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AND TRADEMARK OFFICE. PATENTS.

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 3, 1987 Volume 1075 Number 1

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THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
All cases:	1015.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

Sept. 30, 1986: DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 31, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,428,079 through 4,429,418
Reissue Patents based on the above identified patents.

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No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . \$ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f))	\$ 225.00
By other than a small entity	\$ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 \$ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f))	\$ 55.00
By other than a small entity	\$ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable \$ 500.00"

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

FEBRUARY 3, 1987

U.S. PATENT AND TRADEMARK OFFICE

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PATENTS WHICH EXPIRED NOVEMBER 16, 1986,
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,358,864	06/260,368	11/16/82
4,358,867	06/235,698	11/16/82
4,358,872	06/222,922	11/16/82
4,358,897	06/239,699	11/16/82
4,358,899	06/249,182	11/16/82
4,358,921	06/297,771	11/16/82
4,358,962	06/257,536	11/16/82
4,358,970	06/234,638	11/16/82
4,358,976	06/228,689	11/16/82
4,358,992	06/284,449	11/16/82
4,359,004	06/295,789	11/16/82
4,359,034	06/243,425	11/16/82
4,359,054	06/276,184	11/16/82
4,359,081	06/318,949	11/16/82
4,359,089	06/220,317	11/16/82
4,359,091	06/295,558	11/16/82
4,359,099	06/216,270	11/16/82
4,359,123	06/247,844	11/16/82
4,359,133	06/295,403	11/16/82
4,359,161	06/314,765	11/16/82
4,359,186	06/287,639	11/16/82
4,359,190	06/293,776	11/16/82
4,359,191	06/237,941	11/16/82
4,359,209	06/337,446	11/16/82
4,359,227	06/249,026	11/16/82
4,359,230	06/292,127	11/16/82
4,359,232	06/224,219	11/16/82
4,359,239	06/216,247	11/16/82
4,359,266	06/223,432	11/16/82
4,359,274	06/253,404	11/16/82
4,359,283	06/258,622	11/16/82
4,359,298	06/222,838	11/16/82
4,359,318	06/332,159	11/16/82
4,359,346	06/254,700	11/16/82
4,359,347	06/254,728	11/16/82
4,359,348	06/274,601	11/16/82
4,359,360	06/329,459	11/16/82
4,359,424	06/281,633	11/16/82
4,359,425	06/249,455	11/16/82
4,359,429	06/297,377	11/16/82
4,359,439	06/271,245	11/16/82
4,359,446	06/237,448	11/16/82
4,359,447	06/222,181	11/16/82
4,359,467	06/256,369	11/16/82
4,359,489	06/244,853	11/16/82
4,359,491	06/221,833	11/16/82
4,359,525	06/323,936	11/16/82
4,359,526	06/298,637	11/16/82
4,359,547	06/292,192	11/16/82
4,359,548	06/376,712	11/16/82
4,359,552	06/291,198	11/16/82
4,359,556	06/271,741	11/16/82
4,359,567	06/307,991	11/16/82
4,359,568	06/265,719	11/16/82
4,359,586	06/233,630	11/16/82
4,359,594	06/232,773	11/16/82
4,359,624	06/240,503	11/16/82
4,359,638	06/232,397	11/16/82
4,359,640	06/238,991	11/16/82
4,359,641	06/269,287	11/16/82
4,359,669	06/219,003	11/16/82
4,359,677	06/239,627	11/16/82
4,359,743	06/260,630	11/16/82
4,359,756	06/278,662	11/16/82
4,359,767	06/238,938	11/16/82
4,359,768	06/251,601	11/16/82
4,359,777	06/227,447	11/16/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the

indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,485,982, Re. S.N. 934,586, Filed Nov. 25, 1986, Cl. 242/57.1, WEB TRACKING SYSTEM, Robert P. St. John, et al., Owner of Record: *Xerox Corp., Stamford, Conn.*, Attorney or Agent: W. Douglas Carothers, Jr., Ex. Gp.: 240

4,493,417, Re. S.N. 937,211, Filed Dec. 3, 1986, Cl. 206/387, STORAGE DEVICE FOR FLAT RECORDING MEDIA, Peter Ackeret, Owner of Record: *IDN Inventions and Development of Novelties AG, Chur, Switzerland*, Attorney or Agent: Douglas N. Larson, et al., Ex. Gp.: 240

4,546,969, Re. S.N. 935,233, Filed Nov. 21, 1986, Cl. 296/181, TRAILER FOR AN ARTICULATED VEHICLE, Frederick G. Wilson, Owner of Record: *Inventor*, Attorney or Agent: Thomas B. Van Poole, et al., Ex. Gp.: 310

4,547,833, Re. S.N. 937,578, Filed Dec. 3, 1986, Cl. 361/386, HIGH DENSITY ELECTRONICS PACKAGING SYSTEM FOR HOSTILE ENVIRONMENT, Stanley O. Sharp, Owner of Record: *Schlumberger Technology Corp., New York, N.Y.*, Attorney or Agent: Mary M. Yawney, et al., Ex. Gp.: 210

4,580,634, Re. S.N. 936,537, Filed Nov. 26, 1986, Cl. 166/310, METHOD AND APPARATUS FOR DISTRIBUTING FLUIDS WITHIN A SUBTERRANEAN WELLBORE, Don S. Cruise, Owner of Record: *Chevron Research Co., San Francisco, Calif.*, Attorney or Agent: S. R. LaPaglia, et al., Ex. Gp.: 350

4,583,824, Re. S.N. 938,409, Filed Dec. 5, 1986, Cl. 350/267, CARDIOPULMONARY RESUSCITATION PROMPTING, Donald C. Hutchins, Owner of Record: *Inventor*, Attorney or Agent: Charles Hieken, Ex. Gp.: 250

4,603,269, Re. S.N. 934,550, Filed Nov. 24, 1986, Cl. 307/571, GATED SOLID STATE FET RELAY, Peter A. Hochstein, Owner of Record: *Inventor*, Attorney or Agent: R. P. Barnard, et al., Ex. Gp.: 250

4,606,185, Re. S.N. 937,662, Filed Dec. 3, 1986, Cl. 57/401, FRICTION SPINNING FRAME, Meiji Anahara, et al., Owner of Record: *Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-Shi, Aichi, Japan*, Attorney or Agent: Milton J. Wayne, et al., Ex. Gp.: 240

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,565,930, Reexam. No. 90/001,141, Requested: Dec. 17, 1986, Cl. 556/83, ORGANOTIN MERCAPTO CARBOXYLIC ACID ESTER SULFIDES, Otto B. Kauder, et al., Owner of Record: *Argus Chemical Corp., Brooklyn, N.Y.*, Attorney or Agent: John R. Janes, Ex. Gp.: 120, Requester: George Rauchfuss, Jr., Stamford, Conn.

3,963,254, Reexam. No. 90/001,138, Requested: Dec. 5, 1986, Cl. 280/824, SNOW DISK FOR A SKI STAFF, Yrjo Aho, Owner of Record: *Exel Oy, Helsinki, Finland*, Attorney or Agent: None, Ex. Gp.: 310, Requester: Young & Thompson, Arlington, Va.

3,979,709, Reexam. No. 90/001,145, Requested: Dec. 19, 1986, Cl. 337/186, **ELECTRIC FUSE HAVING A MULTIPLY CASING OF A SYNTHETIC-RESIN GLASS-CLOTH LAMINATE**, Daniel P. Healey, Owner of Record: *Gould, Inc., Rolling Meadows, Ill.*, Attorney or Agent: Paul Edgell, Ex. Gp.: 210, Requester: The Glastic Co., Cleveland, Ohio

4,282,952, Reexam. No. 90/001,142, Requested: Dec. 12, 1986, Cl. 188/18.1, **WHEEL ASSEMBLY**, Francis A. Bartley, Owner of Record: *Unit Rig & Equipment Co., Tulsa, Okla.*, Attorney or Agent: Jerry J. Dunlop, Ex. Gp.: 310, Requester: Owner

4,302,921, Reexam. No. 90/001,137, Requested: Dec. 5, 1986, Cl. 56/13.6, **MOWER WITH BOTTOM-DRIVEN CUTTER DISCS**, Marcel Weber, Owner of Record: *Belrecoit SA Zone Industrielle, Marmoutier, France*, Attorney or Agent: Barry L. Grossman, Ex. Gp.: 330, Requester: Owner

4,513,453, Reexam. No. 90/001,140, Requested: Dec. 15, 1986, Cl. 2/150, **PRE-TIED NECKTIE**, Jian Chen & Ching H. Chen, Owner of Record: *J. Chen & C. H. Chen, Taipei, China*, Attorney or Agent: H. I. Cantor, Ex. Gp.: 240, Requester: Viscount U.S.A., Inc., Compton, Calif.

4,536,341, Reexam. No. 90/001,143, Requested: Dec. 22, 1986, Cl. 558/13, **SUBSTITUTED N-AROYL N-PHENYL UREA COMPOUNDS**, Raymond H. Rigetorink, et al., Owner of Record: *The Dow Chemical Co., Midland, Mich.*, Attorney or Agent: R. G. Waterman, Ex. Gp.: 120, Requester: Owner

4,568,812, Reexam. No. 90/001,139, Requested: Dec. 12, 1986, Cl. 219/64, **DEVICE FOR ELECTRIC LONGITUDINAL-SEAM MASH RESISTANCE WELDING**, Walter Panknin, et al., Owner of Record: *L. Schuler GmbH, Goppingen, W. Germany*, Attorney or Agent: Craig & Burns, Ex. Gp.: 210, Requester: Soudronic Ltd., Briarcliff Manor, N.Y.

4,579,256, Reexam. No. 90/001,144, Requested: Dec. 29, 1986, Cl. 222/162, **FLOWABLE MATERIAL DISPENSER**, Philip R. Heimlich, Owner of Record: *Himedics, Inc., Hollywood, Fla.*, Attorney or Agent: Hayes & Reinsmith, Ex. Gp.: 310, Requester: Owner

Errata

All reference to Patent No. 4,634,577 to Richard H. Nielsen, of Bartlesville, Okla., 'FLUID FEED APPARATUS', appearing in the Official Gazette of Jan. 6, 1987, should be deleted since no patent was granted."

"All reference to Patent No. 4,632,875 to Stanley M. Barnett, Joan M. Lausier, Samuel J. Montalto, all of R.I., 'METHOD OF FORMING A POLYAPH-RON', appearing in the Official Gazette of Dec. 30, 1986, should be deleted since no patent was granted."

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on Oct. 14, 1986 were mailed to 354 candidates. The following list contains the names of persons who successfully passed the examination. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) for a period of 90 days to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of

good moral character and repute. 37 CFR 10.7(a). Accordingly, any information tending to affect the eligibility of any of the following persons on moral, ethical, or other grounds should be furnished to the Director of Enrollment and Discipline on or before Mar. 6, 1987.

Aaker, Mark A., 1765 Shamrock, Santa Clara, Calif. 95051
 Abel, David B., 204 38th Pl., Manhattan Beach, Calif. 90266
 Abrahams, Colin P., 56 Maegan Pl. 9, Thousand Oaks, Calif. 91362
 Arnold, Gordon T., 2820 Fountain View, #102, Houston, Tex. 77057
 Atlas, Seth J., 22 Jones St., #4B, New York, N.Y. 10014
 Ben-Ami, Leora, 10 Fraser Pl., Valley Stream, N.Y. 11581
 Bengtsson, William P., 1301 N. Courthouse Rd., #802, Arlington, Va. 22201
 Berninger, Mark S., 12513 Hialeah Way, Gaithersburg, Md. 20878
 Bingham, Douglas A., 207 Carmelita Pl., Solana Beach, Calif. 92075
 Blackman, William D., 228 W. Hill St., #A2, Davison, Mich. 48423
 Bliss, Daniel H., 1633 Glen Meadow Ct., Rochester, Mich. 48063
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 Boehm, Frederick T., 5 Holly Pl., Wilton, Conn. 06897
 Bond, William J., 326 12th St., S.E., Washington, D.C. 20003
 Brainard, Thomas D., 8441 Whitehorn, Romulus, Mich. 48174
 Brookman, Adam L., 6180 Edsall Rd., #104, Alexandria, Va. 22304
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 Busse, Paul W., 7070 Austrian Pine Way, Apt. 7, Portage, Mich. 49002
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 Cohen, Morris, 7907 Forrester Rd., San Diego, Calif. 92120
 Cohen, Thomas D., 3613 N.E. 43rd, Seattle, Wash. 98105
 Cross, Charles A., 4100 N. 11th Pl., Arlington, Va. 22201
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 Kerins, John C., 3052 S. Abingdon St., Apt. C1, Arlington, Va. 22206
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 Lee, Simon K., 10365 Mary Ave., Cupertino, Calif. 95014
 Levine, Charles D., 2815 Shawn Leigh Dr., Vienna, Va. 22180
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03301

Jan. 7, 1987.
CAMERON WEIFFENBACH,
*Director, Office of
Enrollment and Discipline.*

PATENT NOTICES

Certificates of Correction for the Week of Feb. 3, 1987

4,099,321	4,584,139	4,600,801	4,616,193
4,249,524	4,584,341	4,601,542	4,616,536
4,452,249	4,585,360	4,601,575	4,616,815
4,502,325	4,587,168	4,602,329	4,617,042
4,519,050	4,587,619	4,602,549	4,617,389
4,524,467	4,587,995	4,602,790	4,617,646
4,530,497	4,588,570	4,603,263	4,617,682
4,532,588	4,588,796	4,603,795	4,617,767
4,540,204	4,589,485	4,604,892	4,618,344
4,542,849	4,589,787	4,605,719	4,618,511
4,550,217	4,590,364	4,606,949	4,619,280
4,551,202	4,591,329	4,608,082	4,619,462
4,555,700	4,591,461	4,608,887	4,620,142
4,568,492	4,591,591	4,608,910	4,620,434
4,569,111	4,593,365	4,609,771	4,620,777
4,569,492	4,593,929	4,610,172	4,621,285
4,571,053	4,594,834	4,610,955	4,621,353
4,575,221	4,595,021	4,611,421	4,621,420
4,575,503	4,595,222	4,612,242	4,621,478
4,575,522	4,595,275	4,612,243	4,621,591
4,576,980	4,595,533	4,612,879	4,621,706
4,577,034	4,595,570	4,613,046	4,621,756
4,578,162	4,595,960	4,613,101	4,621,971
4,579,082	4,596,054	4,613,169	4,622,017
4,579,174	4,597,745	4,613,609	4,622,111
4,579,294	4,598,600	4,613,790	4,622,166
4,581,425	4,598,871	4,614,376	4,622,389
4,581,880	4,599,615	4,615,183	4,622,522
4,582,063	4,599,625	4,615,197	4,622,956
4,582,140	4,600,006	4,615,777	4,623,052
4,582,417	4,600,324	4,615,904	4,624,227
4,583,593	4,600,625	4,616,130	

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Birmingham Public Library	(205) 226-3680
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
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	Sacramento: California State Library	(916) 322-4572
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Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
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	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS RENE D. TEGTMEYER, Assistant Commissioner JAMES E. DENNY, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF December 20, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	9-24-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	3-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-29-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	7-09-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	11-06-84
DESIGN, GROUP 290—K. L. CAGE, Director	6-15-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-15-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during December 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents Numbers 3,480,966 to 3,487,469, inclusive
Plant Patents Numbers 2,945 to 2,958 inclusive

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REEXAMINATIONS

FEBRUARY 3, 1987

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,736,966 (625th)

QUICK-CONNECT VENT TUBE STRUCTURE

Anthony J. Diciara, 133-03 128th St., South Ozone Park, Queens, N.Y.

Reexamination Request No. 90/000,935, Jan. 8, 1986.

Reexamination Certificate for Patent No. 3,736,966, issued Jun. 5, 1973, Ser. No. 199,947, Nov. 18, 1971.

Int. Cl.⁴ B65B 3/18; B67C 3/00

U.S. Cl. 141—392



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 5 is confirmed.

Claims 1-4 and 6-9 are cancelled.

5. An apparatus as defined in claim 1, wherein said fluid outlet bore means comprises an adapter nipple for attaching said vent tube to said filling valve device, said adapter nipple having an upper threaded portion for threadingly engaging said filling valve device, a lower cylindrical portion adapted to be slidably inserted into the open end of said hollow cylindrical member, a plurality of annular grooves in spaced relation being provided on the external surface of said cylindrical portion of the nipple, said grooves on the cylindrical member of said vent tube being interiorly thereof, and said sealing ring members interlocking said adapter nipple and said vent tube upon insertion of the latter into the former.

B1 3,799,427 (626th)

DEGASSING VALVE FOR HERMETICALLY SEALED FLEXIBLE CONTAINERS AND A CONTAINER PROVIDED WITH THE VALVE

Luigi Goglio, Milan, Italy, assignor to Flexible Packaging Research and Consulting, Amsterdam, Netherlands

Reexamination Request No. 90/000,978, Mar. 31, 1986.

Reexamination Certificate for Patent No. 3,799,427, issued Mar. 26, 1974, Ser. No. 337,870, Mar. 5, 1973.

Claims priority, application Italy, Dec. 4, 1972, 32439/72

Int. Cl.⁴ B65D 31/14

U.S. Cl. 383—103

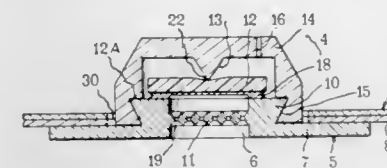
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-14 is confirmed.

1. A unidirectional degassing valve for products in thermoweldable flexible containers, characterized by comprising:
a. a thermoplastic material moulded base member provided with at least one conduit;
b. a resilient valve member normally closing said conduit

and bearing on the base member through a viscous layer; and

c. a cap connected with said base member, therewith defin-



ing a chamber wherein said resilient valve member is located, and provided with at least one exhaust aperture, through which said chamber communicates with the external atmosphere.

B1 3,820,292 (627th)

BUILDING STRUCTURE

John R. Fitzpatrick, Islington, Canada, assignor to Campcore Inc.

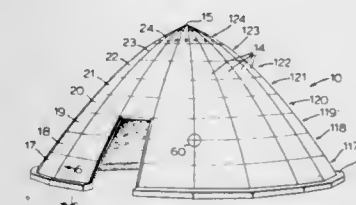
Reexamination Request No. 90/000,787, May 24, 1985.

Reexamination Certificate for Patent No. 3,820,292, issued Jun. 28, 1974, Ser. No. 255,643, May 22, 1972.

Continuation of Ser. No. 84,318, Oct. 27, 1970, abandoned.

Int. Cl.⁴ E04B 1/32

U.S. Cl. 52—81



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-12 is confirmed.

1. A peaked segmented building structure comprising:

a base;
a plurality of similar, upwardly convergent and inwardly sloping adjacent sectors, each supported by said base, all sectors being divided into segmental panels at their intersections with a plurality of vertically spaced, hypothetical horizontal planes, the segmental panels defined between each two adjacent horizontal planes constituting a ring of segmental panels, each segmental panel being flat and having the shape of a trapezoid of which the top and bottom edges are parallel and the two side edges are equal in length and convergent, the acute angle between the bottom edge and each side edge diminishing from one segmental panel to the segmental panel next above it, thereby to give each sector a slight outward bulge, the lowermost ring of segmental panels defining a polygon at its contact with the base;
the profile of said slight outward bulge of each sector lying between a straight line and the critical curve line for the sector, and being different from either; said last-mentioned

characteristic of the profile being assured by first choosing an actual profile for each sector, by then calculating for each segmental panel in a sector its weight and length and the location of its gravitational center, by then sequentially balancing moment arms about one end of each segmental panel in order to determine the ratios between the tangents of the angles defined between the panels and the horizontal which will place the sector of segmental panels in static equilibrium from the base to the peak, by then using trail-and-error to find the set of angles which (a) satisfies the said ratios, and (b) yields the same peak-to-base angle as occurs with the actual segmental panels for which the weights, lengths and gravitational centers were determined, and finally by ensuring that the actual profile defined by the actual segmental panels lies within and is straighter than the static equilibrium profile calculated as above recited.

**B1 3,958,888 (628th)
CLAMPING ASSEMBLY**

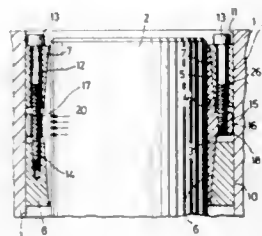
Ralph Mullenberg, Nelkenstrasse 6, 4041 Hülchrath, Fed. Rep. of Germany

Reexamination Request No. 90/000,932, Jan. 6, 1986. -
Reexamination Certificate for Patent No. 3,958,888, issued May 25, 1976, Ser. No. 471,156, May 17, 1974.

Claims priority, application Fed. Rep. of Germany, May 17, 1973, 2324916; Jul. 13, 1973, 2329940

Int. Cl.⁴ F16D 1/06; B25G 3/20

U.S. Cl. 403—13



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-6 is confirmed.

1. A clamping assembly for clampingly connecting together an outer member or hub, having a bore with a cylindrical clamping surface, and an inner member or shaft receivable within said bore and having a clamping surface concentrically spaced from said bore clamping surface, the clamping assembly comprising:

a double-taper ring having concentric inner and outer peripheral surfaces, one of its peripheral surfaces being cylindrical and adapted for engagement with the clamping surface of one of the two members, the opposite peripheral surface including two oppositely slanting tapered surfaces, the tapers of said surfaces being so slanted that the ring has a maximum wall thickness in its mid-portion; two clamping sleeves spaced apart axially and having concentric inner and outer peripheral surfaces, one pair of peripheral surfaces being tapered surfaces adapted to be seated against the tapered surfaces of the double-taper ring, the opposite pair of peripheral surfaces being cylindrical and adapted for engagement with the clamping surface of the other one of the two members;

the double-taper ring including in the space between the clamping sleeves an integral centering collar extending to the same diameter as the cylindrical peripheral surfaces of the clamping sleeves when said sleeves are in their clamped state, the double-taper ring thereby serving as a centering means between the hub member and the shaft member, when the assembly is in its unclamped state;

the assembled double-taper ring and clamping sleeves thus defining a package with concentrically spaced inner and outer cylindrical outlines;

a plurality of clamping bolts spaced along the circumference of the assembly and extending axially between the two clamping sleeves within said inner and outer outlines of the assembly, the clamping bolts reaching through one of the clamping sleeves, through a centrally located wall portion of the double-taper ring, and at least a distance into the second clamping sleeve so as to axially advance the sleeves against one another and onto the tapered surfaces of the double-taper ring, when tightened;

the angle of taper of the cooperating tapered surfaces of the double-taper ring and the clamping sleeves being at an angle at which the clamping engagement between said tapered surfaces is of the self-locking type, the clamped parts being separable by force only; and means for forcibly unclamping each clamping sleeve from the double-taper ring by engaging its centrally located wall portion.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED FEBRUARY 3, 1987

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

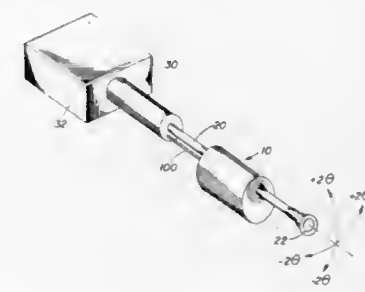
**H202
BARREL FLEXURE CONTROL SYSTEM**
Eugene Geeter, Orange, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 29, 1986, Ser. No. 870,214

Int. Cl.⁴ F41F 17/00, 21/00

U.S. Cl. 89—14.05

9 Claims



1. A gun barrel adapter for a barrel having a longitudinal axis comprising:

a first bearing for engaging the barrel and for acting as a first fulcrum for flexing the barrel;
a second bearing for engaging the barrel at a location spaced along the longitudinal axis from the first bearing and for acting as a second fulcrum for flexing the barrel; and actuator means operatively connected to said first and second bearings and engaged to the barrel between said first and second bearings for applying a lateral force to the barrel for flexing the barrel whereby a position of a muzzle of the barrel can be changed.

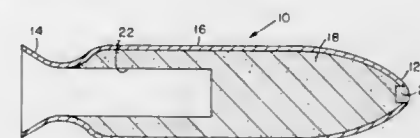
**H203
INTEGRAL ROCKET MOTOR-WARHEAD**
William B. Thomas, and Robert E. Betts, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 1985, Ser. No. 695,499

Int. Cl.⁴ F42B 15/10; C06B 45/12

U.S. Cl. 102—374

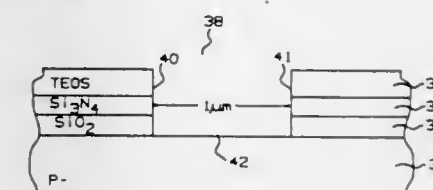
3 Claims



1. A rocket motor comprising a rocket motor case having a forward end which is continuous with said motor case extending from said forward end to an aft end; a nozzle secured to aft end of said motor case; a propellant grain contained within said motor case, said propellant grain being a common burning propellant and an explosive propellant, said propellant grain having an exposed outer surface which burns as an internal or perforated grain propellant during a boost phase to provide boost thrust, said propellant grain surface burning to an end-burning propellant at completion of boost phase and continuing to burn to provide sustaining thrust during sustaining thrust phase, said end-burning propellant burning surface progressing towards said forward end, said propellant grain being of such a predetermined amount to always have an amount of propellant grain remaining when said rocket motor reaches the prox-

imity of a target; and detonator means contained in said rocket motor case and in intimate contact with a portion of said amount of propellant grain remaining and said detonator means being set off in proximity of the target to cause said amount of propellant grain remaining to be exploded and to provide an explosive force to the target.

**H204
METHOD FOR IMPLANTING THE SIDEWALLS OF ISOLATION TRENCHES**
Kye H. Oh, Allentown, and David S. Yaney, Bethlehem, both of Pa., assignors to AT&T Bell Laboratories
Filed Nov. 29, 1984, Ser. No. 676,250
Int. Cl.⁴ B44C 1/22; C03C 15/00; H01L 21/00, 21/461
U.S. Cl. 156—648
11 Claims

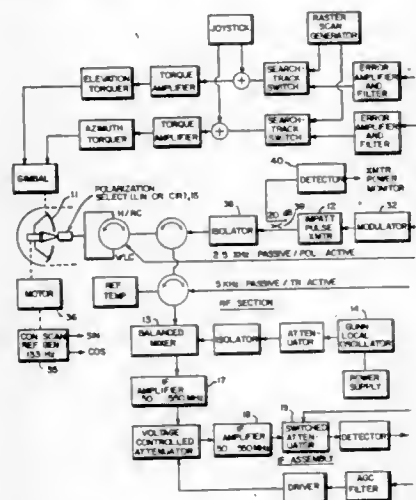


(k) thermally oxidizing and subsequently etching said substrate so as to completely fill said spaced succession of isolation trenches and planarize the final structure.

H205
WIDE BANDWIDTH RADAR HAVING IMPROVED SIGNAL TO CLUTTER RESPONSE CHARACTERISTICS
George M. Green, 6500 Bear Lake Cir., Orlando, Orange County, Fla. 32810, and James R. Ashwell, 2125 Mohawk Trail, Maitland, Orange County, Fla. 32751
Filed Feb. 9, 1984, Ser. No. 578,397
Int. Cl.⁴ G01S 7/28

U.S. Cl. 342-134

4 Claims



1. A wide bandwidth radar having improved signal to clutter response comprising
a radar signal pulse generating means generating a train of wide bandwidth non-coherent pulses,
modulation means effecting wide bandwidth frequency modulation of said non-coherent pulses,
transmit/receive means transmitting said train of frequency modulated pulses and receiving echo signals thereof,
a wide bandwidth IF circuit providing IF processing of said received echo signals, and
a video circuit including a detector means receiving said IF processed echo signals said detector means being effective to average the contents of each pulse thereof whereby each averaged pulse represents an estimate of the true average return from background clutter.

H206
DYNAMIC PRESSURE CALIBRATOR
Donald H. Newhall, Norfolk, Mass.; Arpad A. Juhasz, Joppa, Md.; Charles D. Bullock, Conowingo, Md., and James O. Pilcher, II, Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

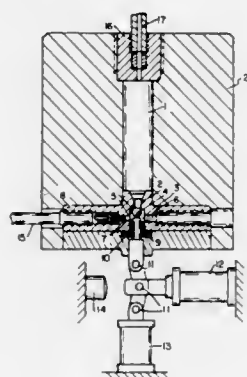
Filed Feb. 10, 1986, Ser. No. 835,857
Int. Cl.⁴ G01L 27/00

U.S. Cl. 73-4 R

16 Claims

10. A method of generating high pressure, short rise time pulses, comprising:
pressurizing a large pressure chamber with a pressure fluid;
discharging the pressurized high pressure fluid from the large pressure chamber through a channel into a small pressure chamber having a volume which is a small fraction of the volume of said large pressure chamber;
confining the pressurized fluid coming from said large pressure chamber in said small pressure chamber to establish a rapid rise in pressure in said small pressure chamber to a

point equaling the pressure initially established in said large pressure chamber; and

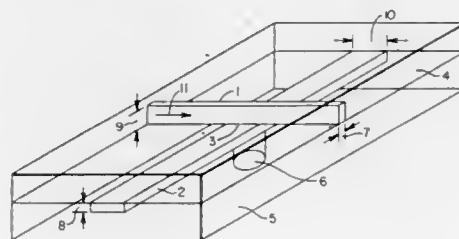


communicating to a pressure gauge the pressure rise in said small pressure chamber.

H207
OVER-UNDER DESTRUCTIVE CROSSOVER CIRCUIT
Denis A. Silvia, Aberdeen, and Herman J. Blische, Forest Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 380,204, May 20, 1982. This application Aug. 15, 1986, Ser. No. 898,543
Int. Cl.⁴ F42B 3/10, 15/00

U.S. Cl. 102-275.9

19 Claims



1. A destructive crossover comprising two intersecting paths of explosive material embedded in a substrate material, said paths being a first path and a second path, wherein the cross-sectional area of each path is sufficiently large to achieve reliable detonation along that entire path and wherein the intersection is configured so that detonation of the first path reliably results in the destruction of only the cross-sectional region of the second path which is in the immediate vicinity of the intersection.

H208
PACKAGING MICROMINIATURE DEVICES
Kwok K. Ng, Union, and Simon M. Sze, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

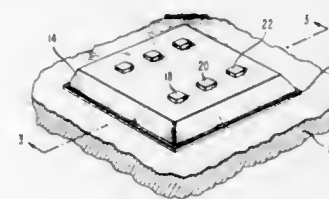
Filed Feb. 17, 1984, Ser. No. 581,336
Int. Cl.⁴ H01L 23/16, 29/04, 21/00

U.S. Cl. 357-75

19 Claims

1. An assembly comprising
a wafer having top and bottom surfaces, said top surface constituting a planar uppermost surface of said wafer and said bottom surface constituting a planar bottommost surface of said wafer, said wafer having conductive terminal portions on said top surface,
at least one microminiature device mounted on the top surface of said wafer, said device having a top surface and

including conductive elements in a central portion of the top surface of said device, each device mounted on the top surface of said wafer having at least one sloped edge extending from said central portion toward the top surface of said wafer,



and a conductive pattern connecting the elements of each device mounted on the top surface of said wafer to said terminal portions, said pattern being disposed entirely on the sloped edge of each device and on the top surface of said wafer.

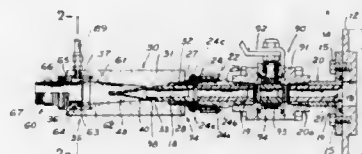
H209
DIFFERENTIAL PRESSURE PIN DISCHARGE APPARATUS
David J. Oakley, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1984, Ser. No. 615,432

Int. Cl.⁴ G21C 19/02; F16J 15/32, 15/40, 15/48

U.S. Cl. 376-261

5 Claims



1. A pin discharge assembly for allowing elongate pins to be discharged from a source area having a source pressure, into a terminal area having a terminal pressure which is greater than the source pressure; comprising:

a valve having a pin passageway therethrough the conveying elongate pins being discharged from the source area; the valve having flexible lip means having a duck bill shape and extending across the pin passageway and having a lip opening therethrough for conveying pins therethrough; the flexible lip means being collapsible to prevent backflow of gases into the source area;
aspirator means connected downstream of the valve and having a pin passageway therethrough for communicating with the pin passageway in the valve to allow elongate pins to pass through the aspirator means; the aspirator means serving to intermittently produce an aspirator venturi pressure downstream of the flexible lip means which is less than the source pressure.

H210
BI-INPUT SAFE DETONATOR
Paul Harris, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 713,132, Mar. 18, 1985. This application Jan. 2, 1986, Ser. No. 815,499

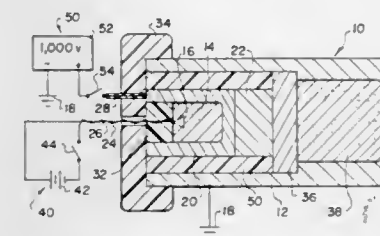
Int. Cl.⁴ F42C 11/02

U.S. Cl. 102-210

9 Claims

1. A detonator comprising:
a housing;

a weak explosive charge in said housing;
a wire associated with said weak explosive charge which is activatable to ignite said weak explosive charge;
first power supply means connected to said wire for activating said wire to ignite said weak explosive charge and produce a shockwave;
a piezoelectric semiconductor buffer in said casing positioned to receive the shockwave; and



second power supply means connected to said buffer for activating said buffer to amplify the shockwave when said first power supply means activates said wire at substantially the same time that said second power supply means activates said buffer, to produce an amplified detonation wave.

H211
COMBINED EJECTOR-RAMMER FOR SMALL ARMS
William E. Vanderbeck, Ridgefield Park, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1985, Ser. No. 730,214
Int. Cl.⁴ F41C 15/00, 13/00

U.S. Cl. 42-17

5 Claims



1. A mechanical device for a small caliber weapon which device is capable of performing the functions of a conventional bolt, a rammer, an extractor and an ejector, said weapon comprising a firing chamber, a feed ramp located rearwardly and below said firing chamber, a bolt assembly adapted to reciprocate above said feed ramp, one side of said bolt having an ejector lever attached thereto by means of a pair of pins mounted in said bolt and a spring which simultaneously urges said lever downwardly and forwardly relative to said bolt, one of said pins being located near the forward end of said bolt and moving in an L-shaped slot in said lever and the other of said pins being located near the aft end of said bolt and moving in a generally horizontal linear slot in said lever, whereby the forward end of said lever functions as a rammer to slide cartridges along said feed ramp and into said chamber and whereby during retraction of said bolt assembly following firing, said lever will move forward relative to said bolt as a result of the pressure of said spring and the sliding of said pins in said slots to eject spent cartridge cases from said weapon, and wherein said bolt has an extractor hook attached thereto.

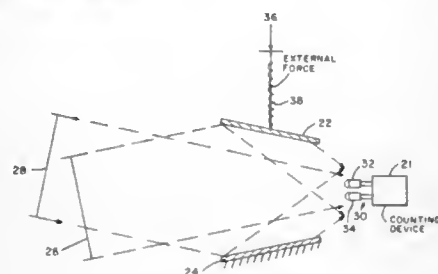
H212
DISPLACEMENT AND FORCE MEASUREMENT BY MEANS OF OPTICALLY-GENERATED MOIRÉ FRINGES
 James D. Holder, and Walter L. Hales, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1984, Ser. No. 686,767

Int. Cl.⁴ G01B 11/02

U.S. Cl. 356—356

3 Claims



1. Apparatus for displacement and force measurement by means of optically-generated Moiré fringe patterns comprising:

- a movable mirror and a fixed mirror positioned in spaced relation;
- a pair of light sources disposed for directing separate light beams to said mirrors; said mirrors disposed to reflect portions of said light beams to an interference region where fringes are generated by interaction of the light wavefronts; and,
- a pair of optic sensors positioned in said interference region to detect light and dark patterns of said fringes.

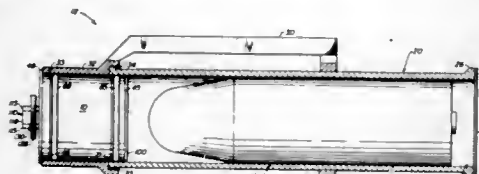
H213
DISICCANT PLUG FOR MISSILE LAUNCHER
 Clayton E. Panlaqui, Palm Springs, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1986, Ser. No. 874,305

Int. Cl.⁴ F41F 3/042

U.S. Cl. 89—1.8

5 Claims



- In a missile launching apparatus having:
 - a frame;
 - a launcher tube mounted on the frame and having an open forward end and an open rearward end;
 - a container tube having an open nose end and a hermetically closed tail end, the container tube being disposed in coaxial relation to the launcher tube with said nose end slidably received in said rearward end;
 - a device releasably retaining the container tube to the frame; and
 - a missile which is adversely affected by humidity and is disposed in the container tube between said ends thereof,
 the improvement comprising:
 - a hollow cylindrical plug which has a periphery slidably fitted within the launcher tube and within the nose end of the container tube, has a perforate end, and has an axially opposite closed end, the plug being extended through the launcher tube with the perforate end of the plug received in the nose end of the container tube and with the closed

end of the plug adjacent to the forward end of the launcher tube;
 a quantity of desiccant disposed within the plug; and
 means for retaining the desiccant within the plug so that the desiccant absorbs humidity entering the plug through the perforate end thereof from the container tube.

H214
DISTILLATION PROCESS FOR THE ISOLATION OF 1,1-DIFLUORO(MONO- OR DIHALO)ETHOXYBENZENEAMINES

John C. Little, 5450 Kirkwood Dr. #C-2, Concord, Calif. 94521

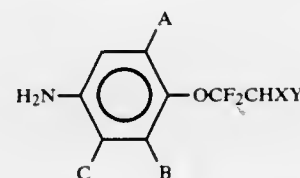
Filed Jul. 19, 1985, Ser. No. 756,907

Int. Cl.⁴ C07C 93/14, 43/225, 41/42

U.S. Cl. 564—437

13 Claims

1. A process for the isolation of 1,1-difluoro-(mono- or dihalo)ethoxybenzeneamines



wherein

A, B, and C each independently represent —H, —F, —Cl, —Br, —CN, —C₁—C₄ alkyl, or —C₁—C₄ alkoxy,
 X represents —F, —Cl or —Br, and
 Y represents —F, —Cl, —Br or —H.

prepared by the reaction of a 1,1-difluoro(mono- or dihalo)-ethylene with a hydroxybenzeneamine in the presence of an alkali metal or alkaline earth metal hydroxide and a polar, aprotic solvent, which comprises distilling the reaction product in two stages so that the solvent and other volatile constituents are removed from the reaction mixture in the first stage by distillation at or below atmospheric pressure and the product is isolated from the residue of the first stage in the second stage by distillation under reduced pressure, without prior dilution with water and phase separation or prior treatment to neutralize said alkali metal or alkaline earth metal hydroxide.

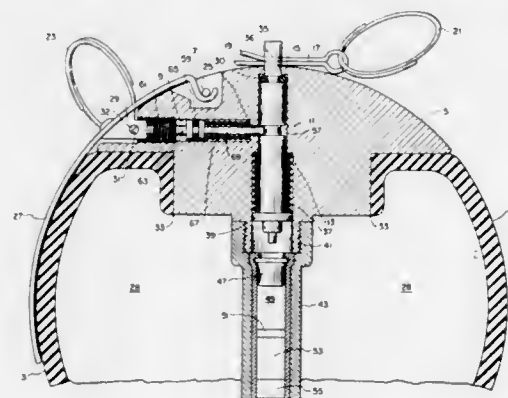
H215
FUZE FOR RIOT CONTROL GRENADE
 Paul L. Stewart, Joppa, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 2, 1985, Ser. No. 729,839

Int. Cl.⁴ F42B 27/00

U.S. Cl. 102—487

4 Claims



1. An improved fuze for a smoke-grenade comprising: a metal fuze body having a partial spherical surface provided

H217
RECOIL MECHANISM
 John K. Jorczak, Castleton, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 24, 1984, Ser. No. 685,647

Int. Cl.⁴ F41F 19/02, 19/14

U.S. Cl. 89—43.01

9 Claims



1. A recoil mechanism comprising:
 a hydraulic cylinder case assembly including an elongated tubular case having an imaginary central axis and end caps attached to said elongated tubular case at opposite ends thereof;

a cylindrical piston rod assembly having a body portion positioned and centered within said hydraulic cylinder case with a fluid-filled chamber between said body portion and the inner wall of said elongated tubular case, said cylindrical piston rod assembly having a portion thereof protruding through one of said end caps for sliding reciprocating motion therein and along the axis of said hydraulic cylinder case, said cylindrical piston rod assembly having a fluid-filled cavity therein and a plurality of orifices connecting said fluid filled chamber and said fluid-filled cavity;

and an elongated cylindrical tapered control rod fixed to said elongated tubular case within said fluid-filled cavity and having an outer wall spaced from the inner wall of said cylindrical piston rod assembly;

wherein upon sliding motion of said cylindrical piston rod assembly in one direction relative to said hydraulic cylinder case hydraulic fluid will be pumped from said fluid-filled chamber and through said orifices into said fluid-filled cavity to dissipate the energy of recoil.

H218
WEAPON TRAINER USING IR RADIATION EMITTED FROM TARGET

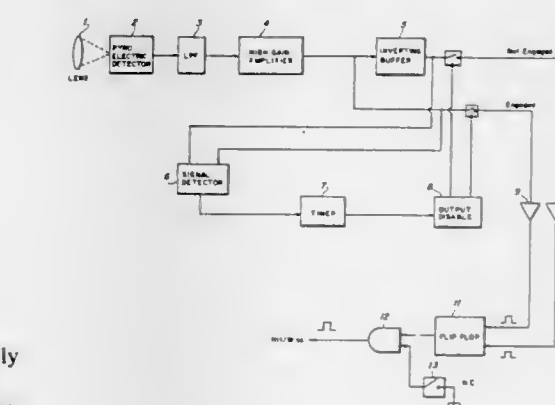
Albert H. Marshall, Orlando, and Randy R. Fields, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1986, Ser. No. 862,337

Int. Cl.⁴ F41G 3/26

U.S. Cl. 434—22

6 Claims



1. A weapons training device comprising:

with a radial hole, a one-piece firing pin retainably mounted in said radial hole, said radial hole having three steps in diameter with the largest diameter housing a spring, said radial hole forming two shoulders, said firing pin having an anterior end, and interior end, and three different diameters resulting in two shoulders wherein the smallest diameter is at the anterior end, and the largest diameter having a flange adjacent said interior end, said spring mounted over said firing pin and said flange retaining said spring in said housing in an energy storing condition, said three steps of said radial hole mating with said diameters of said firing pin, said firing pin having an annular groove, said firing pin also having a second hole adjacent said anterior end, a positive safing pin mounted in said second hole holding said firing pin in a retracted position, said fuze body having an arm/safe hole at 90° to said radial hole, a slideable arm/safe pin having a shank and twin spaced-apart flanges mounted in said arm/safe hole, said shank projecting into said groove of said firing pin retaining said firing pin in the retracted position, said twin flanges of said arm/safe pin consisting of a first and second flange, said first flange retaining a second spring in the energized position maintaining engagement of said arm/safe pin with said firing pin, and said first and second flange maintaining an O-ring in a compressed position therebetween as a seal against moisture, a threaded retainer maintaining said arm/safe pin, said spring, and said O-ring in said arm/safe hole at all times, a curved handle pivoted on a pin on said fuze body, said handle normally blocking said arm/safe hole and holding said slideable arm/safe pin in said groove of said firing pin, a second positive safing pin retaining said handle in place, said arm/safe pin engaged in said firing pin in a retracted position.

H216
METHOD FOR AND PRODUCT OF ELECTRON EMISSIVE LAYER AND MULTIBEAM CRT THEREBY
 Bruce P. Piggan, Birch Lake, North Common, Sheffield English, Hants, England

Continuation of Ser. No. 612,197, May 21, 1984, abandoned,

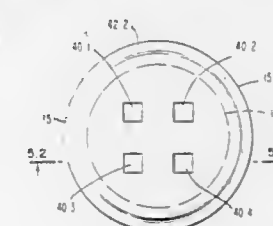
which is a continuation of Ser. No. 279,281, Jun. 30, 1981,

abandoned. This application May 10, 1985, Ser. No. 733,004

Int. Cl.⁴ H01J 1/46, 21/10, 29/50

U.S. Cl. B13—302

1 Claim



1. A cathode comprising:
 an insulating substrate;
 a metallization layer on said substrate having an essentially planar surface;
 an electron emissive layer on said metallization comprising an array of needle-like particles essentially normal to said metallization surface.

means for detecting infrared radiation emitted by warm-blooded animals, including humans and heated targets; a simulated rifle; and means for detecting when the trigger of the said simulated rifle is pulled; wherein the said means for detecting infrared radiation is mounted upon the rifle in such a manner as to detect radiation emitted by said animals at such times as the rifle is properly targeted at said animals.

H219

LAYERED CONSTRUCTION OF COMPOSITE INTERCEPTOR MOTOR CASES, ETC.

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 6, 1984, Ser. No. 577,636

Int. Cl.⁴ B65H 81/00; C06B 45/12

U.S. Cl. 156—169

3 Claims

1. A method of manufacturing composite rocket motor cases wherein a fiber material having a constant strength and a curable resin having a variable formulation to yield a cured matrix from a low-modulus mechanical property value to a high-modulus mechanical property value are employed in a winding process to form successive layers of said fiber material which has been impregnated with said curable resin while passing through a filament impregnating bath containing said curable resin, said winding process when completed forming a composite rocket motor case having an innermost layer section of a highly-flexible, low-modulus mechanical property value matrix resin, an outermost layer section of rigid, high-modulus mechanical property value matrix resin, and a plurality of layer sections therebetween of intermediate modulus mechanical property value matrix resin, said method comprising:

- i. providing a curable resin in a filament impregnating bath for coating a fiber material, said curable resin comprised of a first, second, third, and fourth component in a composition mixture wherein said first component is selected from diglycidyl ether of bisphenol A and a thermoplastic phenol-formaldehyde resin in predetermined parts by weight from about 25 to about 95, said second component which is epoxidized dimer of oleic acid in parts by weight from about 75 to about 5, said third component which is a reactive plasticizer of butanediol diglycidyl ether in parts by weight of about 25, and said fourth component which is an amine-crosslinking agent or curative in parts by weight about 20, said fourth component consisting of a mixture of 65 weight percent of 4,4'-diaminodiphenylmethane, 10 weight percent of triamines, and 25 weight percent of polyamines;
- ii. adjusting said curable resin composition for said first, second, third, and fourth component to about 25, 75, 25, and 20 parts by weight respectively while passing a fiber material through said filament impregnating bath containing said curable resin and coating said fiber material during a plurality of predetermined winding process time period to establish said innermost layer section;
- iii. readjusting said curable resin composition for said first, second, third, and fourth component to about 50, 50, 25, and 20 parts by weight respectively while continuing the passing of a fiber material through said filament impregnating bath containing said curable resin and coating said fiber material during a plurality of predetermined winding process time period to establish a first intermediate layer section;
- iv. readjusting a second time said curable resin composition for said first, second, third, and fourth component to about 75, 25, 25, and 20 parts by weight after completing said first intermediate layer section respectively while continuing the passing of a fiber material through said filament impregnating bath containing said curable resin and coating said fiber material during a plurality of predetermined

winding process time period to establish a second intermediate layer section;

- v. readjusting a third time said curable resin composition for said first, second, third, and fourth component to about 95, 5, 25, and 20 parts by weight respectively after completing said second intermediate layer section while continuing the passing of a fiber material through said filament impregnating bath containing said curable resin and coating said fiber material during a plurality of predetermined winding process time period to establish an outermost layer section; and,
- vi. curing said curable resin to complete said method of manufacturing said composite rocket motor case having a variable matrix and a gradation of mechanical properties value for said innermost layer section which varies in modulus from about 80 to 100 KSI to said outermost layer section which varies in modulus from about 450 KSI to about 640 KSI.

H220

OPTICAL PERFORMANCE COMPARATOR

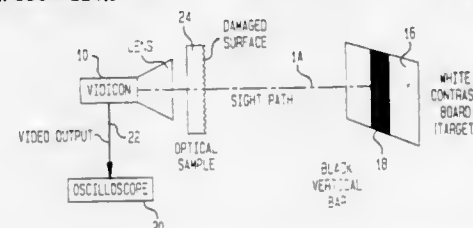
E. Michael Vogel, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1986, Ser. No. 845,674

Int. Cl.⁴ G01M 11/00

U.S. Cl. 356—124.5

8 Claims



1. An optical performance comparator for determining optical degradation of an optical device, comprising: support means for the optical device; target means for viewing through the optical device; illumination means for illuminating the target means; viewing means for selectively and incrementally viewing the target means through the optical device, the viewing means having an output proportional to the magnitude of light sensed by the viewing means; and measuring means for measuring the amplitude and phase changes in the output of the viewing means with respect to time.

H221

FLUIDIC FUEL CONTROL FOR ADVANCED RAMJET ENGINES

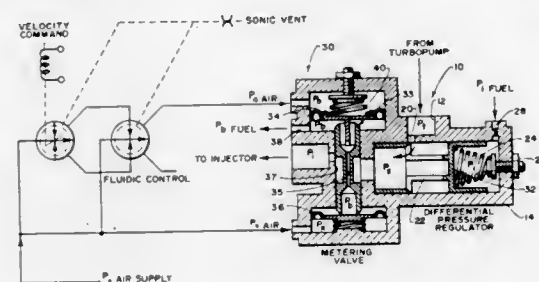
Donald W. Chapin, Scottsdale, and John F. Thurston, Mesa, both of Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1985, Ser. No. 749,687

Int. Cl.⁴ F02K 3/00; F16K 31/12, 31/36; F15C 1/04

U.S. Cl. 60—243

4 Claims



VOL
1075

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1

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REISSUES

FEBRUARY 3, 1987

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,343

WELL SAFETY VALVE

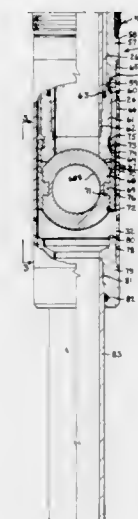
Michael B. Vinzant, Carrollton; Steven C. Speegle, Flower Mound; Michael W. Meaders, Lewisville, and Robert L. Hilts, Dallas, all of Tex., assignors to Otis Engineering Corporation, Carrollton, Tex.

Original No. 4,461,353, dated Jul. 24, 1984, Ser. No. 401,005, Jul. 22, 1982. Application for reissue Mar. 20, 1985, Ser. No. 713,914

Int. Cl.⁴ E21B 34/10

U.S. Cl. 166—322

21 Claims



19. A safety valve comprising:
tubular housing means having longitudinal flow passage means extending through the housing means;
first port means through the housing means communicating said flow passage means with the exterior of said housing means;
valve means for controlling flow through said flow passage means including a first valve seat means, single valve member means and reciprocal actuator means for moving said valve member means relative to said valve seat means between open and closed position; and
lower annular valve seat means below said first port means engagable by said single valve member when said valve means is in open position relative to said first valve seat means;
said valve means and annular valve seat means alternatively directing flow through said flow passage means and said first port means.

Re. 32,344

SHIPPING PALLET AND A PACKAGE FORMED THEREFROM

Joseph H. Wind, Taylors, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Original No. 4,413,737, dated Nov. 8, 1983, Ser. No. 295,524, Aug. 24, 1981. Continuation-in-part of Ser. No. 229,195, Jan. 28, 1981, abandoned. Application for reissue Sep. 28, 1984, Ser. No. 656,142

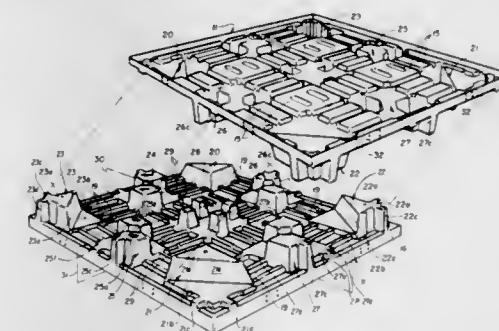
Int. Cl.⁴ B65D 19/00, 19/38, 21/02

U.S. Cl. 206—599

27 Claims

1. A shipping pallet of [the type formed of a single sheet of material and constructed] *the forkliftable type and of unitary plastic construction* for use with another substantially identical

pallet so as to serve as a bottom or top wall of a shipping container for transporting and storing a load, said shipping pallet having a generally planar base and a plurality of foot means projecting from the base, said foot means including corner foot means positioned in respective corner areas of the pallet, central foot means positioned centrally of the pallet, and intermediate foot means positioned between adjacent corner foot means, and wherein each of the foot means comprises at least one projecting member and a *substantially flat* platform member adjacent each projecting member, *all of said projecting members being of hollow construction open at the upper end and tapered for nestability thereof when empty pallets are stacked with each other, said projecting members also having a height of a substantial portion of the overall height of the pallet and being arranged so as to define forklift passages between the projecting members of a substantially uniform overall height for receiving the arms of a forklift, said projecting members having flat bottom bearing surfaces for vertical load distribution and flat tapered side wall bearing surfaces for self aligning stackability, said flat tapered side walls having an overall height at least several times greater than their thickness and substantially the same as the forklift passages, and said projecting members and said platform*



members [being so constructed and arranged relative to each other] *of each foot means being symmetrically disposed with respect to the centerlines of the pallet such that said projecting members are in mirror image relation to the platform members of the corresponding foot means positioned on the opposite side of the centerlines, so that the pallet when in use in a predetermined position of orientation, and at least another position of orientation 180° out-of-phase therefrom, may be stacked in mating relation to a substantially identical inverted pallet and with the projecting members abutting the platform members of the inverted pallet and the flat tapered side wall bearing surfaces thereof serving to provide a lateral anti-shift interengagement between the adjacent pallets in a plurality of directions and wherein said height and said hollow construction and said symmetrical arrangement of said projecting members are such that said projecting members may be nestably engaged with projecting members of another substantially identical unloaded pallet facing in the same direction and in a predetermined position of orientation and at least another position of orientation 180° out-of-phase therefrom, whereby a relatively large number of unloaded pallets may be nestably stacked so as to occupy considerably less space when being stored or shipped.*

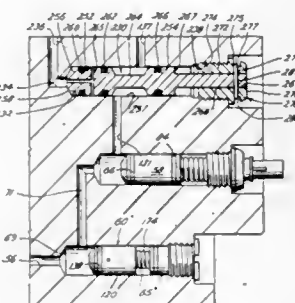
The questions raised in reexamination request No. 90/000,636, filed Sep. 24, 1984, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e).

Re. 32,345

PACKER VALVE ARRANGEMENT

Edward T. Wood, Kingwood, Tex., assignor to Completion Tool Company, Houston, Tex.
Original No. 4,420,159, dated Dec. 13, 1983, Ser. No. 407,898, Aug. 13, 1982. Application for reissue Jun. 21, 1984, Ser. No. 622,957

Int. Cl.⁴ E02D 5/00; E21B 33/12; F16J 15/46
U.S. Cl. 277—34 10 Claims



1. In a tubular system having
 - a [hollow] tubular mandrel;
 - a packer an inflatable packing element attached to the mandrel at one end;
 - a valve collar mounted on the other end of the mandrel, the other end of the [packer] packing element being attached to the valve collar and the valve collar being in fluid communication with the [packer] packing element by [a] passage means and the valve collar also being in fluid communication with the interior bore and the exterior of the mandrel;
 - a valve system mounted [on the mandrel] in the valve collar, the valve system being in fluid communication with the [packer] packing element and the interior bore and the exterior of the mandrel, the valve system including at least one valve means with at least one reciprocating [member] valve element and [a] stop means for preventing reciprocation of the reciprocating [member] valve element prior to the application of at least a predetermined pressure difference to the reciprocating [member] valve element, the reciprocating [member] valve element being located [at one end of] in one position in the [passage] one valve means when the stop means prevents reciprocation, the reciprocating [member] valve element having at least two seals thereon for preventing the flow of fluid from either side of the [reciprocating member around the member] seals to the passage means;

the improvement comprising:

- first means independent of the seals for permitting the flow of fluid from the interior bore of the mandrel to one side of one seal [of] on the reciprocating [member] valve element; and
- second means independent of the seals for permitting the flow of fluid from the exterior of the mandrel to oppositely facing [surface] side of the other seal [of] on the reciprocating [member] valve element; and
- third means independent of the seals for [equalizing the pressure on the other side of each of] permitting the flow of fluid to a location between the seals for equalizing the pressure across the seals to substantially [that of] the pressure at the exterior of the mandrel and to the pressure in the interior bore of the mandrel.

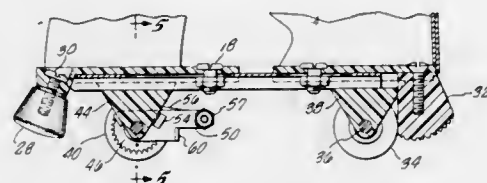
Re. 32,346

TRAINER/LEARNER SKATE

Reuben B. Klammer, Los Angeles, and Robert J. Mortonson, Seal Beach, both of Calif., assignors to Trend Products Group, Los Angeles, Calif.

Original No. 4,334,690, dated Jun. 15, 1982, Ser. No. 90,890, Nov. 5, 1979. Application for reissue May 21, 1984, Ser. No. 547,646

Int. Cl.⁴ A63C 17/14 4 Claims
U.S. Cl. 280—11.2



1. A skate comprising in combination a base plate comprising a front plate and a rear plate attached to, and adjustable on, central rail means; a pair of wheels rotatably attached to said front plate and a second pair of wheels rotatably attached to said rear plate; a ratchet gear fixedly attached to the interior of at least one of said front wheels, said ratchet gear having a plurality of teeth, said front wheels being journaled to said front plate by means of a mounting pedestal which is attached to said front plate and depends downwardly therefrom, through which said front wheels are journaled; a pawl, for engaging said ratchet to prevent rotation of said front wheels in a rearward direction, attached to said mounting pedestal by means of an operation bracket which is securely fastened to said mounting pedestal [by] and nut and bolt means by which said pawl is attached to said bracket; said pawl having a plurality of teeth; said operation bracket having a stop tab extending therefrom to restrict the rotation of said pawl thereby restricting the rotation of said front wheels; and means for quickly attaching the shoe or bare foot of a skater to said base plate.

Re. 32,347

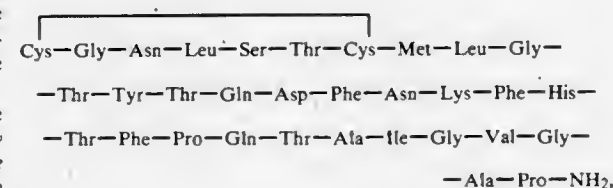
HYPOCALCAEMIC PEPTIDES AND PROCESS FOR THEIR MANUFACTURE

Robert Neher, Binningen, and Bernhard Riniker, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Original No. 4,347,242, dated Aug. 31, 1982, Ser. No. 889,066, Mar. 22, 1978. Continuation of Ser. No. 632,928, Nov. 18, 1975, abandoned, which is a continuation of Ser. No. 488,880, Jul. 15, 1974, abandoned, which is a division of Ser. No. 253,007, May 15, 1972, abandoned, which is a continuation of Ser. No. 831,776, Jun. 9, 1969, abandoned. Application for reissue Aug. 27, 1984, Ser. No. 644,696

Int. Cl.⁴ A61K 37/24; C07K 7/36 18 Claims
U.S. Cl. 514—12

1. The substantially pure dotriacontapeptide amide of the formula



its acid addition salts and complexes.

PLANT PATENTS

GRANTED FEBRUARY 3, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,870

CHRYSANTHEMUM 'WHITE REFLA'

Martinus van der Jagt, Ter-Aar, Netherlands, assignor to Chrysanthemum Breeders Association N.V., Willemstad & Curaçao, Netherlands Antilles

Filed Oct. 25, 1984, Ser. No. 664,834
Claims priority, application Netherlands, Nov. 3, 1985, CHR 834

- Int. Cl.⁴ A01H 5/00 1 Claim
U.S. Cl. Plt.—74
1. A new and distinctive variety of Chrysanthemum named 'White Refla', as described and illustrated in the foregoing specification and accompanying drawings.

5,872

AECHEA FASCINI FRIEDERIKE

Wilhelm Pieper, Dehmke, auf der Horst 2, 3258 Aerzen 9, Fed. Rep. of Germany

Filed Nov. 6, 1984, Ser. No. 668,874
Int. Cl.⁴ A01H 5/00 1 Claim

- U.S. Cl. Plt.—88
1. A new and distinct variety of *Aechmea fascini*, substantially as herein shown and described and characterized particularly as to novelty by the smooth margins of its leaves.

5,873

PEACH TREE

Thomas O. Chamberlin, Sr., Visalia, Calif., assignor to H.P. Metzler & Sons, Del Rey, Calif.

Filed Mar. 25, 1985, Ser. No. 715,735
Int. Cl.⁴ A01H 5/03 1 Claim

- U.S. Cl. Plt.—43
1. A new and distinct variety of peach tree substantially as illustrated and described and which is characterized by producing yellow fleshed, semi-cling fruit having a skin of bright red to yellow coloration tenacious to the flesh ripening for harvest about June 8 to June 10 when ungirdled and responding well to girdling by advancing the harvest date of the fruit several days with only a very minor percentage of splitting of the stones of the fruit.

VOL
1075

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PATENTS

GRANTED FEB. 3, 1987

ERRATA

For CLASS	See PATENT NO.
131-094	4,640,013
540-312	4,640,798
540-350	4,640,799
128-323	4,640,863
379-060	4,640,986
379-062	4,640,987
379-090	4,640,988
379-094	4,640,989
379-077	4,640,990
379-088	4,640,991
379-089	4,640,992
379-383	4,640,993
379-040	4,640,127
379-001	4,640,317
379-038	4,640,318
380-003	4,641,346
380-003	4,641,347
381-103	4,641,361
381-111	4,641,377

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PATENTS

GRANTED FEBRUARY 3, 1987

GENERAL AND MECHANICAL

4,639,944

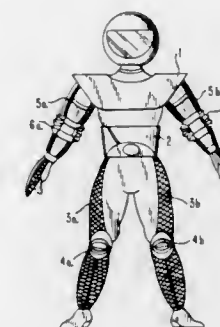
ARMOR FOR MOTORCYCLISTS

Lester Lashley; R. Craig Lashley, and Russel E. Lashley, all of
1209 E. Madison Park, Chicago, Ill. 60615

Filed Sep. 11, 1985, Ser. No. 774,938

Int. Cl.⁴ A41D 13/00

U.S. Cl. 2-2



1. A protective armor for a motorcyclist, comprising, in combination, a breast plate, a waist guard, a plurality of sections of ribbed fabric; said breast plate and said waist guard being made of hard plastic; a pair of said ribbed fabric sections for covering arms and hands including raised ribbed folds at elbows, a pair of said ribbed fabric sections for covering of an outer side of thighs and a front of leg portions below the knees including raised ribbed folds at said knees all said raised ribbed folds being made of solid pieces of polyurethane plastic; elastomeric material connecting an underside of said breast plate and an underside of said waist guard to said ribbed fabric sections, and a pair of crossing straps at the rear being made of said ribbed fabric, and all said ribbed fabric sections being held in place on said motorcyclist by velcro loop fastener means.

4,639,945

PROTECTIVE METHOD AND APPARATUS

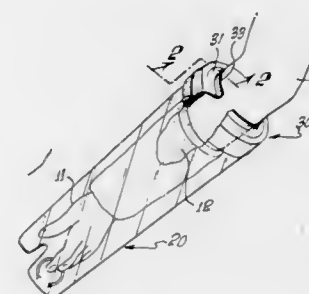
John J. E. Betz, 423 Rose Garden Ct., Reno, Nev. 89509

Filed Dec. 20, 1985, Ser. No. 811,299

Int. Cl.⁴ A41D 13/00; A61F 13/00

U.S. Cl. 2-22

10 Claims



1. The method of protecting a limb from undesired moisture comprising forming a waterproof sleeve open at one end and closed at its other end suitable to encompass the limb desired to be protected from moisture; forming at the open end of the sleeve a reinforced area comprising a semi-rigid formable ring attached to the said sleeve; forming a relatively flat disk across the top of the semi-rigid formable ring said disk having a size adjustable opening therein suitable to be drawn over a limb; drawing the said device over the limb in such manner that the

inner opening of the disk forms a waterproof seal about the limb.

4,639,946

RESTRAINING GARMENT WITH DETACHABLE BIB

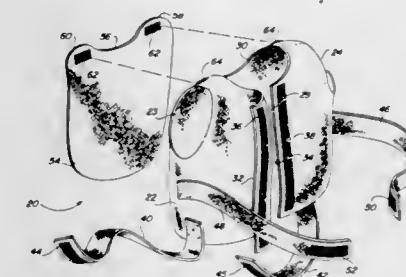
Linda S. Koenig, 1014 S. Euclid St., Santa Ana, Calif. 92704

Filed Oct. 3, 1985, Ser. No. 783,612

Int. Cl.⁴ A41B 13/10

U.S. Cl. 2-49 R

10 Claims



1. A garment for restrainingly holding a baby in a sitting position in a chair having a seat portion and a back rest portion, said garment comprising:

- (a) a torso covering means;
- (b) a first pair of elongated straps depending from opposite sides of said torso covering means for looped placement beneath the seat portion of the chair in which the baby is to be restrained;
- (c) fastener means on the extending ends of said first pair of straps for detachably connecting said first pair of straps to each other beneath the seat portion of the chair;
- (d) a second pair of elongated straps extending rearwardly from opposite sides of said torso covering means for looped around placement in back of the back rest portion of the chair in which the baby is to be restrained;
- (e) fastener means on the extending ends of said second pair of straps for detachably connecting said second pair of straps to each other in back of the back rest portion of the chair; and
- (f) a bib detachably mounted on said torso covering means.

4,639,947

GOLF GLOVE

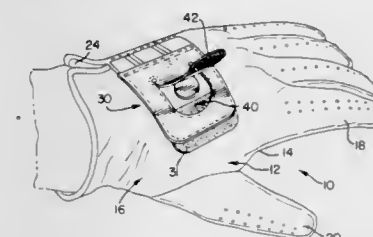
Richard Lancioni, 1310 Oxford Rd., Deerfield, Ill. 60015

Filed Jan. 17, 1985, Ser. No. 693,272

Int. Cl.⁴ A41D 19/00

U.S. Cl. 2-161 A

12 Claims



8. A golf glove comprising a main body having a back portion split into segments with one segment having a flap extending therefrom and connectable to an adjacent segment, the improvement of said flap including first and second layers peripherally interconnected to define a pocket therein, said second layer having a cut therein defining a closure for said

pocket connected to said second layer by an integral hinge and fastener means on said closure for connection to said first layer.

4,639,948

HIP BELT

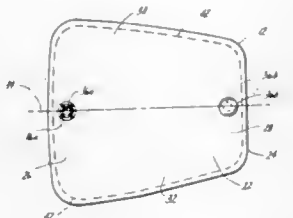
Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed May 16, 1985, Ser. No. 734,926

Int. Cl.⁴ A41F 3/02

U.S. Cl. 2—338

19 Claims



1. A hip belt comprising a number of substantially similar pieces successively connected, each piece possessing a pliant construction of substantially uniform thickness and having a perimeter edge comprising two side edge portions and two end edge portions, said end edge portions having their lengths generally vertically disposed when the belt is being worn around the hips, one of said end edge portions of each piece being greater in length than the other end edge portion of the same piece, said side edge portions extending between said end edge portions to impart a taper to each piece which narrows in the direction from said one end edge portion to said other end edge portion thereof, and each pair of immediately successive pieces being connected together by one piece of each such pair of pieces having its other end edge portion overlapping the one end edge portion of the other piece of each such pair of pieces, and a swivel fastening device connecting each such pair of pieces at their overlapping end edge portions at a location which is essentially at the middle of the lengths of such overlapping end edge portions such that the two pieces of each such pair of pieces can swivel relative to one another about an axis passing through the swivel fastening device, which axis is generally horizontal when the belt is worn, each such swivel fastening device being a snap fastener having two separable parts snapped together, one of said parts of such a snap fastener being affixed to said one piece of each such pair of pieces at said other end edge portion thereof and the other of said parts of the same snap fastener being affixed to said other piece of each such pair of pieces at said one end edge portion thereof, said one piece of each such pair of pieces containing one of said parts of another snap fastener at said one end edge portion thereof snap fastening with the other of said parts of the same another snap fastener contained in an immediately succeeding piece at said other end edge portion thereof, and said other piece of each such pair of pieces containing one of said parts of a further snap fastener at said other end edge portion thereof snap fastening with the other of said parts of the same further snap fastener contained in an immediately succeeding piece at said one end edge portion thereof.

4,639,949 ELASTIC FORM-FITTING CLOSURE CONSTRUCTIONS FOR DISPOSABLE GARMENTS

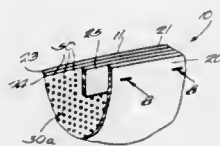
Thomas M. Ales, Winnebago County; David T. Strohbeen, Outagamie County; Joyce A. Damico, Winnebago County; Paul T. Van Gompel, and Kent W. Abel, both of Outagamie County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 10, 1985, Ser. No. 690,348

Int. Cl.⁴ A41B 9/00; A61F 13/16

U.S. Cl. 2—400

12 Claims



1. In a disposable garment including an outer marginal portion of material and an interior marginal portion of material along a part of said garment intended to fit around a portion of a wearer's body, and an elastic element joined thereto to provide an elasticized opening for said garment,

the improvement wherein:

said elastic element includes an exterior surface disposed in mutually facing relationship with said outer marginal portion of material and an inner surface joined to said interior marginal portion of material,

an outer edge portion of said elastic element, said outer marginal portion of material, and said interior marginal portion of material are substantially coincident,

said outer marginal portion of material has a thickness in the range of about 0.0003 to about 0.03 inches, and a flexural rigidity in the range of about 0.002 to about 0.1 cm-g, and a plurality of bond points are uniformly disposed between and join together the mutually facing said elastic element exterior surface and said outer marginal portion of material, the area of each said bond point is between about 0.05 to about 3 mm², the distance between adjacent ones of said bond points in the direction of elongation of said elastic element prior to joining said elastic element to said outer marginal portion is between about 0.05 to about 4 mm, and the total area of said bond points is between about 5% to about 80% of the area of the mutually facing said exterior surface and said outer marginal portion,

said elastic element is joined to said bond points when in an elongated condition and remains joined only to said bond points when in a retracted condition to provide an elasticized opening having micro-ribbing of said outer marginal portion of material between said bond points.

4,639,950

METHOD OF AND MEANS FOR HOLDING A SECURING MEMBER IN AN EXISTING ATTACHMENT SLIT

Leif Palmaer, Kristinagatan 14, Värnamo, Sweden

Filed Nov. 1, 1984, Ser. No. 667,412

Claims priority, application Sweden, Nov. 30, 1983, 8306589

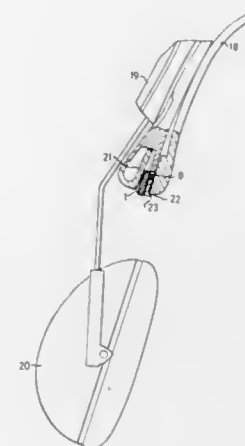
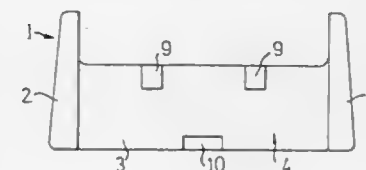
Int. Cl.⁴ A42B 1/24

U.S. Cl. 2—422

7 Claims

1. A method of holding a securing member in an existing attachment slit, the securing member having a portion for introduction into said attachment slit, the method comprising providing a substantially wedge-shaped locking adaptor, providing the locking adaptor with at least one engagement element, providing a complementary engagement element on said

portion of the securing member, introducing said portion of the securing element into said attachment slit, introducing the locking adaptor into said slit so that it engages said portion of the securing member and so that said engagement element of



the locking adaptor co-operates with said complementary engagement element of said securing member while the locking adaptor, together with said portion of the securing member substantially fills the attachment slit, thus wedging the securing member in position in the attachment slit.

4,639,951

WEAR PLATE FOR FLUSH VALVE ASSEMBLY

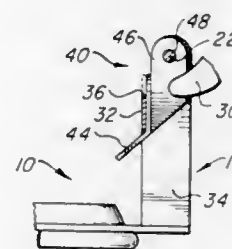
Jerzy Lamot, 232 N. George Mason, #1, Arlington, Va. 22203

Filed Feb. 25, 1986, Ser. No. 832,657

Int. Cl.⁴ E03D 1/35

U.S. Cl. 4—392

6 Claims



1. In a tank outflow valve for a flush closet, with said valve mounted on an arm for pivotal swinging movement, about a horizontal axis through a path between a lower valve-closed position and an upper valve-open position wherein the valve mounting includes pivot shaft at said axis for said arm, said arm having a stop extension thereon, and a rigid support for said pivot shaft means, said support including a wall portion thereof interposed in the path of said arm stop extension, thereby to be engaged by said extension during valve-opening arm swinging movement,

the improvement therein comprising an auxiliary wear plate having means for mounting said wear plate in proximate relation to said support wall portion and wherein the wear

plate is in intercepting relation to said valve arm stop extension, thereby to preclude engagement of said extension with said wall portion.

4,639,952

CONVERTIBLE BEDDING ASSEMBLY AND MATTRESS

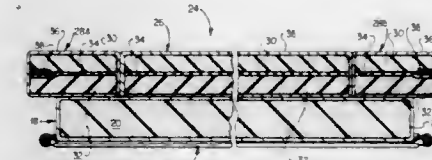
Roger C. Kensinger, 6211 W. Northwest Hwy., #2100, Dallas, Tex. 75225

Filed Jan. 28, 1985, Ser. No. 695,549

Int. Cl.⁴ A47C 17/04, 27/05, 27/16

U.S. Cl. 5—13

2 Claims



1. A convertible bedding assembly comprising a sofa, a chair, or other furniture portion; a foldable frame assembly operatively attached to said portion for movement between an expanded position and a folded position; a first mattress disposed on said frame assembly; and a second mattress extending over said first mattress in at least said expanded position, said second mattress comprising a flexible, resilient pad, a wire layer overlying said pad, a strip of rigid material extending along, and secured to, the edge portions of said wire layer, and an additional flexible resilient pad overlying said wire layer and said rigid material to form a composite assembly; said second mattress being formed by a center piece and two side pieces extending to both sides of said center piece and connected to aid center piece in a manner to permit said side pieces to fold towards said center piece; the width of said second mattress exceeding the width of said first mattress and being at least equal to the width of said frame assembly; and length of said second mattress exceeding the length of said frame assembly and said first mattress.

4,639,953

ROLLOVER BACK SOFA BED

Terry J. McElmurry; H. Coleman Davis; William B. Leftwich, all of Elkhart, Ind., and David Markel, White Pigeon, Mich., assignors to Coachmen Industries, Inc., Elkhart, Ind.

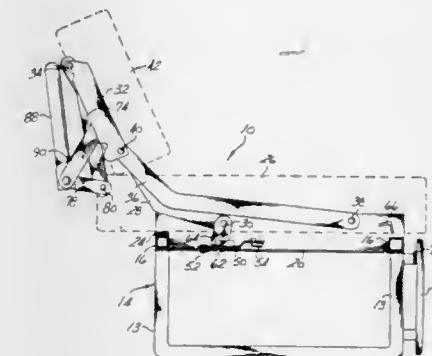
Continuation-in-part of Ser. No. 642,765, Aug. 21, 1984. This

application Dec. 31, 1984, Ser. No. 687,829

Int. Cl.⁴ A47C 23/00

U.S. Cl. 5—43

4 Claims



1. In a convertible sofa bed having a base frame which includes a generally horizontal seat, a back rest, and a pair of arms, control link means connecting said back rest to said base frame for rollover movement of said back rest between a sofa

position wherein the back rest is generally upright and a bed position wherein the back rest is forward of said seat, the improvement wherein said arms are mounted for shiftable movement outwardly of said seat, means associated with said base frame and arms responsive to said rollover movement of the back rest for accommodating said shiftable movement of the arms outwardly of said seat, said arms hingedly connected to said base frame, said means for accommodating said arm movement including pivot means connecting said arm to said base frame and camming means associated with said link means for contacting said pivot means upon said roll over movement of the back rest, said pivot means upon cam means contact for allowing outwardly hinged movement of said arms, a support member pivotally connected to said back rest, second control link means pivotally connected between said first mentioned link means and said support member, said second control link means for shifting said support member between a retracted position behind said back rest when the back rest is in its said sofa position and a support position under said back rest and contacting a floor when the back rest is in its said bed position.

4,639,954

MATERNITY BED

Philip Speed, Solihull, United Kingdom, assignor to Hoskins Limited, Birmingham, England

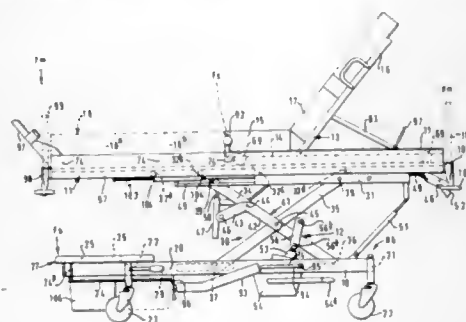
Filed Jul. 20, 1984, Ser. No. 632,952

Claims priority, application United Kingdom, Oct. 1, 1983, 8326357; Apr. 24, 1984, 8410379

Int. Cl.⁴ A61G 7/06

U.S. Cl. 5—63

11 Claims



1. A maternity bed comprising a mattress main frame extending longitudinally between a foot end and a head end, a base frame extending longitudinally between a foot end and a head end, a jacking means to support the main frame on the base frame and to permit of the height of the main frame relative to the base frame being varied, a mattress sub-frame movably mounted on the main frame for movement longitudinally of the main frame towards and away from the foot end of the main frame, the sub-frame comprising a base part having a foot end and a head end supporting a mattress intermediate portion having a foot end and a head end, and a backrest part supporting a mattress head portion and which is adjustable relative to the base part between a flat position in which the top surfaces of the mattress intermediate and head portions lie in a common plane, and an upright position in which the mattress head portion is inclined upwardly relative to the mattress intermediate portion at a maximum permitted angle, the main frame having means to support a mattress foot portion at the foot end of the main frame when the sub-frame is at the head end of its permitted movement, the mattress foot portion being movable away from the foot end of the main frame to permit of the sub-frame being moved towards the foot end of the main frame, the base part of the sub-frame and mattress intermediate portion each having an open-mouthed recess extending inward from the respective foot end towards the respective head end and each recess facing towards the foot end of the main frame, the main frame and the base frame each having a superposed open-mouthed recess extending inward from the respective foot end towards the respective head end and facing outwardly

away from the respective foot end, to permit of access to the perineal region of the mother from below when the sub-frame is at the foot end of its permitted travel.

4,639,955

DEVICE FOR MOVING A PATIENT FROM HIS BED
Armelle Carminati, 47 rue des Marmuzots, 21000 Dijon; Edouard de Buyer, 9 rue des Pommerelles, 60200 Compiègne; Nicolas Monomakhoff, 10 rue Firmin Gillot, 75015 Paris, and Roland Chanut, 108 route de la Douane, 69126 Brindas, all of France, assignors to Armelle Carminati, Dijon; Edouard de Buyer, Compiègne and Nicolas Monomakhoff, Paris, all of France

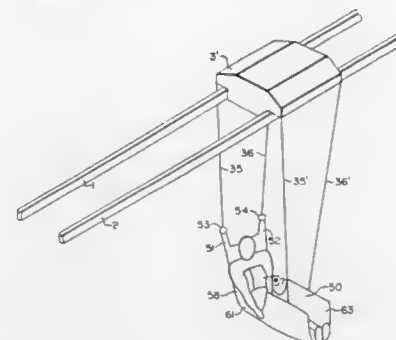
Filed Jul. 29, 1985, Ser. No. 760,031

Claims priority, application France, Aug. 2, 1984, 84 12439

Int. Cl.⁴ A61G 7/08

U.S. Cl. 5—81 B

15 Claims



1. A device for moving a patient, comprising:
a support means for receiving the patient, said support means being made from a unitary supple cloth, said support means comprising:
a first portion adapted to receive and maintain a head of the patient;
a second portion adapted to receive and maintain a main body portion of the patient; and
a third portion adapted to receive and maintain legs of the patient;
a trolley comprising means for actuating cables connected to said support means for lifting said support means loaded with the patient vertically and for horizontal displacement thereof, comprising:
a first pair of cables connected to the first part of said support; and
a second pair of cables connected to the third part of said support;
a lifting motor for lifting and lowering said first and second pair of cables; and
a translation motor for moving said trolley horizontally; and
at least one rail for displacement of said trolley thereon.

4,639,956

MATTRESS SUPPORT FOR CRIB

Louis Shamie, 630 Avenue V, Brooklyn, N.Y. 11225

Filed Nov. 20, 1984, Ser. No. 673,476

Int. Cl.⁴ A47D 7/00; A47C 19/00

U.S. Cl. 5—93 R

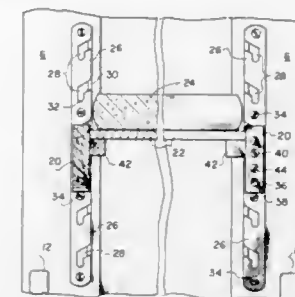
6 Claims

1. A mattress support for a crib having a frame with inner surfaces which define a space, said frame having one end and an opposite end and one side and an opposite side, the mattress support comprising:

a first pair of spaced apart vertical posts at the one end of the frame, each having an inner surface facing the opposite end of the frame;

a second pair of spaced apart vertical posts at the opposite

end of the frame, each having an inner surface facing the one end of the frame;
a vertical bracket connected to each of said vertical posts, each vertical bracket being connected on said inner surface of its vertical post, each vertical bracket having a plurality of vertically spaced slots, each slot having an open mouth and a blind base positioned vertically below the open mouth, the open mouths of slots of each bracket at the one end of the frame facing each other and the open mouths of slots of each bracket at the opposite end of the frame facing each other, the blind bases of slots at each end of the frame being spaced from each other by a greater amount than the open mouths of slots at each end of the frame;
a pair of mattress support beams extending between said first and second pair of vertical posts, one of said mattress support beams being positioned on the one side of the frame and the other of said mattress support beams



being positioned on the opposite side of the frame, each mattress support beam having a pair of fixed pins extending from each end thereof, each pair of fixed pins being insertable into a pair of said open mouths and being seated in a pair of said blind bases of a different vertical bracket, pins at one end of each beam being seated in blind bases of vertical brackets of said first pair of vertical posts and pins at an opposite end of each beam being seated in blind bases of vertical brackets of said second pair of vertical posts;
a cross member engaged between and on said pair of mattress support beams for holding each pin seated in its blind base, said cross member acting as stop means for holding said mattress support beams apart, said cross member extending substantially the full length of said mattress support beams from the one end of the frame to the opposite end of the frame and substantially spanning the distance between said support beams from one side of the frame to the opposite side of the frame.

4,639,957

BEDDING AND SEATING PRODUCT HAVING DOUBLE TWIST COIL SPRING AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Thomas J. Wells, Carthage, Mo., and Angelo Serafini, East Boston, Mass., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Aug. 27, 1985, Ser. No. 769,947

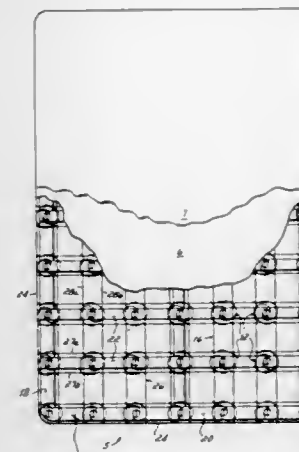
Int. Cl.⁴ A47C 23/04

U.S. Cl. 5—248

24 Claims

1. A bedding foundation box spring comprising,
a bottom, substantially planar, rectangular, base frame having side and end members and slats extending between said side members,
a substantially planar rectangular top wire grid, said grid comprising a border wire and first and second sets of wires, said border wire being of rectangular configuration and surrounding said first and second sets of wires, said first set of wires comprising a plurality of longitudinally extending, spaced, parallel wires and said second set of wires comprising a plurality of transversely extending,

spaced, parallel wires, said first and second sets of wires intersecting one another and being welded together at their intersections, said first and second sets of wires being fixedly connected to said border wire,
a plurality of double twist coil springs interconnecting said base frame and said wire grid, said double twist coil springs each having one end convolution substantially located in the plane of said base frame and a second end convolution located in the plane of said wire grid, each of said coil springs comprising a single length of spring wire having a middle section and a pair of spring arms, said middle section of said spring wire having a pair of opposite ends, said opposite ends of said middle section of said



spring wire being located in a diametral plane of said one end convolution, said pair of spring arms of said spring wire being coiled in the same rotational direction from said opposite ends of said middle section of said spring wire and formed into a helix of increasing pitch extending from said first end convolution toward said second end convolution and over a major portion of the axial length of said coil, said first end convolution being fixedly secured to said base frame and the ends of said spring arms of said spring wire remote from said middle section being fixedly secured to said top wire grid,
a fabric pad overlying said top wire grid, and
an upholstered covering encasing said base frame, wire grid, border wire, double twist coil springs, and said fabric pad.

4,639,958

COMBINED HEAD REST, SUN SHADE AND BAG

Reuben Lerner, 88 Arlozorov Street, Holon, Israel

Continuation of Ser. No. 478,255, Mar. 24, 1983, abandoned.

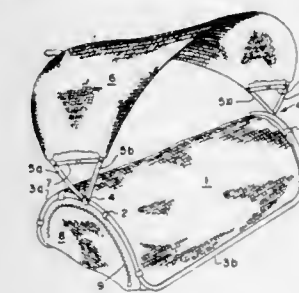
This application May 31, 1985, Ser. No. 740,011

Claims priority, application Israel, Jan. 31, 1983, 67800

Int. Cl.⁴ A47G 8/06; A45C 9/00; B65D 30/00

U.S. Cl. 5—418

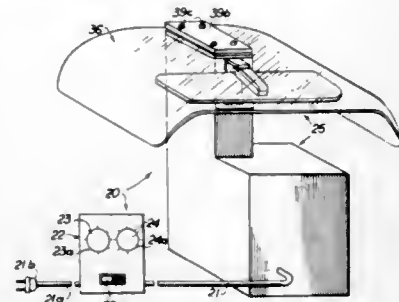
7 Claims



1. A device for use as a head rest and sun shade and a bag for

carrying articles therein, comprising a stiff skeleton, a closable bag supported on said skeleton to provide a flexible head rest, and a foldable sun shade connected to said skeleton, said skeleton including laterally spaced apart, upright side frame members at respective lateral ends thereof and connecting frame means separate from said closable bag extending laterally between said side frame members to connect said side frame members, said bag having a flexible upper portion extending between and stretched by said frame members and said frame members supporting said flexible upper portion against collapse onto a lower portion of said bag to provide the flexible head rest and further to provide between said upper and lower portion a hollow space within said bag for storage of articles in said bag even during use of said device as a head rest, and said flexible upper portion being attached at its lateral ends to said upright side frame members by loops.

4,639,959
WAVE GENERATOR FOR WATERBEDS
Abel Roca, 11480 SW. 131 St., Miami, Fla. 33176
Filed Aug. 5, 1985, Ser. No. 762,684
Int. Cl.⁴ A47C 27/08; A47D 9/02; A61H 1/00
U.S. Cl. 5—451 13 Claims



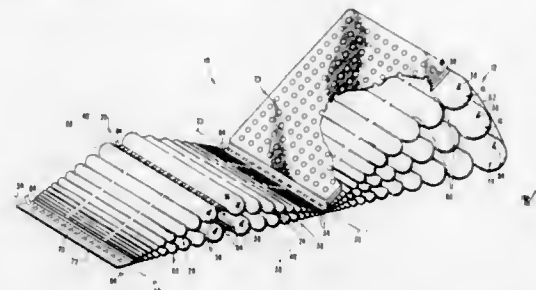
1. A wave generating paddle unit a waterbed assembly, comprising a horizontal surface supporting a water-filled mattress and a frame surrounding the periphery of the mattress, said unit comprising a housing having a bottom wall adapted to rest in an operative position on said horizontal surface, said housing having a vertical wall enclosing a vertical chamber and adapted to abut said frame and dislodge an edge portion of said mattress when in said operative position, an opening formed in said wall at the upper end of the vertical chamber facing said mattress, an electric motor located within said housing and supported on said bottom wall, an arm pivoted at one end to a support means at the upper end of said vertical chamber and having an opposite end projecting through said opening, a paddle supported by said arm opposite end adapted to overlie and engage the upper surface of said mattress adjacent said edge portion, and linkage drive means for converting rotary motion of said motor to reciprocating motion, said drive means extending through said vertical chamber interconnecting said motor and arm to pivot the latter in a vertical plane between a substantially horizontal position and a downwardly inclined position whereby said paddle rhythmically depresses and releases said mattress to create waves in the surface thereof radiating from said paddle.

4,639,960
RECLINER FOR MEDICAL CONVALESCENCE
Jeffrey B. Quillen, P.O. Box 144, Mooresville, Ind. 46158, and James G. Spahn, 4500 Kessler Blvd. East Dr., Indianapolis, Ind. 46220

Filed Apr. 16, 1985, Ser. No. 723,818
Int. Cl.⁴ A47C 27/10; A61G 7/04
U.S. Cl. 5—455 11 Claims

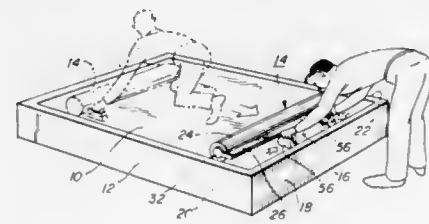
1. A portable recliner for supporting a person in a supine position adapted to be positioned on a bed, comprising:
a substantially triangular back and head support extending

upwardly at an angle between 30 degrees and 45 degrees and including a plurality of individual wedge shaped, air inflatable, cushions with a support surface of a first length equal to at least the distance between the coccyx and the top of the head and positioned and interconnected together in a vertical stack;
a substantially triangular leg and foot support extending from an edge area adjacent the back and head support upwardly at a first angle between 20 degrees and 30 degrees for elevation of the popliteal fossa through a second angle between 120 degrees and 150 degrees and including



a plurality of individual wedge shaped, air inflatable, cushions with a support surface of a second length equal to the distance between the coccyx and the popliteal fossa and positioned and interconnected together in vertical stacks;
a valve on said cushions operable to allow inflation of each at a desired internal air pressure to determine said angles; connecting means interconnecting said back and head support and said leg and foot support together, and including connecting means interconnecting said cushions of said leg and foot support together.

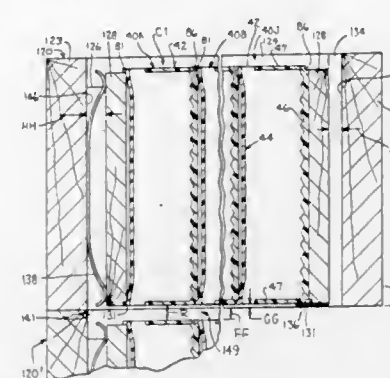
4,639,961
SYSTEM FOR REMOVING AIR FROM WATERBED
Dow B. Chasan, 399 Indian Hill, Buffalo Grove, Ill. 60090
Filed Aug. 29, 1984, Ser. No. 645,346
Int. Cl.⁴ A47C 21/00
U.S. Cl. 5—508 10 Claims



1. A device for removing air from a waterbed having a water/air valve which comprises:
an elongated cylindrical roller having a length that is substantially the width of the bed;
a roller support member connected at opposed ends of the cylindrical roller, with the roller being rotatable with respect to the roller support member;
means for grasping the roller support member to enable manual movement of the roller over a substantial length of the waterbed to provide longitudinal compression of the waterbed;
lateral movable means coupled to the roller support member for providing lateral compression in addition to the longitudinal compression provided by the elongated roller;
said roller support member comprising a rack having sliding means parallel to the axis of the roller; said lateral movable

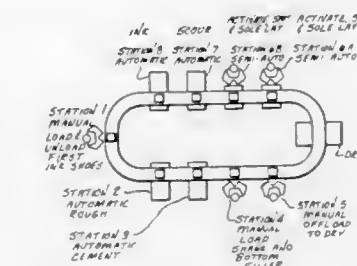
means being connected to said slidable means whereby said lateral movable means is slidable with respect to said roller support member.

4,639,962
APPARATUS FOR COMB HONEY
John A. Hogg, 2225 S. 36th St., Galesburg, Mich. 49053
Continuation-in-part of Ser. No. 581,762, Feb. 21, 1984, abandoned. This application Dec. 28, 1984, Ser. No. 687,314
Int. Cl.⁴ A01K 47/02
U.S. Cl. 6—2 R 21 Claims



1. In a device for producing comb honey in a hive, the combination comprising:
a super having opposed sides;
a plurality of similar honey cassettes stacked top to bottom to form a column extending between said sides of said super;
means operatively associated with said column of cassettes and said super for pressing together said cassettes axially of said column;
connecting means between each adjacent pair of cassettes and between endmost cassettes and the opposed sides of said super for positively blocking dropping of a given cassette from said column toward the bottom of said super and for resisting bending of the middle of said column down toward the bottom of said super, the middle of said column being free of direct contact with or support by said super.

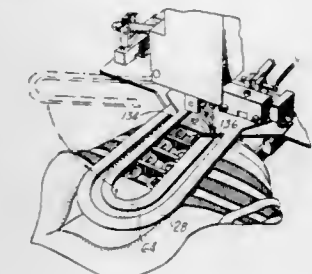
4,639,963
SHOE MANUFACTURING SYSTEM
Lee K. Fisher, Birmingham, Mich., assignor to Cargill Detroit Corporation, Clawson, Mich.
Filed Jun. 4, 1984, Ser. No. 616,849
Int. Cl.⁴ A43D 3/00, 25/00
U.S. Cl. 12—1 A 16 Claims



1. Shoe manufacturing system to cement lasted uppers and outsoles comprising a plurality of sequential operation stations including an automatic cement dispensing station, non-synchronous pallet conveyor system means extending through said stations, a plurality of pallets movable in non-synchronous

sequence to and through said stations, means for stopping and accurately locating individual pallets at said cement dispensing station in non-synchronous relation to pallets being stopped and located at other of said operation stations, lasted shoe upper fixture means on each pallet to hold any of a family of lasted shoe uppers of different size and style in a predetermined position on said pallet, identification means for each individual shoe size and style on each individual pallet when located for cement dispensing operation at said cement dispensing station, and programmable cement dispensing means responsive to said identification means selectively movable along different predetermined dispensing paths for different shoe sizes and styles.

4,639,964
AUTOMATIC JOIN AND SEW PROCESS FOR SHOES
Hans Binder, Vienna, Austria, assignor to USM Corporation, Farmington, Conn.
Filed May 6, 1985, Ser. No. 731,446
Int. Cl.⁴ A43D 100/00; D05B 21/00
U.S. Cl. 12—142 LC 3 Claims

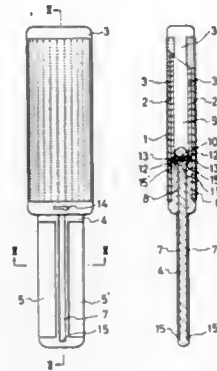


1. A process for joining pieces of a shoe together utilizing an automatic sewing machine, said process comprising the steps of:
orienting a shoe upper in a predefined position within the automatic sewing machine;
clamping the thus oriented shoe upper;
registering a pair of eyelet pieces on the thus oriented and clamped shoe upper;
positioning an eyelet cover piece over the thus registered pair of eyelet pieces;
temporarily holding the thus positioned eyelet cover piece while forming a line of stitches along the outer periphery of the positioned eyelet cover piece.

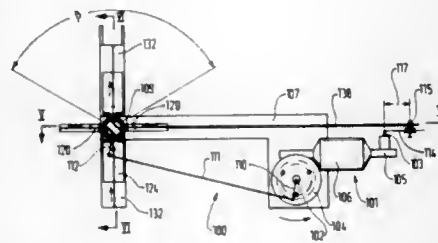
4,639,965
BRUSH FOR CLEANING CLOTHES
Nobubiko Suzuki, Post No. 432, 2114-18, Tomitsuka-Cho, Hamamatsu City, Shizuoka Prefecture, Japan
Filed May 15, 1985, Ser. No. 734,330
Claims priority, application Japan, May 17, 1984, 59-072265
Int. Cl.⁴ A47L 25/00
U.S. Cl. 15—104 A 3 Claims

1. A brush comprising: an outer sheath having a hollow cavity and a longitudinally extending axis and two pieces of woven cloth respectively arranged on two opposite outer surfaces of said outer sheath in such a way that the protruding fibers on both pieces of woven cloth are tilted in substantially the same direction at right angles to the axis of the sheath, and a flat rod that is inserted in the cavity of the outer sheath so as to be withdrawable from the sheath in the direction of the axis

of the sheath and that has at least one porous member mounted thereon, said porous member having a number of small protrusions on its surface for removing fuzz, the rod being usable as a handle when the rod has been withdrawn from the sheath.



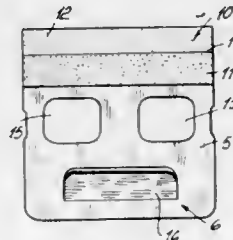
4,639,966
WINDSHIELD WIPER DEVICE
Gerd Kühbauch, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Feb. 19, 1985, Ser. No. 702,878
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1984, 3411160
Int. Cl.⁴ B60S 1/20
U.S. Cl. 15—250.23



1. A windshield wiper device for motor vehicles, comprising a pane wiper oscillatingly pivotally movable over a pane to operation positions and to a reverse position and including a wiper blade being pressed against the pane, and a wiper arm connected to said wiper blade; a first driving means (110, 111) for driving said wiper in its oscillating pivotal movement; a second driving means (114) for imparting to said wiper a reciprocal straight-line movement; transmitting means connected to said wiper and engaged on said second driving means, said transmitting means acting on said wiper in dependence on an angle (α) defined between the wiper when the latter is in its reverse position and the wiper when the latter is in a respective operation position, said transmitting means including at least one rope-like element, said first driving means and said second driving means each including a drive shaft, a reduction gear connected to the drive shaft, and a crank also connected to the drive shaft; a common drive motor connected to each reduction gear, the reduction gears operating to differently reduce the number of revolutions of each drive shaft; said first driving means including an oscillation drive (110, 111, 112) connected to said wiper arm, said drive shaft (102) of the first driving means acting on said oscillation drive, said wiper further including an oscillating shaft (109) connected to said wiper arm, said oscillation drive having a driven member (112) connected to said oscillating shaft; and a driving rod (38, 138) having an end connected to said rope-like element (46), the drive shaft (103) of the second driving means acting on said driving rod, said wiper arm (14) including an inner portion (24) rigidly

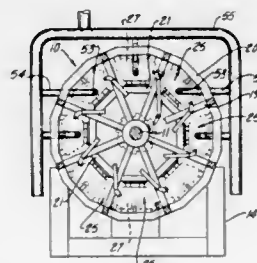
connected to said oscillation drive and an outer portion (32, 132) connected to said wiper blade (16) and being guidably displaceable on said inner portion in a direction of elongation of said wiper arm, said rope-like element extending through said inner portion and being secured at an end thereof to said outer portion.

4,639,967
TAPE WIPING BRUSH, PARTICULARLY FOR MAGNETIC TAPE CASSETTES AND THE LIKE
Abramo Bordignon, Senago, Italy, assignor to A.T.B. S.p.A., Senago, Italy
Filed Mar. 14, 1984, Ser. No. 589,422
Claims priority, application Italy, Apr. 14, 1983, 20596 A/83
Int. Cl.⁴ G11B 23/04
U.S. Cl. 15—256.5



1. A tape wiping brush, particularly for magnetic tape cassettes and the like, comprising a flexible reed extending over a substantially flat length and defining, at opposed ends, a mounting zone for attachment to a cassette and a tape pressure zone having a contact liner attached thereto, characterized in that said contact liner has a flap extending along a tape contacting edge at the opposite end to said mounting zone, said flexible reed being formed, at said contact edge, with a fold line extending in a substantially orthogonal direction to the direction of movement of said tape to define a portion sloping away from said tape, said flap being secured on said sloping portion of said reed.

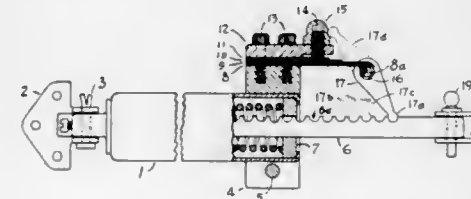
4,639,968
MACHINE FOR CLEANING CASTINGS
Kenneth D. McKibben, Defiance, Ohio; Alan P. Gould, Au Gres, Mich.; Craig J. Groh, Standish, Mich., and Thomas E. Wuepper, Alger, Mich., assignors to Seaton SSK Engineering Inc., Au Gres, Mich.
Filed Aug. 5, 1985, Ser. No. 762,625
Int. Cl.⁴ B08B 5/02
U.S. Cl. 15—304



1. A machine for cleaning debris, such as sand out of castings which have side openings internally connected to end openings, such as engine block castings and the like comprising: a ferris-wheel-like frame mounted for rotation upon a horizontal axle and have a number of circumferentially separated, casting receiving compartments which open horizontally, that is parallel to the axle;

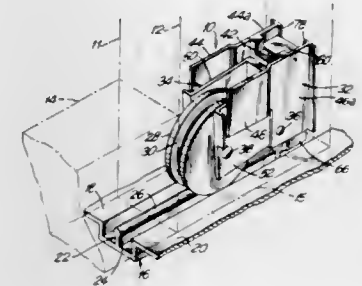
means for horizontally loading and unloading a casting into the compartment loaded in the lowermost position while the frame is momentarily stationary; said frame being indexably rotatable after each lowermost compartment is loaded with a casting, to locate each next succeeding compartment in the lowermost position for unloading and loading castings so that the castings rotate, within their respective compartments, around the axle from the lowermost position of the compartment 360° back to the lowermost position; moveable nozzles mounted in each compartment arranged to enter the side openings of the casting in such compartment; and means for moving and holding the nozzles in said openings during the times that the frame is rotating and for moving the nozzles out of the openings in the castings when the frame is momentarily stationary, i.e. during the times that the lowermost compartment is unloaded and loaded; stationary nozzles mounted adjacent the frame, along side of the compartments, and located so that they aim into the end openings in the castings at each compartment, except for the lowermost one during the time the frame is stationary; and all of said nozzles carrying pressurized air for blowing into their respective side and end openings and into the cavities within the casting which connect such openings for blowing debris out of the casing.

4,639,969
DOOR CLOSER MECHANISM
D. Noel Obenshain, Rte. 1, Box 1191, Swanton, Md. 21561
Filed Jan. 9, 1985, Ser. No. 690,102
Int. Cl.⁴ E05F 3/02
U.S. Cl. 16—70



1. An improved door closer mechanism of the type comprising a piston-cylinder assembly pivotally mounted on one side to a door by means of a first bracket and on the other side to a wall by means of a second bracket, the improvement comprising: a series of grooves or notches on the piston rod of the piston-cylinder assembly; a mounting block clamped to the cylinder of said piston-cylinder assembly; a number of flat springs clamped onto said mounting block, one flat spring proximate said cylinder having one end distant from said block that is bent to form a bearing for a pivot shaft; a pawl mounted on said pivot shaft; and means for adjusting the distance between the distal end of said one flat spring and the piston cylinder assembly, whereby the pawl will engage a selected one of said grooves or notches upon closing of the door so that the door will be slowed or stopped at a selected point.

4,639,970
ROLLER ASSEMBLY WITH STABILIZER ELEMENTS FOR SLIDING PANELS
Sherman C. Adams, Bradenton, Fla., assignor to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Nov. 29, 1984, Ser. No. 675,986
Int. Cl.⁴ E05D 15/06
U.S. Cl. 16—90



1. A roller assembly unit adapted for installation in a panel for slidably mounting the panel on a horizontal guide track having a rail facing and parallel to one edge of the panel, comprising: (a) a roller having a peripheral groove for bearingly receiving the rail; (b) means for rotatably mounting said roller, said mounting means being mountable in the panel with said roller positioned to receive the rail in said peripheral groove as aforesaid; and (c) a rigid stabilizer element, carried by said mounting means, having a generally U-shaped extremity positioned for overlying the rail in tandem relation to said roller, said U-shaped extremity having spaced legs respectively disposed to project on opposite sides of the rail in laterally overlapping relation thereto, for preventing lateral displacement of the roller relative to the rail, when said mounting means is mounted in the panel and the rail is received in the roller groove, said U-shaped extremity having a bridging portion between said legs for engaging the rail when said legs project on opposite sides of the rail as aforesaid, said bridging portion being constituted of a material providing a low-friction surface for ease of sliding contact of the bridging portion with the rail, and said stabilizer element being freely vertically movable in said mounting means at least through a substantial range of positions such that the stabilizer element rides floatingly on the rail, with said bridging portion engaging the rail, when said mounting means is mounted in the panel and the rail is received in the roller groove, (d) said mounting means including vertical wall portions defining an open-ended vertical passage and said stabilizer element being dimensioned to fit in said passage for vertical sliding movement relative to said mounting means while being restrained by said wall portions against horizontal movement in any direction relative to said mounting means; (e) said stabilizer element having a vertically elongated transverse opening above said U-shaped extremity, said transverse opening having upper and lower edges; and (f) one of said wall portions of said mounting means bearing a stop projection, of lesser vertical extent than said transverse opening, disposed within said transverse opening for limiting the extent of upward and downward movement of the stabilizer element by interfering engagement of the stop projection with said lower and upper edges of said transverse opening.

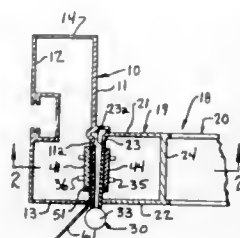
4,639,971

DOOR HINGE SHIM

Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071
 Filed Oct. 23, 1981, Ser. No. 314,100
 Int. Cl.⁴ E05D 7/04

U.S. Cl. 16—247

5 Claims



1. A door hinge shim for use with hinge mounted doors to adjust the hinge mounting of a door on a door casing, the hinge mounting including first and second members interconnected by a set of threaded fasteners, the shim comprising a generally rectangular shim plate having a plurality of slots opening at a first edge at locations to receive the shanks of the set of fasteners when the fasteners are loosened and the shim plate is inserted between the first and second members, and a shim installing handle integral with a second edge of the shim plate opposite said first edge and extending outwardly from the shim plate, the shim installing handle having a line of weakness formed therein at its juncture with said second edge of the shim plate to facilitate breaking of the shim installing handle off the shim plate after installation of the shim, at least one of the slots in the shim plate having teeth on opposite side edges extending toward each other with the apices of the teeth spaced apart a distance slightly less than the diameter of the shanks of the threaded fasteners to releasably engage the shank of a fastener and hold the shim plate in a selected position.

4,639,972

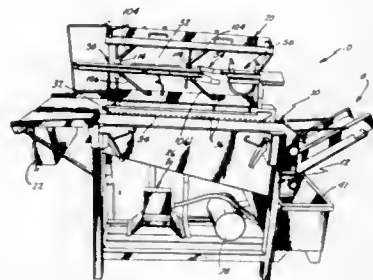
THIGH DEBONER

Eugene G. Martin, New Holland, and Dale M. Risser, Denver, both of Pa., assignors to Favorite Manufacturing, Inc., New Holland, Pa.

Filed Jun. 24, 1985, Ser. No. 747,844
 Int. Cl.⁴ A22C 17/04, 21/00

U.S. Cl. 17—11

38 Claims



1. A deboner apparatus for removing meat from an elongated poultry bone of a poultry part, said apparatus comprising:
 an elongated frame defining an infeed end and a discharge end;
 an elongated conveyor supported on said frame and extending from said infeed end to said discharge end, said conveyor including means for engaging the poultry part;
 a hold-down means supported above said conveyor for holding said bone in engagement with said conveyor;
 a scraper positioned above said conveyor;
 means connected to said scraper for biasing said scraper into

engagement with the meat on the bone and for controlling the force exerted by said scraper on the meat;
 water knife means supported on said frame above said conveyor for discharging a high pressure water stream onto the meat to peel the meat down from the bone; and
 a cutting assembly on said frame and positioned downstream of and below said hold-down means and said water knife means for cutting the meat from a lower edge of the bone.

4,639,973

DEVICE FOR CUTTING OFF THE TAIL OF SLAUGHTERED POULTRY

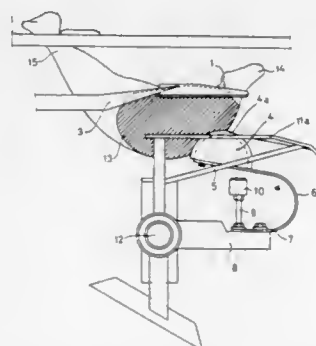
Henricus F. J. M. van der Eerden, Bostel, Netherlands, assignor to Stork PMT B.V., Boxmeer, Netherlands
 Filed Apr. 8, 1985, Ser. No. 720,672

Claims priority, application Netherlands, Apr. 9, 1984, 8401122

Int. Cl.⁴ A22C 21/00

U.S. Cl. 17—11

4 Claims



1. A device for severing the tail of slaughtered poultry while a carcass is suspended by its legs from a conveyor track and being transported breast side forward along the track comprising:
 a cutting knife situated to pass between the two suspended legs of the carcass as it moves forward on the conveyor track;
 an upper guide means attached to the cutting knife for maintaining the back bone side of the carcass in approximate alignment with the cutting knife;
 a lower guide means having two elongate spaced apart plates wherein one plate is situated under each side of the carcass; and
 a spring-mounted pressure member located between the two plates for biasing the carcass upwardly to bring the tail to be cut in alignment with the cutting knife.

4,639,974

THIGH DEBONER

Harold D. Olson, Smyrna, Ga., assignor to Cagle's Inc., Atlanta, Ga.

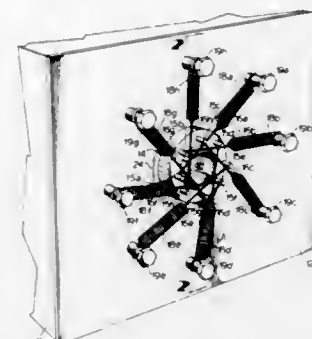
Filed Jul. 2, 1985, Ser. No. 751,076
 Int. Cl.⁴ A22C 17/04

U.S. Cl. 17—46

10 Claims

3. A method of removing meat from an elongated bone of a poultry part or the like comprising the steps of: positioning one end portion of the poultry part in a central portion of a polygon formed by a plurality of wires, applying yieldable spring tension to one end of each wire, moving one end of each wire

in a path to reduce the size of the polygon until the wires engage the poultry part and bend about the poultry part, and



cutting with at least some of the wires through the meat until the wires reach the bone.

4,639,975

DEVICE FOR SEPARATING THE LEGS FROM A CARCASS PORTION OF SLAUGHTERED POULTRY

Henricus F. J. M. van der Eerden, Bostel, Netherlands, assignor to Stork PMT B.V., Boxmeer, Netherlands

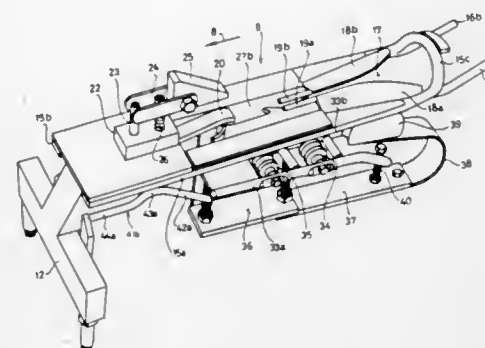
Filed May 28, 1985, Ser. No. 738,232

Claims priority, application Netherlands, May 29, 1984, 8401720

Int. Cl.⁴ A22C 21/00

U.S. Cl. 17—11

5 Claims



1. A device for separating a poultry back from a carcass portion suspended by its legs from a moving conveyor track by cutting between the back and thighs so that the oysters remain attached to the upper thighs comprising:

a leg guide located below the conveyor track and positioned to pass between the suspended legs of the carcass as it is moved in a forward direction, the guide having two elongate spaced-apart guide edges situated in an essentially parallel relationship to the track, one guide edge being positioned on each side of the track, the guide edges extending downwardly and outwardly to press against the upper inner thighs of the carcass portion as it is transported by conveyor;

two elongate downwardly extending cutting knives attached to the guide edges, each having at least two hook-shaped cutting edges pointed against the direction of transport and positioned to sever the thighs and oysters from the back as the carcass portion is moved forward; and
 a carcass portion support means positioned below the leg guide.

4,639,976

METHOD AND A SYSTEM FOR PEELING CRUSTACEANS

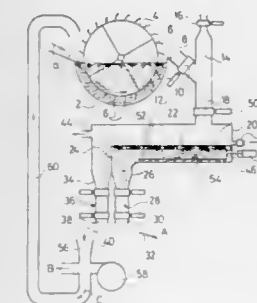
Otto D. Hansen, Ostre Skovvej 21, DK-8240 Risskov, and Bent K. Nielsen, Falkevej 45, DK-9352 Dybvad, both of Denmark
 PCT No. PCT/DK82/00112, § 371 Date Aug. 16, 1983, § 102(e)
 Date Aug. 16, 1983, PCT Pub. No. WO83/02049, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 16, 1982, Ser. No. 527,577

Claims priority, application Denmark, Dec. 17, 1981, 5599/81
 Int. Cl.⁴ A22C 29/02

U.S. Cl. 17—48

9 Claims



1. A method for removing shells from crustaceans, the method comprising the steps of subjecting the crustaceans to a pressure difference treatment for loosening the shells from body portions of the crustaceans and to a mechanical treatment for effectively separating the loosened shells from the body portions of the crustaceans, wherein the step of subjecting the crustaceans to a pressure difference includes exposing the crustaceans to a pressure drop from a pressure level, at which a body liquid adjacent a surface of the body portions and just inside the shells exists in a liquid phase, to a lower pressure level, which is low enough to cause a boiling of said body liquid just inside the shells, and rapidly moving the crustaceans for the mechanical treatment against or into a brake liquid serving to frictionally engage the outside of the crustaceans thereby peeling or drawing-off the already loosened shells thereof, and heating the crustaceans from the outside immediately prior to said pressure drop for a short duration such that the temperature of the body liquid just inside the shell is higher than a temperature of the body portion when the crustacean is subjected to said pressure drop.

4,639,977

COMBINATION ROPE GUARD AND ROPE BUNDLE KEEPER

William R. Howard, Rte. 2, Box 193 N, Brentwood, Calif. 94513
 Filed Feb. 27, 1986, Ser. No. 834,163

Int. Cl.⁴ B65D 63/00

U.S. Cl. 24—16 R

5 Claims

1. A combination rope bundle keeper and rope guard, the rope guard for protecting an item being held in place by the rope from the rope pressing against the item at a position on the item where the rope changes direction due to a change in shape of the item, the combination comprising:

an elongate, flat, flexible body member of a protective material, the body member including first and second lateral edges, a top surface, a bottom surface, a first end, a second end, a length and a width;
 a first slit, positioned at the first end, extending from the first lateral edge toward the second lateral edge in a first direction transverse to the length;
 a second slit, positioned at the second end a chosen distance from the first slit, extending from the second lateral edge

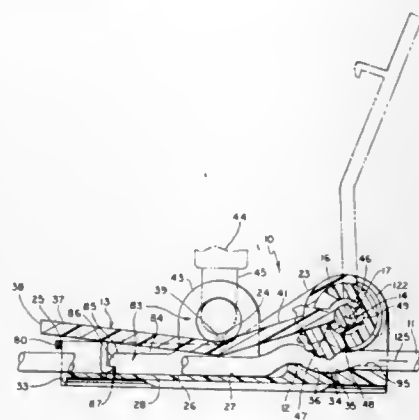
toward the first lateral edge in a second direction transverse to the length;
the body member manipulable between an extended rope guard orientation and a generally ring-like rope bundle keeper orientation with the first and second ends engaged at the first and second slits;
the first and second slits sized for receipt of the rope with the rope passing through the first and second slits and lying



adjacent a portion of the upper surface between the slits, the lower surface of the rope guard positioned against the item at the item position so the body member protects the item from the direct contact of the rope when the body member is in the rope guard orientation; and
the chosen distance chosen so when the body member is in the rope bundle keeper orientation the body member circumscribes and snugly surrounds the rope bundle.

4,639,978
CORD LOCK DEVICE
Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed Dec. 21, 1984, Ser. No. 684,676
Int. Cl.⁴ F16G 11/00
U.S. Cl. 24—134 R

33 Claims

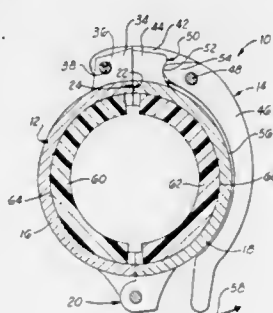


1. A device comprising:
a body past which two elongated flexible elements can extend;
an actuating member mounted to said body for relative swinging movement essentially about an axis between a locking position and a released position; and
two locking members for engaging said two elongated flexible elements respectively and retaining them against longitudinal movement in a predetermined direction and which are connected to said actuating member for swinging movement therewith between said positions;
each of said locking members having a gripping portion which in said locking position of the actuating member is positioned to clamp a corresponding one of said elongated elements against said body, and which in said released

position of the actuating member releases said corresponding element for longitudinal movement in said direction;
means mounting each of said locking members for limited pivotal movement about said axis relative to said actuating member and relative to the other of said locking members when the actuating member is in said locking position thereof;
said gripping portion of each of said locking members being constructed to grip the corresponding one of said elongated flexible elements progressively more tightly as that locking member pivots relative to the actuating members and relative to the other of said locking members when the actuating member is in said locking position.

4,639,979
BARBELL COLLAR
Gary R. Polson, Stillwater, Okla., assignor to Strength, Tech, Inc., Stillwater, Okla.
Division of Ser. No. 615,375, May 30, 1984, abandoned. This application Nov. 15, 1985, Ser. No. 798,354
Int. Cl.⁴ F16L 23/00
U.S. Cl. 24—270

5 Claims

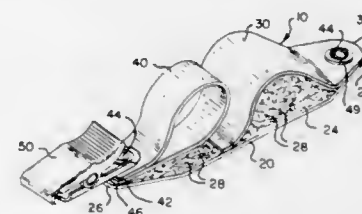


1. A collar for securing weights on the bar having opposite ends of a barbell, comprising:
a pad support ring comprising two arcuate sections hinged together at one side of the pad support ring so that the pad support ring can be opened and closed about said bar, each of the sections of the pad support ring terminating in a free end across the pad support ring from the hinged connection of the two sections of the pad support ring;
at least one pad disposed on the inside of each of the sections of the pad support ring to grippingly engage said bar when the pad support ring is closed about said bar, a groove being formed in the inside periphery of each section of the pad supporting ring with each groove being adapted to receive the pad disposed in that section, each pad having opposite ends;
securing means for securing the pads within the grooves of the sections of the pad support ring to prevent movement of the pads between the free end of each section and the hinged connection of the sections, the opposed ends of the pad in one section being spaced from the opposed ends of the pad in the other section when the pad support ring is closed about the bar; and
linkage means having one portion movably connected to the free end of one of the sections of the pad support ring and another portion removably connectable to the free end of the other pad support ring for removably securing the pad support ring in the closed condition when said means is removably connected to the free end of said other section of the pad support ring, the pad support ring being positionable about the bar by moving the pad support ring over the bar at a position spaced a distance from one end of the bar with the bar being moved through the space between the free ends of the sections of the pad support ring in the opened position of the pad support ring to a position wherein the bar is disposed between the sections of the pad support ring, and said means being movable to

a closed position wherein said means is removably connected to the free end portion of one of the sections of the pad support ring for removably locking the sections of the pad support ring in the closed position with the pads grippingly engaging the bar substantially to prevent axial movement of the pad support ring on the bar and substantially to secure the pad support ring to the bar.

4,639,980
TUBING ORGANIZER
Drew Peterson, Golita, Calif., assignor to Hall Surgical, Division of Zimmer, Inc., Carpinteria, Calif.
Filed May 25, 1984, Ser. No. 614,032
Int. Cl.⁴ A44B 21/00
U.S. Cl. 24—306

4 Claims



1. In an improved tubing organizing device of the type including a first strap having one surface of fine densely matted fibers, a second strap secured at one end to the first strap and having a surface which opposes the matted surface of the first strap, the opposing surface of the second strap having a plurality of generally rigid barbed extensions which adhere to the matted fibers of the surface of the first strap when the opposing surfaces are pressed together, and a clip attached to the first strap for fastening the device to an object, wherein the improvement comprises:

a third strap folded over on itself and secured to said first strap such that a closed loop is formed;
said loop being disposed between one end of said first strap and said clip, and said clip, loop and first strap being held together at a first point by a first eyelet;
said second strap being secured to the opposite end of said first strap by a second eyelet; and
said loop being secured to said first strap at a second point by a third eyelet to maintain the alignment of said loop along said first strap;
wherein the materials which make up the device are capable of withstanding exposure to temperatures up to two hundred eighty degrees Fahrenheit.

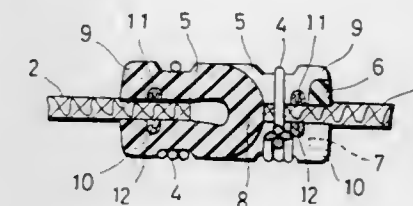
4,639,981
SLIDE FASTENER STRINGER HAVING CONTINUOUS THERMO-PLASTIC MOLDED COUPLING ELEMENT STRIP
Hiroshi Yoshida, and Akira Hasegawa, both of Kurobe, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Continuation of Ser. No. 472,626, Mar. 7, 1983, abandoned. This application Jul. 17, 1985, Ser. No. 755,972
Claims priority, application Japan, Mar. 8, 1982, 57-3216[U]
Int. Cl.⁴ A44B 19/10

U.S. Cl. 24—401

2 Claims

1. A slide fastener stringer comprising:
(a) a stringer tape;
(b) a continuous zigzag-shaped thermoplastic molded coupling element strip attached to said stringer tape by a sewn thread extending along the length of said strip and disposed on and along one longitudinal edge thereof, said strip including
(1) a succession of laterally spaced coupling elements, each having a head and a pair of first and second legs extending

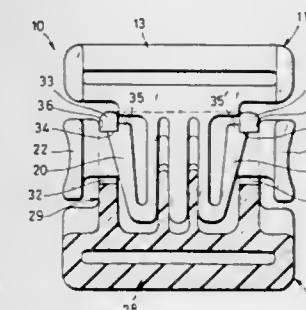
from said head in a common direction and respectively terminating in a distal end heel, and
(2) a plurality of first and second individually spaced solid connecting portions alternately disposed at opposite sides of said strip and extending one between each adjacent pair of said coupling elements, each of said first connecting portions interconnecting said heels of an adjacent pair of said first legs, each of said second connecting portions interconnecting said heels of an adjacent pair of said second legs, said connecting portions being engageable with a slider and being disposed at the tape-engaging sides of said heels, said connecting portions having a reduced size between said coupling elements remote from said stringer



tape to thereby provide flexibility in each connecting portion between said adjacent pair of said coupling elements; and
(c) a pair of connector threads extending transversely of said coupling elements through the full length of said strip and embedded only in said first and second legs, respectively, of each said coupling element, each of said connector threads being respectively disposed between said sewn thread and said connecting portions close to and extending along the head side of a respective one of such two series of said first and second connecting portions, each said connector thread being aligned with the respective series of said connecting portions in a plane parallel to the general plane of said stringer tape.

4,639,982
RELEASABLE BUCKLE
Kazumi Kasai, Namerikawa, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 478,168, Mar. 23, 1983, abandoned. This application Apr. 29, 1985, Ser. No. 728,149
Claims priority, application Japan, Mar. 23, 1982, 57-40577[U]; Oct. 9, 1982, 57-153791[U]
Int. Cl.⁴ A44B 11/25
U.S. Cl. 24—616

3 Claims



1. A buckle for fastening ends of a flat belt-like article, comprising:
A. A male member molded of synthetic resin as one piece including
(1) a first belt-end retainer portion adapted to be connected to one end of the flat belt-like article, and
(2) a plug portion having
(a) a generally T-shaped stem having a horizontal portion integral with said first retainer portion, and a

vertical portion perpendicular thereto, said vertical portion of said stem further having a pair of guide recesses extending from the distal end of said vertical portion toward said horizontal portion and terminating substantially midway along its length;

- (b) a pair of resilient upturns extending from opposite corners of the distal end of said stem, each of said upturns having a lug projecting upwardly at its distal end so as to define with the later a locking recess at the outer side of said lug;
- (c) a pair of thinner connecting portions each extending outwardly from an outwardly facing side of the respective upturn and terminating in an enlarged gripping ear; and

B. A female member molded of synthetic resin as one piece including

- (1) a second belt-end retainer portion adapted to be connected to the other end of the flat belt-like article; and
- (2) a socket portion having

(a) means defining a socket-opening at one end of said socket portion receptive of said plug portion and also defining a pair of side slits communicating with said socket-opening, said means having a pair of first and second inner walls, said means of said socket portion further having a pair of guide projections extending between said inner walls, said guide projections extending from the bottom of said socket opening toward the open end of said socket opening and terminating substantially midway between said bottom and said open end, each of said guide projections being receivable in a respective one of said guide recesses in said vertical portion of said stem when said plug portion is received in said socket opening; and

(b) two pairs of inwardly facing flanges disposed one pair at each side of said socket-opening, each said pair of flanges defining therebetween a restricted slit communicating with both said socket-opening and one of said side slits for passage therethrough of a respective one of said connecting portions, each said restricted slit having a width greater than the thickness of each said connecting portion and smaller than the thickness of either of said lug and said upturn so that each pair of said flanges is received in one of said locking recesses, each said flange having a first abutment facing one of said side slits for engagement with said distal end of one of said upturns to restrict the movement of said male and female members away from each other, and a second abutment facing said socket-opening for engagement with said lug of one of said upturns to restrict the outward movement of said distal end and hence to prevent said respective upturn from being overbent outwardly.

4,639,983

HOOK FOR A HOOK-AND-EYE FASTENER

Takeo Fukuroi, and Keichi Inazawa, both of Uozu, Japan, assignors to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan
Filed Jun. 24, 1985, Ser. No. 747,958

Claims priority, application Japan, Jul. 6, 1984, 59-102169
Int. Cl.⁴ A44B 1/42

U.S. Cl. 24-689

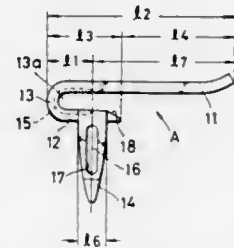
6 Claims

1. A hook for a hook-and-eye fastener, comprising:

(a) a one-piece hook body including a base, a locking tongue lying substantially parallel to said base, an intermediate arcuate portion extending between said base and said locking tongue so as to define therebetween an eye-receiving channel, said locking tongue projecting beyond the free end of said base by a distance which is one and a half to two times as large as a distance between the vertex of said arcuate portion and the free end of said base, said base having a pair of prongs projecting substantially perpendicularly therefrom in a direction away from said locking tongue, said prongs being located on opposite edges of

said base such that the longitudinal central axes of said prongs extend in a plane which is spaced from the vertex of said arcuate portion by a distance approximately equal to one-fourth of the entire length of said hook body;

- (b) said hook body having an inner surface facing said eye-receiving channel, and a plurality of cold-pressed elongated recesses defined in said inner surface and extending from said base through said arcuate portion to said locking tongue, each said recess having opposite end portions terminating adjacent to a plane in which the longitudinal



central axes of said prongs extend, a region adjacent said recesses having a cold-pressed modulus large enough to afford increased resiliency and strength to said arcuate portion; and

- (c) a retainer having a pair of openings through which said prongs can extend, respectively, said openings being spaced from one another by a distance which is smaller than the distance between said pair of prongs, each said prong having a bent end portion retained on said retainer with a space defined therebetween.

4,639,984

GUIDE TRACK FOR A TENTERING CHAIN

Rudolf Langer, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau/Bodensee, Fed. Rep. of Germany

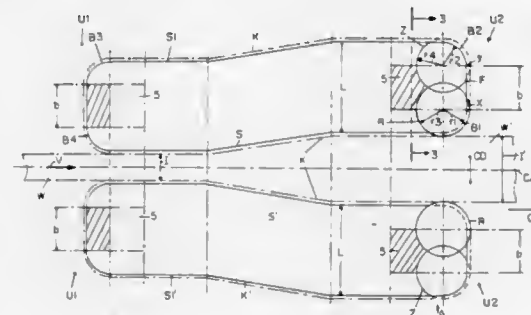
Filed Nov. 19, 1985, Ser. No. 799,403

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3443905

Int. Cl.⁴ D06C 3/02

U.S. Cl. 26-89

19 Claims



1. A guide track for a tentering chain carrying a plurality of tentering members supported by rollers on the guide track, comprising a plurality of guide rail sections forming a forward run, a reverse run, and intermediate runs forming U-turns interconnecting said forward and reverse runs for forming an endless guide track, drive sprocket means operatively arranged in one of said U-turns between said forward and reverse runs for meshing with said tentering chain, said one U-turn in which said drive sprocket means are located comprising a straight guide rail section having a given length and two curved guide rail sections each having a given radius of curvature, said straight guide rail section being arranged between said two curved guide rail sections, said drive sprocket means being

arranged coaxially with one of said curved guide rail sections, both of said radii of curvature of said two curved guide rail sections being equal to each other and each of said radii of curvature being smaller than one half of a spacing between said forward and reverse runs of said guide track, wherein each of said two curved guide rail sections forms a 90° looping angle, said both curved guide rail sections together form a complete 180° U-turn.

10. A guide track for a tentering chain carrying a plurality of tentering members supported by rollers on the guide track, comprising a plurality of guide rail sections forming a forward run, a reverse run, and intermediate runs forming U-turns interconnecting said forward and reverse runs for forming an endless guide track, drive sprocket means operatively arranged in one of said U-turns between said forward and reverse runs for meshing with said tentering chain, said one U-turn in which said drive sprocket means are located comprising a straight guide rail section and two curved guide rail sections each having a given radius of curvature, means for mounting said two curved guide rail sections at different spacings from each other, said straight guide rail section being arranged between said two curved guide rail sections, said drive sprocket means being arranged coaxially with one of said curved guide rail sections, each of said radii of curvature being smaller than one half of a spacing between said forward and reverse runs of said guide track, said straight guide rail section having a given length between said two curved guide rail sections corresponding to one of said different spacings, whereby said straight guide rail section is exchangeable by a similar straight guide rail section having a different length for varying the length of the respective U-turn, and wherein said different spacings relate to said different lengths of said straight guide rail sections.

4,639,985

SNAP-IN CASSET DISH

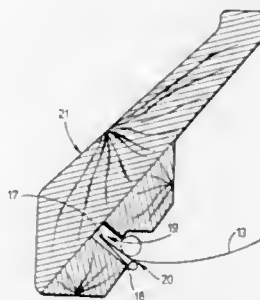
William K. Craft, Cincinnati, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Jun. 19, 1984, Ser. No. 622,303

Int. Cl.⁴ A61G 17/00; E04F 19/02

U.S. Cl. 27-19

6 Claims



1. An improved burial casket comprising:

(A) A main casket body;

(B) A casket lid removably attached to said casket body and having a casket lid channel formed in the interior rim thereof;

(C) A mounting channel member inserted in said casket lid channel and generally conforming to said casket lid channel, said mounting channel member having a pair of opposed edges, one of said opposed edges being adjacent to one outer edge of said casket lid channel and comprising a generally rigid, decorative stop member, said other opposed edge comprising a spring member thereof and adjacent to another outer edge of said casket lid channel and

(D) A flexible casket dish configured to generally conform to the interior of said casket lid and having extending portions removably secured in said mounting channel member having free end, in said casket lid channel, said extending portions comprising a creased flap member the

free end of which abuts said stop member and is held in place thereby, said flap member being secured in said mounting channel member and held in position against said generally rigid stop member by the action of said spring member whereby said casket lid channel and said creased flap member of said dish are hidden from view by said decorative stop member.

4,639,986

FILAMENT JET ENTANGLER

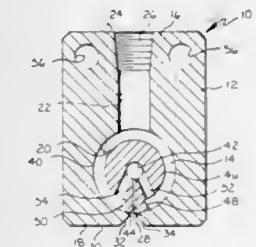
Borenstein, David E., Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 1, 1981, Ser. No. 249,802

Int. Cl.⁴ D02G 1/16; D02J 1/08

U.S. Cl. 28-272

59 Claims



1. A filament entangler comprising:

a jet body;

a yarn confining passage extending entirely through said jet body;

a pair of fluid jet ports in said jet body disposed adjacent to and on opposite sides of said yarn confining passage, said ports communicating in fluid flow relation with said passage, said ports further each having a longitudinal axis, said longitudinal axes lying in a common plane intersecting the axis of said generally cylindrical yarn confining passage and defining an included angle of about 48° therebetween; and

fluid passage means communicating with said pair of fluid jet ports for conducting fluid from a source thereof to said fluid jet ports whereby said fluid is directed through said fluid jet ports into said yarn confining passage.

4,639,987

APPARATUS FOR PRODUCING SIMULTANEOUSLY A PLURALITY OF VENETIAN BLINDS

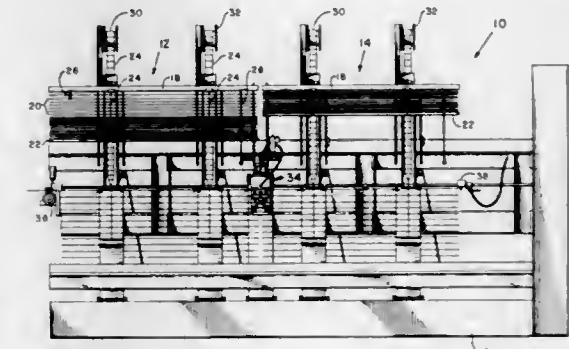
George Georgopoulos, Pine Brook, N.J., assignor to Levolor Loretzen, Inc., Parsippany, N.J.

Filed Apr. 19, 1985, Ser. No. 725,020

Int. Cl.⁴ B23P 19/04

U.S. Cl. 29-24.5

3 Claims



1. A method of producing a plurality of venetian blinds simultaneously, comprising the steps of:

(a) setting up a plurality of blind producing stations adjacent

to each other; each station supporting a venetian blind head rail, a venetian blind bottom rail below said head rail, and a plurality of spaced venetian blind ladders parallel to each other and spaced over the width of the respective station; the head rail, bottom rail, and blind ladders of one station being separate from the head rail, bottom rail and blind ladders respectively of another station;

- (b) cutting from a continuous supply of slat material a length corresponding essentially to the width of the plurality of stations; and simultaneously punching into said length of material openings at locations corresponding to the ladders in the finished plurality of blinds;
- (c) feeding the cut length of slat material into the blind stations, through the ladders of the blinds, until the slat material engages a stop adjacent the last of said plurality of stations as seen from said supply;
- (d) cutting the slat material between adjacent ones of said plurality of stations; and
- (e) repeating steps (b), (c) and (d) until a desired vertical length of blind between said head and bottom rails has been produced.

4,639,988

METHOD OF MAKING QUARTZ OSCILLATORS

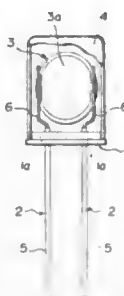
Hajime Goto; Ikuzo Amemiya; Masanobu Nakayama, all of Yokohama, and Yoshinobu Hatano, Ebina, all of Japan, assignors to Kanagawa Mfg., Co., Ltd., Yokohama, Japan

Filed Jul. 13, 1984, Ser. No. 630,850

Int. Cl.⁴ H04R 17/00

U.S. Cl. 29—25.35

12 Claims



1. A method of making quartz oscillators, wherein a pair of leads having a substantially circular cross-sectional shape and inner ends inserted respectively through a pair of holes in a base are glass-sealed to the base at the holes and have inner leads projecting respectively from the inner ends of the leads inserted through the base, and a quartz member having opposite side edges inserted through slots in the inner leads has a pair of electrode plates on opposite sides thereof electrically connected to the inner leads, comprising:

- providing a base having a pair of spaced holes therethrough;
- inserting a pair of elongated substantially circular cross-sectional shaped leads respectively through said holes so that portions thereof extend on opposite sides of the base to provide outer and inner spaced leads;
- glass-sealing said leads in said holes to secure said leads to said base;
- compressing said inner leads in dies to form hardened, resilient, flat plate-shaped inner leads extending in parallel spaced relationship with respect to each other;
- bending the ends of the inner leads adjacent said base outwardly with respect to each other to displace said inner leads outwardly with respect to said holes while maintaining a substantial portion of said inner leads in said parallel spaced relationship;
- punching elongated slots in said parallel portions of said inner leads by punching die means;
- resiliently spreading apart said inner leads;
- inserting a disk-shaped quartz element having electrode plates on opposite sides thereof between said inner leads

so that the opposite side edges of said quartz element are juxtaposed with respect to said slots; allowing said inner leads to resiliently return to said parallel position to insert the side edges of the quartz element through said slots into engaging relationship with said inner leads; and electrically connecting said inner leads with said electrode plates of the quartz element.

4,639,989

SANDING TOOL

Charles E. Filby, 73 Bank Ave., Winnipeg, Manitoba, Canada R2M 0N3

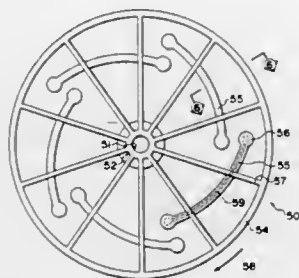
Filed Apr. 9, 1985, Ser. No. 721,442

Claims priority, application Canada, Oct. 2, 1984, 464565

Int. Cl.⁴ B23D 71/00

U.S. Cl. 29—79

2 Claims



1. Abrasive tool comprising a plurality of toothed strip portions, and integral continuous imperforate body member formed from a set plastics filler material in which said strip portions are rigidly embedded so that the filler material rigidly supports the strip portions along their full length, said body member being shaped to define an intended direction of working movement, said body member defining a support surface from which the teeth of the strip portions project for engaging and abrading a work surface generally parallel to the support surface, the strip portions being spaced from each other along their full length by a distance at least five times greater than the width thereof so as to sequentially engage the work surface as the support surface moves relative thereto and so as to allow self-cleaning from between the strip portions of material removed from the work surface by the strip portions, each said strip member being curved along its length in a curvature different from the intended direction of movement of the body member such it is prevented from moving in a working stroke of said body member directly along its length, said support surface having side edges which project sideways from outermost portions of the toothed strip portions so as to define shoulders, the extent of projection of the outermost portions from the surface being less than the width of the shoulder whereby to inhibit gouging of the work surface by the outermost toothed strip portions, the extent of projection of the toothed strip portions from said surface being less than $\frac{1}{8}$ inch.

4,639,990

ROLL FOR TREATING WEBS, PREFERABLY WEBS OF PAPER

Christian Schiel, and Albrecht Bauder, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

PCT No. PCT/EP84/00376, § 371 Date Jul. 29, 1985, § 102(e) Date Jul. 29, 1985, PCT Pub. No. WO85/02425, PCT Pub. Date Jun. 6, 1985

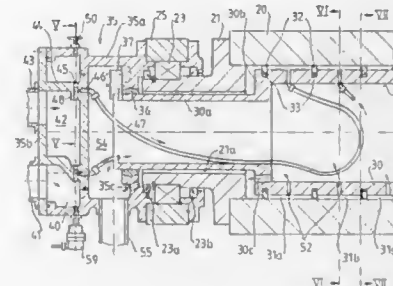
PCT Filed Nov. 29, 1984, Ser. No. 762,154

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343313

Int. Cl.⁴ B21B 13/02; B30B 3/00

U.S. Cl. 29—116 R

25 Claims



1. Roll for treating webs, comprising:

- a tubular roll shell rotatable about an axial axis and having an interior surface, means for supporting the shell at the axial ends thereof, and a means for rotating the shell;
- a stationary core extending through the shell and having an exterior surface which faces the interior surface of the shell and means for supporting the core at its axial ends, the exterior diameter of the core being smaller than the interior diameter of the shell to define an annular space therebetween, which annular space has a radial thickness which changes in response to variations in the relative positions of the shell and the core;
- at least one peripheral seal, in the shape of a closed ring, located on and extending circumferentially around the core, the at least one seal dividing the annular space between the shell and the core into a plurality of annular chambers, the at least one seal having a contacting surface in sliding contact with the interior surface of the shell, the sliding contact making a non-pressure tight seal with the interior surface of the shell thereby to reduce frictional heat and wear normally occurring at the contacting surface of the peripheral seal;
- means for enabling the at least one seal to move into the surface of at least one of the shell and the core to accommodate variations in the radial thickness of the annular space whereby forces exerted on the seal by the shell or by the core will not be applied by the seal, respectively, to the core or to the shell; and
- a respective fluid supply line and a respective fluid return line coupled to each of the annular chambers for, respectively, supplying to and withdrawing from the annular chambers a temperature regulating fluid at about atmospheric pressure, whereby a local external diameter of the roll is controlled by regulating the temperature of the fluid in each annular chamber.

4,639,991

PROCESS FOR PRODUCING A NEW EDGE ON AN AIRFOIL BLADE PARTICULARLY THE FAN BLADE FOR A GAS TURBINE ENGINE

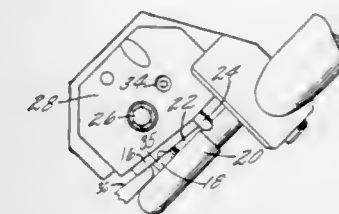
Harold M. Sharon, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 558,135, Dec. 5, 1983, Pat. No. 4,550,497, which is a continuation-in-part of Ser. No. 322,097, Nov. 16, 1981, abandoned. This application May 20, 1985, Ser. No. 736,020

Int. Cl.⁴ B21K 3/04; B23P 15/02, 6/00

U.S. Cl. 29—156.8 B

4 Claims



1. A process for forming a thinner leading edge on a fan blade comprising the steps of:

- (a) providing a first cutting means and a second cutting means;
- (b) providing a fan blade having a first side surface and a second side surface, said surfaces meeting to define a leading edge; and,
- (c) during a first cutting operation, forming a first cut surface using the first cutting means to produce a desired angle and fan blade thickness, by removing material from a portion of the first side surface adjacent the leading edge; and then,
- (d) during a second cutting operation, simultaneously forming second cut surfaces using the second cutting means to produce an aerodynamically efficient contour by removing material at the leading edge from both the first cut surface and the second side surface, by guiding the second cutting means along the leading edge and engaging both a portion of the first cut surface and a portion of the second side surface.

4,639,992

CORROSION RESISTANT STEAM GENERATOR AND METHOD OF MAKING SAME

Israel Stol, Mount Lebanon, and Robert H. Appleman, Pleasant Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 563,899, Dec. 21, 1983, Pat. No. 4,579,087. This application Sep. 23, 1985, Ser. No. 778,950

Int. Cl.⁴ B21D 53/00; B23P 15/26

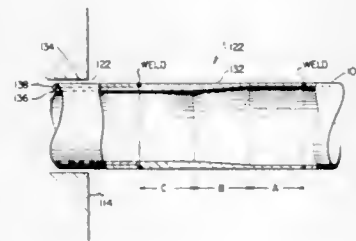
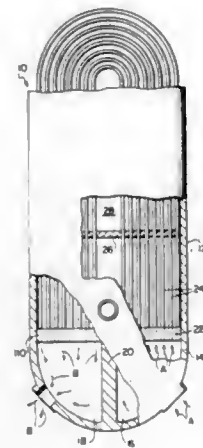
U.S. Cl. 29—157 R

17 Claims

1. A method of fabricating a steam generator comprising the steps of:

- providing inlet and outlet chambers and a secondary coolant chamber and at least one primary coolant tube passing through the secondary coolant chamber and connecting the inlet chamber to the outlet chamber;
- positioning a tubesheet between one of said inlet or outlet chambers and the said secondary chamber, said tubesheet having at least one passage therethrough;
- upsetting ends of said primary coolant tube to form a transition region in said ends, said transition region having smoothly varying wall thickness;
- reducing the outside diameter of a portion of said upset ends to accept a sleeve;
- installing said sleeve on said outside diameter portion;
- closing any space between said sleeve and said reduced outside diameter portion along an interface therebetween;

welding said sleeve to said primary coolant tube to form a sleeve and tube assembly;



inserting said sleeve and tube assembly into said passage in said tubesheet; and welding the sleeve and tube assembly to the tubesheet.

4,639,993 NUCLEAR FUEL ROD LOADING FIXTURE FOR USE IN A REMOTE REPAIR SYSTEM

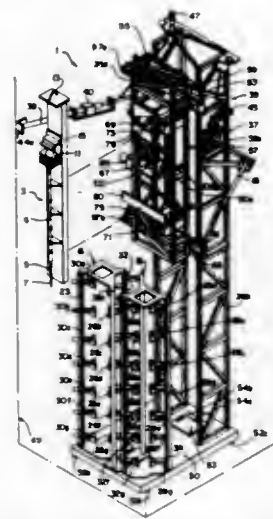
Anoop Kapoor, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 20, 1985, Ser. No. 746,891

Int. Cl.⁴ B23P 19/00, 11/00; G21C 19/00

U.S. Cl. 29—400 N

18 Claims



1. An apparatus for facilitating the insertion of a fuel rod through a selected one of the rod-receiving apertures in a grid of a fuel rod assembly, comprising means for obstructing at

least one of the rod-receiving apertures adjacent the selected aperture.

16. A method for facilitating the insertion of a fuel rod through a selected one of the rod-receiving apertures in a grid of a fuel rod assembly, comprising the step of obstructing at least one of the rod-receiving apertures surrounding the selected aperture while extending said rod through said selected aperture.

4,639,994 SUSPENSION OF TOOLS FOR SLEEVING OF TUBES OF STEAM GENERATOR

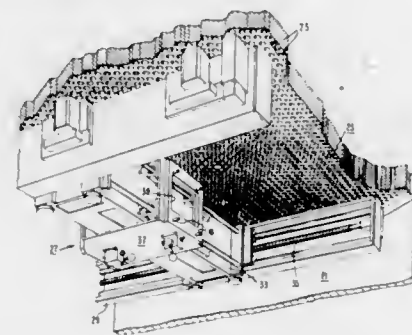
Frank W. Cooper, Jr., Monroeville, Pa.; Bruce A. Howard, Seminole, Fla., and David A. Snyder, North Huntingdon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1983, Ser. No. 538,309

Int. Cl.⁴ B23P 7/00, 15/26

U.S. Cl. 29—402.01

3 Claims



1. The method of suspending a tool, which serves to process the damaged tubes of a steam generator of a nuclear-reactor plant, either to prepare said tubes for insertion of a sleeve blank or to insert a sleeve blank, or to treat a sleeve after it is inserted in a tube, the said tube extending into the tube sheet of said steam generator, the said tool having a plurality of locking pins for engaging tubes of said generator adjacent to a damaged tube to be processed, the said method being practiced with apparatus including means, connected to said locking pins, for supplying fluid under pressure to insert and hold said locking pins, the said method comprising, supplying said fluid to said inserting means at a low pressure to insert said locking pins into said adjacent tubes at a low velocity, to seat said locking pins in said adjacent tubes properly, and, once said locking pins are seated in said adjacent tubes, increasing the pressure of said fluid to a high magnitude so that said locking pins are held firmly in said adjacent tubes, resisting removal by the reactive force of the processing.

4,639,995 METHOD OF RETAINING AND REPAIRING A TRACK JOINT

James A. Garman, Eureka, and Stephen D. Swift, Sparland, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 476,909, Mar. 18, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 713,361

Int. Cl.⁴ B23P 7/00, 19/00; B21D 1/00, 39/00

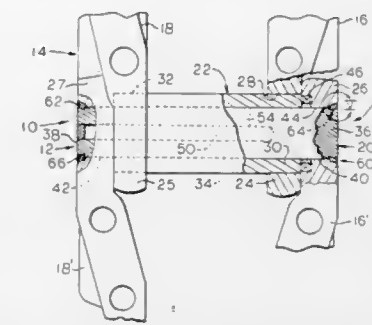
U.S. Cl. 29—402.08

13 Claims

1. A method of repairing a joint of an endless track of a crawler type vehicle, said joint having at least one cavity and a formed-in-place retainer in said cavity, said cavity being defined by a groove in an end portion of a pin and a cooperating socket in a link end portion surrounding said pin end portion and having an opening at an outer side of said link end portion, comprising the steps of:

pushing said pin out of said link end portion and shearing said formed-in-place retainer;
removing the said sheared retainer from said joint;

replacing said pin end portion into said link end portion;
positioning an annular metal preform adjacent said cavity opening; and



applying an axial force to the preform sufficient to intrusively deform said preform and to permanently transform the preform into a new formed-in-place retainer.

4,639,996 SCREW FASTENING METHOD

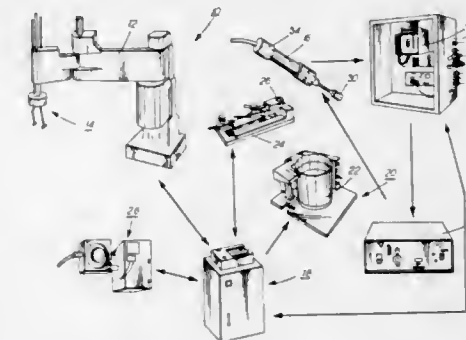
David M. Fullmer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1985, Ser. No. 754,097

Int. Cl.⁴ B23Q 17/00; B25B 23/151

U.S. Cl. 29—407

6 Claims



1. A method of automatically attaching a threaded fastener to an article, including the steps of:

holding releasably the threaded fastener adjacent an untapped hole in the article;
applying a torque on the threaded fastener;
generating a signal indicative of the torque being applied on the threaded fastener; and

controlling the torque applied on the threaded fastener in response to the signal indicative of the torque applied on the threaded fastener so that the torque applied on the threaded fastener does not exceed a first pre-determined level as the threaded fastener taps threads in the hole in the article and a second pre-determined level after the threads have been tapped in the hole during the securing of the threaded fastener to the article wherein said step of controlling includes the step of maintaining the first pre-determined torque level at a higher level than the second pre-determined torque level.

4,639,997 METHOD OF MAKING A DEVICE FOR MONITORING FATIGUE LIFE

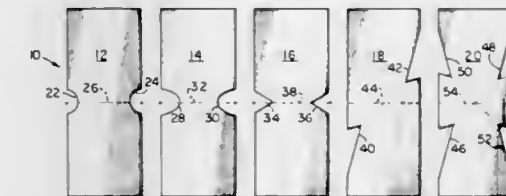
Maurice A. Brull, Herzliya Pituach, Israel, assignor to Tensidyne Scientific Corporation, Horsham, Pa.

Division of Ser. No. 573,081, Jan. 23, 1984, Pat. No. 4,590,804. This application Jul. 18, 1985, Ser. No. 756,419

Int. Cl.⁴ B23Q 17/00

U.S. Cl. 29—407

5 Claims



1. A method of making a device for monitoring the fatigue life of a member fabricated of a particular material comprising the steps of:

obtaining a thin sheet of the material from which the member is fabricated;
cutting a plurality of generally parallel elongated coupons from the thin sheet of material;
cutting a predetermined stress concentrating notch pattern comprised of at least one pair of notches into each coupon, one notch of the notch pair being disposed on each of the longitudinal sides of a coupon, the notches of the notch pair being substantially geometrically the same and substantially aligned with each other, the notch pattern of each of the coupons varying in intensity from mild in which the edge surfaces of the notches are generally smooth and continuously curved, to severe, in which the edge surface of each of the notches exhibits a sudden change to form two portions which are in different planes, the two portions meeting to form a line so that upon the application of the same strain to all of the coupons, each coupon has a different fatigue life, the fatigue life of each coupon being a percentage of the fatigue life of the member being monitored.

4,639,998 LOCKING TUBE REMOVAL AND REPLACEMENT TOOL AND METHOD IN A RECONSTITUTABLE FUEL ASSEMBLY

John M. Shallenberger, Fox Chapel, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 9, 1984, Ser. No. 670,418

Int. Cl.⁴ B23P 19/00, 17/00

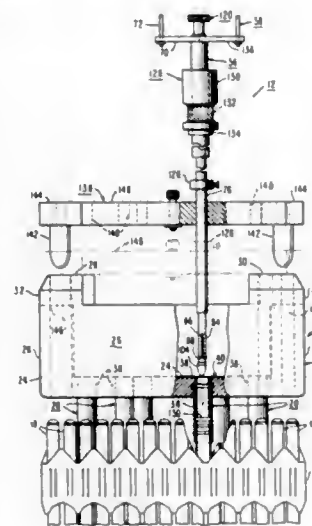
U.S. Cl. 29—426.5

1 Claim

1. For use with a reconstitutable fuel assembly including a top nozzle with an adapter plate having at least one passageway, at least one guide thimble with an upper end portion and an attaching structure having a hollow locking tube for releasably locking the upper end portion of the guide thimble within the passageway of the top nozzle adapter plate, a tool for removing the locking tube from its locking position, comprising:

(a) an elongated inner hollow tubular force-transmitting member having upper and lower opposite ends, said force-transmitting member being insertable at its lower end in said locking tube and including
(i) an elongated inner tubular body having upper and lower ends, and
(ii) a tubular extension having an upper end fixed to said lower end of said inner tubular body and extending therefrom in axial alignment therewith, an upper end portion of said tubular extension having a larger diameter

- ter than a lower end portion thereof so as to define a downwardly-facing shoulder on said tubular extension which abuts said locking tube when said lower end of said force-transmitting member is inserted therein;
- (b) a force-receiving member fixedly attached to said upper end of said force-transmitting member;
- (c) locking tube-engaging means fixedly attached to said lower end of said force-transmitting member and being circumferentially expandable and collapsible, said locking tube-engaging means being defined on said lower end portion of said tubular extension which constitutes said lower end of said force-transmitting member, said locking tube-engaging means being in the form of an axially segmented sleeve which terminates in a lower segmented rim, said rim being expandable to a first outside diameter greater than an inside diameter of said locking tube and collapsible to a second outside diameter less than said inside diameter of said locking tube;
- (d) an outer hollow tubular force-imparting member disposed about said inner force-transmitting member and slidably movable therealong in a reciprocating manner for delivering a sequence of forceful impacts against said force-receiving member, said force-imparting member including
- (i) an upper enlarged cylindrical head, and



- (ii) a lower hand grip tubular sleeve connected in tandem with said head such that upon reciprocable movement of said sleeve along said inner tubular member toward and away from said force-receiving member said head will deliver a series of forceful impacts in an upward axial direction to said force-receiving member, which impacts are transmitted via said inner tubular body and tubular extension to said segmented rim and thereby to said lower edge of said locking tube when said rim is in its engaged position whereby said locking tube is caused to incrementally move and to dislodge from its locking position;
- (e) said force-receiving member being in the form of a bail assembly, said bail assembly including
- (i) a generally flat plate fixed to said upper end of said inner tubular force-transmitting member and disposed for receiving said impacts of said head of said force-imparting member, and
- (ii) a handle connected to and extending upwardly from said plate;
- (f) an elongated shaft means extending through said force-transmitting member between the ends thereof and mounted for axial movement therealong, said shaft means having upper and lower opposite ends, said shaft means including
- (i) a central shaft disposed in said inner tubular body of

- said force-transmitting member and having upper and lower ends, and
- (ii) a shaft extension disposed in said tubular extension of said force-transmitting member and having upper and lower ends, said shaft extension being fixed at its upper end to said lower end of said central shaft;
- (g) means attached to said upper end of said shaft means and being operable to cause axial movement of said shaft means between extended and retracted positions relative to said force-transmitting member, said operable means including
- (i) an actuating knob threadably coupled to said upper end of said central shaft of said shaft means, and
- (ii) means mounted to said upper end of said inner tubular body of said force-transmitting member and coupled to said central shaft such that rotation of said knob in a first sense causes nonrotational axial movement of said control shaft and said shaft extension of said shaft means in a first direction, to said retracted position, whereas rotation of said knob in a second opposite sense causes nonrotational axial movement of said central shaft and shaft extension of said shaft means in a second direction to said extended position; and
- (h) means attached to said lower end of said shaft means and movable between disengaged and engaged positions relative to said locking tube-engaging means, the latter assuming a circumferentially-collapsed position when said shaft means is at one of its positions and said movable means is at its disengaged position and a circumferentially-expanded position when said shaft means is at the other of its positions and said movable means is at its engaged position such that repeated reciprocation of said force-imparting member will cause delivery of a sequence of impacts against said force-receiving member and via said force-transmitting member and tube-engaging means against a lower end of said locking tube so as to provide sufficient force to incrementally move said locking tube relative to said guide thimble from its locking position, said means attached to said lower end of said shaft means being in the form of a conical nose fixedly mounted to said lower end of said shaft extension of said shaft means and disposed below said segmented rim of said locking tube-engaging means such that movement of said shaft means to its retracted position moves said conical nose to its engaged position in which it is forcibly inserted into said segmented rim sufficiently to expand the same to its first outside diameter size wherein said segmented rim will engage said lower edge of said locking tube, whereas movement of said shaft means to its extended position moves said conical nose to its disengaged position in which it is withdrawn from said segmented rim sufficiently to allow contraction of the same to its second outside diameter size wherein said segmented rim will fit through said locking tube.

4,639,999

HIGH RESOLUTION, HIGH EFFICIENCY I.R. LED PRINTING ARRAY FABRICATION METHOD

Joseph J. Daniele, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1984, Ser. No. 667,706

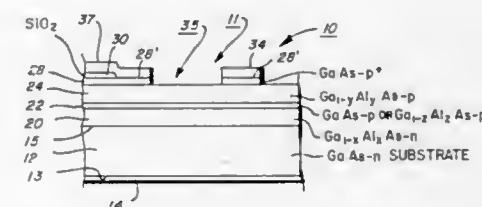
Int. Cl.⁴ H01L 7/36

U.S. Cl. 29—569 L

9 Claims

1. A method of fabricating a high speed, high resolution IR LED array for printing images, comprising the steps of:
- (a) metallizing one surface of a GaAs-n substrate to provide a common electrical contact for said LEDs;
- (b) growing a first layer of GaAlAs-n on the other surface of said substrate;
- (c) growing a second layer of GaAs-p or GaAlAs on said first layer;
- (d) growing a third layer of GaAlAs-p on said second layer;

- (e) growing an electrical contact layer of GaAs-p+ on said third layer;
- (f) depositing an insulating layer on said electrical contact layer;
- (g) etching both said insulating and said contact layers at selected points to expose predetermined areas of said third layer and form viewing windows defining each of said LEDs;



- (h) etching said portion of said insulating layer in the area bounding each of said viewing windows to expose a portion of said contact layer; and
- (i) metallizing said exposed portions of said contact layer to provide said individual electrical contacts for each of said LEDs.

4,640,000

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Masaki Sato, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

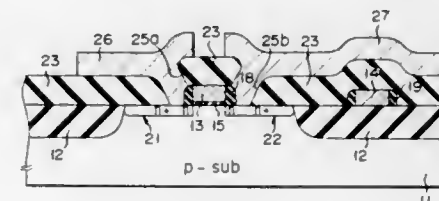
Filed Dec. 26, 1984, Ser. No. 686,375

Claims priority, application Japan, Dec. 27, 1983, 58-244562

Int. Cl.⁴ H01L 21/443

U.S. Cl. 29—571

15 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:
- forming an element isolation region in a surface of a semiconductor substrate of a first conductivity type to provide an island element region surrounded by said element isolation region;
- forming a gate structure on a surface of said island element region, said gate structure including a gate insulating film and a gate electrode film formed thereon;
- doping an impurity having a second conductivity type opposite to the first conductivity type by using said gate structure as a mask, thereby forming first and second semiconductor regions in the island element region;
- forming a wall of an insulating material on a side wall of said gate structure;
- depositing an insulating film on an entire surface of said semiconductor substrate which includes said element isolation region, said island element region and said gate structure including said wall;
- selectively etching a portion of said insulating film which corresponds to a step portion formed by surfaces of said insulating wall and said island element region to form first and second contact holes so as to partially expose said first and second semiconductor regions therethrough; and
- forming a wiring layer on the remaining insulating film so as

to electrically connect to said first and second semiconductor regions through said first and second contact holes.

4,640,001

SOLAR CELL MANUFACTURING METHOD

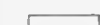
Sakae Koiwai, Ohmichihiro; Keizo Asaoka; Katsuhiko Shirasawa, both of Yokkaichi; Hiroyuki Watanabe, Kusatsu, and Junichi Honda, Sakura, all of Japan, assignors to Japan Solar Energy Co., Ltd., Japan

Filed Dec. 20, 1984, Ser. No. 684,271

Int. Cl.⁴ H01L 31/18

U.S. Cl. 29—572

1 Claim



1. A method of manufacturing a solar cell composed of a polycrystalline silicon wafer with a silicon nitride film deposited thereon as an antireflection coating, said cell having an improved energy conversion efficiency, said method comprising the steps of:

depositing said silicon nitride film on said polycrystalline silicon wafer by a plasma CVD method, said polycrystalline silicon wafer being maintained at a temperature between 350° C. and 500° C.;

removing by an etching method portions of said silicon nitride film deposited in said depositing step, the portions to be removed corresponding to the areas where an electrode is to be formed; and

forming said electrode at said portions where said silicon nitride film is removed in said second process, whereby a solar cell having an energy conversion efficiency greater than 11.5% is produced.

4,640,002

METHOD AND APPARATUS FOR INCREASING THE DURABILITY AND YIELD OF THIN FILM PHOTOVOLTAIC DEVICES

James E. Phillips, and Patrick G. Lasswell, both of Newark, Del., assignors to The University of Delaware, Newark, Del. Continuation of Ser. No. 352,218, Feb. 25, 1982, abandoned.

This application Dec. 5, 1985, Ser. No. 805,435

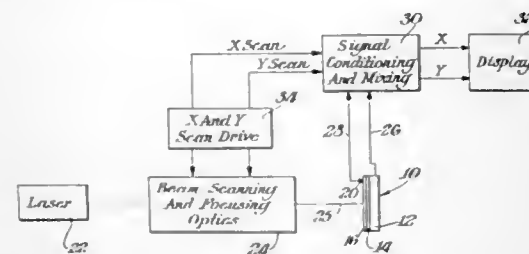
Int. Cl.⁴ H01L 31/18

U.S. Cl. 29—574

17 Claims

1. In a method of manufacturing thin film photovoltaic cells including the steps of depositing at least first and second thin film semiconductor layers on a substrate and forming electrical contacts to the semiconductor layers, the improvement being applying a reverse bias voltage between the semiconductor layers, laser scanning the cell to selectively locate localized shorting or shunting defects therein whereby material from one of the cell components on one side of one of the thin film

semiconductor layers would thereby contact a cell component on the other side of that semiconductor layer through the



defect which would result in a short or shunt, and selectively thermally eliminating the defect to prevent such shorting.

4,640,003

METHOD OF MAKING PLANAR GEOMETRY SCHOTTKY DIODE USING OBLIQUE EVAPORATION AND NORMAL INCIDENCE PROTON BOMBARDMENT
Nicolas A. Papanicolaou, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1985, Ser. No. 781,560

Int. Cl.⁴ H01L 29/56, 21/283

U.S. Cl. 29—576 B

7 Claims



1. A method of fabricating a Schottky diode comprising the steps of:

- providing a semi-insulating substrate of material selected from the group consisting of aluminum gallium arsenide, gallium arsenide and indium phosphide;
- growing sequentially an n⁺ doped layer of the material, an n doped layer of the material, and an undoped layer of the material consecutively on the substrate;
- depositing a polyimide on at least one region of the undoped layer;
- masking at least one region on the undoped layer to produce at least one masked and one unmasked region;
- etching away said unmasked region to produce a mesa with acute angled sides sloping inward from the top on the undoped layer so that the sides of the mesa define two recessed areas underneath the mesa;
- depositing a Schottky material at an angle on the exposed n doped layer so that the recessed area on one side of the mesa is not covered with Schottky material;
- depositing an ohmic material at an angle on the exposed n doped layer and on the Schottky material so that the

recessed area on the other side of the mesa is not covered with ohmic material;

bombarding the Schottky material and ohmic material with protons at normal incidence so that the recessed areas are untouched; and

annealing the ohmic contact.

4,640,004

METHOD AND STRUCTURE FOR INHIBITING DOPANT OUT-DIFFUSION

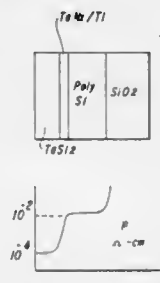
Michael E. Thomas, Cupertino; Madhukar B. Vora, Los Gatos, and Ashok K. Kapoor, Palo Alto, all of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Apr. 13, 1984, Ser. No. 600,163

Int. Cl.⁴ H01L 21/285

U.S. Cl. 29—590

29 Claims



10. A method of inhibiting dopant diffusion in a high speed semiconductor device, said method comprising the steps of:

- (a) providing a silicon substrate containing a dopant and having a first surface;
- (b) disposing a first layer of a first refractory metal over the first surface of said substrate, said first layer having a predetermined thickness;
- (c) depositing a second refractory metal on said first layer in an ambient environment having a predetermined concentration of nitrogen in order to form a blanket layer of a refractory metallic nitride having a predetermined thickness;
- (d) placing an amorphous, co-deposited third refractory metal: silicon layer, having a predetermined thickness and a predetermined atomic ratio of silicon to refractory metal, on said blanket layer; and
- (e) transforming said co-deposited layer to a refractory metallic dicide layer by heating at a predetermined temperature for a predetermined amount of time in a second predetermined ambient environment.

4,640,005

SUPERCONDUCTING MAGNET AND METHOD OF MANUFACTURE THEREOF

Susumu Mine, Zushi, and Takao Ishizaka, Sagami-hara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 363,888, Mar. 31, 1982, Pat. No. 4,549,156.

This application Jun. 12, 1984, Ser. No. 619,894

Claims priority, application Japan, Oct. 8, 1981, 56-160523; Dec. 4, 1981, 56-194430

Int. Cl.⁴ H01L 39/24

U.S. Cl. 29—599

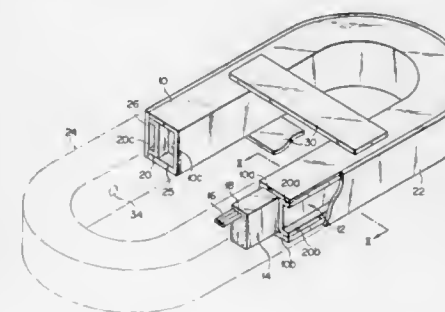
14 Claims

1. A method of manufacturing a superconducting magnet, comprising:

- a first step of providing a winding former having a bottom wall connected to opposed side walls to define a rectangular groove extending in a race track fashion and having an open side;
- a second step of tightly winding a superconducting wire a predetermined number of turns within said rectangular groove of said winding former, to prepare a coil structure

having a rectangular cross section conforming with the cross section of the bottom wall and at least a portion of the side walls of the groove;

a third step of hermetically sealing the rectangular groove of the winding former filled with the coil structure within an annular space defined at least in part by said former to stably fix the coil structure so as to prevent generation of friction heat which causes the coil quench phenomenon, i.e., change from the superconducting state to the normal state;



a fourth step of welding the components necessary for the vessel formation to the winding former; and

a fifth step of injecting a hardenable material into the annular space having the coil structure disposed therein after the winding former heated in the welding step has been cooled to temperatures lower than a prescribed level so as to impregnate the coil structure with the hardenable material, whereby the coil structure impregnated with the hardenable material is prevented from cracking causing deterioration of properties such as reduction of magnetomotive force.

4,640,006

METHOD OF FORMING BATTERY ELECTRODE BY IRREVERSIBLE DONOR DOPING OF CONJUGATED BACKBONE POLYMERS

Ronald L. Elsenbaumer; Granville G. Miller, both of Morris-town, and James E. Toth, Maplewood, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 556,718, Nov. 30, 1983, Pat. No. 4,526,708. This application Jun. 17, 1985, Ser. No. 745,099

Int. Cl.⁴ H01M 10/38; H01B 1/06

U.S. Cl. 29—623.1

12 Claims

1. A method of fabricating a battery comprising the step of introducing a compound of the formula MR into a battery enclosure containing at least two electrodes, at least one of which comprises polyacetylene and also containing an organic solvent, under conditions forming negatively charged polyacetylene intercalated by M⁺ cations in an amount sufficient to produce a conductivity in said polyacetylene of at least 10⁻⁵ S/CM and an organic by-product not susceptible to reaction with negatively charged polyacetylene to reform the compound MR; M being an alkali metal and R being selected from the group consisting of alkyls 1-12 carbons, phenyl and alkyl-phenyls of 7-12 carbons.

4,640,007

APPARATUS AND METHOD FOR REPLACING BEARINGS IN A WALKING BEAM IN TRUCKS AND TRAILERS HAVING TANDEM AXLES

Ronald Hydron, 6820 54th St. NE., Marysville, Wash. 98270

Filed Dec. 10, 1984, Ser. No. 680,289

Int. Cl.⁴ B23P 21/00, 7/00, 19/02; B23Q 15/00

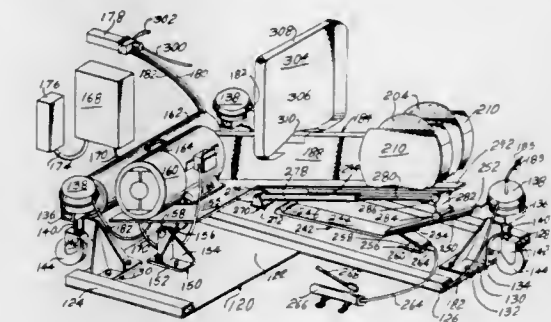
U.S. Cl. 29—709

22 Claims

1. A portable apparatus for removing a beam end connection assembly positioned in an equalizer beam and in a beam hanger axle bracket wherein said beam end connection assembly com-

prises an inner tube and a beam end bushing, said apparatus comprising:

- a. a severing means for severing said inner tube and said beam end bushing of said beam end connection assembly on both sides of said equalizer beam and between two legs of said beam hanger axle bracket, simultaneously;



- b. a first means for positioning said severing means in a position to simultaneously sever said inner tube and said beam end bushing in two spaced apart places; and
- c. a second means for activating said severing means to simultaneously sever in two spaced apart places said inner tube and said beam end bushing.

4,640,008

APPARATUS FOR COMBINING FASTENER STRINGERS
Kazuki Kuse, Toyama, Japan, assignor to Yoshida Kogyo K. K., Japan

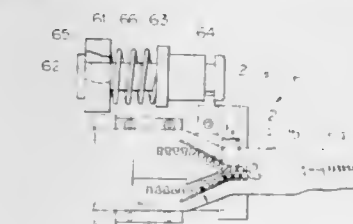
Filed Apr. 9, 1985, Ser. No. 721,396

Claims priority, application Japan, May 10, 1984, 59-68178[U]

Int. Cl.⁴ A41H 37/06; B29D 5/00

U.S. Cl. 29—767

1 Claim



1. In a stringer combining apparatus including a stringer combining guide section having an outer guide member resiliently movable in an outward direction transversely of a stringer, said member being located at the junction of guide groove portions which in combination constitute a Y-shaped guide groove, thereby allowing the passage of members other than fastener elements attached to a stringer, and a conveyor device for conveying a pair of stringers through said guide section, an improvement comprising a fluid-pressure cylinder means connected to said guide section for moving said guide section linearly in the direction parallel with the moving direction of said stringers.

4,640,009

CO-AXIAL CABLE STRIPPING TOOL AND END
PORTION PREPARATION METHOD

Barry P. Liversidge, 9 Heather Close, Layer-de-la-Haye, Colchester, Essex, England

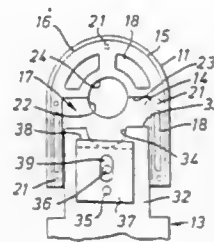
PCT No. PCT/GB85/00024, § 371 Date Aug. 23, 1985, § 102(e)
Date Aug. 23, 1985, PCT Pub. No. WO85/03389, PCT Pub.
Date Aug. 1, 1985

PCT Filed Jan. 18, 1985, Ser. No. 770,870

Claims priority, application United Kingdom, Jan. 20, 1984,
8401513; May 25, 1984, 8413445Int. Cl.⁴ H01B 13/20; B26B 27/00

U.S. Cl. 29—828

11 Claims



1. A tool suitable for stripping distinct layers from a multi-layer elongate member, which tool comprises a body defining an opening in which may be received the member to be stripped, and a cutting blade pivotally mounted with respect to the body and movable between the two limiting positions in the first of which the cutting edge of the blade projects to a relatively large extent into the opening and in the second of which the cutting edge projects to a relatively lesser extent into the opening, whereby following the location of a multi-layer member in the opening and rotating the tool around the member in one sense, the blade is caused to move to one limiting position such that the cutting edge substantially severs several layers of the member, but on rotating the tool around the member in the other sense the cutting blade is caused automatically to move to its other limiting position such that the cutting edge severs fewer layers of the member.

9. A method for preparing the end portion of an elongate member having a core and at least three co-axial layers therearound so as successively to expose the core and layers from the end of the member, which method comprises:

- effecting a first cut around the member at a position adjacent but spaced from the end of the member to a depth sufficient partially to sever the layer immediately overlying the core;
- twisting the so-severed layers around the core so as to complete separation of the end portion of the layer immediately overlying the core from the major portion thereof;
- effecting a second cut around the member at a position spaced further from the end of the member than the first cut and to the same depth as was effected the first cut;
- effecting a third cut around the member at a position spaced further from the end of the member than the second cut but to a lesser depth sufficient at least partially to sever the third layer overlying the second layer but not to sever that second layer;
- applying axially of the member and in the direction of the end thereof a force to the severed portion of the third layer at or immediately adjacent the third cut thereby to strip from the member successively from the third cut the third layer, the second layer and the first layer, so leaving an exposed length of the core at the end of the member.

4,640,010

METHOD OF MAKING A PACKAGE UTILIZING A
SELF-ALIGNING PHOTOEXPOSURE PROCESS

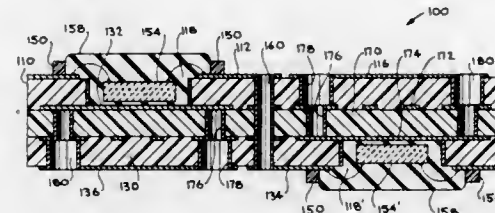
Candice H. Brown, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 29, 1985, Ser. No. 728,053

Int. Cl.⁴ H05K 3/30

U.S. Cl. 29—832

15 Claims



1. In a method for producing a PC board package for one or more integrated circuit dies wherein one or more cavities are formed in a first PC board to receive said dies and heat pipes are formed in a second PC board prior to bonding said PC boards together to form a composite, the improvement which comprises:

- applying a positive photoresist to the surface of said first PC board of the composite over said cavity;
- exposing the back surface of said photoresist over said one or more cavities to light;
- developing said photoresist to provide an accurate mask over the surface of said composite to the edge of said one or more cavities; and
- simultaneously plating the walls of said heat pipes and the cavity walls.

4,640,011

NAIL CLIPPER

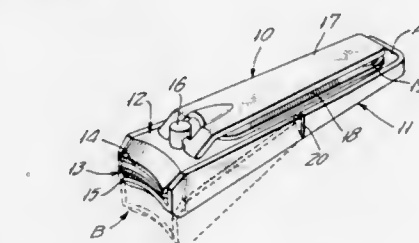
William L. Gamble, Unionville, Conn., assignor to The W. E. Bassett Company, Derby, Conn.

Filed Jul. 30, 1985, Ser. No. 760,460

Int. Cl.⁴ A45D 29/00

U.S. Cl. 30—28

6 Claims



1. As an article of manufacture, a nail-clipping retainer for a nail clipper having two like elongate jaw members securely connected to each other at a connected-jaw member end and divergent longitudinally in the direction away from said connected-jaw member end, said jaw members having mutually facing and inwardly projecting coacting cutting edges at cutting ends longitudinally opposite the connected-jaw member ends thereof, thereby defining between said jaw members an open-sided cavity which converges toward said connected-jaw member end, and an actuator foldable along the outer surface of one of said jaw members and actuably connected to said jaw members for a cutting operation of said cutting edges, said retainer comprising an elongate channel of compliantly deformable material having a bottom panel conforming to the planiform of the other of said jaw members, said bottom panel being in confronting adjacency with the outer surface of said other jaw member, said channel further having like side panel connected by said bottom panel, means coacting between said

jaw members and said channel for retaining said channel to said clipper at least at said connected-jaw member end, the elevational contour of said side panels above said bottom panel conforming substantially to the elevational profile of the open-sided cavity and substantially closing the same, each of said side panels having a transverse slit at a longitudinally central location, each said slit extending the width of its side panel and at least to said bottom panel, whereby said channel is characterized by a selectively movable end near said cutting ends and said selectively movable end is compliantly hinged to a retained end near said connected-jaw member end.

4,640,012

RAZOR CONSTRUCTION

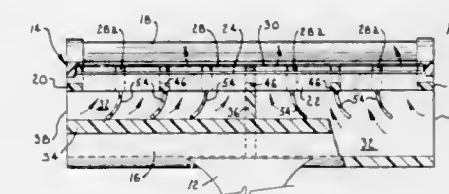
Perry W. Thomas, 12708 12th St., Grandview, Mo. 64030

Filed May 28, 1985, Ser. No. 737,781

Int. Cl.⁴ B26B 21/22

U.S. Cl. 30—41

11 Claims



1. A razor comprising:

- a shaving head having opposite ends and a longitudinal dimension defined between said ends;
- a razor blade carried on said shaving head and having an exposed shaving edge extending generally longitudinally on said head for use in shaving;
- a handle extending from said shaving head;
- a passage extending generally longitudinally within said shaving head and having an inlet end at one end of the shaving head for receiving water;
- an outlet for said passage located adjacent said shaving edge of the blade for discharging water from the passage against said edge to clear shaving debris from the blade; and
- a plurality of curved baffles in said passage spaced apart from one another at locations to divert water from the passage toward said outlet, each baffle having a concave surface facing toward said inlet end of the passage.

4,640,013

DEVICE FOR WRAPPING A JUNCTION BAND AROUND
A PAIR OF CIGARETTES

Athos Cristian, Bologna, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Sep. 6, 1983, Ser. No. 529,854

Claims priority, application Italy, Sep. 10, 1982, 12618 A/82
Int. Cl.⁴ A24C 5/47

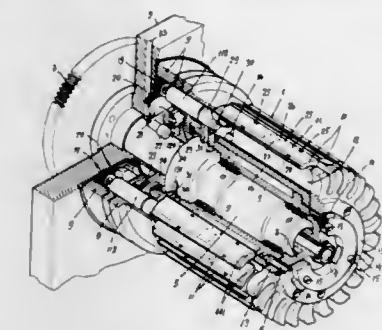
U.S. Cl. 131—94

14 Claims

1. A wrapping device for wrapping a junction band around a cigarettes-and-filter assembly which includes a double filter interposed between the ends of two aligned cigarettes, the wrapping device receiving from an input device a cigarettes-and-filter assembly with a junction band attached thereto by an end margin thereof and delivering, to an output device spaced apart from the input device, the wrapped cigarettes-and-filter assembly, said wrapping device comprising:

- a drum rotatably mounted adjacent said input and output devices;
- a peripheral annular assembly of wrapping units angularly equi-spaced from each other around said drum, each wrapping unit including a first wrapping member fixedly mounted on said drum and having a first active surface with an arcuate curvature, and a second wrapping mem-

ber movably mounted on said drum and having a second active surface with an arcuate curvature, one of said arcuate curvatures being concave and the other being convex, said arcuate curvatures being coaxially disposed and having different radii, said second wrapping member additionally having a delivery end portion and a receiving end portion between which the arcuate curvature of said second wrapping member is disposed; and
means for moving the second wrapping member of a wrapping unit with respect to the first wrapping member thereof in a cycle between first and second predetermined positions as said drum rotates, said second active surface being directed away from said first active and exposed to said input device when said second wrapping member is in said first predetermined position, and said second active surface and delivery end portion being directed toward



said first active surface when said second wrapping member is in said second predetermined position, wherein said cigarettes-and-filter assembly is deposited at said receiving end portion of said second wrapping member with said junction band stretched across said second active surface toward said delivery end portion when said second wrapping member is in said first predetermined position, wherein said cigarettes-and-filter assembly engages said first wrapping member and is rolled thereby over said second active surface to the delivery end portion to wrap said junction band as said second wrapping member moves to said second predetermined position, and wherein the wrapped cigarettes-and-filter assembly is moved from said delivery end portion to said output device as said second wrapping member returns to said first predetermined position.

4,640,014

DIMENSIONAL CHECKING TOOL

Arthur Thomas, Liverpool, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 14, 1986, Ser. No. 818,840

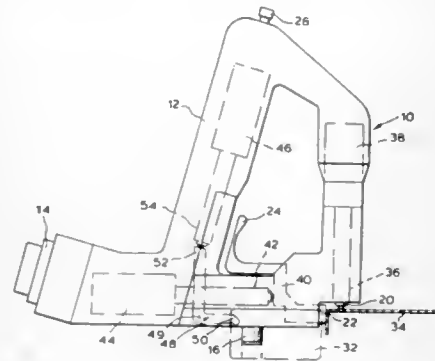
Claims priority, application United Kingdom, Jan. 15, 1985,
8500962Int. Cl.⁴ G01B 7/14

U.S. Cl. 33—143 L

7 Claims

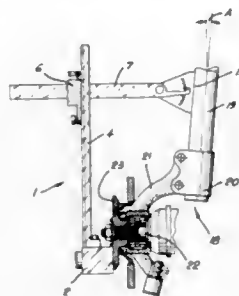
1. A dimensional checking tool for checking a pressing, said tool having a housing to be held in the hand, locating means for locating the housing at a fixed point on a jig, first and second movable probes linearly movable into and out of the housing along different paths, means biasing the probes in a direction outwardly of the housing and means for indicating the positions of the probes relative to the housing,
wherein the different paths along which the probes move are at right angles to each other so that one probe measures "gap" and the other probe measures "flush";
wherein the means for indicating the positions of the probes comprise linear transducers which respond to linear movement of the probes and provide a signal indicative of the instantaneous positions of the probes;

wherein a switch is provided for operation when the tool is fully located, to allow signals from the transducers to be passed from the tool to a remote data capture location; wherein the switch is a push on/release off button; and



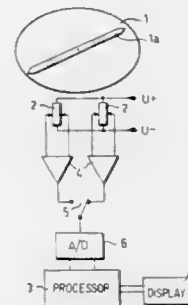
wherein one of the probes is connected to a manually movable slide by which it can be withdrawn into the housing to enable the tool to be applied to the pressing to be checked.

4,640,015
MACPHERSON STRUT ALIGNMENT GAUGE AND STRAIGHTENING APPARATUS
James H. Mason, 786 Pittwater Road, Brookvale, New South Wales 2100, Australia
Filed Dec. 20, 1984, Ser. No. 684,103
Claims priority, application Australia, Dec. 20, 1983, PG2918
Int. Cl.⁴ G01B 3/38
U.S. Cl. 33—181 AT 11 Claims



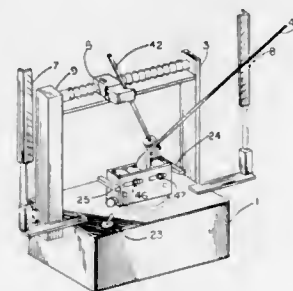
1. Gauge apparatus for measuring the displacement of first and second components, said apparatus comprising:
a support member adapted to secure attachment to the first component, said member including an elongate bar having one end adapted for attachment to the first component, said one end including a threaded portion projecting coaxially from the one end of said support member, thereby being able to engage a complimentary threaded hole in a wheel support flange;
a transverse gauge bar;
means for slidably interengaging said gauge bar to the elongate bar of said support member to provide for selectable relative movement of said gauge bar along a predetermined path on said support member;
locking means for rigidly securing said transverse gauge bar to said support member at a pre-selected position along said path; and
a gauge member rotatably secured to the distal end of said transverse gauge bar, said gauge member including indicia for measuring the angle of displacement of said gauge member with respect to said gauge bar.

4,640,016
MEANS FOR INDICATING DIRECTION AND A METHOD OF DETERMINING A DIRECTION
Risto Tanner, Lukopurorinne 2 A 2, 02200 Espoo, and Hannu Purhonen, Visamäki 4 A 6, 02130 Espoo, both of Finland
Filed Dec. 18, 1985, Ser. No. 810,913
Claims priority, application Finland, Dec. 19, 1984, 845043
Int. Cl.⁴ G01C 17/38
U.S. Cl. 33—356 8 Claims



1. Advice for the determination of direction, comprising:
a turnable indicator having magnetic properties mounted to a frame,
two or more sensors, the operation of which is based on the dependence of the resistance of the magnetic material on a magnetic field exerted thereon, the sensors being secured on said frame and located on a plane parallel with the turning plane of the turnable indicator,
an A/D-converter for converting the sensor values into digital form, the input of said converter being connected to the sensors,
a signal treating processor connected to the output of the A/D-converter, which signal treating processor has in its memory at least one predetermined table, on the basis of which the processor determines a preliminary direction approximation, and a predetermined correction table for correcting the preliminary direction approximation, and
a display for displaying the corrected direction data, said display being connected to the output of the signal treating processor.

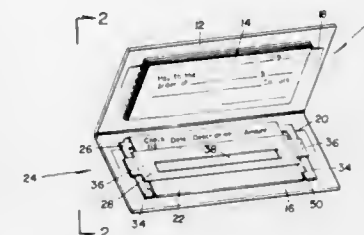
4,640,017
GOLF CLUB ADJUSTING MACHINE
Viktor Cukon, 1902 Golden Circle Dr., Escondido, Calif. 92026
Filed Sep. 8, 1986, Ser. No. 905,291
Int. Cl.⁴ G01B 5/24
U.S. Cl. 33—508 1 Claim



1. In devices for measuring and adjusting the angle of lie and loft of a golf club wherein the improvement comprises:
(a) a base having a club holding vice centrally mounted on the top surface thereof;
(b) the vice having a center fixed jaw and movable jaws on either side of the center jaw;

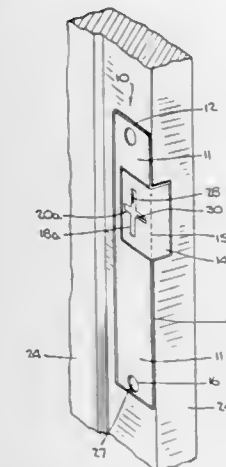
(c) the vice rotatable in azimuth on the top of the base;
(d) the faces of the center jaw of the vice vertical with respect to the base surface;
(e) the bottom surface of the vice vertically adjustable;
(f) a vertical scale, in the vertical plane of the vice, mounted to the base on each side of the vice;
(g) the vertical scale spring mounted to allow deflection backwards from the normal front position;
(h) rotatable vertical supports in a vertical plane back of the vertical scales supporting a horizontal threaded shaft;
(i) a threaded nut on the horizontal shaft driven side to side by rotation of the shaft forming a screw jack;
(j) a chain and sprocket drive from a base mounted, down-gear electrical motor driving the horizontal shaft;
(k) a manual control for disengaging the sprocket drive for manually rotating the threaded shaft;
(l) the threaded nut on the screw jack having a clevis for holding a bending wrench; and
(m) the bending wrench having a clevis on the lower end for engaging the hosel of a golf club.

4,640,018
CHECKBOOK RECORDING DEVICE
Fred Gigliotti, 42 Meadow Dr., Greensburg, Pa. 15601
Filed Jan. 24, 1986, Ser. No. 822,399
Int. Cl.⁴ G01B 3/00
U.S. Cl. 33—562 11 Claims



1. A device for automatically transferring a transaction during the issuing of a negotiable instrument, such as a check or the like, to a record keeping ledger, comprising:
a folder with front and back covers, and at least an inner pocket on the inside of said folder,
a first template having a portion insertable into said pocket of said folder and opposed legs alongside said insertable portion for extending out of said pocket when said insertable portion thereof is inserted into said pocket, and
a second template having window means and cooperating with said first template, said second template having opposed projections each for receiving one of said opposed legs and slideable thereon and over said first template, said first and second templates further arranged to receive pressure sensitive paper means therebetween so that upon said sliding of said second template over said first template, said window means of said second template comes into registry with a selected space on said pressure sensitive paper means, and where, upon the placement of said negotiable instrument directly onto said second template and in the making of said transaction on said negotiable instrument, data from said transaction is transferred through said window means onto said pressure sensitive paper means.

4,640,019
TEMPLATE FOR INSTALLATION OF ELECTRIC DOOR STRIKES
Gary Paley, Cornwall-on-Hudson, N.Y., assignor to Trine Products Corporation, Bronx, N.Y.
Continuation of Ser. No. 652,385, Sep. 20, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 856,851
Int. Cl.⁴ E05B 17/06
U.S. Cl. 33—563 5 Claims

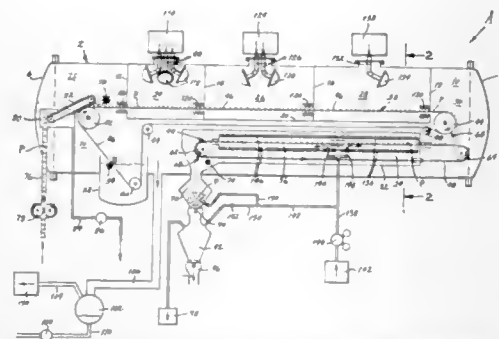


1. A template for outlining an area on a door jamb which is to be removed to facilitate the installation of an electric door strike into the door jamb, said template comprising a flexible, paperlike sheet in the shape of a front view of an electric door strike, said template further having a section for outlining, on the side of the jamb, a portion within said area to be removed which is cut deeper to accommodate installation of the electric door strike, said section protruding from the side of the template and having a fold line scored therein to facilitate the folding of the section over the jamb; a first open area in the form of a cross, disposed along the interior of said sheet, said first open area allowing a portion of the jamb to be viewed therethrough when said template is placed over the jamb, means for retaining the template to the jamb comprising an adhesive applied to the back of the template such that the adhesive will temporarily maintain the template on the jamb, such that when a select portion of the jamb has a pair of locating marks placed on the jamb at select locations the placement of the first open area over the marks aligns the template over the portion of the jamb to be removed, and second and third open areas spaced from the first open area for indicating the location for drilling screw holes in said jamb such that placing the template over the jamb indicates the portion of the jamb to be removed for installation of the electric door strike.

4,640,020
ZONED MICROWAVE DRYING APPARATUS AND PROCESS
Frederick C. Wear, and Howard F. McKinney, both of St. Louis County, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Nov. 27, 1985, Ser. No. 802,265
Int. Cl.⁴ F26B 3/347 28 Claims

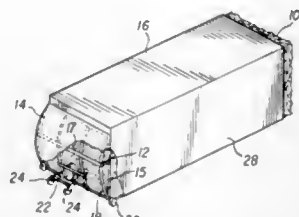
1. A drying apparatus for removing moisture from a product, said apparatus comprising: an air-tight vessel which encloses a chamber that is isolated from the surrounding atmosphere and maintained at a pressure substantially less than that of the surrounding atmosphere; conveyor means within the chamber for moving the product through the chamber; dividing means extending across the chamber for dividing the chamber into a plurality of successive microwave zones through which the conveyor means moves the product, the dividing

means further isolating each zone from the others in the sense that it prevents microwave radiation from passing from one zone to the next; loading means for introducing the moisture-laden product into the chamber without affecting the pressure within the chamber and for further depositing a product on the conveying means; discharge means for collecting the product from the conveyor means and for removing it from the chamber without affecting the pressure within the chamber; and a



separate source of microwave energy presented at and directed into each microwave zone for introducing microwave energy into that zone at a frequency capable of exciting the molecules of water which constitute the moisture of the product that is within the zone, the source of microwave energy for any zone supplying the energy at a power density which maintains the field strength in the zone less than that at which ionization will occur within the zone.

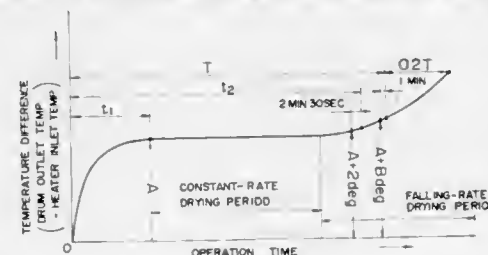
4,640,021
HAY DRYING APPARATUS
M. Roy Gullickson, P.O. Box 70, Barons, Alberta, T0L 0G0, Canada
Filed May 16, 1985, Ser. No. 734,491
Int. Cl.⁴ F26B 5/12
U.S. Cl. 34—15 16 Claims



5. A method of drying a stack of hay bales, including covering a first end, top and sides of said stack, leaving a second end uncovered, forming a chamber substantially co-extensive with said first end and exhausting air from said chamber such that air enters said stack from the second end thereof, passes through the stack and exits out of the first end.

4,640,022
CLOTHES DRYER
Masami Suzuki, Shiga; Tatsuya Hirota, Kyoto, and Masahiko Maeda, Shiga, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Feb. 19, 1985, Ser. No. 702,834
Claims priority, application Japan, Feb. 20, 1984, 59-30737
Int. Cl.⁴ F26B 25/22
U.S. Cl. 34—48 9 Claims
1. A clothes dryer of the dehumidifying type, which comprises:
a rotatable drum for receiving a wash load for drying, the drum defining an interior drying space;
means defining an air outlet, the air outlet being in communi-

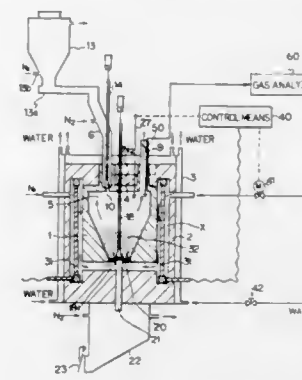
cation with the interior drying space of the drum and provided for allowing exhaust air from the interior drying space to pass therethrough;
means defining an air inlet, the air inlet being in communication with the interior drying space of the drum and provided for allowing reheated and dehumidified exhaust air to reenter the interior drying space;
a heat exchanger, the heat exchanger being in communication with the air outlet and provided for subjecting the exhaust air to heat exchange with external air entering the clothes dryer and for dehumidifying the exhaust air;
a heater being in communication with the heat exchanger and provided for heating the dehumidified exhaust air;
a fan being in communication with the air inlet and provided for supplying the reheated exhaust air to the drum drying space;
first heat-sensitive means for measuring the temperature of the exhaust air at the air outlet;
second heat-sensitive means for measuring one of the temperature of the exhaust air after the exhaust air has been



dehumidified by the heat exchanger but before the exhaust air has been reheated by the heater and the temperature of the external air after the exhaust air has been subjected to heat exchange with the external air, the second heat-sensitive means being adapted to measure the temperature of the exhaust air or the external air at a predetermined time after a heat drying operation of the clothes dryer has started and being adapted to continually measure said temperatures subsequent to said predetermined time;
memory means for storing, as a reference value A, the difference between the temperatures measured by the first and second heat-sensitive means; and
control means for terminating the heat drying operation after a preselected time has elapsed from when the difference between the temperatures continually measured by the first and second heat-sensitive means subsequent to the predetermined time at least equals the sum of reference value A and a selected value B, the value B varying in accordance with the time which has elapsed from the start of the heat drying operation.

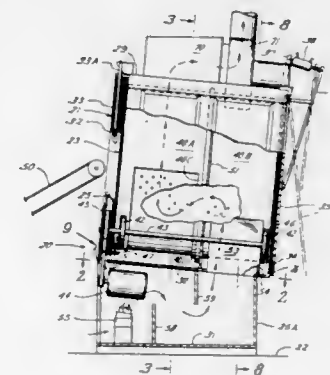
4,640,023
APPARATUS FOR MANUFACTURING POWDERED SILICON NITRIDE
Masaaki Mori; Akira Sano; Yushi Horiuchi, and Yoshihiro Okumura, all of Kariya, Japan, assignors to Director General of Agency of Industrial Science and Technology, Tokyo, Japan
Filed Mar. 11, 1986, Ser. No. 838,566
Claims priority, application Japan, Jul. 7, 1985, 60-146654; Oct. 3, 1985, 60-219129; Oct. 3, 1985, 60-219130; Oct. 3, 1985, 60-219131
Int. Cl.⁴ F26B 17/00, 3/00, 19/00; F27B 15/00
U.S. Cl. 34—57 A 14 Claims
1. A batch-operated furnace apparatus for manufacturing powdered silicon nitride comprising:
a reaction furnace having a reaction chamber, an upper portion, a bottom portion and a side portion;
a feed pipe placed at the upper portion of the reaction fur-

nace for feeding starting materials in a fine or coarse particle form;
an exhaust pipe placed at the upper portion of the reaction furnace for removing gasses from the reaction chamber;
a gas distributor plate positioned at the bottom portion of the reaction chamber for introducing nitrogen gas into the reaction chamber so as to form a fluidized bed at the bottom portion of the reaction chamber;
a heater for heating the starting materials of the fluidized bed within the reaction chamber;
a discharge port formed in the gas distributor plate;



a discharge pipe joined to the discharge port of the gas distributor plate;
a valve seat formed at the discharge port;
a discharge valve means having the valve which engages the valve seat of the discharge port; and
a guide tube provided at an upper portion of the reaction furnace;
the discharge valve means extending through the guide tube in a vertical direction in such a way that the valve of the discharge valve means selectively contacts the valve seat of the discharge port thereby to open or close the discharge port.

4,640,024
APPARATUS FOR TREATING CLOTH GOODS
William C. Files, Destrehan; Norvin L. Pellerin, New Orleans; Somsak S. Rodboon, Kenner, and Thomas M. Pearce, River Ridge, all of La., assignors to Pellerin Milnor Corporation, Kenner, La.
Continuation-in-part of Ser. No. 578,704, Feb. 9, 1984, abandoned. This application Oct. 1, 1984, Ser. No. 656,767
Int. Cl.⁴ F26B 11/04
U.S. Cl. 34—133 35 Claims



1. A tumble dryer, comprising a housing, drum mounted within the housing including a substantially cylindrical wall rotatable about a generally horizontal axis, means for so rotat-

ing the wall, means by which goods may be loaded into and unloaded from the drum, means separating the space between the housing and drum intermediate the ends of the drum to define one space portion on one side thereof and another space portion on the other side thereof, and housing including means providing an air inlet to the one space portion and an air outlet from the other space portion, said cylindrical wall having perforations about its circumference on both sides of the separating means for connecting the interior thereof with both space portions, means for circulating heated air from the inlet through the one space portion and into the drum through the perforations on one side of the separating means and out of the drum and through the perforations on the other side of the separating means and the other space portion to the outlet, so that the goods in the drum are directly contacted by the heated air, and means for causing goods in the drum to move toward the end thereof connecting with the one space portion while directing air from said one space portion into perforations in the bottom of the drum.

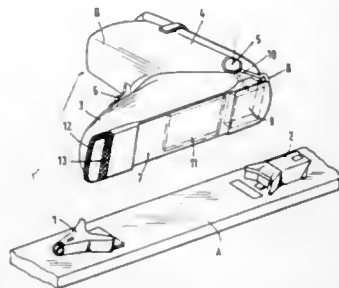
4,640,025
FIGURE EIGHT SHOE TIE SYSTEM
Joseph M. DeRenzo, P.O. Box 6833, Thousand Oaks, Calif. 91359
Filed Apr. 17, 1985, Ser. No. 724,235
Int. Cl.⁴ A43B 5/00, 11/00; A61F 13/06
U.S. Cl. 36—50 1 Claim



1. An improved tie system in combination with footwear such as shoes having a sole and an upper; wherein the tie system consists of:
fastening means affixed on opposite sides of the shoe upper adjacent the arch; and
a pair of elongated wide resilient strap elements each having one end affixed on opposite sides of the shoe upper adjacent the arch and each having a free end provided with complementary fastening means; wherein the free ends of the strap elements extend across the top of the shoe upper, wrap around the back of the users ankle, and recross the tops of the shoe upper; whereby the complementary fastening means on the free ends of the strap element engage the fastening means on the opposite sides of the shoe upper adjacent the arch, thereby producing a double wrap tie system; whereby, each of said strap elements originates and terminates on opposite sides of the shoe proximate the sole of the shoe, to encircle the users foot in a substantially completed figure eight wrapping pattern.

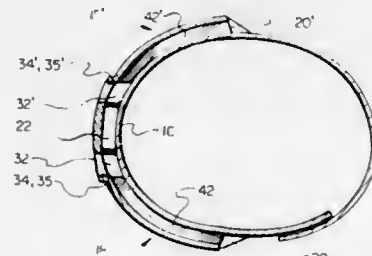
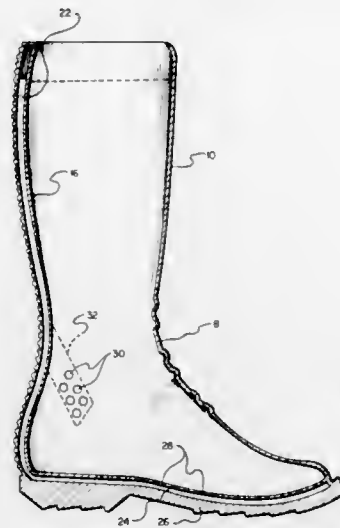
4,640,026
SKI BOOT WITH RELEASE MECHANISM
 Bernhard Kirsch, Im Litzelholz 23, 5500 Trier, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,104
 Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340051; Aug. 8, 1984, 3432065
 Int. Cl.⁴ A43B 5/04; A63C 9/08, 9/088
 U.S. Cl. 36—117 9 Claims



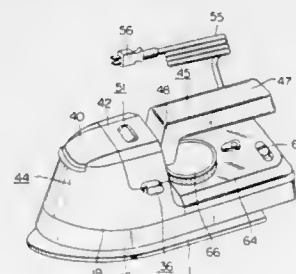
1. In a ski boot fittable in a safety ski binding of a ski and having a foot portion, an ankle portion pivotally mounted on such foot portion for swinging about a horizontal transverse axis in the heel region of the boot and locking mechanism for deterring relative movement of such foot and ankle portions, the improvement comprising a release member pivotally mounted on the boot foot portion for swinging about the same horizontal transverse axis in the heel region of the boot between a locked position in which said release member is engaged in the binding for holding the ski boot on the ski and a released position in which said release member is out of engagement with the binding so as to release the boot from the ski, and control means carried by the boot for normally maintaining said release member in its locked position but actuable by force in excess of a predetermined force being exerted on the boot to permit movement of said release member to its released position.

means and flowed through the intake duct means to the air distribution network, the air exhaust means completing a



circulation path through the boot for air which has entered the boot through the air scoop means.

4,640,028
COMBINATION STEAM IRON AND STEAMER
 Seiichi Nakada, Amagasaki; Tool Hanada, Takarazuka, and Masan Watanabe, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed May 28, 1985, Ser. No. 738,180
 Claims priority, application Japan, Jun. 1, 1984, 59-113333
 Int. Cl.⁴ D06F 75/18
 U.S. Cl. 38—77.7 6 Claims



1. An electric iron comprising: a base adapted to be heated by a heater; a steam generating chamber provided in said base; a water tank provided above said steam generating chamber; a control means for starting and stopping the feed of water from said water tank into said steam generating chamber thus allowing control of the generation of steam; a main body; and a handle; said control means including an aperture providing communication between said water tank and said steam gener-

4,640,027
MOTORCYCLE BOOT WITH POSITIVE AIR CIRCULATION
 Remo Berlese, 31036 Ospedaletto di Istrana, Treviso, Italy
 Filed Oct. 22, 1985, Ser. No. 790,108
 Int. Cl.⁴ A43B 5/14, 7/06

U.S. Cl. 36—131 15 Claims

1. In a motorcycle boot having a lower foot portion with a bottom sole, an upper leg portion and an intermediate ankle portion, the improvement comprising:

forward directed air scoop means on the exterior of the boot adapted to take in air in response to the wearer riding forward on a motorcycle;

an air distribution network at the sole for distributing intake air along the underside of the wearer's foot, intake duct means providing a passageway to deliver air taken in by the air scoop means to the air distribution network; and

an air exhaust means extending from a location in the interior of the boot above the bottom of the foot to the exterior of the boot for venting air which has entered the air scoop

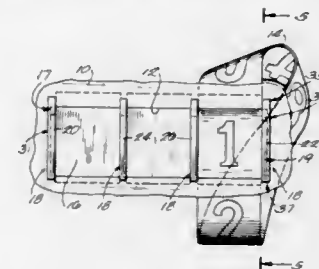
ating chamber, and a means provided along the rear wall of said water tank for opening and closing said aperture, said aperture being provided in a rear portion of the bottom of said water tank to supply water onto a water receiving surface which is provided at the front side of the center of said base.

4,640,029
MOBIUS STRIP AND DISPLAY UTILIZING THE SAME
 Richard P. Hornblad, Shorewood, and Gerald R. Sorensen, Milwaukee, both of Wis., assignors to DCI Marketing, Milwaukee, Wis.

Continuation-in-part of Ser. No. 491,741, May 5, 1983, abandoned. This application Aug. 7, 1984, Ser. No. 638,861
 Int. Cl.⁴ G09F 11/18

U.S. Cl. 40—5

9 Claims



1. A display device comprising a display panel having oppositely facing generally parallel front and back surfaces, means defining a window in said display panel, a support member having a generally planar surface arranged parallel to and opposed to said back surface of said display panel, means on said support member defining planar projection surfaces spaced along said support member and lying in a plane parallel to but spaced apart from the plane of said planar surface of said support member, said planar projection surfaces being arranged to overlap said front surface of said display panel adjacent opposite sides of said window, and said planar surface of said support member being arranged to engage said back surface of said display panel, and means on said support member defining notches between said planar projection surfaces and said planar surface of said support member sufficient to permit said support member to move relative to said display panel so that said planar projection surfaces can be selectively moved to clear said front surface of said display panel to permit removal of said support member from said display panel, and a flat continuous tape in the form of a loop and having a 180° twist therein so as to form a mobius strip, said tape having indicia on both sides thereof and being supported by said support member in said window.

4,640,030
COMBINATION ENVELOPE AND DISPLAY DEVICE
 Marcus B. Wood, and Richard K. Owen, both of 174 Woodstock Ct., Claremont, Calif. 91711

Filed Jun. 8, 1984, Ser. No. 618,565

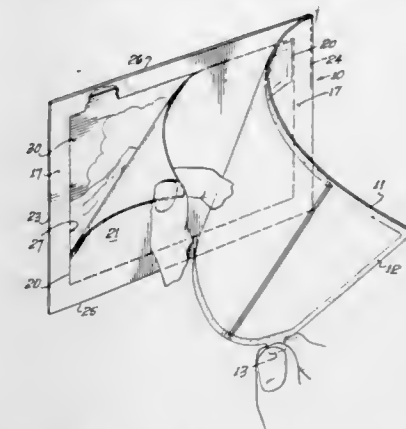
Int. Cl.⁴ G09F 1/10

U.S. Cl. 40—158 R

8 Claims

1. A combination envelope and display device comprising: a front surface, a bottom flap and a pair of side flaps folded to define and envelope enclosure having an open side, said front surface defining a window portion; a removable address panel overlying said window portion and including adhesive means for removably attaching said removable address panel to said front surface; and a support flap, hingeably attached to said front surface along said open side of said envelope enclosure; said support flap alternatively configurable to either a first position in which said envelope enclosure is sealed or a

second position to provide a support for display use of said combination envelope and display device and when said support flap includes a deposit of delayed tack adhesive located upon said support flap, such that said support flap is removably attached to said bottom and side flaps when



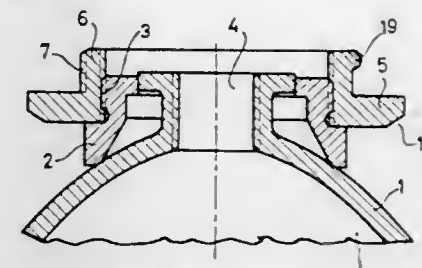
said support flap is configured in said first position and wherein said bottom flap defines a first generally U-shaped tab cutout and wherein said support flap may be configured in a third position in which a portion thereof is received beneath said first tab cutout.

4,640,031
GAS CYLINDER IDENTIFICATION DEVICE
 Cornelis Hoek, Oud Beyerland, and Jurjen L. van Ditten, Schiedam, both of Netherlands, assignors to N.V. W.A. Hoek's Machine, Schiedam, Netherlands
 Filed Nov. 10, 1983, Ser. No. 551,371
 Claims priority, application Netherlands, Nov. 12, 1982, 8204413

Int. Cl.⁴ G09F 3/00

U.S. Cl. 40—306

15 Claims

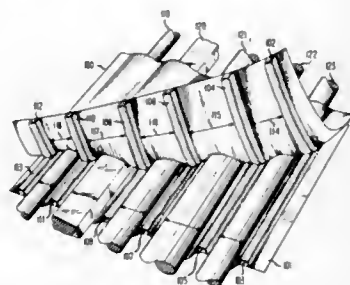


1. A combination lifting aid/code carrier device for use with cylindrical gas containers of the type having a valve neck of reduced diameter relative to the container diameter, the valve neck including an upper end, said device comprising:

a ring body; mounting means for securing said ring body on to the cylinder neck; said ring body having portions extending radially to the neck and engageable by a lifting tool for lifting a gas container secured to the ring body for transport in a suspended condition; said ring body being of reduced dimension relative to the cylinder diameter so as to be protected from lateral impact on the container; and code carrier means disposed within a recess in said ring body, a protective cap removably affixed to said ring body, said code carrier having claw elements removably securing said code carrier to said ring body, said claw elements being accessible for disengagement from said ring body only upon removal of said protective cap; said mounting means being configured and constructed for positioning said code carrier means at a predetermined

distance from said upper end when said ring body is seated on the cylinder neck.

4,640,032
WIRE AND CABLE ORGANIZING SLEEVE
 George L. Lewis, Westminster, Colo., assignor to AT&T Information Systems Inc., Holmdel, N.J.
 Filed Jul. 23, 1984, Ser. No. 633,643
 Int. Cl.⁴ G09F 3/00
 U.S. Cl. 40—316 2 Claims



1. A wire and cable organizing sleeve for individually ordering a plurality of specified wires or cables of differing gauges and lengths comprising:

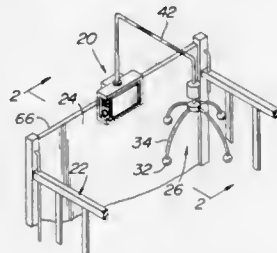
- at least a pair of flexible plastic sheets having interior facing surfaces and exterior facing surfaces for forming said sleeve;
- a plurality of a first type of elongated base strips distributed along the length of and affixed to an interior facing surface of a first sheet of each pair of said plastic sheets with said first type of elongated strips having a plurality of deformable hooks bonded to and randomly distributed over the length of and extending outwardly from said first type of elongated strips;
- a plurality of a second type of elongated base strips distributed along the length of and affixed to an interior facing surface of a second sheet of each pair of said plastic sheets with said second type of elongated strips having a resilient pile of looped filaments bonded to said second type of elongated strips and extending outwardly therefrom over substantially the entire length thereof, said hooks of said first type of elongated strips being adapted to releasable engage said looped filaments of said second type of elongated strips; and
- at least two or more spatially separated adjacent ones of said first type of elongated strips having a one to one correspondence in a facing relationship to a like number of spatially separated adjacent ones of said second type of elongated strips for cooperatively joining said first and second interior facing surfaces of at least a pair of said plastic sheets;
- wherein when said first and second type of elongated strips interposed between said first and second interior facing surfaces of said sheets are joined, the relative movement between said joined plastic sheets is inhibited;
- wherein said first and second type of elongated strips are secured to all of said first and second interior facing surfaces of said plastic sheets by an adhesive substance;
- wherein said plurality of wires or cables are secured between two spatially separated adjacent pairs of said first type of elongated strips having said correspondence to said second type of elongated strips such that there exists at least an equivalent number of spatial separations to an equivalent number of specified wires or cables.

4,640,033
ILLUMINATED CHILD'S TRAY
 Ray P. Bulger, 1900 Primrose, Carrollton, Tex. 75007
 Filed Feb. 15, 1985, Ser. No. 702,317
 Int. Cl.⁴ G09F 3/00
 U.S. Cl. 40—324 9 Claims



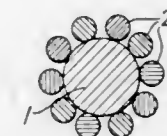
1. An illuminated tray comprising:
 a tray surface having an artistic design thereon;
 a plurality of electric lights mounted within said tray surface;
 an electrical power source located within the tray; and
 electrical circuit means connecting said power source to said electric lights, wherein the electrical circuit means includes a plurality of manual switches mounted on said tray surface, said manual switches selectively controlling the illumination of said electric lights.

4,640,034
MOBILE FOR INFANTS
 Barry Zisholtz, 353 E. 17th St., New York, N.Y. 10003
 Filed May 14, 1985, Ser. No. 733,998
 Int. Cl.⁴ G09F 27/00
 U.S. Cl. 40—455 7 Claims



1. A mobile for use on a structure holding an infant, said mobile comprising housing means including releasable mounting means for releasably mounting said mobile on said structure, plural decorative elements arranged to be moved through a predetermined path adjacent said infant, electrical motor means coupled to said elements and operative, when energized, for moving said elements through said path, audio tape player means releasably supported by said housing means and coupled to said motor means, said tape means including electrical power means, acoustic speaker means and at least one reel of magnetic tape, switch means coupled to said tape player means and said motor means for energizing said motor means from said electrical power means and for causing said tape player to operate, whereupon said voice on said tape is reproduced through said speaker means to be heard by said infant.

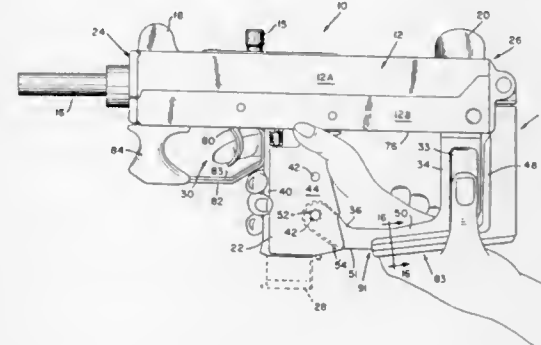
4,640,035
IDENTIFYING MEANS
 Stuart S. Kind, Harrogate; David G. Sanger, Baughurst; John D. Twibell, Ashford Hill, Nr. Newbury, and John Hargraves, Newbury, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
 Filed Aug. 18, 1982, Ser. No. 409,025
 Claims priority, application United Kingdom, Sep. 3, 1981, 8126733
 Int. Cl.⁴ G09F 3/02
 U.S. Cl. 40—625 15 Claims



1. A particulate coding material comprising particles formed as thin transverse sections of an assembly comprising preexisting filaments twisted together and having their longitudinal surfaces in adherent contact, one with another, the individual filaments being of at least two different colors and/or compositions whereby each section has the same number of areas of each color and/or composition as every other section, wherein prior to sectioning into thin transverse sections the filaments of the assembly are transversely united only by the twist and the adherent contact, and, after sectioning, the filament sections of the particles are permanently transversely united only by said adherent contact, and wherein the assembly and the resulting particles are devoid of any surrounding cover about their exteriors.

4,640,036
GRIP AND STOCK ASSEMBLY FOR FACILITATING USE OF A COMPACT GUN

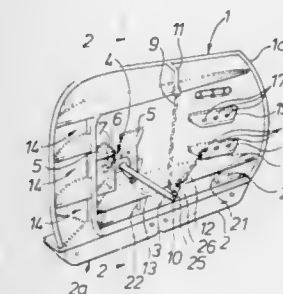
Uzi Gal, Philadelphia, Pa., assignor to UZI R & D Associates, New York, N.Y.
 Continuation of Ser. No. 448,828, Dec. 10, 1982, Pat. No. 4,513,523. This application Apr. 29, 1985, Ser. No. 728,296
 The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
 Int. Cl.⁴ F41C 23/00
 U.S. Cl. 42—72 19 Claims



1. An apparatus for use with a gun having an elongated receiver including a trigger, a forward end, a rearward end and an undersurface, said apparatus comprising:
 a pistol grip for receiving one hand of the user, said pistol grip emanating outwardly from said undersurface a predetermined distance away from the forward end of said receiver;
 a hand grip for receiving the other hand of the user, said

hand grip emanating outwardly from said undersurface a predetermined distance ahead of said pistol grip; and
 a trigger guard in association with said hand grip and said pistol grip surrounding and protecting the trigger and defining a triggering area, said triggering area being sized to simultaneously accommodate at least the trigger finger of said one hand of the user and the thumb finger of said other hand of the user.

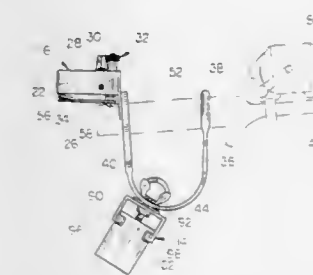
4,640,037
TRAWL DOORS
 John F. H. Ashworth, Ashlands Farm, East Drayton, Retford, Nottinghamshire DN22 0LF, United Kingdom
 Filed Mar. 1, 1983, Ser. No. 471,027
 Claims priority, application United Kingdom, Mar. 2, 1982, 8206130
 Int. Cl.⁴ A01K 73/02
 U.S. Cl. 43—9 9 Claims



1. A trawl door comprising a body having inner concave and outer convex faces and having forward and rearward ends, a rigid bar member pivotally mounted on said inner face of said body for movement about a first axis extending lengthwise of said body, mounting means between the said bar member and said inner body face for mounting said bar member at a plurality of different lateral positions to calibrate said door to different operating conditions, means connected with said bar member for attaching a trawl warp to said bar member from a trawler, means on said outer face of said door to attach backstrops which are attachable to a trawl, and a resilient connection is provided between said bar member and a point on the inner face between said bar member and the rearward end.

4,640,038
APPARATUS FOR SUPPORTING A FISHING ROD HOLDER

James T. Jershin, 3309 S. 122nd Street, Omaha, Nebr. 68144
 Continuation-in-part of Ser. No. 512,459, Jul. 11, 1983, Pat. No. 4,541,196. This application Sep. 16, 1985, Ser. No. 776,540
 Int. Cl.⁴ A01K 97/12
 U.S. Cl. 43—17 12 Claims



6. An apparatus for supporting a fishing rod holder having a base with a mounting hole therein, said apparatus comprising

an elongated channel strip including a top wall and a pair of spaced-apart depending side walls, said top wall of the channel strip having a plurality of longitudinally spaced-apart holes therein, said fishing rod holder being positioned with the mounting hole thereof in registered relation with a selected one of said top wall holes, first fastener means insertable through said registered holes for securing said fishing holder on said channel strip, flange means extended generally horizontally from said side walls in spaced relation from said top wall, a ground stake having an elongated upper portion having top and bottom ends, a support base secured to the top end of said upper portion and having a mounting hole therein, an elongated generally cylindrical medial portion extended downwardly from the bottom end of said upper portion, and a lower portion of reduced width relative to said medial portion secured to and extending downwardly from said medial portion for insertion into the ground, said ground stake being positionable with the support base engaged against the undersides of said flange means and with the ground stake mounting hole in registered relation with a selected one of said top wall holes, and second fastener means insertable through said registered holes of said ground stake and channel strip top wall for securing said ground stake on said channel strip whereby a plurality of fishing rod holders may be supported on a single ground stake.

4,640,039

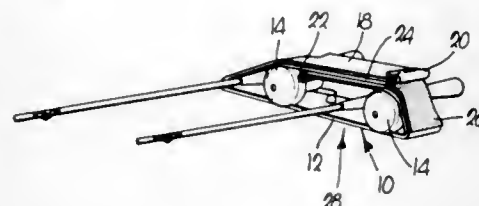
APPARATUS FOR RETAINING FISHING RODS IN A BOAT

John C. O'Neill, P.O. Box 4095, Overland Park, Kans. 66204
Filed Jul. 8, 1985, Ser. No. 752,632

Int. Cl.⁴ A01K 97/08

U.S. Cl. 43-21.2

1 Claim



1. In combination with a boat having a generally rigid supporting surface, apparatus for holding an article with respect to said surface comprising:

- an elongated, flexible belt adapted to encircle the article to be held, said belt having a pair of opposed faces and a pair of terminal ends, one of said faces having a stretch thereof in overlying engagement with the supporting surface of the boat, said stretch being essentially parallel to said surface;
 - means for attaching the belt to said supporting surface, said means being located adjacent each end of said stretch whereby to retain the stretch in said overlying, parallel relationship to said supporting surface;
 - a first fastening tape secured to said one face of the belt between one terminal end of the belt and the proximal means for attaching the belt to the surface; and
 - a second fastening tape secured to the other face of the belt between the other terminal end of the belt and the proximal means for attaching the belt to the surface, said tapes being matingly engageable;
- said belt being swingable about said spaced-apart attaching means whereby articles to be held with respect to said supporting surface may be placed at said stretch of the belt and the first tape placed over the articles to be held and said second tape brought into overlying engagement with

the first tape to matingly engage the tapes over said stretch and said articles to thereby firmly hold said articles in place with respect to the supporting surface of the boat.

4,640,040

CYCLIC FISHING LURE CONTAINING A SLIDABLE FISHHOOK ASSEMBLY

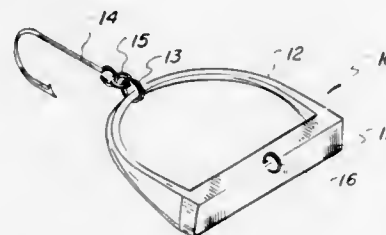
Dale C. Smith, Salt Lake City, Utah, assignor to Dolly Varden Fishing Lures, Salt Lake City, Utah

Filed Jan. 13, 1986, Ser. No. 817,994

Int. Cl.⁴ A01K 85/00

U.S. Cl. 43-42

10 Claims



1. A cyclic fishing lure having a slidable hooking mechanism consisting of a front towbar having opposing ends, said towbar containing means centrally located relative to said opposing ends for attachment to a fishing line, said towbar being integral with a continuous track interconnecting the opposing ends of said towbar, said track depending backwardly and inwardly from said towbar thereby forming a rigid, uninterrupted cyclic structure, ring means encircling said track and slidable thereon and hooking means attached to said ring means.

4,640,041

SPINNER BAIT WITH ARMS OF DIFFERENT DIAMETER

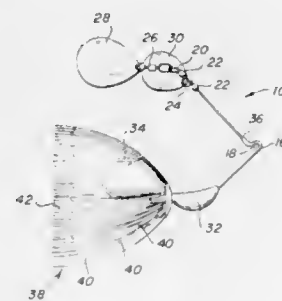
Lonnie D. Stanley, Huntington, Tex., assignor to Stanley Jigs, Inc., Huntington, Tex.

Filed Jun. 12, 1985, Ser. No. 744,144

Int. Cl.⁴ A01K 85/00

U.S. Cl. 43-42.13

8 Claims



1. An artificial fishing lure comprising a unitary wire body having different diameters at opposite ends thereof and formed in the shape of a V so as to have first and second arms integrally joined at an apex, said first arm having at least one spinner blade attached near the distal end thereof, a hook connected to the distal end of said second arm, a line attaching portion at the apex, the wire of said second arm having a significantly greater diameter than the wire of said first arm, said line attaching portion comprising a bent extension of said second arm and being of the same diameter as said second arm, said unitary wire body having a continuous and smooth taper from said line attaching portion to said first arm whereby said spinner blade is capable of generating vibration in said fishing

lure without significant dampening of said vibration by said first arm.

4,640,042

FISHING LURE

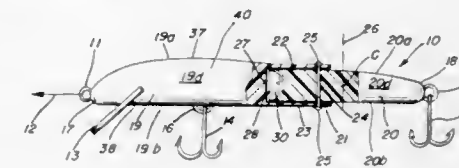
Lacy A. Rowe, 1851 Skycoe Dr., Salem, Va. 24153

Continuation-in-part of Ser. No. 596,381, Apr. 3, 1984, Pat. No. 4,573,282. This application Feb. 26, 1986, Ser. No. 832,894

Int. Cl.⁴ A01K 85/00

U.S. Cl. 43-42.15

13 Claims



1. An articulated fishing lure for simulating an injured minnow when pulled through water comprising a body having a top surface, a bottom surface, opposite side surfaces and front and rear ends, means at said front end for attaching a line and means at said rear end attaching a fishhook thereto, said body being symmetrical about a longitudinal plane extending through said top and bottom surfaces and comprising a leading body section, a trailing body section and hinge means pivotally connecting said leading and trailing body sections for swinging motion relative to each other, each of said leading and trailing body sections having front and rear ends, top and bottom surfaces and opposite side surfaces, said top and bottom surfaces and said opposite side surfaces of said leading and trailing body sections being part of the corresponding surfaces of said body, said hinge means comprising upper and lower bracket arms affixed to and extending rearwardly from the rear end of said leading body section and pivot means secured to said upper and lower bracket arms rotatably mounting said trailing body section to swing freely relative to said leading body section, said upper bracket arm overlying a portion of the upper surface of the trailing body section adjacent the front end thereof and said lower bracket arm underlying a portion of the bottom surface of said trailing body section, said trailing body section having a cupped cavity extending inwardly from the front end thereof and terminating short of the centroid of said trailing body section, and said pivot means being connected to said trailing body section rearward of said cupped cavity and forward of the centroid of said trailing body section.

4,640,043

EXPLOSIVE RODENT TRAP

Perry J. Sigler, 58740 Dogwood La., St. Helens, Oreg. 97051

Filed Jun. 14, 1985, Ser. No. 744,752

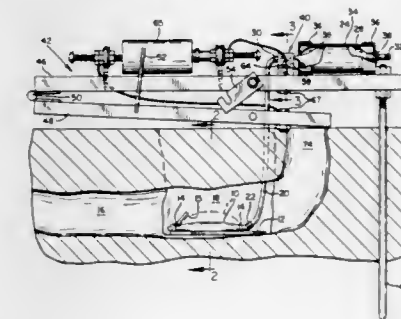
Int. Cl.⁴ A01M 27/00

U.S. Cl. 43-84

11 Claims

1. A device for exterminating burrowing rodents comprising:
- (a) container means for storing a pressurized gas including an opening through which said gas can be discharged;
 - (b) valve means for filling said container means with a pressurized gas;
 - (c) valve means for preventing the release of said gas through said opening;
 - (d) an elastic sack which is interconnected fluidly with said opening on said container means and is capable of being placed into or immediately adjacent to a burrow which was made by a rodent;
 - (e) means for explosively puncturing said sack when it is

expanded to a predetermined size upon being filled with said pressurized gas; and



(f) trigger means for opening said valve means upon displacement of dirt caused by movement of said rodent in said burrow.

4,640,044

HOOD OR COVER USED TO ERADICATE FIRE ANTS

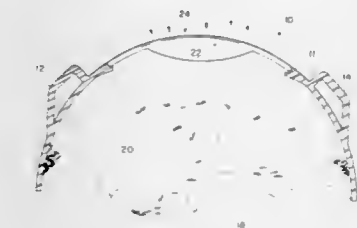
James W. Varnon, Rte. 1, Box 181, Beeville, Tex. 78102

Filed Oct. 2, 1985, Ser. No. 755,856

Int. Cl.⁴ A01M 1/20

U.S. Cl. 43-132.1

5 Claims



1. An ant hood for destroying ants in a mound, comprising: a body having an open end, defining an inner cavity, said open end having a lower edge; means attached to said body for intensifying solar radiation, thereby raising the temperature within said inner cavity; handle means attached to said body; and cutting means attached to said lower edge for facilitating insertion of said lower edge into the ground surrounding said mound.

4,640,045

FLOWER SADDLE FOR TOMBSTONES

Richard L. Nesbitt, 501 West Jensen, and Ricky R. Sievers, Rte. 2, both of Newell, Iowa 50568

Filed Feb. 25, 1985, Ser. No. 704,964

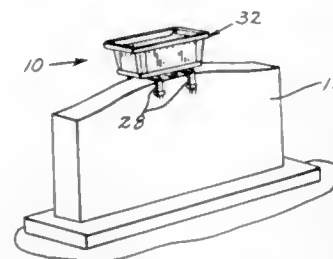
Int. Cl.⁴ A01G 9/02

U.S. Cl. 47-66

6 Claims

1. Apparatus comprising:
- a grave marker having a lower portion adapted to be disposed in the ground and an upper portion extending above the ground;
 - a saddle disposed on top of said grave marker;
 - clamp means attached to the saddle for selectively securing said saddle to a top portion of said grave marker said clamp means comprising a first assembly including a first transverse frame member, a first pair of downwardly extending legs attached to each end of said first transverse frame member and having first abutment members attached to each lower end of said first downwardly extending legs, a first pair of telescoping members extending

from each end respectively of said first transverse frame member and extending transversely with respect to said first transverse member, a tubular internally threaded member rigidly attached at one end thereof to a central portion of said first transverse member and being disposed parallel to said first pair of telescoping members, a second assembly including a second transverse frame member, a second pair of downwardly extending legs attached to each end of said second transverse frame member said having second abutment members attached to each lower end of said second pair of downwardly extending legs, a second pair of telescoping members extending from each end respectively of said second transverse frame member and extending transversely with respect to said second transverse member, said first and second pairs of telescoping members being in a telescoping relationship with each



other and threaded fastener means including a threaded shaft slideably disposed through a central portion of said second transverse member and having one end extending into threaded engagement with said tubular member for moving said second assembly with respect to said first assembly whereby rotation of said threaded shaft in one direction causes said first and second abutment members to move toward each other to tighten against the grave marker with equal force and rotation of said threaded shaft in the other direction permits the first and second abutment members to move apart; means for holding decorative objects; and means for attaching said decorative object holding means to said saddle whereby decorative objects can be displayed on a grave marker and held up out of the way from lawn movers or the like.

4,640,046

REVOLVING DOOR COLLAPSING MECHANISM

Calvin R. Rushford, Reed City, Mich., assignor to Indal, Inc., Reed City, Mich.

Filed Jun. 18, 1985, Ser. No. 746,236

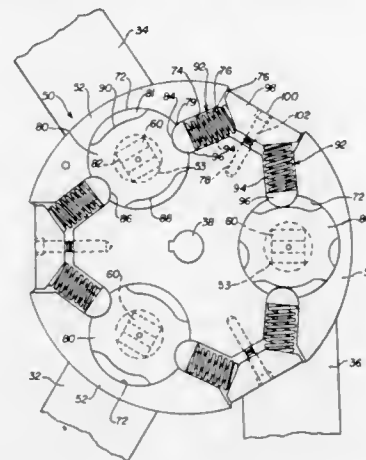
Int. Cl.⁴ E05D 15/02

U.S. Cl. 49-44

15 Claims

1. In a collapsible revolving door comprising: a central shaft; upper and lower housing means mounted respectively to upper and lower portions of the central shaft and adapted to be mounted to the ceiling and floor respectively of a building opening; a plurality of door leaves; means for mounting each of the door leaves to the upper and lower housing means for rotation therewith about a central vertical axis of the central shaft under normal conditions, but for rotation about a second vertical axis radially offset from the central axis when the door leaves are subject to panic conditions; the improvement in the door leaves mounting means comprising: a cam means mounted for rotation about said second axis within at least one of said upper and lower housing means and nonrotatably connected to each of said door leaves; said cam means having a substantially vertical peripheral

surface and at least one retaining indentation in the peripheral surface; at least one horizontal bore for each of said cam means in said one housing means in registry with the peripheral surface of said cam means; at least one resilient detent means mounted in each of said horizontal bores for engaging said at least one indentation



to releasably maintain said cam rotationally fixed in said one housing when said one leaf is radially oriented with respect to said central axis; and a block movably mounted in said one housing means in abutting relationship with each of said detent means; and threaded means for adjustably securing said blocks in said one housing to adjust the tension in said resilient detent means.

4,640,047

TWO-WAY PEDESTRIAN ACCESS CONTROL SYSTEM

Marcel Simonin, Bretigny sur Orge; Bernard Garbe, Janville sur Julne, and Alain Carron, Saint Germain les Corbeil, all of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Paris, France

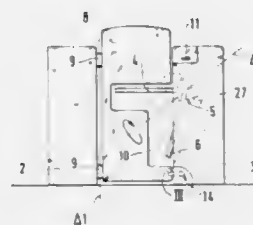
Filed Apr. 24, 1986, Ser. No. 855,256

Claims priority, application France, Apr. 26, 1985, 85 06405

Int. Cl.⁴ E06B 11/08

U.S. Cl. 49-47

1 Claim



1. A two-way pedestrian access control system comprising a passageway laterally bounded by two pillars, said passageway being normally barred by a barrier locked in closed position which can be opened upon validation by a system for recognizing individuals or passes, said barrier comprising a turnstile mounted to one of the pillars and consisting of three arms assembled in conformance with the edges of a regular trihedron and having an axis of rotation confounded with the ternary axis of symmetry of the said turnstile, said axis of rotation being so directed that the turnstile's rotation by $\frac{2}{3}\pi$ about said axis always places an arm in horizontal position, barring the passageway, wherein said barrier further comprises a swinging door, hinged about a vertical axis lying in the vertical plane

containing the said rotational axis of the turnstile, said door or gate having a cutout enabling passage therethrough of the arms of the turnstile and being high enough to prevent from passing an individual of average size.

4,640,048

WINDOW SASH ASSEMBLY

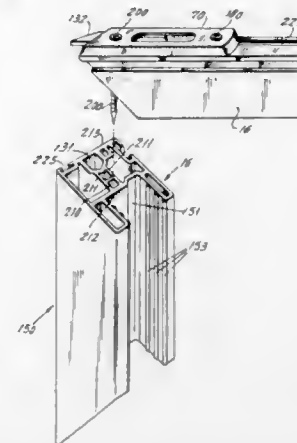
Kurt W. Winner, 22 Fairmount Ave., Mahwah, N.J. 07430, and Ignazio Cangialosi, 5 Rock Rd., Hawthorne, N.J. 07506

Filed Aug. 6, 1984, Ser. No. 638,129

Int. Cl.⁴ E05D 15/22

U.S. Cl. 49-181

9 Claims



1. A window sash comprising at least one pane and having an upper rail, a lower rail and a pair of vertical stiles; each of said rails and stiles being an extruded unit having a plurality of parallel walls spaced from each other in each rail and stile; each of the rails and stiles being mitered to form a miter joint; each of the rails and stiles comprising a generally channel-shaped member having an outer wall normal to the plane of the sash and a pair of the aforementioned parallel walls extending normal to the outer wall;

a further plurality of additional wall members in each of the rails and each of the stiles extending normal to the first-mentioned outer walls and parallel to the first mentioned additional walls secured thereto, said rails and stiles forming a pane support; an additional spacing and support member at each end of each stile and additional horizontal reinforcing members parallel to the first-mentioned wall of each of the rails; and a screw at each of the mitered corners passing from the outer surface of each rail through the rail and through the additional horizontal walls and into the end of the adjacent stile; said screw forming its own thread as it penetrates the outer wall of the rail, the spacing and support members within the rail and the boss within the stile; the screw being supported at a plurality of locations coinciding with the walls of the rails perpendicular by the screw along its length in the rail and being supported along at least part of its length in the stile whereby the miter joint integrity is maintained against distorting forces imposed on the sash.

4,640,049

SAFETY DEVICES FOR OVERHEAD GARAGE DOOR SPRINGS

Joseph L. Duncan, 224 Laurie Dr., Pittsburgh, Pa. 15235

Filed Oct. 29, 1985, Ser. No. 792,443

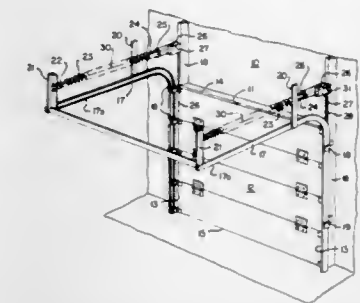
Int. Cl.⁴ E05D 15/22

U.S. Cl. 49-197

6 Claims

1. A garage or like door structure having a door opening, a door movable between a closed position and an open position, guide tracks adjacent opposite sides of the door opening, said guide tracks having a vertical section parallel to the sides of the door opening and a horizontal section transverse thereto above

the top of the door opening, rollers on the sides of the door moving in said guide tracks to carry the door from a vertical closure position to a horizontal open position above the level of the door opening, a counterbalance spring assembly for said door including a coil spring mounted for movement in tension parallel to and adjacent said horizontal guide rail section, anchor means in the garage structure adjacent the horizontal section of the guide tracks and spaced from the door opening, attaching means at each end of the coil spring, one attachment means at one end of the spring engaging said anchor means, a fixed pulley assembly including guide means on the garage structure above the door opening and in general alignment with the anchor means on a line generally parallel to the hori-



zontal section of the guide rails, movable pulley assembly including guide means connected to the attachment means at the opposite end of the coil spring, lift cable means connecting said movable pulley assembly to the garage door over the fixed pulley, a safety cable extending through the open center of the coil spring and through the guide means of each of the fixed pulley assembly and movable pulley assembly, said safety cable aligned with the fixed pulley and anchor means, said safety cable being anchored at each end to said garage structure and adjusting means at one end of said safety cable for continuously placing the cable under sufficient tension that it will contain each of the coil spring, the fixed pulley assembly and the movable pulley assembly against substantial horizontal and vertical movement in the event of spring breakage.

4,640,050

AUTOMATIC SLIDING DOOR SYSTEM FOR VEHICLES

Jun Yamagishi, and Hiromitsu Nishikawa, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

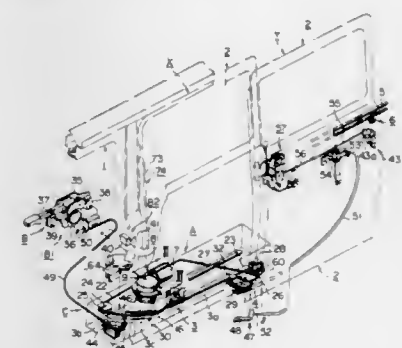
Filed Jul. 25, 1985, Ser. No. 759,088

Claims priority, application Japan, Jul. 26, 1984, 59-154105; Aug. 9, 1984, 59-121406[U]

Int. Cl.⁴ E05F 15/00

U.S. Cl. 49-280

12 Claims



1. An automatic sliding door system for vehicles which consists of:

- (A) a sliding door driving mechanism comprising: guide means affixed to a body of a vehicle so as to guide wires along a path for opening and closing movements of a sliding door, one ends of said wires being secured to the sliding door;
- a winding drum mounted to the body to be rotatable in either direction to send the wires along the guide means, in which another ends of said wires being wound round and outer circumference of said drum and secured thereto; and
- a driving motor mounted to the body and operatively connected to said winding drum through a speed reducer and an electromagnetic clutch;
- (B) an operating device mounted on the body for operating opening and closing movements of the sliding door;
- (C) a door lock releasing device comprising two parts, one of which is mounted on the body and connected to the operating device and another one of which is mounted on the sliding door and connected to a door lock of the sliding door, also comprising coupling means for connecting said two parts mechanically or electrically when the door is closed, and by operation of the operating device said door lock releasing device being actuated to release engagement of the door lock prior to starting operation of the sliding door driving mechanism; and
- (D) a control device electrically connected with the driving motor, the electromagnetic clutch and the operating device, and operating to energize the driving motor and the clutch so that the wires are sent in a direction to open the sliding door when the operating device is operated for opening, and also the wires are sent in another direction to close the sliding door when the operating device is operated for closing.

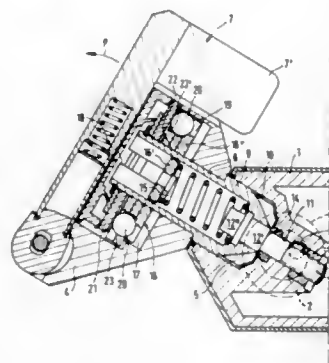
4,640,051
ADJUSTMENT MECHANISM FOR TILTABLE GLAZED SASHES

Helmut Maier, Leinfelden-Echterdingen; Ralf Storandt, Leonberg; Heinz Guenther, deceased, late of Leonberg; by Renate Guenther, legal representative, Stuttgart, and by Sabine Guenther, legal representative, Neuenburg, all of Fed. Rep. of Germany, assignors to Geze GmbH, Fed. Rep. of Germany
Filed Jan. 11, 1985, Ser. No. 690,638

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1984, 3400778

Int. Cl.⁴ E05F 11/24
U.S. Cl. 49—348

8 Claims



1. An adjustment mechanism for tiltable glazed sashes of windows and doors and the like, the adjustment mechanism comprising a housing (1) mountable on a frame part associated with a glazed sash, a spindle (2) arranged in said housing, a slider arranged on said spindle, said slider being moveably disposed on said spindle and displaceable upon rotation of said spindle and being operable to be coupled to the glazed sash to tilt the same, a first gear wheel (6) rotatably fixedly connected with said spindle at an end thereof, a second gear wheel (5) in

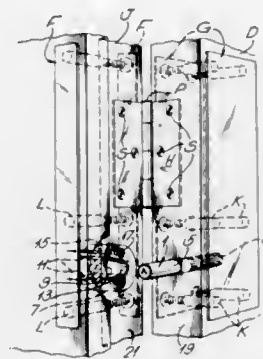
mesh with said first gear wheel and rotatably journaled in said housing, a knob-like rotatable handle (4) for rotating said spindle, said handle being journaled on a stub-like axle element (8) which is rotatably fixedly connected with said second gear wheel, said axle element being constructed as a hollow sleeve, there being a coil spring (15) operable as a latch spring arranged inside said sleeve, a plate part (16) which is axially displaceable and non-rotatably arranged relative to said sleeve, said plate part having a first portion (16') surrounding the sleeve in ring-like manner and being connected via web parts which extend through axial slots (18) provided in the sleeve with a second portion (16'') of the plate part which is disposed inside the sleeve and which forms a movable abutment for the spring, said spring being braced against an annular step in said sleeve and biased against said movable abutment, latch elements (19) arranged on the first portion (16') of said plate part, and counter elements (20) on said knob-like handle (4) and a part (22) connected therewith, and a latch mechanism (15 to 23) cooperating with said part (22) and operating as an overload coupling arranged inside said knob-like handle, said stub-like axle element being drivingly connected with said knob-like handle by said latch mechanism, whereby rotation of said handle causes rotation of said spindle and displacement of said slider.

4,640,052
HINGE BOLT SET
Alan R. Zebedee, New Milton, and Derek R. Hutchins, Christchurch, both of England, assignors to Nouveaux Security Products Limited, Southampton, England
Filed Feb. 24, 1986, Ser. No. 832,842

Claims priority, application United Kingdom, Feb. 27, 1985, 8505077

Int. Cl.⁴ E05D 11/10
U.S. Cl. 49—383

9 Claims



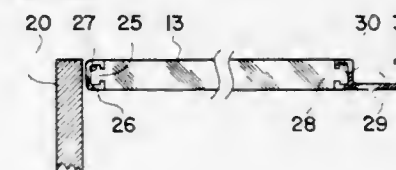
1. A hinge bolt set comprising a rod of circular cross-section adapted to be inserted into an aperture in an edge face of a door to which face hinges are normally connected and a keep adapted to be inserted into an aperture in the jamb of a frame of the door, said keep having a cavity therein extending from a side edge thereof to a central portion thereof so as to permit the rod, during use, to move into and out of said cavity, the inner end of said cavity terminating in an arcuate surface complementary with that of said rod and wherein one of the rod and keep is formed of a synthetic resinous material, and the other of said parts is formed of metal.

4,640,053
EDGE REINFORCED CABINET DOOR WITH BUILT-IN DOOR HARDWARES

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Filed Aug. 12, 1985, Ser. No. 764,888

Int. Cl.⁴ E06B 3/00
U.S. Cl. 49—501

7 Claims



1. An edge reinforced cabinet door comprising in combination;
- (a) a cabinet door;
- (b) a first elongated reinforcing member having lengthwise disposed retaining groove with a narrowed-down opening, said first elongated reinforcing member fitted along a first edge of said cabinet door by a sliding method and secured nonslidably to said first edge wherein said first edge includes a lengthwise disposed retaining rail with a cross section substantially matched to the cross section of said retaining groove included in said first elongated reinforcing member;
- (c) a second elongated reinforcing member having a lengthwise disposed retaining groove with a narrowed-down opening, said second elongated reinforcing member fitted along a second edge of said cabinet door parallel and opposite to said first edge by a sliding method and secured nonslidably to said second edge wherein said second edge includes a lengthwise disposed retaining rail with a cross section substantially matched to the cross section of said retaining groove included in said second elongated reinforcing member, said second elongated reinforcing member further including a handle groove with an opening open through a plane substantially including one side surface of said cabinet door;
- (d) a first hole disposed in one end of said cabinet door substantially perpendicular to said first and second edges substantially through said cabinet door material adjacent to one reinforced corner in the cross section of said edge reinforced cabinet door in a direction substantially parallel to the length of said first elongated reinforcing member wherein said one reinforced corner includes said first elongated reinforcing member and further includes substantially said one side surface of said cabinet door; and
- (e) a second hole disposed in the other end of said cabinet door opposite and parallel to said one end substantially through said cabinet door material substantially in line with said first hole and adjacent to said one reinforced corner in the cross section of said edge reinforced cabinet door.

4,640,054
SASHES AND MATCHING FRAMES FOR WINDOWS AND GLASS DOORS

Kurt Breimeier, Wunstorf; Heinrich Eickhoff, Neustadt; Hans-Walter Erdmann, Garbsen, and Hans D. Kühnel, Minden, all of Fed. Rep. of Germany, assignors to Fulgurit GmbH & Co., Kommanditgesellschaft, Wunstorf, Fed. Rep. of Germany
Filed Jan. 22, 1985, Ser. No. 692,966

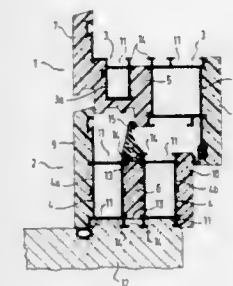
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402226

Int. Cl.⁴ E06B 1/04
U.S. Cl. 49—504

10 Claims

1. A composite shaped section for sashes or jambs for windows or glazed doors and comprising in its installed state:
- (a) first and second aluminum hollow shaped sections each

of which has an outer vertical surface, an inner vertical surface, a top horizontal surface and a bottom horizontal surface;



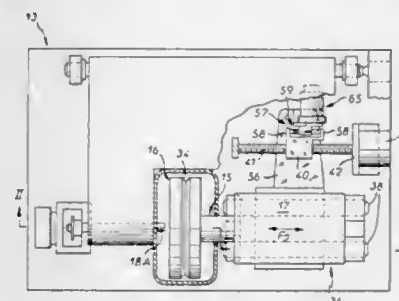
- (b) each of said aluminum hollow shaped sections having a given plastic coating material covering said outer surfaces; and
- (c) a thermal separation between said inner surfaces consisting of said given plastic coating material.

4,640,055
GRINDING MACHINE FOR GUIDED OR NON-GUIDED BEVELING OR GROOVING OF AN OPHTHALMIC LENS
Suzan Badin, Paris; Jean-Francois Moulin, Ris-Orangis; Luc Delattre, Pont Ste-Maxence, and Patrice Renan, Paris, all of France, assignors to Essilor International Cie Generale d'Optique, Cretel, France
Filed Sep. 6, 1985, Ser. No. 773,056

Claims priority, application France, Sep. 11, 1984, 84 13906
Int. Cl.⁴ B24B 9/08

U.S. Cl. 51—101 LG

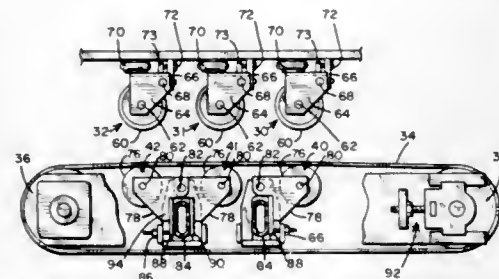
8 Claims



1. Machine for beveling or grooving an ophthalmic lens, said machine comprising, at a machining station, a frame, a first support shaft, means mounting said first support shaft on said frame for rotation, at least one beveling or grooving grinding tool on said first support shaft, a motor forming means for driving said first support shaft, means mounting said second support shaft on said frame parallel to said first support shaft and for rotation, said second support shaft having means for axially gripping an ophthalmic lens for edgewise contact of such lens with said beveling or grooving grinding tool, at least one of said support shafts being a mobile support shaft, and carried on a support member for movement relative to said frame and parallel to the axis of said mobile support shaft, displacement means for procuring guided displacement of said mobile support shaft parallel to its axis comprising a drive member, selectively engageable coupling means arranged between said mobile support shaft and said displacement means, said coupling means comprising two spaced flanges disposed transversely relative to the axis of said mobile support shaft and fastened to a selected one of said support and drive members, and abutment means disposed between said flanges carried by the other of said drive and support members, said abutment means being movable gener-

ally perpendicularly to said flanges between a disengaged position in which said abutment means are out of engagement with said flanges for uncoupling said mobile support shaft from said displacement means and an engaged position in which said abutment means are braced between said flanges for coupling said mobile support shaft with said displacement means.

4,640,056
VERTICALLY SELF-CENTERING FEED ASSEMBLY
 Lee E. Stump, Brooklyn Park, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.
 Continuation of Ser. No. 507,353, Jun. 24, 1983, abandoned.
 This application Apr. 11, 1985, Ser. No. 722,117
 Int. Cl.⁴ B24B 21/04
 U.S. Cl. 51—138 5 Claims

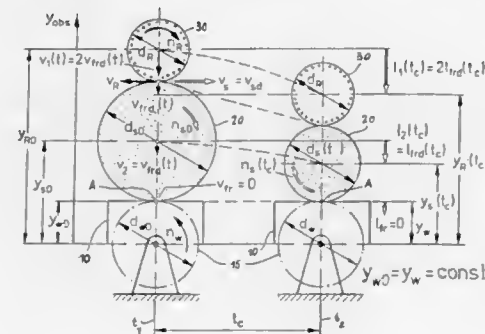


1. In a work station having upper and lower rigid frame members spaced apart from one another to define a path for incoming workpieces such that the incoming workpieces may pass along a longitudinal axis extending therebetween, a feed-works assembly comprising:

- (a) at least two pairs of opposed pinch wheel assemblies being disposed along the longitudinal path of said incoming workpieces with one member of each pair of pinch wheel assemblies being disposed above said longitudinal path and with the other member of the pair being disposed beneath said path so as to define a workpiece support plane generally midway between the opposed members of each pair, and with each member of each pair comprising a plurality of pivotally mounted floating support wheels, each support wheel adapted for rotation about a wheel rotation axis and being arcuately rockable about a rocking axis to oscillate generally arcuately about said rocking axis and inwardly toward the surface of said incoming workpiece and being coupled to each of said upper and lower frame members in generally opposed relationship;
- (b) air bladder means mounted on said frame members for exerting a controlled resilient biasing force upon each floating support wheel while said support wheel is in engagement with said incoming workpieces;
- (c) a drive conveyor coupled to said lower frame member and comprising a driven roller, an adjustable idler roller for varying the tension of an endless belt trained thereover, and an endless conveyor belt being trained over said driven roller and idler roller and having an upper flight portion passing over each of the pinch wheel assemblies disposed beneath said longitudinal path; and
- (d) a transversely extending support shaft disposed coincidentally with and defining each of said rocking axes and spaced laterally from each said wheel rotation axis for accommodating independent rockable arcuate motion of the wheel rotation axis of each of said support wheels, so as to provide resilient opposed upper and lower rotatable supports for workpieces being carried on said conveyor belt while moving therealong with the center planes of said workpieces being movably disposed along a relatively constant horizontal center plane in response to opposed forces being exerted upon said workpieces by said support wheels, and with said support wheels being adapted to be deflected in a direction toward and away from the horizontal plane of said moving workpiece upon

encountering and engaging irregularities in the surfaces and thicknesses of said workpieces adjacent to said support wheels without affecting the vertical disposition of said workpieces; the support wheels of two adjacent ones of said pinch wheel assemblies disposed beneath said path being mounted with respect to the same one of said transverse support shafts and spaced apart from said one transverse support shaft in opposite longitudinal directions.

4,640,057
DRESSING-GRINDING PROCESS AND ELECTRONICALLY CONTROLLED GRINDING MACHINE
 Ernst Salje, Steintorwall 12, 3300 Braunschweig, Fed. Rep. of Germany
 PCT No. PCT/EP83/00145, § 371 Date Jan. 26, 1984, § 102(e) Date Jan. 26, 1984, PCT Pub. No. WO83/04322, PCT Pub. Date Dec. 8, 1983
 PCT Filed Jun. 6, 1983, Ser. No. 589,096
 Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221397
 Int. Cl.⁴ B24B 53/00
 U.S. Cl. 51—165.87 17 Claims



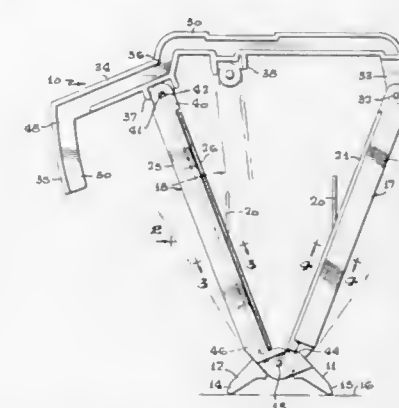
10. A grinding machine for grinding a workpiece to a predetermined profile comprising:

- a frame;
- a grinding wheel mounted on a grinding wheel carrier supported by said frame and movable with respect thereto;
- a dressing roller mounted on a dressing roller carrier supported by said frame and movable with respect thereto;
- controllable drive motor means for rotating said grinding wheel and said dressing roller;
- control means for controlling said motor;
- means for measuring the dimension of the workpiece parallel to the radius of said grinding wheel;
- means for determining the height of the axis of the grinding wheel above said workpiece;
- logic means for determining the diameter of the grinding wheel from dimension of the workpiece, the position of the grinding wheel, and from the computed diameter of the dressing roller for controlling the movement of the said dressing roller toward said grinding wheel.

4,640,058
PORTABLE BLADE SHARPENER
 Louis S. Glesser, P.O. Box 800, Golden, Colo. 80401
 Filed Sep. 30, 1985, Ser. No. 781,722
 Int. Cl.⁴ B24B 3/54
 U.S. Cl. 51—211 R 1 Claim

1. A blade sharpening apparatus comprising:
 - a base;
 - a pair of elongated sharpening elements carried on said base pivotally connected to each other at adjacent ends and free at their opposite ends;
 - an elongated handle means having one end pivotally at-

tached to said free end of a selected one of said sharpening elements and having a second free end; detachable means on said handle means between said ends thereof cooperating between said handle means and the free end of said other sharpening element for releasable securement therebetween whereby said sharpening elements are disposed between an operable position and a storage position such that said sharpening elements are adjacent to one another in said storage position and separated in a V-shaped configuration in said operable position;

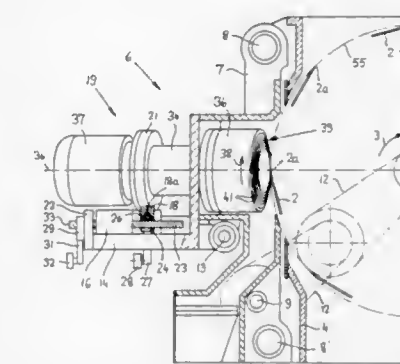


said handle means and said releasable securement means define a detachable retainer;

said base having a pair of legs for supporting the apparatus when in said operable position, each leg integral with and extending from a respective sharpening element, said legs joined together by a pivot constituting said pivotal connection

said second free end of said handle means having a releasable securing means cooperating with at least one of said legs to secure said sharpening elements adjacent each other when in said storage position.

4,640,059
APPARATUS FOR GRINDING THE KNIVES IN TOBACCO CUTTING MACHINES
 Werner Komossa, Börsen; Nikolaus Häusler, Wohltorf, and Uwe Elsner, Dassendorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany
 Filed Mar. 5, 1985, Ser. No. 708,266
 Claims priority, application Fed. Rep. of Germany, Mar. 14, 1984, 3409266
 Int. Cl.⁴ B24B 19/00, 53/07
 U.S. Cl. 51—5 D 20 Claims



1. In a machine for cutting tobacco and like fibrous materials, a rotary knife holder; at least one knife having a cutting

edge and being mounted on said holder; first drive means for rotating said holder about a first axis whereby said cutting edge orbits along a circular first path; a mobile support; guide means defining for said support a second path for movement in parallelism with said axis; a grinding wheel mounted on said support for rotation about a second axis, said wheel having a grinding surface with annular undulations concentrically surrounding said second axis and said surface being adjacent to said first path during movement of said support along said second path; second drive means for reciprocating said support along said second path in first and second directions between first and second end positions and for moving said support at a speed which is a function of the rotational speed of said holder, at least while said support moves in said first direction, said support assuming said second end position upon completion of movement in said first direction; first displacing means for shifting the grinding wheel away from said holder when the support reaches or approaches said second end position so that the grinding wheel is out of contact with the cutting edge during movement of the support from the second to the first end position; and second displacing means for shifting the grinding wheel toward the holder when the support reaches or approaches said second end position so as to move said grinding surface closer to said circular path.

4,640,060
HAND HELD SANDING DEVICE
 Sergei G. Lukianoff, 2107 Van Ness Ave., San Francisco, Calif. 94109
 Continuation-in-part of Ser. No. 454,608, Dec. 30, 1982, Pat. No. 4,501,096. This application Feb. 25, 1985, Ser. No. 705,505
 The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.
 Int. Cl.⁴ B24B 29/02
 U.S. Cl. 51—391 6 Claims



1. An improved hand-held sanding device for use with sandpaper or other abrasive sheet material comprising
 a resilient block having laterally extending intersecting faces forming block perimeter surfaces about which said abrasive material can be wrapped, said perimeter surfaces comprising a bottom and side surface, and a top surface extending in a convex curvature from said bottom surface upwardly to said side surface, the intersection of said top, bottom and side surfaces forming three laterally extending block edges,
 at least one of said bottom or side surfaces having a contour adapted to a specialized sanding surface, and
 said convex top surface having a receiving slot formed therein intermediate and substantially parallel to the laterally extending edges of said curved top surface, said receiving slot being of a width to snugly receive two ends of abrasive sheet material tightly wrapped around the block perimeter surface to hold same in its tightly wrapped position.

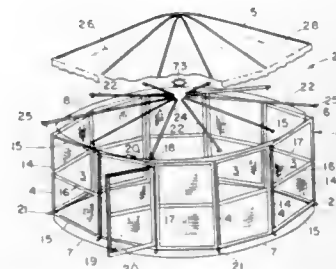
4,640,061

ROLL-FORMED FRAME FOR PORTABLE ENCLOSURES

Richard L. Trumley, Charlotte, Mich., assignor to General Aluminum Products, Inc., Charlotte, Mich.
Filed Jun. 2, 1980, Ser. No. 155,466
Int. Cl.⁴ E04B 1/346

U.S. Cl. 52—71

22 Claims



1. In a collapsible shelter comprising a series of wall panels with flexible hinges interconnecting the same along their upright edges; said wall panels being arranged in a closed polygon configuration and supporting a roof to form an enclosure, and including at least one fastener cable with retainers to hold said wall panels and said roof in position, the improvement wherein:

said wall panels comprise roll-formed frame segments interconnected to form the margin of said wall panels; said frame segments including a roll-formed channel disposed in an outer, peripheral edge thereof; said channel having a dovetailed shape adapted to interchangeably receive and retain therein a bead portion of said hinges, said fastener cable, and a body portion of said retainers; said wall panels have a substantially rectangular shape, and include a pair of side frame segments, and top and bottom frame segments; said hinge bead is disposed in the channels in said side frame segments; said fastener cable is disposed in the channel of one of said top and bottom frame segments; said retainers are positioned in the ends of those frame segments in which said fastener cable is disposed; said roll-formed frame segments include a pair of spaced apart sidewalls disposed adjacent opposite sides of said channel and formed integrally therewith; said channel and said frame sidewalls form a pair of wedge-shaped slots on either side of said channel in the interior of said frame segment; and said retainers include a body with a pair of wedge-shaped prongs which are matingly received into said slots at the ends of those frame segments in which said fastener cable is disposed.

4,640,062

FRAMEWORK TRUSS WITH VARIABLE CANTILEVER LENGTH

Erno Rubik, Budapest, Hungary, assignor to Kozponti Valto-es Hitebank Rt., Budapest, Hungary
PCT No. PCT/HU83/00055, § 371 Date Jun. 28, 1985, § 102(e) Date Jun. 28, 1985, PCT Pub. No. WO85/01865, PCT Pub. Date May 9, 1985

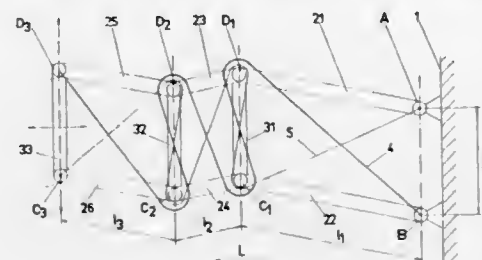
PCT Filed Oct. 31, 1983, Ser. No. 760,725
Int. Cl.⁴ E04H 12/18; A47F 5/08

U.S. Cl. 52—109

11 Claims

1. A lattice bracket of variable cantilevered length, said bracket having an articulated lattice structure for fastening articulately at two fixed points on a wall or other support, said lattice structure comprising at least two parallelogram-like articulated lattice fields, each lattice field consisting of two parallelly disposed links and of a spacer, said spacer having a length equal to the distance between said two fixed pivot

points, and joining together in pairs the ends of the two links between pivots, said lattice fields being disposed in tandem continuously in a direction away from said fixed pivot points, and at least one substantially elongation-free cable connecting



at least one of said fixed pivot points to the diagonally opposite pivot of the last spacer of the last articulated lattice field said cable running along like-leaning diagonals of the articulated lattice fields, and between said fields running along the respective spacer.

4,640,063

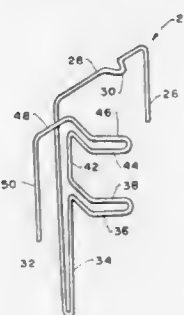
REINFORCING BAR SUPPORT CLIP

Henry Ayala, 605 Broussard Dr., Thousand Oaks, Calif. 91360
Filed Aug. 13, 1985, Ser. No. 765,140

Int. Cl.⁴ E04B 1/00

U.S. Cl. 52—127.3

2 Claims



1. In combination with an elongated form, said elongated form being fixedly positioned at a particular location, said elongated form having a top surface, a cavity located directly adjacent said elongated form, said cavity to have cement poured therein, a reinforcing bar located within said cavity prior to pouring of said cement, a portion of said reinforcing bar extending exteriorly of said cement, a support clip for mounting said portion of said reinforcing bar onto said elongated form prior to pouring of said cement, said support clip comprising:

an integral wire member defining a front section and a rear section, said rear section including engaging means, said engaging means for fixedly mounting said wire member onto said elongated form;

said front section including a pocket, said reinforcing bar to be located within said pocket, said pocket exerting a continuous bias tending to hold said reinforcing bar tightly against said elongated form, said front section including a handle member, said handle member being manually operable to move said pocket a greater distance from said elongated form permitting locating of and removal of said reinforcing bar from said pocket;

said engaging means comprising a U-shaped section, said U-shaped section to be slipped over said elongated form and tightly engage therewith;

said pocket being defined by a pair of spaced apart leg members; and said rear section further including an orientation tab, said orientation tab being abuttingly located against said top surface of said elongated form thereby automatically orienting said wire member at the proper position when engaged with said elongated form.

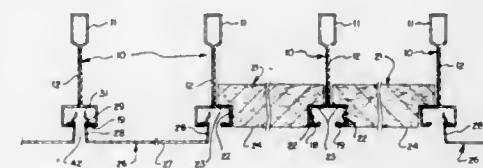
4,640,064

SUSPENSION CEILING SYSTEM COMBINING SNAP-UP PANS AND LAY-IN PANELS

John P. Goodworth, II, Medina, Ohio, assignor to Donn Incorporated, Westlake, Ohio
Continuation-in-part of Ser. No. 713,275, Mar. 18, 1985, abandoned. This application Dec. 2, 1985, Ser. No. 803,729
Int. Cl.⁴ E04B 1/82

U.S. Cl. 52—145

14 Claims



1. A suspension ceiling comprising a grid formed of runners each providing a bulb, a central web depending from said bulb, a pair of flanges along the edge of said web remote from said bulb extending laterally in opposite directions therefrom, and a pair of inwardly extending laterally spaced lips on the side of said flanges remote from said web, said runners being interconnected in said grid and cooperating to define a plurality of openings, lay-in panels in some of said openings supported along the periphery thereof by associated flanges, and snap-up pans in some of said openings providing upstanding peripheral lock means extending past associated said lips, said lock means supporting said pans from said associated lips, adjacent edges of adjacent pans being spaced from each other so that racking of said grid does not produce corresponding racking of said pans.

4,640,065

STRUCTURAL MEMBER

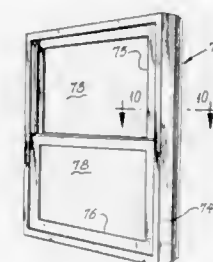
Ronald R. Harris, and Russell L. Ault, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 7, 1985, Ser. No. 785,192

Int. Cl.⁴ E06B 1/04; E04C 1/00

U.S. Cl. 52—204

24 Claims



1. A lineal structural member comprising an elongate glass wool core particularly formed as one of a plurality of cores provided by the cutting of an elongate binder-containing glass wool board of predetermined thickness longitudinally into a plurality of glass wool cores of a predetermined cross-sectional size, said core having outer longitudinal portions removed to provide the core with a predetermined cross-sectional shape, outer surface portions all the way around the periphery of the

core being impregnated with a hardenable liquid resin in addition to the binder and the resin being cured, and a separately applied and cured hardenable liquid resin casing surrounding and being integral with and bonded to the resin-impregnated outer surface portions of the core.

4,640,066

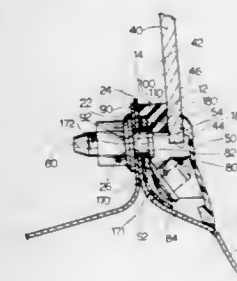
VEHICLE WINDOW STRUCTURE

Motomu Hayashi, Okazaki; Masayuki Nagai, Aichi, and Shigeru Akoshima, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed May 30, 1985, Ser. No. 739,388

Claims priority, application Japan, Jun. 11, 1984, 59-86555[U]
Int. Cl.⁴ E06B 3/00

U.S. Cl. 52—208

12 Claims



1. A sealing assembly for attachment to a window glass prior to insertion within a window opening of a vehicle body, said assembly comprising:

a retainer having a flange;
a window molding secured to said flange, said window molding having a first edge and a second opposite edge, each edge having an inner surface;
a seal member secured to said retainer, said seal member including a sealing portion and a packing portion extending from the sealing portion, said sealing portion having an inner surface and an outer surface opposing said inner surface of said first edge of said window molding and defining a space therebetween for receiving a peripheral edge of said window glass such that said inner surface of said first edge contacts an outer surface of said window glass, and said outer surface of said seal member contacts an inner surface of said window glass; and fastening means on said retainer for securing said window glass to said vehicle body after said retainer, window molding and seal member are attached to said window glass, said packing portion of said seal member being located between said fastening means and said vehicle body.

4,640,067

FLOOR BOARD ASSEMBLY

Franz-Josef Hagemann, Eichendorffweg 8, and Bernd Hewing, Hellstiege 10, both of 4434 Ochtrup, Fed. Rep. of Germany
Filed May 14, 1984, Ser. No. 609,818
Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318694

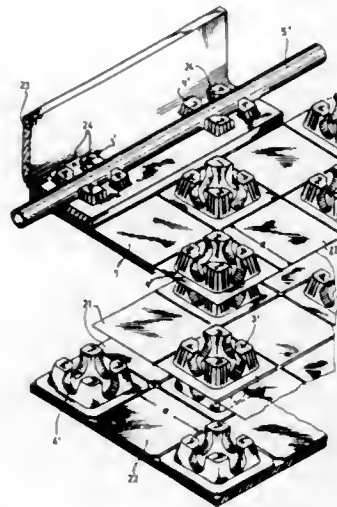
Int. Cl.⁴ E04B 5/48

U.S. Cl. 52—220

10 Claims

1. A plate for the assembly of a floor covering on which pipes of a floor heating system can be installed, comprising: an abrasion-proof molded cover foil of relatively tough synthetic material, said cover foil having a plurality of equispaced one-piece molded hollow holding devices, each formed with four upwardly projecting and opposing clamping fingers, for securing the pipes therebetween, said clamping fingers having ribs formed on outer sides thereof for stiffening backs of said clamping fingers, and

an insulation sheet of synthetic foam material installed directly under the cover foil, said insulation sheet having protruding insertion parts which can be inserted into the hollow holding devices of the cover foil,



whereby the cover foil and the insulation sheet are at least held together provisionally by inserting the insertion parts of the insulation sheet into the hollow holding devices of the cover foil.

4,640,068 ANCHORING AND COUPLING DEVICE FOR TENDONS IN PRESTRESSED CONCRETE

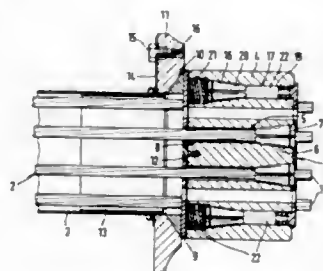
Dieter Jungwirth, and Also Mannhart, both of Munich, Fed. Rep. of Germany, assignors to Dycherhoff & Widmann Ag, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1983, Ser. No. 510,077

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224702

Int. Cl.⁴ E04C 5/08, 3/26; F16G 11/00
U.S. Cl. 52—223 L

6 Claims



1. Anchoring device for a prestressing location also serving as a coupling location for prestressing tendons in a prestressed concrete structure with the tendons made up of a plurality of individual elongated elements such as strands, wires and the like, said tendons being bonded to the concrete structure subsequent to prestressing, said anchoring device comprising an anchoring member having a first face surface and a second face surface each facing in an opposite direction and disposed in spaced relation with a circumferentially extending side surface extending transversely of, around and between said first and second face surfaces, said anchoring member arranged to be supported against an abutment member, said anchoring member having a plurality of axially extending first and second bores therein with said first bores extending into said anchoring member from said first face surface to said second face surface and said second bores extending from said second face

surface toward said first face surface, wedges positioned within said first and second bores for anchoring individual elements within said first and second bores, said first and second bores are shaped in the axial direction thereof for receiving said wedges therein, a first plate extending across said face surface and covering said first bores in said first face surface, means connecting said first plate to said anchoring member, spring elements in said first bores and bearing against said first plate and against said wedges in said first bores, wherein the improvement comprises that said wedges have a frusto-conical configuration, each said first and second bore has an axially extending frustoconical section corresponding to the frusto-conical configuration of the wedges and an axially extending generally cylindrical section extending axially from the smaller diameter end of said frusto-conical section, said frusto-conical sections in said first bores being located adjacent said first face surface and said cylindrical sections in said first bores extending from the small diameter end of said frustoconical sections approximately to said second face surface and said frusto-conical sections in said second bores being located adjacent said second face surface and said cylindrical section in said second bores extending from the smaller diameter end of said frusto-conical sections approximately to said first face surface with the axial dimensions of said first and second bores between said first and second face surfaces being such that said frusto-conical sections in said first bores are located wholly in the axially extending region of said cylindrical sections in said second bores and are spaced axially from said frusto-conical sections in said second bores, a permanently plastic lubricating corrosion protection material is filled into said first bores, said first and second bores are uniformly distributed over the cross-section of said anchoring member transverse to the direction between the first and second face surfaces thereof, and a second plate on the second face of said anchoring member and forming a cover over said first bores containing said corrosion protection material, said second plate being removably secured to said anchoring so that it can be removed for the subsequent placement of individual elements into said first bores containing said corrosion protection material.

4,640,069 METHOD AND APPARATUS FOR CONSTRUCTION OF BUILDINGS TO GIVE THE APPEARANCE OF FULL LOG CONSTRUCTION

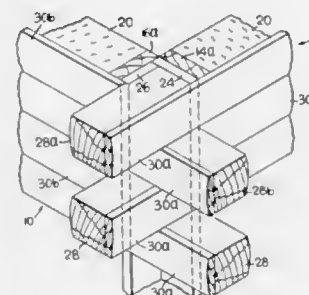
Theodore P. Felser, Winter, Wis., assignor to Felser Forest Products, Inc., Winter, Wis.

Filed Apr. 14, 1986, Ser. No. 851,587

Int. Cl.⁴ E04B 1/10

U.S. Cl. 52—233

7 Claims



1. Apparatus for construction of buildings to give the appearance of full log construction, comprising:
a first wall section comprising studs including at least one end stud located near one end thereof, and having wall finishing materials attached to the inside of said studs;
a second wall section also comprising studs including at least one end stud located near one end thereof, and having wall finishing materials attached to the inside of said studs, said first and second walls being assembled together at approximately right angles to each other such that said

end stud of said first wall contacts said end stud of said second wall at approximately right angles to form a V which opens toward the outside of the building;
a corner block assembly, having two studs assembled perpendicular to each other and arranged vertically so as to fit against said end studs of said first and second wall sections, and having log blocks arranged horizontally and attached at one end thereof alternately perpendicular to first one and then the other of said two studs;
siding, having a cylindrically convex outer surface, horizontally applied to the outside of said studs, having a vertical dimension approximately the same as that of said log blocks, and applied coextensively with said log blocks.

4,640,070 METHOD OF ADDING EXTRA FLOORS ON EXISTING BUILDINGS

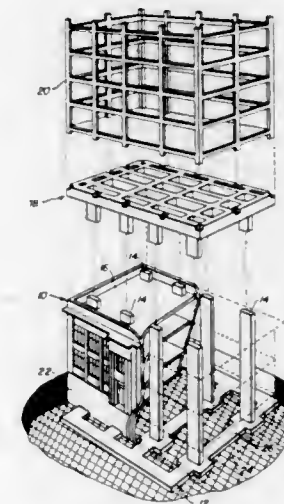
Ian Moffat, 71 Amelia Street, Hamilton, Ontario, L8P 2V3, Canada

Filed Mar. 21, 1986, Ser. No. 842,572

Int. Cl.⁴ E04B 1/00, 1/35

U.S. Cl. 52—236.3

15 Claims



6. A building structure comprising:
an existing building structure, said existing building structure having existing foundations, walls supported on said existing foundations said wall defining a building perimeter, and a roof located above said walls, and an additional internal building foundation adjacent said existing foundation;
a plurality of internal support columns mounted on said additional internal foundations, said plurality of internal supporting columns extending above said existing structure to a predetermined height;
a platform truss supported on said internal support columns above said existing building structure, said platform truss being proportioned to support an additional building structure with a plurality of floors above said existing building structure;
an construction skeleton framework supported on said platform truss, said skeleton framework providing a plurality of floors above said existing building structure.

4,640,071 INTERLOCKING BUILDING BLOCK

Juan Haener, 8215 Harton Pl., San Diego, Calif. 92123

Filed Jul. 12, 1985, Ser. No. 754,136

Int. Cl.⁴ E04C 1/08, 1/10, 1/30

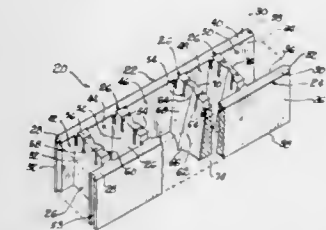
U.S. Cl. 52—286

30 Claims

1. An improved interlocking block for a mortarless wall assembly in which a plurality of such blocks are interlocked

together to create a substantially continuous planar wall surface having a plurality of stacked linear courses of such blocks bonded together internally by cementitious bonding material, the blocks in each course being mechanically interlocked in end to end relation, with adjacent blocks on the same course, the blocks in a given one of said courses being mechanically interlocked in a staggered relation to the blocks in the abutting courses in said stack, said blocks comprising:

- a pair of spaced, parallel, upright sidewalls having flat top and bottom surfaces, said sidewalls having block-interlocking means on opposed ends thereof; and
- at least one transverse upright support web spanning said sidewalls and integral and defining a cavity therewith for receiving said cementitious material therein, said web having a concavity disposed at the upper end of one side



thereof and a complimentary convexity disposed at the lower end of said one side, said convexity uniformly sloping upwardly into said concavity, the opposite side of said web sloping upwardly toward said one side, said web is shaped for facilitating release of said block from its forming mold for reducing mold wear thereby and to provide an increased surface area for improving adhesion of said cementitious bonding material thereto when poured into the cavities of said blocks when said blocks are stacked to form said continuous planar wall surface, the upper surface of said web is divided by parallel slits into three separate knockoff portions any one of which can be removed to permit the addition of reinforcing bars extending longitudinally through the block of each course while maintaining the block of abutting courses in their mechanically interlocked relationship.

4,640,072 MULTIPART THERMALLY INSULATED METAL PROFILE FOR FACADE STRUCTURES OR ROOF STRUCTURES

Manfred Mühle, Tulpenstr. 11, DE-4972 Löhne 2, Fed. Rep. of Germany

PCT No. PCT/DE85/00031, § 371 Date Oct. 15, 1985, § 102(e) Date Oct. 15, 1985, PCT Pub. No. WO85/03733, PCT Pub. Date Aug. 29, 1985

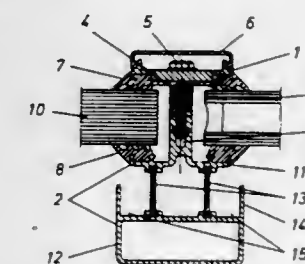
PCT Filed Feb. 6, 1985, Ser. No. 793,697

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406722

Int. Cl.⁴ E04B 1/62

U.S. Cl. 52—403

6 Claims



1. A multipart thermally insulated metal profile for facade

structures or roof structures, comprising: an exterior profile member and an interior profile member; insulator means connecting said inner profile member and said exterior profile member; covering panels comprised of glass or other materials held between said exterior profile member and said interior profile member with interposition of sealing means; screw means penetrating said exterior profile member and fastening said insulator means to said exterior profile member; said insulator means extending into said interior profile member; said interior profile member comprising further a contact profile member for said covering panels and a screening profile member oriented parallel thereto at an interval on a room side; insulating bars connecting continuously said contact profile member and said screening profile member in longitudinal direction of said profile members, said insulating bars being anchored in respective grooves in said profile members.

4,640,073

FLOOR PLATE

Peter Blecher, Hagen, Fed. Rep. of Germany, assignor to Ermossa AG, Chur, Switzerland

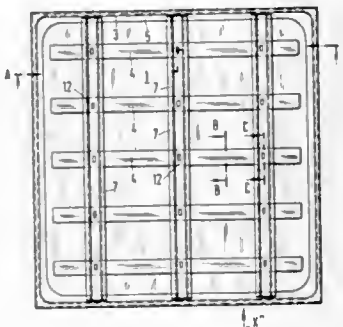
Filed Feb. 3, 1986, Ser. No. 825,792

Claims priority, application European Pat. Off., Feb. 2, 1985, 85101111.4; Dec. 17, 1985, 85116090.3

Int. Cl.⁴ E04F 15/024

U.S. Cl. 52—403

17 Claims



1. A floor plate adapted to accommodate a filler material, comprising:

- a pan having a base plate and a frame, said base plate extending in a plane and having a plurality of ribs extending parallel to one another and projecting from said plane; said frame extending integrally from the base plate along a perimeter thereof and in the same direction as the ribs;
- a plurality of reinforcing rails extending parallel to one another and perpendicularly to the ribs; each said rail being fastened to a plurality of said ribs; and
- a channel formed along a free circumferential edge of the frame; the channel being open in a direction toward said plane.

4,640,074

CONCRETE BUILDING UNIT OF A SANDWICH STRUCTURE AND A TRUSS ELEMENT AND AN INSULATING PLATE FOR SUCH A BUILDING UNIT

Ilmari Paakkinen, Savonlinna, Finland, assignor to Oy Partek AB, Parinen, Finland

Filed Sep. 4, 1985, Ser. No. 772,393

Claims priority, application Finland, Sep. 10, 1984, 843531

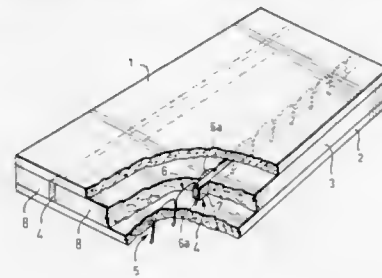
Int. Cl.⁴ E04C 2/34

U.S. Cl. 52—410

13 Claims

1. A concrete building unit of sandwich structure comprising: two concrete slabs positioned in parallel at a distance from each other; an insulating layer filling the space between the concrete slabs; and wire trusses having truss wires extending through the insulating layer and fastened to the concrete slabs at opposite edges of the trusses, characterized in that a continu-

ous truss wire of at least one wire truss is stitched through the insulating layer in the shape of a sewing thread in such a man-



ner that the truss wire forms loops protruding from two opposite surfaces of said layer into the respective concrete slab.

4,640,075

CONTAMINANT SEALING SYSTEM AND METHOD

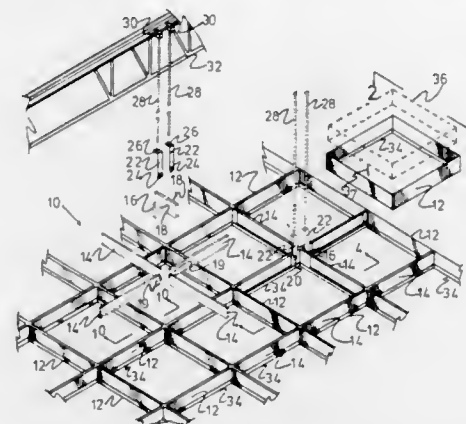
Theodore Nuncio, 1405 S. Olathe Way, Aurora, Colo. 80017

Filed Jan. 13, 1986, Ser. No. 818,204

Int. Cl.⁴ E04B 5/52

U.S. Cl. 52—484

28 Claims



1. A contaminant sealing system for a building, comprising:

- (a) a plurality of ceiling tile frames having sides and corners;
- (b) a plurality of ceiling tiles having a top portion and a bottom portion positioned within the plurality of ceiling tile frames;
- (c) mating means, associated with each frame and ceiling tile, for attaching the plurality of ceiling tiles to the plurality of ceiling tile frames;
- (d) sealing means, associated with the ceiling tile frames, for preventing contaminants from passing between each of the plurality of ceiling tile frames;
- (e) a plurality of X-shaped braces positioned partially over the sealing means and fixedly attached to the corners of the plurality of ceiling tile frames to prevent contaminants from passing between the plurality of ceiling tile frames and to reinforce the contaminant sealing system;
- (f) a plurality of height adjustment brackets attached to the plurality of X-shaped braces;
- (g) a plurality of threaded rods having two ends and positioned at one end within the plurality of height adjustment brackets and fixedly attached thereto;
- (h) a plurality of beam clamps attached to the plurality of threaded rods at the end of the threaded rods opposite to the plurality of brackets and fixedly attached thereto; and
- (i) whereby the plurality of beam clamps are attached to an overhead ceiling joist thereby providing a suspended ceiling which allows containment of contaminants within an area above the ceiling system.

4,640,076

ASSEMBLY SYSTEM WITH CLIP FOR INSTALLING MARBLE PANELS

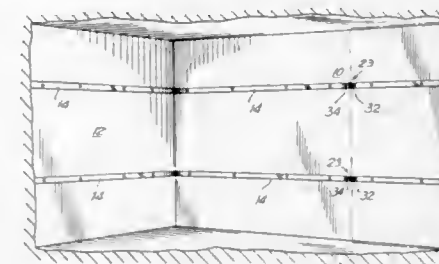
Neil Migliore, 234 New York Ave., Huntington, N.Y. 11743

Filed Aug. 8, 1985, Ser. No. 763,524

Int. Cl.⁴ E04B 2/92, 1/38

U.S. Cl. 52—509

11 Claims



1. A system for assembling and attaching marble panels substantially flush to a flat surface to give the appearance of marble slabs or surfaces, said system comprising:

- a plurality of marble panels,
- each marble panel including a marble sheet and a coextensive backing layer attached thereto which is routed out adjacent said marble sheet at selected portions thereof to define thin sections spaced from said marble sheet at said selected portions,
- independent and separate fastening strips attached to said flat surface, said fastening strips attached on said surface at preselected heights,
- a plurality of clips adapted to be secured to said fastening strips for laterally aligning said marble panels on said flat surface;
- each clip including an inner leg, an outer leg spaced apart and parallel to said inner leg, and a transverse web interconnecting said inner and outer legs in a spaced-apart and parallel arrangement to define a guide channel, said guide channel receiving said panels in a non-load bearing manner to laterally align said marble panels;
- said inner leg of each clip being secured to said fastening strips at an orientation substantially parallel to the horizontal such that each said guide channel laterally guides the marble panels with respect to each other such that vertical edges of adjacent panels are in abutment and substantially co-planar;
- wherein the spacing between respective portions of said common inner and outer legs of each clip which define (of) said guide channel said legs to be freely inserted in the backing layer of said panels to eliminate bending of the outer common leg of the clip.

4,640,077

CLIP FOR A SUSPENDED CEILING

Stephen Hall, London, England, assignor to Intalite International N.V., Curacao, Netherlands

Filed Jan. 23, 1984, Ser. No. 572,891

Claims priority, application United Kingdom, Jan. 21, 1983, 8301605; Mar. 17, 1983, 8307384; Oct. 6, 1983, 8326733

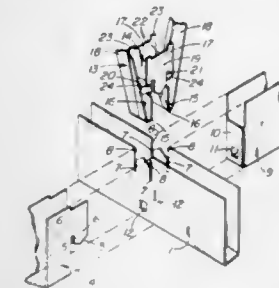
Int. Cl.⁴ E04B 5/52

U.S. Cl. 52—665

12 Claims

1. A suspended ceiling formed of a grid of elongated ceiling members with spaces therebetween, said ceiling members having an opening therein defined by margin ceiling members, said margin ceiling members each extending in a longitudinal direction and having spaced-apart upstanding walls; panel ceiling members extending between said margin ceiling members with ends of said panel ceiling members abutting said walls of said margin ceiling members which face the opening defined by said margin ceiling members,

at least one of said panel ceiling members having means on at least one end thereof for engaging a clip; a clip having bridge portion means for spanning the space between said spaced-apart upstanding walls of one of said margin ceiling members; means on said bridge portion means for limiting movement of said clip along the spaced-apart upstanding walls of said ceiling margin member in a direction perpendicular to the longitudinal direction of said margin ceiling member; a pair of retaining portions, extending from said bridge portion means, for fitting along said spaced-apart upstand-



ing walls of said margin ceiling member, at least one of said retaining portions having first detent means for removably securing said clip engaging means of one of said panel ceiling members to thereby hold said panel ceiling member against said margin ceiling member, said at least one of said retaining portions being movable and biased towards the other of said retaining portions; and securing means on said clip for removably engaging second detent means on said margin ceiling member and for preventing movement of said clip with respect to said margin ceiling member.

4,640,078

COMPOSITE BAR

Dieter Haffer, Pirmasens-Gersbach, Fed. Rep. of Germany, assignor to Gebrüder Kommerling Kunststoffwerke GmbH, Pirmasens, Fed. Rep. of Germany

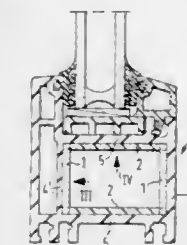
Filed Feb. 27, 1985, Ser. No. 706,560

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407639

Int. Cl.⁴ E06B 9/17

U.S. Cl. 52—731

14 Claims



1. In a composite bar, in particular for window frames or sashes, door frames and shutter, comprising a plastic hollow profile bar and an inner reinforcing bar which is inserted in the cavity of said hollow profile of said plastic bar after said plastic bar is formed, which bears on two opposite sides of said plastic hollow profile bar and which comprises in the vicinity of each of said sides a flange, the two flanges being connected together in a force-transmitting manner, the improvement that the two opposite flanges of the reinforcing bar consist of metal and are connected to each other non-metallically by at least one plastic bridge for transmitting forces, especially shear forces, between said two opposite metal flanges, said at least one plastic bridge engaging directly the opposite metal flanges.

4,640,079

DEVICE FOR PACKAGING PLANTS

Matthew A. Stuck, Menasha, Wis., assignor to Modern Mfg. Co. Inc., Menasha, Wis.

Filed Nov. 20, 1985, Ser. No. 800,030

Int. Cl.⁴ B65B 67/08

U.S. Cl. 53—390

8 Claims



1. A device for packaging potted plants, comprising a base, a column extending upwardly from the base, a tubular support member mounted on the column, said support member being generally frustoconical in shape and having a side wall tapering downwardly and inwardly and having a pair of open ends, said support member disposed to support at least one open-ended tapered sleeve, a pedestal extending upwardly from the base and extending through said support member and through said sleeve, and a platform mounted on the upper portion of said pedestal and located above said support member, said sleeve being drawn upwardly from the support member around said plant supported on the platform to enclose said plant in said sleeve.

4,640,080

PROCESS TO FORM GENERALLY RIGID CUSHION PACKAGES FROM LOOSE FILL DUNNAGE

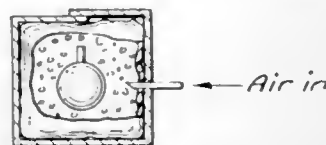
Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 29, 1985, Ser. No. 803,025

Int. Cl.⁴ B65B 23/00

U.S. Cl. 53—449

12 Claims



1. A process to form a generally rigid package from loose fill dunnage, the steps of the process comprising:

- providing a first packaging enclosure capable of being sealed and withstanding a degree of internal pressure without substantial expansion;
- providing a generally flexible, easily deformable second packaging enclosure having an internal volume greater than that of the first packaging enclosure, said second packaging enclosure being capable of being sealed and maintaining an internal vacuum for a length of time sufficient to complete the process steps, set forth below, requiring an internal vacuum in the second packaging enclosure;
- placing the second packaging enclosure within the first packaging enclosure;
- placing the article to be packaged within the second packaging enclosure;
- filling the second packaging enclosure with an amount of resilient loose fill dunnage material, the amount of resilient

loose fill dunnage material having an original volume greater than the internal volume of the first packaging enclosure;

- sealing the second packaging enclosure;
- creating an internal vacuum within the second packaging enclosure, said internal vacuum being sufficient to cause the original volume of the resilient loose fill dunnage material to decrease below the internal volume of the first packaging enclosure;
- sealing the first packaging enclosure; and
- releasing the vacuum within the second packaging enclosure thus allowing the resilient loose fill dunnage material to increase in volume until being substantially equal to the volume of the first packaging enclosure.

4,640,081

AUTOMATIC PACKAGING APPARATUS

Masashi Kawaguchi, Yokohama, and Masaru Yasumune, Mihara, both of Japan, assignors to Kabushiki Kaisha Furukawa Seisakusho, Tokyo, Japan

Continuation-in-part of Ser. No. 378,656, May 17, 1982,

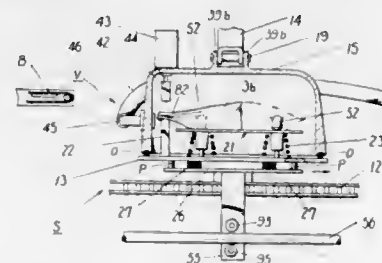
abandoned. This application May 24, 1985, Ser. No. 738,098

Claims priority, application Japan, May 23, 1981, 56-78351

Int. Cl.⁴ B65B 31/02

U.S. Cl. 53—510

13 Claims



- An automatic packing apparatus comprising:
 - a bag forming device for automatically forming bags each containing at least one article; and
 - a vacuum sealing device for sealing open ends of the bags in a vacuum;
- said bag forming device further comprising:
 - a tubular film forming device in the shape of a tube for continuously forming an elongated sheet of film into a tube of the film and wrapping the articles fed into the tubular film forming device in a line;
 - a film sealing and cutting device for cutting the tube of film at preset space intervals to form each of the bags, one end of which is completely sealed and the other end of which is partly sealed; and
 - a feeding device for feeding the bags formed by the film sealing and cutting device to the vacuum sealing device at a faster speed than that of the travel of the tube;
- said vacuum sealing device further comprising:
 - at least one bag supporting device, revolving synchronously with the feeding device so that each bag supporting device can receive a respective one bag fed by the feeding device along a traveling path, the bag supporting device having a base plate which is provided on travel means for transferring the bag supporting device, a pillow head fixed to the base plate on one side thereof for resting thereon the open end of the bag and a plate-like supporting member supported by at least one elastic member over the base plate, the upper surface of the pillow head and the plate-like supporting member being normally positioned in the same horizontal plane;
 - at least one vacuum cover, cooperating with each bag supporting device to form a vacuum box in which the open end of the each bag is sealed under a vacuum and revolving synchronously with said bag supporting device while moving vertically to open and close said vacuum cover

having a heating member for sealing the open end of each bag and a plurality of pushing members formed on the inner surface thereof, which abut against the plate-like supporting member to lower the supporting member under the weight of the vacuum cover when the vacuum cover is placed on the bag supporting device; and a device for evacuating the inner space of the vacuum box.

4,640,082

APPARATUS FOR PACKAGING LOOSE FIBROUS MATERIAL

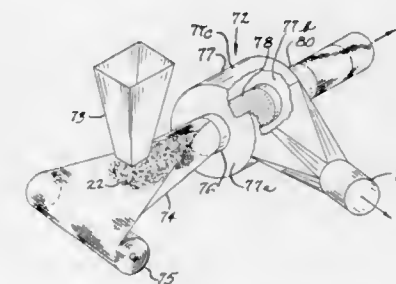
Gurdev S. Gill, Newark, Ohio, assignor to Owens-Corning Fibreglass Corporation, Toledo, Ohio

Filed Mar. 4, 1985, Ser. No. 707,623

Int. Cl.⁴ B65B 1/20

U.S. Cl. 53—523

2 Claims



1. Apparatus for vacuum-compacting and packaging loose fibrous material within a web of porous material comprising a suction housing having a pair of opposite end walls and an enclosing sidewall, said end walls having a pair of aligned openings respectively therein, a perforated duct extending through the suction housing in spaced relationship to the enclosing sidewall, having inlet and outlet openings aligned respectively with the openings in said end walls, and being formed of material having perforations therein, the perforations being of a size normally preventing passage of fibrous material while allowing passage of air therethrough, means for passing a web of porous material through the perforated duct and existing from said outlet opening, supply means for supplying loose fibrous material onto said web of porous material upstream of said inlet opening and accommodating the passage of air to the inlet opening of said perforated duct, an air exhaust duct communicating with said housing, and means for forming said web of porous material into a sleeve around said fibrous material upstream of said outlet opening so that as said filled sleeve passes through said housing it is evacuated and collects said fibrous material.

4,640,083

APPARATUS FOR PRODUCING BAGS AND PACKING ARTICLES THEREIN

Shizuo Takahashi, Abiko, and Kiyoshi Yamashita, Toride, both of Japan, assignors to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,724

Claims priority, application Japan, May 31, 1983, 58-82144[U]; May 31, 1983, 58-82145[U]

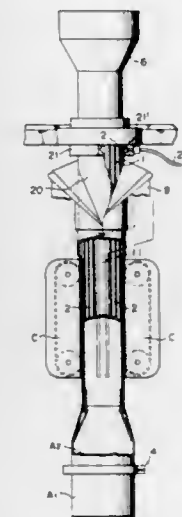
Int. Cl.⁴ B65B 9/06

U.S. Cl. 53—551

1 Claim

1. In an apparatus for forming and filling a series of bags, said apparatus including a vertical bag-making cylinder around which a film can be wrapped to form a tube as the film passes along the length of said bag-making cylinder from its upper end to its lower end and through the interior of which the articles intended to be contained in each bag can flow, a sealing means sealingly located adjacent the lower end of said bag-making cylinder for closing the open top of a downstream bag and closing the bottom of an adjacent upstream bag, and air removal means for removing air from within a bag which

contains articles prior to the closing of its open top, the improvement wherein said air removal means comprises a plurality of parallel grooves in the outer periphery of said bag-making cylinder which extend in parallel with a central axis thereof from its lower end toward its upper end; a plurality of upwardly inclined holes in said bag-making cylinder which extend from its interior to each of said plurality of parallel grooves; an annular element surrounding said bag-making cylinder near its upper end, said annular element including an



annular groove therein which communicates with said plurality of parallel grooves in the outer periphery of said bag-making cylinder; and a suction pipe connected to said annular element and in communication with said annular groove; said suction pipe enabling air to be sucked out of each bag into the interior of said bag-making cylinder, then through said holes into said plurality of parallel grooves in the outer periphery of said bag-making cylinder, along said parallel grooves and into said annular groove in said annular element, and then into said suction pipe.

4,640,084

MOWING APPARATUS

Toru Baba, Yokosuka, Japan, assignor to Kioritz Corporation, Tokyo, Japan

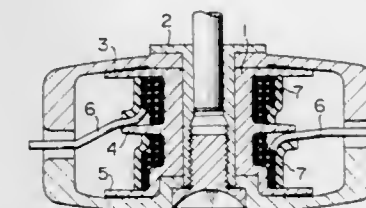
Filed Feb. 5, 1985, Ser. No. 698,538

Claims priority, application Japan, Feb. 7, 1984, 59-15886[U]

Int. Cl.⁴ A01D 34/67; A01G 3/06

U.S. Cl. 56—12.7

2 Claims

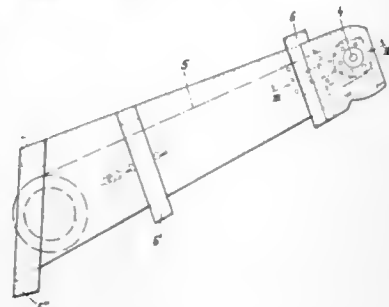


1. A mowing apparatus comprising:

- a casing containing a cord having a free end serving as a cutter;
- a spool defined by a cylindrical portion and a pair of circular side flanges, said spool having at least one coil of the cord wound thereon; wherein the improvement comprises:
 - holding means comprising an elastic band enclosing an outer periphery of the coil of the cord wound on the spool, said elastic band having in its free unstretched state a larger

width and a smaller outer diameter than the coil, said free end of said cord extending from said coil between one of said pair of circular side flanges and an edge of said elastic band.

4,640,085
HARVESTER THRESHER
 Karl Rupprecht, Hilter, Fed. Rep. of Germany, assignor to Claas Ohg, Harzewinkel, Fed. Rep. of Germany
 Filed Jan. 24, 1985, Ser. No. 694,646
 Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406696
 Int. Cl.⁴ A01D 57/00, 47/00, 45/00
 U.S. Cl. 56—14.6 **2 Claims**

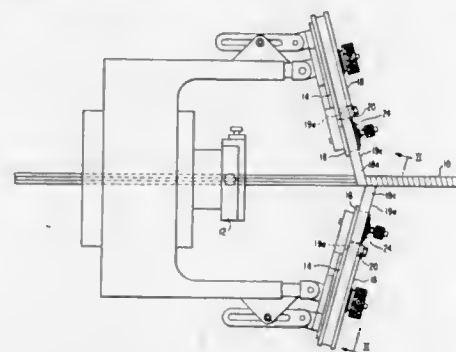


1. In a self-propelling harvester thresher comprising a machine frame and a drawing channel pivotally connected to the machine frame at a pivot axis, said drawing channel carrying at a free end thereof a cutting mechanism or a corn picker, the improvement comprising said drawing channel having an elongated hollow body carrying a plurality of reinforcing frames surrounding said body and spaced from each other along the length of said body, said body having side walls which are provided in the region of said pivot axis with additional reinforcing walls so that said side walls are in said region double-walled, whereby torsional strength of the pivotable drawing channel is substantially increased, said channel also including spacing rings each positioned in a hollow space between a respective side wall and a respective additional reinforcing wall in the region of said pivot axis and rigidly connected to said side walls and said additional reinforcing walls, said channel also including reinforcing ribs extending in a ray-like manner from said spacing rings and connecting to each other said spacing rings, said side walls, said additional reinforcing walls and an adjacent one of said reinforcing frames.

4,640,086
ELECTRICAL INSULATION TAPING MACHINE WITH UNIFORM TAPE TENSIONING
 Andre J. Levino, Sewickley Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Oct. 30, 1985, Ser. No. 793,053
 Int. Cl.⁴ D07B 7/14; B65H 81/08
 U.S. Cl. 57—3 **5 Claims**

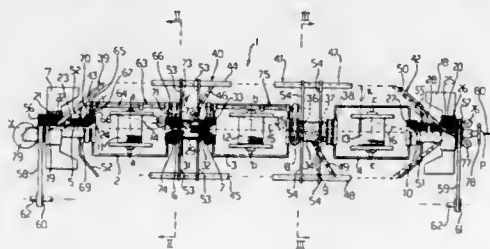
1. An electrical insulation taping machine comprising:
 a head mounted for rotation about an axis on which one or more electrical conductors to be taped are located;
 a cylindrical tape roll mounted on said head, said tape roll having a core affixed to said head and a quantity of electrical insulation tape wound on said core with a layer of said tape fed through a tape path to said axis for taping said conductors, said tape being unwound from said core, traversing said tape path, and wound on said conductors as said head rotates about said axis;
 a tape tensioning device mounted on said head clear of said tape roll, said tape tensioning device comprising a cylindrical tensioning wheel over which said tape path passes and means for adjustably spring loading said wheel against

said head to tension said tape substantially uniformly between said tensioning device and said conductors being



taped independent of what quantity of said tape is on said core.

4,640,087
ROPE-MAKING MACHINE
 Giorgio Targa, Via S. Giovanni Battista alla Creta, 2, and Vitaliano Russo, Via P. Litta, 2, both of Milan, Italy
 Filed Jul. 24, 1984, Ser. No. 634,032
 Claims priority, application Italy, Jul. 26, 1983, 22234 A/83; Feb. 21, 1984, 19722 A/84
 Int. Cl.⁴ D07B 3/04
 U.S. Cl. 57—58.36 **6 Claims**

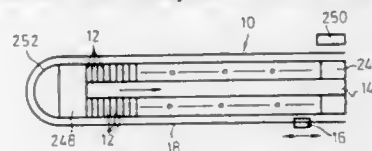


1. A rope-making machine comprising a plurality of reel-carrying cradles aligned along an axis (X—X) and oscillating about said axis, and a plurality of first strand guide structures supported rotatably about said axis, wherein said machine further includes respective couplings which are rotatable about said axis and fix said cradles together in pairs coaxially, whereby said cradles define a rigid beam with said couplings, and a fixed stand at each end of said beam which supports a respective end of said beam free of intermediate supports, said first strand guide structures being supported by said couplings, and second strand guide structures of tubular form spaced from and parallel to said axis, said second strand guide structures supported from respective ones of said couplings.

4,640,088
AUTOMAT LOCATION SYSTEM
 André Lattion, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
 Filed May 18, 1984, Ser. No. 612,068
 Claims priority, application United Kingdom, May 24, 1983, 8314305
 Int. Cl.⁴ D01H 15/02; B65H 67/04, 54/26
 U.S. Cl. 57—263 **4 Claims**

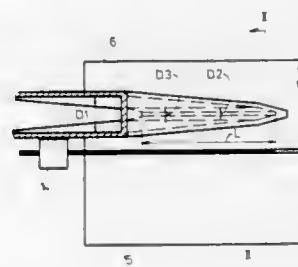
1. In combination,
 a plurality of aligned spinning stations, each said station having a friction roll, a cradle being movable from a first position enabling contact of an empty tube in said cradle

with said friction roll to an uppermost position to space a package thereon from said friction roll and a calling station having a first signal directing means for emitting a call signal, a second signal directing means to indicate a cradle in said uppermost position and a third signal directing means to indicate the presence of a full package in said cradle;
 a service tender movable relative to said spinning stations and being selectively operable to perform a package doffing operation or a piecing operation;
 a detector on said tender responsive to a call signal from a respective spinning station to align said tender with said respective spinning station;
 a first unit on said tender responsive to said second signal



directing means to emit a first signal in response to the presence of said cradle in said uppermost position; and a second unit on said tender responsive to said third signal directing means to emit a second signal in response to a tube or package on said cradle in said uppermost position; said tender being responsive to a predetermined combination of said signals from a respective calling station and said units to perform a predetermined operation in a respective spinning station whereby said service tender is adapted to stop in alignment with a station issuing a call signal only if predetermined combinations of said signals are detected and is conditionable to perform a package doffing operation or a piecing operation in response to detection of respective combinations of said predetermined combinations of said signals.

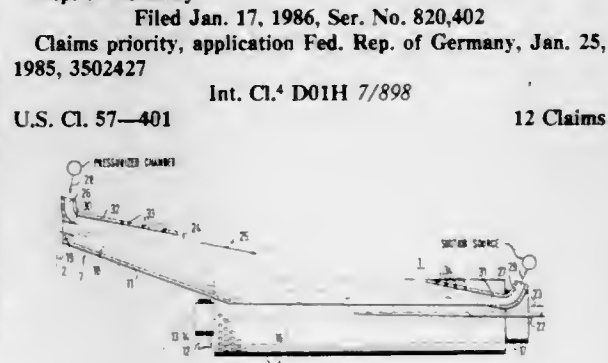
4,640,089
METHOD AND DEVICE FOR SPINNING A YARN IN ACCORDANCE WITH THE OPEN END-FRICTION SPINNING PRINCIPLE
 Herbert Stalder, Kollbrunn; Josef Baumgartner, Sirmach, and Arthur Würmli, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Winterthur, Switzerland
 Filed Jul. 8, 1986, Ser. No. 883,373
 Claims priority, application Switzerland, Jul. 12, 1985, 21/85
 Int. Cl.⁴ D01H 7/898, 7/892
 U.S. Cl. 57—401 **31 Claims**



1. A method for spinning a yarn or the like in accordance with the open end friction spinning principle, comprising the steps of:
 separating fibers from a body of fibers;
 transporting said fibers in a freely floating state by means of a pneumatic fiber transporting airstream guided in a fiber transport passage in a direction of movement inclined at a predetermined acute angle to an exit opening of said fiber transport passage;
 accelerating said pneumatic fiber transporting airstream in a

predetermined region which terminates at the exit opening of the fiber transport passage and which predetermined region has a predetermined height;
 subsequently transferring said fibers to a moving perforated surface of a friction spinning means which is subjected to underpressure;
 intercepting said pneumatic fiber transporting airstream by means of said friction spinning means;
 passing said pneumatic fiber transporting airstream through said moving perforated surface;
 employing said friction spinning means for forming said fibers into a yarn at a yarn formation position of the friction spinning means; and
 withdrawing said formed yarn in a predetermined yarn withdrawal direction.

4,640,090
FIBER CONDUCTING CHANNEL OF AN OE FRICTION SPINNING DEVICE
 Theo Lembeck, Moenchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany
 Filed Jan. 17, 1986, Ser. No. 820,402
 Claims priority, application Fed. Rep. of Germany, Jan. 25, 1985, 3502427
 Int. Cl.⁴ D01H 7/898
 U.S. Cl. 57—401 **12 Claims**

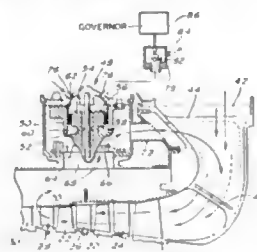


1. In an OE friction spinning spinning device having a fiber loosening device and means for forming a spinning wedge, the improvement comprising a fiber conducting channel having a wall, means for generating a transporting air current in said fiber conducting channel for carrying fibers from the fiber loosening device to the spinning wedge, said wall having at least two openings formed therein being spaced from each other along said transporting air current for the passage of guiding air forming at least one guiding air stream parallel to said transporting air current in said fiber conducting channel.

4,640,091
APPARATUS FOR IMPROVING ACCELERATION IN A MULTI-SHAFT GAS TURBINE ENGINE
 Cyril A. M. Blizzard, Greenfield Park, Canada, assignor to Pratt & Whitney Canada Inc., Longueuil, Canada
 Division of Ser. No. 574,387, Jan. 27, 1984, Pat. No. 4,590,759.
 This application Jan. 8, 1986, Ser. No. 817,056
 Int. Cl.⁴ F02C 9/16 **5 Claims**

1. A free turbine gas turbine engine comprising at least a compressor shaft mounting a plurality of blade stages, an output shaft mounting at least a turbine blade stage, means for bleeding air from the compressor, bleed valve means including a cylinder and piston means within the cylinder, the piston having first and second faces, the first face of the piston defining with the cylinder a first valve chamber and the second face defining with the cylinder a second chamber, said means for bleeding the compressor air communicating with an inlet in said first valve chamber, hollow pre-swirl members provided upstream of said compressor, said pre-swirl members each provided with means for forming a jet flap, an outlet provided in said first valve chamber, means communicating said outlet

from said first valve chamber to said hollow pre-swirl members, means communicating a high pressure air source downstream of the compressor to an inlet in said second valve chamber, an outlet in said second valve chamber, a control valve, governor means operatively connected to said control valve, conduit means communicating said outlet in said second valve chamber to said control valve, load sensing means connected to the governor whereby, under minimum power require-



ments, said governor will maintain said control valve open thereby maintaining a low pressure in the second valve chamber thus maintaining said bleed valve open to provide a jet flap and thus a pre-swirl to the compressor, and when a load is being sensed, the governor will progressively close said control valve thus increasing said pressure in the second valve chamber, thereby closing the bleed valve and eliminating the pre-swirl to enable the compressor to provide a greater gas horsepower.

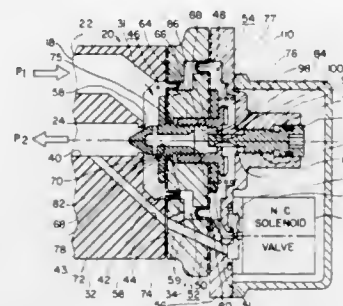
4,640,092
COMBUSTION CHAMBER REAR OUTER SEAL
Robert E. Coburn, Mansfield Center, and John A. Matthews, Melrose, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Mar. 3, 1986, Ser. No. 835,136
Int. Cl.⁴ F02C 3/06, 7/20, 1/00
U.S. Cl. 60—39.36



1. A sealing device for sealing between the downstream end of a combustion chamber outer wall and a forwardly facing surface formed by tabs on the turbine inlet vanes, the device including:

- a sealing element having a flat rearwardly facing radial portion for contact with said forwardly facing surface formed by the tabs,
- a row of bolts securing the elements to said tabs, reinforcing plates extending between adjacent bolts in the row and secured by said bolts to the forward side of said portion, and
- flanges on the outer edge of said portion of the element in the spaces not covered by the plates.

4,640,093
FUEL METERING SYSTEM
James M. Eastman, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.
Filed Sep. 3, 1985, Ser. No. 771,756
Int. Cl.⁴ F02C 9/26
U.S. Cl. 60—39.281



1. A metering valve for supplying fuel to a turbine engine in response to an operational signal, said metering valve comprising:

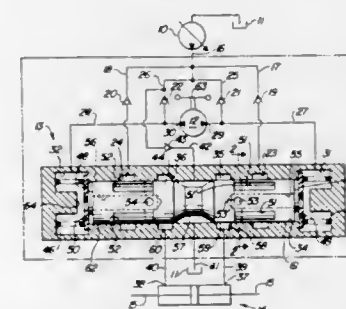
- a housing having a cavity therein with an inlet port, a control port, and an outlet port, said inlet port being separated from said outlet port by a first annular seat, said first annular seat being connected to said outlet port by an outlet conduit, said control port being connected to said outlet conduit by a by pass conduit;
- wall means for separating said cavity into first, second and third chambers, said first chamber being connected to said inlet port for receiving fuel having a fluid pressure P_1 , said second chamber being connected to said outlet conduit, said third chamber being connected to said first chamber and said control port;
- a plunger connected to said wall means having a face therein that moves with respect to said first annular seat to regulate the flow of fuel from said first chamber into said outlet conduit, said fuel in said outlet conduit having a fluid pressure P_2 ;
- feedback valve means connected to said wall means for controlling the fuel flow from said first chamber to said third chamber; and
- electrohydraulic means responsive to said operational signal for rapidly pulsing fuel flow from said third chamber to said by pass conduit to develop a fluid pressure P_x in said third chamber, said fluid pressure P_1 in said first chamber and fluid pressure P_2 in said second chamber and fluid pressure P_x in said third chamber positioning said wall means such that substantially a steady flow of fuel is metered from said first chamber through said first seat into said outlet conduit, said pulsing fuel flow from said third chamber being parallel with and substantially smaller than said steady flow from said first chamber.

4,640,094
FLOW AMPLIFYING STEERING SYSTEM
Richard A. Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Feb. 4, 1986, Ser. No. 825,848
Int. Cl.⁴ B62D 5/06
U.S. Cl. 60—385

- 21 Claims
1. A power steering system for a vehicle including a source of pressurized fluid, a fluid reservoir, a bidirectional hydraulic steering motor, a bidirectional hand pump having first and second work ports, and a control valve providing flow amplification of the output from said bidirectional pump, said control valve comprising:
- a valve housing having a central bore, means for defining first and second chambers along said bore, said chambers having fluid communication with said first and second

work ports respectively, first and second supply inlets along said bore in fluid communication with said source, first and second service outlets along said bore, each outlet in fluid communication with an opposing fluid inlet of said motor, first and second hand pump inlets along said bore in fluid communication with said first and second work ports respectively and a reservoir outlet in fluid communication with said reservoir;

a valve member movably located within said bore having first and second extended recesses in fluid communication with said first and second supply inlets respectively, first and second proportioning recesses in fluid communication with said first and second hand pump inlets respectively, a reservoir channel, first and second lands for blocking fluid flow to or from said first and second service outlets respectively, a third land for blocking fluid communication between said first hand pump



inlet and said first supply inlet, and a fourth land for blocking fluid communication between said second hand pump inlet and said second supply inlet;

means for communicating fluid pressure in said first and second proportioning recesses to said first and second chambers respectively;

means for maintaining said valve member in a neutral position in the absence of fluid flow from said bidirectional hand pump wherein said first and second lands block fluid flow to or from said service outlets; and

means for moving said valve member to an operative position in proportional response to a difference in pressure between said chambers where in said operating position one of said service outlets is in fluid communication with its corresponding proportioning and extended recesses and the other of said service outlets is in fluid communication with said reservoir outlet across said reservoir channel.

4,640,095
DIGITAL ELECTRO-HYDRAULIC VALVE ARRANGEMENT
William K. Engel, Peoria, Ill., and Stephen R. Bogert, Kennewick, Wash., assignors to Caterpillar Inc., Peoria, Ill.
Filed Jan. 28, 1985, Ser. No. 695,512
Int. Cl.⁴ F16D 33/02
U.S. Cl. 60—443

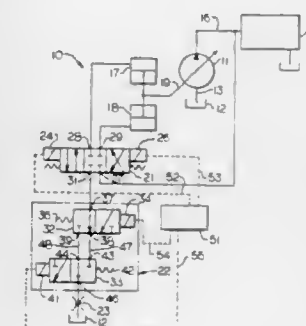
7 Claims

1. A digital electro-hydraulic control system for controlling the displacement of a variable displacement machine having a displacement control member and a pair of actuators operatively connected to the displacement control member comprising:

- a source of pressurized fluid;
- a tank;
- a solenoid actuated directional control valve having an inlet port, a pair of motor ports and a discharge port, said inlet port being connected to said source of pressurized fluid and the motor ports being connected to the actuators of the variable displacement machine, said directional control valve being movable between a neutral position and an operative position at which the inlet port is in fluid

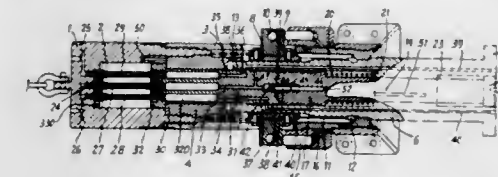
communication with one of the motor ports and the other motor port is in communication with the discharge port;

a digital electro-hydraulic valve arrangement positioned between the discharge port of the directional control valve and the tank, said valve arrangement including first and second solenoid actuated valves each having an inlet port and an outlet port and being movable between a first position at which the inlet port is in communication with the outlet port and a second position at which the inlet port is blocked from the outlet port, one of said first and second valves including means for biasing said one valve to the first position and having a predetermined response



time for moving from the first position to the second position, the other of said first and second valves including means for biasing said other valve to the second position and having a response time for moving from the second position to the first position substantially equal to the predetermined response time of the one valve, said outlet port of said first valve being connected to the inlet port of the second valve to establish a flow path between the inlet port of the first valve and the outlet port of the second valve in response to said other valve being moved from the second position to the first position, said flow path being disrupted when the one valve is moved from the first position to the second position.

4,640,096
LOAD CARRYING CONNECTION AND HYDRAULIC FLUID TRANSMISSION DEVICE
Alain Lecbon, Pau, and Alain Viard, Muret, both of France, assignors to Societe Nationale Elf Aquitaine (Production), France
Filed Nov. 19, 1984, Ser. No. 673,047
Claims priority, application France, Nov. 21, 1983, 83 18459
Int. Cl.⁴ B60T 13/00; E03B 37/00
U.S. Cl. 60—547.1



1. A load carrying connection device comprising a selflocking connector and a mandril firmly secured to loads to be carried and adapted to transmit hydraulic pressures and flows through the mandril, comprising in combination:

- a connector head (1) including a hollow connector body (3) and an internal sleeve (4) providing an elongated chamber (2);
- a hollow mandril extending into said connector body (3) and adapted to be locked to said connector head (1);
- a valving piston (17) having a front face carried within said

mandril (6) and provided with a plurality of annular axially spaced seals (44, 45, 46) at its periphery, a return spring (20) in said mandril for biasing said valving piston toward said connector head (1); a mobile piston (31) slidable with said chamber (2) and having a piston head (32) movable in said chamber (2) and limited in a bottom position by said internal sleeve (4), said mobile piston (31) having a lower portion within connector body (3) and having an end face adapted to bear on said front face of said valving piston (17) within said mandril (6); duct means for flow of hydraulic fluid between said connector head (1) and said mandril (6) including ducts (27, 28 and 29) is said chamber (2), and passing through said head (32), corresponding housings (320) in said mobile piston (31) for receiving said ducts (27, 28) and (29) when said mobile piston is in top position; said mobile piston (31) having corresponding ducts (34, 35) provided with orifices (36, 37) at its lateral periphery for communication with longitudinal ducts (39, 40) in the mandril (6) for transmission of pressure fluid to the loads carried by the mandril, whereby when said mobile piston (31) is in said bottom position, said orifices (36, 37) communicate mutually together and when the mobile piston (31) is followed by said valving piston (17) in top position of said mobile piston (31), the annular zones of said orifices (36, 37) of ducts (39, 40) of the mandril are closed by said annular seals (44, 45, 46) spaced apart along the lateral face of the valve piston (17) on each side of said annular zones of said duct orifices.

4,640,097

BRAKE BOOSTER

Michio Kobayashi, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co. Ltd., Japan

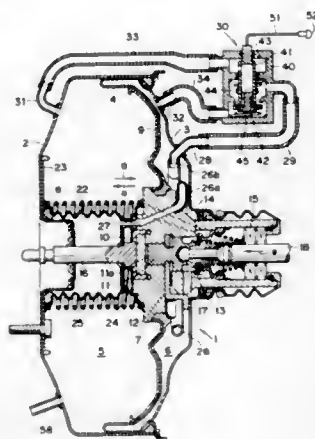
Filed May 30, 1984, Ser. No. 615,455

Claims priority, application Japan, Jun. 2, 1983, 58-98571

Int. Cl.⁴ B60T 13/20

U.S. Cl. 60—554

8 Claims



1. A brake booster comprising a housing (2,3) defining an interior space, diaphragm means (4) connected to said housing in said interior space and dividing said interior space into a constant pressure chamber (5) and a variable pressure chamber (6), a power piston (7) movable in said housing and connected to said diaphragm means for moving said diaphragm means in said space, a push rod (16) for pressing a master cylinder of a brake, reaction means (10) operatively engaged between said power piston and said push rod for transmitting pushing forces from said power piston to said push rod, a vacuum valve (13) in said power piston for opening and closing communication between said constant pressure chamber and said variable pressure chamber, an open air valve (14) in said power piston for opening and closing communication between said variable

pressure chamber and the ambient atmosphere, a relay rod (11) movably mounted in said housing and operatively connected to said vacuum valve and said open air valve for opening and closing said vacuum and open air valves with movement of said relay rod, said relay rod having one end which is engageable against said push rod through said reaction means, an operating rod (18) adapted to be pushed by movement of a brake pedal of a brake, said operating rod being engaged with said relay rod for moving said relay rod, a hollow expansion body (22) disposed in said constant pressure chamber and connected between said housing and said push rod, said expansion body defining an expansion chamber (25) and being expandable and contractable in an axial direction of movement of said push rod in said housing, and pressure valving means connected to said housing and between said expansion chamber, said constant pressure chamber and said variable pressure chamber, said pressure valving means having a plurality of positions for establishing varied communication between said expansion chamber and at least one of said constant pressure chamber and said variable pressure chamber so that an inner pressure of said expansion chamber can be changed dependent on a pressure in one of said constant pressure chamber and said variable pressure chamber to change a boosting ratio of said brake booster, said valving means positioned externally of said housing space.

4,640,098

QUICK TAKE-UP MASTER CYLINDER VALVE ARRANGEMENT

David L. Brademeyer, Centerville, and Timothy M. Welch, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 591,179, Mar. 19, 1984, abandoned. This application Oct. 17, 1985, Ser. No. 788,732

Int. Cl.⁴ B60T 11/08

U.S. Cl. 60—578

2 Claims



1. In a quick take-up master cylinder having a boss with a vertically oriented valve-controlled first passage, compensation ports at the bottom of said first passage connecting with the master cylinder bore, and a hydraulic fluid reservoir mounted on the upper end of said boss and maintaining a supply of hydraulic fluid in said first passage and the master cylinder bore, a compensation port control valve assembly comprising:

a housing having its lower end sealingly secured in said vertically oriented valve-controlled passage and having a vertically extending stepped bore having a shoulder and providing a valve chamber open to the compensation ports and an upper passage section open to said hydraulic fluid reservoir; valve means in said valve chamber having a specific gravity less than the specific gravity of the hydraulic fluid in said first passage so as to normally buoyantly rest against said shoulder and prevent any substantial flow of hydraulic fluid between said master cylinder bore and said reservoir through the compensation ports in one valve means condition of operation, said valve means being sensitive to a pressure differential at said shoulder biased toward the

master cylinder bore to move downwardly away from said first shoulder and permit fluid flow through said valve housing bore from said reservoir to said master cylinder;

said valve means including

a valve body having a base section provided with fluted guides circumferentially spaced thereon for guiding said body in vertical movements in said valve chamber, an axially extending second passage through said base section, a check valve caging section above said base section having an annular valve seat therein with said second passage opening below and to said annular valve seat, a check valve retained in said caging section above said annular valve seat and having means resiliently biasing said check valve toward said annular valve seat to normally close said second passage, and a valve cap on said caging section, said valve cap and said caging section permitting hydraulic fluid flow therepast;

said resiliently biased check valve controlling said second passage to normally prevent fluid flow through said second passage between said master cylinder bore and said reservoir and operable to open at a predetermined master cylinder quick take-up pressure to permit fluid flow from said master cylinder bore to said reservoir through said second passage and past said caging section and said valve cap to relieve any excess quick take-up pressure that may be generated in said master cylinder bore during master cylinder actuation.

4,640,099

PROCESS AND INSTALLATION FOR COOLING A VISCOUS AND IN PARTICULAR FOOD PRODUCT

Claude Gibot, Malakoff, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude, Paris, France

PCT No. PCT/FR85/00040, § 371 Date Oct. 29, 1985, § 102(e) Date Oct. 29, 1985, PCT Pub. No. WO85/03999, PCT Pub. Date Sep. 12, 1985

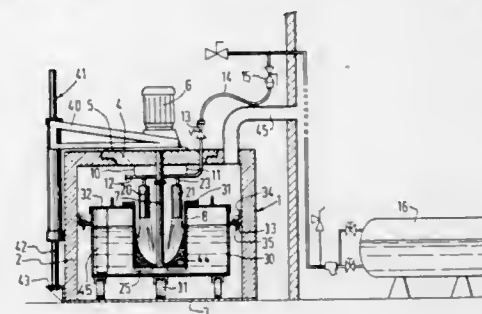
PCT Filed Mar. 5, 1985, Ser. No. 800,637

Claims priority, application France, Mar. 5, 1984, 84 03375

Int. Cl.⁴ F25D 25/00

U.S. Cl. 62—62

16 Claims



1. A process for cooling a viscous product, and in particular a food product to a temperature above 0° C., said process comprising effecting a thermal exchange between a cryogenic medium and a mass of said product through a metal wall of a pot immersed in the mass of product, by generating carbonic acid snow constituting said cryogenic medium in said pot while continuously maintaining the mass of product in a stirred state, and regulating said snow generation so as continuously to maintain in a viscous state the product which is in contact with said pot.

4,640,100

REFRIGERATION SYSTEM

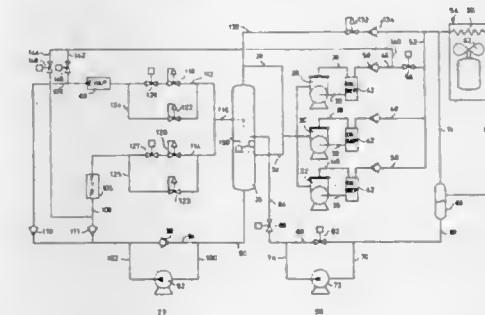
Vladimir Goldstein, Concord, Canada, assignor to Sunwell Engineering Company Limited, Woodbridge, Canada

Filed Jan. 15, 1985, Ser. No. 691,631

Int. Cl.⁴ F25B 43/00

U.S. Cl. 62—197

18 Claims



1. A refrigeration system comprising a first phase separation device containing a supply of refrigerant in liquid and vapour phases, a compressor to withdraw refrigerant in the vapour phase from said supply and compress it, condenser means to condense the refrigerant supplied by said compressor, second phase separation means to segregate liquid and vapour phases of said refrigerant delivered from said condenser, liquid pump means to transfer liquid refrigerant from said first phase separation means through expansion means to said first phase separation means, evaporator means to receive liquid refrigerant from said second phase separation means and pump means to circulate refrigerant through said evaporator and return it to said first phase separation device.

4,640,101

PORTABLE BEVERAGE CHILLER

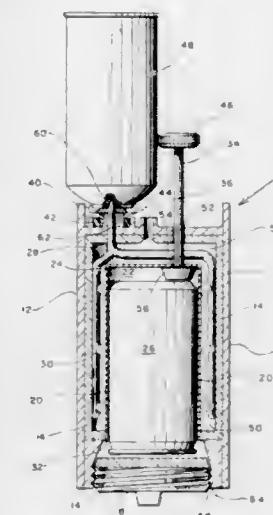
Ken A. Johnson, 6574 NW. Third St., Margate, Fla. 33063

Filed Dec. 18, 1985, Ser. No. 810,279

Int. Cl.⁴ F25D 3/10

U.S. Cl. 62—294

11 Claims



1. A portable beverage chiller for cooling a removable beverage container placed therein comprising: an outer shell; an inner shell concentrically disposed within the outer shell and being of a thermoconductive material, said inner shell having interior dimensions for a close fitting relationship

with the beverage container for efficient conductive heat transfer therewith, and with a first end of the inner shell defining an opening for receiving and removing the beverage container;

an annular gas expansion chamber disposed between the inner shell and outer shell;

an evaporator tube mounted within the gas expansion chamber and having at least one discharge orifice therein, said discharge orifice being disposed to discharge expanding refrigerant gas therefrom to impinge directly upon the inner shell;

an evaporator tube extension in fluid communication with the evaporator tube, said extension penetrating the outer shell and terminating in a connector for removable attachment to a source of compressed refrigerant gas;

an exhaust port through the outer shell for escape of expanded refrigerant gas from the expansion chamber; and

an ejector penetrating the inner shell and outer shell for removal of the beverage container.

4,640,102
SELF-COOLING CONTAINER FOR BEVERAGES
 Marcos Tenenbaum; Luis De Guzman, and Daniel M. Tenenbaum, all of 3559 Paraguay Street, 6th Floor - A, Buenos Aires 1425, Argentina
 Filed Mar. 3, 1986, Ser. No. 835,622
 Int. Cl.⁴ F25D 3/10
 U.S. Cl. 62—294



1. A self-cooling container for a beverage which comprises:
 - (a) a housing for holding said beverage therein;
 - (b) a top end having an opening tab for removing the beverage from said housing, said top end secured to said housing;
 - (c) a capsule having pressurized coolant therein, said capsule being immersed in said beverage and means for affixing said capsule to a bottom of said housing; and
 - (d) a conduit extending from said capsule through said top end, said conduit having a bent obstructed distal end and means for removing said bent obstructed distal end, where by when said bent obstructed distal end is removed at said semi-cut portion, said coolant will escape through said conduit into ambient air causing said beverage to be cooled within said housing.

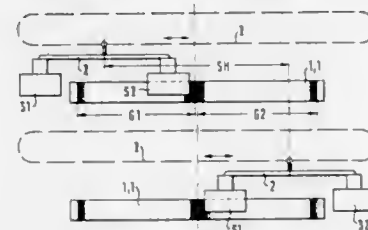
4,640,103
DOUBLE HEAD FLAT KNITTING MACHINE
 Hans Schieber, Bopfingen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG, Fed. Rep. of Germany
 Filed Aug. 14, 1985, Ser. No. 765,627
 Claims priority, application Fed. Rep. of Germany, Aug. 14, 1984, 3429913

Int. Cl.⁴ D04B 7/04
 U.S. Cl. 66—64
 5 Claims

1. Double head flat knitting machine with at least one front and one rear needle bed and two carriages reciprocally movable over the needle beds by means of a reversing drive with a

selectively-adjustable carriage stroke wherein each of said front and rear needle beds is comprised of:

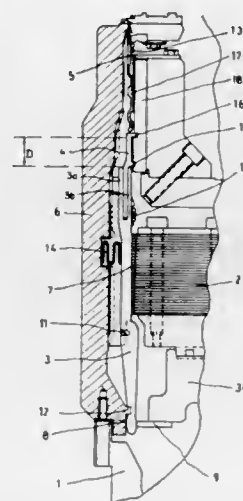
- (a) two contiguous needle beds disposed end to end to provide an approximately double operative width needle bed



provided with a continuous needle space and with needles lowered into the needle beds, and

- (b) at least one complete carriage detachably connected with the reversing drive at one of two positions.

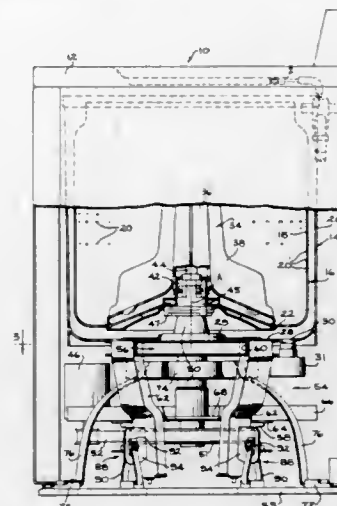
4,640,104
NEEDLE SELECTION ARRANGEMENT FOR A CIRCULAR KNITTING MACHINE
 José M. Dalmau Güell, Barcelona, Spain, assignor to Jumberca, S.A., Badalona, Spain
 Continuation of Ser. No. 657,967, Oct. 5, 1984, abandoned. This application Jan. 23, 1986, Ser. No. 825,672
 Claims priority, application Spain, Oct. 10, 1983, 526,696
 Int. Cl.⁴ D04B 15/68, 15/82
 U.S. Cl. 66—222
 5 Claims



1. A needle selection apparatus for a circular knitting machine, comprising:
 - a selector box including selector cams; selector jacks, each selector jack having two upper extensions; intermediate jacks corresponding to respective ones of the selector jacks and positioned between the upper extensions of the corresponding selector jack; needles each having a butt; and cam sets for the intermediate jacks and the needles, wherein the intermediate jacks are provided with a long upper butt for tucking and a short lower butt for jersey knitting, said intermediate jacks being in engagement with respective ones of the selector jacks which selectively adopt three different angles of tilt, so that said intermediate jacks correspondingly adopt three angles of tilt, thereby determining three positions of the upper and lower butts so that the upper and lower butts are emergent corresponding to the knit position, so that part of the upper butt is emergent corresponding to the tuck position, and so that there is no emergent butt corresponding to the

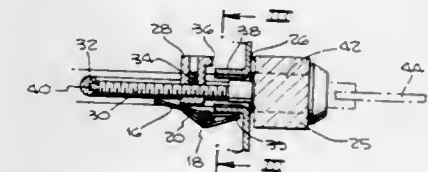
welting position, each set of cams having an upper channel for engaging the butt of the needle, an intermediate channel for engaging the upper butt, and a lower channel for engaging the short butt of the intermediate jack, the intermediate channel being spaced from the lower channel by a distance (d) smaller than a distance (D) between lower edges of the upper and lower butts.

4,640,105
AUTOMATIC WASHER SUSPENSION SYSTEM
 Gerald J. Kushner, Louisville, Ky., and Daniel N. Toma, Georgetown, Ind., assignors to General Electric Company, Louisville, Ky.
 Filed Jul. 29, 1985, Ser. No. 760,350
 Int. Cl.⁴ D06F 37/24
 U.S. Cl. 68—23.3
 14 Claims



1. In a vertical axis washing machine having a base and further having a movable mass including a rotatable basket and an agitator arranged in said basket, and means for imparting oscillation motion to said agitator and rotational movement to said basket which generates both vertical and horizontal vibration to said movable mass a suspension system for supporting said movable mass above said base, comprising:
 - a support member; a plurality of circumferentially spaced spring members connected at their lower end to said base and converging therefrom upwardly and radially inwardly with their upper ends connected to said support member;
 - a frame structure connected to said movable mass including an upper frame portion, and a lower frame portion interconnected by leg members extending between said upper and lower frame portions;
 - a plurality of circumferentially spaced links extending in the general direction of the vertical axis, each of said links having its upper end connected to said support member and their lower end connected to said lower end of said leg member of said frame structure below said support member to thereby support said movable mass above said base in a manner which absorbs both the vertical and horizontal vibrations of said movable mass.

4,640,106
DEVICE FOR PREVENTING UNAUTHORIZED USE OF A CASSETTE TAPE DECK
 Jay S. Derman, Redondo Beach, Calif., assignor to Z-Lock Company, Inc., Redondo Beach, Calif.
 Filed Feb. 5, 1985, Ser. No. 698,313
 Int. Cl.⁴ E05B 73/00
 U.S. Cl. 70—14
 7 Claims

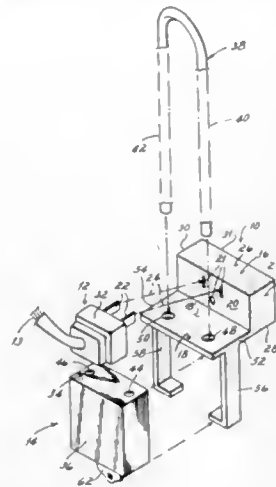


1. In a device for inhibiting use of a cassette tape deck having a cassette tape chamber accessible through a chamber opening, the combination of:
 - a U-shaped member having a length, width and thickness adapted to be received within said chamber through said opening;
 - a transverse member connecting ends of said U-member and having at least one dimension greater than the corresponding dimension of said chamber opening to limit movement of the U-shaped member into the chamber;
 - a lock element connected with said U-shaped member; means for adjusting the position of the lock element within the chamber for restricting outward movement of the device and adapted to engage tape deck means within said chamber;
 - and lock means for changing the position of the lock element to release the U-shaped member for withdrawal thereof from said chamber;
 - said lock means being carried on the transverse member;
 - said adjustable means includes a threaded member extending in an in and out direction with respect to said chamber, said threaded member connecting said transverse member and said U-shaped member;
 - said lock element having threaded connection with said threaded member for adjusting said lock element to a selected position along said threaded member.

4,640,107
SAFETY LOCK APPARATUS FOR AN ELECTRICAL PLUG
 Luman C. Slade, 7717 Westwind La., Cincinnati, Ohio 45242
 Filed Dec. 12, 1985, Ser. No. 807,967
 Int. Cl.⁴ E05B 65/00
 U.S. Cl. 70—57
 17 Claims

1. A safety lock apparatus for an electrical plug having a plug body from which extends a plurality of prongs adapted to be inserted into an electrical outlet, the safety lock apparatus comprising:
 - receiver means for receiving therethrough, in a first direction, prongs of a plug;
 - spacer means extending generally in said first direction from said receiver means for spacing said receiver means from an electrical outlet so that prongs received through said receiver means are prevented from being inserted into the electrical outlet;
 - shelf means extending from said receiver means in a second direction generally opposite said first direction and cooperating with a padlock for securing a plug body of a plug to said receiver means when its prongs are received through said receiver means, a portion of said shelf means adapted to be placed between a padlock body of the padlock and a U-shaped shackle of the padlock so that (i) the shackle is lockably receivable in the padlock body and (ii) the plug body is secured to said receiver means, whereby to pre-

vent removal from said receiver means prongs extending from a plug body so secured; and securement means operably associated with said shelf means for securing a portion of the padlock to said shelf means,



said securement means comprising a pair of spaced apart resilient gripper arms depending from said seat means in a direction generally perpendicular said second direction and between which a padlock is removably grippable.

4,640,108

DOOR LOCKING SYSTEM

Quentin H. Young, San Antonio, Tex., assignor to Southern Steel Company, San Antonio, Tex.

Continuation of Ser. No. 393,701, Jun. 30, 1982, Pat. No. 4,509,347. This application Apr. 9, 1985, Ser. No. 721,478. The portion of the term of this patent subsequent to Apr. 9, 2002, has been disclaimed.

Int. Cl.⁴ E05B 47/00, 65/06; E05C 1/06, 1/12
U.S. Cl. 70—129

2 Claims



1. An electrically operated door locking system for use in a door mounted in a door jamb comprising:
a modular carrier frame mounted in said door jamb;
bolt means mounted on said carrier frame for reciprocation between a retracted position wholly enclosed within said housing and an extended position in which one end of said bolt means protrudes from said housing;
a bolt actuator cam slide operable for movement between a lock position and an unlock position for respectively posi-

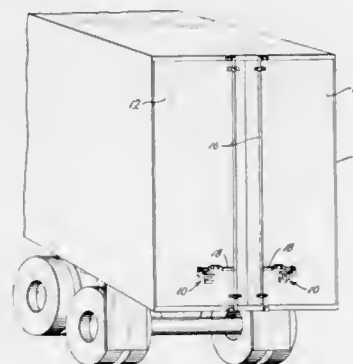
tioning said bolt means in said extended position or said retracted position;
guide surfaces on said carrier frame for precluding horizontal movement of the bolt actuator cam slide;
solenoid means for selectively positioning said bolt actuator slide in its unlock or lock positions;
a control circuit for said solenoid means including circuit means for actuating said solenoid means to cause the bolt actuator slide to move to its lock position in response to movement of the door to closed position; and
means for preventing actuation of said solenoid means for moving said bolt to its lock position in response to said door not being in a fully closed position.

4,640,109

REMOVABLE LATCH HANDLE LOCKING DEVICE
John M. Schaublin, Rte. 7, Box 378 and Donna S. Schaublin, Rte. 4, Box 5215, both of Russellville, Ark. 72801
Filed Jun. 8, 1984, Ser. No. 618,671
Int. Cl.⁴ G05G 5/00

U.S. Cl. 70—202

5 Claims



1. In combination with a truck, trailer, rail car or the like having a cargo door with a latch and a latch handle movable between a first latched and a second unlatched position, a cylinder lock having an indexable body, a front rim having a diameter greater than that of said body, a lock cylinder and a cam lug pivotally mounted on said body opposite said front rim movable by said lock cylinder between a first receivable position inwardly of said body and a second position extending outwardly of said body, a locking device mounted to said door for engaging said latch handle when said latch handle is in its said first position and for receiving said cylinder lock when said cam lug is in its said first position, whereby said latch handle is retained in its said first position when said cam lug is moved to its said second position;

said locking device comprising:

- (a) stationary slide box means having a first axial slideway;
- (b) first lock receiving means in said slide box means in communication with said first axial slideway and having a diameter corresponding to that of said front rim;
- (c) slide means slidable in said first axial slideway between a first and a second position;
- (d) indexed second lock receiving means in said slide means alignable concentrically with said first lock receiving means in said slide box means when said slide means is in its said first position and having a diameter corresponding to that of said body;
- (e) latch handle retaining means in said slide means having a second axial slideway slidably engageable over said latch handle when said latch handle is in its said first position and said slide means is in its said first position; and
- (f) cam lug engaging means in said slide means in communication with said second lock receiving means and engageable by said cam lug when said slide means is in

its said first position, said lock is received within said first and second index lock receiving means and said cam lug is in its said second position.

4,640,111

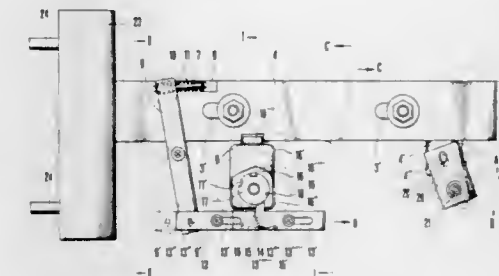
LOCKING DEVICE FOR A DOOR ON SAFE OR THE LIKE APPARATUS

Masao Hashizume, Hiroshima, Japan, assignor to Kumahira Safe Co., Inc., Hiroshima, Japan

Filed Mar. 7, 1984, Ser. No. 587,251
Claims priority, application Japan, Nov. 21, 1983, 58-217908
Int. Cl.⁴ E05B 37/00

U.S. Cl. 70—314

16 Claims

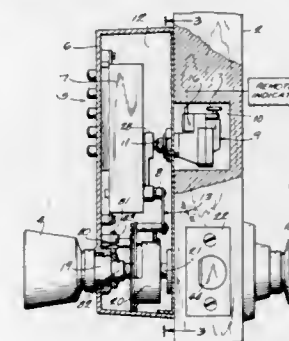


4,640,110
AUTOMATIC DELAY RELOCKING DEVICE
Aaron M. Fish, Rocky Mount, N.C.; Stanley S. Mazoff, Dollard des Ormeaux, Canada; Adamo M. D'Intino, Riviere-des-Prairies, Canada, and Hariharan Somasundaram, Montreal, Canada, assignors to Ileo Unican Corp., Rocky Mount, N.C.

Filed Sep. 16, 1985, Ser. No. 776,626
Int. Cl.⁴ E05B 43/00, 13/10

U.S. Cl. 70—269

10 Claims



1. A latching means comprising:

- a permutation lock having a latch element;
- a control element releasable for motion in one direction from a normal position responsive to proper decoding of the permutation lock;
- a first rotatable clutch member connected to said latch element for retracting said latch element in response to rotation of said clutch member in one direction;
- a second rotatable clutch member for transmitting such latch retracting rotation through said clutch member;
- drive means providing a rotation transmitting connection between said clutch members which is disruptable upon movement of one of said member to an inactive position in a predetermined direction along an axis of rotation relative to the other clutch member;
- connecting means connecting said control element with said first clutch member whereby rotary latch retracting motion of the latter is interfered with, except when the permutation lock has been properly decoded,
- said drive means on said clutch members rendered ineffective by such interference with latch retracting rotation of the clutch member to move said member relative to the other to an inactive position;
- a delayed relocking device having a retracted lock opening mode and an extended lock closed mode,
- said connecting means normally biasing said delayed relocking device to a retracted position when moving in one direction,
- means in said delayed relocking device biasing said device to an extended position in a predetermined time,
- said delayed relocking device in the extended position interfering with movement of said linkage means in a second direction and causing said first clutch member to move relative to the other to its said inactive position, except for a predetermined time from the setting of the opening mode of said delayed relocking device.

4,640,112

SECURITY DOOR KNOB AND ESCUTCHEON

Raymond V. Kambic, Joliet, Ill., assignor to R. R. Brink Locking Systems, Inc., Plainfield, Ill.

Continuation of Ser. No. 521,118, Aug. 8, 1983, abandoned. This application Dec. 4, 1985, Ser. No. 805,253

Int. Cl.⁴ A47B 35/04; E05B 9/08, 15/02

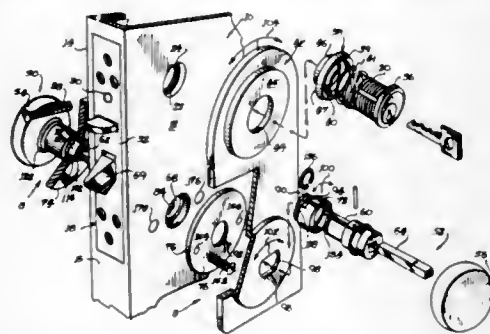
U.S. Cl. 70—452

10 Claims

1. A security door knob assembly for a door having an inner side and an outer side, and latch means, said assembly comprising: inner knob means and outer knob means; mounting means for mounting said inner and outer knob means to the respective inner and outer sides of said door so as to operate at least one associated latch means; said knob means being coupled to predetermined portions of said mounting means so as to be non-removable from the door except as a unit with said portions of said mounting means to which they are coupled; and securing means co-acting with said mounting means for preventing both disassembly and removal of either of said knob means or of said mounting means from said door, from either of the inner or outer sides thereof; said mounting means including an outer mounting plate non-rotatably mounted to a surface of the door and held thereagainst by fastener means, an outer bearing means rotatably coupled with said outer knob

means and threadably engaged with said outer mounting plate and at least one non-round outer surface portion on said bearing means said non-round outer surface portion on said bearing sleeve means including a generally cylindrical surface having at least one generally flat surface portion formed therein; escutcheon means overlying both said outer mounting plate and the fastener means and including an aperture through which said bearing means is received, said escutcheon aperture being of a complementary non-round configuration said through aperture defining an internal generally cylindrical surface portion having at least one generally flat surface portion formed therein and alignable with the generally flat surface portion of said bearing sleeve to effect non-rotatable engagement between said escutcheon means and said bearing sleeve means, such that said escutcheon, when fixed prevents rotation of said outer bearing means, with disengagement of said holding means freeing said escutcheon for rotation, such that said escutcheon may be used in a wrench-like manner to rotate said bearing means as required to disassemble or assemble said knob assembly; said holding means comprising a lock having a shoulder overlying said escutcheon means to prevent removal thereof and extending therethrough and into said door so as to be removable only from an edge surface of said door when said door is open.

2. A security door knob assembly for a door having an inner side and an outer side, and latch means, said assembly comprising: inner knob means and outer knob means, mounting means



for mounting said inner and outer knob means to the respective inner and outer sides of said door so as to operate said latch means; and securing means co-acting with said mounting means for preventing both disassembly and removal of either of said knob means or said mounting means from said door, from either of the inner or outer sides thereof; wherein said mounting means comprises, a mounting plate secured to one of the sides of said door and bearing sleeve means threadably secured to said mounting plate and rotatably receiving one of said inner and outer knob means therethrough; and wherein said securing means includes at least one non-round outer surface portion on said bearing sleeve means, said non-round outer surface portion on said bearing sleeve means including a generally cylindrical surface having at least one generally flat surface portion formed therein, escutcheon means having a through aperture defining an internal surface of complementary configuration for engaging said bearing sleeve means surface, said through aperture defining an internal generally cylindrical surface portion having at least one generally flat surface portion formed therein and alignable with the generally flat surface portion of said bearing sleeve to effect non-rotatable engagement between said escutcheon means and said bearing sleeve means, such that said escutcheon means may be employed in a wrench-like manner to rotate said bearing sleeve means to effect engagement or disengagement of said bearing sleeve means with said mounting plate means, and holding means for releasably, non-rotatably securing said escutcheon means to said one side of said door.

4,640,113 SHEET-BENDING PRESS INCORPORATING A DEVICE FOR CONTINUOUS MONITORING OF THE BENDING ANGLE

Willem Dieperink, Buchillon, Switzerland, and Arend Vrugink, Harfsen, Netherlands, assignors to Beyeler Machines, S.A., Crissler, Switzerland

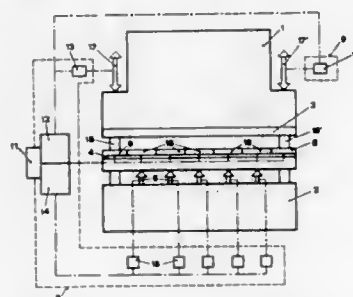
Filed Feb. 4, 1985, Ser. No. 697,870

Claims priority, application Switzerland, Feb. 3, 1984, 504/84

Int. Cl.⁴ B21D 5/00

U.S. Cl. 72—21

12 Claims



1. A press for bending sheet metal comprising an upper table and a lower table, one of which carries a punch, further comprising two means for actuating the movement of the punch and mounted on the punch, at least one means for compensating the deflection inherent in bending operations and mounted in one of the tables, and a bending device that continuously monitors the bending process and comprising:

- two pairs of measuring rods situated opposite the up-rights of the press and at least one pair of measuring rods situated opposite the compensating means, the measuring rods being circular in section and longitudinally machined with a flat upper surface provided for supporting the workpiece, each of the measuring rods being seated in such a manner that it rotates with the bending of the workpiece, each pair of measuring rods being connected to a device for measuring the rotational angle of the measuring rods,
- a control device connected to the measuring devices, to the means actuating the movement of the punch, and to the compensating means, comprising:
 - a first means whereby the data provided by the measuring means is compared with a preset value;
 - a second means (13, 13') for controlling the means actuating the movement of the punch;
 - a third means for comparing the data provided by the various measuring devices, and for causing
 - a fourth means (15) to control the compensating means so that a constant bending angle is obtained along the whole length of the workpiece.

4,640,114 AUTOMATED PROCESS FOR COLD WORKING HOLES

Madeline A. Kulesh, Bethpage, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 29, 1985, Ser. No. 696,230

Int. Cl.⁴ B21D 41/02

U.S. Cl. 72—22

1 Claim



1. An automated method utilizing a multi-tool machine for

cold working the wall around a hole in a metal member, the method comprising:

- drilling a plurality of holes in a workpiece;
- serially feeding a plurality of memory metal alloy sleeves to the location of their respective holes from a feed track;
- automatically positioning each sleeve within a respective hole, the outer diameter of each sleeve having a smaller outer diameter than the diameter of the hole;
- driving a mandrel through the sleeve thus causing plastic expansion thereof which cold works the wall of the hole; withdrawing the mandrel from the sleeve to complete displacement of the mandrel;
- sensing the displacement of the mandrel;
- initiating a timing cycle upon actuation of the sensing step;
- subjecting the sleeve to a timed heat source located proximate the machine during said timing cycle thus thermally inducing the sleeve for a specific timed period, at a preselected temperature, for shrinking it; and
- removing the sleeve from the hole thus permitting its recycling.

4,640,115 STRAIGHTENING DEVICE

Franz-Josef Hartmann, Paderborn, and Heinz Hefendehl, Altenbeken, both of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

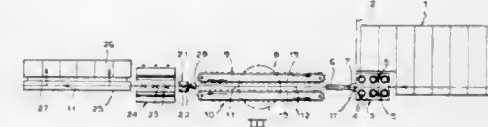
Filed Jul. 3, 1985, Ser. No. 752,389

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424439

Int. Cl.⁴ B21D 3/04

U.S. Cl. 72—98

14 Claims



1. A straightening device for elongated round articles defining a center axis, particularly for rods or pipes, comprising a preparatory station for receiving the articles to be straightened, a driving unit having a plurality of driving rollers for engaging the articles in the preparatory station and consecutively advancing the articles in axial direction into a feeding station which guides the articles in axial direction said articles into a straightening station, the straightening station being provided with driven inclined straightening rollers, said feeding station including a set of rotation symmetrical bodies arranged in spaced relation one after the other to engage discrete circumferential portions of respective articles exiting in axial direction from said driving unit, said rotation symmetrical bodies being supported for free rotation about axes which extend parallel to the center axis of the processed articles; said feeding station including two articulated conveying members arranged in a vertical plane below and above a feeding path for the processed articles, said rotation symmetrical bodies being arranged in pairs side by side and one after the other on respective conveying members, so as to surround the processed article over the entire length of the feeding station, said articulated conveying members being positively guided to circulate in the same axial direction and at the same speed as that of the advancing articles.

4,640,116 TWO-OUT BELT SYSTEM

Omar L. Brown, Dayton, Ohio, assignor to Dayton Reliable Tool & Mfg. Co., Dayton, Ohio

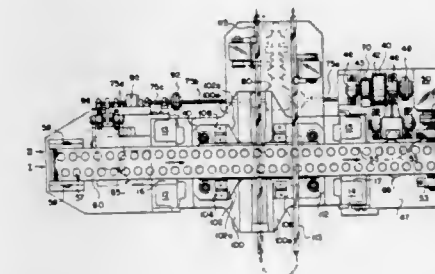
Division of Ser. No. 610,446, May 15, 1984, Pat. No. 4,568,230.

This application Sep. 3, 1985, Ser. No. 772,278

Int. Cl.⁴ B21D 22/00

U.S. Cl. 72—356

2 Claims



1. A method of maximizing the output of a single-acting press for producing can ends, said press having a rectangular bed and crown and a slide reciprocally driven between the bed and crown, comprising fitting said bed and slide with pairs of multi-station end tooling arranged progressively and centered from side to side of the press, fitting said bed and slide with multi-station tab tooling arranged progressively from front to back of the press across the center of the end tooling, feeding a strip of tab stock through the tab tooling and back to tab insert stations in the end tooling.

4,640,117 CRIMPING TOOL

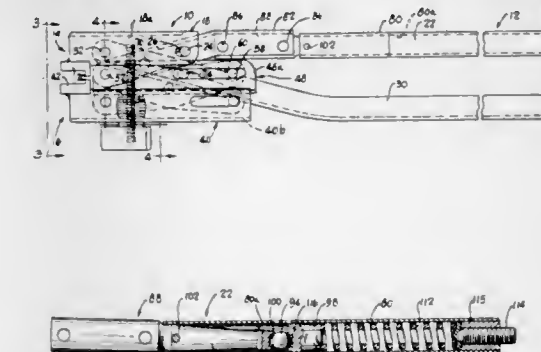
J. Edward C. Anderson, Moreland Hills, and Merritt A. Osborn, Chesterland, both of Ohio, assignors to The Bares Group, Chagrin Falls, Ohio

Filed Jun. 29, 1984, Ser. No. 626,290

Int. Cl.⁴ B21D 7/06

U.S. Cl. 72—410

5 Claims



1. A plier type hand tool for squeezing, compressing, crimping or pressing, comprising:

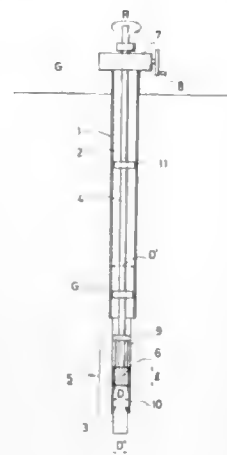
- a pair of jaw assemblies including associated jaws movable towards and away from each other;
- a pair of handles for actuating said jaw assemblies;
- linkage means coupling said handles to said jaws such that movement of said handles toward each other produces squeezing movement in said jaw;
- at least one of said handles including:
 - an extension forming part of one of said jaw assemblies;
 - a handle member pivotally connected to said extension;

- (iii) said handle member including a spring biased slide element slidable within a portion of said handle member;
- (iv) a detent means captured between said extension and said slide, said extension and slide defining confronting associated recesses when said extension and handle member are in a predetermined position;
- (v) said detent means being releasably captured between said recesses and operative to maintain said predetermined extension and handle member in said position until sufficient force is applied by said jaws to overcome the spring biasing force exerted by said slide on said detent means whereupon said handle member pivots with respect to said extension to provide a sensory indication that a predetermined force has been exerted by said jaws.

4,640,118
METHOD OF AND APPARATUS FOR MEASURING PILE SKIN FRICTION
 Takao Kishida, and Takeo Fukaya, both of Yokohama, Japan, assignors to Toa Harbor Works, Co., Ltd., Tokyo, Japan
 Filed Aug. 21, 1985, Ser. No. 768,085
 Claims priority, application Japan, Aug. 23, 1984, 59-174052
 Int. Cl.⁴ G01N 19/02

U.S. Cl. 73—9

9 Claims



1. A method of measuring the skin friction of a pile, comprising the steps of drilling a hole into the ground, inserting a casing pipe in said hole, then forming a bored hole below the leading end of the casing pipe, introducing a skin-friction measuring device having a cylindrical testing part in contact with the wall of said bored hole into the above formed bored hole, rotating said cylindrical testing part of said skin-friction measuring device with a boring rod connected to said cylindrical testing part and extending upward through said casing pipe and out the upper end thereof, and determining the friction force generated between said cylindrical testing part and said wall of said bored hole in the ground by the torque required for the rotations of said cylindrical testing part.

4,640,119
UTILITY POLE TESTER
 Frank Ludwig, Richmond, Mich., assignor to P.T.E. Inc. and American Energy Services, Inc., both of Richmond, Mich.
 Filed Jul. 5, 1985, Ser. No. 752,130
 Int. Cl.⁴ G01N 3/30

U.S. Cl. 73—12

12 Claims

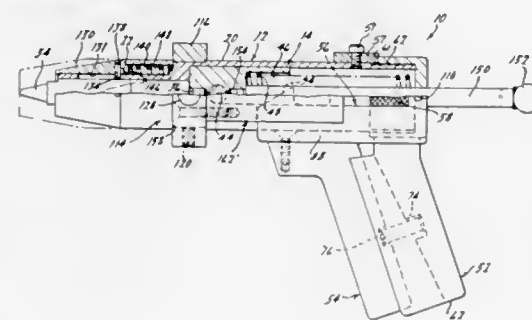
1. A portable testing apparatus for determining the degree of degradation of metal surface, said testing apparatus comprising:

an elongated housing having a bore extending longitudinally therethrough;

removable closure means closing one end of said bore;

piston means movably disposed within said bore, said piston means including an impacting portion removably secured to said piston means and movable into and out of said housing, said impacting portion being operative to impact said metal surface to be tested;

biasing means operative to urge said piston means in a forward direction whereby said impacting portion extends outwardly of said housing;



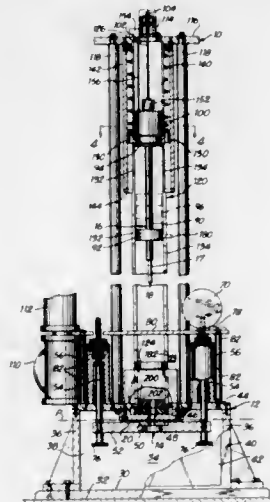
handle means secured to said housing, said handle means including trigger means operative when in a first position to retain said piston means in a rearward position within said housing and when moved to a second position to release said piston whereby said biasing means may operate to drive said piston forwardly with respect to said housing so as to cause said impacting portion to impact said metal surface with a predetermined force.

a nose cone assembly longitudinally movably secured to said housing, said nose cone assembly being operative to surround and protect a part of said impacting portion projecting outwardly of said housing when said piston is in a forward position.

4,640,120
IMPACT TESTING APPARATUS
 Ronald F. Garritano, Flemington; John J. O'Connor, Roselle Park, and Manuel E. Papayanopoulos, Elizabeth, all of N.J., assignors to Rheometrics, Inc., Piscataway, N.J.
 Filed Jun. 21, 1985, Ser. No. 747,646
 Int. Cl.⁴ G01N 3/30

U.S. Cl. 73—12

25 Claims



1. In testing apparatus for determining impact characteristics of a test specimen placed at a prescribed location in a testing

station, the test specimen being subjected to impact by a test element traveling under free-fall at a predetermined velocity and level of kinetic energy, the improvement comprising:

holding means for holding the test specimen at the prescribed location in the testing station;

impact means carrying said test element and moveable between a first position located at the testing station and a second position spaced above the testing station;

elevating means for elevating the impact means and the test element from the first position to the second position to impart potential energy to the impact means related to the height of the second position above the first position;

coupling means for coupling the impact means with the elevating means;

supplemental energy-input means responsive to movement of the impact means beyond an intermediate position located between the first position and the second position, during movement of the impact means in the direction from the first position toward the second position to impart additional energy to the impact means;

guide means for guiding the impact means for elevation by the elevating means between the first position and the second position and for essentially free-fall between the intermediate position and the first position;

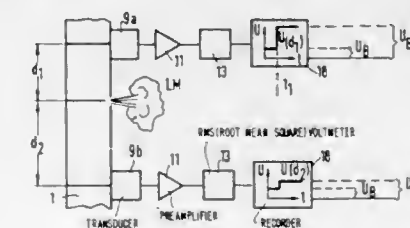
control means for determining the height of the second position above the first position and above the intermediate position, said height being determined by the total energy available to the impact means to provide the predetermined velocity and level of kinetic energy in the impact means at the testing station, said control means being coupled to the coupling means for operating the coupling means to release the impact means at the second position for downward movement and essentially free-fall between the intermediate position and the first position, whereby the test element will impact the test specimen during free-fall and at the desired predetermined velocity and level of kinetic energy.

4,640,121
METHOD FOR FINDING A LEAK IN PRESSURE-CARRYING VESSELS AND APPARATUS FOR CARRYING OUT THE METHOD
 Wilhelm Leuker, Gosberg; Günter Stipsits, Neunkirchen/Brand, and Bernhard Thiel, Forchheim, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany
 Filed Sep. 28, 1984, Ser. No. 655,864
 Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336245

Int. Cl.⁴ G01M 3/24

U.S. Cl. 73—40.5 A

18 Claims



1. Method for determining the location of a leak in pressure-carrying vessels, including a plurality of probes spaced apart on walls of the vessels for picking up high-frequency solid-conducted sound noises, and an amplifier connected to the probes, which comprises determining the solid-conducted sound noises by comparing with a background noise averaged over at least ten minutes, forming an r.m.s. value in the amplifier from the sound noises, comparing the r.m.s. value with a threshold value, issuing a signal if the r.m.s. value exceeds the threshold value, comparing the solid-conducted sound noises from at least two probes with each other for localizing the leak, plac-

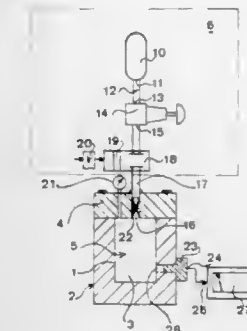
ing the r.m.s. value of the solid-conducted sound noises in a relationship relative to the spacing between the probes based on the comparison, and determining the location of the leak as the location of the maximum solid-conducted sound noise from the relationship.

4,640,122
APPARATUS FOR LEAK TESTING AT LEAST ONE WALL PORTION AND/OR A VOLUME DELIMITED BY SAID WALL PORTION, AND A METHOD OF DETERMINING OPTIMUM PARAMETERS FOR SAID LEAK TESTING
 Roger A. Héraud, Orsay, and Jacques Amiel, Clamart, both of France, assignors to Societe de Traitement Automatique—Controle et Etancheite "T R A C E", Fresnes, France
 Filed Sep. 10, 1985, Ser. No. 774,494
 Claims priority, application France, Sep. 10, 1984, 84 13827; Jul. 22, 1985, 85 11153

Int. Cl.⁴ G01M 3/32

U.S. Cl. 73—49.2

16 Claims



1. In an apparatus for leak testing at least a portion of the wall of a part, and/or for leak testing a volume, the apparatus comprising:
- means cooperating with said wall or volume to be tested to constitute an enclosure and including means for conveying a reference gas into said enclosure;
- means for cooling said gas inside said enclosure; and
- means for measuring the pressure of said gas inside said enclosure;
- the improvement whereby said means for cooling said gas inside said enclosure comprises at least one nozzle and said nozzle is connected in series with said means for conveying the reference gas to the enclosure.

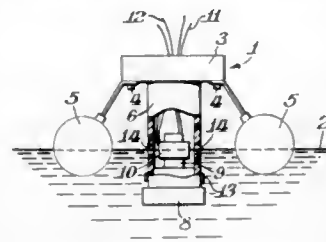
4,640,123
LEAK DETECTING DEVICE
 Haruo Imaizumi, Nishi-Asuma, and Satoru Kobayashi, Hitaka, both of Japan, assignors to Junkosha Company, Ltd., Tokyo, Japan
 Filed Aug. 22, 1985, Ser. No. 768,456
 Claims priority, application Japan, Aug. 29, 1984, 59-181262
 Int. Cl.⁴ G01N 27/00

U.S. Cl. 73—61.1 R

3 Claims

1. A leak detecting device comprising a detecting element contained in a suitable housing and submerged at least partially in water for detecting the leakage of a substance different from said water, and a vibrator disposed in the vicinity of said de-

detecting element for applying periodic vibrations to said detecting element at a suitable frequency, wherein said detecting

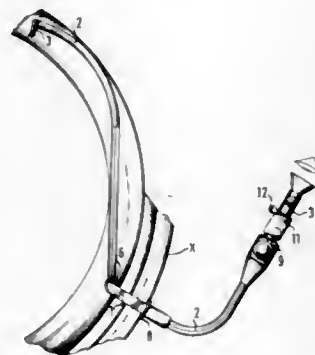


element is arranged on the outer surface of a column-shaped vibrator.

4,640,124
TECNOSCOPIES
Jörg Diener, Oberderdingen, and Ehrenfried Bitroff, Knittlinger-Kleinwillars, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany
Filed Feb. 4, 1985, Ser. No. 697,623
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405541

Int. Cl.⁴ G02B 23/26
U.S. Cl. 73-116

8 Claims



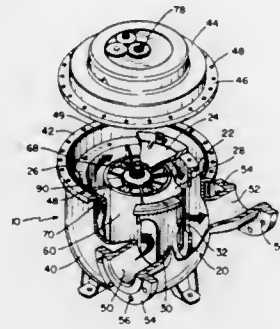
1. A technoscope for internal inspection of power plants and the like by insertion through a wall port thereof, said technoscope comprising:

- a rigid first guide shaft of non-circular cross-section for insertion in said wall port, said shaft having a distal end equipped with a lateral outlet adjacent the distal end;
- a flexible second guiding element being pass through said first guide shaft with a sliding fit and extend out of said lateral outlet, said second guiding element having a deflectable distal end portion, a proximal end portion with a control system for controlling deflection of said distal end portion and an axial intermediate portion whose cross-section is complementary with the internal cross-section of the first guide shaft, said second guiding element having an axial passageway extending therethrough; and
- a separate flexible endoscope being slideable received in said axial passageway with a distal end of the flexible endoscope extending pass said distal end of the second guiding element.

4,640,125
ROTARY METERING DEVICE USEFUL WITH ABRASIVE FLUIDS
Frank Carpenter, Lake Charles, La., assignor to Lake Charles Instruments, Inc., Lake Charles, La.
Filed Apr. 8, 1985, Ser. No. 721,075
Int. Cl.⁴ G01F 3/04

U.S. Cl. 73-259

13 Claims



1. An apparatus useful for measuring the flow of abrasive fluids through a pipe, comprising:
- a cylindrical housing having inlet and outlet ports through which the flow of a fluid may be directed;
 - a cylindrical rotor body mounted within said housing for rotation about an axis parallel to the axis of said housing;
 - a flow channel through said housing between said inlet and outlet ports defined by the exterior of said rotor body and the interior of said housing;
 - a plurality of slots through the cylindrical surface of said rotor body, wherein said slots are disposed symmetrically about said rotor body and parallel to the axis of said rotor body, wherein the exposed surfaces of said slots formed by said rotor body comprise a metal of high wear resistance and wherein the hardness of said metal is between 40 and about 70 on the Rockwell C hardness scale;
 - a plurality of blades mounted for shuttle movement transversely of said flow channel and through said slots wherein the hardness of the surface of said blades opposing the exposed surfaces of said slots is between about 40 and about 70 on the Rockwell C hardness scale and less than the hardness of said metal; and
 - means for moving said blades through said slots as said rotor body rotates to repetitively produce a measuring chamber of predetermined volume within said flow channel.

4,640,126
DEVICE FOR MEASURING OIL LEVEL IN AN INTERNAL COMBUSTION ENGINE
Peter A. G. Jänsch, Gothenburg, Sweden, assignor to Sanb-Scania Aktiebolag, Sodertalje, Sweden
Filed May 20, 1985, Ser. No. 735,732
Claims priority, application Sweden, May 21, 1984, 8402722
Int. Cl.⁴ G01F 23/04

U.S. Cl. 73-290 R

1 Claim

1. An oil level meter for an internal combustion engine comprising:
- a measuring tube communicating with an oil reservoir in said engine;
 - a cap for covering an open end of said measuring tube, said cap including a cover formed for connection to said measuring tube; a sealing cover formed with an inner spherical bearing surface; said measuring tube cover and said sealing cover having means for securing said covers together while allowing limited axial movement therebetween; and
 - a sealing member associated with said sealing cover for engaging the open end of said measuring tube;
 - a bearing washer with a spherical bearing surface and a compression spring biased between the inside of the mea-

suring tube cover and one side of the bearing washer; said compression spring urging said sealing cover and said sealing member toward engagement with said open end of said measuring tube;

a rigid oil dipstick; and

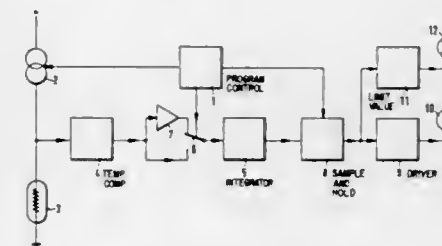


a bearing ball rigidly connected at one end of said dipstick and located between the spherical bearing surfaces of the bearing washer and the sealing cover and under urging of said compression spring articulately connect said cap and said dipstick, thereby forming a ball joint allowing the cap to tilt in all directions relative to the dipstick.

4,640,127
ELECTROTHERMAL MEASUREMENT OF LEVELS COMPENSATED FOR AMBIENT TEMPERATURE
Dieter Schneider, Frankfurt am Main, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed May 1, 1985, Ser. No. 729,493
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1984, 3423802

Int. Cl.⁴ G01F 23/24
U.S. Cl. 73-295

7 Claims



1. A method for electrothermal measurement of liquid level, which measurement is compensated for ambient temperature and employs a resistance probe heated with a constant current during a heating time of predetermined duration, the method further employing means for timing the heating of the probe to provide a first variable derived from at least one probe voltage at the start of the heating time, said first variable being compared in the method with a second variable which is derived from at least one probe voltage at the end of the heating time in order to form a comparison variable which is approximately proportional to the liquid level, the method providing for the forming of at least one of the variables in accordance with a time function, the improvement wherein the method further comprises:

- integrating a probe voltage from the start of the heating time until the middle of the heating time to reduce the effect of disturbance such as noise, etc., on the measurement;
- forming the first variable from the integration of the probe voltage from the start of the heating time until the middle of the heating time;
- integrating the probe voltage from the middle of the heating

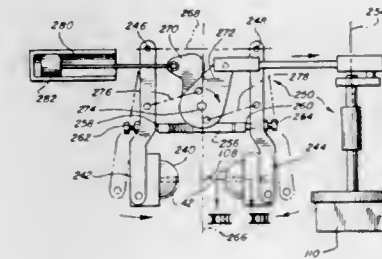
time until the end thereof to reduce the effect of the noise, etc., disturbances on the measurement;

forming the second variable from the integration of the probe voltages from the middle of the heating time until the end thereof; and

subtracting the two variables to form the difference between the first variable and the second variable, the difference being a measure of the liquid level.

4,640,128
MECHANISM FOR PROPER ALIGNMENT OF SENSOR PROBES WITH FLUID SAMPLE CHAMBER
Terry D. Lewis, Aptos, Calif., assignor to The Kendall Company, Boston, Mass.
Filed Dec. 20, 1984, Ser. No. 683,989
Int. Cl.⁴ G01D 3/04; G01N 9/24
U.S. Cl. 73-866.5

22 Claims



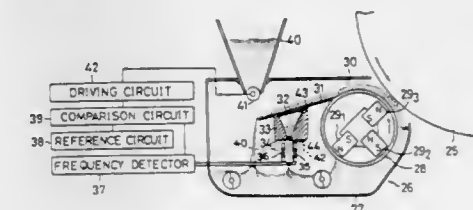
1. In a biological fluid sensor apparatus for sensing fluid in a sample chamber, an apparatus for correctly aligning a pair of sensor probes relative to a sample chamber location, comprising:
- a pair of arms for carrying the pair of sensor probes;
 - means for mounting the arms for movement of the probes toward one another;
 - means for blocking the arms from movement toward one another beyond a preselected limit; and
 - means for moving said arms into blocking engagement with said blocking means.

4,640,129
METHOD AND APPARATUS FOR DETECTING TONER CONCENTRATION OF TWO-COMPONENT DRY DEVELOPER
Seiichi Miyakawa, 1346 Kagawa, Nagareyama-shi, Chiba; Susumu Tatsumi, 17-9 Hinodai 5-chome, Hino-shi, Tokyo, and Koji Sakamoto, 9-14 Chuoh 1-chome, Ohta-ku, Tokyo, all of Japan

Continuation of Ser. No. 362,497, Mar. 26, 1982, abandoned, which is a continuation of Ser. No. 156,411, Jun. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 881,853, Feb. 27, 1978, abandoned. This application Apr. 22, 1985, Ser. No. 726,166

Int. Cl.⁴ G01N 11/06; G03G 9/10
U.S. Cl. 73-866

12 Claims



1. A method of detecting the active toner concentration of a two-component developer comprising a mixture of carrier particles and toner particles including active and fatigued toner

for use in an electrostatic copying apparatus comprising the steps of:

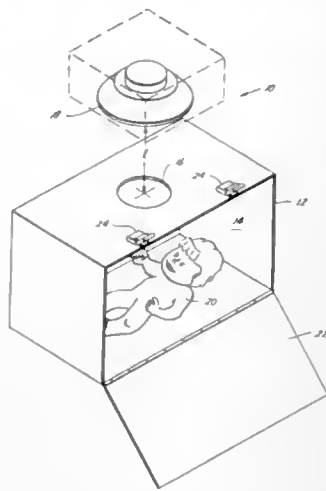
changing the concentration of active toner in said developer according to a predetermined pattern and measuring the flow rate of said developer for each concentration of active toner to obtain the relationship between the flow rate and the active toner concentration of said developer; measuring the flow rate of said developer when its active toner concentration is unknown; and determining the unknown active toner concentration of said developer from the measured flow rate and from the predetermined relationship between the flow rate and the active toner concentration of said developer.

4,640,130

METHOD AND APPARATUS FOR ACOUSTICALLY MEASURING THE VOLUME OF AN OBJECT

Hwai-Ping Sheng, Bellaire; Cutberto Garza, Houston; Dean C. Winter, Houston, and William G. Deskins, Houston, all of Tex., assignors to Baylor College of Medicine, Houston, Tex.
Filed Oct. 29, 1984, Ser. No. 665,800
Int. Cl.⁴ G01N 29/00; G01F 17/00
U.S. Cl. 73-579

8 Claims



1. An apparatus for measuring the volume of an object comprising:

a container adapted to receive the object to be measured and having gas therein, said container having an opening; variable frequency means positioned for producing periodic pressure fluctuations at the mouth of the opening; means for measuring the resonance frequency in the container; and wherein said pressure fluctuation producing means is mechanically uncoupled from the opening so that a uniform and normal pressure wavefront impinges on the opening.

4,640,131

METHOD AND APPARATUS FOR THE ULTRASONIC TESTING OF BOLTS WITH A WALL THICKNESS DISCONTINUITY

Michael Kröning, Röttenbach; Georg Hölzler, Möhrendorf, and Roland Heumüller, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,298
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1984, 3414362

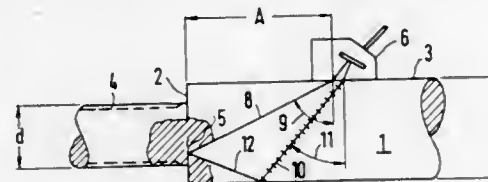
Int. Cl.⁴ G01N 29/04

U.S. Cl. 73-600

3 Claims

1. Method for the ultrasonic testing of bolts for incipient cracks emanating from a wall thickness discontinuity between thinner and thicker parts of the bolt, which comprises placing

an ultrasound transmitter and receiver in the form of a piezo-electric transducer on the periphery of the thicker part of the bolt with the discontinuity located in the near-field region, radiating longitudinal waves at an angle of 55° to 70° and transversal waves at an angle of 25° to 35° from the transducer



in direction toward the discontinuity, and comparing the intensity of reflected transversal and longitudinal waves with an echo characteristic obtained from a test body corresponding to the bolt to be tested, having slots formed therein simulating incipient cracks of different depths.

4,640,132

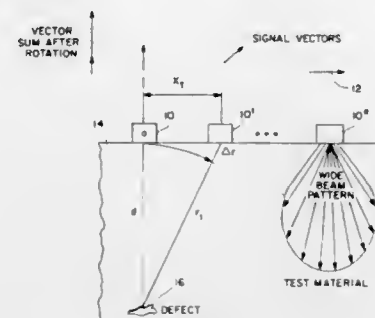
ENHANCEMENT OF LINEAR SCAN ULTRASONICS

John H. Flora, and Thomas Powers, Jr., both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 15, 1985, Ser. No. 691,599
Int. Cl.⁴ G01N 29/04

U.S. Cl. 73-602

2 Claims



1. A method for the ultrasonic testing of a coarse-grained material, comprising:

transmitting ultrasonic waves into the material to produce reflected signals which are characteristic of internal structures of the material; detecting the reflected signals at a plurality of spaced locations distributed along a known scan path over the material; storing the detected reflected signal for each location; for each individual location, multiplying the stored detected reflected signal for each other location by a corrective phase shift factor which is characteristic of a time delay for the detected reflected signal from the other locations to the individual location, to obtain a rotated reflected signal for each other location; and for each individual location, adding the rotated reflected signal for each other location to the reflected signal for the individual location to form a composite signal, designated ST_a, indicative of internal structures in the material, which equals:

$$\sum_{i=-N}^N (S_{a+i}) (e^{2K(d^2 + X_i^2)})$$

wherein N is the number of locations before an individual location a, N' is the number of locations after position a,

S_{a+i} is the reflected signal at each position a+i, i being a number designating each individual location, X_i is the distance between each adjacent location along the scan path, and d being the depth from a surface of the material to the internal structure which causes the reflected signal.

4,640,133

ULTRASONIC TESTING DEVICE PROVIDED WITH A ROLLING MEANS

Daniel Lecuru, Puteaux, and Jean-Pierre Choffy, Rueil-Malmaison, both of France, assignors to Aerospatiale Societe National Industrielle, Paris, France

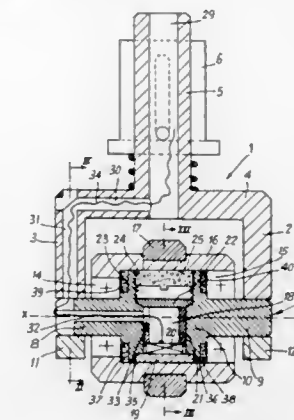
Filed Apr. 15, 1986, Ser. No. 852,125

Claims priority, application France, Apr. 17, 1985, 85 05826

Int. Cl.⁴ G01N 29/04

U.S. Cl. 73-639

8 Claims



1. In an ultrasonic testing device of the type comprising a fixed hub with at least one ultrasonic transducer as well as an annular rolling means having an inner face and mounted for rotation on said hub and surrounding said transducer, this latter being mounted on the hub through a support whose external face, opposite said transducer, defines with the inner face of said rolling means a rotational sliding slit, coupling between said support and said rolling means being provided by an ultrasonic coupling liquid present in said slit, there is further provided a spongy resilient element imbedded with said coupling liquid, said element being housed in a recess in said hub and being applied resiliently against the inner face of said rolling means.

4,640,134

APPARATUS AND METHOD FOR ANALYZING ACOUSTICAL SIGNALS

James A. Simmons, Eugene, Oreg., assignor to Bio-Dynamics Research & Development Corporation, Eugene, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,523

Int. Cl.⁴ G01H 3/08; G01R 23/165

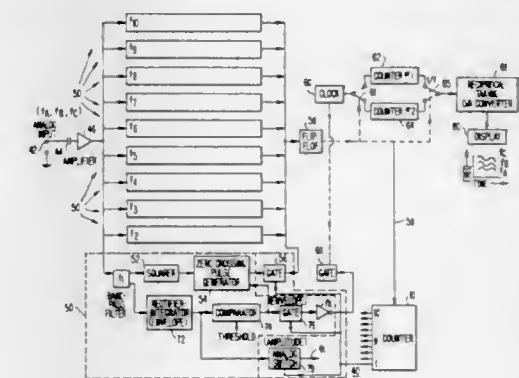
U.S. Cl. 73-648

14 Claims

1. Apparatus for analyzing an acoustical signal having a plurality of signal components extending over a band of signal frequencies, comprising:

means for separating an acoustical signal into a plurality of sub-bands; means for measuring the time period between successive zero-crossings of signal components in each of said sub-bands; reciprocal means for extracting the reciprocal of the zero-crossing time periods of signal components in each of said sub-bands; display means for simultaneously displaying the time period reciprocals of signal components in each of said sub-bands; and means for sequentially scanning each of said sub-bands for the presence of a signal component therein, for causing a

zero-crossing time period measurement to be made if said signal component is present in the selected sub-band, and



for advancing to the next sub-band if no such signal component is present.

4,640,135

SENSOR

Walter Kästel, Steinen, and Wolfgang Geiger, Schopfheim, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

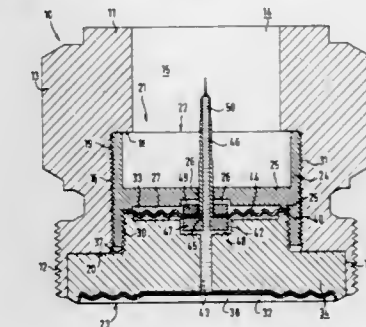
Filed Jun. 14, 1985, Ser. No. 745,282

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1984, 3422945

Int. Cl.⁴ G01L 7/08

U.S. Cl. 73-716

12 Claims



1. A sensor comprising a housing having at least two diaphragms supported therein which enclose a volume filled with hydraulic fluid, one of said diaphragms having an opening, and a narrow tube connected to said diaphragm with the opening in a fluid tight manner around the edge of the opening to permit hydraulic fluid to be introduced into the volume and for serving as a force-transmitting or travel-transmitting member for connecting the diaphragm with the opening to a force or travel sensor.

4,640,136

METHOD FOR THE PROCESSING OF MEASUREMENT DATA IN A GAS FRICTION VACUUM METER AND A GAS FRICTION VACUUM METER EQUIPPED WITH A CIRCUIT FOR THE PRACTICE OF THIS METHOD

Lothar Schmidt, Kerpen-Sindorf, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 11, 1984, Ser. No. 680,378

Claims priority, application European Pat. Off., Dec. 17, 1983, 83112728.7

Int. Cl.⁴ G01L 9/00

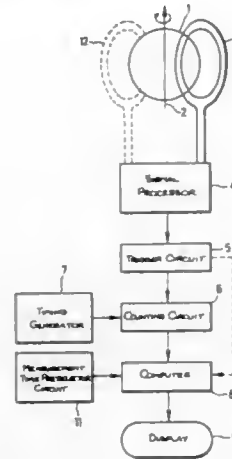
U.S. Cl. 73-753

6 Claims

1. A method for measurement value processing in a gas

friction vacuum meter, in which the pressure value is determined by the drag on a magnetically suspended free ball, comprising:

forming a first time value t_{n-1} by measuring the time of $N/2$ periods of revolution of the ball and a second time value by directly following measurement of the time t_n of additional $N/2$ periods of revolution of the ball, comparing the



two time values to determine a pressure value, repeating this pressure value determination from two time values after each period of revolution for the same number of N periods of rotation of the ball to a total of Z determinations, and displaying the average of the Z -times-determined pressure value, $N:Z$ being as at least one of 3:1, 4:1 and 5:1.

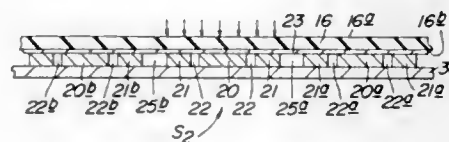
4,640,137

TACTILE SENSOR

Michael W. Trull, Cary, and Richard C. Powell, Apex, both of N.C., assignors to Lord Corporation, Erie, Pa.
Filed May 31, 1985, Ser. No. 739,676
Int. Cl.⁴ G01D 7/02; H01C 10/10

U.S. Cl. 73-862.04

30 Claims



1. A tactile sensor for identifying the magnitudes and locations of pressures applied substantially contemporaneously thereto at a plurality of locations thereon, comprising:

a resilient platen having upper and lower surfaces;
a plurality of laterally spaced pressure sensing sites underlying said lower surface;

each of said pressure sensing sites including emitter electrode means and companion collector electrode means surrounding said emitter electrode means in spaced relation therewith;

flexible conductive means on said lower surface of said platen overlying said pressure sensing sites and cooperable therewith when said platen is deflected downwardly against a selected site to receive current emitted from said emitter electrode means and to conduct to said companion collector electrode means substantially all of the current flowing into the conductive means from said emitter electrode means; and

control means for measuring, and for determining the locations of said sites constituting the source of, the current

conducted from said emitter electrode means to said collector electrode means at each of said sites.

4,640,138

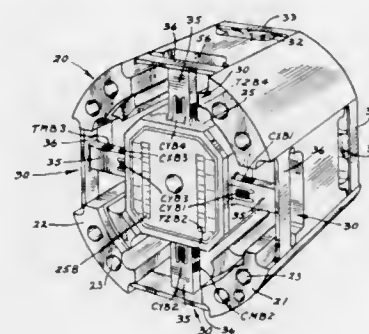
MULTIPLE AXIS LOAD SENSITIVE TRANSDUCER
Richard A. Meyer, Carver, and Anthony E. Lowe, Eden Prairie, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Mar. 6, 1985, Ser. No. 708,596

Int. Cl.⁴ G01L 5/16

U.S. Cl. 73-862.04

7 Claims



1. A load transducer for measuring loads in a plurality of axes including means forming an outer housing;

means for attaching said outer housing to a first member;

a hub located substantially within said outer housing and being adapted to carry a second member;

first and second spiders joining said hub to said outer housing, each spider comprising a plurality of support arms spaced substantially 90° apart and extending substantially radially from said hub, the support arms of each spider being aligned in a separate spider plane generally perpendicular to a reference central longitudinal axis through the outer housing, said spiders being spaced apart from each other along the central longitudinal axis;

separate strap means for joining the outer ends of each of said support arms to said outer housing comprising flexure beams which are integrally supported on the housing at the opposite ends of the flexure beams and integrally joined to respective ends of the support arms, said flexure beams having planes parallel to the central longitudinal axis and having beam longitudinal axes, said flexure beams being flexible to deflect under loads between said outer housing and hub tending to twist the flexure beams about the beam longitudinal axis and under loads acting perpendicular to the planes of the flexure beams, and carrying substantial loads in directions parallel to the plane of the flexure beams;

means to individually measure strain in each of said support arms when said hub is loaded relative to the outer housing, said strain being measured in a direction along said central longitudinal axis, and in at least two mutually perpendicular directions lying in each of said spider planes, and said means to measure strain including means to sense loads in said support arms caused by rotational loads about said central longitudinal axis between said outer housing and said hub; and

said housing, said hub, said support arms of said spiders and said flexure beams being formed as an integral unit from a single block of material with no individual separable pieces.

4,640,139

STRAIN GAUGE DEVICE FOR MEASURING MULTICOMPONENT FORCES AND TORQUES

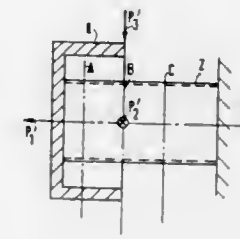
Harald Fritz, Waldbronn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 634,970, Jul. 27, 1984, abandoned. This application May 21, 1986, Ser. No. 868,189

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1983, 3327141; Feb. 20, 1984, 3406059

Int. Cl.⁴ G01L 5/16

U.S. Cl. 73-862.04

11 Claims



1. A device for use in the measurement of multicomponent forces and torques, said device connectable to a current supply, computing means being connectable to said device for calculating, in response to electrical signals therefrom orthogonal components of a composite unbalanced force and orthogonal components of a composite torque acting on said device, said device comprising:

an elastically and substantially uniformly deformable body in the form of a hollow cylinder firmly clamped at one end and rigid at an opposite end with a force introduction cup partially surrounding said cylinder;

a multiplicity of wire strain gauges mechanically attached to said deformable body and electrically connected at one end to each other, said gauges being operatively connectable to the current supply and to the computing means for supplying to said computing means voltages partially determined by the magnitudes and directions of the composite unbalanced force and composite torque acting on the device and partially determined by the respective positions and respective orientations of said gauges with respect to said body, said gauges being disposed about said deformable body at positions and orientations so that sufficient number of equations are available for use by said computing means to calculate each component of the composite unbalanced force and each component of the composite torque acting on the device, said gauges including at least seven gauges mounted on said cylinder in at least two parallel planes extending substantially transversely to an axis of symmetry of said cylinder, said cup having a rim defining one of said planes, said seven gauges including a first pair of gauges oriented parallel to said axis and perpendicularly to said planes and disposed on diametrically opposed sides of said cylinder, said seven gauges further including a second pair of gauges lying in said planes in a circumferential direction with respect to said cylinder and disposed on diametrically opposed sides of said cylinder from one another, said seven gauges further including at least a third pair of gauges inclined at substantially 45° to said planes and substantially 90° with respect to one another.

4,640,140

AEROSOL SAMPLER WITH CASCADE IMPACTION AND UNIFORM DEPOSITION

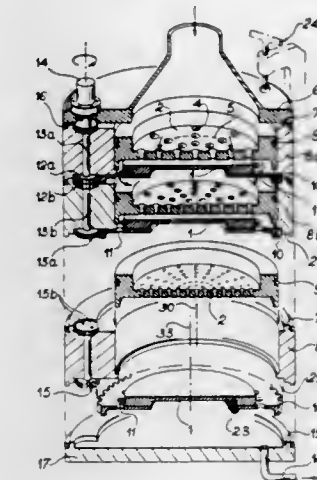
Patrick Burghoffer, Lognes; Michel Pourprix, Montlhéry, and Patrick Poussier, Vincennes, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Dec. 21, 1984, Ser. No. 684,864

Claims priority, application France, Dec. 23, 1983, 83 20697
Int. Cl.⁴ G01N 1/24

U.S. Cl. 73-863.22

9 Claims



1. An apparatus of the aerosol sampler type with cascade impaction and uniform deposition comprising a conical air inlet fixed to a tight, hollow, cylindrical chamber of revolution constituted by the superimposing of several stages in the form of hollow cylinders of revolution traversed by the air flow from the conical inlet and each having a circular plate perforated with holes located on concentric circles coaxial to said plate and having an identical diameter progressively decreasing in each stage, as well as a collection disk located downstream of the perforated plate and whose diameter is smaller than the internal diameter of the impactor chamber, incorporating means for ensuring the vertical downward circulation of the air and means for the relative rotation of each perforated plate with respect to the corresponding collection disk, wherein in each stage, the axis of rotation of the disk passes through the disk and is offset relative to the axis of the circular perforated plate.

4,640,141

GEARBOX-TRANSMISSION WITH SYNCHRONIZED REVERSE-GEAR

Gunter Knödel, Mühlacker, and Georg Helms, Ludwigsburg, both of Fed. Rep. of Germany, assignors to GETRAG Getriebe- und Zahnradfabrik GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,077

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320494

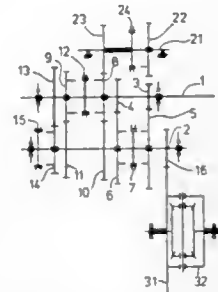
Int. Cl.⁴ F16H 3/08

U.S. Cl. 74-357

5 Claims

1. A gearbox-transmission for motor vehicles, comprising:
a first shaft;
a second shaft arranged in parallel to the first shaft;
a first gearwheel fixed to the first shaft;
a second gearwheel rotatably mounted to the second shaft and engaging the first gearwheel;
means for fixing the second gearwheel to the second shaft to provide a first forward gear;
a third gearwheel rotatably mounted to the first shaft;
a fourth gearwheel fixed to the second shaft and engaging the third gearwheel;

means for fixing the third gearwheel to the first shaft to provide a second forward gear;
a third shaft arranged in parallel to the first shaft;
a fifth gearwheel rotatably mounted to the third shaft and in driving connection with the first gearwheel;



a sixth gearwheel rotatably mounted to the third shaft and in driving connection with the fourth gearwheel; and
means for connecting the fifth gearwheel and the sixth gearwheel to provide a reverse gear.

4,640,142

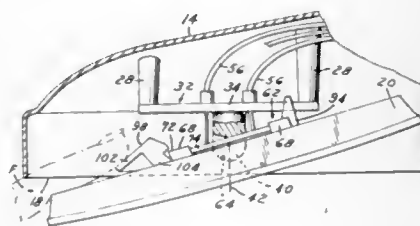
ADJUSTABLE AUTOMOBILE MIRROR SYSTEM
Michael Cummins, Mount Clemens; James M. Cummins, Warren, and Raymond A. Theys, Clawson, all of Mich., assignors to NI Industries, Inc., Long Beach, Calif.

Filed May 12, 1983, Ser. No. 493,934

Int. Cl.⁴ F16C 1/10

U.S. Cl. 74—501 R

27 Claims



1. In a remotely controlled mirror system of the type including a mirror anchored to a mirror retainer whose position is universally adjustable relative to a mirror housing by means of a cable linkage interconnecting the mirror retainer with a control unit, the improvement comprising:

- a pivot boss on a longitudinal pivot axis mounted upon the housing and having a mounting head;
- a pivot block having a socket element receiving and movably mounted upon said head;
- said block being held in abutting and pivotal contact by the tension of the cable linkage exerting a force pulling the block towards and against said head;
- pin and slot means between said block and head, constraining said block from movement in a plane through said block; and
- resilient detent means on said mirror retainer receiving and retainingly engaging said pivot block for universal movements therewith;
- said detent means being yieldable to facilitate selective assembly of said mirror retainer on and disassembly from said pivot block;
- said mirror retainer defining a polygonal recess adjacent said detent means;

said pivot block being of a size and shape to substantially fill said recess; and
said pivot block being retained in said recess by said detent means.

4,640,143

SELF-LOCKING DIFFERENTIAL WITH HEXAGONAL DRIVE ROD

Carl E. Schou, 1438 Lone Pine Rd., Bloomfield Hills, Mich. 48013

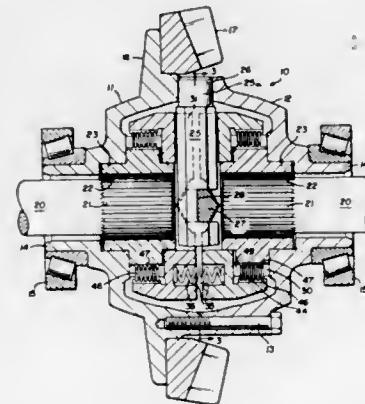
Continuation-in-part of Ser. No. 371,034, Apr. 22, 1982, Pat. No. 4,498,355. This application Feb. 7, 1985, Ser. No. 698,996

The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.

Int. Cl.⁴ F16H 35/04

U.S. Cl. 74—650

3 Claims



1. A differential assembly, self-releasing locking means for connecting and disconnecting the end portions of each of a pair of axially aligned, conventional axle-like shafts to a conventional power rotated housing which contains said end portions, comprising:

- a diametrically arranged, hexagonal cross-section, drive rod housed between the adjacent shaft end portions and having its outer ends fixedly connected to the housing for rotating therewith;
- a pair of closely spaced apart, opposing coupling rings in axial alignment with and surrounding bushing-like hubs mounted upon the shaft end portions;
- pairs of aligned, adjacent V-shaped notches formed in the facing ends of the coupling rings with the drive rod radially extending through the V-shaped notches, and with the V-shaped notch forming walls being parallel to and slightly spaced from their adjacent rod faces;
- said drive rod being positioned between said coupling rings and having opposed lead faces which are perpendicular to the plane of rotation of said drive rod;
- a clutch means releasably interconnecting each of the coupling rings to the bushing-like hub which said ring surrounds, said clutch means being engaged by axially outwardly directed pressure caused by movement of the coupling ring away from the opposite coupling ring, and said clutch means being disengaged upon release of the ring pressure due to movement of the ring inwardly towards the opposite coupling ring, and each of said clutch means including a series of interleaved ring-like clutch plates surrounding a shaft end hub, and being surrounded by a coupling ring, and with alternate plates being spline connected to the coupling ring and to the hub, with the interleaved clutch plates being relatively axially movable together into engaging surface to surface contact for locking and being movable apart from each other for unlocking in response to corresponding movement of their coupling ring;
- said drive rod including a pair of opposed side walls associ-

ated with each lead face, each drive rod side wall forming a pressure angle "A" with respect to its associated lead face with angle "A" being defined as follows:

$$\tan A \cong \frac{r}{R \times N \times U}$$

A=pressure angle

r=outer radius of coupling rings

R=mean radius of clutch means

N=number of friction surfaces on clutch plates

U=coefficient of friction for friction surfaces

whereby during normal powered rotation of the housing, the drive rod rotates with the housing and engages the V-shaped notch forming walls that are in its path of rotation for rotating the coupling rings and simultaneously, for wedging the V-shaped notch forming walls apart, causing the coupling rings to move axially apart and to apply axially outwardly directed pressure upon the clutch means to thereby lock the hubs and shaft end portions to the housing for rotation therewith; but when either of the shafts rotate faster than the rotation of the housing, the coupling ring of that shaft angularly moves forwardly relative to the drive rod so as to disengage the rod from the notch forming walls for that coupling ring resulting in that coupling ring moving inwardly towards the opposite coupling ring and releasing its pressure upon, and consequently unlocking, its clutch means so that its shaft may free wheel relative to the housing;

and stop means connecting the coupling rings for limited relative angular movement of one coupling ring relative to the other so that during the times that the drive rod is disengaged from the notch forming walls in the path of its direction of rotation, the rod is roughly centered within the walls forming such notches, and said stop means being formed of a number of pins, each having one end secured to one of the coupling rings, and its opposite end extending towards and loosely fitting into a socket formed in the other coupling ring, with the degree of looseness corresponding to the permissible angular movement of one ring relative to the other for centering the drive rod within the notches of one ring, and coil springs means arranged between and normally spring pressing the two coupling rings apart in the axial direction for normally tending to move the rings axially away from the rod and into position for applying pressure to their respective clutch means for engaging the clutch means.

4,640,144

MOTION INTERCONVERSION APPARATUS

Martin McLendon, 11173 Kelowna St., San Diego, Calif. 92126

Filed Aug. 12, 1985, Ser. No. 764,795

Int. Cl.⁴ F16H 25/12

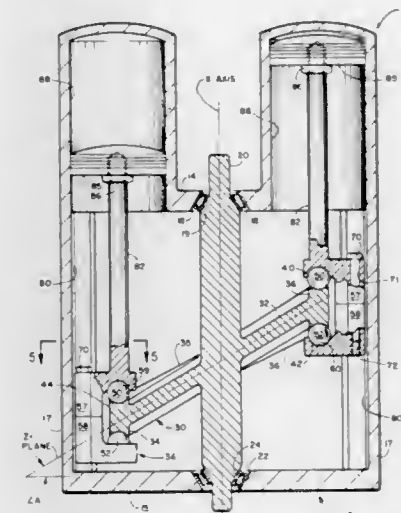
U.S. Cl. 74—56

9 Claims

1. Apparatus for interconversion of reciprocal and rotary motion comprising:

- an axle having a longitudinally extending axis;
- a housing;
- means for rotationally mounting said axle in said housing;
- a rotative slant having a ring portion having a top surface and a bottom surface, said rotative slant being mounted on said axle so that they rotate as one, said rotative slant having a predetermined plane that passes through it intermediate the top and bottom surface of its ring portion, said predetermined plane intersects the longitudinal axis of said axle at a predetermined acute angle;
- a first continuous groove formed in the top surface of the ring portion of said rotative slant and a second continuous groove formed in the bottom surface of the ring portion of said rotative slant;
- at least one primary ball adapted to ride in said first continuous groove and at least one secondary ball adapted to ride in said second continuous groove;
- at least one coupling slide for each pair of primary and

secondary balls, said coupling slide having a first retaining means for capturing the top surface of said primary ball and maintaining it in said first continuous groove while permitting free rotation therein and second retaining means for capturing the bottom surface of said secondary ball and maintaining it in said second continuous groove while permitting free rotation therein;



4,640,145

MULTIPLE COUNTERSHAFT TRANSMISSION

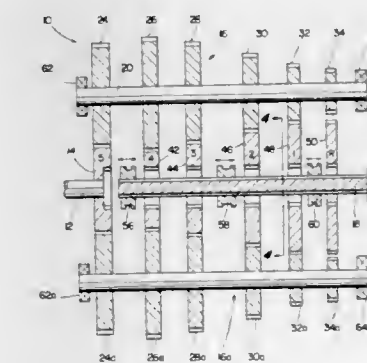
John R. Vandervoort, Richland, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 31, 1981, Ser. No. 289,007

Int. Cl.⁴ F16H 3/08

U.S. Cl. 74—325

11 Claims



1. An improved change gear transmission of the type comprising an input shaft having an input gear thereon, a mainshaft, at least two substantially identical countershafts equally circumferentially spaced about said mainshaft and driven by said input gear, said countershafts having an axis of rotation substantially parallel to the axis of rotation of said mainshaft, each of said countershafts having a plurality of countershaft gears supported thereon for rotation therewith, a plurality of

mainshaft gears surrounding said mainshaft and constantly meshed with one countershaft gear on each countershaft and clutch means for selectively clutching said mainshaft gears one at a time to said mainshaft, the improvement comprising:

said input gear and each of said mainshaft gears have a number of gear teeth defined by the relationship:

M is not equal to XN

wherein;

M =number of gear teeth on said input gear and said mainshaft gears,

X =a whole integer, and

N =the number of substantially identical countershafts.

4,640,146

MULTIRATIO CONSTANT MESH CHANGE SPEED TRANSMISSION

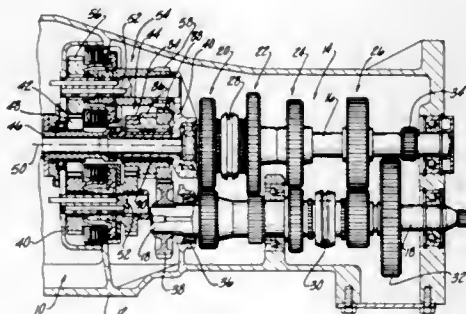
John Buback, Pontiac, Mich., assignor to Massey-Ferguson Inc., Des Moines, Iowa

Filed Apr. 25, 1983, Ser. No. 488,495

Int. Cl.⁴ F16H 3/08

U.S. Cl. 74—359

6 Claims



1. A multiratio constant mesh change speed transmission comprising:

- a transmission housing;
- an input gear rotatably mounted within the transmission housing for rotation about a central axis;
- a plurality of support shafts nonrotatably carried by the transmission housing substantially equal radial distances away from said central axis;
- a pair of gears rotatably journaled on each of said support shafts, each of said pair of gears including a first gear in constant mesh with said input gear, and a second gear;
- a clutch pack assembly rotatably journaled on each of said support shafts, each assembly extending between the first and second gears and being capable when engaged of causing the first gear to be drivingly coupled to the second gear;
- a further shaft mounted within the housing coaxial with the central axis;
- a cluster of spaced apart output gears mounted on said further shaft for rotation with each other and each of said output gears being in constant mesh with one of said second gears; and
- control means capable of selectively engaging one of said clutch pack assemblies at a time, whereby the output speed of the transmission can be varied.

4,640,147

GEAR ASSEMBLY ADAPTED FOR MATING WITH A THIRD GEAR WITHOUT BACKLASH

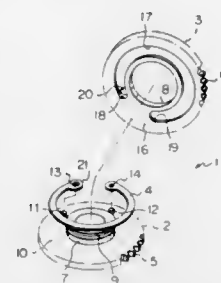
Massao Yasukawa, Okazaki, and Yukiyasu Taguchi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 7, 1985, Ser. No. 742,294

Claims priority, application Japan, Jun. 12, 1984, 59-86061[U] Int. Cl.⁴ F16H 55/18

U.S. Cl. 74—409

6 Claims



1. A gear assembly adapted for mating with a third gear in a non-backlash manner, said assembly comprising:

- first and second circular gears arranged so as to be coaxially and relatively rotatable, said gears having peripheral teeth with identical tooth profiles and having inner surfaces opposing each other;
- first and second pin means standing on the inner surface of the first gear;
- a spring having a generally arcuate shape with first and second ends and having first and second hole means adjacent to the respective ends thereof, said spring being carried by said first gear in a prestressed state by said first and second pin means engaged with said respective first and second hole means at each end of the spring, at least said first hole means having a dimension, taken circumferentially of the assembly, greater than that of the associated first pin means so that said spring can be elastically deformed by application of a force to said spring at the first end thereof; and
- a wall means on the inner surface of said second gear for defining a groove to cover said spring at least partly in the axial direction of the assembly, a part of said wall means abutting against said one end of said spring to cause elastic deformation to said spring, said first and second gears together being adapted to mate with the common third gear under the elastic deformation of said spring to provide non-backlash mating with said third gear.

4,640,148

STEERING MECHANISM OF RACK-AND-PINION TYPE

Akira Hasegawa, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 18, 1985, Ser. No. 756,276

Claims priority, application Japan, Jul. 19, 1984, 59-109445[U]

Int. Cl.⁴ B62D 3/12

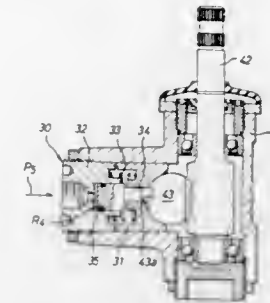
U.S. Cl. 74—422

3 Claims

1. A steering mechanism of the rack-and-pinion type comprising a gear housing integrally formed at one side thereof with a radial cylinder portion, a pinion shaft rotatably mounted within said gear housing and arranged to be operatively connected to a steering wheel, a rack member axially slidably carried on said gear housing across said pinion shaft and being in mesh with said pinion shaft to be moved in response to rotation of said pinion shaft, a guide member slidably disposed within the radial cylinder portion of said gear housing and having a thrust surface for slidable engagement with the rear surface of said rack member, a closure member threaded into the radial cylinder portion of said gear housing and fastened in

place, and a compression spring interposed between said guide member and said closure member to bias said guide member toward said rack member,

wherein said rack member is formed at the rear portion thereof with an axial cam groove, a cam follower element is slidably disposed within an axial bore of said guide member and engaged at one end thereof with the axial cam groove of said rack member to cause rotation of said



rack member in its circumferential direction, and a piston is slidably disposed within a counter bore in said closure member to form a pressure chamber for connection to a hydraulic pressure source and engaged at one end thereof with said cam follower element to effect movement of said cam follower element toward said rack member in accordance with a hydraulic pressure applied thereto in said pressure chamber.

4,640,150

STEERING WHEEL WITH INTEGRALLY-SKINNED FOAMED THERMOPLASTIC RESIN-COVERED HANDWHEEL CORE HAVING FLOW MARK-OBSCURING ABRASION-RESISTANT COATING

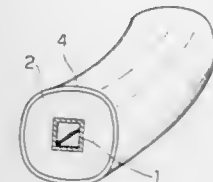
Teruo Kobayashi, Inazawa, and Sadao Uchida, Ichinomiya, both of Japan, assignors to Toyota Gosei Co., Ltd., Nishikasugai, Japan

Filed Dec. 14, 1984, Ser. No. 681,662

Claims priority, application Japan, Dec. 14, 1983, 58-235727 Int. Cl.⁴ B62D 1/04

U.S. Cl. 74—552

5 Claims



1. A steering wheel, comprising:

- a core, including a rim portion;
- a handwheel portion made of injection-molded foamed thermoplastic synthetic resin having an integral inner non-foamed, solid skin adhered to and enclosing said rim portion of said core, and having an integral outer non-foamed, solid skin;
- said foamed thermoplastic synthetic resin of said handwheel portion, between said integral inner and outer solid skins thereof, possessing an expansion ratio in the range of 1.1–1.8 compared with said thermoplastic synthetic resin when nonfoamed; and
- an abrasion-resistant coating adhered to and enclosing said outer skin of said handwheel portion, said coating being formed of a coating material containing a powdery lubricant in a coating material vehicle and being sufficiently thick as to substantially obscure from being seen or felt by hand any flow marks present on said outer solid skin.

4,640,151

BICYCLE PEDALLING APPARATUS

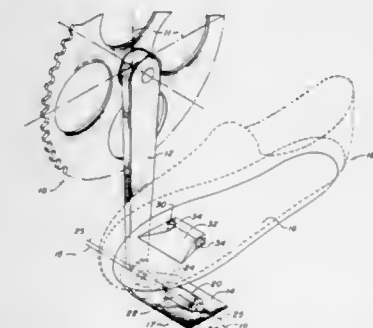
Richard J. Howell, 20 W. Canal St., #502, Winooski, Vt. 05404

Filed Feb. 27, 1984, Ser. No. 583,890

Int. Cl.⁴ G05G 1/14

U.S. Cl. 74—594.6

15 Claims



1. Pedalling apparatus for releasably and replaceably coupling a rider's foot to a pedal arranged to revolve about a pedal axis, said pedalling apparatus having the improvement comprising

- A. latch means upwardly projecting on said pedal with first and second latch members selectively directed along a latch axis longitudinal with said pedal axis, said latch axis

HIGH PROFILE CONTACT RATIO, NON-INVOLUTE GEAR TOOTH FORM AND METHOD

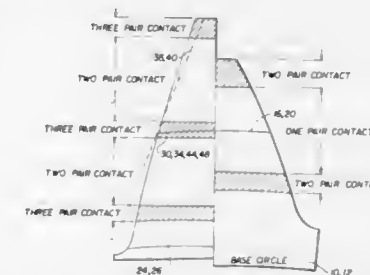
Raymond Drago, Glenn Mills, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 4, 1983, Ser. No. 472,379

Int. Cl.⁴ F16H 55/06

U.S. Cl. 74—462

5 Claims



1. A gear set comprising a pair of mating gears having conjugate gear teeth, the profile of said gear teeth having substantially constant relative curvature (CRC) at all points of contact and a high profile contact ratio (HCR) of at least 2.

and a transverse longitudinal axis being in a normally horizontal plane and said upward projection being normally vertical and orthogonal to that horizontal plane,
 B. at least one of said latch members being resiliently biased relative to the other along said latch axis, and
 C. socket means arranged for wearing on a rider's foot and having a walking surface free of pedal-engaging projections and having a latch-receiving recess with first and second latch seats for releasably and replaceably coupling seating, against the action of said resilient bias, said latch members, said socket means being adapted to couple with said latch means upon vertical downward movement, upon longitudinal forward movement, and upon rotational twist movement of said socket means relative to said latch means,
 D. whereby said socket means resists unseating of said latch means coupled therewith and transmits to said latch means a cycling thrust in response to pedalling loads, and said latch means unseats from said socket means in response to selected non-pedalling loads.

4,640,152

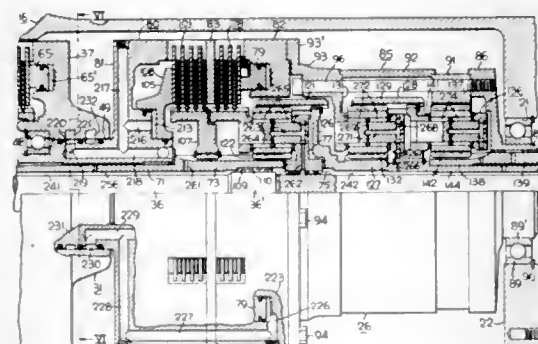
MULTI-SPEED PLANETARY TRANSMISSION
 David C. Quick, New Berlin; Stephen J. McCormick, Shorewood, and Gerardus M. Ballendux, Waukesha, all of Wis., assignors to Deutz-Allis Corporation, Milwaukee, Wis.

Filed May 16, 1985, Ser. No. 734,545

Int. Cl.⁴ F16H 57/02

U.S. Cl. 74—767

19 Claims



1. A single axis planetary change speed transmission comprising:

- a stationary housing having wall means defining a hollow interior chamber including interior walls at opposite ends of said chamber defining a pair of axially spaced circular apertures disposed on said axis,
- a rotatable housing having wall means defining an interior cavity and presenting hollow cylindrical end portions at its opposite ends and in constant rotation therewith,
- a pair of bearing means rotatably mounting said end portions in said apertures, respectively, said end portions presenting openings, respectively, aligned on said axis,
- an input shaft coaxial with and extending through said opening in one of said end portions of said rotatable housing, first, second and third coaxial and axially spaced epicyclic gear sets operatively arranged in sequence within said cavity each including a ring gear component, a sun gear component and a planet carrier component rotatably supporting planet gears meshing with said ring and sun gear components,
- a first quill shaft encompassing said input shaft and having a central portion extending through said opening in said one of said end portions and presenting an axially inner end connected for rotation with a first of said components of said first gear set,
- means connecting said input shaft to a second of said components of said first gear set for rotation therewith and transmission of torque thereto,
- means connecting a third of said components of said first

gear set in torque transmitting relation with a first of said components of said second gear set,

means securing a second of said components of said second gear set to said rotatable housing for rotation therewith,

means connecting a third of said components of said second gear set to a first of said components of said third gear for transmission of torque thereto and rotation therewith,

means connecting a second of said components of said third gear set to said rotatable housing for rotation therewith,

a second quill shaft having one end connected for rotation with a third of said components of said third gear set, and a central portion extending coaxially through the opening in the other of said cylindrical end portions of said rotatable housing,

an output shaft coaxial with and extending through said second quill shaft having an axially inner end connected for torque transmitting rotation with said first component of said third gear set,

a first brake operatively associated with the axially outer end of said first quill shaft and said stationary housing and having engaged and disengaged conditions of adjustment in which said first component of said first gear set is, respectively, secured to and released from said stationary housing,

a second brake on said housing outside of said chamber operatively associated with said stationary housing and the other end of said second quill shaft and having engaged and disengaged positions of adjustment in which said second quill shaft is, respectively, secured to and released from said stationary housing,

a first clutch in said rotatable housing operatively associated with the latter and said first component of said first gear set and having engaged and disengaged positions of adjustment in which the latter is, respectively, connected for rotation with and disconnected from said rotatable housing,

a second clutch in said rotatable housing operatively associated with the latter and said second component of said first gear set and having engaged and disengaged conditions of adjustment in which said second component of said first gear set is, respectively, connected for rotation with and disconnected from said rotatable housing and

said output shaft providing

- a reverse drive when said first brake and said first clutch are engaged and said second brake and said second clutch are disengaged,
- a first forward drive when said second brake and said first clutch are engaged and said first brake and second clutch are disengaged,
- a second forward drive when said brakes are engaged and said clutches are disengaged,
- a third forward drive when said second brake and said second clutch are engaged and said first brake and said first clutch are disengaged,
- a fourth forward drive when said first brake and said second clutch are engaged and said second brake and said first clutch are disengaged, and
- a fifth forward drive when said clutches are engaged and said brakes are disengaged.

4,640,153

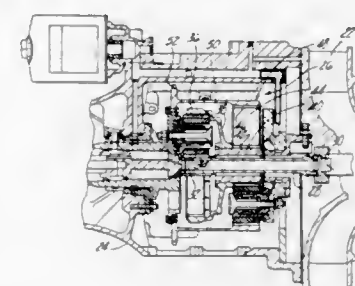
ACCESSORY DRIVE FOR A TURBINE ENGINE
 James W. Brogdon, Daphne; Kenneth D. Allen; John S. Barton, both of Mobile, all of Ala., and Raymond J. Hicks, Llandrinod Wells, United Kingdom, assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 9, 1983, Ser. No. 559,646

Int. Cl.⁴ F16H 57/10

U.S. Cl. 74—789

6 Claims



1. In combination:

- a radial flow turbine engine having a main shaft and a casing with air inlets open radially at one end, and
- an accessory drive comprising:
- an accessory housing positioned axially adjacent said one end of the turbine engine casing,
- a gear ring rotatably mounted within said accessory housing, means for mechanically drivingly connecting said gear ring to said turbine main shaft, said connecting means comprising a planetary gear arrangement contained in said accessory housing,
- said accessory housing having a plurality of apertures open to said gear ring and circumferentially spaced from each other,
- at least one accessory having a driven gear, and
- means for mounting said at least one accessory to said accessory housing so that said accessory registers with one of said plurality of apertures and so that said gear ring meshes with said driven gear,
- wherein each aperture is adapted for connection with a separate accessory.

4,640,154

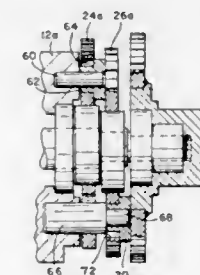
EPICYCLIC POWER TRANSMISSION
 Merritt A. Osborn, 8706 Cedar Rd., Chesterland, Ohio 44026

Filed Sep. 9, 1983, Ser. No. 530,733

Int. Cl.⁴ F16H 1/28

U.S. Cl. 74—805

2 Claims



1. In an epicyclic power transmission system the improvement which comprises,
- a torque arm means,
 - an input shaft journaled for rotation;
 - a plurality of gear means including first and second gears axially spaced and eccentrically mounted on said input shaft with their throws essentially equally spaced, means interconnecting said gear means to said torque arm means

including a first set of pin means connecting the torque arm means to one of said gears and a second set of larger pin means extending through said one of said gears and connecting said torque arm means to the other of said gears, said one of said gears having circular openings corresponding to said first and second sets of pins, said second set of larger pins each having first end portions secured to said torque arm and passing through said corresponding openings of said one of said gears and second end portions reduced in diameter from said first end portions, said second end portions of said second set of larger pins extending through said openings of said other gear and having bushing means mounted thereon and journaled in said openings in said other gear, said first set of pins having bushing means journaled in the corresponding openings in said one of said gears, said system preventing rotations of the eccentrically mounted gears about their own axis, while permitting gyration of their axis about a common axis, each pin in each set of pins being journaled in a bushing which bushing is mounted in a circular opening in its respective gear, and means connecting an output means and said gear means to rotatively drive said output means.

4,640,155

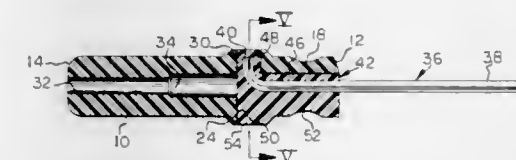
HANDLE WITH ALTERNATE TOOL ORIENTATION
 Harry F. Condon, 147 S. Howell St., Hillsdale, Mich. 49242

Filed Dec. 24, 1985, Ser. No. 813,090

Int. Cl.⁴ B25B 23/00

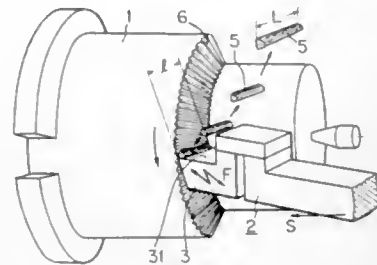
U.S. Cl. 81—439

8 Claims



1. A hand tool having a tool implement alternately positionable upon a handle comprising, in combination, an elongated handle having an outer surface, an axis, a front end and a rear end, an elongated axially extending radial slot defined in said handle laterally intersecting said handle outer surface and said handle front end, said slot including spaced, opposed flat parallel sides defined upon opposite sides of said handle axis and radially spaced relative thereto, an elongated implement having an axis, an outer end and an inner end, torque drive means defined on said implement outer end, a head integrally fixed on said implement inner end, said head including a pair of spaced parallel sides spaced apart a distance substantially equal to the spacing of said slot's sides whereby said head may be firmly received within said slot in a first position wherein said implement axis is substantially parallel to said handle axis and extends from said handle front end and a second position wherein said implement axis is transversely disposed to said handle axis, an elongated projection defined on said head extending in a direction transverse to said implement axis, a first recess defined in said handle and intersecting said slot having a length transversely disposed to said handle axis, a second recess defined in said handle and intersecting said slot having a length substantially parallel to said handle axis, said head projection being closely received within said first recess when said head is in said first position and closely received within said second recess when said head is in said second position, reception of said projection within a recess preventing withdrawal of said head from said slot in a direction parallel to said implement axis.

4,640,156
PRODUCTION OF SHORT METAL FIBERS
 Takeo Nakagawa, Kawasaki, and Kiyoshi Suzuki, Misato, both of Japan, assignors to Research Development Corp., Tokyo and Aisin Seiki Kabushiki Kaisha, Aichi, both of Japan
 Continuation of Ser. No. 468,277, Feb. 22, 1983, abandoned, which is a continuation of Ser. No. 199,457, Oct. 22, 1980, abandoned. This application Oct. 15, 1984, Ser. No. 660,559
 Claims priority, application Japan, Dec. 13, 1979, 54-161911; Sep. 8, 1980, 55-124362
 Int. Cl.⁴ B23B 1/00, 37/00
 U.S. Cl. 82-1 C 5 Claims

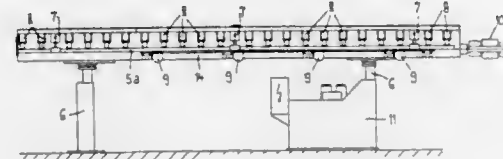


1. Process for producing short ultra-thin metal fibers having a cross-sectional dimension of less than 200 microns by directly cutting a metal block having a surface comprising the steps of:
 (a) rotating said metal block such that said surface is moving at a cutting speed;
 (b) contacting a cutting edge of an elastic tool to said surface at an entering cut, the cut having a width corresponding to a length of the fibers to be obtained, said elastic tool upon such contact self-generating self-excited vibrations;
 (c) feeding said elastic tool towards said surface at a feed rate such that
 (1) said cutting edge is dislocated in a feed force direction,
 (2) the amplitude of said self-excited vibrations is larger than said feed rate,
 (3) said cutting edge separates from said surface once per cycle of each self-excited vibration, and
 (4) the cutting loci of the cutting edge contacting said surface are equal in n times and $n+1$ times of cutting, to finely cut, break, and separate said fibers from said surface;
 (d) and wherein the rake angle of the cutting edge is between 0° and a negative angle; and in accordance with the material nature and thickness of fibers to be produced, the cutting speed is determined between 20 and 200 m/min, the feed rate between 0.001 and 0.02 mm/rev, and the self-excited vibration between 1 and 7 KHz, thereby producing a needle-shaped fiber in each cycle of said self-excited vibrations having said cross-sectional dimension and having a length corresponding to said entering cut, each said fiber having a smooth, bright face, a rugged face, and a destroyed face.

4,640,157
PROCESS FOR LOADING A LATHE WITH BARS TO BE MACHINED AND LOADING DEVICE FOR CARRYING OUT OF THE PROCESS
 Markus Geiser, Péry, and Claude Vandevor, La Neuveville, both of Switzerland, assignors to Sameca S.A., Lamboing, Switzerland
 Filed Jun. 1, 1984, Ser. No. 616,169
 Claims priority, application European Pat. Off., Jun. 6, 1983, 83810243.2
 Int. Cl.⁴ B23B 13/02 15 Claims

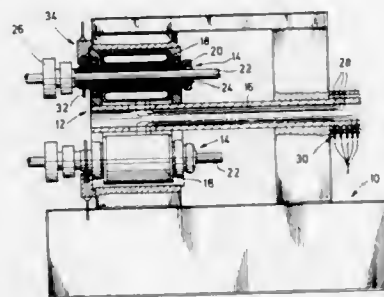
1. A method of loading a lathe having a gripping unit for gripping remnants of bar stock with new bar stock to be machined, said bar stock, during machining, being enclosed in a guiding tube having a stationary part and a mobile part, and

being supported in said guiding tube and advanced toward the lathe by a supporting and advancing means, said guiding tube having a first end disposed adjacent said lathe and a second end remote from said lathe, said method comprising:
 producing a first signal when said supporting and advancing means reaches a predetermined position adjacent the lathe such that only a remnant of bar stock is in the lathe;
 determining if said gripping unit is firmly gripping said remnant;
 withdrawing said supporting and advancing means toward of said guiding tube;
 machining said remnant during said step of withdrawing when said first signal is being produced and said remnant is being firmly gripped by said gripping unit;



producing a second signal when said supporting and advancing means is withdrawn from said guiding tube to predetermined location;
 opening the guiding tube by moving the mobile part thereof; progressively and laterally introducing new bar stock to be machined into the stationary part of the guiding tube;
 closing the guiding tube by returning the mobile part thereof;
 producing a third signal indicative of completion of machining of the last piece of said remnant; and
 advancing said supporting and advancing means towards said new bar stock in the presence of said third signal when said guiding tube is closed.

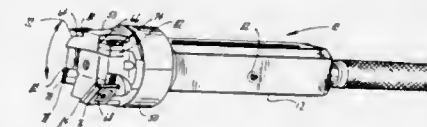
4,640,158
MULTIPLE-SPINDLE AUTOMATIC LATHE
 Helmut F. Link, Aichwald; Günther Trautmann, Kirchheim-Nabern, and Albert Herrscher, Plochingen, all of Fed. Rep. of Germany, assignors to Index Werke Komm.-Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany
 PCT No. PCT/EP84/00236, § 371 Date Apr. 3, 1985, § 102(e) Date Apr. 3, 1985, PCT Pub. No. WO85/00770, PCT Pub. Date Feb. 28, 1985
 PCT Filed Aug. 4, 1984, Ser. No. 721,115
 Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328496
 Int. Cl.⁴ B23B 9/00 12 Claims



1. A multiple-spindle automatic lathe comprising a rotatable spindle drum; a plurality of work spindles rotatably mounted about the interior of said spindle drum; an individually controllable electric motor associated with each of said work spindles for rotatably driving the same; said motors being supportably

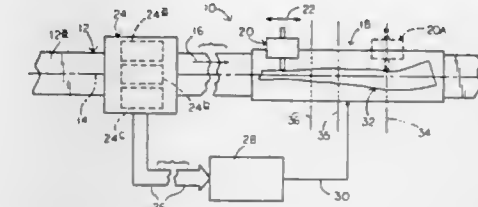
mounted in adjacent relationship in said spindle drum; stationary frame means for supportably mounting said spindle drum; means for indexing said spindle drum into a plurality of positions corresponding to the number of said work spindles; each of said work spindles comprising the shaft of its associated electric motor; said spindle drum having a supporting shaft end rotatably work spindles comprising the shaft of its associated electric motor; said spindle drum having a supporting shaft end rotatably mounted on said stationary frame means; current conducting slip rings mounted on said spindle drum shaft; current-conducting means interconnecting said slip rings and said motors; current-conducting brush means mounted on said stationary frame means for communication with an electrical supply for engaging said slip rings and energizing said motors by means of such electrical supply; control means for controlling the speed of each electric motor and the angular disposition of its associated shaft; said control means comprising angular position indicator means rotating synchronously with each of said spindles, and stationary signal-generating sensor means sensitive to the speed and angular disposition of said angular position indicator means.

4,640,159
TOOL HOLDER WITH PLURALITY OF CUTTING INSERTS
 Stojan Stojanovski, 1950 Birchwood, Troy, Mich. 48084
 Filed Nov. 22, 1985, Ser. No. 800,798
 Int. Cl.⁴ B23B 29/30 7 Claims



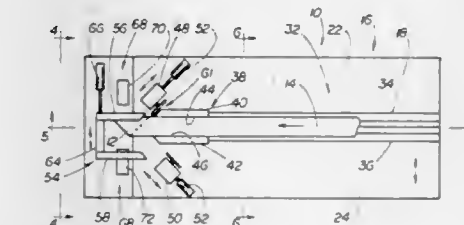
1. A combination comprising:
 an elongated body having a longitudinal opening;
 a shank disposed in the longitudinal opening of the body for rotatable and longitudinal motion, the shank having a first end adjacent one end of the body and a second end adjacent the opposite end of the body;
 handle means carried on the first end of the shank for rotating same between a first rotated position and a second rotated position, and for moving same between longitudinally spaced positions along a generally linear path of motion, including a locking position and a release position;
 tool holder means including a head carried on the second end of the shank so as to be movable therewith between said locking position and said release position;
 a first cutting insert and a second cutting insert mounted on the head such that the first insert is disposed in a cutting position in said first rotated position, and the second insert is disposed in said cutting position when the first insert is disposed in said second rotated position;
 interengagable pin and socket means carried on the head and the body, including a socket and a pin member received in the socket as the handle means is moved to said locking position, to block the head against rotation with respect to the body, the pin being removable from the socket as the handle means is moved to said release position, to permit rotation of the head with respect to the body; and
 bias means carried between the shank and the body to bias the shank towards said locking position with respect to the body, whereby the user can exchange the first insert with the second insert by pushing the handle in a linear motion to release the head, rotating the head and the releasing the handle as the pin is received in said socket.

4,640,160
SWEEP-DATA-RESPONSIVE, HIGH-SPEED, CONTINUOUS-LOG-TRAVEL BUCKING APPARATUS
 John E. Hards, Delta, Canada, assignor to Brunette Machine Works, Ltd., New Westminster, Canada
 Filed Dec. 9, 1985, Ser. No. 806,502
 Int. Cl.⁴ B27B 7/00 2 Claims



1. High-throughput, high-end-product-recovery log-bucking apparatus featuring continuous log travel comprising transport means defining an endo log-transport path for the continuous movement of a log endo along the path, flying-saw log-bucking mechanism disposed along said path for bucking a log, while the same travels continuously along the path, at one or more selected locations along the length of the log,
 log-configuration-determining means located adjacent said path, upstream from said log-bucking mechanism, including means for generating data related to a log's sweep as the log travels toward said log-bucking mechanism, and control/decision means operatively connected both to said log-bucking means and to said log-configuration-determining means, responsive to log-sweep data generated by the latter, relative to a traveling log, to control bucking of the log by the former in a manner facilitating, ultimately, the optimum recovery of usable wood end-product from the log.

4,640,161
WOOD CUTTING APPARATUS
 Robert L. Kurk, 3524 Hanover Rd., Jeffersonton, Ky. 40299
 Filed May 31, 1985, Ser. No. 739,521
 Int. Cl.⁴ B27B 5/00 19 Claims



1. A saw apparatus for cutting a workpiece from a stock of material comprising:
 stock material guide means for guiding the movement of the stock material along a predetermined path;
 a pair of saws located to opposite lateral sides of the path determined by the stock material guide means, each of the saws being adapted for movement across the guide means to cut a workpiece off of the stock material located on the guide means;
 a movable workpiece holder located at the end of the guide means defining the downstream end of the predetermined path movable back and forth in a direction transverse to the predetermined path of the guide means across the downstream end of the predetermined path, adapted to alternately engage opposite sides of and support the por-

tion of the stock material comprising the workpiece being cut-off the stock material; and means for ejecting the severed workpiece from the workpiece holder after the workpiece has been cut-off the stock material as the workpiece holder moves the workpiece transversely away from the lateral sides of the guide means.

4,640,162
APPARATUS FOR FORMING AND PRESENTING BIAS CUT GUSSETS IN THE FORMATION OF PANTY HOSE GARMENTS

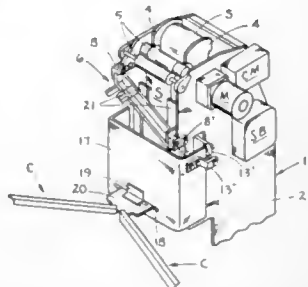
J. Reid London, Winston-Salem; Cecil R. Bell, Jr., Pinnacle; A. Russell Edwards, Winston-Salem; Willie M. Lathery, Germantown; Lee A. Efrid, Kernersville, all of N.C.; Richard M. Porter, Hartsville, S.C.; Stephen K. Shaw, Winston-Salem, N.C.; Thomas J. Costello, Kernersville, N.C.; August A. Pike, Winston-Salem, N.C.; Donald G. Bell, Mocksville, N.C., and Harold Setliff, High Point, N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Mar. 10, 1986, Ser. No. 838,314

Int. Cl.⁴ B26D 7/06; B21D 43/00

U.S. Cl. 83—152

11 Claims



1. An apparatus for forming inserts such as gussets or the like of predetermined configuration to be sewn to hosiery blanks to define panty hose or other type lower body garments comprising:

- a frame structure positioned adjacent to and oriented with a machine having a pair of clamps adapted to hold the hosiery blanks as well as the gussets;
- a support for holding a supply of material from which the gussets are formed;
- a feeding assembly positioned downstream of said support for intermittently feeding said material;
- a cutting device having fixed and moveable blades between which blades said material is intermittently fed, the cutting edges of said blades being positioned at a predetermined angle for cutting said material into such predetermined configuration; and
- a transfer and orienting mechanism downstream of said cutting device for orienting and placing the cut gussets in a location adjacent the path of said clamps, reciprocable pusher means positioned adjacent to and on the side of the formed and oriented gusset remote from said clamps, and means to move said pusher means into engagement with said gusset and push same into said clamps for subsequent uniting with said hosiery blanks or the like.

4,640,163
UMBILICAL SAFETY JOINT
Larry D. Douglas, Cypress, Tex., assignor to Multiflex International, Inc., Magnolia, Tex.

Filed Aug. 26, 1985, Ser. No. 769,130

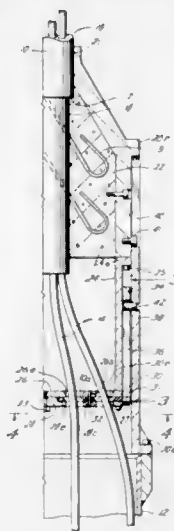
Int. Cl.⁴ B26D 7/14

U.S. Cl. 83—175

14 Claims

1. A safety joint apparatus for cutting the flexible control hoses of a hose bundle which comprises:

- a fixed plate having a hole for each control hose to pass therethrough;
- a cutter plate movable relative to said fixed plate;
- said cutter plate having a hole corresponding to each hole in said fixed plate for each control hose to also pass therethrough;
- first tubular support means for said fixed plate;
- second tubular support means for said cutter plate slidably concentric with said first tubular support; and



actuating means operably interconnecting said first tubular support means and said second tubular support means to cause said cutter plate to move relative to said fixed plate upon separation of said first tubular support means and said second tubular support means relative to each other upon a predetermined tension being applied to the hose bundle for cutting the control hoses.

4,640,164
HIGH SPEED WIRE CUTTER
Ivan K. Pavlov, Palatine, Ill., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed May 2, 1985, Ser. No. 729,599

Int. Cl.⁴ B23D 25/12

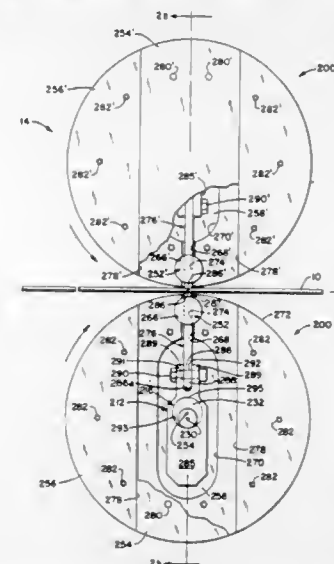
U.S. Cl. 83—304

5 Claims

1. A machine for cutting a moving wire passing therethrough, comprising:

- (a) a pair of knife carriers, each of said carriers including a knife blade having a cutting edge, each of said knife carriers having a bore therethrough;
- (b) a pair of parallel shaft means, each of said shaft means including a carrier shaft and a coaxial drive shaft having an axis of rotation, each of said carrier shafts including an eccentric having a center offset from said shaft axis, one of said carrier shafts extending through said bore in each of said knife carriers, wherein each of said eccentrics mates for rotation with the bore in its respective knife carrier;
- (c) means for connecting each knife carrier to its respective drive shaft for rotation therewith, said connecting means comprising a pair of knife wheels, each of said wheels having a cut-out therein for receiving one of said knife carriers and including means for trapping in and limiting axial movement of its respective knife carrier, said connecting means further comprising blade guide means attached to each of said knife wheels; said guide means rotatable about an axis parallel to its respective drive shaft axis, each of said blade guide means having a slot therethrough and one of said knife blades extending through each of said slots, said knife blades being slidable therewithin;

- (d) means for rotating said drive shafts; and
- (e) means associated with each of said shaft means for coupling said carrier shaft to its respective drive shaft such that each coupled carrier shaft and drive shaft rotate together about their respective drive shaft axis, and for uncoupling said carrier shaft from its respective drive shaft and stopping the rotation of said uncoupled carrier shafts such that each knife carrier and its respective cutting edge rotates about the center of the eccentric on



which it is disposed, wherein each cutting edge moves in reciprocal fashion in a substantially radial direction relative to said shaft axis, said means for stopping rotation including means for stopping rotation of said carrier shafts in a position wherein said cutting edges meet substantially on a line intersecting and perpendicular to both of said drive shaft axis when said cutting edges are at their maximum radial extent, and cooperate to cut the moving wire as said knife carriers rotate.

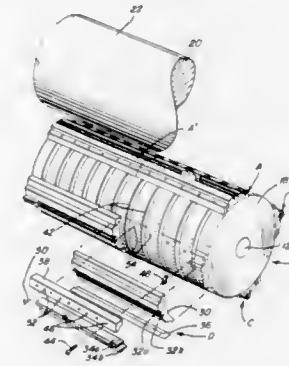
4,640,165
ROTARY KNIFE SYSTEM
Raymond D. McMahon, Naperville; John C. Jellovitz, Lake Barrington; James T. Vaile, Brookfield; Gregory J. Renn, Naperville, and Elmer J. Ondek, Riverside, all of Ill., assignors to Baldwin Technology Corporation, Stamford, Conn.

Filed Apr. 11, 1985, Ser. No. 722,729

Int. Cl.⁴ B26D 1/42

U.S. Cl. 83—346

14 Claims



1. A rotary-type papercutting apparatus comprising:

- (a) a knife roller;
- (b) a cooperating anvil roller having an anvil on its periphery against which the paper is cut, said knife roller and

said anvil roller being rotatable about parallel longitudinal axes in timed relationship to the travel of the paper therebetween;

- (c) at least one knife carrying unit mounted on the periphery of said knife roller, said knife carrying unit movable around the circumference of said knife roller, said knife carrying unit comprising:
 - (i) a knife holder formed of a resilient elastomeric material having a Shore D hardness of about 70-80 and having at least one slot extending longitudinally on the radially outwardly presented face of said knife holder;
 - (ii) a cutting knife carried within said slot of said knife holder and having at least one radially outwardly presented cutting edge for engagement with said anvil to cut the paper repeatedly;
- (d) means for retaining said knife holder on the periphery of said knife roller comprising at least one retaining member and fastening means passing through said retaining member and into receptacles within said knife roller; said knife holder formed of resilient elastomeric material yielding within its elastic limits during the cutting operation to take up displacement of said cutting knife by said anvil roller and to allow said cutting knife to settle into its cutting position within said knife holder.

4,640,166
TURRET PUNCH PRESS
Masayoshi Mizukado, Kani; Akio Morishita, Inuyama, and Yoshihiro Muto, Mino, all of Japan, assignors to Yamazaki Machinery Works, Ltd., Aichi, Japan

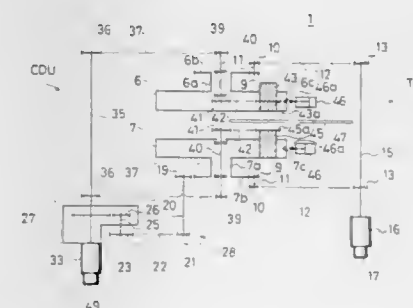
Filed Oct. 28, 1985, Ser. No. 792,022

Claims priority, application Japan, Oct. 29, 1984, 59-227517

Int. Cl.⁴ B21D 28/36; B26D 5/06

U.S. Cl. 83—552

3 Claims



1. A turret punch press including a rotatably mounted upper turret and a rotatably mounted lower turret, said upper turret and said lower turret being provided with at least one upper tool and a at least one lower tool, respectively, said upper and lower tools being positioned in a predetermined striking position by rotating said turrets, said upper and lower tools being rotatably mounted and positioned within the respective turrets for performing a punching process while holding the tools in desired angular positions, comprising:

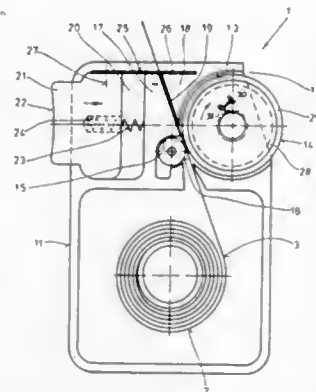
- a first drive means for driving said upper turret and said lower turret in such a manner that said upper and lower turrets can be synchronously rotated through a turret drive system; and
 - a second drive means for driving said upper tool and said lower tool in such a manner that said upper and lower tools can be synchronously rotated within their respective turrets through a tool drive system;
- said tool drive system being connected to said turret drive system through a differential gear mechanism, gear ratios of both the drive means and the differential gear mechanism being set as such that said tools can be driven by said first drive means within the respective rotatable turrets

without changing angular position thereof while said second drive means is stopped.

4,640,167
TAPE DISPENSER
Hans Stusack, and Peter Schulz, both of Tettmang, Fed. Rep. of Germany, assignors to Franz Sachs & Co. KG, Fed. Rep. of Germany

Filed Jun. 5, 1985, Ser. No. 741,539
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 3420873

Int. Cl.⁴ B26D 5/10
U.S. Cl. 83—649 10 Claims



1. A device for dispensing elongated material which is stored on a supply reel, comprising a housing having outer walls and defining an interior supply reel space for rotatably receiving a supply reel of elongated material, guide means in said housing defining a guide path from said supply reel space through one of said outer walls for elongated material to leave said housing, a manually rotatable drive wheel rotatably mounted at one end of said one outer wall and in said housing, said drive wheel having an outer periphery, a part of said outer periphery of said drive wheel being accessible from outside said outer walls of said housing and said outer periphery tangentially intersecting said guide path for engaging elongated material so that rotation of said drive wheel in one direction moves elongated material along said guide path from said supply reel space out of said housing, a cutting knife movably mounted in said housing in a direction across said guide path and parallel to said one outer wall and adjacent said one outer wall of said housing for cutting elongated material supplied from said supply reel space along said guide path by said drive wheel, said housing including a displacement slot extending parallel to said one outer wall of said housing which is adjacent to said cutting knife, said cutting knife being displaceable able in said slot, said slot extending across said guide path, a pushbutton movably mounted in said housing in a direction parallel to said one outer wall and toward said drive wheel, said pushbutton being fixed to said cutting knife and having a portion accessible from outside said housing on an opposite side of said one outer wall from said drive wheel, and a spring engaged between said pushbutton and said housing for biasing said pushbutton in a direction out of said housing, and away from said drive wheel for moving said knife in a direction away from said guide path.

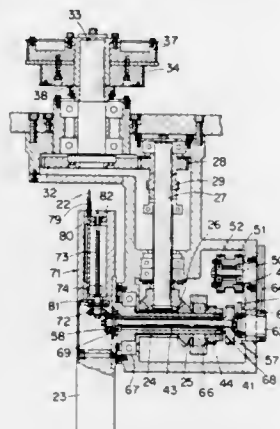
4,640,168
APPARATUS FOR CUTTING CIGARETTES
Yutaka Okumoto, Musashino, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Jan. 17, 1986, Ser. No. 819,608
Claims priority, application Japan, Mar. 27, 1985, 60-060980
Int. Cl.⁴ A24C 5/28

U.S. Cl. 83—677 4 Claims

1. In an apparatus for cutting cigarettes in a cigarette making

machine, including a cutter head supported rotatably on a first rotary shaft, a knife projecting from said cutter head, and means provided in said cutter head for holding and advancing said knife, the improvement which comprises:
a second rotary shaft which is coaxial with said first rotary shaft;

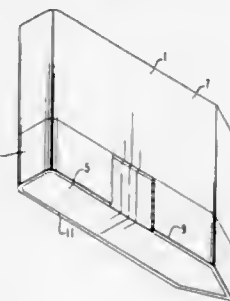


a gear train provided between said first and second rotary shafts for rotating said second rotary shaft at a speed which is slightly different from that of said first rotary shaft; and
said knife advancing means including a feed screw member adapted for rotation by said second rotary shaft.

4,640,169
CEMENTED CARBIDE CUTTING TOOLS AND PROCESSES FOR MAKING AND USING
Robert E. Fromson, Wilkins Township, Allegheny County; Ram Kossowsky, Pittsburgh, both of Pa., and Charles S. Nunnaker, Amherst, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 342,525, Jan. 25, 1982, abandoned. This application Mar. 28, 1985, Ser. No. 717,480

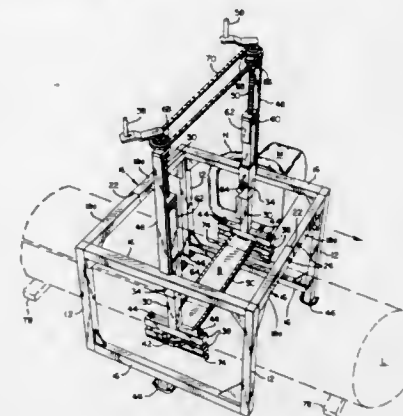
Int. Cl.⁴ B26F 1/14; B21D 28/34
U.S. Cl. 83—685 10 Claims



1. A sharpenable cemented carbide cutting tool, said cutting tool having a cemented carbide cutting edge hardened by ion implantation and being sharpenable for reuse without further ion implantation, said cutting tool comprising:
a first surface;
a second surface joining said first surface;
a cemented carbide cutting edge formed at the junction of said first and said second surfaces;
a wear-resistant layer located along said first surface and extending away from said cutting edge and said second surface beneath and parallel to said first surface to a depth of up to approximately 1000 angstroms, and intersects said second surface in a zone up to approximately 1000 angstroms wide; the hardening of the cutting edge by ion

implantation along only said first surface and not along said second surface enabling reshaping of the cutting tool by removing material from said second surface, said second surface being hardened only in a zone up to approximately 1000 angstroms wide at the intersection of said first surface and said second surface.

4,640,170
CHAIN SAW CARRIAGE
John A. Bakken, 8837 S. Barnards Rd., Canby, Oreg. 97013
Filed Feb. 28, 1985, Ser. No. 706,526
Int. Cl.⁴ B27B 17/00
U.S. Cl. 83—794 4 Claims

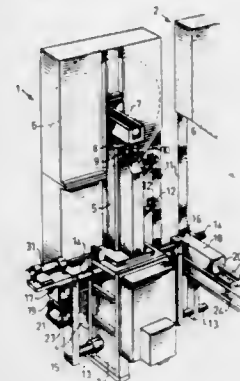


1. A portable chain saw attachment for a chain saw to facilitate cutting a reclined log into lumber, the log being supported by a substantially planar log supporting surface, the chain saw having a saw chain, saw bar, motor end and opposite nose bar end, the attachment comprising:

frame means having interconnected frame members for straddling the log without contacting the log;
a plurality of sliding members mounted to said frame for direct contact with said supporting surface such that said frame can slide on said supporting surface relative to said log, said sliding members having substantially planar bottom portions;
mounting means for mounting the chain saw such that said saw chain defines an imaginary cutting plane disposed at a predetermined relationship to said log supporting surface;
height adjusting means interconnecting said frame means and mounting means for adjusting the height of said mounting means relative to said log supporting surface;
said frame means including a plurality of substantially vertical support members and horizontal support means supportively interconnecting said vertical members;
said horizontal support means including opposed pairs of telescoping support members adjustable to vary the width of said frame means and thereby accommodate saw bars of different lengths;
said mounting means including first clamping means for clamping said nose bar end and second clamping means for clamping said motor end;
said height adjusting means including a pair of rotatable threaded elements, one associated with each said first and second clamping means, and a pair of vertically movable support elements, one connected to each said first and second clamping means, each said movable support element being threadably engaged by one said threaded element such that rotation of said threaded element causes its associated said support element and clamping means to move upwardly or downwardly; and
said height adjusting means further including a drive chain cooperable with said threaded support elements for translating rotation of one said threaded element into simulta-

neous corresponding rotation of the other said threaded element.

4,640,171
BAND SAW INSTALLATION WITH VERTICALLY SPACED GUIDES
Kurt Jansson, Mariannelund, Sweden, assignor to AB A.K. Eriksson, Mariannelund, Sweden
Filed Aug. 20, 1985, Ser. No. 767,447
Claims priority, application Sweden, Aug. 23, 1984, 8404210
Int. Cl.⁴ B27B 15/08
U.S. Cl. 83—797 5 Claims

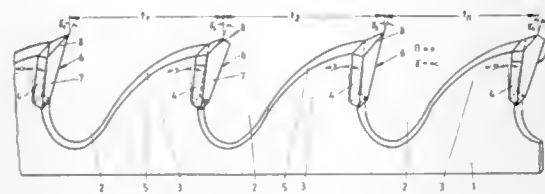


1. A band saw installation, especially intended for sawing logs with the grain or dividing wood blocks, comprising: two spaced pairs of upper and lower saw band pulleys (6, 4) which can be adjusted relative to one another, a pair of endless, band-like saw blades (11) individually extending around each pair of pulleys and individually driven by one (4) of the pulleys in each pair, a pair of frame structures (3) in which the lower pulleys of each pair are individually journaled, and two pairs of mutually parallel guide members (13, 14) extending at right angles to the feed direction of the material to be sawn, said frame structures being individually and slidably mounted on said pairs of guide members, each frame structure carrying a vertically upstanding post (5) which in turn carries at a top thereof said upper pulley (6), and one guide member (14) of each pair being located substantially vertically above the other guide member (13) of each pair, said installation thus being substantially vertical in overall configuration and horizontally compact in the feed direction of the material, and the weight of the installation being substantially equally distributed between and borne by the upper and lower guide members of each pair.

4,640,172
SAW BLADE
Rolf Kullmann, and Jörg Kullmann, both of Spangenberg, Fed. Rep. of Germany, assignors to Wilhelm H. Kullmann Wikus-Sagenfabrik, Fed. Rep. of Germany
Filed Feb. 27, 1984, Ser. No. 583,830
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307170
Int. Cl.⁴ B23D 61/00, 61/04, 61/14
U.S. Cl. 83—835 9 Claims

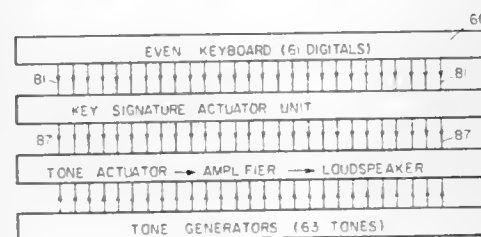
1. A saw blade comprising a foundation of spring steel, said foundation including an edge portion with a series of teeth formed therein at intervals therealong for cutting in the plane of the blade foundation, each of said teeth separated from its adjacent teeth by chip spaces with a seat formed on one edge of each tooth for supporting a cutting material plate and a tooth back formed on its other edge, said seats being formed at rake angles (α) varying from tooth-to-tooth, a cutting material plate mounted to the seat of each tooth, each of said cutting material plates including a cutting edge oriented generally transverse to the plane of the blade foundation and at a location

to effect a cutting action in the plane of the blade foundation and a front surface formed at substantially equal rake angles (β), with each cutting material plate mounted to the seat of a tooth to orient each tooth front surface at an effective rake angle (γ) different from the effective rake angle (γ) of the front



surfaces of others of said cutting material plates, and said teeth being variably spaced along the edge portion of said foundation so that the pitch distance (t) between the cutting edges of some adjacent ones of said cutting material plates is different in comparison to the pitch distance (t) of other adjacent ones of said cutting material plates.

4,640,173
ELECTRONIC MUSICAL INSTRUMENT
Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806
Filed May 22, 1985, Ser. No. 736,701
Int. Cl.⁴ G10H 1/00; G10C 3/12
U.S. Cl. 84—1.01

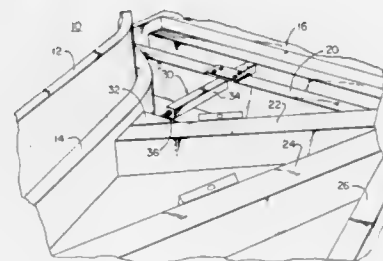


1. An improved musical instrument having a keyboard containing a plurality of fifteen front digitals and a plurality of fifteen back digitals, the front digitals being arranged in a sequence, a single one of the back digitals being positioned between each two consecutive members of the sequence of front digitals, the instrument having tone actuator means for actuating a plurality of twenty-four musical tones, the tones being arranged in a sequence having a musical interval of a single semitone between each two consecutive members of the sequence of tones, the improvement comprising:

electronic key signature actuator circuitry for the digitals to actuate the tone actuator means, there being exactly seven consecutive front digitals per octave span, the circuitry comprising twenty-four electronic tone substitution modules arranged in sequence so that each substitution module activates its single associated member of the sequence of musical tones, each substitution module having left, central, and right input leads receiving signals from their respective members of the two pluralities of digitals, the single digital transmitting a signal to the central input lead of a substitution module being designated its central digital, the substitution module being controlled by left and right enabling leads, when neither enabling lead is energized, the single musical tone associated with the module being played by its central digital, when the left enabling lead is energized the musical tone associated with the module being played by a digital to the left of its central digital, when the right enabling lead is energized the musical tone

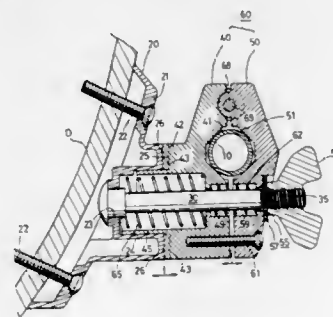
associated with the module being played by a digital to the right of its central digital.

4,640,174
SOUNDBOARD CALIBRATOR
Santi Falcone, Carlisle, Mass., assignor to Falcone Piano Company, Haverhill, Mass.
Filed Jan. 16, 1985, Ser. No. 691,940
Int. Cl.⁴ G10C 3/08
U.S. Cl. 84—196



1. A piano tension adjusting system comprising a rim, a belly rail, a soundboard, and a tension adjusting device, said tension adjusting device being interconnected between said rim and said belly rail to adjust the tension on the soundboard and including a beam member and adjustment means for selectively increasing the length of the tension adjusting device to increase the tension applied to the soundboard and decreasing the length of the tension adjusting device to decrease the tension applied to the soundboard.

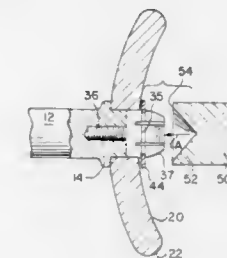
4,640,175
SUPPORT LEG FOR BASS DRUM
Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Co., Ltd., Japan
Filed Jan. 13, 1986, Ser. No. 818,550
Claims priority, application Japan, Feb. 6, 1985, 60-015438
Int. Cl.⁴ G10G 5/00
U.S. Cl. 84—421



1. A support leg for a bass drum having a supporting bass drum body, the support leg comprising:
an elongated leg member;
a base member having an attachment means for attaching the base member to the drum body; and
a circular surface on the base member having a first positioning member thereon;
a shaft means projecting from the center of the circular surface, one end of which is attached to the base member, a leg holding member comprising:
inner and outer block members surrounding the shaft having mutually facing surfaces for holding the leg member, the inner block having a mating circular surface which slidably mates with the circular surface of

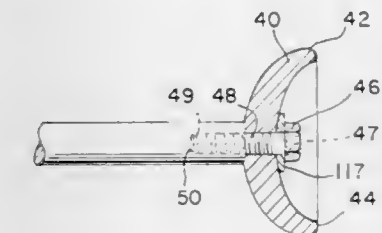
the base member and a second positioning member which mates with and engages the first positioning member;
means, mounted to the other end of the shaft, for releasably engaging the outer block and urging the blocks together;
a first spring means between the blocks surrounding the shaft and having a spring pressure for urging the blocks apart;
a member connecting the blocks for setting and holding predetermined gap between the blocks;
a second spring means between the inner block and base member surrounding the shaft and having a spring pressure for urging the inner block and base apart, the second spring means having a spring pressure which is smaller than the spring pressure of the first spring means;
wherein when the outer block is released, the gap between the inner and outer blocks widens to the predetermined gap by the coaction of the first spring means between the inner and outer blocks loosening the leg member therebetween, and a gap between the base and inner block is subsequently created by the coaction of the second spring means between the inner block and base to permit rotation of the leg holding member on the base and disengagement of the first and second positioning members.

4,640,176
QUICK DISCONNECT RETAINER FOR A DETACHABLE DRUMSTICK HEAD
Francis J. J. Elliott, Jr., Band, OPS Co., H&S BN, MCDEC, Quantico, Va. 22134
Filed Oct. 18, 1984, Ser. No. 662,345
Int. Cl.⁴ G10D 13/02
U.S. Cl. 84—422 S



1. A connector for a drumstick having a removable head comprising:
a main body element;
attachment means at one end of said main body element to permit semi-permanent attachment thereof to an elongated drumstick;
connector means at the other end of said main body element for quickly attaching and detaching a drumstick head thereto;
retainer means operable in conjunction with said connector means for securing said head in place upon a drumstick;
said attachment means at one end of said main body element comprising a central projection extending therefrom for complementary engagement with an aperture in the end of said drumstick;
said centrally extending projection being externally threaded;
said drumstick having internal threads provided within said aperture for complementary engagement with the external threads of said projection;
said connector means at the other end of said main body element comprising spring means which are movable radially for engagement with said retainer means in releasable fashion; and
said spring means comprising a plurality of resilient fingers extending from the other end of said main body element.

4,640,177
DRUMSTICKS OR MALLETS WITH PARA-HEMISPHEROIDAL HEADS AND THEIR ASSEMBLY
Francis J. J. Elliott, Jr., Band, OPS Co., H&S BN, MCDEC, Quantico, Va. 22134
Filed Oct. 26, 1984, Ser. No. 665,139
Int. Cl.⁴ G10D 13/02
U.S. Cl. 84—422 S



1. A drumstick or mallet comprising:
an elongated handle;
at least one enlarged, para-hemispheroidal head means attachable to said handle for use in beating a percussion instrument; and
means for detachably affixing in secure fashion said head means to said handle.

4,640,178
ROPE
Erich Kurzböck, Wels, Austria, assignor to Teufelberger Gesellschaft m.b.H., Austria
Filed Jan. 25, 1985, Ser. No. 695,080
Claims priority, application Austria, Feb. 1, 1984, 317/84
Int. Cl.⁴ D04C 1/12
U.S. Cl. 87—6

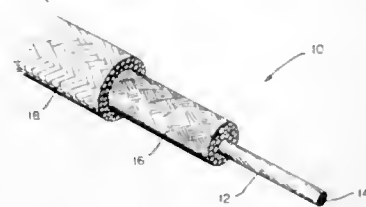


1. A rope which comprises:
a plurality of elongate textile elements consisting of twisted textile fibers;
an array of reinforcing monofilaments extending throughout the length of the rope and having a higher hardness than said textile elements and an elongation to break which is not in excess of that of said textile elements, surrounding each of said textile elements; and
a sheath of braided monofilament surrounding said plurality of elongate textile elements, the total cross sectional area of said reinforcing elements amounting to less than 10% of the total cross sectional area of said rope.

4,640,179
COMPOSITE METALLIC CORE LINE
Robert W. Cameron, 7725 115th Pl. NE., Kirkland, Wash. 98003
Continuation-in-part of Ser. No. 624,222, Jun. 25, 1984, abandoned. This application Sep. 20, 1985, Ser. No. 778,365
Int. Cl.⁴ D04C 1/12; D07B 1/16
U.S. Cl. 87—6

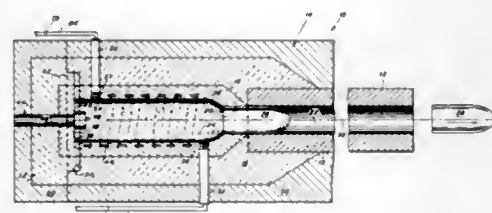
1. A composite line structure, comprising:
a core of a heat-resistant, substantially inelastic, metallic

cable, having a tensile strength sufficient to separately support the desired rated load;
an inner nylon sheath braided or wrapped tightly about said core; and
an outer polyester sheath braided or wrapped tightly about said inner sheath and shielding said inner sheath from exposure to sunlight or abrasion, said inner and outer sheaths having a combined tensile strength substantially exceeding the tensile strength of said core and containing



said core therewithin upon breakage of said core under extreme loading to substantially eliminate backlash, said core having a weight sufficient to minimize backlash of said inner and outer sheaths upon subsequent breakage thereof, whereby a substantially static line is provided which will support the rated load even if said inner and outer sheaths are melted or severed by fire, heat or sharp objects, which substantially eliminates backlash, and which protects the nylon inner sheath from abrasion and sunlight.

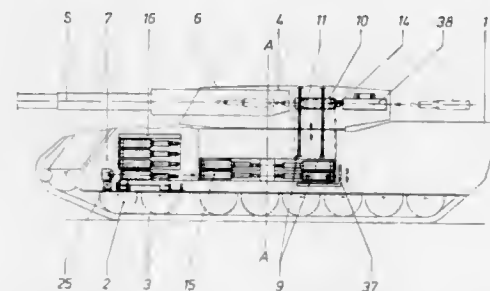
4,640,180
GUN-FIRING SYSTEM
Millard F. Rose, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 20, 1985, Ser. No. 746,824
Int. Cl.⁴ F41F 1/00; F42B 5/00
U.S. Cl. 89—8 15 Claims



1. A gun firing system comprising:
a barrel having a longitudinally extending bore between its ends,
breech means connected to the inner end of the barrel, the breech means having a chamber for receiving propellant for accelerating and launching a projectile in the barrel bore at the inner end, the chamber being closed off from open communication with the bore when the projectile is in the bore at the inner end of the barrel,
removable cap means connected to the outer end of the breech means for closing off the outer end of the chamber, said cap, means including detonator means for igniting propellant in the chamber,
said breech means being comprised of inner and outer sleeve means, the inner sleeve means being made up of insulated and electric nonconducting material that surrounds the chamber and extends between its ends, the outer sleeve means being of electrically nonconductive material, the inner sleeve means including electromagnetic coil means embedded therein such that the coil means extends between the ends of the inner sleeve means while at the same

time the coil means is concentrically and helically wound about the axis of the sleeve means,
a pair of pressure responsive switch means, first switch means of the pair being connected to the inner and outer sleeve means at the barrel end thereof and being arranged in direct open communication with the chamber at its inner end, second switch means of the pair being connected to the inner and outer sleeve means at the cap means end thereof, said second switch means being arranged in direct open communication with the chamber at its outer end and longitudinally spaced from the first switch means, said pair of switch means being responsive to a plasma pressure formed in the chamber upon detonation of the propellant so as to actuate both switch means of the pair when the pressure of the plasma formed in the chamber substantially extends throughout the chamber, and
power supply means operatively associated with and electrically connected to said detonator means, said power supply means being operable for actuating said detonator means to ignite the propellant so as to progressively form a plasma between the ends of the chamber; and the power supply means, in response to the plasma pressure actuating the first and second switch means, being further operable for energizing the coil means to induce eddy currents in the plasma so as to increase the temperature and pressure thereof thereby increasing the velocity of the projectile as it exits from the outer end of the barrel during system use.

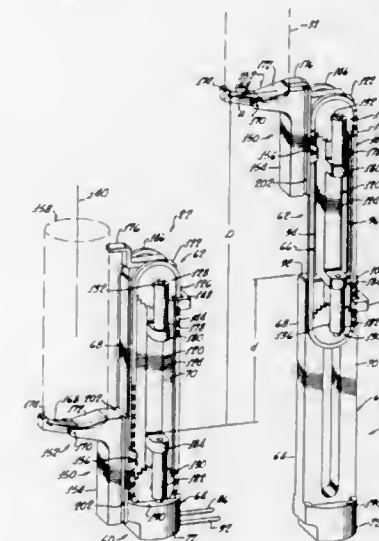
4,640,181
AUTOMATIC GUN LOADING DEVICE FOR A TANK
August Schiele, and Wolfgang Huber, both of Augsburg, Fed. Rep. of Germany, assignors to Kuka Wehrtechnik GmbH, Fed. Rep. of Germany
Filed Jul. 6, 1981, Ser. No. 285,037
Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3025501
Int. Cl.⁴ F41F 9/10
U.S. Cl. 89—46 6 Claims



1. A device for automatically loading large-caliber ammunition into a gun mounted on a rotatable turret of a tank, the gun having a bore for receiving a cartridge and a zero elevation position with respect to the turret, the turret rotatably mounted to the tank about an axis of rotation, and the tank movable in a forward direction having a longitudinal axis parallel to the forward direction, and a driver seat at one side of the longitudinal axis in front of the turret in the forward direction, the device comprising:
a first magazine rotatably mounted to the tank below the turret and about the axis of rotation of the turret, said first magazine having at least two substantially horizontal levels for at least two vertically spaced cartridges to be held one over the other, and a plurality of radially extending magazine compartments at each level for carrying a plurality of cartridges at each level pointing toward the axis of rotation, said first magazine being independently rotatable with respect to the turret;
an elevator mounted in the turret at a position to lift a cartridge from one of said radial compartments to a cartridge

station in alignment with the gun bore when the gun is in its zero elevation position, said elevator mounted for movement parallel to the axis of rotation;
means defining a vehicular trough in the tank, in front of the turret in the forward direction and next to the driver's seat;
a second magazine disposed in said trough and having a plurality of chutes disposed, one next to the other, transversely of the forward direction, each chute extending parallel to the longitudinal axis of the tank and having a space for a single vertical stack of at least three cartridges facing rearwardly of the forward direction, a lowermost position for a cartridge in each chute being above a lowermost one of said levels of said first magazine;
a cartridge pickup movably mounted to the tank below said second magazine for movement of a cartridge from a lowermost position in each chute to a position parallel to the longitudinal axis and adjacent one magazine compartment at said lowermost level of said first magazine;
first drive means connected to said cartridge pickup for moving said cartridge pickup laterally of the longitudinal axis from said lowermost position of each chute to said position parallel to the longitudinal axis; and
a first rammer mounted to the tank in a position forward of said cartridge pickup and parallel to said position of said pickup which is parallel to the longitudinal axis, for ramming a cartridge carried by said pickup into the one of said magazine compartments at said lowermost level which is parallel to the longitudinal axis.

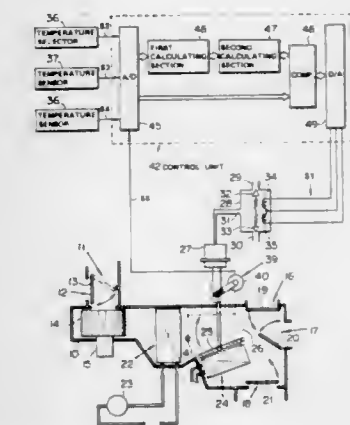
4,640,182
SHELL FEEDING APPARATUS FOR GUNS
Vernet F. DeHaven, Huron, and Francis J. Warin, Oak Harbor, both of Ohio, assignors to ARES, Inc., Port Clinton, Ohio
Filed Nov. 4, 1983, Ser. No. 549,265
Int. Cl.⁴ F41F 17/16
U.S. Cl. 89—47 11 Claims



1. Shell ramming apparatus for rapidly moving ammunition towards a gun, said apparatus comprising:
(a) an actuator having first and second portions, the second portion being linearly movable, relative to the first portion, a distance, d, between retracted and extended positions;
said actuator first portion comprising a cylinder having means defining laterally spaced apart, parallel first and second bores, said actuator second portion comprising first and second pistons disposed, respectively, in said first and second bores, said pistons each having a piston rod which extends beyond an open end of said bores, said actuator including means interconnecting said

extending ends of the piston rods and means for delivering pressurized fluid to said first and second bores;
(b) actuating means for causing the actuator second portion to move between the retracted and extended positions at a linear velocity, v;
(c) a shell ramming member; and
(d) motion multiplying means mounted to the piston rod interconnecting means, said shell ramming member being connected to the motion multiplying means, said motion multiplying means being configured for causing, in conjunction with the actuating means moving the actuator second portion from the retracted to the extended positions, movement of the shell ramming member a linear shell ramming distance, D, at a shell ramming velocity, V, said shell ramming distance, D, and velocity, V, being substantially greater than the respective actuating distance, d, and velocity, v.

4,640,183
AIR CONDITIONER
Koichi Doi, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan
Filed Aug. 14, 1985, Ser. No. 765,527
Claims priority, application Japan, Aug. 21, 1984, 59-172401
Int. Cl.⁴ B60H 1/00; E04H 14/00
U.S. Cl. 98—2.01 5 Claims



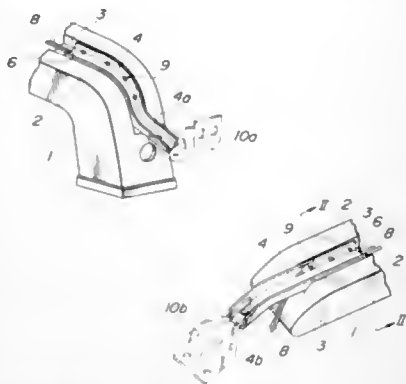
1. An air conditioner comprising:
(a) a movable air mix door for adjusting the temperature of outgoing air from the air conditioner, the outgoing air temperature depending on the position of the air mix door;
(b) a combination sensor formed of a position sensor for sensing actual position of the air mix door and a temperature sensor for sensing temperature of incoming air into the air conditioner, said combination sensor generating a first signal depending on the actual position of the air mix door and on the incoming air temperature;
(c) means for generating a second signal representing a target position of the air mix door; and
(d) means for controlling the position of the air mix door in accordance with the first and second signals.

4,640,184
MOUNTING STRUCTURE FOR A ROOF DUCT
Katsuaki Matsushima; Yasuhiro Fujioka; Takeshi Sasaki; Manabu Fujine, and Kouji Yamamoto, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Jan. 10, 1985, Ser. No. 690,122
Claims priority, application Japan, May 7, 1984, 59-66175[U]
Int. Cl.⁴ B60H 1/28
U.S. Cl. 98—2.15 1 Claim
1. A detachable ventilation apparatus along a vehicle surface

capable of housing conductor cables for operating the ventilation apparatus which comprises:

conduit means for conveying air within the vehicle, said conduit means including a substantially enclosed duct having an elongated groove extending along a substantial portion of the length of an outer surface of said duct, said duct including means for diffusing the conveyed air into the vehicle;

support means extending within said elongated groove and projecting out of opposite ends thereof for supporting said conduit means and having a first end section and a second end section, said support means including a reinforcement plate and securing means for securing said conduit means to said reinforcement plate, said reinforcement plate and said outer surface defining a channel therebetween within said elongated groove for receiving the conductor cables;



bracket means affixed to said first and second end sections for removably mounting said support means and said conduit means within the vehicle, said bracket means being mounted to the vehicle to align said outer surface to abut an interior portion of the vehicle, thereby substantially concealing said elongated groove, said bracket means including a first bracket and a second bracket, said first bracket being affixed to said first end section and said second bracket being affixed to said second end section, said first bracket including an upward extension and defining a trough between said duct and said upward extension, said second bracket including a downward extension and defining a gap beneath said second end section and between said duct and said downward extension; a support plate mounted within said gap; and switching means for controlling the electrical operation of the conductor cables, wherein said support plate provides support for said switching means.

4,640,185

FUNNEL STOCK/SAUCE SEPARATOR

Auvin H. Joyner, 2 Walnut St., Pawling, N.Y. 12564

Filed Nov. 21, 1985, Ser. No. 800,277

Int. Cl.⁴ A47J 43/28

U.S. Cl. 99—495

6 Claims

1. A funnel stock/sauce separator for separating fat from liquids comprising:

(a) a funnel for storing therein said liquid which is to be separated from said fat at top of said liquid, said funnel including:

(i) a wide mouthed conical vessel, and

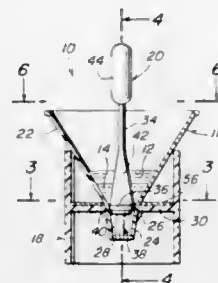
(ii) a short tapered spout with bayonet projections thereon, said spout extending downwardly from said conical vessel having an opening formed therein through which said liquid is removed from said conical vessel;

(b) a cylindrical housing with a horizontal mid-portion having a central notched hole to accommodate and secure said projections of said spout when said spout is placed and turned within said notched hole with said conical vessel sitting on top of said housing so that said housing supports said funnel onto a support surface; and

(c) a manually operated closure member positioned within said funnel for controlling outflow of said liquid through said spout, said closure member including:

(i) a stem reciprocally movable within said conical vessel;

(ii) a valve element positioned above the spout, said spout limiting the downward movement of the valve element, said valve element having diametrical cross-sectional areas approximately equal to diametrical cross-sectional area of said opening in said spout at juncture of said conical vessel; and



(iii) means for attaching said valve element to said stem whereby when said stem is moved downwardly said valve element is positioned on said opening in said spout at said juncture of said conical vessel and said liquid within said vessel is prevented from flowing through said opening in said spout and when said stem is moved upwardly said valve element is lifted up from said opening in said spout at said juncture of said conical vessel and said liquid is allowed to flow outwardly therethrough.

4,640,186

STEAM JUICE EXTRACTOR

Eberhard Hackelsberger, 8767 Wehr-Ofingen, Fed. Rep. of Germany

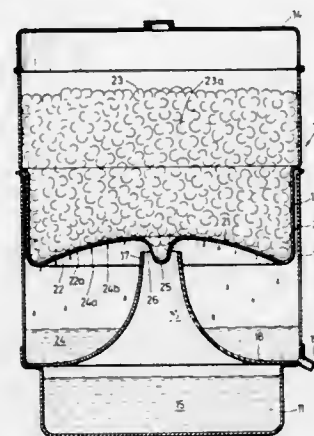
Filed May 14, 1985, Ser. No. 734,383

Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418729; Dec. 7, 1984, 3444722

Int. Cl.⁴ A23N 1/00

U.S. Cl. 99—495

13 Claims



1. A steam juice extractor, comprising a water cup for producing a water steam; a juice collecting container arranged on said water cup, said juice collecting container having a funnel for passing the water steam and being provided with an outlet; a fruit container arranged above said juice collecting container for receiving fruits and having a bottom which in the region of said funnel is closed and in the region surrounding said funnel is provided with a plurality of sieve openings through which the steam flowing through the funnel is introduced into said

fruit container and the juice from fruits in said fruit container is dripped and flows into said juice collecting container; and a guiding and protecting body arranged on said bottom of said fruit container, said guiding and protecting body being arranged so that when said fruit container is arranged on said juice collecting container said guiding and protecting body cooperates from above with said funnel and reduces a cross section of said outlet of said funnel so that an annular opening remains for producing a high steam output speed, and when said fruit container is removed from said juice collecting container the whole cross section of said outlet of said funnel becomes unobstructed and thereby the outlet speed of the steam is lowered to a low and not dangerous value.

4,640,187

FOOD CORING DEVICE

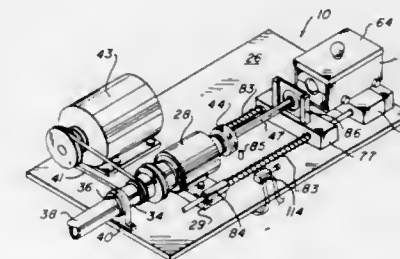
William P. Wallick, 7478 W. 10th Ave., Lakewood, Colo. 80215, and Gary J. Hoffman, Arvada, Colo., assignors to William P. Wallick, Lakewood, Colo.

Continuation-in-part of Ser. No. 553,580, Nov. 21, 1983, abandoned. This application Jan. 31, 1985, Ser. No. 697,214

Int. Cl.⁴ A23P 1/00; A47J 25/00

U.S. Cl. 99—538

19 Claims



1. An apparatus for forming bores within food products, diameters of the bores varying corresponding to the food product in which the bore is to be formed, a first bore formed within a first food product, a second food product of a diameter essentially equal to said first bore, said second food product inserted into said first bore of said first food product, said second food product having a second bore formed therein for receipt of other food products, said apparatus comprising in combination:

a mounting base having rotatably mounted thereto a longitudinally extending generally hollow connection assembly having one end operatively connected to a rotary drive means for turning said connection assembly about a longitudinal axis thereof, said connection assembly having a second end selectively connected to tubular cutting means of diameter equal to a diameter one of said first or said second bores, said tubular cutting means including a circular cutting edge at a terminal end thereof, the connection assembly and cutting means having a passageway extending along a longitudinal axis of said apparatus, said passageway in air vacuum communication with suction means sealingly connected to said one end of said connection assembly for removing core material from said food products along said passageway, retention means for receiving and holding said food products in a pre-set position relative to said cutting means, said retention means slidably secured to said mounting base for longitudinal movement over a fixed maximum distance therealong, said retention means further having stripping means for receiving said cutting means therethrough and for cleaning an outer surface of said cutting means on withdrawal of said cutting means from said retention means.

4,640,188

SILK SCREEN TRANSFER PRINTING APPARATUS FOR CYLINDRICAL OBJECTS

Colin Cosson, 38 Sidney Road, Rugby, Warwickshire, and Laurence E. Hopper, 34 Lauds Road, Crick, Northampton, NN6 7TJ, both of England

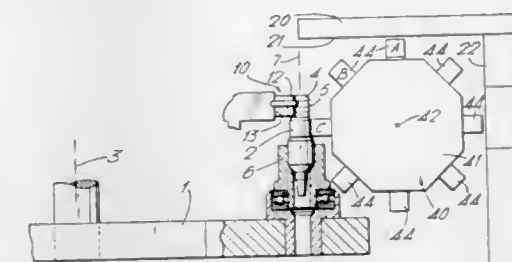
Filed Jun. 5, 1985, Ser. No. 741,503

Claims priority, application United Kingdom, Jun. 5, 1984, 8414295

Int. Cl.⁴ B41F 17/22

U.S. Cl. 101—39

6 Claims



1. Printing apparatus for printing onto a substantially cylindrical vertical surface of a body comprising: a screen printing head containing a heat-flowable ink; means for heating said printing head to render the ink flowable; means mounting the head with the screen substantially horizontal; a print transfer device, said print transfer device including a drum that is rotatable about a horizontal axis and a plurality of print transfer pads spaced about the surface of the drum, each said transfer pad having a face thereon extending parallel to the axis of the drum; means for heating each said transfer pad to maintain ink on said pad in a flowable state; means mounting the print transfer device for rotation between a first stationary position in which the face of a pad is substantially horizontal and a second stationary position in which the face of the pad is substantially vertical; means for bringing the face of the pad into contact with the printing head in said first position so as to take up ink from the printing head; and means for rolling the body about a vertical axis along the face of the pad transverse to the direction of displacement of the pad in said second position so as to deposit ink from the pad around the cylindrical surface of the body, said body being unheated such that the ink deposited on the body rapidly dries on cooling.

4,640,189

ROTARY MULTICOLOR MACHINE FOR SIMULTANEOUSLY PRINTING BOTH SIDES OF A PAPER WEB OR SHEET

Manolo Hernandez, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Continuation of Ser. No. 620,678, Jun. 14, 1984, abandoned.

This application Jan. 13, 1986, Ser. No. 818,995

Claims priority, application Switzerland, Jul. 26, 1983, 4084/83

Int. Cl.⁴ B41F 5/16, 5/22

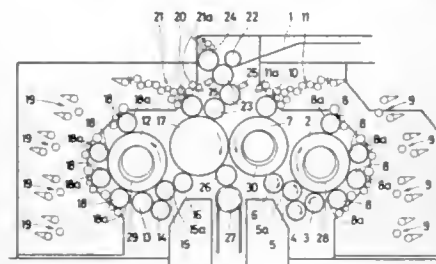
U.S. Cl. 101—177

6 Claims

1. A rotary multicolor machine for simultaneously printing both sides of paper webs or sheets, more particularly for printing a safety background on fiduciary documents and notably bank notes, which comprises a first pair of blanket cylinders, each blanket cylinder having arranged along its periphery a group of several cylinders each inked by an inking unit of different ink color and each adapted to cooperate with the corresponding blanket cylinder of said first pair of blanket cylinders for applying a multicolor image thereon, each one of said blanket cylinders being associated with a typographic plate cylinder and with an associated rubber cylinder, said typographic plate cylinder being in contact with said rubber cylinder and provided with a typographic plate representing the complete design to be printed and adapted to be inked by

the corresponding blanket cylinder, and a second pair of blanket cylinders cooperating together, each blanket cylinder of the second pair being associated with one of the blanket cylinders of the first pair and also with one of said typographic plate cylinders and its associated rubber cylinder, and arranged for transferring a multicolor image to one or the other side of the paper webs or sheets passing between said blanket cylinders of said second pair, and comprising means for mounting the first pair of blanket cylinders for movement away from the corresponding blanket cylinder of the second pair of blanket cylinders, means for mounting each of said typographic plate cylinders and its associated rubber cylinder for movement from a printing position to a nonprinting position and vice versa, whereby in the printing position one of said two last mentioned cylinders contacts the associated blanket cylinder of the first pair of blanket cylinders and the other of said two last mentioned cylinders contacts the associated blanket cylinder of the second pair of blanket cylinders, and in the nonprinting position each of said two last mentioned cylinders is spaced from the associated blanket cylinder of said first and said second pair of blanket cylinders, and means for converting said groups of several cylinders from selective color inking cylinders having relief areas to plate cylinders and from plate cylinders to selective color inking cylinders; and means for selectively adapting said machine to the following arrangements of adjustable or replaceable component elements:

(a) means for selectively adapting each of said groups of said several cylinders into selective color inking cylinders of which said relief areas correspond to the image portions to be colored in the various colors, and of which the number corresponds to the number of colors to be printed;



means for spacing both blanket cylinders of said first pair from said associated blanket cylinder of said second pair so as to operate as color ink collecting cylinders for inking the typographic plate of the associated typographic plate cylinder;

means for adapting each of said typographic plate cylinders and its associated rubber cylinder into their printing position so as to transfer the image from the corresponding inked typographic plate to the associated blanket cylinders of the second pair;

(b) means for selectively adapting each of said groups of said several cylinders into plate cylinders each equipped with a printing plate, the number of said printing plates for each of said groups of said several cylinders corresponding to the number of colors and designs to be printed; means for contacting the blanket cylinders of said first pair to the associated blanket cylinder of the second pair; wherein said typographic plate cylinders and their associated rubber cylinders have no printing function and are adapted into their nonprinting position;

(c) means for selectively adapting one of said groups of said several cylinders into selective color inking cylinders and means for selectively adapting the other of said groups of said several cylinders into plate cylinders, each provided with a printing plate;

means for spacing one of said two blanket cylinders of said first pair of blanket cylinders from said associated blanket cylinder of said second pair of blanket cylinders so as to operate as a color ink collecting cylinder for inking

said associated typographic plate, said typographic plate cylinder and its associated rubber cylinder being in their printing position;

means for contacting the other of said blanket cylinders of said first pair of blanket cylinders to said associated blanket cylinder of said second pair of blanket cylinders;

wherein the typographic plate cylinder associated with said other of said blanket cylinders of said first pair of blanket cylinders, and its associated rubber cylinder, have no printing function and are adapted into their nonprinting position.

4,640,190

COAXIAL SHAFT CONNECTION FOR A PRINTING MACHINE CYLINDER

Klaus Holzappel, Dischingen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

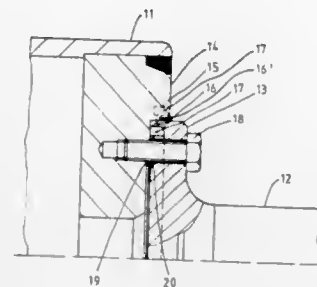
Filed Aug. 22, 1985, Ser. No. 768,044

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1984, 3431149

Int. Cl.⁴ B41F 31/26

U.S. Cl. 101—348

3 Claims



1. Coaxial shaft connection for attaching a cylinder (11) to a shaft (12) both of which have the same axis of rotation, in which the cylinder is formed with an end face (14) and the shaft (12) comprises a stub shaft having a flange (13) extending therefrom and facing said end face,

wherein, in accordance with the invention, the end face (14) is formed with a disk-shaped circular recess (15);

the flange (13) is received, at least in part, in the recess by an interengaging fit;

said circular recess (15) is formed with a finished planar surface (19) perpendicular to the axis of rotation of said cylinder (11) and defining a bottom of said recess;

said flange (13) is formed with a matching engagement planar surface (20) perpendicular to the axis of rotation of said shaft (12), and fitting against said planar surface (19) of said recess, thereby assuring precise alignment of said cylinder (11) and shaft (12);

the flange (13) has an outer diameter dimensioned to be fitted into the disk-shaped recess by an interference fit;

and the interengaging fit includes a resilient circumferential engagement lip (16, 16') defined by a groove (17, 17') formed in at least one of:

said flange (13) and said end face (14) of the cylinder (11),

said lip being concentric with the axis of rotation of the shaft, and located spaced from said interengaging fit by a distance sufficient to provide resiliency of the material of the lip of the respective flange, or end face of the cylinder adjacent said interengaging fit; and

means (18) to attach the flange to said cylinder.

4,640,191

SUBLIMATION PRINTING APPARATUS

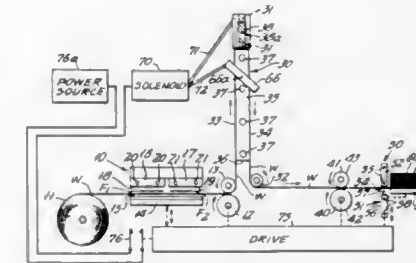
Gerald R. Bradley, c/o Packaging Systems Corporation, 317 S. Thomas Ave., Sayre, Pa. 18840

Filed Aug. 13, 1985, Ser. No. 765,272

Int. Cl.⁴ B41M 5/035; F26B 3/22

U.S. Cl. 101—470

3 Claims



1. Apparatus for printing discrete, separated patterns or indicia on a web of indefinite length, said apparatus comprising:

a printing station having printing means for printing a pattern or indicia on said web;

a heating tower for receiving and heating the web on which a pattern or indicia has been printed, thereby, curing said pattern or indicia;

stepping means for periodically moving said web stepwise past said printing means and said heating tower;

web control means adjacent said heating tower for contacting said web with surfaces of said tower during movement of said web and for separating said web from said surfaces during pauses in movement of said web;

said web control means comprising a pair of spaced rollers mounted adjacent one end of said heating tower for transferring said web from one side of said tower to the other side thereof, said rollers being spaced from each other by a distance greater than the distance from said one side of said tower to said other side thereof and being pivotable from a first position in which a plane containing the axis of said rollers is parallel or substantially parallel to the length of said tower and to a second position in which said plane extends transversely to the length of said tower, whereby in said first position of said rollers, said web contacts said surfaces of said tower and in said second position of said rollers, said web is spaced from said surfaces; and

control means for synchronizing the operation of said printing means, said stepping means and said web control means so that said printing means prints said pattern or indicia and separates said web from said surfaces during intervals between movement of said web by said stepping means and operates said web control means to cause said web to contact said surfaces during movement of said web by said stepping means.

4,640,192

MEANS FOR SECURING TUBES TO A TUBE SHEET

Henry G. Nash, 3924 S. Jamestown, Tulsa, Okla. 74135

Filed Nov. 19, 1985, Ser. No. 799,437

Int. Cl.⁴ F42B 1/02

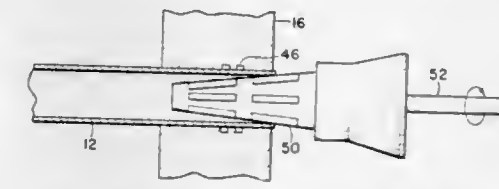
U.S. Cl. 102—307

4 Claims

1. A reusable device for fastening a tube to a tube sheet having holes into which the tube is placed which comprises: a detonator for detonating an explosive for generating gas at high pressure;

a barrel insertable into said holes and having a perforated section attached to said detonator for receiving said gas, said detonator being exterior of said barrel;

an exterior disc-shaped stop surrounding said barrel for contacting an area of said tube sheet surrounding a hole;



a reusable disc-shaped interior stop on said barrel at the end of said perforated section opposite the exterior stop and being of about the interior diameter of said tube.

4,640,193

CHEMILUMINESCENT LIGHT CONTAINER

Anthony Korosic, Escambia, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1985, Ser. No. 813,345

Int. Cl.⁴ F42B 4/26

U.S. Cl. 102—336

8 Claims

1. A hollow container adapted for insertion into a device for use in creating a signal and having fitted into the hollow space thereof, in the following sequence,

(a) a fuse or percussion cap,

(b) a propellant,

(c) a chemiluminescent light activator solution,

(d) a chemiluminescent light fluorescer solution,

(e) a reactive enhancer capable of catalyzing the reaction product produced upon contact of (c) and (d) which occurs upon detonation of said fuse or cap and

(f) a sealing means.

4,640,194

AIRBORNE ARRANGEMENT FOR PRODUCING A PROJECTILE

Wolfram Witt, Duesseldorf, and Herbert Scholles, Meerbusch, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

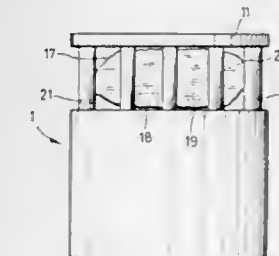
Filed Nov. 30, 1984, Ser. No. 676,661

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343267

Int. Cl.⁴ F42B 25/20, 25/08, 1/02; F42C 13/04

U.S. Cl. 102—425

4 Claims



1. An improved airborne arrangement for producing a projectile having an effective load, a projectile-forming layer and a target-recognition device which encompasses an antenna, the improvement comprising

said arrangement including a housing having a longitudinal axis;

said antenna being outwardly axially slidably mounted in said housing; and

means supporting said antenna, said support means being equi-angularly disposed about the periphery of said housing, guide means in said housing, said support means being slidably mounted in said guide means, whereby said an-

tenna is movable from an inoperative position to an operative position by outwardly sliding said support means in said guide means, wherein,
an inflatable container is mounted between said housing and said antenna, which said container is adapted to be inflated by a gaseous mixture coming from an internal pressure source.

4,640,195

ROCKET LAUNCHING CARTRIDGE CASE AND ASSEMBLY

Ralph F. Campoli, Dover, N.J., assignor to General Defense Corporation, Wharton, N.J.

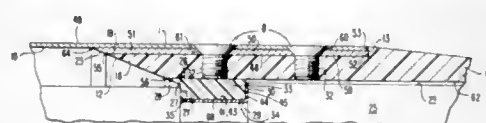
Continuation of Ser. No. 565,655, Dec. 27, 1983, abandoned.

This application Apr. 11, 1986, Ser. No. 851,898

Int. Cl.⁴ F42B 5/02

U.S. Cl. 102-430

18 Claims



1. Apparatus for connecting a rocket assembly to a cartridge case of the type having a primer-receiving closed end and a projectile-receiving open end, for launching the rocket assembly from a conventional weapon, said rocket assembly having a rocket with a diameter conforming to the bore of the weapon, and also having a nozzle end, the rocket assembly being substantially greater in length than the projectile conventionally employed with the cartridge case in the weapon, the apparatus comprising:

a cylindrical extension member secureable to the cartridge case at the open end, said extension member and the cartridge case together conforming to the shape and dimensions of the cartridge receiving chamber of the weapon, said extension member also being configured to slideably receive the rocket assembly,

wherein said extension member includes a portion having an axial bore of essentially constant diameter for receiving the rocket assembly, said extension member portion extending within said cartridge case past said open end, locking means associated with said extension member for releasably retaining the rocket assembly when the latter is inserted into said extension member, said locking means being forcefully releasable in response to the rocket assembly being launched;

the apparatus further including means associated with said extension member for positioning said rocket assembly within extension member bore to achieve a predetermined overall rocket round length, and

sleeve means positioned between the cartridge case and said cylindrical extension member and expandably engageable with the cartridge case for preventing leakage past said extension member of the gases generated in the cartridge case during launch of the rocket assembly.

4,640,196

TRACK MEMBER AND TRACK FOR CONVEYOR TROLLEYS

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 343,392, Jan. 28, 1982, abandoned. This application Jun. 26, 1984, Ser. No. 624,796

Int. Cl.⁴ B61B 12/02; B65G 39/00

U.S. Cl. 104-94

10 Claims

1. A reversible and invertable track member adapted to form one-half of a track for vertically supporting the wheels of conveyor trolleys, said conveyor trolleys consisting of a plurality of first conveyor trolleys each having wheels of one diameter or consisting of a plurality of second conveyor trol-

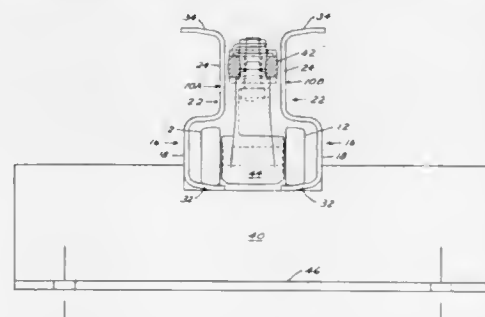
leys each having wheels of another diameter, said track member comprising:

a first longitudinally extending trackway having a first vertical web and a first pair of longitudinal track surfaces extending transversely from the first vertical web in opposed vertically spaced relation;

a second longitudinally extending trackway joined directly to the first trackway in vertically superimposed oppositely facing relation, the second trackway including a second vertical web offset vertically and transversely with respect to the first vertical web, and a second pair of track surfaces extending transversely from the second vertical web in opposed vertically spaced relation;

said first vertical web having a length such that said first pair of track surfaces are spaced apart a distance corresponding to the diameter of the wheels of said first trolleys, and said second vertical web having a length such that said second pair of track surfaces are spaced apart a distance corresponding to the diameter of the wheels of said second trolley wheels;

said track being formable by a pair of said track members



assembled in any one of the following longitudinally parallel, transversely spaced relationships:

(a) the first trackways of said pair of track members face each other and form said track for the wheels of said first conveyor trolleys, and said second vertical webs of said pair of track members face each other and are disposed vertically below said track;

(b) the second trackways of said pair of track members face each other and form said track for the wheels of said second conveyor trolleys, and said first vertical webs of said pair of track members face each other and are disposed vertically below said track;

(c) the first trackways of said pair of track members face each other and form said track for the wheels of said first conveyor trolleys, and said second vertical webs of said pair of track members face each other and are disposed vertically above said track; and

(d) the second trackways of said pair of track members face each other and form said track for the wheels of said second conveyor trolleys, and said first vertical webs of said pair of track members face each other and are disposed vertically above said track.

4,640,197

ROCKER ARM ASSEMBLY WITH A FIXING COLLAR FOR AN AERIAL TRAMWAY INSTALLATION

René Brian, Fontaine, France, assignor to Pomagalski SA, France

Filed Mar. 27, 1985, Ser. No. 716,445

Claims priority, application France, Apr. 13, 1984, 84 06257

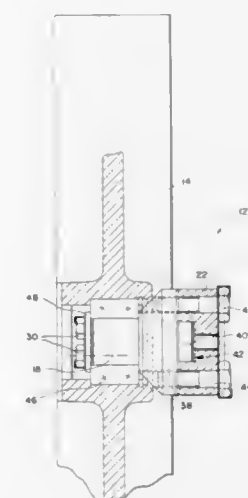
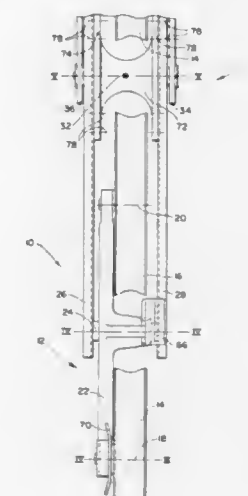
Int. Cl.⁴ B61B 7/00, 12/00, 12/06

U.S. Cl. 104-179

3 Claims

1. An aerial tramway installation including a rope, load-bearing hanger arm grips coupled to the rope, and a rope supporting device comprising rocker assembly arms, rope support sheaves having an external side, said hanger arm grips passing

said external side, and an internal side, the rocker assembly arm being disposed on said internal side, each sheave having a bearing and a rotation spindle on which the bearing is mounted, each rocker assembly arm supporting at ends thereof a sheave rotation spindle, a pair of straight side plates in the form of a cover having at ends thereof a pivoting spindle fitted between said plates, said rocker assembly arm being pivotally



mounted on said spindle, said sheave rotation spindles having internal sheave sides, a fixing collar and a centering pin, said rocker assembly arm having an orifice into which said centering pin is fitted with a small amount of clearance and a bearing face against which said collar is in abutment for cantilevered mounting of the rotation spindle from the rocker assembly arm and fixing means to secure said collar to said rocker assembly arm.

4,640,198

AXLE CONTROL MECHANISM FOR RAIL VEHICLES

Otmar Häupl, Kassel, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,417

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331559

Int. Cl.⁴ B61F 5/30, 5/38

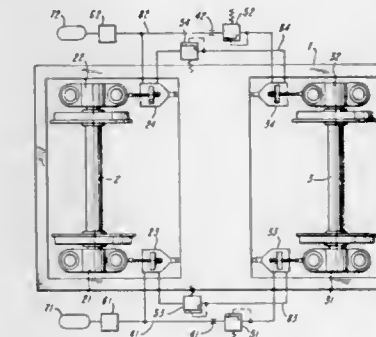
U.S. Cl. 105-168

6 Claims

1. In an axle control mechanism for rail vehicles having at least one truck frame, which has a longitudinal dimension in a

predetermined direction and two wheel sets therewith, each wheel set having an axle, and a journal box and journal box housing at each end of each axle; the two journal boxes of a given wheel set being interconnected with the respectively opposite journal boxes of the other wheel set by means of a hydraulic system; a movement of one of the wheel sets automatically bringing about a "self-orienting" movement of the other wheel set; the improvement therewith which comprises:

hydraulic cylinders, each having a double-acting piston with a working chamber, each working chamber including an inner chamber portion connected to the frame and an outer chamber portion on the opposite side of the piston; each hydraulic cylinder being operatively connected via its piston to a respective said journal box housing of the two wheel sets of a given truck frame; said hydraulic cylinders being disposed in longitudinal pairs in the direction of said longitudinal dimension of said truck frame,



and effecting connection of the latter to said journal box housings; in a given truck frame, two hydraulic cylinders being successively located in-line on each longitudinal side thereof; and

hydraulic lines for respectively interconnecting an inner chamber portion of a given hydraulic cylinder to the outer chamber portion of the other hydraulic cylinder located on the same longitudinal side of said truck frame to establish hydraulic circuit communication directly between said last-mentioned chamber portions so that a piston movement in a given one of the in-line hydraulic cylinders on a given longitudinal side of said truck frame causes an oppositely directed piston movement in the other hydraulic cylinder on that longitudinal side of said truck frame, thus accomplishing coupled opposite turning movements of the two wheel sets of a given truck frame during movements in curve travel.

4,640,199

MOBILE TERMINAL MOUNTING STAND

Donald J. Zigman, 5569 S. 116th St., Hales Corners, Wis. 53130

Filed Mar. 15, 1985, Ser. No. 712,601

Int. Cl.⁴ A47B 9/14

U.S. Cl. 108-6

6 Claims



1. A mounting stand for supporting a video display terminal,

keyboard, disc drive, printer, and printer paper on a floor comprising:

- a first portion defining a forward keyboard support surface and a rearward VDT support surface, said VDT support surface being hingedly connected to said keyboard support surface;
- means for adjusting the inclination of said VDT support surface relative to said keyboard support surface;
- a second portion defining a paper support surface at a height above said VDT support surface, at least a portion of said paper support surface being vertically aligned with a portion of said VDT support surface;
- a third portion defining a printer support surface above said paper support surface wherein at least a portion of said printer support surface is forward of said VDT support surface;
- a fourth portion defining a disc drive support member at a height below said VDT support surface, at least a portion of said disc drive support member being rearward of said keyboard support surface;
- frame support means interconnecting said first, second, third and fourth portions; and
- roller means operatively connected to the frame support means to contact the floor, said roller means being disposed at two places rearward of the VDT support surface, one on each side of the mounting stand, and at two places forward of the VDT support surface, one on each side of the mounting stand.

4,640,200

PASS-THROUGH TRANSACTION DRAWER WITH REMOVABLE DEAL TRAY

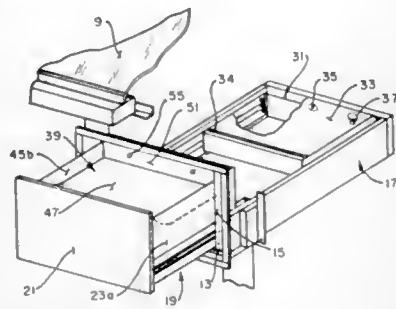
Daniel E. Richardson, St. Louis County, Mo., assignor to Shure Manufacturing Corporation, St. Louis, Mo.

Filed Jun. 11, 1984, Ser. No. 619,383

Int. Cl.⁴ E06B 7/32

U.S. Cl. 109—19

6 Claims



1. A transaction drawer, comprising:
 - a frame adapted to be installed in an opening in the wall of a structure, said frame including a runway extending into the structure;
 - a drawer movably mounted on said runway and being selectively movable by an attendant within said structure between at least a first retracted position in which said drawer is within said structure such that said opening is closed, and a second extended position in which said drawer projects out beyond the wall of the structure permitting a customer on the outside of the structure to have access to the interior of the drawer, said drawer having a relatively large depth dimension for receiving relatively large items along said interior;
 - a deal tray carried by said drawer, said deal tray having a relatively shallow depth, said deal tray being mounted to close the interior of said drawer, said deal tray being removable from said drawer by the attendant when said drawer is in the retracted position, said deal tray including means for preventing removal of said deal tray by a person on the outside of said building when said drawer is in its extended position, said means for preventing removal of

said deal tray from said drawer including a downwardly extending lip on the attendant side of said deal tray engageable with said drawer so as to prevent relative forward movement of said deal tray with respect to said drawer, and means at the opening of said structure coacting with the lip of said transaction drawer to prevent upward movement of said deal tray in the extended position of said drawer; and

- a cash box mounted on the inner end of said runway, said cash box being disposed rearwardly of said drawer when said drawer is in its first position, said cash box having a depth dimension substantially less than the depth dimension of said drawer so that said cash box is at least partially blocked from view from the customer side of said structure when said drawer is in its first position.

4,640,201

FLUIDIZED BED COMBUSTOR HAVING INTEGRAL SOLIDS SEPARATOR

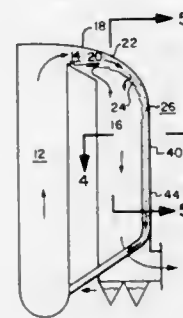
Myron L. Holmes, Simsbury, and Leo A. Smolensky, W. Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 30, 1986, Ser. No. 858,138

Int. Cl.⁴ F23G 5/00, 7/00

U.S. Cl. 110—245

7 Claims



1. A fluidized bed combustor system for combusting a particulate fuel comprising:
 - a furnace enclosure defining a combustion chamber for burning a particulate fuel in a fluidized state in a fluidizing gas to generate a hot flue gas and having a gas outlet above said bed for passing the hot flue gas from the combustion chamber;
 - a flue gas duct disposed downstream of the furnace enclosure having an inlet for receiving the flue gas generated in the combustion chamber;
 - a separator means for separating particulate solids carried over from the combustion chamber in the flue gas, said separator means comprising an arcuate duct having an inlet opening to the gas outlet of the furnace enclosure for receiving the hot flue gas from the combustion chamber and an outlet spaced from said inlet and interconnected to said inlet by a curvilinear inner wall, a curvilinear outer wall, and a pair of spaced sidewalls extending therebetween, a portion of the curvilinear inner wall being disposed across the inlet to flue gas duct, said portion having a plurality of openings therein providing a flow area through which a first portion of the hot gas passes from the arcuate duct of the separator means through the inlet to the flue gas duct; and
 - a solids collection means opening to the outlet of the arcuate duct of the separator means for receiving a second portion of the flue gas together with the particulate solids separated from the first portion of the flue gas passing through the inner wall of the arcuate duct of the separator means.

4,640,202

READILY REPAIRABLE AND LIGHTWEIGHT COVER FOR A HEATED VESSEL

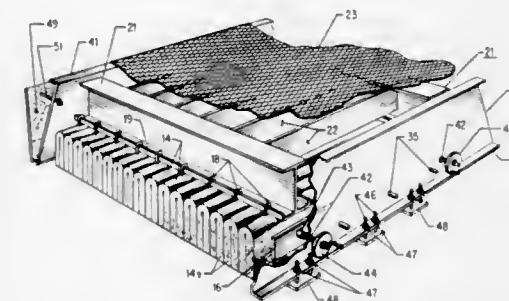
Raymond J. Schraff, Cleveland; Thomas M. Miller, North Olmsted, and Nicholas Labas, Solon, all of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 635,441, Jul. 30, 1984, Pat. No. 4,524,702. This application Mar. 26, 1985, Ser. No. 716,029

Int. Cl.⁴ F23M 5/00

U.S. Cl. 110—336

12 Claims



1. A ceramic fiber insulation module adapted for repairing a shrinkage compensating insulation cover structure having a support frame supporting a matrix of discrete, folded ceramic fiber insulation units in form-stable condition, with said insulation being under externally applied compression while being linked, by means of insulation support means, in upwardly moveable as well as at least substantially swinging engagement with said support frame, said insulation module comprising:
 - at least one unit of folded ceramic fiber insulation in form-stable condition;
 - at least one support element in interengagement with said folded fiber unit within a fold thereof;
 - first linking means securely fastened to said support element; and
 - second linking means supportingly engaging said support element without being securely fastened thereto;
 wherein said first and second linking means protrude directly from said support element beyond the ceramic fiber and terminate therebeyond in a head configured for said moveable engagement with said support frame.

4,640,203

METHOD AND APPARATUS FOR BURNING COMBUSTIBLE WASTE MATERIALS

Albrecht Wolter; Rolf Hartmann, both of Cologne; Horst Herchenbach, Hennef, and Alexander Grisar, Mainz-Finthen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt Deutz Aktiengesellschaft and Dyckerhoff Engineering GmbH, both of, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,246

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1984, 3444073

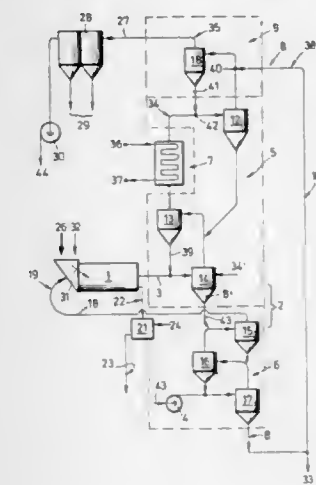
Int. Cl.⁴ F23G 5/00

U.S. Cl. 110—346

23 Claims

1. A method for burning combustible waste materials and the like which comprises:
 - introducing said waste materials into a rotary tubular kiln to incinerate said waste materials and produce a high temperature flue gas,
 - transferring at least a portion of the heat contained in said flue gas to a solid heat exchange medium which has the ability of chemically or adsorptively bonding noxious substances released during the incineration in a heating stage,
 - thereafter transferring heat from said solid heat exchange

medium to incoming combustion air to heat the same to a temperature in the range from 300° to 800° C., and



introducing the thus preheated combustion air into said kiln in sufficient quantities to incinerate said waste materials.

4,640,204

FLUIDIZED BED COMBUSTION APPARATUS AND METHOD OF OPERATING SAME

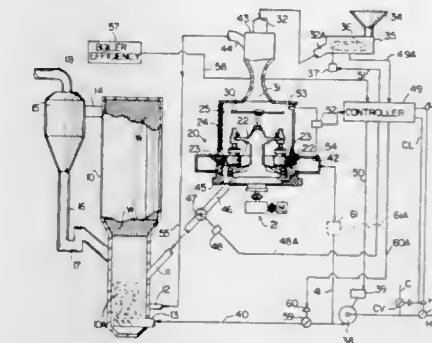
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Jun. 9, 1986, Ser. No. 871,856

Int. Cl.⁴ F23D 1/00

U.S. Cl. 110—347

11 Claims



1. In a coal burning boiler having a dense bed column with a closed end and opening into a combustion chamber, and a source of coal, the improvement comprising:
 - (a) coal processing mill means adapted to receive coal from said source and having a first outlet conduit connected to said dense bed column adjacent the closed end and a second outlet conduit connected to said dense bed column spaced from said connection of said first outlet conduit to said dense bed column;
 - (b) means supplying air into said coal processing mill means for stripping fine particulate fractions and delivering the same into said first outlet conduit for injection into said dense bed column;
 - (c) means in said second outlet conduit connection operable to feed coarse particulate fractions into said dense bed column for supplying coarse coal fractions into said column spaced from said injection of fines into said column; and
 - (d) air supply means connected into said dense bed column adjacent said closed end of said dense bed column for

fluidizing the fine and coarse coal fractions in said dense bed column.

4,640,205

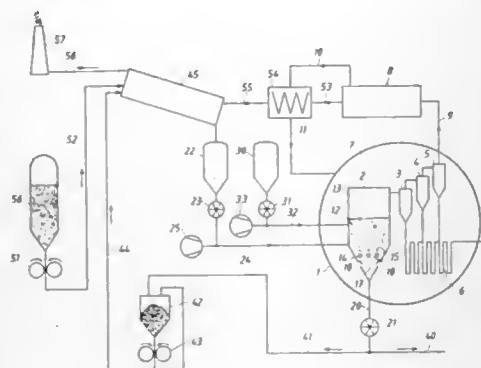
METHOD OF DRYING GRANULAR FUEL IN A FLUIDIZED BED COMBUSTION PLANT AND A COMBUSTION PLANT WITH A DRYING DEVICE
Roine Brännström, Finspong, Sweden, assignor to Asea Stal AB, Västerås, Sweden

Filed Jul. 2, 1985, Ser. No. 751,095

Claims priority, application Sweden, Jul. 11, 1984, 8403665
Int. Cl.⁴ F22B 1/00

U.S. Cl. 110—347

16 Claims U.S. Cl. 112—143



1. A method of improving the pneumatic conveying properties of a particulate fuel fed to a pneumatically fluidized combustion bed in a combustion chamber, the fuel particles prior to feeding containing moisture and the fluidized combustion bed containing particulate bed material comprising calcium carbonate, said method comprising withdrawing a fluidized portion of said bed material directly from said pneumatically fluidized combustion bed in the combustion chamber, subjecting said withdrawn portion to calcining conditions to at least partially calcine said bed material to provide calcium oxide in said withdrawn portion, crushing said withdrawn bed material to expose said calcium oxide, mixing said crushed bed material with said fuel particles containing moisture to dry the particulate fuel by reacting said calcium oxide with said moisture at the surface of said fuel particles, contacting said mixture of crushed bed material and moist particulate fuel with a supply of drying gas to aid in the drying of said fuel, and supplying said mixture of crushed bed material and dried particulate fuel to the combustion chamber via a pneumatic conveying means, the drying provided by said crushed bed material and said drying gas reducing the moisture content of said particulate fuel sufficiently to prevent clogging of said pneumatic conveying means.

12. An apparatus for improving the pneumatic conveying properties of a particulate fuel fed to a pneumatically fluidized combustion bed in a combustion chamber, the fuel particles prior to feeding containing moisture and the fluidized combustion bed containing particulate bed material comprising calcium carbonate, said apparatus comprising means for withdrawing a fluidized portion of said bed material directly from said pneumatically fluidized combustion bed in the combustion chamber, means for subjecting said withdrawn portion to calcining conditions to at least partially calcine said bed material to provide calcium oxide in said withdrawn portion, means for crushing said withdrawn bed material to expose said calcium oxide, mixing means for mixing said crushed material with said fuel particles containing moisture to dry the particulate fuel by reacting said calcium oxide with said moisture at the surface of said fuel particles, means for supplying a drying gas to said mixing means to aid in the drying of said particulate fuel, and pneumatic conveying means for supplying said mixture of crushed bed material and dried fuel to the combustion chamber, the drying provided by said crushed bed material and

said drying gas reducing the moisture content of said particulate fuel sufficiently to prevent clogging of said pneumatic conveying means.

4,640,206

HEMMING APPARATUS

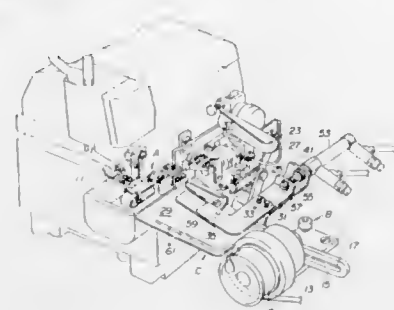
Masahiko Nishikawa, Osaka, Japan, assignor to Pegasus Sewing Machine Mfg. Co., Ltd., Osaka, Japan

Filed Aug. 20, 1985, Ser. No. 767,408

Claims priority, application Japan, Aug. 21, 1984, 59-127179[U]; Oct. 18, 1984, 59-157946[U]
Int. Cl.⁴ D05B 35/04

U.S. Cl. 112—143

16 Claims



1. A hemming apparatus for a sewing machine which creates an S-shaped hem in a piece of cloth, comprising a hem folding attachment supported on a machine bed in front of a needle dropping point and an aiding apparatus for hemming disposed in front of said hem folding attachment so as to prefold the hem into said S-shape, said aiding apparatus for hemming including:

- (a) a free roll supported for rotation about an axis on a front side of said machine bed,
- (b) position setting means for setting the position of an edge of the cloth on said free roll, said position setting means being supported on or near said free roll and being engageable with the edge of the cloth, the edge of the cloth extending from said free roll toward said hem folding attachment,
- (c) fitting means for engaging an upper surface of the hem,
- (d) an under guide plate engageable with a lower surface of the hem, and
- (e) a base guide disposed above said under guide plate a predetermined distance, said fitting means, said under guide plate and said base guide being disposed between said hem folding attachment and said free roll and forming the hem gradually into the prescribed S-shape as the cloth advances from said free roll to said hem folding attachment, an upper side fold of the hem having a width determined by the distance between an end surface of said free roll and said position setting means in cooperation with said base guide, and an underside bent section of the hem being folded gradually more deeply beneath said upper side fold by said under guide plate and said fitting means in cooperation with said free roll as the cloth advances toward said hem folding attachment, said fitting means moving the underside bent section of the cloth progressively farther between said base guide and said under guide plate as the cloth advances.

4,640,207

DETACHABLE GUIDE FOR A SEWING MACHINE OPERATING STATION

Michael O'Keefe, and John R. Fox, both of South Yorkshire, United Kingdom, assignors to S.R. Gent plc, England

Filed Jul. 15, 1985, Ser. No. 754,767

Int. Cl.⁴ D05B 33/00

U.S. Cl. 112—236

15 Claims

1. A sewing machine operating station for use with an over-

4,640,209

DECORATIVE FABRICS

Julian H. Glenn, High Point, N.C., and Douglas J. Glenn, P.O. Box 156, Wallburg, N.C. 27373, assignors to Douglas J. Glenn, Wallburg, N.C.

Filed Apr. 17, 1985, Ser. No. 724,101

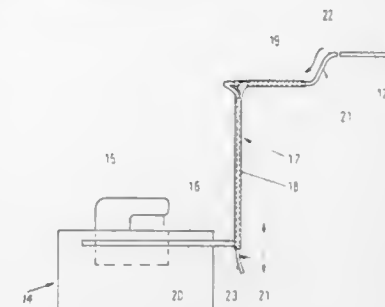
Int. Cl.⁴ B32B 7/08

U.S. Cl. 112—429

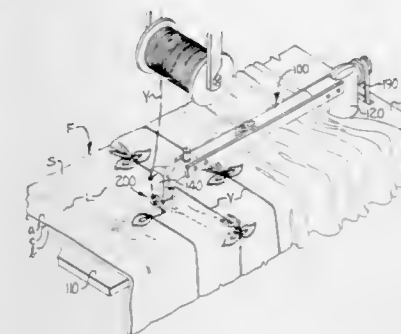
11 Claims

head conveyor system having a trolley movable therealong and provided with a delivery arm from which partly-formed garments can be suspended, for delivery to the operating station, in which the operating station comprises:

- a table;
- a sewing machine mounted in or on the table;
- a working surface adjacent to the sewing machine and on which a partly-formed garment can rest while undergoing a sewing operation;



a guide mounted on the table and having a guide portion which extends generally horizontally over the working surface; and means for statically coupling a free end of the guide portion with the delivery arm of the trolley in order to permit sliding transfer of a partly-formed garment from the delivery arm to a suspended position on the guide portion.



1. A textile fabric comprising a substrate and an effect yarn arranged on said substrate in a predetermined manner, said effect yarn being in a longitudinally compressed bulked condition imparting an expanded cross-sectional width to the effect yarn, and stitching thread securing said effect yarn to said substrate in said compressed, bulked condition, whereby there is imparted to the fabric an appearance attendant to an effect yarn much larger than that actually present on the fabric.

4,640,210

COMPUTER CONTROLLED SEWING MACHINE

Hideaki Takenoya; Mikio Inamori, both of Tokyo, and Eiichi Shomura, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,562

Claims priority, application Japan, May 11, 1983, 58-80966

Int. Cl.⁴ D05B 3/02

U.S. Cl. 112—456

2 Claims

METHOD AND APPARATUS FOR FORMING DECORATIVE FABRICS

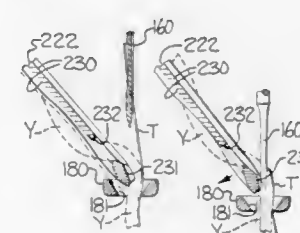
Julian H. Glenn, High Point, N.C., and Douglas J. Glenn, P.O. Box 156, Wallburg, N.C. 27373, assignors to Douglas J. Glenn, Wallburg, N.C.

Division of Ser. No. 724,101, Apr. 17, 1985. This application Jun. 27, 1986, Ser. No. 879,424

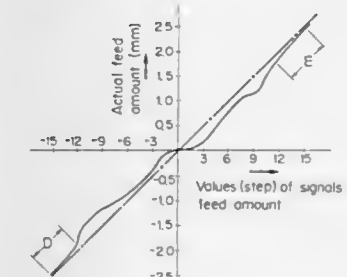
Int. Cl.⁴ D05B 3/12

U.S. Cl. 112—265.1

9 Claims



1. A method of forming a decorative textile fabric from a substrate and an effect yarn which comprises guiding the effect yarn in a predetermined path of travel to a position adjacent a vertically reciprocating needle of a sewing machine while longitudinally compressing the effect yarn to expand the cross-sectional width of the effect yarn by engaging the effect yarn by the needle and by stitching thread carried by the needle during the downward stroke of the needle and while causing the stitching thread to stitchingly secure the compressed effect yarn to the substrate.



1. A sewing machine having a microcomputer including

memory stitch control data for a plurality of different patterns to be stitched, including a predetermined number of specific patterns of comparatively many stitches, pattern selecting means including a plurality of pattern selecting switches selectively operated to sequentially read out the stitch control data specific to the selected pattern to control a needle position control motor and a fabric feed control motor to thereby produce the selected pattern, said sewing machine comprising a predetermined number of feed adjusting switches provided within said sewing machine to be individually set ON or OFF in dependence upon the formation result of said specific patterns, each of said specific patterns having at least three conditions including one in which each is stitched as expected in accordance with the values of the corresponding stitch control data, another in which each is stitched as deformed due to the accumulated errors in the forward fabric feeding amount and another in which each is stitched as deformed due to the accumulated errors in the rearward fabric feeding amount, said feed adjusting switches being selectively set ON or OFF individually to produce different signals in dependence upon the combinations of switches thus set, so as to cover said three conditions which may be taken by each of said specific patterns, wherein said memory further stores correcting data respectively responsive to said signals produced from said feed adjusting switches so set to thereby modify said stitch control data for a selected pattern, said modified data controlling said fabric feed control motor.

4,640,211

ADJUSTMENT FIXTURE FOR WISHBONE BOOMS BOARD-SAILING DEVICES

Marc Namur, Darmstadt-Eberstadt, Fed. Rep. of Germany,
assignor to Schutz-Werke GmbH & Co. KG, Selters, Fed.
Rep. of Germany

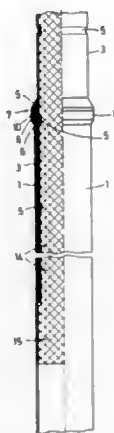
Filed Mar. 20, 1985, Ser. No. 714,061

Claims priority, application Fed. Rep. of Germany, Mar. 20,
1984, 3410152

Int. Cl.⁴ B63H 9/08

U.S. Cl. 114—97

5 Claims



1. In a wishbone boom of the type comprising two main tubes joined at an acute angle, said main tubes each comprising an integral end portion having an end surface, and two end tubes telescopingly adjustable in said main tubes, said end tubes comprising a plurality of spaced, circumferential grooves; the improvement comprising an adjustment fixture comprising: an O-ring adapted to be received in any one of said plurality of grooves; and an annular sleeve adapted to be radially interposed between said end portion of said main tube and said end tube, said annular sleeve comprising a radially outwardly extending portion designed to abut against said end surface of said main tube and a conical portion extending radially inward and axially from said abutment portion, said O-ring being formed integrally with said annular sleeve axially opposite said

abutment portion, and said O-ring extending radially inwardly of said annular sleeve.

4,640,212

ROPE AND A MOORING DEVICE, PARTICULARLY FOR CLAMPING GOODS MOORING SHIPS AND ANCHORING FLOATING LANDING STAGES, BUOYS, NAVIGATION MARKS AND THE LIKE

Bertil Brandt, Paris, France, assignor to Socared S.A., Geneva,
Switzerland

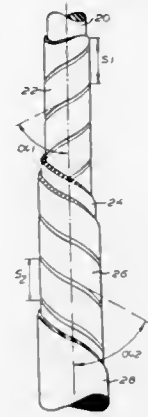
Continuation of Ser. No. 917,757, Jun. 21, 1978, abandoned.

This application Jun. 24, 1980, Ser. No. 162,462

Int. Cl.⁴ B63B 21/00

U.S. Cl. 114—230

3 Claims



1. A mooring device for anchoring floating landing stages, buoys, navigation marks and the like, comprising two floating bodies of relatively great displacement, and means connecting each of said floating bodies to one or more stationary anchorages placed on the sea bottom, wherein said means comprises a rigid tubular arm which is rigidly connected to the floating bodies by stays and projects downwardly from said bodies, said two floating bodies being placed on either side of said arm, an elastomer rope being connected to at least one stationary anchorage and extending into and through said tubular arm and being attached to the upper end thereof, wherein said rope has a core of elastomeric material, a fiber reinforcement disposed around said core, and an outer covering layer of elastomeric material, said elastomeric material in said core and said covering layer comprising synthetic rubber, wherein the fiber reinforcement comprises two strip layers of a material considerably less elongatable than the elastomeric material of said core, which strip layers are helically wound about the core in opposite directions, each with a reinforcement angle of 50°-65° between the longitudinal axis of the rope and the reinforcement projected at right angles thereto, and wherein said strip layers are separated from each other by a continuous layer of elastomeric material.

4,640,213

SIGNAL FLAG APPARATUS FOR WATER SKIING

Steven H. Lugo, 5157 W. Joan de Arc, Glendale, Ariz. 85304

Filed Jan. 14, 1985, Ser. No. 691,282

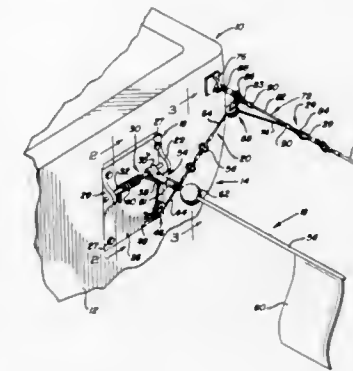
Int. Cl.⁴ G08C 5/00

U.S. Cl. 114—253

14 Claims

1. A signal flag apparatus for use on a boat that is towing a water skier, said apparatus comprising:
(a) tow line means for coupling to a boat for towing a water skier, said tow line means being taut when tension is applied thereto by the skier and being slack in the absence of skier applied tension;
(b) a flag raising mechanism for mounting on the transom of the boat and including:
I. pivot means having a substantially horizontal first position and a substantially vertical second position,

II. biasing means for yieldably urging said pivot means to the second position thereof;
(c) a flag assembly demountably connected to said pivot means for movement therewith; and
(d) coupling cable means for connection between said pivot means and said tow line means for moving said pivot means to its first position when tension is applied to said tow line means and allowing said biasing means to move said pivot means to its second position when the tension is removed from said tow line means, said cable coupling means including:
I. a leader line having one end connected to said pivot means and having an opposite end,
II. a first pulley means mounted on said flag raising mechanism below said pivot means, said first pulley means being adapted for free swivel movement and having said leader line in engagement therewith,



III. an elongated cable having an intermediate loop formed therein to separate it into an extension cable segment having an extending end and a control cable segment having an extending end,
IV. means on the extending end of the extension cable segment of said elongated cable for demountable connection to the boat,
V. a second pulley means connected to the extension cable segment of said elongated cable proximate the extending end thereof, said second pulley means being adapted for free swivel movement and having the control cable segment of said elongated cable in engagement therewith, and
VI. means on the extending end of the control cable segment of said elongated cable for demountable connection to the opposite end of said leader line.

4,640,214

MODULAR MULTI-STORAGE BUILDING

John H. Bruns, 8251 SE. 26th Ave., Mercer Island, Wash. 98040

Filed Jan. 18, 1985, Ser. No. 692,770

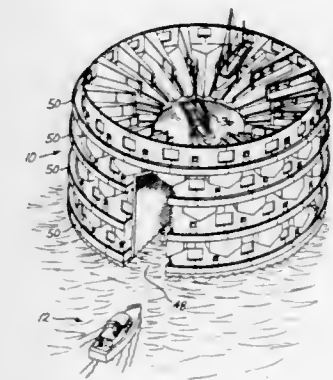
Int. Cl.⁴ B63B 35/44

U.S. Cl. 114—263

39 Claims

1. In a building, a cell construction, comprising:
wall means defining a hexahedral building cell which narrows in width from a first end to a second end, said wall means comprising a pair of spaced apart vertical sidewalls which converge together from the first to the second end of the cell,
said wall means further including a pair of top sections which slope upwardly and inwardly from the sidewalls of the cell to an apex whereat they are connected together, a pair of bottom sections which slope downwardly and inwardly from the sidewalls of the cell to a valley whereat they are connected together,
each said vertical sidewall including an inboard end located between the first and second ends of the cell, and said wall means defining an upper and a lower cantilever

beam on each side of the cell, each projecting from the inboard end boundary of a vertical sidewall towards the second end of the cell,



with the regions located vertically between the upper and lower cantilever beams and horizontally between the inboard ends of the vertical sidewalls and the second end of the cell being open regions in the vertical sidewalls.

4,640,215

CONVERSION ADAPTER FOR BUOYANCY COMPENSATOR VEST

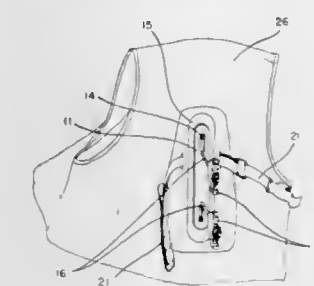
George G. Purifoy, Jr., 206 Lockwood Dr., Morehead City, N.C. 28557

Filed Jan. 31, 1986, Ser. No. 824,639

Int. Cl.⁴ B63C 11/46

U.S. Cl. 114—315

10 Claims



1. In a buoyancy compensator vest having a single tank mounting base, the improvement comprising: a two tank conversion adapter including a base plate; securing means for mounting said base plate on said single tank mounting base; elongated, rod-like members secured to and outwardly extending from said base plate; a pair of spaced, interconnected tanks mounted on either side of said rod-like members; wedge means mounted on the outer end of said rod-like members for engaging said tanks; and means for releasably tightening said wedge means against said pair of interconnected tanks whereby a buoyancy compensator vest designed for use in conjunction with a single tank can be readily converted to mount interconnected double tanks.

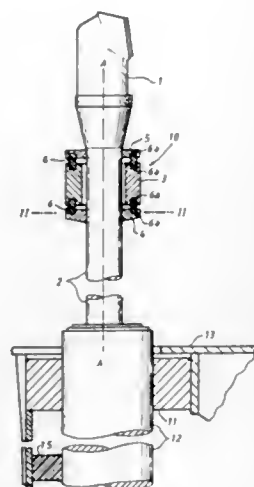
4,640,216 DEVICE FOR REDUCING VIBRATIONS OF PERISCOPES

Elke Lehmann, Mühlenberg, and Reiner Jannusch, Bergenring, both of Fed. Rep. of Germany, assignors to Howaldtswerke-Deutsche Werft, Aktiengesellschaft, Hamburg und Kiel, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,391
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1984, 3433397

Int. Cl.⁴ B63G 8/38
U.S. Cl. 114—340

21 Claims



1. An apparatus for a submarine which damps vibrational deflections of a periscope which is extendable from and retractable into said submarine when in use in an aqueous medium about said submarine, said periscope having: an uppermost portion and a lower portion; said damping apparatus being mounted at said uppermost portion of said periscope, said damping apparatus comprising: damping mass means for storing kinetic energy and potential energy resulting from vibrational deflections of said periscope; said damping apparatus for damping said vibrational deflections of said periscope, when said submarine is in motion, with respect to said aqueous medium; at least one damping element for damping the stored energy of said damping mass means; means for mounting said damping apparatus onto said periscope; said damping mass means and said at least one damping element being moveable mounted at said mounting means, whereby said damping mass means is subject to vibratory deflection in response to vibrating deflection of said periscope; said damping mass means comprising at least one damping mass for being disposed at said uppermost portion of said periscope; said submarine having a superstructure for withdrawing said periscope thereinto; said submarine superstructure having an uppermost bearing for holding said lower portion of said periscope when extended; and said damping apparatus, when withdrawn with said periscope into said submarine superstructure, fitting within said uppermost bearing.

4,640,217 PNEUMATIC BOATS

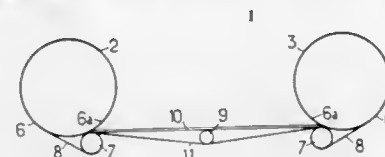
Michel Ferronniere, Paris, France, assignor to Zodiac, Issy les Moulineaux, France

Continuation of Ser. No. 399,299, Jul. 19, 1982, abandoned. This application Aug. 28, 1985, Ser. No. 769,810

Claims priority, application France, Jul. 22, 1981, 81 14294
Int. Cl.⁴ B63B 7/08

U.S. Cl. 114—345

16 Claims



1. An inflatable boat comprising two inflatable elongate legs drawing together at corresponding first ends thereof to form a bow portion of the boat, each leg comprised of a first part that is at least substantially parallel with the first part of the other leg and a second part which is connected with the corresponding second part of the other leg to form a part of said bow, each first part comprised of an upper compartment and of a lower compartment each said upper and lower compartments having at least a substantially circular cross section and fixed to the other compartment along a circumferential zone, said upper compartment having a cross section greater than the cross section of said lower compartment; a rearwardly located transom connecting the other ends of said two legs together, said transom being adapted to receive a motor; a lateral sheet fixed tangentially to said two upper and lower compartments on the outer sides of each leg; said upper and lower compartments of each leg being dimensioned and disposed with respect to each other so that the angle formed by said lateral sheet and the horizontal plane is between 5° and 45°; a floor rigid in the transverse direction and engaging the lower face of said upper compartment; a bottom sheet fixed to said legs at the connection between the upper and lower compartments of said legs; and a keel interposed between said floor and said bottom sheet, the diameters and size of said lower compartments being such that said bottom sheet contacts the water when said boat is floating.

4,640,218 TABLET COATING APPARATUS

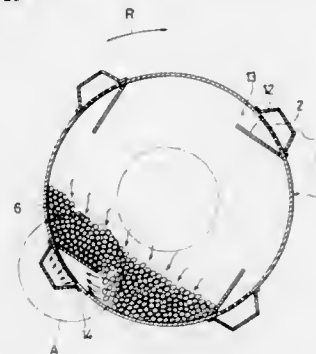
Shimesu Motoyama, Asaka; Masakazu Gotou; Hiromu Shirakawa, both of Tokyo, and Takamoto Makino, Sakado, all of Japan, assignors to Freund Industrial Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,739

Claims priority, application Japan, Oct. 4, 1982, 57-174273
Int. Cl.⁴ B05C 5/00, 19/00

U.S. Cl. 118—19

18 Claims



1. An apparatus for applying a coating on tablets or the like

comprising a rotatable coating drum and at least one ventilating area provided in the wall of said drum, characterized in that an impermeate baffle means at least coextensive with the ventilating area for covering said ventilating area from inside of said drum is provided in said drum which does not permit tablets to fall on a wall portion extending below the baffle but which causes said tablets to fall onto said drum wall adjacent said ventilating area, the leading edge of said baffle means relative to the rotational direction of said drum is substantially in contact with the inner wall surface of said drum, and an unobstructed ventilating opening and an unobstructed path are defined between at least one of the trailing edge or side edges of said baffle means and the inner wall surface of said drum whereby tablets introduced in the drum fall from said baffle to said drum wall along said unobstructed path as said drum is rotated.

4,640,219 APPARATUS FOR COATING MATERIALS ONTO ELONGATED FOODSTUFFS

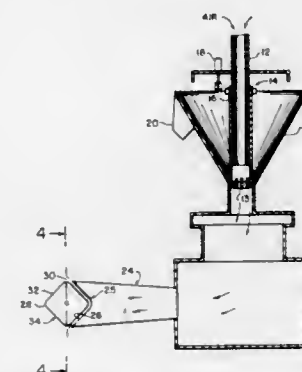
James E. Anderson, Madison, and Terry L. Holmes, Monona, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Feb. 5, 1985, Ser. No. 698,297

Int. Cl.⁴ B05C 19/00

U.S. Cl. 118—24

18 Claims



1. A coating material application apparatus for coating an elongated food product that comprises: means for conveying said food product at a predetermined rate past an applicator nozzle, said conveying means further comprising an area of non-support; an applicator nozzle for dispersement of coating material onto said food product, said applicator nozzle comprising a body structure having a vertical width substantially greater than the horizontal width, said vertical width being substantially equal to the diameter of a cylindrical food product or the diagonal width of a square or rectangular food product, a nozzle discharge, and an opening sufficient to evenly coat about one-half of said food product side surfaces and said nozzle discharge and having an elliptical, semi-circular, or angular configuration conforming to said food product side surfaces, said applicator nozzle positioned at said conveying means area of non-support; and a blower means for impelling coating material through said opening of said applicator nozzle.

4,640,220 PAINT BOOTH ASSEMBLY

Spyros Fallas, Brighton Le Sands, Australia, assignor to Electropainting Sales Pty. Ltd., New South Wales, Australia

Filed Sep. 9, 1985, Ser. No. 774,054

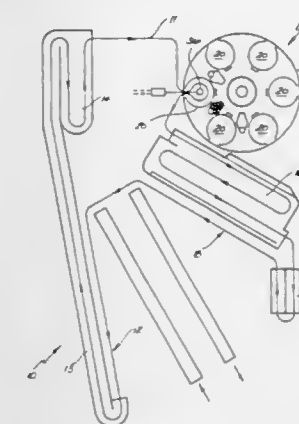
Int. Cl.⁴ B05B 15/12

U.S. Cl. 118—326

4 Claims

1. A spray booth assembly having a vertically extending housing with a generally vertically extending peripheral surface defining a plurality of vertically extending spray cham-

bers, said chambers being angularly spaced about a generally vertical axis, and means rotatably supporting said housing for



rotation about said axis, each of said chambers opening radially outwardly relative to said axis.

4,640,221 VACUUM DEPOSITION SYSTEM WITH IMPROVED MASS FLOW CONTROL

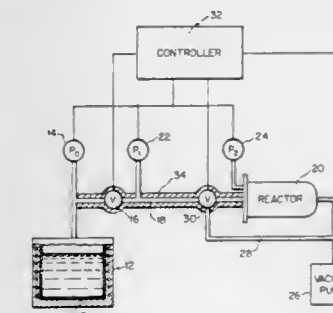
Steven G. Barbee, Dover Plains; Gregory P. Devine, Poughquag; William J. Patrick, Newburgh, and Gerard Seeley, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1985, Ser. No. 792,729

Int. Cl.⁴ C23C 13/08

U.S. Cl. 118—689

5 Claims

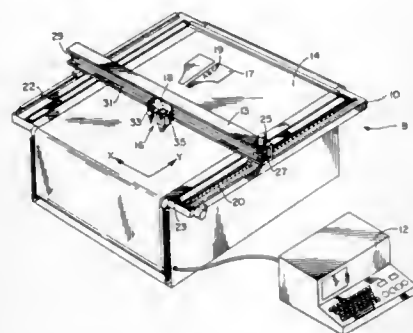


1. A system for forming a layer of a material upon a surface from a gas comprising: a reservoir for heating a material from which said gas is propagated; a low pressure reactor wherein said layer is formed; connecting means between said reservoir and said reactor; means connected to the outlet of said reactor for creating a vacuum therein and causing said gas to flow from said reservoir through said connecting means to said reactor; first pressure control means at the outlet of said reservoir for maintaining the pressure of said gas at the reservoir end of said connecting means at a first valve; and second pressure control means at the inlet of said reactor maintaining the pressure of said gas thereat at a second value by adjusting said means for creating a vacuum, thereby providing a constant mass flow rate of said gas into said reactor.

4,640,222
MARKING APPARATUS
 Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific Inc., South Windsor, Conn.
 Continuation-in-part of Ser. No. 737,392, May 23, 1985, abandoned. This application May 31, 1985, Ser. No. 739,619
 Int. Cl.⁴ B05C 5/02

U.S. Cl. 118—697

26 Claims



1. An apparatus for cutting and annotating porous sheet material, said apparatus comprising:
 means defining a support surface for supporting said sheet material,
 marking means for outputting a stream of powder downwardly onto said sheet material to mark it, said marking means comprising a movable mechanical element which engages said powder and urges it into air to minimize the force necessary to deliver said powder to said sheet material,
 means for supporting said cutting means and said marking means adjacent to said support surface and for automatically moving said marking means and said support surface in relation to each other along a first course which outlines said annotation as said marking means outputs a stream of powder and moving said cutting means and said support surface in relation to each other along a second course which outlines a pattern piece as said cutting means cuts out said pattern piece, and
 means for adjusting the output of said stream of powder in relation to a marking speed to regulate marking intensity.

4,640,223
CHEMICAL VAPOR DEPOSITION REACTOR
 Alfred R. Dozier, 9075 Meadowrun Way, San Diego, Calif. 92129

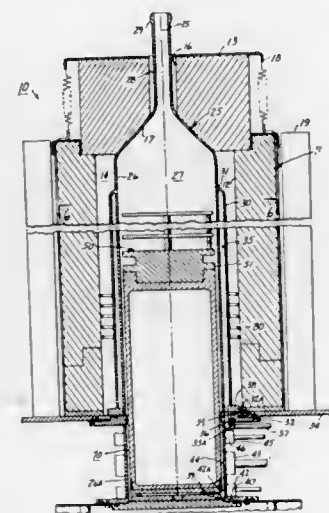
Continuation-in-part of Ser. No. 634,146, Jul. 24, 1984, abandoned, which is a division of Ser. No. 306,697, Sep. 21, 1981, abandoned. This application Apr. 18, 1986, Ser. No. 853,690
 Int. Cl.⁴ C23C 13/08

U.S. Cl. 118—719

36 Claims

1. Apparatus within which to conduct processes of silicon epitaxial chemical vapor deposition on substrate wafers, said apparatus comprising:
 a heating enclosure comprising a heating enclosure wall which forms a heating chamber therein, said heating enclosure wall having a heating chamber opening therethrough and being insulated against loss of heat;
 a reactor in said heating chamber, fitting in and closing said heating enclosure opening, said reactor including a heatable reaction chamber wall which is impermeable to gases and defines a reaction chamber and which makes a sealing fit in the opening in the heating chamber wall and itself has an opening through said reaction chamber wall which opens outside of said heating chamber, and reactant distribution means for receiving reactant and adapted to discharge reactant into said reaction chamber;
 heater means in said heating chamber for heating said reaction chamber wall;
 a wafer carrier so proportioned, arranged, and mounted as to

be at least partially insertable into, and removable out of, said reaction chamber through said opening in said reaction chamber wall, said wafer carrier including support means to support said wafers spaced apart from one another so that at least one surface of each said wafer will be exposed in said reaction chamber;
 closure means adapted to open and to close said opening in said reaction chamber to pass said wafer carrier and to seal said opening respectively;
 reactant passage means entering said reactant distribution means, and being accessible from outside of said heating chamber for introducing reactants into said reactant distribution means, and thence into said reaction chamber;



a conditioning chamber aligned with said reaction chamber, said conditioning chamber including door means through which said wafer carrier can be placed in and removed from the interior of said conditioning chamber;
 means for providing an atmosphere in said conditioning chamber which is not incompatible with the atmosphere which will exist in the reaction chamber when the wafer carrier is inserted into the reaction chamber; and
 first moving means adapted to move said wafer carrier into and out of said reaction chamber, said wafer carrier being movable into and out of said conditioning chamber, whereby said wafer carrier can be moved into and out of said reaction chamber without direct communication of the reaction chamber with conditions external to the conditioning chamber.

4,640,224
CVD HEAT SOURCE
 Matthew L. Bunch, Phoenix; J. B. Price, Scottsdale, and Robert W. Stitz, Mesa, all of Ariz., assignors to Spectrum CVD, Inc., Phoenix, Ariz.

Filed Aug. 5, 1985, Ser. No. 762,355
 Int. Cl.⁴ C23C 13/04

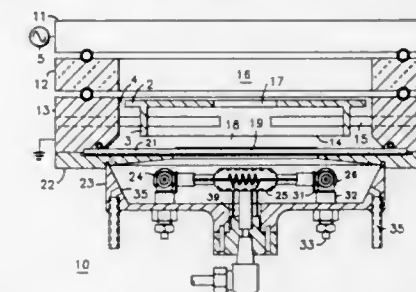
U.S. Cl. 118—725

4 Claims

1. In a chemical vapor deposition apparatus having means for enclosing a volume, said means including a thermally translucent window, gas means for supplying gases to said volume and exhausting gases from said volume, and plasma means for causing a glow discharge within said volume, the improvement comprising:

heating means adjacent the outside of said window for di-

rectly heating an article upon which a deposit is to be formed within said volume;

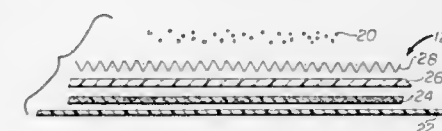


wherein said heating means comprises a base, bracket means attached to said base, and at least one lamp resiliently attached to said base by said bracket means.

4,640,225
ODORLESS ANIMAL LITTER UNIT
 Patrick Yananton, 1518 Little Hill Rd., Pt. Pleasant, N.J. 08762
 Continuation-in-part of Ser. No. 315,307, Oct. 27, 1981, Pat. No. 4,469,046, which is a continuation-in-part of Ser. No. 909,256, May 24, 1978, abandoned. This application Jan. 26, 1984, Ser. No. 573,958
 Int. Cl.⁴ A01K 29/00

U.S. Cl. 119—1

29 Claims



1. In combination, a litter device for use with cats and sorbent pad laminate means for the collection of animal urine, said sorbent pad laminate means comprising:
 (A) a bottom sheet layer of moisture impermeable material, overlying the base of the device,
 (B) an intermediate sorbent layer of material having a high sorption capacity for urine, and
 (C) a top claw resistant screen means, said screen means being a urine permeable, flexible member of material which is substantially inert to urine, formed of strands bonded at their intersections and having sufficient tear strength to withstand the clawing action of a cat and sufficiently small hole size to protect said sorbent layer and said sheet layer of moisture impermeable material from being torn by animal claws, said bottom sheet layer and said top screen means being bonded to each other along at least a substantial portion of their periphery.

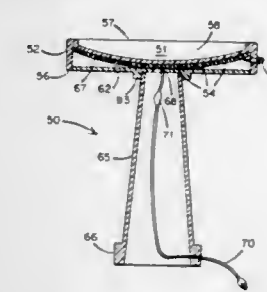
4,640,226
BIRD WATERING APPARATUS
 Walter H. Liff, P.O. Box 96, Newcastle, N.H. 03854
 Continuation-in-part of Ser. No. 662,365, Oct. 18, 1984. This application Oct. 23, 1985, Ser. No. 790,507
 Int. Cl.⁴ A01K 45/00

U.S. Cl. 119—1

6 Claims

1. A temperature controlled birdbath device comprising:
 (a) a molded plastic container having:
 (1) an inner wall defining a closed bottom, sidewalls and an open top;
 (2) an outer wall integrally joined to said inner wall at said top and extending below said closed bottom spaced outward of said inner wall to define an open bottom below said closed bottom;
 (b) an electrical resistance heating element wound in contact with the bottom surface said inner wall consisting of nega-

tive temperature coefficient of conductivity heating cable; and,



(c) means to connect said heating element to a source of electrical energy, said heating element providing increasing electrical energy as the ambient temperature falls below the freezing temperature of water.

4,640,227
INTENSIVE SHRIMP BREEDING PROCESS
 Jean-Paul Blancheton, Montpellier; Jacques Calvas, Noirmoutier; Alain H. Michel, Paris, all of France, and Vincent Vonau, Papeete-Tahiti, assignors to Institut Francais de Recherche pour l'Exploitation de la Mer - IFREMER, Paris, France
 Filed Dec. 19, 1985, Ser. No. 810,987

Claims priority, application France, Dec. 20, 1984, 84 19753
 Int. Cl.⁴ A01K 61/00

U.S. Cl. 119—2

9 Claims

1. A process for the intensive breeding of shrimps in tanks where only a small proportion of the water is renewed, with a view to obtaining the pre-growth or the growth of post-larvae more than twelve-days old, by feeding them with artificial food, process wherein before placing the post-larvae in the tank water, said water is prepared by topping up progressively the volume of water in the tank and adding daily to said water an artificial food containing nitrogenous organic products, then the water is stirred, oxidized, and its temperature is kept to between 15° C. and 33° C. until an important formation of flocs is obtained, said flocs being made up of heterotroph and nitrifying bacteria and phytoplankton and being kept in suspension in the water, after that post-larvae of shrimps are introduced into the tank containing said flocs and are fed with artificial food.

4,640,228
ANIMAL CAGE ASSEMBLY WITH REUSABLE FILTER CAP

Robert S. Sedlacek, Stoneham, Mass., and Neil Campbell, Hasbrook Heights, N.J., assignors to Lab Products, Inc., Maywood, N.J.

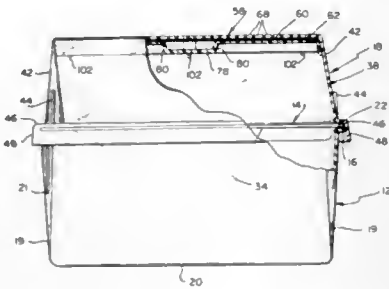
Continuation-in-part of Ser. No. 422,355, Sep. 23, 1982, Pat. No. 4,480,587. This application Sep. 24, 1984, Ser. No. 653,325
 Int. Cl.⁴ A01K 1/03

U.S. Cl. 119—15

17 Claims

1. A filter cap for an open-top animal cage, comprising:
 a rigid body portion sized to fit upon and cover over the open top of said cage, said body portion having continuous, unbroken side and end walls, a perforated top wall and an open bottom end,
 detachable air filter means extending across the entire perforated top wall of said filter cap body portion,
 flange means extending around the periphery of the open bottom end of said body portion and including a lateral flange portion sized and positioned to rest upon the top surface of said animal cage when the filter cap is inserted thereon, to effect a substantial peripheral seal between said filter cap and said cage, and a continuous rigid skirt portion depending from said lateral flange portion and sized to closely encompass the open top of said cage such that

said filter cap overhangs said cage and cannot be dislodged therefrom, said air filter means comprising a sheet of filter material sized to fit closely within the upper end of said body portion against said perforated top wall, support means comprising a support member sized to fit closely within said filter cap and insertible through said open bottom end of said filter cap to a filter-retaining position in which it is flush against the under surface of said sheet of filter material with said sheet in a mounted

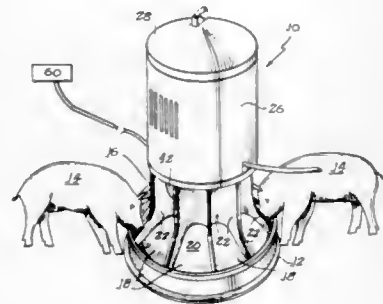


position in which it is sandwiched between said support means and the perforated top wall and covers over the perforations of said top wall, and retaining means on the inner surfaces of at least some of said filter cap side and end walls for detachably securing said support member in said filter-retaining position, said retaining means being sized and positioned to engage the periphery of said support member with a snap fit when said support member is brought to its filter-retaining position.

4,640,229
APPARATUS FOR FEEDING LIVESTOCK
Ray E. Swartzendruber, Syracuse, and Keith Coffman, Leesburg, both of Ind., assignors to Chore-Time Equipment, Inc., Milford, Ind.

Filed Feb. 28, 1985, Ser. No. 706,492
Int. Cl.⁴ A01K 5/02
U.S. Cl. 119—51.11

14 Claims



1. Apparatus for feeding livestock comprising: pan means accessible to the livestock for feeding therefrom; container means having a bottom and sides for holding a quantity of feed comprising dry powdered feed material; mixing means; feed dispensing means for dispensing measured increments of said feed to said mixing means; control valve means for dispensing measured increments of water to said mixing means; said mixing means being selectively operable for mixing said water with said feed to produce a fluid feed mixture; wherein said feed dispensing means comprises auger means and auger motor means operatively coupled for rotating said auger means; and further including an elongate recess extending below said bottom of said container means for mounting said auger means therein; said auger recess having an outlet at one end thereof and extending across said bottom of the container means to

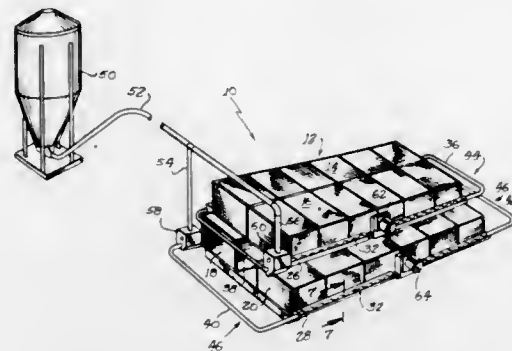
said outlet and being generally of semicylindrical cross-section and open-topped for mounting the auger recessed below but in communication with said container means for receiving feed therefrom and carrying said feed outwardly thereof; wherein said container is substantially circular in cross-section defining a generally circular bottom and generally cylindrical sidewall portion adjacent thereto and further including scraping means disposed for traversing a bottom portion of said container for agitating said feed and directing said feed generally into said elongate recess to be carried outwardly of said container by said auger; and wherein said scraping means comprises a generally cylindrical, open-topped recess extending below said container means bottom and in communication with at least a portion of said elongate recess, a sprocket member configured, and disposed in said circular recess, for rotation by said auger, and a resilient elongate member mounted for rotation with said sprocket member and extending radially outwardly therefrom, and dimensioned for scraping a substantial portion of the interior bottom surface and an adjacent portion of an interior sidewall surface of said container means.

4,640,230
ROTATING HELICAL CONVEYOR SYSTEM
Gerardus H. Van Rooijen, Maldegem, Belgium, assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Dec. 9, 1985, Ser. No. 806,708
Int. Cl.⁴ A01K 39/012

U.S. Cl. 119—52 AF

7 Claims



1. A conveyor system for delivering feed to a plurality of animal cages arranged in rows, said conveyor system comprising: an endless conduit extending along a conduit run past at least one of said rows of cages and through a feed trough disposed adjacent the faces of said row of cages; an elongate, continuous, endless material moving element extending through said endless conduit run and longitudinally movable therethrough, and driver means for advancing said endless material moving element through said conduit run; wherein said material moving element comprises an elongate helical member defining a longitudinal helix axis and bendable about said axis for following said endless conduit run, and wherein said driver means comprises a gear element having projecting teeth for engaging said helical member for axially advancing said helical member in response to rotation of said gear element; the interengaged surfaces of said gear element teeth and of said helical member being formed for rotating said helical member about the helix axis thereof simultaneously with said axial advancement thereof in response to rotation of said gear element.

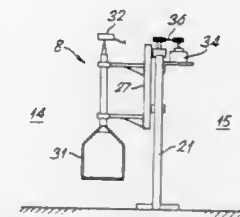
4,640,231
ANIMAL SEPARATOR
Michael J. B. Turner, Clophill; Michael Hanley, Dunstable, and Eric S. Hartwell, Bedford, all of England, assignors to National Research Development Corporation, London, England
Filed May 28, 1985, Ser. No. 738,472

Claims priority, application United Kingdom, Jun. 1, 1984, 8413992

Int. Cl.⁴ A01K 29/00

U.S. Cl. 119—155

10 Claims



1. An apparatus for separating animals according to their weight or other chosen characteristic comprising: support means for allowing the animals to be examined one at a time, boundary means providing a barrier between a first collection region for animals selected as satisfying a particular chosen criterion and one or more second collection regions for the remaining animals, means mounting the support means for rotation about a vertical axis, drive means connected to and operative to rotate the support means by a predetermined amount to introduce or to allow the introduction of a selected animal into the appropriate collection region, and means connected to the drive means and responsive to a characteristic of an animal on the support means for operating the drive means.

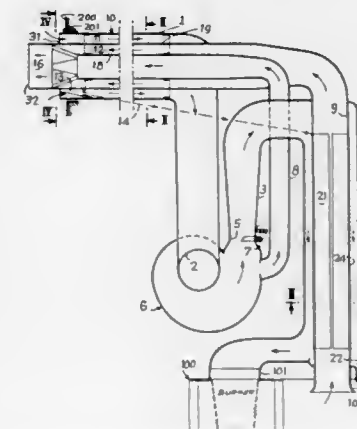
4,640,232
DEVICE FOR EVACUATING INTO THE AMBIENT AIR COMBUSTION PRODUCTS FROM A CONDENSATION BOILER

Francois Couprie, Paris, France, assignor to Gaz de France, Paris, France

Filed Sep. 28, 1984, Ser. No. 655,575
Claims priority, application France, Sep. 30, 1983, 83 15657
Int. Cl.⁴ F22D 1/00; F22B 1/18

U.S. Cl. 122—7 R

1 Claim



1. In a device for evacuating into the ambient air combustion products from a condensation boiler, in which at least one downstream section of the conduit for evacuating the combustion products is coaxial to the conduit for admission of the combustion air necessary for the burner of the boiler, and a fraction of the air collected in said admission conduit is returned towards the outside, the improvement which includes:

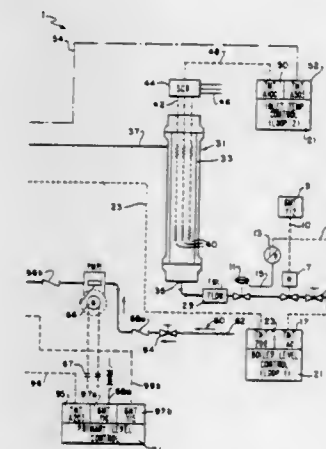
an opening for suction of the combustion air and for rejection of the combustion products into the ambient air; means for returning a fraction of the collected air to the outside comprising a central tube coaxial to said downstream section of the conduit for evacuating the combustion products; said conduit for admission of the combustion air surrounding said downstream section of the conduit for evacuating the combustion products; said downstream section of the conduit for evacuating the combustion products, said coaxial section of the admission conduit and said means for returning to the outside a fraction of the collected air defining a first heat exchanger; means for diluting the combustion products with said fraction of collected air located in the vicinity of said opening; a second heat exchanger between said first heat exchanger and said boiler whereby the combustion products issuing from said boiler further heat the combustion air heated in said first heat exchanger; said second heat exchanger being of the trickling water type to increase the humidity of the combustion air; means associated with said first heat exchanger, adjacent the outlet of said conduit for evacuating the combustion products, to collect the condensates formed in said conduit and return them into said second heat exchanger to constitute the trickling water; and said second heat exchanger comprising an outer tube constituted by a part of said conduit conducting air to said boiler, and a coaxial inner tube constituted by a part of said conduit for evacuating the combustion gases, the outer face of said coaxial inner tube being covered with a porous, hygrophilic material allowing the condensation water to trickle, and said coaxial inner tube being made of a good heat-conducting metal and internally provided with longitudinal ribs.

4,640,233
MODEL STEAM GENERATOR
Robert Draper, Churchill Boro, and Edward H. Smith, Brave, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1984, Ser. No. 636,437
Int. Cl.⁴ F22B 37/26

U.S. Cl. 122—488

24 Claims



1. An improved model steam generator for simulating the conditions inside a full-scale steam generator in order to monitor the conditions of the heat exchange tubes and tubesheet contained within the full-scale generator, comprising a boiler vessel having a feedwater inlet for introducing feedwater to the interior of the vessel, at least one sample heat exchange tube for converting the feedwater into a flow of steam, a steam outlet for conducting the flow of steam out of the vessel, and

a separator assembly for separating water droplets entrained within the steam flowing out of the outlet to an extent greater than the amount of droplet separation achieved within the full-scale generator being monitored so that the model steam generator can be operated in a predictive mode, wherein said separator includes a plurality of stationary separator grids, each of which is formed from an array of deflector members.

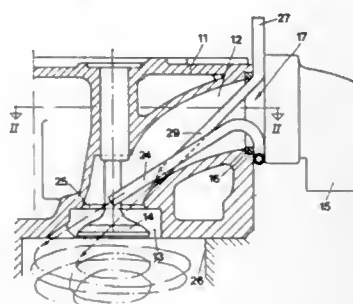
4,640,234

METHOD OF RUNNING AN INTERNAL COMBUSTION ENGINE WITH ALTERNATIVE FUELS

John Olsson; Bertil Olsson, and Gunnar Olsson, all of Partille, Sweden, assignors to J-Jet Konstruktion HB, Partille, Sweden. Continuation-in-part of Ser. No. 513,118, Jun. 15, 1983, Pat. No. 4,548,187. This application Feb. 25, 1985, Ser. No. 704,928. Claims priority, application Sweden, Oct. 16, 1981, 8106113. Int. Cl.⁴ F02M 31/00

U.S. Cl. 123—557

16 Claims



1. In a method of operating an internal combustion engine with one of a plurality of alternative fuels, the engine having at least one cylinder, an air intake and an inlet valve in an inlet port for the at least one cylinder, wherein the fuel is fed to the at least one cylinder through fuel feed lines and is preheated, and an additional medium is fed to the at least one cylinder, the improvement comprising:

- detecting the flow of air drawn into the engine through the air intake;
- proportioning and distributing the fuel to be fed to the at least one cylinder in response to at least said detected flow of air;
- heating the fuel after said proportioning step to a temperature between the flame temperature and evaporation temperature of the fuel but below the auto ignition temperature of the fuel;
- injecting the heated fuel through the inlet valve port at a substantially flat, tangential angle with respect to the wall of said at least one cylinder;
- injecting the additional medium in a controlled amount into said at least one cylinder within the flow path of the fuel and at a steeper angle with respect to the cylinder wall than said fuel injection; and
- operating the engine at the same compression ratio irrespective of the alternative fuel being used.

4,640,235

APPARATUS FOR CONTROLLING THE COOLANT MEDIUM CIRCULATION OF AN INTERNAL COMBUSTION ENGINE

Hans Martin, Stuttgart, Fed. Rep. of Germany, assignor to Soddeutsche Kuehlerfabrik Julius Fr., Behr GmbH & Co. KG, Fed. Rep. of Germany.

Filed Sep. 23, 1985, Ser. No. 779,102

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436702

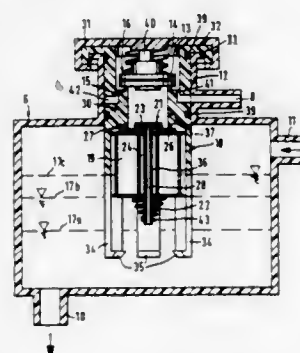
Int. Cl.⁴ F01P 11/02

U.S. Cl. 123—41.03

20 Claims

1. A device for protecting coolant circulation of an internal combustion engine from excess pressure including a first pres-

sure control valve capable of selectively communicating a coolant-carrying tank with overflow means for removing coolant from the tank, comprising:



float means disposed in the tank upstream of said first pressure control valve for preventing a flow of coolant from the tank to the first pressure control valve and overflow means in response to a rising coolant level in the tank.

4,640,236

LIQUID-COOLED CYLINDER ASSEMBLY IN INTERNAL-COMBUSTION ENGINE

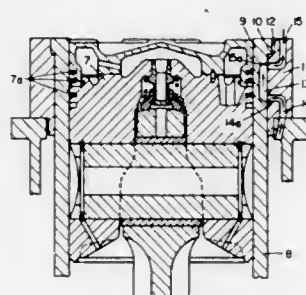
Hideaki Nakano, Akashi, and Tadahiro Ozu, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan.

Filed Sep. 25, 1985, Ser. No. 780,077

Int. Cl.⁴ F01P 3/02

U.S. Cl. 123—41.79

6 Claims



1. An internal-combustion engine of the piston type having at least one cylinder assembly comprising a cylinder head and a cylinder liner capped at the upper end thereof by the cylinder head, the improvement comprising: a reinforcing ring fixedly fitted around the outer cylindrical surface of the upper end part of the cylinder liner; a plurality of recesses grooved in and at respective positions around said outer cylindrical surface; a plurality of passageways in the reinforcing ring and communicating with respective said recesses to form cooling-liquid passageways; said upper end part of the cylinder liner having an inverted frustoconical shape with the outer diameter thereof increasing gradually in the direction toward the cylinder head, and the inner wall surface of the reinforcing ring formed to fit tightly around said upper end part in a leak-proof manner for preventing relative displacements between the cylinder head, the cylinder liner, and the reinforcing ring.

4,640,237

FOUR STROKE PISTON ENGINE

Josef Schleich, Oeschle 20, D-7906 Blaustein-Markbronn, Fed. Rep. of Germany

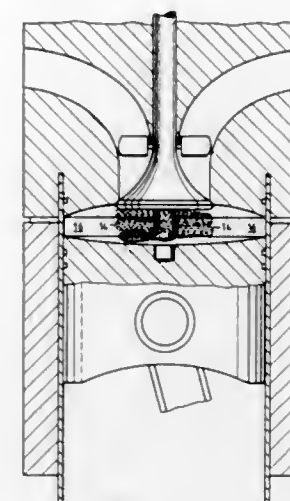
Continuation-in-part of Ser. No. 602,973, Apr. 23, 1984, abandoned, which is a division of Ser. No. 302,993, Sep. 17, 1981, Pat. No. 4,450,795, which is a continuation-in-part of Ser. No. 957,661, Nov. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 854,904, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 643,165, Dec. 22, 1975, abandoned. This application Aug. 22, 1985, Ser. No. 768,559

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1975, 2529074

Int. Cl.⁴ F01L 1/28; F02B 3/00

U.S. Cl. 123—79 C

4 Claims



1. A method of forming at least one combustible and rotating fuel-air mixture surrounded by a ring of air in a four-stroke internal combustion engine with cylinder, cylinder head, piston, gas inlet means, gas outlet means, ignition means and combustion space, characterized in that air with a substantially helically rotating flow pattern is introduced into the cylinder via inlet means disposed substantially coaxially with the longitudinal axis of the cylinder, that substantially turbulence-free and substantially helically rotating gas is compressed, that vaporized or gaseous fuel is blown into the helically rotating air substantially transversely to the axis of rotation by means of a fuel delivery device, fuel conducting means and at least one nozzle connected to said fuel conducting means and disposed in the region of the longitudinal axis of the cylinder in spaced relation to said inlet means in such a manner that the fuel jet terminates between said nozzle and the cylinder wall, the amount of fuel blown in being metered such that a combustible mixture zone is obtained which, in the compressed state, is enveloped by air.

4,640,238

OILTIGHT HYDRAULIC TAPPET FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE VALVE

Domenico Camosso; Franco Colanzi, both of Turin, and Silvio Ragazzoni, Pino Torinese, all of Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Italy

Filed Jul. 8, 1985, Ser. No. 752,949

Claims priority, application Italy, Jul. 16, 1984, 67715 A/84

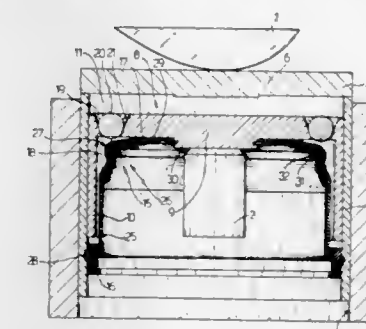
Int. Cl.⁴ F01L 991/24

U.S. Cl. 123—90.55

5 Claims

1. A hydraulic tappet for controlling a valve of an internal combustion engine, the said tappet comprising a first cup member axially slidably disposed in relation to the engine frame, and a second cup member axially slidably disposed inside the said first cup member; each said cup member having a respec-

tive substantially flat bottom wall and a cylindrical side wall, said cup members cooperating to form a first variable-volume chamber with an inlet duct for activating fluid; the said duct being controlled by an on-off member in such a manner that the said fluid flowing into the said first chamber causes one of the said cup members to slide axially in relation to the other cup member so as to vary the volume of the said chamber; characterised by the fact that said tappet further comprises an annular member made of flexible material and arranged essentially inside the said second cup member in such a manner as to



form a second annular chamber for the said activating fluid, said second chamber connected hydraulically to the said first chamber via the said duct; the said annular member of flexible material having first and second annular edges connected in fluidtight manner respectively to the said side wall of the said first cup member and to the said bottom wall of the said second cup member and resilient means for urging said flexible annular member into a flexed position, whereby the volume of said second chamber is minimized, thereby causing activating fluid to flow from said second chamber to said first chamber.

4,640,239

DISTRIBUTOR FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

Robert Green, West Midlands, United Kingdom, assignor to Austin Rover Group Limited, Coventry, United Kingdom

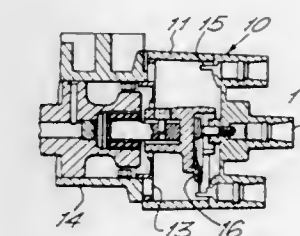
Filed Mar. 25, 1985, Ser. No. 715,264

Claims priority, application United Kingdom, Mar. 28, 1984, 8408019

Int. Cl.⁴ F02P 1/00

U.S. Cl. 123—146.5 A

10 Claims



1. A distributor and camshaft combination for a spark ignition internal combustion engine, the rotor of the distributor connected to and driven by a spindle which is mounted in a resilient elastomeric bushing, the bushing mounted in a recess in an end of the camshaft, whereby the life of the rotor arm is extended.

4,640,240

ARRANGEMENT FOR LIMITING RADIAL THERMAL EXPANSIONS OF CYLINDERS OF A RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Gerhard Ziegler, Besigheim; Karl Gregotsch, Heimerdingen, and Rolf von Silvers, Rutesheim, all of Fed. Rep. of Germany, assignors to Dr. Ing.H.c.f. Porsche Aktiengesellschaft, Fed. Rep. of Germany

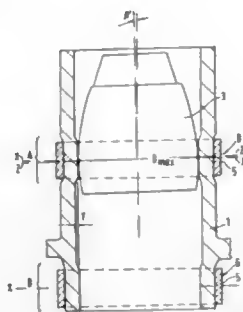
Filed Sep. 28, 1984, Ser. No. 655,733

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3335536

Int. Cl.⁴ F02F 1/02

U.S. Cl. 123—193 C

29 Claims



1. An arrangement for limiting radial thermal expansions of cylinders of a reciprocating piston internal combustion engine, comprising control means including at least one ring-shaped clamping member which is provided within an area of maximum alternating abutment pulses of a piston in the cylinder, each clamping member consisting of a material having a smaller coefficient of thermal expansion than the cylinder, and wherein the clamping member has such a position at the cylinder that its median center plane coincides approximately to at least one of an upper and lower dead-center position of the piston with a plane normal to piston movement, wherein the normal plane extends through a central region of a maximum piston diameter at said position of the piston.

4,640,241

FUEL INJECTION APPARATUS FOR DIESEL ENGINES

Masahiro Matsunaga, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

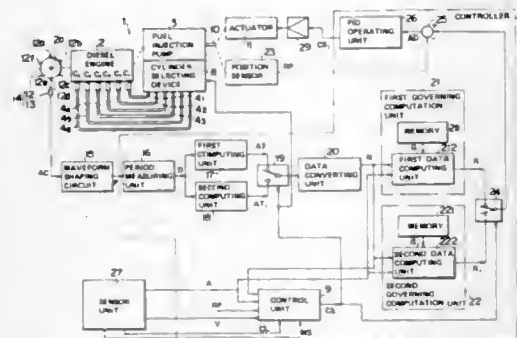
Filed May 29, 1985, Ser. No. 738,944

Claims priority, application Japan, May 29, 1984, 59-107484; May 29, 1984, 59-107485

Int. Cl.⁴ F03M 39/00

U.S. Cl. 123—198 F

12 Claims



1. A fuel injection apparatus for a multi-cylinder diesel engine, comprising:
a fuel injection pump having a fuel regulating member;
a first means for producing at least one electric signal which represents an operating condition of the diesel engine;
a second means responsive to at least the electric signal for

determining the cylinder of cylinders of the diesel engine to be used;

a control device which is responsive to the result of the determination in said second means and in accordance with the result of the determination in said second means controls the fuel supply so as to supply fuel to all of the cylinders in a non-skip-cylinder mode operation or to only selected cylinders in a skip-cylinder mode operation; and
a third means responsive to at least the electric signal for regulating the amount of fuel injected said fuel injection pump on the basis of a governor characteristic determined in accordance with the result of the determination in said second means;

wherein said third means has:

a memory for storing at least first characteristic data representing a governor characteristic for non-skip-cylinder operation of the diesel engine and second characteristic data representing a governor characteristic for skip-cylinder operation of the diesel engine;

a data generating means responsive to the electric signal for generating a target signal representing a target position of the fuel regulating member necessary for obtaining the optimum amount of fuel injection corresponding to the operating condition of the diesel engine at each instant on the basis of the data read out from said memory in accordance with the result of the determination in said second means; and

a servo means responsive to the target signal for controlling the position of the fuel regulating member so as to position the fuel regulating member at the position indicated by the target signal.

4,640,242

ROTARY ENGINE

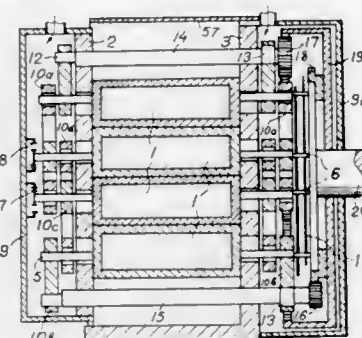
Usher Meyman, 230 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Aug. 21, 1984, Ser. No. 642,871

Int. Cl.⁴ F02B 53/00

U.S. Cl. 123—246

6 Claims



1. A rotary engine comprising:
two covers spaced from one another;

a plurality of rotors located between said covers and rotating and planetating in different phases; said rotors interengaging to form working chambers therebetween; means to supply fluid to the working chambers and means to exhaust fluid from the working chambers during the operating cycle of the engine; gearing for synchronizing rotation and planetation of said rotors and each including first and second gears arranged so that one of said gears is connected with said rotors while the other of said gears is connected with an immovable part of the engine and said gears engage with one another;

a plurality of carriers interconnecting the rotors and planetating in the same phase with the planetation of the rotors for synchronizing the rotation and planetation of the rotors;

shafts arranged to support said carriers during their planeta-

tions; and elements for connecting said covers with one another.

4,640,243

SYSTEM AND METHOD FOR CONTROLLING INTAKE AIR FLOW FOR AN INTERNAL COMBUSTION ENGINE

Toshimi Abo, Yokohama, and Yoshitaka Hata, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

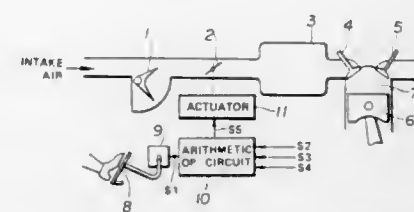
Filed Feb. 22, 1985, Ser. No. 704,268

Claims priority, application Japan, Feb. 24, 1984, 59-32665

Int. Cl.⁴ F02D 9/00

U.S. Cl. 123—399

14 Claims



1. A system for a vehicular internal combustion engine, comprising:

- (a) first means for monitoring at least one engine operating variable;
- (b) second means for detecting a gear position of an engine power transmission mechanism; and
- (c) third means for variably controlling the rate of change of negative pressure in an intake manifold of the engine in response to changes in desired intake air flow in accordance with at least one of the engine operating variable monitored by said first means and the gear position of the engine power transmission mechanism detected by said second means such that the rate of change of negative pressure is faster when the gear is placed in at least one of a high geared position and a neutral position than at a low geared position.

4,640,244

IDLING SPEED FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Yuzuru Koike; Akihiko Koike, both of Utsunomiya, and Masayuki Ueno, Haga, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

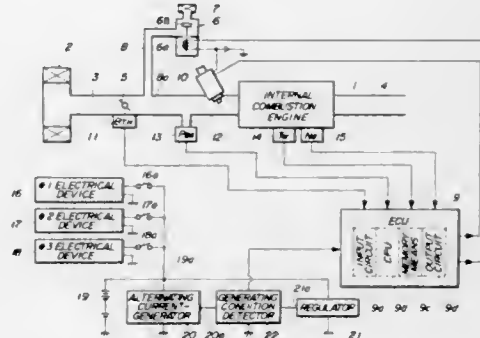
Filed Sep. 26, 1985, Ser. No. 780,559

Claims priority, application Japan, Sep. 28, 1984, 59-201589

Int. Cl.⁴ F02D 41/16; F02M 3/07

U.S. Cl. 123—339

7 Claims



1. A method of controlling the operating amount of a control valve for regulating the quantity of intake air being supplied to an internal combustion engine, in a feedback manner

responsive to the difference between a desired idling speed and an actual engine speed while said engine is in a predetermined idling region, said engine having a generator driven for supplying electric power to at least one electrical device in dependence upon the operative states of said electrical device, the method comprising the steps of: (1) detecting the value of a signal indicative of generating conditions of said generator; (2) determining a correction value for the operating amount of said control valve in dependence upon the value of said signal thus detected; (3) correcting the operating amount of said control valve by means of said correction value thus determined; and (4) setting an initial value of the operating amount of said control valve which is applied at the start of the feedback control to a sum of a value obtained by correcting said correction value by a predetermined increment, and a predetermined reference value, when said engine has entered said predetermined idling region immediately after deceleration thereof.

4,640,245

METHOD OF CONTROLLING AN ENGINE MOUNTED ON A CONSTRUCTION VEHICLE

Yukinobu Matsuda, Komatsu, and Takayasu Inui, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

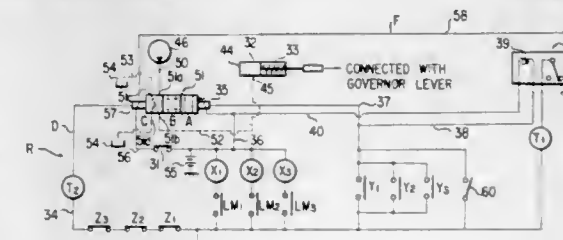
Filed May 28, 1985, Ser. No. 738,332

Claims priority, application Japan, May 31, 1984, 59-109378

Int. Cl.⁴ F02D 41/00

U.S. Cl. 123—339

4 Claims



1. The method of controlling an engine mounted on a construction vehicle used for earth moving operations and including operating levers associated with control valves for work implements and a control system, said operating levers having operating positions and neutral positions, said method comprising the steps of:

reducing the rotational speed of the engine to a primary number of revolutions per minute immediately after all said operating levers associated with all control valves for work implements and the control system are shifted to their respective neutral positions;
maintaining the engine under such a low speed running condition for a predetermined period of time; and
then reducing further the rotational speed of the engine to a lower, secondary number of revolutions per minute.

4,640,246

ROAD AND ENGINE SPEED GOVERNOR WITH POWER DEMAND CONTROL

H. David Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Incorporated, Wilmington, N.C.

Filed Jan. 3, 1986, Ser. No. 815,966

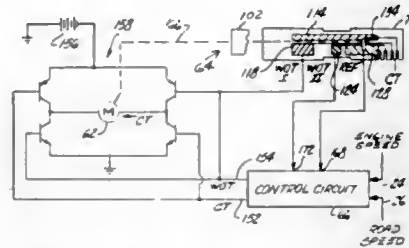
Int. Cl.⁴ F02D 41/00, 43/00

U.S. Cl. 123—350

2 Claims

1. A speed limiting governor for use with an engine having a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means,
an engine speed signal generating means for producing a signal corresponding to engine speed,

a load speed signal generating means for producing a signal corresponding to load speed, actuating means including a reversible motor coupled with the overriding throttle closing means and being responsive to motor control signals for energizing the motor in the close throttle direction or in the open throttle direction, logic means responsive to the engine speed signal and the load speed signal for producing motor control signals for



moving the overriding means between a wide open throttle position and a close throttle position and to intermediate positions including a reference position, said logic means being responsive to said speed signals for moving said overriding means in the close throttle direction to said reference position when the engine speed reaches a first preset value, and means responsive to engine power demand for energizing said motor to move said overriding means from said reference position toward said open throttle position.

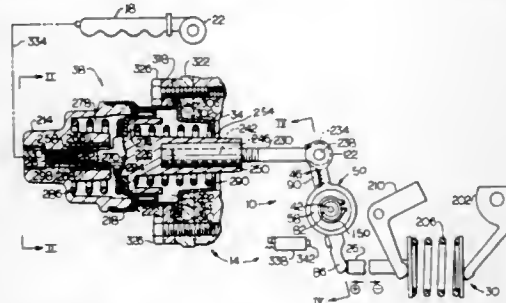
4,640,247

AIR-FUEL RATIO CONTROL SYSTEM HAVING A FLUID-POWERED BROKEN-LINK MECHANISM
E. Eugene Bruning, Normal, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 698,205, Feb. 4, 1985, abandoned. This application Jul. 1, 1985, Ser. No. 750,836
Int. Cl.⁴ F02D 1/06

U.S. Cl. 123—388

28 Claims



1. A fluid-powered broken-link mechanism for an internal combustion engine, said engine having a housing, a source of fluid which is adapted to be pressurized only during engine operation, a fuel quantity control member movable in both a fuel-increasing direction to increase the quantity of fuel supplied to the engine during each combustion cycle and in a fuel-decreasing direction to decrease the quantity of fuel supplied to the engine during each combustion cycle, a governor controlling the position of the fuel quantity control member, and an override means for selectively overriding the governor during engine operation to prevent movement of the fuel quantity control member in the fuel-increasing direction when the ratio of air-to-fuel supplied to the engine for combustion falls below a preselected value, said fluid-powered broken-link mechanism adapted to be operatively linked between the override means and the fuel quantity control member and comprising:

a first lever having a shaft portion adapted to be rotatively

mounted within the housing and an arm adapted to swing into contact with the fuel quantity control member; a second lever adapted to be pivotally connected to said override means and being rotatively mounted on the shaft portion and also being axially movable thereon between a disengaged axial position at which the second lever is completely free of drivable engagement with the first lever and an engaged axial position at which the second lever drivably engages the first lever in one angular direction;

axial biasing means for axially biasing the second lever towards the disengaged axial position; angular motive means for rotating the first lever relative to the second lever so that the axially engageable portions of the levers are substantially angularly aligned to facilitate drivable engagement;

fluid power means for moving the second lever to the engaged axial position against the bias of the axial biasing means when pressurized fluid is communicated thereto; and

valve means for selectively blocking fluid communication between the source of fluid and the fluid power means when the first lever is rotated to a first predetermined angular position and for selectively opening fluid communication between the source of fluid and the fluid power means to axially move the second lever under pressurized fluid power to the engaged axial position when the first lever is rotated to a second predetermined angular position.

4,640,248

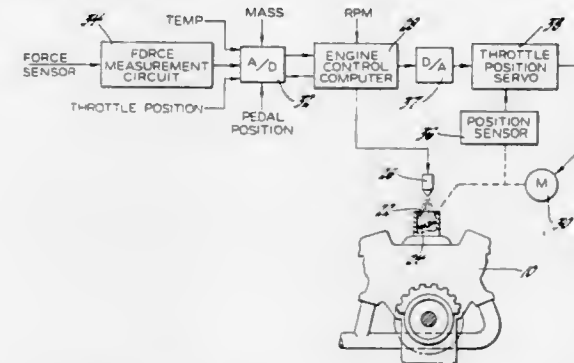
FAILSAFE DRIVE-BY-WIRE ENGINE CONTROLLER
Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1985, Ser. No. 812,901

Int. Cl.⁴ F02D 11/10, 41/22

U.S. Cl. 423—399

2 Claims



1. A control system for a vehicle internal combustion engine having an intake space into which air and fuel are supplied, comprising in combination:

an accelerator pedal biased to an engine idle position and operable to an engine off-idle position in response to a force applied thereto;

position sensing means for sensing the position of the accelerator pedal;

force sensing means for sensing the force applied to the accelerator pedal; and

means responsive to the force applied to the accelerator pedal sensed by the force sensing means for supplying an air and fuel mixture to the engine in accord with the accelerator pedal position sensed by the position sensing means when the force applied to the accelerator pedal is greater than zero and in accord with an engine idle schedule when the force applied to the accelerator pedal is zero, whereby the engine operation is maintained at idle when the force applied to the accelerator pedal is zero even

though the accelerator pedal position remains in an off-idle position.

4,640,249

SYSTEM FOR CONTROLLING AN IGNITION TIMING IN AN INTERNAL COMBUSTION ENGINE AND METHOD THEREFOR

Yoshihisa Kawamura, and Shuzo Fukuzumi, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

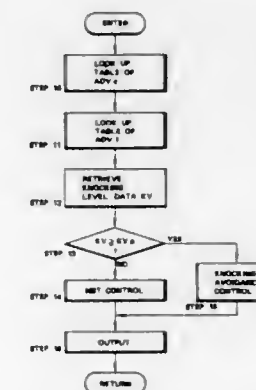
Filed Jun. 27, 1985, Ser. No. 749,413

Claims priority, application Japan, Jun. 30, 1984, 59-136708; Jun. 30, 1984, 59-136709

Int. Cl.⁴ F02P 5/15

U.S. Cl. 123—425

10 Claims



1. A system for controlling an ignition timing of an internal combustion engine, comprising:

(a) first means for detecting an engine operation condition; (b) second means for detecting whether the engine is in a transient operating state on the basis of the detected engine operating condition;

(c) third means for detecting engine knocking;

(d) fourth means for detecting an engine rotational angle with respect to a top dead center position in a compression stroke of an engine cylinder at which pressure in a combustion chamber has reached its maximum;

(e) fifth means responsive to said first, second, third and fourth means for determining that engine knocking is not occurring, that the engine is warmed up, and that the detected rotational angle falls in a range from a first to a second reference value when a predetermined time has elapsed in which the engine has operated in a non-transient condition, and, responsive to said determination, storing a correction value of the ignition timing as a learning value in an address corresponding to the detected engine operating condition, said learning value being based on said detected rotational angle and said first and second reference values being values of engine rotational angle which are set for enhancing the stability of a minimum advance for best torque control and deviate from a predetermined maximum engine output torque value by a predetermined percentage toward retardation and advance angles, respectively, to stabilize the engine rotational angle at which the combustion chamber pressure is a maximum; and

(f) sixth means for calculating the ignition timing on the basis of a basic ignition timing value determined according to the detected engine operating condition and the learning value corresponding to the detected engine operating condition.

4,640,250

METHOD AND APPARATUS FOR ENGINE KNOCK LEVEL CONTROL

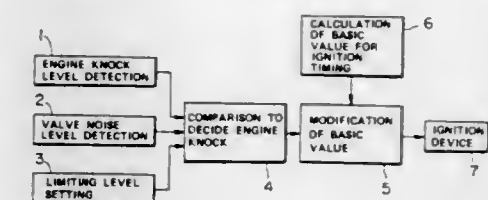
Akio Hosaka, and Akito Yamamoto, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 6, 1985, Ser. No. 698,916

Claims priority, application Japan, Feb. 7, 1984, 59-19362
Int. Cl.⁴ F02P 5/15

U.S. Cl. 123—425

21 Claims



1. A method of controlling the level of knock in an internal combustion engine having knock induced vibrations and valve noises, comprising the steps of:

calculating a basic value for the timing of ignition of said engine based upon engine operating parameters; generating a vibration indicative signal in response to knock induced vibrations and valve noises;

generating a first and second signal in response to said vibration indicative signal, said first signal having a value corresponding to the level of the knock induced vibrations, said second signal having a value corresponding to the level of the valve noises;

generating a third signal having a value corresponding to a limiting level;

deciding the occurrence of engine knock when said first signal exceeds at least one of said second and third signals; and

modifying said basic value based upon the decision of the occurrence of engine knock.

4,640,251

METHOD OF DISCRIMINATING OCTANE NUMBER OF FUEL FOR MOTOR VEHICLE

Osamu Harada, Toshio Suematsu, Yuji Takeda, and Katsushi Anzai, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 12, 1985, Ser. No. 775,431

Claims priority, application Japan, Oct. 1, 1984, 59-206031
Int. Cl.⁴ G01N 33/22; F02D 43/00

U.S. Cl. 123—425

10 Claims

1. A method of discriminating an octane number of a fuel for motor vehicle having an electronic ignition timing system wherein a basic ignition advance angle is determined in accordance with an engine operational condition so that the ignition timing is optimum for a predetermined octane number and is corrected so as to be retarded by using a correction value for retardation of the ignition timing when a knocking greater than a first predetermined level is detected, comprising the steps of: determining as to whether the correction value is a predetermined discriminating value in vicinity of the maximum value thereof;

detecting a rapid acceleration of the engine;

comparing a frequency of occurrence of the knocking greater than a second predetermined level with a reference frequency; and

discriminating the fuel as to whether the octane number thereof is the predetermined octane number or not in accordance with the frequency of occurrence of knocking greater than the second predetermined level when it is determined that said correction value is equal to said predetermined discriminating value in said determining

treated air for combustion being conducted therethrough, the air guide casing comprising:
 a distribution duct for conducting the mixture of recycled exhaust gas and treated air for combustion,
 a partition situated within the air guide casing to divide the air guide casing into a first portion including the clean air chamber and a second portion including the mixing duct and the distribution duct, the distribution duct being coupled to the mixing duct and in communication with at least one cylinder in the internal combustion engine,
 means for mounting the air throttle valve on the partition, wherein the partition includes a shaped lip portion in proximity to an opening between the clean air chamber and the mixing duct, the shaped lip portion having a drop-like shape when viewed in cross section to improve air flow through opening.

4,640,257

ENGINE CONTROL WITH EXHAUST GAS RECIRCULATION

Katsuhiko Kodama, Oobu, and Hisamitsu Yamazoe, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

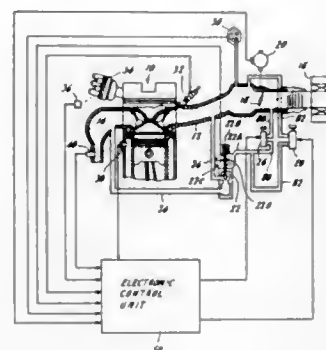
Filed Apr. 30, 1985, Ser. No. 729,145

Claims priority, application Japan, May 1, 1984, 59-88644; May 8, 1984, 59-91424

Int. Cl.⁴ F02M 25/06

U.S. Cl. 123—571

12 Claims



1. Apparatus for controlling the amount of exhaust gases to be recirculated from an exhaust passage of an internal combustion engine to an intake passage of the same, comprising:

- means for detecting various engine parameters;
- gas sensor means for detecting the concentration of an exhaust gas in said exhaust passage;
- means for forcibly interrupting exhaust gas recirculation when said engine is under air/fuel ratio feedback control and exhaust gas recirculation is being performed; and
- computing means for computing a value representing a desired amount of exhaust to be recirculated using engine parameters and for:
 - producing a correction factor using an output signal from said gas sensor means;
 - obtaining a first mean value of a first plurality of feedback correction factor values during feedback control of air/fuel ratio and during exhaust gas recirculation control;
 - interrupting exhaust gas recirculation during air/fuel ratio feedback control;
 - obtaining a second mean value of a second plurality of feedback correction factor values when exhaust gas recirculation is being interrupted;
 - resuming exhaust gas recirculation when said second mean value is obtained;
 - detecting a difference between said first mean value and said second mean value; and

(7) correcting said value using said difference.
 9. Apparatus for controlling air-fuel mixture to be supplied to an internal combustion engine having an intake passage, an exhaust passage, and an exhaust gas recirculation passage for recirculating exhaust gases in said exhaust passage to said intake passage therethrough, said apparatus comprising:

- means for detecting intake and rotational conditions of said engine;
- means for controlling an amount of fuel to be supplied to said engine with air for combustion therein in accordance with said detected intake and rotational conditions;
- means for detecting an exhaust composition of said exhaust gas in said exhaust passage;
- means for determining a correction factor which is determined from detected exhaust composition when said engine is under a predetermined feedback control;
- means for correcting said amount of fuel using said correction factor;
- means for controlling an amount of exhaust to be recirculated through said recirculation passage in accordance with said detected intake and rotational conditions;
- first averaging means for obtaining a first mean value of a first plurality of said correction factor values during feedback control of air/fuel ratio and during exhaust gas recirculation control;
- means for prohibiting exhaust gas recirculation during air/fuel ratio feedback control;
- second averaging means for obtaining a second mean value of a second plurality of said correction factor values when exhaust gas recirculation is being prohibited;
- means for resuming exhaust gas recirculation when said mean value of said second feedback correction factor values is obtained;
- means for determining a difference between said mean value of said first feedback correction factor values and said mean value of said second feedback correction factor values; and
- means for correcting said air-fuel mixture in accordance with said detected difference between said first and second correction factor values.

4,640,258

ARCHERY SHOOTING BOW WITH STABILIZING FLASHLIGHT

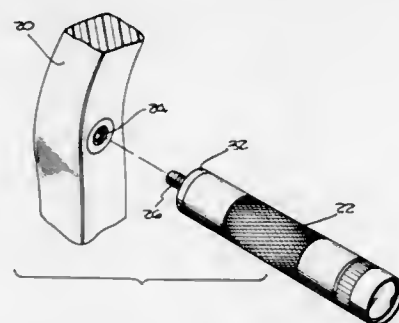
C. Bradford Penney, Norristown, and Raymond L. Sharrah, Collegeville, both of Pa., assignors to Streamlight, Inc., Norristown, Pa.

Filed Nov. 1, 1984, Ser. No. 667,209

Int. Cl.⁴ F41B 5/00

U.S. Cl. 124—24 R

2 Claims



1. A shooting bow assembly comprising:

- a bow having an elongated frame with a rigid central portion and bendable end portions, a string mechanism intercoupling the extremities of said end portions, a hand grip formed on said rigid central portion of said frame, an arrow guide carried by said frame adjacent the upper end of said hand grip, and a tapped threaded bore in said rigid central portion of said frame adjacent the lower end of

said hand grip, said bore facing away from said string mechanism;
 a flashlight having an elongated metal housing and a metal tail cap on the rearward end of said housing, said tail cap having a protruding threaded stud which is threadably secured within said threaded bore;
 said flashlight having switch means that may be manually actuated while said flashlight is fixedly supported from said threaded bore; and
 said flashlight acting as a stabilizer for said bow and concurrently providing illumination in the general direction in which an arrow may be shot from said bow.

4,640,259

DEVICE FOR FEEDING WORK TO MACHINE TOOL

Hiroshi Shimizu, Tokyo, Japan, assignor to Yasunaga Engineering Kabushiki Kaisha, Ueno, Japan

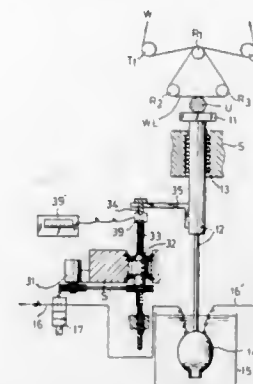
Filed Apr. 5, 1985, Ser. No. 720,238

Claims priority, application Japan, Jan. 21, 1985, 60-7568

Int. Cl.⁴ B28D 1/06

U.S. Cl. 125—16 R

4 Claims



1. A device for feeding a work to a tool comprising:

- a machine frame;
 a slidable member slidably connected to the machine frame so that the slidable member can be moved vertically, said slidable member having an upper end adapted to support the work thereon and a lower end;
 means for moving the slidable member upwardly, said moving means including a container having liquid therein, an air float connected to the lower end of the slidable member, said air float being substantially completely submerged in the liquid in the container so that the slidable member can be moved upwardly by means of buoyancy of the air float, and means for controlling buoyancy of the air float so that speed of movement of the slidable member in the vertical direction can be controlled, and
 means for comparing the speed of the vertical movement of the slidable member and a desired speed, said comparing means operating the controlling means to change buoyancy of the air float so that the work on the table can be moved at desired speed.

4,640,260

ADJUSTABLE FLEXIBLE DUAL GAS MIXING ASSEMBLY

Mannel Perez, 11204 Hidden Valley, Tampa, Fla. 33624

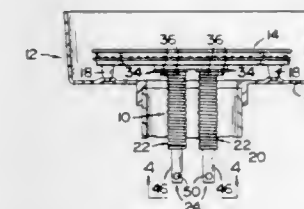
Filed Jan. 22, 1986, Ser. No. 821,046

Int. Cl.⁴ F24C 3/00

U.S. Cl. 126—39 E

6 Claims

1. An adjustable gas mixing assembly specifically configured for use with a burner gas grill including a burner element having a first and second gas supply port formed therein, said adjustable gas mixing assembly comprising a flexible gas supply tube secured to the burner element in open fluid communi-



4,640,261

CERAMIC BURNER PLATE FOR GAS COMBUSTION

Hiroyuki Kato, and Toshifumi Yamana, both of Aichi, Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 29, 1985, Ser. No. 696,071

Claims priority, application Japan, Jan. 30, 1984, 59-13377

Int. Cl.⁴ F24C 3/00

U.S. Cl. 126—39 J

5 Claims

1. In a ceramic burner plate for gas combustion which is provided with a large number of flame openings passing therethrough between its front and rear surfaces and which is formed by molding a particulate composition into a plate shaped member and baking same, the improvement consisting of a particulate composition comprising about 33-40 weight percent of a clay, about 3-8 weight percent of talc, about 25-40 weight percent of a pore-producing substance, and about 14-36 weight percent of mullite.

4,640,262

HEATER, ESPECIALLY A HEATER FOR VEHICLES

Werner Lucius, Starnberg, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Aug. 22, 1984, Ser. No. 643,305

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337601

Int. Cl.⁴ F24H 3/02

U.S. Cl. 126—110 B

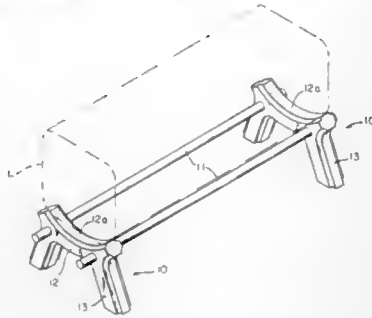
19 Claims

1. A heater, especially for a fuel operated vehicle heater, of the type having a fuel enrichment unit, an ignition device, a burner comprised of a nozzle and a vorticity element, and a combustion chamber defined by a combustion pipe from which exhaust gases are guided to an exhaust outlet in a reverse flow along an outer wall of the combustion pipe in heat exchange relationship to a heating medium, wherein a cylindrical insert is provided as a means for supporting the flame by concentration thereof in the combustion pipe, said insert being connected to the burner in a manner forming an annular space extending along the full length of the insert between an outer circumferential surface of the cylindrical insert and an inner

surface of a circumferential wall of the combustion pipe by being arranged concentrically in the combustion pipe and projecting into the combustion chamber defined by the combustion pipe from the area of the vorticity element.

4,640,263
GRATE FOR ARTIFICIAL LOG
 Gerald C. Nelson, P.O. Box 80816, Seattle, Wash. 98108
 Filed Apr. 4, 1985, Ser. No. 720,031
 Int. Cl.⁴ F23H 13/00
 U.S. Cl. 126—164

2 Claims



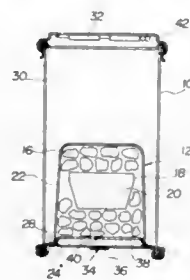
1. An adjustable grate for use with an artificial log, comprising:
 - a pair of identical upright end supports of unitary one-piece construction, each having an upper horizontal saddle portion presenting an upper concave support surface for receiving an end portion of the log and each having a pair of support legs of equal length depending from the saddle portion;
 - a pair of matching horizontal parallel rods of uniform cross-section slidably interfitting with the end supports by way of identical holes in said end supports located adjacent the upper ends of the legs and equidistant from the lower ends of the legs for giving intermediate support to the log when it sags while burning, the distance between said end supports being freely adjustable along the rods and the sliding interfit of the rods with said end supports maintaining the end supports in vertical parallel relation.

4,640,264
FOOD AND DRINK WARMING CONTAINER
 Tosinoba Yamaguchi, 386-28, Hirui-cho; Sigeru Aitoh, 2885-12, Akasaka-cho, both of Ogaki-shi, Gifu-ken, and Masafumi Hamasaki, 359-24, Kume, Tokorozawa-shi, Saitama-ken, all of Japan

Filed Oct. 22, 1984, Ser. No. 663,459
 Claims priority, application Japan, Oct. 20, 1983, 58-161377; Dec. 5, 1983, 58-187020

Int. Cl.⁴ F24J 1/00
 U.S. Cl. 126—263

3 Claims

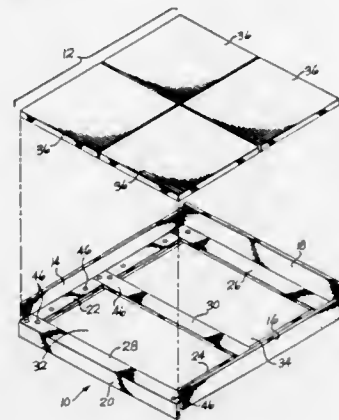


1. A food and drink warming container comprising:
 - a container body for receiving therein a drink or food con-

- taining at least a liquid substance, said container having an open end;
 - a metallic can housed within said container body and having a cylindrical portion and a flange formed integrally with said cylindrical portion, said flange having a circumferential edge defining an open end of said metallic can and being curled and fixed to said container body for closing said open end of said container body, and said cylindrical portion being filled with quicklime;
 - a bag formed of rupturable synthetic resin material and containing therein water in an amount sufficient to expand said bag, said bag being disposed in said metallic can at a substantially central portion thereof and being entirely surrounded by said quicklime;
 - a cover member attached to said metallic can for closing said open end thereof, said cover member having formed therein a communication port in the form of a through hole;
 - an inner cover separating the interior of said cylindrical portion of said metallic can from said cover member, said inner cover being formed of a soft material and having formed therein a pair of crossed slits at a position aligned with said through hole of said cover member; and
 - a rod member formed separately from said cover member and said inner cover, said through hole and said slits permitting an end of said rod member to be inserted into said metallic can;
- whereby water is brought into contact with said quicklime when said bag is ruptured by said rod member, thereby allowing a hydration reaction of said quicklime to take place for generating heat and thereby warming said drink or food to a predetermined temperature by said heat.

4,640,265
INSERT FOR CONVERTING A CONVENTIONAL HOME OVEN INTO A PIZZA OVEN
 H. Duane Romo, 7105 - 156th SW., Edmonds, Wash. 98020
 Filed Feb. 24, 1986, Ser. No. 832,850
 Int. Cl.⁴ F24C 15/16
 U.S. Cl. 126—337 R

14 Claims

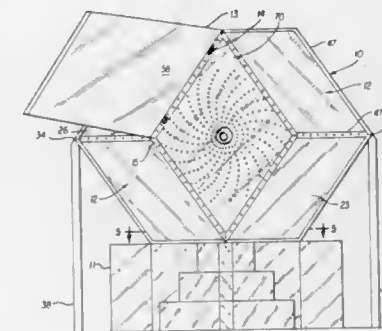


1. An oven insert for converting a conventional home oven into a pizza oven, comprising:
 - a rectangular frame having upstanding sidewalls, an upstanding rear wall, a depending front wall, and bottom wall portions bordering each of said side, rear and front walls, said bottom wall portions comprising bottom support surfaces settable on a wire oven rack, and said front wall depending below the bottom support surfaces an amount greater than the depth of a forward edge portion of the oven rack;
 - said frame including at least one open area defined by and between the bottom wall portions;
 - ceramic oven tile means supported on said bottom wall portions;

wherein in use the insert is supported on a wire rack in the oven, with the support surfaces of the bottom wall portions of the frame setting on the wire rack, and with the depending front wall of the frame being situated forwardly of a front edge portion of the wire rack, in a position to contact the forward edge and function as a stop, and also depending below the front edge of the rack, in a position to function as a handle.

4,640,266
SENSORY STIMULATION ENCLOSURE
 Zubin Levy, 4718 Reeves Rd., Ojai, Calif. 93023
 Filed Aug. 29, 1984, Ser. No. 645,193
 Int. Cl.⁴ A61B 19/00
 U.S. Cl. 128—1 R

17 Claims



1. A sensory stimulation apparatus comprising an enclosure having a plurality of angularly related panel members and a door means, each of said panel members and said door means having inner and outer surface, each of said inner surfaces being mirrored, light emitting means mounted between each of said panel members adjacent said inner mirrored surfaces, means for movably mounting said door means, with respect to said panel members, a floor portion within said chamber, said floor portion having an inner mirrored surface, a housing mounted to said enclosure and extending outwardly with respect to said panel members, mounting means for moveably supporting said housing with respect to said panel members, first light projection means mounted within said housing so as to direct light through one of said panel members into said enclosure.

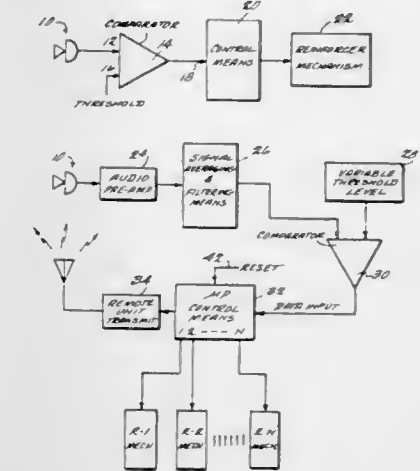
4,640,267
METHOD AND APPARATUS FOR NONDETRIMENTAL REDUCTION OF INFANT CRYING BEHAVIOR
 Philip A. Lawson, 5950-28 SW. 20th Ave., Gainesville, Fla. 32607

Filed Feb. 27, 1985, Ser. No. 706,086
 Int. Cl.⁴ A61B 5/00

U.S. Cl. 128—1 R
 1. A method for nondetrimental reduction of infant "crying" behavior, comprising the steps of:

- establishing a criterion response defined as vocal behavior equal to or above a predetermined audible level;
- continuously monitoring the vocal behavior of said infant;
- presenting an intermittent "positive reinforcer" (R1) to said infant noncontingently during absence of said criterion response;
- suspending said presentation of said intermittent "reinforcer" (R1), when said monitored vocal behavior is in accord with said criterion response; and

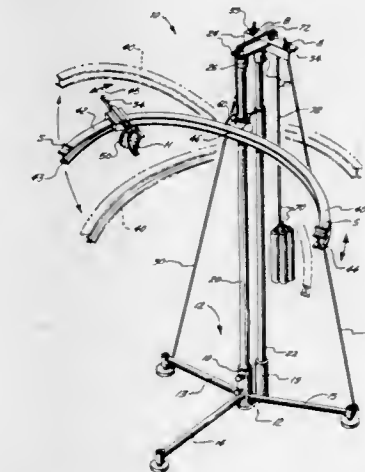
presenting a positive reinforcer (R2) to said infant contingent upon the cessation of vocal behavior in accord with



said criterion response for at least a predetermined time period X21.

4,640,268
MUSCULAR REHABILITATION APPARATUS FOR EXERCISING HUMAN BODY APPENDAGES
 Bobby S. Roberts, 5504 Campbor St., Metairie, La. 70003
 Filed Mar. 7, 1985, Ser. No. 709,512
 Int. Cl.⁴ A61H 1/02
 U.S. Cl. 128—25 R

10 Claims



1. A muscular rehabilitation apparatus for exercising the human body appendages of a user through multiple geometric positions of the appendage with respect to the user's body, comprising:

- a support base;
- a curved track mounted for adjustable movement upon the base into multiple elevational positions including at least a position near the head of the user when standing;
- the track defining an arcuate path which tracks the outer extremity of a human appendage as it pivots about a joint thereby defining an exercise plane occupied by the appendage and the track;
- carriage means mounted to move on the track between the end portions thereof for forming a connection to the appendage extremity; and
- articulating adjustment means movably mounted with the track upon the base upwardly and downwardly for affix-

ing the curved track to the base and in multiple preselected positions with respect to the base including multiple elevational positions, multiple rotational positions wherein the track and the exercise plane can rotate with respect to the user, and multiple angular positions wherein the track and the exercise plane can form different angles with a horizontal plane.

4,640,269

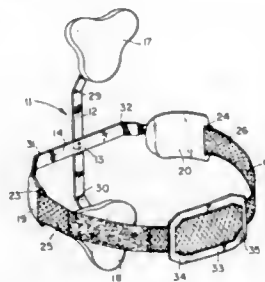
BACK BRACE HAVING STRAP WITH WIDENED MIDDLE PORTION FOR PAD

Joan Goins, R.R. #6, Box 92, North Vernon, Ind. 47265
Filed Jul. 30, 1984, Ser. No. 635,834

Int. Cl.⁴ A61F 5/01

U.S. Cl. 128—78

5 Claims



1. In combination with a back brace of the type having an anterior frame configured to be applied to the anterior thoracic area of a person and a back pad configured to be applied to the lumbar area of a person and having strap means connected to said back pad and to said anterior frame for providing suitable tension therebetween, said back pad having vertical slots for receiving said strap means therethrough, the improvement comprising:

- a strap constructed of a cloth-like material and having a middle portion, wherein said middle portion has a width dimension greater than the length dimension of either of said back pad slots, the middle portion of said strap freely overlying said back pad on a side opposite that side of said back pad which is applied to the lumbar area of the person, and being readily removable from said back pad, said strap having end portions each disposed through a respective slot of said back pad and secured to said anterior frame, whereby longitudinal displacement of said back pad with respect to said strap is precluded in normal use by said middle portion.

4,640,270

MALE ORGAN JACKET

Te-Chien Chin, 705 Windsor, Hercules, Calif. 94547

Filed May 6, 1985, Ser. No. 731,042

Int. Cl.⁴ A61F 5/41

U.S. Cl. 128—79

4 Claims

1. A penile prosthetic device comprising, in combination: base means, including a tubular base section adapted to hold and support a base portion of a penis shaft and a supporting strap, said tubular base section being securely connected to said strap, which in turn may be securely fastened to a lower abdominal area of a male body; extension means comprising a tubular extension section having two ends, one end having a larger diameter than the other end, the larger end being able to hold any portion of the base section tightly whereas the smaller

end being able to be inserted closely inside a lower end of a top section, wherein the ends overlap; and said top section having



4,640,271

BONE SCREW

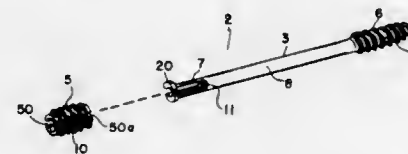
Jerry L. Lower, Bourbon, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Nov. 7, 1985, Ser. No. 795,963

Int. Cl.⁴ A61F 5/04

U.S. Cl. 128—92 YF

10 Claims



1. A bone screw for connecting portions of bone across a fracture therebetween, comprising:

- (a) a shaft comprising a leading end portion including a first set of uniformly pitched screw threads and an elongated, smooth unthreaded portion including a central portion and a trailing end portion;
- (b) a sleeve member having a smooth inner cylindrical surface surrounding the elongated unthreaded portion and being freely slidable thereabout, the sleeve member including a second set of uniformly pitched screw threads thereon, the sleeve member adapted to be positioned substantially about the trailing end portion spaced apart from the first set of threads by the central portion;
- (c) a retaining means to prevent the sleeve member from sliding off the shaft; and
- (d) a driving means on the trailing end portion to accommodate a tool for driving the screw.

4,640,272

SPRINGLESS DIAPHRAGMS AND METHOD OF PRODUCING SAME

Edward Monett, 639 Scotch Plains Ave., Westfield, N.J. 07090

Filed Oct. 11, 1983, Ser. No. 540,402

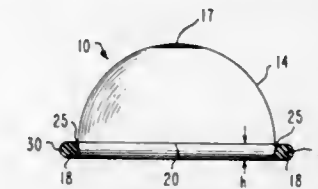
Int. Cl.⁴ A61F 5/46

U.S. Cl. 128—127

14 Claims

1. A springless diaphragm adapted to be inserted into a vaginal vault for birth control which comprises (a) a resilient rim member composed of a first flexible rubber material, and (b) a dome member composed of a second flexible rubber material, said rim member being securely bonded to, and extending continuously about the base of said dome member, said dome member in the upper portion thereof having a greater

thickness than the remainder of said dome member, said first rubber material being characterized by a Shore A Durometer



of from about 75 to 90, and said second rubber material being characterized by a Shore A Durometer of from about 30 to 45.

4,640,273

MOUTH GUARD FOR USE WITH A DIAGNOSTIC INSTRUMENT

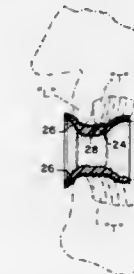
Franklin R. Greene, Flushing; Howard S. Stern, Old Westbury, and Jerome D. Waye, New York, all of N.Y., assignors to E-Z-Em, Inc., Westbury, N.Y.

Filed May 8, 1985, Ser. No. 731,882

Int. Cl.⁴ A61B 1/24

U.S. Cl. 128—136

11 Claims



1. An annular disposable mouth guard having a main axis, said mouth guard comprising:

- a relatively rigid center annular portion adapted to be held by a patient's teeth,
- a first annular end portion, said first portion extending axially inward and radially outward from said center portion and adapted to be received within a patient's mouth;
- a second annular end portion, said second portion extending axially forward and radially outward from said center portion to form a flange adapted to overlie the patient's lips when said first portion is in the patient's mouth;
- a relatively hard plastic core extending through said first, center and second portions, said core having an opening to permit passage of a diagnostic instrument therethrough, said core being sufficiently rigid at said center portion to resist compression and prevent damage to the inserted diagnostic instrument when the patient bites down on said center portion of said mouth guard; and
- a relatively soft plastic coat formed on the radially outer surface of said core to cushion the patient's bite, the plastic material of said core being sufficiently flexible to provide a relatively flexible edge at the axially inward end of said first portion.

4,640,274

SURGICAL NEEDLE EXTRACTOR HAVING A DISPOSABLE CHUCK, A CHUCK AND A HANDLE

Takayuki Nakamoto, Tokyo, Japan, assignor to Iwata Electric Works Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,290

Claims priority, application Japan, Dec. 2, 1982, 57-212547

Int. Cl.⁴ A61B 17/10

U.S. Cl. 128—321

35 Claims

10. A chuck for a surgical needle extractor, said needle

extractor having a handle, wherein said chuck is adapted to be releasably attached to a first recess in the body of said handle, wherein said handle further comprises an actuating rod adapted to actuate said chuck, wherein said chuck comprises:

- (a) first and second members attached to one another, one end of each of said first and second members comprising a penetration portion for penetrating between the claws of a surgical needle;
- (b) an actuated piece disposed between and pivotally attached to said first and second members at a pivot point; and
- (c) means for releasably attaching said penetration portion and said actuated piece only in said first recess of said body of said handle and for releasably attaching said actuated piece within said first recess to said actuating rod of said handle.

4,640,275

HEAD RESTRAINT FOR BACKBOARDS

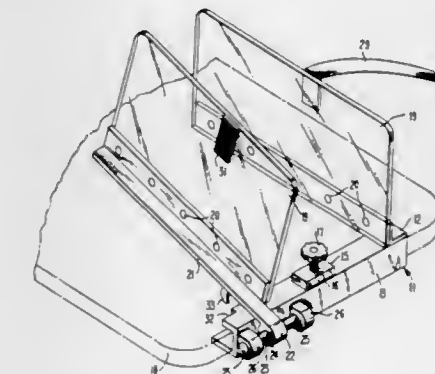
Vincent J. Buzzese, 324 Greenbrier Rd., Sunbury, Ohio 43074, and Mario Dohnert, Jr., 873 Mike Ct., Westerville, Ohio 43081

Filed Apr. 3, 1985, Ser. No. 719,506

Int. Cl.⁴ A61F 5/37

U.S. Cl. 128—133

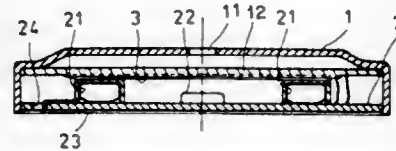
4 Claims



1. A head restraining device for use with a backboard to immobilize the head and neck area of a person supported upon the backboard and apparently suffering cervical trauma, said head restraining device comprising:

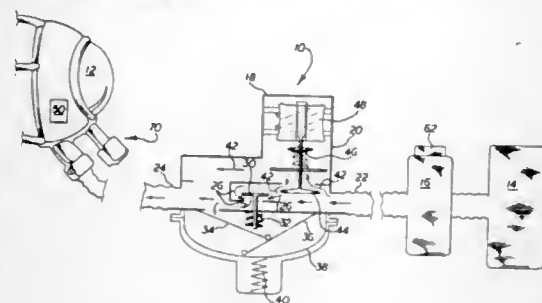
- a frame removably securable to one end of the backboard;
- a pair of side plates, one of said side plates being fixedly and nonadjustably secured to one end of said frame to extend in a generally perpendicular orientation over the backboard when said frame is secured to the backboard;
- support means secured to the other end of said frame opposite to said one end, said support means supporting the other of said pair of side plates for pivotal movement about a horizontal axis toward and away from the backboard and horizontal movement along said axis and along a portion of said frame whereby said other side plate can be pivoted into a generally perpendicular orientation over the backboard and horizontally moved toward said fixedly secured side plate to adjust said head restraining device for different head sizes; and
- a fastener strap having one end fixedly secured to one of said pair of side plates and the other end adapted to be removably secured to the other of said pair of side plates, said fastener strap being positioned relative to said side plates such that it is adapted to be generally aligned with the forehead of a person supported upon the backboard when the strap is fastened to secure a person's head between said pair of side plates.

4,640,276
SUPER-THIN ENURESIS ALARM
 Tseng Jing-Sheng, 5 Fl., No. 460-2, Kuang-Fu S. Rd., Taipei, Taiwan
 Filed Mar. 20, 1985, Ser. No. 714,168
 Int. Cl.⁴ A61B 19/00
 U.S. Cl. 128—138 A 1 Claim



1. A super thin enuresis alarm comprising a buzzer case; double sided adhesive tape; a double sided printed circuit board having a first and a second side; melody producing integrated circuit means; and two batteries; said music producing integrated circuit means and batteries being fitted on said first side of said printed circuit board; said printed circuit board having a hole means therethrough for allowing two parallel conductors to pass from the first side to the second side; said conductors being spatially and electrically separated and having exposed conductive areas to form a switch; said buzzer case having a sound outlet on one side and a buzzer strip on another side; said double sided tape being placed against said buzzer strip; said printed circuit board being placed with said one side, and the batteries and integrated circuit thereon, against said double sided adhesive tape, thereby forming an enclosure containing all of said batteries, melody producing integrated circuit means, and buzzer strip.

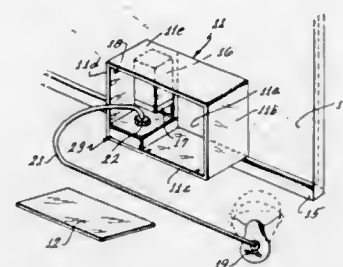
4,640,277
SELF-CONTAINED BREATHING APPARATUS
 Steven D. Meyer, Fort Worth, and Peter B. Raven, Irving, both of Tex., assignors to Texas College of Osteopathic Medicine, Fort Worth, Tex.
 Filed May 17, 1984, Ser. No. 611,507
 Int. Cl.⁴ A62B 7/04
 U.S. Cl. 128—204.23 11 Claims



1. A portable, self-contained breathing device of the type which may be used by industry and firefighters to protect a user from toxic atmospheric conditions, comprising:
 a facepiece which can be worn on the face of a user to isolate the breathing functions of said user from ambient atmosphere;
 a supply of pressurized breathing air to be supplied to said facepiece in response to the inhalation demand of said user;
 air flow regulator means between said facepiece and said supply, said regulator means including a first air flow path and second air flow path, said first air flow path including a first means to permit air passage from said supply to said

facepiece in response to facepiece pressure decreases below a first preselected level, said second air flow path including second means which permits additional air passage from said supply to said facepiece in response to facepiece pressure decreases below a second preselected level lower than said first preselected level; and
 an electrical power supply;
 said first air passage means comprising:
 a first valve member,
 and means hydraulically responsive to changes in pressure in said facepiece caused by the breathing functions of said user to control the opening and closing of said first valve member; and
 said second air passage means comprising:
 a second valve member,
 pressure-sensitive means responsive to pressure changes in said facepiece, and
 means for opening said second valve member in response to a signal from said pressure sensitive means that facepiece pressure has decreased below said second preselected level;
 wherein said first air flow path is capable of of comfortably providing said user with the volume of breathing air required by said user during light to moderate physical exertion, and
 said pressure sensitive means is electrically connected to said electrical power supply to generate an electrical signal when said facepiece pressure has decreased below said preselected level.

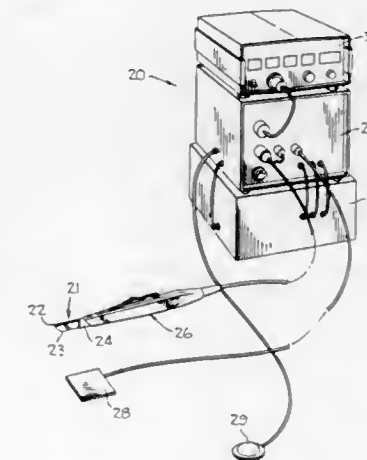
4,640,278
EMERGENCY AIR ACCESS AND SIGNAL
 John C. Barry, 1411 N. Fairfax #17, West Hollywood, Calif. 90046
 Filed Aug. 20, 1984, Ser. No. 642,422
 Int. Cl.⁴ A62B 7/00
 U.S. Cl. 128—206.12 7 Claims



1. An emergency fresh air access for use in a room having a window facing to the environment outside of the building and set in a casement, comprising: means forming a passage in said casement or window, means forming a housing, said housing having walls one of which is transparent, another of said walls being removable from the housing to thereby leave that portion of the housing covered by said wall open to provide an access, means for securing the transparent wall of the housing to the window, a breathing mask, said housing providing space for storing said mask, said mask being accessible through said access, a filter stage having an inlet and an outlet, said filter stage being carried in said housing, a first tube, said passage being just large enough to allow said first tube to pass through, means for connecting one end of said first tube through the passage to the outside environment, connector means for connecting the other end of said first tube to the inlet of said filter stage, a second tube, means connecting one end of the second tube to the mask and the other end to the outlet of the filter stage so that said first tube, filter, second tube, and mask are connected in series to define an airflow path there-through between the outside environment and the mask, a signal light mounted in the housing to shine through the win-

dow to which it is mounted, a power source for said signal light, switch means for connecting said light to said power source, said switch means mounted in proximity to said one wall to respond when the one wall is removed to switch on the light.

4,640,279
COMBINATION SURGICAL SCALPEL AND ELECTROSURGICAL INSTRUMENT
 Robert W. Beard, Placerville, Calif., assignor to Oximetrix, Inc., Mountain View, Calif.
 Filed Aug. 8, 1985, Ser. No. 763,549
 Int. Cl.⁴ A61B 17/36
 U.S. Cl. 128—303.14 12 Claims



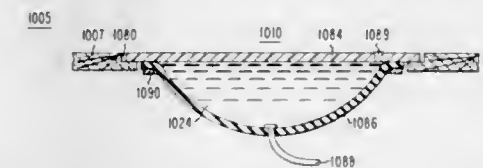
1. A disposable assembly for a surgical instrument that cuts tissue mechanically and that applies electrical current to the tissue for causing coagulation, said assembly comprising:
 an electrosurgical active electrode having
 a tip at one end,
 and electrical contact at the opposite end, and
 an intermediate portion with a straight section;
 a scalpel blade having
 a shank section and
 a blade section projecting from the shank section, said blade section having
 a cutting edge and
 a back edge that come together at a point remote from the shank section, the back edge including a straight portion positioned adjacent the straight section of the electrode with the electrode tip and the blade section point facing the same direction, the blade section point being spaced sufficiently from the electrode tip to prevent electrical shorting therebetween, the adjacent straight electrode section and back edge straight portion defining therebetween an axis of rotation; and
 a body of electrically insulative material that joins the scalpel blade and the electrode for simultaneous movement and for simultaneous support, said body holding the scalpel blade and the electrode in spaced and opposed operational positions that are used sequentially by rotating the assembly one-half revolution about the axis of rotation.

4,640,280
MICROWAVE HYPERTHERMIA WITH DIELECTRIC LENS FOCUSING
 Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.
 Filed Aug. 12, 1985, Ser. No. 764,744
 Int. Cl.⁴ A61N 5/02
 U.S. Cl. 128—804 5 Claims

1. An apparatus for focusing radio frequency or microwave

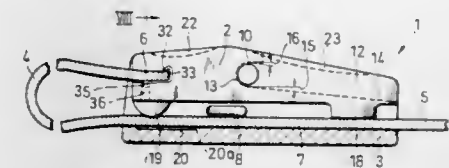
electromagnetic energy within tissues being treated, comprising:

a lens having, when operating, a cross-section substantially in the shape of a section of a circle, said lens comprising an enclosure defining a cavity and also comprising means for filling said cavity with a dielectric liquid having a dielectric constant greater than about 6, said enclosure including a horizontally oriented flat rigid base including a periphery, said base being adapted for being placed under and in



contact with said tissues being treated, and a sheet of resilient material attached to said periphery and depending from said base, said sheet of resilient material being adapted to be deformed into approximately semispherical shape by said dielectric liquid; and
 a source of said radio frequency or microwave electromagnetic energy placed below and spaced away from said sheet of resilient material for directing energy upward toward said lens whereby said energy is focused on said tissues.

4,640,281
TOURNIQUET
 Gerd-Jochen Sturm, Leverkusen, and Wolfgang Wehking, Cologne, both of Fed. Rep. of Germany, assignors to Präzisionsmetall- und Kunststoffzeugnisse G. Baumann & Co., Cologne, Fed. Rep. of Germany
 Filed Dec. 9, 1985, Ser. No. 806,977
 Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 3445794; Oct. 30, 1985, 3538583
 Int. Cl.⁴ A61B 17/12
 U.S. Cl. 128—327 20 Claims



1. A tourniquet comprising a belt and a buckle, said buckle having first and second buckle parts, means for connecting a first end of said belt to said first buckle part, means for releasably clamping a second end of said belt between said first and second buckle parts, a loop between said first and second buckle parts, interengaged pivot pin and recess means for cooperatively slidably securing and releasing said first and second buckle parts and effecting pivotal movement therebetween, means for imparting relative pivotal movement between said first and second buckle parts to effect the clamping of said belt second end therebetween by said clamping means, said pivot pin means being positioned between said clamping means and said movement imparting means, and said pivotal movement imparting means being cam means operative upon relatively slidably securing said first and second buckle parts together to automatically relatively pivot said first and second buckle parts and thereby clamp said second belt end by said clamping means.

sions less than the sheet and being centrally disposed thereon so as to leave said adhesive layer exposed therearound, said exposed adhesive layer defining an annulus of adhesive coating on the marginal portion of the sheet for securing the pad onto a selected area on the human body and defining inside thereof a non-adhesive and translucent area, said film having thereon a smooth surface which is adapted to be in adhesive-free contact with the portion on the human body, and said non-adhesive and translucent area allowing that portion of the body covered thereby to be seen through the lamination of the sheet and the film.

4,640,289

BIOMEDICAL ELECTRODE

Lawrence W. Craighead, Mendota Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1983, Ser. No. 551,069
Int. Cl.⁴ A61B 5/04

U.S. Cl. 128—639

7 Claims



1. A biomedical electrode comprising:

- an electrical terminal member comprising a base having upper and lower surfaces and a post integral with said upper surface of said base and extending therefrom, said post presenting an exposed surface adapted for direct physical and for electrical connection to a lead wire of an electro-medical device;
- an ionically conductive layer in physical and electrical contact with the entire lower surface of said base and extending peripherally beyond said base; and
- a conformable retainer sheet having upper and lower major surfaces bound together by an edge surface, having a surface area and shape larger than that of the terminal base, and having an aperture therethrough receiving and surrounding the post, the aperture being spaced apart from the edge surface and dimensioned with a perimeter larger than the largest perimeter of the post and smaller than the largest perimeter of the base such that a portion of the lower surface of the retainer sheet contacts the upper surface of the base and the remainder of the lower surface the retainer sheet contacts the portion of the ionically conductive layer extending peripherally beyond the base to positionally confine said electrical terminal member between said retainer sheet and said ionically conductive layer; and
- a medical tape comprising a backing and a pressure sensitive adhesive coating on at least one major surface thereof, the tape having an aperture therethrough receiving and surrounding said post, the aperture being dimensioned with a perimeter larger than the largest perimeter of the post and smaller than the perimeter of the retainer sheet, a portion of the adhesive-coated surface being adhered to the upper surface of the retainer sheet and the remaining portion of the adhesive-coated surface extending beyond the peripheral edges of the retainer sheet and the ionically conductive layer to assist in securing the electrode to skin.

4,640,290

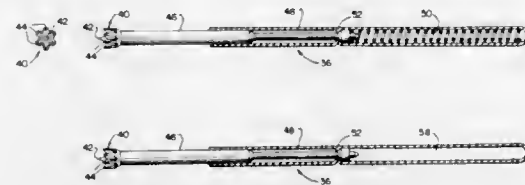
SHIELDED, SELF-PREPARING ELECTRODE SUITABLE FOR ELECTROENCEPHALOGRAPHIC MAPPING

Gary W. Sherwin, South Huntingdon Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 25, 1985, Ser. No. 727,058
Int. Cl.⁴ A61B 5/04

U.S. Cl. 128—642

17 Claims



1. A shielded, self-preparing electrode, connectable to a coaxial cable having inner and outer conductors, for sensing an electrical potential of a blood-rich skin layer covered by a dead skin layer, said electrode comprising:
 - potential sensing means, connectable to the inner conductor of the coaxial cable, for penetrating the dead skin layer, sensing the electrical potential of the blood-rich skin layer, absorbing a part of a penetrating force exceeding a force required to penetrate the dead layer of skin and helping prevent penetration of the blood-rich skin layer; and
 - shell means, connectable to the outer conductor of said coaxial cable, for securely holding and providing electromagnetic shielding for said potential sensing means and absorbing a remainder of the penetrating force exceeding the force required to penetrate the dead layer of skin.

4,640,291

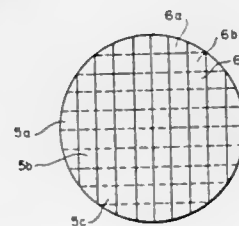
BI-PLANE PHASED ARRAY FOR ULTRASOUND MEDICAL IMAGING

Pieter 't Hoen, Mission Viejo, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Jun. 27, 1985, Ser. No. 749,613
Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—660

3 Claims



1. A transducer array for ultrasonic medical imaging comprising:
 - a flat disc of a composite piezoelectric material, said composite material having a plurality of cylinders of a piezoelectric material disposed in an insulated damping material, each cylinder extending from one major surface of said disk to the other major surface of said disk perpendicular to the diameter of said disk, each of said cylinders being completely surrounded by said insulated damping material;
 - a conductive electrode material laminated on each of the major surfaces of said disc, forming electrode surfaces; each of said electrode surfaces being scored to provide regions of electrically separated electrode elements, the scoring of one electrode surface being at an angle to the scoring of the second electrode surface whereby said regions overlie said plurality of cylinders so as to define a matrix of transducer elements;
 - a mechanical lens over one electrode surface;
 - means to connect alternately all electrode elements on one electrode surface with phased-array electronics while

grounding the electrode elements on the other electrode surface thereby to successively connect portions of said transducer elements to form successive transducer sub-arrays in order to effect a sector scan in each of two planes, such that an image in one direction is followed by an image in a second direction, thus producing a dynamic image of a bodily function.

4,640,292

EXTENDING SAMPLE VOLUME IN PULSED DOPPLER SYSTEMS

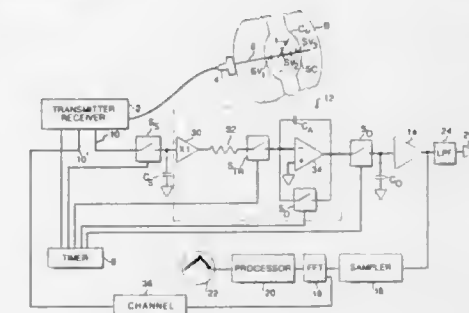
Alexander Tykulsky, Carlisle, Karl E. Thiele, Melrose, and Leslie I. Halberg, Malden, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 619,881, Aug. 24, 1984, abandoned.
This application Feb. 10, 1986, Ser. No. 827,670

Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—661

4 Claims



1. A method for operating an ultrasonic pulsed Doppler system in such manner as to obtain the velocity distribution of scatterers along the path of the Doppler pulse and within a volume having a length along the line of propagation of the pulse that is greater than the length of the sample volume, defined by the length of said Doppler pulse, along the line of propagation, comprising the steps of:
 - launching pulses of alternating waves at a given rate into a medium containing the scatterers,
 - obtaining a plurality of samples of the reflections of each launched pulse at respectively successive times so that each sample is of the reflections of scatterers contained in a different sample volume,
 - accumulating said samples so as to derive an accumulated sample to which all samples contribute, and
 - coupling the accumulated sample to processing means therefor to provide a signal representative of Doppler shift encompassed by all said different sample volumes.

4,640,293

SPIROMETER ACCESSORY

Dietmar R. Garbe, Maids Moreton House, Maids Moreton, Buckingham, England
Continuation of Ser. No. 430,689, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 201,286, Oct. 27, 1980, abandoned. This application Jan. 18, 1985, Ser. No. 692,704
Claims priority, application United Kingdom, Oct. 27, 1979, 7937320; Sep. 23, 1980, 8030676

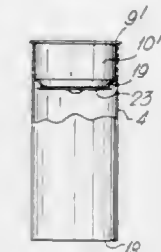
Int. Cl.⁴ A61B 5/08

U.S. Cl. 128—716

8 Claims

1. An inlet for use with a spirometer responsive to the exhalation flow of breath gases from a patient, said inlet comprising an inlet tube having an inlet end for the entry of said exhalation flow and an outlet end for connection to the spirometer; a mouthpiece having a first and second end and an internal bore, said mouthpiece being in engagement at its first end with said inlet end of said inlet tube as an exhalation flow inlet thereto; an apertured valve seating member carried by said mouthpiece and being formed to extend across said bore; a valve diaphragm formed of thin flexible material, said diaphragm hav-

ing a peripheral region, a central region and an intermediate region between said peripheral region and said central region; said valve seating member having an axially projecting outer rim and a diaphragm mounting means positioned within said outer rim, said diaphragm mounting means having a central mount and at least three radially extending spokes connected between said central mount and said sidewall for retaining said diaphragm by said central region thereof in an axial position such that said diaphragm flexes toward the outlet end of said inlet tube and said diaphragm lies in a first plane with said peripheral region of said diaphragm in sealing engagement with said outer rim; said spokes having cross-sections that provide laminar flow therearound in a direction from said first



end to said second end of said mouthpiece to minimize flow resistance therethrough; said diaphragm mounting means further including inner members extending laterally from each of said spokes, said spokes and said inner members being axially displaced from said first plane in a direction toward the first end of said mouthpiece such that said inner members lie in a second plane parallel to and axially displaced from said first plane whereby, under zero flow conditions, said diaphragm lies in said first plane and engages only said outer rim and, under reverse flow conditions, said diaphragm distorts and engages said inner members at said intermediate region thereof thereby preventing disengagement of said diaphragm from sealing engagement with said outer rim.

4,640,294

ASSEMBLY METHOD AND APPARATUS FOR SPLINE-TYPE CONNECTION

Richard A. Ordo, Greenwood, Ind., Assignor to General Motors Corporation, Detroit, Mich.

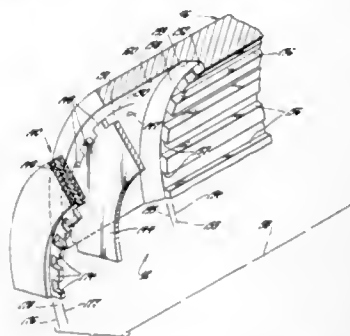
Filed Mar. 1, 1985, Ser. No. 707,391
Int. Cl.⁴ F16D 13/52

U.S. Cl. 192—70.2

11 Claims

9. In a clutch having a first member defining one of an inside cylindrical wall and an outside cylindrical wall aligned on an axis of said clutch, a plurality of first annular clutch plates connected to said one cylindrical wall and disposed in planes perpendicular to said axis, and a plurality of second annular clutch plates disposed between respective ones of said first clutch plates in planes perpendicular to said axis, the combination comprising, a second member defining the other of said inside and said outside cylindrical walls, means operative to support said second member relative to said first member such that said inside and said outside cylindrical walls are concentric and rotatable relative to each other about said axis, means on each of said second clutch plates defining a plurality of angularly spaced spline teeth projecting from a circular edge of said second clutch plate and disposed in an imaginary annulus concentric with said circular edge, means on said second member defining at one end of said other cylindrical wall and in a plane perpendicular thereto a staging annulus corresponding in size to said imaginary annulus with a first edge coincident with said other cylindrical wall, means on said second member defining a centering guide shoulder extending longitudinally outboard from the plane of said staging annulus having one edge coincident with a second edge of said staging annulus, and means on said second

member defining a plurality of spline grooves in said other cylindrical wall intersecting said staging annulus at a corre-



sponding plurality of notches angularly spaced to register with said spline teeth.

4,640,295

TOCODYNAMOMETER

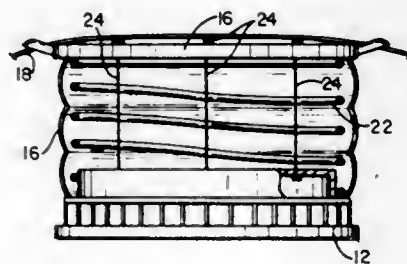
Philip O. Isaacson, Chanhassen, Minn., assignor to Aequitron Medical, Inc., Minneapolis, Minn.

Filed Nov. 14, 1985, Ser. No. 798,162

Int. Cl.⁴ A61B 5/03

U.S. Cl. 128—748

13 Claims



1. An apparatus for housing a pressure transducer for measuring intra-amniotic pressure through the abdominal wall of an obstetric patient, comprising

- (a) a ring-shaped housing having a smooth lower surface and a center opening therethrough;
- (b) a transducer member loosely fitted in said center opening, said transducer member having a smooth lower surface proximately aligned with said ring-shaped housing smooth lower surface;
- (c) a leaf spring having respective ends affixed to said ring-shaped housing opposite its lower surface and having a center point affixed to said transducer member, said leaf spring having one or more strain gauges affixed thereon;
- (d) an outer housing spaced away from said ring-shaped housing and a compression spring seated between said outer housing and said ring-shaped housing to bias the respective housings in spaced apart relation;
- (e) means, connected between said outer housing and said ring-shaped housing, for at least partially compressing said compression spring; and
- (f) means for attaching a belt to said outer housing.

4,640,296

BIOPSY CANNULA

Wolfram Schnepf-Pesch, Schönblick 6, D-7505 Ettlingen 8, and Josef Lindenberg, Buchenweg 13, D-7512 Rheinstetten 4, both of Fed. Rep. of Germany

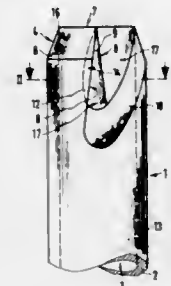
Continuation of Ser. No. 570,501, Jan. 13, 1984, abandoned. This application Dec. 10, 1985, Ser. No. 807,248

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341117

Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—754

6 Claims



1. A biopsy cannula comprising a cylindrical jacket wall surrounding an axial hollow space for receiving a tissue specimen, a distal end of the cannula being conically tapered to form a substantially ring-shaped cutting edge, at least one axially extending recess provided at the distal end and opening in a direction of the distal end, at least one cutting side extending substantially tangentially from an inside surface of the cylindrical jacket wall toward an outside surface thereof, and at least one cutting edge extending substantially parallel to a longitudinal axis of the cannula provided on at least one side of the recess, the cutting edge being formed by a cutting side of the cylindrical jacket wall whereby the cutting edge is disposed in the outer periphery of the cylindrical jacket wall.

4,640,297

FLUID SAMPLING DEVICE

William T. D. Bates, Daventry, England, assignor to Bilbate Limited, Daventry, England

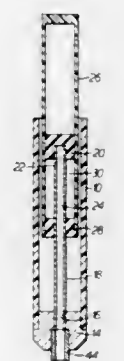
Filed Jan. 23, 1985, Ser. No. 694,091

Claims priority, application United Kingdom, Jan. 24, 1984, 8401754

Int. Cl.⁴ A61B 5/14

U.S. Cl. 128—765

7 Claims



1. A suction generating device comprising a barrel, a hollow plunger having inner and outer ends and co-axially received within said barrel, means for manually moving said plunger within said barrel co-axially therewith, a first seal slideably received within said plunger intermediate the ends thereof, means fixing said first seal against movement relative to said barrel, a second seal carried by said plunger proximate its inner end and movable therewith, the space within the hollow plunger between said first and second seals defining a chamber, said plunger and seals being constructed and arranged such

that inward movement of said plunger relative to said barrel causes said second seal to move away from said first seal to increase the volume of said chamber, and inlet means connected to said chamber, inward movement of said plunger to increase the volume of said chamber causing suction at the inlet means.

4,640,298

ESOPHAGEAL ELECTRODE PROBE USEFUL FOR ELECTRICAL STIMULATION OF THE HEART

Peter Pless, Åsumvej 460, 5240 Odense NO, and Henning R. Andersen, Fruens Bøge Alle 4, 5250 Odense SV, both of Denmark

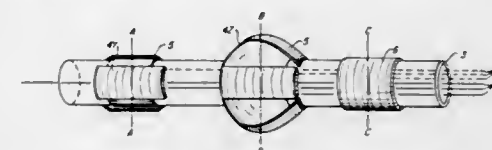
Continuation of Ser. No. 671,023, Nov. 14, 1984, abandoned, which is a continuation of Ser. No. 517,395, Jul. 26, 1983, abandoned, which is a continuation of Ser. No. 321,173, Nov. 12, 1981, abandoned. This application Jul. 29, 1985, Ser. No. 759,930

Claims priority, application Denmark, Jun. 3, 1980, 2380/80

Int. Cl.⁴ A61N 1/04

U.S. Cl. 128—784

3 Claims



1. An electrode probe adapted to be inserted into the esophagus of a patient and to provide stimulation of the heart which comprises a central tube provided with radially expandable fixing means at its distal end for axial positioning of the probe with respect to the stomach, a maximum of two stimulation zones selected from a first stimulation zone being positioned on a radially expandable part of the probe at a first distance of about 9 cm from the fixing means and a second stimulation zone being positioned on a radially expandable part of the probe at a second distance of about 4 cm from the fixing means, said first and second distances being predetermined on the basis of the distance from the transition between stomach and esophagus to the transition between the left atrium and the left ventricle so as to ensure that each of the first and second stimulation zones upon expansion of the expandable parts is in close contact with the posterior side of the left atrium or ventricle respectively, and

an inert electrode being positioned with respect to said stimulation zones as to provide an electrical field through the heart.

4,640,299

DRYING AND CONDITIONING APPARATUS FOR TOBACCO

Takahiro Ono, Hiratsuka; Takao Akutsu, Tokyo, and Hideyuki Fujiwara, Hadano, all of Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 685,043

Claims priority, application Japan, Dec. 23, 1983, 58-242088

Int. Cl.⁴ A24B 3/04

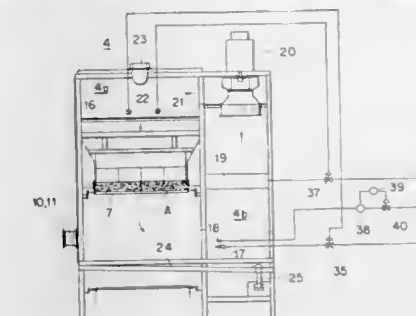
U.S. Cl. 131—303

4 Claims

1. An apparatus for drying and conditioning tobacco leaves, comprising:

- a chamber for conditioning tobacco leaves therein;
- means for drying the tobacco leaves prior to conditioning in said chamber;
- means cooperating with said chamber for circulating conditioning air through said chamber for conditioning the tobacco leaves therein;
- means in the path of the conditioning air for heating the conditioning air;
- a temperature detector in the path of the conditioning air for measuring the temperature of the conditioning air;
- temperature controlling means cooperating with said temperature detector and said heating means for controlling

said heating means so that the temperature of the conditioning air becomes a pre-set temperature; means in the path of the conditioning air for spraying atomized water in the conditioning air for cooling the conditioning air; means in the path of the conditioning air for injecting steam



into the conditioning air for humidifying the conditioning air; a humidity detector in the path of the conditioning air for measuring the humidity of the conditioning air; and means cooperating with said humidity detector and said steam injecting means for controlling said steam injecting means so that the moisture content of tobacco leaves reaches a target moisture content.

4,640,300

HIGH-PRESSURE WATER-JET STRIPPING OF TOBACCO

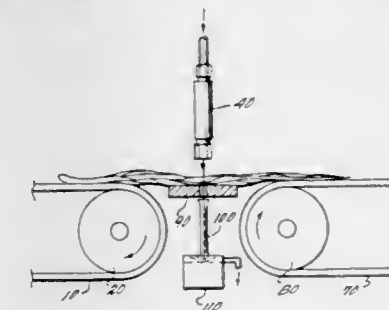
G. A. John Coleman, Richmond, Va., assignor to Universal Leaf Tobacco Company, Incorporated, Richmond, Va.

Filed Dec. 17, 1984, Ser. No. 682,772

Int. Cl.⁴ A24B 5/04, 5/06

U.S. Cl. 131—318

10 Claims



9. A method of cutting a plurality of tobacco leaves into strips, said method comprising the steps of: feeding the tobacco leaves along a predetermined path; receiving the tobacco leaves at a station comprising a plurality of liquid jet nozzles; cutting the tobacco leaves received at said station into strips by subjecting them to high-pressure liquid from the plurality of liquid jet nozzles; and separating the strips of tobacco leaves with stems from strips of tobacco leaves without stems.

4,640,301

FOLDABLE WALKER WITH PLUNGER ACTUATED LATCH ASSEMBLY

Joseph D. Battiston, Sr., and Joseph Battiston, Jr., both of Clifton, N.J., assignors to Tubular Fabricators Industry, Inc., Passaic, N.J.

Division of Ser. No. 440,051, Nov. 8, 1982. This application May 2, 1985, Ser. No. 729,724

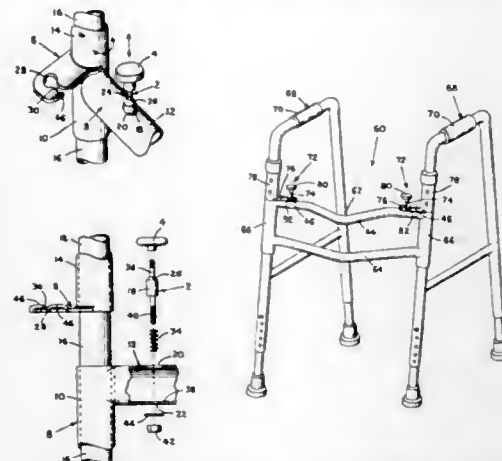
Int. Cl.⁴ A61H 3/00

U.S. Cl. 135—67

9 Claims

1. A collapsible walker for the elderly and the infirm, comprising:

- A. a cross brace having a bearing at each of its extremities;
 B. a pair of gate legs, with one of said gate legs pivotally mounted in each of said bearings for rotation between an opened position, wherein said gate legs are positioned generally transverse to said cross brace, and a collapsed position wherein said gate legs are folded against said cross brace; and
 C. a releasable locking assembly mounted on each gate leg and said cross brace adjacent the extremities thereof, each said locking assembly adapted to releasably lock the respective gate leg in the opened position with respect to said cross brace;
 each said locking assembly comprising:
 (a) a spring biased reciprocating latch;
 (b) a plunger attached to said latch;
 (c) an open ended catch plate adapted to releasably engage said latch;
 (d) said spring biased latch reciprocally mounted within said cross brace and comprising a longitudinally ex-



tended locking bolt adapted for retractable protrusion from said cross brace, a reduced diameter guide rod extending from said locking bolt external to said cross brace, and a cam surface located between said locking bolt and said guide rod, and adapted to slidably engage said catch plate;

- (e) said catch plate mounted external to the respective gate leg and substantially parallel to said cross brace when said gate leg is in said opened position and substantially transverse to said cross brace when in said collapsed position, said catch plate comprising a collar adapted to releasably retain said locking bolt, and a track communicating with said collar defining an access way for said latch to enter and escape from said collar; and
 (f) said plunger mounted on said guide rod on the free end thereof, to receive and transmit pressure against said locking bolt to urge said locking bolt into the retracted position, for release from said collar.

4,640,302
DOUBLE DISC GATE VALVE
 Thomas T. Impey, 631 Camelia St., Berkeley, Calif. 94710
 Filed Jun. 9, 1986, Ser. No. 871,802
 Int. Cl. F16K 43/00, 3/06, 25/00

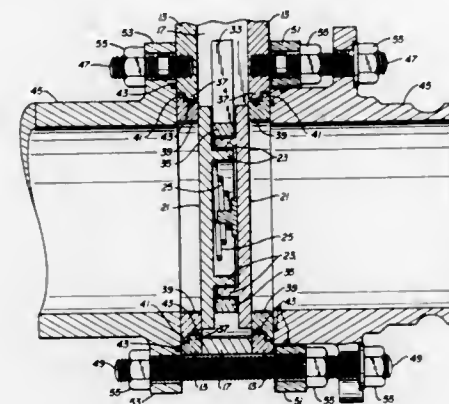
U.S. Cl. 137—15

4 Claims

3. A method for repairing downstream leaks in a double disc gate valve having upstream and downstream sealing rings and mating discs for each in the valve gate without disassembly of the valve including the steps of

providing the valve with at least a downstream sealing ring and a removable gate disc which are retained in the gate valve by an outlet connection and the downstream sealing ring and that disc of the valve gate which is mated with it

can be removed from the valve and replaced with new parts when the outlet connection is disconnected from the valve, and



replacing only the downstream sealing ring and the removable gate disc of the valve when it begins to leak.

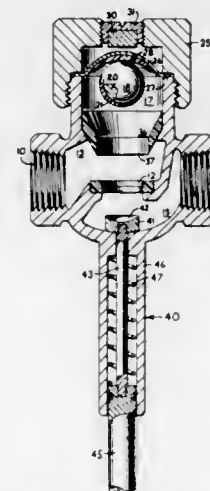
4,640,303
SEISMIC ACTIVATED VALVE
 Donald S. Greenberg, 11228 Barnett Valley Rd., Sebastopol, Calif. 95472

Filed May 20, 1985, Ser. No. 720,572

Int. Cl. F16K 17/36

U.S. Cl. 137—38

12 Claims



1. A seismically actuated valve comprising
 a. a valve body having an inlet, an outlet, and a normally horizontal valve seat located between said inlet and said outlet,
 b. a closure member located above said valve seat, said closure member being spherical and made of ferromagnetic material,
 c. a cavity located above said valve seat, said cavity being sufficiently large that said closure member may reside within it,
 d. a dome located at the upper end of said cavity, said dome forming the continuous and concave upper surface of said cavity,
 e. a magnet located above said dome.

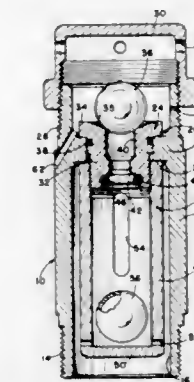
4,640,304
OVERFLOW VENT VALVE
 Raymond H. Looney, Tulsa, Okla., assignor to Baird Manufacturing Company, Tulsa, Okla.

Filed Mar. 22, 1985, Ser. No. 714,982

Int. Cl. F16K 24/04

U.S. Cl. 137—202

3 Claims



1. An overflow vent valve comprising outer housing means, pressure responsive normally closed check valve means disposed within the outer housing means and responsive to excessive pressure in the housing means for exhausting the pressure therefrom, ported cage means secured to the check valve means and suspended within the interior of the outer housing means, the interior of the ported cage means being in communication with the interior of the outer housing means for receiving fluid pressure therefrom and in communication with the check valve means, said ported cage means including (a) a sleeve member having one end open for communication with the check valve means and the opposite end thereof closed, (b) first port means provided in the proximity of the closed end whereby any liquid present in the interior of the outer housing initially enters the interior of the ported cage means and (c) slot means provided in said sleeve member in the proximity of the open end, said slot means being of larger area than the area of said first port means, secondary valve seat means provided on the check valve means and opens to the interior of the ported cage means, valve closure means loosely disposed within the ported cage means and is not in the proximity of said slot means when said valve closure means is adjacent the closed end of said sleeve member for engaging the secondary valve seat means when the liquid level rises sufficiently within the ported cage means whereby gaseous components of a flow stream may be exhausted through the check valve means and liquid components of the flow stream are precluded from discharge through the check valve means.

4,640,305
HIGH TEMPERATURE, ZERO LEAKAGE PACKING ASSEMBLY

Roger E. Johnson, Girard, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 14, 1984, Ser. No. 671,477

Int. Cl. F16K 41/02; F16J 15/40

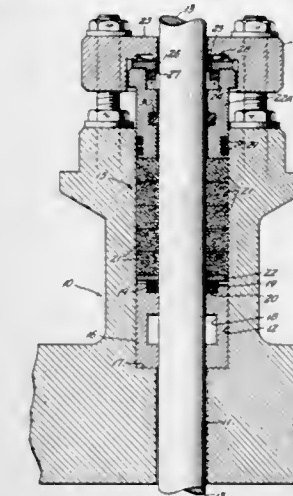
U.S. Cl. 137—312

16 Claims

11. In a high pressure control valve including a valve body, an opening formed through said valve body and a valve stem extending through said opening, a packing assembly to form a leak tight seal between said valve stem and said opening, which comprises,

- (a) a plurality of series arranged, axially stacked sealing barriers, and
 (b) a cartridge element being arranged and configured to house and enclose each of said sealing barriers,
 (c) whereby said cartridge element and enclosed sealing barriers comprise an integral unit to thereby provide a means to easily remove and replace all of said series arranged, axially stacked sealing barriers at one time by removing and replacing the cartridge element, and

(d) said cartridge element includes a lowermost bushing element having an internal fluid chamber arranged to form a fluid reservoir around a portion of said valve stem, whereby high pressure fluid leakage between the bushing element and the valve stem expands into and accumulates



within the reservoir to provide an anti-pumping effect during valve opening operation and a precipitation of solid particles from the accumulating fluid, said reservoir accumulates the solid particles therein during the movement of said valve stem to prevent the particles from reaching and deteriorating the sealing barriers.

4,640,306
FLUID FLOW REGULATOR FOR INTRAVENOUS FEEDING DEVICE
 Cheng-Kuo Fan, Kaohsiung, Taiwan, assignor to Liang-Jr Lee, Kaohsiung, Taiwan

Filed Mar. 19, 1986, Ser. No. 841,255

Int. Cl. F16K 31/22, 33/00

U.S. Cl. 137—390

5 Claims

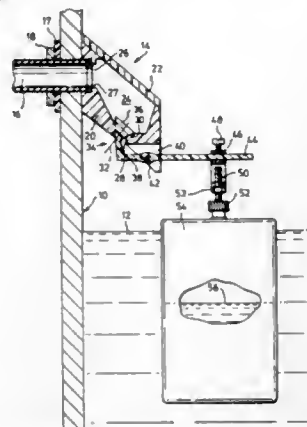


1. A fluid flow regulator for intravenous feeding device comprising:

- a cylindrical housing defining a liquid chamber having a top inlet end and a bottom tubular outlet end;
 a resilient hollow sealing body fitted in the bottom part of the housing adjacent to the tubular outlet end, the body having a central through-hole therein directed from the chamber to the tubular outlet end, and an annular flange projecting toward the through-hole at the top side of the sealing body, the annular flange forming a valve seat;
 a float body disposed in the chamber and having a bottom plug portion to seat against the valve seat;
 a tube inserted movably in the tubular outlet end for communicating the intravenous fluid flow, the top of the tube extending to the through-hole of the resilient body to communicate therewith; and
 an elastic connecting sleeve having an upper end secured to the tubular outlet end and a lower end being directly

secured to the tube with said tube extending through said lower end, the elastic sleeve being extensible and retractable in an axial direction relative to the tubular outlet end as said tube moves in said axial direction.

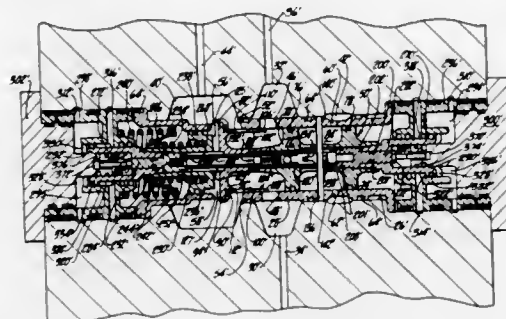
4,640,307
FLOAT VALVE
Charles G. Roberts, Richmond, England, assignor to Roberts & Associates Water and Waste Treatment Limited, England
Filed Nov. 28, 1983, Ser. No. 555,690
Claims priority, application United Kingdom, Nov. 30, 1983, 8234090
Int. Cl.³ F16K 31/22, 33/00
U.S. Cl. 137—448 9 Claims



9. A float valve mechanism for a cistern or tank, said valve mechanism comprising in combination:

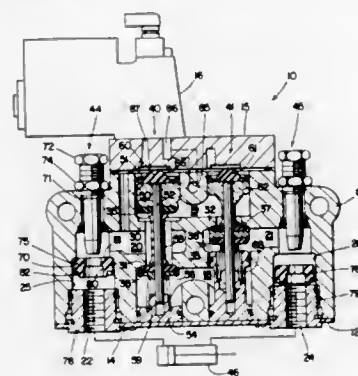
- a valve housing defining an enclosed chamber;
- an inlet port to said closed chamber adapted to be permanently connected to the inlet pipe to said cistern or tank;
- an outlet port from the chamber;
- a conical valve seat surrounding said outlet port said valve seat having a cone axis;
- a lever pivotally mounted on said housing for pivotal movement about a horizontal axis;
- a weighted float rigidly affixed to the lever at a location laterally spaced from said housing, and so as to extend below said lever, effective to cause the lever to pivot about said horizontal axis as the level of water or other liquid in said cistern or tank rises and falls;
- a valve member fixedly connected directly and rigidly to said lever and passing freely through said outlet port; and
- a valve head on said valve member, said valve head being within said chamber and having a surface of cooperating conical shape to said conical valve seat, said valve head being positioned on said lever so as to be sealingly engageable around the full periphery of said valve head in said conical valve seat precisely at the moment when said valve head reaches a closed position of said valve, the valve head then having a portion fully within said closed valve chamber, said valve head pivoting as an integral unit with said lever, whereby said valve head moves along a circular path centered on a pivot of the lever and passing through said outlet port, the cone axis of the valve head and valve seat being tangent at all times to said circular path, whereby the conical surface on said valve head is effective, in said closed position to seal off water or other liquid flow from said chamber through said outlet port, the inlet pressure of said water or other liquid within said chamber acting on said portion of said valve head fully within said closed chamber to maintain the conical valve surface continuously in sealing contact with said conical valve seat until the turning moment of said weighted float about said horizontal axis exceeds the turning moment of the inlet pressure acting on said portion of said valve head.

4,640,308
FLUID CONTROL VALVE
Alvin D. Toelle, Fenton, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Jul. 25, 1984, Ser. No. 634,255
Int. Cl.⁴ F16K 11/14
U.S. Cl. 137—596.18 23 Claims



1. A fluid flow control valve comprising a valve housing means having a bore with a fluid inlet means, fluid outlet means and fluid drain means in fluid flow communication therewith, a valve means slidably disposed in said bore, said valve means having fluid metering valve means slidable therewith for metering fluid flow between said fluid inlet means and fluid outlet means, fluid shut-off valve means slidable therewith for terminating fluid flow to said fluid outlet means and further having a longitudinal valve bore in fluid flow communication with said fluid outlet means and said fluid drain means, drain valve opening means disposed in fixed position in the valve bore, and a fluid drain valve means in the valve bore movable with the valve means for opening by the drain valve opening means when fluid flow to said fluid outlet means is terminated by said shut-off valve means so that fluid can drain from said fluid outlet means to said fluid drain means through the valve bore and closeable during metered fluid flow to the fluid outlet means past said metering valve means, and means for sliding said valve means to control fluid flow.

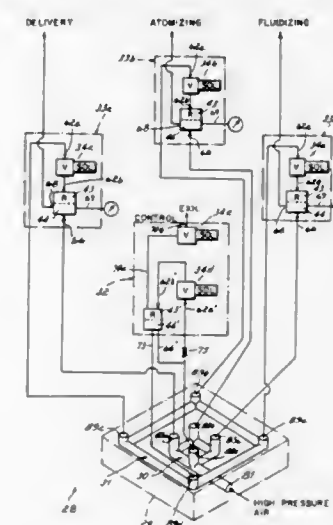
4,640,309
PILOT OPERATED POPPET VALVE WITH SPEED CONTROL
Robert K. Hoffman; Mark A. Kavanaugh, both of Plainwell, and David C. Franson, Kalamazoo, all of Mich., assignors to Parker Hannifin Corporation, Cleveland, Ohio
Division of Ser. No. 508,785, Jun. 29, 1983, abandoned. This application Aug. 15, 1985, Ser. No. 766,668
Int. Cl.⁴ E03B 7/07
U.S. Cl. 137—596.18 3 Claims



1. A valve for controlling the flow of fluid to and from a load device, comprising

a valve body having pressure and exhaust chambers and an internal chamber therein,
a load port to which said load device is connected
a fluid passageway between said load port and said internal chamber,
a valve seal in said passageway reciprocable between first and second positions in response to fluid pressure at said port,
a valve stem in said passageway cooperable with said valve seal for restricting the flow of fluid through said passageway when said valve seal is in said first position therein and for allowing free flow when said valve seal is in said second position, and
a pilot operated poppet valve in said valve body for controlling the flow of fluid from said pressure chamber to said internal chamber and from said internal chamber to said exhaust chamber, for alternately pressurizing and exhausting said load device connected to said load port,
said poppet valve comprising a piston moveable in a piston bore and spaced valve seals movable with said piston and cooperable with spaced valve seats at ports connecting said internal chamber with said pressure and exhaust chambers,
said poppet valve further comprising a bumper seal for said piston, said bumper seal comprising an elastomeric disc having a raised edge for flexible sealing engagement with said piston bore and a raised central bumper portion for cushioning abutment with a closed end of said piston bore, said valve stem and valve seal comprising a speed control valve with said valve seal being annular, having a seal at the periphery thereof and a central opening for fluid flow, said central opening being partly restricted by said valve stem when said valve seal is in said first position to limit the flow of fluid therethrough,
said valve stem being adjustably mounted in said valve body for movement toward and away from said central opening in said valve seal, for controlling the flow of fluid at said load port when said valve seal is in said first position.

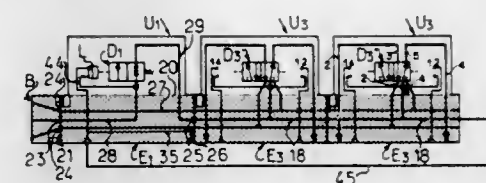
4,640,310
VARIABLE AIR-PILOTED AIR REGULATOR SYSTEM
Ronald J. Hartle, Lorain, and Robert C. Hall, Strongsville, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Dec. 26, 1984, Ser. No. 686,206
Int. Cl.⁴ F16K 11/20
U.S. Cl. 137—883 16 Claims



1. An apparatus for individually and independently setting the pressure of a plurality of air streams in a powder spray system having a fluidizing air stream, an atomizing air stream and a delivery air stream, comprising:

a control regulator, means for selectively setting the output pressure of said control regulator,
first, second and third flow regulators, each flow regulator being operable to control the pressure of one of said fluidizing, atomizing and delivery air streams,
pressure setting means selectively interconnecting said control regulator to each of said first, second and third flow regulators for individually setting the pressures of said first, second and third flow regulators independently of one another.

4,640,311
MODULAR SYSTEM OF DISTRIBUTION
Roland Martinet, Blois, and Alain Casas, Vineuil, both of France, assignors to Climax France S.A., France
Continuation of Ser. No. 407,053, Aug. 11, 1982, abandoned.
This application Jul. 12, 1985, Ser. No. 754,465
Claims priority, application France, Aug. 14, 1981, 81 15778
Int. Cl.⁴ F15B 13/07
U.S. Cl. 137—884 11 Claims



1. A modular system for the distribution of a pressure fluid connected to a pressure fluid supply system and to a driving device adapted to receive said fluid, said modular system comprising:

at least one main unit (U₃) comprising a distributor (D₃) and a base plate (E₃) provided with a mounting face, said base plate ensuring the connection of said distributor to said driving device and to said fluid supply system, said distributor being mounted interchangeably by means of a mounting face on said mounting face of said base plate, said distributor mounting face and said base plate mounting face comprising the same configuration of registering orifices of supply connectable to said fluid system, of outlet for the distribution of the pressure fluid to said driving device, of discharge and of control, said distributor being switchable between two positions for establishing predetermined connections between said distributor mounting face supply and outlet orifices,
said base plate (E₃) comprising a front and a rear connecting face provided respectively with the same configuration of two discharge orifices and one pressure fluid orifice which is an inlet orifice in the front face and an outlet orifice in the rear face, said base plate (E₃) having external orifices connectable to said driving device and additionally comprising internal passageways connecting said pressure fluid inlet orifice of said front connecting face to said pressure fluid outlet orifice of said rear connecting face and to said pressure fluid supply orifice of said base plate mounting face, for connecting each one of the two discharge orifices of said front connecting face to one corresponding discharge orifice of said rear connecting face and to one corresponding discharge orifice of said base plate mounting face and for connecting each one of said outlet orifices of said base plate mounting face to said external orifices connectable to said driving device;
at least one auxiliary unit (U₁) mounted upstream in series with said main unit (U₃) to constitute a progressive starter, said auxiliary unit (U₁) comprising a distributor (D₁) and a base plate (E₁) provided with a mounting face, said distributor (D₁) being mounted interchangeably by means of a mounting face on said mounting face of said auxiliary unit base plate, said auxiliary unit base plate (E₁) comprising

ing front and rear connecting faces provided for the connection of said auxiliary unit (U₁) to said main unit (U₂) and to said fluid supply system, said front and rear connecting faces of said auxiliary unit base plate having the same configuration of two discharge orifices and one pressure orifice which is a pressure inlet orifice in the front face and an outlet pressure orifice in the rear face, each one of said front connecting face discharge orifices being directly connected through internal passageway to a corresponding rear connecting face discharge orifice, wherein the improvement consists in that said auxiliary unit distributor (D₁) is of the same type as the main unit distributor (D₂), whereas the auxiliary unit base plate differs from the one of the main unit, and in that said auxiliary unit base plate mounting face comprises a first pressure fluid orifice communicating with said pressure inlet orifice of said front connecting face of said auxiliary unit base plate (E₁), a second orifice and a third calibrated orifice provided with a nozzle, these two orifices communicating with the outlet pressure orifice of the rear connecting face of said auxiliary unit base plate, each of said auxiliary unit base plate mounting face orifices being in a registering relationship with an auxiliary unit distributor mounting face orifice, and said two orifices are alternately connectable through communication of said auxiliary distributor to said pressure fluid orifice of said auxiliary unit base plate mounting face, the auxiliary unit distributor mounting face orifices without registering auxiliary unit base plate mounting face orifice being obturated by said auxiliary unit base plate mounting face, said three orifices of said auxiliary unit base plate mounting face being so arranged that the auxiliary unit distributor (D₁) connects the first orifice either to the second orifice or to the third, calibrated orifice, depending on its switching position.

4,640,312

PREFABRICATED THERMALLY INSULATED PIPELINE SECTION

Farrokh A. Patell, Cheltenham, and Stephen E. McConkey, Islington, both of Canada, assignors to Shaw Industries Ltd., Rexdale, Canada

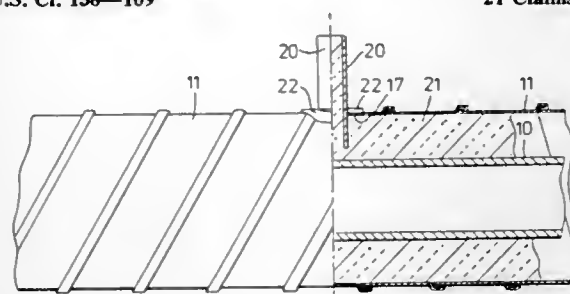
Filed Dec. 13, 1984, Ser. No. 681,277

Claims priority, application Canada, Dec. 22, 1983, 444038

Int. Cl.⁴ F16L 9/22

U.S. Cl. 138—109

21 Claims



20. A prefabricated thermally insulated pipeline section comprising an outer tubular casing, a pipe disposed within and in spaced relationship to the inner surfaces of the casing, a one piece cast thermally insulative liner disposed between the casing and the pipe and comprising particles of lightweight expanded aggregate in a foamed, cured, and dried portland cement binder, the liner bonding to the inner surfaces of the casing and having an inner annular surface closely conforming to and in disjunction from the exterior surface of the pipe, so that the pipe reciprocates relative to the casing and liner without disrupting the material of the liner, and a cylindrical sleeve bonded to the inner surface of each end of the liner and extending axially inwardly from said end of liner and circumferentially around the pipe with sufficient clearance to permit rotational and axial movement of the pipe relative to the sleeve.

4,640,313 INTERLINING OF PIPELINES FOR TRANSPORTING SEWAGE, WATER, SLURRIES, LIQUID AND GASEOUS HYDROCARBONS, AND THE LIKE

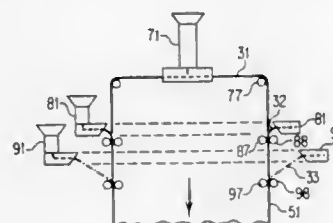
Robert K. Stanley, 698 Geneva Pl., Tampa, Fla. 33606

Filed Dec. 19, 1983, Ser. No. 563,065

Int. Cl.⁴ B29C 67/22, 47/06; F16L 55/18; E21D 11/00

U.S. Cl. 138—141

20 Claims



1. In preparing for lining a pipe with composite tubular materials fitting therein and having an inner skin layer and contiguous expansible layer, the improvement comprising extending the skin layer biaxially at least about 2X before juxtaposing the expansible layer into lateral contiguity therewith.

4,640,314

ENCLOSED CONDUIT

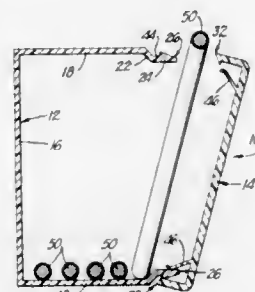
Donald E. Mock, San Dimas, Calif., assignor to Kirkhill Rubber Company, Brea, Calif.

Filed Jul. 23, 1984, Ser. No. 633,638

Int. Cl.⁴ F16L 9/22

U.S. Cl. 138—162

2 Claims



1. An enclosed conduit having a base of uniform cross-sectional configuration throughout its length, said base including opposed sides terminating in spaced, parallel edge walls and having a cover of uniform cross-sectional configuration throughout its length, said cover enclosing the space between said edge walls of said base and having spaced parallel edge walls located so as to extend along the sides of said edge walls of said base which are remote from one another, both said edge walls of said base and of said cover including coacting means for securing said cover in place, said coacting means enabling said cover to be snapped onto and off of said base in which the improvement comprises:

said coacting means on both said base and on said cover each including a sloping wall leading to a catch surface, both of said catch surfaces being shaped so as to permit said cover to be snapped onto said base with adjacent catch surfaces on the exterior of said edge walls of said base facing outwardly, generally away from one another and with said catch on said edge walls of said cover extending generally towards one another; auxiliary retainer walls for inhibiting the deflection of said sides of said base located on said cover adjacent to and spaced from each of said edge walls of said cover, each of

said auxiliary retainer walls having a terminal end which extends parallel to an adjacent edge wall of said cover and extends diagonally from said cover generally towards said auxiliary retainer wall terminal end so as to inhibit the deflection on the sides of said base when said cover is located on said base by engaging the side walls of said base;

said coacting means and said auxiliary walls being of such a configuration as to serve as a pivot structure such that an edge wall of said cover can be rotated relative to the outer edge wall of said base adjacent to it while the other edge wall of said cover is engaged with the outer edge wall of said base adjacent to it so as to serve as a pivot structure such as to permit limited rotation of said cover relative to said base so as to be in a partially open position;

said edge walls of said base are separated from the remainder of said base by offsets;

said edge walls of said cover appear as extensions of said sides of said base and are spaced from said offsets by gaps, said gaps being sufficiently large to receive a manipulative tool used to deform said base to the extent necessary to release said cover;

said auxiliary walls fit internally of said edge walls of said base so as to make it relatively difficult to move said sides of said base so as to disengage said catch surfaces.

4,640,316

FLOW VELOCITY DISTRIBUTION DETECTING SYSTEM

Shinzi Wakai, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

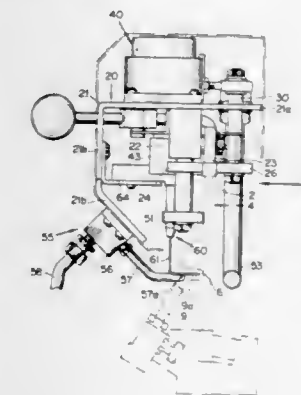
Filed Jan. 6, 1986, Ser. No. 816,743

Claims priority, application Japan, Jan. 17, 1985, 60-4848; Jan. 21, 1985, 60-7422; Jan. 29, 1985, 60-13472

Int. Cl.⁴ D03J 1/00

U.S. Cl. 139—1 R

29 Claims



1. A system in combination with an air jet loom including means for defining a plurality of grooves on front side of a reed, said grooves being aligned in direction of weft picking to form an air guide channel, and auxiliary nozzles for ejecting air into said air guide channel,

said system comprising:

a rail disposed parallel with said reed and extending in the weft picking direction;

a carrier engageable with said rail and movable along said rail;

means for maintaining said carrier in a predetermined posture; and

a flow velocity detector for detecting the flow velocity of air flowing through said air guide channel, carried by said carrier and including a flow velocity sensing section located in said air guide channel.

4,640,317

WOVEN STRAPS WITH TRANSVERSE CONTRACTIONS

Georges Chardon, Saint-Etienne, and Andre Chomienne, Saint-Chamond, both of France, assignors to Faure Roux, Saint-Chamond, France

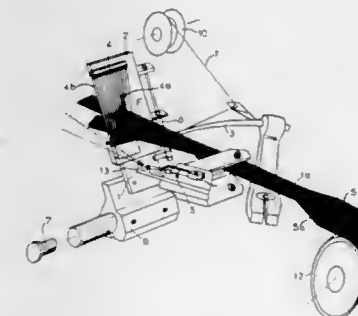
Filed Oct. 31, 1984, Ser. No. 666,910

Claims priority, application France, Nov. 3, 1983, 8317761

Int. Cl.⁴ D03D 47/42

U.S. Cl. 139—431

6 Claims



1. A method of weaving straps having a rectilinear portion and a transverse constricted portion, on an automatic sickle loom having a slay and a knitting needle, the needle being fixed

4,640,315

PROJECTILE WEAVING MACHINE

Lorant Gacsay, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

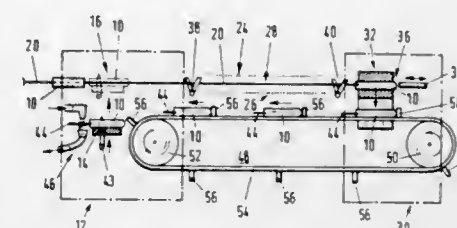
Filed Dec. 2, 1985, Ser. No. 803,716

Claims priority, application Switzerland, Dec. 18, 1984, 05990/84

Int. Cl.⁴ D03J 1/00; D03D 47/24

U.S. Cl. 139—1 C

12 Claims



1. A projectile weaving machine comprising
a picking mechanism for picking a projectile with a weft yarn therein through a shed;
a catcher for receiving a picked projectile;
a projectile return conveyor for returning a projectile from said catcher to said picking mechanism;
a cutting means adjacent said catcher for severing a weft yarn end at said catcher; and
a pneumatic means for removing a severed weft yarn end from a projectile, said pneumatic means including a suction tube for drawing a severed weft yarn end thereinto and a blowing nozzle for blowing a stream of air through an opened projectile aligned with said suction tube to blow a severed weft yarn end into said suction tube.

against displacement transverse to the straps, the method comprising the steps of:

- guiding warp yarns for the strap through a V-shaped support reed having converging blades, the support reed being positioned angularly on the slay of the loom in an oblique manner relative to the knitting needle, so as to maintain an edge of the reed in a plane parallel to the needle;
- imparting a displacement to the support reed in said plane parallel to the needle to thereby cause the warp yarns to be spaced further from one another and to be brought nearer to one another during weaving while maintaining the endmost yarn in said fixed plane parallel to the needle; and,
- synchronizing and controlling the vertical displacement of the support reed with variation of weft feeding speed, strap tension and slay-striking stress, for production of said constricted portion and said rectilinear portion, respectively.

4,640,318

CATCHER FOR A WEAVING MACHINE

Otto Hintsch, Wallisellen, and Hanspeter Ernst, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

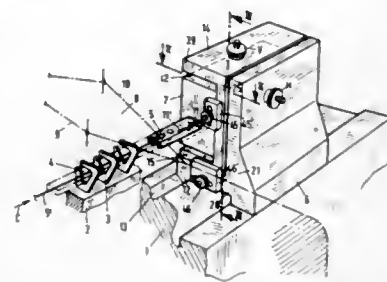
Filed Dec. 18, 1985, Ser. No. 810,879

Claims priority, application European Pat. Off., Jan. 24, 1985, 85100679.1

Int. Cl.⁴ D03D 47/24

U.S. Cl. 139—439

4 Claims



1. In a weaving machine having a guide channel for picking of a projectile therethrough, the combination comprising a catcher having a braking channel for receiving a projectile from said guide channel;
- a holder slidably receiving said catcher therein for movement transversely relative to said braking channel;
- a slide slidably receiving said holder therein for movement transversely relative to said braking channel and said holder; and
- a support slidably receiving said slide for movement parallel to said guide channel and said braking channel.

4,640,319

AUTOMATIC TIE GUN

John G. Walker, Hamble, England, assignor to Bowthorpe-Hellermann Limited, Crawley, England

Continuation of Ser. No. 351,997, Feb. 24, 1982, Pat. No. 4,495,972, which is a continuation-in-part of Ser. No. 236,583, Feb. 20, 1981, abandoned, and a continuation-in-part of Ser. No. 236,584, Feb. 20, 1981, abandoned. This application Jan. 28, 1985, Ser. No. 695,699

Claims priority, application United Kingdom, Feb. 27, 1980, 8006529; Feb. 26, 1981, 8106130; Sep. 21, 1981, 8128479

Int. Cl.⁴ B21F 09/02

U.S. Cl. 140—93 A

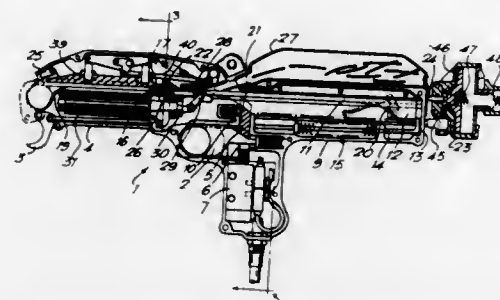
4 Claims

1. In a combination for automatically applying an individual flexible tie from a supply of individual interconnected flexible ties around an elongate bundle of wires, each of the ties having a tie body portion having a flat tail portion and an operational

head portion at opposite ends of said tie body, said combination including a tool and said supply of interconnected flexible ties, the improvement comprising:

- a series of individual flexible ties assembled in the form of a belt of ties wherein the ties are disposed side-by-side in a flat plane and in generally parallel alignment with each other, said individual flexible ties being interconnected successively with one another in a predetermined spacing by integral flexible bridging portions adjacent the head and tail portions of individual ties so as to form a tie supply bandolier wherein the ties are in generally parallel alignment with each other and in generally perpendicular relation to the axes defined by the integral flexible bridging portions adjacent said tie head and tail portions, said bridging portions at said head and tail portions cooperating to maintain adjacent ties in said generally parallel alignment and maintain said predetermined spacing of adjacent ties for preventing relative movement of adjacent ties and facilitating receipt of adjacent ties onto a tie tool indexing means; and

a tie tool adapted to receive individual ties from said tie



supply bandolier, said tie tool including indexing means for receiving said individual ties from said tie supply bandolier in said predetermined spacing, cropping means for cutting the individual ties free from the bridging portions adjacent the tie head and tail portions to separate said individual ties from said tie supply bandolier for use in said tie tool, removal means operatively associated with said cropping means for receiving and transmitting to waste said bridging portions which have been severed from said individual ties, driving means operatively associated with said indexing means for driving each individual tie so separated around said elongate bundle, guide means at the one end of said tool which directs each individual tie so separated from said bandolier around said elongate bundle in a manner by which said tie tail passes through said apertured head to interlock therein, means for engaging said free end of said tie tail (once passed through said apertured head) and driving it lengthwise of itself to tension the tie around said bundle being tied, and a knife for cutting the tail behind said tie head and tension-sensing means for actuating said knife when a predetermined tension in said tie is reached.

4,640,320

AUTOMATIC TIE GUN

Gerald Avison; John W. Teape, and Paul H. F. Willer, all of Cambridge, England, assignors to Bowthorpe-Hellermann Limited, Crawley, England

Filed Sep. 18, 1984, Ser. No. 651,873

Claims priority, application United Kingdom, Sep. 20, 1983, 8325138; May 9, 1984, 8411828

Int. Cl.⁴ B21F 9/02

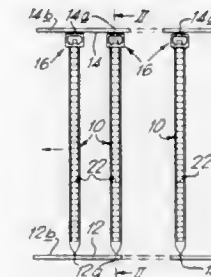
U.S. Cl. 140—93 A

24 Claims

1. An automatic tie gun for applying a flexible one-piece plastic cable tie around an elongate bundle of cables, each tie

having a tie body which includes a tail and apertured head at opposite ends of said tie, comprising:

- means for advancing a single tie into a tail-forward, tie driving position within said gun;
- means for driving said single advanced tie tail-first from said gun and around said cable bundle;
- guide means at the forward end of said gun for guiding the tie tail of said driven tie around the cable bundle such that the free end of said tie tail is spaced apart from said tie head aperture and aligned with said tail head aperture;
- means for threading said tie tail of said driven tie while held in said guide means into and through said tie head aperture



in interlocking engagement therewith, said threading means being adapted for reciprocable movement, whereby said tie head is displaced onto said tie tail by the first movement of said threading means and the second reciprocal movement of said threading means carries the interlocked tie head and tail in a direction opposite that of said first movement, and

a rotatable wheel for tensioning said driven tie around said cable bundle, said rotatable wheel being adapted to engage said tie tail free end, said second movement of said threading means carrying said free end of said tie tail into engagement with said rotatable tensioning wheel.

4,640,321

WIRE BEND MACHINE

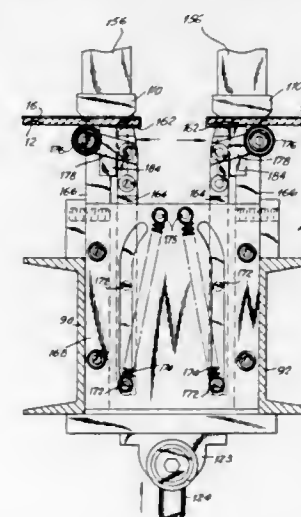
LeRoy M. Varga, Dover, and Michael F. Yermal, Wharton, both of N.J., assignors to Rockaway Corporation, Rockaway, N.J.

Filed Aug. 16, 1985, Ser. No. 766,882

Int. Cl.⁴ B21F 27/14

U.S. Cl. 140—93 C

30 Claims



1. Apparatus for processing a series of sequentially arranged container blanks each having a plurality of sequentially arranged spaced mats, said blanks having gaps therebetween and being connected by a plurality of binding wires, said blanks

having first and second sides and end edges facing each other at said gaps, said wires being located along said first side thereof; said apparatus comprising a frame defining a path of travel therethrough for the container blanks, means for driving said container blanks along the path of travel to a wire manipulating position, and for stopping movement of the blanks with a gap therebetween at said wire manipulating position, means for cutting the binding wires at said gap in the wire manipulating position to form cut wire sections, means for bending the cut wire sections through 90° perpendicular to the first side of the blanks and over said facing edges thereof; means for wiping the thus bent cut wire sections through another 90° bend toward and generally parallel to the second side of its associated mat, and means for clinching the bent cut wire sections into the second sides of their associated mats.

4,640,322

METHOD AND APPARATUS FOR FILLING A RECEPTACLE WITH A MATERIAL

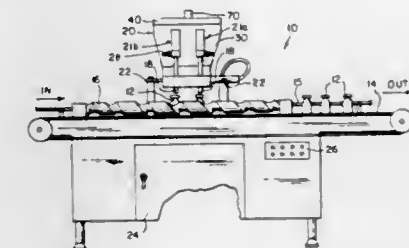
Edwin Ballester, Babylon, N.Y., assignor to Cozzoli Machine Co., Plainfield, N.J.

Continuation-in-part of Ser. No. 746,363, Jun. 19, 1985, abandoned, which is a continuation of Ser. No. 537,266, Sep. 29, 1983, abandoned. This application Dec. 30, 1985, Ser. No. 814,314

Int. Cl.⁴ B65B 1/38, 3/14

U.S. Cl. 141—5

20 Claims



20. A method of automatically filling receptacles with powder substantially free of contaminants, comprising the steps of:
 - (a) containing the powder in a hopper;
 - (b) constantly openly communicating an inlet of an upright measuring chamber with the hopper;
 - (c) positioning an outlet of the chamber above successive receptacles each in their respective turn;
 - (d) mounting a porous filter within, and extending across, an upper region of an internal elongated passageway provided in the chamber, said filter being operative for resisting passage of powder therethrough;
 - (e) mounting a discharge valve within a lower region of the passageway;
 - (f) moving the valve between open and closed positions in which the valve respectively permits and obstructs communication between the passageway and the outlet, said valve in the closed valve position extending across the lower region remote from the filter and bounding therewith an internal cavity;
 - (g) suddenly conveying a mass of the powder from the hopper through the inlet and into the cavity when the valve is in the closed valve position, said cavity being substantially closed to the ambient environment exteriorly of the apparatus to resist powder contamination during charging of the cavity; and
 - (h) suddenly conveying the mass of the powder en masse from the cavity through the outlet and into each respectively positioned receptacle to fill each receptacle when the valve is in the open position, said cavity being substantially closed to the exterior ambient environment to resist powder contamination during filling of each receptacle.

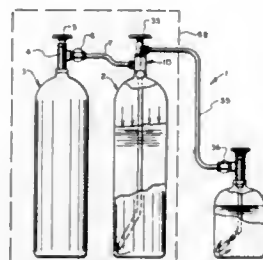
4,640,323
PORTABLE SYSTEM FOR FILLING BOTTLES WITH NITROUS OXIDE

John A. Norcia, Columbia; Ray Bickar, Blythewood, and William M. Wheatley, Elgin, all of S.C., assignors to Ram Automotive Company, Columbia, S.C.

Filed Sep. 27, 1985, Ser. No. 784,672
Int. Cl.⁴ B65B 3/10

U.S. Cl. 141—18

15 Claims



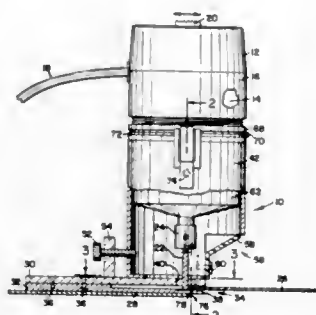
1. A portable system for filling bottles with nitrous oxide including:

- (a) a first container holding a supply of pressurized liquid nitrous oxide;
- (b) a second container holding a supply of pressurized inert gas under a greater pressure than the nitrous oxide;
- (c) a third container for receiving a supply of liquid nitrous oxide from said first container;
- (d) first conduit means for delivering nitrous oxide from the first container into the third container;
- (e) second conduit means for delivering pressurized inert gas from the second container into the first container to form a pressurized blanket of inert gas against the liquid nitrous oxide for discharging the nitrous oxide from said first container and into the third container through the first conduit means; and
- (f) valve means for directing the flow of pressurized inert gas into the first container through the second conduit means to form the pressurized blanket of inert gas and for directing the nitrous oxide from said first container and into the third container through the first conduit means, wherein said valve means is a two-position valve which enables the first container to be alternatively connected to the second and third containers through the second and first conduit means, respectively.

4,640,324
ROUTER ATTACHMENT
Bernard C. Lounds, P.O. Box 403, Holt, Mich. 48842
Filed Sep. 12, 1985, Ser. No. 775,376
Int. Cl.⁴ B27C 5/10

U.S. Cl. 144—134 D

16 Claims



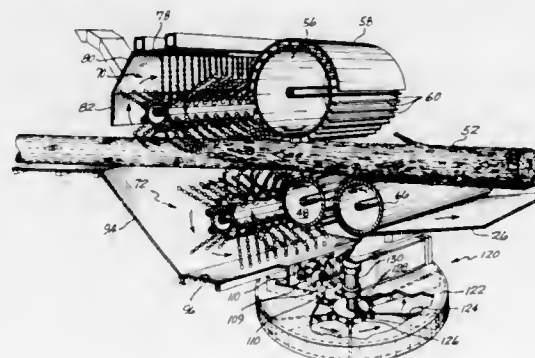
1. A router attachment, comprising:

a generally planar top plate having a clearance hole therein;
a generally planar bottom plate secured in predetermined vertically spaced-apart relationship with the top plate to define a generally horizontal slot therebetween for receiving a first sheet of material to be cut;
means for adjustably securing a router and bit in inverted relationship to said top plate over the clearance hole therein; and
a rotatable cam mounted in said bottom plate beneath the clearance hole in said top plate, said cam including an offset depending cam follower mounted for movement therewith for engaging an edge of a second sheet of material.

4,640,325
FLAIL MEMBER FOR DEBARKING TREES
Dennis H. Vaders, Plymouth, N.C., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Dec. 5, 1984, Ser. No. 678,309
Int. Cl.⁴ B27L 1/00

U.S. Cl. 144—208 J

5 Claims



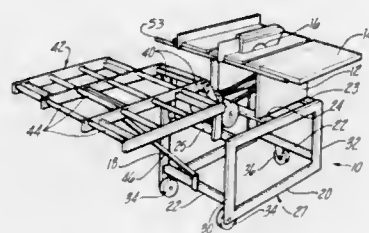
1. A flail member of the type useful in a debarking system for removing bark from logs as the logs travel relative to the flail member through a debarking station, having the improvement comprising:

- a plurality of laterally spaced chain segments mounted on a rotatable member with the segments being arranged in a plurality of rows, and
- at least some of the chain segments having different lengths thereby defining means providing a different lateral vibratory frequency upon impact with the logs.

4,640,326
STAND FOR A TABLE SAW
Timothy W. Hewitt, 18 Kensington, Pleasant Ridge, Mich. 48069
Filed Jan. 24, 1985, Ser. No. 694,603
Int. Cl.⁴ B25H 1/00

U.S. Cl. 144—287

5 Claims



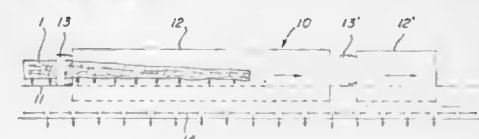
1. A stand for a table saw having a work support surface, said stand comprising,
a generally rectangular frame having a top, bottom, two

spaced sides and two spaced ends, constructed from rigidly connected elongated framing members,
a pair of elongated supports which angle outwardly away from said frame,
means securing said supports to one end of said frame so that said supports are spaced apart and parallel to each other and so that one end of each support is spaced above said top and is spaced outwardly from said one end by a predetermined distance,
a planar platform having a plurality of spaced rollers,
means pivotally securing said platform to said ends of said supports, said platform being pivotal between an upper position in which an upper surface of each roller is substantially coplanar with said work support surface and a lower position in which said platform is substantially flush against said end of said frame, and
means connecting said frame and said platform for locking said platform in said upper position, wherein said supports are rigidly secured to at least one of said members at the top of said frame.

4,640,327
ULTRA HIGH PRESSURE WATER LOG DEBARKING
Alexandre Krilov, New South Wales, Australia, assignor to The Minister for Industry and Decentralization of the State of New South Wales, Sydney, Australia
Filed Mar. 25, 1985, Ser. No. 715,937
Claims priority, application Australia, Oct. 17, 1984, PG7689
Int. Cl.⁴ B27L 3/00

U.S. Cl. 144—340

2 Claims

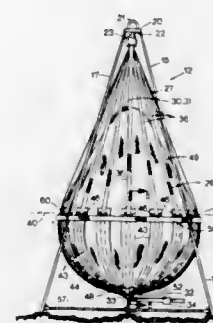


1. A method of hydraulically debarking logs, comprising the step of directing water generally radially onto the surface of a log to be debarked at a substantially constant ultra high pressure of at least 25,000 kPa.

4,640,328
COLLAPSIBLE LIQUID CONTAINER PARTICULARLY FOR TRANSPORTATION BY HELICOPTER
Donald B. Arney, 1001 - 2191 W. 39th Ave., Vancouver, B.C., V6M 1T7, Canada
Filed May 16, 1984, Ser. No. 610,831
Int. Cl.⁴ B65D 90/12; B64D 37/04

U.S. Cl. 150—55

14 Claims



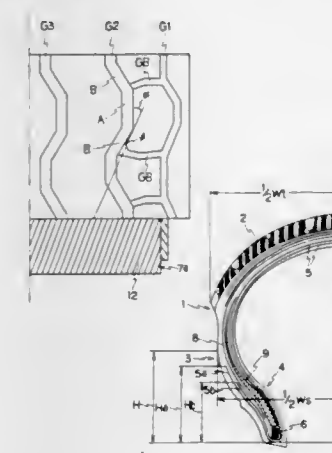
1. A flexible fully collapsible and emptyable fluid container apparatus for aerial transport or the like comprising:
(a) a collapsible container having a first upper portion and a second lower portion and a third central portion;

- (b) ground engageable support means for supporting said container;
- (c) said first upper portion of said container having a first collapsed position when said container is empty and a second expanded position when said container is full;
- (d) said second lower and said third central portions having a substantially bowl-like configuration at all times;
- (e) said support means including rigid means engageable with said third central portion for maintaining said second lower and said third central portions in said bowl-like configuration at all times;
- (f) said first upper position of said container including means for permitting said first upper portion to collapse fully into said bowl-like configuration of said second lower and said third central portions whereby, when said first upper portion is fully collapsed into said second central and said third lower portions, said container is fully emptied and said fully collapsed position can be observed by visual inspection to confirm full drainage of fluid in the container;
- (g) said ground engageable support means includes three legs;
- (h) said rigid means connects said three legs together; and,
- (i) harness means cooperating with said container and said ground engageable support means to suspend the container from the support means.

4,640,329
RADIAL TIRE FOR MOTORCYCLES
Eiji Nakasaki, Kakogawa; Hisashi Shirasboji; Katsuyuki Hoshikawa, both of Kobe; Takao Kamijo, Toyonaka; Kazushige Ikeda, Akashi; Yasuhiro Inoue, Himeji, and Takeo Kato, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Aug. 13, 1984, Ser. No. 640,270
Claims priority, application Japan, Aug. 11, 1983, 58-147458
Int. Cl.⁴ B60C 11/06, 9/20

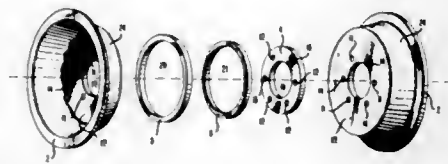
U.S. Cl. 152—209 R

6 Claims



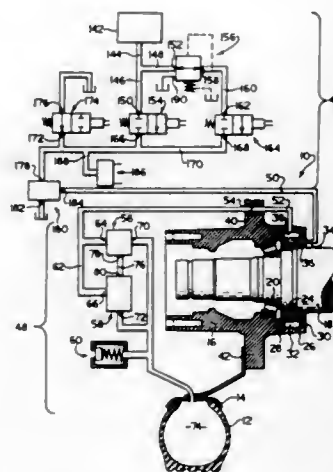
1. A tire for motorcycles comprising a tread portion, side wall portions extending inwardly from the both ends of said tread portion in the radial direction, bead portions positioned at the radially inward ends of said side wall portions, a toroidal carcass composed of cords which extend approximately parallel with each other in the radial direction of the tire and of which the both end portions are turned up around bead cores, and a breaker arranged on the radially outer side of said carcass so that the cords thereof are extended at an angle of 5° to 35° to the circumferential direction of the tire, said tread portion having in its surface a plurality of zigzagged-longitudinal grooves which extend in the circumferential direction of the tire and each elemental groove of said zigzagged-longitudinal grooves is arranged at an angle of at least 5° with respect to the cord extending direction of the most outer ply of said breaker.

4,640,330
SEAL DEVICE FOR CENTRAL SECTIONS OF WHEEL HALVES
 James J. Frassica, 5 Essex Pl., Chelmsford, Mass. 01824
 Filed Jan. 31, 1985, Ser. No. 697,065
 Int. Cl.⁴ B60B 3/08
 U.S. Cl. 152—404 2 Claims



1. A wheel comprising:
 first and second generally cup shaped wheel halves having a center section, an integral rim section, and a central opening in said center section, said wheel halves being disposed with their central sections facing each other and parallel throughout their entire length,
 means forming an air-tight seal between the wheel halves center sections such that the sealing means is sandwiched between the center sections and in contact with the surfaces of both center sections wherein said means comprises an inner ring, an outer ring coaxially disposed about said inner ring, the outer diameter of the inner ring being smaller than the inner diameter of the outer ring and an O-ring positioned in the space between the inner and outer rings, both said inner and outer rings being separate from the wheel halves, and
 means for connecting the wheel halves together and compressing the O-ring.

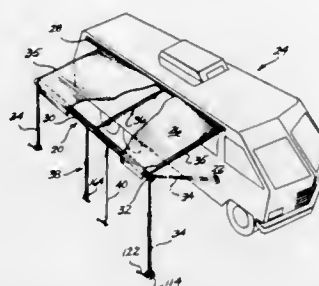
4,640,331
CENTRAL TIRE INFLATION SYSTEM
 Eugene R. Braun, Royal Oak, and Gary R. Schultz, Novi, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio
 Filed Jun. 4, 1984, Ser. No. 617,644
 Int. Cl.⁴ B60C 23/10, 29/00
 U.S. Cl. 152—417 23 Claims



1. A vehicle onboard tire inflation system comprising:
 control means for selectively pressurizing and exhausting a first conduit;
 a pressure relief valve having a first port for fluid connection to said first conduit, a second port for fluid connection to atmosphere and a third port connected to a second conduit; said pressure relief valve automatically responsive to fluid pressure in said first and second conduits and effective to establish fluid flow between said first and second conduits and to block said second port if the pressurization in said first conduit is equal to or greater than the pressurization in said second conduit, and to establish fluid flow between said second conduit and said second port and to block said first port if the pressurization in said second conduit is greater than the pressurization in said first conduit;

tire valve means rotatably mounted to an inflatable tire and having a fourth port for fluid connection to said second conduit and a fifth port fluidly connected with the interior pressurized chamber of said tire, said tire valve means automatically responsive to pressurization of said second conduit and of said interior pressurized chamber to establish and block fluid communication between said fourth port and said fifth port;
 said tire valve means effective to establish fluid communication between said fourth port and said fifth port when said second conduit is pressurized to a pressure greater than a predetermined first reference pressure and said interior pressurized chamber is pressurized to a pressure equal to or greater than a minimum tire reference pressure;
 said tire valve effective to establish fluid communication between said fourth and fifth ports, when the pressure in said interior tire chamber exceeds a maximum tire pressure reference value;
 said tire valve effective to block communication between said fourth and fifth ports when the pressure in said second conduit does not exceed said first reference pressure and the pressure in said interior tire chamber does not exceed a predetermined maximum tire reference pressure; and
 said tire valve effective to block fluid communication between said fourth and fifth ports if said interior chamber of said tire is pressurized to a pressure less than said minimum tire reference pressure value regardless of the magnitude of pressure in said second conduit.

4,640,332
AWNING SUPPORT ASSEMBLY
 Joe D. Turner, 2807 W. Prairie Creek, Richardson, Tex. 75080
 Filed Jul. 29, 1985, Ser. No. 760,322
 Int. Cl.⁴ E04F 10/06 27 Claims

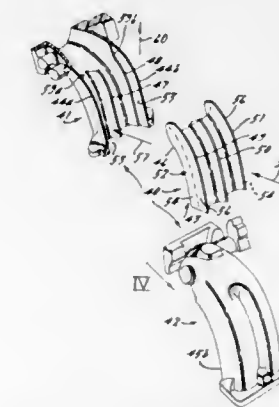


1. A support assembly for an awning apparatus adapted for attachment to a supporting structure and capable of retraction, the awning apparatus including a support tube, and a canopy having a first edge portion securable to the support tube, the canopy being windable about the support tube, said support assembly comprising:
 (a) means for supporting the awning apparatus; and
 (b) means for attaching said supporting means to the awning apparatus, said attachment means comprising:
 (i) first and second clamping members, each having a hook-shaped distal end portion adapted for engagement within a corresponding opening in the support tube, and a longitudinal portion extending generally circumferentially about a portion of the support tube;
 (ii) means for adjustably interconnecting the longitudinal portions of the clamping members of said attachment means into taut condition relative to the support tube

with the end portions of the clamping members engaged within a corresponding support tube opening; and,
 (iii) means for interconnecting said supporting means with said attaching means.

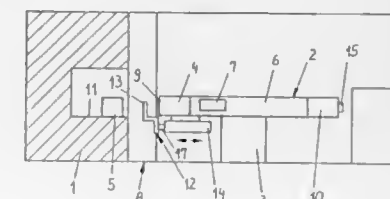
4,640,333
FOAM PATTERN ASSEMBLY FOR USE IN EVAPORATIVE CASTING PROCESS
 Robert A. Martin, Northville, and Thomas J. Heater, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
 Filed Sep. 5, 1985, Ser. No. 772,817
 Int. Cl.⁴ B22C 7/02 9 Claims

U.S. Cl. 164—246



1. A complex consumable foam pattern assembly for use in an evaporative pattern metal casting process, comprising:
 (a) mating first and second clamshell-shaped foam members, said first and second foam members meeting along exteriorly exposed joint margins defined by mateable surfaces extending along opposite sides of each of said members;
 (b) at least one other foam member nestable totally within the mated assembly of said first and second members and nestable without joint margins exposed to the exterior of said assembly;
 (c) surface means enclosed within said mated assembly for piloting said first, second and other members into mating relationship; and
 (d) adhesive means bonding said first and other members together and said second member to the assembly of said first and other member.

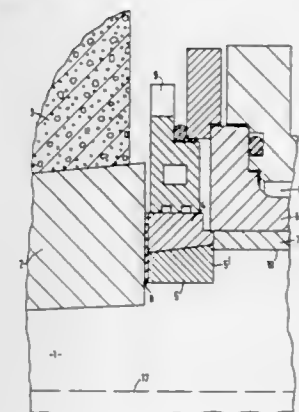
4,640,334
APPARATUS FOR CASTING MATERIALS FOR FALSE TEETH
 Rudi Koerner, Elisabethenstrasse 41, D-7080 Aalen-Unterkochen, Fed. Rep. of Germany
 Filed Dec. 3, 1985, Ser. No. 804,667
 Claims priority, application Fed. Rep. of Germany, Dec. 13, 1984, 3445424
 Int. Cl.⁴ A61C 13/20; B22D 13/00, 13/10 11 Claims



1. An apparatus for casting materials for false teeth, especially gold, from a melt receptacle into a muffle preheated in a preheater furnace, wherein said melt receptacle together with the muffle attached thereto by a connecting means is disposed on a centrifugal arm of a centrifugal device that rotates during a casting operation, wherein said preheater furnace (1) and said connecting means (9,13) are situated upon a common structural unit (8) so close to each other that to convey said muffle (5) and fasten it on said connecting means there is provided an actuatable manipulator arm (12) which carries out only one shifting movement in one plane and which engages said muffle.

cially gold, from a melt receptacle into a muffle preheated in a preheater furnace, wherein said melt receptacle together with the muffle attached thereto by a connecting means is disposed on a centrifugal arm of a centrifugal device that rotates during a casting operation, wherein said preheater furnace (1) and said connecting means (9,13) are situated upon a common structural unit (8) so close to each other that to convey said muffle (5) and fasten it on said connecting means there is provided an actuatable manipulator arm (12) which carries out only one shifting movement in one plane and which engages said muffle.

4,640,335
CASTING APPARATUS
 Peter J. Clark, Cannock; Anthony W. Hudd; Stephen T. Bloor, both of Sutton Coldfield, all of England, and Erling Roller, Essen, Fed. Rep. of Germany, assignors to IMI Refiners Ltd., Walsall, England
 Filed Jan. 18, 1985, Ser. No. 692,543
 Claims priority, application United Kingdom, Jan. 25, 1984, 8401976
 Int. Cl.⁴ B22D 11/10 9 Claims



1. Apparatus for the continuous casting of metal, comprising:
 a horizontally-oriented mould having in inner perimetricaly-extending mould surface extending longitudinally from a mould entrance end;
 said mould including means for cooling said mould surface so as to cause molten metal to solidify thereagainst while travelling longitudinally of said mould from said mould entrance end;
 a feed means adapted to pass molten metal from a container towards said entrance end of said mould for supplying said mould with molten metal;
 a perimetricaly-extending composite sleeve sealingly interposed axially between said feed means and said mould at said entrance end of said mould so that molten metal flowing from said feed means into said mould through said entrance end of said mould, must flow through said composite sleeve;
 said composite sleeve including a perimetricaly-extending inner portion made of graphite and having a perimetricaly-extending inner surface defining at least part of a conduit between said feed means and said mould;
 said composite sleeve further including a perimetricaly-extending outer portion engagingly surrounding said inner portion, said outer portion being made of thermal insulating material;
 said inner portion of said composite sleeve, immediately adjacent said entrance end of said mould, about all of the periphery of said inner surface of such composite sleeve inner portion, being of such lesser transverse extent from a notional longitudinal centerline of said mould surface, that an abrupt, downstream-facing annular shoulder is

formed on said inner portion of said composite sleeve, which annular shoulder extends effectively between said inner surface of said inner portion of said composite sleeve, and said mould surface at said entrance end of said mould.

4,640,336

REFRACTORY FOR CONTINUOUS CASTING

Kazumi Arakawa; Toshiyuki Hirao; Kenji Sugiura; Satoshi Karoki, all of Kariya; Sei Hiraki; Takao Suzuki, both of Amagasaki, and Ken Nakai, Ibaragi, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of Japan

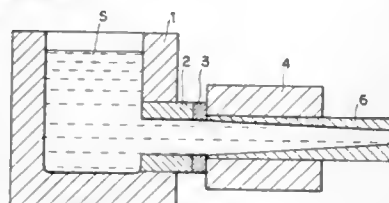
Filed Sep. 24, 1985, Ser. No. 779,417

Claims priority, application Japan, Mar. 11, 1985, 60-47846; Oct. 1, 1985, 59-205966

Int. Cl.⁴ B22D 11/10, 41/02

U.S. Cl. 164—440

10 Claims



1. A refractory article for connecting a mold and a tundish in continuous casting, said refractory article containing silicon aluminum oxynitride produced by heating an admixture consisting essentially of:

- 1-80 wt. % aluminum nitride,
 - 1-50 wt. % boron nitride,
 - 1-30 wt. % clay mineral, and
 - the remainder being silicon nitride,
- said clay mineral containing alumina, silica and an alkali component, whereby said silica and alumina react with said aluminum nitride and said silicon nitride to produce the silicon aluminum oxynitride and said alkali component reacts with said silicon nitride to produce a glass phase within the refractory.

4,640,337

CONTINUOUS CASTING APPARATUS

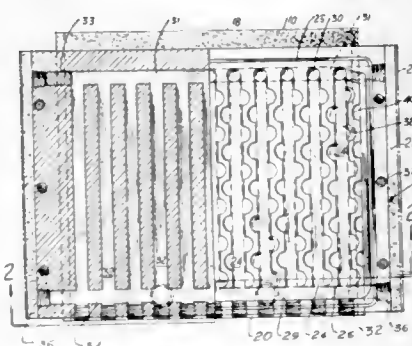
Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Filed May 1, 1985, Ser. No. 729,246

Int. Cl.⁴ B22D 11/124

U.S. Cl. 164—443

9 Claims



1. A continuous casting apparatus comprising a coolant body having an elongated opening into one end of which molten metal is introduced and out of the other end of which solidified metal is removed, said body having an outer surface,

a plurality of grooves on said outer surface defining spaced ribs, a plate closing said grooves to define axial passages between the ribs, an inlet in said coolant body for supplying coolant communicating with said axial passages, an outlet in said coolant body for removing coolant communicating with said axial passages such that coolant flows continuously through said axial passages, said ribs having side walls, said ribs having longitudinally spaced oppositely facing recess in said side walls defining a radial enlargement whereby coolant moving along said axial passages is subjected to a turbulent flow, said recesses are substantially cylindrical in a direction transverse to the ribs, said recesses on one side of one rib being staggered longitudinally with respect to the recesses on the adjacent side of the adjacent rib such that the coolant is subject, in addition, to a sinuous flow from a recess in one side wall of one rib to a recess of an opposite side wall of an adjacent rib.

4,640,338

ROLLER APRON FOR CASTING OF SUPPORT-PRE-PROFILES OR SECTIONAL SHAPES AND BLOOMS IN A CONTINUOUS CASTING INSTALLATION

Ken Kumagai, Niihama, Japan, assignor to Concast AG, Zürich, Switzerland

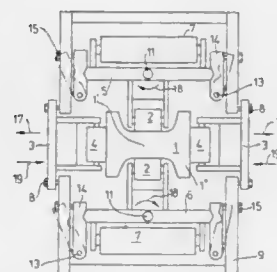
Filed Oct. 2, 1980, Ser. No. 193,357

Claims priority, application Japan, Oct. 22, 1979, 54-146204

Int. Cl.⁴ B22D 11/128

U.S. Cl. 164—448

4 Claims



1. A roller apron for the continuous casting of I-shapes and blooms in a continuous casting installation, comprising: a movable roller support member having two sides; a roller member for guiding a web portion of an I-shape mounted at one side of the roller support member; and a further roller member for guiding a bloom arranged at the other side of said roller support member.

4,640,339

APPARATUS FOR CARRYING OUT PHYSICAL AND/OR CHEMICAL PROCESSES, MORE SPECIFICALLY A HEAT EXCHANGER OF THE CONTINUOUS TYPE

Dick G. Klaren, Hillegom, Netherlands, assignor to Esmil B.V., Amsterdam, Netherlands

Division of Ser. No. 629,810, Jul. 11, 1984, Pat. No. 4,567,940.

This application Jan. 15, 1986, Ser. No. 819,297

Claims priority, application Netherlands, Jul. 22, 1983, 8302622

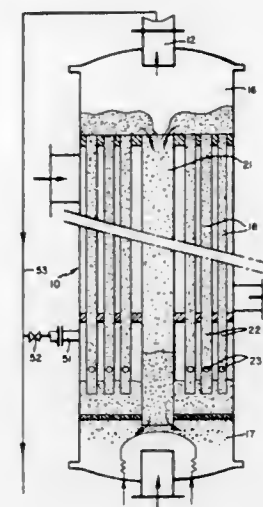
Int. Cl.⁴ F28C 3/16; F28D 13/00

U.S. Cl. 165—1

3 Claims

1. Method of operation of apparatus for carrying out physical and/or chemical processes, in particular a heat exchanger of the continuous type, comprising a bundle of parallel vertical riser tubes, an upper chamber, a lower chamber, an upper pipe plate and a lower pipe plate for open connection of the pipe bundle to the upper and lower chambers respectively, a granu-

lar mass that can be kept in a fluidised condition at least in the riser tubes by a fluid medium flowing during operation upwardly through the lower chamber, the riser tubes and the upper chamber, a distribution plate for the granular mass in the lower chamber and at least one return tube with outlet below the distribution plate for return of an overflow of granules above the upper pipe plate from the upper chamber to the lower chamber, wherein each riser tube is provided with an



inflow pipe element extending into the lower chamber from the lower pipe plate to a level above the distribution plate through which the return tube or tubes projects or project, and the lower chamber is provided with a device that prevents granules from reaching the lower chamber inlet for the fluid medium at standstill characterised in that the fluid medium pressure at the top of the lower chamber is temporarily reduced.

4,640,340

HEATED OR COOLED STEERING WHEEL

Kazushi Noda, Inazawa; Moriyuki Komatsu, Nagoya, and Hiroshi Mitsunaga, Hirakata, all of Japan, assignors to Toyota Gosei Co., Ltd., Nishikasugai and Matsushita Electric Industrial Co., Ltd., Kadoma, both of Japan

Filed Oct. 18, 1984, Ser. No. 663,978

Claims priority, application Japan, Oct. 21, 1983, 58-197894

Int. Cl.⁴ F25B 21/02

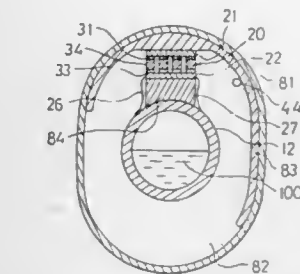
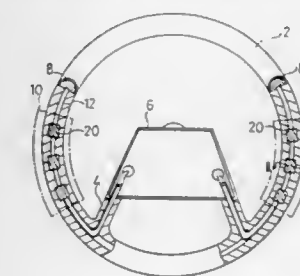
U.S. Cl. 165—41

7 Claims

1. Apparatus for heating and cooling a steering wheel, comprising:

- skin layer means adapted to form an outer surface of said steering wheel;
- heat conductive means, connected to an inside surface of said skin layer means, for transferring heat to and from said skin layer;
- thermal storage means, adapted to extend along a central portion of said steering wheel, for storing thermal energy;
- thermoelectric transducer means, thermally coupled to said heat conductive means and said thermal storage means, for generating and absorbing thermal energy, said transducer means including first and second heat generating/absorbing contact portions adapted to generate and absorb heat in accordance with an electric current supplied

thereto, said first contact portion being thermally coupled to said heat conductive means, and said second contact



portion being thermally coupled to said thermal storage means.

4,640,341

RADIATOR FOR VEHICLES, HAVING IMPROVED MOUNTABILITY INTO VEHICLES

Motoo Ozawa, Iruma, Japan, assignor to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Apr. 17, 1984, Ser. No. 601,289

Claims priority, application Japan, Apr. 19, 1983, 58-69034; Apr. 21, 1983, 58-70723

Int. Cl.⁴ F01P 11/08

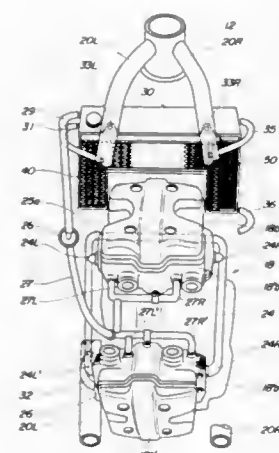
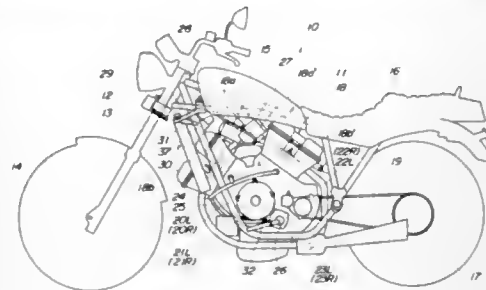
U.S. Cl. 165—41

1 Claim

1. A radiator for use in a vehicle having a vehicle body, a water-cooled engine mounted in said vehicle body at a central location thereof, said engine having at least one cylinder projected toward a central portion of said radiator, said radiator being adapted to radiate the heat of hot cooling water from said engine, said vehicle body including a cooling fan disposed to direct air to said central portion of said radiator, said radiator comprising:

- a plurality of radiator-forming elements juxtaposed and joined to each other,
 - each element being formed of a pair of half elements joined together in an abutting manner, each half element having: a partition wall extending along an axis of said half element from a first end portion thereof to a point in the vicinity of a second end portion thereof,
 - a substantially U-shaped groove extending around said partition wall, and
 - a flange formed along an outer peripheral edge of said half element;
- each pair of half elements being joined together along said partition walls and said flanges thereof, the partition walls and flanges of the half elements of each element being aligned with each other so that a substantially U-shaped heat radiating passage is defined within the element,
- said plurality of radiator-forming elements thus containing a corresponding plurality of U-shaped heat radiating passages juxtaposed to each other,
- the parts of said radiator-forming elements positionally cor-

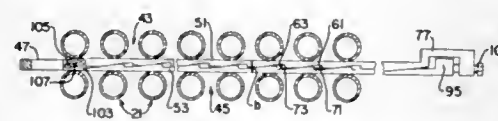
responding to said central portion of said radiator being shorter in length than the other parts of said radiator-forming elements, whereby said radiator assumes a substantially U-shaped configuration adapted to avoid interference of said radiator with said at least one cylinder; a water distributing chamber disposed at the first ends of said passages and communicating therewith, said water distributing chamber being supplied with cooling water and distributing the cooling water into said passages; and



a water collecting chamber disposed at the second ends of said passages and communicating therewith, said water collecting chamber being supplied with cooled water from said passages; said U-shaped heat radiating passages extending in substantially the same direction as each other, such that said water distributing chamber and said water collecting chamber are closely juxtaposed to each other.

4,640,342
EXPANDABLE ANTIVIBRATION BAR FOR HEAT TRANSFER TUBES OF A PRESSURIZED WATER REACTOR STEAM GENERATOR
Robert H. Appleman, Pleasant Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 26, 1984, Ser. No. 574,304
Int. Cl.⁴ F28F 7/00
U.S. Cl. 165—69

16 Claims



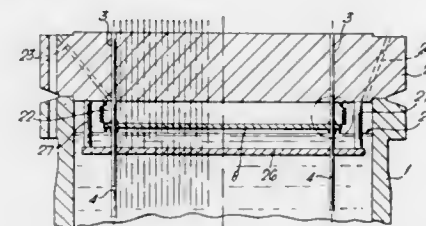
9. In a pressurized water reactor steam generator having a plurality of spaced rows of heat transfer tubes through which primary coolant from the reactor flows, the tubes being of a U-shaped design, with the U-bend portions of the U-shaped

tubes stabilized by antivibration bars, the improvement comprising:

a plurality of expandable antivibration bars for stabilizing the U-bend portions of said U-shaped tubes, said expandable bars having a pair of adjustable rods, formed from a pair of rod sections affixed to a connector, one rod section of each of said pair of rod sections having a plurality of protrusions, each of said protrusions having slidable surfaces thereon, and the other rod section of each of said pair of rod sections having a plurality of indentations, each of said indentations having slidable surfaces thereon complementary to the sliding surfaces of said protrusions, such that the rods are expandable from a first cross-sectional width less than the spacing between two adjacent rows of said tubes, to a second cross-sectional width greater than said first cross-sectional width, whereby said expanded rods are adapted to contact tubes of the two adjacent rows of said tubes.

4,640,343
TUBE-IN-SHELL HEAT EXCHANGERS
Guy L. Dearden, Rochdale, and Owen Hayden, Bolton, both of England, assignors to National Nuclear Corporation Limited, London, England
Filed Sep. 12, 1984, Ser. No. 649,669
Claims priority, application United Kingdom, Sep. 28, 1983, 8325948
Int. Cl.⁴ F28F 11/00
U.S. Cl. 165—70

12 Claims



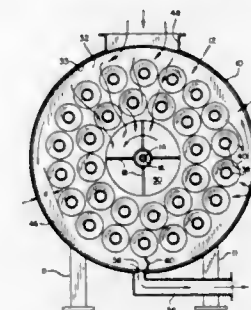
12. In a tube-in-shell heat exchanger having a casing closed at its ends by main tube plates to define a shell through which a first heat exchange fluid is conducted for contact with the exterior of heat exchanger tubes extending through the shell and the main tube plates and sealingly secured to the main tube plates for conducting another heat exchange fluid through the heat exchanger, the improvement comprising at least one secondary tube plate within the shell and adjacent to but spaced from at least one of said main tube plates, each tube extending through the secondary tube plate and being sealingly secured thereto as well as being sealingly secured to the main tube plate, the secondary tube plate being sealed in its spaced position by a bellows sealingly secured to both the main and the secondary tube plates and disposed so as to envelope the said tubes, with the secondary tube plate unsecured to the shell of the heat exchanger, said bellows being of substantially thinner and more flexible construction than either of said main and secondary tube plates.

4,640,344
SELF-CLEANING, ROTARY HEAT EXCHANGER
Milton F. Pravda, Towson, Md., assignor to Manco Corporation, Walla Walla, Wash.
Filed Mar. 4, 1986, Ser. No. 836,064
Int. Cl.⁴ F28D 5/00
U.S. Cl. 165—86

16 Claims

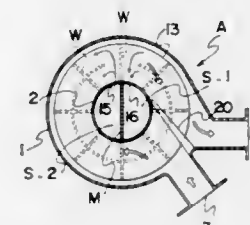
16. In a rotary, Perkins tube heat exchanger, a case located in the fluid flow boundary layer surrounding the rotor, purge port means in the case, and airfoil means extending inwardly

from the case into the fluid flow boundary layer and operative to cause local turbulent fluid flow therein, as well as to divert



4,640,345
ROTATING HEAT EXCHANGER
Jinichi Nishimura, 584-8 Ohaza Ushizu, Ushizu-machi, Ogi-gun, Saga, Japan
Filed Oct. 1, 1984, Ser. No. 656,225
Int. Cl.⁴ F28F 5/02; F28D 11/02
U.S. Cl. 165—92

4 Claims



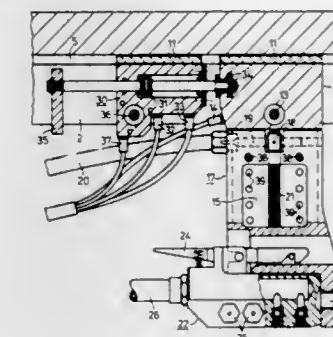
1. A heat exchanger comprising:
 - (a) a hollow drum through which a heating or heated medium can be circulated,
 - (b) means rotably mounting said hollow drum within an outer casing, inlet means for introducing fluid into said outer casing,
 - (c) an outlet means for discharging said fluid after being heated from said outer casing,
 - (d) a plurality of hollow and disc-like projections mounted on the outer peripheral surface of said hollow drum,
 - (e) first partition means dividing the interior of said hollow drum into supply and discharge passages,
 - (f) a supply port for each projection at said peripheral wall of said hollow drum communicating with said supply passage and a discharge port for each projection at said peripheral wall of said hollow drum communicating with said discharge passage, whereby said heating medium supply and discharge passages each communicate with the interior of hollow portions of said projections,
 - (g) second partition means within each of said hollow disc-like projections between a supply port and a discharge port thereof for directing fluid around the interior of said projection from said supply port to said discharge port, said second partition means comprising a solid radial wall disposed between said supply port and said discharge port, said solid radial wall defining a C-shaped fluid passage in said disc-like partition and
 - (h) a plurality of perforated radial walls disposed in said C-shaped fluid passage in a circumferentially spaced-apart manner, said each perforated radial wall having a multiplicity of small communicating apertures through which said fluid passes and circumferential wall disposed within

said C-shaped fluid passage dividing said flow passage into inner and outer flow passages.

4,640,346
TUBE LANE MANIPULATOR FOR THE HIGH-PRESSURE BLOW-DOWN OF HEAT EXCHANGERS

Robert Weber, Uttenreuth, and Josef Forster, Babenreuth, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany
Filed Mar. 25, 1986, Ser. No. 843,713
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3512100
Int. Cl.⁴ F22B 37/52
U.S. Cl. 165—95

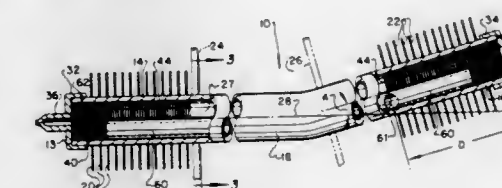
4 Claims



1. Tube lane manipulator for the high-pressure blow-down of heat exchangers with tubes spaced apart by a given tube pitch, comprising a guide rail extended along the tube lane having a vertical leg with holes formed therein at mutual spacings substantially matched to the tube pitch; a stepping mechanism extended along and locked to said guide rail, said stepping mechanism including two stepping mechanism members, means for executing steps of a length substantially matched to the tube pitch, clamping feet in the form of posts, and means for extending said posts into said holes formed in said vertical leg for fixing said stepping mechanism members in a position provided by said steps; a spraying head carrier coupled to one of said stepping mechanism members, a spraying head holder, means for telescopically extending and guiding said spraying head holder along said spraying head carrier in a direction perpendicular to said guide rail, and a spraying head with at least one spraying nozzle disposed on said spraying head holder.

4,640,347
HEAT PIPE
George M. Grover, and Robert H. Chrisman, both of Los Alamos, N. Mex., assignors to Q-dot Corporation, Garland, Tex.
Filed Apr. 16, 1984, Ser. No. 600,478
Int. Cl.⁴ F28D 15/00
U.S. Cl. 165—104.26

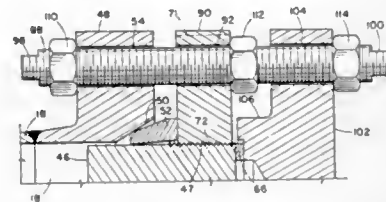
7 Claims



1. A heat transfer device comprising:
a tubular member closed at both ends to form an enclosed chamber for containing a quantity of working fluid operable to be in a liquid state and a vapor state at the working

temperature of the device, said tubular member having a generally horizontally extending evaporator section at a first end and a condenser section at a second end in spaced relationship to the first end, said condenser section forming an angular extension upwardly of the evaporator section, a flow separator means for dividing the tubular member into adjust passage surrounded by a second passage, the first passage being formed a distance of not less than 90% of the inner dimension of the tubular member from the tubular member's first and second closed ends for open communication with the second passage, said first passage having an inner dimension defining the cross section of said flow path at least 45% of the inner dimension of the said tubular member, said first passage operative to pass working fluid in the vapor state from the evaporator section into the second passage at the condenser section for condensation to the liquid state and return through the second passage to the evaporator section whereby during operation of said heat pipe heat is transferred between said sections.

4,640,348
DUAL PURPOSE CLOSURE FOR HEAT EXCHANGERS
 W. F. Roberts, 4731 S. Columbia Pl., Tulsa, Okla. 74105
 Division of Ser. No. 641,865, Aug. 17, 1984, Pat. No. 4,564,065, which is a continuation-in-part of Ser. No. 551,573, Nov. 14, 1983, Pat. No. 4,570,701. This application Oct. 25, 1985, Ser. No. 792,278
 Int. Cl.⁴ F28F 9/02
 U.S. Cl. 165—158 **4 Claims**



1. An end closure for a heat exchanger of the type having a shell side enclosure and at least one tube within said shell, the closure comprising a shell flange attached to the end of said shell, a tube sheet encompassing said tube and situated within said shell adjacent said end, said tube sheet having peripheral threads, a tubular connection and a tube flange for said tubular connection, said tube flange in facing alignment with said shell flange, a thrust flange positionable between said shell flange and said tube flange, said thrust flange surrounding said tube sheet and including inner peripheral threads for interconnection with said tube sheet threads, a plurality of axially aligned openings in said shell, tube and thrust flanges to receive connection bolts or studs to assemble said closure, an enlarged means on a plurality of said bolts or studs abutable against said thrust flange, means to seal between said tube sheet and said shell flange, and means to seal between said tube flange and said tube sheet.

4,640,349
FLEXIBLE SUCKER ROD UNIT
 Loy F. Allen, Odessa, Tex., assignor to Allen and Bennett, Inc., Odessa, Tex.
 Filed Jun. 14, 1985, Ser. No. 745,285
 Int. Cl.⁴ E21B 17/10
 U.S. Cl. 166—68.5 **5 Claims**

1. In a deep well having:
 a. an eduction tube with an inside diameter extending from the surface of the earth to far below the surface,

- b. a reciprocating pump housing attached to the bottom of the eduction tube,
- c. pump jack means at the surface for reciprocating the pump,
- d. a light sucker rod connected to the pump jack means and extending into the eduction tube, and
- e. a series of heavy sinker bars having a large cross sectional area in the eduction tube connecting the light sucker rod to the pump;
- f. an improved integral metal flexible rod unit interconnecting the sinker bars comprising in combination with the above;
- g. a coupling on each end of the integral metal flexible rod unit connecting the flexible rod unit to the contiguous sinker bar,



- h. a segment which is flexible as compared to the sinker bars connecting one of the couplings to
- i. an integral metal bearing adjacent to the other of the couplings, the bearing having
- j. a cylindrical surface with
- k. a diameter
- i. only slightly smaller than the inside diameter of the eduction tube thereby forming a sliding fit therewith, and
- ii. greater than the diameter of any other portion of the flexible rod unit and the sinker bar, and
- l. grooves in the cylindrical surface for the passage of fluid between in the eduction tube around the bearing.

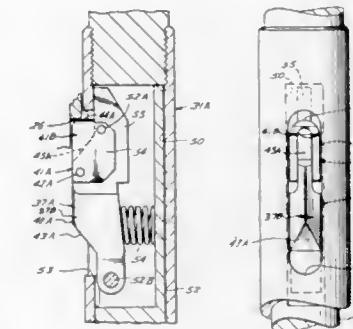
4,640,350
KICKOVER TOOL
 Neil H. Akkerman, Houston, and John P. Hare, Pearland, both of Tex., assignors to AVA International Corporation, Houston, Tex.

Filed Feb. 11, 1985, Ser. No. 700,821
 Int. Cl.⁴ E21B 23/03

U.S. Cl. 166—117.5 **3 Claims**

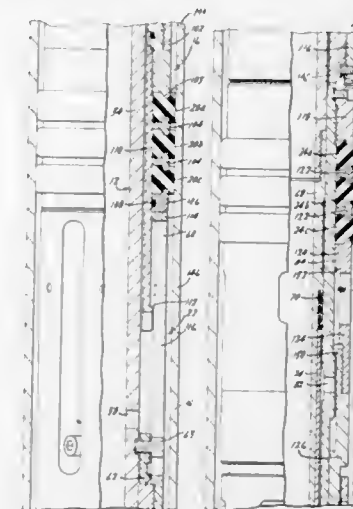
1. For use in running or pulling well tools respectively into or from a side pocket to one side of a bore through a mandrel of a well string, wherein there is a generally vertical slot in the bore of the mandrel which has a shoulder at its upper end and which has upwardly converging guide surfaces on its open lower end; a kickover tool comprising a housing connectable to a wire line for raising and lowering therewith closely through the upper end of the bore, an arm pivotally connected to the housing and having means on one end from which the well tool may be suspended, a plunger mounted in the housing for vertical reciprocation between an upper position in which the end of the arm is generally beneath housing to permit the kickover tool to move through the upper end of the mandrel bore, and a lower position in which the arm is tilted to dispose its end to one side of the housing, and means guidably movable into the

slot for rotationally orienting the end of the tilted arm into a position above the pocket, including a trigger mounted on the plunger for movement between an outer position with respect to the housing in which a portion of the trigger protrudes from the housing and an inner position with respect thereto in which the orienting means may move through the upper end of the mandrel bore, means yieldably urging the trigger toward its outer position, said trigger having a surface on the uppermost end of the protruding portion, and a key connected to the trigger to dispose its upper end directly above the said trigger surface, when the trigger is in its outer position, and thus to engage with the shoulder of the slot as the housing is raised to lift the orienting means into the slot, whereby the housing may



be raised further so as to lower the plunger and locate the end of the tilted arm above the pocket, and then lowered to permit said end of the arm to be connected to or disconnected from a well tool in the pocket, said connection of the key to the trigger being releasable when the housing is again raised to lift the upper end of the key into engagement with the shoulder of the slot and the housing is jarred upwardly, to permit the key to move to a lower position in which a downwardly and outwardly tapered surface on one of said trigger and key is slidable over the shoulder of the slot, as the housing is further raised, to force the orienting means into its inner position and thus permit it to be lifted through the upper end of the mandrel bore with the housing.

4,640,351
SEALING PACKER
 Ted G. Clifton, Tulsa, and Robert L. Brookley, Jerks, both of Okla., assignors to Arrow Oil Tools, Inc., Tulsa, Okla.
 Filed Oct. 2, 1985, Ser. No. 783,207
 Int. Cl.⁴ E21B 33/124
 U.S. Cl. 166—127 **5 Claims**



1. A sealing packer for a well casing characterized by: a tubular inner sleeve with a passage therethrough;

an upper outer sleeve assembly mounted about said inner sleeve and including:
 a resiliently deformable upper packing element;
 seat means for seating said upper packing element;
 hold down means for engaging a well casing and retaining said outer sleeve assembly stationary against upwardly directed well pressures;
 a lower outer sleeve assembly slidably mounted about said inner sleeve and including:
 a resiliently deformable lower packing element;
 first seat means for seating said lower packing element;
 abutment means for compressing said upper packing element between said abutment means and said seat of said upper outer sleeve assembly;
 said upper packing element constructed such that when compressed it engages said well casing,
 setting means for fixing a second seat means of said lower outer sleeve assembly relative to said well casing;
 said lower packing element being deformable between said first and second seat means of said lower outer sleeve assembly to engage said well casing;
 piston means normally adjacent said abutment means and separable therefrom, said piston means responsive to fluid pressure in said passage and in said well casing between said lower and upper packing elements when said packing elements deformably engage said well casing to separate from said abutment means and further deform said upper packing element; and
 said tubular inner sleeve having a port for allowing fluid communication from said passage to a section of said well casing interposed between said upper and lower packing elements.

4,640,352
IN-SITU STEAM DRIVE OIL RECOVERY PROCESS
 Peter Vanmeurs, Monroe H. Waxman, and Harold J. Vinegar, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 477,570, Mar. 21, 1983, abandoned, and a continuation-in-part of Ser. No. 609,605, May 14, 1984, abandoned. This application Sep. 24, 1985, Ser. No. 779,761

Int. Cl.⁴ E21B 36/04, 43/24, 43/30
 U.S. Cl. 166—245 **20 Claims**



1. A process for heating a subterranean oil and water-containing reservoir formation, comprising:
 completing at least one each of heat-injecting and fluid-producing wells into a treatment interval of said formation

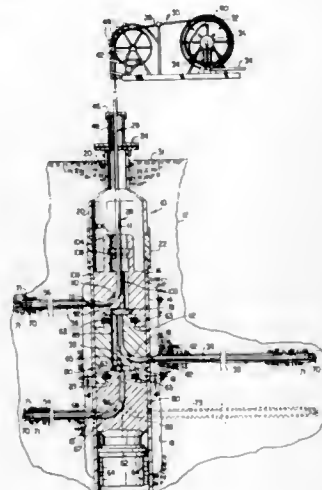
which is at least about 100 feet thick, contains both oil and water, and is both undesirably impermeable and non-productive in response to injections of oil recovery fluids; arranging said wells to have boreholes which, substantially throughout the treatment interval, are substantially parallel and are separated by substantially equal distances of at least about 20 feet;

in each heat-injecting well, substantially throughout the treatment interval, sealing the face of the reservoir formation with a solid material which is relatively heat-conductive and substantially fluid impermeable;

in each fluid-producing well, substantially throughout the treatment interval, establishing fluid communication between the wellbore and the reservoir formation and arranging the well for producing fluid from the reservoir formation; and

heating the interior of each heat-injecting well, at least substantially throughout the treatment interval, at a rate or rates capable of (a) increasing the temperature within the borehole interior to at least about 600° C. and (b) maintaining a borehole interior temperature of at least about 600° C. without causing it to become high enough to thermally damage equipment within the borehole while heat is being transmitted away from the borehole at a rate not significantly faster than that permitted by the thermal conductivity of the reservoir formation.

4,640,353
ELECTRODE WELL AND METHOD OF COMPLETION
 Frank J. Schuh, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
 Filed Mar. 21, 1986, Ser. No. 842,516
 Int. Cl.⁴ E21B 7/08, 7/18, 17/20, 36/04
 U.S. Cl. 166—248 21 Claims



1. A method of providing an electrode well for electrical resistance heating of a subterranean formation comprising the steps of:

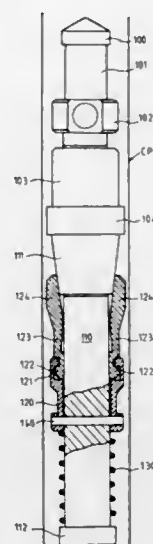
drilling a well into said formation to form a wellbore;

inserting at least one electrode member comprising a length of metal electrode tube into said formation by extending said electrode tube from means located at the surface of said formation through said well and diverting said electrode tube generally radially outwardly with respect to the central longitudinal axis of said well at a predetermined position in said formation by axially moving said electrode tube into said formation, the penetration of said electrode tube into said formation being enhanced by hydraulic jetting action, including the pumping of fluid through said electrode tube to the distal end thereof, during said insertion;

anchoring said electrode tube in a portion of said well adjacent said formation; and

connecting said electrode tube to a source of electrical energy for resistance heating of said formation through electrically conductive contact of said electrode tube with said formation.

4,640,354
METHOD FOR ACTUATING A TOOL IN A WELL AT A GIVEN DEPTH AND TOOL ALLOWING THE METHOD TO BE IMPLEMENTED
 Gérard Boisson, Melun, France, assignor to Schlumberger Technology Corporation, New York, N.Y.
 Filed Dec. 5, 1984, Ser. No. 678,444
 Claims priority, application France, Dec. 8, 1983, 83 19701
 Int. Cl.⁴ E21B 23/00, 33/132
 U.S. Cl. 166—250 11 Claims



1. A method for actuating a tool in a well at a chosen depth, comprising the following steps:

determining the temperature of the well at the chosen depth;

equipping the tool with a central element comprising a material capable of melting at a temperature near the temperature thus determined;

lowering the tool into the well to the chosen depth; and

maintaining the tool in the well at the chosen depth until actuation of the tool by the melting of the control element material.

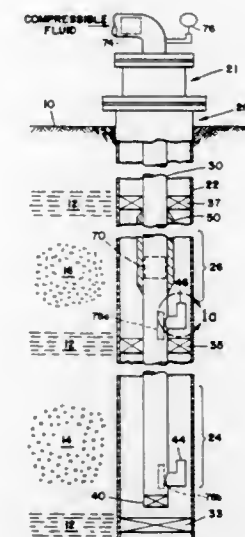
6. A downhole tool designed to be actuated in response to the temperature of a well at a chosen well depth, comprising:

a body member adapted to be lowered into a well at the end of a cable;

energy storage means associated with said body member for storing energy in said tool prior to lowering said body member into said well; and

control means comprising a material that melts at a temperature near the temperature of said well at said chosen depth and cooperable with said energy storage means for releasing said stored energy to cause actuation of said tool.

4,640,355
LIMITED ENTRY METHOD FOR MULTIPLE ZONE, COMPRESSIBLE FLUID INJECTION
 Ki C. Hong, Orange; Suzanne Griston, San Dimas, and Joseph W. Ault, Moraga, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
 Filed Mar. 26, 1985, Ser. No. 716,292
 Int. Cl.⁴ E21B 36/00, 43/12, 43/18, 43/24
 U.S. Cl. 166—269 25 Claims



1. A method for injecting compressible thermal fluid at a constant injection rate into two or more producing zones of a formation through a single tubing string in an injection well comprising the steps of:

installing casing in said injection well having perforations at each of said producing zones;

installing a single tubing string in said injection well;

providing outlets in said tubing string at each of said producing zones;

packing off said single tubing string substantially adjacent to each of said producing zones;

insulating the single tubing string through the packed off producing zones to minimize heat transfer between fluid in the tubing string and fluid outside the tubing string; and

injecting compressible thermal fluid down said single tubing string at an injection pressure which will produce sonic flow of compressible fluid through said outlets of said tubing string.

6. A method for injecting compressible fluid at a constant injection rate into one or more producing zones of a formation through a single tubing string in an injection well comprising the steps of:

installing a single tubing string in said injection well;

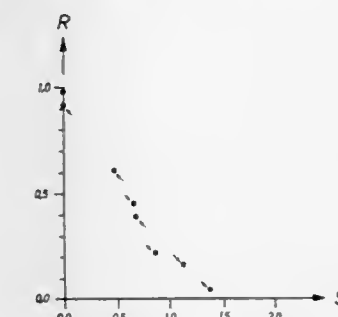
providing outlets in said tubing string at each of said producing zones;

packing off said single tubing string substantially adjacent to each of said producing zones;

injecting compressible fluid down said single tubing string at an injection pressure which will produce sonic flow of compressible fluid through said outlets of said tubing string; and

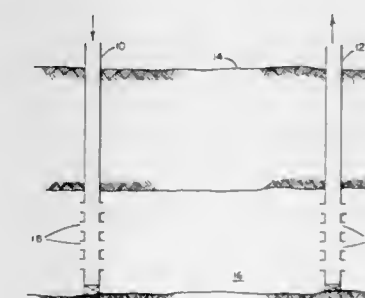
changing the size of said outlets thereby adjusting the constant injection rate.

4,640,356
PROCESS FOR THE ENHANCED OIL RECOVERY OF UNDERGROUND MINERAL OIL DEPOSITS
 Zoltan Heinemann, Leoben, and Heinz König, Linz, both of Fed. Rep. of Germany, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria
 Filed Feb. 12, 1985, Ser. No. 700,630
 Claims priority, application Fed. Rep. of Germany, Feb. 14, 1984, 3405201
 Int. Cl.⁴ E21B 33/138, 43/24
 U.S. Cl. 166—272 4 Claims



1. A process for the enhanced oil recovery of underground mineral oil deposits by selective, reversible reduction of the permeability using hot water flooding at an injection temperature of 150° to 250° C. and/or steam flooding at an injection temperature of 200° to 350° C., wherein hot water and/or steam is injected, at least at times, into the deposit via one or more injection boreholes, as a flooding medium which contains an active amount of one or more substances scarcely oil-soluble at the temperature of the deposit and a water solubility of below 3 kg/m³ water at 20° C. but well soluble or volatile in hot water and/or steam, the melting point of which lies above the temperature of the deposit and which moves with the hot water or the steam through the deposit and which, by precipitation as a solid in an amount of up to 4.3% of the pore volume, temporarily and reversibly constricts the pores of the deposit until flooding medium flowing on after dissolves or evaporates the solid again, which has the overall effect of an areal and vertical equalization of the temperature front.

4,640,357
MULTISTEP METHOD FOR VISCOUS HYDROCARBON RECOVERY
 Lloyd G. Jones, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
 Filed Sep. 11, 1985, Ser. No. 774,631
 Int. Cl.⁴ E21B 43/16
 U.S. Cl. 166—273 7 Claims



1. A method for recovering hydrocarbons from a fractured or stratified subsurface formation penetrated by at least one injection well and at least one production well, comprising the steps of:

- (a) injecting a first flooding agent having an organic thickener into said formation only in the near vicinity of the injection well to form a filtercake on the walls of the fractures or permeable streaks of said formation,
- (b) injecting a second flooding agent having an inorganic thickener deep into said formation to fill the thief zones provided by the fractures or permeable streaks between the injection and production wells,
- (c) injecting a first flushing agent into said formation only in the near vicinity of the injection well to clear the fractures or permeable streaks in the near vicinity of the injection well of said inorganic thickener,
- (d) injecting a second flushing agent having a breaker material into said formation only in the near vicinity of the injection well to remove the filtercake from the walls of the fractures or permeable streaks only in the near vicinity of the injection well,
- (e) injecting a third flooding agent into said formation to flood said formation through the open pore space made available by the removal of the filtercake from the walls of the fractures or permeable streaks in the near vicinity of the injection well, and
- (f) recovering hydrocarbons from the formation by way of the production well.

4,640,358
OIL RECOVERY PROCESS EMPLOYING A COMPLEXED POLYSACCHARIDE
 Krishnaswamy Sampath, Carrollton, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
 Division of Ser. No. 593,464, Mar. 26, 1984, abandoned. This application May 17, 1985, Ser. No. 735,002
 Int. Cl.⁴ E21B 43/22

U.S. Cl. 166—274

14 Claims

1. In a method wherein a fluid medium is introduced into a borehole in the earth and into contact with a subterranean formation penetrated by said borehole, the improvement wherein at least a portion of said fluid medium comprises an aqueous gel and wherein said gel comprises water having incorporated therein:

a water thickening amount of a member selected from the group consisting of titanium ion and chromium ion complex of a fungal polysaccharide, having a linear chain of anhydroglucose units linked beta 1-3 with 30-35% of the linear chain units and bearing single appended anhydroglucose units linked beta 1-6, said complex being prepared by forming a water solution of the polysaccharide and adding thereto a water soluble reducing agent and a water soluble member selected from the group consisting of titanium compounds and chromium dichloride to form said complex.

4,640,359
BITUMEN PRODUCTION THROUGH A HORIZONTAL WELL
 Declan B. Livesey, Calgary, and Petre Toma, Edmonton, both of Canada, assignors to Texaco Canada Resources Ltd., Calgary, Canada

Filed Nov. 12, 1985, Ser. No. 797,354

Int. Cl.⁴ E21B 43/24, 36/00

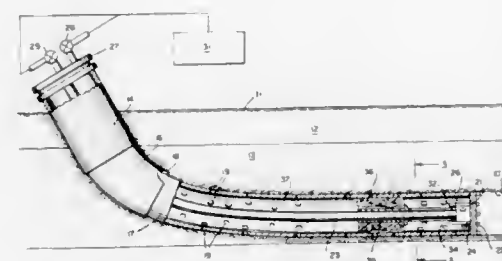
U.S. Cl. 166—276

10 Claims

1. Method for thermal stimulation and production of a viscous hydrocarbon from a reservoir having a productive layer which retains the hydrocarbon until the latter is made flowable by contact with a hot stimulating medium, which method includes the steps of:

forming a borehole having a substantially horizontal segment which transverse the productive layer, registering a well completion in said borehole which includes; an elongated perforate well liner, a fluid conduit extending through said liner and having a discharge end, and a well

head at the liner upper end communicated with said fluid conduit, positioning a variable length flow diverter in said liner adjacent to the fluid conduit discharge end, whereby to define a quasi-barrier in said liner which is pervious to passage of the hot stimulating medium, and which divides the liner into injection and production segments respectively, heating the productive layer about the substantially horizontal segment of said elongated liner, introducing a pressurized stream of the hot stimulant through said fluid conduit and into the liner injection segment, and producing hydrocarbon emulsion which flows into the liner production segment, progressively extending the length of the variable length flow diverter to maintain the volume of the liner injection segment, and to concurrently decrease the volume of the liner production segment.



6. The combination with a well completion for a borehole formed in a generally horizontal disposition into a formation having a hydrocarbon productive layer comprised at least in part of sand particles which retain the said hydrocarbon in viscous form of;

a liner registered in said generally horizontal borehole having a perforated wall, and a well head, and a remote end, a fluid carrying conduit in said liner communicated to a source of a hot stimulating fluid and with said well head, and having a discharge opening adjacent to the liner remote end for conducting a hot stimulating fluid flow to said liner remote end, a variable length flow diverter bed positioned on said fluid carrying conduit to define a quasi-barrier to passage of said fluid therethrough, whereby to permit a limited flow of stimulating fluid into said barrier while diverting a major portion thereof through the liner perforated wall and into the hydrocarbon productive layer.

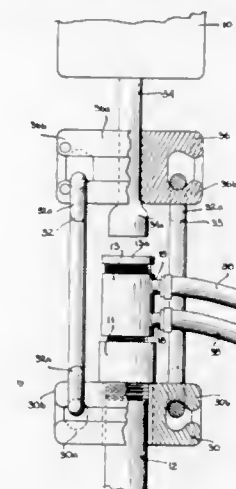
4,640,360
SONIC CEMENTING
 Albert G. Bodine, and James N. Gregory, both of 7877 Woodley Ave., Van Nuys, Calif. 91406
 Filed Oct. 21, 1985, Ser. No. 789,447
 Int. Cl.⁴ E21B 33/14

U.S. Cl. 166—286

4 Claims

1. In a device for forming a cement annulus around the outer wall of a well casing, said device including means for generating sonic energy and a well casing to which said sonic energy is to be fed to effect a sealing bond between the cement and the casing, the improvement comprising means for coupling the sonic energy from a sonic generator to the casing comprising inlet means attached to the casing for feeding cement and other material into the casing, first holder means connected to the sonic energy generating means, second holder means connected to the casing at a point thereon below the inlet means, and

link means for interconnecting said first and second holder means such that the sonic energy is fed directly from the



oscillator through said holder and link means to the casing and bypassing the inlet means.

4,640,361
THERMALLY RESPONSIVE AQUEOUS SILICATE MIXTURES AND USE THEREOF
 William H. Smith, Walters, and Edward F. Vinson, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 13, 1985, Ser. No. 808,576

Int. Cl.⁴ E21B 33/138

U.S. Cl. 166—288

20 Claims

1. A method of plugging or sealing a zone in a subterranean formation comprising:

- (a) contacting said zone with an aqueous silicate composition consisting essentially of
 - (i) an aqueous solution containing an alkali metal silicate; and,
 - (ii) a thermally responsive gelation activator selected from the group consisting of lactose, dextrose, fructose, galactose, mannose, mantose, xylose and mixtures thereof; and
- (b) activating said gelation activator in response to a thermal change in said composition within said formation whereby said silicate composition is caused to form a gel in said zone.

4,640,362
WELL PENETRATION APPARATUS AND METHOD
 Herman J. Schellstede, 342 Duperier Ave., New Iberia, La. 70560

Filed Apr. 9, 1985, Ser. No. 721,848

Int. Cl.⁴ E21B 43/112, 7/18

U.S. Cl. 166—298

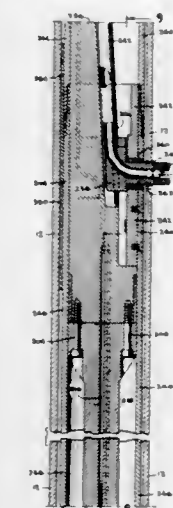
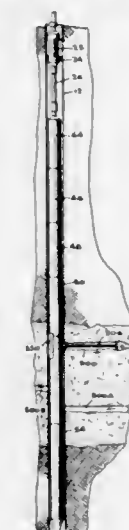
50 Claims

1. A well penetrator for use in a well having a casing, said penetrator comprising:

- (a) an elongated housing having an upper end and a lower end, said upper end being connectable to surface mounted supporting means and said housing being dimensioned and shaped so as to be capable of being moved axially in the casing of a well;
- (b) an outwardly movable punch member having an inner end and an outer end, said outer end including casing cutting means for cutting an opening in a casing when moved forcefully against such casing;
- (c) guide means supporting said punch member for movement relative to said elongated housing between a retracted position in which said outer end of said punch member is positioned substantially within the confines of

said elongated housing and an extended position in which said outer end of said punch member is positioned outwardly from said carrier body;

- (d) said elongated housing and said punch member being dimensioned and shaped so that said punch means can be positioned within a well casing for movement therein when said punch means is in its retracted position but wherein said outer end of said punch means extends outwardly beyond the outer surface of said casing when said punch member is in its extended position;
- (e) power actuated punch drive means for moving said



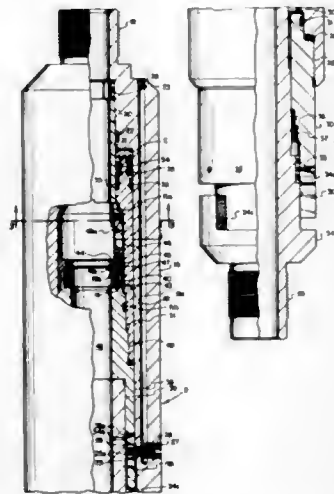
punch member between its retracted and extended positions; and

- (f) high pressure liquid jet providing means including a source of high pressure working fluid connecting to nozzle means mounted for movement in said punch member between a retracted position in which said nozzle means is positioned internally of said punch member and an extended position in which said nozzle means is positioned externally of said punch member for discharging a high pressure jet outwardly beyond the outer end of said punch member for cutting and removing the surrounding earth formation.

4,640,363
BLEEDOFF TOOL FOR WELL TEST SYSTEM
 Frank H. Taylor, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 12, 1985, Ser. No. 764,391
 Int. Cl.⁴ E21B 34/12
 U.S. Cl. 166—317

10 Claims



1. A bleedoff tool, connectable in pipe and having a longitudinal flow passage comprising:

- (a) a piston;
- (b) a body, including upper and lower bodies rotatably mounted and sealed around and releasably pinned to said piston;
- (c) means for limiting body rotation relative to said piston to less than one turn;
- (d) pressure balanced areas on the piston for preventing extension of said piston from said body;
- (e) bearing means for minimizing relative rotational friction between the body and piston;
- (f) closed flow passage means, openable on relative rotation between the body and piston to permit flow from the longitudinal flow passage to exterior of the tool;
- (g) valve means in the longitudinal flow passage positioned open to permit two-way flow therethrough, said valve means releasable on a relative rotation between the body and piston to close and permit upward flow through said flow passage;
- (h) means positioning said longitudinal flow passage valve means open; and
- (i) friction means for transmitting torque through the tool.

4,640,364
BALLAST CLEANING MACHINE WITH PRELIMINARY SIFTING CONVEYOR

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

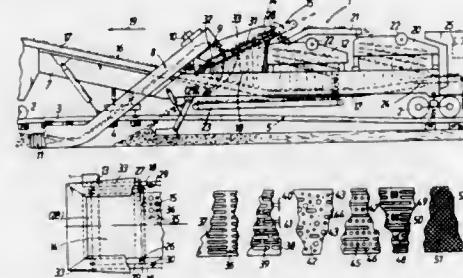
Filed Sep. 17, 1984, Ser. No. 651,253
 Claims priority, application Austria, Nov. 4, 1983, 3904/83
 The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.

Int. Cl.⁴ E01B 27/04, 27/02; A01D 17/04; B07B 9/00
 U.S. Cl. 171—16

14 Claims

1. A ballast cleaning machine capable of receiving ballast including a waste component from the track, cleaning the received ballast and conveying the ballast, which comprises a machine frame, a ballast excavating and conveying chain mounted on the machine frame, the chain having a discharge end for the excavated and conveyed ballast, ballast screening apparatus arranged to receive the ballast from the discharge end of the chain and to separate the waste component from the clean ballast, a conveyor band system mounted below the screening apparatus for receiving the clean ballast component

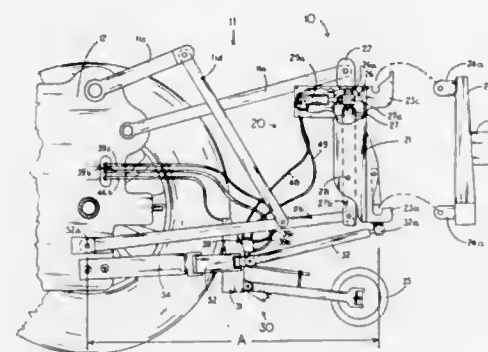
and redistributing it to the track, and an endless conveyor band mounted below the screening apparatus for receiving and conveying the waste component, wherein the improvement comprises an endless sifting conveyor band mounted between the discharge end of the chain and the screening apparatus, the sifting conveyor band having an upper stringer receiving the excavated and conveyed ballast from the discharge end and defining openings permitting a portion of the waste component



of said ballast to pass through the sifting conveyor band, the sifting conveyor band being mounted directly above the endless conveyor band whereby the endless conveyor band receives the waste component from the screening apparatus and the portion of the waste component passing through the sifting conveyor band, and a drive connected to the sifting conveyor band for driving the band whereby partially cleaned ballast is conveyed by the sifting conveyor band from the discharge end of the chain to the screening apparatus.

4,640,365
ROW FOLLOWING GUIDANCE DEVICE FOR A TRACTOR-DRAWN ROW CROP IMPLEMENT
 Eugene H. Schmidt, P.O. Box 821, Lexington, Nebr. 68850
 Filed Apr. 24, 1985, Ser. No. 726,802
 Int. Cl.⁴ A01B 69/06
 U.S. Cl. 172—26

19 Claims



17. A row following guidance device for a row crop implement drawn by a tractor with a hitch, comprising:

- an "L"-shaped portion of an inverted "U"-shaped support means, having means for rigid attachment to the crop implement at one end of one leg of which "L"-shaped portion which leg extends horizontally at a right angle to the direction of travel, said "L"-shaped portion further having a leg depending from said one leg;
- an extending support means aligned with the direction of travel and rigidly attached to said "L"-shaped portion at the juncture of its two legs, said support means extending outwardly from said "L"-shaped portion to a free end thereof;
- a lever connected intermediate its ends, for pivotal rotation about a horizontal axis oriented transverse to the direction

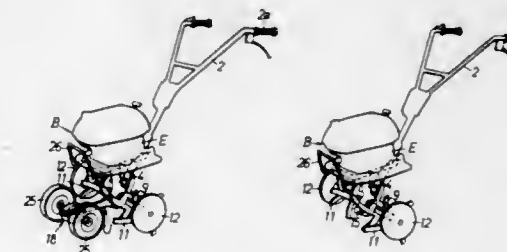
of travel, to a point on the depending leg of said "L"-shaped portion near the lower end thereof, said lever having means for pivotal connection at its lower end to the trailing end of an arm of the tractor hitch and being pivotally connected at its upper end to the end of a horizontal tie rod which rotates about a vertical pin affixed to said "L"-shaped portion at a point thereon aligned with said means for attachment to the crop implement;

a hydraulic cylinder means pivotally connected at one end to said extending support means at a point thereon near its free end and pivotally connected at its other end to the horizontal tie rod near its connection to said lever; and

means for detecting lateral movement of the crop implement with respect to the crop rows and transmitting proportionate signals to a means for controlling said hydraulic cylinder, whereby the crop implement will be guided along a crop row independent of the relative lateral position of the tractor.

4,640,366
CULTIVATOR
 Gunji Saito, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed May 14, 1984, Ser. No. 609,953
 Claims priority, application Japan, May 13, 1983, 58-83590
 Int. Cl.⁴ A01B 33/02, 33/08
 U.S. Cl. 172—42

13 Claims

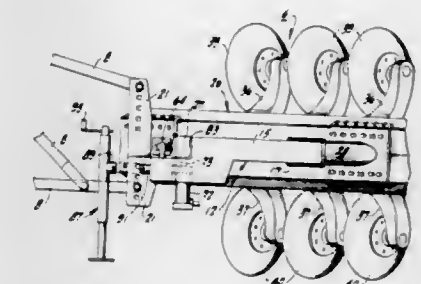


1. A rototiller-cultivator apparatus comprising a body portion, an engine mounted in said body portion, a transmission housing mounted on a bottom of said engine and extending vertically downward from said engine, a transmission shaft extending vertically downward from said engine through said transmission housing, said transmission shaft being coupled at its upper end to a crankshaft of said engine and mounted adjacent its lower end for rotation about a substantially vertical axis in said transmission housing, a cultivator tine shaft extending horizontally and laterally through the lower portion of said transmission housing, intermeshing gear means mounted on the lower end of said transmission shaft and on said cultivator tine shaft for driving said cultivator tine shaft when said transmission shaft is driven by said engine, cultivator tines mounted on opposite ends of said cultivator tine shaft for rotation with said cultivator tine shaft when said cultivator tine shaft is driven by said transmission shaft, a power take-off shaft mounted in the lower portion of said transmission housing transversely to said cultivator tine shaft and extending forwardly of said transmission housing with an output end of the power take-off shaft being protruded out of the housing, gear means mounted on said power take-off shaft and intermeshing with said gear means mounted on the lower end of said transmission shaft for driving said power take-off shaft when said transmission shaft is driven by said engine, and a wheel unit for mounting on said lower portion of said transmission housing for direct interconnection with the output end of said power take-off shaft when said apparatus is used as a cultivator, said wheel unit including a casing mounted on said lower portion of said transmission housing over the output end of said power take-off shaft and extending forwardly therefrom transversely to said cultivator tine shaft, a wheel drive transmission shaft having an input end and an output end and coupled at the input end to said power take-off shaft and extending forwardly through said casing, a

wheel axle extending horizontally and laterally through a forward portion of said casing adjacent the output end of said wheel drive transmission shaft, running wheels mounted on opposite ends of said axle for rotation therewith and intermeshing gear means mounted on the output end of said wheel drive transmission shaft and said axle for driving said axle and said wheels when said transmission shaft is driven by said engine and drives said cultivator tine shaft and tines, said power take-off shaft and said wheel drive transmission shaft, wherein when said wheel unit is detached from the transmission housing, said apparatus is used as a rototiller.

4,640,367
ROLL-OVER DISC PLOW
 Ventura J. Lawrence; Charles G. Metcalf, both of Stockton, and Lawrence H. Silva, Manteca, all of Calif., assignors to Tractor Plow Co., Inc., Stockton, Calif.
 Filed Nov. 1, 1985, Ser. No. 793,829
 Int. Cl.⁴ A01B 3/42
 U.S. Cl. 172—225

6 Claims



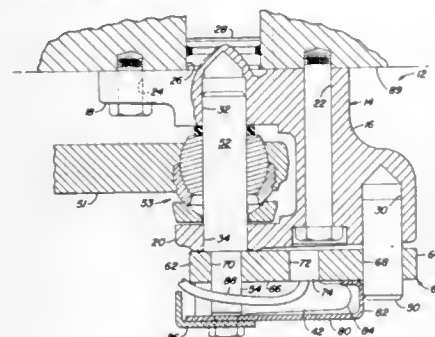
1. A roll-over disc plow comprising a base frame symmetrical in plan about a longitudinal axis and including a transverse leading beam and side beams merging with the ends of said leading beam and having a convergence rearwardly, a coaxial forward journal in said leading beam, a coaxial rearward journal in said convergence, a plow frame including a plow beam extending diagonally in plan across said axis and including a cross beam adapted to flex rearwardly under load, means for mounting said plow frame in said forward journal and in said rearward journal, a plurality of disc plows arranged along and mounted on said plow beam, means interconnecting said plow frame and said main frame for rotating said plow frame about said axis and with respect to said main frame to lie in either of two extreme positions, said side beams each including a forward upper surface and a rearward upper surface vertically offset upwardly from said forward upper surface, said side beams each further including an upstanding step, each of said upstanding steps comprising a substantially vertical surface interconnecting said forward upper surface with said rearward upper surface, said upstanding step being positioned relative to said cross beam so as to be adjacent with said cross beam when said cross beam is unloaded and to be abutted by said cross beam when said cross beam flexes under plowing load.

4,640,368
DRAFT SENSOR INCLUDING STRAIN SENSOR COUPLED TO LOAD SHAP
 Carl E. Kittle, Cedar Falls; Arthur J. LaFave, and David L. Olson, both of Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.
 Filed Feb. 27, 1986, Ser. No. 834,002
 Int. Cl.⁴ A01B 63/112
 U.S. Cl. 172—430

5 Claims

1. A draft force sensor for sensing generally fore-and-art loads comprising:
 a bracket comprising a base fixed to a frame of a vehicle and a pair of legs extending from the base, the legs being

spaced apart in a direction which is transverse to the fore-and-aft direction;
 a shaft supported by and extending between the legs for movement relative thereto;
 means for coupling a generally fore-and-aft extending draft link to the shaft;



a generally fore-and-aft extending load strap having one end supported by the bracket and having another end rigidly fixed to the shaft so that fore-and-aft loads on the shaft create fore-and-aft strain in the load strap, the bracket preventing strain in the strap due to bending of the shaft and vertical loads on the shaft; and
 a strain sensor coupled to the load strap for generating a signal representing strain in the load strap.

4,640,369

SLIDE BAR MINING BOLTING MACHINE

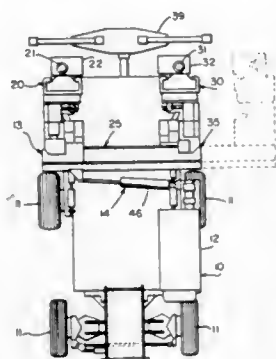
Wynand M. Goyarts, Bristol, Tenn., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 7, 1984, Ser. No. 669,235

Int. Cl.⁴ E21C 11/02; E21D 20/00

U.S. Cl. 173—42

5 Claims



1. A mining bolter machine comprising:
 a main body;
 a main drill support structure connected to the main body and transversely movable relative to the main body by a selected amount to either side of the main body;
 a first drilling mechanism attached to the main support structure and transversely movable relative to the main support structure by a selected amount to one side of and beyond the main structure;
 a second drilling mechanism attached to the main support structure and transversely movable relative to the main support structure by a selected amount to the other side of and beyond the main structure;
 a means for transversely moving the first drilling mechanism relative to the main support structure to selected positions; and
 a means for transversely moving the second drilling mechanism relative to the main support structure to selected positions.

nism relative to the main support structure to selected positions.

4,640,370

PERFORATING GUN FOR INITIATION OF SHOOTING FROM BOTTOM TO TOP

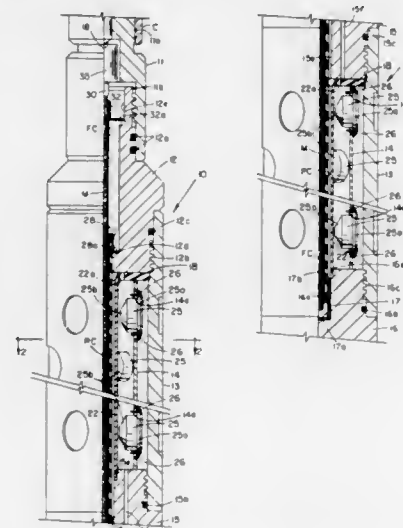
Rodney J. Wetzel, Woodlands, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Jun. 11, 1985, Ser. No. 743,429

Int. Cl.⁴ E21B 43/1185

U.S. Cl. 175—4.6

8 Claims



1. A perforating gun for an elongated production formation of a subterranean well, comprising, a plurality of shaped charge containers, each container having a primer containing end; carrier means for mounting said containers in vertically and angularly spaced relation with all said primer containing ends disposed substantially the same radial distance from the well axis; a fusible guide tube coaxially located in the well and defining a continuous axial passage adjacent said primer ends of said shaped charge containers; a continuous length of high detonating energy primer cord extending through said continuous axial passage; length of low detonating energy fusible cord also extending through said continuous axial passage, a firing mechanism at the top of said fusible guide tube for detonating said fusible cord, and a booster charge operatively connected to the bottom ends of said primer cord and said fusible cord, whereby said primer cord is detonated from the bottom up, thereby melting said fusible guide tube and firing said shaped charges in succession from the lowermost one upwardly.

4,640,371

PROCESS AND TOOL FOR BORING CAVITY HOLES, MORE ESPECIALLY IN CONCRETE PLASTER OR SIMILAR WALLS

Paul Moraly, Rosny Sous Bois, France, assignor to Sarkis S.A., Chexbres, Switzerland

Filed Jun. 14, 1985, Ser. No. 744,607

Claims priority, application France, Aug. 16, 1984, 84 12859; Dec. 31, 1984, 84 20102

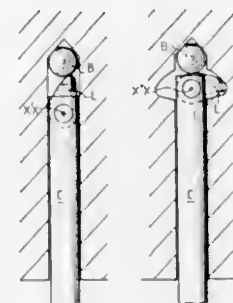
Int. Cl.⁴ E21B 10/32

U.S. Cl. 175—61

13 Claims

1. An expansion bit, comprising at least one blade movable angularly about a transverse axis disposed at one end of an elongate rotatable shank and a further member which has a first smooth shaped camming surface portion having a symmetry of revolution about the shank axis, said blade having a second shaped smooth camming surface portion adapted for

engagement with said first shaped surface portion, said blade further having a cutting surface portion oppositely disposed with respect to the second smooth surface portion, the first and second mutually engaging surface portions being so shaped and arranged that the cutting surface portion of the blade, passes, for a short axial travel distance of the shank within a



hole in the direction of the bottom of said hole and beyond the point where the further member abuts against the said bottom from a substantially axial orientation to a substantially transverse orientation in which the cutting surface portion is nearer to the opposite end of the shank than the second smooth surface portion.

4,640,372

DIVERTER INCLUDING APPARATUS FOR BREAKING UP LARGE PIECES OF FORMATION CARRIED TO THE SURFACE BY THE DRILLING MUD

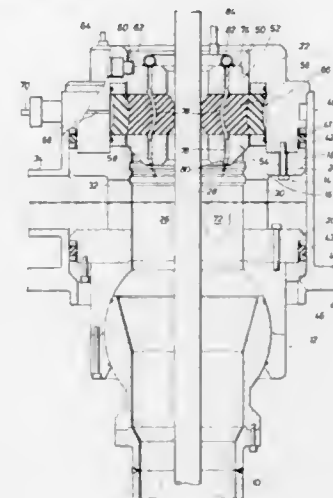
Haggai D. Davis, 1910 McDermott Dr., Morgan City, La. 70380

Filed Nov. 25, 1985, Ser. No. 801,294

Int. Cl.⁴ E21B 21/06

U.S. Cl. 175—208

3 Claims



1. In a diverter for drilling mud having a packer-housing mounted on the upper end of a riser through which drilling mud flows to the surface between the riser and the pipe string extending through the riser and a packer located in the packer-housing, said packer having a body of resilient material, and means for moving the resilient material into sealing engagement with a pipe string to divert drilling fluid laterally into a mud return line, the improvement comprising a plurality of conduits extending vertically through the packer, each conduit including a flexible section extending through the body of resilient material to move with the resilient material as it is moved into and out of sealing engagement with the drill string, means supplying the upper ends of the conduits with drilling

fluid, and nozzles located in the lower ends of the conduits to direct the drilling fluid into the drilling fluid below the packer.

4,640,373

BORE HEAD FOR DEEP-HOLE BORING

Wilfried Horsch, Obrigheim, Fed. Rep. of Germany, assignor to GTE Products Corporation, Stamford, Conn.

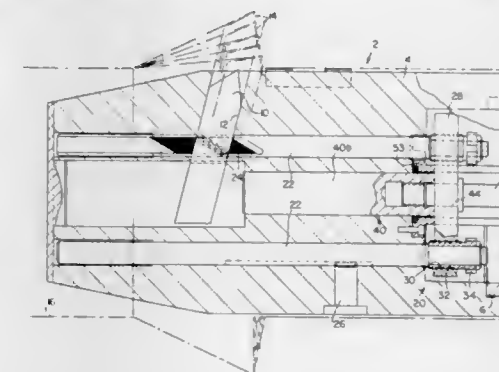
Filed Feb. 19, 1985, Ser. No. 703,069

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410967

Int. Cl.⁴ E21B 7/28

U.S. Cl. 175—272

1 Claim



1. An improvement in a bore head for deep boring of the type comprising a plurality of circumferentially spaced cutting members adjustable transverse to the bore head axis, and an actuating device actuatable by a drive motor for adjusting the cutting members, the improvement wherein said actuating device comprises a plurality of actuating rods positioned parallel to each other, each actuating rod being operably associated with a respective cutting member, a plurality of force transmitting means, each force transmitting means being adapted for actuating and displacing a respective actuating rod in a direction parallel to said bore head axis whereby respective cutting members are actuated, each of said force transmitting means includes a gear means having inclined teeth provided at the sides of said associated cutting member, each actuating rod being displaceable in a direction parallel to the bore head axis for acting on a respective associated cutting member by a respective force transmitting means, said actuating rods being secured against rotation and connected to a central actuating bar having a common connecting member, said connecting member comprises a disc disposed in a radial plane, said disc being provided with a central opening for receiving a part of the actuating bar and having a plurality of circumferentially spaced openings for receiving the actuating rods said central actuating bar being axially displaceable by a drive motor for actuating said cutting members.

4,640,374

ROTARY DRILL BIT

Mahlon D. Dennis, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 575,398, Jan. 30, 1984, Pat. No. 4,538,691. This application Sep. 3, 1985, Ser. No. 771,877

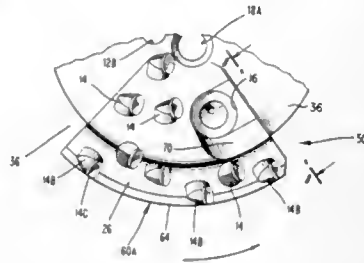
Int. Cl.⁴ E21B 10/04, 10/60

U.S. Cl. 175—393

5 Claims

1. A rotary drill bit for cutting in earth formations, comprising:
 a bit body including a cutting face having an outer peripheral edge and a central recess extending longitudinally inwardly from said peripheral edge,
 a plurality of bores formed in said cutting face and containing nozzles for emitting drilling fluid under pressure,
 a plurality of cutter elements, some of which being mounted in said peripheral edge, and others of which being

mounted in said recess to fracture an earthen core formed as the drill cuts through the formation, said cutter elements including cutting faces facing in a direction defining a direction of rotation of said drill bit, a plurality of lateral discharge passages formed in said body, said passages extending radially through said body from said recess and extending longitudinally to said peripheral edge to form circumferential interruptions in said peripheral edge,



a convex protrusion disposed centrally at a longitudinally inner end of said recess for deflecting cuttings to said lateral discharge passages, said cutting face including a groove extending in said direction of rotation from one side of an outer end of each said bores and terminating at the nearest lateral discharge passage for conducting cuttings from said bore to that passage.

4,640,375

DRILL BIT AND CUTTER THEREFOR

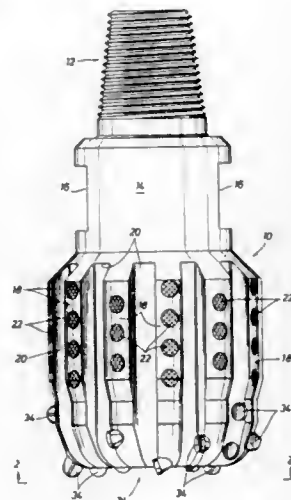
John D. Barr, Gloucestershire, and John M. Fuller, Stroud, both of United Kingdom, assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 443,657, Nov. 22, 1982, Pat. No. 4,505,342. This application Feb. 8, 1984, Ser. No. 578,182. The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl. E21B 10/46

U.S. Cl. 175-410

18 Claims



1. A drag-type drill bit comprising: a bit body adapted for rotative movement in a pre-determined direction in use and having an operating end face; and a plurality of cutting members mounted in said bit body, each of said cutting members having a stud portion disposed in a respective recess in said bit body and defining the inner end of said cutting member, and a cutting face generally adjacent the outer end of the

cutting member facing outwardly through said end face of said bit body and terminating in an outermost cutting edge, the centerline of said stud portion being rearwardly inclined from said outer end to said inner end with respect to said direction of movement in use—taken at the midpoint of said cutting edge—at a first angle from 80° to 30° inclusive; and said cutting face being oriented such that the tangent to said cutting face at the midpoint of said cutting edge and in the central plane of the cutting member, is disposed at a second angle, from 18° to 75° inclusive, with respect to the centerline of said stud portion.

4,640,376

DEVICE FOR TESTING, IN PARTICULAR OF TABLETS BY WEIGHING

Jürgen Hinzpeter, Schwarzenbek, Fed. Rep. of Germany, assignor to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

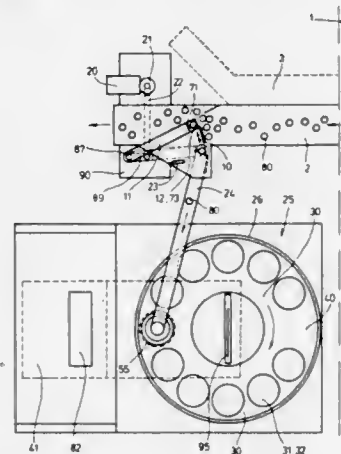
Filed Nov. 12, 1985, Ser. No. 797,419

Claims priority, application European Pat. Off., Nov. 10, 1984, 84113592.4

Int. Cl. G01G 19/52; G01N 1/04

U.S. Cl. 177-50

11 Claims



1. Device for testing, in particular tablets with a scale on which the tablets, which are being filled into containers, are individually weighed, characterized in that the device is provided with an arm (11) which can be pivoted into the tablet flow, which at its head is provided with a cage (12) for receiving an individual tablet (80) and transferred to a container (31) which is disposed in a hole (32) of a rotatably mounted apertured disk (30) under which a scale (41) for the container (31) is mounted.

4,640,377

MOTOR VEHICLE

Heinz Wössner, P.O. Box 1140, D-7605 Bad Peterstal-Griesbach, Fed. Rep. of Germany

PCT No. PCT/EP83/00302, § 371 Date Jul. 13, 1984, § 102(e) Date Jul. 13, 1984, PCT Pub. No. WO84/01923, PCT Pub. Date May 24, 1984

PCT Filed Nov. 15, 1983, Ser. No. 628,586

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242408

Int. Cl. B62D 53/00, 53/02; B60D 15/00

U.S. Cl. 180-9.1

11 Claims

1. A crawler vehicle having two sides, two crawler belts on each side of the vehicle, each crawler belt having a profiled tread with transverse profiling having segments in the form of cleats, transverse ribs or the like, said segments being arranged

in spaced relationship in the running direction of the respective belt, each profiled tread comprising two partial profiles which are adjustable relative to one another in the running direction.

9. A vehicle having two wheels, each wheel having a profiled tread with transverse profiling, having segments in the

munication between said output shaft of said engine and said PTO shaft; and means for rotatably supporting the other end of said PTO shaft such that said PTO can experience limited pivotal motion thereabout.

4,640,379

VEHICLE STEERING CONTROL SYSTEM

Yasuji Shibahata, Yokohama; Yasumasa Tsubota, Yokosuka, and Takaaki Uno, Zama, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

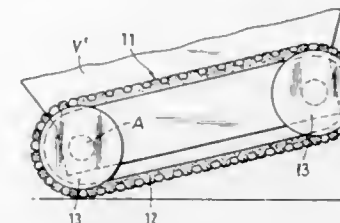
Filed Oct. 15, 1984, Ser. No. 661,070

Claims priority, application Japan, Oct. 27, 1983, 58-166592[U]

Int. Cl. B62D 5/06

U.S. Cl. 180-140

13 Claims



form of cleats, transverse ribs, or the like, said segments being arranged in spaced relationship in the running direction of the respective wheel, each profiled tread comprising two partial profiles which are adjustable relative to one another in the running direction, the partial profiles being formed on coaxial running wheels.

4,640,378

POWER TAKE-OFF SYSTEM AND ISOLATION MOUNTING THEREFOR

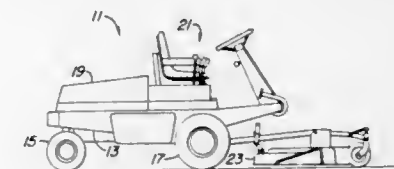
Dale R. Dobberpuhl, Horicon, and David K. Stricker, Juneau, both of Wis., assignors to Deere & Company, Moline, Ill.

Filed Aug. 22, 1985, Ser. No. 768,980

Int. Cl. B60K 5/10

U.S. Cl. 180-53.1

13 Claims



1. A power take-off assembly and isolation mounting arrangement for mounting to the frame of a vehicle having an engine mounted to said frame, said engine having an output shaft in driving communication with the input shaft of a transmission comprising:

a formed bracket with a hole therein operatively connected to said frame;

a brace having a generally elongated hole formed therein and a key formed thereon;

an isolation member mounted to said bracket and said brace such that said bracket radially aligns said hole's elongation of said brace to the axial extension or projection of said output shaft, thereby permitting limited deflection of said brace from a nominal position;

a casting having a keyway formed therein and a bearing seat having a bearing mounted therein, said keyway being sized to slidably receive said key therein and being oriented to maintain radial alignment of said hole's elongation to said output shaft;

means for slidably mounting said casting to said brace such that said key is received in said keyway of said casting and such that said casting can slidably displace coextensive relative to said elongation of said hole in said brace from a nominal biased position, whereby said nominal biased position positions said key in first extreme position in said keyway;

a PTO shaft rotatably supported in said bearing seat at one end and extending through said elongated hole of said brace;

means, supported by said brace, for providing driving com-

1. A vehicle steering control system comprising: means for providing hydraulic fluid under pressure; a fluid control valve for controlling the hydraulic fluid form said hydraulic fluid providing means in response to rotation of a steering wheel; front wheel operating means for controllably power assisting steering of front wheels under the influence of the hydraulic fluid controlled by said fluid control valve; rear wheel control means for controllably compliance steering rear wheels under the influence of the hydraulic fluid controlled by said fluid control valve; and directional control means actuated in response to vehicle speed for selectively directing the hydraulic fluid controlled by said fluid control valve to said front wheel operating means for providing power assisted steering at a low vehicle speed range and to said rear wheel control means for providing compliance steering at a higher vehicle speed range.

4,640,380

APPARATUS FOR CONTROLLING A STEERING FORCE OF A HANDLE IN AUTOMOBILES

Toshihiko Daido; Hideo Matsubara, and Shuzo Hirakushi, all of Nara, Japan, assignors to Koyo Seiko Kabushiki Kaisha and Koyo Jidoki Kabushiki Kaisha, both of Osaka, Japan

Filed Apr. 8, 1985, Ser. No. 720,814

Claims priority, application Japan, Apr. 9, 1984, 59-69119

Int. Cl. B62D 5/08

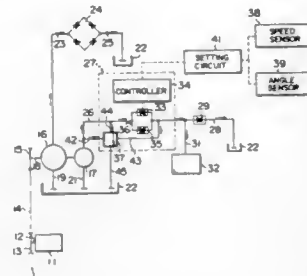
U.S. Cl. 180-141

14 Claims

1. A handle steering force control apparatus for controlling a steering force of a handle in an automobile having a power steering system for assisting a steering force of the steering handle by a fluid from a fluid pump, and a hydraulic reaction chamber for applying a force opposite the steering force of the steering handle to the steering handle by the fluid, the steering force control apparatus comprising:

an auxiliary pump having a driving shaft common to a driv-

ing shaft of a fluid pump to suction a fluid for the power steering system,
a fluid passageway connected between an outlet of the auxiliary pump and a fluid tank for fluid,
a flow control device provided in said fluid passageway to control the fluid by the speed of the automobile and the steering angle,



A throttle means for said fluid provided in the fluid passageway on the outlet side of the flow control device, and
a fluid branch passageway for a hydraulic reaction chamber, one end of the fluid branch passageway being in communication with a portion of the aforesaid fluid passageway between the outlet side of the fluid control device and the throttle means and the other end thereof being in communication with the hydraulic reaction chamber.

4,640,381

WALL-MOUNTED RESIN SPEAKER CABINET

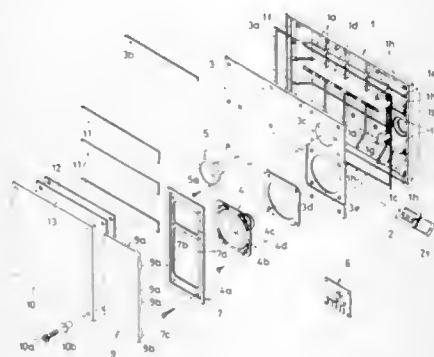
Yukio Tsuchiya, and Yutaka Matsukawa, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 5, 1984, Ser. No. 628,084

Claims priority, application Japan, Jul. 4, 1983, 58-121255
Int. Cl.⁴ H05K 5/00

U.S. Cl. 181-144

17 Claims



1. In a molded resin speaker cabinet, the improvement wherein said cabinet has a back wall and a plurality of side walls, at least one side wall of said cabinet being inclined inwardly towards said back wall of said cabinet; wherein at least one elongated rib is integrally formed with said back wall inside of said cabinet body and extends longitudinally inside the cabinet body parallel to two of said side walls, and further comprising a substantially planar baffle board secured in a front opening in said cabinet body, said baffle board having a rear surface in abutment with said elongated rib.

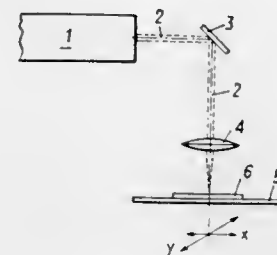
4,640,382
ACOUSTIC FRICTIONAL RESISTANCE
CONSTRUCTION AND METHOD OF PRODUCING AN
ACOUSTIC FRICTIONAL RESISTANCE USING A LASER
Hans Hartmann, Vienna, and Ewald Kerschbaum, Maria Enzersdorf-Südstadt, both of Austria, assignors to AKG Akustische u. Kino-Geräte GmbH, Austria

Filed Aug. 28, 1984, Ser. No. 644,982

Claims priority, application Austria, Aug. 29, 1983, 3077/83
Int. Cl.⁴ G10K 11/00; B23K 9/00

U.S. Cl. 181-175

10 Claims



8. A method of forming an acoustic frictional resistance member having a selected known acoustical impedance comprising providing a flat plate having a thickness of from 0.1 to 1.5 mm, directing a laser beam at the plate to form a plurality of holes through the plate each having a diameter of 0.3 mm at most, supplying a constant air stream to the plate during the formation of the holes in the plate, measuring a pressure drop of the constant air stream at the plate, the pressure drop having the value corresponding to an instantaneous frictional resistance of the plate, comparing the instantaneous frictional resistance of the plate to a desired final frictional resistance of the plate, and stopping the formation of holes when the instantaneous frictional resistance meets the desired frictional resistance.

4,640,383

MOVABLE STAGING SCAFFOLD SYSTEM FOR BUILDING CONSTRUCTION

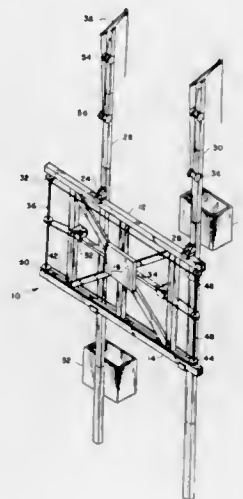
Claude A. Newberry, 4970 Avenida de Carmen, Santa Clara, Calif. 95054

Filed Feb. 3, 1986, Ser. No. 825,224

Int. Cl.⁴ E04G 1/22, 1/36

U.S. Cl. 182-38

8 Claims



1. A movable staging scaffold system for positioning construction and maintenance workers adjacent the face of a structure said system comprising:

a frame assembly alignable in a substantially vertical plane and having spaced, parallel, substantially horizontal upper and lower rail members;
at least one vertical columnar member mounted for horizontal movement along said upper and lower rail members;
at least one worker car coupled to said vertical columnar member and vertically moveable along said member;
a structural support attached to said frame assembly; and
a knuckle assembly attached to said structural support and to a boom on a movable crane, said knuckle assembly providing powered horizontal and vertical pivotal movement between said crane boom and said scaffold system for the attitude control of said frame assembly.

4,640,384

EMERGENCY EVACUATION SYSTEM FOR HIGH-RISE BUILDINGS

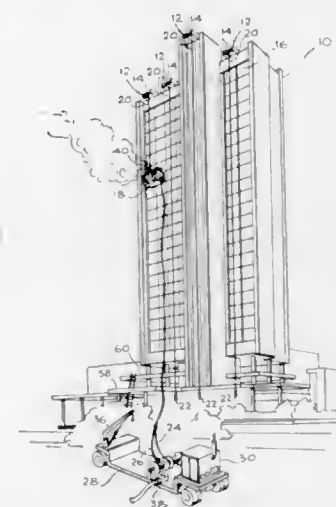
Alexander Kucher, 1525 Nelson Ave., Manhattan Beach, Calif. 90266; Igor Krasnov, 2587 Captains Ave., Port Hueneme, Calif. 93041, and Yury Bromberg, 21802 Fairlane Circle, Huntington Beach, Calif. 92646

Filed Apr. 7, 1986, Ser. No. 849,120

Int. Cl.⁴ B66B 9/00; A62B 1/02

U.S. Cl. 182-51

10 Claims



1. An emergency evacuation system for a high-rise building including:

a support structure secured to the top of said building, said support structure including at least one spool rotatably carried in said support structure;
cable means carried by said spool and selectively payable outwardly therefrom and re-windable thereon;
a weight-coupler carried by said cable at the end thereof remote from said spool;
brake means carried by said support structure in cooperative engagement with said spool for normally preventing rotation of said spool, said brake means being releasable;
escape cabin means having a powered spool thereon, said powered spool having a slot therein for receiving, in secure engagement, said weight-coupler;
electromechanical means coupled mechanically to said power spool for powering it in a controlled fashion to cause the rotation of said powered spool and the consequent raising and lowering of said escape cabin;
said escape cabin having an entry-exit side; and,
crawler means supported on said entry-exit side of said escape cabin for engaging said building during the raising and lowering of said escape cabin.

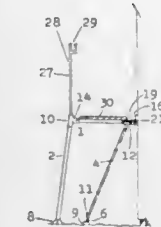
4,640,385

PORTABLE SCAFFOLDING

Philip O. Underhill, 5747 Newland Rd., Paradise, Calif. 95969
Filed Jun. 21, 1985, Ser. No. 747,557
Int. Cl.⁴ E04G 1/32

U.S. Cl. 182-113

6 Claims



1. A portable scaffolding structure, comprising
a. a horizontally positioned, T bar having a horizontally aligned walkway support member affixed thereto, the walkway support member attached removably to a downwardly slanted main support leg, the support leg fitted with an extension and a leveling foot pivotally attached at the ground rest position of said leg;
b. there being two angled side supports fastened by fittings affixed to V braces of the T bar, the two angled side supports adjustable for length and extending to a ground position approximately adjacent the main leg ground contact, each side support fitted with a pivotally attached leveling foot; the side supports adding angular bracing to the T bar and walkway support member;
c. there being a pliable ribbed covering on a wall facing surface of said T bar, and fitted to the top of the T bar, there being
d. a laterally adjustable angled nailer for nailing attachment to a wall surface and
e. the scaffolding having a safety bracket with holding means for a security rail fittable into the top section of the said main support leg,
f. the scaffolding units used in pairs or more to provide an adjustable elevated walkway in a leveled position.

4,640,386

FOLDING UTILITY HORSE

James W. Hall, 3713 NE 22nd Ave., Portland, Oreg. 97212
Filed Feb. 14, 1986, Ser. No. 829,213
Int. Cl.⁴ B27B 21/00; F16M 11/00

U.S. Cl. 182-155

16 Claims



1. A folding utility horse comprising:
(a) a main beam extending horizontally when the utility horse is in its set-up position;
(b) a first pair of legs attached to and positioned at one end of the main beam;

- (c) a second pair of legs attached to and positioned at the other end of the main beam;
 (d) pivot means mounting each leg, the pivot means including:
 (1) a transverse mount extending outwardly from the main beam;
 (2) a cross shaft mounted pivotally substantially at right angles to the transverse mount; and
 (3) bearing means for mounting the leg pivotally on the cross shaft for pivotal movement along an axis substantially perpendicular to the axis of the pivot between the transverse mount and the cross shaft;
 (e) stop means for abutment by the leg when the leg is in its extended position; and
 (f) securing means for releasably fastening the leg in its extended position.

4,640,387

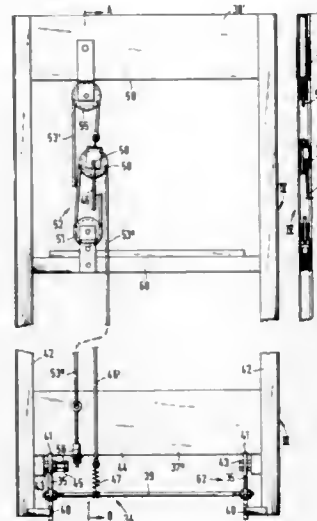
ELEVATOR COMPRISING TELESCOPIC SECTIONS, AND A LOCKING DEVICE THEREFOR

Albert Böcker, Werne, Fed. Rep. of Germany, assignor to Firma Albert Böcker GmbH & Co. Kg., Fed. Rep. of Germany
 Filed Dec. 9, 1985, Ser. No. 807,167

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1984, 3445244; Jan. 12, 1985, 3500841
 Int. Cl.⁴ E06C 7/06

U.S. Cl. 182—213

16 Claims



1. An elevator having a plurality of telescopic sections which are positively guided on one another, each telescopic section being of ladder-like formation having a pair of rails and a plurality of rungs extending between said rails, each pair of adjacent telescopic sections being lockable together by a respective locking device in a plurality of positions of extension, each locking device including a cable-actuated pivotable locking dog associated with one telescopic section of the associated pair of telescopic sections, each locking dog being provided with a support member for the other telescopic section of said pair of telescopic sections, each locking dog being actuated by a respective draw cable which actuates a respective locking-/release cable attached to a movably-mounted intermediate member, associated with said other telescopic section of said associated pair of telescopic sections, the improvements comprising constructing each of the locking devices by
 (a) providing each of the intermediate members with a fixed pulley and a movable pulley,
 (b) mounting each of the locking dogs for movement in a direction towards an unlocked position and in a direction towards a locked position, movement in one of said directions being a spring-loaded movement, and movement in

- the other of said directions being under the action of the associated draw cable,
 (c) connecting each locking-/release cable to the associated movable pulley, and
 (d) passing the draw cable of each telescopic section around the associated fixed pulley and around the associated movable pulley.

4,640,388

ESCAPE DEVICE

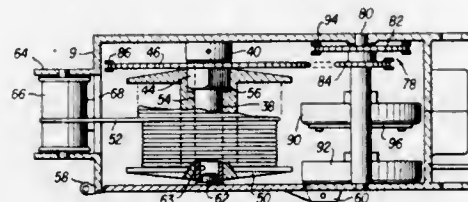
John B. Walborn, Deer Path Run, Preston Rd., R.D. #1, Wernersville, Pa. 19565

Filed Feb. 6, 1985, Ser. No. 698,904

Int. Cl.⁴ A62B 1/08

U.S. Cl. 182—231

13 Claims



1. An escape device comprising:
 a casing;
 means for securing said casing to a support;
 a cylindrical spool rotatably mounted in said casing;
 a cable wound on said spool, said cable having one end secured to said spool and a second end having harness attachment means;
 brake means operatively connected to said spool for limiting the rotational velocity of said spool; and
 means for permitting rapid mounting and dismounting of said spool in said casing, whereby said spool can be rapidly replaced by a second spool following an unwinding of said cable from said spool,
 wherein said casing includes at least first and second opposing walls, and wherein said means for permitting rapid mounting and dismounting comprises:
 (a) a first shaft having one end fixed in said first wall and a second end extending toward said second wall,
 (b) a door in said second wall adjacent said first shaft, said door being sized and shaped to permit passage of said spool,
 (c) a bore in said spool, said bore being coaxial with the axis of said cylindrical spool and having a diameter sufficient to permit mounting of said spool on said first shaft, and
 (d) means associated with said first shaft and said spool for rotatably connecting said spool relative to said brake means when said spool is fully mounted on said first shaft, and wherein said means for rotatably connecting said spool relative to said brake means comprise:
 (e) a hex shaped enlargement of said bore at one axial end of said cylindrical spool,
 (f) a hex nut rotatably mounted on said first shaft and fittable in said hex shaped enlargement,
 (g) a spool sprocket rotatably mounted on said first shaft and fixed to said hex nut, and
 (h) means rotatably connecting said spool sprocket to said brake means.

4,640,389

SYSTEM FOR CONTROLLING A MOTOR

Hiroshi Kamaike, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, JPN

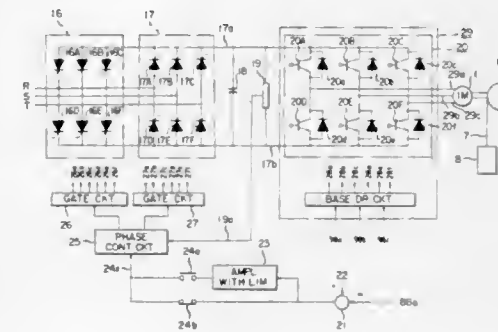
Filed Dec. 21, 1984, Ser. No. 685,119

Claims priority, application Japan, Dec. 26, 1983, 58-250289

Int. Cl.⁴ B66B 1/30

U.S. Cl. 187—119

19 Claims



1. A system for controlling the speed of an alternating current elevator in which a direct current power from a direct current power source is converted into an alternating current power having a variable voltage and frequency by means of an inverter and the alternating power is supplied to an induction motor so that a cage is operated by controlling the motor in response to a speed command value, said system comprising an energy saving operation command unit which commands the energy saving operation;
 a low speed command generating circuit which generates a low speed command value lower than said speed command value; and
 a frequency decreasing circuit which decreases the output frequency of the inverter in response to said low speed command value.

4,640,390

BRAKE LINING CARRIER FOR DISK BRAKES HAVING DIVIDED LINING ELEMENTS

Eckart Saumweber, Gauting, and Otto Schmitt, Munich, both of Fed. Rep. of Germany, assignors to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

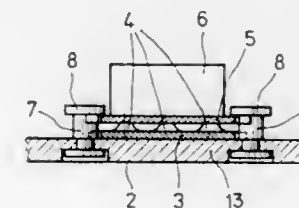
Filed May 16, 1984, Ser. No. 610,655

Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317913

Int. Cl.⁴ F16D 55/224, 65/04

U.S. Cl. 188—73.37

9 Claims



1. A braking lining carrier for disk brakes having divided lining elements, particularly for rail vehicles, comprising a base plate having a first side and a second side, an elastically deformable intermediate plate having first and second plane surfaces and said first surface thereof directly positioned on said second side of said base plate, a carrier plate having one side positioned on said intermediate plate and having another side to which is attached a divided brake lining element, said intermediate plate having a plurality of deformations protruding only from said second plane surface thereof and disposed in

a substantially regular pattern at substantially the same distance from one another, said deformations being elastically deformable to a limited degree such that said carrier plate and attached brake lining element is elastically supported upon said base plate and capable of limited movement.

4,640,391

AUTOMATIC STOP VALVE DEVICE FOR VEHICLE BRAKE SYSTEMS

Toshifumi Maehara, Hanazono, and Masayuki Kurata, Kazo, both of Japan, assignors to Akebono Brake Industry Company, Ltd., Japan

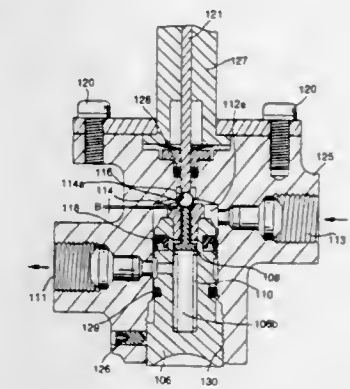
Filed Jun. 28, 1983, Ser. No. 508,506

Claims priority, application Japan, Jul. 12, 1982, 57-120769

Int. Cl.⁴ B60T 11/28

U.S. Cl. 188—353

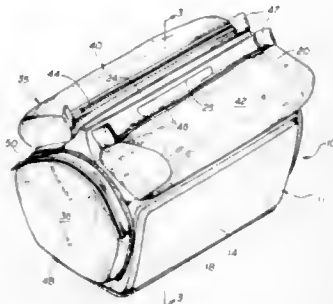
11 Claims



1. An automatic stop valve device adapted to be mounted in the brake system of a vehicle comprising:
 a normally open valve mechanism capable of being shifted between an open and a closed state to open and close communication between an input fluid chamber connected to receive fluid pressure from a master cylinder of said system and an output fluid chamber connected to transmit said fluid pressure to a brake device of said system for applying the brakes, said valve mechanism including a valve element comprising a movable ball cooperating with and movable relative to a valve seat in the direction toward the seat;
 first spring means for maintaining said valve mechanism in the normally open position before receiving fluid pressure from said master cylinder and during an initial stage of transfer of pressure fluid from said master cylinder through said valve mechanism;
 second spring means urging said ball in the direction toward said valve seat to maintain the closed state in response to increase in fluid pressure in the input fluid chamber from the master cylinder;
 an electromagnetic mechanism including a coil and a movable armature actuated by the coil and connected to overcome said first spring means and cause said valve mechanism ball to shift to said closed state upon said coil being energized as the vehicle comes to a stop to maintain said fluid pressure in said output chamber and transmitted to said brake device and thereby hold the brakes in applied condition, said electromagnetic mechanism further including an element extending from said armature and engaging said ball to overcome said second spring force for maintaining said valve mechanism in the normally open position and causing said ball to be positively shifted by said second spring means onto said seat upon actuation of said coil; and
 unidirectional means independent of said valve mechanism for bypassing said valve mechanism and allowing pressure fluid to flow only from said input chamber to said output

chamber upon increase in fluid pressure from the master cylinder and thereby increase the fluid pressure transmitted to said brake device and applying the brakes with said valve mechanism in its closed state.

4,640,392
ACCESSORY BAG FOR CONTAINERS
Joseph A. Decker, Jr., Katy; Joseph F. Fiore, Jr., and Stanley A. Katz, both of Houston, all of Tex., assignors to Igloo Corporation, Houston, Tex.
Filed May 8, 1985, Ser. No. 732,348
Int. Cl.⁴ A45C 11/20, 13/28; B65D 21/00
U.S. Cl. 190—108 6 Claims



1. In a generally rectangular container having two opposed pairs of sides defining an open upper end, and a bottom extending between the sides to form a container body, a lid pivotally mounted on the container body having a pitched dome-like body forming a generally concave inner surface extending over said open end and a pair of opposed generally parallel ends secured to said dome-like body and extending alongside one opposed pair of sides on said container, and a handle projecting from the apex of said pitched body and having a elongate opening extending along the length of the container, said lid ends being mounted for pivotal movement on said opposed pair of sides for pivoting of said lid from a closed position in which the dome-like body covers said open upper end to an open position in which the dome-like body is removed from said open upper end to fully expose said open end, said dome-like body being of an inner shape and configuration to clear the upper portion of said container sides upon pivotal movement to open position;

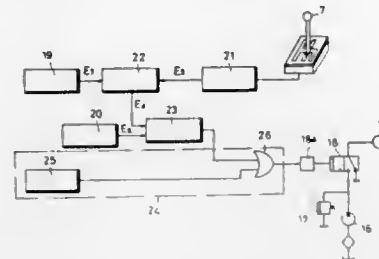
the improvement of a flexible accessory bag mounted on the outer surface of the dome-like lid for pivotal movement therewith between said open and closed positions, said accessory bag comprising:

a pair of spaced elongate pockets arranged in parallel spaced relation to each other and receiving said handle therebetween, said pockets having openings to provide access thereto and means for selectively closing said openings; a pair of opposed ends fitting over said lid ends and including means for releasably mounting the accessory bag on the lid for movement therewith; and flexible connections between said pockets and said bag ends to permit folding movement of said bag ends relative to said pockets.

4,640,393
CONTROL DEVICE FOR VEHICULAR TRANSMISSION
Sadanori Nishimura, and Noboru Sekine, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 14, 1985, Ser. No. 701,756
Claims priority, application Japan, Feb. 17, 1984, 59-26969
Int. Cl.⁴ B60K 41/02 3 Claims

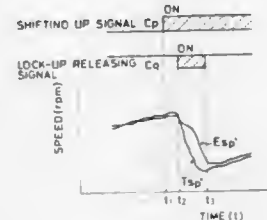
1. In a vehicular transmission of the type in which an auxiliary transmission having high and low speed transmission lines and clutch means is connected in series to a manual shift type

main transmission connected to an engine through a transmission clutch and in which said auxiliary transmission is automatically shifted in accordance with the throttle opening of said engine and the vehicle velocity, the improvement comprising, a control device having low-speed transmission holding means for holding said auxiliary transmission in said low-speed transmission line for a predetermined period after said transmission



clutch has been applied, the control device including means for detecting actuation of the transmission clutch and initiating a signal in response thereto, and means for producing a signal to cause operation of the auxiliary transmission clutch means in response to the vehicle operating characteristics, and OR gate means for receiving both said signals from said detecting means and said auxiliary transmission clutch means.

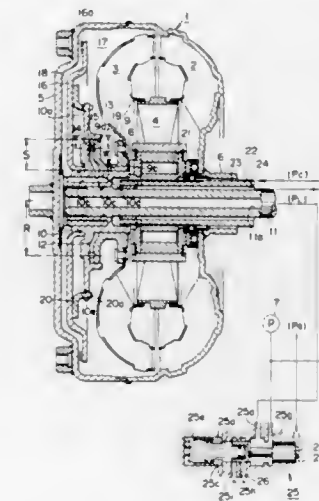
4,640,394
LOCK-UP CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION
Haruki Higashi; Seiji Yashiki, both of Hiroshima; Kouichirou Waki, Mihara, and Toshiyuki Kikuchi, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed May 3, 1985, Ser. No. 730,036
Claims priority, application Japan, May 14, 1984, 59-96175
Int. Cl.⁴ F16H 45/02; B60K 41/28 7 Claims



1. A lock-up control system for an automatic transmission including a torque converter coupled with the output portion on an engine, a power transmitting gear arrangement coupled with the output portion of the torque converter and controlled to vary the transmitting gear ratio therein by gear ratio control means in accordance with a shifting up or down command supplied to the latter, and a lock-up clutch provided for locking up the output portion of the torque converter to the output portion of the engine, the lock-up control system comprising: lock-up operation control means for controlling said lock-up clutch to be in its operative state and in its inoperative state selectively, and for causing said lock-up clutch to be in the inoperative state thereof when said gear ratio control means performs the control with the shifting up or down command, and lock-up command means for preventing said lock-up operation control means from causing said lock-up clutch to be in the inoperative state thereof until a predetermined reductive variation in the speed of the output portion of said torque converter arises after the shifting up command

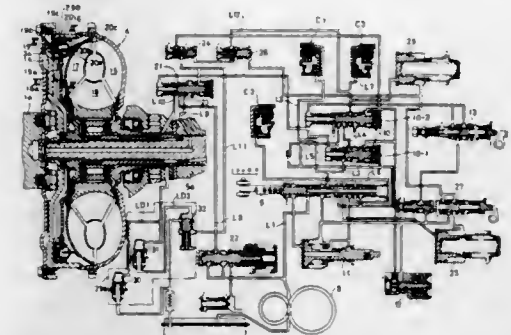
is supplied to said gear ratio control means under the condition in which said lock-up clutch is in operation to hold a lock-up state.

4,640,395
SLIP CONTROL MECHANISM FOR FRICTION CLUTCH IN TORQUE CONVERTER OF AUTOMATIC POWER TRANSMISSION
Takashi Murasugi; Masaaki Suga, both of Yokohama, and Yasuhiro Niihara, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan
Filed Oct. 5, 1984, Ser. No. 657,953
Claims priority, application Japan, Oct. 7, 1983, 58-186885
Int. Cl.⁴ B60K 41/02; F16D 47/06 16 Claims



1. A torque converter with a lock-up friction clutch comprising: an input member driven to rotate by a prime mover; an impeller rotating with said input member; a turbine independently rotatable and cooperative with said impeller to form a toroidal circuit by which torque is exerted on said turbine by said impeller in a hydrodynamic drive mode; an output member freely rotatable and coupled to said turbine to rotate therewith at a variable phase; a friction clutch movable into and out of contact with said input member to establish frictional engagement to a variable degree with said input member in a mechanical drive mode; hydraulic means associated with said friction clutch for moving the latter between a first state enforcing said mechanical drive mode and a second state enforcing said hydrodynamic drive mode, said hydraulic means including first and second fluid chambers on opposite sides of said friction clutch for moving said friction clutch in accordance with the fluid pressure difference therebetween; means establishing fluid communication between said first and second fluid chambers; and slip control means, associated with said passage means, for controlling fluid flow rate through said passage means for adjusting said fluid pressure difference, said slip control means including a throttle of variable cross-section disposed within said passage means for controlling the fluid flow rate, said throttle being so arranged that its cross-section increases to reduce the fluid pressure difference in a greater than linear relationship with the torque on said turbine.

4,640,396
DEVICE FOR CONTROLLING THE OPERATION OF CLUTCH FOR FLUID TORQUE CONVERTER
Sadanori Nishimura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 1983, Ser. No. 495,267
Claims priority, application Japan, May 17, 1982, 57-81494; Nov. 11, 1982, 57-196840
Int. Cl.⁴ F16H 45/02; B60K 41/02 19 Claims



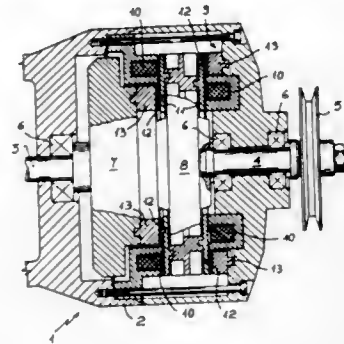
1. An apparatus for controlling the operation of a clutch for a torque converter of a transmission of a vehicle having a throttle-operated engine wherein the clutch is operated by differential fluid pressure thereacross between a direct coupling state and a slipping state, the apparatus including; means for fluid pressurizing the clutch to cause the direct coupling state at or above a relatively high speed of the vehicle and depressurizing the clutch to cause the slipping state at relatively low speeds of the vehicle speed including means for controlling and varying the pressure in the clutch in proportion to the vehicle speed when the vehicle is traveling at speeds above a predetermined speed and below the relatively high speed.

2. An apparatus for controlling the operation of a clutch for a torque converter of a transmission of a vehicle having a throttle-operated engine wherein the clutch is operated by differential fluid pressure thereacross between a direct coupling state and a slipping state, the apparatus including; means for fluid pressurizing the clutch to cause the direct coupling state at relatively high speeds of the vehicle and depressurizing the clutch to cause the slipping state at relatively low speeds of the vehicle including means responsive to the engine throttle for pressurizing the clutch in proportion to the throttle position.

4,640,397
ELECTROMECHANICAL FRICTION BRAKE FOR ACTUATING AND STOPPING A ROTATING ELEMENT IN PREDETERMINED POSITIONS
Antonio Santalini, Arconate, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy
Filed Jul. 25, 1985, Ser. No. 758,915
Claims priority, application Italy, Mar. 5, 1985, 19757 A/85
Int. Cl.⁴ F16D 13/40, 13/64, 69/02 6 Claims

1. An electromechanical friction clutch and brake unit for driving and stopping a rotation element, for example the needle actuating shaft of a sewing machine, said friction brake and clutch unit comprising: (a) a housing having a drive shaft and a driven shaft journaled in opposite side walls thereof; (b) a flywheel mounted within said housing on said drive shaft for rotation therewith; (c) a coupling disk mounted within said housing on said driven shaft; (d) friction elements made of a mixture of blended natural and synthetic materials treated and impregnated with oil on each side of said coupling disk;

(e) counter elements mounted within the side wall of said housing in which said driven shaft is journaled and in said fly wheel adjacent said coupling disk, said counter elements being made of an oil impregnated sintered metal providing an oil reservoir capable of supplying oil by capillary action to said friction elements carried on said



coupling disk after said friction elements have used up the oil with which they are impregnated; and
(f) control and actuating means for selectively moving said coupling disk against said counter elements in said fly wheel and in such housing, as desired, to drive and stop said driven shaft, respectively.

4,640,398 FRICTION CLUTCH WITH TANGENTIAL LEAF SPRINGS

Dieter Kolb, Bad Kissingen, and Norbert Pieper, Werneck-Easleben, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Fed. Rep. of Germany
Filed Jan. 18, 1985, Ser. No. 692,593
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3403024

Int. Cl.⁴ F16D 13/71
U.S. Cl. 192—70.18

1 Claim



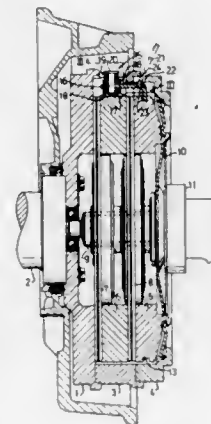
1. A friction clutch unit for engine powered wheeled motor vehicles, comprising a clutch housing (1) having an axis and adapted for being fixed to a driving disc (10) rotating with a predetermined direction of rotation (D) in the pulling direction when the motor vehicle engine drives the motor vehicle as opposed to the pushing direction when torque is transmitted from the drive wheels to the motor vehicle engine, a pressure plate (2) connected to said clutch housing (1) for common rotation therewith about said axis and for limited axial movement with respect to said clutch housing (1), main spring means (14) supported by said clutch housing (1) and engaging said pressure plate (2) such as to urge said pressure plate (2) towards a clutch disc (16) and said clutch disc (16) towards a friction face (18) of said driving disc (10), means for connecting said pressure plate (2) to said clutch housing (1) consisting of a plurality of leaf spring elements (4) spaced circumferentially with respect to the clutch housing axis and which are substantially tangential with respect to said axis and have—with re-

spect to said predetermined direction of rotation—a leading end portion (7) and a trailing end portion (8), respectively, the leading end portions (7) of all leaf spring elements (4) being fastened to said pressure plate (2) and the trailing end portions (8) of all said leaf spring elements (4) being fastened to said clutch housing (1), said leaf spring elements are secured to said pressure plate and clutch housing in a play-free manner.

4,640,399 AXIALLY ENGAGING TWIN PLATE FRICTION CLUTCH WITH ADJUSTMENT MEANS

Tore L. Börjesson, Varberg, Sweden, assignor to AB Volvo, Gothenburg, Sweden
Filed Nov. 6, 1984, Ser. No. 668,988
Claims priority, application Sweden, Nov. 8, 1983, 8306131
Int. Cl.⁴ F16D 13/52
U.S. Cl. 192—70.25

5 Claims



1. A vehicle clutch assembly comprising a clutch housing which can be connected to a flywheel, twin clutch plates which can be connected to an output shaft, an intermediate plate which is arranged to press the one clutch plate against a surface on the flywheel and which is coupled to the clutch housing via axially acting plate springs, a pressure plate which is arranged to press the other clutch plate against the intermediate plate and which is spring-biased in a direction there-towards; disengaging means for moving the pressure plate away from said clutch plate, and means connected to the intermediate plate for centering said intermediate plate between the clutch plates when the clutch is disengaged, the plate springs active between the clutch housing and the intermediate plate being arranged to bias the intermediate plate in a direction towards said one clutch plate; and the centering means including means so arranged between the pressure plate and the intermediate plate that—departing from an engaged clutch—the pressure plate, when disengaging the clutch, is movable through a given limited distance in the clutch-disengaging direction prior to moving the intermediate plate.

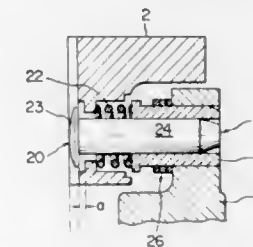
4,640,400 AUTOMATIC WEAR COMPENSATION MECHANISM

Mototaka Nakane, and Shizuo Tanaka, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi and Toyota Jidosha Kabushiki Kaisha, Aichi, both of Japan
Filed Mar. 7, 1985, Ser. No. 709,335
Claims priority, application Japan, Mar. 8, 1984, 59-042826
Int. Cl.⁴ F16D 13/75

U.S. Cl. 192—70.25
1. An automatic wear compensation mechanism for a clutch comprising:

- a flywheel connectable to an input member,
- a casing secured integral with the flywheel,

at least one pressure plate disposed between the casing and the flywheel,
at least one clutch disc disposed between the flywheel and the pressure plate;
a spring mechanism for biasing the clutch disc and the pressure plate relative to the casing toward the flywheel, wherein the flywheel, the casing, the pressure plate and the clutch disc rotate integrally with each other;
wherein the compensation mechanism includes:
a ring member secured to said flywheel and disposed substantially outside of the pressure plate,
stopper means which is axially of the flywheel slidably fitted to the ring member and the pressure plate for allowing the pressure plate to move by a given length toward the casing relative to the ring member when a release mechanism acts on the spring mechanism for disengaging the clutch disc from the flywheel, the stopper means being engageable with the ring member at a predetermined axial sliding in a releasing direction of the pressure plate;



movement restriction means having a friction engagement member which is friction-engaged with the stopper means and in contact with the pressure plate at the side thereof directed to the flywheel for supporting and restricting the pressure plate due to the frictional force of the friction engagement member in an axial direction of the flywheel; biasing means disposed coaxially with the movement restriction means for biasing the movement restriction means toward the casing; and
connecting means linking the ring member with the pressure plate toward the flywheel;
the frictional force of the friction engagement member being preset to a value lower than the biasing force of said spring mechanism and higher than the force of the biasing means applied upon the movement restriction means, and the biasing force of the connecting means being preset to a value lower than the force of the biasing means exerted to the movement restriction means.

4,640,401 VEHICLE CLUTCH LUBE CONTROL SYSTEM

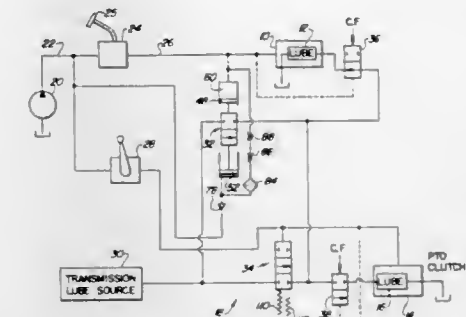
Sarkis A. Koltookian, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 2, 1985, Ser. No. 730,006
Int. Cl.⁴ F16D 13/72, 13/74, 25/00
U.S. Cl. 192—85 R

4 Claims

1. In a vehicle having a fluid pressure operated torque-transmitting clutch having engaged and disengage states, a vehicle driven pump, a clutch lube circuit, a source of lube fluid, an operator-controlled control valve which receives system pressure from the pump and which provides a clutch operating pressure to the clutch, and a control system for controlling flow of lube fluid to the lube circuit, the improvement wherein the control system comprises:
a valve housing having a valve bore extending therein and having larger and smaller diameter bore portions, an end of the larger bore portion receiving clutch-operating pressure, an end of the smaller bore portion receiving system pressure from the pump, an inlet communicating the valve bore with the lube source and an outlet communicating the valve bore with the lube circuit; and
a pressure-responsive valve member movable in the valve

bore, the valve member comprising a first land sealingly slidable in the first larger bore portion and exposed to clutch operating pressure, a second land sealingly slidable in the second smaller bore portion and exposed to system

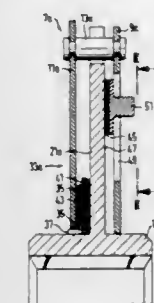


pressure, one of the lands cooperating with a wall of the valve bore to control communication between the inlet and the outlet, and a stem interconnecting the first and second lands.

4,640,402 CLUTCH DISC

Franz Hartig, Dittelbrunn; Matthias Fischer, Euerbach, and Dagwin Tamm, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Mar. 15, 1985, Ser. No. 712,352
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409869
Int. Cl.⁴ F16D 13/14, 3/66, 13/75
U.S. Cl. 192—106.2

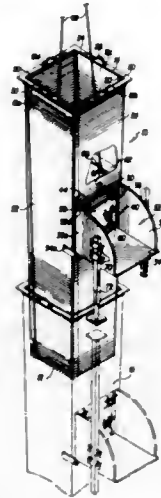
23 Claims



1. In a clutch disc for a motor vehicle friction clutch comprising a hub, a friction lining carrier mounted on the hub rotatably through a limited angle of rotation in relation to the hub about its axis of rotation, a torsional vibration spring means arranged in the torque transmission path between hub and friction lining carrier, at least one torsion vibration friction damper having at least two friction elements lying axially resiliently flat against one another, of which elements one is connected non-rotatably with the hub and the other with the friction lining carrier, the improvement comprising one of the friction elements being adjustably moveable along the friction face of the other friction element on one of the hub and the friction lining carrier, in such a way that the mutually overlapping friction faces of the friction elements are adjustable radially in relation to the rotation axis.

4,640,403
GRAVITY-CONVEYOR CHUTE SECTION
 Daniel R. McDermott, 6105 Woodland La., Clinton, Md. 20615
 Filed Feb. 13, 1985, Ser. No. 701,256
 Int. Cl.⁴ E04F 17/12
 U.S. Cl. 193—34

6 Claims



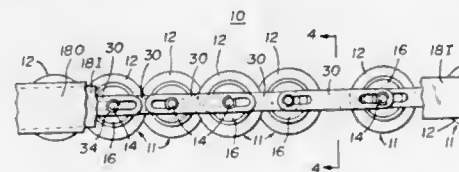
1. A portable gravity conveyor chute section of a type which can be nested with other conveyor chute sections to form a gravity conveyor chute, the section comprising a sidewall having basically a tubular shape which guides items falling through a bore thereof, said section having an upstream end opening for receiving items dropped into said section from above, and a downstream end opening for discharging said items passing through the bore of said section, said downstream end being selectively engagable with the upstream end of an adjacent section to form said conveyor chute to be longer than a single section whereby items serially fall through the bores of said thusly engaged sections, said section further defining a side opening through the sidewall thereof at a position intermediate said upstream and downstream ends through which items can be dropped into the bore of said section, said section including a unitary door/ledge assembly mounted at said side opening, said door/ledge assembly comprising a door frame and a ledge member being fixedly attached together, and a hinge to hingedly attach said unitary door/ledge assembly at an edge of said side opening for allowing said door frame to be rotated inwardly into the bore of said chute section, thereby making the outside shape of said chute section more streamline, and to be rotated outwardly, thereby closing said door frame on the inside of the side opening with said ledge member extending away from said sidewall, and wherein is further included a door mounted on said door frame, whereby said door/ledge assembly forms a ledge and door for said side opening when it is rotated outwardly said door including latching means for selectively preventing said door from opening.

5. A portable gravity conveyor chute section of a type which can be nested with other conveyor chute sections to form a gravity conveyor chute mounted on the outsides of buildings, the section comprising a sidewall having basically a tubular shape which guides items falling through a bore thereof, said section having an upstream end opening for receiving items dropped into said section from above, and a downstream end opening for discharging said items passing through the bore of said section, said downstream end being selectively engagable with the upstream end of an adjacent section to form said conveyor chute to be longer than a single section whereby items serially fall through the bores of said thusly engaged sections, said section further defining a side opening through the sidewall thereof at a position intermediate said upstream and downstream ends through which items can be dropped into the bore of said section, said section including a door covering said side opening and being hingedly attached

to said sidewall, said door including latching means for selectively preventing said door from opening; said conveyor chute section further including a baffle means positioned on and attached to the inside surface of said section adjacent said side opening said baffle means including an inwardly, downwardly sloping surface to deflect items falling through said section inwardly and including a tie means for receiving a hoisting line hook of a hoisting device for lifting said section, said tie means being accessible to someone outside said section reaching through said side opening, whereby, said portable section can be positioned on the outside of a building with said side opening facing said building, a hoisting device for lifting and manipulating said section can be made to extend a hoisting line having a hook on the end thereof through said upstream end opening of said conveyor chute section for positioning said hook near said side opening and someone from within said building can reach through said side opening and engage or disengage said hoisting line hook from said tie means without getting outside said building and said section.

4,640,404
TELESCOPIC ROLLER
 Jeffrey J. Bigott, 12832 Ponderosa Dr., Palos Heights, Ill. 60463
 Filed Jul. 17, 1985, Ser. No. 756,037
 Int. Cl.⁴ B65G 13/12
 U.S. Cl. 193—35 TE

8 Claims

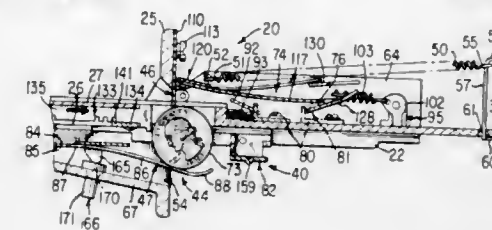


1. A telescopic roller conveyor over which items may move and which may be telescopically extended and retracted, comprising, in combination:

- two generally parallel but spaced-apart siderails, each formed of at least two generally channel-shaped members which are telescopically mounted together so that the siderails may extend from a contracted position to an extended position;
- a plurality of roller units spanning between said siderails sequentially along the length thereof, each of said roller units including:
 - at least one roller,
 - axle means for mounting said at least one roller, and
 - a pair of bushings, one of said pair of bushings at each end of said axle means, one of said bushings being received in one of said two siderails, and the other of said bushings being received in the other of said two siderails, said bushings being mounted therein so as to allow the roller unit to move longitudinally along the siderails; and
- link means for interconnecting the sequence of roller units and allowing the spacing between adjacent roller units to vary over a limited distance, said link means being encased in said channel-shaped members during use, and during extension or contraction of the conveyor, so as to present no external, moving link-means parts that may interfere with the items carried by the conveyor or harm the user.

4,640,405
COIN CHUTE CONSTRUCTION AND METHOD OF MAKING SAME
 Mitchell A. Hall, Ft. Thomas, Ky., assignor to Monarch Tool & Manufacturing Company, Covington, Ky.
 Filed Jun. 22, 1984, Ser. No. 623,574
 Int. Cl.⁴ G07F 5/06
 U.S. Cl. 194—235

29 Claims



1. In a coin chute construction for a dispensing machine which requires at least one coin of predetermined size and valuation to initiate one operation of said machine for one item of goods or service, said construction comprising, a support body, a slider supported on said body for reciprocation in a rectilinear path between a fully retracted inoperative position and a fully advanced operative position thereof, at least one pocket in said slider for receiving said coin, said pocket being defined by surface means for supporting said coin so that upon moving said slider toward said operative position said coin is moved therewith to a test position and then toward said operative position, test means at said test position for testing said coin for acceptability as to valuation and genuineness and when acceptable allowing full movement of said slider to said operative position enabling said slider to initiate said one operation of said machine, means operative upon failure of said coin to satisfy the test provided by said test means at said test position to preclude said full movement to said operative position, and means for providing curvilinear movement of said coin away from and then back toward said rectilinear path during movement of said slider from said inoperative position to said test position, said providing means comprising baffle means and cooperating yieldable spring means, the improvement in which said spring means is a one-piece leaf spring member adapted to engage and provide the sole bottom support for said coin during said curvilinear movement and thereby assure precise introduction of said coin into said test means.

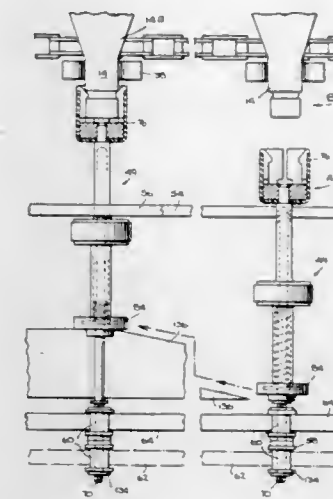
4,640,406
ROTATIONAL AND RETRACTABLE CONTAINER HOLDING DEVICE AND CONVEYOR THEREFOR
 Beverly G. Willison, Akron, Ohio, assignor to Feco Engineered Systems, Inc., Cleveland, Ohio
 Filed Oct. 3, 1984, Ser. No. 657,244
 Int. Cl.⁴ B65G 17/32

U.S. Cl. 198—377

4 Claims

1. A container holding device for receiving and gripping containers for conveying through one or more operating stations being adapted for mounting on chain conveyor unit having a plurality of links for supporting containers in a generally horizontal orientation comprising an elongated spindle attached at one of its ends to a conveyor link and extending laterally from one side of the conveyor unit, an inner housing including a tubular portion for internally receiving the spindle, and a cam follower forming part of the inner housing at its end adjacent the conveyor unit, the inner housing and cam follower as a unit being mounted for telescoping movement with respect to the spindle, means cooperating with the inner housing and the spindle for biasing the inner housing into a first telescoped position with respect to the spindle, an outer housing mounted at the other end of the inner housing for rotation about the spindle axis and the inner housing, the outer housing having means for engaging and gripping a container by its neck, whereby said inner and outer housing are adapted for axial sliding movement with respect to the spindle from the

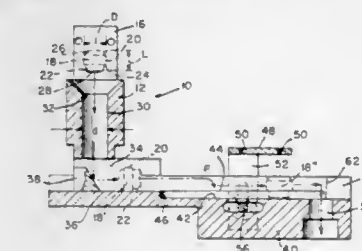
first telescoped position to a second telescoped position for receiving a container and for rotary movement of the outer



housing and container with respect to the inner housing and spindle for applying a coating to the container.

4,640,407
END PLUG ORIENTATION DEVICE
 Wade H. Widener, Cayce, and Kenneth K. Klapper, West Columbia, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Dec. 21, 1983, Ser. No. 563,898
 Int. Cl.⁴ B65G 47/22
 U.S. Cl. 198—389

15 Claims



1. Apparatus for orienting articles, wherein the articles have a substantially right circular cylindrical configuration as defined about a longitudinal axis and characterized by a first diameter portion having a diametrical extent D, a second diameter portion having a smaller diametrical extent than said first diameter portion, and a length dimension L, comprising: funnel means, having a longitudinal axis, for receiving said articles in a random manner wherein said longitudinal axis of each of said articles may be disposed in any one of an infinite number of orientations relative to said longitudinal axis of said funnel means; passage means, having a longitudinal axis, connected to said funnel means for permitting passage of said articles through said passage means only when the longitudinal axis of each of said articles is disposed in a predetermined orientation relative to said funnel means and said passage means wherein said longitudinal axis of each of said articles will be disposed substantially co-axially with said longitudinal axis of said passage means while said first diameter portion of each of said articles will be disposed only in either a first mode in which said first diameter portions of some of said articles will be disposed vertically above their corresponding second diameter portions of said some of said articles or a second mode in which said

first diameter portions of the remaining ones of said articles will be disposed vertically below their corresponding second diameter portions of said remaining ones of said articles, and for preventing passage of said articles through said passage means when said longitudinal axis of each of said articles is disposed in an orientation different from said predetermined orientation;

means for re-orienting each of said articles passing through said passage means through an angle of 90° such that each of said articles has its longitudinal axis disposed horizontally; and

conveyor means for re-orienting each of said horizontally disposed articles through an angle of 90° such that said first large diameter portions of all of said articles are disposed vertically above said second smaller diameter portions of said articles for discharge in a final orientation mode.

4,640,408

FEEDER WITH AUTOMATIC ZONED PRODUCT TIMING CORRECTION

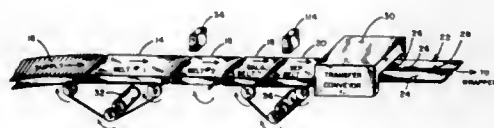
Fred W. Eaves, Clayton, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Continuation of Ser. No. 456,614, Jan. 10, 1983, abandoned. This application Jan. 23, 1985, Ser. No. 694,086

Int. Cl.⁴ B65G 47/26

U.S. Cl. 198—460

7 Claims



1. An electronic control system for a belt-type conveyor for causing products being carried thereby to be properly spaced for centering between adjacent pusher fingers defining a flight of a transfer mechanism, comprising in combination:

- first conveyor belt means adapted to receive products in random sequence from a supply conveyor;
- first multi-speed motor means connected in driving relation only to said first conveyor belt means and said supply conveyor;
- backlog conveyor belt means for positioning said products in a serial head-to-tail touching relationship and separation conveyor belt means respectively serially disposed downstream from said first conveyor belt means;
- second multi-speed motor means connected in driving relation only to said backlog conveyor means and said separation conveyor means with said separation conveyor means being continually driven at a speed slightly greater than the speed of said backlog conveyor means;
- electronic sensing means positionally associated with said backlog conveyor means for sensing the presence of a gap between adjacent products when said products are moving in the area between said backlog belt and said first conveyor belt means for increasing the speed of said first multi-speed motor means for closing said gap;
- servo control means for driving said second multi-speed motor means at a normal rate proportional to the speed of said transfer mechanism;
- zone defining means for establishing more than two discrete zones within said conveyor flight of said transfer mechanism, said zone defining means including means for generating a unique signal for each of said more than two discrete zones, and
- means coupled to said zone defining means and to said servo control means for increasing or decreasing the rate of said second multi-speed motor means for said normal rate by one of more than two speed change values which depends upon the relative positioning of said conveyor flight of said transfer mechanism at the instant that a

product reaches a predetermined location with respect to said separation belt.

4,640,409

CONVEYOR FOR SHEET MATERIAL

Lodewijk T. Holtman, Tegelen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

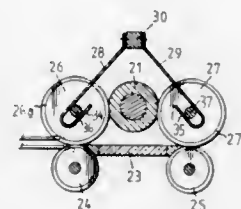
Filed May 16, 1984, Ser. No. 610,910

Claims priority, application Netherlands, May 31, 1983, 8301915

Int. Cl.⁴ B65G 29/00, 37/00

U.S. Cl. 198—624

6 Claims



1. A conveyor for conveying sheet material in sheet or web form, comprising two pairs of conveyor rollers disposed with their axes parallel to one another, each pair comprising a displaceable deformable conveyor roller and a cooperating substantially non-deformable conveyor roller; a substantially non-deformable drive roller operable to drive said pairs of rollers, said drive roller being mounted for rotation on a fixed axis intermediate said pairs of rollers; and means for pressing each of said deformable rollers in peripheral frictional driving relation against its cooperating non-deformable conveyor roller and in peripheral frictional driven relation against said drive roller so that at the corresponding nips of each said deformable roller deformations thereof cause substantially compensating changes of peripheral speed to keep said non-deformable conveyor rollers at an at least nearly identical peripheral speed.

4,640,410

CONVEYING SYSTEM OF THE TYPE IN WHICH PLASTIC CARRIERS ARE MOUNTED ON PLASTIC LINKS OF A CONVEYOR CHAIN

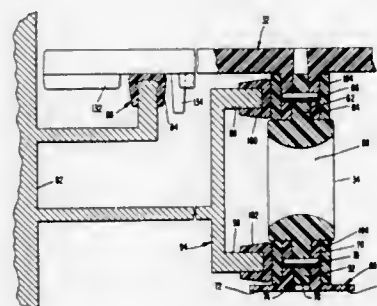
Karl V. Palmaer, 694 Golfers Pass, Unit #2, Incline, Nev. 89450, and David B. Park, 28 Walnut St., Middleboro, Mass. 02346

Filed Oct. 11, 1983, Ser. No. 540,920

Int. Cl.⁴ B65G 47/84

U.S. Cl. 198—803.01

7 Claims



1. A conveyor comprising:

- a chain including a plurality of plastic links connected together for relative pivotal movement, at least some of said links including an integral upwardly projecting first coupling element,
- a plurality of plastic carriers mounted on at least some of said

links, said carriers each including an integral downwardly projecting second coupling element,

one of said first and second coupling elements comprising a socket of non-circular cross-section, and the other of said first and second coupling elements comprising a post of non-circular cross-section received in said socket with a tapered fit, and

a dowel pin frictionally disposed in aligned holes in each socket and post assembly,

at least some of said links including plastic hold-down members attached to lower portions thereof, said hold-down members each including at least one lateral flange adapted to engage the underside of a stationary guide, said hold-down members being replaceably mounted, and each including a socket which receives a downwardly projecting post on said link with a tapered fit, and a plastic pin disposed within aligned holes in said socket and post.

4,640,411

MAILER CONSTRUCTION

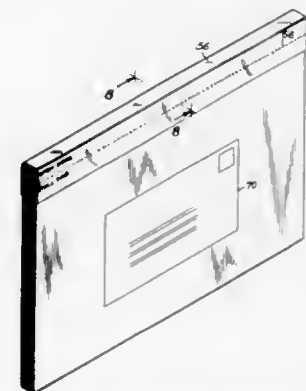
Guy A. Fery, New York, N.Y., assignor to Floating Sky, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 449,361, Dec. 13, 1982, Pat. No. 4,567,982, which is a continuation-in-part of Ser. No. 346,441, Feb. 8, 1982, Pat. No. 4,434,889. This application Nov. 7, 1984, Ser. No. 669,148

Int. Cl.⁴ B65D 75/20, 77/00

U.S. Cl. 206—216

9 Claims



1. A mailing envelope for a multi-page book having front and back covers joined by a spine, comprising a receptacle having a base and four upstanding sides, said base and sides being formed from a sheet material and being foldable into an essentially planar configuration having a top edge and bottom edge, said folded receptacle being dimensioned to be wrapped about said book such that said top edge is proximate said spine-front cover joint and said bottom edge is proximate said spine-rear cover joint, and a closure strip affixed to said top and bottom edges of said receptacle and extending across said spine, said strip having means to permit separation of said edges such that the receptacle may be removed from the book and opened.

4,640,412

SELF-CONTAINING PACKAGE SYSTEM FOR STORAGE AND TRANSPORTATION OF PRE-FABRICATED PORTIONS OF A BUILDING STRUCTURE AND THE ASSEMBLY THEREOF

Joseph Skvaril, 4807 -143rd St., Edmonton, Alberta, Canada T6H 4C9

Filed Dec. 27, 1984, Ser. No. 686,829

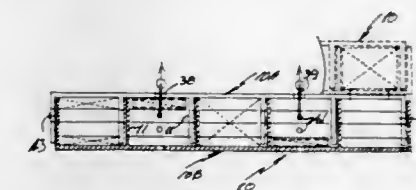
Int. Cl.⁴ E04H 1/12

U.S. Cl. 206—321

32 Claims

1. A floor/ceiling package for prefabricated structures, said package including two halves, each half including a plurality

of spaced and parallel transverse joists, each including ends and a planar panel spanning one side of said joists and acting as a floor or ceiling surface, means to detachably secure said halves together along a common junction line to form a floor or ceiling unit, said unit including corners, said junction line extending parallel to said joists, each half having a joist at the common junction line for selectively securing said halves together, said halves being nestable one within the other to form said package when separated, one of said halves being



reversed vertically through 180° relative to the other half and placed whereby said joists of one half are nested within said corresponding joists of the other half so that said planar panels form upper and lower enclosure surfaces of said package, means to detachably secure said halves together to form said package and a perimetrical beam member engaging strut secured across the ends of all of said joists perpendicular to said joists and situated intermediate the upper and lower sides of said joists.

4,640,413

UNIVERSAL PACKAGE FOR PRERECORDED COMPUTER DISK AND ASSOCIATED INSTRUCTIONAL MATERIAL

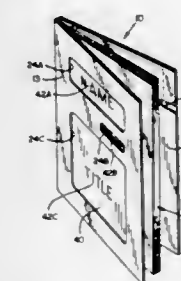
Gary M. Kaplan; Robert T. Karau, both of Eugene; Norman E. Winney, Jr., Springfield, and David G. Brader, Eugene, all of Oreg., assignors to Communications Transfer Corp., Eugene, Oreg.

Filed May 31, 1985, Ser. No. 739,824

Int. Cl.⁴ B65D 27/30, 85/57

U.S. Cl. 206—232

7 Claims

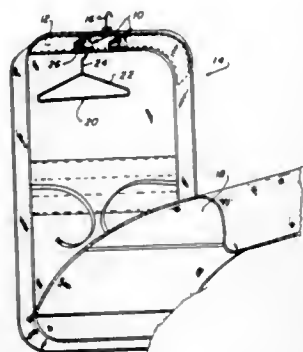


1. A package for displaying and selling a preprogrammed computer disk comprising:

- a sheet containing printed indicia relating to the particular computer program or series of programs being sold in the package; and
- a folder which is divided into at least two integral segments which are foldable relative to one another between a closed position wherein said sections overlies one another and an open position wherein said sections are disposed side-by-side, said folder including a front segment having an open pocket defined therein which removably receives said sheet and has openings defined therein which are arranged to permit viewing said identifying indicia through said package when said folder is in its closed position, and a rear segment having a closed pocket defined therein encapsulating the computer disk.

4,640,414
LOCKING TROLLEY FOR GARMENT BAG WITH IMPROVED HANGER RETENTION
 Lawrence R. Mobley, and James S. Gregg, both of Aurora, Colo., assignors to Samsonite Corporation, Denver, Colo.
 Continuation-in-part of Ser. No. 673,353, Nov. 23, 1984. This application Jul. 12, 1985, Ser. No. 754,617
 Int. Cl.⁴ B65D 85/18; B25B 5/08
 U.S. Cl. 206—287

32 Claims



1. A locking trolley for suspending and retaining hooked ends of clothes hangers within the interior of a garment bag, comprising:

- a substantially rigid frame member of generally C-shaped configuration having an upper horizontal portion, a back vertical portion extending downward from the rear of the upper horizontal portion, and a lower horizontal portion extending forward from the lower end of the back vertical portion, the upper and lower horizontal portions being vertically separated by a space open at the front of the C-shaped frame member and closed at the rear end of the frame member by the back vertical portion;
- a jaw member pivotably connected at a rear end thereof to the vertical portion of the frame member and extending forward through the space at a location between the upper and lower horizontal portions and terminating at a forward end thereof;
- a gripping structure connected to the jaw member and facing the lower horizontal portion of the frame member;
- a gripping structure connected to the lower horizontal portion of the frame member and facing the jaw member;
- the gripping structures contacting and retaining the hooked ends of the hangers when in operative hanger-end gripping adjacency with one another upon a predetermined degree of pivoting movement of the jaw member toward the lower portion of the frame member; and
- the gripping structures separating to allow free movement of the hanger ends therebetween upon a predetermined degree of pivoting movement of the jaw member away from the lower portion of the frame member;
- lip means extending above and at the forward end of the gripping structure connected to the lower horizontal portion of the frame member; and
- a lever pivotably connected to the forward end of the jaw member, the lever having a lower end and an upper end extending in respectively opposite directions from the location at which the lever is pivotably connected to the jaw member, the lever pivoting between a first position in which its upper end extends into the space between the jaw member and the upper portion of the frame member and its lower end extends forward of the front end of the jaw member and a second position in which the lever generally extends across the space at the front of the C-shaped member; the upper end of the locking lever including means operatively contacting and moving along the upper portion of the frame member for pivoting the jaw member about its rear end into a generally aligned relation with the lower horizontal portion of the frame

member in which the gripping structure on the jaw member is in hanger-end gripping adjacency with the gripping structure of the lower portion of the frame member as the lever is moved into the second position;

said lip means presenting an obstruction to the movement of the hanger ends from between the gripping structures at the forward ends of the gripping structures when the lever is moved into the second position.

23. A locking trolley adapted to be operatively connected to the interior surface of a top side gusset of a garment bag, and operative for suspending the hooked ends of clothes hangers within the interior of a garment bag on a non-inclined gripping structure when the trolley is in an unlocked condition, and operative for retaining the hooked ends of hangers on the gripping structure when the trolley is in a locked condition, comprising:

a substantially rigid frame member of generally C-shaped configuration having an upper horizontal portion, a back vertical portion extending downward from the rear of the upper horizontal portion, and a lower horizontal portion extending forward from the lower end of the back vertical portion, the upper and lower horizontal portions being vertically separated by a space open at the front end of the C-shaped frame member and closed at the rear end of the C-shaped frame member by the back vertical portion;

means for connecting the frame member to the garment bag with the upper portion of the frame member positioned facing the top side gusset and the lower portion positioned below the upper portion;

a jaw member extending generally forward through the space defined by the C-shaped frame member;

a gripping structure connected to the lower portion of the frame member and facing the jaw member, the gripping structure extending in a generally non-inclined and horizontal manner to contact and suspend the hooked ends of the hangers when the trolley is in the unlocked condition and to contact and retain the hooked ends of the hangers when the trolley is in the locked condition;

means connecting the jaw member to the frame member and operative for moving the jaw member toward the lower horizontal portion of the frame member to position the hanger ends in gripping adjacency and retention with the gripping structure when the trolley is in the locked condition, and operative for moving the jaw member away from the lower horizontal portion of the frame member to release the hanger ends for free suspension on the gripping structure and to provide an access opening in the space between the gripping structure and the jaw member when the trolley is in the unlocked condition;

selectively operable locking and unlocking means operatively connected between the jaw member and the frame member for maintaining the jaw member positioned toward the lower portion of the frame member to maintain the locked condition of the trolley and for releasing the jaw member for movement away from the gripping structure to achieve the unlocked condition of the trolley; and

means at the forward end of the gripping structure for obstructing movement of a hanger and from between the forward end of the gripping structure and the jaw member when the trolley is in the locked condition.

30. A locking trolley adapted to be operatively connected to the interior surface of a top side gusset of a garment bag, and operative for suspending the hooked ends of clothes hangers within the interior of a garment bag on a non-inclined resilient gripping structure when the trolley is in an unlocked condition, and operative for retaining the hooked ends of hangers on the resilient gripping structure when the trolley is in a locked condition, comprising:

a substantially rigid frame member of generally C-shaped configuration having an upper horizontal portion, a back vertical portion extending downward from the rear of the upper horizontal portion, and a lower horizontal portion extending forward from the lower end of the back vertical

portion, the upper and lower horizontal portions being vertically separated by a space open at the front end of the C-shaped frame member and closed at the rear end of the C-shaped frame member by the back vertical portion;

means for connecting the frame member to the garment bag with the upper portion of the frame member positioned facing the top side gusset and the lower portion positioned below the upper portion;

a jaw member extending generally forward through the space defined by the C-shaped frame member;

a resilient gripping structure connected to the lower portion of the frame member and facing the jaw member, the gripping structure extending in a generally non-inclined and horizontal manner to contact and suspend the hooked ends of the hangers when the trolley is in the unlocked condition and to contact and retain the hooked ends of the hangers when the trolley is in the locked condition;

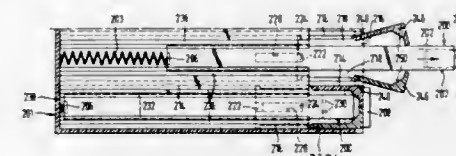
means connecting the jaw member to the frame member and operative for moving the jaw member toward the lower horizontal portion of the frame member to position the hanger ends in gripping adjacency and retention with the gripping structure when the trolley is in the locked condition, and operative for moving the jaw member away from the lower horizontal portion of the frame member to release the hanger ends for free suspension on the gripping structure and to provide an access opening in the space between the gripping structure and the jaw member when the trolley is in the unlocked condition;

selectively operable locking and unlocking means operatively connected between the jaw member and the frame member for maintaining the jaw member positioned toward the lower portion of the frame member to maintain the locked condition of the trolley and for releasing the jaw member for movement away from the gripping structure to achieve the unlocked condition of the trolley; and

structural means the resilient gripping structure for increasing the compressibility of the resilient gripping structure over the compressibility provided by the resiliency of the material itself from which the gripping structure is formed.

4,640,415
CONTAINER HAVING AUTOMATIC DOORS AND FOR ACCOMMODATING DATA STORAGE MEDIA
 Peter Ackeret, Küssnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland
 Filed Jan. 16, 1984, Ser. No. 570,912
 Claims priority, application Fed. Rep. of Germany, Jan. 15, 1983, 3301203; European Pat. Off., Aug. 29, 1983, 83108481.9
 Int. Cl.⁴ B65D 85/676, 85/57
 U.S. Cl. 206—387

12 Claims



1. A container for accommodating at least one data storage medium, said container comprising:

- (a) a housing having a base wall, a top wall, two side walls, a rear wall, and an open front face opposite the rear wall, and having at least one compartment therein;
- (b) at least one slider member each for holding at least one data storage medium, the number of slider members at least corresponding to the number of compartments, said slider member being received in said compartment and being slidably movable into and out of the housing, the data storage medium being accessible for insertion or removal when the slider member is out of the housing;

(c) locking means for retaining the slider member in the housing;

(d) biasing means for ejecting the slider member from the housing when the locking means is released; and

(e) door means separate and distinct from the slider member, said door means being movable between an open position and a closed position for opening and closing the open front face of the housing wherein the door means is moved to the closed position by the insertion of the slider member into the housing and is moved to the open position by the ejection of the slider member from the housing.

4,640,416
DISK STORAGE AND CARRYING CASE
 Allan R. Northrup, and John G. Tomkinson, both of King County, Wash., assignors to Amaray International Corporation, Redmond, Wash.
 Filed Apr. 12, 1985, Ser. No. 722,936
 Int. Cl.⁴ B65D 85/57
 U.S. Cl. 206—425

20 Claims



1. A storage case for floppy disks and similarly shaped articles, comprising:

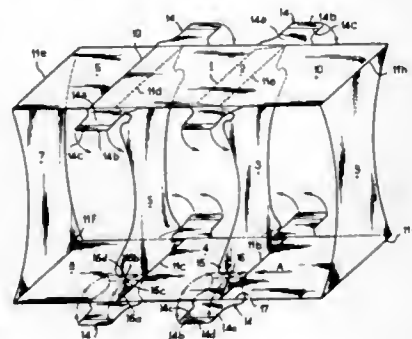
- (a) a base having an open interior and forming a receptacle for receiving and storing the articles;
- (b) dividers positionable within the receptacle for separating and segregating the articles, including means for securing the dividers to the base, at least when the base is in a tipped, upright position and for securing the dividers to the base for tilting movement;
- (c) a lid for selectively enclosing and exposing the interior receptacle and wherein the lid has a top interior surface positioned in a spaced relation to the top of the articles when they are placed in the receptacle;
- (d) means for securing the lid to the base when the lid is enclosing the receptacle; and
- (e) means, extending toward the interior from the top interior surface of the lid, for engaging the top of at least some of the articles to support a portion of the article's weight and to maintain their position relative to the dividers and other stored articles when the lid is closed and the base is in a tipped, upright position.

4,640,417
DISPLAY-PACKING UNIT FOR GLASSES AND SIMILAR ARTICLES
 Philippe Durand, Arques, France, assignor to Verrerie Cristallerie d'Arques J. G. Durand & Cie, Arques, France
 Filed Apr. 9, 1985, Ser. No. 721,225
 Claims priority, application France, Apr. 9, 1984, 84 05570
 Int. Cl.⁴ B65D 85/44
 U.S. Cl. 206—426

10 Claims

1. A collapsible and erectable display packing for glasses and similar objects, said display packing being formed from a generally rectangular cardboard blank having parallel transverse fold lines therein defining a plurality blank panels adapted to constitute wall sections of said display packing, said display packing having, when in an object-receiving state, a plurality of alternately upper and lower horizontal wall sections inter-

connected by vertical wall sections, a respective projecting tongue formed at each of the opposite side edges of each blank panel defining a horizontal wall section which in the object-receiving state of the display packing bridges a respective interior vertical wall section of the latter located intermediate the opposite ends of the display packing, each of said tongues having a first tongue panel connected along an inner fold line to the associated blank panel and further having a second tongue panel connected along a medial fold line to said first tongue panel and terminating in a free end edge, and a corresponding groove formed in each of the opposite side edges of each blank panel defining one of said respective interior vertical wall sections at the upper and lower regions thereof, each of said grooves having a first straight edge region extending inwardly of the respective blank panel from the associated side edge thereof at an acute angle to the associated transverse fold line and corresponding in length to the dimension of the respective first tongue panel between said inner and medial fold



lines, a second straight edge region extending from a juncture thereof with said first edge region outwardly of the respective blank panel at an angle to said first edge region and corresponding in length to the dimension of the respective second tongue panel between said medial fold line and said free end edge, and a projection extending from a juncture with and at an angle to said second edge region outwardly of the respective blank panel so as to overlie the portion of said first edge region adjacent said juncture thereof with said second edge region, said grooves thereby being configured for receiving the associated tongues so that when the display packing is in its object-receiving state, said first tongue panel of each tongue rests flush against said first edge region of the associated groove, said second tongue panel rests flush against said second edge region, and said free end edge of said second tongue panel is hooked behind said projection at said juncture thereof with said second edge region, thereby to hold and lock the vertical wall sections in position.

4,640,418 PROTECTIVE BULK PACK CONTAINER FOR ICE CREAM CONES

Bobby Lowry, Norcross, Ga., assignor to June A. Lowry, Decatur, Ga.

Filed Apr. 8, 1985, Ser. No. 720,997
Int. Cl. B65D 81/16, 85/36

U.S. Cl. 206-499

2 Claims

1. A protective bulk pack container for ice cream cones, comprising:

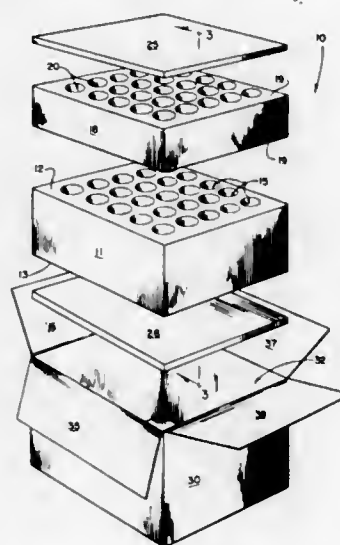
- a plurality of stacks of nested ice cream cones, each of said cones being of substantially identical outside diameter;
- a first protective body formed of a semi-rigid and resilient plastic foam material, said first protective body defining a plurality of cylindrical cone-receiving passageways extending the height thereof, so as to define openings in the top surface and the bottom surface thereof, each of said passageways in said first protective body being of such a diameter as to yieldingly receive one of said plurality of stacks of nested ice cream cones without causing damage

to any of said cones but to suspend each of said cones within said stack within said passageway, thereby preventing any lateral movement thereof;

a second protective body formed of a semi-rigid and resilient plastic foam material, said second protective body defining a plurality of cylindrical cone-receiving passageways extending the height thereof, so as to define openings in the top surface and bottom surface thereof, each of said passageways in said second protective body being of a diameter substantially equal to that of said passageways in said first protective body,

said second protective body being configured for placement on top of said first protective body so as to align said passageways of said second protective body with said passageways of said first protective body;

a top cover member disposed on the top surface of said second protective body, said top cover member being formed of a rigid and resilient plastic foam, and dimen-



sioned to cover each of said plurality of openings defined in said top surface of said second protective body;

a bottom cover member disposed on the bottom surface of said first protective body, said bottom cover member being formed of a rigid and resilient plastic foam, and dimensioned to cover each of said plurality of openings defined in said bottom surface of said first protective body; and

an external container dimensioned to snugly receive said first protective body, said second protective body, said top cover member and said bottom cover member, whereby insertion of a plurality of nested stacks of ice cream cones into said plurality of cone-receiving passageways in said first protective body and said second protective body provides a casing which envelopes said stacks of cones for shipping and storing and removal of said top cover member and said second protective body provides a container from which the cones may be dispensed.

4,640,419 PACKING STRUCTURE FOR A HANGING FAN

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Oct. 30, 1985, Ser. No. 793,111
Int. Cl. B65D 69/00

U.S. Cl. 206-577

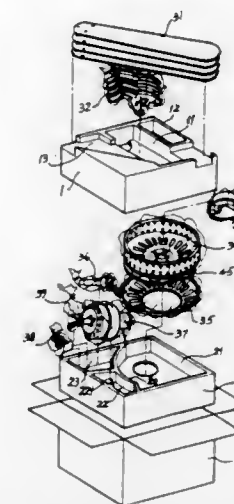
7 Claims

1. A packaging structure for a hanging fan of the type having a housing, a motor being disassemblable from the housing, and at least one fan blade, said structure comprising:

- an upper storage tray having a substantially rectangular base, said base having a diagonal slot formed therein to receive the fan blade and further having four edges, said

tray further having four side walls, each side wall being secured to and extending downwardly from a respective edge of the base;

a lower storage tray adapted to receive the upper storage tray thereon, said lower tray having a substantially rectangular base having four edges, said lower tray further



having four side walls, each side wall being secured to and extending upwardly from a respective edge of the base, each of said side walls being of a height to receive the housing and the motor therein; and

a carton for receiving and enclosing the said upper tray and lower tray therein, and wherein the hanging fan is packaged.

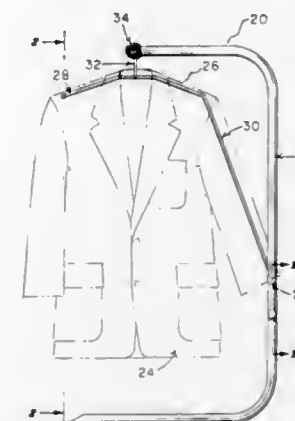
4,640,420 GARMENT LOCK

Scott A. McKay, 13811 Bessemer St., Van Nuys, Calif. 91401

Filed Oct. 20, 1983, Ser. No. 543,750
Int. Cl. A47F 7/19

U.S. Cl. 211-4

20 Claims



1. A clothing rack comprising:

frame means comprising a first upright arm and a second upright arm;

at least one rod removably attached near one end to said frame means for retaining an article of clothing on said frame means;

locking means for locking said rod to said frame means, said locking means comprising:

a channel section having an edge and a web and connected between said first and second arms;

a hinged cover pivotally attached to said edge of said channel section;

at least one tapered opening in said web of said channel section for receiving said one end of said rod;

at least one stop means attached to said hinged cover for preventing the disengagement of said end of said rod with said channel section whenever said hinged cover is closed;

securing means for attaching the other end of said rod to said frame means and preventing separation of said rod from said frame means, said securing means being an elongate brace and extending between said arms.

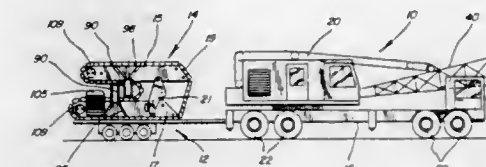
4,640,421 TRUCK CRANE CONVERSION TO CRAWLER CRANE

Daniel P. Mason, 4232 N. Kedvale, Chicago, Ill. 60641

Filed Feb. 26, 1985, Ser. No. 705,904
Int. Cl. B66C 23/78

U.S. Cl. 212-175

10 Claims



1. A truck crane of the type having a crane mounted on a truck frame and using wheels for movement from one locale to another, being convertible to a self-powered crawler crane, comprising in combination,

a crane of the type having its own control system, mounted on a truck frame having a truck cab with its own power source and drive train and vehicle wheels mounted thereon to accommodate the movement of said crane from one locale to another,

said crane further including an independent track control system mounted thereon,

said truck frame being split and being engageably disengageable into a forward frame section and a rear frame section, said drive train being disengageable thereby to permit said forward frame section of said truck frame to be separable from said rear frame section thereof,

said truck frame further including a plurality of outrigger beams positioned on opposed sides of said rear frame section, each of said outrigger beams provided with upstanding standards fixedly secured to the outer end thereof and said outrigger beam further provided with at least one aperture adjacent to and rearward of said upstanding standard, each of said upstanding standards accommodating an outrigger jack mounted therein and adapted to reciprocate between a raising position and a retracted position,

said truck frame further including a plurality of first mount means positioned on opposed sides thereof,

a pair of portable crane tracks,

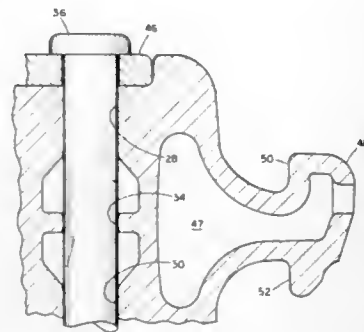
at least one of said pair of crane tracks having an independent power source carried thereon and further including flexible motive means for connecting said independent power source to said independent track control system,

each of said pair of portable crane tracks including mounting fixtures positioned thereon for engageable mounting with said first means of said truck frame where said truck frame is elevated by said outrigger jacks when reciprocated into the raising position thereof, and adapted to raise the level of said truck frame relative to the ground such that said vehicle wheels are above ground level when said crane tracks are mounted on said truck frame and said outrigger jacks reciprocated into the retracted position thereof,

whereby said truck crane may be powered to a desired locale by the truck cab and thereafter, said truck cab forming said forward frame section being separated by

disengaging said truck frame and drive train into said respective forward and rear frame sections, raising said truck frame by means of reciprocating outrigger jacks into the raising position thereof, employing said crane to maneuver said portable crane tracks into position relative to said truck frame until said frame first mount means and said crane tracks mounting fixtures are in registry and secured together and connecting said flexible motive means to said independent track control system such that said truck crane is converted into a crawler crane having its own independent power source.

4,640,422
KNUCKLE STRUCTURE TO PREVENT KNUCKLE PIN FAILURE IN A RAILWAY COUPLER
 William O. Elliott, Pittsburgh, Pa., assignor to McConway & Torley Corporation, Pittsburgh, Pa.
 Filed Feb. 6, 1985, Ser. No. 698,782
 Int. Cl.⁴ B61G 3/04
 U.S. Cl. 213—155 6 Claims

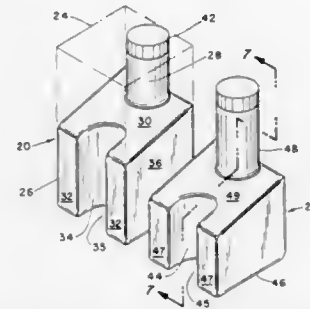


1. In a knuckle for a railway coupler of the type having a hub portion provided with a pivot pin hole and bounded on one side by a throat portion contiguous with a nose portion, the nose portion being adapted to be engaged by the nose portion of the knuckle of a cooperating coupler, and wherein said pivot hole is formed in a casting by upper and lower circular openings separated by an intermediate cavity; the improvement in said knuckle comprising an annular knuckle pin support surface in said intermediate cavity, said annular support surface having a diameter essentially corresponding to the diameter of said upper and lower circular openings for supporting a knuckle pin against bending between said upper and lower circular openings whereby bending stresses on the knuckle pin imposed by the nose portion of the knuckle of a cooperating coupler are materially reduced.

4,640,423
MULTIPLE VARIABLE CONTAINER PACKAGE
 Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
 Filed Apr. 9, 1985, Ser. No. 721,195
 Int. Cl.⁴ B65D 21/02
 U.S. Cl. 215—10 22 Claims

1. A multiple container package comprising a plurality of mated containers each having an interior volume and an exterior volume, each container having a hollow body including two polygonal side walls, a polygonal rear wall, a polygonal front wall, a polygonal bottom wall and a top shoulder wall, with an elongated recessed surface adjacent one of said bottom and front walls forming a recess in each container, each recess in a bottom of a container extending through the rear and front walls of that container and each recess in a front wall of a container extending through the shoulder and bottom of that container; each container having a hollow neck connected integrally to said body and extending outwardly from said top shoulder wall into the recess of the recessed surface of another container, at least one wall of adjacent container bodies lying

in contiguous relationship against each other, said plurality of containers forming a polyhedron having opposite side planes with one side wall of each container body lying in one side plane and the other side wall of each container body lying in the other side plane, one of the interior and exterior volumes of



at least two of said plurality of containers being different from each other, said polyhedron being the minimum rectangular polyhedron which is needed to encompass at least one of said containers with its hollow body and neck, said at least one container having a neck which substantially fills the recess of another one of said containers.

4,640,424
SELF-OPENING NIPPLE CONSTRUCTION AND NURSING CONTAINER
 Leonard A. White, Gurnee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
 Continuation of Ser. No. 599,305, Apr. 12, 1984, abandoned.
 This application Mar. 13, 1986, Ser. No. 840,523
 Int. Cl.⁴ A61J 9/00, 9/08, 11/00; B65D 85/172
 U.S. Cl. 215—11 R 15 Claims



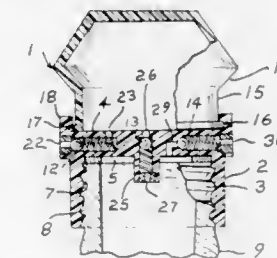
1. An infant nurser comprising:
 means defining a flexible plastic container having a penetrable wall portion;
 a quantity of liquid within said container; and
 a nipple assembly carried by said container adjacent said penetrable wall portion, said nipple assembly including:
 a hollow flexible dispensing nipple including a base portion carried by the container and a flexible nipple portion;
 accessing means associated with said nipple, said accessing means being axially movable upon lateral compression of the flexible nipple portion to penetrable said penetrable wall portion to permit dispensing of said liquid through said nipple; and
 a cover enclosing said flexible nipple, said cover being axially substantially rigid and including means for lateral compression.

4,640,425
ONE-PIECE NURSING CONTAINER WITH MEANS FOR STORING NIPPLE
 James L. Cabernoch, Cary, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
 Filed Apr. 12, 1984, Ser. No. 599,425
 Int. Cl.⁴ A61J 9/00, 11/00; B65D 85/72
 U.S. Cl. 215—11 E 16 Claims



1. A nursing container comprising:
 a web of flexible material having transverse and longitudinal dimensions;
 a nipple assembly secured to said web and generally centrally disposed on one face of said web, the nipple assembly being a standard nipple assembly;
 a first pair of side panels defined in said web on either side of said nipple assembly and joined together to enclose said nipple assembly;
 means defining a peelable seal between said first pair of side panels to enclose said nipple assembly and adapted to access said nipple assembly for use;
 a second pair of side panels extending from said first pair of side panels to the end of said web, the sides and ends of said second pair of side panels being joined together to form a liquid compartment;
 a quantity of liquid in said liquid compartment;
 said first pair of joined side panels form an inner compartment to enclose said nipple assembly and said second pair of joined side panels form an outer compartment for liquid and said nipple assembly;
 an access port in said web communicating with said nipple assembly and said liquid compartment; and
 means for defining a liquid tight peelable seal within said liquid compartment to close fluid communication with said access port until ruptured for use.

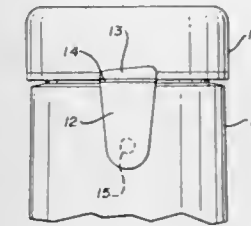
4,640,426
CAP FOR A CARBONATED BEVERAGE BOTTLE
 Bernard Wasley, 212-11 85th Ave., Jamaica, N.Y. 11427
 Filed Feb. 7, 1986, Ser. No. 826,921
 Int. Cl.⁴ B65D 51/24
 U.S. Cl. 215—228 5 Claims



1. A cap for closing the mouth end of a bottle containing a beverage and for pressurizing the interior of the bottle with air, the cap comprising a body having a recess in a bottom end thereof adapted to receive the mouth end of the bottle, the body having a flat surfaced headpiece closing over a top end of the recess, a resilient bulb having an open bottom end seated on the headpiece, the bulb being compressible under manual pressure and adapted to re-expand to normal upon relaxing of said pressure, a normally closed spring loaded valve means in the

headpiece having response to contraction of the bulb to allow air forced out of the bulb to pass through the headpiece to the mouth of the bottle, and a normally closed spring loaded ball valve means in the headpiece having response to re-expansion of the bulb to allow outside air to be drawn through the headpiece into the expanding bulb; wherein the recess in the body has a threaded wall adapted for engagement with a threaded neck of the bottle adjacent the mouth end; wherein a third normally closed spring loaded ball valve means is in the headpiece and is responsive to development of pressure above a predetermined value in the bottle to cause release of the excess pressure to atmosphere; and wherein the headpiece has a raised shoulder extending about the flat surface, and the bulb has a rib around its periphery interlocked in a complementary channel in the shoulder.

4,640,427
TAMPER-RESISTANT CLOSURE
 Michael Marino, 540 Sampson St., New Castle, Pa. 16101, and Thomas C. Rudis, 2306 Eastman, Rolling Meadows, Ill. 60008
 Filed Dec. 4, 1985, Ser. No. 804,498
 Int. Cl.⁴ B65D 41/34
 U.S. Cl. 215—232 4 Claims

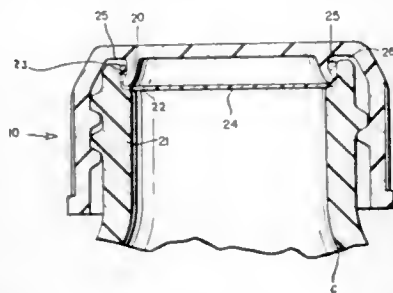


1. An improvement in a thermoplastic tamper-resistant closure for a thermoplastic cylindrical container of the type having a neck surrounding an opening to the container, and having a closure retaining continuous thread pattern on said neck, said closure comprising means for covering said opening to said container and having an annular portion with inner and outer surfaces surrounding said neck, a continuous thread pattern in said inner surface of said annular portion of said closure for cooperation with said continuous thread pattern on said neck, the improvement wherein an integral depending tab is located on the outer surface of said annular portion of said closure and positioned alongside of said cylindrical container, a transverse tear line in said depending tab adjacent said annular portion of said closure defining a tear-away portion of said depending tab therebelow, an area of said tear-away portion and a matching area of said cylindrical container being bonded to one another whereby separation of said depending tab at said tear line leaves a small portion of said depending tab on said annular portion of said closure spaced with respect to said tear-away portion so that said closure can be rotated freely to remove the same from said neck of said container.

4,640,428
HIGH GAS BARRIER PLASTIC CLOSURE
 Long Fei Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
 Filed Sep. 3, 1985, Ser. No. 772,277
 Int. Cl.⁴ B65D 53/04
 U.S. Cl. 215—270 10 Claims

1. A plastic closure system for containers holding liquids under internal pressure, which provides good sealing and gas barrier properties, comprising a generally circular sealing member formed of at least two superimposed layers of different resins, said sealing member having a diameter larger than the inner diameter of the container inner neck wall, a plastic

overcap, said overcap having an integrally formed, annular member extending downward from the inner top wall thereof, said annular member having a diameter less than the topmost portion of the container inner neck wall, said container inner



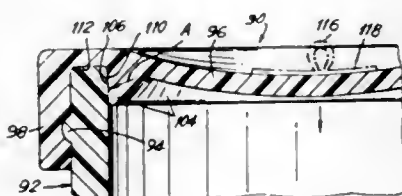
neck wall formed with a radially inwardly extending annular ledge spaced below said topmost portion of said container neck, said ledge in said container neck and the lower edge of said annular member adapted to sealingly engage an annular portion of said sealing member positioned therebetween.

4,640,429 CLOSURE HAVING INTEGRAL FORMED SEALING MEANS

Jeffrey Sandhaus, Rte. 9W, Snedens Landing, N.Y. 10964
Division of Ser. No. 549,477, Nov. 7, 1983, Pat. No. 4,550,841, which is a continuation-in-part of Ser. No. 441,546, Nov. 15, 1982, Pat. No. 4,479,585, which is a continuation-in-part of Ser. No. 399,237, Jul. 19, 1982, Pat. No. 4,442,945, which is a continuation-in-part of Ser. No. 335,216, Dec. 28, 1981, Pat. No. 4,413,742. This application Jul. 30, 1985, Ser. No. 760,475
Int. Cl.⁴ B65D 45/32

U.S. Cl. 215—320

12 Claims



1. A closure for closing an open end of a container, said open end having a sidewall including an outer surface, an inner surface, and a top surface, comprising:

- a top;
 - a skirt depending from a peripheral edge region of said top, said skirt having a sidewall adapted to fit over said outer surface of said sidewall of said open end; and
 - means, coupled to said top, spaced radially inwardly from said sidewall of said skirt, for engaging said sidewall of said open end,
- said top including means, disposed in a central region thereof, pivotable downwardly about said sidewall of said open end, for, with downward pivoting thereof, urging said engaging means outwardly against said sidewall of said open end of said container without affecting a disposition of said sidewall of said skirt relative to said sidewall of said open end of said container,
- said engaging means extending downwardly from said urging means.

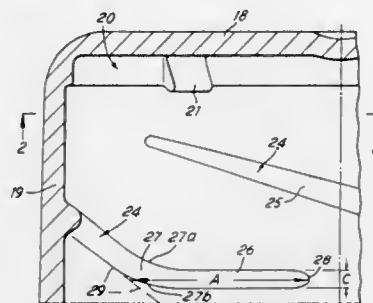
4,640,430 SCREW CAPS FOR CONTAINERS

Peter R. Haines, Skelmersdale, England, assignor to M C G Plastics Limited, Lancashire, England
Filed Dec. 17, 1985, Ser. No. 809,866
Claims priority, application United Kingdom, Dec. 18, 1984, 8431914; Feb. 12, 1985, 8503523

Int. Cl.⁴ B65D 41/04

U.S. Cl. 215—330

7 Claims



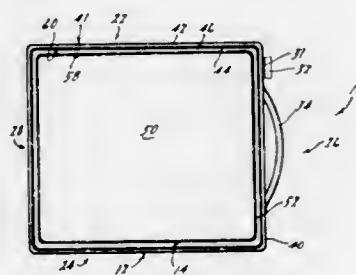
1. A cap for a container which cap comprises a top and a depending skirt having an internal surface which is formed with inward projections for screw-threaded engagement with the neck of the container, each of said projections having a surface facing generally towards the top which surface has, in the direction of rotation during application of the cap, a leading portion extending circumferentially with a zero helix angle and a trailing portion inclined towards the top.

4,640,431 DUAL-CHAMBERED OIL CHANGING CONTAINER

Robert W. Harrison, 3475 Joan Drive, Mississauga, Ontario, Canada L5B 1T7
Filed Jul. 3, 1985, Ser. No. 751,687
Int. Cl.⁴ B65D 85/00

U.S. Cl. 220—1 C

14 Claims



1. A dual-chambered oil changing container comprising:

- (a) a new oil chamber having a generally flat configuration defined by upper and lower broad, spaced surfaces, said upper surface having a shallow recess and a converging downward slope to a used oil inlet; and
- (b) a used oil chamber situated beneath said new oil chamber, said used oil chamber having a generally flat configuration defined by a broad, spaced top and base, said top having a cylindrical extension that extends from said top through said lower surface of said new oil chamber and is integrally connected to said used oil inlet.

4,640,432 REFRIGERATION APPARATUS CABINET CONSTRUCTION UTILIZING PREPAINTED STEEL PANELS

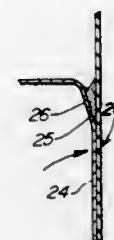
Ralph Tate, Jr., Center Township, Vanderburgh County, and John T. Woods, Scott Township, Vanderburgh County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 19, 1984, Ser. No. 633,214

Int. Cl.⁴ B65D 6/34

U.S. Cl. 220—75

21 Claims



1. A refrigeration apparatus cabinet wall structure comprising:

- a first cabinet wall;
- a second cabinet wall defining a transverse, first portion extending toward said first wall and having a second, edge portion adjacent said first wall, said second portion comprising a turned portion of said second wall connected to the transverse portion thereof by resiliently deflectible hinge means, said second portion being deflectible about said hinge means as an incident of the engagement of the distal end of said second portion with said first wall and defining therewith an acute angle thereby forming with said first wall a tapered sealant crevice; and
- a preselected quantity of sealant material in said sealant crevice.

4,640,433 ECCENTRIC KNOCKOUTS FOR METAL BOXES

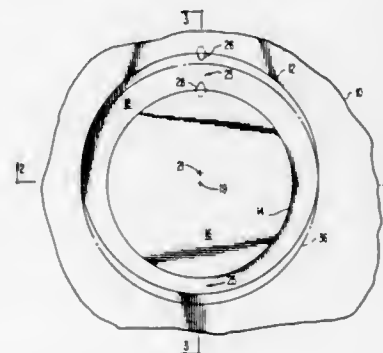
Robert W. Jorgensen, Niles, Mich.; Thomas E. Lewis, and Gregory J. Keeler, both of South Bend, Ind., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 21, 1985, Ser. No. 800,318

Int. Cl.⁴ B65D 41/32, 17/32

U.S. Cl. 220—266

6 Claims



1. A knockout structure comprising a metal electrical box having a wall through which an electrical wiring passage is to be established, said wall being substantially planar and having opposite surfaces; means in said wall defining separations along first and second substantially circular punch lines, the circles of said punch lines having centers spaced from each other along a common diameter, said second punch line being totally

within and spaced from said first punch line, said punch lines together defining a first circular knockout having opposite surfaces substantially coplanar with said opposite surfaces of said wall, and a second generally annular knockout surrounding said first knockout and having opposite surfaces offset from the planes containing said opposite surfaces of said wall, said second knockout having regions of maximum and minimum width on opposite sides of said first knockout along said diameter;

a first bridge member crossing said first punch line and constituting the sole junction between said wall and said second knockout, said first bridge member being in said region of maximum width; and

a second bridge member crossing said second punch line and constituting the sole junction between said first and second knockouts, said second bridge member joining said second knockout at said region of maximum width, whereby said knockouts can be selectively removed to open a hole through which conduit of either of two sizes can be attached to establish a wire passage with said conduit securely grounded to said wall.

4,640,434 PLUG FOR HOLE SEALING

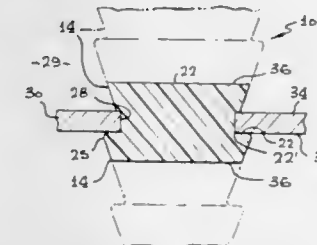
Kenneth D. Johnsen, Worthington, and Alan J. Fletcher, Columbus, both of Ohio, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 24, 1986, Ser. No. 831,883

Int. Cl.⁴ B65D 51/00

U.S. Cl. 220—287

15 Claims



14. In combination, a fuel tank having a hole therein, said hole being plugged by a plug comprising a solid flexible rubber elongated and tapered body member formed of a series of successively reduced integral axially disposed tapered portions, each of said tapered portions having substantially the same angle of taper, the large end of each tapered portion being larger in radial extent than the tapered end of the adjacent tapered portion, and a bifurcated portion connecting the tapered ends of the successive larger tapered portions with the large ends of the adjacent tapered portions, said bifurcated portions being tapered in a direction opposite to the main direction of taper of said tapered portions, the hole being plugged by compressive contact of one or more of said tapered portions against the hole surfaces and edges, said plug being trimmed at the opposite ends to remove excess material.

4,640,435 PLASTIC CLOSURE FOR BEVERAGE CONTAINER

Herbert V. Dutt, Sarasota, Fla., assignor to Sun Coast Plastics, Inc., Sarasota, Fla.

Filed Jan. 23, 1986, Ser. No. 824,983

Int. Cl.⁴ B65D 39/00

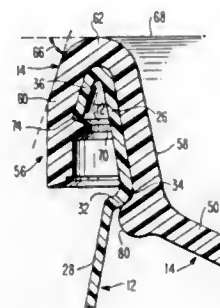
U.S. Cl. 220—307

15 Claims

1. A plastic lid for a wide-mouthed plastic container wherein the container includes a side wall having at its upper peripheral edge a radially outwardly and downwardly flared locking flange terminating in a free flange edge, said lid comprising:

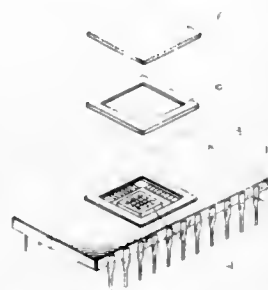
- a top wall having a peripheral rim extending generally up-

wardly, outwardly, and then downwardly from said top wall to define a V-shaped peripheral groove having inner, upper, and outer walls receiving the locking flange of a container;
an annular shoulder integrally formed within said peripheral groove on the outer wall thereof for engaging the free edge of the locking flange of a container; and



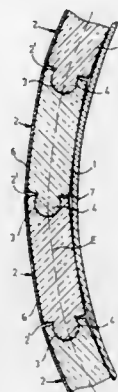
an annular bead extending outwardly from the inner wall of said peripheral rim for engaging the interior surface of the side wall of a container below the locking flange thereof, said lid being shaped to extend into the mouth of a container with said groove engaging the locking flange in a snap-on fit to produce a surface-to-surface sealing engagement between the container and said lid.

4,640,436
HERMETIC SEALING COVER AND A METHOD OF PRODUCING THE SAME
Akio Miyoshi, and Akira Fukami, both of Nishitama, Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan
Filed Mar. 5, 1986, Ser. No. 836,493
Claims priority, application Japan, Mar. 8, 1985, 60-45935
Int. Cl.⁴ B65D 41/00
U.S. Cl. 220—359 12 Claims



1. A hermetic sealing cover assembly comprising:
a seal ring having a thin layer of a metal selected from the group consisting of gold, silver, platinum and palladium; and
a metallic cover having a film of a material of high solderability at least on the peripheral edge of its surface facing said seal ring, said seal ring being joined to said peripheral edge of said cover in its entirety so that said layer may be bonded to said film.

4,640,437
INSULATED CONTAINER AND INSULATING ELEMENT THEREFOR
Rudolf Weingartner, Neuzeug, Austria, assignor to Kremsumster, Austria, Austria
Filed Sep. 4, 1984, Ser. No. 647,138
Int. Cl.⁴ B65D 25/36, 90/06, 90/08
U.S. Cl. 220—400 20 Claims



1. An insulation for a vessel having a curved outer wall and adapted to form a sheath hugging said wall, said insulation comprising a multiplicity of elongated plates having opposite longitudinal edges, each of said plates being formed with a projection along one of said edges extending the full length thereof and with a groove along the opposite edge extending the full length thereof and shaped to receive such projection, said groove and said projection being each of cylindrical segmented configuration with said groove having an arc length greater than 180° and said projection having an arc length greater than that of said groove such that more than a semicircular arc of each projection is receivable in a groove of an adjoining plate, adjoining plates being laterally retained to one another by the formfit interengagement between projection and groove and being angularly displaced relative to one another about the centers of curvature of the respective projections at varying angles corresponding to the radius of curvature of said wall to enable a sheath of said plates to closely surround said vessel, each of said plates comprising a body of foamed thermally insulating material, the interfitting grooves and projections constituting the sole means for laterally retaining the plates together into a sheath, whereby no other means is required to retain the plates together against lateral separation.

4,640,438
COVER FOR SEMICONDUCTOR DEVICE PACKAGES
Robert L. Trevison, Spokane, Wash.; William E. McKee, Coeur D'Alene, Id., and Larry B. Hunnel, Otis Orchards, Wash., assignors to Comlenco Limited
Filed Mar. 17, 1986, Ser. No. 840,225
Int. Cl.⁴ B65D 41/00
U.S. Cl. 220—359 19 Claims

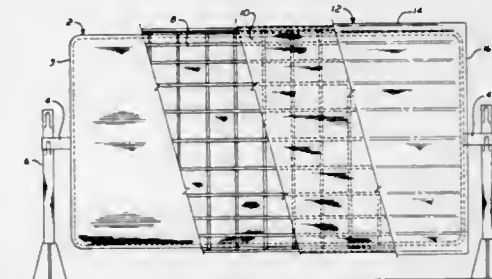
14. A cover for a package for semiconductor devices comprising a cover substrate having a coating on one side thereof selected from at least one of the group consisting of gold and nickel, and a preform made of an alloy selected from the group consisting of gold-tin alloys, lead-tin alloys, lead-indium alloys, tin-silver alloys, lead-indium-silver alloys and lead-tin-silver

alloys, said preform having a coating on one side thereof of a preform alloy component having a melting point lower than



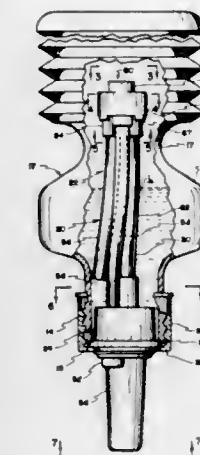
the melting point of the preform alloy, said preform being diffusion pressure bonded to the cover substrate.

4,640,439
DOUBLE WALL STORAGE TANK FOR LIQUIDS AND METHOD OF MAKING SAME
David T. Palazzo, P.O. Box 290676, Tampa, Fla. 33687
Filed Sep. 12, 1985, Ser. No. 775,140
Int. Cl.⁴ B65D 87/24
U.S. Cl. 220—445 19 Claims



14. A tank for storage of liquids comprising
a substantially rigid inner tank having means for introducing thereinto and withdrawing therefrom liquids to be stored;
a spacing material overlying a substantial portion of the exterior surface of said inner tank, said spacing material providing for passage of liquids along the portions of the exterior surface of said inner tank underlying said spacing material; and
a substantially rigid outer sheath formed of a resin impregnated fibrous material that is substantially liquid tight, said outer sheath enclosing said inner tank and said spacing material and having at least a portion thereof spaced from said inner tank by said spacing material;
a film of impermeate material interposed between said resin impregnated fibrous material and said spacing material, whereby is formed a double wall tank having at least a portion of the outer sheath thereof spaced from the inner tank.

4,640,440
FOAM DISPENSING DEVICE
George W. Ford, Jr., and Darrel R. Palmer, both of Sandy, Utah, assignors to Ballard Medical Products, Midvale, Utah
Filed Apr. 12, 1985, Ser. No. 722,831
Int. Cl.⁴ B67D 5/58; B65D 37/00
U.S. Cl. 222—190 5 Claims

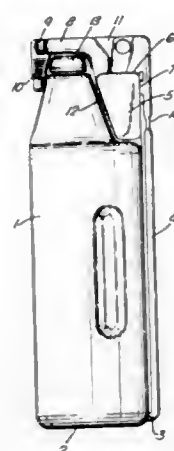


1. A foam dispensing device for use in an inverted condition, comprising:
(a) an hour glass-shaped one piece container for holding foamable liquid and air having a discharge port, a reservoir portion disposed at one end of the container adjacent the discharge port, a bellows portion disposed at the other end of the container remote from the discharge port and a necked-down finger engageable portion centrally disposed between said bellows portion and said reservoir portion, said central finger engageable portion being substantially reduced in its transverse area when compared to the reservoir portion and the bellows portion,
(b) means associated with the container having air inlet passage means and foam outlet passage means, whereby air is selectively admitted into the interior of the device and foam is selectively extruded from the interior of the device,
(b1) means communicating with the reservoir portion and the bellows portion,
(c) foam producing means associated with the container and said means communicating with the reservoir portion and the bellows portion,
(d) means communicating between the foam producing means and the foam outlet means,
(e) means communicating between the air inlet means and the container air space, and
(f) valve means closing the air inlet means when pressure is applied to the bellows portion and opening the air return means when pressure applied to the bellows portion is relieved.

4,640,441
LIQUID-DISPENSING CONTAINER
Gerrit K. Bunschoten, Oud Zuilen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.
Filed May 7, 1985, Ser. No. 731,431
Claims priority, application United Kingdom, May 14, 1984, 8412297
Int. Cl.⁴ B65D 37/00
U.S. Cl. 222—207 4 Claims

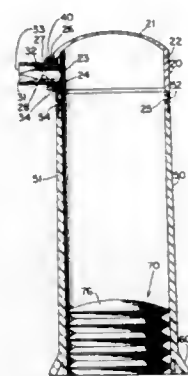
1. A liquid-dispensing container comprising a manually deformable reservoir chamber for holding liquid, a dosage chamber, a duct extending from close to the bottom of the reservoir chamber to the dosage chamber such that liquid can be expressed from the reservoir chamber into the dosage chamber.

ber by squeezing the reservoir chamber, said duct having a restriction, a discharge duct extending from the dosage chamber and defining a non-linear flow path for the liquid to be discharged, said discharge duct having a first flow channel portion extending away from said dosage chamber and a second flow channel portion inclined substantially perpendicular



to said first flow channel from which the dispensed liquid exits the discharge duct, said second flow channel oriented to permit liquid discharge therefrom in a horizontal direction relative to the reservoir chamber, and a closure seal fitted at an end of said second flow channel, all parts of the container being integrally moulded in fixed positional interrelationship.

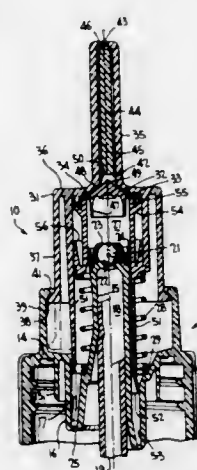
4,640,442
DISPENSING PACKAGE AND FOLLOWER DEVICE
James L. Drobish, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 546,344, Oct. 31, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 759,390
Int. Cl.⁴ B65D 37/00; B67D 5/42
U.S. Cl. 222—209 33 Claims



1. An improved dispenser for a product, wherein the product is housed in an axially extending bore of a tubular container body having an upper end from which product is dispensed and an open lower end, said dispenser comprising a follower piston slidably mounted within said lower end of the bore of said body to support said product thereabove, said piston being constructed of resilient material and comprising a face portion adapted to contact the product and a peripherally attached sidewall which has at least one integral peripheral contact band conforming to the shape of the cross section of said bore, said sidewall being adapted to virtually resiliently longitudinally extend or contract in response to axial forces exerted on said face portion with such change in length resulting in an inversely proportional virtual change in lateral dimension of

said peripheral contact band, said piston being hollow with the interior surfaces of said face and said sidewall exposed to atmospheric pressure, and said contact band dimensioned to provide an interference fit within the bore which exerts a predetermined normal force against the inner surfaces of said bore in static condition, whereby application of downward axial force on said piston face tends to virtually expand the lateral dimension of said peripheral contact band thereby increasing said normal force and proportionally increasing piston resistance to rearward displacement within said dispenser, and application of upward axial force on said piston face tends to virtually decrease the lateral dimension of said peripheral contact band thereby reducing said normal force and proportionally reducing piston resistance to upward displacement therein and permitting said follower piston to move upwardly within said dispenser while maintaining a seal with the inner surfaces of said bore.

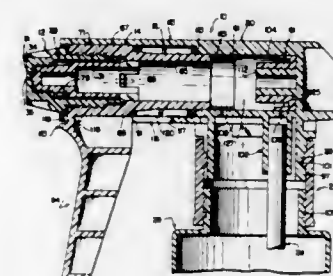
4,640,443
MANUALLY OPERATED DISPENSING PUMP
Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045
Continuation-in-part of Ser. No. 502,274, Jun. 8, 1983, Pat. No. 4,494,680, and Ser. No. 502,273, Jun. 8, 1983, Pat. No. 4,511,065, each is a continuation-in-part of Ser. No. 121,223, Feb. 13, 1980, Pat. No. 4,402,432. This application Jan. 8, 1985, Ser. No. 689,783
Int. Cl.⁴ B05B 11/00
U.S. Cl. 222—321 23 Claims



1. A dispensing pump comprising, a pump body adapted for fluid tight communication with the opening of a container of flowable product to be dispensed, said pump body including a stationary upstanding piston, a container vent opening, and a collar surrounding said piston, an annular plunger mounted for reciprocation on said piston to define therewith a variable volume pump chamber, said piston having an inlet passage and a coaxial valve for controlling said inlet passage, a plunger head slidably disposed on said plunger for reciprocation and having means defining a variable volume accumulation chamber in open communication with said pump chamber, means resiliently urging said plunger into a fully raised position above said pump body, said head having a discharge passage with an inlet end thereof coaxial with said piston, discharge valve support means at an upper end of said plunger confronting an upper end of said piston and complementarily contoured thereto, said support means including a discharge valve for controlling said discharge passage and having at least one passageway extending therethrough for maintaining the open communication between said chambers, retention beads on said plunger head and on said collar for limiting said plunger head in a predetermined raised position wherein said plunger closes said discharge passage in said fully raised position

thereof, said retention beads extending laterally respectively toward confronting surfaces of said collar and said plunger head, one of said beads defining a first annular bearing member in sliding engagement with one of said confronting surfaces during plunger head reciprocation, said pump body further including an upstanding annular wall spaced from said piston and therewith defining a vent chamber which includes said vent opening, a vent skirt extending from said plunger head and having an annular vent seal defining a second bearing member slidably guided along said wall during said plunger head reciprocation, said vent chamber being adapted to be closed by said vent seal in said fully raised position of said plunger and to be opened by said vent seal during plunger reciprocation, and said bearing members being spaced apart acting to resist any lateral or eccentric forces applied to said head during its reciprocation to thereby isolate said forces from said plunger permitting it to respond without restraint during said movement in opening and closing said discharge passage.

4,640,444
PUMP DISPENSER WITH SLIDABLE TRIGGER
Robert L. Bundschuh, Box 4415, Miami Lakes, Fla. 33014
PCT No. PCT/US84/00839, § 371 Date Jun. 1, 1984, § 102(e)
Date Jun. 1, 1984
PCT Filed Jun. 1, 1984, Ser. No. 632,083
Int. Cl.⁴ B67D 5/40; B05B 9/43
U.S. Cl. 222—321 29 Claims



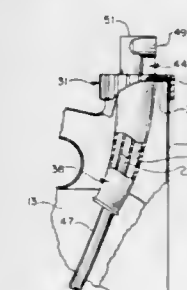
1. In a manually-operated pump dispenser including a housing adapted to be coupled to a liquid-containing bottle and having a fluid passageway, a dip tube extending from the passageway into the bottle, an open-ended slot, and a vent for venting the bottle to the atmosphere; a pump member having a fluid passageway communicating with the fluid passageway in the housing, and a finger engaging trigger extending therefrom and movable in the slot, the pump member being slidably engaged with the housing and having an exit orifice; means for biasing the pump member away from the housing; and a pair of one-way valves located along the pump member and the housing fluid passageways, the improvement comprising: cooperating, substantially planar means on said housing and said pump member for maintaining said pump member and said housing in longitudinal alignment when said trigger is engaged and said pump member is moved towards said housing, said finger engaging trigger having a bottom edge free from engagement with said housing, said cooperating means comprising a substantially planar downwardly facing surface on said pump member and a substantially planar upwardly facing surface on said housing in slidable engagement with said downwardly facing surface.

4,640,445
PORTABLE AND WEARABLE INJECTOR OF MINI SIZE
Yasuyuki Yamada, Ishikawa, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan
Filed Dec. 20, 1984, Ser. No. 683,811
Claims priority, application Japan, Dec. 22, 1983, 58-242364
Int. Cl.⁴ B67D 5/42; A61M 37/00
U.S. Cl. 222—386.5 2 Claims



1. A portable and wearable medical injector of mini size, which comprises an injector syringe and a gas-impermeable flexible bag received in the syringe, said syringe having one open end for injection of an infusion liquid, the other end being sealed, said bag containing therein a gas generating means comprising a chemical substance which is non-toxic to human beings and reactive with hydrogen peroxide, said bag prior to administration of infusion liquid being provided with a predetermined amount of hydrogen peroxide for reaction with the said chemical substance in the bag to produce an oxygen gas in the flexible bag for expanding the bag in the syringe to force the infusion liquid in predetermined quantities and rates over predetermined periods of time out of said open end of the syringe, said syringe being provided with a slidable element which seals its said other end, said slidable element having an extension at its bottom engageable by a tool for pulling the sealing element downwardly for filling the syringe with infusion liquid after mixture of said chemical substance with said hydrogen peroxide.

4,640,446
SAFETY GAS CAN WITH PLURAL, NESTABLE DISPENSING MEANS
William T. Walker, 28 Tamela Dr., Little Rock, Ark. 72207
Filed Jun. 4, 1985, Ser. No. 740,982
Int. Cl.⁴ F04F 10/00; B67D 5/06
U.S. Cl. 222—416 9 Claims



1. A fluent material storage and dispensing device, comprising in combination: a container having enclosing walls defining an interior within which the material is to be stored, one of the enclosing walls having a portal allowing access to the interior of said container, first and second open tubular dispensing means together

having a single common portal-engaging fastener, wherein said common fastener is deployable on said portal to modify the manner in which the fluent material is dispensed, wherein said first dispensing means comprises a tube disposed inside said second dispensing means and extending therebelow to substantially reach the bottom of the container, and wherein said second dispensing means comprises a pour spout jacketing a portion of said first dispensing means,

and means for nesting said first and second dispensing means, one within the other, and then within said container for storage.

7. A kit with means for variably altering the flow rate of fluent material and nestable storage means for said flow altering means comprising in combination:

first and second tubular dispensing means, each dispensing means having a first and second open end, said second dispensing means having a greater cross section than said first dispensing means such that said second dispensing means can be slid over said first dispensing means concentrically,

said greater tubular second dispensing means having a radially extending end flange adapted to abut against a similar diameter flange on said inner first tubular dispensing means,

and a coupling means adapted to engage either or both flanges, respectively, for use or storage.

4,640,447

MOLTEN METAL IMMERSION POURING SPOUT
Heinrich Geller, Duisburg; Peter Nold, Rümmlsheim; Heinz Schermer, Eltville, and Ortwin Rave, Wiesbaden, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

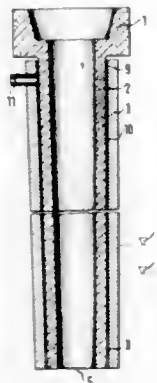
Filed Oct. 29, 1984, Ser. No. 665,758

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339586

Int. Cl.⁴ B22D 41/08

U.S. Cl. 222—603

12 Claims



1. An immersion pouring spout for molten metal, comprising:

- a top first part;
- a cylindrically-shaped second part having an outside surface and coupled with said top first part to be operative as a pouring tube; and
- a protective jacket made of a ceramic material protecting said outside surface of said second part, and cement layer means attaching said jacket to said second part such that said protective jacket extends over substantially the entire length of said second part, said cement layer means comprising a material whose thermal conductivity is less than the thermal conductivity of said pouring tube, said second part having a bottom outlet for molten metal, and with said cement layer means including a first portion positioned adjacent to said top first part and a second portion

positioned adjacent to said bottom outlet such that a space is provided between said second part and said protective jacket and between said first and second portions of said cement layer means.

4,640,448

VOLUME ADJUSTMENT DEVICE FOR POWDER FILLING APPARATUS

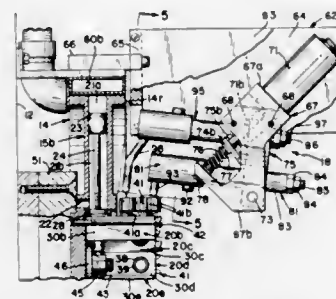
Hans W. Trechsel, Rockford, Minn., assignor to TL Systems Corporation, Minneapolis, Minn.

Filed Jun. 24, 1985, Ser. No. 747,567

Int. Cl.⁴ G01F 11/24

U.S. Cl. 222—636

22 Claims



1. Apparatus for dispensing metered quantities of a substance to sequentially moving containers, comprising:

- a wheel member revolvable about a predetermined axis of rotation;
- a plurality of substance dispensing devices arranged in a radial manner on the wheel member;
- each dispensing device having a chamber of predetermined volume for retaining a predetermined quantity of the substance, an opening in the chamber through which the substance is received and discharged, and means for varying the chamber volume and hence the quantity of the substance received and discharged;
- and means for adjusting the chamber volume varying means, comprising:
- an externally accessible adjustment member operatively connected to the chamber volume varying means and movable in a first direction to increase the volume of the chamber, and movable in a second direction to decrease the volume of the chamber;
- first and second actuator means selectively engagable with the adjustment member, the first actuator means constructed and arranged to move the adjustment member in said first direction upon engagement therewith, and the second actuator means constructed and arranged to move the adjustment member in said second direction upon engagement therewith.

4,640,449

HANDLE BAR MOUNTED QUICK DISCONNECT BOTTLE CAGE

James R. Blackburn, Los Gatos, Calif., assignor to Jim Blackburn Designs, Inc., Campbell, Calif.

Filed Jan. 10, 1985, Ser. No. 690,952

Int. Cl.⁴ B62J 7/00

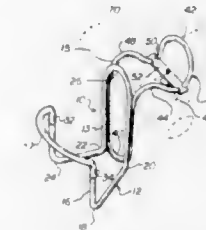
U.S. Cl. 224—41

3 Claims

1. Bottle cage apparatus for mounting to the handle bar of a bicycle proximate the goose neck thereof comprising:

- means forming a bottle cage for receiving a bottle of liquid and holding said bottle forwardly of said handle bar and including at least one upstanding member disposed rearwardly of said bottle and forwardly of said handle bar when said cage is mounted to said bicycle; and
- an attachment means including a bracket member having a first portion secured to said upstanding member and hav-

ing a second portion commencing at said first portion and extending over and rearwardly of said handle bar when said cage is mounted to said bicycle with a first bend of less than 180° which passes over said handle bar and thence downwardly followed by a second bend of less than 180° upwardly, such that said second portion is disposed below said goose neck at the location of said second bend, a laterally extending third portion extending from said second portion and passing upwardly over said goose neck and thence downwardly, said third portion having a third bend of substantially 180° located at approximately the mid-point of said third portion, and a forwardly extending fourth portion extending from said third portion



and including a less than 180° fourth bend upwardly such that said fourth portion is disposed below said goose neck at the location of said fourth bend followed by a less than 180° fifth bend, said fourth portion extending over said handle bar at said fifth bend and extending to a fifth portion that is attached to said upstanding member; and

a clamp means coupling said second and fourth portions at said second and fourth bends to said goose neck and including means for lockingly engaging the bottom of said goose neck enveloped by said clamp member and the portion of said bracket member forming said third bend; whereby said apparatus may be securely attached to the goose neck and handle bar of a bicycle.

4,640,450

ROOF RACK FOR MOTOR VEHICLES

Georg A. Gallion, Wiesbaden; Dieter N. Bratke, Wallerstädten; Klaus Helbig, Russelsheim, and Karl F. Reuter, Kelsterbach, all of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

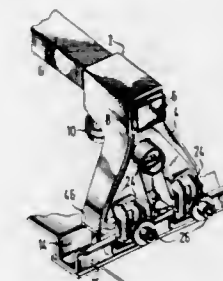
Filed May 17, 1985, Ser. No. 735,891

Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418770

Int. Cl.⁴ B60R 9/00

U.S. Cl. 224—331

2 Claims



1. A roof-mounted luggage carrier for motor vehicles including a leg and clamp device adapted for attachment to a flange which is formed in a longitudinal extending channel disposed on the lateral portion of the roof, said channel being covered by a molding strip for preventing entry or dirt into the channel and being provided with a cutout for the installation of the leg and the clamp of the luggage rack, said cutout being disposed only at the place where the luggage rack is mounted to the roof, the improvement characterized in that:

- a protective cap attached to the leg and having a lower edge

disposed in close proximity with the roof surface, and a seal means connected to and extending downwardly from the lower edge of the protective cap and including a longitudinal extending lip which bears against the roof and transversely extending lateral lips at the front and rear of the leg extending transversely of the vehicle and sealingly engaging with the molding strip on each side of the cutout thereof, to thereby prevent entry of foreign matter into the channel through the cutout in the molding strip.

4,640,451

COMBINATION HOLE PUNCH AND STAPLER

Paul Steiner, Staad, and Bruno Stocker, Berneck, both of Switzerland, assignors to Kollektivgesellschaft Eberhard, Steiner & Dr. Stocker, Kloten, Switzerland

PCT No. PCT/CH83/00121, § 371 Date Jun. 26, 1984, § 102(e)

Date Jun. 26, 1984, PCT Pub. No. WO84/01739, PCT Pub.

Date May 10, 1984

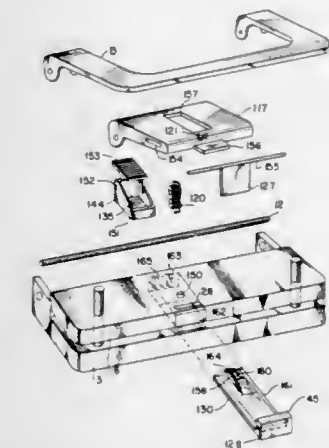
PCT Filed Nov. 7, 1982, Ser. No. 629,830

Claims priority, application Switzerland, Nov. 8, 1982, 6461/82; May 31, 1983, 2982/83

Int. Cl.⁴ B25C 5/02; B26F 1/36

U.S. Cl. 227—76

20 Claims

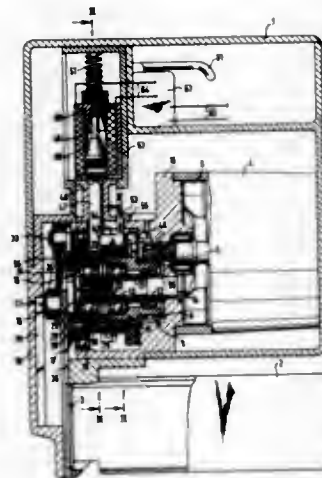


10. In an organizing device for travel, office, school and the home, comprising a hold punch having a first rocking lever and at least two punches, a stapler integrated into said hole punch for stapling together documents being processed by means of an initially U-shaped staple and having a magazine for accommodating a plurality of said initially U-shaped staples and including stop means for said plurality of initially U-shaped staples, spring means for pressing said plurality of initially U-shaped staples against said stop means in said magazine, a substantially flat insertion plunger for inserting a staple of said plurality of initially U-shaped staples and bearing against the stop means into the documents being processed and a second rocking lever operatively connected with said substantially flat insertion plunger, a base pivotably connected to said first and second rocking levers and having a forming anvil for closing the legs of said staple upon a rear side of the documents being processed and at least two bores defining female die members for said punches of said hole punch, the improvement which comprises:

- said magazine having a longitudinal axis and a head defining said stop means;
- spring means mounted transversely to said longitudinal axis of said magazine for feeding said plurality of initially U-shaped staples sequentially arrayed in said magazine toward said head;
- said magazine of said stapler being arranged in a base portion rigidly connected to said base and forming conjointly with said base a slot for accommodating documents; and

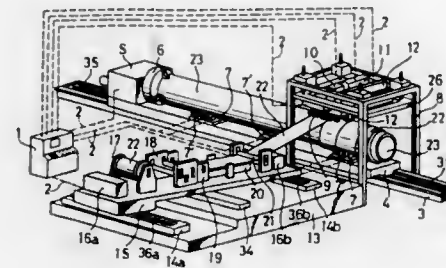
said substantially flat insertion plunger being translatably mounted transversely to an insertion direction of said plurality of initially U-shaped staples for precisely vertically guiding said substantially flat insertion plunger during the insertion of each said staple of said plurality of initially U-shaped staples into the documents.

4,640,452
DEVICE FOR DRIVING NAILS OR SIMILAR FASTENING ELEMENTS
Lukas Matt, Mauren, Liechtenstein; Fritz Mark, Mäder, Austria, and Hans Gschwend, Vaduz, Liechtenstein, assignors to Hilti Aktiengesellschaft
Filed Jul. 24, 1985, Ser. No. 758,478
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427614
Int. Cl.⁴ B25C 5/06, 5/15
U.S. Cl. 227—131



1. Device for driving nails, staples and similar fastening elements comprises an axially extending driving member having an axially extending cylindrically shaped surface concentric with the axis thereof, a motor arranged to rotate said driving member, an axially extending driven member disposed in axial alignment with and extending axially from adjacent one end of said driving member, said driven member having an axially extending cylindrically shaped surface concentric with the axis thereof, means connected to said driven member for converting rotational movement into translational movement, clutch means for selectively interconnecting the cylindrically shaped surfaces of said driving member and said driven member for transmitting torque from said driving member to said driven member, and a relasing device for providing a limited timewise connection between said driving member and said driven member via said clutch means, said clutch means comprises an axially extending wraparound spring encircling the cylindrically shaped surfaces of said driving member and driven member and arranged to grip the cylindrically shaped surfaces of said driving member and driven member for transmitting the rotational driving motion of said driving member to said driven member.

4,640,453
APPARATUS FOR FABRICATING MULTI-LAYER SPIRAL TUBES
Tsutomu Oe; Shigeaki Kimura; Yoshinori Yuzaki, and Tadao Ozaki, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1985, Ser. No. 780,078
Claims priority, application Japan, Oct. 13, 1984, 59-215015
Int. Cl.⁴ B23K 5/02
U.S. Cl. 228—17.7

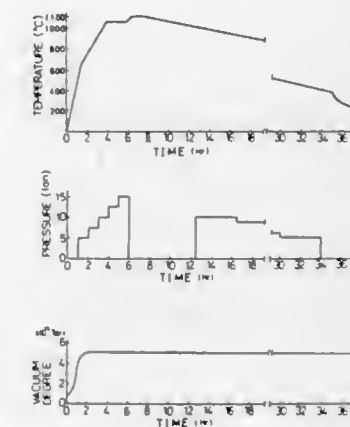


1. An apparatus for fabricating multi-layer spiral tubes, comprising first drive means for performing rotation of an inner cylinder around which a web is to be wrapped spirally, a slide base moveable along the longitudinal direction of said inner cylinder, said slide base being disposed on a bed so as to be slidable along the longitudinal direction of said inner cylinder, a plurality of pairs of cradles mounted on said slide base for placing said inner cylinder thereon, first depressing rolls for wrapping said web, second depressing rolls for constraining a weld portion of said web, an automatic gap detector for detecting a gap between adjacent edge portions of said wrapped web, an automatic welding machine for welding edge portions of said wrapped web, an automatic grinding machine for grinding excess metal of welding, an automatic defect hunter for detecting defects in the weld portion, a web feed table for feeding said web, second drive means for moving said web feed table, and a central control unit coupled to said first drive means, said cradles, said first depressing rolls, said second depressing rolls, said automatic gap detector, said automatic welding machine, said automatic grinding machine, said automatic defect hunter, said web feed table and said second drive means, to control the operations of these component means in a concentrated manner.

4,640,454
METHOD FOR PRODUCING EXTRUSION DIE FOR FORMING A HONEYCOMB STRUCTURE
Shinichi Yamamoto, Takahama; Toshihiko Ito, Nukata, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Jun. 9, 1983, Ser. No. 502,656
Claims priority, application Japan, Jun. 12, 1982, 57-101083
Int. Cl.⁴ B23P 17/00; B23K 20/02, 20/14
U.S. Cl. 228—161

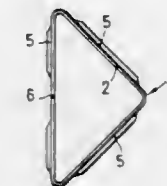
1. A method for producing an extrusion die adapted to receive a plurality of feeds of an extrudable material, distribute and pool those feeds and extrude the distributed, pooled extrudable material as a grid, this method comprising:
(a) providing a first metallic block having an inlet face and an outlet face separated from one another by the thickness of said first metallic block;
(b) providing a second metallic block having an inlet face and an opposite face separated from one another by the thickness of said second metallic block;
(c) forming a plurality of transversally spaced feed passages through said first metallic block, these feed passages extending at least part-way through the thickness

thereof so as to extend communication of the inlet face thereof towards the outlet face thereof;
(d) forming a grid network of extrusion slots in said second metallic block incompletely through the thickness thereof, from said inlet face thereof, so as to leave intact a layer of the second metallic block adjoining said opposite face thereof;
(e) forming a grid network of pooling slots in at least one of:
(i) the first metallic block incompletely through the thickness thereof from said outlet face thereof, to such depth and arrangement that each such pooling slot communicates with at least one said feed passage; and
(ii) the second metallic block incompletely through the thickness thereof from said inlet face thereof, each said extrusion slot being so located in said second metallic block so as to be capable, upon facewise juxtaposition of said first and second metallic blocks, of aligning with a respective pooling slot as a continuation thereof thicknesswise of the resulting composite and of communicating with at least one said feed passage in such a sense as to be fed thereby, and each



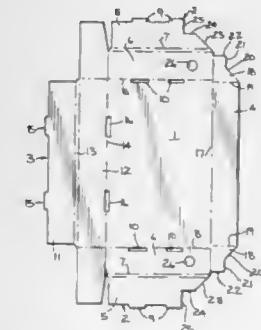
pooling slot being wider than each respective extrusion slot;
(f) placing said outlet face of said first metallic block in facewise juxtaposition with said inlet face of said second metallic block with respective said extrusion slots in alignment with respective said pooling slots as respective continuations thereof thicknesswise of the resulting composite, and each feed passage in communication with a plurality of said pooling slots in such a sense as to feed such pooling slots;
(g) while maintaining such juxtaposition, heating said first and second metallic blocks under such conditions as to join said outlet face of said first metallic block with said inlet face of said second metallic block as a composite block, said diffusion welding being performed in two stages within a vacuum chamber of a hot pressing device, in each of which stages said blocks are pressed together, with such pressure being relieved between said stages in order to prevent excessive deformation of said blocks; and
(h) thereafter, severing said intact layer from said second metallic block thereby defining an outlet face of the composite block, through which face said extrusion slots open as a grid.

4,640,455
METHOD OF MAKING A METAL SEAL FOR FLANGED JOINTS AND A SEAL MADE BY SAID METHOD
Lutz Grein, and Günter Matthiessen, both of Hanau, Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany
Continuation of Ser. No. 511,309, Jul. 6, 1983, abandoned. This application Apr. 1, 1986, Ser. No. 846,835
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225361
Int. Cl.⁴ B23K 31/08
U.S. Cl. 228—176



1. A method of making a closed-figure metal seal for a flanged joint, comprising:
bending a length of metal bar along its length into a closed figure corresponding to the figure of the flanged joint, the metal bar having a cross section profiled generally in the shape of a keyhole with a thicker portion on one side for forming a sealing bead in the flanged joint in use and a thinner portion of elongated cross section on the other side for stiffening the metal bar;
uniting ends of the metal bar to close the figure of the metal seal;
mounting the metal bar on one of the flanges of the flanged joint with adhesive on the thinner portion of the metal bar and without adhesive on the thicker portion of the metal bar, whereby leaks form later dissolving thereof are avoided; and
sealingly compressing the thicker portion of the metal bar in the flanged joint as the sealing bead.

4,640,456
ONE-PIECE FOLDED BOX CONSTRUCTION HAVING A HINGED WALL
Ralph E. Stacey, Augusta, Mich., assignor to Green Bay Packaging Inc., Green Bay, Wis.
Filed Oct. 17, 1985, Ser. No. 788,390
Int. Cl.⁴ B65D 5/22
U.S. Cl. 229—122



1. A box construction, comprising a bottom wall, a pair of first walls extending upwardly from opposed edges of said bottom wall, each first wall including an outer section and an inner section, said sections disposed flatwise in relation to each other, a second wall extending upwardly from said bottom

wall and having means connecting corresponding first ends of said first walls, a third wall hinged to said bottom wall and movable between an open position where said third wall is substantially flush with said bottom wall to a closed position where said third wall is normal to said bottom wall and connects corresponding ends of said first walls, said third wall when in said open position constituting an extension to said bottom wall whereby articles contained in said box can be slid across said bottom wall and across said third wall, a flap pivotally connected to each end of said third wall, each flap disposed generally normal to said third wall and lying in a common plane with the inner section of the respective first wall, a first abutment on the inner section of each first wall, a second abutment on each flap and engageable with the respective first abutment, the outer section of each said first wall having an opening disposed in alignment with the respective flap when said third wall is in the closed position, insertion of an object through said opening acting to pivot said flap inwardly to release engagement of said abutments and enable said third wall to be pivoted to the open position.

4,640,457

THERMOSTATIC VALVE ASSEMBLY

Robert D. MacDonald, Mesa, Ariz., assignor to Masco Corporation, Taylor, Mich.

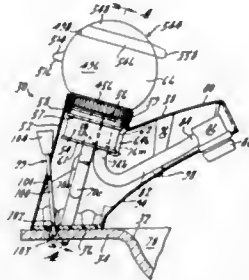
Division of Ser. No. 354,241, Mar. 3, 1982, Pat. No. 4,458,839.

This application Feb. 27, 1984, Ser. No. 583,758

Int. Cl.⁴ G05D 23/185

U.S. Cl. 236—12.11

31 Claims



1. A thermostatically regulated valve assembly comprising: a valve body; an internal cavity in said valve body; a hot water passageway extending through said valve body from said cavity to an inlet capable of being interconnected with a source of pressurized hot water; a cold water passageway extending through said valve body between said cavity and an inlet capable of being interconnected with a source of pressurized hot water; a mixed water discharge passageway extending through said valve body between said cavity and a discharge outlet on an exterior surface of said body; a valve member disposed within said cavity and moving therein between two extreme positions in said cavity along a predetermined path, a watertight seal between a surface of said cavity and a surface of said valve member whereby said valve member divides said valving cavity into two chambers, said valve member moving at least partly into one of said chambers in each of said extreme positions; proportioning valve means on said valve member for selectively regulating the relative amounts of hot and cold water flowing from said hot and cold water passageways to said mixed water discharge passageway, said proportioning valve means varying said relative amounts of hot and cold water as said valve member is moved along said path; first auxiliary passageways interconnecting an upstream portion of said discharge passageway with a respective one of said chambers; second auxiliary passageways interconnecting a respective

one of said chambers with a downstream portion of said discharge passageway; thermostat means in said discharge passageway, said thermostat means measuring the temperature of water in said discharge passageway and moving in response to a deviation in water temperature from a selected temperature; secondary valve means disposed along each of said second auxiliary passageways and actuated by the movement of said thermostat means to selectively open and close said passageways in response to the temperature measured by said thermostat means; and whereby, in response to a deviation in the temperature of the water in the discharge passageway from the preselected temperature, said thermostat means actuates said secondary valve means to temporarily close one of said second auxiliary passageways and thereby causes a temporary increase in pressure in one of the chambers, said pressure change causing said valve member to move along said path towards the other of said chambers and to thereby alter relative flow rates of hot and cold water into the discharge passageway to produce the preselected temperature of water in the discharge passageway.

4,640,458

METHOD OF PRODUCING HOT AIR AND HOT WATER FOR SANITARY PURPOSES AND APPARATUS FOR CARRYING OUT THE SAID METHOD

Yves Casier, Ermont; Philippe Cassagne, Paris; Sylvain Gicquel, Saint Denis, and Roland Junet, Paris, all of France, assignors to Gaz de France, France

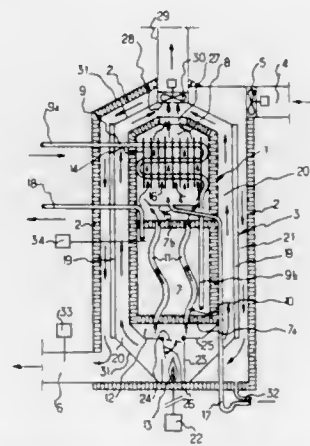
Filed Jul. 18, 1985, Ser. No. 756,312

Claims priority, application France, Jul. 25, 1984, 84 11816

Int. Cl.⁴ F24H 3/06

U.S. Cl. 237—17

5 Claims



1. An apparatus for producing hot air and hot water for the supply of sanitary fittings, comprising the combination of: a heat-insulated central portion or casing (1) for the heating of sanitary water, including a water storage tank (7) and a chamber (8) located above said tank which comprises a lower portion (7a) and an upper portion (7b) above which said chamber is situated; a first exchanger (10) located in said tank and including sinuous tube means (11) which opens at the upper portion (7b) of said tank into said chamber; a pre-exchanger (14) disposed inside said chamber and a cold-water intake tube (9) associated with said pre-exchanger, extending through said chamber and opening into said tank; a heat-insulated external casing (2) completely surrounding the central portion of the apparatus and defining therewith an annular space (3) which contains a second exchanger (19) including a finned wall arranged concentri-

cally around said central portion and forming a first annular passageway (20) between said finned wall and said central portion (1), and a second annular passageway (21) between said wall and said external casing (2); duct means (4,6) connected to said external casing and adapted to blow air through said second passageway (21); a burner (13) and a conduit (23) associated with said burner and communicating with said tube means, for conveying the combustion gas through said sinuous tube means (11) inside said tank and through said chamber (8) above said tank; flap means (26) hinged onto said conduit (23) for directing the combustion gas either towards said sinuous tube means and chamber for heating the stored water or towards said first passageway (20) for heating the blown air passing through said second passageway (21) by counterflow heat exchange with the combustion products flowing in said first passageway; and openings (27,28) provided in said chamber (8) and said first passageway (20) respectively, for discharging the combustion gas flowing either through said central portion (1) or through said first passageway (20).

4,640,460

CO₂ SNOW FORMING HEADER WITH TRIPLE POINT FEATURE

Paul R. Franklin, Jr., P.O. Box 37978, Jacksonville, Fla. 32236

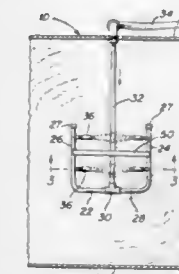
Continuation-in-part of Ser. No. 702,888, Feb. 19, 1985,

abandoned. This application Oct. 7, 1985, Ser. No. 785,019

Int. Cl.⁴ F25J 1/00

U.S. Cl. 239—2.2

3 Claims



3. The method of forming maximum CO₂ snow in a vented receptacle for CO₂ snow comprising the steps of providing a pair of substantially equal rate discharge CO₂ snow forming nozzles including inlet and outlet ends, supporting said nozzles in spaced apart relation with said outlet ends opposing and aligned with each other, and simultaneously supplying liquid CO₂ under pressure to said inlet ends through a supply pipe for simultaneous discharge of CO₂ from the outlet ends of said nozzles and opposing impact of the discharge of CO₂ from said outlet ends in an impact area centrally between said nozzles and with an intermediate length portion of said supply pipe passing centrally through said impact area, supplying pressurized liquid CO₂ to said inlet ends at approximately 300 psi, said step of supporting said nozzles in spaced apart relation including supporting said nozzles with the outlet ends thereof spaced approximately 12½ inches apart.

4,640,459

DUAL RAILS FOR ROLLER PALLETS

Kalevi Hetemaa, Helsinki; Esko Naumanen, Hyvinkää, and Frans Vainio, Helsinki, all of Finland, assignors to Elevator GmbH, Baar, Switzerland

Continuation of Ser. No. 445,505, Nov. 30, 1982, abandoned.

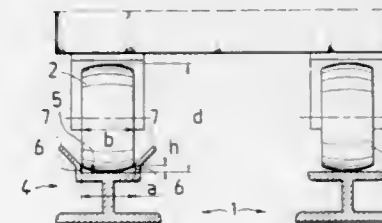
This application Dec. 26, 1984, Ser. No. 685,221

Claims priority, application Finland, Nov. 30, 1981, 813832

Int. Cl.⁴ E01B 5/02

U.S. Cl. 238—122

5 Claims



1. Dual rails for a rail transportation system for use with roller pallets having two pairs of supporting wheels and for which at least one of the wheel pairs are swivelable and permit the roller pallets to be moved in either direction on the rails, which rails comprise:

one rail having an upper running surface and being provided on the margins of the upper running surface with dual upwardly pointing low steering flanges having spacing between the flanges slightly greater than the breadth of the wheels traveling on the rail, and on the upper margin of each steering flange is provided a wheel positioning flange pointing outward at an angle of about 45° for guiding a swiveled wheel to between the steering flanges; and one other rail horizontally spaced apart from said one rail and having a substantially flat upper running surface, said flat running surface being wider than the running surface of said one rail and having a width sufficient to permit swiveling of the wheel traveling thereon without it falling off the flat running surface of the other rail, whereby the roller pallets can travel in either direction on the dual rails.

4,640,461

FOAM-APPLYING NOZZLE

Leslie P. Williams, Port Neches, Tex., assignor to Cause Consequence Analysis, Inc., Port Neches, Tex.

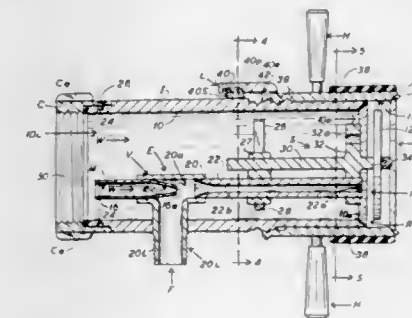
Continuation of Ser. No. 399,112, Jul. 16, 1982, abandoned. This application Aug. 1, 1985, Ser. No. 762,019

The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.

Int. Cl.⁴ B05B 7/26, 7/30, 7/06; A62C 35/00

U.S. Cl. 239—317

8 Claims



1. A nozzle assembly for applying a foam made up from a supply of a foam-forming liquid composition and a flowing liquid stream, comprising: an inner barrel having an axial bore with an inlet for receiving a liquid stream under pressure and an outlet for discharging the liquid stream therefrom; flow regulating nozzle means mounted in said outlet for

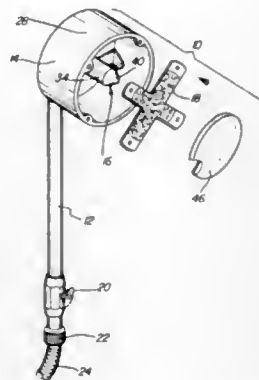
regulating the lateral extent of the stream discharged from the inner barrel;
 eductor means with said inner barrel having means for receiving a portion of the liquid flowing through said inner barrel to create a reduced pressure in the eductor means; foam-forming inlet means mounted with said eductor means for introducing a foam-forming composition into said eductor means as a result of the reduced pressure therein; a mixing passage between said eductor means and said flow regulating nozzle means; and
 said eductor means having a discharge opening into said mixing passage in proximity to said outlet of said inner barrel for mixing by an outward deflection with respect to said inner barrel, the foam-forming composition and said portion of said fluid stream flowing through said eductor means, with the remaining liquid stream from the inner barrel prior to discharge from said nozzle assembly, whereby a foam is created, with substantially the full velocity and volume of a liquid stream, to allow the foam to be propelled from the nozzle with a maximum distance of ejection and volume output.

4,640,462

WATER DRIVEN SHOWER MASSAGER

R. Dewey Stearns, III, 323 River, Northville, Mich. 48167
 Filed Jun. 10, 1985, Ser. No. 742,774

Int. Cl.⁴ B05B 1/34, 3/06; A01G 27/00; B05C 1/00
 U.S. Cl. 239—383 18 Claims



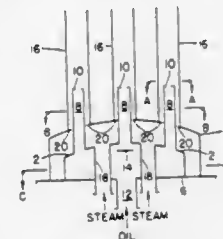
1. A water driven cleansing device comprising:
 a housing having a generally opened end,
 a spindle assembly rotatably within said housing about an axis of rotation, said spindle having a water discharge nozzle which rotates with said spindle assembly and which discharges water along a path which is offset from said axis of rotation of said spindle assembly, said spindle assembly further having a center of mass offset from said axis of rotation due at least in part to the location of said nozzle with respect to said spindle assembly, and
 means for conducting water to said spindle assembly such that water is discharged from said nozzle causing said spindle assembly to rotate within said housing, said rotation causing said cleansing device to vibrate and causing said device to emit a stream of water from said housing opened end.

4,640,463
APPARATUS FOR INJECTING LIQUID HYDROCARBON FEED AND STEAM INTO A CATALYTIC CRACKING ZONE
 Frederick J. Krambeck, Cherry Hill; Stephen J. McGovern, West Deptford Township, Gloucester County, both of N.J., and John E. Sauer, Washington Crossing, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
 Division of Ser. No. 572,039, Jan. 19, 1984, Pat. No. 4,555,328.
 This application Aug. 30, 1985, Ser. No. 770,940

U.S. Cl. 239—424

Int. Cl.⁴ B05B 7/00

10 Claims



1. A nozzle apparatus for injecting a liquid hydrocarbon feedstock into a catalytic conversion zone which comprises:
 (a) at least two confined passageways arranged to provide parallel fluid flow;
 (b) a first flow restriction means concentric with an affixed to the downstream end of each confined passageway;
 (c) at least two annular passageways, each of said annular passageways having a detached confined passageway extending longitudinally through a portion thereof in concentrically spaced relationship
 (d) a second flow restriction means concentric with and affixed to the upstream end of each annular passageway; and
 (e) a third flow restriction means wherein said confined passageways communicate with each other at the upstream end by means of a first common flow space defined at the downstream end of said first common flow space by said third flow restriction means, said first common flow space containing therein means for deflecting said liquid hydrocarbon feedstock entering said first common flow space.

4,640,464

ROLLER MILL CONTROL SYSTEM

Richard L. Musto, Homewood, and Mark R. Dunn, Wilmette, both of Ill., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 7, 1984, Ser. No. 669,145

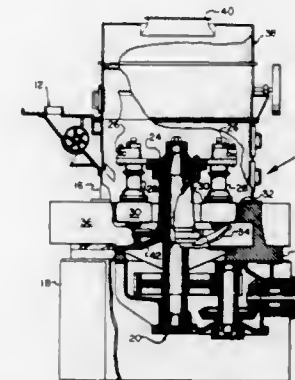
Int. Cl.⁴ B02C 25/00

U.S. Cl. 241—34

6 Claims

1. In the combination of a roller mill operative for grinding material therewithin and feeder means operative for feeding to the roller mill the material to be ground therewithin, the roller mill including a mill motor for driving the roller mill and a classifier for classifying material ground in the roller mill, the improvement comprising a control system for effecting control over the rate of feed of material to the roller mill in accordance with the rate of output of ground material being demanded from the roller mill, said control system comprising: to the
 a. demand sensing means mounted in juxtaposed relation to the path of flow of ground material being discharged from the roller mill in the form of output therefrom, said demand sensing means including sensing means and a fuel indicating controller connected in circuit relation with said sensing means and having a manually set set point, said sensing means being operative to sense the output of ground material being demanded from the roller mill, said fuel indicating controller being operative to generate a signal representative of the output of ground material

being demanded from the roller mill as sensed by said sensing means;
 b. feed control means operative for controlling the rate of feed of material to the roller mill, said feed control means being connected in circuit relation with said demand sensing means for receiving said signal from said fuel indicating controller, said feed control means in response to said signal received thereby from said fuel indicating controller being operative to effectuate any changes in the rate of feed of material to the roller mill that may be required in order to conform the rate of feed of material to the roller mill to the rate of output of ground material being demanded from the roller mill as changes occur in the rate of output of ground material being demanded from the roller mill;
 c. airflow measuring means operative to measure the airflow through the roller mill, said airflow measuring means including interconnected in circuit relation one with another a roller mill airflow sensor and a pressure transmitter and an airflow indicating controller having a self-corrected set point and a control linkage and a fan damper and linearization means, said airflow measuring means being connected in circuit relation with said demand sensing means for receiving said signal from said fuel indicating controller, said airflow measuring means in response to said signal received thereby from said fuel indicating controller being operative through the manipu-



lation of said control linkage and said fan damper to effectuate as established by said airflow indicating controller any changes in the amount of airflow through the roller mill that may be required in order to maintain the desired air-to-solids ratio in the roller mill as changes occur in the rate of output of ground material being demanded from the roller mill that result in changes being made by said feed control means in the rate of feed of material to the roller mill;

d. pressure measuring means operative to measure the differential pressure across the roller mill, said pressure measuring means including interconnected in circuit relation one with another a roller mill pressure sensor and a pressure transmitter and a pressure indicating controller having a self-correcting set point and linearization means, said pressure measuring means being connected in circuit relation with said demand sensing means for receiving said signal from said fuel indicating controller, said pressure measuring means in response to said signal received thereby from said fuel indicating controller being operative to effectuate as established by said pressure indicating controller any changes in the value of the differential pressure across the roller mill that may be required in order to maintain the desired differential pressure across the roller mill as changes occur in the rate of output of ground material being demanded from the roller mill;
 e. mill motor control means operative for controlling the speed of the mill motor;

f. classifier control means operative for controlling the mode of operation of the classifier; and
 g. feed forward circuit means including differentiation means and summation means, said feed forward circuit means being connected in circuit relation with said mill motor control means and said classifier control means such that said summation means is connected in circuit relation with both said mill motor control means and said classifier control means and said differentiation means is connected in circuit relation with said summation means and therethrough to said mill motor control means and said classifier control means, said feed forward circuit means further being connected in circuit relation with said demand sensing means for receiving said signal from said fuel indicating controller, said feed forward circuit means being operative when said signal evidences the occurrence of a rapid change in demand per unit time of the output of ground material being demanded from the roller mill to effectuate as established by said differentiation means and said summation means an anticipation and modulation of the speed of the mill motor as well as the operation of the classifier to prevent the roller mill from being subjected to a condition wherein there occurs either an overfeeding of the roller mill or an underfeeding of the roller mill relative to the rate of feed of material to the roller mill that is required in order to conform the rate of feed of material to the roller mill to the rate of output of ground material being demanded from the roller mill.

4,640,465

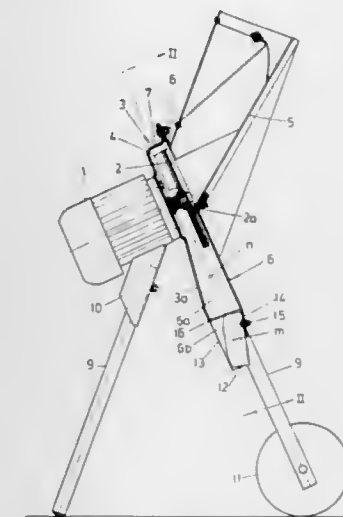
CHOPPER FOR GARDEN REFUSE OR THE LIKE
 Dieter Schmid, Augsburg, Fed. Rep. of Germany, assignor to Lescha Maschinenfabrik GmbH, Fed. Rep. of Germany
 Filed May 28, 1985, Ser. No. 738,456

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 8508739[U]

Int. Cl.⁴ B02C 18/22

U.S. Cl. 241—37.5

17 Claims



1. A chopper for refuse comprising a housing defining a chamber, a cutting rotor mounted rotatably in said chamber for turning in a cutting plane about an axis of rotation, an inlet passage mounted on said housing so that a longitudinal axis of said inlet passage is at an angle to the cutting plane, said housing further having an ejection passage and a tubular extension running out generally radially from said axis of rotation and constituting at least part of said ejection passage, said tubular extension having a substantially unimpeded internal cross section that firstly increases and then decreases in a direction

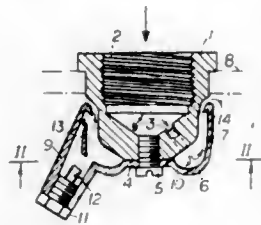
away from said rotor to impede a user from inserting his hand into the ejection passage.

4,640,466
CONTAMINANTS BREAKING AND SEPARATION
Semyon Fishgal, 1908-35 High Park Ave., Toronto, Canada M6P 2R6

Filed Apr. 1, 1985, Ser. No. 718,570
Int. Cl.⁴ B02C 19/06

U.S. Cl. 241—40

7 Claims



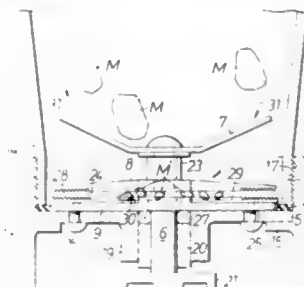
1. A device for breaking down contaminants existing within a liquid, including
a reservoir of the liquid;
a pressure line of the liquid;
a nozzle having an inlet and an outlet communicating respectively with said line and reservoir;
a stand-off obstacle facing the outlet;
a hydrocyclone provided with a drain vent for removal of the contaminants from the liquid.

4,640,467
KITCHEN UTENSIL
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi, Japan

Filed Jul. 16, 1985, Ser. No. 755,519
Claims priority, application Japan, Jan. 29, 1985, 60-15075
Int. Cl.⁴ A47J 43/046

U.S. Cl. 241—152 R

8 Claims



1. A kitchen utensil for obtaining juice comprising:
a main body with a built-in motor;
a vessel removably mounted on said main body for receiving therein a juice material to be treated;
a rotary shaft which is connectable to and driven by said motor and which is rotatably supported by a bottom plate of the vessel;
a pre-treatment rotary blade secured for integral rotation to a part of said rotary shaft which is located in said vessel, said pre-treatment rotary blade applying a pre-treatment to said juice material and concurrently generating a circulating flow of the material within the vessel;
a first grinder member secured to said rotary shaft below said rotary blade and within said vessel, the first grinder member having a grinding surface on one side surface thereof extending over substantially an entire area in a radial direction around the rotary shaft; and
a second grinder member secured to said bottom plate and

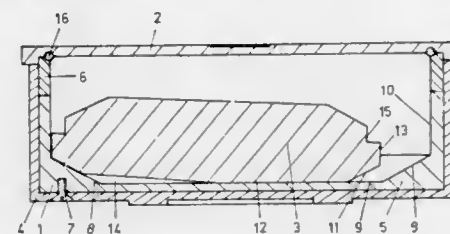
having a grinding surface provided on one side surface thereof so as to oppose said grinding surface of the first grinder member;
wherein the grinding surfaces of the first and second grinder members cooperate with each other to apply a grinding treatment in a repeated manner to the juice material which circulates in said circulating flow within said vessel.

4,640,468
DISC PULVERIZER
Bevan P. Quinn, Labtechnics Australia, P.O. Box 318, Glenside, South Australia, Australia 5065

Filed Jul. 22, 1985, Ser. No. 757,638
Claims priority, application Australia, Jul. 31, 1984, PG6297
Int. Cl.⁴ B02C 19/00

U.S. Cl. 241—199.1

17 Claims



1. A laboratory rock grinder head, comprising:
a bowl and a loose grinder disc movable within the bowl, the disc being smaller than the bowl and eccentrically movable within the bowl as the bowl is agitated, the bowl defining a substantially cylindrical internal shape, the bowl having a sloping shaped surface between an internal side and internal base of the bowl, and the disc having a generally cylindrical shape with an angled edge, the angled edge of the disc being complementary with the internal side and internal base of the bowl, such that a varying gap between the disc and bowl occurs under the disc as the disc is moved eccentrically in the bowl and as the disc rides up on the shaped surface of the bowl, and the angled edge of the disc rests squarely against the internal shape of the bowl.

4,640,469
SYSTEM FOR ROLLING AND UNROLLING A GROUND COVER
Charles Mackintosh, 3838 Oakwood Ave., Los Angeles, Calif. 90004

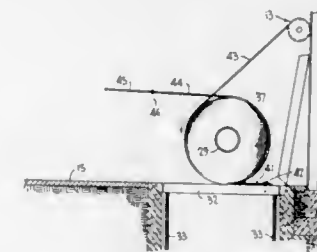
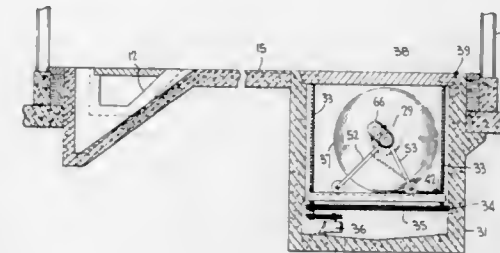
Continuation-in-part of Ser. No. 656,330, Oct. 1, 1984, abandoned. This application Aug. 15, 1985, Ser. No. 766,425
Int. Cl.⁴ B65H 16/00, 18/10

U.S. Cl. 242—55

10 Claims

1. A system for tightly rolling up a web covering a surface with one end of the web anchored to said surface, comprising a core about which the web is rolled,
means for rolling up the web into a roll about said core from the other end thereof in the direction of said one end, and
means for tightening the roll turns about one another during roll-up,
said tightening means comprising a closed-ended tube of flexible and unstretchable material partially filled with a fluid,
said tube having a length substantially equal to the width of said web,
said tube underlying the roll for supporting the same above the web which covers the surface, and
said tube being in an initial position beneath the roll such that the central axis of the tube is spaced in said direction from the central axis of the roll, and

said tube being in a normal position beneath the roll such that said central axes lie in a plane perpendicular to the web which covers the surface,
whereby during a rolling up of the web said tube shifts by rolling on itself from said initial to said normal positions for causing said roll to slip to thereby tighten the web, whereafter said tube rolls on itself in said direction together with the roll and serves to maintain a tight web.
6. A system for unrolling a web without bulging from a wound web roll for covering a surface with one end of the web anchored thereto, comprising,
a core about which the web is rolled, said core including an outwardly extending axle,



a plurality of spaced straps disposed between individual turns of said wound web roll in the same direction of web winding,
means for unwinding said straps from their wrapped condition to effect an unrolling of the web from said wound web roll,
a gear motor operatively coupled with said axle, and means for powering said motor,
said powering means being disconnected during unrolling whereby said motor serves (to retard rotation of said axle against unrolling) to thereby effect a tightening of the web during unrolling.

4,640,470
MAGNETICALLY ACTUATED LINE FEATHERING SYSTEM FOR SPIN CAST REELS
Steven W. Ohler, Cincinnati, Ohio, assignor to Brunswick Corporation, Skokie, Ill.

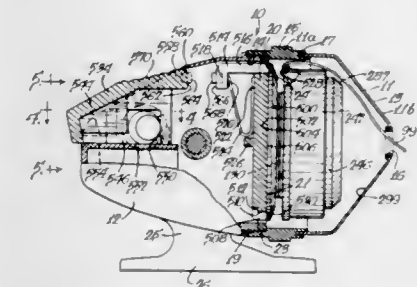
Filed Apr. 5, 1985, Ser. No. 720,604
Int. Cl.⁴ A01K 89/01

U.S. Cl. 242—84.2 A

17 Claims

1. In a fishing reel of the type having a housing, a reel body with a deck plate, a line-carrying spool, a spinner head assembly mounted forwardly of the deck plate and means for operating the spinner head assembly to direct line onto the spool during line retrieval, line feathering structure comprising:
a feathering element;
means mounting the feathering element movably relative to the deck plate; and
means for directing at least a portion of the feathering element towards the spinner head assembly so that the line can be trapped between the feathering element and the spinner head assembly during a cast,
said means for directing the feathering element towards the

spinner head assembly comprising a button on the reel and magnetic means on each of the feathering element and button, said magnetic means on the feathering element and



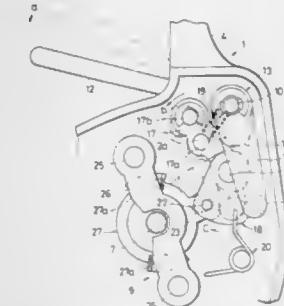
button being mutually repulsed by a magnetic force so that the feathering element is biased towards the spinner head assembly by said magnetic force.

4,640,471
CLUTCH RELEASING AND BRAKING MECHANISM FOR FISHING REEL
Hideo Murakami, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Aug. 17, 1984, Ser. No. 641,546
Claims priority, application Japan, Aug. 18, 1983, 58-128237[U]; Jun. 1, 1984, 59-82236[U]
Int. Cl.⁴ A01K 89/015, 89/02

U.S. Cl. 242—84.53

7 Claims

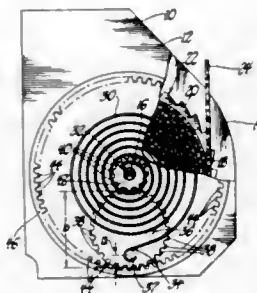


1. A below-the-rod double-bearing type fishing reel comprising:
a reel housing;
a reel frame within said housing;
an operating lever extending forwardly and externally of said housing and rotatably mounted within said housing on an upper portion of said frame;
a cam portion within said housing, said cam portion rotatable with said operating lever around a pivot point of said operating lever;
a spool rotatably mounted on said frame;
brake means for reciprocally moving into and out of engagement with said spool to brake and release, respectively, said spool; said brake means being positioned within said housing and in proximity to said cam portion such that rotation of said cam portion in a first direction actuates said brake means to cause it to brake said spool;
a first clutch lever rotatable with said operating lever and joined to said operating lever at said pivot point;
a first pin within said housing and affixed to an end of said first clutch lever opposite said pivot point; and
clutch means within said housing and operable by movement of said first pin;
wherein said operating lever is fixed to a shaft which constitutes said pivot point, said shaft being rotatably mounted on said frame in said housing, and wherein said first clutch

lever is fixed to said shaft for rotation with said operating lever;
 wherein said clutch means comprises a second clutch lever rotatably mounted at one end and having a free end positioned to abut said first pin, a second pin fixed to said free end of said second clutch lever, a rotatably mounted clutch plate having an arm having an elongated hole therein in which said second pin is inserted, an operating plate disposed in abutment with cam portions of said clutch plate, said operating plate being moved in the axial direction of said spool upon rotation of said clutch plate caused by rotation of said second clutch lever, and spring means for biasing said operating plate in an axial direction;
 wherein said brake means comprises a brake lever having one end rotatably mounted about a fixed point in said housing, a brake shoe coupled to a free end of said brake lever, and a spring for rotatably urging said brake lever into engagement with said cam portion; and
 wherein said second clutch lever and said brake lever are rotatably mounted about the same point.

4,640,472
TORQUE COMPENSATING SPRING ARRANGEMENT FOR SEAT BELT RETRACTOR
 Peter C. Epple, Russelsheim/Königsdorf, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1985, Ser. No. 808,062
 Int. Cl.⁴ B65H 75/48
 U.S. Cl. 242-107 3 Claims

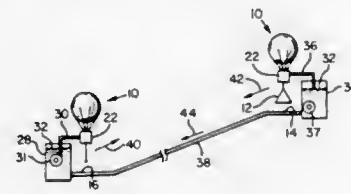


2. A winding spring arrangement for a seat belt retractor having a belt reel rotatably mounted on a housing by a reel shaft for a plurality of revolutions to wind and unwind the belt relative to the reel comprising:
 a sun gear carried by the reel shaft;
 a ring gear fixedly mounted on the housing and encircling the sun gear;
 a planetary gear interposed between and meshing with the sun gear and the ring gear and having a diameter selected relative to the diameters of the sun gear and the ring gear to effect revolution of the planetary gear less than a full revolution during the plurality of revolutions of the sun gear during belt winding and unwinding; and
 a spirally wound spring having a first end mounted on the reel shaft and a second end mounted on the planetary gear at a point thereon which migrates in the belt unwinding direction of reel rotation from a point thereon diametrically most opposite to the sun gear to a point closest adjacent the sun gear so that the second end of the spring chases the first end of the spring during belt unwinding rotation and also acts through the planetary gear to provide a progressively effective force on the shaft counteracting the torque of the spirally wound spring.

4,640,473
MAGNETIC TAPE CASSETTE WITH IMPROVED GUIDE ROLLER MEANS

Kazunori Aoyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Jan. 31, 1986, Ser. No. 824,829

Claims priority, application Japan, Mar. 27, 1985, 60-43076[U]
 Int. Cl.⁴ B65H 27/00; G11B 23/04
 U.S. Cl. 242-197 12 Claims

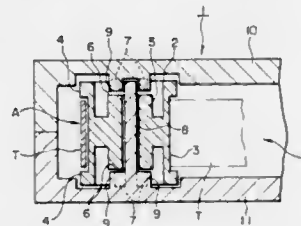


1. A magnetic tape cassette having at least one guide means for contacting and guiding a magnetic tape while rotating, said guide means comprising:
 a shaft (8);
 a guide roller (2) rotatably mounted on said shaft, said guide roller have at least one axial end face (6);
 at least one annular seat (9) for supporting said end face of said guide roller; and
 at least one rib (7) integral with and extending radially inwardly between said seat and said shaft for conveying lubricant flowing downwardly between said shaft and said roller outwardly along said rib to said seat to reduce frictional resistance between the end face and the seat and to attendantly reduce wear.

4,640,474
METHOD AND APPARATUS FOR AERIALY TRANSPORTING LOADS

Robert A. Manseth, P.O. Box 9, Florence, Oreg. 97439
 Filed Aug. 5, 1985, Ser. No. 762,771

Int. Cl.⁴ B64B 1/70
 U.S. Cl. 244-31 2 Claims

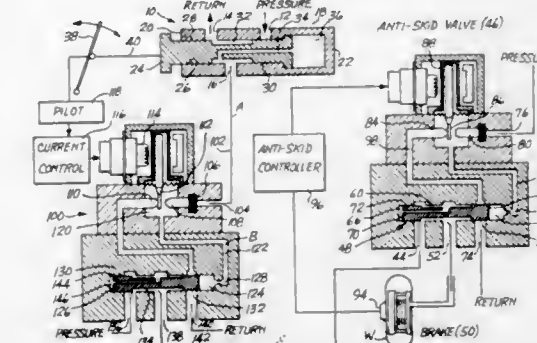


1. A method of aerially transporting loads between a loading site and a discharging site, comprising the following steps:
 loading an inflated lift balloon with ballast at the discharging site;
 propelling the ballasted balloon to the loading site;
 suspending a load from the balloon at the loading site;
 removing ballast from the balloon at the loading site;
 moving the removed ballast to the discharging site;
 propelling the balloon with its suspended load to the discharging site;
 reballasting the balloon with the removed ballast at the discharging site; and
 discharging the load from the ballasted balloon at the discharging site.

4,640,475
AIRCRAFT WHEEL BRAKE CONTROL SYSTEM AND METHOD

Melvin C. Zoerb, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 24, 1984, Ser. No. 685,298
 Int. Cl.⁴ B60T 8/02; B64C 25/42
 U.S. Cl. 244-111 31 Claims

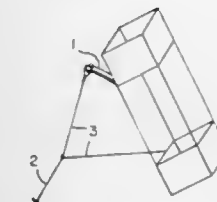


1. An aircraft wheel brake controlling system, comprising:
 a first stage metering valve including a first port control member, a pressure port, a return port and an output port; pilot operated foot control means for moving the first port control member in a pressure port opening first direction;
 a second stage metering valve having an inlet port, an outlet port and pressure control means between such ports;
 first conduit means connecting the output port of the first stage metering valve to the input port of the second stage metering valve;
 a third stage metering valve comprising a second port control member, a pressure port, a return port, a brake port and a command pressure chamber at one end of the second port control member;
 second conduit means connecting the output port of the second stage metering valve to the command pressure chamber of the third stage metering valve;
 third conduit means connecting the pressure port of the third stage metering valve to the source of supply pressure;
 fourth conduit means connecting the return port of the third stage metering valve to return pressure;
 fifth conduit means connecting the brake port of the third stage metering valve to an aircraft wheel brake;
 wherein the first stage metering valve has an off position in which there is no foot pedal force on the first port control member and such first port control member is positioned to block the pressure port and to communicate the outlet port with the return port;
 wherein a pilot foot force supplied to the foot control means depresses the first port control member so that it in turn meters flow from the pressure port to the output port in proportion to displacement of the first port control member;
 wherein said third stage metering valve has an off position in which the second port control member is positioned to block the pressure port and communicate the brake port with the return port;
 wherein a pilot applied foot force on the foot control means, for causing the first port control member to meter pressure through the first stage metering valve, results in the delivery of a command pressure to the command pressure chamber of the third stage metering valve, via the second stage metering valve, and this causes the second port control member to move and meter pressure and flow through such third stage metering valve in an amount proportional to the displacement of the second port control member;
 wherein said third stage metering valve includes feedback means for feeding brake pressure in the fifth conduit

means to the second port control member, to exert a force on such second port control member opposite to the command pressure force, for moving the second port control member into a null position in response to the pressure build-up in the brake; and
 said first stage metering valve including feedback means for delivering a feedback pressure signal from the first conduit means to the first port control member, for exerting a force on such first port control member opposite to the pilot applied foot force, for moving the first port control member to a null position in response to a pressure increase in said first conduit means.

4,640,476
AUTOMATIC ATTITUDE ADJUSTER FOR KITE
 Charles O. Meckley, 29520 SW. 199th Ave., Homestead, Fla. 33030

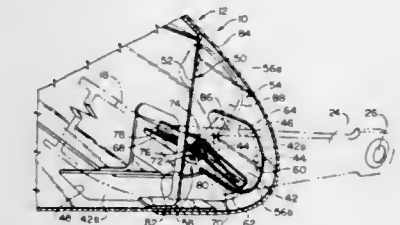
Filed May 28, 1985, Ser. No. 738,368
 Int. Cl.⁴ B64C 31/06
 U.S. Cl. 244-155 R 5 Claims



1. An automatic adjuster for a kite comprising a strip of flexibly bendable material which has a memory, said strip having a first end which is adapted to be firmly connected to a portion of a kite assembly, said portion being rigid when the kite is in flight, and said strip having a second end adapted to be connected to a kite bridle so that when the strip is connected and a force is applied between the bridle and said strip said strip bends in response to the applied force.

4,640,477
CLOSING DEVICE FOR AN AIRFOIL
 James W. Pace, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1984, Ser. No. 687,929
 Int. Cl.⁴ B64C 3/50, 1/38
 U.S. Cl. 244-214 18 Claims



1. In an airfoil where there is a leading edge structure having a front skin section and a leading edge device having a cruise position covering said front skin section, and a deployed position where said front skin section is exposed to airflow, said airfoil having a spanwise axis, a chordwise axis and a vertical axis, said airfoil having a connecting member extending between said leading edge structure and said leading edge device, said front skin section having a front opening through which said connecting member extends, said airfoil being characterized in that during movement of said leading edge device to its deployed position, said connecting member has a component of motion in said opening generally transverse to said chord-

wise axis to a transversely displaced position, so as to leave a portion of said opening as an exposed front skin open area, an improvement to close said exposed front skin open area when the connecting member is in its transversely displaced position, said improvement comprising:

- a door having a surface configuration generally matching said exposed front skin open area;
- a pivot mounting device by which said door is pivotally mounted in said leading edge structure for movement about an axis of rotation having a substantial alignment component generally perpendicular to a portion of said front skin section adjacent to said exposed front skin open area, and substantial alignment components parallel to a plane of movement through which said connecting member moves from its first position to its second position, said mounting device being characterized in that said door has a first retracted position where said door is removed from said exposed front surface open area and displaced about said axis of rotation from a position occupied by said connecting member in its retracted position, and a second deployed position where said door is positioned in said plane of movement and closes at least a portion of said exposed front surface open area;
- means to cause said door to move between its retracted and deployed positions.

4,640,478

QUICK CONNECT CYLINDER MOUNT STRUCTURE

Keith V. Leigh-Monstevens, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

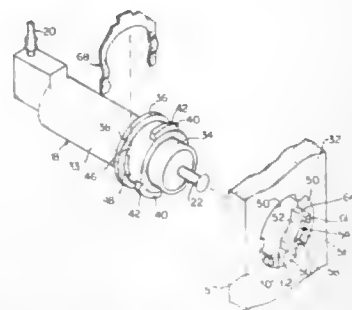
Continuation-in-part of Ser. No. 387,019, Jun. 10, 1982, Pat. No. 4,488,701. This application Aug. 15, 1984, Ser. No. 641,054

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.⁴ G12B 9/00

U.S. Cl. 248—27.1

6 Claims



1. A mounting structure coupling a hydraulic cylinder housing to a support plate, said housing having a generally cylindrical peripheral surface portion and a substantially circular flange at one side of said generally cylindrical peripheral surface portion, said mounting structure comprising at least a pair of symmetrically disposed radially projecting lugs at the other side of said generally cylindrical peripheral portion, a mounting opening in said support plate, said mounting opening having a cylindrical portion of a diameter conforming to said housing generally cylindrical portion extending from one face of said support plate to the other face of said support plate, and a cylindrical cut-out portion conforming to the perimeter of said lugs extending from said one face of said support plate to said other face, notched recesses of a perimeter conforming to the perimeter of said lugs extending from said other face of said support plate to a predetermined depth in said cylindrical portion of said mounting opening, each of said notched recesses being adapted to receive one of said lugs between two lateral abutment walls of said notched recesses, the first of said abutment walls extending to said other face of said support plate and the second of said abutment walls extending part of the way to said other face, whereby rotation of said housing in one direction after introduction of said lugs and cylindrical

peripheral portion through said mounting opening is prevented by the first of said abutment walls extending all the way to the other face of said support plate and rotation of said housing in an opposite direction is enabled by passage of said lugs over the second of said abutment walls extending part of the way to said other face of said support plate, each first of said abutment walls preventing rotation of said lugs beyond said notched recesses, and spacer means disposed between said housing circular flange and said one face of said support plate for drawing each of said lugs within one of said notched recesses.

4,640,479

STRAIN RELIEF GROMMET

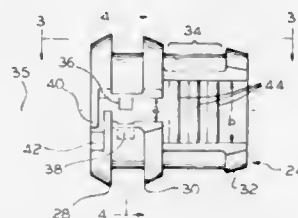
William W. Shely, St. Charles, and Peter M. Wells, Sycamore, both of Ill., assignors to All States Inc., Chicago, Ill.

Continuation of Ser. No. 462,312, Jan. 31, 1983, abandoned. This application Apr. 16, 1985, Ser. No. 723,007

Int. Cl.⁴ F16L 5/00

U.S. Cl. 248—56

10 Claims



1. A plastic strain relief eyelet device for protecting, insulating, and holding a cord passing through a perforation in a chassis against abrasion and axial forces exerted by pulling upon said cord; said strain relief device comprising a cylindrical ring with a C-shaped cross section having a single longitudinal open split sector along one side and having a substantially uniform internal diameter throughout forming a grommet, a spaced parallel pair of annular shoulder means formed on an outside surface of said C-shaped cylindrical ring for securely mounting said grommet in a perforation on a chassis by being pushed therethrough, one of said shoulder means being at a first end of said grommet; means formed on the outside perimeter surface of said cylinder at a location adjacent the other of said pair of shoulder means for securely receiving, retaining and positioning a cable tie which wraps around the circumference of the split cylinder, said longitudinal open split sector being smaller in the area of said spaced parallel annular shoulders than in the area of the cable tie, the means for receiving, retaining and positioning said cable tie being at an end of said grommet which is opposite said first end, the length of said cylinder being equal to the combined widths of said pair of annular shoulder means, a width approximately equal to a thickness of said chassis, and a width approximately equal to a width of said cable tie; internal ridges formed on an inside wall of said cylinder for applying a clamping pressure transverse to said axial force by pressing against a cord passing through said grommet with sufficient force to deform a jacket on said cord; and means responsive to an attachment and selective tensioning of said cable tie about the outside perimeter for drawing together said split grommet to squeeze said internal ridges into said cord and to apply a selected predetermined tension in said cord and therefore a selected clamping pressure upon said cord as it is captured by said internal ridges.

4,640,480

DEVICE FOR SUPPORTING PIPES HAVING A LOW THICKNESS

Jean-Claude Semedard, Paris; Jean-Jacques Marsault, St Arnaud en Yvelines; Jean-Pierre Peyrelongue, Pontchartrain, and Gérard Vallée, Viroflay, all of France, assignors to Stein Industrie, Velizy Villacoublay, France

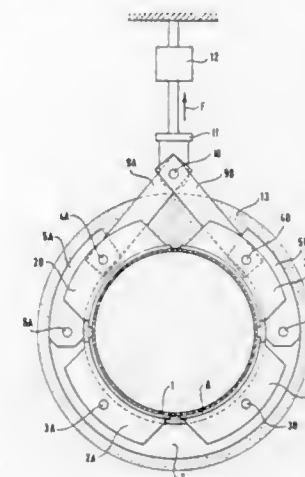
Filed Aug. 5, 1985, Ser. No. 762,246

Claims priority, application France, Aug. 8, 1984, 84 12539

Int. Cl.⁴ F16L 3/00

U.S. Cl. 248—62

7 Claims



1. A device for supporting a pipe (1) of given radius of curvature which has a low thickness in relation to its diameter and which is subjected to considerable variations in temperature and to a radial traction stress of a known direction, said device comprising:

- a number of support cradles (2A, 2B, 2C, 2D) having an internal profile with a radius of curvature close to that of the pipe;
- a rigid half-collar (7) for mounting around a portion of the pipe and separated from the pipe periphery, certain of the cradles being mounted to said rigid half-collar for internal profile contact with the periphery of said pipe;
- two first arms (5A, 5B) articulated on the ends of the half-collar (7), other of said cradles being mounted to said arms for internal profile contact with the periphery of said pipe; and
- a connection device (9A, 9B, 10, 11) comprising two second arms (9A, 9B), said two second arms being articulated at one end on said first mentioned arms, respectively and at the other and commonly on a pivot pin (10), and means for exerting a radial traction stress to said second arms for tightening said cradles about the pipe under the force of radial traction (F) applied to the pin and independently of the expansion of the pipe.

4,640,481

CAMERA HOLDER

Teruo Kohno, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Sep. 17, 1984, Ser. No. 651,547

Claims priority, application Japan, Sep. 30, 1983, 58-150574[U]

Int. Cl.⁴ A47G 29/00

U.S. Cl. 248—126

13 Claims

1. A camera holder having multiple functions, comprising: first pipe provided with camera mount means at one end thereof;
- a second pipe telescoped in said first pipe from the other end of the first pipe to be slidable along an axis of the first pipe;

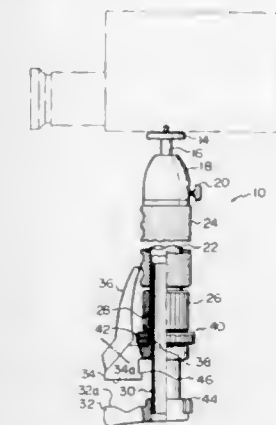
pipe fastening means for fastening said second pipe telescoped in the second pipe at a desired position;

a first clamp seat rigidly mounted on the second pipe;

a second clamp seat mounted on an outer periphery of the second pipe to be slidable along and rotatable about an axis of the second pipe, said second clamp seat being provided with a rotatable arm having locking means;

clamp fastening means for fastening the second clamp seat after positioning the second clamp seat relative to the second pipe;

breast support arm means constituted by the first and second clamp seats, the rotatable arm of the second clamp seat



and the clamp fastening means and operable in a breast support mode such that the rotatable arm is rotated and locked by the locking means in a predetermined angular position and the second clamp seat is moved to a predetermined fixing position on the second pipe and rotated until the second clamp seat becomes locked to the first clamp seat whereby the second clamp seat is fastened by the clamp fastening means at the predetermined fixing position; and

leg means for cooperating with said rotatable arm of the second clamp seat to constitute a tripod, said leg means being nested in the second pipe when out of use and pulled out from the second pipe when in use.

4,640,482

FOLDABLE TRIPOD

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 25, 1984, Ser. No. 653,901

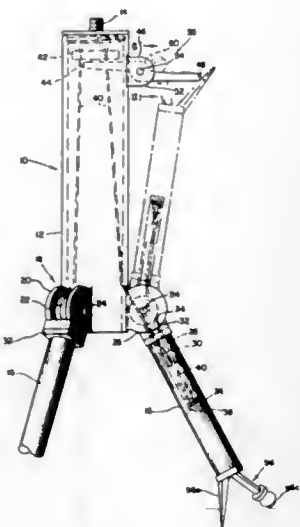
Int. Cl.⁴ F16M 11/38

U.S. Cl. 248—168

16 Claims

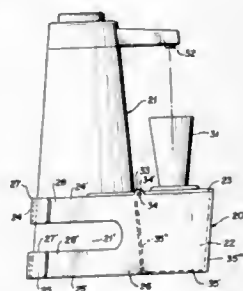
1. An apparatus for supporting an article, comprising: an elongated support having a predetermined axis; a plurality of legs;
- bracket means including bearing means mounted on said support for mounting each of said legs for pivotal movement between support positions in which said legs extend angularly relative to said axis, and storage positions, and having an axis of rotation extending normal to said predetermined axis, said bracket means each being provided with an arcuate peripheral surface at least partially and eccentrically circumscribing said bearing means, and whereby the spacing between said peripheral surface and said axis of rotation increases radially from a minimum to a maximum;
- abutment means connected with said legs in facing relationship to said peripheral surfaces and radially movable relative thereto for maintaining said legs in their support positions; and
- means for selectively radially moving said abutment means into engagement with said peripheral surfaces for arrest-

ing each leg against pivotal movement in the direction of the radially increasing curvature and to provide quick



release of each leg for pivotal movement in the opposite direction.

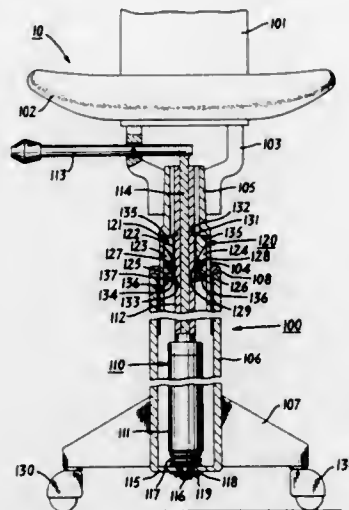
4,640,483
PLATFORM DEVICE
Jerold W. Tuft, Box 79, Glenfield, N. Dak. 58443
Filed Feb. 25, 1985, Ser. No. 704,790
Int. Cl. A47K 1/08
U.S. Cl. 248-311.2



1. A support platform device for attachment to a liquid dispenser of the pump type for dispensing fluid from its spout while upright, said platform device comprising a horizontal platform; a pair of straps having connecting means connecting their one ends to the platform and adapted to be extended about the dispenser with securing means at their outer ends to secure the platform to the dispenser, so that the dispenser supports the platform; said platform serving to support a receptacle for receiving fluid, with said platform and receptacle being directly below the spout and spaced above the bottom of the dispenser so as to conveniently receive fluid pumped from the spout into the receptacle; said connecting means comprising a second receptacle mounted to said straps beneath the spout; said platform being operatively mounted to said second receptacle to also serve as a top.

4,640,484
SUPPORT COLUMN WITH GRAVITY DEPENDENT RETENTION MEANS
Lee T. Lamond, North Wales, Pa., and Richard D. Staton, Collingswood, N.J., assignors to Fichtel & Sachs Industries, Colmar, Pa.
Filed May 6, 1985, Ser. No. 730,796
Int. Cl. F16M 11/28
U.S. Cl. 248-407

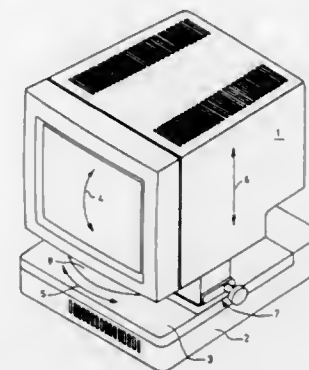
13 Claims



1. An adjustable-length support column comprising:
 - (a) a first tubular member for connecting to a surface to be supported;
 - (b) a second tubular member for connecting to a base for the surface, one of the tubular members being telescopically received within the other;
 - (c) pneumatic spring means located within the first and second tubular members comprising:
 - (1) a cylinder member,
 - (2) a piston rod member axially movable within the cylinder member and having a first annular groove in an outwardly extending portion thereof, and
 - (3) means for permitting adjustment of the axial position of the piston rod member relative to the cylinder member and thereby of the length of the support column;
 - (d) means for operatively coupling the piston rod member to the first tubular member in load-transmitting relationship thereto;
 - (e) means for operatively coupling the cylinder member to the second tubular member in load-transmitting relationship thereto; and
 - (f) means for releasably locking the piston rod member within the first tubular member comprising:
 - (1) a lock body retained within the first tubular member and having a bore with the piston rod member slidably disposed therein, the lock body having one or more cavities inclined downwardly and communicating with the bore,
 - (2) a locking member slideably disposed within each cavity, such that, when the column is upright and the inner ends of the cavities are adjacent the first annular groove, each locking member falls to a first position in which a portion of the locking member protrudes into the bore and, when the column is inverted, each locking member falls to a second position in which the locking member is retracted from the bore, and
 - (3) the first annular groove in the piston rod member cooperating with the portion of each locking member that protrudes into the bore of the lock body to achieve locking of the piston rod member to the lock body when the column is upright.

4,640,485
ADJUSTABLE SUPPORT FOR DISPLAY MONITOR
George D. Day, Winchester; John K. Flack, Chancellors Ford; Ian Golledge, Romsey; Christopher J. Hillary, Chancellors Ford; John V. Pike, and Michael H. Watson, both of Winchester, all of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1985, Ser. No. 742,260
Claims priority, application European Pat. Off., Jun. 8, 1984, 084303888
Int. Cl. F16M 13/00
U.S. Cl. 248-422

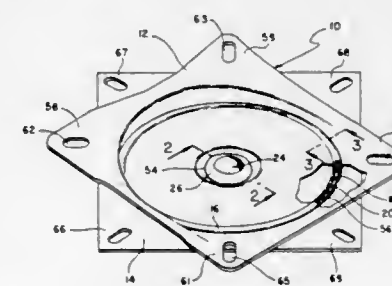
8 Claims



1. An adjustable support for a display monitor comprising a turntable, a spaced pair of vertically-extending support columns carried by said turntable, at least one of which columns is hollow to contain a gas strut of non-magnetic material, a support beam supported on said columns to extend horizontally therebetween and slidable along said columns thereby to vary the height of the support beam relative to the turntable, a support carrier mounted on said support beam between said columns in such a manner that the angle between the carrier and the beam can be varied, and means for securing a display monitor to the support carrier, the gas strut being secured by one end of the turntable and its other end to the support beam to counterbalance the weight of a display monitor secured on the carrier thereby to assist in the raising and lowering of the support beam along the support columns, in which each support column comprises a rack, a pair of pinions mounted on the support beam to co-operate with the racks being coupled together by means of a shaft to distribute the force exerted by the gas strut between the support columns.

4,640,486
SEAT SWIVEL APPARATUS
Donald G. Neville, Manhattan Beach, Calif., assignor to International Glide Mfg. Corp., Glendale, Calif.
Filed Jun. 14, 1985, Ser. No. 744,934
Int. Cl. F16M 13/00
U.S. Cl. 248-425

16 Claims

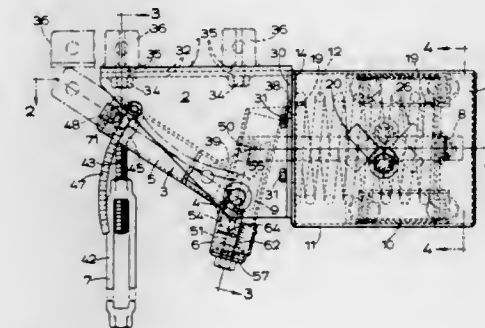


1. A seat swivel apparatus comprising:
a first mounting plate having circular recess formed therein

adapted to connect to a seating surface, said first mounting plate having a bore defined therein;
a second mounting plate having a circular recess formed therein adapted to connect to a support structure, said second mounting plate having a bore defined therein;
bearing means located within said recesses for transmitting loads between said first and second mounting plates and for allowing relative rotation between said plates; and
means for rotatably fastening said plates, said fastening means being insertable into each of said bores on said first and second mounting plates,
said fastening means having a Belleville spring attached thereto for biasing said mounting plates together, said Belleville spring maintaining a continuous and generally constant force to urge said mounting plates together.

4,640,487
PIPE SUPPORTS
Anthony J. Salter, Cherry Trees, The Ridgeway, Sedgley, Dudley, West Midlands, DY3 1BS, England
Filed Apr. 16, 1985, Ser. No. 723,740
Claims priority, application United Kingdom, Apr. 17, 1984, 8410006; Apr. 17, 1984, 8410007
Int. Cl. F16M 13/00
U.S. Cl. 248-571

15 Claims



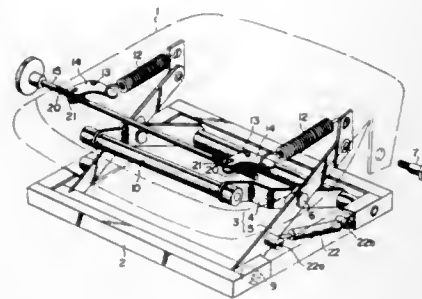
1. A pipe support of the constant tension kind which comprises a carrier, a pivot on said carrier and a lever which is pivotally mounted on said carrier by said pivot, load attachment means on said lever adapted to connect a pipe to be supported to said lever at a position thereon spaced from said pivot, a connecting link connected to said lever, spring means which acts on said lever through said connecting link such that a spring force is exerted on said lever which produces a moment about said pivot, said spring means being slidably connected to said carrier for adjusting the position of said spring means relative to said carrier such as to alter the moment of spring force about said pivot by varying the perpendicular distance from the pivotal axis of said lever to a central longitudinal axis of said connecting link, and screw retention means adjustably connecting said spring means to said carrier and acting between said spring means and said carrier to secure said spring means and said carrier against relative sliding movement in any adjusted position of said spring means.

4,640,488
SEAT SUSPENSION
Takao Sakamoto, Akishimashi, Japan, assignor to Tachikawa Spring Co., Ltd., Japan
Filed Jan. 4, 1985, Ser. No. 688,980
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl. F16M 13/00
U.S. Cl. 248-588

5 Claims

1. In a seat suspension comprising an upper frame, a lower frame, a pair of X-shaped links disposed between said upper frame and said lower frame such that one of the links is dis-

posed at the left side of said upper and lower frame while the other of the links is disposed at the right side of said upper and lower frames, each of said pair of X-shaped links being made up of (a) a first link component having a forward upper end portion at the upward positioned end thereof and a rearward lower end portion at the downward positioned end thereof and (b) a second link component having a forward lower end portion at the downward positioned end thereof and a rearward upper end portion at the upward position thereof, the arrangement of said first and second link components being such that the first link component is rotatably, pivotally fixed to the second link component at the center portion of each thereby allowing the first and second link components to be freely rotated independently of each other, each of said pair of X-shaped links being connected to said upper frame such that one of said forward upper end portion of said first link component and said rearward upper end portion of said second link component is rotatably fixed to said upper frame while the other of said forward upper end portion of said first link component and said rearward upper end portion of said second link component is slidably supported by said upper frame; and each of said pair of X-shaped links being connected to said lower frame such that one of said forward lower end portions of said



second link component and said rearward lower end portions of said first link component is rotatably fixed to said lower frame while the other of said forward lower end portions of said second link component and said rearward lower end portions of said first link component is slidably supported by said lower frame, and a pair of tension springs disposed above, and adjacent to, said pair of X-shaped links, the improvement comprising:

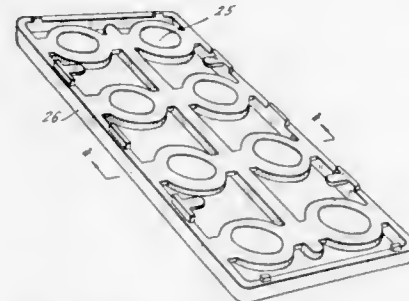
- a pair of bell cranks rotatably, pivotally supported at substantially the center portion thereof;
- rotatable means for operating said pair of bell cranks;
- a pair of shock absorbers, the arrangement of said pair of shock absorbers being such that one of the shock absorbers is disposed at one lateral side of said pair of X-shaped links while the other of the shock absorbers is disposed at the other lateral side of said pair of X-shaped links, and further, that one end of each shock absorber is rotatably connected to said pair of X-shaped links, respectively; and wherein said pair of tension springs are each connected at one end thereof to one of said forward upper end portions of said first link component and said rearward upper end portion of said second link component and connected at the other end thereof to one end portion of each of said pair of bell cranks.

4,640,489
MOLD FOR MAKING CONTACT LENSES, EITHER THE MALE OR FEMALE MOLD SECTIONS BEING RELATIVELY MORE FLEXIBLE

Hans-Ole Larsen, Farum, Denmark, assignor to Mia-Lens Production A/S, Copenhagen, Denmark
Division of Ser. No. 549,702, Nov. 7, 1983, Pat. No. 4,565,348, which is a continuation-in-part of Ser. No. 360,107, Mar. 19, 1982, Pat. No. 4,495,313. This application Sep. 19, 1985, Ser. No. 777,667

Int. Cl.⁴ B29C 39/40, 33/40, 39/26
U.S. Cl. 249—122

10 Claims



1. A lens mold assembly comprising a plurality of female mold sections having a concave optical surface terminating in a peripherally extending annular flange, the surface of said flange forming a sharp edge at the intersection with said concave optical surface;

a plurality of male mold sections having a substantially spherical convex optical surface terminating in a peripherally extending annular flange;

the maximum outside diameter of the convex surface of said male mold section being greater than the maximum inside diameter of the concave surface of said female mold section whereby said sharp edge of said female mold section impinges on said convex surface of said male mold section to form a mold cavity in said mold assembly with the facing surfaces of said peripherally extending annular flanges of said female and male mold sections being spaced apart;

one of said female or male mold sections having relatively greater flexibility than the other section whereby compensation for shrinkage during polymerization of monomers within the mold cavity is afforded by said relatively more flexible mold section; and each of said female mold sections being attached to a supporting frame by a tab or bar extending between said female mold sections and said supporting frame, and each of said male mold sections being individually centered on a respective female mold section to define said mold cavity.

4,640,490
SPACER WASHER FOR CONCRETE FORM TIE RODS
T. Woodrow Wilson, 16th & Mica Rd., Box 1, Spokane, Wash. 99206

Filed Mar. 18, 1986, Ser. No. 840,687
Int. Cl.⁴ E04G 17/06

U.S. Cl. 249—214

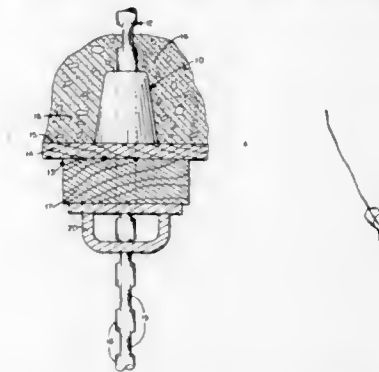
4 Claims

1. A compound spacer washer for concrete form tie rods having a cylindrical body with at least one flattened portion, for each washer to be carried thereby, comprising, in combination:

an elongate washer body, having planar base and axially inwardly tapering sides extending therefrom to communicate with a flattened nose portion, said washer body defining a medial tie rod channel extending axially therethrough to slidably receive a tie rod to be serviced, and

a fastening member chamber larger than the medial tie rod channel in the nose portion thereof, said chamber having

screw thread means defined on the internal wall of the chamber to threadedly receive a fastening member; and a cylindrical fastening member having means on a peripheral surface thereof for threadedly engaging said screw thread means within the fastening member chamber, a periphery configured to threadedly engage within the fastening

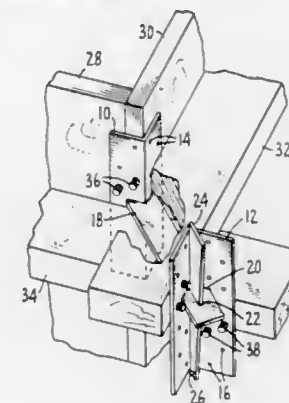


member channel defined in the washer body, and defining a tie rod slot, extending from the periphery through the center of the fastening member and therebeyond, configured to be positionable upon the flat portion of the tie rod to be serviced but not movable axially therealong past the flat portion on which it is positioned.

4,640,491
WATER CORNER LOCK ASSEMBLY
Warren W. Grist, and David L. Kelly, both of Sacramento, Calif., assignors to The Burke Company, San Mateo, Calif.
Filed Jun. 21, 1985, Ser. No. 747,322

Int. Cl.⁴ E04G 17/02
U.S. Cl. 249—219 W

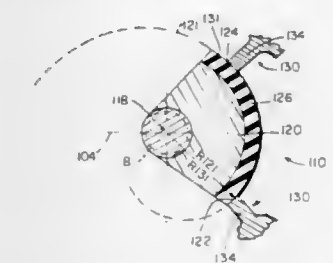
11 Claims



1. An assembly for securing a pair of walers in crossed relationship, said assembly comprising: a first member having converging outwardly facing surfaces complementally engageable with the crossed walers to one side thereof, said outwardly facing surfaces of said first member defining a first angle therebetween; a bar secured to said first member and extending outwardly from the outwardly facing surfaces thereof; a second member received on said bar and having inwardly facing converging surfaces defining a second angle therebetween, said inwardly facing surfaces of the second member being complementally engageable with the crossed walers to the side thereof opposite said one side and said second member being movable relative to said bar to bring the outwardly facing surfaces of the first and second members into simultaneous engagement with opposite sides of the crossed walers, said first and second angles being essentially equal; and means to secure said second member to said bar to maintain the first and second members in such engagement.

4,640,492
INVOLUTE VALVE CLOSURE
William L. Carlson, Jr., St. Cloud, Minn., assignor to General Signal Corporation, Stamford, Conn.
Filed Jan. 23, 1985, Ser. No. 694,097
Int. Cl.⁴ F16K 25/00, 5/00
U.S. Cl. 251—163

19 Claims



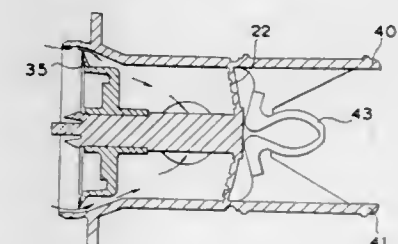
1. Rotary valve means for controlling fluid flow therethrough, comprising:

valve housing means having fluid passageway therethrough; valve closure member movably supported in said valve housing means about a pivotal axis and having a shaped sealing surface; and

valve seat surface means within said valve housing means for engagement with said shaped sealing surface of said valve closure member to restrict fluid flow through said fluid passageway means, said valve seat surface means having, with respect to a plane perpendicular to said pivotal axis, an arc segment forming a sufficient portion of an involute so as to not form a portion of an eccentrically mounted circle such that the sealing portions of said shaped sealing surface and said valve seat surface means engage substantially simultaneously upon closure of said rotary valve means.

4,640,493
TAP FOR A LIQUID CONTAINER
Henryk Dudzik, Mansfield, United Kingdom, assignor to Mar-don Illingworth, Ltd., England
Filed Jun. 24, 1985, Ser. No. 747,978
Int. Cl.⁴ B67D 3/00
U.S. Cl. 251—342

9 Claims



1. A tap for a container holding a substance, wherein said tap comprises:

hollow body means having an open mouth defined at an end thereof;

flexible diaphragm means closing an end of said hollow body means opposite to said open mouth;

outlet port means for providing an exit way from said tap for said substance;

valve closure means in operative engagement with said diaphragm means for opening and closing a passageway between said open mouth and said outlet port means;

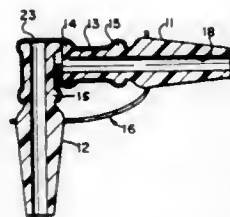
spaced grippable element means including a pair of grippable levers hinged to said hollow body means said grippable levers extending generally parallel to the axis of said hollow body means;

resilient means interposed between and biasing said grippable levers in a manner whereby said tap is maintained in a closed position whereupon the actuation of said grippable levers against said biasing by said resilient means thereby causes said resilient means to act on said diaphragm means which in turn acts upon said valve closure means to open said tap.

4,640,494
TAP OR VALVE
Peter L. Steer, Surrey, England, assignor to Craig Medical Products, Limited, Sussex, England
Filed Jun. 21, 1985, Ser. No. 747,203
Claims priority, application United Kingdom, Jul. 6, 1984, 8417347

Int. Cl.⁴ F16K 31/00
U.S. Cl. 251-354

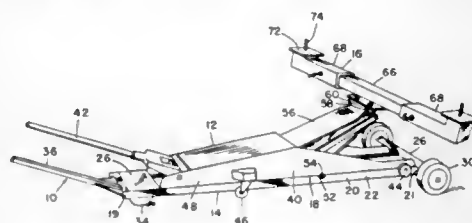
6 Claims



1. A tap comprising a first tube, a second tube and a sleeve of flexible elastic material placed over abutting or nearly abutting ends of the tubes to form a flexible elastic coupling between said tubes to allow fluid passage between said tubes when said tubes are substantially coaxially aligned and to allow displacement of one of said tubes substantially at right angles to the other by stretching said sleeve across an open end of one of said tubes to close said fluid passage, the facing ends of the tubes each comprising at least one flange so that when the tubes are displaced to the closed position at substantially right angles to one another, the flanges engage to help to maintain the displaced tubes in the closed position.

4,640,495
DEVICE FOR MOVING AN AUTOMOBILE WITH DISABLED WHEELS
David M. Parsons, Box 14, Antigo, Wis. 54409
Filed Jan. 24, 1985, Ser. No. 694,354
Int. Cl.⁴ B66F 3/00; B60P 1/48
U.S. Cl. 254-8 B

12 Claims



1. A moving device for moving automobiles with disabled wheels and having an automobile frames, the moving device to be used in conjunction with a conventional floor jack having a floor jack body, rear jack wheels projecting sidewardly therefrom, and a jack arm with a distal end so that it may be raised and lowered, the moving device comprising:

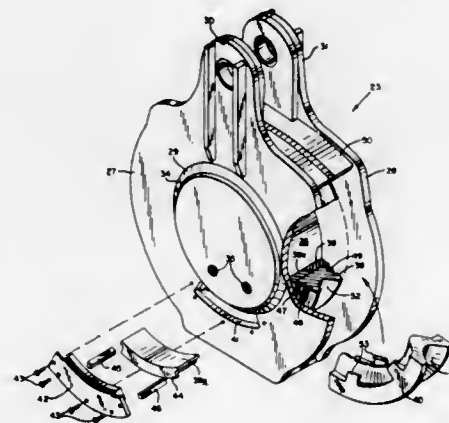
(a) a jack dolly including wheels upon which the jack dolly can be moved, a securing means for securing the floor jack on the jack dolly, and a longitudinally extended box having a front end, a rear end, and opposed side pieces wherein the securing means includes opposed side members wherein the securing means includes opposed side members forming part of the side pieces and extending upwardly, the side members being spaced apart from each

other by a distance selected to be such that the floor jack snugly fits therebetween and side-to-side movement of the floor jack within the box is constrained, the side members including rear jack notches adapted to snugly engage the rear jack wheels so that movement of the floor jack toward the front and rear ends of the box is restrained; and (b) cradle having retaining means for retaining the cradle on the distal end of the jack arm in pivoting relation thereto, and engaging means for engaging the cradle with the automobile frame so that the cradle may be engaged with the automobile frame at a selected location thereon and the jack arm of the floor jack may be raised to lift the disabled wheels so that the automobile may be moved by moving the jack dolly on its wheels.

4,640,496
DUMP BLOCK FOR DRAGLINE BUCKET
Robert L. Van Hoomissen; Terry L. Briscoe, and Don P. S. Barker, all of Portland, Oreg., assignors to ESCO Corporation, Portland, Oreg.
Filed Apr. 4, 1985, Ser. No. 720,301
Int. Cl.⁴ B66D 3/04

U.S. Cl. 254-415

21 Claims



1. A dump block for a dragline bucket comprising a body having a central cylinder and auxiliary-spaced rope confining walls defining a reeve-way for a dump rope, a ring rotatably mounted on said cylinder and having a replaceable plastic outer surface adapted to engage said rope and a replaceable plastic inner surface arranged to engage said cylinder, said cylinder being equipped with means for lubricating said ring inner surface, said inner and outer surfaces each including a plurality of arcuately related, removable plastic segments, at least one of said walls being equipped with access means for inner surface segment removal.

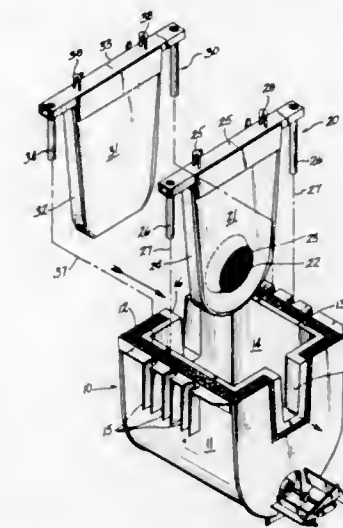
4,640,497
FILTRATION APPARATUS
Mark L. Heamon, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Oct. 25, 1985, Ser. No. 791,604
Int. Cl.⁴ C22B 21/06

U.S. Cl. 266-227

14 Claims

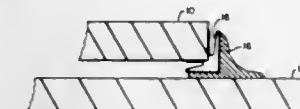
1. An improved molten metal filtration apparatus comprising a filter chamber having an internal surface for contact with molten metal, an external surface out of contact with molten metal, a molten metal inlet and a molten metal outlet defining a molten metal flow path therebetween, a removable filtration assembly engageable with said filter chamber and disposed between said inlet and outlet including a solid, plate-like member resistant to said molten metal completely blocking said flow path, a porous filter member seated in said solid member permitting flow of molten metal therethrough so that molten

metal flowing through the filter chamber will flow through the porous filter member and means on said external surface for horizontally and rotated with respect to said charging floor adjacent said tapping converter.



4,640,499
HERMETIC CHIP CARRIER COMPLIANT SOLDERING PADS
Paul F. Hemler, Arnold, Md., and William A. Rohr, Buffalo, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 1, 1985, Ser. No. 729,389
Int. Cl.⁴ F16F 1/00
U.S. Cl. 267-160

4 Claims

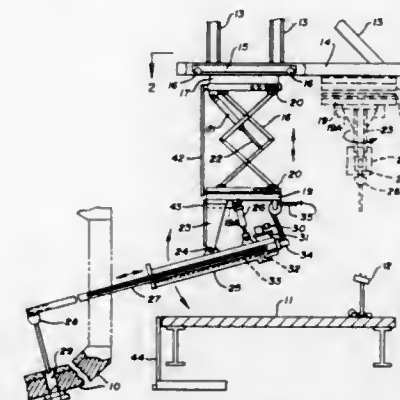


engaging and disengaging said filtration assembly from the filter chamber.

4,640,498
HORIZONTALLY AND VERTICALLY MOVABLE ELEVATED APPARATUS FOR PLACING SLAG RETAINING MEANS IN TAPPING CONVERTERS
Michael D. LaBate, Ellwood City, and Joseph Perri, Coraopolis, both of Pa., assignors to Insul Company, Inc., East Palestine, Ohio
Filed May 14, 1985, Ser. No. 733,911
Int. Cl.⁴ C21C 5/46

U.S. Cl. 266-272

8 Claims



1. Apparatus for placing a slag retaining device in a tap hole in a tapping converter adjacent a charging floor, said apparatus comprising a horizontally disposed railway suspended from overhead supports substantially above said charging floor, a drive tube and an elongated insertion beam movable carried thereby, a carriage on said overhead railway and a vertically movable device depending from said carriage, a rotatable table on said vertically movable device, said drive tube pivotally mounted to said rotatable table, first means for moving said carriage on said railway; second means for moving said vertically movable device and third means for moving said elongated insertion beam relative to said drive tube, jaws on one end of said elongated insertion beam for detachably holding said slag retaining device whereby said drive tube and said elongated insertion beam may be moved vertically and

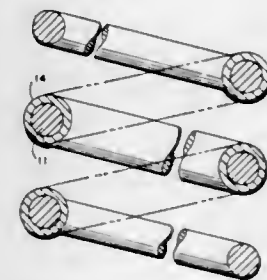
1. A compliant soldering pad for attaching an electronic device to electrical paths, said compliant soldering pad comprising:

a horizontal leg, said horizontal leg being for soldering to electrical paths,
a vertical leg, said vertical leg being integrally attached to said horizontal leg at an angle of about 90 degrees,
a lower diagonal leg, said lower diagonal leg being attached to said horizontal leg,
an upper diagonal leg, said upper diagonal leg being attached to said vertical leg, said diagonal legs being near the hypotenuse between said horizontal leg and said vertical leg,
a vertical support, said vertical support being attached to said lower diagonal leg, said vertical support being for soldering to a bottom of an electronic device, and
a horizontal support, said horizontal support being attached to said upper diagonal leg, said horizontal support being for soldering to a vertical side of an electronic device.

4,640,500
INHERENTLY EFFECTIVELY DAMPED COILED SPRING
Jgi J. Shiao, 3010 Persimmon Place, Fullerton, Calif. 92635
Filed Oct. 31, 1985, Ser. No. 793,250
Int. Cl.⁴ F16F 3/02

U.S. Cl. 267-168

13 Claims



1. An improved inherently effectively damped coiled spring construction, comprising:

(a) a first coiled spring having a pair of ends and a plurality

of coils, the two ends of which are adapted to operably bear a load;

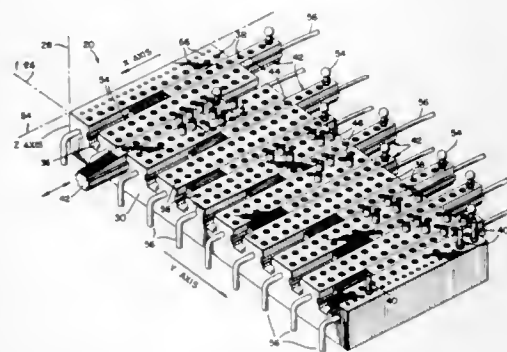
- (b) a second coiled spring having essentially the same coil diameter as the first spring and further having a pair of ends and a plurality of coils, said second coiled spring being in the form of at least one tubular spring, the coils of the tubular spring being concentrically disposed about each of the coils of the body of the coils of the first coiled spring in operable intimate frictional engagement therewith, the second coiled spring being shorter in length than the body of the first coiled spring so that the ends of the second coiled spring are not contiguous with the ends of the first coiled spring and are free of contact with the load imposed on the ends of the first springs so that when the first spring is dynamically compressed or expanded, relative twisting movement between the coils of the springs does not occur, but only occurs immediately following the yielding of the static frictional engagement which exists along essentially the entire faying surface between the two springs, whereby the second spring disengages from further twisting movement of the temporarily deformed coils of the first spring, thereby creating an effective friction generating and energy dissipating device and damping the relative axial movement of the combination formed by the first and second springs.

4,640,501 HOLDING FIXTURE

David A. Poland, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Apr. 29, 1985, Ser. No. 728,430
Int. Cl.⁴ B25B 11/00

U.S. Cl. 269-21



1. A holding fixture capable of positioning an irregularly shaped article in a cartesian coordinate system and for holding the article immobile to enable machining operations to be accurately and repeatedly performed on successive articles comprising:

- a base member being hollow to define a chamber therein and having a first working surface and a plurality of spaced apart, recessed, ways extending parallel to an x-axis of the coordinate system, said base member having a plurality of first bores extending between said working surface and the chamber and including first stop means fixed on said base member engageable by the article for defining a position of the article along a y-axis of the coordinate system;
- a plurality of positioning members, each being slidably received in said ways and movable between a rest position and active positions, each of said positioning members being hollow to define a cavity therein and having a second working surface generally coplanar with said first working surface of said base member and a plurality of second bores extending between said second working surface and the cavity;
- a plurality of vacuum hold down members slidably received

within said first and second bores, said hold down members being tubular and terminating at an outer rim, each of said hold down members being movable in a direction parallel to the z-axis of the coordinate system between a retracted position with said outer rim being generally flush with said first and second working surfaces and an extended position spaced from said first and second bores and said working first and second surfaces, said outer rims of a predetermined plurality of said hold down members adapted to supportingly engage the article thereon for defining the position of the article in the z-direction at a plurality of spaced locations parallel to the z- and y- axes of the coordinate system;

second stop means mounted on each of said positioning members, movement of each of said second stop means being interrupted by engagement with the article when said associated positioning member is slid along said way toward the article supportingly engaged on said hold down members, said plurality of said second stop members thereby defining the position of the article in the x-direction at a plurality of spaced locations in the y-direction of the coordinate system; and

a source of vacuum to the chamber and to the cavity; said hold down members being connected with the vacuum when said hold down members are in said extended position to thereby hold immobile the article supportingly engaged thereon, said hold down members being disconnected from the vacuum when said hold down members are in said retracted positions.

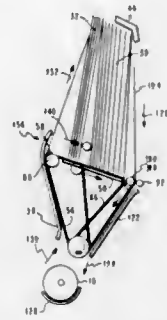
4,640,502 ENVELOPE HOPPER FOR FEED AND DELIVERY

Adolph B. Habich, Austin, and Ronald E. Hunt, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 629,933, Jul. 11, 1984, abandoned, which is a continuation of Ser. No. 335,438, Dec. 29, 1981, abandoned. This application Oct. 28, 1985, Ser. No. 792,635
Int. Cl.⁴ B65H 3/06, 5/02, 1/28

U.S. Cl. 271-4

5 Claims



1. Apparatus for feeding documents seriatim from a stack of such documents maintained on edge through a transport path to, around and from a print station located along a rotatably driven platen in a printer comprising:

- divided storage means having an input and output hopper located upstream of the platen for holding separately fresh and printed documents;
- a picker station adjacent said divided storage having a picker roller, a feed roller and a backup roller, wherein said backup roller and said feed roller form a feed nip, and wherein said picker roller is coaxial to said feed roller, said picker roller located at one side, its axis parallel to the axis of the platen, of the storage means drivingly connected to the platen and having a protruding edge for engaging the bottom edge of a fresh document to be fed and urging it away from the stack and into the transport path, said picker roller having a larger diameter than said feed roller to allow said document to enter the feed nip;

an output throat area having an endless belt, fixed guide means, and resilient means for urging the bottom edge of said printed document to contact relation with said endless moving belt for transporting said document away from said output throat area and into said output hopper; said transport path being generally triangular in shape and defined by endless belt means continuously moving through said divided storage means, picker station, print station, and output throat;

said continuously moving belt means being provided for simultaneously urging the stack of fresh document toward said picker roller means, urging a picked document around said platen to said output throat, and the printed documents away from the entry area to said printed document storage section of said divided storage means.

4,640,503 SHEET-SEPARATING AND CONVEYING SUCTION DEVICE

Reinhard Naumann, Delitzsch, German Democratic Rep., assignor to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, German Democratic Rep.

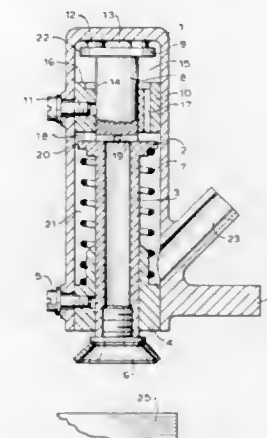
Filed Jan. 30, 1985, Ser. No. 697,118

Claims priority, application German Democratic Rep., May 28, 1984, 2634154

Int. Cl.⁴ B65H 3/08

U.S. Cl. 271-103

5 Claims



1. A sheet-separating and conveying suction device, comprising a housing; a first sleeve positioned within said housing and secured thereto; a first suction piston having a hollow piston rod carrying a suction nozzle and being reciprocally movable upwardly and downwardly in said first sleeve between an initial and end position; a spring biasing said piston to the initial position in said housing, in which said suction nozzle is remote from a sheet to be sucked from a stack, said housing having a peripheral wall and an end wall, said first suction piston with said hollow piston rod and said peripheral wall and said first sleeve defining one cylinder chamber in said housing while said peripheral wall and said end wall defining another cylinder chamber in said housing; throttle means for connecting said one cylinder chamber and said another cylinder chamber with each other; and braking means for retarding the movement of said first suction piston towards its initial position, said braking means including an additional suction piston having a piston rod and cooperating with said first suction piston and an additional sleeve positioned in said housing and secured thereto, said additional suction piston being slidably movable in said additional sleeve between said end wall and said first suction piston, the piston rod of said additional piston and said additional sleeve defining a first intermediate cylinder chamber while the piston rod of said additional piston and said peripheral wall defining a second intermediate cylinder chamber, said throttle means connecting said first intermediate cylinder chamber with said another cylinder chamber and said

second intermediate cylinder chamber, the piston rod of said first suction piston having a bore which opens into said second intermediate cylinder chamber.

4,640,504 PADDLE WHEEL FEEDER

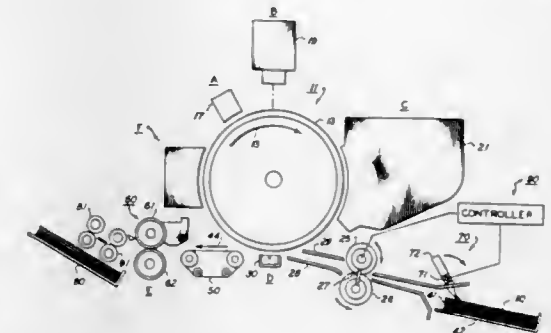
Gerald M. Garavuso, Macedon, N.Y.; Shwu-Jian Liang, Spring Valley, Ohio, and Raghulunga R. Thettu, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1984, Ser. No. 627,269

Int. Cl.⁴ B65H 3/32

U.S. Cl. 271-113

22 Claims



1. A paddle wheel feeder adapted to feed sheets individually from a stack of sheets including a paddle wheel having a plurality of individual blades adapted to strike the stack one at a time to inertially separate the top sheet in the stack from the rest of the stack, characterized in that said each of said plurality of blades are semi-circular in shape with respect to an axis running orthogonal to the axis of rotation of said paddle wheel.

4,640,505 DOCUMENT GUIDE MECHANISM

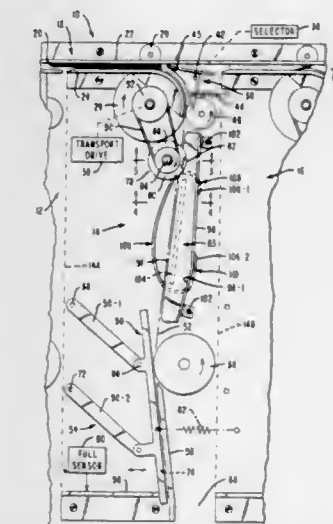
Dale L. Placke, and Donald L. Weeks, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 25, 1985, Ser. No. 791,492

Int. Cl.⁴ B65H 31/26

U.S. Cl. 271-209

7 Claims



1. A document guide mechanism comprising: an upstream end, a downstream end, and a feeding line positioned therebetween; a receiving means located at said downstream end for receiving documents.

ing documents to be pocketed; said documents which are pocketed in said receiving means having trailing edges which at times fan out towards said feeding line; feeding means located at said upstream end for feeding said documents sequentially along said feeding line; cupping means positioned between said feeding means and said receiving means for stiffening a document passing therethrough by forming concave and convex sides on said document; said cupping means including a cupping rib which is positioned along one side of said feeding line where said concave side is formed by said cupping means; and

a flexible band having a portion which extends from said one side of said feeding line across said feeding line so as to be engaged by the leading edge of a document being fed by said feeding means;

said flexible band having operating parameters to enable said flexible band to form a wave which progresses from said cupping means towards said receiving means as said leading edge of a document being fed progresses from said cupping means towards said receiving means to thereby move the trailing edges of said documents in said receiving means away from said feeding line to provide an entrance for the leading edge of said document being fed into said receiving means;

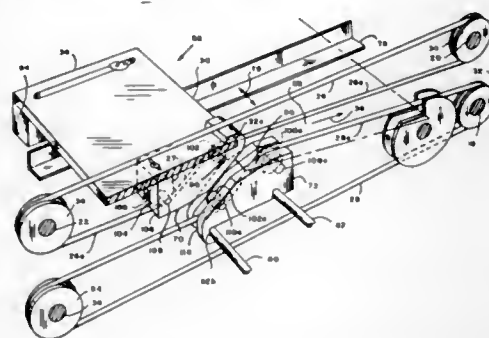
said cupping means including a pair of spaced driving rollers with said cupping rib being positioned between said pair of spaced driving rollers, said cupping rib also including a back-up rib which is positioned parallel to and spaced from said feeding line to provide a back up for said portion of said flexible band.

4,640,506
REVERSE COLLATING MACHINE
Harry E. Lupert, Wilton; Robert Irvine, Riverside, and Anthony Luvira, Stamford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 28, 1985, Ser. No. 791,889
Int. Cl.⁴ B65H 31/36

U.S. Cl. 271—212

5 Claims



1. In a collating machine for stacking sheets of paper being fed serially thereto from a singulating feeder in the same order as said sheets appear in said singulating feeder, said collating machine having at least one upper, endless, elastic belt and one lower, endless, elastic belt, each of said belts having an upper and a lower reach, and wherein the lower reach of the upper belt is situated slightly above the upper reach of the lower belt to thereby frictionally engage and transport said sheets of paper, ramp means for lifting a succeeding sheet of paper over and onto a preceding, stopped sheet of paper, said ramp means including a slot for receiving the lower reach of said lower belt, and means for stopping each sheet of paper after said sheet has been lifted by said ramp means, the improvement comprising removable means for stacking said sheets of paper in the reverse order as said sheets appear in said singulating feeder.

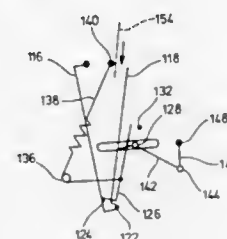
4,640,507
DEVICE FOR FEEDING AND POSITIONING RECORDING MEDIUM

Makoto Ohgoda, and Kaoru Tamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 22, 1985, Ser. No. 704,686

Claims priority, application Japan, Feb. 22, 1984, 59-31736
Int. Cl.⁴ G03C 5/16

U.S. Cl. 271—245

13 Claims



1. A device for feeding and positioning a recording medium, comprising:

- (a) a grip member for gripping, feeding, and positioning the recording medium therein, said grip member comprising a first plate and a second plate, each plate having upper and lower ends, means for mounting said second plate in confronting relation to said first plate with a gap between the lower ends of said plates and for permitting relative movement of at least the upper end of said second plate with respect to the upper end of said first plate to allow the recording medium to enter between said plates, and a cover member moveably mounted adjacent the lower ends of said plate for closing and opening said gap between lower ends of said first and second plates; and
- (b) positioning means for holding said grip member with the upper ends of said plates opened in a recording medium receiving position, means for displacing said grip member after it has received the recording medium and closing the upper end portion thereof to thereby position said grip member to position the recording medium in an exposure position in said grip member and for further displacing said grip member after the recording medium has been exposed from said exposure position and for opening said cover member for discharging the exposed recording medium out of said grip member through said gap.

4,640,508
PRECESSIONAL EXERCISING DEVICE
James C. Escher, Swarthmore, Pa., assignor to Gyro-Flex Corporation, Del.
Continuation-in-part of Ser. No. 477,175, Mar. 21, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,257
Int. Cl.⁴ A63B 21/22

U.S. Cl. 272—128

16 Claims

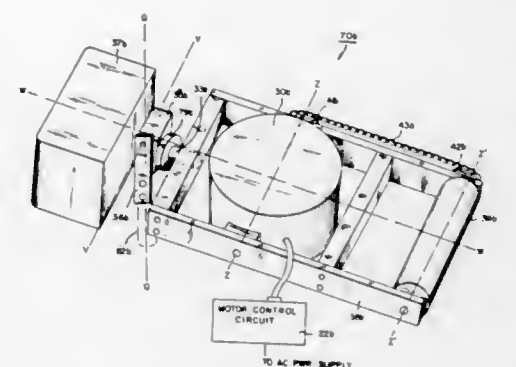
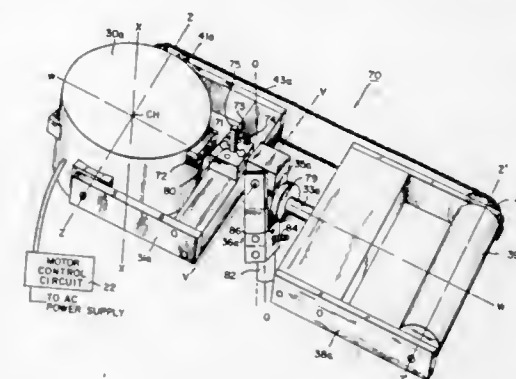
1. A device for exercising the muscles associated with a limb extremity or other part of the body by resisting precession torque generated by the device, comprising:

- a support;
- an intermediate supporting structure comprising an intermediate supporting member mounted on said support for rotation about at least one axis;
- a housing;
- bearing means within the housing;
- a mass within the housing and supported by said bearing means for rotation about a spin axis, said mass being dynamically balanced about said spin axis;
- means for rotating said mass about the spin axis;
- connecting means for connecting said housing to said intermediate supporting structure and for rotatably supporting said housing such that said housing is rotatable relative to said intermediate supporting member only about a first axis and a second axis, said first axis passing through the

centroid of mass of said housing and perpendicular to said spin axis, said second axis passing through the centroid of mass of said housing and perpendicular to both said spin axis and said first axis;

actuator means adapted to be held by or connected to said limb extremity or other part of the body, said actuator means being mounted on said intermediate supporting structure for rotation about two mutually orthogonal axes, one of said orthogonal axes being spaced apart from said first axis;

coupling means operatively associated with said intermediate supporting structure for bidirectionally linking said actuator means to said housing, so that (i) angular rotation of said actuator means about two mutually orthogonal axes results in corresponding angular rotation of said housing about said first and second axes respectively, and (ii) any precessional torque generated by said mass about said first and second axes is coupled to said actuator means



so as to apply corresponding amounts of torque to said actuator means about respective ones of said mutually orthogonal axes; and

counterbalance means connected to said intermediate supporting structure and coupled to said second axis for balancing said device about said at least one axis so that no force is required to maintain the actuator means in position when said limb extremity or other part of the body is not imparting any force to said actuator means;

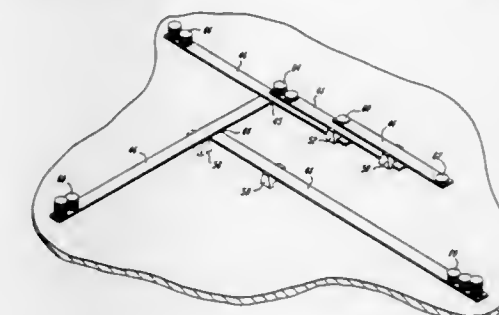
whereby the limb extremity or other part of the body may be exercised by rotating the actuator means about said mutually orthogonal axes and resisting the resulting torque applied to said actuator means about said mutually orthogonal axes via said coupling means due to the generation of precessional torque by said mass, said counterbalance means substantially compensating for the effect of gravity, so that the arm is subjected to substantially only torsional forces by said device.

4,640,509
BALANCE GAME
Edward L. Manspeaker, 483 Exton Lake Rd., Apollo, Pa. 15613-9214

Filed May 8, 1985, Ser. No. 731,917
Int. Cl.⁴ A63F 9/00

U.S. Cl. 273—1 GF

16 Claims



4. A skill game, comprising:

- a plurality of boards, each of said plurality of boards having two generally parallel planar surfaces, each of said planar surfaces having a length and a width; and
- a plurality of fulcrums, each of said fulcrums having a base portion and a support portion, said support portion providing two generally parallel edges disposed a preselected distance apart to receive one of said plurality of boards in support relation when said board is disposed on top of said support portion, said base portion being shaped to receive a portion of one of said plurality of boards under said base portion, said base portion being provided with a groove disposed between two support legs, said groove being shaped to receive said portion of said board in clearance relation.

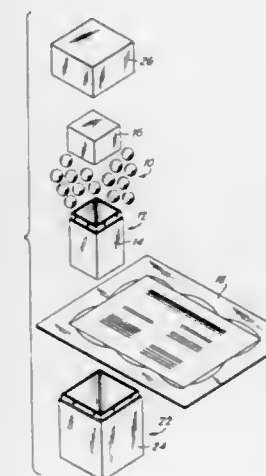
4,640,510
NON-COMPETITIVE GAME FOR TWO OR MORE PLAYERS

John C. Braddock, and Kathy M. Braddock, both of 1230 Park Ave., New York, N.Y. 10028

Filed May 30, 1984, Ser. No. 615,311
Int. Cl.⁴ A63F 9/00

U.S. Cl. 273—1 R

17 Claims



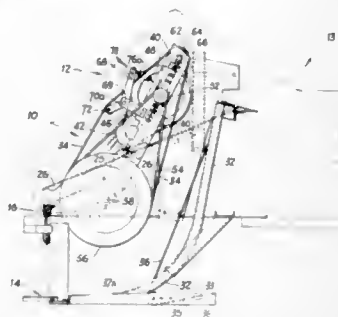
1. A method of playing a game comprising the steps of: assembling a plurality of tokens, assigning a quantitative time value to each of said tokens,

preparing a certificate attesting to ownership of said tokens for purposes of the game, transferring said tokens and certificate from a first player to a second player, thereby placing said second player in a position to use said tokens to place demands on the time of said first player, selectively retransferring at least one of said tokens back to said first player with a concomitant demand by said second player on the time of said first player, said demand being in accordance with the quantitative time value assigned to said one token, and passing an interval of time in accordance with said demand.

4,640,511
BOWLING BALL RETURN MECHANISM
Daniel R. Speranza, Westerville, Ohio, assignor to AMF Incorporated, White Plains, N.Y.
Filed Nov. 29, 1984, Ser. No. 676,114
Int. Cl.⁴ A63D 5/02

U.S. Cl. 273—49

6 Claims

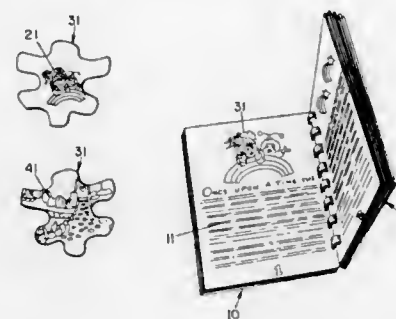


1. Bowling ball return apparatus adapted for mounting within the housing of a ball storage tray which is located at the bowler end of a bowling lane and adapted to receive a bowling ball returned on a ball return track from the pin deck end of the lane and to lift the ball upwardly onto the storage tray for pick up by a bowler, the combination comprising an inclined frame adapted to be pivotally supported at its lower end within said housing compressible tire means rotatably supported on the lower portion of the frame in spaced relationship to its pivot end and adapted to be placed partially in the path of a bowling ball returning on said track from the pin deck, roller means supported on the upper portion of said frame adjacent the end opposite the pivot end, an endless belt passing around the tire means and said roller means and having an inclined ball-engaging span, means for rotating said tire, said belt and roller, said frame being positionable within the housing to normally rotatably support the tire means partially in the path of a ball returning from the pin deck end and beyond the pivot means in the direction of travel of the ball so that a returning ball is wedged under the belt and rotating compressible tire means and said frame pivots away from a returning ball to absorb the impact of the ball and to roll the ball under the tire means and onto the inclined ball-engaging span of the belt, said ball-engaging span of the endless belt adapted to be placed in spaced relation to an inclined ball lifting means a sufficient distance to cause the ball to be frictionally engaged with the belt and roll up the ball lifting means, said roller means being positionable adjacent the storage tray, whereby balls rolled up the inclined ball lifting means are rolled onto the storage tray.

4,640,512
INTERACTIVE BOOK-PUZZLE INSTRUCTIONAL ENTERTAINMENT SYSTEM
William B. Burke, 407 Nassau Dr., Springfield, Mass. 01129
Continuation-in-part of Ser. No. 779,629, Sep. 24, 1985. This application Feb. 24, 1986, Ser. No. 832,023
Int. Cl.⁴ A63F 9/10

U.S. Cl. 273—157 R

1 Claim



1. An interactive book-puzzle instructional entertainment system comprising:
a story book of consecutively-arranged pages with different indicia and a portion of a complementary supporting story imprinted on each of the consecutive pages, and a jigsaw puzzle including a plurality of separable playing pieces, with each playing piece bearing on one side a duplicate representation of an indicia appearing on one of the pages of the book and bearing on the opposite side a portion of a complete picture, all adapted and arranged for a participant to successively match the indicia of each page of the book with the indicia on each playing piece with each successive piece being playable according to the consecutive order of their appearance in the book, the pieces being playable consecutively, each being interlocked in a manner where the second to be played piece is interjoined with the first to be played piece and the third to be played piece is interjoined somewhere along the continuous edge provided by the previously interjoined first and second pieces, with each successively coded piece being interjoined somewhere along the continuous edge provided by the previously interjoined pieces.

4,640,513
SUPER MEMORY EDUCATIONAL GAME OF SKILL AND CHANCE
Robert Montijo, P.O. Box 629, Brooklyn, N.Y. 11211
Filed May 10, 1985, Ser. No. 732,584
Int. Cl.⁴ A63F 3/00, 9/18

U.S. Cl. 273—249

11 Claims

1. A super memory educational game of skill and chance which comprises:
(a) a circular game board having consecutive spaces defining a path of travel, a plurality of said spaces having color codes with game symbols identifying games including a pronunciation game, a define game, a super spelling bee game, a thinker game and a photo memory game, and numbered score points imprinted thereon, two spaces showing direction and final space being a winner jack pot;
(b) a plurality of playing pieces for use by players, said playing pieces being positionable on said spaces;
(c) a plurality of vocabulary card with word definition usage and correct spelling there on to be used when one of said playing pieces lands on one of said spaced indicating pronunciation, define, and super spelling bee games;
(d) a plurality of trivia multiple choice and true or false question cards in an intermixed assortment to be used

when one of said playing pieces lands on one of said spaces indicating thinker game;
(e) a plurality of photo memory game presentation cards having a series of numbers thereon to be used when one of said playing pieces lands on one of said spaces indicating photo memory game;
(f) a paper pad having a plurality of sheets with illustrated blank squares to be filled in when playing photo memory game;



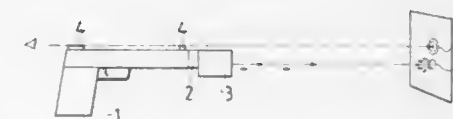
(g) Check-a-Chip game board having three vertical by five horizontal rows of fifteen squares to be used when one of said playing pieces lands on said space indicating check-a-chip game;
(h) Fifteen chips to be used for said check a chip game; and
(i) a bonus unit device to be used after one of said players properly plays one of said games and including chance determining means for matching with said game just played whereby said player piece can advance an additional space.

4,640,514
OPTOELECTRONIC TARGET PRACTICE APPARATUS
Risto Myllylä ; Harri Kopola; Juha Kostamovaara, and Raimo Ahola, all of Oulu, Finland, assignors to Noptel Ky, Dulu, Finland

Filed Feb. 20, 1985, Ser. No. 703,414
Claims priority, application Finland, Feb. 24, 1984, 840766
Int. Cl.⁴ F41J 5/02

U.S. Cl. 273—310

6 Claims



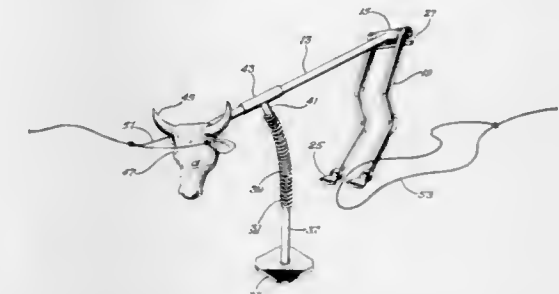
1. An apparatus for dry-run target practice using firearms, such as pistols and rifles, which are to be used in competition, comprising: an integrated transmitter/receiver means for attachment to the barrel of a firearm, and a target having one portion defining a first area for aiming the sights of the firearm and another portion separated therefrom and defining a second area which exhibits significantly different light reflectivity than that of a third area surrounding said second area, said first and second areas being variable independently of each other as to their size and position;
said transmitter/receiver means further comprising means for generating and transmitting a light beam pulse to said second or third area of said target exhibiting greater light reflectivity, upon actuation of the trigger of the firearm, means for receiving a reflected light beam pulse from said second or third area of greater reflectivity, and means for detecting and indicating that a reflected light beam has been received by said receiver means, whereby an opera-

tor of the firearm can ascertain whether or not he would have hit or missed the first area of the target at which he has aimed.

4,640,515
MECHANICAL ROPING STEER
Art Rhine, Box 1278, Pampa, Tex. 79065
Filed Feb. 10, 1986, Ser. No. 827,735
Int. Cl.⁴ A63B 69/00

U.S. Cl. 273—339

6 Claims



1. An apparatus for use in practicing team steer roping, comprising in combination:
a longitudinal frame member;
a pair of rear legs;
mounting means for mounting the upper ends of the legs to the rearward end of the longitudinal frame member to allow pivotal swinging movement of the legs relative to the longitudinal frame member, the legs having lower ends adapted to contact the ground to support the rearward end of the longitudinal frame member;
a pair of horn members mounted to the forward end of the longitudinal frame member;
a forward support member having an upper end connected to the longitudinal frame member between the horn members and the legs, and a lower end adapted for contact with the ground to support the forward end of the longitudinal frame member; and
flexible means in the forward support member for allowing the forward support member to flex forwardly and laterally when the horn members are roped and pulled sideways repeatedly, for causing the lower ends of the legs to repeatedly raise above the ground and pivot forwardly, to position the lower ends of the legs for roping.

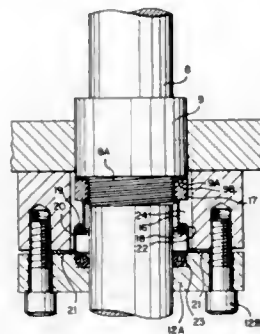
4,640,516
METALLIC SEAL WITH INTERLOCKING J-SHAPED LIPS
Edward M. Almada, 7537 Linden St., Hammond, Ind. 46224
Division of Ser. No. 634,140, Jul. 25, 1984, Pat. No. 4,585,023.
This application Feb. 18, 1986, Ser. No. 829,933
Int. Cl.⁴ F16J 15/06

U.S. Cl. 277—236

1 Claim

1. A mechanical seal for a shaft exit, comprising:
a shaft having a threaded portion thereon;
a fixed housing;
a first flange having a J-shaped lip, said first flange being secured to a flange clamping nut located on said threaded portion of said shaft;
a second flange having a J-shaped lip, said second flange adapted to be fixed to said housing, said lip of said first flange being oppositely disposed with respect to said lip of said second flange, said lips overlapping to define an annular chamber;

a sealing ring disposed within the annular chamber defined by said lips;

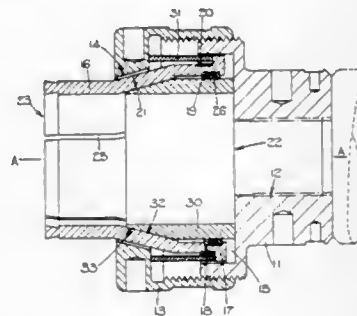


whereby said clamping nut is tightened on said shaft, thereby urging said lips of said flanges into intimate contact with said sealing ring.

4,640,517
COLLET CHUCK
John Lovatt, West View, Rock Cross Nr Kidderminster DY14 9SF, England
Filed Feb. 17, 1984, Ser. No. 581,361
Claims priority, application United Kingdom, Mar. 16, 1983, 8307185

Int. Cl.⁴ B23B 31/20
U.S. Cl. 279-2 R

7 Claims



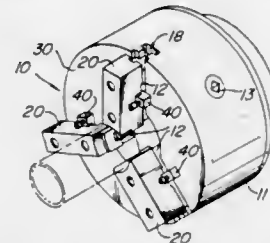
1. A Collet chuck comprising a body having means for securing to a machine tool shaft so that the axis of said body is aligned with that of said shaft, a plurality of jaws mounted in said body, an outer sleeve surrounding said jaws and being axially movable relative to said body, said jaws being separate arcuate elements, and positioning means axially movable with said jaws for maintaining the latter in relative axial alignment and circumferential spacing, each of said jaws having an outer face and an abutment which latter can coact with a spacer which can engage said outer sleeve to prevent engagement thereof with the outer faces of said jaws, said jaws also having inner faces inclined to said axis of the body which can engage with an inner sleeve as a result of coaction between said abutments and said spacer, whereby in the absence of said spacer and inner sleeve and axial movement of said outer sleeve results in engagement of said outer sleeve with the outer faces of said jaws to urge said jaws radially inwardly, and in the presence of said spacer an inner sleeve the same axial movement of said outer sleeve results in engagement of said inner sleeve with the inner faces of said jaws to urge said jaws radially outwardly.

4,640,518
JAW LOCKING MEANS FOR LATHE CHUCKS
Thomas A. Ferraro, Hatfield, Pa., assignor to Lock Jaws, Inc., Ambler, Pa.

Filed Nov. 19, 1984, Ser. No. 672,480
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.⁴ B23B 31/10

U.S. Cl. 279-123

10 Claims



1. In a lathe chuck having a master jaw guided for sliding movement relative to the chuck body in ways in the chuck body extending radially to the chuck axis by the jaw setting means of the lathe to a workpiece holding position, and a soft jaw mounted on and secured to the master jaw for conjoint movement therewith as a unit, the master jaw and the soft jaw being mounted for movement across the face of the lathe chuck as the master jaw slides in the ways, the ways and the master jaw having opposed surface portions limiting movement of the master jaw toward the chuck face, the improvement comprising

means for frictionally locking said master jaw and soft jaw unit in a fixed position relative to the chuck body including a pair of body portions extending laterally from sidewalls of the soft jaw in generally parallel relation to the chuck face, locking members extending from said laterally extending portions of said soft jaw towards the chuck face for frictionally engaging the same at the ends of said locking members, and actuating means for causing the ends of said locking members to come into frictional engagement with the chuck face and said soft jaw to move away from said chuck face to cause said opposed surface portions of said master jaw and the ways to be frictionally engaged so that said master jaw and soft jaw unit is frictionally locked in a fixed position relative to the chuck body.

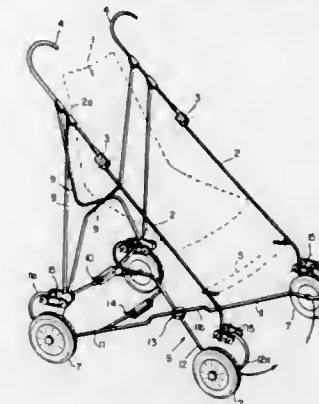
4,640,519
LIGHT PUSH CHAIRS OF THE FOLDABLE TYPE
Jean Bigo, c/o 1 ter, avenue du Hem, 59246 Mons en Pevele, France
Continuation of Ser. No. 288,389, Jul. 30, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 581,224
Claims priority, application France, Jul. 31, 1980, 80 16984
Int. Cl.⁴ B62B 7/06

U.S. Cl. 280-42

6 Claims

1. A light-weight foldable push chair of the baby-buggy type comprising two foldable side bars on which a basket is supported, and extending slopingly back from lower ends thereof to upper portions thereof, with push handles provided at their upper portions; two rear side bars each having an upper end pivotally coupled to an associated one of the first-mentioned side bars and a lower end; an articulated stay formed of crossed members having lower ends coupled to the associated lower ends of the rear side bars and upper ends coupled to the upper portions of the first-mentioned side bars; four wheels having axle means for mounting the same; a frame for mounting the axle means of said four wheels, the frame being formed of two foldable arms configured in a horizontal cross and articulated at a center portion for folding together, each said arm having

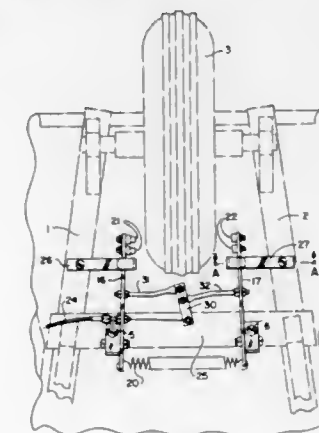
an upwardly curving C-shaped portion at each end of the arm and ending at a free end, with the axle means for an associated wheel being mounted on said frame arms in advance of the associated C-shaped portion; Daumont-type suspended link members non-rigidly joining the free ends of said upwardly curving portions of said foldable frame arms to the respective lower ends of the first-mentioned bars and of the rear side bars so that the suspension means effectively behaves as if the axle means were located between the central articulation point of said foldable arms and the respective intersecting plane of said side arms on said lower extending foldable arms to provide increased support and stability to the chair; an articulated strut



pivotally connecting each horizontal cross frame arm thereof to lock the same into an open position and rigidly retaining the horizontal cross frame arms in generally the same horizontal plane to prevent imbalance; and the horizontal cross frame arms, each having an upwardly curving C-shaped portion at each end of the arms, axle means being mounted in advance of the C-shaped portion, the Daumont-type connecting link members non-rigidly joining the free end of the upwardly curving portions to respective lower ends of the first-mentioned bars and of the rear side bars, and the articulated strut all cooperating to retain in a generally parallel alignment the corresponding wheels of the chair to prevent imbalance during use.

4,640,520
BRAKE DEVICE
Anders Wing, Hagaberg, Grimared, 439 29 Veddige, and Christer Nicklasson, Skanegatan 116, 432 00 Varberg, both of Sweden
Filed Feb. 5, 1985, Ser. No. 698,483
Claims priority, application Sweden, Feb. 13, 1984, 8400741
Int. Cl.⁴ B62B 1/18
U.S. Cl. 280-47.31

5 Claims



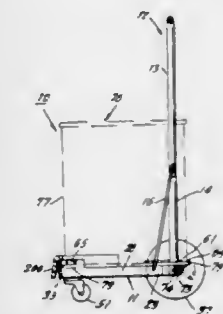
1. A device for braking at least one wheel in a cart, for

example a wheelbarrow, which has a frame including a pair of shafts, a wheel mounted between the shafts at one end thereof, said shafts having opposite ends provided with handle portions for maneuvering the cart,

said braking device comprising two brake levers which extend along a said shaft, brake shoes mounted on said brake levers, connection means including first and second pivots for mounting each brake lever on the frame, said first pivot supporting its respective brake lever for pivotal movement about a first pivot axis to and from a braking position where the brake shoe engages the wheel, means for biasing each brake lever for movement away from said braking position, operating means for moving each brake lever about said first pivot axis to bring the brake shoe against the wheel, said second pivot mounting its respective brake lever for pivotal adjusting movement about a second pivot axis, said second pivot being oriented to provide an adjustment of the angle between the brake lever and the first pivot axis, said operating means including a brake cable, booster means with input and output connections connected respectively to the brake cable and said brake levers, said booster means being operable to provide forces at the output connections which are greater than the force exerted by said brake cable at the input connection, said booster means being a booster lever which has one end connected to the cable and another end with two pivots, and arms which connect said pivots to said brake levers.

4,640,521
DOLLY WITH TANK LATCH
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.
Filed Feb. 19, 1985, Ser. No. 703,088
Int. Cl.⁴ B62B 1/10
U.S. Cl. 280-47.34

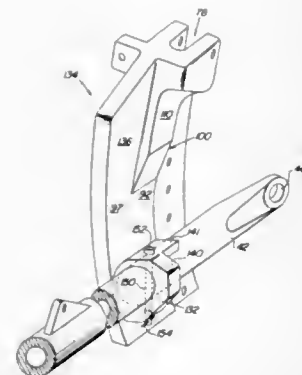
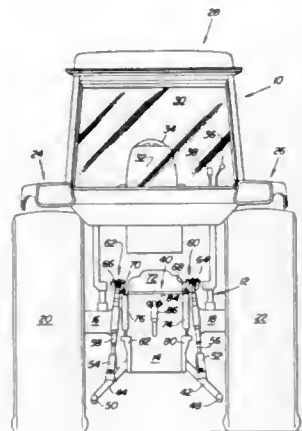
20 Claims



1. A dolly for movably supporting a tank having a circular side-wall, a closed bottom and an outwardly extending bead on the side-wall at the bottom thereof, said dolly including: a base, a wheel means on said base for horizontally positioning the latter, and releasable latch means on said base for maintaining a tank supported by said base from below latched to said base; said base being frame-like and including a rear section, a front section, and side sections extending from opposite ends of said rear section to said front section; said front section having inwardly protruding means operatively positioned to extend slightly above the bead of a tank supported on said rear section and said side sections; said latch means including a holding portion disposed outside said base in the vicinity of said rear section and being movable relative thereto, while remaining on said base, between a raised tank latching position and a lowered tank releasing position; said holding portion when moved from said releasing position to said latching position snapping over said bead and

forcing said bead forward under said inwardly protruding means to lock said tank to said base;
said rear section and said side sections including walls having notch means extending downward from upper edges thereof;
said notch means being adapted to receive a bead of a tank supported by said base to operatively position such tank on said base for cooperation of such bead with said holding portion and said inwardly protruding means to lock said tank to said base when said holding portion is in said latching position;
said notch means being proportioned to permit limited rearward movement of a tank supported by said base, when said holding portion is in said releasing position, to a position wherein the bead is clear of said inwardly protruding means to permit dismounting such tank from said base.

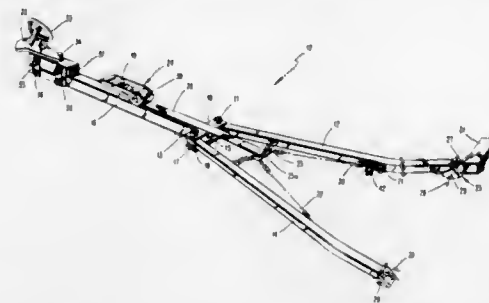
4,640,522
DRAFT LINK SWAY BLOCK
Christian M. Teich, Mannheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.
Continuation of Ser. No. 615,861, May 31, 1984, abandoned.
This application Apr. 21, 1986, Ser. No. 857,384
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322551
Int. Cl.⁴ A01B 59/41; B60D 7/00
U.S. Cl. 280—460 A 11 Claims



1. An assembly for limiting sway of a draft link of a tractor comprising:
a bracket fixed to a frame of the tractor, the bracket having a nearly vertical, generally L-shaped sliding surface with upper and lower portions, the lower portion having a longer length in the fore-and-aft direction and the upper portion having a shorter length in the fore-and-aft direc-

tion, the bracket also having a stop member projecting therefrom and located to one side of the upper surface portion and above the lower surface portion, and an adapter mounted on the draft link for sliding engagement with the bracket sliding surface, the adapter being rotatable and shiftable into a plurality of settings, the adapter comprising a first portion with a shorter fore-and-aft length corresponding to the shorter length of the upper portion of the bracket sliding surface and a second portion having a longer fore-and-aft length corresponding to the longer length of the lower portion of the bracket sliding surface, the second portion being engageable with the stop member when the draft link is in a transport position.

4,640,523
HITCH ASSEMBLY
Johann R. Wolmarans, 2 Cornelius, Glen Marais, Campton Park 16280, South Africa
Filed Jun. 11, 1985, Ser. No. 743,552
Int. Cl.⁴ B60D 1/14
U.S. Cl. 280—491 D 20 Claims

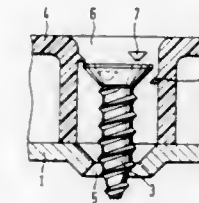


1. A hitch assembly for a vehicle having front and rear axle frame structures, said assembly comprising:
(a) a boom portion including means for coupling to another hitch mechanism;
(b) two leg members mounted to the boom portion and being movable with respect to each other;
(c) each leg member including a contact end for abutting an axle frame structure of a vehicle;
(d) flexible line means extending outwardly from each of the contact ends of the leg members to wrap at a location around the axle frame structure against which each contact end abuts; and
(e) means mounted on the assembly for pulling the line means at a location laterally displaced rearwardly from the contact ends to cause tightening of the line means wrapped around each location on the respective axle structure while at the same time urging the two leg members inwardly with respect to each other.

4,640,524
SKI BINDING WITH SCREW RETAINING CONSTRUCTION
Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker International, Salt Lake City, Utah
PCT No. PCT/EP85/00150, § 371 Date Dec. 3, 1985, § 102(e) Date Dec. 3, 1985, PCT Pub. No. WO85/04695, PCT Pub. Date Oct. 24, 1985
PCT Filed Apr. 3, 1985, Ser. No. 810,289
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1984, 8410539[U]
Int. Cl.⁴ F16B 39/00 12 Claims

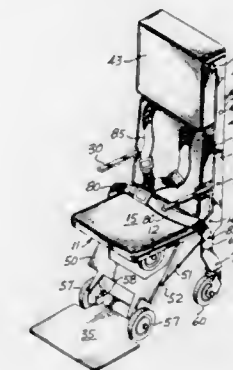
1. A screw retainer for retaining a screw having an enlarged head with a predetermined diameter in a first member which is to be attached to a second member, such as a ski binding part and a base plate, by means of said screw retainer, said screw retainer comprising: an outer wall in the first member defining

a longitudinal bore having an outer entrance and a head receiving portion with a diameter larger than the diameter of the head of the screw, at least one first elastic projection near said entrance extending from said outer wall into said bore in the projected area of the head of a screw in said head receiving portion for blocking the withdrawal of a screw whose head is in said head receiving portion, and at least one second elastic projection spaced longitudinally inwardly from said first projection by at least the length of the head of the screw and



extending from said outer wall into said bore in the projected area of a screw head in said head receiving portion, said first and second projections being adapted to bend away from said entrance to permit entry of the screw head into said bore past said projections and to resist removal of the screw from said bore by engaging the top of the screw head, and said first and second projections being further adapted to retain a screw head between said first and second projections in the first member prior to attachment to the second member.

4,640,525
FOLDING WHEELCHAIR
Tom M. Jensen, Everett; Frederick T. Yoshimura, Seattle, and Deborah P. Jensen, Everett, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 19, 1985, Ser. No. 811,068
Int. Cl.⁴ B62B 7/08
U.S. Cl. 280—642 6 Claims

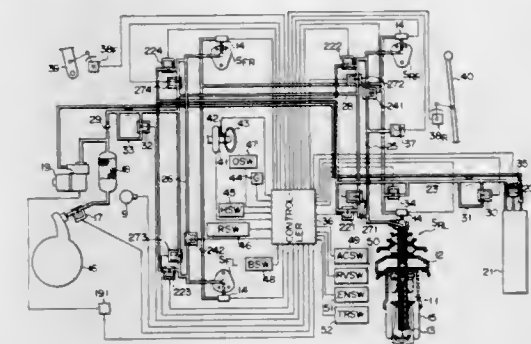


1. The combination of a folding seat and a folding wheelchair configuration, comprising: a back frame having a pair of vertically parallel side frame members and transverse frame members secured between said pair of side frame members for integrally forming a rigid back frame; latch means for removably securing said back frame to a wall which serves as connective support structure when the folding seat configuration is utilized; a seat pan frame extending horizontally forward from said back frame when in a lowered position for occupancy and being pivotally supported at its aft end to said back frame for limited articulation between a forward extended, horizontal position for occupancy and a rearward retracted, vertical position for stowage; said seat pan frame having side frame members incorporating a lengthwise orientated slot with a locking detent; rear legs formed by a lower extension of said back frame; front legs having their upper end slidably con-

nected through said lengthwise orientated slot in the seat side frame members for forward extension or rearward retraction of the upper end of the front legs in said slot relative to the rear legs; said front legs having their upper end extended forward in said slot when the seat pan frame is lowered for occupancy and having their lower ends maintained by said latch means in a rearward retracted position adjacent to the lower extent of the rear legs, thereby forming a diagonal, ground-to-seat, support brace for seating load reaction; said back frame and the lower end of the front legs, being detached through said latch means from the wall for forming a self-supporting wheelchair configuration; said front legs, for the unfolded wheelchair configuration, having their lower ends extended forward from the rear legs and having their upper ends locked in a forward extended position by said locking detent; a folding link brace connected at its forward end to mid-length of the front legs and connected at its rearward end to said back frame for bracing the front legs in a forward extended position for the unfolded wheelchair configuration; and wheels mounted to the lower ends of the front and rear legs for rolling movement of the unfolded wheelchair configuration.

4,640,526
VEHICLE SUSPENSION APPARATUS
Tadao Tanaka, Okazaki; Sunao Chikamori, Nagoya; Mitsuhiro Harara, Okazaki; Yasutaka Taniguchi; Masanaga Suzumura, both of Nagoya; Minoru Tatemoto, Okazaki; Naotake Kumagai, Aichi; Hiroki Abe, and Shozo Takizawa, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 25, 1985, Ser. No. 727,373
Claims priority, application Japan, Apr. 25, 1984, 59-60918[U]; Apr. 25, 1984, 59-60919[U]; Apr. 25, 1984, 59-60921[U]; Mar. 29, 1985, 60-66099
Int. Cl.⁴ B60G 11/26 15 Claims

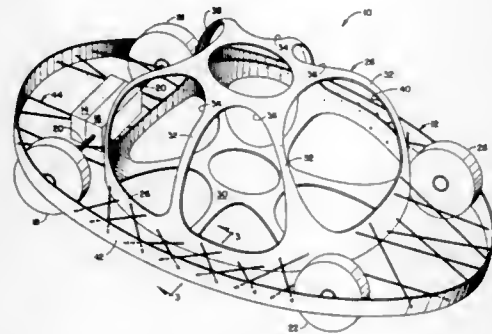
U.S. Cl. 280—707 15 Claims



1. A vehicle suspension apparatus comprising:
suspension units each provided for each wheel and each having an air spring chamber;
a reservoir tank for storing compressed air to be supplied through an air supply valve to said air spring chambers of said suspension units;
exhausting means for exhausting compressed air from said air spring chambers of said suspension units through an exhaust control valve;
a compressor driven by at least one of a vehicle running engine and an electrical power supply of the engine for supplying compressed air to said reservoir tank;
engine condition detecting means for detecting the rotation condition of the engine on the basis of the rotational speed of the engine after an engine switch for starting the engine has been turned on and for generating a signal when the rotation of the engine is stabilized; and
control means coupled to said engine condition detecting means for inhibiting the driving of said compressor until said engine condition detecting means detects that the

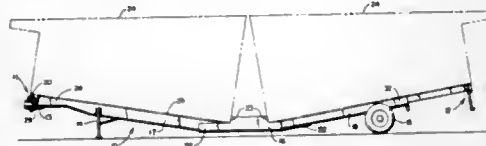
rotation of the engine has been stabilized after the start of the engine.

4,640,527
SAFETY VEHICLE
William D. Taylor, 1600 S. Orange Ave., Westaco, Tex. 78596
Filed Nov. 15, 1985, Ser. No. 798,455
Int. Cl.⁴ B60R 27/00
U.S. Cl. 280—781 9 Claims



1. A motorized vehicle comprising a frame; and an engine, drive train and a plurality of wheels carried on the frame for propelling the vehicle; the frame comprising an inner rigid hub including a closed band; a passenger compartment shell rigid with and carried by the inner hub; an outer rim larger than and surrounding the inner hub; and a multiplicity of stress transmitting members interconnecting the outer rim and inner hub, the members comprising elongate bodily rigid spokes and means maintaining the spokes in tension, the spokes comprising the only load supporting connection between the rim and the hub; and a shell on the exterior of the frame including a roof, a hood and a trunk lid.

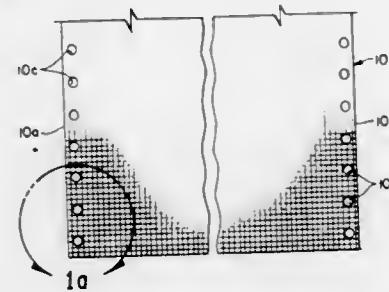
4,640,528
TORSION-ABSORBING HIGHWAY SEMITRAILER
William C. Boyles, Osteen, Fla.; Douglas R. Hagge, Columbus, and Clifford V. Johnston, Hebron, both of Ohio, assignors to Cardinal Industries, Inc., Columbus, Ohio
Filed Jul. 30, 1985, Ser. No. 760,595
Int. Cl.⁴ B62D 21/14
U.S. Cl. 280—789 9 Claims



1. In a highway semitrailer adapted to carry cargo, that improvement which comprises: (a) an elongated frame having a central cargo-supporting base portion, a first pair of laterally spaced apart beams projecting forwardly from the base portion and defining a front end portion of said frame, a second pair of laterally spaced apart beams projecting rearwardly from said base portion and defining a rear end portion of said frame, and at least two braces, each extending laterally between and affixed to one of said first and second pairs of beams; (b) a front stabilizer assembly carried on the front end portion of the frame and provided with a laterally extending

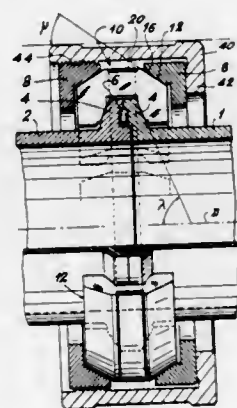
- front cargo-supporting arm disposed for rocking movement in a generally vertical plane perpendicular to the first pair of beams; and (c) a rear stabilizer assembly carried on the rear end portion of the frame and provided with a laterally extending rear cargo-supporting arm disposed for rocking movement in a generally vertical plane perpendicular to the second pair of beams.

4,640,529
FLEXIBLE NON-DISTORTABLE HANDCRAFT SHEET MATERIAL AND METHOD OF APPLYING PRINTED DESIGNS THERETO
Marcella M. Katz, 10573 Le Conte Ave., Los Angeles, Calif. 90024
Filed Sep. 16, 1985, Ser. No. 776,759
Int. Cl.⁴ B42D 19/00
U.S. Cl. 281—5 23 Claims



1. A flexible non-distortable handcraft sheet material having a print surface on at least one side thereof for receiving computer-generated print designs, patterns, and photographs as craft instructional or decorative visual information for use in creating finished handcrafted items incorporating the printed areas of said sheet material, said handcraft sheet material having alignment and feed means located along the edges thereof for moving said material through a computer-directed printer for imprinting a design, pattern or photograph on the print surface thereof.

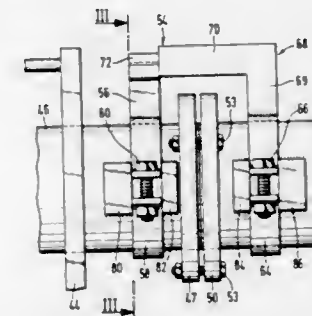
4,640,530
TIGHT CONNECTION DEVICE
Claude Abbes, St. Etienne; Christian Rouaud, Bourg St. Andeol; Jean Valla, St. Etienne; Robert Forges, Bollene, and Raymond de Villepoix, Donzère, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France
Filed Apr. 20, 1984, Ser. No. 602,372
Claims priority, application France, Apr. 27, 1983, 83 06962
Int. Cl.⁴ F16L 23/00
U.S. Cl. 285—18 15 Claims



1. A device for the tight connection of a first part to a second

part in a longitudinal direction along an axis D, the first and second parts having respective first and second flanges, each flange having a conical surface inclined at an angle λ with respect to the axis D, the device comprising two longitudinally movable clips, each clip having a conical surface at an angle μ with respect to axis D, and a radially movable intermediate member in the form of a ring constituted by a plurality of interconnected radially movable segments, each segment having a generally U-shaped cross-section and having an inner surface portion and an outer surface portion, the inner surface portion of each segment having first and second symmetrical conical surfaces inclined at an angle λ with respect to axis D for cooperating with corresponding ones of the conical surfaces of angle λ of the first and second flanges to move the flanges together upon the segments being moved radially inwardly, and the outer surface portion having third and fourth symmetrical conical surfaces inclined at an angle μ with respect to axis D for cooperating with corresponding ones of the conical surfaces of angle μ of the clips, and means for bringing the clips together longitudinally along axis D so as to move said plurality of segments radially inwardly and force said first and second parts together.

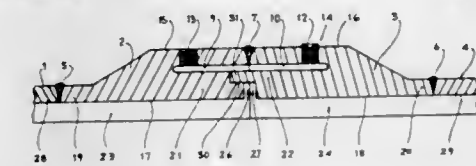
4,640,531
ARRANGEMENT FOR CENTERING CONDUITS
Jürgen Forster, Minden, and Helmüt Westendorf, Hanover, both of Fed. Rep. of Germany
Filed Oct. 22, 1984, Ser. No. 663,444
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341044
Int. Cl.⁴ F16L 35/00
U.S. Cl. 285—24 7 Claims



1. A centering arrangement for facilitating the remotely-manipulated connection of the end flange of a removable flanged conduit member to the end flange of a stationary flanged conduit member in an installation equipped with remote viewing apparatus and remote handling apparatus for moving the removable flanged conduit member in elevation relative to the stationary conduit member, the installation being a facility such as a large-area cell for reprocessing irradiated nuclear fuel, each of said conduit members defining a longitudinal axis and the centering arrangement comprising: key means mounted on the outer surface of one of said conduit members and extending outwardly therefrom in a direction transverse to the longitudinal axis thereof, said key means terminating in an outermost tip; centering means mounted on the outer surface of the other one of said conduit members; said centering means including two mutually adjacent centering surfaces joined together to form an apex and define a trough-like centering structure for receiving the outermost tip of said key means in contact engagement therewith whereupon said key means and said centering structure coact to finely guide said removable flanged conduit member as the latter is moved in elevation perpendicularly to the longitudinal axis of said stationary member so as to cause said axes to become aligned with each other when said key means outermost tip seats in said apex

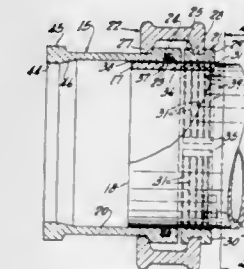
whereby said conduit members can be joined to each other at said mutually adjacent flanges thereof; and, said centering surfaces and the outermost tip of said key means being disposed in spaced relationship to said conduit members, respectively, so as to facilitate remote viewing with aid of said remote viewing apparatus during the remote handling of said removable flanged conduit member.

4,640,532
JOINING MEANS AND METHOD FOR JOINING METAL MEMBERS
Paul B. Pope, Auckland, New Zealand, assignor to McConnell Dowell Constructors Limited, New Zealand
Filed Dec. 5, 1983, Ser. No. 557,930
Claims priority, application New Zealand, Dec. 10, 1982, 202768
Int. Cl.⁴ F16L 53/00
U.S. Cl. 285—41 4 Claims



1. A coupler, comprising: a body having an outside wall and an inside wall substantially opposite the outside wall, a first end and a second end substantially opposite the first end, the first end of the coupler in use being connectable by welding to a metal member, the second end in use being connectable by welding to the second end of another coupler at the outside wall of both couplers, the couplers having a slot open at the second end and interposed between the outside and inside walls at the second end so as in use substantially to reduce any transfer of heat towards the inside wall when welding the second end of the coupler to the second end of another similar coupler, the slot being displaced from the outside wall an amount at least equal to the thickness of the first end; a passageway from the outside wall into said slot; a rebate at the corner of the intersection of the second end and the inside wall; and alignment means to align butted couplers so that their outside and inside walls are substantially aligned.

4,640,533
ADJUSTABLE PIPE EXTENDER FOR HIGH PRESSURE LINES CARRYING ABRASIVE MATERIALS
Robert E. Klemm, Milwaukee, Wis., assignor to Construction Forms, Inc., Cedarburg, Wis.
Filed Oct. 4, 1985, Ser. No. 784,798
Int. Cl.⁴ F16Z 27/12
U.S. Cl. 285—62 21 Claims



1. In a concrete pumping system, comprising a plurality of

essentially identical line pipe sections mounted in aligned end to end relationship, each of said pipe sections being of a standard length and having annular clamping shoulder portions, coupling units for firmly connecting adjacent pipe sections, said system including at least one pair of coupling locations spaced from each other by a distance less than said standard length, a special pipe section interposed between said locations and having a clamping shoulder portion on only one end thereof for coupling to an adjacent line pipe section, a high pressure pipe extender unit coupled to said special pipe section for adjusting the length of said special pipe section to close said space between said locations, said special pipe section having a constant diameter free end, said extender unit comprising an extender pipe telescoped over the free end of said special pipe section and thereby forming an extension thereof, sealing means interposed between the opposed peripheral surfaces of said extender pipe and said special pipe section, a plurality of arcuate jaw members circumferentially distributed about said special pipe section immediately adjacent the telescoped end of said special pipe, said extender pipe and said jaw members including circumferential shoulder projections, a multiple-piece annular coupling means encircling said adjacent shoulders of said extender pipe and said jaw members for clamping the jaw members to said special pipe section and for interconnecting of said pipe extender to said pipe jaws and thereby firmly affixing said extender pipe to said special pipe section and forming a rigid extension thereof, and a coupling unit of said spaced coupling units connecting said clamping shoulder portion of said special pipe section to said adjacent line pipe section.

4,640,534

FLUID COUPLING ASSEMBLY

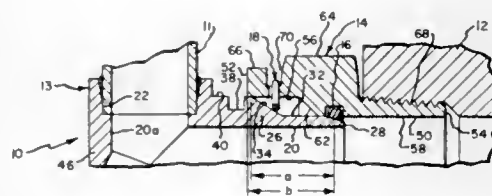
John T. Hoskins, 16 Cobblestone Ct., Orchard Park, N.Y. 14127; Steven R. Zillig, and James E. Carroll, both of Williamsville, N.Y., assignors to John T. Hoskins and Robert G. Zillig

Filed Mar. 14, 1986, Ser. No. 840,111

Int. Cl.⁴ F16L 37/14

U.S. Cl. 285—158

3 Claims



1. A fluid coupling for connecting a fluid line to a threaded port, the fluid coupling comprising in combination:

- a male member having a bore which terminates at the free end of the member, the bore having a fluid line receiving portion at its other end, the exterior surface of the body of the male member further being provided with first and second reduced diameter cylindrical surface, a first tapered portion between the first reduced diameter surface and the free end of the fitting, an enlarged diameter cylindrical portion between the first and second reduced diameter cylindrical portions, a radially outwardly extending shoulder surface between the second reduced diameter cylindrical portion and the enlarged diameter cylindrical portion, and a second tapered portion between said enlarged diameter cylindrical portion and the first reduced diameter cylindrical portion; and
- a female subassembly including a female member provided with a bore extending through the body of the female member from one end to the other end, the bore of the female member having an enlarged diameter cylindrical portion at the one end and a reduced diameter cylindrical portion adjacent the other end, the reduced diameter

cylindrical portion being provided with an O-ring receiving groove, an O-ring disposed within said O-ring receiving groove, the diameter of the enlarged and reduced diameter cylindrical portions being just slightly greater than the diameter of the enlarged and first reduced diameter cylindrical portions of said male member, respectively, the distance from said one end of the bore of the female member to that portion of the O-ring which is initially contacted by the male member when inserted into the female member being essentially equal to or greater than the distance from the enlarged diameter exterior cylindrical surface portion of the male member to that portion of the first tapered portion of the male member which initially contacts the O-ring when the male member is inserted into the female member, the body of the female member having an enlarged diameter exterior surface portion between the ends, first and second reduced diameter exterior surface portions adjacent said one end and said other end, respectively, the first reduced diameter exterior surface portion having a spring clip receiving groove therein, and the second reduced diameter exterior surface portion being provided with threads for threading into said threaded port, the female member further being provided with slots extending between the spring clip receiving groove and the enlarged diameter cylindrical portion of the bore; and a spring clip carried at least partially within the spring clip receiving groove, the overall diameter of the spring clip being less than the diameter of the enlarged diameter exterior surface portion of the female member, and portions of the spring clip passing through the slots and disposed in juxtaposition to the shoulder surface of the male member to maintain the first reduced diameter exterior cylindrical surface portion of the male member in sealing relationship with said O-ring.

4,640,535

QUICK HOSE CONNECTOR

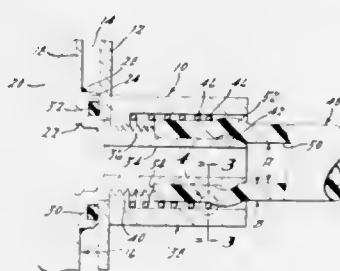
John T. Hermann, Livonia, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Sep. 27, 1985, Ser. No. 780,763

Int. Cl.⁴ F16L 3/04

U.S. Cl. 285—158

5 Claims



1. A connector for an elastic hose in the form of a composite assembly facilitating connection of a bare hose end thereto solely by insertive force on the hose, comprising:

- an elongated nipple-shaped member having a cylindrical main body portion of slightly larger diameter than the inner diameter of the hose, the nipple portion also having an end base portion of significantly larger diameter than the body portion to form a stop for limiting the insertion of the hose over the body portion of the nipple member and the nipple member further having a relatively large diameter bead portion on the end opposite the base portion to first receive the hose thereover when it is pushed over the fitting to cause the hose to be radially enlarged in the vicinity of the bead portion;
- a housing with a hollow cylindrical interior coaxially encircling the main body portion of the nipple-shaped member,

the housing having an end wall attached to the nipple member near the base portion thereof and further having an opposite open end forming a radial space about the bead portion of the nipple sufficient to permit insertion of the bare hose end therethrough;

an elongated coil-type wire spring coaxially within the cylindrical interior of the housing with one end thereof engaging the housing base portion and an opposite free end terminating near the nipple's bead portion, the coil spring having a generally tubular shape with an outer diameter and an inner diameter defining a cylindrical spring interior whereby insertive movement of the hose end into the housing and over the nipple causes the hose portion extending over the main body portion and past the bead portion of the nipple to slide into the interior of the coil spring and produce a tightly gripping operative connection with the inner diameter spring portion when an opposite disconnecting force is exerted on the hose which causes the free end of the coil spring to move slightly with the hose toward the radially enlarged portion caused by the bead portion thereby causing the outer surface of the hose to press against and portions thereof to move between the coils of the spring.

4,640,536

TUBE CLAMP ASSEMBLY

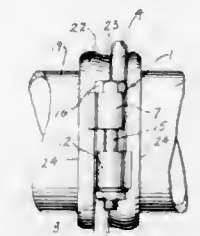
Frederick H. Printiss, Sr., and Irvy T. Barker, both of Stoughton, Wis., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed Feb. 27, 1986, Ser. No. 833,544

Int. Cl.⁴ F16L 19/02

U.S. Cl. 285—367

12 Claims



1. A clamp assembly for clamping overlapping ends of metal tubes, comprising a ring having a pair of overlapping ends disposed in direct contact with each other, and a generally U-shaped bracket for each of said ends, said U-shaped bracket having opposing legs and means securing one leg of each bracket to one of said ends and the opposite leg of said bracket being disposed in contact with the outer surface of the other of said ends whereby said other end can slide relative to the respective bracket, each bracket defining an opening with said openings being in alignment, and fastening means extending freely through said aligned openings for drawing said brackets in a direction toward each other to contract said ring and clamp said tubes.

4,640,537

JOINING MEANS BETWEEN TWO PIPES HAVING RETRACTABLE BEARING MEMBERS

Jean-Edmond Chaix, Pierrevet, and Michel Metteey, Egulles, both of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Jan. 9, 1986, Ser. No. 817,459

Claims priority, application France, Jan. 18, 1985, 85 00722

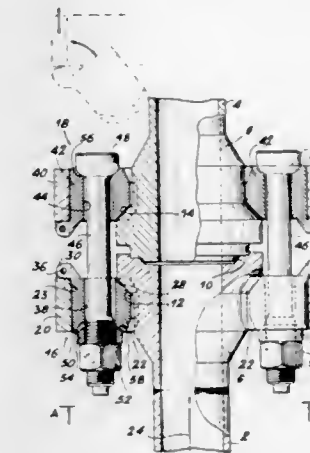
Int. Cl.⁴ F16L 23/00

U.S. Cl. 285—368

9 Claims

1. A joining means between two pipes, each of which is provided with a collar having a given external diameter and able to compress a gasket between these two collars, said means having two flanges perforated with aligned holes and having an internal diameter smaller than the external diameter

of the collars, so as to be able to bear against the latter, as well as tightening means traversing the holes formed in the flanges in order to apply thereto a force tending to move them together and compress the gasket between the collars, wherein at least one of said flanges is an assembly comprising an external cylindrical ring having an internal diameter larger than the



external diameter of the collars and bearing parts positioned in an inner position within said ring and in which are formed said holes, each bearing part being articulated on a lateral face of the ring, so as to be able to tilt into an outer position in which the internal diameter of the assembly substantially corresponding to the internal diameter of the ring.

4,640,538

SECURITY SEAL

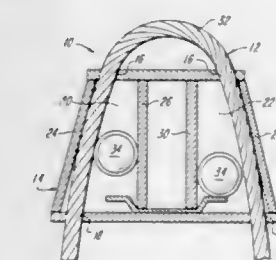
Terrence N. Brammell, Angola, Ind., assignor to Trans-Guard Industries Inc., Angola, Ind.

Filed Oct. 29, 1985, Ser. No. 792,447

Int. Cl.⁴ B65D 33/34

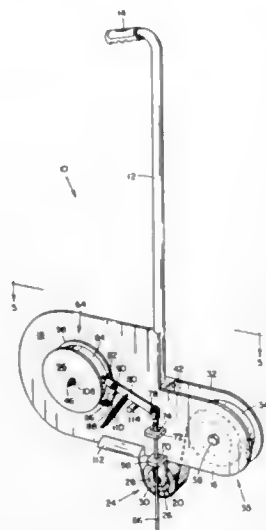
U.S. Cl. 292—323

9 Claims



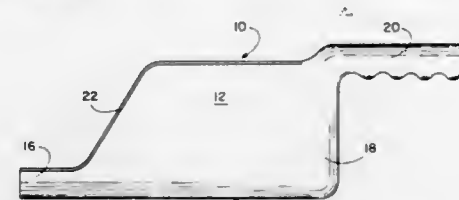
1. A security seal of the type which utilizes a stranded cable as a shackle, said cable being of the type that includes spiral wound filaments on the exterior surface, said seal body having an internal channel for receiving the cable, and a cable locking element associated with said channel, said element being a disc having a series of parallel grooves in the peripheral surface, said surface being positioned for engagement with an inserted cable, said grooves having a configuration enabling it to mesh with the filaments on the external surface of the cable so as to prevent rotation of the cable in the housing.

4,640,539
DEVICE FOR PICKING UP SMALL PIECES OF LITTER
 Allen R. La Porte, 240 Jones Rd., Kerrville, Tex. 78028
 Filed Oct. 21, 1985, Ser. No. 789,320
 Int. Cl.⁴ A47L 13/00
 U.S. Cl. 294—19.1



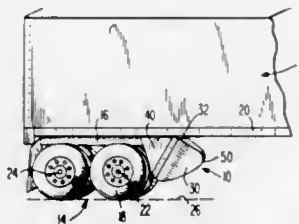
1. A device for picking up small pieces of litter, using a roll of tape that is sticky on one side, comprising:
 - a rod of a rigid material having a length generally equal in length to a walking cane;
 - a handle located on an upper end of said rod;
 - a means for mounting a pick-up roller, said pick-up roller mounting means being located on the lower end of said rod, said pick-up roller mounting means including roller flanges extending downward from said rod, and a pick-up roller axle between said roller flanges;
 - a roller mounted on said roller axle, said roller having a rigid inner cylinder and a resilient outer cylinder bonded thereto for pressing said sticky side of said tape against said small pieces of litter;
 - a means for dispensing tape, said dispensing means including a dispensing reel located above and in front of said roller, with the axis of rotation of said dispensing reel being parallel to the axis of rotation of said roller, said dispensing reel comprising a hub between a dispensing plate and dispensing back plate, said dispensing plate being attached to said rod near said lower end thereof and mounted on a first side of and above said pick-up roller, said dispensing back plate being located on the opposite side of said rod from said dispensing plate;
 - a means for taking-up tape, said take-up means including a take-up plate attached to said rod near the lower end thereof and mounted on a second side of and above said roller means, and a take-up reel rotatably mounted cylinder mounted on said take-up plate, said take-up reel being a cylinder, an external end of said cylinder being open and having slot therein parallel to the axis of rotation of said take-up reel, said slots being of sufficient size to receive a starting end of said tape;
 - a means for advancing said tape including an actuating rod extending below said pick-up roller means and a means for rotating said take-up reel, said actuating rod being movable in a generally vertical direction, said actuating rod being pivotally connected to said take-up means to cause rotation with a first direction of motion of said actuating rod but not in a second direction of motion of said actuating rod, spring means for returning said actuating rod to a lowermost position.

4,640,540
GUTTER CLEANING TOOL
 Bruce Chisholm, 4141 S. Marigold, Portland, Oreg. 97219
 Filed Nov. 22, 1985, Ser. No. 800,685
 Int. Cl.⁴ A47F 13/08; E04D 13/06
 U.S. Cl. 294—55



1. A tool for removing debris from a rain gutter having a generally U-shaped cavity, said tool comprising:
 - (a) a U-shaped scoop having open and closed ends and an integral bottom and side walls, said side walls being easily deflected sufficiently to permit a scoop having a larger transverse dimension than a particular gutter cavity to be inserted into the gutter cavity and conform to the shape of the gutter cavity when inserted therein;
 - (b) a heel located at the closed end of said scoop which is narrower than the remainder of said scoop and which is relatively inflexible; and
 - (c) handle means for inserting said heel into a gutter and for thereafter rotating the tool to conformingly insert said scoop into said gutter.

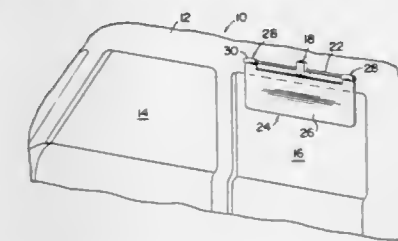
4,640,541
UNDER-TRAILER AIR DEFLECTOR
 Joseph M. FitzGerald, and James P. FitzGerald, both of Buena Park, Calif., assignors to FitzGerald Corporation, Buena Park, Calif.
 Filed Sep. 17, 1985, Ser. No. 776,845
 Int. Cl.⁴ B62D 35/00
 U.S. Cl. 296—1 S



1. An air deflector for reducing the aerodynamic drag of the wheels of a rear wheel assembly for vehicles such as trucks and trailers and for suppressing the spraying of water by such wheels, comprising:
 - an aerodynamic fairing adapted to be mounted beneath the body of a vehicle and immediately forward of a rear wheel assembly of the vehicle, said fairing including:
 - top, bottom, and first and second side edges defining a generally rectangular fairing body for extending laterally completely across the body of the vehicle and for extending beyond the rear wheel assembly on each side of the vehicle;
 - a continuous, contoured front fairing surface extending away from said top, bottom, and side edges and converging from said edges to an area of maximum extension located between said side edges, said front fairing surface being curved substantially symmetrically in a lateral direction about a vertical plane passing through the center line of said fairing so that a part of any impinging air is directed toward said first and second side edges and around the rear wheel assembly of a vehicle;
 - said fairing surface being curved asymmetrically in a vertical

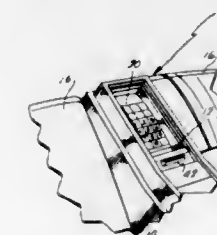
direction, with said area of maximum extension being disposed above the center of said fairing so that the distance along the lower fairing surface between said area of maximum extension and said bottom edge is substantially longer than the distance along the fairing surface between said area of maximum extension and said top edge, the lower fairing surface curving laterally, downwardly and rearwardly toward said side and bottom edges and the upper fairing surface curving laterally, upwardly and rearwardly toward said side and top edges; and said fairing being adapted to extend downwardly from said vehicle body so that a portion of any impinging air is directed downwardly beneath and between the wheels of the rear wheel assembly and the remaining impinging air is directed laterally around the wheels of the rear wheel assembly to suppress water spray and to reduce the aerodynamic drag of the wheel assembly.

base of the hook, a rod supported on the tubular portion of the bracket and a one piece panel member having spaced apart



short vertically upward extending arms fixedly secured to the rod.

4,640,542
MOBILE TELEPHONE MOUNT FOR A VEHICLE
 Sheldon J. Watjer, Holland, and Edward T. Boerema, Zeeland, both of Mich., assignors to Prince Corporation, Holland, Mich.
 Filed Aug. 6, 1985, Ser. No. 762,879
 Int. Cl.⁴ B60R 7/04
 U.S. Cl. 296—37.8



1. A telephone mount for use in an automobile, comprising:
 - a telephone unit storage housing having an access opening thereto;
 - a telephone carriage including a telephone receiver mounted thereon, said carriage being movable between a storage position in which said carriage locates said telephone receiver carried thereon within said storage housing and a use position in which said carriage locates at least a portion of said telephone receiver carried thereon through said access opening; and
 - means for mounting said carriage in said housing for movement in an arcuate path from said storage position to said use position, whereby said carriage moves the telephone receiver between said storage position within said housing and a position at least partially extended from said housing to said use position in which an operator can operate the telephone receiver.

4,640,543
VEHICLE REAR SEAT SUN VISOR
 John W. Bradley, 2461 66th Ter. South, St. Petersburg, Fla. 33712
 Filed Dec. 11, 1984, Ser. No. 680,551
 Int. Cl.⁴ B60J 3/00
 U.S. Cl. 296—97 K

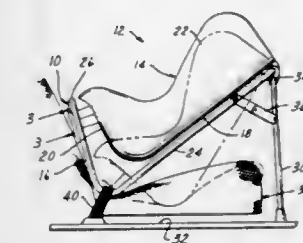
1. A sun visor assembly for side rear windows of an automotive vehicle comprising a clothes hanger hook for securement to a vehicle headliner, a bracket rigidly secured by said hook having a tubular portion disposed adjacent to and under the

4,640,544
VEHICLE CONSTRUCTION
 James R. McNamara, RMB 20, Whorouly, Victoria 3735, and Denis L. Piazza, Whalleys Lane, Myrtleford, Victoria 3737, both of Australia
 Filed Oct. 19, 1984, Ser. No. 662,743
 Claims priority, application Australia, Oct. 19, 1983, PG1917
 Int. Cl.⁴ B60P 1/00
 U.S. Cl. 296—181



1. An enclosure adapted for use on a trailer or a vehicle flat bed comprising at least first and second panels on each side of the trailer, one end of the first panel of each side being hingedly connected to the trailer, or an extension therefrom, the panels on each side being hingedly connected to each other, a frame assembly extending transversely across the width of the trailer rearwardly of said second panels, the other ends of the second panel of each side being hingedly connected to said frame assembly, the frame assembly being movable longitudinally along the trailer to move the panels on each side from a first position, where they are located along the side of the trailer, to a position where these panels on each side move inwardly to extend across the trailer with the normally outwardly facing surfaces of the panels facing each other.

4,640,545
LOCK FOR VEHICLE INFANT RESTRAINT
 Heinrich F. von Wimmersperg, 15721 Rosemont Rd., Detroit, Mich. 48223
 Filed May 13, 1985, Ser. No. 733,117
 Int. Cl.⁴ A47C 1/08; B60N 1/12
 U.S. Cl. 297—216



1. A lock for a child restraint for use in a vehicle comprising, a catch, a bearing carried by said catch and being releasably engageable by a hook a support for said bearing carried by said

catch, a first arcuate surface on said support for engagement with said bearing, a latch, a hook carried by said latch and being movable to a first position wherein it engages said bearing to restrain movement in at least one direction of said latch with respect to said catch and to a second position wherein it is released from said bearing to permit movement in said one direction of said latch with respect to said catch, a second arcuate surface of said hook constructed and arranged to engage said bearing when said hook is in its first position, said bearing being a roller bearing disposed between said first and second surfaces when said hook is in its first position, a flyweight carried by said latch and movable from a first position to a second position due to inertia when the vehicle is rapidly decelerated in a frontal crash, a coupling of said flyweight with said hook so that when said flyweight moves to its second position said hook is moved to its second position to release said lock, and said flyweight has sufficient mass to produce sufficient force by inertia during such frontal crash to move said hook to its second position.

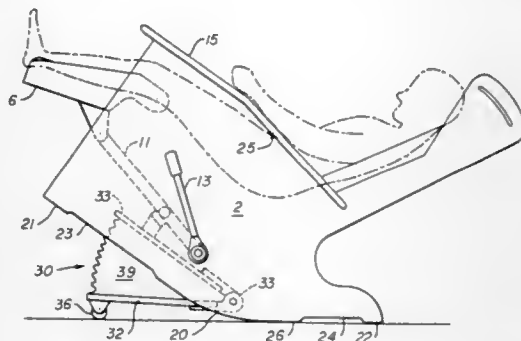
4,640,546

ROCKER-RECLINER CHAIR

Henry Aguilar, 61 Garcia Ave., San Francisco, Calif. 94127
Continuation of Ser. No. 577,416, Feb. 6, 1984. This application
Dec. 24, 1985, Ser. No. 814,286
Int. Cl.⁴ A47C 3/02

U.S. Cl. 297—260

11 Claims



1. A rocker-recliner chair comprising:
 - a chair assembly having a seat surface configured to receive an occupant, and rocker surface adapted support said chair assembly on a floor surface such that said chair assembly may rock between a forward position and rearward position;
 - an inflatable and deflatable air-driven operator disposed between said chair assembly and said floor surface, said air-driven operator rocking said chair assembly rearwardly as it inflates and allowing said chair assembly to rock forwardly as it deflates;
 - forward sensing means provided proximate a forward portion of said rocker surface, said forward sensing means contacting said floor surface when said chair assembly is in said forward position;
 - rearward sensing means provided proximate a rearward portion of said rocker surface, said rearward sensing means contacting said floor surface when said chair assembly is in said rearward position;
 - inflation means coupled to said air-driven operator, said inflation means being responsive to said forward sensing means; and
 - deflation means coupled to said air-driven operator, said deflation means being responsive to said rearward sensing means.

4,640,547

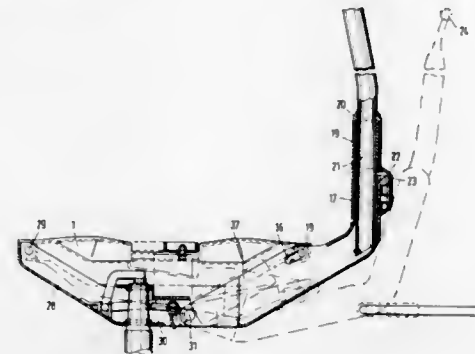
ADJUSTABLE SWIVEL CHAIR

Heinrich Fromme, 27, Liemker Strasse, D-4815 Schloss Holte, Fed. Rep. of Germany
Filed Jul. 12, 1984, Ser. No. 630,111
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1983, 8326792[U]

Int. Cl.⁴ A47C 1/032

U.S. Cl. 297—301

12 Claims



1. A chair mechanism comprising:
 - a chair stand assembly including a chair stand frame with a front end portion;
 - a seat holder with a forward portion;
 - a first pivotal connection between said forward portion of said seat holder and said front end portion of said chair stand frame, whereby said seat holder may pivot about a horizontal axis;
 - a backrest holder including an offset arm and a second portion coupled at an obtuse angle with the offset arm;
 - a second pivotal connection between a forward end portion of said offset arm and said chair stand frame, said second pivotal connection spaced rearwardly of said first pivotal connection, whereby said backrest holder may pivot relative to said chair stand frame about a second horizontal axis;
 - a third connection connecting said offset arm to a rear portion of said seat holder comprising a horizontally disposed pivot member affixed to one of said offset arm and said rear portion of the seat holder and a slot in the other of said offset arm and said rear portion, said slot receiving said pivot member, said slot extending in a linear direction defined through said second and third connections, whereby said pivot member may move in said slot so as to permit pivoting of said seat holder about said first pivotal connection simultaneously with pivoting of said backrest holder about said second pivotal connection;
 - means for selectively arresting movement of said pivot member in said slot, said selectively arresting means arranged between said second connection and said pivot member of the third connection so to fix the distance therebetween.

4,640,548

CHAIR WITH AN ADJUSTABLE BACKREST

Simon Desanta, Gutersloh, Fed. Rep. of Germany, assignor to Kusch & Co. Stizmobelwerke KG, Hallenberg, Fed. Rep. of Germany
Filed Oct. 17, 1983, Ser. No. 542,875
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1981, 3139448

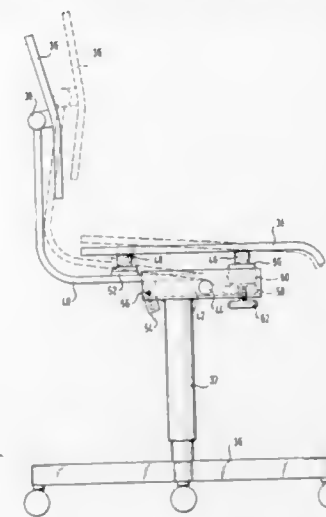
Int. Cl.⁴ A47C 1/032

U.S. Cl. 297—320

9 Claims

1. A chair, especially an office chair, having a vertical column with a seat mounted on said column and a backrest connected to said column by a curved supporting bar, means defining three hinge points, each having a horizontal trans-

verse axis, for respectively connecting the seat and the column, the column and the supporting bar and the supporting bar and the seat in a hinged triangular arrangement, wherein, when said backrest is reclined, said hinge point connecting the seat and the supporting bar is simultaneously vertically moved horizontally shifted between the seat and the supporting bar,



wherein said hinge points connecting the seat and the column on the one hand and the seat and the supporting bar on the other hand, respectively, are formed by rubber pads, whereby seat movement is divided into a shifting movement between the seat and the column on the one hand and between the seat and the supporting bar on the other hand.

4,640,549

HEADREST FOR A VEHICLE SEAT

Masaaki Yokota, Akishima, Japan, assignor to Tachikawa Spring Co. Ltd, Tokyo, Japan

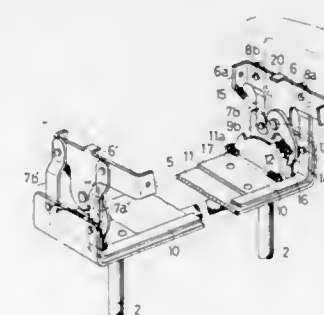
Filed May 29, 1985, Ser. No. 739,064

Claims priority, application Japan, May 31, 1984, 59-80778[U]

Int. Cl.⁴ A47C 7/36

U.S. Cl. 297—410

1 Claim



1. A headrest for a vehicle seat having stays extending downwards therefrom and supported on a seat back, said headrest comprising:
 - a fixed frame having a front and rear and left and right end portions, fixedly secured to the upper ends of said stays;
 - a pair of movable frames each being disposed above the respective left and right end portions of said fixed frame;
 - a pair of first parallel links each being at the upper end portion thereof pivotally connected to one of said pair of movable frames and being at the lower end portion thereof pivotally connected to one of the left and right ends of said fixed frame;
 - a pair of second parallel links each being at the upper end

portion thereof pivotally connected to the other of said pair of movable frames and being at the lower end portion thereof pivotally connected to the other of the left and right ends of said fixed frame;

wherein both said pairs of first and second parallel links are of the arrangement that the links are in a parallel spaced-apart relationship with each other;

means for integrally connecting one link of said pair of first links with the opposite one link of said pair of second links;

a pair of lock plates provided on said fixed frame, each of said lock plates having a plurality of engagement teeth, a first projection and a second projection, with the arrangement being such that said plurality of engagement teeth are formed between said first and second projections;

a pair of stoppers each being pivotally fixed to a respective one of said pair of movable frames, each of said pair of stoppers having a first front end portion and a second rear end portion;

a pair of first biasing means each of said pair of first biasing means being respectively extended between one of said pair of stoppers and one of said pair of movable frames, each of said first biasing means being adapted for biasing a respective stopper in such a manner that, (i) when a respective movable frame is in a normal adjusting position, said first biasing means biases said respective stopper into engagement with a selected one of said plurality of engagement teeth on a respective lock plate, and (ii) when said pair of movable frames is moved forwardly of said fixed frame, causing said pair of stoppers to contact said first projection of said lock plate, said pair of first biasing means then biasingly rotates said pair of stoppers out of engagement with the selected one of said plurality of engagement teeth;

a pair of second biasing means each of said pair of second biasing means being respectively extended between said connecting means and the front portion of a respective lock plate, said pair of second biasing means being adapted for biasing said connecting means toward the front of said fixed frame, thereby biasing each of said pair of movable frames toward the rear of said fixed frame; and

means for limiting the rotational movement of said pair of stoppers, said limiting means being provided on each of said pair of movable frames.

4,640,550

ADJUSTABLE FASTENING DEVICE

Bengt E. W. Håkansson, Ekgratan 8, S-662 00 Åmål, Sweden

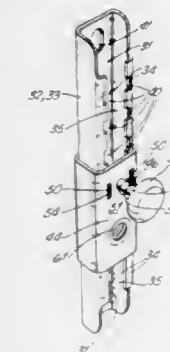
Filed Oct. 8, 1985, Ser. No. 785,469

Claims priority, application Sweden, Nov. 21, 1984, 8405851

Int. Cl.⁴ B60R 22/20

U.S. Cl. 297—483

6 Claims



1. Adjustable fastening device comprising a guide member mountable on a carrier so that a clearance is created between said guide member and said carrier, and a runner which may be

displaced along said guide member and positioned in different positions, said positions being determined by a plurality of recesses disposed along said guide member, wherein said guide member is in the form of a rail comprising a web section, mountable adjacent said carrier and defining said clearance, and flanges extending firstly away from the web section and away from said carrier and then turning inwards toward each other, said in-turned portions between them forming a longitudinal channel, said in-turned portions each provided with said recesses; said runner comprising both external parts outside the rail, internal parts essentially inside the rail and connecting means for operably connecting said external and internal parts; said connecting means extending through said longitudinal channel of said rail; said external parts including a sleeve runner, having a front portion and a back portion, enclosing entirely the rail, said back portion of said sleeve runner being positioned in said clearance between said rail and said carrier, said front portion of said sleeve runner provided with first means defining an aperture positioned such that said first aperture means may be placed above said recesses as of said rail; said internal parts include locking means, being arranged to enter simultaneously at least one of said recesses in each of said in-turned portions of said rail, for locking said runner in a predetermined position on said rail; and said connecting means includes movement means to move said locking means inward and outward to release and engage, respectively, said locking means from and with respectively, said recesses of said rail as well as said first aperture means of the sleeve runner positioned outside said rail;

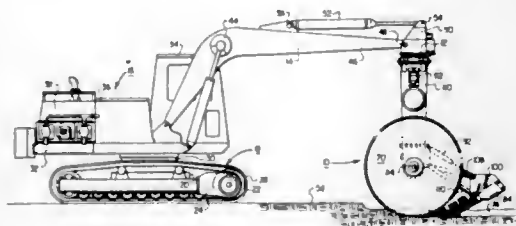
and wherein said internal parts further comprise an interconnected member arranged within said channel of said rail, said interconnected member being rigidly connected to said front portion of said sleeve runner, said interconnected member having opposed edges extending, respectively, beneath said in-turned portions of said rail and said interconnected member is provided with second means defining an aperture, receivable of said locking means, aligned with said first means defining an aperture of said sleeve runner; and said connecting means comprises a shaft, having a first end and a second end, connected to said locking means at said first end and to a push button at said second end, said push button being manually engageable to move said shaft, said shaft slidably extending through a first hole in said front portion of said sleeve runner and a second hole in said interconnected member.

4,640,551 ROCK SAW UNIT FOR HARD ROCK EARTH FORMATIONS

Edward N. Marten, P.O. Box 183, Von Ormy, Tex. 79703
Continuation-in-part of Ser. No. 614,460, May 25, 1984, which is a continuation-in-part of Ser. No. 103,231, Dec. 13, 1979, Pat. No. 4,542,940, which is a continuation-in-part of Ser. No. 966,338, Dec. 4, 1978, Pat. No. 4,230,372. This application Sep. 23, 1985, Ser. No. 779,148
Int. Cl.⁴ E21C 27/10

U.S. Cl. 299—1

14 Claims



1. Rotary trenching apparatus comprising:
an off highway type vehicle operably movable over ground terrain;
an elongated boom extending from said vehicle and adjust-

able for varying the position setting of its distal end in relative orientation to the ground surface therat;
a support head on the distal end of said boom; and
a trenching unit mounted on said support head in a driving relation therewith, and comprising:

- a pair of axially spaced cutting wheels mounted for rotation in said driving relation and having cutting teeth circumferentially spaced about its periphery;
- a hydraulically powered breakout tool having a reciprocally actuated chisel face operable for chiseled breakup removal of earth formations encountered against said chisel face;
- support means for supporting said breakout tool with the chisel face longitudinally spaced from said cutting wheels and in a plane located intervening within the spacing between said cutting wheels; and
- adjustment means to position set the height of said chisel face relative to the cutting plane of said cutting wheels.

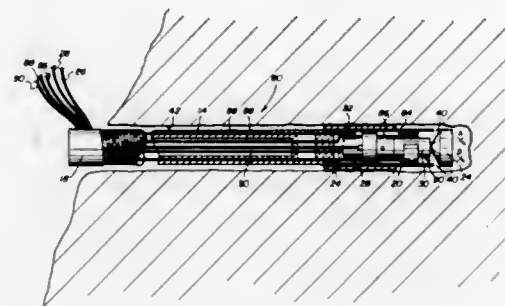
4,640,552 METHOD AND APPARATUS FOR SPLITTING ICE MASSES

Ronald D. Page, Newfoundland, Canada, assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,802, Sep. 28, 1983, abandoned. This application Oct. 16, 1985, Ser. No. 787,706
Int. Cl.⁴ F02B 15/02

U.S. Cl. 299—24

5 Claims



1. An apparatus for fracturing an ice structure comprising:
an elongated hollow housing having a deployment end and a drilling end;
a drillhead rotatably mounted on said drilling end of said housing;
a pressure means fixed to said drillhead for providing pressurized fluid from said drillhead to the ice structure to drill a borehole by fluid erosion including pressure jets mounted on said drillhead for receiving pressurized fluid;
a conduit means traversing through said housing means for providing pressurized fluid to said pressure jets;
a movement means for advancing said elongated housing into the ice structure to a predetermined location approximately one-third the distance from the bottom of the ice structure;
a packing means on said drilling end of said housing for sealing said housing in a portion of the borehole; and
a force means for providing high pressure gas to said drilling end of said housing in said sealed portion of the borehole.

4,640,553 BRAKE SYSTEM FOR CUTTERS OF SURFACE CLEANING CUTTER CAGE

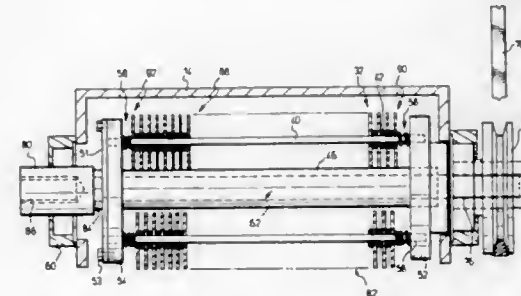
Frank Zelenka, Rexdale, Canada, assignor to Bartell Industries Ltd., Weston, Canada

Filed Jan. 31, 1985, Ser. No. 697,014

Int. Cl.⁴ E01C 23/08, 23/12

U.S. Cl. 299—39

18 Claims



1. In an apparatus for removing surface material from a solid substrate comprising a support frame, a rotary cutter cage, means for mounting said rotary cutter cage on said support frame, means for rotating said rotary cutter cage, said rotary cutter cage having at least two spaced-apart plate portions to which at least one bar is connected, a plurality of cutters being mounted along each of said at least one bar to provide at least one row of said plurality of cutters, said cutters impacting a solid substrate during rotation of said cutter cage, each of said cutters having a bore through which said bar extends in mounting said plurality of cutters on said cutter cage, said bore being larger than said bar to permit rotation of each said cutter on said bar at least during contact with a surface being treated, said cutter cage having means for braking rotation of said cutter after each occurrence of a corresponding said row of said cutters contacting a surface being treated during rotation of said cutter cage, said brake means being provided for each of said at least one bar for frictionally engaging adjacent cutters and frictionally engaging end portions of said row of cutters with said respective plate portions, said brake means establishing a degree of frictional engagement between said cutters and said plate portions to permit said cutters to rotate during contact with a surface being treated and brake rotation of said cutters before said row of cutters contact such surface again said brake means comprising a compressible resilient material associated with each said row of cutters, the extent to which said material is compressed determining said degree of frictional engagement.

4,640,554 VALVE ASSEMBLY FOR USE IN BRAKE PRESSURE CONTROL UNIT

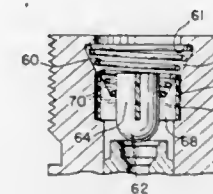
William A. Barr, Gibson Island, Md. 21056

Division of Ser. No. 659,897, Oct. 12, 1984, abandoned. This application Apr. 8, 1986, Ser. No. 849,269

Int. Cl.⁴ B60T 8/26

U.S. Cl. 303—6 C

4 Claims



1. In a brake pressure control unit for a vehicle brake system

which unit includes an inlet adapted to be connected to a master cylinder and an outlet adapted to be connected to a wheel brake cylinder, said unit having a stepped bore, a stepped piston in said bore and including an axial passage communicating with said inlet and said outlet, a valve chamber in said unit between one end of said stepped bore and said inlet, said chamber having a cylindrical internal wall surface, a valve seat co-axial with said passage in said stepped piston and at the end thereof adjacent said valve chamber, and a valve extending towards said bore from said chamber for engagement by said valve seat to close said passage upon movement of said stepped piston towards said valve in response to opposing pressure forces acting on said piston, said valve having a cross-sectional dimension less than said bore and said valve chamber, the invention comprising means for retaining said valve at all times co-axial with said valve seat and comprising a part integral with said valve and extending co-axially into said valve chamber, said integral part being radially spaced inwardly from the wall of said chamber, a cylindrical sleeve-like element having an inner surface surrounding said integral part and an outer surface whose diameter is complementary to and in sliding engagement with the inner surface of said valve chamber, and means integrally joining the inner surface of said sleeve-like element and said integral part, said sleeve-like element having an axial extent which in cooperation with the inner surface of said valve chamber prevents said assembly and hence said valve from moving laterally or cocking with respect to the axis of said valve seat, and axial passageway means between said valve and the outer surface of said sleeve-like element for connecting said inlet and said bore.

4,640,555 SYSTEM AND METHOD FOR SUPPLYING FLUID UNDER PRESSURE FOR A VEHICLE BRAKE SYSTEM

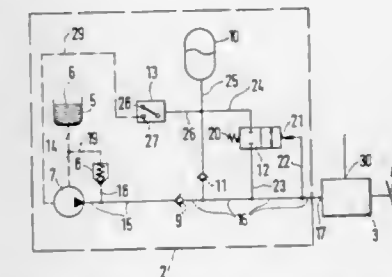
Hannes Bertling, Vaihingen, and Heinz Leiber, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 13, 1985, Ser. No. 765,082
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435435; Mar. 26, 1985, 3510910

Int. Cl.⁴ B60T 8/02, 13/14

U.S. Cl. 303—10

15 Claims



1. A system for supplying fluid under pressure for a motor vehicle brake system, which comprises a pressure supply system, including a fluid supply, a pump and a pressure reservoir that is fillable with fluid by said pump, a brake control valve having an inlet connected to said pressure supply system for controlling braking pressures in at least one brake circuit for at least one wheel brake, a fluid control valve means in said pressure supply system between said pump and said pressure reservoir and connected to a line to said brake control valve, said fluid control means controlling fluid pressure with priority supplying of fluid under pressure to said brake control valve, a pressure control switch for controlling said pump to supply fluid under pressure to said brake control valve and to said pressure reservoir in order to fill said pressure reservoir to a predetermined pressure and to shut off said pump when said predetermined pressure has been reached in said pressure reservoir whereby said pressure reservoir supplies fluid under

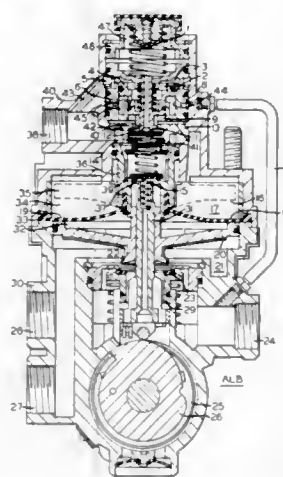
pressure to said brake control valve until a predetermined low pressure has been reached wherein said pressure control switch starts said pump.

4,640,556
LOAD-DEPENDENT BRAKE PRESSURE REGULATOR FOR MOTOR VEHICLE AND/OR TRAILER BRAKE SYSTEMS

Gerhard Fauck, Hanover; Bernd Kiel, Wunstorf, and Helmut Ulrich, Springe, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,417
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 3344839

Int. Cl.⁴ B60T 8/22
U.S. Cl. 303—22 R 18 Claims



1. A load-dependent air brake pressure system for pneumatically activated motor vehicles and/or trailer brakes comprising:

- (a) a load-dependent brake pressure controller which is regulated by control pressure modulated by a brake valve;
- (b) an entrance device for controlling the load-dependent brake pressure controller up to a predetermined control pressure for delivering the full control pressure as a function of the controlled pressure;
- (c) means for increasing the controlled pressure in accordance with a value corresponding to the control ratio up to full available supply pressure; and
- (d) means for effectively controlling said means for increasing the controlled pressure when a predetermined control pressure is exceeded.

4,640,557
ANTI-SKID DEVICE FOR MOTOR VEHICLES
Ettore Panizza, and Ercole Premoli, both of Turin, Italy, assignors to Fiat Auto S.p.A., Italy

Filed Jun. 13, 1985, Ser. No. 744,455
Claims priority, application Italy, Jun. 15, 1984, 67621 A/84
Int. Cl.⁴ B60T 8/58

U.S. Cl. 303—100 4 Claims

1. An anti-skid device for a front-wheel drive motor vehicle with a front-mounted engine and fitted with a hydraulic braking system comprising a master cylinder actuated by a brake pedal and connected to a first and a second hydraulic circuit each connected to brake operating cylinders of a respective pair of diagonally opposed front and rear wheels of the motor vehicle, the said device comprising:

electrical position sensor means associated with the brake pedal;

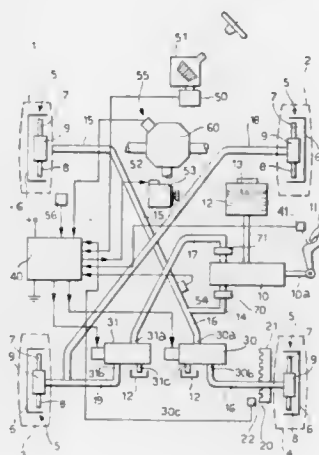
sensor means for sensing the average speed of the front wheels;

angular speed sensor means designed to supply electrical signals indicative of the speed of rotation of at least one rear wheel of the motor vehicle;

sensor means for sensing the speed of rotation of the engine, an electrical sensor for sensing the steering angle of the wheels of the motor vehicle,

a first and a second electrically-controlled changeover valve designed to be fitted respectively in the first and the second hydraulic circuits between the master cylinder and the brake operating cylinder of the rear wheel, each changeover valve being designed, when it receives a command signal, to changeover from a first condition in which it permits braking of at least one of said front and rear wheels with which it is respectively associated to a second condition in which it causes at least partial reduction of the braking force of at least one of said front and rear wheels with which it is associated; and

an electronic control unit connected to the said angular speed sensor means, to said average speed sensor means, to

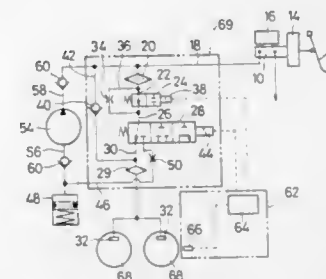


said engine speed sensor means, to the position sensor means, to the said electrically controlled changeover valves and to the said steering sensor and arranged:

- (a) to supply said command signal to the first changeover valve, during braking, to reduce the braking force of the said at least one rear wheel associated with the said first valve when the signals supplied by the said position sensor means and the said angular speed sensor means respectively indicate that the brake pedal is depressed and the said at least one rear wheel of the motor vehicle is on the point of locking; and
- (b) to supply said command signal to the second changeover valve to reduce the braking force of the front and rear wheels associated with the said second valve when, during said braking, the signals supplied by the said average speed sensor means and the steering sensor means respectively indicate that at least one front wheel is locked and that the steering angle has increased beyond a predetermined extent relative to a value assumed by the said steering angle at the instant when the said at least one rear wheel locked.

4,640,558
ANTI-SKID BRAKE SYSTEM
Yoshihisa Nomura, Toyota; Hiroyuki Oka, Susono, and Hiromi Otsuki, Anjo, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Nippondenso Co., Ltd., both of Japan

Filed Jul. 27, 1984, Ser. No. 635,229
Claims priority, application Japan, Jul. 29, 1983, 58-140391
Int. Cl.⁴ B60T 8/36, 13/68
U.S. Cl. 303—119 14 Claims



1. An anti-skid brake system for a vehicle, comprising:
 - a master cylinder generating a hydraulic braking pressure in response to operation of a brake operating member of the vehicle;
 - at least one brake cylinder for applying a brake to a wheel of the vehicle;
 - a primary fluid passage for connecting said at least one brake cylinder and said master cylinder;
 - a reservoir for storing a brake fluid;
 - a solenoid-operated directional control valve disposed in said primary fluid passage and operable selectively in a first position for providing communication of said at least one brake cylinder with said master cylinder, a second position for providing communication of said at least one brake cylinder with said reservoir, and a third position for inhibiting communication of said at least one brake cylinder with said master cylinder and said reservoir;
 - a control device sensing a skidding condition of said wheel and controlling said directional control valve according to the sensed skidding condition of the wheel;
 - a restrictor disposed in said primary fluid passage in series connection with said directional control valve; and
 - a solenoid-operated shut-off valve disposed in said primary fluid passage in parallel connection with said restrictor and controlled by said control device, said shut-off valve being normally placed in an open position thereof, and brought into a closed position thereof at the time when said control device has started to activate said directional control valve for preventing said wheel from skidding.

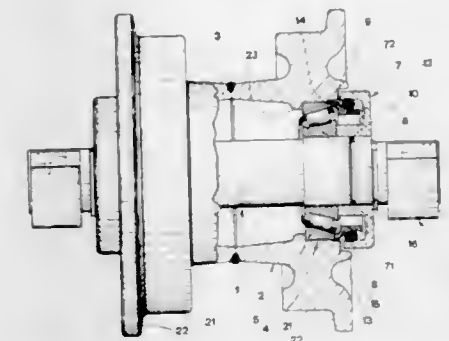
4,640,559
BEARING SEAL FOR ENDLESS TRACK ROLLERS
Aldo Crotti, Castelnuovo Rangone, Italy, assignor to Italtrator Meccanica ITM S.p.A., Potenza, Italy

Filed Dec. 3, 1984, Ser. No. 677,305
Int. Cl.⁴ B62D 55/14
U.S. Cl. 305—11 3 Claims

1. An improved roller for the tracks of crawler tractors and other similar vehicles, comprising:
 - a shaft fixed immovably to a crawler vehicle and including opposing end portions;
 - a roller body having portions adjacent each of said shaft end portions and being supported by said shaft for rotation about the longitudinal axis of said shaft, said roller body having a recess at each end of said portions;
 - a chamber defined between said roller body and said shaft for containing lubricant;
 - a pair of bearings each secured in each of said recesses, each said bearing including an inner race engaging with said shaft and an outer race engaging with said roller body;
 - a pair of thrust brackets, each secured on said shaft adjacent

respective end portions thereof, said thrust brackets cooperating to maintain said roller body at a predetermined position on said shaft; and

means, cooperating with said bearings and said thrust brackets, for preventing leakage of said lubricant from within said chamber through said bearings, each said preventing means being positioned at a portion of said roller body adjacent a respective shaft end portion and comprising annular sealing means and annular thrust means,

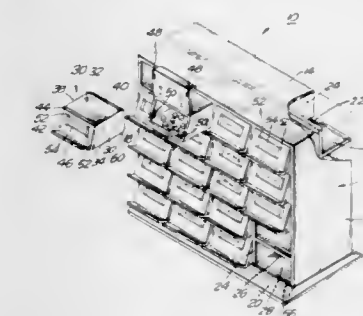


said annular sealing means consisting solely of a metal ring supported, coaxially about said shaft at said roller body portion between said respective thrust bracket and said respective bearing, for movement in a direction axially of said shaft, said ring having a radially extensive surface engageable with a radially extensive surface of said bearing outer race, and

said annular thrust means consisting solely of an elastomeric ring in direct engagement with, and compressed between, an inner surface of said thrust bracket and an outer surface of said metal ring.

4,640,560
PILL DISPENSER
Richard S. Blum, 25 Spruce Dr., East Hills, N.Y. 11576
Filed Dec. 17, 1984, Ser. No. 682,658
Int. Cl.⁴ G08B 21/00 14 Claims

U.S. Cl. 312—234.1



1. A pill dispenser for dispensing daily medications pre-stored for a week comprising:
 - an upright housing having a plurality of compartments arranged in rows and columns, each column representing a day of the week and each row representing an hourly part of the day;
 - a corresponding plurality of pill boxes, each slidably receivable within a respective compartment, each pill box respectively comprising an enclosed container having a hinged cover and storing all the medications to be taken at a pre-set hour and day;
 - means for retaining said pill boxes in their respective compartments;

clock means for pre-setting a day and hour for each pill box; indicator means associated with each pill box and coupled to said clock means whereby the indicator means on a respective pill box will give an appropriate indication when the time and day pre-set for that pill box occurs; circuit means for retaining the indication until the pill box has been removed, and means to turn off the indicator means after the pill box has been removed.

4,640,561

FLEXIBLE PRINTED CIRCUIT CONNECTOR

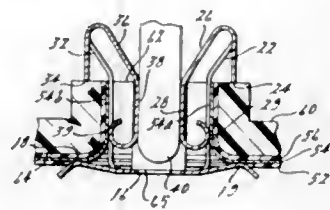
Melvin J. George, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1985, Ser. No. 798,549

Int. Cl.⁴ H01R 9/09

U.S. Cl. 339—17 F

7 Claims



1. A unitary retainer socket for providing a positive mechanical and electrical interconnection between a male pin conductor and a flexible printed circuit having exposed conductors while inserted in a walled aperture of a rigid support panel of a predetermined depth, comprising:

- a generally planar base portion;
- two pair of opposing legs extending in a generally normal direction from said base portion wherein the legs of each pair are separated by a defined contact space;
- a pair of spring tabs extending from said base to provide resilient biasing of said socket against said flexible printed circuit when inserted in said panel aperture;
- a retrorse locking tab extending from between each leg pair towards a corresponding spring tab;
- an inner contact guide extending from each leg pair in a direction back towards said base portion forming continuous opposed surfaces separated by a distance that is less than the thickness of said male pin conductor for receiving and contacting said male pin conductor; and
- an electrical contact extending outwardly from each of said inner contact guides and being compressible by the insertion of said male pin conductor between said inner contact guides to positively compress the exposed conductors of said flexible printed circuit against opposing walls of said panel aperture.

4,640,562

SURFACE MOUNTING MEANS FOR PRINTED CIRCUIT BOARD

John R. Shoemaker, Reidsville, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 683,538, Dec. 19, 1984, abandoned.

This application Feb. 10, 1986, Ser. No. 828,576

Int. Cl.⁴ H01R 9/07

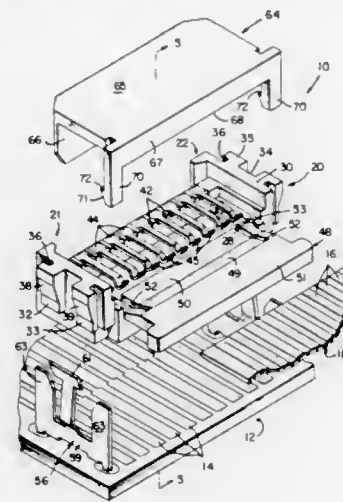
U.S. Cl. 339—17 F

21 Claims

1. An electrical assembly including an electrical connector which is adapted to be mounted to the surface of a printed circuit board for interconnecting a plurality of conductors on the circuit board to a like number of conductors in a flexible flat cable, and comprising

- an electrical connector comprising a body member having opposite end portions and a generally flat shelf extending longitudinally between said end portions, a plurality of metal terminals, with each of said terminals having a generally U-shaped configuration so as to define a pair of

generally parallel legs, means mounting said terminals to said body member in a longitudinally spaced apart and aligned arrangement, and with a first one of the legs of each terminal extending laterally across at least a portion of said shelf and so that the first legs of the terminals define an upper row of longitudinally spaced apart legs which overlie said shelf, and with the second ones of the legs of the terminals defining a lower row of longitudinally spaced apart legs which is disposed below said shelf and so as to be exposed below said housing, and a wedge plate sized to overlie substantially the entire longitudinal and lateral dimensions of said shelf, and with the wedge plate being adapted to be laterally inserted between said shelf and said upper row of legs, and



means for mounting said connector to a printed circuit board or the like,

whereby a flexible flat cable comprising a row of conductors may be electrically connected to said connector by the steps of exposing the conductors of the cable at an end portion thereof, and laterally inserting such end portion and the wedge plate between the shelf and the upper row of contact legs and so that the terminal legs of said upper row engage respective ones of the conductors of the cable, and wherein the connector and assembled cable may be mounted on a circuit board having a row of conductors on the surface thereof and with such conductors on the board being respectively engaged by the lower row of terminal legs.

4,640,563

UNIVERSAL CLASP STRUCTURE FOR EXTERNAL ELECTRODE PROBES

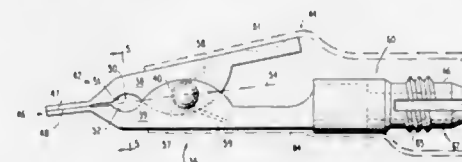
James R. LeBlanc, Augusta, Ga., assignor to The LeBlanc Corporation, Augusta, Ga.

Filed Jun. 10, 1985, Ser. No. 743,147

Int. Cl.⁴ H01R 11/00

U.S. Cl. 339—32 M

10 Claims



1. Universal clasp structure capable of being releasably secured to either a planar tab-type or curvilinear-surface button-type contact of an EKG external electrode sensor for electrical transfer of body or skin signals enabling accurate

measurements to be made with minimal electrical interference, comprising:

- a pair of elongated electrically-conductive clip arms, each clip arm having electrical contact means contiguous to one of its longitudinal ends and means capable of functioning as a handle at its remaining longitudinal end,
- mechanical means pivotally interconnecting said pair of clip arms intermediate their longitudinal ends in articulated relationship, with said electrical contact means at said one longitudinal end of each clip arm confronting each other and said handle means at the remaining longitudinal end of said clip arms being disposed for articulated movement toward each other about said mechanical interconnecting means to open said confronting contact means,
- spring means acting on said clip arms as pivotally interconnected to bias said confronting electrical contact means of said clip arms together,
- said electrical contact means on each said clip arm including: a planar surface contact, and a curvilinear configuration contact,
- said planar surface contact extending from the distal end of each said clip arm toward said mechanical interconnecting pivot means for said arms presenting an elongated nose portion of a substantially flat configuration in longitudinal cross section,
- said curvilinear contact of each clip arm being located intermediate said planar surface contact and said interconnecting means, and
- electrical coupling means located at said handle end of at least one of said clip arms for electrically connecting said clasp structure directly to a shielded electrically conductive cable for transferring sensed electrical signals to electrical measurement equipment.

4,640,564

ELECTRICAL OUTLET FACEPLATE WITH LOCKING CLOSURES

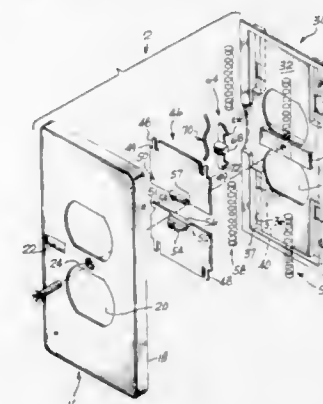
Joe W. Hill, 23320 SE, 271st, Maple Valley, Wash. 98038

Filed Mar. 4, 1986, Ser. No. 835,999

Int. Cl.⁴ H01R 13/44

U.S. Cl. 339—40

11 Claims



1. A faceplate for an electrical outlet of the type having at least one set of openings for receiving prongs of an electrical plug, said faceplate comprising:

- a body dimensioned to cover the outlet and having an aperture therein alignable with said openings to allow insertion of said prongs into said openings;
- a shutter having a closed position in which it blocks said aperture and an open position in which it is adjacent to said aperture; said shutter including an edge portion with an interlocking surface;
- spring means for biasing the shutter into its closed position;
- tab means carried by the shutter for manually sliding the

shutter from its closed position into its open position against the force of the spring means; and

releasable lock means for preventing the shutter from sliding out of its closed position toward its open position; said lock means including an interlocking portion, resilient means for urging said interlocking portion toward the shutter and into interlocking engagement with said interlocking surface of the shutter to positively lock the shutter against sliding out of its closed position toward its open position, and a release member carried by said interlocking portion for manually sliding said interlocking portion against the force of the resilient means away from the shutter and out of engagement with said interlocking surface to allow the tab means to be operated to slide the shutter into its open position.

4,640,565

EJECTING LATCH FOR ELECTRICAL CONNECTORS

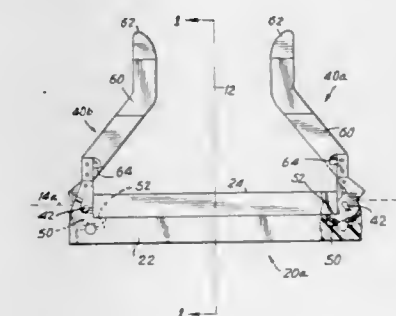
Alexander W. Hasircoglu, Lancaster, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1985, Ser. No. 739,032

Int. Cl.⁴ H01R 13/62

U.S. Cl. 339—45 M

9 Claims

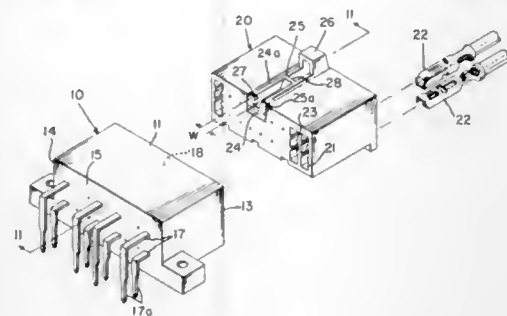


1. Electrical connector apparatus comprising:

- a connector member having (1) a substantially rectangular first connector face, (2) first and second substantially planar, substantially parallel side surfaces perpendicular to the first connector face, each of the first and second side surfaces extending rearwardly from respective first and second substantially parallel sides of the first connector face, and (3) at least one ejection surface substantially parallel and adjacent to the first connector face and facing in substantially the same direction as the first connector face;
- a header member having a second rectangular connector face for removably receiving the connector member along a connector axis which is mutually perpendicular to the first and second connector faces for making a plurality of electrical connections between the header member and the received connector member; and
- an ejecting latch pivotally mounted on the header member adjacent the second connector face, the pivotal axis of the latch being substantially perpendicular to the first and second side surfaces of the received connector member, the latch having (1) a first lever arm extending substantially perpendicularly from the pivotal axis, said first lever arm having an ejection element bearing on the ejection surface of the received connector member, and (2) a second lever arm offset and projecting from the first lever arm, said second arm extending adjacent and angularly across one of said side surfaces of the received connector member in a direction toward the rear of said connector member, said second lever arm terminating with an end portion which is located beyond the rear of the received connector member so that the latch can be pivoted by engaging the end portion, thereby causing the first lever arm to push the ejection surface and the received connector member away from the header member said second

lever arm is its ejecting position extending substantially perpendicular to said first connector face, whereby obstruction from an adjacent connector is avoided.

4,640,566
ELECTRICAL CONNECTOR HOUSING
 Yoshihide Matsusaka, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.
 PCT No. PCT/US85/00696, § 371 Date Nov. 12, 1985, § 102(e) Date Nov. 12, 1985, PCT Pub. No. WO85/05501, PCT Pub. Date Dec. 5, 1985
 PCT Filed Apr. 17, 1985, Ser. No. 797,282
 Claims priority, application Japan, May 17, 1984, 59-71100[U]
 Int. Cl.⁴ H01R 13/627
 U.S. Cl. 339—91 R **4 Claims**

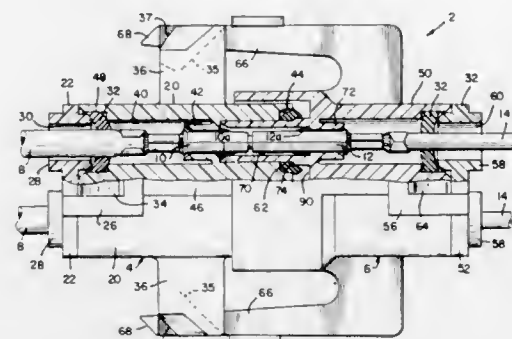


1. An electrical connector housing, comprising:
 a male housing portion;
 a female housing portion which is matable with male housing portion, characterized in that:
 the male housing portion has a latching arm on which a latching portion is provided, with the latching arm lying within a groove formed in an outer wall of the male housing portion and one end thereof being fixed so as to resiliently flex toward the bottom surface of the groove, the female housing portion further having a locking member which is engageable with the latching projection of the latching arm so as to lock both housings with each other when the male housing portion is mated with the female housing portion, further characterized in that:
 the latching arm is provided with a groove which extends in the longitudinal direction of the latching arm and which has the latching projection therein.

4,640,567
DETACHABLE SEALED MULTICONTACT ELECTRICAL CONNECTOR
 Robert G. Lundergan, Kernersville, N.C., and Donald W. McClune, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.
 Continuation of Ser. No. 696,286, Jan. 30, 1985, abandoned. This application Apr. 16, 1986, Ser. No. 854,719
 Int. Cl.⁴ H01R 4/00
 U.S. Cl. 339—94 M **10 Claims**

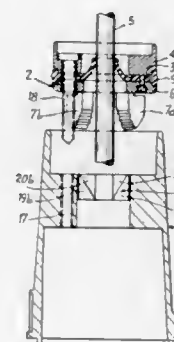
1. A multicontact detachable sealed electrical connector for use in establishing a sealed interconnection between conductors in one or more circuits, comprising:
 first and second mating connector housings formed of an insulative material, each having cavities extending from an exterior housing end therethrough to an interior housing end, each cavity having retaining means therein for attaching a corresponding terminal insertable therein to the housing,
 an outer seal aligned with each housing cavity at the exterior end of the housing, to establish sealing integrity between each conductor and the corresponding connector housing;
 tubular protuberances on the interior end of the first connec-

tor housing defining an extension of each cavity therein, each tubular protuberance being insertable in the corresponding cavity adjacent the interior end of the second connector housing; and
 a deflectable inner seal surrounding each tubular protuberance, means maintaining said inner seal in position on each protuberance spaced from an interior end of said first connector housing, the inner seal having an outer dimen-



sion greater than the inner diameter of the cavity in the second housing, the inner seal having inner and outer peripheral surfaces and inner and outer facial surfaces, the outer peripheral surface being axially deflected toward said interior end, when the first and second connector housings are mated, whereby terminals interconnecting corresponding conductors forming each circuit are separately sealed.

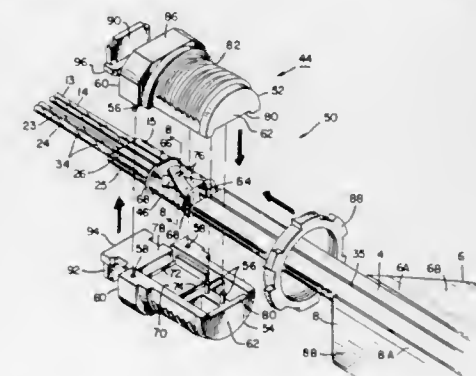
4,640,568
ELECTRIC CABLE CONNECTOR HANDLE
 Yves L. Magourou, Ermont, France, assignor to Societe de Exploitation des Procédes Marechal, Paris, France
 Filed Jan. 8, 1985, Ser. No. 689,791
 Claims priority, application European Pat. Off., Sep. 24, 1984, 84401902.6
 Int. Cl.⁴ H01R 13/58
 U.S. Cl. 339—103 R **18 Claims**



1. Electric cable connector handle for securing and providing electrical contact for a cable which enters one end of said connector handle, said connector handle comprising:
 (a) a gripping element comprising an annular base provided with a plurality of elastically deformable jaws which project from the annular base and cooperate with at least one frustoconic bearing, said gripping element being positioned in the connector handle in a manner such that at least the exterior portions of the ends of said jaws converge opposite to the annular base and are disposed on the side of the base opposite to the inlet of the cable into the connector handle, and wherein said frustoconic bearing

converges towards the longitudinal axis thereof on the opposite side of the base relative to the inlet of the cable;
 (b) means for exerting a pressure on the annular base to immobilize it in the connector handle and cause an axial displacement of the base and of the jaws into said frustoconic bearing to cause said jaws to grip said cable, wherein said jaws are inwardly and elastically deformable, wherein when said annular base is moved along said longitudinal axis of said bearing, at least the ends said jaws are deformed into a position in which at least said jaw ends grip said cable;
 (c) a seal between the annular base and a cover; and
 (d) means for fixedly connecting said cover, said seal and said annular base to one another.

4,640,569
ADAPTOR FOR COUPLING A CABLE TO A CONNECTOR
 Frank P. Dola, Hudson; Paul P. Siwinski, Seminole, and Grover A. Zwieg, Clearwater, all of Fla., assignors to AMP Incorporated, Harrisburg, Pa.
 Filed Mar. 27, 1985, Ser. No. 716,779
 Int. Cl.⁴ H01R 4/66
 U.S. Cl. 339—143 R **21 Claims**

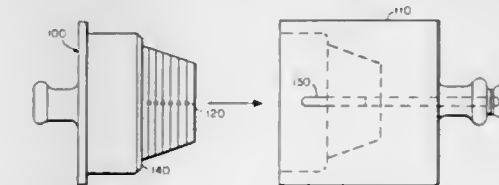


1. For use in joining a plurality of conductive wires of a cable to a connector, an adaptor comprising:
 a generally cylindrical shaped, hollow, ferrule through which the insulated wires of a cable may pass,
 an electrically conductive adaptor body formed of separable portions shaped for mating engagement one with another, each portion having an internal recess for the receipt of said ferrule therein, and comprising means for providing electrically grounded contact with ground strips of the cable, the adaptor including coupler plates on the outboard ends of said separable portions for the securement and grounding of the adaptor to a connector, and securement means to hold said portions of said body in operative engagement of said ferrule located within said recesses of the adaptor body.

4,640,570
ELECTRICAL CONE CONNECTOR
 Edward A. Strate, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
 Filed Oct. 9, 1985, Ser. No. 785,690
 Int. Cl.⁴ H01R 13/50
 U.S. Cl. 339—182 R **4 Claims**

1. An electrical connector for connecting a first set of wires with a second set of wires, said electrical connector comprising:
 a male plug which has a center and receives said first set of wires in a plurality of sockets on one end, and has a conically shaped mating surface on its other end, said male

plug having an outer surface with a longitudinal indentation;
 a female socket which has a center and receives said second set of wires in a plurality of sockets on a projecting annular surface at one end, and has a concave conical surface on its other end with interior dimensions complementary to the conically shaped mating surface of the male plug;
 a first set of contacts distributed radially and longitudinally in a plurality of annular layers in the conically shaped mating surface of the male plug, each of said first set of sockets being connected to one of said first set of wires inserted in the plurality of sockets in the male plug, said first set of sockets having first engagement surfaces imbedded in the conically shaped mating surface of the male plug, said first set of contacts comprising a plurality of screw contacts which receive and are connected to the first set of wires as they enter the sockets in the male plug, the screw contacts in the male plug each having a first outer contact which extends onto the conically shaped mating surface of the male plug and a first screw contact which extends through the first outer contact into the male plug to contact one of the first set of wires;
 a second set of contacts distributed radially and longitudinally in a plurality of annular layers in the concave conical surface of the female socket, each of said second set of contacts being connected to one of said second set of wires inserted in the plurality of sockets in the female socket, and having second engagement surfaces imbedded in the concave conical surface of the female socket to electrically connect with one of the first set of sockets when the male plug and female socket are engaged, said second set of contacts comprising a plurality of screw



contacts which receive and are connected to the second set of wires as they enter the sockets in the female socket, the screw contacts in the female plug each having a second outer contact on the concave conical surface of the female socket serving as the second engagement surface and a second screw contact which extends through the second outer contact into the female socket to contact with one of second set of wires;
 an insert attached to the male plug at an orifice within its conically shaped mating surface, at its center;
 a self locking center bolt having a threaded end and a head, said threaded end projecting through an orifice in the female socket to be screwed into the insert at the center of the male plug when the male plug and female socket are engaged, the head of the self locking center bolt remaining outside of the orifice at the end of the female socket which receives the second set of wires and pressing the female socket towards the male plug when the threaded end of the self locking center bolt is screwed into the insert, the self locking center bolt and insert thereby providing early engagement and preventing the first and second set of contacts from prematurely touching each other during assembly; and
 an indexing key fitting between a section of an outer edge of the male plug and a section of the female socket, said indexing key providing annular alignment between all the first and second set of contacts by aligning the male plug with the female socket; said indexing key being a protrusion connected to and aligned longitudinally along the projecting annular surface of the female socket so that it is parallel with the self locking center bolt, said protrusion fitting into the longitudinal indentation in the male plug

when the male plug is engaged with the female socket to annularly align the first and second set of contacts so that they contact each other in corresponding pairs when the male plug and female socket are engaged.

4,640,571

ELECTRICAL CONNECTOR BLOCKS

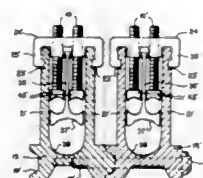
Gerard S. Walter, Glenshaw, and John Hagan, Gibsonia, both of Pa., assignors to Walter Electrical Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 14, 1985, Ser. No. 691,502

Int. Cl.⁴ H01R 13/11

U.S. Cl. 339-242

8 Claims



1. An electrical connector block comprising a housing having a pair of generally parallel elongate sidewalls extending from a base member and separated by a trough open on the side opposite the base member, said trough extending from a first end of said base member to a second end thereof, a groove on each sidewall opposite the trough and spaced from the open side of the trough, a cap member having depending arms along each side edge adapted to slide along the outer sides of the parallel sidewalls over the open trough, said arms having interlocking flanges engaged in the grooves of the sidewall, at least one depending member on said cap member extending between the sidewalls of the base member, at least one screw member threadingly engaged in said cap member through said at least one depending member and carrying a clamp member pivoted on the end thereof between the sidewalls for clamping a wire between the clamp member and base member, said base member having a V-groove extending generally parallel to the trough bottom along one side of said base member from said first end to said second end and a like shaped fully interfitting V-tongue parallel thereto on the other side of said base member and passages through the base transverse to the tongue and groove and passing therethrough receiving a fastener means whereby a plurality of connectors may be conductively and integrally connected together.

4,640,572

CONNECTOR FOR STRUCTURAL SYSTEMS

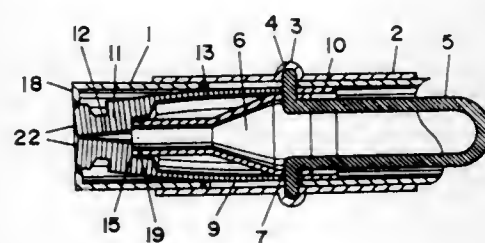
Thomas R. Conlon, P.O. Box 88810, Honolulu, HI. 96815

Filed Aug. 10, 1984, Ser. No. 640,044

Int. Cl.⁴ H01R 11/22

U.S. Cl. 339-252 R

14 Claims



1. In a structural system including an attaching component provided with at least one connecting port, a structural component, and a coupling mechanism adapted to attach said

structural component to said connecting port of said attaching component; an improved coupling mechanism comprising: an elongated jaw assembly disposed coaxially within said structural component proximate an end thereof and movable between an extended and a retracted position, said jaw assembly including a plurality of radially expandable jaws adapted to engage an inner perimeter of said connecting port when they are extended out of said end of said structural component to said extended position; an elongated locking pin disposed coaxially within said jaw assembly, said locking pin being movable between a locked and unlocked position, where moving said locking pin from said unlocked position to said locked position causes said jaw assembly to move from said retracted to said extended position, and where moving said locking pin from said locked position to said unlocked position causes said jaw assembly to move from said extended position to said retracted position; an operating sleeve disposed around said end of said structural component; and means connecting said operating sleeve to said locking pin such that movement of said operating sleeve causes a corresponding movement of said locking pin.

4,640,573

LENS-ON-DISC TYPE OPTICAL SCANNING APPARATUS

Keiji Kataoka, Kawagoe, and Susumu Saito, Hachioji, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

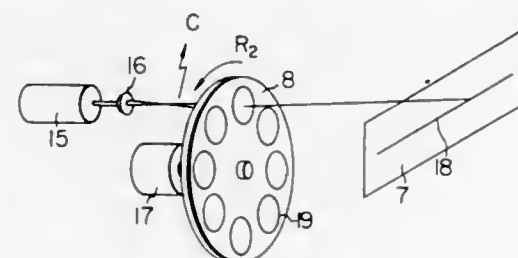
Filed Jan. 25, 1983, Ser. No. 460,804

Claims priority, application Japan, Feb. 24, 1982, 57-27491

Int. Cl.⁴ G02B 26/10

U.S. Cl. 350-6.1

7 Claims



1. A lens-on-disc type optical scanner comprising a first support in the form of a disc, a plurality of lenses arranged on said first disc along the circumferential direction of said disc and having a first predetermined surface profile, a second support in the form of a disc, and a plurality of lenses arranged on said second disc along the circumferential direction of said disc and having a second predetermined surface profile different from said first predetermined surface profile, said first and second discs being bonded together at their circumferential edges, wherein a scanning plane located at a predetermined position is scanned by a laser beam passing through said lenses sequentially by rotating said first and second discs.

4,640,574

INTEGRATED, MICRO-OPTICAL DEVICE

Hans-Georg Unger, Braunschweig, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Aug. 24, 1983, Ser. No. 525,887

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231492

Int. Cl.⁴ G02B 6/12

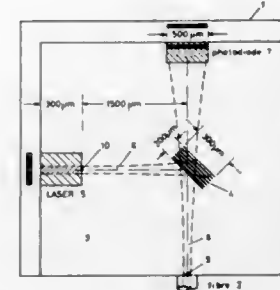
U.S. Cl. 350-96.11

9 Claims

1. An integrated, micro-optical device for use in combina-

tion with a monomode fiber, a laser and a photodiode, said device comprising:

- a common substrate including means for connecting the fiber, laser and photodiode to said device;
- a film waveguide disposed on said substrate and presenting a first beam path between said means for connecting the fiber and said means for connecting the photodiode;
- a refraction grating disposed in the first beam path of said film waveguide, said film waveguide presenting a second



beam path between said means for connecting the laser and said refraction grating; wherein said refraction grating is composed of parallel lines which are arranged in confocal elliptical arcs and which are so spaced apart to define a selective filter which transmits radiation coming from the fiber and having a first wavelength toward the photodiode, and deflects radiation coming from the laser and having a second wavelength different from the first wavelength in the direction toward the fiber.

4,640,575

FIBER OPTIC CONNECTOR COVER APPARATUS

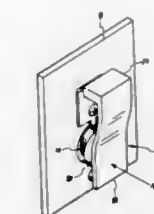
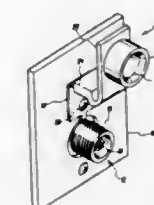
Theodore A. Dumas, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 13, 1986, Ser. No. 818,517

Int. Cl.⁴ G02B 6/42

U.S. Cl. 350-96.20

4 Claims



1. Combination dust cover and radiation shield comprising, in combination:

- L-shaped base means including mounting means for attaching said base means to a support adjacent a cylindrical male lightwave connector means, said male connector means including at least one annular surface engaging means; and
- unitary L-shaped flexible shield means including first attach-

ment means for connection to said base means at one end thereof and a cylindrical and tubular female second attachment means, having at least one interior annular surface, at the other end thereof for engagement with the male lightwave connector means, said shield means having a normal position wherein the female second attachment means covers the male lightwave connector means, said shield means also having an elastic memory so that it may be flexed out of its normal position of covering the lightwave connector means whereby a female lightwave connector may be attached to the male lightwave connector means and said shield means will return to said normal position, the application of force in line with an axis of said lightwave connector means and to said other end of said flexible shield means causing said annular surface of said shield means to interact with said male lightwave connector means to form a dust cover for said male lightwave connector means.

4,640,576

METHOD AND APPARATUS FOR TUBING OPTICAL FIBERS

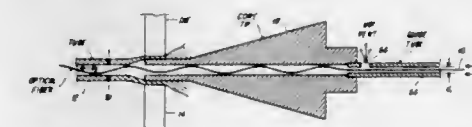
H. Keith Eastwood, Winnipeg, and Paul W. J. Rivett, Scarborough, both of Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Filed Jun. 26, 1984, Ser. No. 624,825

Int. Cl.⁴ G02B 6/44

U.S. Cl. 350-96.23

10 Claims



3. A system for controlling the feed of at least one optical fiber into a tube while the tube is being formed, said system comprising:

- (a) means for propelling at least one fiber into a tube with sufficient force to move the fiber faster than the speed at which the tube is being formed;
- (b) means for restraining the feed of fiber into the tube;
- (c) means for driving the tube being formed at a predetermined speed; and
- (d) means for regulating the excess length of the fiber by controlling the degree of restraint imparted to said fiber by said restraining means based upon the driven speed of the tube by the means driving the tube so that the feed of fiber into the tube is faster than the speed at which the tube is being formed by a predetermined controlled amount.

4,640,577

IMAGE FIBER WITH A MECHANISM FOR ROTATING A FIELD OF VIEW

Kolchi Tsuno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 503,475, Jun. 13, 1983,

abandoned. This application Mar. 19, 1985, Ser. No. 767,069

Claims priority, application Japan, Jun. 11, 1982, 57-100349

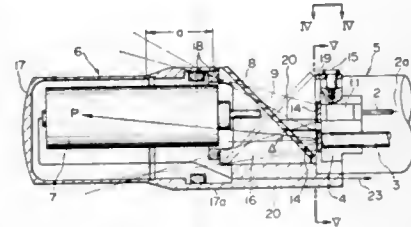
Int. Cl.⁴ G02B 7/04

U.S. Cl. 350-96.25

10 Claims

1. An image fiber device of the type having a mechanism for rotating a field of view, said image fiber device comprising: a main portion, having an image fiber and a light guide parallel to said image fiber, and an adaptor mechanism detachably mounted to the end of said main portion for rotating a field of view of said image fiber device, said adaptor including a window, a motor with a rotary shaft substantially parallel to the axis of said image fiber, a mirror having a reflecting surface for

reflecting an illuminating light from said light guide through said window to an object to be viewed and for receiving an image of said object through said window and reflecting said image to said image fiber, said mirror being mounted on said rotary shaft and having its reflecting surface opposite the ends

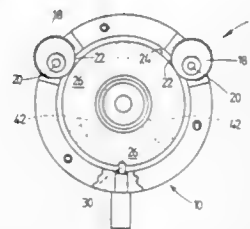


of said image fiber and light guide and opposite said window, the axis of said rotary shaft being coincident with the axis of said image fiber, and said window being opened and formed in a side surface of said adaptor mechanism, at a position adjacent to said reflecting surface of said mirror.

4,640,578
OPTICAL INSPECTION DEVICE FOR INSPECTING AN ARTICLE SURFACE
Charles F. R. Turner, Hingham, and John V. Wingfield, Bishop's Stortford, both of England, assignors to Prior Scientific Instruments Limited, Hertfordshire, England
Filed Mar. 20, 1985, Ser. No. 713,880
Claims priority, application United Kingdom, Mar. 20, 1985, 8407197

Int. Cl.⁴ G02B 27/02, 7/00
U.S. Cl. 350—239

3 Claims



1. A hand-held optical inspection device comprising a magnifying lens arrangement, a casing enclosing said lens arrangement, said casing having two end regions, viewing means disposed at one of said end regions of the casing, and, at the opposite end region, adapter means capable of receiving in an adjustable manner a portion of an article upon which is the surface to be viewed, wherein the adapter means is capable of imparting controlled lateral movement of the surface with respect to the longitudinal axis of the lens arrangement in the focussing plane thereof, said adapter means including a centering ring in which an adapter component is received, and wherein the arrangement for imparting said controlled lateral movement comprises at least two cam surfaces arranged to impart pressure in a generally radially inward direction on spaced-apart regions of the perimeter of the ring, and spring-biased reaction means for supporting the ring in the device.

4,640,579
SLIDING FRICTION MEMBER FOR LENS SLIDING RING

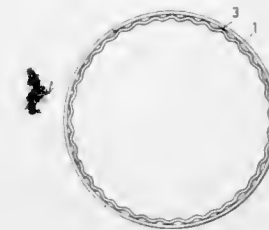
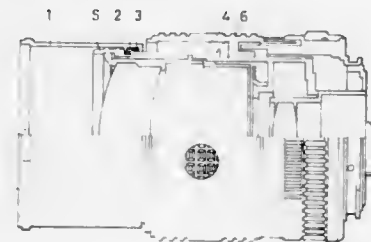
Morio Takizawa, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 9, 1984, Ser. No. 578,349

Claims priority, application Japan, Feb. 10, 1983, 58-18373; Mar. 2, 1983, 58-30119

Int. Cl.⁴ G02B 15/00, 7/04

U.S. Cl. 350—255

8 Claims



8. In a photographing lens device having first and second cylindrical members with said first cylindrical member being slidably fitted within said second cylindrical member, the improvement comprising: a sliding friction member provided between an outer surface of said first cylindrical member and an inner surface of said second cylindrical member, said sliding friction member comprising a corrugated elastic member bent into an annular shape and fitted into a groove in said second cylindrical member, said elastic member being flocked on a side thereof in contact with said outer surface of said first cylindrical member.

4,640,580
OPTICAL CHOPPER WITH HIGH RATE OF FOCUS DITHER

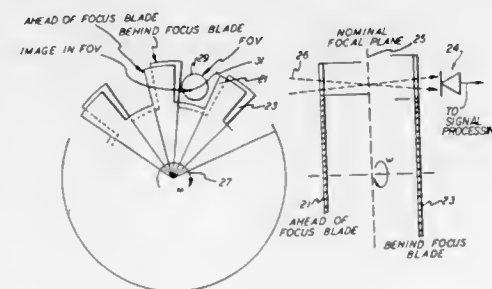
Eugene R. Schlesinger, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 345,860, Feb. 4, 1982, abandoned. This application Jul. 13, 1984, Ser. No. 630,459

Int. Cl.⁴ G02B 26/02

U.S. Cl. 350—274

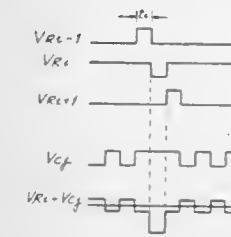
6 Claims



1. In an optical system with an optical axis in which an image

is to be focused at an image plane, an improved chopper which can be driven at a high rate and use multi-notch choppers for obtaining dither about the focal point in said system comprising, first and second chopper blades, each having at least one notch in their periphery, said notches in said first and second chopper blades being fixed in rotationally offset position with respect to each other, said chopper blades mounted to a common shaft adapted for rotation, said blades disposed parallel to each other and essentially perpendicular to the optical axis, said blades disposed on opposite sides of the image plane, one of said blades providing an ahead of focus edge response and the other of said blades a behind focus edge response, means for sensing said ahead of focus edge response and a behind focus edge response and providing an output representative of the out of focus condition of said image at said image plane.

plied to each pixel being inverted at a rate not greater than that necessary to activate a single pixel, and greater than the rate



which will cause crosstalk, but in any event greater than the rate needed to scan a row of pixels without inverting polarity.

4,640,581
FLEXIBLE PRINTED CIRCUIT BOARD FOR A DISPLAY DEVICE

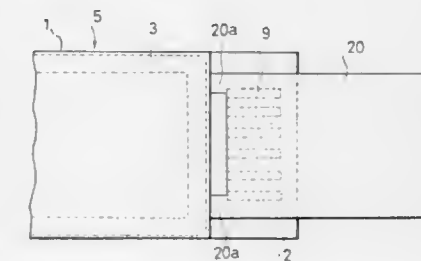
Jun Nakanowatari, Miyagi; Mitsuo Machida, Fukuoka; Toshitaki Okamoto, and Yoshihiro Nakura, both of Iwaki, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 27, 1984, Ser. No. 686,706
Claims priority, application Japan, Dec. 28, 1983, 58-204060[U]

Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—331 R

3 Claims



1. In a flexible printed circuit board having one end soldered to the terminal section of a display device which is used for connection to an external circuit, the display device having a small base sheet and a large base sheet bonded together to form a cell,

the improvement wherein said end is provided with protrusions which, when caused to bear on the side of the cell of the display device, form a given gap between the portion of said end other than the protrusions and the small base sheet of the display device.

4,640,582
SYSTEM FOR DRIVING A LIQUID CRYSTAL MATRIX DISPLAY SO AS TO AVOID CROSSTALK

Kikuo Oguchi, and Yoshiro Uchikawa, both of Suwa, Japan, assignors to Kabushiki Kaisha Seiko Epson, Japan

Filed May 7, 1984, Ser. No. 607,482
Claims priority, application Japan, May 10, 1983, 58-81129

Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—333

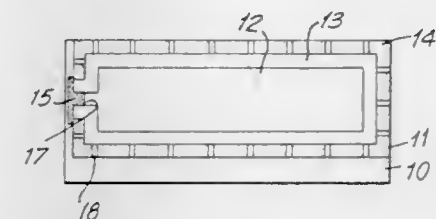
7 Claims

1. A method for driving a liquid crystal matrix display device, said display having a plurality of scanning signal row electrodes and a plurality of image signal column electrodes, said row electrodes and column electrodes being provided in a matrix orientation, the intersection of each row and column defining a picture element, or pixel, the scanning of all of said pixels defining a frame, the method for driving said liquid crystal matrix display device comprising sequentially selecting each scanning signal row electrode once per frame and selecting each image signal column electrode in synchronicity with the selection of a scanning signal row electrode to activate each desired row/column pixel, the polarity of the signal ap-

1. A display panel, comprising:
a pair of spaced apart flexible substrates;
a display medium sandwiched therebetween; and
multiple seal means deposited between the substrates for containing the display medium between the substrates and maintaining the substrates in spaced separation, including a first seal member of a material having the property of strongly adhering to the substrates and a second seal member having the property of low water permeability.

38. A process for the production of a display panel having a pair of spaced apart flexible substrates and a display medium sandwiched therebetween, comprising:

depositing on the interior surface of one substrate a first sealant formed of a material having the property of strongly adhering to the substrates;
depositing on the interior surface of the other substrate, a second seal, formed of a material having the property of low water permeability;
scattering a spacer on at least one of the substrates;
combining the substrates together; and
curing the sealants to form a display panel.



4,640,584

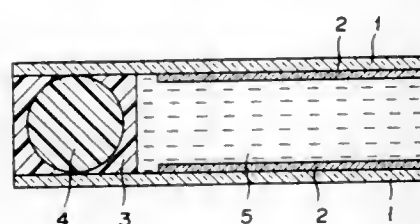
SPACERS FOR LIQUID CRYSTAL DISPLAY DEVICE
Tsuneo Tsubakimoto, Toyonaka; Iwao Fujikawa, Otsu, and Mitsuo Kuahino, Minoo, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan
Filed Mar. 22, 1985, Ser. No. 714,903

Claims priority, application Japan, Mar. 24, 1984, 59-55303

Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—344

7 Claims



1. A liquid crystal display device, comprising two transparent substrates each provided on the inner side thereof with a transparent electrode, liquid crystal sealed in a space formed between said two transparent substrates, and fine spherical cured particles formed of amino resin obtained from formaldehyde and at least one amino compound selected from the group consisting of benzoguanamine, melamine and urea, and disposed at least in the inner peripheral portion of said two transparent substrates as mixed with an adhesive sealing agent.

4,640,585

SEMICONDUCTOR THIN FILM LENS

Hidetoshi Nojiri, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

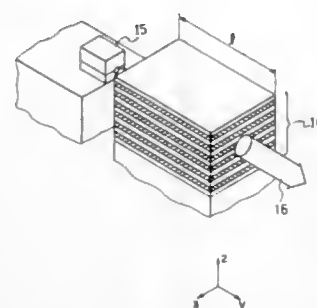
Filed Apr. 25, 1984, Ser. No. 603,757

Claims priority, application Japan, Apr. 28, 1983, 58-75832; Apr. 11, 1984, 59-73817

Int. Cl.⁴ G02B 3/00

U.S. Cl. 350—413

9 Claims



1. A semiconductor thin film lens comprising a laminated member comprising a semiconductor A and a semiconductor B alternately layered, said semiconductors A and B satisfying the following conditions:

$$n_A > n_B, E_{gA} < E_{gB},$$

where E_{gA} is the forbidden bandwidth of said semiconductor A, n_A is the refractive index of said semiconductor A, E_{gB} is the forbidden bandwidth of said semiconductor B, and n_B is the refractive index of said semiconductor B, the thicknesses of the layers of said semiconductor A and said semiconductor B, respectively, having values of several tenths to several one hundredths of wavelengths corresponding to the forbidden bandwidths of said semiconductor A and said semiconductor B, different amounts of impurity being doped into the respective layers, whereby said laminated member as a whole has

refractive index gradient which creates a lens action on a light beam entering the lens from the exterior thereof.

4,640,586

OBJECTIVE FOR A BINOCULAR STEREOMICROSCOPE

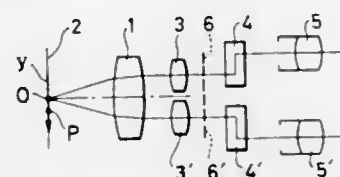
Yoichi Iba; Tadaaki Kimura, and Kazuo Kajitani, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 26, 1985, Ser. No. 759,242

Claims priority, application Japan, Jul. 31, 1984, 59-159368

Int. Cl.⁴ G02B 21/02

U.S. Cl. 350—414

10 Claims



1. An objective for a binocular stereomicroscope to be used with a single-objective type binocular stereomicroscope comprising an objective for forming an afocal image, and two observation optical systems for observing said afocal image by the right and left eyes, said objective for a binocular stereomicroscope being arranged to fulfill the condition shown below where reference symbol θ_R represents the angle between a ray that comes from an arbitrary point in a plane to be observed, which is perpendicular to the optical axis of said objective, and passes the center of pupil of one of said observation optical systems after passing through said objective and a ray that comes from the intersecting point of said plane to be observed and the optical axis of said objective and passes said center of pupil of said one of said observation optical systems after passing through said objective, said angle being formed by said two rays just after said two rays come out from said objective, and reference symbol θ_L represents the angle between a ray that comes from said arbitrary point in said plane to be observed and passes the center of pupil of the other one of said observation optical systems after passing through said objective and a ray that comes from said intersecting point of said plane to be observed and the optical axis of said objective and passes said center of pupil of said other one of said observation optical systems after passing through said objective, said angle being formed by said two rays just after said two rays come out from said objective.

$$\left| \frac{\theta_R - \theta_L}{\theta_R} \right| < 0.00775$$

4,640,587

METHOD FOR MANUFACTURING A SPECTACLE LENS FOR MYOPES

Günter Henkel, Daaden, Fed. Rep. of Germany, assignor to N.V. Optimed, Izegem, Belgium

Filed Jan. 23, 1985, Ser. No. 693,728

Claims priority, application Belgium, Jun. 19, 1984, PV 0/213171

Int. Cl.⁴ G02B 3/04

U.S. Cl. 350—432

8 Claims

6. An optical lens comprising:

- a body having first and second opposite sides, the first side including
 - (i) a central outwardly concave surface,
 - (ii) an annular outside milled surface spaced from and extending around the central concave surface, and

- (iii) an annular outwardly convex surface extending around the central concave surface and inside the milled surface, and radially smoothly extending from the concave surface to the milled surface;



the lens having a diopter between -21 and -7, and a field of view from 29 mm to 46 mm, and the outwardly convex surface being located outside the field of view.

4,640,588

STEREOSCOPIC MICROSCOPE INCLUDING A ROTATABLE LIGHT BEAM DISTRIBUTING MEANS WITH A SURFACE HAVING DISTRIBUTING AND NON-DISTRIBUTING AREAS

Shinya Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

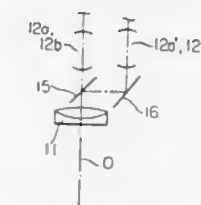
Filed Jan. 16, 1986, Ser. No. 819,306

Claims priority, application Japan, Jan. 25, 1985, 60-13162

Int. Cl.⁴ G02B 21/22, 27/14

U.S. Cl. 350—516

10 Claims



- 1. A stereoscopic microscope having:
 - an objective optical system used in common for left and right observation optical paths;
 - a first stereoscopic observation optical system having left and right observation optical paths, disposed rearwardly of said objective optical system;
 - light beam distributing means disposed between said first stereoscopic observation optical system and said objective optical system and rotatable about the optic axis of said objective optical system; and
 - a second stereoscopic observation optical system rotatable about the optic axis of said objective optical system with the rotation of said light beam distributing means;
- wherein said light beam distributing means is provided with a light beam distributing surface, and said light beam distributing surface has a light beam distributing area for distributing light received thereon to said second stereoscopic observation optical system, and said light beam distributing surface also has a non-distributing area for transmitting light received thereon to said first stereoscopic observation optical system.

4,640,589

MICROSCOPE ILLUMINATOR

William N. Reich, San Mateo, Calif., assignor to Spectrolyte, Inc., San Mateo, Calif.

Division of Ser. No. 464,961, Feb. 8, 1983, abandoned, which is a division of Ser. No. 405,253, Aug. 4, 1982, abandoned. This application Mar. 3, 1986, Ser. No. 836,713

Int. Cl.⁴ G02B 21/24

U.S. Cl. 350—523

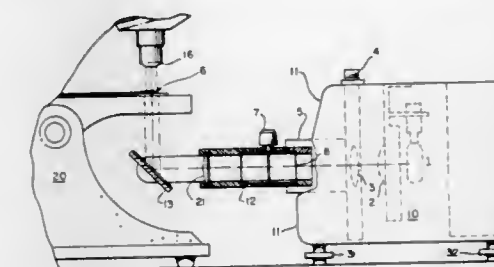
3 Claims

1. A microscope illuminator comprising:

- a point source of illumination including an incandescent bulb and means for increasing the intensity of illumination from said point source by varying the voltage applied to said point source of illumination;
- an aspheric lens capable of blocking infrared radiation from

said point source of illumination and directing the illumination from said point source along a predetermined optical path;

- a narrow band pass dichroic filter mounted for rotation about an axis perpendicular to the optical path of illumination to permit only a limited plurality of wavelengths of



radiation along the optical path and capable of transmitting a preselected plurality of wave lengths along the pathway; and means for adjustably directing the resulting radiation substantially normal to the pathway so as to be able to be directed onto and through a specimen to be observed in a position to be viewed by a microscope.

4,640,590

APPARATUS PROVIDING RAPID ADJUSTMENT OF A MIRROR

Erich Wunsch, Bad Liebenzell, Fed. Rep. of Germany, assignor to Efrudec GmbH, Fed. Rep. of Germany

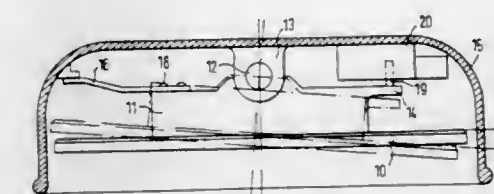
Filed Jun. 21, 1985, Ser. No. 747,359

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 3423520

Int. Cl.⁴ G02B 7/18, 5/08

U.S. Cl. 350—632

18 Claims



- 1. An apparatus providing rapid adjustment of a mirror which is pivotable about a vertical axis and disposed in a mirror housing, wherein said mirror is adjustable from an initial adjustment position by a preset pivot angle to a final adjustment position and automatically returnable to said initial adjustment position, said apparatus comprising: a mirror housing (15) having journal bearings (13) aligned on said vertical axis; an adjuster unit (11) having journals (12) aligned on said vertical axis and mounted in said journal bearings (13); a mirror mounted on said adjuster unit (11); a spring means (16) in force relation between said mirror housing (15) and a first side of said adjuster unit (11) displaced from said vertical axis; an actuator means (19) of said adjuster unit (11) at a second side of said adjuster unit displaced from said vertical axis opposite to said first side; a rotatable operating disk (21) having a contoured peripheral control curve and a drive pin (34) extending therefrom, said actuator means (19) maintained in contact with said contoured peripheral control curve by said force of said spring means (16); said contoured peripheral control curve defining a cycle comprising an angular initial position (25), a movement arc (26), a final adjustment position (27), a rest phase arc (28), and a return arc (30); a drive shaft (38) with a drive section (37)

extending therefrom and means for rotating said drive shaft in a direction of rotation (31), said drive shaft (38) coupled to said operating disk (21) by a clutch means coupling said drive section (37) to said drive pin (34), said clutch means providing a monodirectional link between said drive shaft (38) and said operating disk (21) in said direction of rotation (31) whereby said operating disk (21) is rotatable in said direction of rotation (31), causing said actuator means (19) to sequentially contact said movement arc (26), said rest phase arc (28) and said return arc (30) comprising one said cycle of said peripheral control curve and thereby providing adjustment of said mirror from said initial adjustment position through said preset pivot angle to a final adjustment position and back to said initial adjustment position.

4,640,591
SUPPORT MECHANISM FOR A MIRRORRED SURFACE
OR OTHER ARRANGEMENT

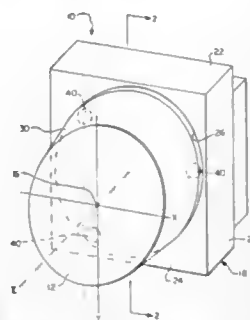
Ronald W. Cutburth, Tracy, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 8, 1985, Ser. No. 796,464

Int. Cl.⁴ G02B 7/18, 5/08

U.S. Cl. 350—632

10 Claims



1. A mechanism for supporting first means including a planer surface for movement relative to a vertical plane defined by particular intersecting x and y axes which extend horizontally and vertically, respectively, said mechanism comprising:

- second means including a plurality of segments of an annular surface which forms part of a sphere whose center defines the intersection of said x and y axes, said annular surface defining a z axis extending through the intersection of said x and y axes perpendicular to said vertical plane;
- third means connecting said planer surface including first means with said second means such that said planer surface is positionable within said vertical plane and is itself intersected by said z axis at a particular point thereon, said third means including bearing means disposed between said first means and said segments of said annular surface of said second means for allowing said first means to move in any direction on said annular surface segments including certain specific directions which allow said planer surface to pivot back and forth to a limited extent about both said x and y axes relative to said vertical plane; and
- fourth means interconnecting said first and second means and cooperating with said third means for limiting the movement of said first means to said certain specific directions and thereby limiting the movement of said planer surface to said back and forth pivotal movement about said x and y axes, whereby said particular point defined at the intersection of the z axis with said planer surface remains substantially fixed at the intersection of said x and y axes and within said vertical plane.

4,640,592
OPTICAL DISPLAY UTILIZING THERMALLY FORMED
BUBBLE IN A LIQUID CORE WAVEGUIDE

Yukuo Nishimura, Sagami-hara; Toshiaki Asano; Nobutoshi Mizusawa, both of Yokohama; Elgo Kawakami, Kawasaki; Masahiro Haruta, Funabashi; Takashi Noma, Tokyo; Hiroshi Takagi, Yokohama; Mitsunobu Nakazawa, and Kunitaka Ozawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

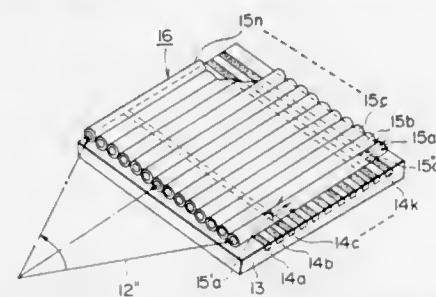
Filed Jan. 16, 1984, Ser. No. 570,810

Claims priority, application Japan, Jan. 22, 1983, 58-8873; Jan. 22, 1983, 58-8874; Jan. 22, 1983, 58-8875; Jan. 22, 1983, 58-8876

Int. Cl.⁴ G02B 6/20; G09G 3/04; G09F 13/00; F21V 7/04

U.S. Cl. 350—96.32

9 Claims



1. An optical device comprising an optical waveguide having, as a basic unit, a core layer of a liquid having a relatively high refractive index and a clad layer having a relatively low refractive index and covering said core layer, heat generating means for heating a part of said core layer to form a vapor bubble in said liquid of said core layer, said heat-generating means being positioned externally of said waveguide and including a plurality of elongated heating members crossing a longitudinal direction of said waveguide, means for selectively heating said heating members, said selective heating means being positioned externally of said waveguide, means for causing light to be incident on said waveguide along said longitudinal direction and cooling means for eliminating said vapor bubble.

3. An optical device comprising an optical waveguide panel having optical waveguide channels comprising core layers formed by filling a transparent liquid having a relatively high refractive index in parallel channels formed in a combined clad layer of a relatively low refractive index obtained by adhering a transparent flat clad layer having stripe-shaped grooves in a surface therein and a flat clad layer, heat-generating means for heating a part of said core layer to form a vapor bubble in said liquid of said core layer, said heat-generating means being positioned externally of said waveguide channels and including a plurality of elongated heating members crossing a longitudinal direction of said waveguide channels, means for selectively heating said heating members, said selective heating means being positioned externally of said waveguide channels, means for causing light to be incident on said waveguide channel along said longitudinal direction and cooling means for eliminating said vapor bubble.

4,640,593
PROGRESSIVE MULTIFOCAL OPHTHALMIC LENSES
Toshihide Shinohara, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1983, Ser. No. 534,211

Claims priority, application Japan, Sep. 29, 1982, 57-170627

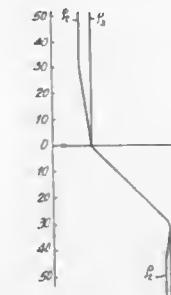
Int. Cl.⁴ G02C 7/06

U.S. Cl. 351—169

20 Claims

1. A progressive multifocal ophthalmic lens comprising a refractive surface divided into a far vision viewing zone, an intermediate vision viewing zone and a near vision viewing zone, a substantially vertical principal meridian curve, an optical center of said far vision viewing zone being at the lower

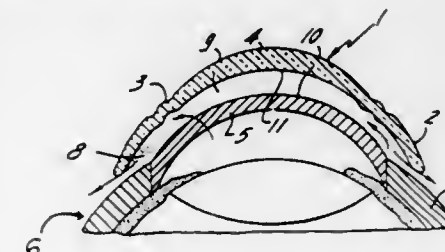
end of said principal meridian curve in said far vision viewing zone, and an optical center of said near vision viewing zone being at the upper end of said principal meridian curve in said near vision viewing zone, the curvature of said principal meridian curve changing between the optical center of said far vision viewing zone and the optical center of said near vision viewing zone in accordance with a prescribed law to define the



additional power of said lens, the difference (Δp) between the curvature (p_t) along said principal meridian curve and the curvature (p_s) along the vertical direction with respect to said principal meridian curve at each point on said principal meridian curve, ($\Delta p = |p_s - p_t|$) is not zero along at least a portion of said principal meridian curve in at least one of said far vision viewing zone and said near vision viewing zone.

4,640,594
TEAR PUMP CONTACT LENS
Richard Berger, P.O. Box 189, Woodbury, N.Y. 11797
Continuation-in-part of Ser. No. 337,725, Jan. 7, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 649,983
Int. Cl.⁴ G02C 7/04
U.S. Cl. 351—160 R

4 Claims

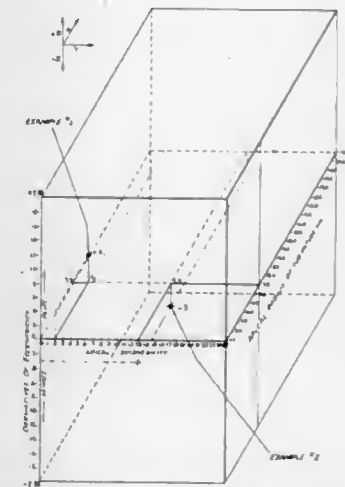


1. A semi-rigid polymeric corneal contact lens made to float upon and adhere to the cornea comprising a transparent, non-contacting, non-distorting central optical lens zone adapted to conform with the cornea and float on tear fluid, said central optical zone having an optical center, and inner and outer surface with the inner surface adjacent the tear fluid, and an intermediate reticulated zone of the same material as the central zone and of substantially uniform thickness but with at least one concave and one convex surface in relation to the cornea which is in the shape of a bellows to provide limited axial movement of the central zone whenever an eyelid blink transmits a force to the central zone which displaces the intermediate zone in an axial inward direction with the cornea of the eye, without actually touching the cornea, to effect out flow of tear fluid from a fluid chamber, between the cornea and the eye, and at the completion of the blink to restore the central zone to an initial equilibrium position thereby creating a pressure differential to draw fresh tear fluid back into the tear chamber.

171-151 O.G.-87-9

4,640,595
ASPHERIC CONTACT LENS
David Volk, 3336 Kersdale Rd., Pepper Pike, Ohio 44124
Filed May 2, 1984, Ser. No. 606,140
Int. Cl.⁴ G02C 7/04, 7/06
U.S. Cl. 351—160 R

24 Claims



1. A contact lens made of transparent homogeneous optical material and of a diameter between 7 and 14 mm to fit the human eye, having at least one of its surfaces a novel aspheric surface of revolution with an apical unibilical point at which the derivative of curvature vanishes and wherein said surface decreases continuously and regularly in curvature along a meridian from its apex to its peripheral edge and wherein said surface varies continuously and regularly in eccentricity from its apex to its periphery.

4,640,596
OBJECTIVE REFRACTOR FOR THE EYE
William E. Humphrey, San Leandro, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.
Continuation-in-part of Ser. No. 202,536, Oct. 31, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,607
Int. Cl.⁴ A61B 3/10
U.S. Cl. 351—211

8 Claims



1. Apparatus for testing the eye along an optical axis comprising in combination:
a first linearly aligned knife-edge at first angle with respect to said optical axis;
a second linearly aligned knife-edge at an angle with respect to said first knife-edge;
means for illuminating each of said knife-edges;
means for projecting an image of said illuminated knife-edges to the eye;
optical means between said eye and knife-edges for providing a prescription including variable spherical input and variable cylindrical input between said eye and knife-edges;
a detector at the opposite end of said optical axis having segments for receiving light from said eye, said detector positioned to receive the light over said knife-edges; and
means operatively connected between said detector seg-

ments and said optical means for varying the prescription between said eye and detector.

4,640,597

MICRO-READER

Takeshi Okano, Nishinomiya; Sadaaki Nakaoka, Osaka, and Saichiro Ohashi, Otokuni, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

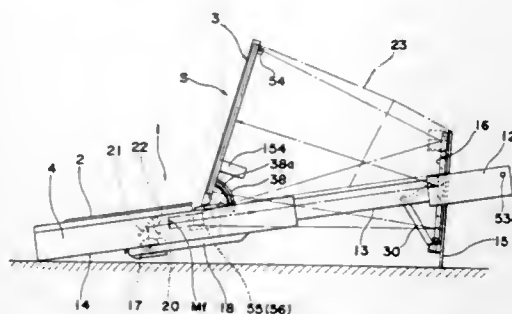
Filed Feb. 11, 1985, Ser. No. 700,157

Claims priority, application Japan, Feb. 10, 1984, 59-23888; Aug. 28, 1984, 59-131151[U]; Aug. 28, 1984, 59-131154[U]; Aug. 28, 1984, 59-131155[U]; Aug. 28, 1984, 59-131159[U]

Int. Cl.⁴ G03B 21/28

U.S. Cl. 353—79

6 Claims



1. A micro-reader in which an optical system is utilized for projecting on a screen a magnified reproduction of an image on a microfilm, said micro-reader comprising:

- a generally rectangular box-like, flattened, casing including opposed side walls;
- a moveable member supported by the casing for movement between longitudinally retracted and extended positions in a direction parallel to the opposed side walls of the casing;
- a viewing screen mounted on and supported by the casing for movement between folded and raised positions;
- an optical system for projecting the image onto the screen;
- a lamp for illuminating the image on the screen; and
- a reflecting mirror member supported by said moveable member for movement between a laid-down position and an upright position facing said screen for reflecting the image-wise light from the optical system towards the screen when in the upright position and, when at the same time, the screen is held in the erected position, whereby; when the micro-reader is not in use, the screen and the mirror member are held in the retracted, folded and laid-down positions, respectively, said screen and said mirror member constitute cover members for covering the top and bottom of a portion of the space between the casing and the moveable member, but when the micro-reader is in use, the screen and the mirror member are held in the extended raised and upright positions, respectively, and the mirror member confronts the screen at a predetermined angle while lying in a plane different from the plane which is occupied by the mirror member when in the laid-down position.

4,640,598

POWER WINDER ATTACHMENT FOR A CAMERA
Taichi Yoshida, 2-4-8-903, Otsuka, Bunkyo-ku, Tokyo, Japan

Filed Nov. 15, 1985, Ser. No. 798,389

Int. Cl.⁴ G03B 1/12

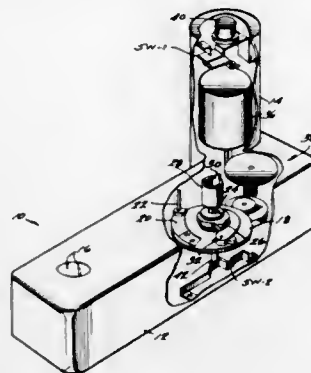
U.S. Cl. 354—173.1

10 Claims

1. A power winder attachment adapted to be secured to a camera comprising:

- a housing;
- a battery-driven motor located within the housing;
- support means journaled for rotation within said housing;

means for connecting the motor to said support means so as to rotate the support means during operation of the motor; a leaf spring secured at one of its ends to said support means; a shutter-release pin slidably retained by said housing and positioned so as to be engaged by the opposite end of the leaf spring as the spring is moved during rotation of the support means, said engagement between the spring and the pin causing the pin to slide outwardly from the housing;



a film winder mechanism journaled within said housing; and winder actuator means joined to said support means for engaging the winder mechanism during rotation of the support means to pivot the winder mechanism in one direction from a first position to a second position and then to pivot the winder mechanism in the opposite direction to return the winder mechanism to said first position.

4,640,599

METHOD AND APPARATUS FOR NEUTRALIZING RESIDUAL CHARGE ON A PHOTOCONDUCTIVE SURFACE

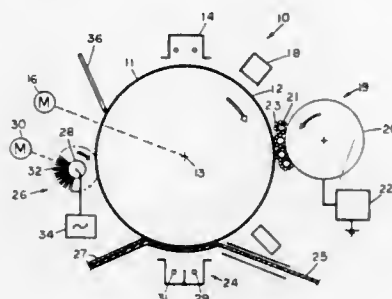
George J. Doutney, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 15, 1985, Ser. No. 787,347

Int. Cl.⁴ G03G 15/00

U.S. Cl. 355—3 CH

7 Claims



1. In a device for discharging residual charge on a photoconductive surface of a reversal development type printer, the combination comprising: a brush in contact with the photoconductive surface, means for rotating said brush, means for conveying said photoconductive surface past said brush, and means for applying an AC potential to said brush.

4,640,600

FIXING DEVICE

Hiromitsu Hirabayashi, and Masaaki Sakurai, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

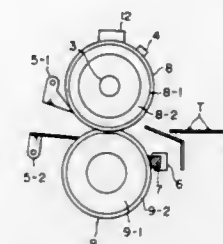
Filed Oct. 12, 1983, Ser. No. 541,071

Claims priority, application Japan, Oct. 15, 1982, 57-181815; Oct. 20, 1982, 57-183995; Jan. 8, 1983, 58-1561; Jul. 6, 1983, 58-123706; Jul. 8, 1983, 58-125075

Int. Cl.⁴ G03G 15/20

U.S. Cl. 355—3 FU

40 Claims



1. A fixing device comprising:

- a first rotatable member and a second rotatable member for gripping and transporting a recording material to fix a toner image having a predetermined electric polarity onto the recording material, wherein said first rotatable member is positioned to be contactable with a face of the recording material bearing the toner image, and said second rotatable member is positioned to be contactable with a back face of the recording material, and wherein said first rotatable member and said second rotatable member each have an electrically insulating surface layer; and electrification agent applying means for applying to said second rotatable member an electrification agent which causes charging of said second rotatable member to an electric polarity opposite to the electric polarity of the toner image through a friction between the recording material and said second rotatable member, whereby the electric charge of said second rotatable member attracts the toner image from offsetting to said first rotatable member.

4,640,601

PATENT IMAGE REPRODUCING ELECTROPHOTOGRAPHIC MACHINE

Yutaka Deguchi, Himeji, and Yasuyuki Tsuchida, Hyogo, both of Japan, assignors to Sanyo Electric Co., Ltd., Japan

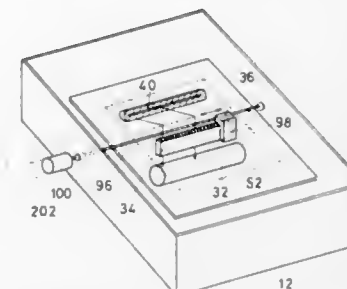
Filed Dec. 19, 1984, Ser. No. 683,791

Claims priority, application Japan, Dec. 20, 1983, 58-241203; Feb. 6, 1984, 59-20182; Feb. 6, 1984, 59-20183; Feb. 6, 1984, 59-20184; Feb. 7, 1984, 59-20956

Int. Cl.⁴ G03G 15/00

U.S. Cl. 355—3 R

42 Claims



1. An electrophotographic copying machine comprising: a photosensitive member,

charging means for charging said photosensitive member, a first light source for exposing an original copy, first electrostatic latent image forming means for forming an original copy image formed by said first light source on said photosensitive member as a first electrostatic latent image, additional information providing means for providing an additional information other than said original copy, displaying means for displaying said additional information, a second light source for forming an image of said additional information, and second electrostatic latent image forming means for forming said additional information image formed by said second light source on said photosensitive member as a second electrostatic latent image, said photosensitive member including a material sensitive to both said first and second light sources, further developing means for developing said first and second electrostatic latent images formed on said photosensitive member by toner as a toner image, and transferring means for transferring said toner image formed by said developing means on paper.

4,640,602

SHEET FEEDER-STACKER

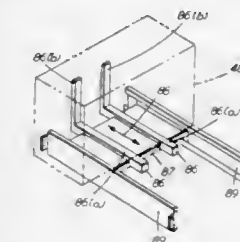
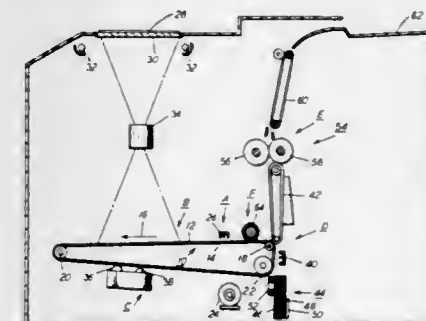
Thomas P. Redding, Penfield, and Laurence S. Barker, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1984, Ser. No. 624,439

Int. Cl.⁴ G03G 15/00, 21/00

U.S. Cl. 355—3 SH

5 Claims

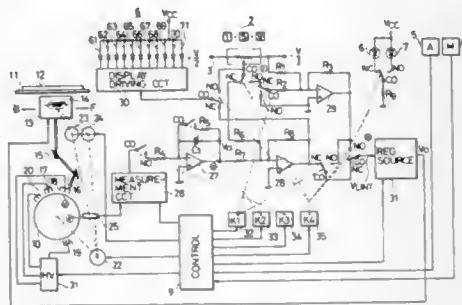


1. An electrophotographic printing machine of the type having a toner image formed on a photoconductive belt wherein successive flexible sheets advance to a transfer station for receiving toner images thereat, wherein the improvement includes:

- means for holding a stack of sheets in a substantially vertical orientation;
- means for feeding successive, outermost sheets from one side of the stack in said holding means in a substantially vertical direction opposed to the direction of the gravitational force exerted thereon;
- means, arranged to receive successive sheets from said feed-

ing means, for transporting the sheets to the transfer station for receiving the toner image thereat;
at least one upright member having a planar surface engaging the outermost sheet of the other side of the stack in said holding means; and
means for advancing said upright member toward said feeding means to translate the stack with respect to said holding means in a substantially horizontal direction toward said feeding means so as to position successive, outermost sheets of said one side of the stack in said holding means in feeding relationship therewith, said holding means being arranged to move from an operative location in which said advancing means positions the outermost sheet of said one side of the stack in feeding relationship with said feeding means to an inoperative location spaced from said advancing means and said member for loading a new stack of flexible sheets therein.

4,640,603
COPYING APPARATUS
Toshio Honma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1983, Ser. No. 532,144
Claims priority, application Japan, Sep. 24, 1982, 164979; Sep. 24, 1982, 164980
Int. Cl.⁴ G03G 15/00
U.S. Cl. 355—3 R 10 Claims

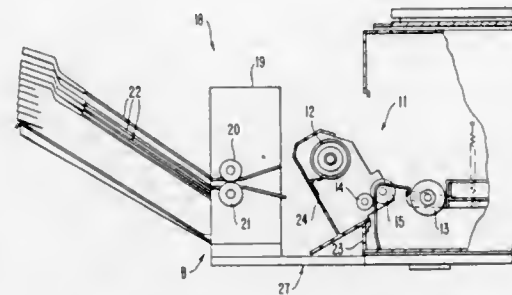


1. A copying apparatus comprising:
image forming means for forming a copy image of an original on a recording member;
setting means for manually setting the copy density of the image to be formed by said image forming means;
detecting means for detecting the density of said original;
selecting means for selecting either a first mode in which said copy density is set by said setting means without regard to the density of the original or a second mode in which said copy density is set in response to an output of said detecting means; and
adjusting means for permitting said setting means to adjust said copy density, which has been set in response to the output of said detecting means when the second mode is selected, within a predetermined range without releasing the second mode.

4,640,604
ELECTROSTATIC PHOTOGRAPHIC COPYING MACHINE PROVIDED WITH A MOVABLE SORTER
Nobuhiko Kozuka; Shigeo Koyama, both of Osaka, and Atsushi Kano, Amagasaki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Mar. 17, 1983, Ser. No. 476,377
Claims priority, application Japan, Apr. 4, 1982, 57-49165[U]
Int. Cl.⁴ G03G 15/00, 21/00
U.S. Cl. 355—3 R 4 Claims

1. In an electrostatic photographic copying machine of the type including a machine body, means for electrostatically transferring copied images to sheets of copying paper moved in a feed direction, means for fixing said images on said sheets

and discharging said sheets in said direction, and a sorter mounted on said body for receiving and sorting said discharged sheets, the improvement comprising:
means for mounting said sorter on said body such that the entire said sorter is selectively movable, in said direction of discharge of said sheets, between a first position mechanically connected to said body, whereat said sorter is adjacent said body and said fixing means for receipt therefrom of said discharged sheets, and a second position mechanically connected to said body, whereat said entire sorter is spaced in said direction from said body and said fixing means, with a space between said sorter and said

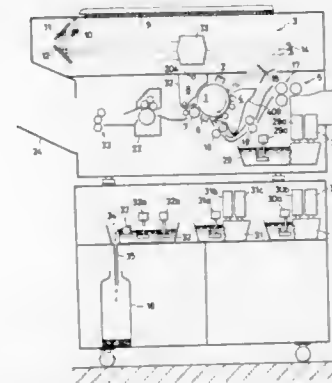


fixing means sufficiently large to enable removal of any sheets jammed in said sorter or said fixing means, said mounting means comprising link supporting members fixed to opposite sides of a lower portion of said body and extending therefrom in said direction, pairs of parallel links connecting said sorter to said link supporting member, each said link having a lower first end pivotally connected to a respective said link supporting member and an upper second member pivotally connected to a respective side of said sorter, whereby said sorter is movable between said first and second positions by pivoting said links about said lower first ends thereof.

4,640,605
APPARATUS FOR FORMING MULTICOLOR ELECTROPHOTOGRAPHIC IMAGES THROUGH WET-TYPE DEVELOPING PROCESS
Kenzo Ariyama, Kanagawa; Tsuneo Kurotori, Tokyo, and Manabu Mochizuki, Kanagawa, all of Japan, assignors to Ricoh Company, Ltd., Japan
Filed Oct. 2, 1985, Ser. No. 783,025
Claims priority, application Japan, Oct. 2, 1984, 59-149485[U]; Nov. 9, 1984, 59-236229; Nov. 9, 1984, 59-236230; Nov. 9, 1984, 59-236231; Dec. 24, 1984, 59-272588
Int. Cl.⁴ G03G 15/01, 15/06
U.S. Cl. 355—4 49 Claims

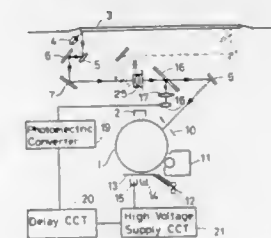
1. An apparatus for forming multicolor electrophotographic images through a wet-type developing process, comprising:
a latent image carrier rotatable in one direction about its own axis;
charging means for charging said latent image carrier;
an optical system for forming an electrostatic latent image on said latent image carrier;
a rotatable development body disposed adjacent to said latent image carrier and rotatable in one direction for supplying a developer to said latent image carrier to visualize a latent image formed on the latent image carrier;
a development housing in which said rotatable development body is rotatably accommodated;
a plurality of developer tanks for storing developers of different colors, respectively;
developer supply means for selectively supplying the developer from one of said developer tanks to said development housing and for returning the developer having developed the image to said one of the developer tanks;

transfer means for transferring the visible image from said latent image carrier to an image transfer sheet;
a sheet feeder device for feeding the image transfer sheet to said latent image carrier;



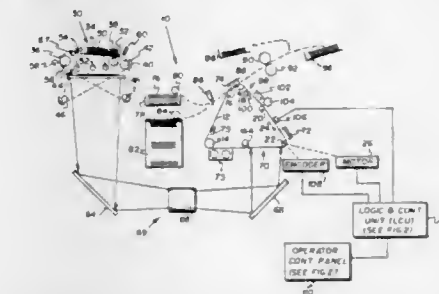
a first cleaning device for removing the residual developer from said latent image carrier after the visible image has been transferred therefrom; and
a second cleaning device for supplying a cleaning solution to said development housing to clean the development housing and said rotatable development body.

4,640,606
CORONA DISCHARGER FOR SEPARATING COPY PAPER FROM PHOTORECEPTOR IN ELECTROPHOTOGRAPHIC COPYING MACHINE
Kiyoshi Inamoto, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 7, 1984, Ser. No. 577,800
Claims priority, application Japan, Feb. 15, 1983, 58-24309
Int. Cl.⁴ G03G 15/14
U.S. Cl. 355—14 TR 5 Claims



1. An electrophotographic copying machine comprising:
photoreceptor means for forming a latent image thereon corresponding to an image of a document based on light reflected by said document;
transfer means for transferring said latent image onto a copy paper while said copy paper is close to the photoreceptor; and
separation corona discharger means actuated by a selected voltage for causing a corona discharge to said copy paper so that said copy paper is permitted to electrostatically separate from said photoreceptor;
photodetector means for sensing the amount of light reflected from said document; and
control means responsive to the photodetector means for applying the selected voltage to said separation corona discharge means, the selected voltage being proportional to the amount of light reflected from said document.

4,640,607
SIMPLEX TO DUPLEX COPIER APPARATUS
Richard L. Bray, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 12, 1984, Ser. No. 680,707
Int. Cl.⁴ G03G 15/00
U.S. Cl. 355—14 R 6 Claims

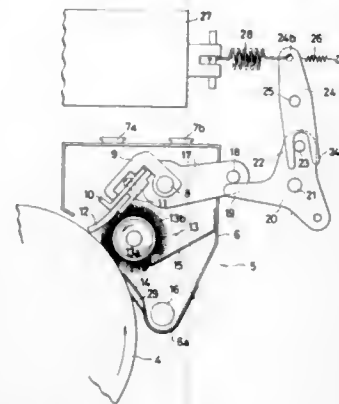


1. Apparatus for copying a set of simplex originals to produce a set of duplex copies having subsets in which the first page of each subset is on the front side of a copy comprising:
producing means for producing images of originals, said producing means including an exposure position;
recirculating means for receiving a set of simplex originals at a receiving position and for sequentially recirculating individual originals from said receiving position to said exposure position and then back to said receiving position;
supply means for selectively supplying copy sheets to receive images from said producing means; and
control means operable (1) in a setup mode for controlling said circulating means to circulate originals one at a time under operator control, said control means including operator actuable means for designating individual simplex originals as the first pages of subsets of copies and (2) in a producing mode for controlling (a) said circulating means to circulate said simplex originals to said exposing position, (b) said producing means to produce sequential images of said originals, and (c) said supply means to supply to said producing means copy sheets to receive images of simplex originals on the front and back sides of said copy sheets with the designated first page of each subset being received on the front side of a copy sheet.

4,640,608
CLEANING METHOD FOR USE IN ELECTROPHOTOGRAPHY
Toshiaki Higaya; Masaaki Ogura, both of Kanagawa; Takato Yano, Saitama; Kiyozo Hashizume, Tokyo; Toshiyuki Ogawa, and Nachio Seko, both of Kanagawa, all of Japan, assignors to Ricoh Co., Ltd., Japan
Continuation of Ser. No. 31,415, Apr. 19, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 250,929
Claims priority, application Japan, May 11, 1978, 53-55957
Int. Cl.⁴ G03G 21/00
U.S. Cl. 355—15 2 Claims

1. In a method for cleaning residual toner particles remaining on the surface of a photoconductor movable cyclically in an electrophotographic copying apparatus, comprising:
bringing a cleaning blade into pressure contact with said photoconductor by actuating a solenoid connected resiliently to a lever to pivot said lever and thereby urge said blade against said photoconductor;
energizing the drive means for said photoconductor a first time period after actuation of said solenoid;
de-energizing the drive means for said photoconductor upon completion of a copying cycle;
removing said cleaning blade from contact with said photoconductor by actuation of said solenoid a second time period after de-energizing said drive means;
removing toner collected by the blade by a brush roller

rotated adjacent said blade in a direction whereby its peripheral surface moves opposite the movement of said photoconductor, said cleaning blade and brush roller



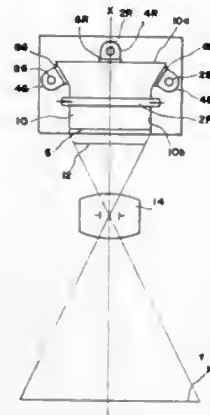
being mounted in a housing having a seal member riding along said photoconductor, said brush roller being rotated adjacent said seal member to clean toner therefrom.

4,640,609
LIGHT SOURCE FOR A COLOR ENLARGEMENT
Hitooshi Yasumoto, Toedabayashi, and Tetsuyuki Tanimoto, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1984, Ser. No. 635,814
Claims priority, application Japan, Aug. 5, 1983, 58-122436[U]

Int. Cl.⁴ G03B 27/54
U.S. Cl. 355—37

16 Claims



1. A light source device for a color enlarger which includes a projection lens having an optical axis, comprising:
means for emitting red light toward a film to be enlarged, said red light emitting means including at least a linear light source located perpendicularly to said optical axis;
means for emitting blue light toward said film, said blue light emitting means including at least a linear light source;
means for emitting green light toward said film, said green light emitting means including at least a linear light source, the linear light source of said green light emitting means and the linear light source of said blue light emitting means being arranged to be symmetrical with respect to said optical axis and to be in parallel with each other; and
means for illuminating said film with a substantially constant brightness having a linear light source which is located, in a plane perpendicularly to the optical axis, perpendicu-

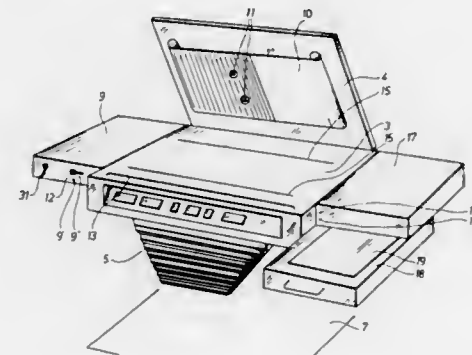
larly to the linear light source of said red light emitting means.

4,640,610
REPRODUCTION CAMERA
Vagn N. Rasmussen, Gentofte, and Finn Hongaard, Copenhagen, both of Denmark, assignors to Eskofot A/S, Ballerup, Denmark

Filed May 9, 1985, Ser. No. 732,410
Claims priority, application Denmark, Sep. 3, 1984, 4214/84
Int. Cl.⁴ G03B 27/60

U.S. Cl. 355—73

5 Claims



1. A reproduction camera comprising: a supporting frame with an original plane, an objective plane and a picture plane, said planes being mutually displaceable toward and away from each other; a delivery roll adjacent one end of the picture plane for holding a roll of light sensitive material; a first pair of rollers for advancing light sensitive material from the delivery roll toward the picture plane; means for cutting the light sensitive material when a desired length thereof has been delivered by said rollers; a developing container adjacent the end of the picture plane which is opposite the delivery roll; and an opaque conveyor band overlying the picture plane and serving as a flexible cover for transporting the light sensitive material to the picture plane and thence to the developing container after the light sensitive material has been cut by said cutting means, said conveyor band being provided with transverse grooves which can be evacuated and said conveyor band including at least one suction cup facing the picture plane.

4,640,611
COPYING METHOD FOR BOOKBINDING
Eisbu Ohdake, Tomohiro Oikawa, both of Yokohama; Kenichi Shimizu, Kawasaki; Takashi Seto, Ayase; Masahiro Ishikawa, Hiratsuka; Shigeru Suzuki, Yokohama, and Izumi Tagoku, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,428
Claims priority, application Japan, May 30, 1984, 59-110090; May 31, 1984, 59-111601; May 31, 1984, 59-111602; Jun. 26, 1984, 59-131672

Int. Cl.⁴ G03B 27/32

U.S. Cl. 355—77

7 Claims

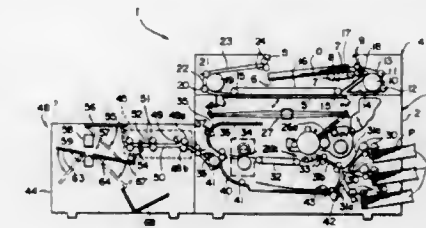
1. A copying method for bookbinding which copies documents on papers each being double the size of the documents by means of a copier, comprising the steps of:
(a) setting up a relation

$$\frac{N}{4} \leq I < \frac{N}{4} + 1$$

where N is a total number of pages of documents and I is a number of papers necessary for copying the N documents pages, and, considering that a front face and a back

face of one half of the paper are paged in this sequence, duplicating a page 2i-1 of the documents on a front face of one half of the i-th paper and a page 2i of the documents on a back face of the i-th paper;
(b) copying a page 2I of the documents on a back face of one half of a last paper and a page 2I+1 of the documents on a back face of the other half of the last paper; and

mask as occasion demands, and exposing the unnecessary area on said photosensitive plate, and moving said light shielding mask and said printing frame to the predetermined positions to print repeatedly in response to the number of duplicate printing in case of the multiduplicate printing.



(c) considering that a back face and a front face of the other half of the paper are paged in this sequence toward the first paper, duplicating a page 4I-2I+1 on a back face of the other half of the i-th paper and a page 4I-2i+2 of the documents on a front face of the i-th paper.

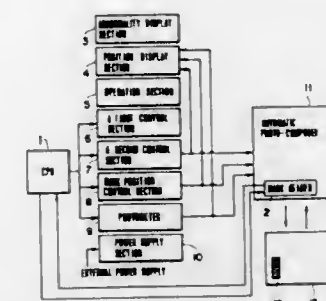
4,640,612
METHOD AND APPARATUS FOR CONTROLLING CONTINUOUSLY OPERATION OF AUTOMATIC PHOTO-COMPOSER

Yuki Watanabe, and Hiroshi Tozaki, both of Tokyo, Japan, assignors to Hosen Printing Co., Ltd., Tokyo, Japan
Filed Oct. 31, 1985, Ser. No. 793,559

Claims priority, application Japan, Nov. 24, 1984, 59-246991
Int. Cl.⁴ G03B 27/20

U.S. Cl. 355—87

4 Claims



1. A method of controlling the operation of an automatic photo-composer continuously and automatically, the steps comprising:

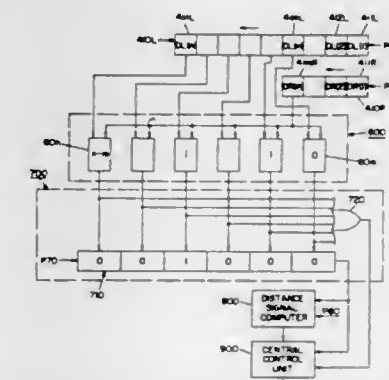
attaching a mark which indicates necessary processes to be executed to a photographic original plate in said photo-composer,
reading the contents of said mark by a mark reader provided in said photo-composer to thereby discriminate the contents of process necessary for said photographic original plate,
moving a photosensitive plate to a predetermined position, moving a printing frame to which said photographic original plate is contacted to a predetermined position,
controlling the positions of four, that is, upper, lower, right and left light shielding films provided in said printing frame to automatically form a light shielding mask necessary for said photographic original plate,
printing said photosensitive plate by a predetermined amount of exposure,
controlling the positions of said light shielding films to form a mask for exposing the unnecessary area on said photosensitive plate simultaneously with said light shielding

4,640,613
IMAGE DATA COMPARISON CIRCUIT FOR RANGEFINDERS
Shotaro Yokoyama, and Takashi Nishibe, both of Kanagawa, Japan, assignors to Fuji Electric Corporate Research and Development, Ltd. and Fuji Electric Company, Ltd., both of Kanagawa, Japan

Filed May 31, 1984, Ser. No. 615,880
Claims priority, application Japan, Jun. 21, 1983, 58-111173
Int. Cl.⁴ G01C 3/00, 5/00; G03B 3/00

U.S. Cl. 356—1

2 Claims



1. An image data comparison circuit for a rangefinder wherein two digital image signal trains from corresponding optical sensor arrays are compared while being shifted relatively to each other so that the distance to an object can be determined from the number of shifts between the digital image signal trains at the time the digital image signal trains have maximum coincidence, said data comparison circuit comprising a pair of shift registers for storing image data items from the two digital image trains, respectively, at least one of the shift registers being arranged to transmit stored image data items in parallel, coincidence detector means responsive to receipt of image data items transmitted from the shift registers, for detecting data coincidence of image data items from the two image signal trains, simultaneously, for a plurality of said relative shifts of the image data items, and counter means for counting output signals of the coincidence detector means indicative of results of image data coincidence detection by the coincidence detector means.

4,640,614
TESTING SAMPLES
David Roberts, Maple Durham, Near Reading, and Michael R. Williams, Stokenchurch, both of United Kingdom, assignors to Ranks Hovis McDougall plc, United Kingdom

Filed Dec. 7, 1984, Ser. No. 679,570
Claims priority, application United Kingdom, Dec. 7, 1983, 8332675

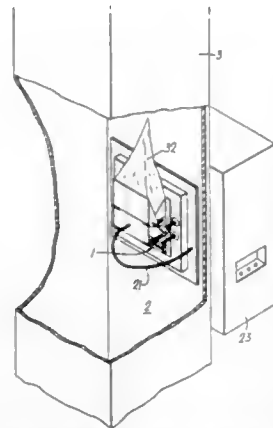
Int. Cl.⁴ G01N 21/01

U.S. Cl. 356—36

2 Claims

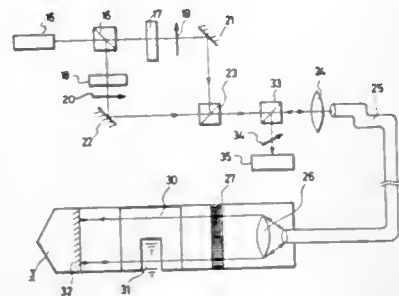
1. A method of testing a sample of particulate material which includes permitting a continuous stream of the material to fall freely through a vertical chute having at least one sidewall and a given horizontal cross-sectional area, positioning in said vertical chute a trap having vertical wall members defining a trap chamber having a horizontal cross-sectional area much smaller than the horizontal cross-sectional area of said chute,

said trap chamber having a top and a bottom which allow a portion of said stream of particulate material to fall through said trap chamber when both said top and bottom are open, one of said vertical wall members of said trap being a portion of said one side wall of said chute and having a window made of transparent material, said trap including a top closure member movable relative to said vertical wall members between an open position at which the top of said chamber is open to receive material from said stream and a closed position at which the top of said chamber is closed to prevent the entry of material from said stream, and said trap also including a bottom closure member movable relative to said vertical wall members between an open position at which the bottom of said chamber



is open to permit material to fall from said chamber into said stream and a closed position at which the bottom of said chamber is closed to prevent material from falling from said chamber, moving said top closure member to its closed position and said bottom closure member to its open position, then purging said trap chamber by flowing air into said trap chamber to loosen remnant material and permit it to fall through the now open bottom of said trap chamber, then terminating said flow of air and thereafter moving said bottom closure member to its closed position and said top closure member to its open position and permitting a sample mass of material to accumulate in said trap chamber, and then testing said sample mass through said window by instrumental means located outside of said chute.

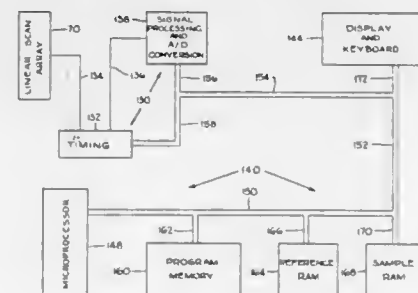
4,640,615
LIQUID REFRACTOMETER
Issei Sasaki, 15-402, Hanakawa-Cyuo-Danchi, 3-4, Hanakawa-kita 3-chome, Ishikari-machi, Ishikari-gun, Hokkaido, Japan, assignor to Issei Sasaki and Seiko Instruments & Electronics Ltd., both of Tokyo, Japan, a part interest
Filed Oct. 15, 1984, Ser. No. 660,923
Claims priority, application Japan, Oct. 20, 1983, 58-197093
Int. Cl.⁴ G01N 21/41
U.S. Cl. 356—130 27 Claims



1. A liquid refractometer comprising: a light source unit for generating a polarized mixed light composed of two coherent

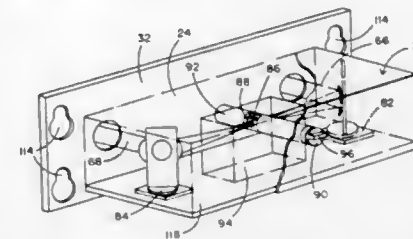
light waves that have been polarized in directions crossing each other at right angles; a probe unit having a sample holding portion for holding a liquid sample, a reference portion, polarization separation means for separating said polarized mixed light back to the two polarized light waves and for propagating one of the two waves through said sample holding portion and propagating the other of the two waves through said reference portion, and means for re-mixing the two waves after propagation thereof through said sample holding portion and said reference portion; a detection unit for effecting measurement of the refractive index difference between the liquid sample and the reference portion upon receiving the re-mixed light; and light guide means for optically connecting said light source, probe unit and detection unit.

4,640,616
AUTOMATIC REFRACTOMETER
John K. Michalik, Sloan, N.Y., assignor to The Cambridge Instrument Company plc, Cambridge, England
Filed Dec. 6, 1984, Ser. No. 678,932
Int. Cl.⁴ G01N 21/43
U.S. Cl. 356—136 23 Claims



1. An automatic refractometer comprising:
 - (a) a linear scanned array comprising a plurality of photoelectric elements, each element providing an output pulse during a scan and the amplitude of each pulse being determined by the amount of illumination of the corresponding element by incident light;
 - (b) optical means for directing light onto said array, the particular photoelectric elements of said array which are illuminated by said light being determined by the index of refraction of a light transmitting substance placed in operative association with said optical means;
 - (c) means for converting the signals from said linear scanned array into digital signals containing information as to the amplitudes of said signals from said array;
 - (d) digital processing circuit means for storing respective digital signals from reference and sample substances placed in operative association with said optical means and for computing the index of refraction of the sample substance by means of a comparison of the stored reference and sample signal information, said digital processing circuit means including means for matching reference curve data and sample curve data and searching for the critical angle of total reflection indicated by rapidly increasing amplitude of said signals from said array resulting from rapidly increasing light intensity; and
 - (e) means for providing a read out of the result computed by said digital processing circuit means.

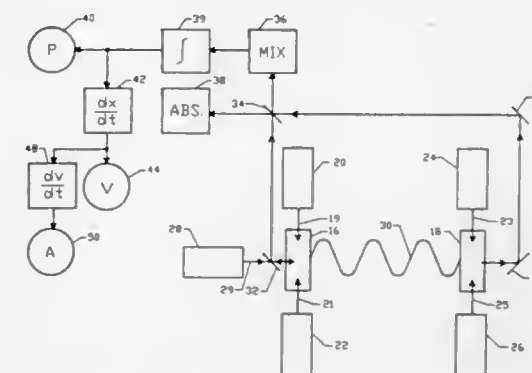
4,640,617
SPECTROMETERS HAVING PURGE RETENTION DURING SAMPLE LOADING
Norman S. Hughes, San Clemente, and Walter M. Doyle, Laguna Beach, both of Calif., assignors to Laser Precision Corporation, Utica, N.Y.
Filed Feb. 28, 1985, Ser. No. 707,022
Int. Cl.⁴ G01N 21/13
U.S. Cl. 356—326 20 Claims



1. In a spectrometer having a wall-enclosed body space, a readily accessible wall-enclosed sample space wherein sample illumination occurs, and means for maintaining a non-atmospheric gas purge in both of the enclosed spaces, purge retention apparatus which avoids substantial purge loss during sample insertion into, and removal from, the sample space comprising:

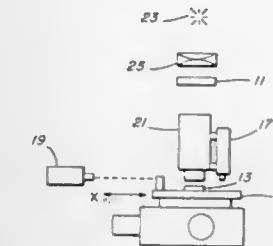
- a hollow guiding member which extends from the exterior into the interior of the sample space beyond the sample-illuminating position and which is secured in position; and
- a sample-carrying member which is insertable into the interior of the hollow guiding member to advance the sample toward the sample-illuminating position, and which has a close exterior fit into the guiding member, and a generally closed interior construction, in order to substantially block flow of atmosphere into the gas purged interior of the sample and spectrometer spaces.

4,640,618
PHASE CONJUGATE RELATIVE POSITION SENSOR
John M. Tracy; Pochi A. Yeh, both of Thousand Oaks, and Mohsen Khoshnevisan, Newbury Park, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 3, 1983, Ser. No. 548,585
Int. Cl.⁴ G01J 3/36, 13/00, 15/00
U.S. Cl. 356—345 15 Claims



1. A phase conjugate relative position sensor, comprising: an optical resonator, including a pair of opposed phase conjugate reflectors; a source of electromagnetic energy for initiating a standing electromagnetic wave in said resonator; and a detector for measuring relative movement between said resonator and said standing wave.

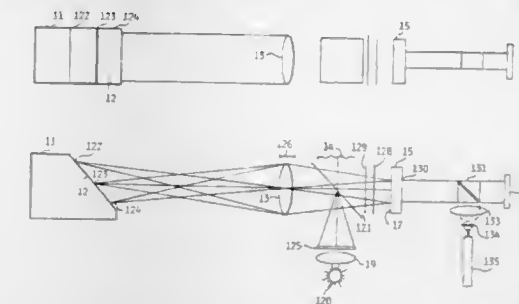
4,640,619
MICROLITHOGRAPHIC CALIBRATION SCHEME
Karl W. Edmark, III, Seattle, Wash., assignor to GCA Corporation, Andover, Mass.
Filed Mar. 13, 1985, Ser. No. 711,587
Int. Cl.⁴ C01B 11/00
U.S. Cl. 356—372 2 Claims



1. In a microlithographic system for optically projecting circuit patterns on semiconductor wafers in which alignment between successive exposures is provided by means of a microscope mounted to one side of the optical projection column, there being a metered stage for transporting a wafer between the microscope and the optical projection column, the method of correcting the the baseline vector between the projection column and the microscope, which method comprises:

- placing, on said stage, a wafer with a light sensitive coating;
- transporting said wafer to said column using an appropriate baseline vector for controlling movement of said stage;
- exposing said wafer from a reticle which includes pattern reference markings to produce a visible latent image;
- without removing said wafer from said stage, transporting said wafer to said microscope;
- by observing, with said microscope, the latent image on said film, measuring the actual stage movement required to align the latent image of said fiducial markings on said wafer with the microscope; and
- correcting said baseline vector based on said actual measurement.

4,640,620
ARRANGEMENT FOR RAPID DEPTH MEASUREMENT USING LENS FOCUSING
Richard Schmidt, Huntington, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.
Filed Dec. 29, 1983, Ser. No. 566,688
Int. Cl.⁴ G01B 11/24
U.S. Cl. 356—376 6 Claims



1. A method for simultaneously acquiring the three-dimensional co-ordinates relative to a sensor of at least two spatially separated points on a surface that may be devoid of detail, comprising the steps of: projecting a pattern of light with a projector from a light source; imaging reflected light from said pattern with a lens onto a light-sensitive detector array; focusing said image sharply by said lens within a narrow object plane; calibrating the image on said detector array for each

unique location of the said sharply focused narrow object plane; storing calibration data from said calibration in a memory; adjusting said object plane focal distance with said lens to intersect the surface of an object to be measured at an intersection; said intersection containing at least two spatially separated points; comparing each measured response to a threshold value; and conveying each response above threshold value into a three-dimensional measurement report from said calibration data.

4,640,621 TRANSMISSOMETER AND OPTICAL ELEMENTS THEREFOR

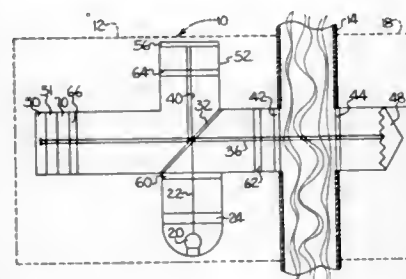
Thomas H. Rose, County of Wake, N.C., assignor to Eastern Technical Associates, Inc., Raleigh, N.C.

Filed Jun. 17, 1983, Ser. No. 505,535

Int. Cl.⁴ G01J 1/02; G01N 21/00

U.S. Cl. 356—434

15 Claims



1. An optical device comprising means for establishing a transmitted beam and a reference beam, means for subjecting the transmitted beam to a sample condition for attenuation thereby, detector means positioned for receiving each of said beams and generating a signal representative of a condition of the beams, and an electronic stepwise light attenuator located in the path of the reference beam, said attenuator having an optical field and comprising multiple liquid crystal display elements, each element being substantially uniformly distributed throughout the optical field and being independently energizable to place it in either a clear or an opaque condition, said elements being so positioned as to cooperate in their respective clear/opaque conditions to produce stepwise attenuation of the reference beam at predetermined and repeatable opacity steps, including multiple intermediate values between 0% and 100% opacity.

4,640,622 DISPERSION OF DRY POLYMERS INTO WATER

Edwin T. Sortwell, Wheaton, Ill., assignor to Diatic Polymers, Batavia, Ill.

Division of Ser. No. 588,793, Mar. 12, 1984, Pat. No. 4,603,156.

This application Nov. 14, 1985, Ser. No. 798,190

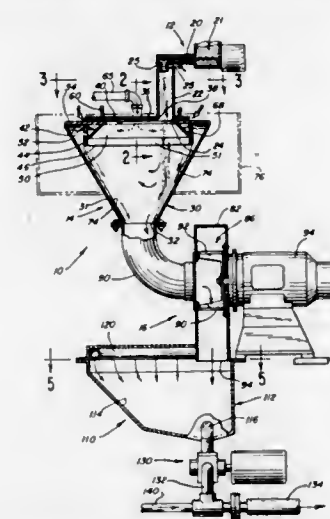
Int. Cl.⁴ B01F 1/00; B28C 7/04

U.S. Cl. 366—76

33 Claims

1. An apparatus for rapidly dispersing particles of dry, water soluble polymer in water, comprising:
(a) means for contacting said particles with water and air, said contacting means comprising a chamber having interior surfaces, under conditions of flow of said air and water whereby at least a portion of said interior surfaces are wetted such that said particles are substantially completely wetted by said water without substantial contact of said particles with interior surfaces of said chamber which are not completely wetted, to form a mixture of water, polymer and entrained air;
(b) means for subjecting said mixture to conditions of instantaneous and momentary shear immediately after formation thereof whereby formation of agglomerates of particles is prevented, and existing agglomerates of particles are di-

vided into individual particles without substantial molecular degradation or substantial reduction of particle size, to



form a dispersion of said polymer in said water, with entrained air; and,
(c) means for separating said dispersion from said air.

4,640,623 STIRRING MEMBER FOR LIQUID SUSPENSIONS IN SEALED SPRAY CONTAINERS

Göran Törnell, Lennart Torstensongatan 3, S-412 56 Göteborg, Sweden

PCT No. PCT/SE85/00069, § 371 Date Oct. 10, 1985, § 102(e) Date Oct. 10, 1985, PCT Pub. No. WO85/03457, PCT Pub. Date Aug. 15, 1985

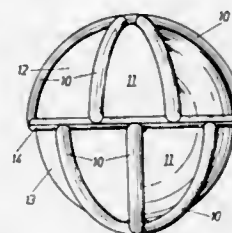
PCT Filed Feb. 12, 1985, Ser. No. 795,345

Claims priority, application Sweden, Feb. 13, 1984, 8400736

Int. Cl.⁴ B01F 13/00; B65D 83/14

U.S. Cl. 336—342

3 Claims



1. An improved stirring member for a liquid suspension in a sealed spray container, said stirring member being in the form of an essentially spherical body, the improvement comprising a plurality of ribs on said stirring member, said ribs extending along the jacket face of said stirring member, said ribs designed to increase the effects of the stirring activity when said stirring member passes through the liquid suspension in said container.

4,640,624 TIME COMPUTER AND DISPLAY DEVICE

Peter N. E. Pitt, 60 Wierda Road East, Wierda Valley, Sandton 2196, South Africa

Filed May 11, 1984, Ser. No. 609,328

Claims priority, application South Africa, May 16, 1983, 83/3467

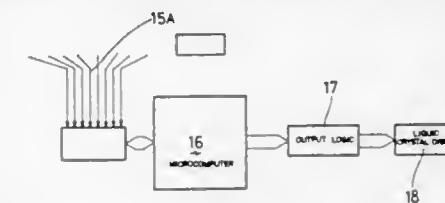
Int. Cl.⁴ G04F 8/00, 10/00

U.S. Cl. 368—111

6 Claims

1. A time computer and display device comprising an electronic stopwatch having an operating switch and including

first time means for measuring and indicating cumulative time, second time means for measuring and indicating an element of time between the latest two actuations of the operating switch



and a third time means for measuring and indicating the average element of time between all previous consecutive actuations of the operating switch.

4,640,625 EXTERNAL MEMBER FOR A WATCH

Hachiro Kushida, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1986, Ser. No. 834,354

Claims priority, application Japan, Mar. 1, 1985, 60-40528

Int. Cl.⁴ G04B 37/00; B22F 1/00

U.S. Cl. 368—280

4 Claims



1. An external member for a watch comprising:
a body made of an aluminum alloy containing 0.5–2.5% of magnesium by weight, less than 0.01% of silicon by weight, and less than 0.01% of iron by weight; and
an anodic oxide film formed on the body.

4,640,626 METHOD AND APPARATUS FOR LOCALIZING WEAK POINTS WITHIN AN ELECTRICAL CIRCUIT

Ralf Schmid, Rosenfeld; Johann Otto, Bad Toelz; Daniela Bernklau, Riemerling, and Erwin Knapke, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

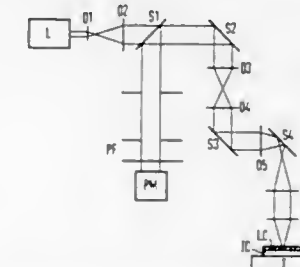
Filed Jul. 22, 1985, Ser. No. 757,445

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433659

Int. Cl.⁴ G01R 31/00

U.S. Cl. 374—57

14 Claims



1. A method for localizing weak points within an integrated circuit, comprising the steps of:

covering a surface of the integrated circuit with a liquid crystal material;
heating the liquid crystal material to a temperature just below its clearing temperature wherein said liquid crystal material is in an ordered condition; then
radiating a three-dimensional region of the integrated circuit with polarized light whereby the radiation not reflected from the surface of the integrated circuit generates electron-hole pairs and thereby produces at least one current which causes a temperature rise at a weak point of the integrated circuit sufficient to induce conversion of the adjacent liquid crystal material from said ordered condition into an unordered condition; and
detecting the unordered condition by sensing the radiation reflected from the surface of the integrated circuit in the region of the weak point.

4,640,627 APPARATUS FOR MONITORING A PLASMA TORCH

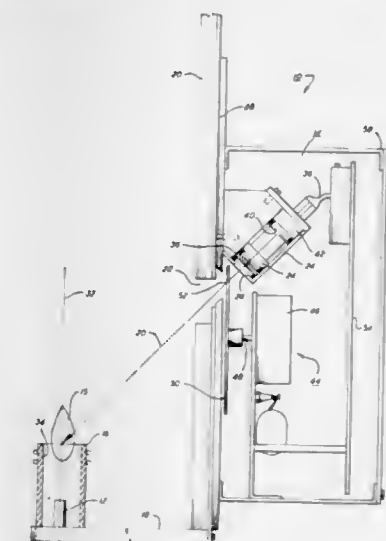
David H. Tracy, Norwalk; Michael J. O'Brien, Bethel, and Walter Bohler, Wilton, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 26, 1983, Ser. No. 526,758

Int. Cl.⁴ G01J 5/10

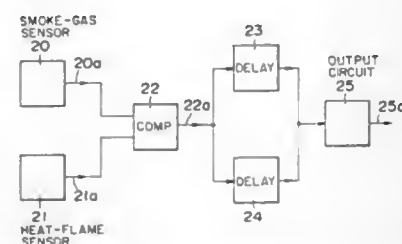
U.S. Cl. 374—121

10 Claims



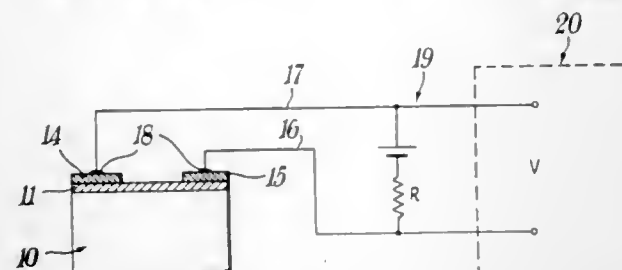
1. An apparatus for monitoring the temperature of a quartz tube used to partially surround a plasma flame issuing therefrom comprising; in combination:
electro-optical detector means remote from said quartz tube for producing an electrical signal whose amplitude is a function of the temperature of the quartz tube, said electro-optical detector means being disposed to receive infrared radiation from at least part of the exterior surface of the quartz tube and at least part of the interior surface of the tube; and
threshold means responsive to said electrical signal being above an upper threshold level indicative of a temperature approaching the melting point of quartz to produce a signal to turn off the plasma flame issuing from the quartz tube.

4,640,628
COMPOSITE FIRE SENSOR
 Hiroshi Seki, 2265 Kamihongo, Matsudo-shi, Chiba-ken, and Ryuichiro Kataishi, 108-13, Ishiharada-machi, Kashihara-shi, Nara-ken, both of Japan
 Filed Jul. 11, 1985, Ser. No. 753,987
 Claims priority, application Japan, Jul. 11, 1984, 59-104650[U]; Sep. 10, 1984, 59-137114[U]; Oct. 20, 1984, 59-159000[U]; Oct. 20, 1984, 59-159013[U]
 Int. Cl.⁴ G01K 3/00
 U.S. Cl. 374-141 6 Claims



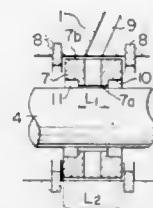
1. A composite fire sensor comprising a first sensor element sensitive to a change in incident infrared rays, a second sensor element having a variable electric conductivity according to gas absorption/desorption, said first sensor element being sensitive to smoke and gas and both producing outputs, at least one comparator means for combining the outputs of said first and second sensor elements, said at least one comparator means adapted to change its sensitivity to produce an alarm output in response to said outputs of said first and second sensor elements, and a delay circuit for delaying said alarm output of said at least one comparator means, wherein predetermined reference voltages along with the output of the first and second sensor elements are fed to said comparator means to produce said alarm output.

4,640,629
THERMISTOR-BOLOMETER AND METHOD FOR THE MANUFACTURE THEREOF
 Bruno Antonini; Camillo Borghese; Arnaldo D'Amico; Paolo DeGasperi; Antonio Paoletti; Paolo Paroli; Giovanni Petrocco; Aldo Tucciarone, and Fernando Scarinci, all of Rome, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy
 Filed Jul. 12, 1983, Ser. No. 513,199
 Claims priority, application Italy, Jul. 12, 1982, 48797 A/82
 Int. Cl.⁴ G01K 7/16
 U.S. Cl. 374-178 10 Claims



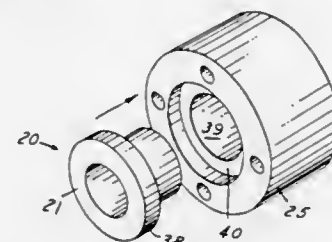
1. A thermistor-bolometer comprising a detector body (10) consisting of a low resistivity layer (11, 13) of a doped magnetic garnet, two contact elements (14, 15) of conductive material fastened on said low resistivity layer, said two contact elements being adapted to form ohmic contacts, and two conductor wires (16, 17) attached to said contact elements (14, 15) by means of contact pads (18) in order to connect said detector body to a biasing circuit and to a read-out circuit.

4,640,630
TURBOCHARGER BEARING ASSEMBLY
 Masahiro Yoshioka, Ibaraki, and Haruyoshi Tsubouchi, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Jan. 19, 1982, Ser. No. 340,814
 Claims priority, application Japan, Feb. 4, 1981, 56-14353
 Int. Cl.⁴ F16C 17/00, 19/55; F04B 17/00
 U.S. Cl. 384-129 5 Claims



1. A supercharger bearing assembly comprising floating bushes for journalling a rotor shaft, the floating bushes being interposed between the rotor shaft and a housing assembly, characterized in that said floating bushes are each formed with an inner peripheral portion having an axial length less than an axial length of an outer peripheral portion thereof, and in that the axial length L_1 of the inner peripheral portion of each floating bush and the axial length L_2 of the outer peripheral portion thereof have values related to each other such that $0.4L_2 \leq L_1 \leq 0.58L_2$.

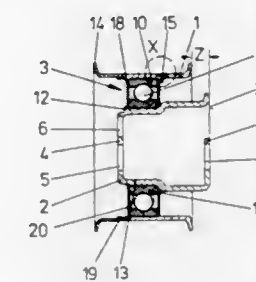
4,640,631
PLASTIC BEARING AND ONE PIECE HOUSING ASSEMBLY
 James A. Belanger, Northville, Mich., assignor to Belanger, Inc., Northville, Mich.
 Continuation of Ser. No. 612,306, May 21, 1984, Pat. No. 4,586,831. This application Dec. 24, 1985, Ser. No. 813,313
 Int. Cl.⁴ F16C 33/20, 25/02, 35/02
 U.S. Cl. 384-297 1 Claim



1. The combination of a bearing and a supporting surface to which the bearing is secured comprising:
 a unitary block of plastic material having first and second sides, said block having a bearing bore centrally located and extending from the first side to the second side, and an outer surface coaxial with said bearing bore and having first and second portions, said first portion being a cylindrical surface extending from said first side to an intermediate point between said first and second sides, said second portion being a cylindrical surface extending from said second side towards said first side to said intermediate point and having a diameter smaller than the diameter of said first portion;
 a housing formed of a rigid material and defining an inner space for receiving said block and having first and second axially aligned cylindrical openings, said first cylindrical opening extending from a first side of said housing to an intermediate point between said first side and a second side of said housing, said second cylindrical opening extending from said second side to said intermediate point,

said first cylindrical opening being sized to receive said first portion of said block and said second cylindrical opening being sized to receive said second portion of said block; and
 said housing including a plurality of fastener holes spaced radially outwardly from said first and second cylindrical openings and being spaced about said openings, said plurality of fastener bores each being adapted to receive a fastener for mounting said housing on the supporting surface with the bearing bore of the block of plastic material extending perpendicularly to the supporting surface, said first side of said housing being abutted against said supporting surface, wherein the collocation of the housing and the supporting surface being the sole means for locating the block in the housing.

4,640,632
ARRANGEMENT FOR THE AXIAL POSITIONING AND HOLDING OF A MACHINE PART IN A THIN WALL SLEEVE OR THE LIKE
 Manfred Brandenstein, Eussenheim; Hermann Hetterich, Heidenfeld, and Peter Horling, Mainberg, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany
 Filed Apr. 19, 1982, Ser. No. 369,756
 Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 8112196[U]
 Int. Cl.⁴ F16C 43/04, 13/02, 35/06
 U.S. Cl. 384-537 9 Claims

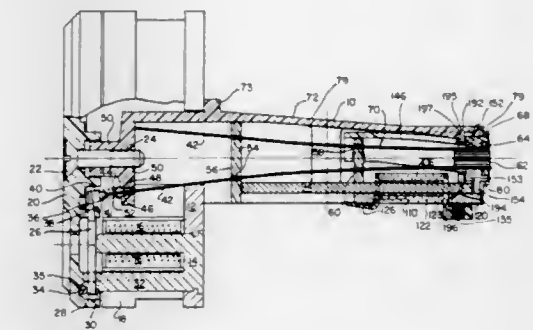


1. In an arrangement for axially positioning and holding a machine element in a thin wall sleeve having a bore there-through the improvement wherein the sleeve material is radially inwardly deformed at several circumferential positions of the sleeve to form radially inwardly directed projections each having a rectilinear end surface toward the machine element extending in a radial plane and formed by radial deformation with a tool in said bore, for axially positioning and holding the sleeve and machine element with respect to one another, whereby said rectilinear surfaces are formed without additional processing of the sleeve.

4,640,633
HIGH-SPEED WIRE PRINT HEAD WITH WIRE PRINT POSITION SHIFT APPARATUS
 Donald G. Hebert, San Ramon, Calif., assignor to DH Technology, Inc., San Diego, Calif.
 Continuation-in-part of Ser. No. 592,400, Mar. 22, 1984, abandoned. This application Mar. 15, 1985, Ser. No. 710,633
 Int. Cl.⁴ B41J 3/12 54 Claims

1. A wire print head assembly comprising:
 a plurality of wire print means having drive end portions mounted in a circular array and print end portions mounted in at least one linear array for printing characters composed of a series of adjacent circular dots;
 wire actuating armature means and associated electromagnetic means mounted in a circular array in operative association with said drive end portions of said wire print means for actuating said wire print means in a longitudinal

direction between a retracted non-print position and an extended print position;
 elongated wire housing means for receiving said wire print means and being made of one piece of molded plastic material, and having a rear end portion located in fixedly mounted juxtaposition to said electromagnetic means and said wire actuating armature means for receiving said drive end portions of said wire print means, and having a front end portion for receiving said print end portions of said wire print means;
 wire bearing plate means having a plurality of wire bearing hole means arranged in at least one linear array of bearing holes for receiving and axially slidably supporting said print end portions of said wire print means;
 shiftable bearing plate support means made of one piece of molded plastic material for fixedly mounting and supporting said wire bearing plate means and being mounted within said wire housing means for selective transverse shifting movement relative to said longitudinal direction of movement of said wire print means between a first unshifted print position and a second transversely shifted print position;



support and guide means including slidably engageable side wall portions of said wire housing means and side wall portions of said shiftable bearing plate support means for slidably supporting said shiftable bearing plate support means in said front end portion of said wire housing means for movement between said first unshifted print position and said second transversely shifted print position;
 rigid non-flexible wire shift armature plate means pivotally mounted in said wire housing means for pivotal movement therein by pivotal displacement thereof between a non-shift position and a shift position, and being operatively associated with said shiftable bearing plate support means for causing transverse shifting movement of said shiftable bearing plate support means between said first unshifted print position and said second transversely shifted print position; and
 electrically energizable magnetic means mounted in said wire housing means in juxtaposition to said wire shift armature plate means for causing pivotal movement of said wire shift armature plate means between said non-shift position and said shift position to selectively effect movement of said shiftable bearing plate support means between said first unshifted print position and said second transversely shifted shift print position.

4,640,634

PRINTER WITH IMPROVED CARRIAGE AND CHARACTER WHEEL DRIVING MEANS

Toshiaki Ozawa, Tokyo; Yasuaki Yamada, Funabashi, and Hirotsu Kondo, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

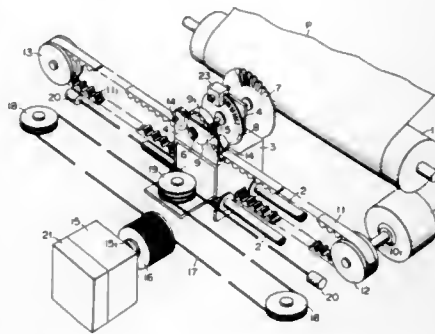
Continuation of Ser. No. 525,802, Aug. 24, 1983, abandoned, which is a continuation of Ser. No. 280,098, Jul. 2, 1981, abandoned, which is a continuation of Ser. No. 70,985, Aug. 30, 1979, abandoned. This application Mar. 12, 1985, Ser. No. 710,530

Claims priority, application Japan, Sep. 5, 1978, 53-108054; Sep. 5, 1978, 53-108055

Int. Cl.⁴ B41J 23/00, 1/30

U.S. Cl. 400—144.2

11 Claims



1. A printer provided with a carriage movable parallel with an axis of a platen for feeding a recording medium, comprising: a shaft rotatably mounted on the carriage; a character wheel fixed on said shaft; a pulley fixed on said shaft; first braking means for stopping rotation of said shaft at a first state thereof and allowing the rotation of said shaft at a second state thereof, said first braking means including a drum brake; transmission means for transmitting driving power from a motor to said pulley; second braking means for stopping movement of said carriage at a first state thereof and allowing the movement of said carriage at a second state thereof; and control means for alternately placing said first braking means and second braking means into their first states.
4. A printer provided with a carriage movable parallel with an axis of a platen for feeding a recording medium, comprising: a shaft rotatably mounted on the carriage; a character wheel fixed on said shaft; a pulley fixed on said shaft; a motor for driving said pulley; transmission means for transmitting driving power from said motor to said pulley; first stopping means for stopping movement of said carriage to allow said motor to drive said character wheel; and second stopping means for stopping rotation of said shaft to allow said motor to drive said carriage, said second stopping means including brake means which is actuated by a plunger mounted on a member other than said carriage.

4,640,635

METHOD FOR INHIBITING PRINTING DURING RIBBON REVERSAL

Toshihiko Nakai, and Masahiko Kaneko, both of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1984, Ser. No. 684,123

Claims priority, application Japan, Dec. 28, 1983, 58-248888

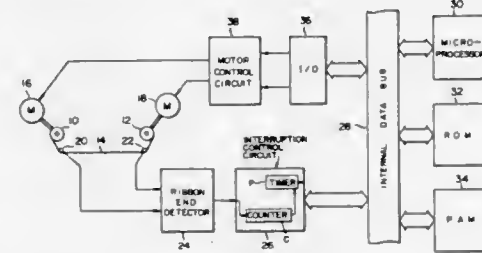
Int. Cl.⁴ B41J 29/70

U.S. Cl. 400—664

2 Claims

1. A method of feeding an ink ribbon for a printer in which the ink ribbon is frequently used for imprinting action by the

reversal of feeding at the ribbon ends comprising suppressing the imprinting action of the printer for a predetermined time at



the end of reversal of feeding at the ribbon ends and changing the suppression time at every reversal of feeding.

4,640,636

POWDER STICK WITH SHRINK FILM SHEATHING

Hans J. Hofmann, Nürnberg, Fed. Rep. of Germany, assignor to Schwan-Stabilo Schwanhäuser GmbH & Co., Nürnberg, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 712,641

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 8504263[U]

Int. Cl.⁴ A45D 40/00, 40/20

U.S. Cl. 401—96

6 Claims



1. A powder stick for a cosmetic pencil, including a lateral sheathing of a shrink film consisting essentially of hard PVC having a modulus of elasticity of from about 2400 to 3000 N/mm² (in accordance with DIN 53457), with a thickness of from 50 to 200 μm.

4,640,637

APPARATUS FOR DISPENSING AND APPLYING NAIL POLISH

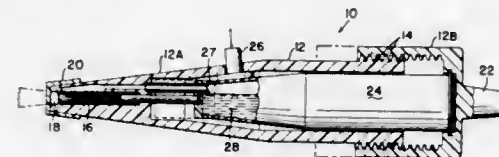
Marilyn P. Winthrop, 54 Magnolia Hill, West Hartford, Conn. 06117

Filed May 21, 1984, Ser. No. 612,081

Int. Cl.⁴ A46B 11/04

U.S. Cl. 401—101

9 Claims



1. Apparatus for dispensing and applying nail polish, which comprises: an elongated, hollow housing having an opening at one axial extremity; a brush having a plurality of bristles, said bristle having a first end and a second end which is a free end, said brush being mounted for axial movement between a first position inside said housing and a second position;

4,640,639

PRINTED CIRCUIT BOARD HOLDING APPLIANCE

Kazuhiro Matsui, Toyooka, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

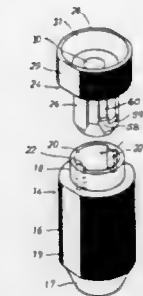
Filed Dec. 6, 1984, Ser. No. 679,071

Claims priority, application Japan, Feb. 13, 1984, 59-19492[U]

Int. Cl.⁴ F16B 1/00; H01B 17/00

U.S. Cl. 403—24

7 Claims



means for axially translating said brush between said first position within said housing and a second position wherein at least a portion of said brush extends out of said housing; a reservoir for nail polish disposed within said housing; and means for discharging nail polish from said reservoir onto said brush comprising a passageway extending between said reservoir and said free end of said bristles said means for discharging comprises a button which is movable between a first position in which said button is positioned to deform and reduce the volume of said reservoir and a second position in which said button does not deform and reduce the volume of said reservoir.

4,640,638

CLEANING SYSTEM

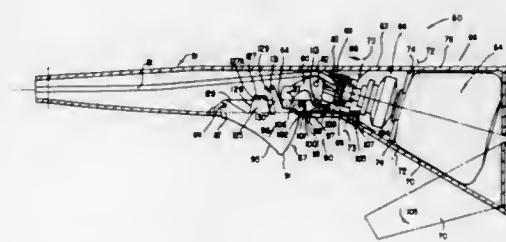
David J. Bokmiller, and Samuel C. Heck, both of San Antonio, Tex., assignors to Sani-Fresh International, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 478,516, Mar. 24, 1983, Pat. No. 4,534,669. This application Mar. 23, 1984, Ser. No. 592,945

Int. Cl.⁴ A46B 11/02; A47L 13/22, 13/17

U.S. Cl. 401—145

5 Claims



1. A cleaning wand comprising: an elongate housing having a cavity therein adapted to receive a cleaning fluid cartridge; a surface cleaning means connected to said housing; a finger trigger pivotally connected to said housing within a slot in said housing; a movable linkage pumping mechanism within said cavity of said housing comprising a pivotal swing arm and an end cap member, said pivotal swing arm being in operative engagement with said end cap member and having a camming surface for sliding engagement with an inner surface of said trigger, whereby upon depression of said trigger said camming surface slides on said inner surface of said trigger and said swing arm pivots, thereby causing said end cap member to move toward a rear of said housing opposite said surface cleaning means, said end cap member being adapted to compress said cartridge upon movement of said end cap member toward said rear of said housing, said linkage pumping mechanism thereby permitting translation of movement of said pivotal trigger in a first direction upon depression thereof into movement of said end cap member in a second direction generally transverse to said direction of movement of said trigger; and a tube disposed within said cavity of said housing for permitting fluid communication between said cartridge and a discharge passage in said housing, said linkage pumping mechanism being adapted to effectuate compression of said cartridge to discharge cleaning fluid from said cartridge through said tube and outward from said housing through said discharge passage upon depression of said trigger.

4,640,640

SUBSTANTIALLY FRICTIONLESS UNIVERSAL CONNECTING DEVICE

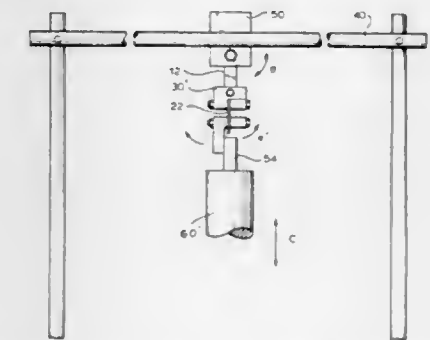
Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 1, 1985, Ser. No. 707,274

Int. Cl.⁴ F16D 3/00; F16C 11/06

U.S. Cl. 403—57

8 Claims



1. Apparatus for universal swivel linear mounting of an actuated object comprising: a fixed mounting means for unencumbered support of linear actuation of said actuated object, said mounting means including a rod fixed at a certain height and a bracket mounted on said rod for connection to one end of a first elongated planar blade member; a combination extension/universal swivel connection which provides substantially frictionless universal swivel movement between said mounting means and said actuated

object, said combination extension/universal swivel connection comprising;

a first elongated flexible planar blade member having two ends, one of said ends connected to said bracket and the other of said ends extended from said bracket for interconnection;

a second elongated flexible planar blade member having two ends, one of said ends connected to an actuated member and the other of said ends extended from said actuated member for interconnection, and

an interconnecting means to which said other ends of said first and second flexible blade members are interconnected with the plane of each of said elongated planar blade members perpendicular to each other, said first and second elongated flexible planar blade members and said interconnecting means linearly arranged between said mounting means and said actuated member whereby said combination forms part of a connecting extension between said mounting means and said actuated member, and wherein said actuated member extends between said combination extension/universal swivel connection and said actuated object, said actuated member being connected to both said one end of said second elongated flexible planar blade member and said actuated object,

whereby motion imparted by said actuated object is universally accommodated by bending of said first and second flexible blade members in the substantial absence of friction.

4,640,641 PISTON PIN CONSTRUCTION AND METHOD FOR FORMING SAME

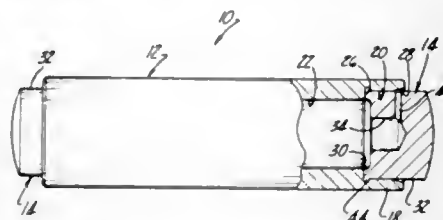
Thomas C. Edelmayer, Mobile, Ala., assignor to Teledyne Continental Motors, Mobile, Ala.

Continuation of Ser. No. 634,365, Jul. 25, 1984, abandoned. This application May 12, 1986, Ser. No. 863,816

Int. Cl.⁴ F16D 1/12; B21D 39/00

U.S. Cl. 403—150

6 Claims



1. A piston pin comprising:

a tubular body having a pair of axial ends, an inner peripheral wall at each of said axial ends, and a radially outwardly extending annular recess formed in each of said inner peripheral walls, each of said recesses being spaced axially inwardly of its associated body axial end,

a pair of substantially cylindrical end caps dimensioned correspondingly to said inner peripheral walls so as to be receivable in said axial ends of said tubular body, and means for extruding a portion of said end caps into said recesses when said end caps are forcibly inserted into said axial ends of said tubular body

wherein at least one of said caps includes an axial bore and a radial bore which intersect at one end, the other end of said axial bore being open to said tubular body and the other end of said radial bore being open exteriorly of said tubular body wherein said inner peripheral walls each include an outwardly tapered portion at its said axial end, and wherein said radial bore communicates with said outwardly tapered portion.

4,640,642

BENDABLE ELBOW CONNECTOR

Robert Magid, 188 Goldhurst Terrace, West Hampstead, London NW6, England, and John Choong, London, England, assignors to Robert Magid, London, England

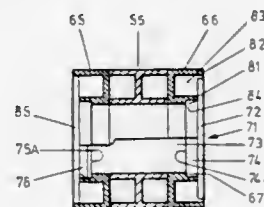
Filed Jan. 22, 1985, Ser. No. 693,666

Claims priority, application United Kingdom, Jan. 27, 1984, 8402150

Int. Cl.⁴ F16C 11/06

U.S. Cl. 403—157

9 Claims



1. A bendable elbow connector comprising a first element having one end provided with a single first eye, a second element having one end provided with two coaxial second eyes axially spaced to receive between them said single eye, and a pivot pin insertable through all said three eyes, when the latter are coaxially aligned, to thereby join said two elements together, wherein said pivot pin consists of two parts insertable through said eyes, each said part having a first end provided with a first engagement means and an opposite second end provided with a resilient second engagement means, and each said second eye having at its axially outer side a third engagement means, whereby on full insertion of said parts through said eyes said parts at each end and said second eyes are interlocked by said engagement means.

4,640,643 SIDEWALL EXTENSION FOR DRAIN CHANNEL SYSTEM AND METHOD FOR EXTENDING THE CONTINUOUS SLOPE OF A DRAINAGE CHANNEL SYSTEM

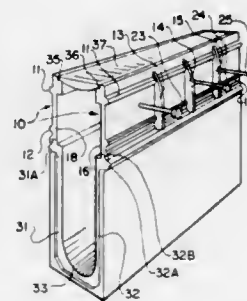
Barry C. Williams, Statesville, N.C., assignor to Polydrain, Inc., Troutman, N.C.

Filed Jun. 19, 1985, Ser. No. 746,258

Int. Cl.⁴ E01F 5/00

U.S. Cl. 404—4

23 Claims



1. In a drainage channel system of the type characterized by a plurality of drainage channel segments of progressively greater length adapted to be interlocked end-to-end to provide a below grade gravity feed sloping drainage run of a predetermined length, each of said channel segments comprising a pair of opposing, spaced-apart side walls, a bottom wall connecting said side walls adjacent one end thereof, and a top opening opposite said bottom wall, said side walls and said bottom wall defining a fluid carrying space therebetween and said top opening defining a fluid entrance adapted to receive a grate;

the combination therewith of a side wall extension for being mounted on top of each of the side walls of the interlocked channel segments along at least a part of the length of the sloping run and effectively increasing the total depth of each said channel segment and increasing the length of a continuously and progressively sloping run of the drainage channel system, each of said side wall extensions comprising a substantially planar body mounted on top of one of the side walls of the channel segment and including means for laterally supporting said planar body in parallel upright relation to said channel segment by engagement with a supporting bed of concrete or the like and without engagement or cooperation with an opposing side wall extension.

4,640,644

METHOD AND APPARATUS FOR REMOVAL OF SURFACE MATERIAL

Ryszard J. Puchala, Scarborough, and Stephen J. Miko, Toronto, both of Canada, assignors to Indescor Hydrodynamics Inc., Concord, Canada

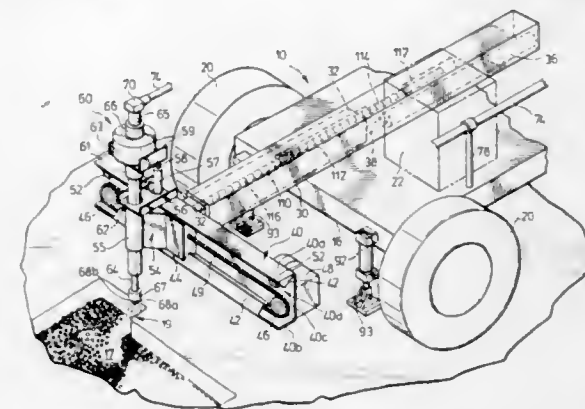
Filed Apr. 12, 1985, Ser. No. 722,454

Claims priority, application Canada, Apr. 16, 1984, 452,066

Int. Cl.⁴ E01C 23/12; E21C 25/60

U.S. Cl. 404—75

14 Claims



1. Apparatus for removing material from a surface, for use in association with a source of water at a pressure within the range of about 10,000 to 25,000 psi, the apparatus comprising: a carriage vehicle means; extendable arm means mounted on the vehicle means and defining a free end, said arm means being movable along a linear path away from and towards said vehicle means and defining a longitudinal axis lying in a predetermined plane; a transverse nozzle support member attached to the free end of said arm means; transverse nozzle movement means on said support member; rotatable nozzle means movably attached to said support member, said nozzle means being movable to and fro along a linear transverse path defining a transverse axis lying in a predetermined plane, and being operable to direct a water jet at an angle onto said surface over a circular zone of predetermined width; hose means connecting said source of water to said nozzle means; motor means attached to said nozzle means operable to rotate said nozzle means, and, power operated means attached to said arm means operable to extend and retract said arm means relative to said vehicle means along said longitudinal axis by increments equal to said predetermined width of said circular zone of said jet.

13. A method for removing material from a surface comprising the steps of pressurizing water to a pressure within the range of 10,000 to 25,000 psi;

at a first location passing said pressurized water through nozzle means supported on a movable carriage; directing at least two separate water jets from said nozzle means, oriented at two different angles relative to a vertical axis;

rotating said nozzle means whereby to establish a circular zone of predetermined width for said water jets on said surface to establish turbulent water flow thereon to break up material and to wash away loose material;

traversing said nozzle means relative to said carriage along a transverse linear axis from one side to another establishing a transverse path of said jets having a width equal to said predetermined width whereby to define a scan and stopping said traversing of said nozzle means;

moving said nozzle means relative to said carriage along a second linear axis perpendicular to said first axis at the completion of at least one said scan by an increment equal to said predetermined width, and stopping said movement;

again traversing said nozzle means to define another scan parallel to and alongside said first mentioned scan; repeating said traversing and incremental movement a predetermined number of times, and then stopping same; moving said carriage and stopping at second location, and, repeating said steps, in sequence, whereby to progressively remove said material from said surface.

4,640,645

CONTAINMENT BOOM SYSTEM

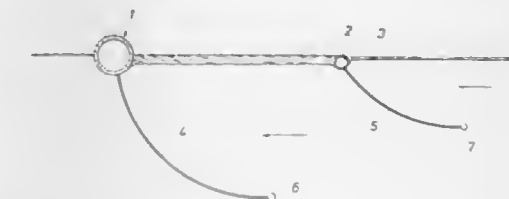
Wayne F. Simpson, Anchorage, AK; Ray R. Ayers, and Robert W. Patterson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1985, Ser. No. 779,137

Int. Cl.⁴ E02B 15/04

U.S. Cl. 405—63

4 Claims



1. A method for containing a floating liquid pollutant upon a water surface, comprising:

providing at least two spaced-apart booms, one boom having a lower above-water profile than other boom; allowing pollutant to splash over the lower profile boom and be captured in a containment area between the two booms; providing the lower profile boom with a skirt having sufficient draft to create a low pressure region between the two booms; and providing the higher profile boom with a skirt having sufficient draft to prevent pollutant from escaping thereunder.

4,640,646

APPARATUS FOR THE CONSTRUCTION OF TUNNELS AND SHAFTS

Volker Hentschel, Dorsten-Wulfen, Fed. Rep. of Germany, assignor to Hochtief Aktiengesellschaft vorm Gebr. Helfmann, Essen, Fed. Rep. of Germany

Filed Jan. 10, 1985, Ser. No. 690,163

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 3401012

Int. Cl.⁴ E21D 9/06, 9/08

U.S. Cl. 405—141

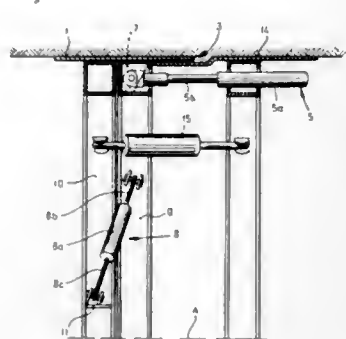
8 Claims

1. A tunneling apparatus comprising:

a shield structure including a leading shield, a follower shield, and a joint connection for joining said leading shield and said follower shield; a pressure ring mounted in said follower shield and at least one means for receiving thrust forces mounted in said leading shield;

a roll correction device mounted in said shield structure and including a roll correction ring in said leading shield and

which can rotate with respect to the leading shield and bearing upon said means for receiving thrust forces; a plurality of advancing piston/cylinder assemblies, distributed about the shield circumference and movably connected to said pressure ring and to said roll correction ring but acting upon said leading shield only through said roll correction ring; and



a plurality of adjusting piston/cylinder assemblies mounted at said roll correction device, said adjusting piston/cylinder assemblies being oriented generally secantially and being braced between said means for receiving thrust forces and said roll correction ring for controlling the orientations of said advancing piston/cylinder assemblies with respect to said leading shield and said follower shield.

4,640,647

OFFSHORE WELL APPARATUS AND METHOD

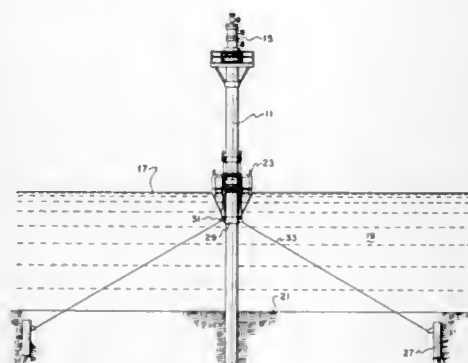
Christon R. Blair, Spring, Tex., and Kenneth B. Parker, Anchorage, Ak., assignors to Atlantic Richfield Company, Plano, Tex.

Filed Apr. 12, 1985, Ser. No. 722,853

Int. Cl.⁴ E02B 17/00

U.S. Cl. 405—224

10 Claims



1. In an offshore well in a first depth of water above a bottom, the well having:

- a main casing penetrating subterranean formations below the bottom and protruding upwardly through the first depth of water and extending above the surface of the water;
 - a wellhead affixed to said main casing; said wellhead having valves connected with tubing penetrating interiorly of said main casing to subsurface completion zones in said well and having external means for connecting with surface accessories for delivering at least one fluid from said well; and
 - a boat landing disposed about said main casing and connected with said well;
- the improvement comprising:
- a plurality of at least three anchor piles driven at respec-

tive azimuths and distances about the well for anchoring said protruding main casing against lateral forces;

- a plurality of clamping means movably connected with said main casing so as to be movable longitudinally of said casing means and disposed a predetermined distance apart and including an upper clamping means and a cable clamp movably connected with said main casing a predetermined distance below said upper clamping means and below the surface of the water and supporting a plurality of at least three pulleys adapted to receive respective cables therethrough; said cable clamp being rigidly disposed said predetermined distance below said upper clamping means and said surface to ensure sufficient depth for boats to maneuver about said boat landing;
- said plurality of at least three cables connected respectively with respect to said anchor piles, passed through respective said pulleys onto said cable clamps; said cables begin pulled taut and connected with said boat landing and well so as to support said well against said lateral forces such that boats can maneuver about said landing without becoming entangled in said cables or having their props fouled by said cables because of said predetermined distance of vertical clearance before said cables traverse outwardly at respective angles to said respective anchor piles.

4,640,648

INDUSTRIAL FLOOR AND CONSTRUCTION METHOD

Xavier P. Destree, and Angelo A. Lazzari, both of Brussels, Belgium, assignors to Eurosteel S.A., Brussels, Belgium

PCT No. PCT/BE84/00006, § 371 Date Nov. 2, 1984, § 102(e) Date Nov. 2, 1984, PCT Pub. No. WO84/03530, PCT Pub. Date Sep. 13, 1984

PCT Filed Mar. 7, 1984, Ser. No. 678,552

Claims priority, application Belgium, Mar. 10, 1983, 0/210291 Int. Cl.⁴ E02D 27/08, 27/26; E04B 5/32

U.S. Cl. 405—229

7 Claims

1. A process for making a totally independent and continuous slab of fiber-reinforced concrete devoid of seams, which comprises the steps of:

- providing a foundation course;
- compacting said foundation course to a k value of Westergaard of at least 5 kg/cm³;
- leveling said foundation course with a tolerance of at most ± 1 cm with respect to a reference level;
- placing a plastic sheet on said foundation course;
- placing a compressible mattress adjacent fixed boundaries which are to limit or traverse said slab so as to separate said slab from said fixed boundaries;
- placing complementary reinforcements adjacent said fixed boundaries;
- casting on said foundation course, adjacent said fixed boundaries, a limited shrinkage concrete reinforced with fibers;
- allowing said concrete to set.

4,640,649

METHOD AND APPARATUS FOR FORMING AN UNDERGROUND SOLIDIFICATION STRUCTURE

Wataru Nakanishi, Machida, Japan, assignor to N.I.T. Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1985, Ser. No. 729,143

Claims priority, application United Kingdom, May 9, 1984, 8411774

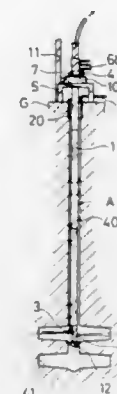
Int. Cl.⁴ E02D 3/10

U.S. Cl. 405—237

8 Claims

1. A method for forming an underground solidification structure comprising the steps of inserting an insertion tube assembly including a reverse suction tube, a high pressure jet spouting tube and a solidification material spouting tube to a predetermined depth into an area of the underground where a solidification structure is to be formed, filling a cavity formed in said underground area by the insertion of said insertion tube

assembly therein with bentonite liquid or the like, recycling said bentonite between said cavity and an external device, spouting digging material as a high pressure jet laterally through said high pressure jet spouting tube against the wall of said cavity to dig down the cavity while rotating the tube assembly continuously and alternately in one and the other directions covering a predetermined angular distance, sucking



the soil displaced from the wall of said cavity upwardly through said reverse suction tube onto the ground with the soil entrained in the bentonite liquid and at the same time monitoring the conditions of said dug cavity by a monitor on said insertion tube assembly and spouting solidification material through said solidification material spouting tube into said cavity to thereby reinforce the underground.

4,640,650

HYDRAULICALLY OPERATED UNIT FOR ROOF SUPPORT

Manfred Koppers, Duisburg, Karlheinz Bohnes, Bochum, and Friedel Amling, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhütte Heintzmann GmbH & Co. Kg, Bochum, Fed. Rep. of Germany

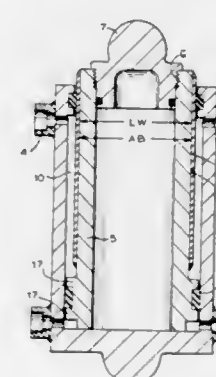
Filed Aug. 9, 1983, Ser. No. 521,735

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320759

Int. Cl.⁴ E21D 15/50

U.S. Cl. 405—290

14 Claims



1. A hydraulically operated unit, particularly a prop for a support in underground operations, comprising an outer tubular element and having a predetermined outer diameter and a flow limit; and a thin-walled tubular jacket pressed on said inner element and having an inner diameter which is determined with such an undersize relative to said outer diameter of said inner element that said tubular jacket is clamped on said inner element with exceeding of said flow limit of said inner element

4,640,651

COMPUTER MEMORY DISC AND METHOD FOR MACHINING SAME

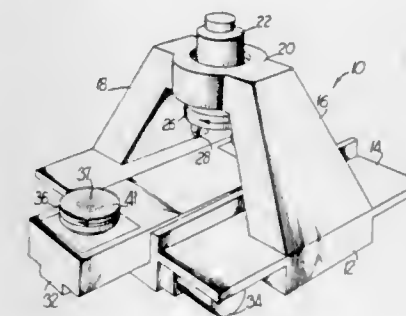
Robert C. Runyon, Dunwoody, Ga., assignor to Substrate Systems, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 680,863, Dec. 12, 1984. This application Dec. 28, 1984, Ser. No. 685,612

Int. Cl.⁴ B23C 3/13

U.S. Cl. 409—132

8 Claims



1. A method for machining a thin workpiece with a fly cutter having a periphery with a tool mounted thereon to avoid stress warping of the workpiece wherein the workpiece has a surface and the tool engages the workpiece and produces machining lines on the surface of the workpiece, which machining lines result in corresponding lines of stress within the workpiece, the method comprising the steps of:

- rotating the fly cutter at an angular velocity, which angular velocity produces a corresponding linear velocity for the tool;
- rotating the workpiece at an angular velocity; and
- feeding the rotating workpiece past the rotating fly cutter at a transverse feed rate, which feed rate is at least an order of magnitude less than the linear velocity of the tool.

4,640,652

COOLANT DELIVERY SYSTEM

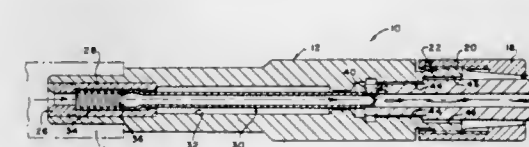
Jeremias C. Rivera, Jr., Chicago, Ill., assignor to Scully-Jones Corp., Chicago, Ill.

Filed Jun. 30, 1986, Ser. No. 880,043

Int. Cl.⁴ B23G 1/46; B23B 51/04

U.S. Cl. 409—136

12 Claims



1. A tap extension for connecting a cutting tap in rotatably driven relation with an associated spindle having coolant supply means, said tap extension comprising:

- a shank portion having a first end for connection to said spindle in driven relation therewith;
- locking means at a second end of said shank portion opposite said first end, said locking means being adapted to receive and releasably retain said tap in rotatably driven relation with said shank portion;
- coolant passage means extending within and axially of said shank portion, said passage means being joined in fluid

communication with said coolant supply means when said extension is connected to said spindle whereby coolant is delivered to said passage means; and valve means operatively associated with said passage means for controlling flow of coolant from said passage means, whereby (1) in a first mode of operation, coolant is delivered from said passage means to an axial coolant bore defined by a first tap, and (2) in a second mode of operation, coolant is delivered from said valve means to between flutes of a second, solid tap.

4,640,653
INTEGRAL SPRING FLEXURE FOR USE WITH HIGH SPEED ROTATING SHAFTS
Everett H. Schartzman, 2751 Toledo St., #309, Torrance, Calif. 90503

Filed Jul. 30, 1984, Ser. No. 635,716
Int. Cl.⁴ B23Q 3/12

U.S. Cl. 409—233

10 Claims



1. A high speed spindle having an accurate axis of rotation which does not deviate during operation thereof comprising:
a housing;
a spindle shaft positioned in said housing;
bearing means positioned within said housing a supporting said spindle shaft for rotation;
rotatable collet means cooperating with said rotatable spindle shaft for releasably holding a tool member,
said spindle shaft including rotatable drawbar means movable axially relative to said spindle to effect release of said collet means in one position and engagement in another position;
rotatable non-helical spring means cooperating with said drawbar means to bias the latter in the engaged position of said collet means,
said non-helical spring means being positioned in concentric relation to said drawbar means,
means interconnecting said non-helical spring means and said drawbar means, and
said non-helical spring means being an integral one-piece spring member including a plurality of spring elements integrally jointed together in which each spring element includes spaced upper and lower surfaces and being of a predetermined thickness and of a diameter which determines the stiffness and the stress level of each spring element in order to inhibit out-of-balance shifting of the true mass of the spring member with respect to the geometric axis of said spring member during rotation of said spindle assembly at high speeds.

4,640,654
ANCHOR
Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen; Jürgen Onasch, Bonn, and Manfred Haage, Herrenberg-Oberjesingen, all of Fed. Rep. of Germany, assignors to Artur Fischer, Waldachtal/Tumlingen, Fed. Rep. of Germany

Filed Jun. 3, 1985, Ser. No. 740,645
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420375

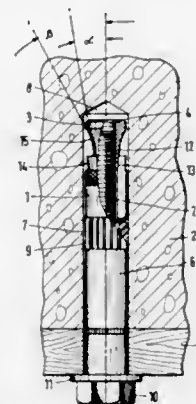
Int. Cl.⁴ F16B 13/04

U.S. Cl. 411—55

7 Claims

1. An anchor for fastening in bore holes formed in support structures, comprising an expansion sleeve having a leading end; an expander body positioned at said leading end of said expansion sleeve and including a conical portion; a stay bolt having an abutment with gripping surfaces for applying a torque thereto, said bolt being inserted into said sleeve and

engaged with said expander body for driving said expander body into said sleeve; and an intermediate sleeve positioned between said abutment and said expansion sleeve, said expander body further including a concavely-curved portion, said conical portion immediately tangentially merging at a greater



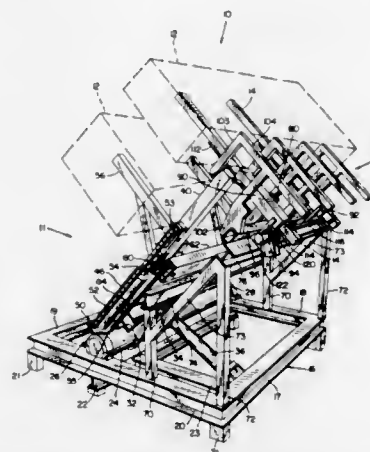
diameter thereof into said concavely-curved portion, said concavely-curved portion forming at a leading end of said expander body a tangent line which extends at an angle to a central axis of the anchor, said angle approximately corresponding to a double angle of inclination of said conical portion to said central axis.

4,640,655
CONTINUOUS FEEDING APPARATUS
Marvin A. Jacobsen, Winston, Oreg., assignor to Con-Vey/Key-stone, Inc., Roseburg, Oreg.

Filed Apr. 12, 1985, Ser. No. 722,338
Int. Cl.⁴ B65G 59/02, 59/08

U.S. Cl. 414—119

12 Claims



12. An apparatus for continuously feeding tiers from successive tiered loads, comprising:
hoist means pivotally mounted for receiving a tiered first load and then pivoting to hoist the tiered first load upward along a load path from a path base;
tier-discharging means mounted for relative movement along the path toward the load as the load is hoisted and held stationary for engaging the first load and effecting discharge of successive tiers from the top of the load; and
load-accepting means disposed along the load path and insertable into the path for receiving and holding the first load from the hoist means and for maintaining engagement of the load with the tier-discharging means as the hoist

means lowers to receive a second load, the load-accepting means thereafter retractable from the path to allow engagement of the tier-discharging means with the second load.

4,640,656
DEVICE FOR SUPPLYING ROD-SHAPED ARTICLES, FOR EXAMPLE CIGARETTES, TO A PROCESSING MACHINE

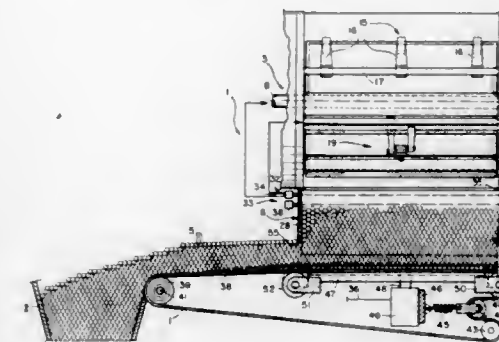
Riccardo Mattei, Bologna, Italy, assignor to G. D. Società per Azioni, Bologna, Italy

Filed Aug. 2, 1985, Ser. No. 762,545

Claims priority, application Italy, Oct. 11, 1984, 3600 A/84
Int. Cl.⁴ B65G 65/23

U.S. Cl. 414—303

6 Claims



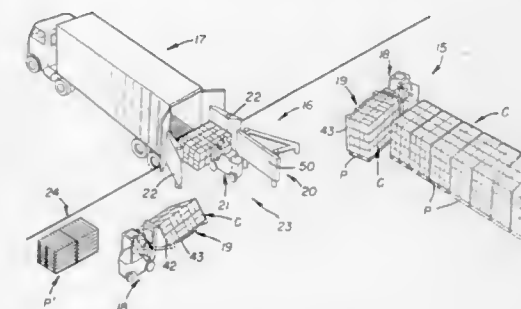
1. A device for supplying rod-shaped articles, for example cigarettes, to a processing machine, comprising means for supplying containers of these articles above a tank, retaining means associated with the containers and movable between a closed position and an open position of a discharge mouth of the containers, a conveyor forming the base of the tank for supplying a continuous flow of articles to the processing machine, means for displacing at least the portion of said conveyor under the tank with a reciprocating movement in a substantially vertical direction, and detection means for detecting the level of the articles in the tank and for controlling the displacement means.

4,640,657
CARTON LOADING METHOD AND SYSTEM
Robert W. Moore, 664 Melrose Dr., and Michael J. Azzopardi, 215 E. Romie La., both of Salinas, Calif. 93901

Filed Sep. 10, 1984, Ser. No. 649,221
Int. Cl.⁴ B65G 57/28

U.S. Cl. 414—347

24 Claims



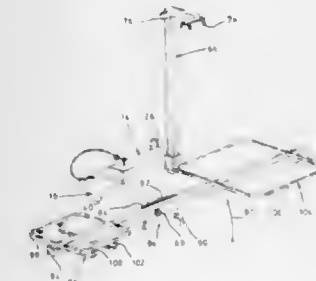
14. A carton loading system comprising
a first station adapted to receive at least one pallet having a plurality of cartons stacked thereon,
a rotator lift truck having a rotator attachment rotatably mounted forwardly thereon for rotation about a longitudinal axis thereof, said rotator attachment including means

for receiving, lifting, retaining and rotating said pallet and cartons thereon generally 90° from a first to a second upright position,
a second station adapted to receive said rotator lift truck, a vertically disposed stationary stop plate means positioned transversely relative to the longitudinal axis of said rotator attachment and fixedly mounted at said second station for engaging and compressing all of said cartons simultaneously on said rotator attachment and
lift truck means for entering said second station transversely of the longitudinal axis of said rotator attachment and towards said cartons when they are retained in their second upright position on said rotator lift truck and for thereafter lifting said cartons directly from said rotator lift truck and loading said cartons into a cargo space of a transport vehicle.

4,640,658
DEMOUNTABLE CARRIER FOR MOUNTING ON VEHICLES
Grandville S. Webb, Jr., Rte. 1, Box 75, Harriman, Tenn. 37748
Filed Sep. 24, 1985, Ser. No. 779,665
Int. Cl.⁴ B60R 9/06

U.S. Cl. 414—462

11 Claims



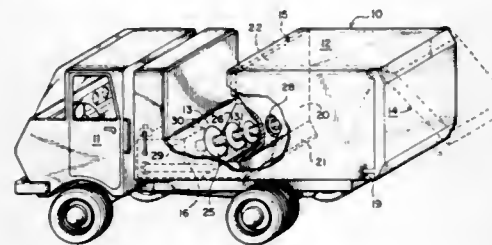
1. A demountable carrier for attachment to a trailer hitch mounted upon a vehicle and having a flat tongue extending from such vehicle substantially parallel to ground, such tongue provided with an aperture, which comprises:
a hollow elongated socket member having a bore of a selected cross-section and being provided with at least one pair of aligned apertures in opposite surfaces oriented perpendicular to said bore, said socket member being provided with fastening means for passing through such aperture in such tongue to secure said socket member to such tongue in an orientation substantially perpendicular to a long axis of such tongue and parallel to such ground;
an L-shaped plug member having first and second legs substantially at right angles to each other, said first leg having a selected cross section and length to be closely received in said socket member, said second leg having a free end to support a carrier unit, said first leg provided with at least one aperture therethrough oriented perpendicularly to said first leg whereby said aperture in said first leg is aligned with said apertures in said socket member when said first leg is inserted in said socket member;
a removable pin for passing through selected aligned apertures in said first leg and said socket member;
wherein the number of apertures in said socket member and said first leg of said plug member is selected whereby said pin is receivable in aligned apertures when said second leg is either substantially vertically oriented or substantially horizontally oriented with respect to said ground; and
wherein said selected cross sections of said first leg of said plug and said bore of said socket member prevent rotation between said plug member and said socket member and permit said first leg to be inserted into said bore in said two orientations of said second leg substantially perpendicular to each other.

4,640,659 IMPELLER AND COMPACTION REFUSE COLLECTION SYSTEM

Hal Parks, 7323 W. Vogel Ave., Peoria, Ariz. 85345
Filed Dec. 20, 1984, Ser. No. 684,106
Int. Cl.⁴ B65F 3/14

U.S. Cl. 414—503

7 Claims



1. A transportable container for collection, compaction and ejection of refuse comprising:

- a. a refuse storage compartment having forward and rearward ends and a confined volume between opposing side walls and top and bottom walls, said rearward end of the compartment being closed by an ejection door coupled to the compartment and including means for releasing the ejection door in response to ejection of refuse from the compartment;
- b. the forward end of the compartment being enclosed by a movable compacting blade having a fixed, upright orientation and adapted with means for activating lateral reciprocating movement of the blade in its fixed, upright orientation between a forward, noncompacting position and a rearward compacting position which is disposed with the confined volume of the compartment, said compaction blade including an opening therethrough for communicating through the forward end;
- c. a hopper compartment positioned immediately forward of the forward end and having forward, rearward, side and floor walls adapted for receiving refuse to be dumped therein;
- d. a refuse shredding device attached at the floor of the hopper compartment, said device having a receiving portion and a dispensing end, said dispensing end being positioned at the opening in the compaction blade when said blade is in the rearward position to dispose shredded refuse therethrough into the storage compartment for compaction the compaction blade is attached to the rearward part of the hopper compartment forming a single hopper/compaction blade structure, said shredding device being permanently disposed in a fixed position in relation to the compaction blade with its dispensing end at the opening therethrough, the combined blade and hopper being subject to movement by the reciprocating means between the rearward and forward positions.

4,640,660

RECOVERY AND TOWING VEHICLE

Norman F. Watson, Chippings, England, assignor to EKA Group Ltd., London, England

Filed Feb. 15, 1985, Ser. No. 701,957

Claims priority, application United Kingdom, Feb. 20, 1984, 8404429

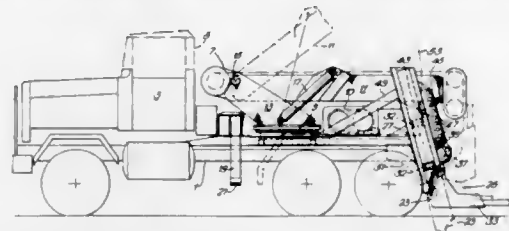
Int. Cl.⁴ B60P 3/12

U.S. Cl. 414—563

12 Claims

1. A recovery vehicle comprising a chassis, two parallel arcuate slideways connected to said chassis and a supported lift towing boom having a mast which is slidably supported between and within said two parallel slideways and a boom

connected to the mast extending generally normal to the mast so that as the mast is raised up between the arcuate slideways,



the free end of the boom will rise at a greater rate than the end connected to the mast.

4,640,661

VACUUM LIFT CLAMP DEVICE FOR HANDLING OF PAPER ROLLS

Rolf B. Rasmussen, Niels Hoegs vel 33C, N-2010 Strommen, Norway

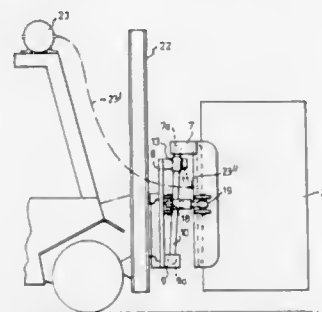
PCT No. PCT/NO83/00027, § 371 Date Feb. 28, 1984, § 102(e) Date Feb. 28, 1984, PCT Pub. No. WO84/00154, PCT Pub. Date Jan. 19, 1984

Continuation-in-part of Ser. No. 394,803, Jul. 2, 1982, abandoned. This PCT application Jul. 4, 1983, Ser. No. 598,311

Int. Cl.⁴ B66F 9/18

U.S. Cl. 414—619

11 Claims



1. A vacuum lift clamp device for handling at least one paper roll, for use in connection with a conventional lifting truck, comprising:

- a frame member operatively connected to the truck,
- a support member connected to the frame member,
- a vacuum pad unit comprising a rigid curved central plate and two rigid curved, outer flap plates hingedly connected, one to each vertical edge of the said central plate, whereby movement of the flap plates about their said hinge connections to the central plate permits the vacuum pad to adapt to different diameter paper rolls, sealing means on the faces of said plates for forming an evacuable vacuum tight area between the plates and the roll, after the plates have been placed against a roll, for holding the roll to the plates,
- a bearing member connected to the upper rear part of said central plate,
- a universal connection means between said support member and said bearing member for supporting the vertical forces exerted by the vacuum pad and by a roll held thereon, while permitting fore and aft tilting movement and limited turning movement, of the bearing member, and hence also the upper part of the vacuum pad, relative to said frame member, a force exerting balance arm operatively connected between said frame member and each of said flap plates, said balance arm engaging said flap plates at a height sufficiently below the height of the bearing member to exert a tilting forward torque effect on the paper

roll which tends to urge the lower part of the roll forwardly relative to the upper part of the roll located adjacent the bearing member, said balance arm having means for substantially increasing, in three stages, the horizontal forces which it exerts against said flap plates, the first and lowest force stage being attained by the rearward movement of the upper part of the roll, relative to the vacuum unit, upon forward movement of the truck against a roll, the second and medium force stage being attained by the forward horizontal turning movement of the two flap plates into a sealing position against the roll upon further forward movement of the truck, and the third and highest force stage being attained by the lifting movement of the paper roll,

whereby, as the truck moves the vacuum pad unit forwardly against a roll, in the said first stage the upper part of the roll moves the upper part of the vacuum pad rearwardly towards the truck until vertical parallelism is attained between the vacuum pad unit and the roll surface, and at the same time turns the vacuum pad unit horizontally until symmetry is attained between the vacuum pad unit and the roll surface, followed by the said second stage, in which the two flap plates are turned forwardly against the roll surface into correct sealing position, caused by increasing horizontal forces transferred from the truck's forward movement force via the balance arm, further followed by the said third stage that occurs in the lifting moment, in which said tilting forward torque effect of the paper roll in a lifted position is converted by the flap plates, via the balance arm, into a substantial additional flap plate closing torque, the said third stage giving an essentially higher sealing pressure to the sealing rubber on the flap plates then would be caused by the vacuum alone, and also attaining a mechanical clamping effect in addition to the holding force caused by the vacuum.

4,640,662

FORK LIFT ATTACHMENT FOR TRACTOR

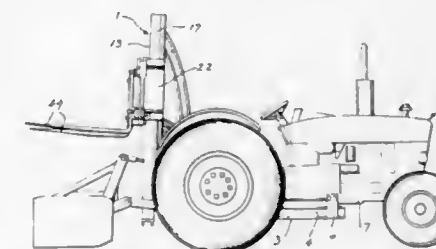
Francis T. Spellman, Jr., Blue Springs, Mo., assignor to Hy-Lite Mfg. Co., Inc., O'Fallon, Mo.

Filed Jun. 3, 1985, Ser. No. 740,735

Int. Cl.⁴ B66F 9/20

U.S. Cl. 414—642

5 Claims



1. In combination, a tractor having a power take-off, three-point hitch means connected to the rear of the tractor and mounted for vertical pivotal movement relative to said tractor, said three-point hitch means including a pair of lower arms and an upper arm disposed between said lower arms and located at a higher level than said lower arms, a sub-frame including a pair of elongated members, means for rigidly connecting the forward ends of the elongated members to the respective sides of said tractor, an upstanding mast pivotally connected to the rear end of the sub-frame and including a pair of spaced side members, said power take-off being aligned with the space between said side members, rack means mounted for movement on said mast, a pair of lift forks carried by said rack means, and means for raising and lowering said rack means relative to the mast to thereby raise and lower said forks, said upper arm extending through the space between said side members and said lower arms located outwardly of the respective side members, whereby said lift forks and said three-point

hitch means can each be used independently without disconnecting the other from said tractor.

4,640,663

BALANCER AND CONTROLLING METHOD THEREOF

Tatsuya Nishimi, Yokohama, and Hiroshi Kikuchi, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,430

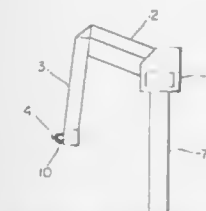
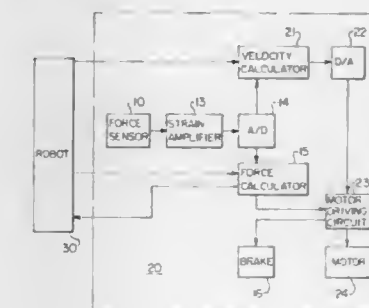
Claims priority, application Japan, Dec. 13, 1982, 57-216801

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.⁴ B66C 23/00

U.S. Cl. 414—730

20 Claims



1. A method of controlling a balancer, comprising the steps of: receiving a first instruction for controlling movement in a vertical direction of the arm of a balancer; moving said arm according to said first instruction while the distal end of said arm is subjected to external forces; detecting a force added to the arm along said vertical direction with a force sensor mounted on the distal end portion of the arm; determining a velocity instruction for the balancer in response to the first signal and directing the distal end of the balancer to follow movement indicated by said external forces by modifying said velocity instruction with a second signal derived from the force sensor; and applying said velocity instruction to control the velocity of the balancer.

4,640,664

METHODS OF CONTROLLING OPERATION OF MULTISTAGE HYDRAULIC MACHINES

Shinsaku Sato, Ebina, and Ichiro Yamagata, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1984, Ser. No. 588,362

Claims priority, application Japan, Mar. 15, 1983, 58-42690; Mar. 15, 1983, 58-42691; Mar. 15, 1983, 58-42692; Mar. 15, 1983, 58-42693

Int. Cl.⁴ F01D 17/00

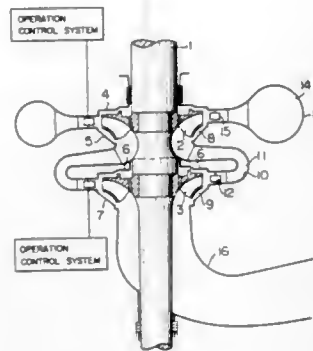
U.S. Cl. 415—1

10 Claims

1. A method of controlling the operation of a multistage hydraulic machine for aimed load adjustment under a normal operation condition in which respective pressure stages are

connected in series through runners and return passages and highest and lowest pressure stages are provided with movable guide vanes having variable degrees of openings, said method comprising the steps of:

controlling the degree of opening of movable guide vanes of one of the highest and lowest pressure stages of the multi-stage hydraulic machine to a degree of opening corresponding to an aimed load and satisfying a relative relation



between degrees of opening of said highest and lowest pressure stage movable guide vanes for achieving a high performance operation under a predetermined head; and controlling the degree of opening of movable guide vanes of the other one of the highest and lowest pressure stages to a degree of opening satisfying a relative relation between the degrees of openings of the movable guide vanes of the highest and lowest pressure stages for maintaining a hydraulically stable operation under a predetermined head.

4,640,665

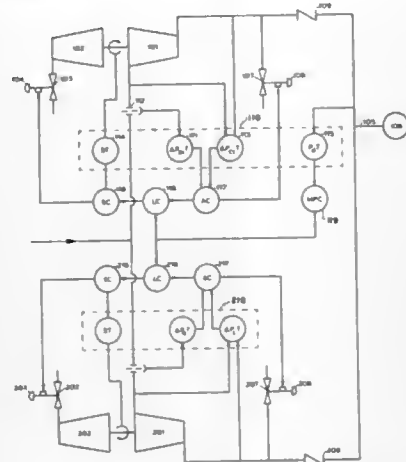
METHOD FOR CONTROLLING A MULTICOMPRESSOR STATION

Naum Staroselsky, and Saul Mirsky, both of Des Moines, Iowa, assignors to Compressor Controls Corp., Des Moines, Iowa
Division of Ser. No. 418,224, Sep. 15, 1982, Pat. No. 4,494,006.
This application Nov. 13, 1984, Ser. No. 657,200

Int. Cl.⁴ F04D 13/12, 27/00

U.S. Cl. 415—1

2 Claims



1. A method of controlling a compressor station receiving gas from an upstream process, compressing the gas and delivering it to a process downstream thereof, said compressor station having a station control means to adjust the station performance to the demand of a process located upstream or downstream, said compressor station including also one dynamic compressor driven by a prime mover, said dynamic compressor having a variable performance, a main control

means associated with said compressor for changing its performance, and a surge control means associated with said compressor for maintaining said compressor along a surge control line having a predetermined equation and located a predetermined distance from its surge limit; said method comprising: transforming said predetermined equation of said surge control line into a variable criterion representing a relative distance between said compressor's operating point and its surge control line, said variable criterion reaching some predetermined value when said relative distance reaches zero value; and

changing set points for said criterion representing the relative distance between said compressor's operating point and its surge control line by changing an output of said station control means to control the performance of said compressor station and limiting said set points and providing for a decoupling between said compressor and said station control means to avoid a dangerous approaching of said surge limit line after the compressor's operating point crosses its surge control line and reaches some predetermined deviation from said control line.

4,640,666

CENTRIFUGAL PUMP

Bengt Sodergard, Upplands Vasby, Sweden, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 535,109, Sep. 23, 1983, abandoned. This application Jul. 3, 1985, Ser. No. 751,472

Claims priority, application Sweden, Oct. 11, 1982, 8205774

Int. Cl.⁴ B02C 18/40

U.S. Cl. 415—121 B

5 Claims



1. A centrifugal pump for pumping liquids containing solid objects, such as rags and other elongated objects, comprising a pump housing having an internal surface bounding an inlet opening and provided with grooves; and an impeller having a part thereof received in said inlet opening for rotation therein, said part having a substantially cylindrical outer circumferential surface which is spaced a distance from said internal surface to form a slot therebetween to reduce underpressure at the center of the impeller, a primary cutting means having at least two substantially axially extending cutting portions on said part projecting radially outwardly from the said cylindrical surface, each of said primary cutting portions having a surface inclined relative to the longitudinal axis of said impeller which cooperates with edges of said internal surface which forms said grooves to cut the objects, at least one secondary cutting means having a surface projecting radially outwardly from said substantially cylindrical outer circumferential surface and up to one edge of said central inlet opening and cooperating with the edges of said internal surface which forms said grooves to cut the objects, and a projection extending axially outside of said inlet opening from each of said primary cutting portions to

create a flow pattern to direct the solid objects to said primary cutting portions.

4,640,667

APPARATUS FOR CONVEYING AND COMPRESSING A GASEOUS MEDIUM

Christian Trepp, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

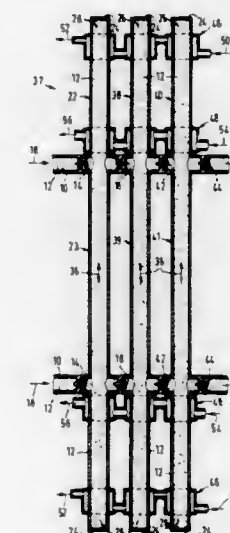
Division of Ser. No. 601,370, Apr. 17, 1984, abandoned. This application Nov. 13, 1985, Ser. No. 797,639

Claims priority, application Switzerland, Apr. 29, 1983, 2339/83

Int. Cl.⁴ F04B 19/24, 23/04

U.S. Cl. 417—52

4 Claims



1. In combination

a pair of apparatus for conveying and compressing a gaseous medium, each apparatus comprising a line for conveying a gaseous medium, a plurality of vessels connected in series to said line, each vessel having a chamber in communication with said line for receiving gaseous medium, heat exchange means disposed about each said vessel for exchanging heat with a gaseous medium in said respective vessel to generate thermoacoustic oscillations therein, and check valves in said line about each said vessel for conveying a compressed gaseous medium through said line in a downstream direction; and

a plurality of tubes connected to and between respective vessels of each apparatus to increase the amplitude of oscillation therein.

4,640,668

CEILING FAN WITH ADJUSTABLE BLOWING SCOPE THRU A SPEED-SERVO AND WITH DRIVING SPEED CONTROL MEANS

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shlann, Taiwan

Filed Aug. 2, 1982, Ser. No. 404,384

Int. Cl.⁴ F04B 35/04; F04D 29/36

U.S. Cl. 417—354

1 Claim

1. A ceiling fan comprising:

an outer case having a ring-shaped groove under a top portion thereof and having a ring-shaped groove under a bottom portion thereof;

a driving motor, housed in said outer case, having a rotor with upper and lower shaft portions;

a first flange bushing positioned at said top portion of said case and having a ring-shaped groove corresponding to

the ring-shaped groove under the top portion of said outer case;

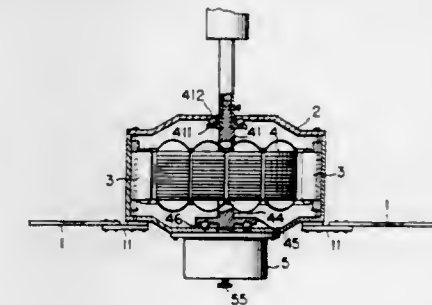
a second flange connected to said lower shaft portion, said second flange positioned at said bottom portion of said case and having a ring-shaped groove corresponding to the ring-shaped groove under the bottom portion of said outer case;

steel balls positioned in a first track defined by said ring-shaped groove in said first flange bushing and the corresponding ring-shaped groove in said top portion of said outer case;

steel balls positioned in a second track defined by said ring-shaped groove in said second flange and said corresponding ring-shaped groove under said bottom portion of said outer case;

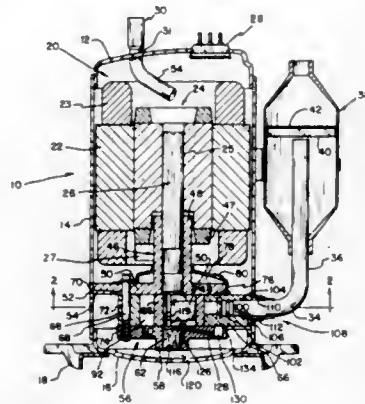
an adjustable blade structure attached to said outer case, said adjustable blade structure consisting of a plurality of fan shank seats, each said fan shank seat having a base and a pivot joint, each said fan shank base attached to said outer case, a plurality of fan shanks, each shank respectively pivotally mounted on a said pivotal joint of a said fan shank seat, a plurality of fan blades, each said fan blade respectively attached to a said corresponding said fan shank; and

means for motor speed control, wherein said motor speed control means includes an adjustable centrifugally controlled triac, said triac providing an intermittent power



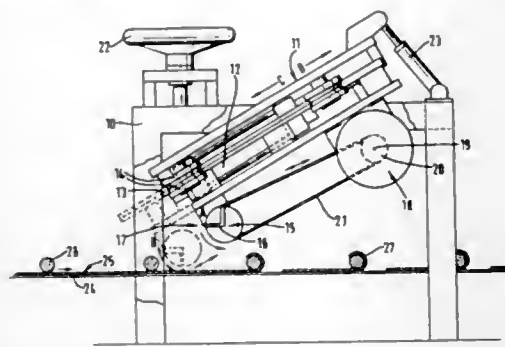
whereby power to the motor is interrupted on an intermittent basis to thereby regulate the motor speed, said triac having a collector and a base, a centrifugal switch, said collector and said base electrically connected to said centrifugal switch, said triac is electrically in series with said driving motor which are then connected in parallel with an AC power supply, said lower shaft portion of said rotor coupling with said centrifugally controlled means, said centrifugally controlled means including two conducting pieces installed in close abutting contact on the lower end of said shaft portion, biasing means comprising a sliding piece connected with a pair of weighted blocks and a spring, an insulating block, said biasing means biasing said insulating block, said insulating block then in turn urging said two connecting pieces into electrical contact, whereby when said centrifugally controlled means rotates together with said outer case and reaches a preset speed, the said insulating block will be pulled downwardly and said two conducting pieces will thus separate from each other to thereby interrupt the power supply circuit to said driving motor such that the running speed of driving motor reduces below said preset speed and whereby said biasing means will urge said insulating blocks upwardly against said conducting pieces to re-make electrical contact between said conducting pieces; and said centrifugally controlled means may be set at said preset speed by adjusting the tension of said biasing means by means of a screw.

4,640,669
ROTARY COMPRESSOR LUBRICATION
ARRANGEMENT
 Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
 Continuation of Ser. No. 670,307, Nov. 13, 1984, abandoned.
 This application Mar. 6, 1986, Ser. No. 837,660
 Int. Cl.⁴ F04B 17/00, 35/04
 U.S. Cl. 417—410 10 Claims



1. In a rotary compressor including a vertical crankshaft rotatably journaled in a bearing, a compressor cylinder including a vane slot in a wall of said cylinder and a sliding vane slidably received in said vane slot for compressing a compressible gas, said vane having at least two sliding surfaces, lubrication means for lubricating said vane comprising:
 an oil sump located in a lower portion of said housing;
 oil pumping means comprising an axial passageway in said crankshaft, said passageway communicating with said oil sump for pumping oil upwardly from said sump;
 an upwardly extending lubrication passage in said cylinder, said passage being open to said vane slot;
 duct means directly connecting said lubrication passage to said axial passageway for supplying oil upwardly under positive pressure against gravity from said axial passageway to said lubrication passage for lubricating said at least two sliding surfaces of said vane.

4,640,670
PREPARATION OF A ROLLED PASTRY PRODUCT
 Anders G. Svengren, Ängelholm, and Bertil A. Ganrot, Bjur, both of Sweden, assignors to Nestec S.A., Vevey, Switzerland
 Division of Ser. No. 640,700, Aug. 14, 1984, Pat. No. 4,600,595.
 This application May 9, 1986, Ser. No. 861,538
 Claims priority, application European Pat. Off., May 2, 1984, 84104918.2
 Int. Cl.⁴ B29C 53/02; A21C 5/00, 11/10
 U.S. Cl. 425—142 10 Claims

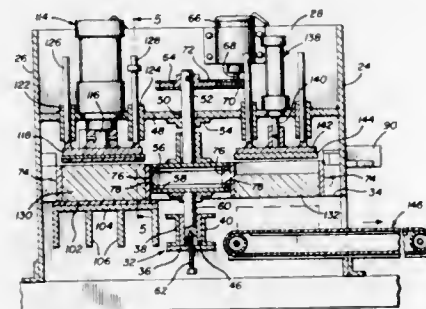


1. An apparatus which comprises a conveyor means, means for feeding a pastry material in a sheet onto the conveyor, a

knife capable of oscillating and having a cutting edge positioned above the conveyor such that the cutting edge of the knife extends laterally across the width of the sheet of pastry and the conveyor, and means for controlling the movement of the knife such that

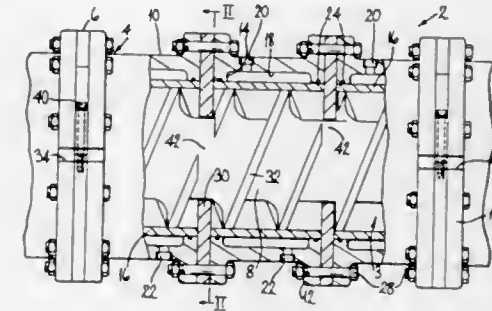
- the cutting edge contacts and cuts through the pastry sheet which advances on the conveyor, and
- the knife then raises and rotates about its longitudinal axis in a direction such that the motional vector of the cutting edge is counter to the downstream direction of the conveyed sheet of pastry material and maintains contact with and lifts up and folds over and then releases the forward edge of the pastry sheet onto the advancing pastry sheet, and
- the knife then descends and rotates in the reverse direction so that the cutting edge is in a position to again contact and cut through and fold the advancing pastry sheet behind the advancing cut and folded portion.

4,640,671
ADOBE BLOCK PRESS
 John W. Wright, P.O. Box 7397, Grants, N. Mex. 87020
 Filed Dec. 5, 1985, Ser. No. 804,860
 Int. Cl.⁴ B28B 17/00
 U.S. Cl. 425—149 9 Claims



1. An apparatus for forming building blocks from freshly dug soil, said apparatus including a frame, a rotary table journaled from said frame for intermittent angular displacement about an upstanding axis and defining at least three peripherally spaced open-ended vertically extending sleeve-type cavities spaced equally radially outwardly from said axis, said frame defining first soil receiving, second pressure head and third ejection head stations spaced about said axis and with which said cavities are successively registrable, said soil receiving station being adapted to receive freshly dug soil and opening downwardly for discharging soil therefrom into cavities of said table successively registered therewith, said pressure head station including downwardly facing pressure head means displaceable downwardly into a cavity of said table registered therewith for vertically compressing the soil therein and said ejection head station including a vertically shiftable ejection head for ejecting a compressed soil block from a cavity of said table registered therewith, said frame including horizontal plate means disposed at and extending along an arcuate path portion extending at the first and second stations and defining a bottom for said cavities disposed thereat as they move to said first and second stations, adjustment means operably connected between said frame and table for vertically shifting said table along said upstanding axis.

4,640,672
MODULAR EXTRUDER BARREL CONSTRUCTION
 Henry Ellwood, Rochdale, England, assignor to Farrel Corporation, Ansonia, Conn.
 PCT No. PCT/GB84/00396, § 371 Date Jul. 3, 1985, § 102(e)
 Date Jul. 3, 1985, PCT Pub. No. WO85/02364, PCT Pub. Date Jun. 6, 1985
 PCT Filed Nov. 20, 1984, Ser. No. 756,514
 Claims priority, application United Kingdom, Nov. 26, 1983, 8331653
 Int. Cl.⁴ B29B 7/13
 U.S. Cl. 425—192 R 5 Claims



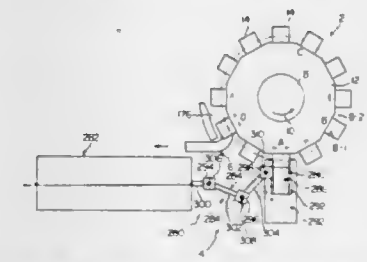
1. An extruder characterized by a plurality of barrel modules arranged in alignment, at least two adjacent barrel modules having a plate secured between each pair of adjacent barrel modules, each plate and each barrel module being interchangeable, each plate being formed of two or more arcuate parts each plate having an opening passing therethrough and comprising projections extending into said opening, the opening of the plate and internal surfaces of the barrel modules forming a substantially continuous passageway which provides an extrusion chamber of a barrel of the extruder and a screw in the extrusion chamber having one or more helical flights projecting from a root portion of the screw, the flights being discontinuous and arranged to leave annular spaces between adjacent flight sections into which the projections extend towards the root of the screw, the barrel modules being provided with external flanges extending around end portions thereof, the flanges containing a plurality of bore holes which correspond to bore holes passing through a respective part of a plate around the external circumference thereof, so that the plate parts are secured between two adjacent barrel modules by fastening means inserted in aligned bore holes of the plate parts and external flanges, and the plate parts are removable in a radial direction when the fastening means are removed from the plate parts.

4,640,673
COMPRESSION MOLDING APPARATUS
 Hiroshi Takeda; Noritsugu Oshima, both of Kanagawa; Tateo Kubo, Hiratsuka, and Kenichi Sakaguchi, Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan
 Filed May 3, 1985, Ser. No. 730,534
 Claims priority, application Japan, May 22, 1984, 59-101776
 Int. Cl.⁴ B29C 43/08, 45/06
 U.S. Cl. 425—297 31 Claims

1. A compression molding apparatus comprising
 a rotary compression molding means including a rotating supporting member mounted rotatably about its central axis, a plurality of molding die means mounted on said rotating supporting member at circumferentially spaced intervals, each of said molding die means having an upper die assembly and a lower die assembly cooperating with each other, at least one of the upper die assemblies and one of the lower die assemblies being freely movable with respect to the other, a driving source for rotating said rotating supporting member in a predetermined direction and moving said molding die means through a circular conveying passage including a material charging zone, a

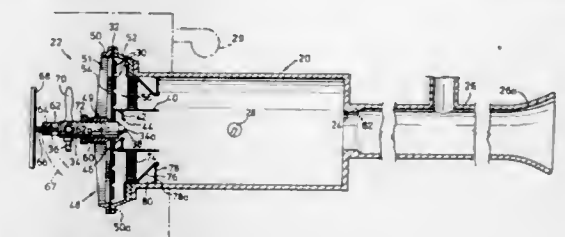
molding zone, a cooling zone and an article discharging zone located successively, and a die opening-closing means for moving at least one of said upper and lower die assemblies in a predetermined manner with respect to the other according to the movement of said molding die means;

a material feed means for feeding a plastic material to said molding die means in said material charging means; and an article carrying means for carrying the molded article from the molding die means in said article discharging zone, wherein said material feed means comprises an extruding means for extruding a molten plastic material through an extrusion opening and a cutting means for cutting the



plastic material extruded from the extrusion opening and feeding it to the molding die means; the cutting means comprises comprising a rotating cutting blade mounted for rotation across the extrusion opening, a driving source and drivingly connecting means for drivingly connecting the driving source to the rotating cutting blade; the drivingly connecting means including a non-uniform speed rotating mechanism for converting the uniform speed rotation of the driving source to a non-uniform speed rotation, and a rotating angular position adjusting mechanism in which the relative angular position between its input end drivingly connected to the output end of the non-uniform speed rotating mechanism and its output end drivingly connected to the rotating blade can be freely adjusted.

4,640,674
PULSE COMBUSTION APPARATUS
 John A. Kitchen, Hastings, Canada, assignor to John A. Kitchen Ltd., Hastings, Canada
 Filed Jan. 2, 1986, Ser. No. 815,488
 Int. Cl.⁴ F23C 11/04
 U.S. Cl. 431—1 11 Claims



1. A pulse combustion apparatus comprising:
 a combustion chamber having inlet means for fuel charges and an outlet for exhaust gases remote from the inlet means;
 an exhaust pipe extending from said exhaust gas outlet and forming a resonant system with the combustion chamber; and
 means operable to initiate combustion in said chamber; wherein said fuel charge inlet means comprises:
 a plurality of one way air inlet valves which open and permit air to enter the combustion chamber during low pressure

portions of successive pulse combustion cycles, and close during high pressure portions of said cycles, said valves including at least one primary air inlet valve;
a fuel nozzle having a fuel inlet for connection to a fuel supply externally of the combustion chamber, and a fuel outlet;
means removably supporting the nozzle with its fuel outlet in the combustion chamber adjacent said primary air inlet valve, while permitting removal of the nozzle at appropriate times and replacement with a nozzle for a different fuel;
baffle means within the combustion chamber co-operating with said nozzle to define a metering orifice through which air entering the combustion chamber from the primary air inlet valve is constrained to flow;
said nozzle support means being adapted to position the nozzle with respect to said baffle means to determine the size of said metering orifice according to the volume of primary air required to maintain continuous combustion commensurate with a pulse cycle of reasonable strength.

4,640,675

METHOD OF BURNING LOW HYDROGEN CONTENT FUELS

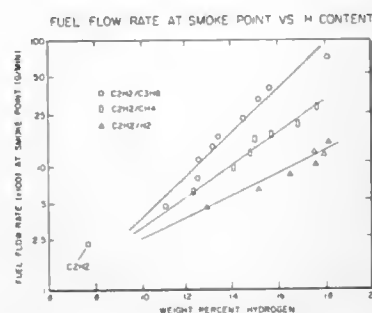
Gary J. Green, Yardley, Pa.; Harry A. McVeigh, Morrestown; Joe E. Penick, Princeton, both of N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 559,124

Int. Cl.⁴ F23C 1/00

U.S. Cl. 431—2

15 Claims



11. In a process for burning a heavy residual fuel by injecting said fuel into a burning zone via an atomizer and wherein said fuel has a viscosity at the atomizer of at least about 20 centistokes, the improvement comprising dissolving in said residual fuel 1 to 20 wt% of a light hydrogen rich hydrocarbon, which comprises methane and at least one other gas selected from the group consisting of ethane, propane, butane, ethylene, propylene and butylene, admixed with the methane, whereby the viscosity and sooting tendency of said fuel are reduced.

4,640,676

BURNER CONTROL DEVICE, SYSTEM AND METHOD OF MAKING THE SAME

Jay R. Katchka, Cypress; George A. Yeaman, and Richard W. McKinney, both of Lakewood, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 20, 1985, Ser. No. 767,721

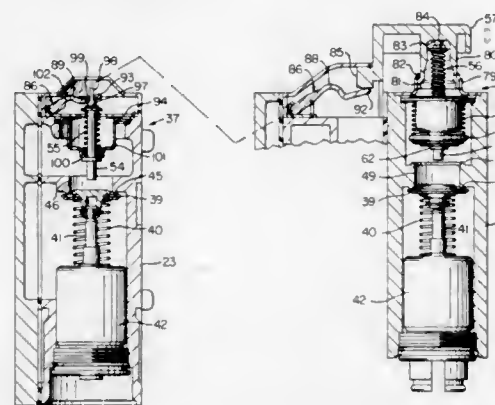
Int. Cl.⁴ F23Q 9/08

U.S. Cl. 431—54

15 Claims

1. In a control device for supplying fuel to a burner means, said device comprising a housing means having an inlet means for being interconnected to a source of fuel and having an outlet means for being interconnected to said burner means, and first and second control valve means carried by said housing means and being in series to connect said inlet means to said outlet means only when both of said control valve means are in an open condition thereof, each said control valve means

comprising a movable valve member resiliently biased closed and an independent electromagnetic valve member latching means energizable to hold its respective said valve member open and deenergizable to allow its respective said valve member to close, each said control valve means having movable means to open its respective said valve member to a latching position so as to be held open by its respective said latching means when its respective said latching means is energized, the



improvement comprising a single manually movable actuator means carried by said housing means and comprising a push button-like member and means operatively interconnecting said movable means together and being operatively associated with said push button-like member so that said valve members will move substantially in unison to their said latching positions as said actuator means is being moved to an actuated position thereof.

4,640,677

GAS CONTROL DEVICE FOR CONTROLLING THE FUEL GAS AND OXIDIZING AGENT SUPPLY TO A BURNER IN AN ATOMIC ABSORPTION SPECTROMETER

Bernhard Huber, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Überlingen, Fed. Rep. of Germany

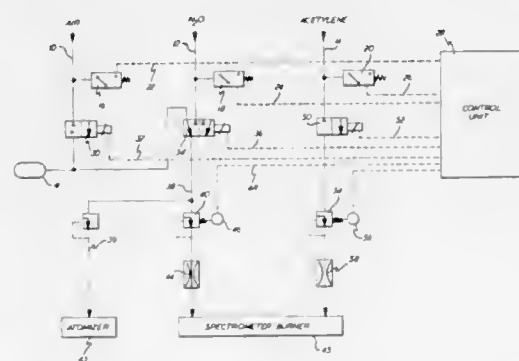
Filed Feb. 25, 1985, Ser. No. 704,830

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407552

Int. Cl.⁴ F23N 1/02

U.S. Cl. 431—89

6 Claims



1. A device for controlling fuel gas and oxidizing agent supplied to a burner (45) in an atomic absorption spectrometer, comprising:

a fuel gas line (14) for supplying fuel gas to said burner (45);
an oxidizing agent supply conduit (38) for supplying an oxidizing agent to said burner (45);

a first oxidizing agent supply line (10) for supplying a first oxidizing agent to said oxidizing agent supply conduit (38);
a second oxidizing agent supply line (12) for supplying a second oxidizing agent, having a higher oxygen content than said first oxidizing agent, to said oxidizing agent supply conduit (38);
a control unit (28);
a first restrictor (58) and a first pressure regulator (54) disposed in said fuel gas line; a second restrictor (44) and a second pressure regulator (40) disposed in said oxidizing agent supply conduit (38); the regulators being connected upstream of the restrictors, respectively;
first (56) and second (46) servomotors connected to said first and second pressure regulators, respectively; each of said servomotors being connected to receive signals from said control unit (28) for adjusting the pressure settings of said pressure regulators, respectively;
a 3/2-directional solenoid control valve (34) connected between said oxidizing agent supply conduit (38) and said first oxidizing agent supply line (10) in a first valve position, and said 3/2-directional solenoid control valve (34) being connected between said oxidizing agent supply conduit (38) and the second oxidizing agent supply line (12) in a second valve position; said solenoid control valve (34) being connected to receive signals from said control unit (28) for controlling the valve position;
a first shut-off solenoid valve (30) disposed in said first oxidizing agent supply line (10), said first shut-off solenoid valve being connected to receive signals from said control unit (28) for controlling the first shut-off solenoid valve;
a second shut-off solenoid valve (50) disposed in said fuel gas line upstream of said first pressure regulator (54), said second shut-off solenoid valve (50) being connected to receive signals from said control unit (28) for controlling the second shut-off solenoid valve position;
a first pressure sensor (16) disposed in said first oxidizing agent supply line (10) upstream of said first shut-off solenoid valve (30), said first pressure sensor being connected to send signals to said control unit (28) responsive to the pressure in the first oxidizing agent supply line (10);
a second pressure sensor (18) disposed in said second oxidizing agent supply line (12) upstream of said 3/2-directional solenoid control valve (34), said second pressure sensor being connected to send signals to said control unit (28) responsive to the pressure in the second oxidizing agent supply line (12);
a third pressure sensor (20) disposed in said fuel gas line upstream of said second shut-off solenoid valve (50), said third pressure sensor being connected to send signals to said control unit (28) responsive to the pressure in the fuel gas line (14).

4,640,678

DUAL-VALVE AIR-GAS CONTROLLER

Joseph Fraioli, 8 Seymour Pl., White Plains, N.Y. 10605

Filed Sep. 26, 1985, Ser. No. 780,666

Int. Cl.⁴ F23N 5/00

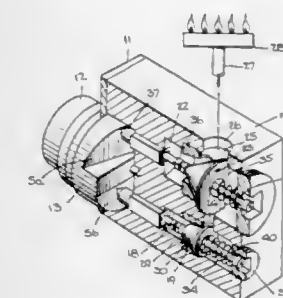
U.S. Cl. 431—75

8 Claims

1. A dual-valve controller adapted to mix incoming air and gas derived from air and gas sources to produce a combustible output mixture and to adjust the flow rate of the output mixture without altering the air-gas ratio, said controller comprising:

(A) a mixing chamber yielding said output mixture;
(B) an air-control valve whose input is coupled to the air source and whose output is coupled to said chamber to supply air thereto at a flow rate which depends on the extent to which this valve is open;
(C) a gas-control valve whose input is coupled to the gas source and whose output is coupled to said chamber to supply air thereto at a flow rate which depends on the

extent to which this valve is open, said gas-control valve being in parallel relation to said air-control valve;
(D) means including a single control element coupled both to said air control and said gas control valve to concurrently operate these valves from an initially closed state to a fully open state whereby the flow rate of the output mixture yielded by the chamber may be varied progressively, said means including a circular cam block coupled to said control element and turned thereby, said block having an indented inner face defining upper and lower



cam surfaces, said valves each having an axially displaceable valve element and provided with a cam follower which engages a respective cam surface, the upper cam surface having a depth relative to the inner face which is at a maximum value at one end of the block and is at a minimum value at the other end thereof, said lower cam surface having the reverse configuration whereby when the block is turned, both cam followers are concurrently displaced axially to progressively open their associated valves as the maximum setting of the controller is approached.

4,640,679

FLAME SHIELD FOR CIGARETTE LIGHTER AND CIGARETTE LIGHTER INCLUDING SAID FLAME SHIELD

Denis Perrin, 1315 Avenue "P", Ottawa, Ontario, Canada K1G 0B4

Filed Oct. 15, 1984, Ser. No. 661,041

Int. Cl.⁴ F23Q 25/00

U.S. Cl. 431—146

9 Claims



1. In a disposable lighter having a fuel receptacle, a pyrophoric sparking wheel lighting mechanism mounted on the top edge thereof, and a finger-actuated fuel control valve adjacent said sparking wheel, the improvement comprising: a windshield of similar cross-section to that of said receptacle and slidably retained on said receptacle, said windshield comprising two solid side walls and a solid back wall, an open top and an open front wall having a lower peripheral ring joining two mutually opposed solid side walls, said solid side walls having a cut-away portion to allow unhindered access by a thumb of a user to said sparking wheel lighting mechanism, said open front wall having a cigarette-access opening above said cut-

away portion of said side walls, said windshield being slidable along the outside of said receptacle from a lower position where the bottom periphery of said windshield abuts a lower cap on said receptacle to an upper position where the upper edge of said lower peripheral ring abuts an upper stop member on said receptacle said windshield being between about 50% and about 100% of the height of the receptacle.

4,640,680

PORTABLE GAS-FIRED FORCED-DRAFT HEATER

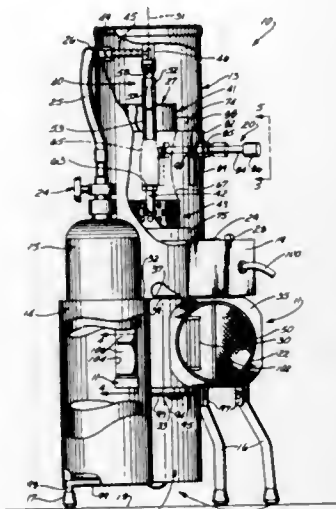
Thaddeus A. Schilling, 549 Shoshone St., Lander, Wyo. 82520

Filed May 20, 1985, Ser. No. 735,993

Int. Cl.⁴ F23D 14/46

U.S. Cl. 431—350

26 Claims



1. Combustion apparatus for burning a gaseous fuel-air mixture and adapted for use within a surrounding high velocity air stream, the apparatus comprising

(a) a fuel and air mixing nozzle assembly for mixing fuel supplied to the assembly with air, for creating an essentially entirely gaseous mixture of fuel and air, and for discharging that mixture along a discharge axis of the assembly to a combustion zone surrounded by the air stream, the assembly being adapted for connection to a source of fuel for supply of fuel from the source to the assembly, the assembly having a discharge end on said axis through which the mixture is discharged to the combustion zone, and

(b) spaced upstream and downstream combustion zone shroud means disposed along said axis respectively upstream of and adjacent the nozzle assembly discharge end and at a location downstream of said assembly discharge end for creating in the combustion zone, during the existence of said air stream therepast, a region of relatively nonturbulent gas having a pressure higher than the pressure in said air stream and in which combustion of the fuel-air mixture can occur, the shroud means including plate means disposed substantially normal to the axis upstream and downstream of the discharge end of the nozzle assembly, the upstream shroud means including a cup-like shroud having a diameter greater than that of the nozzle assembly discharge end and disposed coaxially of the nozzle assembly discharge end upstream of said higher pressure region to be open toward the downstream shroud means, said shroud having walls substantially parallel to the axis, the shroud having a base comprised by said plate means between the walls thereof and apertures of selected size through the base adjacent the shroud walls,

(c) the apparatus being characterized by the absence, between the upstream and downstream shroud means, of

physical structure between the high velocity air stream and the region of relatively nonturbulent gas.

4,640,681

METHOD AND APPARATUS FOR THE REMOVAL OF HARMFUL AND WASTE MATERIALS BY COMBUSTION

Eberhard Steinbiss, Cologne; Horst Herchenbach, Hennef, and Albrecht Wolter, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 644,929, Aug. 27, 1984, abandoned.

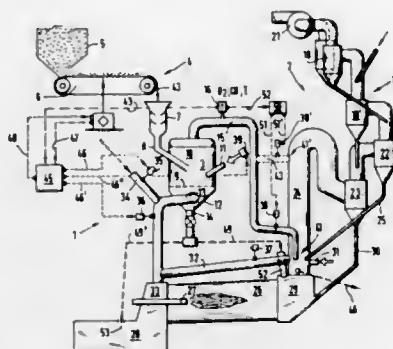
This application Aug. 30, 1985, Ser. No. 771,156

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330667; Apr. 21, 1984, 3415211

Int. Cl.⁴ F27B 15/00; F23D 1/00

U.S. Cl. 432—14

11 Claims



1. A method for the removal of hazardous substances from hazardous and waste materials which comprises:

providing a process for manufacturing cement clinker which includes the steps of preheating the cement raw material, calcining the preheated raw material in a precalciner, sintering the calcined raw material in a kiln following said precalciner, and cooling the clinker thus produced in a cooler,

diverting heated air from the cooler of the cement making process according to the heat content of the substances to be burned at temperatures in the range from 600° C. to 950° C. to a furnace in which said hazardous and waste materials are combusted under conditions sufficient to achieve a combustion temperature and flue gas temperatures in said furnace of at least 1250° C., withdrawing and discharging a portion of the hot flue gas from said kiln by means of a bypass, the amount of said portion depending on the relative amounts of hazardous materials contained in said furnace flue gas,

directing the hot flue gas from said furnace into the precalciner of said cement making process for supplying heat thereto, and

adding to said hazardous and waste material a quantity of calcium containing carbonate carriers such that the CaO content of the calcination product is in the range of between 30% to 70% by weight.

4,640,682

PULSE JET COMBUSTOR DEHYDRATION CONE CONSTRUCTION

Robert R. Gray, 110 Via Monte Mar Dr., Gladstone, Ore. 97027, and Thomas G. Lindahl, 7325 SW. Mallard Ct., Portland, Ore. 97223

Filed Oct. 3, 1985, Ser. No. 783,858

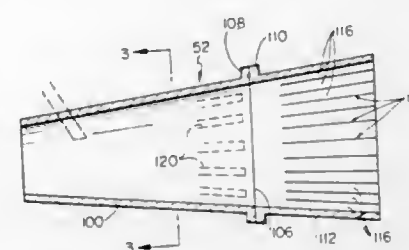
Int. Cl.⁴ F27B 15/00; B01D 1/16; B01F 15/06; F27D 7/00

U.S. Cl. 432—58

5 Claims

1. In pulse jet combustor apparatus for the drying of particulate material of the type having
a combustion chamber,
an air inlet conduit connected to one end thereof

a primary exhaust gas outlet conduit connected to the other end thereof,
an elongate transition-tailpipe section connected to said primary exhaust conduit, and
a frusto-conically shaped drying section of increasing diameter connected to the downstream end of said transition-tailpipe section having means for introducing particulate material to be dried therein,



the improvement wherein

the downstream portion of said drying section includes a plurality of longitudinal slits extending through the terminal end thereof forming a plurality of individually vibratable finger-like sections integrally connected to the drying section at a location spaced a predetermined distance upstream of said terminal end thereof.

4,640,683

KILN FOR FIRING HEAVY CERAMICS

Giorgio B. Mori, Ctra. Alcora, Km 10,400, Castellon, Spain

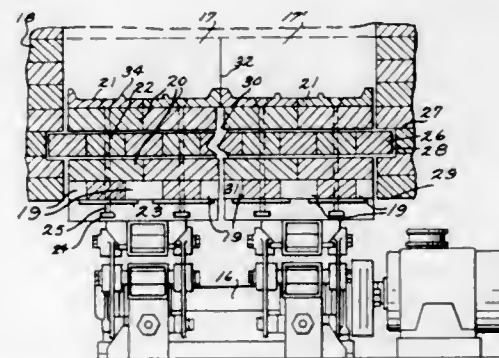
Filed Mar. 12, 1984, Ser. No. 588,590

Claims priority, application Spain, Mar. 22, 1983, 520853; Mar. 29, 1983, 521117; Mar. 29, 1983, 521118

Int. Cl.⁴ F27B 9/14; F27D 15/02; F26B 9/00

U.S. Cl. 432—134

11 Claims



1. A kiln for firing heavy ceramic articles comprising a hearth including a transport surface portion, a loading and unloading end disposed at spaced ends of said hearth, a supporting chassis, means mounting said transport surface portion on said chassis so that said surface portion is movable relative to said chassis, means rigidly mounting said chassis in said kiln, drive means for imparting a predetermined vibratory motion to said surface portion, said drive means including an eccentric member whereby said motion is generally rearwardly and downwardly directed during a first portion of a vibratory cycle, said means mounting said transport surface portion including spring means and said drive means including releasing means so that upon release of said surface portion from said drive means, said surface portion will move, under the influence of said mounting means and spring means, upwardly and forwardly an extent sufficient to shift an article resting on said surface portion in a forward direction in said hearth toward said unloading end, said means mounting said surface portion including conduit means extending along at least a portion of

said hearth below said transport surface portion for conveying cool air along said hearth exteriorly thereof, insulating material being disposed between said transport surface portion and said conduit means, said kiln further including first conveying means for conveying articles to be fired to adjacent said loading end of said surface portion, a second conveying means for receiving articles from said first conveying means and pusher means for moving articles from said second conveying means to said transport surface portion, said kiln including an unloading conveying means adjacent said unloading end, a detainer stop extending transverse to said unloading end and being movable by contact with articles discharged from said surface portion, an unloading conveyor means cooperating with said detainer stop to receive and periodically move articles received from said surface portion away from said unloading end of said kiln.

4,640,684

DENTAL DRILLING ASSEMBLY

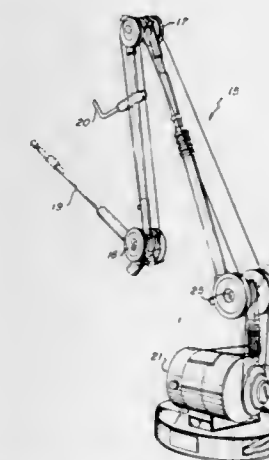
Chong S. Hwang, 41-80 Parsons Blvd., Flushing, N.Y. 11355

Filed Sep. 25, 1985, Ser. No. 780,023

Int. Cl.⁴ A61C 1/06

U.S. Cl. 433—110

2 Claims



1. A triple arm dental drilling assembly containing arm members provided with pulley wheels and a motor provided with large and small size pulley wheels for conveying a belt member thereon, the improvement which comprises means for adjusting the distance between the arm pulley wheels that are closest to the motor, said means comprising a removably attached extension member inserted between said arm pulley wheels, whereby said extension member can be inserted between said arm pulley wheels to increase the distance therebetween to render them compatible with the large size pulley wheel on the motor, or can be removed to render them compatible with the small size pulley wheel on the motor.

4,640,685

HAND-HELD LIGHT FILTER

Theodore P. Croll, 685 S. Chubb Dr., Doylestown, Pa. 18901

Filed Apr. 15, 1985, Ser. No. 723,332

Int. Cl.⁴ A61C 3/00

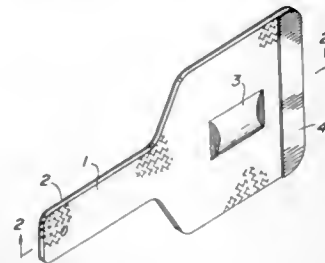
U.S. Cl. 433—141

7 Claims

1. A hand-held light shield device for use in dentistry, comprising:

a. a main paddle element which has optical properties necessary to filter out physically harmful light,

- b. an intensity filter affixed to one side of said main paddle element,
c. a magnifying element on said main paddle portion, and

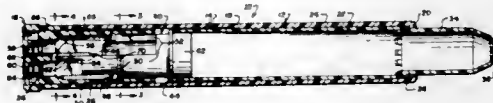


- d. a light blue colored strip affixed to the end of said main panel portion.

4,640,686
AUDIBLE SIGNAL AUTOINJECTOR TRAINING DEVICE
N. Lawrence Dalling, Winchester, Va., and Linda A. Gordon, Germantown, Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Feb. 24, 1986, Ser. No. 832,224
Int. Cl.⁴ G09B 23/28
U.S. Cl. 434—262

16 Claims

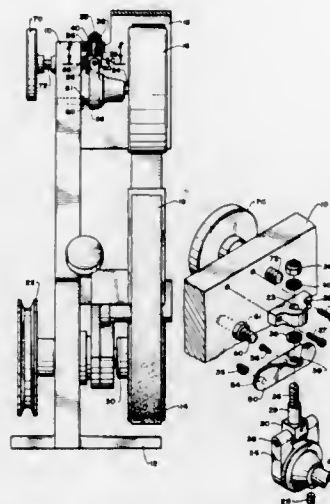


1. An automatic injector training device comprising an automatic injector simulating assembly having a forward end arranged to be engaged with a muscle injection site of the user and an exterior periphery adapted to be manually gripped by a user, said assembly including an outer structure, a movable structure mounted for movement with respect to said outer structure (1) from a storage position into an audible signal producing position in response to an actuating movement performed by the user while manually gripping the exterior periphery of said assembly and thereby maintaining the forward end of said assembly in engagement with the injection site and (2) from said audible signal producing position into said storage position in response to a reset movement performed by the user, cooperating audible signal producing means carried by said movable structure for movement therewith and operatively fixed with respect to said outer structure for producing an audible signal when said movable structure is moved from its storage position into its audible signal producing position in response to an actuating movement, safety means mounted for manual movement out of a safety position with respect to said assembly, and means operatively associated with said safety means (1) for preventing movement of said movable structure out of said storage position in response to a user actuating movement when said safety means is in said safety position (2) for enabling said movable structure to be moved from its storage position into its audible signal producing position in response to a user actuating movement when said safety means has been manually moved out of said safety position and (3) for enabling said movable structure to be moved from its audible signal producing position back into its storage position in response to a user reset movement.

4,640,687
IDLER PULLEY ADJUSTER
Donald W. MacCarthy, Sr., 11227 E. Rincon Dr., Whittier, Calif. 90606

Filed Jul. 2, 1985, Ser. No. 751,417
Int. Cl.⁴ F16H 7/08; B24B 21/00
U.S. Cl. 474—101

4 Claims



1. A device for adjusting an idler pulley comprising: an upright frame; a first adjustable member rotatably attached to said frame for adjustment about a first axis; a second adjustable member rotatably attached to said first member for adjustment about a second axis substantially perpendicular to the first axis; an idler pulley rotatably supported by said second member on a third axis substantially perpendicular to said first two axes; an elongate flat tracking bracket having a securing screw there through for engaging said first adjustable member to said tracking bracket, said tracking bracket having a projection means extending from its rear; spring means positioned between said main frame and said rear of said tracking bracket and engaging said projection means for biasing said tracking bracket away from said main frame; hanger means attached to said frame having a hole for holding said tracking bracket and said first adjustable means; tracking knob means having a threaded shaft for pivoting said tracking bracket and biasing it towards said main frame; and, screw means having its end projecting from said frame and positioned adjacent to said second adjustable member for pivoting said second adjustable member.

4,640,688
URINE COLLECTION CATHETER
Thomas M. Hauser, Sanibel, Fla., assignor to Mentor Corporation, Minneapolis, Minn.

Filed Aug. 23, 1985, Ser. No. 768,633
Int. Cl.⁴ A61F 44/00

U.S. Cl. 604—352

6 Claims

1. A urine collection catheter which is secured only to the tip of the penis and is formed of thin resilient material, the catheter having a tubular portion open at its outer end and designed to be connected to a urine receptacle and a cup shaped portion integrally connected to the inner end of said tubular portion, and forming the inner terminal part of said catheter, said cup shaped portion being of a shape and size to conform generally with that of the tip or glans of a typical penis, said cup shaped portion having a non-allergic pressure sensitive adhesive on the inner surface thereof to enable said

catheter to adhere to the tip of a penis in urine tight relation when the catheter is pressed into engagement with such tip to body for the migration of at least one medicament through the skin into the blood stream comprising:

at least two electrode elements forming said applicator and being separated from each other, reservoir means, in at least one of said electrode elements of said applicator, for containing said medicament, at least one of said electrode elements comprise reservoir means separated by a semi-permeable member which forms a drug gradient across said reservoir means,



hold the tubular portion in urine conducting relation with the penis.

4,640,689
TRANSDERMAL DRUG APPLICATOR AND ELECTRODES THEREFOR

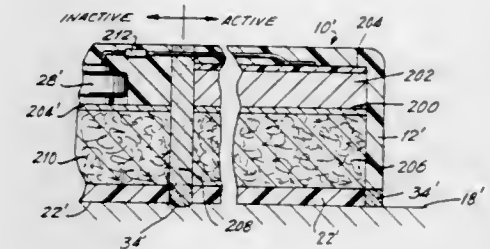
Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Continuation of Ser. No. 702,486, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723, which is a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, which is a continuation-in-part of Ser. No. 778,183, Sep. 16, 1985, abandoned. This application Mar. 12, 1986, Ser. No. 839,050
Int. Cl.⁴ A61N 1/30

U.S. Cl. 604—20

9 Claims

1. A transdermal drug applicator for application to a living



a circuit means, including a power source, for supplying electric power to said electrodes and said reservoir means, cover means partially enclosing at least said reservoir means, and adhesive means for affixing said applicator to said skin, whereby an electrical circuit through the skin is formed when said applicator is affixed to said skin, thereby creating at least one physico/chemical mass transfer phenomena which causes said medicament to migrate through the skin.

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CHEMICAL

4,640,690

COLORED THERMOPLASTIC RESIN COMPOSITION CONTAINING A COLORANT HAVING AN ALKYLENOXY-SUBSTITUTED CHROMOPHORE GROUP

Alan S. Baumgartner; Patrick D. Moore, and Richard A. Van-Dahm, all of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 13, 1985, Ser. No. 775,614
Int. Cl.⁴ D06P 3/00, 5/13, 3/79, 3/24

U.S. Cl. 8—506 8 Claims

1. A process for coloring a thermoplastic resin which comprises incorporating into said resin while said resin is in a molten state a colorant in the form of a polyalkyleneoxy-substituted chromophore group in a minor amount sufficient to provide coloration to said thermoplastic resin.

4,640,691

PAD DYEING PROCESS FOR WOOL

Wolfgang Richter, Hofheim am Taunus, and Bernd Dürl, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1986, Ser. No. 823,468

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1985, 3502960

Int. Cl.⁴ C09B 62/00; D06P 3/14

U.S. Cl. 8—543 6 Claims

1. A pad cold batch process for dyeing wool with reactive dyes, which comprises padding the fiber material at a pH value between 7 and 9 with aqueous liquors containing the dissolved reactive dyes and then, to fix the dye, batching this padded fiber material in the moist state at temperatures up to at most 25° C., for 6 to 24 hours under the established weakly alkaline conditions.

4,640,692

PROCESS FOR THE ELIMINATION OF PYRITE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 26, 1985, Ser. No. 759,386

Int. Cl.⁴ C10L 00/00; C10B 57/00; C09C 1/56; C01B 31/02
U.S. Cl. 44—1 SR 13 Claims

1. A process for the removal of pyritic sulfur from a pyritic containing solid comprising:

- reacting a first quantity of an acidic solution of cerium IV salt with a pyrite containing solid, wherein the molar ratio of the cerium IV salt to pyrite is less than the stoichiometric requirement to remove all of the pyrite from the solid;
- separating said cerium IV treated pyrite containing solid from the reaction mixture; and
- reacting the remaining pyrite-containing solid with a second quantity of an acidic solution of cerium IV salt, wherein the molar ratio is more than the stoichiometric to remove the remaining pyrite from the solid.

4,640,693

COATED SILICON NITRIDE CUTTING TOOL AND PROCESS FOR MAKING

Deepak G. Bhat, Troy; Dhirajlal C. Shah, Sterling Hgts.; John R. Kyle, Troy, and Paul F. Woerner, Grosse Pointe Farm, all of Mich., assignors to GTE Valeron, Troy, Mich.

Filed Apr. 15, 1985, Ser. No. 723,222
Int. Cl.⁴ B24D 11/00

U.S. Cl. 51—295 40 Claims

1. A coated ceramic silicon nitride cutting tool comprising a substrate comprising a major portion by volume of silicon nitride, a layer of refractory material, and an interfacial layer intermediate said substrate and said layer of refractory material, said interfacial layer comprising a refractory metal chemically reacted to form a reaction bonded refractory metal nitride for enhancing the adherence of said layer of refractory metal material to said substrate.

4,640,694

ADSORPTION PROCESS

Paul Leitgeb, Munich; Johann Leis, Egling, and Dietmar Winkler, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

PCT No. PCT/EP83/00048, § 371 Date Nov. 27, 1984, § 102(e) Date Nov. 27, 1984, PCT Pub. No. WO84/03231, PCT Pub. Date Aug. 30, 1984

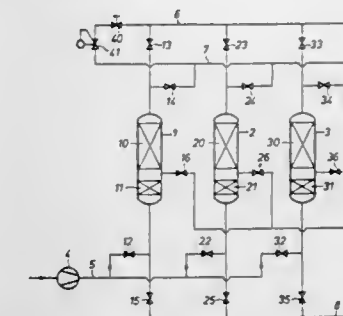
PCT Filed Feb. 24, 1983, Ser. No. 668,370

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132758

Int. Cl.⁴ B01D 53/04

U.S. Cl. 55—26

18 Claims



1. In a pressure swing adsorption process wherein a gaseous mixture under elevated pressure is conducted in cyclic alternation through only three adsorbent-filled adsorbers, with selective adsorption of at least one first component and formation of a product depleted in said first component, each adsorber passing through mutually chronologically shifted switching cycles, and each switching cycle comprising an adsorption phase at maximum process pressure, expansion phases conducted first cocurrently and then countercurrently to the adsorption direction, a desorption phase at minimum process pressure, and pressure buildup phases for restoring the adsorption pressure, and wherein pressure equalization takes place between an adsorber in a cocurrent expansion phase and an adsorber in a pressure buildup phase, the improvement which comprises the following sequential phases: after termination of the adsorption phase of (a) a first adsorber, a first cocurrent expansion phase with the thus-obtained expansion gas being utilized for scavenging a second adsorber which is in a desorption phase; (b) a second cocurrent expansion phase with the thus-obtained expansion gas is utilized for pressurizing the second adsorber; (c) a countercurrent expansion phase during which a residual gas is withdrawn from the inlet end of the first adsorber; (d) the desorption phase during which scavenging is carried out with a cocurrent expansion gas from the third adsorber; and (e) two pressure buildup phases of which the first takes place in pressure equalization with the third adsorber which is in the second cocurrent expansion phase, and the second takes place by introduction of product gas by way of the outlet end of the adsorber.

4,640,695

SEGMENTED ELECTRODE COLLECTING PANEL ASSEMBLY

James H. Adams, Pleasant Grove; Jerry L. Burgess, Birmingham, and William C. Wagers, Alabaster, all of Ala., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 21, 1986, Ser. No. 842,598

Int. Cl.⁴ B03C 3/47

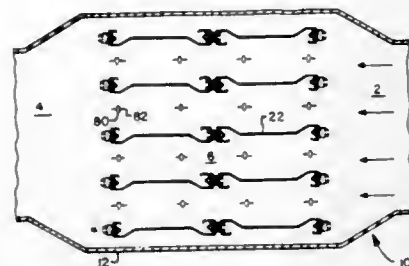
U.S. Cl. 55—130 5 Claims

1. A collecting electrode panel assembly for mounting within a precipitation chamber housing of an electrostatic precipitator, comprising:

- an electrode support member adapted to be supported by the housing of the precipitator;
- a plurality of collecting electrode plates disposed in suc-

cessively aligned relationship beneath and suspended from said electrode support member, each of said collecting electrode plates having a pair of spaced end members and a central web portion extending between and interconnecting the spaced end members, each end member having an edge surface extending substantially transverse to the central web portion;

c. suspension means operatively associated with said collecting electrode plates for suspending said collecting electrode plates from said electrode support member, said suspension means comprising a plurality of suspension



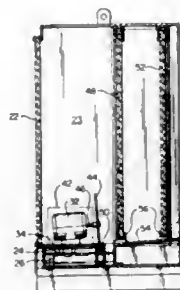
lugs mounted to said electrode support member and disposed therealong such that a suspension lug extends outwardly therefrom adjacent each of the end members of said collecting electrode plates; and

d. fastener means for mounting each of the end members of said collecting electrode plates to one of said suspension lugs, said fastener means having a longitudinal axis disposed substantially transverse to the edge surface of the end member such that said fastener means does not extend beyond the lateral extremities of the edge surface of the end member.

4,640,696
APPARATUS FOR CLEANING AND CONDITIONING GAS
Roger J. Hicks, Lakewood, and John W. Hufgard, Novelty, both of Ohio, assignors to Bessam-Aire, Inc., Cleveland, Ohio
Filed Mar. 26, 1986, Ser. No. 844,326
Int. Cl.⁴ B01D 47/00

U.S. Cl. 55—227

20 Claims



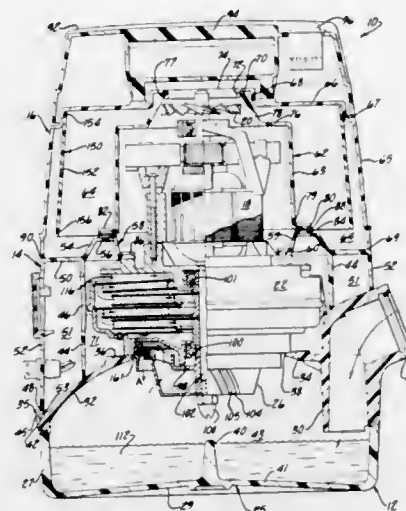
1. Apparatus for cleaning, cooling and humidifying gas comprising,
means forming a chamber having an inlet and an outlet,
a first foraminous wall extending across the inlet to filter large solid particles from gas entering the chamber through the inlet,
an open top water reservoir in the bottom of the chamber adjacent the first foraminous wall, said reservoir being filled with water to a predetermined level,
two means for controlling the water level,
an electric motor in the chamber mounted above the water level adjacent the first foraminous wall, said motor having

a rotatable shaft projecting away from said first foraminous wall at an upwardly extending angle of about 3°,
a disc mounted on the end of the shaft most remote from the first foraminous wall, said disc having a diameter sufficiently great as to extend below the surface of the water and, upon rotation of said shaft, to fling droplets of water from the reservoir upwardly to form a wet curtain of water droplets across the chamber generally parallel to said wall and thereby clean, cool and humidify gas passing from the inlet to the outlet,
means for adjusting the size of the water droplets flung from the disc,
means for pulling gas from the inlet through the outlet, second and third foraminous walls extending across the chamber between the disc and the outlet,
the second foraminous wall being nearest the disc and serving to filter large water droplets from the gas moving toward the outlet,
the third foraminous wall being spaced from this second foraminous wall and farthest from the disc,
both the second and third foraminous walls being supported on a surface sloping downwardly toward said reservoir whereby water droplets trickling down the second and third foraminous walls will flow down the sloping surface and return to the reservoir.

4,640,697
VACUUM CLEANER CONSTRUCTION
Roy O. Erickson, Jr., Cadillac, Mich., assignor to Rexair, Inc., Troy, Mich.
Filed Oct. 1, 1985, Ser. No. 782,509
Int. Cl.⁴ B01D 47/02

U.S. Cl. 55—248

8 Claims



1. A liquid bath vacuum cleaner comprising a pan assembly adapted to contain a liquid bath including inlet means for enabling ingress of cleaning air into said vacuum cleaner and having an outer wall and a wall extending radially inwardly from said outer wall forming an opening at the top of the pan assembly, a main housing operably associated with said pan assembly, said main housing including a main housing cavity including outlet means for enabling egress of cleaning air from said main housing cavity and said vacuum cleaner, a cap assembly operably associated with said main housing, said cap assembly including a cap assembly cavity, an inner canister positioned within said cap assembly, a motor assembly mounted within said inner canister, baffle means positioned within said cap assembly and surrounding said inner canister for reducing vacuum noise while enabling cooling air to pass through said cap assembly cavity, means for drawing cooling air into said cap assembly associated with said motor, means for enabling

cooling air to egress from said inner canister into said cap assembly cavity, means for enabling cooling air to egress from said cap assembly cavity and said vacuum cleaner, means for dividing said main housing assembly from said cap assembly including an opening, means for separating said main housing cavity from said cap assembly cavity, said separating means including a support ring associated with and secured to said dividing means, and a fan housing assembly, including a fan, positioned within said main housing cavity and associated with and secured to said support ring at said dividing means opening, means for establishing a seal between said fan housing assembly and said radially inwardly extending wall, and a separator for drawing cleaning air into said pan assembly and separating said cleaning air from liquid droplets.

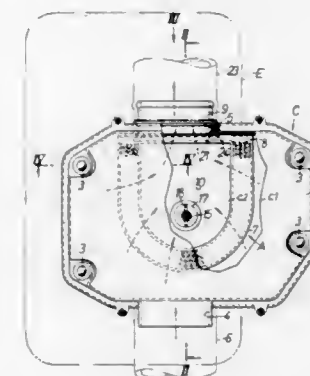
4,640,698
AIR CLEANER DEVICE
Toshio Ohishi, Sagami, and Yohji Kurotobi, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 7, 1985, Ser. No. 731,631

Claims priority, application Japan, May 21, 1984, 59-74225[U]

Int. Cl.⁴ B01D 46/00

U.S. Cl. 55—502

8 Claims



1. An air cleaner device comprising
(a) a cleaner case;
(b) a cleaner assembly means disposed in said cleaner case and dividing the space in said cleaner case into an uncleaned air chamber outside the assembly means and a cleaned air chamber inside the assembly means, said cleaner assembly means comprising
(i) a cleaner element;
(ii) a holder means affixed to said cleaner case for holding said cleaner element; and
(iii) seal means, connected to said holder means, for hermetically sealing said cleaned air chamber, said seal means being adapted for connection to an air intake system; wherein said seal seal means comprises a seal joint, and seal ring positioned between said seal joint and said holder means, said seal joint providing a hermetic seal of the cleaned air chamber against outside;
(c) said cleaner case consisting of an upper half part and a lower half part which are coupled to each other at peripheral edge portions thereof, and wherein a hole is provided at a mating part of the peripheral edge portions of said upper and lower half parts, said seal joint being fitted into said hole of the cleaner case.

4,640,699
PROCESS FOR PRODUCING GLASS PRODUCT HAVING GRADIENT OF REFRACTIVE INDEX
Shigeaki Ohmi, Tokorozawa; Seiichi Shingaki; Hiroyuki Sakai, both of Akishima, and Yoshiyuki Asahara, Higashiyama, all of Japan, assignors to Hoya Corporation, Tokyo, Japan
Continuation of Ser. No. 488,809, Apr. 26, 1983, Pat. No. 4,525,189. This application Apr. 3, 1985, Ser. No. 719,569
Claims priority, application Japan, May 14, 1982, 57-80124
The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.
Int. Cl.⁴ C03B 25/02

U.S. Cl. 65—3.15

9 Claims

1. A process for producing a glass product having a gradient of refractive indices and transparent without turbidity which comprises:

- producing a porous glass body by:
 - heating a glass body to effectuate a phase separation;
 - leaching out the acid-soluble phase from said glass body; and then
 - recovering therefrom the porous glass body;
- premeating a solution of dopant into the micropores of said porous glass product wherein said dopant is selected from the group consisting of (1) $TiNO_3$, the concentration of $TiNO_3$ in the dopant solution being about 80 g/100 ml of H_2O or less, (2) $TiNO_3$ and an alkali metal compound, the concentration of $TiNO_3$ in the dopant solution being about 100 to 400 g/100 ml of H_2O , and (3) $TiNO_3$, $Pb(NO_3)_2$ and an alkali metal compound, the concentration of $TiNO_3$ in the dopant solution being about 100 to 400 g/100 ml of H_2O ,
- leaching out a portion of the dopant from the micropores with or without solidifying the dopant in the micropores to form a concentration gradient of the dopant in said porous glass product;
- solidifying the dopant in the micropores,
- drying the porous glass product,
- heat treating said porous glass product to collapse the micropores, and
- recovering a glass having Δn greater than 0.04 wherein Δn is the difference between the central and peripheral portions of the glass.

4,640,700
METHOD FOR ATTACHING A STUD PIN TO A CATHODE RAY TUBE PANEL
Shinzo Takei, Tokyo; Junji Yokoyama, Kanagawa, and Makoto Takagi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 3, 1985, Ser. No. 751,428

Claims priority, application Japan, Jul. 4, 1984, 59-138789
Int. Cl.⁴ C03C 27/02

U.S. Cl. 65—59.22

3 Claims

1. A method for attaching a stud pin to an inside wall portion of a cathode ray tube panel using a frit slurry which consists of a crystallizing solder glass containing lead oxide, a binder comprising nitrocellulose and a solvent, characterized in that said solvent is an ester alcohol having a viscosity of higher than 10 cps and a boiling point ranging from 200° C. to 320° C., whereby said slurry has a slow drying property and high viscosity.

4,640,701
HERBICIDAL PHOSPHONIC ACID AND PHOSPHINIC ACID DERIVATIVES

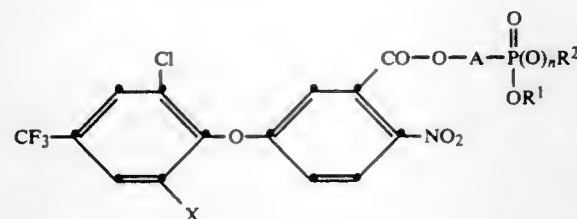
Peter J. Diel, Riehen, and Ludwig Maier, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 8, 1985, Ser. No. 720,784

Claims priority, application Switzerland, Apr. 17, 1984, 1946/84

Int. Cl.⁴ A01N 57/06; C07F 9/40, 9/32
U.S. Cl. 71-86 18 Claims

1. A phosphonic acid or phosphinic acid derivative of the formula



wherein

- X is hydrogen,
n is 0 or 1,
R¹ and R² are each independently hydrogen or C₁-C₄alkyl and
A is a C₁-C₃alkyl chain which may be substituted by one or two C₁-C₂alkyl radicals, with the proviso that R² is not hydrogen if n is 0.
2. A herbicidal composition which contains, as active ingredient, a phosphonic acid or phosphinic acid derivative of formula I according to claim 1, together with inert adjuvants.

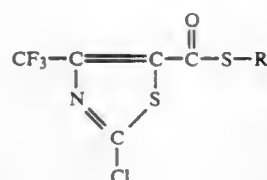
4,640,702
2-CHLORO-4-TRIFLUOROMETHYL-THIAZOLECARBO-
THIOIC ACIDS USEFUL AS HERBICIDAL SAFENERS

Raymond C. Grabiak, Creve Coeur; Robert K. Howe, Bridgeton, and David E. Schafer, Olivette, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 14, 1980, Ser. No. 168,959

Int. Cl.⁴ A01N 43/78; C07D 277/34
U.S. Cl. 71-90 34 Claims

6. A method of reducing herbicidal injury to sorghum plants due to application thereto of 2-haloacetanilide herbicides which comprises applying to the plant locus a non-phytotoxic, safening effective amount of a compound having the formula



wherein R is C₁-5 alkyl, phenyl or benzyl.

4,640,703
2-PHENOXYPROPIONIC ACID CYANAMIDES AS
HERBICIDES

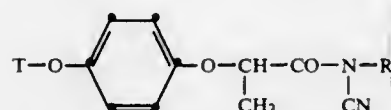
Beat Böhner, Binningen; Hermann Rempfler, Ettingen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1984, Ser. No. 676,962

Claims priority, application Switzerland, Dec. 6, 1983, 6509/83; Apr. 18, 1984, 1948/84

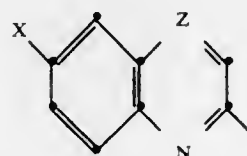
Int. Cl.⁴ C07D 241/44; A01N 43/60, 43/40, 43/76
U.S. Cl. 71-92 16 Claims

1. A 2-phenoxypropionic acid cyanamide of the formula



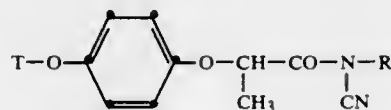
wherein

- R is hydrogen, C₁-C₄alkyl, C₃-C₄alkenyl, C₃-C₄alkynyl or C₂-C₄alkoxyalkyl, and
T is a quinoxaliny radical of the formula



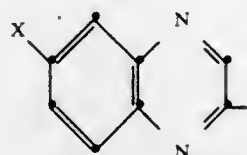
wherein

- X is fluorine, chlorine, bromine, iodine or trifluoromethyl, and
Z is nitrogen.
4. A herbicidal composition which comprises, as active ingredient, 0.1 to 80% of a 2-phenoxypropionamide of the formula



wherein

- R is hydrogen, C₁-C₄alkyl, C₃-C₄alkenyl, C₃-C₄alkynyl or C₂-C₄alkoxyalkyl, and
T is a quinoxaliny radical of the formula



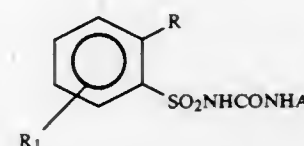
wherein X is fluorine, chlorine, bromine, iodine or trifluoromethyl, in combination with conventional carriers or other adjuvants.

4,640,704
HERBICIDAL SULFONAMIDES
Chi-wan Chen, Silver Spring, Md., and Gregory W. Schwing, Lincoln University, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

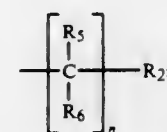
Division of Ser. No. 637,580, Aug. 3, 1984, Pat. No. 4,582,525, which is a continuation-in-part of Ser. No. 168,346, Jul. 11, 1980, abandoned. This application Oct. 22, 1985, Ser. No. 790,305

Int. Cl.⁴ C07D 239/70; A01N 47/36
U.S. Cl. 71-92 10 Claims

1. A compound selected from



wherein
R is

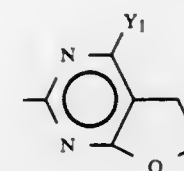


R₂ is C₂-C₅ alkenyl, C₅-C₆ cycloalkenyl or C₂-C₃ alkenyl substituted with 1-3 chlorine atoms;

n is 0 or 1;
R₁ is H, F, Cl, Br, NO₂, CF₃, C₁-C₄ alkyl, OCF₃ or C₁-C₃ alkoxy;

R₅ and R₆ are independently H or CH₃;

A is



Y₁ is H, CH₃, OCH₃ or Cl; and
Q is CH₂.

4,640,705
METHOD FOR COMBATING BLACKGRASS IN
CEREAL CROPS AND COMPOSITIONS THEREFOR
Julian Gabe, Rehovot, Israel, and Richard J. Makepeace, Lower Heyford, United Kingdom, assignors to Agan Chemical Manufacturers Ltd., Israel

Filed Jul. 6, 1983, Ser. No. 511,513

Claims priority, application Israel, Jul. 7, 1982, 66255; Jul. 21, 1982, 66359

Int. Cl.⁴ A01N 43/70

U.S. Cl. 71-93 10 Claims

1. A method for obtaining satisfactory blackgrass control in cereal crops, without injury to the cereal crops, comprising preemergent application of a mixture consisting essentially of terbutryne and trifluralin having a ratio of 1:2 to 2.5:1 in sufficient amount to control the blackgrass and yet not injure the crops at a rate of application of the mixture from 1.0 to 4.5 kilogram per hectare.

4,640,706
CYCLOHEXENONECARBOXYLIC ACID DERIVATIVES
WITH HERBICIDAL AND PLANT GROWTH
REGULATING PROPERTIES

Hans-Georg Brunner, Lausen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

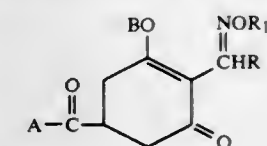
Filed Mar. 20, 1985, Ser. No. 714,133

Claims priority, application Switzerland, Mar. 30, 1984, 1613/84

Int. Cl.⁴ A01N 31/06, 33/24; C07C 131/08

U.S. Cl. 71-94 7 Claims

1. A cyclohexenonecarboxylic acid derivative of formula I



wherein

- A is -NR₃R₄,
R is C₁-C₆alkyl or C₃-C₆cycloalkyl, each unsubstituted or substituted by halogen, C₁-C₄alkoxy or C₁-C₄alkylthio,
R₁ is C₁-C₆alkyl, C₁-C₆haloalkyl, C₃-C₆alkenyl, C₃-C₆haloalkenyl or C₃-C₆alkynyl,
R₃ is hydrogen; C₁-C₆alkyl, C₁-C₆haloalkyl, C₂-C₁₀alkoxyalkyl, C₂-C₁₀alkylthioalkyl; or is C₃-C₆alkenyl which is unsubstituted or substituted by halogen, C₁-C₄alkoxy or C₁-C₄alkylthio; or is C₃-C₆alkynyl; or is phenyl or benzyl, the phenyl nucleus of which is unsubstituted or substituted by halogen, C₁-C₄alkyl, C₁-C₄alkoxy, C₁-C₄haloalkyl, nitro or cyano,
R₄ is C₁-C₄alkoxy or has the same meaning as R₃, or
R₃ and R₄ together with the nitrogen atom to which they are attached are also a saturated 5- or 6-membered heterocycle, B is -COR₅, and
R₅ is C₁-C₆alkyl, C₃-C₆alkenyl, C₃-C₆alkynyl, or also phenyl or benzyl which is unsubstituted or substituted by halogen, C₁-C₄alkyl, C₁-C₄haloalkyl, C₁-C₄alkoxy, C₁-C₄haloalkoxy, nitro or cyano.
4. A herbicidal and plant growth regulating composition which comprises an effective amount of a cyclohexenonecarboxylic acid derivative according to claim 1, together with a carrier or other adjuvants.

4,640,707
TETRAHYDROPHthalIMIDES AND THEIR
HERBICIDAL USE

Eiki Nagano, Nishinomiya; Toru Haga, Takarazuka; Ryo Sato, and Kouchi Morita, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

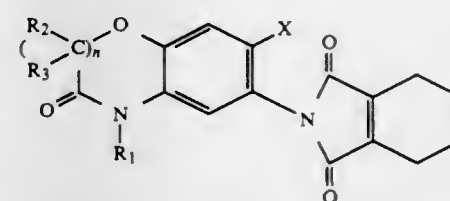
Filed Jul. 18, 1985, Ser. No. 756,251

Claims priority, application Japan, Jul. 23, 1984, 59-152721; Aug. 3, 1984, 59-164020; Sep. 20, 1984, 59-198245

Int. Cl.⁴ A01N 43/76, 43/84; C07D 413/02

U.S. Cl. 71-96 23 Claims

1. A compound of the formula:



wherein R₁ is a hydrogen atom, a C₁-C₅ alkyl group, a C₃-C₄ alkenyl group, a C₃-C₄ alkynyl group, a C₁-C₄ haloalkyl group, a C₃-C₄ haloalkenyl group, a C₃-C₄ haloalkynyl group, a C₁-C₂ alkoxy(Chd 1-C₂)alkyl group or a C₁-C₂ alkoxy(C-

1-C₂alkoxy(C₁-C₂)alkyl group, R₂ and R₃ are, the same or different, each a hydrogen atom, a halogen atom, a C₁-C₃ alkyl group or a phenyl group, X is a hydrogen atom, a chlorine atom or a fluorine atom and n is an integer of 0 or 1.

19. A method for exterminating harmful weeds which comprises applying as an active ingredient a herbicidally effective amount of the compound according to claim 1 to the area where the weeds grow or will grow.

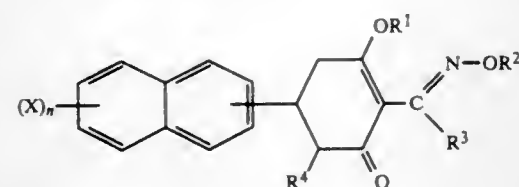
4,640,708
HERBICIDAL CYCLOHEXANE-1,3-DIONE
DERIVATIVES

Graham J. Bird, North Melbourne; Graeme J. Farquharson, Reservoir, and Keith G. Watson, Box Hill North, all of Australia, assignors to ICI Australia Limited, Victoria, Australia
Filed Mar. 20, 1984, Ser. No. 591,372

Claims priority, application Australia, Apr. 7, 1983, PF8781; May 5, 1983, PF9189

Int. Cl.⁴ A01N 31/08, 33/04; C07C 131/00
U.S. Cl. 71-98 9 Claims

1. A compound of formula I



wherein:

X, which may be the same or different, are independently selected from the group consisting of: C₁ to C₆ alkyl, C₁ to C₆ haloalkyl, C₁ to C₆ alkoxy, C₁ to C₆ alkylthio, halogen, nitro, sulfamoyl, N-(C₁ to C₆ alkyl)sulfamoyl, N,N-di(C₁ to C₆ alkyl)sulfamoyl, formyl, C₂ to C₆ alkanoyl, and the group of the formula -C(R⁷)=NR⁸ wherein R⁷ is selected from hydrogen and C₁ to C₅ alkyl and R⁸ is selected from hydroxy and C₁ to C₆ alkoxy;

R¹ is selected from the group consisting of: hydrogen; C₂ to C₆ alkanoyl; benzoyl and substituted benzoyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, C₁ to C₆ alkyl and C₁ to C₆ alkoxy; benzenesulfonyl and substituted benzenesulfonyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, C₁ to C₆ alkyl and C₁ to C₆ alkoxy; and an inorganic or an organic cation selected from the alkali metals, the alkaline earth metals, the transition metals, the ammonium ion and the tri- and tetra-(alkyl)ammonium ions wherein alkyl is selected from C₁ to C₆ alkyl and C₁ to C₆ hydroxyalkyl;

R² is selected from the group consisting of: C₁ to C₆ alkyl, C₂ to C₆ alkenyl, C₂ to C₆ alkynyl, C₁ to C₆ haloalkyl, C₂ to C₆ haloalkenyl and C₂ to C₆ haloalkynyl;

R³ is selected from C₁ to C₆ alkyl;

R⁴ is selected from hydrogen, halogen and (C₁ to C₆ alkoxy)-carbonyl; and

n is zero or an integer selected from 1 to 3.

6. A herbicidal composition comprising as active ingredient an effective amount a compound as defined according to claim 1 and a carrier therefor.

4,640,709
HIGH CONCENTRATION ENCAPSULATION BY
INTERFACIAL POLYCONDENSATION

George B. Beestman, St. Louis County, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 12, 1984, Ser. No. 619,752

Int. Cl.⁴ A01N 37/18, 37/22; B01J 13/02

U.S. Cl. 71-100 18 Claims

1. A process of encapsulating water-immiscible material within a shell wall of polymeric material which comprises:

(a) providing an aqueous phase containing an emulsifier which is an water-soluble alkylated polyvinyl pyrrolidone polymer which forms an oil-in-water emulsion;

(b) dispersing in said aqueous phase a water-immiscible phase consisting essentially of a first shell wall component dissolved in said water-immiscible material, to form a dispersion of water-immiscible phase droplets through the aqueous phase;

(c) adding, with agitation, to said dispersion a second shell wall component whereby said second shell wall component reacts with said first shell wall component to form a polymeric shell wall about said water-immiscible material wherein the concentration of said water-immiscible material is from about 480 to about 700 grams per liter of composition.

11. A composition consisting essentially of microcapsules suspended in an aqueous liquid said microcapsules being comprised of a water-immiscible material contained within an encapsulating wall of polymeric material wherein:

(a) the concentration of said water-immiscible material is from about 480 grams to about 700 grams per liter of composition;

(b) wherein said encapsulating wall of polymeric material is the reaction product of a first shell wall component which is a difunctional or polyfunctional reactant that is soluble in said water-immiscible material and a second shell wall component which is water soluble and which is a difunctional or polyfunctional reactant and wherein the concentration of said first shell wall component is from about 3.5% to about 21.0% relative to the weight of said water-immiscible material and wherein the concentration of said second shell wall component is from about 1.5% to about 9.0% relative to the weight of said water-immiscible material; and

(c) wherein said water contains from about 0.5% to about 15% of an emulsifier relative to the weight of said water-immiscible material, said emulsifier being an water-soluble alkylated polyvinyl pyrrolidone polymer which is capable of forming an oil-in-water emulsion.

15. A composition as described in claim 11 wherein said water-immiscible material is an herbicide, insecticide, plant growth regulant or an herbicidal antidote.

4,640,710
PROCESS FOR RECOVERING SILVER FROM SULFATE SOLUTIONS

Didier Bentier, Paris, and Jean-Jacques Predali, Elancourt, both of France, assignors to Societe Miniere et Metallurgique de Penroya, Paris, France

Filed Dec. 6, 1984, Ser. No. 678,998

Claims priority, application France, Dec. 9, 1983, 83 19825
Int. Cl.⁴ C22B 11/04

U.S. Cl. 75-108 8 Claims

1. A process for recovering silver in sulfuric solutions having a pH less than 4 and a temperature between 50° and 80° C., which comprises adjusting the redox potential of the solutions to the equilibrium value with sphalerite and contacting said silver solutions with a quantity of zinc sulfide which is at least equal to the stoichiometric quantity of silver in said solutions and the surface area of which is at least equal to K Ag¹ x V, Ag being the concentration of silver in the solution expressed in kilograms per cubic meter and V the volume of the solution in cubic meters, the surface area being expressed in square meters

and the value of K being greater than or equal to approximately 10.

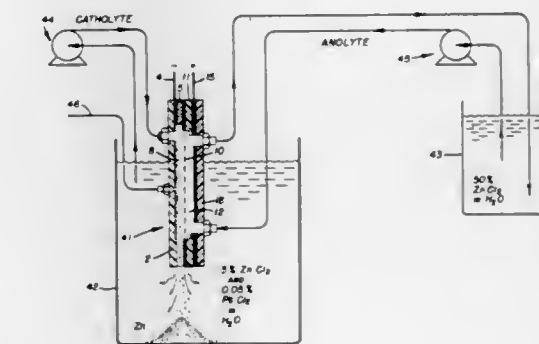
4,640,712
IMPURE ZINC POWDER, PREPARATION THEREOF,
AND USE AS A SELECTIVE REDUCTANT FOR
PENTACHLOROPYRIDINE

Theodore J. Sobierski, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1985, Ser. No. 715,329

Int. Cl.⁴ B22F 1/00; C22C 18/00

U.S. Cl. 75-251 3 Claims



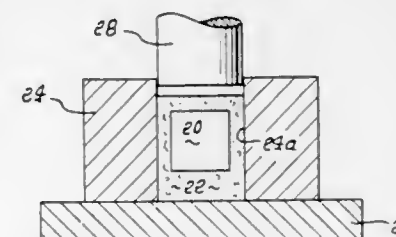
4,640,711
METHOD OF OBJECT CONSOLIDATION EMPLOYING
GRAPHITE PARTICULATE

Wayne P. Lichti, Lakewood, and Alfred F. Hofstatter, Dana Point, both of Calif., assignors to Metals Ltd., Newport Beach, Calif.

Continuation-in-part of Ser. No. 535,791, Sep. 26, 1983, Pat. No. 4,539,175. This application May 10, 1985, Ser. No. 732,683

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Int. Cl.⁴ B22F 1/00

U.S. Cl. 75-248 37 Claims



1. The method of consolidating a metallic, metallic and ceramic, or ceramic body in any of initially powdered, sintered, fibrous, sponge, or other form capable of compaction, that includes the steps:

- providing a bed of flowable particles within a contained zone, said particulate primarily consisting of flowable and resiliently compressible carbonaceous particles, in the form of beads having outwardly projecting nodules thereon, and at least some beads having surface fissures;
- positioning said body in said bed;
- effecting pressurization of said bed to cause pressure transmission via said particles to said body, thereby to compact the body into desired shape, increasing its density;
- said body and bed being at elevated temperatures prior to said pressurization step.

1. An impure zinc powder of which the particles consist of zinc, from about 5,000 to about 30,000 parts of lead and less than 5 parts of other materials per million parts of zinc.

4,640,713
TARNISH REMOVER/METAL POLISH FORMULATION
COMPRISING A METAL IODIDE, AN ACID, AND
WATER

Robert B. Harris, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 19, 1984, Ser. No. 672,966

Int. Cl.⁴ C09G 1/04, 1/06

U.S. Cl. 106-3 17 Claims

1. An improved tarnish remover/metal polish formulation comprising:

- at least one metal iodide in an amount of from about 8 to 25% by weight;
- an acid in an amount of from about 0.1 to 25% by weight;
- a surfactant in an amount of from about 0.5 to 3% by weight, and;
- the balance water.

4,640,714
ALCOHOL-BASED FLEXOGRAPHIC INK FOR USE IN
BACKCARBON PAPERS

Nobuhiro Kagota, and Hideaki Senoh, both of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

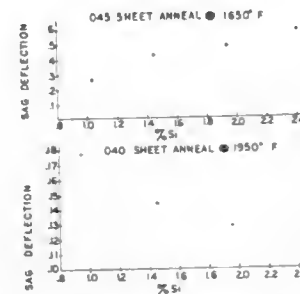
Filed Aug. 22, 1984, Ser. No. 643,276

Claims priority, application Japan, Aug. 24, 1983, 58-155497
Int. Cl.⁴ C09D 11/12

U.S. Cl. 106-21 11 Claims

1. An alcohol-based flexographic ink for use in colorless backcarbon papers which is composed essentially of (A) microcapsules whose core substance is an oil droplet containing an electron-donating organic color former, (B) microcapsules whose core substance is an oil droplet containing an electron-

less than 0.5% aluminum, with the silicon content being at least 3 times the aluminum content, about 6% to about 25% chromium, up to about 5% molybdenum, with the sum of chromium and molybdenum being at least 8%, 0.05% maximum nitrogen, at least one of titanium, zirconium and tantalum, with



said titanium, zirconium and tantalum being present in an amount at least equal to the stoichiometric equivalent of the percent carbon plus the percent nitrogen, about 0.3% maximum total columbium with at least 0.1% uncombined columbium, and balance essentially iron.

4,640,723 LEAD FRAME AND METHOD FOR MANUFACTURING THE SAME

Shinzo Sugai, Chigasaki; Shigemi Yamane, and Takashi Kuze, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 20, 1983, Ser. No. 563,445
Claims priority, application Japan, Dec. 23, 1982, 57-230402
Int. Cl.⁴ C22D 1/08

U.S. Cl. 148—411

3 Claims



3. A lead frame comprising a copper alloy containing 0.1 to 1% by weight of chromium and 0.001 to 0.5% by weight of zirconium and having a precipitate with a grain size from 0.5 to 50 μm distributed therein at a rate of 1,000 to 10,000 grains/ mm^2 , wherein the copper alloy further contains not more than 1% by weight of at least one member selected from the group consisting of magnesium, silicon, tin, nickel, iron, zinc, manganese, phosphorus, boron, silver, beryllium, cobalt, titanium and yttrium, said copper alloy being formed by the sequential steps of continuously casting the alloy, rolling the cast alloy, solution treating the alloy, cold working the alloy, and age-hardening the alloy.

4,640,724 METHODS OF PRIMING EXPLOSIVE DEVICES

George B. Carter, Lichfield, and Alan P. Manby, Amlington, both of England, assignors to IMI Kynoch Limited, Birmingham, England

Filed Mar. 20, 1981, Ser. No. 245,972
Claims priority, application United Kingdom, Apr. 19, 1980, 8012963

Int. Cl.⁴ C06B 41/06; F42B 33/02

U.S. Cl. 149—109.6

11 Claims

1. A method of priming a rimfire cartridge by providing in the rim thereof a quantity of primer comprising a primary

explosive compound, said method comprising, in the recited order, the steps of:

- dosing into the rimfire case a quantity of a substantially dry, powdery, relatively insensitive premix comprising, in predetermined proportions, at least two materials that will, in the presence of a liquid reaction medium, react together forming said primary explosive compound,



- compacting the premix so as substantially to fill the rim of the case therewith,
- dosing a quantity of said liquid reaction medium into said case so as to cause said materials to react together forming the primary explosive compound, and
- drying the primer.

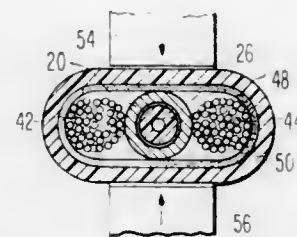
4,640,725 METHOD OF FORMING FIBER OPTIC CABLE TERMINATION

Theodore L. Jones, Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 9, 1985, Ser. No. 785,790
Int. Cl.⁴ B32B 31/04, 31/20

U.S. Cl. 156—85

4 Claims



1. A method for forming a termination of a fiber optic cable with an electro-optic component housing wherein the fiber optic cable is comprised of an optical fiber, a plurality of reinforcement strands aligned about the length of the optical fiber, and a jacket positioned about the reinforcement strands, and

the electro-optic component housing has an interior compartment, a tubular extension of a predetermined length with a passage in communication with the interior compartment, and an outer diameter surface, said method comprising the steps of:

- removing a terminal portion of the jacket which is at least as long as the predetermined length of the tubular extension, thereby exposing a length of optical fiber and lengths of reinforcement strands at one end of the jacket on the fiber optic cable;
- inserting the exposed length of optical fiber into and through the passage to the interior compartment of the component housing;
- positioning the exposed reinforcement strands about the outer diameter surface of the tubular extension so as to cover only portions of the outer diameter and leave the remaining portions of the outer diameter exposed;
- providing a layer of adhesive over the strands, the exposed portions of the outer diameter and an end portion of the jacket;

- positioning a length of a heat-shrink tubing about the tubular extension and the jacket; and
- heating the heat-shrink tubing to a temperature sufficient to reduce the diameter of the tubing so as to cause the layer of adhesive to adhesively engage the strands, the exposed areas of the tubular extension, the end portion of the jacket and the heat-shrink tubing.

4,640,726 HEAT ACTIVATION PROCESS AND APPARATUS FOR HEAT SHRINKABLE MATERIAL

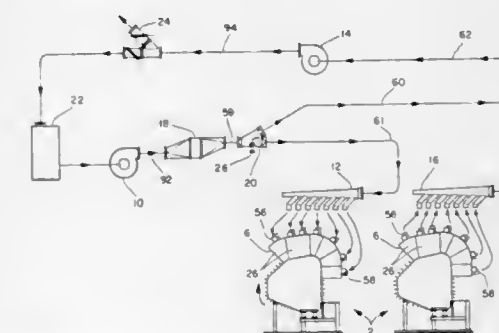
Lorry F. Sallee, Pine River, and Robert L. Popp, Hortonville, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 27, 1985, Ser. No. 749,170

Int. Cl.⁴ B32B 31/26

U.S. Cl. 156—85

25 Claims



1. An apparatus for heating selected portions of an article, comprising:

- transport means for moving said article into a heating compartment;
- shroud means disposed within said heating compartment for directing a stream of heated gas toward a selected portion of the article;
- supply means for delivering a volume rate of flow of said heated gas to said shroud means; and
- discharge means for removing a volume rate of exhaust gas flow from said heating compartment, said discharge means constructed and arranged to provide a volume rate of exhaust gas flow from said heating compartment which is greater than the volume rate of heated gas flow supplied into said shroud means and to provide a cooling gas flow past article portions which are not targeted for heating.

4,640,727 GRAPHIC DESIGN ARTICLE

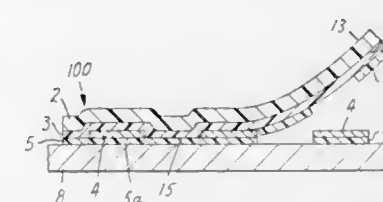
Jeffrey R. Janssen, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 28, 1985, Ser. No. 695,693

Int. Cl.⁴ B44C 1/00; B41M 3/12; B32B 3/00

U.S. Cl. 156—240

31 Claims



1. A dry article for transferring a graphic design to a substrate comprising

- a carrier which is transparent to actinic radiation;
- an actinic radiation transmissive first adhesive layer on

said carrier, which first adhesive layer presents a major surface having first and second surface portions thereon; (c) a graphic design on said first surface portions which is opaque to actinic radiation; and (d) a continuous actinic radiation responsive second adhesive layer which covers said graphic design and said second portions of said first adhesive layer; wherein, upon a single exposure of said article to actinic radiation through said carrier and application of said article to said substrate and removal of said carrier, said first adhesive layer and said second adhesive layer on said second surface portions of said first adhesive layer are selectively removed from said substrate leaving only said graphic design and said second adhesive layer in registry therewith on said substrate.

4,640,728 METHOD OF JOINING FOAM PATTERNS FOR EVAPORATIVE CASTING PROCESS

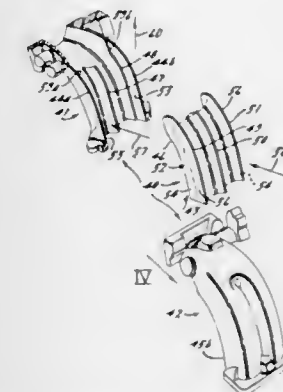
Robert A. Martin, Northville, and Thomas J. Heater, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 772,817, Sep. 5, 1985. This application Jun. 23, 1986, Ser. No. 877,595

Int. Cl.⁴ B32B 31/04; B22C 7/02

U.S. Cl. 156—245

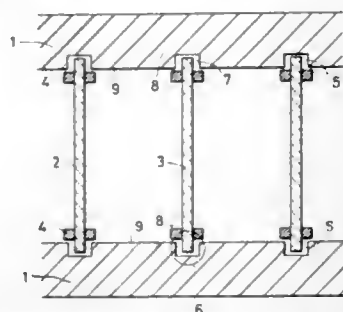
2 Claims



1. A method of assembling foam pattern segments into a unitary assembly, comprising:

- molding first, second and third consumable foam pattern segments, said first and second pattern segments being mateable and effective to meet along exteriorly disposed joint margins defined by mateable surfaces extending along opposite sides of each of said first and second segments, and a third pattern segment nestable totally within the assembly of said first and second segments and nestable without joint margins exposed to the exterior of the mated assembly, said first and third segments being molded with interiorly disposed pilot surfaces effective to constitute a double-ply foam wall when mated, said first and third segments being molded with interiorly disposed second pilot surfaces effective to constitute a double-ply foam wall when mated, said pilot surfaces also having stop means to limit movement of the pilot surfaces;
- mating said first segment with said third segment by moving said first pilot surfaces together along the plane of said surfaces until said stop means is bottomed out; and
- mating said second segment with the assembly of said third and first segments by moving said second means is bottomed out.

4,640,729
METHOD OF PRODUCING IONIZATION CHAMBER DETECTOR
 Hideji Fujii, Nishitama; Takayuki Hayakawa, Hachioji; Shigeru Sato, Kitasoma, and Eiichi Yanagihara, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corporation, both of Tokyo, Japan
 Filed Jun. 4, 1985, Ser. No. 741,108
 Claims priority, application Japan, Jun. 4, 1984, 59-114029
 Int. Cl.⁴ H01J 1/88, 47/02
 U.S. Cl. 156—257 14 Claims

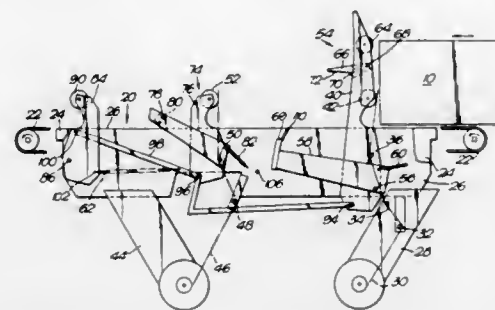


1. A method of manufacturing an ionization chamber detector of the type in which a plurality of flat anode and cathode electrodes are alternately arranged in a predetermined gaseous medium, comprising the steps of:
 forming a plurality of ditches of predetermined depth on respective surfaces of a pair of insulators;
 disposing said insulators in spaced-apart relation, whereby opposing edges of said anode and cathode electrodes can be supported and fixed in said ditches;
 applying a first adhesive having a B stage to portions of at least one surface of said anode and cathode electrodes, said portions being spaced a predetermined distance from the opposing edges of said anode and cathode electrodes which are to be supported and fixed in said ditches;
 inserting the opposing edges of said anode and cathode electrodes, having said B stage adhesive thereon, respectively into said ditches on said respective surfaces of said pair of insulators such that there is a gap between said anode and cathode electrodes and the walls of said ditches;
 charging a second curable adhesive having a low viscosity into the gaps between said anode and cathode electrodes and walls of said ditches; and
 curing integrally said first adhesive having a B stage and said second adhesive in order to bond and fix said anode and cathode electrodes in said ditches.
 11. The method of producing an ionization chamber detector as defined in claim 1, wherein said insulators are made of a transparent material and said second adhesive is a resin, curable by UV, the liquid adhesive having a low viscosity.

4,640,730
METHOD OF ADHERING ROOFING MATERIALS
 Roger L. Streets, Thomas G. Rabito, and David N. Peresie, all of Ashland, Ohio, assignors to Ashland Oil, Inc., Russell, Ky.
 Filed Mar. 22, 1985, Ser. No. 715,138
 Int. Cl.⁴ C09J 5/02
 U.S. Cl. 156—334 7 Claims

1. A process of adhering roofing materials consisting essentially of the steps of (a) coating edges of EPDM roofing materials with an adhesive composition consisting essentially of an admixture of 100 parts by weight of a thermoplastic block copolymer, from 10 to 150 parts by weight of an aromatic hydrocarbon resin, and solvent, (b) allowing said coated edges to dry, (c) joining said dried coated edges, and (d) heating said joined edges to a temperature greater than 300° F. and less than 500° F.

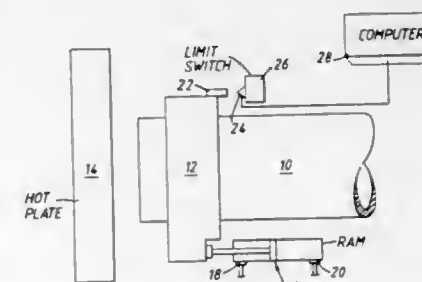
4,640,731
APPARATUS FOR TAPING CARTONS
 Joseph S. Lerner, and David Krukas, both of Kings Park, N.Y., assignors to The Lovesaw Corporation, Deer Park, N.Y.
 Filed Apr. 30, 1985, Ser. No. 728,728
 Int. Cl.⁴ B31B 1/72
 U.S. Cl. 156—355 15 Claims



1. Apparatus for applying sealing tape to front and rear ends of a forwardly traveling rectangular carton and in two respective courses the first of which runs in part on the carton front vertical panel and around in part onto a carton horizontal panel and the second of which runs in part on said horizontal panel and around in part onto the carton rear vertical panel, said apparatus comprising
 a first movably mounted tape applicator normally biased into projecting position in the path of carton forward travel to present tape from a first stock thereof in confrontation to the carton front panel, said tape applicator including an arm having a first pressing member thereon for pressing tape against the carton front panel, the advancing carton countering a bias on said tape applicator and retracting same as it advances and causing the tape to be wiped against said front panel,
 first movably mounted cutter means including bias means tending to move said cutter means in a tape cutting direction, said tape applicator arm carrying a push finger which engages during at least a portion of the retraction movement of said applicator arm with said first cutter means for moving same in a direction opposite to said cutting direction,
 cam means disposed for engagement thereof by said push finger during the terminal portion of applicator arm retraction for causing release of said push finger from engagement with said first cutter means whereby said cutter means moves in cutting direction to sever a length of tape from said first tape stock,
 an additional pressing member carried on said tape applicator arm and disposed when said arm is retracted, in tape wiping relationship to the carton horizontal panel to press tape thereagainst,
 a second movably mounted tape applicator disposed downstream of the first and normally biased into projecting position in the path of carton forward travel but connected to said first tape applicator to retract in tandem therewith, said second tape applicator when retracted presenting tape from a second stock thereof in alongside spaced confrontation to said horizontal panel, said second tape applicator including an associated movably mounted second cutter means normally biased to extend into the carton travel path in a tape cutting direction but being held retracted in opposition to said bias as the carton travels holdingly against said associated second cutter means,
 forward travel of the carton beyond the retracted first tape applicator releasing said first tape applicator from retracted constraint so same is caused to tend to return to projecting position, return movement of the unconstrained first tape applicator being accompanied by said

second tape applicator tending to move to projecting position and thereby pressing the tape from said second stock against said horizontal panel, passage of the forwardly traveling carton beyond said second cutter means releasing same whereby the bias acting thereon moves it in a cutting direction to sever a length of tape from said second tape stock, and
 a tape wiping member downstream of said second tape applicator and tandemly operable therewith to project extendingly from a retracted position thereof to wipe the length of severed tape from the second tape stock against the carton rear vertical panel.

4,640,732
APPARATUS FOR FUSION JOINING OF THERMOPLASTIC PIPES
 Trevor G. Stafford, Whitley Bay, England, assignor to British Gas Corporation, London, England
 Filed Mar. 10, 1986, Ser. No. 837,755
 Claims priority, application United Kingdom, Mar. 25, 1985, 8507711
 Int. Cl.⁴ B65H 69/06
 U.S. Cl. 156—358 6 Claims



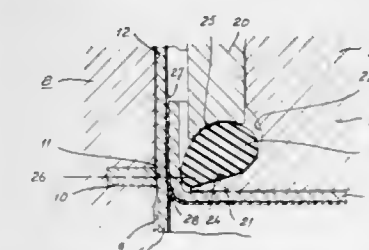
1. Apparatus for joining thermoplastic pipes by fusion comprising two clamps mounted on a guide structure, hydraulic ram means operable to force one clamp towards the other along the guide structure, a device arranged to detect movement of one clamp towards the other clamp, a microprocessor-based control system, a source of pressurised hydraulic fluid including a pump, a hydraulic control valve which has a control solenoid and which is operable in response to control of solenoid current by said system to increase the ram means fluid pressure at a pre-programmed relatively lower first rate until said device detects said movement, whereupon said system changes said solenoid current by a pre-programmed amount so that said pressure is further increased at a relatively higher second rate and the ram means completes its advance to effect beat-up.

4,640,733
APPARATUS FOR FORMING AND INSERTING AN INTERNAL LID IN A CONTAINER
 Ingemar S. B. Bogren, 193 00, Sigtuna, Sweden
 PCT No. PCT/SE84/00180, § 371 Date Jan. 7, 1985, § 102(e)
 Date Jan. 7, 1985, PCT Pub. No. WO84/04507, PCT Pub. Date Nov. 22, 1984
 PCT Filed May 15, 1984, Ser. No. 694,400
 Claims priority, application Sweden, May 19, 1983, 8302841
 Int. Cl.⁴ B31F 7/00
 U.S. Cl. 156—380.2 5 Claims

1. Apparatus whereby an internal closure having a flat lid portion surrounded by an upwardly projecting rim portion is inserted into an upper end portion of a tubular container sleeve and whereby said rim portion is sealed to the sleeve by welding, said apparatus being of the type comprising a carrier in which a container sleeve is receivable for immobilized support, a welding ring in said carrier for surrounding said upper end portion of a sleeve therein and heating the same, and a piston means movable up and down relative to the carrier between a

raised position above a sleeve in the carrier and a defined lowered position wherein the piston means is received in the carrier and at which a closure carried by the piston means has its rim portion radially opposite said welding ring, said piston means comprising coaxial upper and lower piston parts which are axially movable relative to one another and a resilient ring confined between said piston parts to be radially outwardly expanded by relative motion of said piston parts towards one another, for cooperation with the carrier in clamping the rim portion and the sleeve in tight engagement with one another, said apparatus being characterized by:

- A. said resilient ring being toroidal;
- B. said lower piston part having
 - (1) a flat bottom surface for closely overlying the lid portion of a closure,
 - (2) a circumferential groove which is spaced above said bottom surface and in which said resilient ring is closely received when unexpanded, and
 - (3) an annular upper surface which is inclined downwardly and radially outwardly, into which said groove merges downwardly and which cooperates with said bottom surface to define a thin edge around the bottom of the lower piston part;



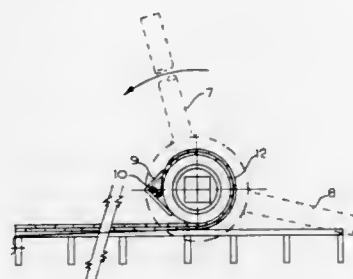
- C. said upper piston part having an annular lower portion with cylindrical and concentric radially inner and outer surfaces that concentrically surrounds said lower piston part above said annular upper surface thereon, said upper piston part further having an annular bottom surface with a radially inner edge and a radially outer edge at its respective junctions with said radially inner and outer surfaces
 - (1) which annular bottom surface opposes said upper surface on the lower piston part,
 - (2) which annular bottom surface has an arcuate cross-section profile between said inner and outer edges that substantially mates with the upper portion of the resilient ring when the same is unexpanded, and
 - (3) which annular bottom surface has said radially outer edge at a level substantially below the level of said radially inner edge so that upon downward motion of the upper piston part relative to the lower piston part said annular bottom surface cooperates with said annular upper surface to so expand the resilient ring radially outwardly that the maximum girth thereof is in a plane which is parallel and near to said flat bottom surface and which passes through said welding ring all around the same.

4,640,734
METHOD AND APPARATUS FOR ASSEMBLING LARGE PANELS
 Ernest E. Roberts, DeSoto, Tex.; Paul H. Hansel, Thousand Oaks, and William O. Hudgens, Camarillo, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
 Filed May 24, 1984, Ser. No. 613,853
 Int. Cl.⁴ B30B 5/00, 9/00
 U.S. Cl. 156—562 9 Claims

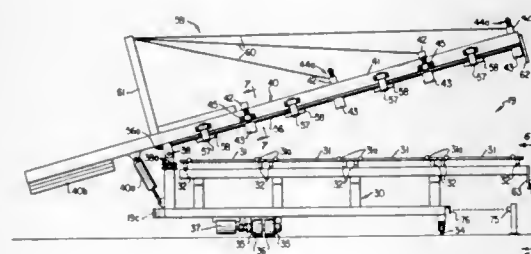
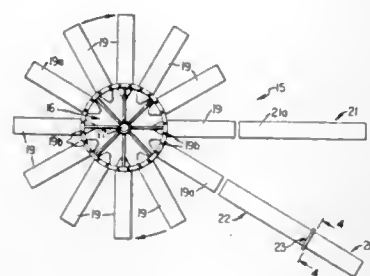
1. A system for assembling panels from a plurality of pre-formed sections, said system comprising:

a carousel structural pivotably mounted in the floor of an assembly area;
a plurality of press tables attached to said carousel structure and adapted to be rotated thereby, each of said press tables comprising;
a frame;
one or more plates mounted on said frame, and said plates forming a surface adapted to receive the number of said preformed sections necessary to form said panels in an aligned relationship;
means for applying adhesive to said preformed sections;
wheel means on said frame positioned between said frame and the floor of said assembly area;
a press rack pivotably mounted on said frame and adapted to move between an up position away from said surface and

means to axially rotate said cylinder assembly, and strapping means attached to and extending tangentially from said cylinder



der assembly with said strapping means providing a lifting force underneath the covering to be removed when the cylinder assembly is rotated about its axis.



a down position where said press rack is substantially parallel and adjacent said surface; said press rack comprising;
a frame support structure;
means on said frame support structure for releasably securing one or more support members to said frame support structure in a position where each of said support members will contact and rest on, and adhesively bond to all of said preformed sections on said surface when said press rack is in a down position; means for applying pressure to each of said support members downward toward said sections when said press rack is in a down position; and means to rotate said carousel structure to thereby simultaneously move all of said plurality of press tables in a circular direction.

4,640,735

CYLINDER ASSEMBLY COVERING REMOVER
Leroy J. Murray, 15B Howd Ave., Stony Creek, Conn. 06405; Lawrence N. Olson, 23 Norwood Rd., New Haven, Conn. 06513; Robert Chavoya, 210 Okenuck Trail, Stratford, Conn. 06497, and James Wade, 100 Saw Mill Rd., Stony Creek, Conn. 06405

Filed Feb. 5, 1985, Ser. No. 698,379

Int. Cl. B32B 31/18

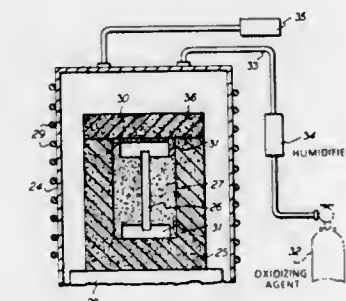
U.S. Cl. 156—584

5 Claims

1. A covering remover comprising a cylinder assembly which includes a cylinder and a rotatable shaft within the cylinder, connected means between the shaft and the cylinder,

1. A method of forming a wave guiding layer in a transparent crystalline member comprising the steps of:

- placing said transparent crystalline member in a crucible having a cavity of dimensions such that said crystalline member is substantially symmetrically separated from the walls of said cavity in said crucible by a distance up to approximately 3 millimeters, said crucible comprising a material which gives off the same chemical component in the vapor phase as said transparent crystalline member at a predetermined temperature, said chemical component in the vapor phase having a vapor pressure less than about 10^{-4} atmosphere at said predetermined temperature;
- isothermally heating said transparent crystalline member and said crucible at said predetermined temperature in a chamber;
- providing a controllable atmosphere in said chamber which surrounds said transparent member and said crucible, said atmosphere having a more highly oxidizing atmosphere than one including only an oxygen (O_2) and moisture content by including ozone and/or single oxygen either alone or in combination with oxygen (O_2), water vapor, or oxygen (O_2) and water vapor together; and
- maintaining said isothermal heating of the transparent crystalline member and crucible in said atmosphere at said predetermined temperature for a predetermined time and at a pressure of one atmosphere, so that a wave guiding layer is produced along the surface of said transparent crystalline member which has increased optical damage resistance.



4,640,736

WAVE GUIDE FABRICATION METHOD

Robert L. Holman, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 193,248, Oct. 2, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,671

Int. Cl. G02B 5/14; B01B 9/00; C03C 21/00

U.S. Cl. 156—603

4 Claims

4,640,737

DRY ETCHING METHOD OF COMPOUND SEMICONDUCTOR

Hiroko Nagasaka, Yokohama, and Nawoto Motegi, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

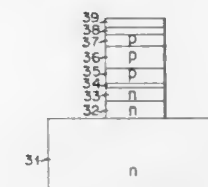
Filed Oct. 26, 1984, Ser. No. 664,965

Claims priority, application Japan, Nov. 30, 1983, 58-224077

Int. Cl. H01L 21/306; B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—643

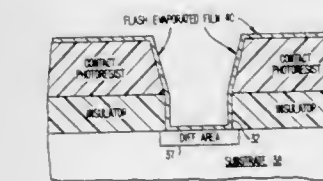
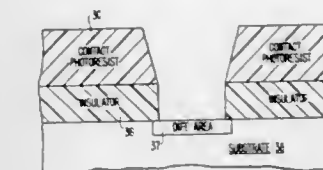
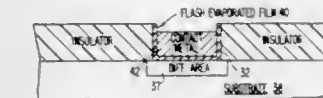
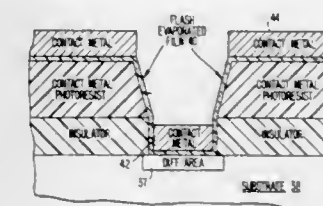
13 Claims



1. A method for preparing a semiconductor light-emitting device including a semiconductor laser and a light-emitting diode, by reactive ion etching of a compound semiconductor comprising the steps of:

- introducing a plasma-generating gas comprising boron trichloride and chlorine into a plasma generation region which is defined between a cathode supporting a work-piece comprising a Group III-V compound semiconductor containing an element which may be readily oxidized and an anode opposite thereto;
- applying high-frequency electric power between said cathode and said anode, thereby generating a plasma from said plasma-generating gas; and
- etching said compound semiconductor with said plasma according to reactive ion etching, so as to prepare a light-emitting semiconductor device.

ture conforming to the surface of said protective layer covering the sidewalls of said window; and



applying etching chemicals for photoresist removal and lift-off of undesired metal.

4,640,739

PROCESS OF PRODUCING GALVANIC LAYERS OF SOLDER OF PRECISE CONTOUR ON INORGANIC SUBSTRATES

Fedor Modic, Wolfgang Leibfried, both of Leonberg; Manfred Nitsch, Schwieberdingen; Kurt Spitzenberger, Weil der Stadt, and Herbert Zimmermann, Freiberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 15, 1985, Ser. No. 765,815

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430001; Sep. 11, 1984, 3433251

Int. Cl. C23F 1/02; C25D 5/02; B44C 1/22

U.S. Cl. 156—659.1

15 Claims



4,640,738

SEMICONDUCTOR CONTACT PROTECTION

Edward C. Fredericks, Haymarket, and Madan M. Nanda, Reston, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,656

Int. Cl. H01L 21/312; B44C 1/22

U.S. Cl. 156—656

7 Claims

1. In a metal lift-off process for the deposition of a metal structure on a substrate, a method for protecting the sides of the metal structure from attack by chemicals used in subsequent processing steps, comprising the steps of:

- providing a substrate with an overlying insulating layer;
- applying a layer of photoresist on the insulating layer;
- forming a window with sidewalls through the photoresist and insulating layers down to the substrate surface;
- flash evaporating a layer of protective semiconductor material which is resistant to attack by the chemicals used for photoresist removal on all surfaces of said sidewalls of said window;
- depositing contact metal in said window and in contact with the substrate surface and with the sides of the metal structure.

1. Process for producing contoured solder layers overlying a copper layer on a surface of an inorganic substrate which is an electrical insulator composed predominantly of oxide material, comprising the steps of:

applying over an entire surface of said substrate, and then calcining, a conducting copper paste to form a conducting

and adhesion-promoting copper first layer (2) on said substrate;
superposing on said copper layer a photoresist film (3) and a negative image film of a desired pattern on top of said photoresist film, followed by exposing said photoresist film, through said negative image film, to illumination, developing said photoresist film and hardening the same in said desired pattern;
galvanically reinforcing the portion of said copper first layer not covered by said photoresist film with at least one layer (4) of a conducting layer composed of metallic material selected from the group which consists of copper and nickel;
galvanically depositing, on top of said at least one reinforcing layer, a layer (5) of lead-tin solder;
removing said hardened photoresist film;
etching away said copper first layer in the locations where said hardened photoresist film was removed, and
melting said solder layer for conforming its contour to the underlying unetched remainder of said copper first layer.

4,640,740

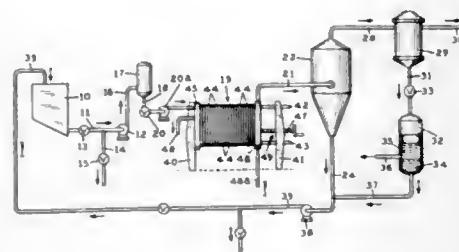
APPARATUS FOR EVAPORATIVE STRIPPING

James G. Moore; James H. Obey, both of Williamsville, and Edward B. Pinkel, Angola, all of N.Y., assignors to Blaw Knox Corporation, Pittsburgh, Pa.
Division of Ser. No. 385,322, Jun. 4, 1982, Pat. No. 4,511,431.
This application Nov. 2, 1984, Ser. No. 667,862
The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.⁴ B01D 1/00; F28F 3/08

U.S. Cl. 159—13.1

5 Claims



1. An apparatus for removing volatile components from a heat sensitive liquid material having foaming characteristics, which comprises

- a liquid product heating means operable to heat said liquid product in the absence of a stripping gas to a predetermined temperature, whereby the liquid product remains at preselected pressure and temperature levels to prevent any vaporization of the volatile components from occurring during the heating of the liquid material,
- a volatile component evaporation section and
- a restrictive orifice forming flow path providing direct fluid communication between said liquid product heating means and said volatile component evaporation section and forming a partial restriction to fluid flow therebetween,
- said volatile component evaporation section and said restrictive orifice forming flow path being dimensioned relative to one another and in respect of the preselected pressure and temperature of the liquid product whereby the volatile components of the liquid material substantially instantaneously vaporize in a flashing action as the liquid material passes from the restrictive orifice forming flow path to the volatile component evaporation section,
- said volatile component evaporation section being further dimensioned to form a fluid flow conduit whereby the vaporized volatile components continue to flow as a high velocity vapor continuum carrying said liquid material in atomized droplet form and subjecting said liquid

droplets to a turbulent stripping action to remove the remaining volatile components therefrom.

2. The apparatus according to claim 1, further characterized by

- a plate-type evaporator,
- said liquid product heating means comprising a first predetermined number of heated passes of said plate-type evaporator,
- said volatile component evaporation section comprising a second predetermined number of passes of said plate-type evaporator, and
- said restrictive orifice forming flow path comprising a third predetermined number of passes of said plate-type evaporator and being arranged between the first predetermined number of heated passes and the second predetermined number of passes,
- said third predetermined number of passes being fewer than each of said first and second predetermined number of passes of said plate-type evaporator.

4,640,741

FORMING FABRIC FOR USE IN A PAPERMAKING MACHINE

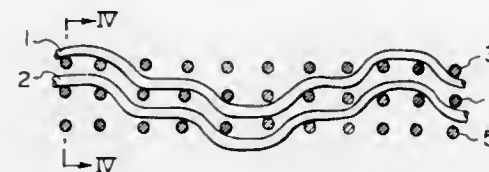
Ishino Tsuneo, Inagi, Japan, assignor to Nippon Filcon Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,435

Claims priority, application Japan, Nov. 30, 1983, 58-224412
Int. Cl.⁴ D03D 13/00; D21F 1/00, 11/00

U.S. Cl. 162—202

17 Claims



1. A forming fabric for use in a papermaking machine having two warp layers consisting of machine direction threads and three weft layers consisting of cross machine direction threads, comprising:

- an uppermost weft layer adapted to define the Paper-web supporting surface of said fabric during use;
 - an intermediate weft layer arranged below said uppermost weft layer;
 - a lowermost weft layer arranged below said intermediate weft layer to define the under-side of said fabric during use;
 - an upper warp layer, the warp threads of which are interwoven only with said uppermost weft layer and with said intermediate weft layer; and
 - a lower warp layer, the warp threads of which are interwoven only with said intermediate weft layer and said lowermost weft layer, the warp threads of the lower warp layer passing between the uppermost weft layer and the intermediate weft layer, and then between the intermediate weft layer and the lowermost weft layer, and then beneath the lowermost weft layer, and then again between the intermediate weft layer and the lowermost weft layer, and then again appearing between the uppermost weft layer and the intermediate weft layer to complete one cycle of a weave pattern;
- whereby when said forming fabric is stretched longitudinally, the under-side knuckles of said lower warp layer are positioned higher than the under-side knuckles of adjacent threads of said lowermost weft layer, such that the lowermost weft layer is subject to wear before the lower warp layer.

17. In a method for making paper wherein a paper-web is formed on a forming fabric in the wire part of a papermaking

machine, the improvement comprising using a forming fabric having two warp layers consisting of machine direction threads and three weft layers consisting of cross machine direction threads, comprising:

- an uppermost weft layer adapted to define the paper-web supporting surface of said fabric during use;
 - an intermediate weft layer arranged below said uppermost weft layer;
 - a lowermost weft layer arranged below said intermediate weft layer to define the under-side of said fabric during use;
 - an upper warp layer, the warp threads of which are interwoven only with said uppermost weft layer and with said intermediate weft layer; and
 - a lower warp layer, the warp threads of which are interwoven only with said intermediate weft layer and said lowermost weft layer, the warp threads of the lower warp layer passing between the uppermost weft layer and the intermediate weft layer, and then between the intermediate weft layer and the lowermost weft layer, and then again between the intermediate weft layer and the lowermost weft layer, and then again appearing between the uppermost weft layer and the intermediate weft layer to complete one cycle of a weave pattern;
- whereby when said forming fabric is stretched longitudinally, the under-side knuckles of said lower warp layer are positioned higher than the under-side knuckles of adjacent threads of said lowermost weft layer, such that the lowermost weft layer is subject to wear before the lower warp layer.

4,640,742

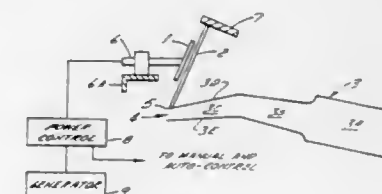
METHOD AND APPARATUS FOR CONTROLLING THE SIZE OF AN OPENING THROUGH WHICH A PRODUCT IS METERED

Donald E. Helleur, 221 Mortlake, St. Lambert, Quebec, Canada
Continuation of Ser. No. 459,327, Jan. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 306,465, Sep. 28, 1981, abandoned. This application Sep. 17, 1984, Ser. No. 650,783

Int. Cl.⁴ B29C 39/38, 39/44; D21C 1/02, 1/06

U.S. Cl. 162—212

15 Claims



1. An apparatus for controlling the size of an opening through which material is metered, said opening being defined by at least first and second members spaced apart from each other, at least one of the members being movable toward or away from the other member to change the size of the opening, a heat expandable member associated with the movable member and a fixed base, magnetic field generating means for generating a magnetic field and including an induction coil spaced from said heat expandable member, said induction coil having a magnetic core which is operatively connected to said heat expandable member whereby magnetic flux generated by said magnetic field is conducted from the magnetic core to said heat expandable member to heat the same, the heat expandable member having higher resistivity and permeability than said magnetic core, thereby causing said expandable member to expand and cause movement of the movable member, said magnetic field generating means being located in a position relative to the heat expandable member so that no external material will impede magnetic flux from the magnetic field

inducing heat in said heat expandable member and so that the magnetic field generating means may generate a maximum amount of flux and a minimum amount of heat.

5. A method of use in controlling the size of an opening through which material is metered and wherein at least part of said opening is defined by a movable member with a heat expandable member associated with the movable member and a fixed base, the method comprising the steps of providing magnetic field generating means, positioning the magnetic field generating means about a magnetic core, electrically connecting said magnetic core to said expandable member by a low resistance electrical conductor to close the magnetic circuit of said core with the heat expandable member, and selectively controlling the application of electrical power to the magnetic field generating means to cause the generation of magnetic field and thereby cause generation of heat in the heat expandable member to control the size of the opening.

4,640,743

MULTI-STAGE CONDENSATION PROCESS

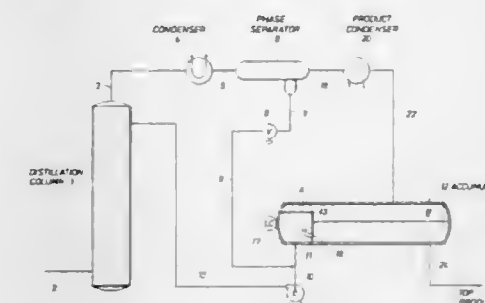
Robert P. Bannon, and Stanley Marple, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1985, Ser. No. 726,854

Int. Cl.⁴ B01D 3/14

U.S. Cl. 203—87

4 Claims



1. A two-stage condensation process comprising:

- distilling a multi-component liquid in a distillation column under conditions to provide an overhead fraction vapor;
- condensing a portion of the overhead fraction vapor in a first condensation zone to obtain a liquid in addition to the partially cooled vapor;
- passing said partially cooled vapor and liquid from the first condensation zone and separating said partially cooled vapor and said liquid in a separation zone;
- passing a first portion of said liquid from the separation zone to the upper portion of said distillation column to contact said overhead fraction;
- accumulating a second portion of said liquid from the separation zone in a first accumulation section of an accumulating zone, said accumulating zone also comprising a second accumulation section having vapor communication with the first accumulation section but being separated from said first accumulation section by a barrier which provides for one way flow of liquid from the second accumulation section to the first accumulation section in the lower portion of said barrier, the first accumulation section and the second accumulation section being at different temperature;
- passing said partially cooled vapor from the separation zone to a second condensation zone at a lower temperature than the first condensation zone to form a condensed liquid and passing the condensed liquid to the second accumulation section of the accumulating zone, and;
- controlling the flow of liquid from said separation zone to said first accumulation section so as to minimize the

1. The process of imparting a uniform silver/gray surface appearance to silver copper alloy strip material comprising the steps of:

- providing a supply roll of silver copper alloy strip material;
- providing an acid treatment bath having a cathode disposed therein;
- passing the strip material from the supply roll to the treatment bath; and
- resistively heating the strip material to at least 350° C. prior to its entry into the treatment bath by passing an electric current through the strip material and the treatment bath to the cathode; and
- electrolytically dissolving copper oxide from the surface of the strip material in the treatment bath.

4,640,753 METHOD OF ELECTROCOATING METALLIC SURFACES

Christopher P. Banks, Saffron Walden, and Edward Irving, Burwell, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 19, 1985, Ser. No. 746,429

Claims priority, application United Kingdom, Jan. 27, 1984, 8416389

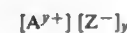
Int. Cl.⁴ C25D 13/06; C09D 3/58

U.S. Cl. 204—181.7

16 Claims

1. A method of coating a metallic surface which comprises passing an electric current at a voltage of at least 15 volts between the metallic surface as anode and a cathode in contact with a composition comprising

- (A) an epoxide resin, and
- (B) a salt of formula



where

A^{p+} denotes a cation which is a metal, a metal complex, an organometallic, a heterocycle, ammonium, a sulfoxonium, a substituted ammonium, or a phosphonium ion, p denotes 1, 2, or 3,

Z^{-} denotes an anion selected from perchlorate, trifluoromethane sulfonate, pentafluorohydroxyantimonate and complex anions of formula MQ_d^{-} , M represents an atom of a metal or metalloid selected from boron, phosphorus, antimony and arsenic, Q represents a halogen atom, and

d is 4 to 6 and is one more than the valency of M , whereby polymerized epoxide resin is deposited on the metallic surface.

4,640,754 PROCESS FOR THE PRODUCTION OF DICHLOROHYDRIN

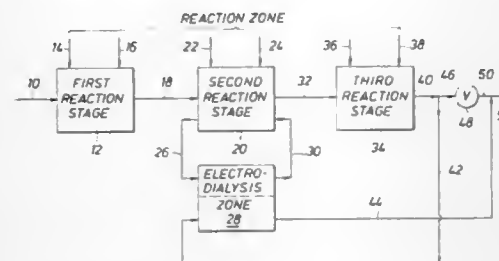
F. Norman Grimsby, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 814,346

Int. Cl.⁴ C25B 3/06; B01D 13/02

U.S. Cl. 204—182.4

8 Claims



1. In a continuous process for the production of dichlorohydrin by the reaction of allyl chloride, water and chlorine in a reaction zone comprising a first reaction stage, a final reaction stage, and at least one intermediate reaction stage, where the reaction mixture from at least one reaction stage, before entering the next reaction stage is electro-dialyzed in a separate electro-dialysis zone having a feed inlet and a concentrate inlet, to remove ions formed during said reaction, the improvement which comprises passing at least a portion of the reaction product from said final reaction stage to the concentrate inlet of said at least one electro-dialysis zone, and withdrawing an ion-containing reaction product concentrate stream from such said electro-dialysis zone, whereby any dichlorohydrin which passes into the concentrate stream in said at least one electro-dialysis zone may be recovered.

4,640,755 METHOD FOR PRODUCING MAGNETIC MEDIUM

Noboru Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

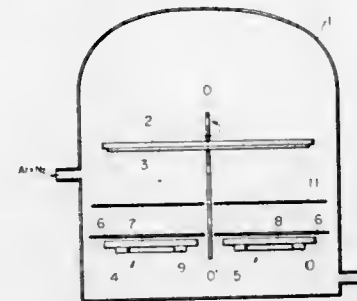
Filed Dec. 6, 1984, Ser. No. 678,674

Claims priority, application Japan, Dec. 12, 1983, 58-234089; Feb. 10, 1984, 59-23883

Int. Cl.⁴ C23C 14/36

U.S. Cl. 204—192.2

7 Claims



1. A method for producing a magnetic medium comprising the steps of:

sputtering a magnetic material consisting of Fe-Co alone or Tb-FeCo onto a substrate in an atmosphere of argon gas mixed with nitrogen gas in a sufficient amount to increase the saturation intensity of magnetization of said material and forming a magnetic film on said substrate while rotating said substrate.

4,640,756 METHOD OF MAKING A PIEZOELECTRIC SHEAR WAVE RESONATOR

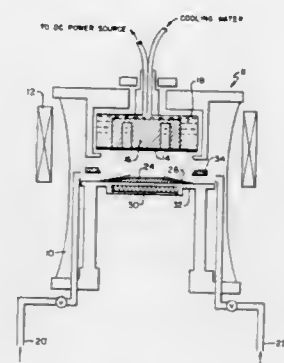
Jin S. Wang, Harbor City, Calif.; Kenneth M. Lakin, and Allen R. Landin, both of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 545,411, Oct. 25, 1983, abandoned. This application May 20, 1985, Ser. No. 736,164

Int. Cl.⁴ C23C 14/38

U.S. Cl. 204—192.18

13 Claims



1. A method of depositing a film of piezoelectric material on a substrate, the film having a uniform, controlled, inclined C-axis orientation comprising:

providing a dc planar reactive sputtering system having a chamber containing a cathode for holding a target, an anode spaced from and parallel to the cathode for holding the substrate and a reactive gas, establishing an electrical field between the cathode and the anode to sputter the target such that the target material ionizes to form an ion flux which reacts with the reactive

gas forming the piezoelectric material which deposits on the substrate, providing a positively biased control electrode in the chamber near the substrate and establishing a second, dc electrical field between the control electrode and the anode to collect the electron current and control the ion flux, the electrode position and the strength of the dc field being sufficient to alter the direction of the ion flux as it strikes the substrate to control the orientation of the C-axis away from the direction of the control electrode, the distance of the electrode above the plane of the substrate and the strength of the second electrical field controlling the degree of inclination of the C-axis, thereby forming a film of piezoelectric material having a uniform, controlled, inclined C-axis.

4,640,757 VERTICAL CELLS FOR THE CONTINUOUS ELECTRODEPOSITION OF METALS AT HIGH CURRENT DENSITY

Maurizio Podrini, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

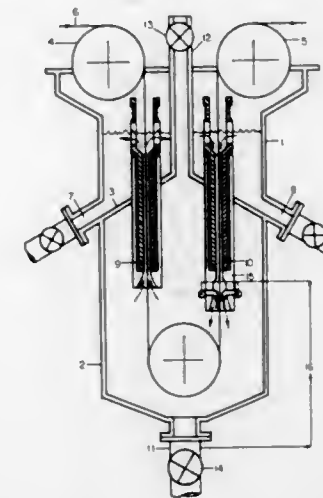
Filed Jan. 28, 1986, Ser. No. 823,280

Claims priority, application Italy, Feb. 8, 1985, 47663 A/85

Int. Cl.⁴ C25D 17/00

U.S. Cl. 204—206

3 Claims



1. In a plant for continuous high current density electrodeposition of metals on other metal bodies in movement, comprising at least one treatment unit having an upper chamber and a lower chamber containing electrolyte and connected by two vertical electroplating cells, wherein the metal body to be plated passes from said upper chamber downwards through the first of said cells to the lower chamber, where it is diverted and returns upwards through the second of said cells to the upper chamber, while the electrolyte is forced to pass in the opposite direction in each of the two cells, the improvement in which only one pumping device is used for each of the treatment units, said pumping device being located at one extremity of only one of the two cells and having its delivery directed into one of said chambers, said one chamber being completely filled with electrolyte which is in continuous communication with the outside of said one chamber only through the other chamber, via said vertical electroplating cells.

4,640,758 APPARATUS FOR THE ELECTRODEPOSITION OF A COATING ON AN ENDLESS BELT

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

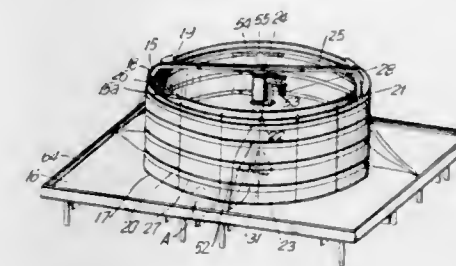
Filed Mar. 6, 1986, Ser. No. 837,017

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1985, 3509388

Int. Cl.⁴ C25D 17/00

U.S. Cl. 204—272

27 Claims



1. Apparatus for the electrodeposition of a metal coating comprising an electrolytic bath including a generally horizontally arranged base plate, wall means secured to and extending upwardly from said base plate forming an annular bath having a generally circularly extending radially inner surface and a generally circularly extending radially outer surface spaced outwardly from the inner surface and said inner and outer surfaces being concentric about a common centerpoint located on said base plate, said annular bath arranged to contain an aqueous electrolytic solution extending between and contacting said inner and outer surfaces, said wall means comprising at least a first endless press belt for use in a double band press having a first face surface directed toward the common centerpoint and a second face surface forming said inner surface of said annular bath and a second endless press belt having a first face surface directed toward the common centerpoint and forming the outer surface of said annular bath and an oppositely directed second surface, a vertically extending mast extending vertically upwardly from the common centerpoint and being electrically insulated from said base plate, a pair of generally horizontally extending arms each having a first end and a second end with the first ends thereof secured to the top of said mast and said arms extending radially outwardly therefrom with the second ends located spaced radially outwardly from the inner surface, means for forming an anode located within said annular bath, a constant voltage source, means connecting said constant voltage source to said anode forming means and to a selected part of said wall means for forming a cathode so that an electrodeposition of a metal coating takes place from the electrolytic solution onto the selected part of said wall means.

4,640,759 SUPPORTED MEDIUM FOR ELECTROPHORESIS AND SUPPORTS THEREFOR

Masakazu Hashiue, Kaisei, and Masashi Ogawa, Asaka, both of Japan, assignors to Fuji Photo Film Co., Ltd.

Filed Mar. 11, 1985, Ser. No. 710,130

Claims priority, application Japan, Mar. 12, 1984, 59-47556; Apr. 20, 1984, 59-79612

Int. Cl.⁴ G01N 27/28

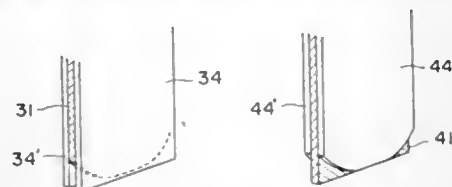
U.S. Cl. 204—299 R

8 Claims

1. An electrophoresis apparatus including a medium for electrophoresis tightly sandwiched by supports, the improvement which comprises the length of both side portions of the medium along the direction of electrophoresis is shorter than that of the center portion of the medium.

5. An electrophoresis apparatus including a set of supports for tightly sandwiching a medium to be employed in a process

for electrophoresis wherein the potential in the direction of electrophoresis is larger at both side portions of the medium than at the center portion thereof, wherein the length of both



side portions of at least one support along the direction of electrophoresis is shorter than that of the center portion of the same support.

4,640,760
PROCESS FOR UPGRADING CARBONACEOUS MATERIAL COMPRISING LIQUID EXTRACTION AND FLASH PYROLYSIS OF EXTRACTION RESIDUE
 William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1984, Ser. No. 646,341
 Int. Cl.⁴ C10G 1/04

U.S. Cl. 208—390

12 Claims

6. A process for recovering hydrocarbons from raw tar sands comprising:

- adding a solvent to the raw tar sands and mixing to form an oil and solvent-containing mixture of tar sands;
- separating the oil and solvent from said mixture leaving a residue of sands and heavy hydrocarbons;
- raising the temperature of said residue and maintaining the temperature in the range of 800° C. to about 1200° C. for a period of time in the range of 0.1 to about 10 seconds to produce a combustible synthesis gas and hot pyrolyzed tar sand;
- combusting the pyrolyzed tar sand with a free-oxygen containing gas to recover residual carbon values therefrom, producing hot combustion gases and hot carbon free sand;
- distilling the solvent as a solvent vapor from the oil and solvent-containing mixture;
- condensing a first portion of the solvent vapor in a condenser; and
- adsorbing a second portion of the solvent vapor in an adsorbent bed.

4,640,761
PROCESS FOR PREPARING PITCH
 Makihiko Mori, Nara; Satoshi Kibe, Kashihara, and Toyohiro Maeda, Tenri, all of Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

PCT No. PCT/JP83/00279, § 371 Date Apr. 17, 1984, § 102(e) Date Apr. 17, 1984, PCT Pub. No. WO84/00975, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 27, 1983, Ser. No. 606,778

Claims priority, application Japan, Aug. 30, 1982, 57-151621
 Int. Cl.⁴ C10C 1/20, 3/02

U.S. Cl. 208—44

30 Claims

1. A process for preparing pitch comprising the steps of heat-treating coal tar or coal tar pitch at a temperature of 300° to 500° C. and a pressure ranging from ambient pressure to 20 kg/cm²-G for 0.5 to 50 hours to cause the aggregation of quinoline insoluble components 0.3 μm or less in particle size into solids of increased apparent particle size and centrifuging the heat-treated material at a temperature of 100° to 450° C. and at a centrifugal force of 500 to 3,500 G to remove the aggregated solids of quinoline insoluble component and recovering said pitch.

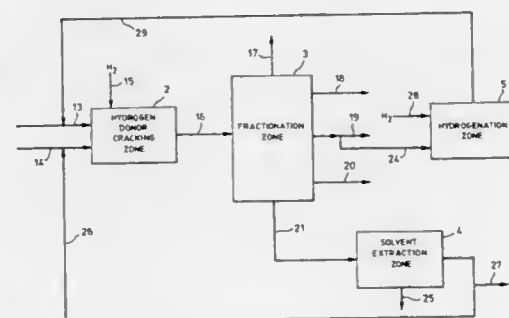
4,640,762
PROCESS FOR IMPROVING THE YIELD OF DISTILLABLES IN HYDROGEN DONOR DILUENT CRACKING

H. John Woods, Campbellville, and Frank Souhrada, Islington, both of Canada, assignors to Gulf Canada Corporation, Calgary, Canada

Filed Jul. 8, 1985, Ser. No. 752,710
 Int. Cl.⁴ C10G 47/34, 65/12

U.S. Cl. 208—56

9 Claims



1. A process for converting a feedstock comprising a heavy, high-boiling hydrocarbon oil residuum and a recycle stock to produce lower-boiling hydrocarbons, comprising:

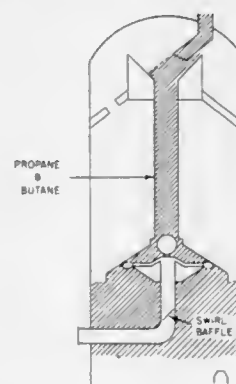
- thermally hydrocracking said feedstock with hydrogen donor diluent in a hydrogen donor diluent cracking zone to produce a hydrocracked product stream,
- fractionating said hydrocracked product stream into at least one distillate fraction and a hydrocracked residuum fraction,
- contacting said hydrocracked residuum fraction with an extracting solvent to produce (i) a deasphalted oil fraction containing deasphalted oil bottoms fraction having a boiling point of at least 500° C. and (ii) as asphaltene-rich residue, and
- directly recycling at least the deasphalted oil bottoms fraction of said deasphalted oil fraction as said recycle stock.

4,640,763
INJECTION OF LPG INTO TCC UNIT
 Tai-Sheng Chou, Sewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1985, Ser. No. 787,196
 Int. Cl.⁴ C10G 57/02; C07C 2/12, 2/58

U.S. Cl. 208—78

20 Claims



1. A process for catalytically cracking hydrocarbon feed in a bed of catalyst effective to crack said hydrocarbon feed, comprising contacting said feed under catalytic cracking conditions,

with said catalyst in a first portion of said bed, to produce cracked product; sealing another portion of that bed of catalyst by introducing into said another portion of that bed a seal selected from the group consisting of ethane, propane, butane, isobutane, ethylene, propylene, butylene, isobutylene and mixtures thereof whereby feed and cracked product are prevented from surging into said another portion;

whereby contact of the seal with catalyst in said another portion of the bed results in conversion of the seal to the higher molecular weight adducts thereof, the condition in said another portion of the bed being effective to provide said conversion.

4,640,764
SELECTIVE TRICYCLIC HYDROGENATION AND CRACKING PROCESS AND CATALYST SUITABLE FOR SUCH HYDROCONVERSION

David M. Hamilton, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 24, 1986, Ser. No. 831,884
 Int. Cl.⁴ C10G 47/04

U.S. Cl. 208—110

25 Claims

1. A selective hydrocracking and hydrogenation process to upgrade the cetane value of a hydrocarbon distillate boiling in the range of from 300° to 700° F. and containing C₁₀ to C₁₈ normal paraffins, C₁₀ to C₁₈ isoparaffins, tetralins, decalins and undesirable tricyclic hydrocarbons which process comprises contacting said hydrocarbon distillate with a catalytic metal or metals containing intercalated clay at hydrocracking and hydrogenation conversion conditions to selectively crack said tricyclic hydrocarbons in preference to said C₁₀ to C₁₈ normal paraffins, C₁₀ to C₁₈ isoparaffins, tetralins and decalins and to produce a hydrocarbon distillate having an increased cetane value.

4,640,765
METHOD FOR CRACKING HEAVY HYDROCARBON OILS

Junichi Kubo, Yokohama, Japan, assignor to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1985, Ser. No. 770,734
 Claims priority, application Japan, Sep. 4, 1984, 59-183673; Apr. 11, 1985, 60-75364

Int. Cl.⁴ C10G 47/32, 47/34

U.S. Cl. 208—110

17 Claims



1. A method for cracking a heavy oil containing heavy metals and at least 1% by weight of asphaltene comprising the steps of:

- vertically dividing the interior of a cracking tower into at least two portions with a porous partition housing a solid catalyst having a hydrogenation function;

(b) communicating said divided portions with each other at the upper and lower parts thereof;

(c) introducing a heavy fraction oil, a hydrogen donor solvent and a hydrogen-containing gas into said cracking tower at the lower part of at least one of said divided portions and letting said heavy fraction oil, said hydrogen donor solvent and said hydrogen containing gas ascend through said at least one portion, removing the hydrogen containing gas from the top of said cracking tower, whereby a pressure difference exists between the outside of said partition and the interior thereof;

(d) circulating a fluid including said heavy oil, hydrogen donor solvent between said at least one portion and the other divided portion and only part of said fluid goes through from the outside of said partition to the interior of said partition.

4,640,766
PROCESS FOR THE PREPARATION OF HYDROCARBONS

Martin F. M. Post, Houston, Tex.; Swan T. Sie, and Ernst J. R. Sudhölter, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 19, 1985, Ser. No. 725,189

Claims priority, application Netherlands, Apr. 25, 1984, 8401332

Int. Cl.⁴ C10G 47/00

U.S. Cl. 208—111

24 Claims

1. A process for the preparation of C₅⁺ hydrocarbons suitable for the production of middle distillates from C₄⁻ hydrocarbons comprising:

- reforming C₄⁻ hydrocarbons at a pressure higher than 10 bar in the presence of carbon dioxide and steam into a mixture of carbon monoxide and hydrogen having a H₂/CO molar ratio between 0.25 and 2.25 by using a carbon dioxide/hydrocarbon ratio (a) higher than 0.1, but lower than 10 g mol CO₂/g atom C, a steam/hydrocarbon ratio (b) higher than 0.1, but lower than 1 g mol H₂O/g atoms C and a carbon dioxide/steam ratio chosen such that (2×a+3×b)>3, and
- converting the product of (a) into a mixture of hydrocarbons substantially consisting of C₅⁺ hydrocarbons by contacting it at a temperature of 105°–305° C. and a pressure, substantially corresponding with that used in the reforming, with a cobalt catalyst comprising 3–60 pbw of cobalt and 0.1–100 pbw of at least one other metal chosen from the group formed by zirconium, titanium, and chromium per 100 pbw silica, alumina or silica-alumina, wherein said catalyst has been prepared by kneading and/or impregnation, and that when the H₂/CO mixture has a H₂/CO molar ratio lower than 1.5, the cobalt catalyst is used in a catalyst mixture with a copper and zinc containing composition having CO-shift activity.

4,640,767
HYDROCARBON EXTRACTION AGENTS AND MICROBIOLOGICAL PROCESSES FOR THEIR PRODUCTION

James E. Zajic, London, and Donald F. Gerson, Granton, both of Canada, assignors to Canadian Patents & Development Ltd./Société Canadienne des Brevets et d'Exploitation Ltd., Ontario, Canada

Continuation of Ser. No. 106,848, Dec. 26, 1979, abandoned, which is a continuation of Ser. No. 872,010, Jan. 24, 1978, abandoned. This application Nov. 29, 1984, Ser. No. 675,470
 Int. Cl.⁴ C10G 32/00; C12N 1/20; C12P 21/00

U.S. Cl. 208—390

8 Claims

1. A process for producing extraction agents useful in the separation of hydrocarbon values from mineral deposits, which comprises cultivating by an aerobic fermentation, in a growth promoting medium and under growth promoting conditions, and on a liquid hydrocarbon substrate, a selected mi-

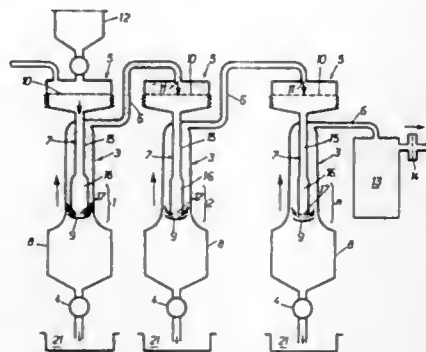
crobal strain of a species of microorganism selected from the group consisting of *Arthrobacter terregens*, *Arthrobacter xerosis*, *Bacillus megaterium*, *Corynebacterium lepus*, *Corynebacterium xerosis*, *Nocardia petroleophila*, and *Vibrio fischeri*; to produce an extraction agent of microbiological origin in said fermentation medium, subsequently recovering the extraction agent from the fermentation medium and drying said agent to powdered form.

4,640,768
ELUTRIATION APPARATUS FOR THE PURIFICATION AND SEPARATION OF POWDERS OF DIFFERENT DENSITIES

René J. Morbioli, and Jean C. Ney, both of Corbeil, France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation - S.N.E.C.M.A., Paris, France
Filed Jun. 15, 1984, Ser. No. 620,957
Claims priority, application France, Jun. 29, 1983, 83 10717
Int. Cl.⁴ B07B 9/02

U.S. Cl. 209—37

2 Claims



1. An elutriation apparatus for purification and separation of powders comprising:

- at least first and second separating columns connected in series wherein each column further comprises an upper zone, a lower zone, a cross-sectional area of the lower zone being less than that of the upper zone in each of said columns, the ratio of cross-sectional areas in the respective upper and lower zones of the successive columns being substantially constant, and a cross-sectional area of the lower zone of column (n+1) of the series being such that the flow velocity therein is substantially equal to the flow velocity in the upper zone of the column n of the series which lies immediately upstream,
- means for the introduction of a powder containing at least two fractions of a first lower density and a second higher density to each of said first and second columns to be separated and for the introduction of a carrier fluid wherein said means for the introduction of powder further comprises a distributor tube arranged to discharge the carrier fluid and the powder carried thereby into the lower zone and through an opening formed at the lower end of the tube,
- a deflector plate disposed transversely of the opening at the lower end of the tube wherein the deflector plate deflects the carrier fluid and powder into said lower zone,
- means defining an outlet in the upper zone of said first column for the carrier fluid and powder
- means positioned at the lower end of the columns for collecting a fraction of powder of coarser granulometry of the second higher density powder fraction,
- means for removing the coarser grains from the means for collecting a fraction of the powder of coarser granulometry;
- means for interconnecting said means defining the outlet in the upper zone of the first column and the means for

introduction of the powder and the carrier fluid to the lower zone of said second column; and
a screen disposed between said columns and in said means for interconnecting the first and second columns, the mesh of said screen being such that said screen retains the first lower density fraction of particles of a minimum diameter substantially equal to the minimum diameter of the second higher density fraction of particles retained in the collecting means at the lower end of the immediately preceding column wherein the first and second powder fractions are successively separated in the interconnected elutriating columns and screens such that the second high density fraction is deposited in successive sized fractions in each of the collecting means of said columns and the first low density fraction is retained on said screens located in the columns interconnecting means as successive sized fractions.

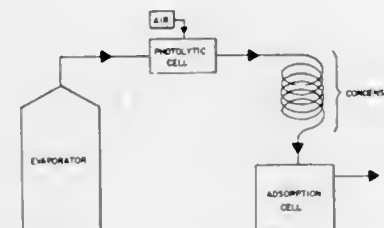
4,640,769
APPARATUS FOR PHOTOGRAPHIC FILM PROCESSOR POLLUTION CONTROL

Mark F. Wemhoff, P.O. Box 4031, Enterprise, Fla. 32725
Filed Aug. 29, 1985, Ser. No. 770,609

Int. Cl.⁴ B01D 1/02, 5/00; C02F 1/04, 1/32

U.S. Cl. 210—96.1

7 Claims



1. A system for the removal of metals and reduction of biological and chemical oxygen demand (BOD/COD) in washless photographic processing chemistry comprising:

- an evaporator including means for receiving effluent from said photographic processing, the effluent having metals dissolved therein and containing certain volatile organic compounds and other substances characterized by BOD/COD; said evaporator including a corrosion-resistant vessel and having a temperature-resistant removable liner affixed to the interior of said vessel for collecting solids, a heat source for separation of vaporized water and volatile organic compounds from solids and complexed ionic metals;
- a photolytic cell and ozone generator fluidly coupled to said evaporator for receiving, oxidizing, and photolyzing the vaporized water and volatile organic compounds;
- a condenser fluidly coupled to said photolytic cell and ozone generator for receiving and condensing said photolyzed vapor into a condensate;
- an activated carbon adsorption cell fluidly coupled to said condenser for receiving and purifying said condensate, said adsorption cell comprising an activated carbon media and outlet means;
- an insulated enclosure for said system for conserving evaporative heat and dissipating condenser heat; and
- control means coupled to said evaporator, photolytic cell and ozone generator, condenser, and activated carbon adsorption cell for controlling the operation of the system.

4,640,770
APPARATUS FOR EXTRACTING WATER FROM SOLID FINES OR THE LIKE

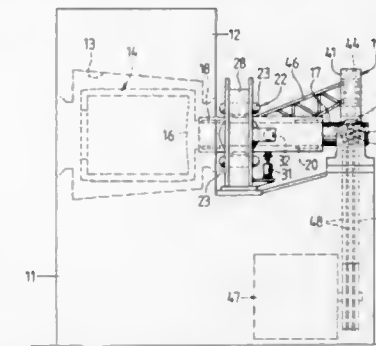
Lloyd B. Smith, Bristol, Tenn., assignor to United Coal Company, Bristol, Va.

Continuation-in-part of Ser. No. 719,534, Apr. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 436,735, Oct. 26, 1982, abandoned. This application Feb. 19, 1986, Ser. No. 831,055

Int. Cl.⁴ B04B 1/06

U.S. Cl. 210—144

30 Claims



1. In a centrifuge including an envelope for collecting fluid extracted thereby, means for introducing wet particulate solids into said centrifuge and means for removing dried solids from said centrifuge, the improvement comprising:

- (a) a bowl mounted for rotation within said envelope and having an unobstructed opening at one end thereof for receiving said wet particulate solids, a base support closing the other end of said bowl and a plurality of outlet ports for discharging fluid into said envelope;
- (b) a filter media liner proximal the inner surface of said bowl;
- (c) means between said filter media liner and said bowl for allowing extracted fluid to move outwardly of said filter media liner;
- (d) a continuous shaft fixed to said base support at one end and rotatably mounted at a second end on a gimbal-like system to maintain a vertex of precession of said shaft and bowl at said second end in a substantially well defined locus;
- (e) variable speed drive means connected to said shaft adjacent said vertex to effectively rotate said bowl for centrifugally extracting fluids from said wet particulate solids; and
- (f) resilient means supporting said shaft and bowl on bearings, located intermediate said vertex and said base support, with said resilient means for supporting said shaft being variable in resiliency and constructed to vary the natural radial frequency of said bowl and shaft in accordance with the speed of said drive means.

4,640,771
FLUID INTAKE SCREENING DEVICE
Charles E. Whalen, East Peoria, and Wilbur G. Hoover, Delavan, both of Ill., assignors to Caterpillar, Inc., Peoria, Ill.
Filed Nov. 4, 1982, Ser. No. 439,167

Int. Cl.⁴ B01D 27/08

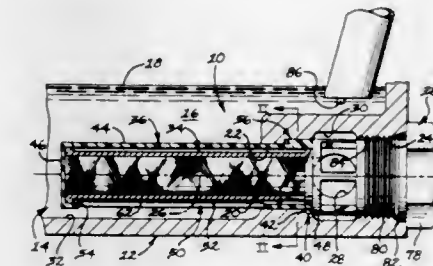
U.S. Cl. 210—167

11 Claims

8. A fluid intake screening device (10) adapted for insertion into a case (12) defining a sump (14), an opening (20) therethrough having inner and outer ends (22, 24), and an outwardly facing shoulder (48) therebetween, comprising:

- a tubular filter assembly (34) including a filter element (62) and a skeleton frame (64) of a construction sufficient for protectively supporting the filter element (62) concentrically therewithin;
- a tubular baffle member (36) supporting the skeleton frame

(64) concentrically therewithin and being extendable from the inner end (22) of the opening (20) into the sump (14) and defining an opening (54) therethrough; and



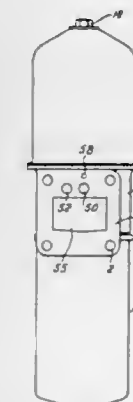
releasable closure means (38) for blocking the outer end (24) of the opening (20) and resiliently urging the skeleton frame (64) against the baffle member (36) and the baffle member (36) into seated engagement against the shoulder (48).

4,640,772
OIL CLEANING ASSEMBLIES FOR ENGINES
Nell A. Graham, Somerset, England, assignor to AE PLC, Warwickshire, England
Filed May 6, 1985, Ser. No. 731,168
Claims priority, application United Kingdom, May 4, 1984, 8411502

Int. Cl.⁴ B01D 27/06, 45/12

U.S. Cl. 210—295

8 Claims



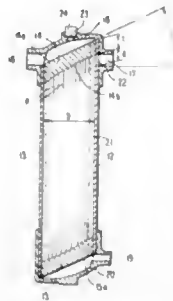
1. An oil cleaning assembly for an internal combustion engine, comprising means for enabling oil to flow through both a separator unit and a filter unit at all times when oil flows through a passage, including, a by-pass flow substantially vertically disposed centrifugal separator unit having an outer casing and an oil nozzle-driven rotor rotatable therein, the rotor being non-openable and disposable, a full flow filter unit having an outer casing and a filter element therein, at least the filter element being disposable, and a mounting member for mounting said casings by means of screw thread connections in such a way that the separator casing is upstanding from the mounting member, means for enabling both of said casings to be independently removable from said mounting member, the mounting member having first passage means for supplying high pressure oil from the engine pump directly to an inlet of each said separator unit and said filter unit, second passage means for receiving oil from said centrifugal separator unit and returning it to the engine sump and third passage means for receiving oil from said filter unit and supplying it to a pressurised engine lubricating system.

4,640,773
MEMBRANE SEPARATION APPARATUS
 Yuji Nishida, Yoshiyasu Kamiyama, and Koichi Okuno, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed May 20, 1985, Ser. No. 735,897
 Claims priority, application Japan, May 18, 1984, 59-101495
 Int. Cl.⁴ B01D 13/01

U.S. Cl. 210—321.1

4 Claims



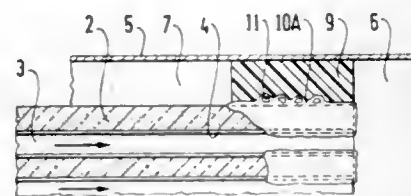
1. A membrane separation apparatus comprising: a cylindrical case provided with an outlet for a membrane permeated fluid; a plurality of tubular or capillary membranes which are inserted into the cylindrical case in a substantially parallel state with each other and in a closely bundled state, the membranes themselves and also the bundled membranes and the cylindrical case being bonded and fixed with casting resin at both end portions of said membranes and said cylindrical case to define two casting resin outer faces including open ends of said membranes; a cap having a nozzle for a feed inlet communicating directly with a first of said outer faces and a nozzle for a membrane permeated fluid outlet communicating with the interior of said cylindrical case between said casting resins and aligned with said outlet for a membrane permeated fluid provided in said cylindrical case, provided at one end of the cylindrical case; and a cap having a nozzle for a concentrated fluid communicating directly with a second of said outer faces, provided at another end of the cylindrical case, wherein at least one outer face is arranged with a slope with respect to a vertical axis of the cylindrical case, and the nozzle for the feed inlet and the nozzle for the membrane permeated fluid are provided on substantially the same axis which is perpendicular to the vertical axis of the cylindrical case.

4,640,774
ASSEMBLY OF MOUNTED TUBULAR FILTER MEMBERS INSIDE AN ENVELOPE
 Daniel Garcera, Tarbes, and Jacques Gillot, Odos, both of France, assignors to Ceraver, S.A., Paris, France

Filed Jun. 19, 1985, Ser. No. 748,581
 Claims priority, application France, Jun. 20, 1984, 84 09687
 Int. Cl.⁴ B01D 13/00

U.S. Cl. 210—323.2

10 Claims



1. An assembly of at least one elongated tubular filter member having an outside surface, two ends, and at least one channel extending from end to end therethrough; an elongated envelope surrounding said member, the envelope having an inside surface spaced from the outside surface of the filter

member; and a gasket of elastomeric or polymeric material disposed at at least one of the ends of the filter member between the outside surface of the tubular filter member and the inside surface of the envelope, the gasket contacting the filter member and the envelope over a portion of their respective lengths, wherein the improvement comprises:

the outside surface of the filter member is provided, over at least a part of that portion of its length which contacts the gasket, with roughnesses, projections, or hollows of suitable size and in sufficient number to prevent the filter from sliding relative to the gasket due to differential thermal expansion of the filter member and the envelope.

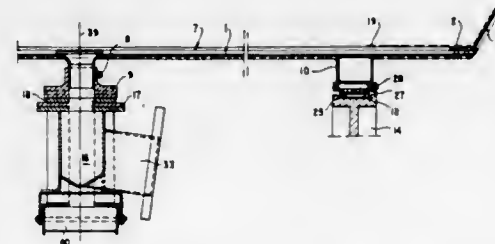
4,640,775
VACUUM FILTER FOR THE SEPARATION OF SOLIDS FROM LIQUIDS
 Kurt E. Pietzsch, Wiesbaden-Sonnenberg, Fed. Rep. of Germany, and Laszlo Bonnyay, JV-Wassenaar, Netherlands, assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Dec. 31, 1984, Ser. No. 687,805
 Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404110

Int. Cl.⁴ B01D 33/32

U.S. Cl. 210—387

8 Claims



1. A vacuum tray filter for separating solids from a liquid slurry comprising, an endless conveyor belt rotatable about a pair of longitudinally spaced wheels mounted on a main frame structure, said conveyor belt movable in a horizontal plane of travel located between said spaced wheels and defined by the distance therebetween, an endless row of U-shaped trays fixed to said conveyor belt for movement in said defined horizontal plane of travel, slurry feed means located at the tray entry to said horizontal plane, a filtration zone in said horizontal plane of travel arranged after said feed means, a stationary vacuum channel in said filtration zone, each of said U-shaped trays having a bottom wall and spaced sidewalls extending upwardly and away from said conveyor belt, each tray having a sealing engagement at the front and rear edges of said sidewalls and bottom walls thereof with the corresponding edges of the sidewalls and bottom walls of the next adjacent trays throughout movement of said engaged trays through said defined horizontal plane, an endless filter cloth lying between the said sidewalls of said engaged trays and disposed about the said engaged bottom walls of said trays along the entire length of said horizontal plane of travel, and said trays connected to said conveyor belt for gliding movement over said vacuum channel.

4,640,776
PLASMAPHORESIS FILTRATION MODULE HAVING PRESSURE BALANCING AND SEALING MEANS
 Robert P. Luoma, II, Newark, Del., and Frank M. Willis, Wenhah, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

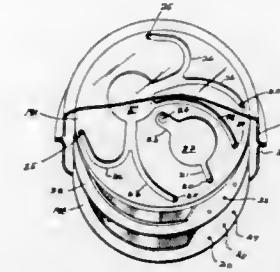
Filed Feb. 16, 1982, Ser. No. 349,368
 Int. Cl.⁴ B01D 13/00

U.S. Cl. 210—433.2

5 Claims

1. Improved plasmapheresis filtration module having a planar membrane between a blood side support and a plasma side

support, the blood side support having a plurality of blood flow paths extending radially from a central inlet to a plasma-depleted blood channel, wherein the improvement comprises means for blood pressure balancing and membrane sealing at the ends of the blood flow paths on the blood side support, said



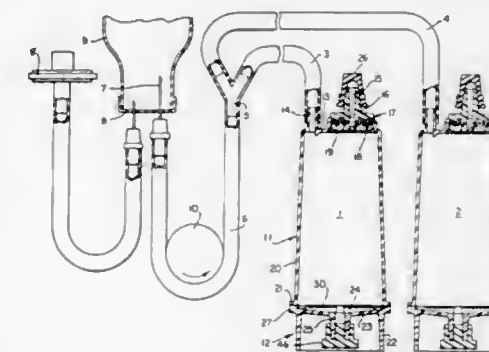
module further having radial blood flow channels as the blood flow paths on the blood side support and wherein the balancing and sealing means is comprised of a multiplicity of plasma-depleted blood collection channels which lead to a single plasma-depleted blood outlet.

4,640,777
MEMBRANE DEVICE FOR STERILITY TESTING
 Jean Lemonnier, Le Vesinet, France, assignor to Millipore Corporation, Bedford, Mass.

Filed Dec. 23, 1983, Ser. No. 565,076
 Claims priority, application France, Feb. 15, 1983, 83 02391
 Int. Cl.⁴ B01D 13/00

U.S. Cl. 210—433.2

10 Claims



1. In an apparatus for testing the sterility of a fluid comprising at least one hermetically sealed test container wherein each of said containers comprises a top portion and a bottom portion sealed together and each of said containers have first and second ports in a first end thereof and a third port in an opposite end thereof, and each of said containers has a filter support member positioned within said container and spaced from said first end thereof and a first microporous membrane filter supported in a flat position on said filter support member, said first microporous membrane filter having an exposed area which is hydrophilic, said first membrane filter facing said first container end and being sealed about its entire periphery to annular flanges on said top portion and said bottom portion, said annular flanges extending from the interior of said container to a short distance outside said container, said first port including a second membrane filter having a pore size to screen any microorganisms above a predetermined size in a gas passing through said second membrane filter, means for introducing liquid into said container through said second port, means for collecting filtered liquid through said third port and means for capping said first port and said third port, the improvement which comprises said first membrane filter being entirely formed of a hydrophilic microporous material, said first filter

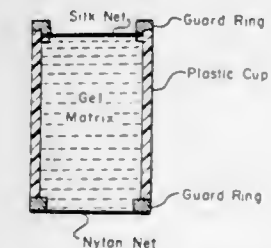
membrane having an upper surface and a lower surface and an outer edge, one of the upper or lower surfaces adjacent said outer edge of said first membrane filter being sealed about its entire periphery to either said bottom portion or said top portion the other of said upper or lower surfaces being sealed to the other of said bottom or top portions, the bottom portion being sealed to the top portion about the entire outer edge of the first membrane filter, the portion of said first membrane filter being sealed to said top and bottom portions being substantially free of plastic material forming said top and bottom surfaces and wherein one surface of the first membrane filter is secured to one of the top portion or bottom portion of the container by means of an initial weld effected by direct application of heat and pressure, whereas the other surface of the edge of the first membrane filter is secured to the other of the top or bottom portion of the container by means of a second weld which is formed by a flow of melted container material originating from an area occupying a radial position, beyond the edge of the first membrane filter thereby forming a pressure tight and vacuum tight seal.

4,640,778
FIBRIN GEL-CONTAINING FILTER
 Birger Blomback, and Masahisa Okada, both of New York, N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,768
 Claims priority, application Sweden, Dec. 30, 1981, 8107864
 Int. Cl.⁴ C12N 7/02, 1/00; B01D 39/00

U.S. Cl. 210—484

41 Claims



1. A filter comprising fibrin in gel form, said gel having substantially uniform pore sizes, said filter comprising means for retaining the shape of at least the upper surface of said gel against deformation when contacted by a flowing medium, said means for retaining the shape comprising a foraminous sheet member or a foam.

4,640,779
FILTER ELEMENT
 Yoshihiro Taki, Nagoya; Hajime Akado, Anjo; Keizo Funae, and Satoshi Inukai, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

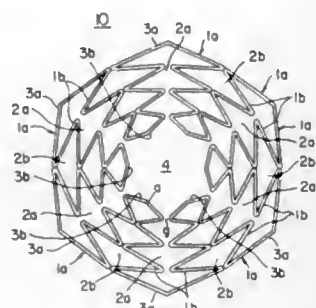
Filed Oct. 15, 1984, Ser. No. 661,188
 Claims priority, application Japan, Oct. 18, 1983, 58-194605; Feb. 20, 1984, 59-31204; Mar. 12, 1984, 59-47640; Apr. 23, 1984, 59-82762; Jun. 28, 1984, 59-134778; Jun. 28, 1984, 59-134779
 Int. Cl.⁴ B01D 27/06

U.S. Cl. 210—493.5

17 Claims

1. A filter element including a generally ring-like structure including a plurality of generally radial sections each converging generally radially inwardly and having a plurality of generally circumferential zigzag pleats of a filtering sheet material, said radial sections being circumferentially arranged such that the radially inner ends of said radial sections cooperate to define a central space disposed substantially centrally of said ring-like structure, the zigzag pleats of each radial section having circumferential dimensions which are substantially gradually decreased radially inwardly of said ring-like structure, the respective circumferential ends of the zigzag pleats of

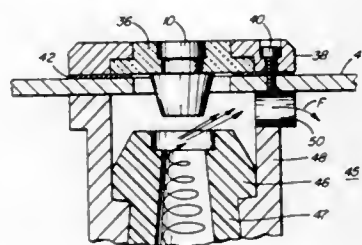
each circumferentially adjacent pair of radial sections being directed toward each other and disposed in circumferentially adjacent relationship, so that generally radial spaces are defined between said radial sections, some of said radial spaces being radially inwardly open to said central space and being closed at the radially outer ends by said filtering sheet material,



the other radial spaces being closed at the radially inner ends by said filtering sheet material, said radially inwardly open radial spaces and the other radial spaces being circumferentially alternately arranged, and said radially inwardly open radial spaces being closed at the axially opposite ends by end walls.

4,640,780 UNPLUGGING OF HEAVY FRACTION OUTLET HYDROCYCLONE

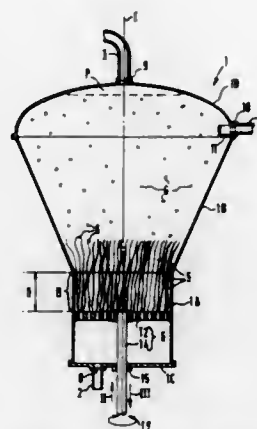
Jacek J. Macierewicz, Calgary, Canada, assignor to ELP Products Ltd., Calgary, Canada
Filed May 21, 1985, Ser. No. 736,475
Claims priority, application Canada, Jun. 4, 1984, 455797
Int. Cl.⁴ B04C 5/18, 5/23
U.S. Cl. 210—512.2 13 Claims



7. A hydrocyclone separator system comprising: a plurality of hydrocyclones having heavy fraction outlets through which a fluid under pressure is exhausted and means for housing said heavy fraction outlets, the housing means defining at least one space which, when in use, is at an elevated pressure, and in alignment with corresponding ones of said heavy fraction outlets, a plurality of resilient grommets, each resilient grommet comprising a body portion exposed to said elevated pressure in said space, the body portion including a passage for receiving means for unplugging said heavy fraction outlet, the passage including a first portion and a second portion, said body portion of said grommet being compressible and deformable under the elevated pressure to (a) cause said first portion of said passage to form a tight leak proof seal around said unplugging means when inserted, and (b) cause said second portion of said passage to close tightly on itself when said unplugging means has been withdrawn to prevent leakage of fluids along such passage.

4,640,781
EXPANDABLE FIBROUS BED COALESCER
Victor B. Hughes, Chester, United Kingdom, assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 1, 1985, Ser. No. 718,265
Claims priority, application United Kingdom, Jul. 12, 1984, 8417783

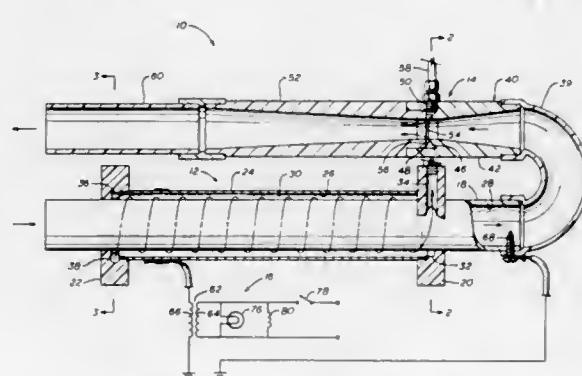
Int. Cl.⁴ C02F 1/40
U.S. Cl. 210—520 8 Claims



1. Apparatus for treating liquids comprising a housing forming a fluid passage between a fluid feed and a fluid exhaust, and a cluster of fibers arranged in the housing, the housing having a neck portion connected to the fluid feed and another portion having a larger width than the neck portion connected to the fluid exhaust, both housing portions having a common central axis, the cluster of fibers being secured to a support which is displaceable axially relative to the housing and which is operable to be rotated about the central axis.

4,640,782
METHOD AND APPARATUS FOR THE GENERATION
AND UTILIZATION OF OZONE AND SINGLET OXYGEN
James C. Burleson, Friendswood, Tex., assignor to Ozo-Tek, Inc., Houston, Tex.
Filed Mar. 13, 1985, Ser. No. 711,257
Int. Cl.⁴ C02F 1/78

U.S. Cl. 210—748 9 Claims



1. A method for killing pathogens contained within an electrically conductive liquid, with ozone (O₃) and singlet oxygen (O₁) comprising the steps of:

- providing an annular chamber defined by (1) a cylindrical body of said electrically conductive liquid forming a first electrical conductor surface, (2) a cylindrical insulated tube confining said liquid, (3) said insulated tube forming a dielectric medium, and (4) a cylindrical metal housing enclosing said tube and forming a second electrical conductor surface;
- establishing an elevated electrical force field in said

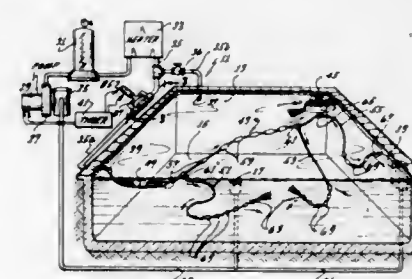
annular chamber between said first conductor surface and said second conductor surface;
(c) moving a gas containing normally occurring oxygen (O₂) into, through, and out of, said chamber at a moving rate suitably slow to permit ionization within said gas as caused while said gas is within said force field and thereby to transform said normally occurring oxygen (O₂) into the constituents of ozone (O₃) and singlet oxygen (O₁); and,
(d) mixing said gas while containing said constituents immediately with said liquid containing pathogens in a venturi for the purpose of allowing said constituents to react with and to kill said pathogens, wherein said electrically conductive liquid is pumped through said tube and said venturi, and said gas is moved out of said chamber and mixed with said liquid by a vacuum created in said venturi by the pumping of said liquid.

9. In apparatus for killing pathogens contained within an electrically conductive liquid, utilizing ozone (O₃) and singlet oxygen (O₁), the combination comprising:

- a flow tube including a first section and a second section for containing a flow of said liquid, each section of said sections comprising substantially cylindrical chambers of dielectric material, said sections being connected such that said conductive liquid flows through both said sections, wherein said conductive liquid comprises a first electrode within said first section;
- a second electrode mounted concentrically about said first section and defining an annular chamber between said first section of said flow tube and said second electrode;
- a means for establishing an elevated electrical force field in said annular chamber between said first electrode and said second electrode;
- means for moving a gas containing normally occurring oxygen (O₂) through said annular chamber at a suitable flow rate to permit ionization within said gas while said gas is within said annular space and thereby transforming said normally occurring oxygen (O₂) into the constituents of ozone (O₃) and singlet oxygen (O₁); and
- means for mixing said gas including said ozone (O₃) and said singlet oxygen (O₁) with said conductive liquid in a venturi located in said second section and thereby to contact said gas with said pathogens contained within said liquid to react with and kill said pathogens, wherein said means for moving and said means for mixing are constructed to pump said liquid through said flow tube and said venturi to create a vacuum in said venturi and move said gas out of said annular chamber and into said venturi.

4,640,783
OZONE INJECTION METHOD AND APPARATUS
Donald W. Kern, 5290 Orcutt Rd., San Luis Obispo, Calif. 93401
Filed Jun. 10, 1985, Ser. No. 742,934
Int. Cl.⁴ C02F 1/78; E04H 3/20

U.S. Cl. 210—760 9 Claims



1. A method of injecting ozone into the water of a swimming pool comprising:
providing a swimming pool cleaner which includes a movable head, a water-responsive drive coupled to the head,

and at least one flexible conduit coupled to said head and having at least one opening therein;
placing the head and the flexible conduit into a swimming pool;
supplying water under pressure to the flexible conduit to cause movement of the flexible conduit to clean a surface of the swimming pool and to the water-responsive drive to cause the head to move about in the pool; and
injecting ozone into the water under pressure supplied to the flexible conduit discharging the ozone carried through the flexible conduit and out of said opening to mix with the water in the swimming pool.

4,640,784 METHOD AND APPARATUS FOR CLEANING SWIMMING POOLS

Peter R. Cant, Woollahra, Australia, assignor to Cant Investments Pty. Limited, New South Wales, Australia
Filed Jul. 29, 1985, Ser. No. 760,123
Int. Cl.⁴ C02F 1/40

U.S. Cl. 210—776 31 Claims

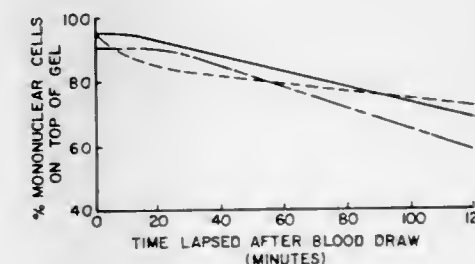


1. A method of cleaning debris from the pool water of a swimming pool having a bottom, opposed sidewalls, opposed endwalls and a weir mounted in an opening formed in one of the endwalls and extending into the pool, comprising:
spraying water in pressurized streams into the pool to move a surface layer of the pool water toward the endwall having the weir;
applying a suction force to the pool water at the weir for drawing the pool water and debris contained therein into the weir from the pool;
filtering the debris from the pool water entering the weir.

4,640,785 SEPARATION OF LYMPHOCYTES AND MONOCYTES FROM BLOOD SAMPLES

Richard J. Carroll, Syracuse, N.Y.; Albert A. Luderer, Marshfield, Mass.; Ward C. Smith, Painted Post, and Anthony R. Zine, Jr., Corning, both of N.Y., assignors to Becton Dickinson and Company, Paramus, N.J.
Filed Dec. 24, 1984, Ser. No. 685,801
Int. Cl.⁴ B01D 21/26

U.S. Cl. 210—782 13 Claims



1. A method for separating lymphocytes and monocytes from granulocytes in a sample of anticoagulated unseparated whole blood wherein an apparent shift in the buoyant density of the granulocytes is inhibited and any loss in buoyant density of the granulocytes is restored which comprises the steps of:
(a) incubating said sample of anticoagulated unseparated

whole blood with a fluid selected from the group consisting of a hypertonic fluid containing a low molecular weight organic ionic substance which is essentially chemically compatible with the blood cells, a hypertonic fluid containing a low molecular weight inorganic ionic substance which is essentially chemically compatible with the blood cells, an isotonic fluid containing a high molecular weight organic substance which is essentially chemically compatible with the blood cells, a hypertonic fluid containing a high molecular weight organic substance which is essentially chemically compatible with the blood cells, a culture medium for blood cells and combinations thereof, said incubation of said sample of anticoagulated unseparated whole blood with said fluid being maintained for a sufficient length of time to inhibit the apparent shift in the buoyant density of the granulocytes and restore any loss in the buoyant density of the granulocytes;

- (b) placing a water-insoluble, thixotropic gel-like substance which is chemically inert to blood constituents and said fluid into the blood-fluid mixture resulting from step (a);
- (c) centrifuging the blood-fluid gel mixture of step (b) at a force and for a sufficient length of time to cause said gel-like substance to flow sufficiently to form a barrier between the lymphocytes and monocytes and the granulocytes; and then
- (d) removing the lymphocytes and monocytes from atop said barrier.

4,640,786

PHOSPHONIUM SALT-CONTAINING CORROSION INHIBITORS FOR HIGH DENSITY BRINES

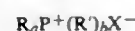
Mark E. Soderquist; Ramaiah Muthyala; William A. Larson, and Peter A. Doty, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1983, Ser. No. 538,451
Int. Cl.⁴ C09K 7/02; C23F 11/04, 11/167

U.S. Cl. 252-8.551 28 Claims

1. A composition comprising:

- (a) a high density brine comprising $ZnBr_2/CaBr_2$; and
- (b) a corrosion-inhibiting amount of an agent comprising at least one phosphonium salt represented generally by the formula:



wherein "a" is 0, 1 or 2; b is the quantity (4-a); R is alkyl, alkenyl or alkynyl, R' is a saturated or unsaturated hydrocarbyl moiety, and X⁻ is an anion.

22. A process of inhibiting corrosion of metals which are in contact with a high density brine which brine comprises $ZnBr_2/CaBr_2$, the process comprising dissolving in the brine a corrosion inhibiting agent comprising at least one phosphonium salt represented generally by the formula:



wherein "a" is 0, 1 or 2; b is the quantity (4-a); R is alkyl, alkenyl or alkynyl, R' is a saturated or unsaturated hydrocarbyl moiety, and X⁻ is an anion.

4,640,787

GASOLINE COMPOSITIONS CONTAINING BRANCHED CHAIN AMINES OR DERIVATIVES THEREOF

Alexander D. Schuettenberg, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 364,361, Apr. 1, 1982. This application Jun. 22, 1984, Ser. No. 623,069

Int. Cl.⁴ C10M 133/16

U.S. Cl. 252-51.5 A 13 Claims

1. A detergent additive comprising a reaction product of (a) a C₈₋₃₀ branched chain monoamine having at least 7 carbon atoms in a straight chain and (b) a C₁₋₁₂ monocarboxylic acid or ester.

4,640,788

HYDROCARBON COMPOSITIONS CONTAINING POLYOLEFIN GRAFT POLYMERS

Maria M. Kapuscinski, Carmel; Christopher S. Liu, Poughkeepsie; William P. Hart, Beacon, and Larry D. Grina, Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 29, 1985, Ser. No. 728,635

Int. Cl.⁴ C10M 145/00, 149/00

U.S. Cl. 252-51.5 R 45 Claims

1. A graft polymer comprising an oil-soluble, substantially linear, carbon-carbon backbone polymer having graft polymerized thereon units derived from, as a functional monomer, the reaction product of (i) an unsaturated aldehyde or ketone and (ii) a primary or secondary amine which contains at least one nitrogen atom in a heterocyclic ring.

2. A graft polymer as claimed in claim 1 wherein said backbone polymer is a copolymer of ethylene-propylene or a terpolymer of ethylene-propylene-diene monomer.

4,640,789

ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Clarence R. Bresson, and Rector P. Louthan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 608,825, May 10, 1984, Pat. No. 4,515,687. This application Feb. 12, 1985, Ser. No. 701,005

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.⁴ C09K 3/00; B03D 1/06

U.S. Cl. 252-61 10 Claims

5. A composition represented by the formula



wherein R¹ is selected from the group consisting of alkyl radicals each having no more than 6 carbon atoms, R² is selected from the group consisting of alkyl radicals each having no more than 6 carbon atoms, R³ is selected from the group consisting of alkylene radicals each having no more than 6 carbon atoms, R⁴ is an ethylene radical, and R¹ and R² can be the same or different.

4,640,790

DISPERSANT COMPOSITION FOR MAGNETIC MEDIA

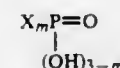
Judith M. Sylvester, Midland, and David J. Kimball, Remus, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 14, 1986, Ser. No. 885,109

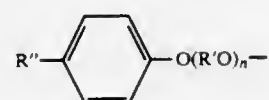
Int. Cl.⁴ C04B 35/04; H01F 1/26; C07F 9/02

U.S. Cl. 252-62.54 20 Claims

1. A composition comprising the reaction product of: (a) from about 3 to 9 parts by weight of a phosphate ester represented by the formula

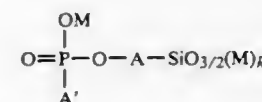


wherein X is independently selected from the group consisting of RO—, RO(R'O)_n—and



in which R represents an alkyl radical having from 2 to 18

carbon atoms, R' is an alkylene group having 2 to 4 carbon atoms, R'' is an alkyl radical having 6 to 18 carbon atoms, n is an integer between 1 and 150 and the average value of m is between 1 and 2; and (b) from about 0.5 to 7 parts by weight of an alkali silicate silylalkylphosphonate represented by the formula



wherein A' is a hydrocarbon radical having from 1 to 18 carbon atoms, A is a divalent aliphatic hydrocarbon radical containing 1 to 4 carbon atoms or the benzylene radical, M is a cation selected from the group consisting of sodium, potassium, lithium, rubidium, ammonium and tetraorgano ammonium and k may have an average value of 0 to 3.

4,640,791

WATER-BASED FUNCTIONAL FLUIDS THICKENED BY THE INTERACTION OF AN ASSOCIATIVE POLYETHER THICKENER AND CERTAIN FATTY ACID AMIDES

Charles F. Deck, Trenton, and James E. Carson, Lincoln Park, both of Mich., assignors to BASF Corporation, Wyandotte, Wis.

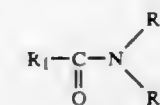
Filed Jan. 30, 1985, Ser. No. 696,406

Int. Cl.⁴ C10M 173/00, 119/18, 133/16

U.S. Cl. 252-75 6 Claims

1. A functional fluid comprising

- (a) from about 60.0 percent by weight to about 99.0 percent by weight of a diluent;
- (b) from about 1.0 percent by weight to about 25.0 percent by weight of a thickener component comprising in effective amounts
- (i) an associative polyether thickener, and
- (ii) a fatty acid amide having the following chemical structure:



wherein R₁ is individually an alkyl radical having 8 to 18 carbon atoms, and R₂ and R₃ are individually hydroxyalkyl radicals having 1 to 4 carbon atoms.

4,640,792

SILICONE BRAKE FLUID HAVING REDUCED AIR SOLUBILITY

Eugene D. Groenhof, Freeland; David J. Romensko, and Rick D. Streu, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 25, 1985, Ser. No. 801,448

Int. Cl.⁴ C10M 107/50

U.S. Cl. 252-78.3 22 Claims

1. A hydraulic fluid composition, consisting essentially of: a random silicone copolymer having the general formula (R')₃-SiO[R(CH₃)SiO]_x[(CH₃)₂SiO]_y-Si(R')₃, wherein R is selected from the group of alkyl radicals having five to ten carbon atoms, such that the ratio, defined by x/(x+y), is between 0.5 and 0.7 when R is pentyl; said ratio is between 0.25 and 0.7 when R is hexyl; said ratio is between 0.1 and 0.7 when R contains from seven to ten carbon atoms; R' is an organic radical selected from the group consisting of an alkyl group having one to eight carbon atoms and phenyl; and said copolymer has a viscosity between 15 and 50 cS at 25° C.

4,640,793

SYNERGISTIC SCALE AND CORROSION INHIBITING ADMIXTURES CONTAINING CARBOXYLIC ACID/SULFONIC ACID POLYMERS

Leonard J. Persinski, Pittsburgh; Jerry L. Walker, Coraopolis, and Bennett P. Boffardi, Bethel Park, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 578,331, Feb. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 472,808, Mar. 7, 1983, abandoned. This application May 9, 1985, Ser. No. 732,466

Int. Cl.⁴ C02F 5/12, 5/10; C23F 11/00; C08F 220/56

U.S. Cl. 252-82 6 Claims

1. An admixture useful for inhibiting the formation of scale forming salts in an aqueous system comprising:

- (a) a water-soluble polymer having a weight average molecular weight of less than 25,000, as determined by light scattering, selected from the group of polymers comprising:
- (i) an unsaturated mono-carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid; and
- (ii) an unsaturated sulfonic acid selected from the group consisting of 2-acrylamido-2-methylpropyl sulfonic acid and 2-methacrylamido-2-methylpropyl sulfonic acid; wherein the weight ratio of (i):(ii) range from about 1:4 to about 4:1; and
- (b) at least one member selected from the group consisting of: alkyl phenoxy poly(ethyleneoxy)ethanols and propylene terminated ethylene oxide adducts, low molecular weight homopolymers of maleic acid or anhydride, low molecular weight polyacrylic acids, phosphino carboxylic acid, low molecular weight copolymers of acrylamide and acrylate, about 60/40 copolymers of acrylic acid and 2-hydroxypropyl acrylate, copolymers of maleic acid or anhydride and sulfonated styrene and sulfonated polystyrenes;

wherein the weight ratio of (a):(b) is about 1:10 to about 10:1.

4,640,794

IMPULSE ROCKET PROPELLANT

Masao Tomita, Nagoya, Japan, assignor to Kinki Denki Co., Ltd., Nagoya, Japan

Filed Aug. 26, 1983, Ser. No. 526,631

Claims priority, application Japan, Apr. 4, 1983, 58-59085

Int. Cl.⁴ C09K 3/00

U.S. Cl. 252-194 8 Claims

1. A composition useful for propelling an impulse rocket, which when rapidly heated by an electrical current gives off steam to propel an impulse rocket and to produce a trail of ionized salts consisting essentially of about 20 to about 80 wt. % boric acid hydrate, about 10 to about 40 wt. % plaster forming agent comprising about 5 to about 25 wt. % sodium sulfate hydrate, and from about 10 to about 40 wt. % inorganic fiber.

4,640,795

5-ALKYL-2-(3,4-DIFLUOROPHENYL)PYRIMIDINE AND NEMATIC LIQUID CRYSTAL COMPOSITION CONTAINING SAME

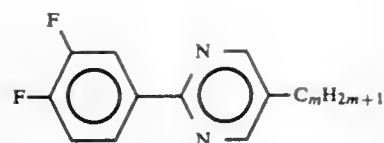
Tetsuya Ogawa; Kisei Kitano; Yasuyuki Goto; Masahiro Fukui, all of Yokohamashi, and Shigeru Sugimori, Fujisawashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 21, 1986, Ser. No. 842,190

Int. Cl.⁴ C09K 19/34; G02F 1/13; C07D 239/00

U.S. Cl. 252-299.5 9 Claims

1. A 5-alkyl-2-(3,4-difluorophenyl)pyrimidine expressed by the formula



wherein m represents an integer of 1 to 8.

4,640,796

1,4-DIPYRIMIDINYLBENZENE DERIVATIVE

Naoyuki Yoshida, Kamakurashi; Kisel Kitano, Yokohamashi; Yoshito Furukawa, Yokohamashi; Tetsuya Ogawa, Yokohamashi; Shigeru Sugimori, Fujisawashi; Yasuyuki Goto, Yokohamashi; Toyoshiro Isoyama, Yokohamashi, and Kazunori Nigorikawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Nov. 26, 1985, Ser. No. 801,877

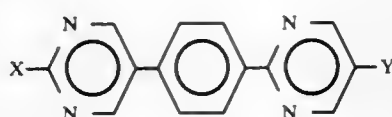
Claims priority, application Japan, Dec. 27, 1984, 59-279878

Int. Cl.⁴ C09K 19/34; G02F 1/13; C07D 403/00

U.S. Cl. 252-299.61

10 Claims

1. A 1,4-dipyrimidinylbenzene derivative expressed by the formula



wherein X represents an alkyl group or an alkoxy group each of 1 to 10 carbon atoms, methylthio group or cyano group and Y represents an alkyl group or an alkoxy group each of 1 to 10 carbon atoms.

4,640,797

PHOSPHORESCENT POLYMER-CONTAINING COMPOSITIONS AND ARTICLES MADE THEREFROM

Peter J. Goguen, Fitchburg, Mass., assignor to Jones and Vin- ing, Incorporated, Leominster, Mass.

Division of Ser. No. 743,528, Jun. 11, 1985. This application

May 8, 1986, Ser. No. 861,048

Int. Cl.⁴ G01N 21/64; B01D 1/32; C08C 11/70

U.S. Cl. 252-301.36

6 Claims

1. A fluorescent polymeric composition comprising:
 - (a) about 25-75% by weight of an elastomeric polymer selected from the group consisting of styrenic block copolymers suitable for making footwear, footwear soles, and other footwear parts;
 - (b) about 20-50% by weight of a processing oil selected from the group consisting of naphenic hydrocarbon oils suitable for use as polymer plasticizers and extenders and mixtures thereof;
 - (c) about 0.005-1% by weight of a stabilizer selected from the group consisting of hydroxybenzoate ester ultraviolet stabilizers, hindered phenolic anti-oxidant compounds, thioesters of carboxylic acid, and mixtures thereof; and
 - (d) about 3-30% by weight of a phosphorescent compound, capable of imparting phosphorescent properties to said composition and articles made therefrom.

4,640,798

INTERMEDIATES FOR THE PREPARATION OF PENICILLIN AND CEPHALOSPORIN COMPOUNDS

John R. Corfield, Runcorn, and Andrew S. Miller, Marple, both of England, assignors to Lilly Industries Ltd., London, England

Division of Ser. No. 498,234, May 26, 1983, Pat. No. 4,558,124.

This application Aug. 2, 1985, Ser. No. 761,717

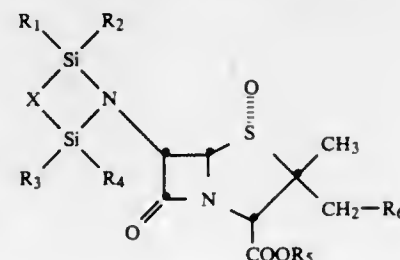
Claims priority, application United Kingdom, May 26, 1982, 8215418

Int. Cl.⁴ C07D 501/02; A61K 31/545

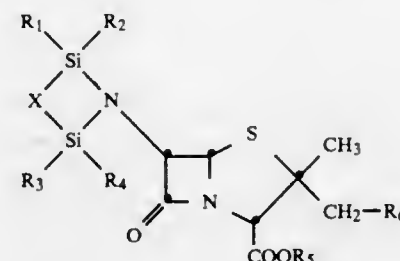
U.S. Cl. 540-312

9 Claims

1. A process for preparing a compound of the formula



which comprises combining a penam compound of the formula:



with a peracid oxidising agent and a sufficient amount of base so as to maintain the pH of the process from between about seven to above thirteen; and wherein:

R₁, R₂, R₃ and R₄ are the same or different and are chosen from the group consisting of C₁ to C₄ alkyl, C₁ to C₄ alkoxy, phenyl, and phenyl substituted with from one to three C₁ to C₄ alkyl, nitro, halo and C₁ to C₄ alkoxy groups;

R₅ is a carboxylic acid protecting group;

R₆ is hydrogen, halo, methoxy, acetoxy, formyloxy, azido, nitro, cyano or phenylamino; and

X is an alkylene group of the formula:



wherein n is an integer from one through five.

4,640,799

CARBAPENEM ANTIBIOTICS

Choung U. Kim, Manlius, and Peter F. Misco, Jr., Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 499,690, Jun. 7, 1983, which is a continuation-in-part of Ser. No. 389,652, Jun. 18, 1982, abandoned. This application Aug. 5, 1985, Ser. No. 762,735

Int. Cl.⁴ C07D 487/04; A61K 31/40

U.S. Cl. 540-350

7 Claims

1. A compound of the formula

4,640,802

PROCESS FOR THE CO-PRODUCTION OF CARBOXYLIC ACIDS AND CARBOXYLIC ACID ESTERS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 7, 1982, Ser. No. 395,952

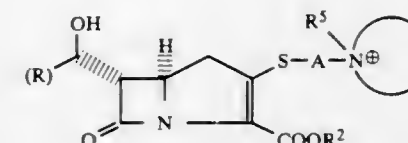
Claims priority, application United Kingdom, Dec. 10, 1981, 8137359

Int. Cl.⁴ C07C 51/12, 67/36, 67/37

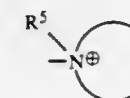
U.S. Cl. 260-410.9 R

20 Claims

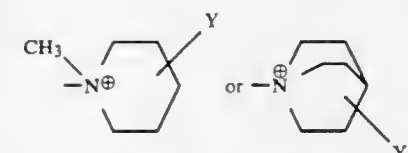
1. A process for the co-production of carboxylic acids of the general formula R¹-COOH and R²-COOH, and carboxylic acid esters of the general formula R¹COOCH₂R² and R²COOCH₂R¹, wherein each of the groups R¹ and R², which may be the same or different, represents and alkyl group having from 1 to about 20 carbon atoms which may be substituted by one or more inert substituents selected from the group consisting of fluorine or chlorine-containing moieties or hydroxy, alkoxy or alkanoyl groups, or an aryl, alkaryl or aralkyl group which may be substituted by one or more inert substituents selected from the group consisting of fluorine or chlorine-containing moieties or alkoxy or alkanoyl groups, while R¹ may also represent a hydrogen atom, characterized in that a carboxylic acid ester of the general formula R¹-COOR² and/or ether of the general formula R³OR⁴, wherein R¹ and R² are as defined hereinbefore and each of R³ and R⁴, which may be the same or different, represents an alkyl group having from 1 to about 20 carbon atoms which may be substituted by one or more inert substituents selected from the group consisting of fluorine or chlorine-containing moieties or hydroxy, alkoxy or alkanoyl groups, or an aryl, alkaryl or aralkyl group which may be substituted by one or more inert substituents selected from the group consisting of fluorine or chlorine-containing moieties or alkoxy or alkanoyl groups, is reacted with carbon monoxide and hydrogen at a temperature of up to about 300° C. and a pressure of up to about 1000 bar in the presence of a catalytic system which comprises a ruthenium compound and a further compound of a Group VIII metal selected from the group consisting of rhodium and palladium, and a compound of the general formula R⁵Hal or R⁵COHal where R⁵ has one of the meanings given above for R² and Hal represents an iodine or bromine atom, the reaction mixture being substantially free from other transition metal or Group II metal iodides or bromides, and containing a tertiary phosphine oxide according to the general formula OPR⁶R⁷R⁸, wherein each of R⁶, R⁷ and R⁸, which may be the same or different, represents a substituted or unsubstituted alkyl, cycloalkyl or aryl group having up to 20 carbon atoms, a tertiary phosphine oxide containing two or more phosphorus atoms or the corresponding oxy-acid derivatives according to the general formula OP(OR⁶)(OR⁷)(OR⁸) wherein R⁶, R⁷ and R⁸ each has the meanings as defined hereinabove or phosphonates according to the general formula OP[(O)_aR⁶][(O)_bR⁷][(O)_cR⁸] wherein a, b and c are 0 or 1 and a+b+c is 1 or 2 and R⁶, R⁷ and R⁸ have the meanings as defined hereinbefore.



wherein A is cyclopentylene, cyclohexylene or C₂-C₆ alkylene optionally substituted by one or more C₁-C₄ alkyl groups; R² is hydrogen, an anionic charge or a conventional readily removable carboxyl protecting group, providing that when R² is hydrogen or a protecting group, there is also present a counter ion; and



represents



wherein Y is hydrogen, C₁-C₆ alkyl, hydroxy, -SC₁-C₆ alkyl, carboxyl, carbamoyl, chloro, bromo, iodo, fluoro or phenyl; or a pharmaceutically acceptable salt thereof.

4,640,800

QUINODIMETHANE COMPOSITIONS

Eui W. Choe, Randolph; Alan Bockley, Berkeley Heights, both of N.J., and Anthon F. Garito, Radnor, Pa., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 25, 1985, Ser. No. 748,583

Int. Cl.⁴ C07C 50/02, 50/22

U.S. Cl. 260-396 N

10 Claims

9. 13,13-Di(diethylamino)-14,14-dicyano-4,5,9,10-tetrahydro-1,4-dipyrrenoquinodimethane.

4,640,801

GRAFT POLYOLS

Dominic Simone, Lincroft, and Melvin Brauer, East Brunswick, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 581,816, Feb. 21, 1984,

abandoned. This application Dec. 12, 1984, Ser. No. 680,705

Int. Cl.⁴ C08H 5/00; C08F 242/00, 222/20

U.S. Cl. 260-407

34 Claims

1. A graft polyol comprising the liquid reaction product of:
 - (a) at least one unsaturated fatty carbon compound having at least 8 carbon atoms, at least one hydroxyl group, and at least one ethylenic double bond, said compound having other than terminal unsaturation;
 - (b) at least one liquid cyclopentadienyl compound; and
 - (c) at least one terminally unsaturated monomer having at least one hydroxyl group.
2. The graft polyol according to claim 1 wherein the unsaturated fatty carbon compound is castor oil.
25. A graft polyol comprising the liquid reaction product of:
 - (a) about 50 to 90 parts by weight of at least one vegetable oil;
 - (b) about 5 to 40 parts by weight of at least one liquid cyclopentadienyl compound; and
 - (c) about 1 to 25 parts by weight of at least one of a monoes- ter of acrylic, methacrylic, or crotonic acid and a diol.

4,640,803

TUBULAR VENTILATOR

Klaus-Peter Schmidt-Kufek, Bernhardtstr., 7500 Karlsruhe 1, and Gerhard Feld, Am Erl-Anger 3, 8501 Eckental, both of Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,816

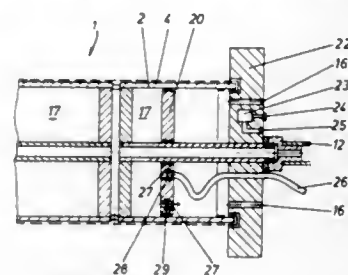
Int. Cl.⁴ B01F 3/04

U.S. Cl. 261-64.3

14 Claims

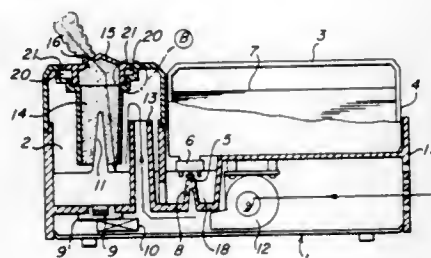
1. A tubular ventilator for introducing gases into liquids, comprising a rigid supporting tube having two spaced ends and being provided with a plurality of radial bores; a hose provided with a plurality of fine pores and surrounding said supporting tube; two covers each tightly closing a respective one of said ends of said supporting tube; means for subdividing the interior of said supporting tube into two tube halves; means for supply-

ing gas into each of said tube halves; at least one hole provided in each of said covers and communicating a respective one of



said tube halves with outside; and two plungers each pressure-tightly displaceable in a respective one of said tube halves.

4,640,804
HUMIDIFIER BLOWOFF PORTION
Saburo Mizoguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 1, 1985, Ser. No. 718,228
Claims priority, application Japan, Apr. 2, 1984, 59-48705[U]
Int. Cl.⁴ B01F 3/04
U.S. Cl. 261—81 10 Claims

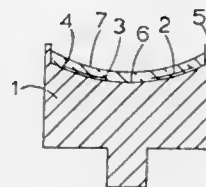


1. A humidifier, comprising:
 - a first chamber means for storing water;
 - a second chamber means in communication with said first chamber means for receiving water therefrom;
 - means for atomizing water supplied from said first chamber means to said second chamber means;
 - a cylinder, provided on an upper wall of said second chamber means, said cylinder providing communication between said second chamber and the atmosphere, the upper portion of the said cylinder having a step-like configuration comprising at least one horizontal wall and at least one vertical wall;
 - a cap, having a side wall and an opening for discharging atomized water into the atmosphere, said cap being rotatably and detachably secured in the step-portion of said cylinder so as to form a groove between said side wall of said cap and said step portion for inhibiting capillary action of water produced at an interface between said cap and cylinder; and
 - an eave extending from an upper end of said side wall of said cap for covering said groove.

4,640,805
METHOD OF SELECTIVELY TINTING CAST LENSES
Charles W. Neefe, 811 Scurry St. P.O. Box 429, Big Spring, Tex. 79720
Filed Oct. 7, 1985, Ser. No. 785,247
Int. Cl.⁴ B29D 11/00 16 Claims

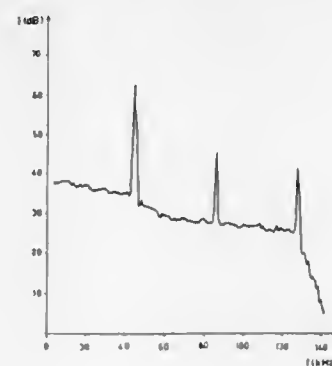
1. A method of coloring selected areas of spin cast contact lenses by the steps of providing a concave spin cast mold having a concave radius equal to the convex lens radius, placing a dye soluble in the lens monomer on the selected areas of

the concave mold surface, placing the liquid lens monomer on the concave spin cast mold surface, rotating the spin cast mold around the lens optical axis and perpendicular to the concave spin cast mold surface, allowing the liquid lens monomer to



dissolve the soluble dye present on the concave mold surface, allowing the liquid lens monomer containing the soluble dye to polymerize and form a solid contact lens and the dye being contained within the selected areas of the lens, removing the colored lens from the spin cast mold.

4,640,806
PROCESS FOR ATOMIZING LIQUID METALS TO PRODUCE FINELY GRANULAR POWDER
Thomas Duerig, Fremont, Calif.; Marcel Escudier, Mönthal, and Jakob Keller, Killwangen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Division of Ser. No. 583,691, Feb. 27, 1984, Pat. No. 4,575,325.
This application Oct. 1, 1985, Ser. No. 782,688
Claims priority, application Switzerland, May 3, 1983, 2389/83
Int. Cl.⁴ B22F 9/08
U.S. Cl. 264—9 4 Claims

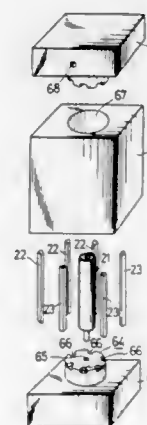


1. An improved process for atomizing liquid metals to produce a finely granular powder by disintegrating a jet of liquid metal by means of a gas jet running concentrically with the jet of liquid metal, said gas being directed towards the interior of the jet of liquid metal, forming an enveloping sheath, being annular and having superposed sound vibrations, said improved process being characterized in that the gas jet, in addition to having a continuous band of sound frequencies, contains at least one more discrete sound frequency whose intensity is at least 5 decibel above the average of that of the continuous band and whose pressure amplitude reaches at least the same level as the static stationary pressure of the driving gas used for producing the gas jet.

4,640,807
PROCESS FOR THE PREPARATION OF SILICA SPHERES
Madjid Afghan, and Josephus G. Sponselee, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Jul. 24, 1985, Ser. No. 758,623
Claims priority, application United Kingdom, Aug. 2, 1984, 8419708
Int. Cl.⁴ C01B 33/12 15 Claims

1. A process for the preparation of silica spheres which comprises:
 - (a) preparing a silica hydrosol by mixing an aqueous solution of an alkali metal silicate with an aqueous solution of an acid;
 - (b) converting the hydrosol into droplet form;
 - (c) aging the droplets in a fluid to produce hydrogel particles;
 - (d) partially drying the hydrogel particles at 10° to 60° C. in air having a relative humidity in the range of from 45 to 95%, to a water content in the range of from 0.3 to 1.3 kg/kg solids;
 - (e) decreasing the cation content of the hydrogel particles by ion-exchange in an aqueous medium to less than 10%w, calculated on dry material; and
 - (f) finally drying the hydrogel particles to obtain silica spheres.

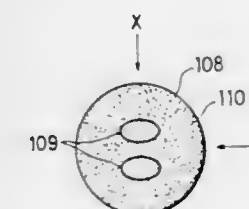
4,640,808
METHOD FOR MAKING MAGNETIC ROLLS
Kunio Okumura, Hachioji; Yasuo Fukuyama, Uji, and Atsuo Tanaka, Yawata, all of Japan, assignors to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan
Division of Ser. No. 368,998, Apr. 16, 1982, Pat. No. 4,517,719.
This application Jan. 18, 1985, Ser. No. 692,681
Claims priority, application Japan, Apr. 20, 1981, 56-59958; Mar. 12, 1982, 57-39916
Int. Cl.⁴ B29C 45/14, 67/22; B21B 27/00; G03G 15/09
U.S. Cl. 264—46.5 8 Claims



1. A method for the manufacture of a magnetic roll having a rigid synthetic resin or synthetic resin foam retaining layer and individual spaced-apart magnets arranged and held fast around the periphery thereof, comprising the steps of:
 - (a) mounting a middle mold member, having a cylindrical bore, on a lower mold member provided with a protruding cylindrical base containing a roll shaft insertion hole at the center thereof and spaced-apart magnet insertion grooves around the periphery thereof;
 - (b) inserting a roll shaft into said roll shaft insertion hole, while inserting said individual magnets into said magnet insertion grooves and setting the magnets upright within the cylindrical bore of said middle mold member;
 - (c) placing an upper mold member, having a protruding cylindrical base with spaced apart magnet insertion

- grooves around the periphery thereof and a synthetic resin injection hole, on said middle mold member while inserting said magnets in said magnetic insertion grooves of said upper mold to retain said magnets in predetermined positions;
- (d) assembling said upper, lower and middle mold members to form a closed mold;
- (e) introducing a synthetic resin or synthetic resin foam, which is formulated to provide a rigid finished retaining layer of at least 40 Shore hardness, into said mold through the synthetic resin injection hole;
- (f) curing or solidifying the synthetic resin or synthetic resin foam introduced into the closed mold in step (e) to provide said rigid finished retaining layer of at least 40 Shore hardness; and
- (g) separating the mold members to obtain said magnetic roll.

4,640,809
METHOD FOR MANUFACTURING A CERAMIC HEATER
Shinichi Yokoi, and Tsuneo Ito, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan
Division of Ser. No. 549,327, Nov. 7, 1983, Pat. No. 4,502,430.
This application May 3, 1984, Ser. No. 606,606
Claims priority, application Japan, Nov. 8, 1982, 194767; Nov. 8, 1982, 194768
Int. Cl.⁴ B24B 11/00 5 Claims



1. A method of manufacturing an elongated ceramic heater, comprising the steps of:
 - forming an elongated U-shaped heating coil by bending an elongated helical coil having a circular cross section into a U-shaped form having two generally parallel helical coil portions and a bend at one end of said U;
 - embedding said U-shaped coil in a ceramic powder;
 - forming said powder into a preform having a generally rectangular cross section with the bend in said U-shaped coil adjacent one end of said preform;
 - compacting and sintering said preform to reduce the longer cross-sectional dimension of said rectangle thereby deforming each of said helical coil portions of said U-shaped coil into an oval cross section, wherein each of said deformed coils has an oval cross section, wherein planes passing through the long cross-sectional dimension of each of said ovals would be substantially parallel to one another and a plane passing through the short cross-sectional dimension of each said ovals would be substantially coplanar, said compacted and sintered article having a substantially circular cross section; and
 - grinding the outer periphery of said compacted and sintered article to form a product having a circular cross section.

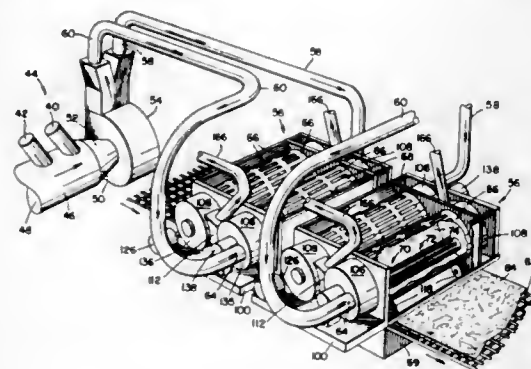
4,640,810
SYSTEM FOR PRODUCING AN AIR LAID WEB
 Henning Laursen, Aarhus; John Mosgaard, Risskov; Otto V. Nielson, Aarhus, all of Denmark, and Clark L. Poland, New Canaan, Conn., assignors to Scan Web of North America, Inc., New Canaan, Conn.

Filed Jun. 12, 1984, Ser. No. 619,946

Int. Cl.⁴ B27N 1/00

U.S. Cl. 264—518

44 Claims



1. A process for forming an air laid web of predetermined characteristics comprising the steps of:

- (1) forming a stream of roughly graded material of first loose fibers and at least one of
 - (a) second loose fibers
 - (b) particles,
- (2) directly and controllably introducing said stream of material into a mixing zone with air to produce an air-borne stream of said roughly graded material;
- (3) forming a recirculating air-borne stream of said roughly graded material and said stream includes some clumps of fibers, called nits;
- (4) causing said nits to be removed from said recirculating stream at at least two spaced locations;
- (5) introducing said air-borne stream of step (2) into said recirculating stream of step (3);
- (6) causing at least a portion of said recirculating stream of roughly graded material to rotate in one direction;
- (7) causing an internal portion of said recirculating stream to rotate in an opposite direction to that of step (6);
- (8) removing from the perimeter of said recirculating stream roughly graded material at the general location of said contrarotation, material of a predetermined size and shape to be a first finely graded material;
- (9) causing said first finely graded material to become a directionalized air-borne stream;
- (10) providing a translating zone of a portion of said first finely graded material where said translation is in a direction transverse to said directionalized air-borne stream of step (9); and
- (11) providing a second fine grading of said material in said air-borne stream by arresting predetermined sizes and shapes of said first finely graded material in said translating zone to provide said web of predetermined characteristics as a second finely graded material web.

12. Apparatus for forming an air laid web of predetermined characteristics material comprising:

- supply means forming a stream of roughly graded material of first loose fibers and at least one of
- (a) second loose fibers
 - (b) particles
- and for mixing the roughly graded material with air to produce an air-borne stream thereof;
- distributor means forming a recirculating air-borne stream of the roughly graded material adapted to receive the air-borne stream from said supply means, said distributor means including tumbler means causing at least a portion of the recirculating stream of roughly graded material to

rotate in one direction and agitating means causing an internal portion of the recirculating stream to rotate in an opposite direction to that of said tumbler means, said recirculating stream to have clumps of fibers, called nits; said tumbler means being a first fine grading means having a plurality of classification apertures extending there-through being of a predetermined shape, number, and size as specifically related to the types of the roughly graded material desired in said webs of predetermined characteristic introduced to said distributor means;

said agitating means adapted to cause flow through the classification apertures of a first finely graded material;

a plurality of nit removal conduits communicating with said distributor means at spaced locations with reference to said recirculating air-borne stream to remove nits from said stream;

air flow producing means causing the first finely graded material to become a directionalized air-borne stream; and

a foraminous carrier movable in a direction transverse to the directionalized air-borne stream being arranged to be a second fine grade means for arresting predetermined sizes and shapes of the first finely graded material resulting in a translating arrested web of material of predetermined characteristics.

4,640,811

APPARATUS WITH LINEAR MOVEMENT

René Peletan, Saint-Hilaire, France, assignor to Framatome, Courbevoie, France

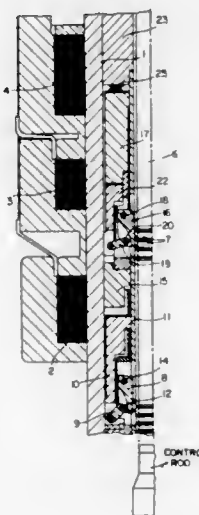
Continuation-in-part of Ser. No. 209,925, Nov. 24, 1980, abandoned. This application Jun. 22, 1983, Ser. No. 505,899

Claims priority, application France, Dec. 21, 1979, 79 31398

Int. Cl.⁴ G21C 7/12

U.S. Cl. 376—228

2 Claims



1. A linear motion device comprising:

- (a) an axially movable vertical drive shaft provided with a plurality of circumferential grooves equally spaced in the vertical direction, said drive shaft being arranged for connection with a nuclear reactor control rod at the lower end thereof, and
- (b) two gripping devices axially spaced relative to said drive shaft, each of said devices having:
 - (i) a set of identical pawls each pivotally connected to a first support for pivotal movement about an upper horizontal axis into and out of engagement with said grooves,
 - (ii) an actuation member axially movable between a first position and a second position with respect to said support, and
 - (iii) link means pivotally connected to said pawls about a

4,640,813
SOLUBLE BURNABLE ABSORBER ROD FOR A NUCLEAR REACTOR
 Pratap K. Doshi, and John F. Wilson, both of Murrysville Boro, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Sep. 26, 1984, Ser. No. 654,625
 Int. Cl.⁴ G21C 7/04, 7/10

U.S. Cl. 376—327

8 Claims



lower horizontal axis located at a level lower than said upper axis and pivotally connected to said actuation member, said link means being located and dimensioned for causing pivotal movement of said pawls into engagement with said grooves responsive to movement of said actuation member into its first position and out of engagement with said grooves upon movement of said actuation member into said second position.

- (c) wherein each of said pawls comprises an upper tooth and a lower tooth separated by a vertical distance equal to the distance between two successive grooves of said drive shaft and wherein said lower axis is located at a vertical distance below the tip of said upper tooth which is between one sixth and one fourth of the vertical distance separating the tips of said upper tooth and said lower tooth on one of said pawls.

4,640,812

NUCLEAR SYSTEM TEST SIMULATOR

Steven D. Sawyer, William D. Hill, Patricia A. Wilson, and William M. Steiner, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

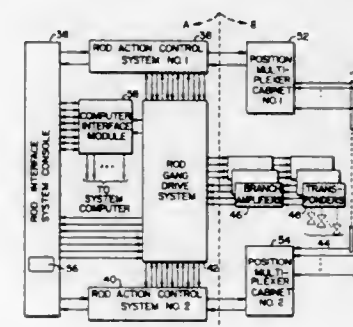
Filed Jun. 11, 1984, Ser. No. 619,727

Int. Cl.⁴ G21C 17/00

U.S. Cl. 376—245

8 Claims

MICROFICHE APPENDIX INCLUDED
 (7 Microfiche, 390 Pages)



1. A transportable test simulator for a nuclear power plant, the nuclear power plant including a control panel, a reactor having a plurality of actuated rods for moving into and out of a reactor for causing said plant to operate, and a control rod network extending between said control panel and said reactor rods, said network serially transmitting command words between said panel and rods, said network further having connecting interfaces at preselected points remote from said control panel between said control panel and rods, said test simulator comprising:

- a test simulator input for transport to and connection into said network at at least one said interface for receiving said serial command words from said network, each said serial command including an identifier portion and a command portion;
- means for processing interior of said simulator for said serial command words for identifying that portion of said power plant designated in said identifier portion and processing said word responsive to the command portion of said word after said identification; means for generating a response word responsive to said command portion; and
- output means for sending and transmitting said response word to said nuclear power plant at said interface whereby said control panel responds to said response word.

1. A soluble burnable absorber rod, comprising:
 - (a) an elongated hollow tubular member having opposite ends and a hermetically sealed chamber defined therein between its said opposite ends, said tubular member including
 - (i) a tubular body of thin wall construction and having reinforcing means defined therein, said reinforcing means taking the form of convolutions formed in said body, and
 - (ii) a pair of end plugs attached to opposite ends of said body so as to hermetically seal the same;
 - (b) a neutron absorber material in liquid form contained in said sealed chamber within said tubular member;
 - (c) means providing a hydride sink disposed at one end of said tubular member and in communication with said sealed chamber, said sink being provided by one of said end plugs of said tubular member; and
 - (d) means providing a hydrogen getter disposed at the other end of said tubular member and in communication with said sealed chamber, said means providing said getter being in the form of
 - (i) a sponge of getter material disposed adjacent the other end plug of said tubular member, and
 - (ii) a retainer disposed between said sponge and said chamber for positioning said sponge within said member and having a passageway formed therein for providing communication between said chamber and said sponge.

4,640,814

METHOD FOR PRODUCING CLAD TUBULAR PRODUCT

Walter T. Haswell, Jr., Jamesville, N.Y.; Karl S. Brosius, Burgettstown; Scott B. Justus, Wexford, both of Pa., and David A. Salvatori, Gibsonia, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1985, Ser. No. 788,413

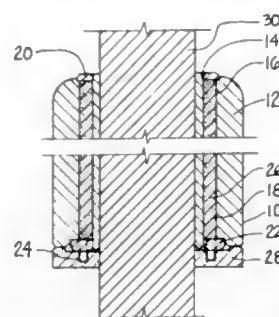
Int. Cl.⁴ B22F 7/00

U.S. Cl. 419—8

11 Claims

1. A powder-metallurgy method for producing tubular product having on a metal surface thereof a cladding of an alloy of a metallurgical composition different from said sur-

face, said method comprising constructing an assembly including a metal tubing having at least one surface to be clad, a tubular insert mounted generally axially with said tubing in spaced-apart relation to said surface to provide a generally annular cavity between said surface and said tubular insert, filling said cavity with metal particles of a metallurgical composition different from said surface, sealing said powder-filled cavity, heating said assembly to an elevated temperature and

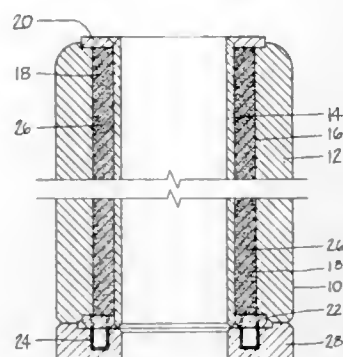


simultaneously forging said assembly to compact said metal particles to substantially full density and metallurgically bond said particles to said surface, said forging including passing said assembly along a feed path having an axis through a forging box having a plurality of hammers evenly spaced around said assembly and adapted to extend and retract radially with respect to said axis to impart a radial forging action to said assembly as said assembly passes through said forging box.

4,640,815
METHOD AND ASSEMBLY FOR PRODUCING EXTRUSION-CLAD TUBULAR PRODUCT
Karl S. Brosius, Burgettstown; Scott B. Justus, Wexford, and David A. Salvatori, Gibsonia, all of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.
Filed Oct. 17, 1985, Ser. No. 788,416
Int. Cl. 4 B22F 7/00

U.S. Cl. 419-8

8 Claims

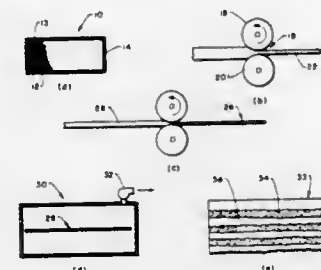


1. A powder-metallurgy method for producing a tubular product having on a metal surface thereof a cladding of an alloy of a metallurgical composition different from said surface, said method comprising constructing an assembly including a metal tubing having at least one surface to be clad, a tubular insert mounted generally axially with said tubing in spaced-apart relation to said surface to provide a generally annular cavity between said surface and said tubular insert, filling said cavity with metal particles of a metallurgical composition different from said surface, sealing said powder-filled cavity, heating said assembly to an elevated temperature and simultaneously extruding said assembly to compact said metal particles to substantially full density and metallurgically bond said particles to said surface, whereby surface cladding on tubing is produced.

4,640,816
METASTABLE ALLOY MATERIALS PRODUCED BY SOLID STATE REACTION OF COMPACTED, MECHANICALLY DEFORMED MIXTURES
Michael Atzman, Herzlia, Israel; William L. Johnson, Pasadena, Calif., and John D. Verhoeven, Ames, Iowa, assignors to California Institute of Technology, Pasadena, Calif.
Filed Aug. 31, 1984, Ser. No. 645,847
Int. Cl. 4 B22F 1/00

U.S. Cl. 419-24

15 Claims



1. A method of forming solid, metastable, amorphous metal materials comprising the step of: forming a mixture of solid, metal precursors of the metastable, amorphous material, at least one of the precursors being in the form of individual, discrete, solid units and said mixture containing metals A and Z where A is an early transition metal selected from Group IIIB, IVB, or VB and Z is a late transition metal selected from Group VIIB, VIII or IB or the mixture is formed of a transition metal selected from IB, VIB, VIIB or VIII with a metalloid selected from Group IIIA, IVA, or VA; consolidating the mixture by cold working the consolidated mixture to reduce the thickness of the said discrete units of precursor by a factor of at least 10; and heating the cold-worked mixture at a temperature lower than the transformation temperature at which the metastable phase transforms into a more stable crystalline phase for a time sufficient to form a solid, metastable, amorphous, metal material.

2. A method according to claim 1 in which the metastable amorphous metal material is selected from YCu, YCo, YAu, YNi, YFe, ZrFe, ZrCu, ZrNi, ZrCo, TiNi, TiFe, TiCu, NbNi or AuLa.

11. A method according to claim 1 in which the heating is conducted in an inert environment.

12. A method according to claim 11 in which the ratio of the rate of forming metastable material to the rate of forming stable crystalline phases is at least 10^2 .

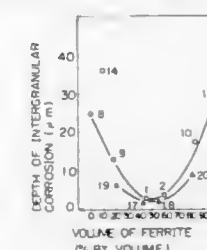
4,640,817
DUAL-PHASE STAINLESS STEEL WITH IMPROVED RESISTANCE TO CORROSION BY NITRIC ACID
Haruhiko Kajimura, Nishinomiya; Hiroo Nagano, and Minoru Miura, both of Kobe, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Filed Jul. 27, 1984, Ser. No. 635,108
Claims priority, application Japan, Aug. 5, 1983, 58-142518
Int. Cl. 4 C22C 38/40

U.S. Cl. 420-50

14 Claims

1. A dual phase stainless steel exhibiting improved resistance to corrosion caused by nitric acid, which consists essentially of:
C: not more than 0.02% by weight;
Si: more than 2% by weight, but not more than 6% by weight;

Mn: 0.1-2% by weight; Cr: 22-35% by weight;
Ni: 3-27% by weight; P: not more than 0.02% by weight;
N: not more than 0.30 by weight;



Fe and incidental impurities: balance; and wherein the amount of ferrite is 30-70% by volume.

4,640,818
CORROSION INHIBITION OF METALS IN WATER SYSTEMS USING AMINOPHOSPHONIC ACID DERIVATIVES IN COMBINATION WITH MANGANESE
Jeffrey G. Grierson, Angleton; Carol A. Jones, Sweeny, and William D. Spears, West Columbia, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 641,649, Aug. 17, 1984, abandoned. This application Jun. 13, 1985, Ser. No. 744,190
Int. Cl. 4 C23F 11/18, 11/16; C09K 3/00

U.S. Cl. 422-15

75 Claims

1. A composition useful in inhibiting metal corrosion in water conducting systems comprising, in combination, (a) an organic aminophosphonic acid derivative, wherein the nitrogen and phosphorus are inter-connected by an alkylene or substituted alkylene radical having the formula



wherein X, Y are independently selected from hydrogen, hydroxyl, carboxyl, phosphonic, salts of the acid radicals and hydrocarbon radicals having from 1-12 carbon atoms and wherein n is 1-3, with the proviso that when n > 1, each X and Y may be the same as or different from any other X or Y on any carbon atom, and (b) a manganese compound capable of providing a manganese ion.

4,640,819
STRESS CRACK REDUCTION IN POLYCARBONATE PARTS
David P. Balding; Li-Chien Hsu, both of Mission Viejo, and Lucas S. Gordon, Laguna Beach, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Jun. 19, 1985, Ser. No. 746,355
Int. Cl. 4 A61L 2/08, 2/20

U.S. Cl. 422-22

9 Claims

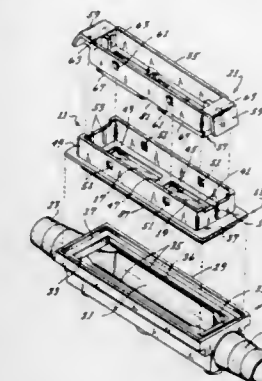
1. In a method of providing assemblies of polycarbonate parts which are in surface contact with polyvinyl chloride tubing, the improvement which comprises the step of reducing stress cracking in said polycarbonate parts by limiting the polyvinyl chloride tubing in contact therewith to plasticized polyvinyl chloride tubing produced using a trimellitate as the primary plasticizer.

3. The method of claim 1, further comprising the step of exposing said tubing and parts to about 3 Mrad of gamma radiation.

4,640,820
FLOW-THROUGH HOUSING WITH BLOOD GAS SENSORS
Robert P. Cooper, Yorba Linda, Calif., assignor to Cardiovascular Devices, Inc., Irvine, Calif.
Filed Oct. 28, 1983, Ser. No. 546,493
Int. Cl. 4 G01N 21/05, 33/48

U.S. Cl. 422-68

18 Claims

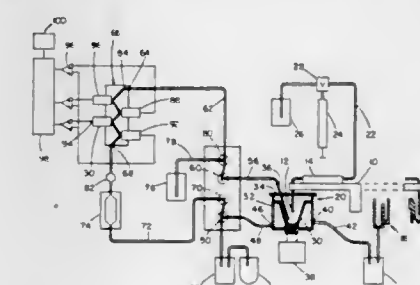


1. A membrane support apparatus comprising: a membrane support having first and second recesses; first and second membranes extending over the first and second recesses, respectively, said first and second membranes being permeable to at least a component of a liquid; means for mounting the first and second membranes on the membrane support with the membranes extending over the first and second recesses, respectively; said mounting means including a groove in the membrane support between the recesses, edge portions of said membranes extending into said groove; said mounting means including means for retaining the edge portions in said groove; and said edge portions of said first membrane extending into said groove on a side thereof adjacent the first recess, and said second membrane extending over said retaining means on a side thereof facing outwardly of said groove and then extending into said groove to thereby form a smooth transition with said first membrane.

4,640,821
ANALYSIS APPARATUS
Dinesh I. Mody, Bedford; James E. Rasmussen, Hyde Park, and Mikhail Y. Ryaboy, Methuen, all of Mass., assignors to Fisher Scientific Company, Pittsburgh, Pa.
Filed Jul. 16, 1985, Ser. No. 756,149
Int. Cl. 4 G01N 27/26, 35/08

U.S. Cl. 422-81

11 Claims



1. A system for analyzing a biological fluid comprising: structure defining an analysis region having an inlet and an outlet, a measuring system connected in sensing relation to said analysis region, structure defining an accumulator chamber that has an inlet

U.S. Cl. 423—328 **11 Claims**

1. A method for synthesizing a crystalline silicate consisting essentially of one having the structure of ZSM-50 and exhibiting a characteristic X-ray diffraction pattern as shown in Table I of the specification, which comprises (i) forming a reaction mixture capable of forming said crystalline silicate, said mixture comprising sources of alkali metal ions, dibenzyldimethylammonium ions, an oxide of silicon, water and an oxide of

UMI

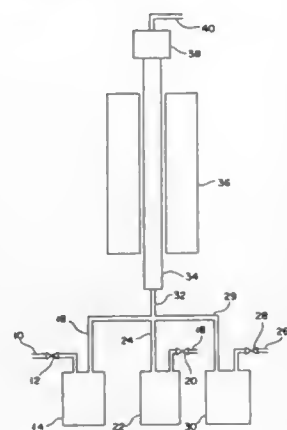
aluminum, said reaction mixture having a composition, in terms of mole ratios, within the following ranges:

SiO ₂ /Al ₂ O ₃	=	>250
H ₂ O/SiO ₂	=	5-30
OH ⁻ /SiO ₂	=	0.08-0.3
M/SiO ₂	=	0.08-0.3
R/SiO ₂	=	0.05-1.0

wherein M is said alkali metal ion and R is said dibenzyltrimethylammonium ion, (ii) maintaining the reaction mixture at conditions sufficient to crystallize said silicate, and (iii) recovering the crystalline silicate having the structure of ZSM-50, said recovered crystalline silicate containing alkali metal and dibenzyltrimethylammonium ions.

11. Dibenzyltrimethylammonium-containing crystalline silicate ZSM-50.

4,640,830
PROCESS FOR PREPARING FINE FIBERS
 Kohei Arakawa, Shinada, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan
 Filed Sep. 9, 1985, Ser. No. 774,015
 Claims priority, application Japan, Sep. 13, 1984, 59-192050
 Int. Cl.⁴ C01B 31/36
 U.S. Cl. 423-346 8 Claims

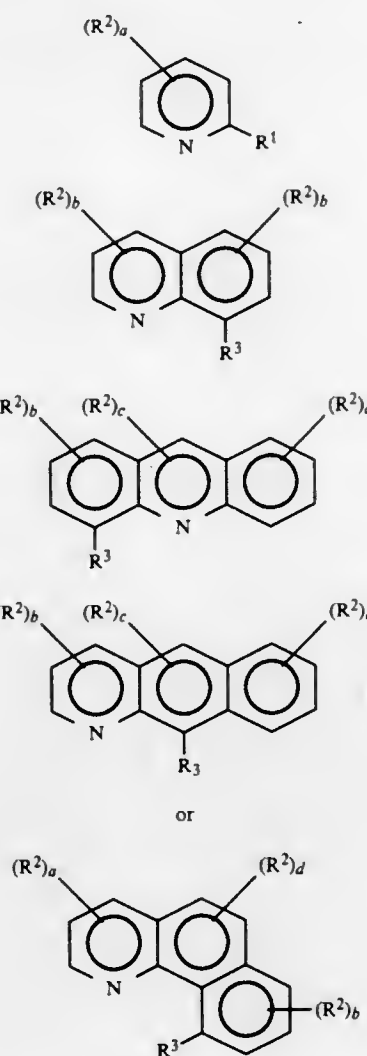


1. In a process for preparing fine fibers consisting of carbon and silicon in a gaseous phase reaction, the improvement comprising subjecting a gas mixture comprising at least one transition metal compound gas, at least one organo-silicon compound gas and at least one carbon compound gas to an elevated temperature, said transition metal compound decomposing at the elevated temperature to form metal catalyst in a floating state which induces growth of fine fibers in a floating state, said fine fibers being continuously recovered.

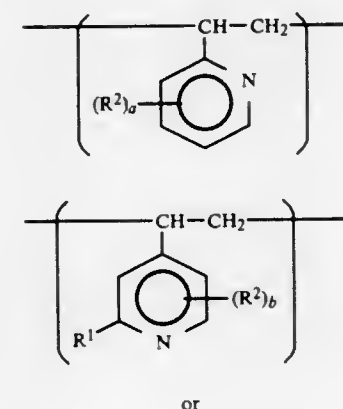
4,640,831
METHOD FOR RECOVERING PROTIC ACIDS USING REVERSIBLE BASES
 Robert A. DeVries, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
 Filed Dec. 18, 1984, Ser. No. 683,439
 Int. Cl.⁴ C01B 7/01, 7/19, 9/08
 U.S. Cl. 423-481 16 Claims

1. A process for the recovery of protic acids from a medium which comprises
 (a) contacting a medium containing a protic acid selected from the group consisting of hydrobromic acid, hydrochloric acid, hydrofluoric acid, and hydroiodic acid which comprises hydrobromic acid, hydrochloric acid, hydrofluoric acid, or an hydroiodic acid with a reversible

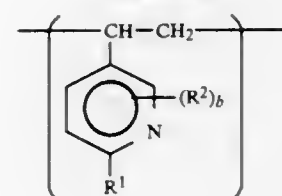
base under conditions such that the protic acid and the reversible base form a salt; and
 (b) exposing the salt of the protic acid and the reversible base to temperatures at which the salt dissociates liberating the protic acid;
 wherein the reversible base is a compound corresponding to one of the formulas



or is a polymer containing units corresponding to one of the formulas



-continued



wherein

R¹ is separately in each occurrence C₂₋₂₀ alkyl, C₆₋₂₀ aryl, C₇₋₂₀ alkaryl, C₇₋₂₀ aralkyl or C₃₋₂₀ cycloalkyl, wherein the C₂₋₂₀ alkyl, C₆₋₂₀ aryl, C₇₋₂₀ aralkyl, C₇₋₂₀ alkaryl or C₃₋₂₀ cycloalkyl is unsubstituted or substituted with a halo, nitro, C₁₋₂₀ alkoxy, C₆₋₂₀ aryloxy, C₇₋₂₀ alkaryloxy or C₇₋₂₀ aralkoxy;
 R² and R³ are separately in each occurrence C₁₋₂₀ alkyl, C₆₋₂₀ aryl, C₇₋₂₀ alkaryl, C₇₋₂₀ aralkyl, C₃₋₂₀ cycloalkyl, nitro, halo, C₁₋₂₀ alkoxy, C₆₋₂₀ aryloxy, C₇₋₂₀ alkaryloxy or C₇₋₂₀ aralkoxy wherein the C₁₋₂₀ alkyl, C₆₋₂₀ aryl, C₇₋₂₀ alkaryl, C₇₋₂₀ aralkyl, C₁₋₂₀ alkoxy, C₆₋₂₀ aryloxy, C₇₋₂₀ alkaryloxy, C₇₋₂₀ aralkoxy or C₃₋₂₀ cycloalkyl group is unsubstituted or substituted with a halo, nitro, C₁₋₂₀ alkoxy, C₆₋₂₀ aryloxy, C₇₋₂₀ alkaryloxy or C₇₋₂₀ aralkoxy;
 a is separately in each occurrence an integer of from 0 to 4; b is separately in each occurrence an integer of from 0 to 3; c is separately in each occurrence the integer 0 or 1; and d is separately in each occurrence the integer of from 0 to 2.

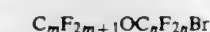
4,640,832
PROCESS FOR THE PRODUCTION OF SODIUM POLYSULFIDES FROM THE ELEMENTS SODIUM AND SULFUR
 Friedrich Bittner, Bad Soden; Walter Hinrichs, Brühl; Herbert Hovestadt, Erfstadt; Ludwig Lange, Brühl, and Erich Splitt, Hürth-Berrenrath, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
 Filed Sep. 4, 1985, Ser. No. 772,395
 Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436698
 Int. Cl.⁴ C01B 17/22, 17/34
 U.S. Cl. 423-562 18 Claims

1. A process for the production of pure sodium polysulfide from sodium polysulfides and the elements sodium and sulfur consisting essentially of step: (a) forming an initial melt consisting of sodium polysulfide having an initial sodium to sulfur ratio under a protective gas atmosphere, step (b) adding only one reactant from the group consisting of sodium and sulfur, to form an intermediate melt having a sodium to sulfur ratio different than that of the initial melt, step (c) then adding the other of said reactants to the intermediate melt formed in step (b) to change its sodium to sulfur ratio to that of the product polysulfide, the amount of sodium and sulfur added being that to produce the product polysulfide and to convert the initial melt sodium to sulfur ratio to that of the product polysulfide.

4,640,833
USE OF PERFLUOROBROMOALKYL ETHERS AS X-RAY CONTRAST AGENTS
 Christ Tamborski, Dayton, and Leland C. Clark, Jr., Cincinnati, both of Ohio, assignors to Adamantech, Inc., Marcus Hook, Pa. and Children's Hospital Research Foundation, Cincinnati, Ohio
 Continuation of Ser. No. 470,343, Feb. 28, 1983, abandoned.
 This application Mar. 11, 1985, Ser. No. 710,931
 Int. Cl.⁴ A61K 49/04
 U.S. Cl. 424-5 6 Claims

1. In a method of radioimaging an internal region of an animal wherein a radiopaque agent is introduced into the region and the region is X-rayed while perfused with the radi-

opaque agent, the improvement which comprises employing as the radiopaque agent a perfluorobromoalkyl ether of the formula:



where m and n independently are integers of from 2 to 6.

4,640,834
METHOD OF INACTIVATING REPRODUCIBLE FILTERABLE PATHOGENS IN BLOOD PRODUCTS AS WELL AS A METHOD OF PRODUCING BLOOD PRODUCTS

Johann Eibl; Otto Schwarz; Fritz Elsinger, all of Vienna; Günter Wüber, Oberwaltersdorf; Anton Philapitach, Ebenfurt; Yendra Linnau, Vienna; Friedrich Dorner, Vienna; Karl Trambauer, Vienna, and Wolfgang Frechinger, Vienna, all of Austria, assignors to Immuno Aktiengesellschaft für Chemisch-Medizinische Produkte, Austria
 Filed Feb. 26, 1985, Ser. No. 705,691
 Claims priority, application Austria, Mar. 9, 1984, 792/84; Oct. 11, 1984, 3237/84
 Int. Cl.⁴ A61K 37/465, 37/48
 U.S. Cl. 424-94 20 Claims

1. A method of inactivating viable filterable pathogens in a blood product, which comprises: placing said blood product in a solid state in a closeable treating zone in the presence of a hydroxyl group-containing compound selected from the group consisting of water, methanol, ethanol, and mixtures thereof, and closing said treating zone; maintaining the content of said hydroxyl group-containing compound in said treating zone to provide said blood product with a content of hydroxyl group-containing compounds of more than 0.05 (5% by weight) and less than 0.70 (70% by weight); and heating said blood product in the solid state in the closed treating zone at a temperature of between 50° and 121° C. to increase the partial vapor pressure of said hydroxyl group-containing compound, to thereby inactivate viable filterable pathogens.

4,640,835
PLASMINOGEN ACTIVATOR DERIVATIVES
 Kimihiro Shimizu, Yoshikawa; Tsuguji Nakahara, Tokyo; Takatoshi Kinoshita, Koshigaya; Jun Takatsuka, Kawasaki, and Michiko Igarashi, Musashino, all of Japan, assignors to Nippon Chemphar Company, Ltd., Tokyo, Japan
 Continuation-in-part of Ser. No. 437,009, Oct. 27, 1982, Pat. No. 4,495,285. This application Oct. 28, 1983, Ser. No. 546,590
 The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.
 Int. Cl.⁴ A61K 37/48; C12N 9/96, 9/72
 U.S. Cl. 424-94 24 Claims

1. A derivative of a nonimmunogenic human plasminogen activator, comprising at least one polyalkylene glycol chemically bonded with at least one coupling agent to the amino acid side chains of said plasminogen activator, wherein said polyalkylene glycol has a molecular weight in the range of 200-20,000 and is unsubstituted or is substituted with one or more alkyl, alkoxy or alkanoyl groups or a mixture thereof.

4,640,836
PLANT PROTECTION METHOD
 Donald Boulter, Durham; Angharad M. R. Gatehouse; John A. Gatehouse, both of Broom Park, and Roger B. Cox, Reading, all of England, assignors to Agricultural Genetics Company, Limited, Cambridge, England
 Filed Aug. 13, 1984, Ser. No. 639,856
 Claims priority, application United Kingdom, Aug. 19, 1983, 8322446; Nov. 18, 1983, 8330847
 Int. Cl.⁴ A01N 65/00
 U.S. Cl. 424-195.1 4 Claims

1. A method of protecting a plant or a part of the said plant against an invading pest, comprising presenting a pest belong-

ing to the genus *Heliothis*, *Anthonomus*, *Tribolium*, *Sitophilus*, *Chilo*, *Spodoptera*, *Ostrinia* or *Agrotis* with a pesticidally effective amount of a cowpea trypsin inhibitor while the said pest is in contact with or in the vicinity of the said plant or said plant part, wherein the said plant is not a cowpea and does not produce cowpea trypsin inhibitor.

4,640,837
COATING COMPOSITION FOR MICROWAVE COOKING

Edward C. Coleman, Cranbury; Jeffrey D. Wagner, Imlaystown; Donna J. Ballard; Catharine E. Stone, both of East Windsor; Nancy A. Swallow, Plainsboro, and Nancy L. Carey, Erial, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 15, 1985, Ser. No. 786,985
Int. Cl.⁴ A23L 1/176

U.S. Cl. 426—94

18 Claims

1. A food coating composition for imparting a crisp, golden-brown surface to foodstuff cooked in a microwave appliance comprising: a blend of bread crumbs and oil wherein the amount of bread crumbs in the blend ranges from 66 to 76% by weight of the blend and the amount of oil in the blend ranges from 24 to 34% by weight of the blend; and the amount of bread crumb/oil blend in the composition ranges from 40 to 90% by weight; dextrin in amounts ranging from 5 to 20% by weight of the composition; pre-gelatinized starch in amounts ranging from 5 to 20% by weight of the composition; and soy protein concentrate in amounts ranging from 2 to 20% by weight of the composition, said composition having a total oil content ranging from 15 to 24% by weight.

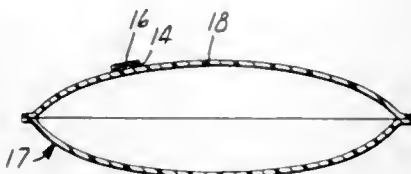
4,640,838
SELF-VENTING VAPOR-TIGHT MICROWAVE OVEN PACKAGE

Gary A. Isakson, Woodbury, Minn., and Curtis L. Larson, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 6, 1984, Ser. No. 647,882
Int. Cl.⁴ B65D 51/16, 81/34; H05D 9/00

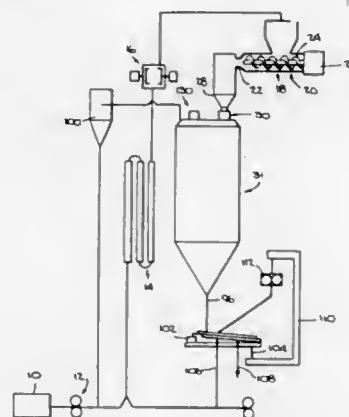
U.S. Cl. 426—107

17 Claims



1. A vapor-tight package including means for automatically venting through the package upon heating in a microwave oven, wherein the package comprises a sheet of thermoplastic film and a deposit of less extent than the film adhered to said sheet at the point where venting is desired to occur and comprising nonmetallic, microwave-absorbing particles selected from the group consisting of graphite and carbon black dispersed in a nonmetallic binder, which deposit has a thickness within the range from 10 to 300 micrometers, said particles comprising at least 10% by weight of said deposit, the dimensions of the deposit and the concentration of the particles being sufficient to provide sufficient heating of the thermoplastic film when exposed to microwave energy to cause softening of the film sufficient to cause or allow rupture and venting of the package through the softened ruptured film without arcing.

4,640,839
AGGLOMERATION PROCESS
Sheng-Hsiung Hsu, Marysville, Ohio, assignor to Nestec S.A., Vevey, Switzerland
Filed Jul. 1, 1985, Ser. No. 750,931
Int. Cl.⁴ A23F 5/38, 5/44; A23C 9/16; A23G 1/00
U.S. Cl. 426—285



1. A process agglomerating a water-soluble particulate material comprising:

- projecting a stream of particles of the particulate material through a confined moistening chamber in a downward direction along a generally vertical path, the stream of particles having a lesser cross-section width than the cross-section width of the moistening chamber;
- diffusing an aqueous gas horizontally inwardly, from outside and about the periphery of the confines of the moistening chamber, towards the stream of particles such that the aqueous gas is directed to and surrounds and tends to confine the stream of particles under relatively quiescent conditions throughout their path through the moistening chamber to moisten and fuse the particles; and then
- drying the resulting moistened and fused particulate material.

4,640,840
FOOD PROCESSING METHOD TO AVOID NON-ENZYMATIC BROWNING
Ivar Assinder, Kempston, England; Michael K. Supran, River Vale, N.J., and Geoffrey A. K. Thompson, Great Barford, England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
Filed May 7, 1985, Ser. No. 731,572
Claims priority, application United Kingdom, May 8, 1984, 8411720

Int. Cl.⁴ A23L 1/00

U.S. Cl. 426—399

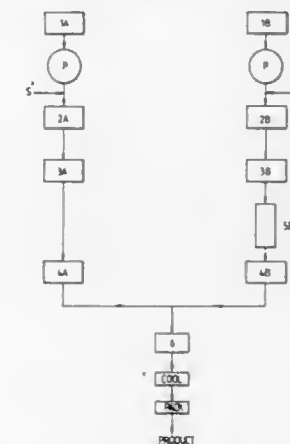
8 Claims

1. A method for minimizing non-enzymatic browning reactions during heat-processing of liquid foodstuffs having carbohydrate and nitrogenous reactants, comprising the steps of:

- aseptically heat-processing the carbohydrate components of the liquid foodstuff comprising reducing sugars, aldehydes, ketones, and mixtures thereof;
- aseptically heat-processing the nitrogenous components

of the liquid foodstuff comprising proteins and amino acids; and

with such flavorant material is organoleptically detectable in such germ and endosperm.



(c) combining the aseptically heat-processed components of the liquid foodstuff sub (a) and sub (b) at a temperature of at most 65° C.

4,640,841
PROCESS FOR THE EXTRACTION OF HOP SUBSTANCES
Adrian Forster, and Manfred Gehrig, both of Wolnzach, Fed. Rep. of Germany, assignors to Hopfenextraktion HVG Barth, Raiser & Co., Wolnzach, Fed. Rep. of Germany
Filed Dec. 18, 1984, Ser. No. 683,436
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346776

Int. Cl.⁴ A23L 1/211

U.S. Cl. 426—425

6 Claims

1. A process for obtaining extracts from hops by extraction of hop containing material selected from the group consisting of hops, hop powder and hop pellets by treatment thereof with supercritical carbon dioxide solvent in the absence of organic solvents under pressures of between about 100 and about 300 bar comprising the sequential steps of carrying out the extraction step at a temperature of between about 110° and about 150° C. but below the boiling point of said solvent at the aforesaid pressures, and removing said extracts from said solvent.

4,640,842
INTERNALLY FLAVORED HULLED CEREAL GRAIN AND PROCESS FOR PREPARATION
William A. May, 5 House Wren, Hackettstown, N.J. 07840
Continuation-in-part of Ser. No. 697,204, Feb. 1, 1985, which is a continuation-in-part of Ser. No. 547,131, Oct. 31, 1983, abandoned, and a continuation-in-part of Ser. No. 577,342, Feb. 6, 1984, abandoned, and a continuation-in-part of Ser. No. 605,466, Apr. 30, 1984, abandoned. This application Aug. 13, 1985, Ser. No. 764,711
Int. Cl.⁴ A23L 1/00, 1/18

U.S. Cl. 426—534

33 Claims

1. A process for introducing an organic flavorant into hulled cereal grain comprising the steps of contacting such grain with said flavorant under aqueous liquid phase conditions while maintaining said liquid phase at a temperature in the range from about 60° to 200° F. for a time at least sufficient to introduce into the endosperm of such hulled cereal grain at least an organoleptically detectable taste of said flavorant without substantial change in hull structure, said flavorant containing at least four carbon atoms per molecule, and, when said flavorant contains at least one carboxyl group per molecule, then said flavorant has a dissociation constant in water which is less than about 1×10^{-5} whereby, when such grain's hull is separated from such grain's germ and endosperm, the flavor associated

4,640,843
LOW FAT CONTENT FOOD CHIPS AND METHOD OF PREPARATION
Edward A. Matuszak, Liverpool; Yanien Lee, Manlius, and Stephen R. Gillmore, Weedsport, all of N.Y., assignors to Borden, Inc., Columbus, Ohio
Filed Dec. 11, 1984, Ser. No. 680,350
Int. Cl.⁴ A23L 1/01

U.S. Cl. 426—560

20 Claims

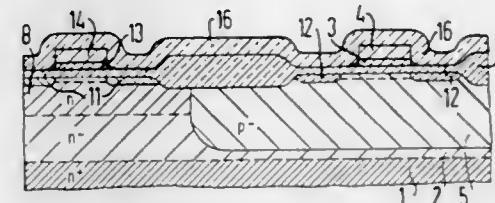
1. A process for preparing food product chips or ribbons comprising subjecting a comminuted starch-containing food composition having a moisture content of from about 30 percent by weight to about 40 percent by weight to compression at a pressure of at least 1000 psig and at a temperature of from 60° F. to about 110° F. and sequentially frying said composition in an edible oil without an intermediate drying step, whereby a substantial portion of said moisture content is retained during the period of compression and introduction of said starch-containing composition into said frying step.

4,640,844
METHOD FOR THE MANUFACTURE OF GATE ELECTRODES FORMED OF DOUBLE LAYERS OF METAL SILICIDES HAVING A HIGH MELTING POINT AND DOPED POLYCRYSTALLINE SILICON
Franz Neppi, Ulrich Schwabe, both of Munich, and Konrad Hieber, Bernau, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 8, 1985, Ser. No. 709,712
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3419034

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.
Int. Cl.⁴ B05D 5/12; C23C 16/00

U.S. Cl. 427—38

10 Claims



1. A method for manufacture of gate electrodes formed of double layers of metal silicides having a high melting point and doped polycrystalline silicon (polycide) for integrated complementary MOS-field effect transistor circuits (CMOS) in which manufacture of source and drain zones is carried out through ion implantation in n-type and p-type zones in a substrate with a field oxide zone thereover after production of a gate electrode through use of the gate electrode as an implementation mask, comprising the steps of:

- depositing a layer formed of undoped polycrystalline silicon on the gate oxide layer lying over the n- and p-type zones in the substrate;
- applying a metal silicide layer on the undoped polycrystalline silicon layer so as to create a polycide double layer;
- structuring the polycide double layer so as to create respective gates above the n- and p-type zones;
- implanting source and drain zones of one transistor conductivity type with a respective dopant while masking zones of the opposite transistor conductivity type and vice versa, and wherein during the implanting, the respective structured metal silicide layers are also correspondingly doped with respective dopants; and

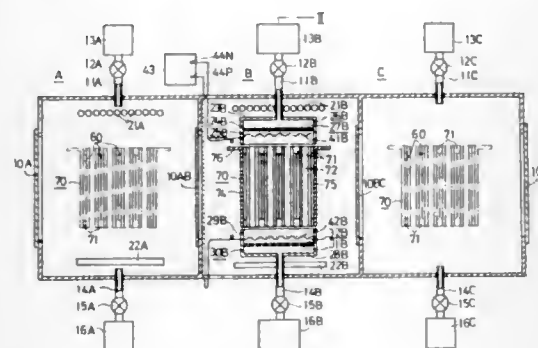
(e) removing the masks, depositing an intermediate oxide through a temperature treatment, and then diffusing said respective dopants introduced into said respective structured metal silicide layers from the respective metal silicide layers into the respective structured polycrystalline silicon layers lying therebeneath.

4,640,845 METHOD AND APPARATUS FOR FORMING NON-SINGLE-CRYSTAL LAYER

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan
Division of Ser. No. 533,941, Sep. 20, 1983, Pat. No. 4,582,720.
This application Feb. 13, 1986, Ser. No. 828,790
Claims priority, application Japan, Sep. 20, 1982, 57-163728; Sep. 20, 1982, 57-163729; Sep. 25, 1982, 57-167280; Sep. 25, 1982, 57-167281

Int. Cl.⁴ C23C 16/50
U.S. Cl. 427—38

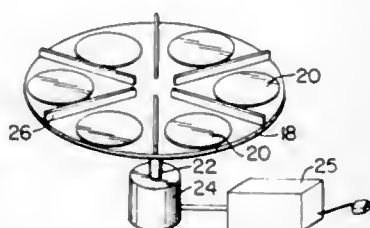
21 Claims



1. A non-single-crystal layer forming method in which a material gas for forming a non-single-crystal layer is introduced into a reaction chamber and is excited to form the non-single-crystal layer by deposition on one or more substrates placed in the reaction chamber, wherein the material gas is confined within a region within the reaction chamber, said region being defined by first and second cup-shaped gas guide members and a tubular holder for at least one substrate wherein the material gas is guided by said first and second cup-shaped gas guide members provided upstream and downstream of said tubular substrate holder, respectively, so that the material gas stream is confined to said region to pass along the substrate surfaces.

4,640,846
SEMICONDUCTOR SPIN COATING METHOD
Yue Kuo, 1079 San Pablo Ave. #8, Albany, Calif. 94706
Filed Sep. 25, 1984, Ser. No. 654,441
Int. Cl.⁴ B05D 5/12; H01L 21/312
U.S. Cl. 427—82

12 Claims



1. A method for coating semiconductor wafers with a liquid film comprising:

first, depositing a continuous non-uniform layer of the liquid film on the top of the wafers;
second, rotating the wafers about an axis perpendicular to the plane of the wafers and removed from the wafers to spread said film substantially uniformly across said wafers; and
third, preventing liquid film deposited on one wafer from contacting another wafer during said rotation without reflecting said liquid film back onto said first wafer.

4,640,847 PARTIALLY PRESSURE-SENSITIVE RECORDING PAPER

Yoshio Okada, and Yuriko Igarashi, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1985, Ser. No. 690,523
Claims priority, application Japan, Jan. 17, 1984, 59-4776
Int. Cl.⁴ B41M 5/16

U.S. Cl. 427—150

3 Claims

1. A process for producing a partially pressure-sensitive recording paper comprising dispersing dried microcapsules containing a solution of a colour-former into an organic solvent selected from the group consisting of hexane, cyclohexane, heptane, octane, nonane, toluene, xylene, ethanol, propanol, isopropyl alcohol, butanol, ethyl butyl ether and dibutyl ether, further dispersing the thus prepared dispersion into a thermally melting suspension medium selected from the group consisting of Japan tallow (haze wax), Carnauba wax, Montan wax, paraffin wax, microcrystalline wax, polyethylene wax, oxidized wax and mixtures thereof, thereby obtaining an ink comprising said microcapsules, said thermally melting suspension medium and said organic solvent, and painting the thus obtained ink on a specified part of a surface of a sheet of paper, said thermally melting suspension medium being in the range of 30 to 200 parts by weight to 100 parts by weight of said microcapsules, and said dried microcapsules being obtained by dispersing, as a core substance, said solution of a colour-former in an aqueous medium containing at least one prepolymer selected from the group consisting of melamine-formaldehyde prepolymers, urea-formaldehyde prepolymers, melamine-urea-formaldehyde prepolymers, melamine-thiourea-formaldehyde prepolymers and melamine-thiourea-urea-formaldehyde prepolymers or a mixture of a melamine-formaldehyde prepolymer and a thiourea-formaldehyde prepolymer, a water-soluble cationic urea resin and a low molecular weight anionic surfactant, polycondensing said water-soluble cationic urea resin and said prepolymer on the surface of the thus dispersed solvent droplets containing said colour-former by adding an acid-catalyst, while causing complex-coacervation between said water-soluble cationic urea resin and said anionic surfactant, and drying the microcapsules separated from the aqueous dispersion.

4,640,848
SPRAY-APPLIED CERAMIC FIBER INSULATION
Juan M. Cerdan-Diaz, North Tonawanda, N.Y.; Michael J. Sanders, Salisbury, N.C., and Mark E. Wellar, Niagara Falls, N.Y., assignors to Kennecott Corporation, Cleveland, Ohio
Filed Aug. 26, 1985, Ser. No. 770,333
Int. Cl.⁴ B05D 1/34

U.S. Cl. 427—426

21 Claims

1. A spray-applied refractory fiber thermally insulating layer comprising on a dry weight basis:
(a) from about 72.5 to about 97.5 weight percent ceramic fiber;
(b) an organic binder component in amount sufficient to impart a wet adhesion to steel of at least 0.2 g/cm²; and
(c) an inorganic binder component in amount from about 2.5 to about 30 weight percent based on weight of fiber of solids derived from a colloidal sol of a high temperature resistant refractory metal oxide.

13. A method of forming a thermally insulating layer on a substrate comprising:
(a) providing ceramic fibers;
(b) providing a binder including:
(i) an organic polymeric binder component;
(ii) an inorganic binder component in the form of a sol of a high temperature refractory metal oxide;
(iii) a liquid vehicle which is a solvent for the organic component and a diluent for the inorganic component;
(c) Applying said sol and liquid vehicle to said ceramic fibers while spraying said fibers toward the substrate.

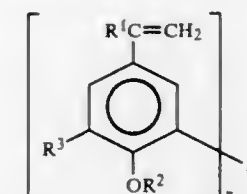
4,640,849
META-BRIDGED STYRYLOXY RESINS
John G. Woods, Dublin, and John M. Rooney, Kildare, both of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland
Filed Jan. 31, 1986, Ser. No. 824,903

Int. Cl.⁴ B05D 3/06; C08F 283/04, 26/02; C08G 18/08; C07C 125/06

U.S. Cl. 427—54.1

20 Claims

17. A method of curing a compound to a cross-linked solid, the compound having the formula:



where R¹ is H or methyl; R² is hydrocarbyl, hydrocarbyl interrupted by oxygen atoms, or halo substituted hydrocarbyl; R³ is H, lower alkyl, or alkoxy; G is any multivalent organic or inorganic radical free of amino or aliphatic thiol groups; and n is an integer of 7.

18. A method as in claim 17 for providing a colored cross-linked coating on a substrate, the method further comprising coating said substrate with said composition prior to cationically polymerizing the composition.

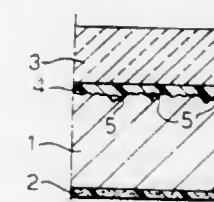
19. The method of claim 18 wherein said composition further comprises a cationic photoinitiator and said cationically polymerizing step comprises irradiating said composition coated substrate with UV irradiation.

4,640,850
COMPOSITE SLAB INCORPORATING A SHEET OF MARBLE OR SIMILAR NATURAL STONE, FOR THE FORMATION OF FACINGS FOR BUILDING, INTERIOR DECORATION AND THE LIKE

Giuseppe Marocco, Turin, Italy, assignor to Technomarmi Maiera S.p.A. and Seifag S.r.l., both of Italy
Division of Ser. No. 486,172, Apr. 18, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 679,089

Int. Cl.⁴ B05D 5/00; B44F 9/04
U.S. Cl. 428—15

3 Claims



1. A composite slab for exterior facings on a building, interior decoration and the like comprising a thin sheet of natural stone having at least one rough unfinished face intended to be

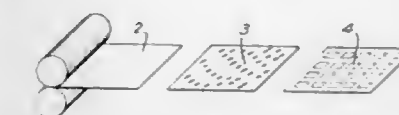
visible in use, a protective sheet of transparent glass overlying said rough unfinished face and a layer of transparent thermoplastics material interposed between said sheets and adhered to both sheets for connecting said sheets to define a composite slab wherein the thermoplastics material completely fills any surface defects in the rough unfinished face of said stone sheet so as to provide a smooth finished appearance to said surface of said stone sheet when viewed through said glass sheet and said layer of thermoplastics material while providing protection for said stone sheet against corrosion.

4,640,851
BROAD BAND CAMOUFLAGE SCREEN HAVING A FREQUENCY DEPENDENT RADAR ATTENUATION
Gunter Pusch, Bannholzweg 12, 6903 Neckargemund 2, Fed. Rep. of Germany
Filed Apr. 1, 1985, Ser. No. 718,080

Int. Cl.⁴ F41H 3/00, 3/02; B32B 3/10

U.S. Cl. 428—17

9 Claims



1. A camouflage material having a wide-band effect ranging from the visual portion of the spectrum up through the radar region of the spectrum, said material comprising at least a base layer, an intermediate homogeneous metal layer on said base layer reflective in the range of terrestrial thermal radiation as well as in the radar region of the spectrum and having a specific surface resistivity of not more than 0.5 to 10 ohms per square and an outer camouflage paint layer applied on said reflective metal layer, said paint containing coloring matter having reflective properties in the visible and near IR spectral regions that are similar to the natural background and containing a binder having high transparency characteristics in the spectral regions of the atmospheric windows II (3-5 μm) and III (8-14 μm) and wherein the emissivity of the camouflage paint in windows II and III varies over the surface of the material and varies between 50 and 90% in window II and between 60 and 95% in window III and wherein the metal is selected from the group consisting of aluminum, copper, zinc and its alloys and is deposited in a pattern of rectangles or squares whose long dimension is smaller than 1/4 lambda of the largest radar wavelength used for reconnaissance systems and larger than 1/4 lambda of the radar wavelength used for homing missiles and bullets.

4,640,852
MULTIPLE LAYER FILMS CONTAINING ORIENTED LAYERS OF NYLON AND ETHYLENE VINYL ALCOHOL COPOLYMER

William F. Ossian, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 28, 1984, Ser. No. 675,519
Int. Cl.⁴ B65D 30/02; B32B 27/08

U.S. Cl. 428—35

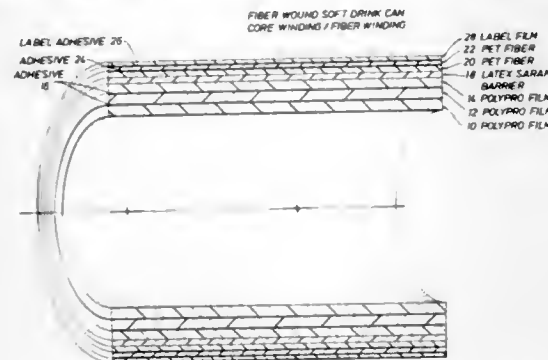
15 Claims



1. A multiple layer oriented sheet structure wherein the layers are firmly adhered to each other, said sheet structure comprising a first oriented layer of nylon, and in face to face contact with said first layer, a second oriented layer of ethylene vinyl alcohol copolymer, said second layer containing an effective amount of a plasticizer therefore, said sheet structure

being capable of withstanding retort conditions for 30 minutes at 250° F. without substantial embrittlement of said layers.

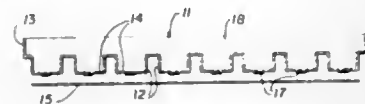
4,640,853
FIBER WOUND PLASTIC BEVERAGE CAN
 W. R. Schmeal, S. N. Sing'el, and K. H. Lo, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
 Filed Aug. 12, 1985, Ser. No. 764,690
 Int. Cl.⁴ B65D 8/08; D02G 3/00
 U.S. Cl. 428—35 10 Claims



1. A beverage can which will withstand pressure from carbonated beverages and which has acceptable swelling resistance, which comprises:
 - a thermoplastic core;
 - at least two fiber layers wound on said thermoplastic core;
 - adhesive layer between said fiber layers and said core and between said fiber layers themselves where said fiber layers are made of multiple fibers in an ordered relation; and
 - a barrier layer contiguous to either said thermoplastic core or said fiber layers or within said thermoplastic core or said fiber layers.

4,640,854
SELF-SUPPORTING COMPOSITE PLATE, ESPECIALLY FOR DOUBLE FLOORS
 Manfred Radtke, Margetshöchheim, Fed. Rep. of Germany, assignor to MERO-Werke Dr.-Ing Max Mengerhausen GmbH & Co., Würzburg, Fed. Rep. of Germany
 Filed Aug. 20, 1985, Ser. No. 767,716
 Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431118

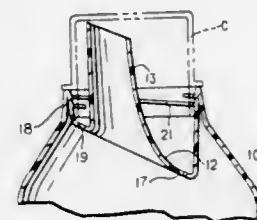
Int. Cl.⁴ B32B 3/12 10 Claims
 U.S. Cl. 428—35



1. Self-supporting composite plate, for double floors or the like, with a pan-shaped outside wrapper for flowable and hardenable filler material with high compression resistance when in hardened state, e.g. anhydrite, concrete or the like, characterized in that the pan-shaped wrapper (11) is provided on the bottom thereof with a plurality of burl-like projecting blocks (12) containing filler material (18), and a base element (15) of high tensile strength is connected to said projecting blocks, said base element (15) being a thin sheet metal plate and being welded to the bottoms of the projecting blocks (12) to absorb tensile stresses thereon.

4,640,855
PLASTIC CONTAINER WITH INTEGRAL SPOUT
 David L. St. Clair, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
 Filed Oct. 25, 1985, Ser. No. 791,287
 Int. Cl.⁴ B67D 1/16 6 Claims

U.S. Cl. 428—36



1. A plastic container comprising a hollow plastic body, an integral tubular neck extending from said body, said neck having an integral outer wall and an integral inner wall connected to the outer wall, and an integral spout integrally connected to the lower edge of the inner wall and defining a dispensing opening and extending outwardly from the hollow body.

4,640,856
MULTI-LAYER PACKAGING FILM AND RECEPTACLES MADE THEREFROM
 Daniel J. Ferguson; Henry G. Schirmer, both of Spartanburg, and Walter B. Mueller, Inman, all of S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
 Filed Apr. 29, 1985, Ser. No. 728,428
 Int. Cl.⁴ B32B 27/08 18 Claims

U.S. Cl. 428—36 18 Claims

1. A multi-layer, thermoplastic barrier film having at least three layers comprising:
 - (a) a layer consisting essentially of very low density polyethylene having a density of less than 0.910 gms/cc;
 - (b) a barrier layer comprising a material selected from the group consisting of: (1) copolymers of vinylidene chloride and (2) hydrolyzed ethylene-vinyl acetate copolymers;
 - (c) a thermoplastic polymeric layer, said layer being on the side of the barrier layer opposite to that of layer (a); and
 - (d) the shrinkage of layer (a) controlling the shrinkage of the entire multi-layer barrier film, said multi-layer film having been oriented and rendered heat shrinkable at a temperature below 100° C. (212° F.), said orientation temperature being about 40° F. or more below the melt temperature of said very low density polyethylene.

4,640,857
PLYWOOD
 Katsujl Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan
 Filed Jan. 25, 1983, Ser. No. 460,774
 Claims priority, application Japan, Jan. 30, 1982, 57-13600
 Int. Cl.⁴ B32B 21/14 5 Claims

U.S. Cl. 428—57

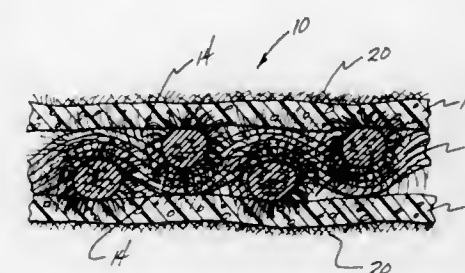


1. Plywood comprising at least two standard sections each having multiple straight extending plies of veneer sheets glued together and at least one joint section wherein two contiguous ends of two adjacent veneer sheets forming the external opposite faces of said plywood are glued together lapping one on

the other, at least one end of said two contiguous ends being beveled and the lapping distance being greater than the beveled distance, no veneer sheet extending and interposed between said veneer sheets forming said external opposite faces at said standard sections being present substantially over the distance of said joint section, so that the thickness of the joint section is made substantially equal to that of the standard sections.

4,640,858
SYNTHETIC LEATHER SHEET MATERIAL PRODUCTS
 Gary A. Barnett, Wellford, S.C., assignor to M. Lowenstein Corporation, Lyman, S.C.
 Filed Oct. 29, 1984, Ser. No. 666,272
 Int. Cl.⁴ B32B 7/08, 3/00 7 Claims

U.S. Cl. 428—90



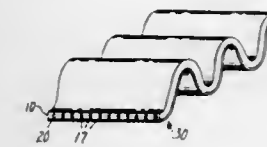
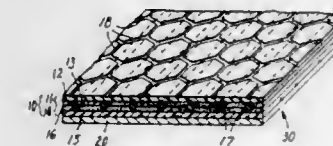
1. A composite sheet material having a soft suede-like surface appearance and feel, high liquid absorption and retention, and improved resilience and abrasion resistance comprising a reinforcing textile fabric substrate having opposed raised fiber surfaces; a water-absorbent, porous polymeric foam layer secured to each of the raised fiber surfaces of the fabric with the fibers substantially embedded therein, each of said polymeric foam layers comprising a composition containing as ingredients therein a hydrophillic acrylonitrile-butadiene polymer and a polyacrylate polymer, said acrylonitrile-butadiene copolymer being present in said composition in an amount of between about four to fifteen parts per one part of said polyacrylate polymer, by weight; and a plurality of flocked fibers embedded in and extending from the outer surface of each foam layer, said fibers having a length of from about 0.75 to 1.25 mm and providing with said water-absorbent porous polymeric foam layers an improved liquid absorption of the sheet material and reduced surface tack, and the outer flocked fibrous surfaces of the polymeric foam layers being further characterized by the absence of any water-insoluble, film-forming resinous coating thereon.

4,640,859
INELASTIC, HEAT-ELASTICIZABLE SHEET MATERIAL FOR DIAPERS
 Paul E. Hansen, Lake Elmo, and Susan K. Marquardt, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
 Division of Ser. No. 565,451, Dec. 27, 1983, Pat. No. 4,552,795.
 This application Sep. 23, 1985, Ser. No. 778,851
 Int. Cl.⁴ B32B 5/12; A61F 13/16 1 Claim

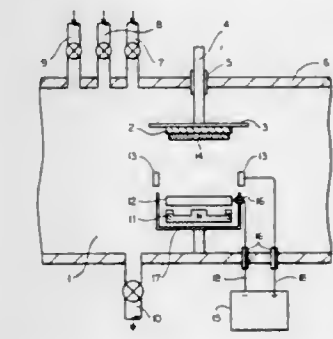
U.S. Cl. 428—105 1 Claim

1. A laminate comprising a disposable diaper to which is attached a substantially inelastic, flexible composite flat sheet material that is dimensionally stable at room temperature, said sheet material comprising in combination:
 - a plurality of parallel elastomeric strands extended to several times their relaxed length and bonded to at least one substantially flat inelastic planar web other than the diaper by thermoplastic, substantially inelastic polymeric binder,

the stiffness of the combined web and binder decreasing significantly when heated, thereby permitting the elastomeric strands to contract and the laminate to shrink at right angles to the length of the elastomeric strands.



4,640,860
OPTICAL RECORDING COATING
 Ian T. Ritchie, Santa Monica, Calif., assignor to Andus Corp., Canoga Park, Calif.
 Filed Oct. 16, 1985, Ser. No. 787,862
 Int. Cl.⁴ D06N 7/04; G01D 9/00 32 Claims
 U.S. Cl. 428—143

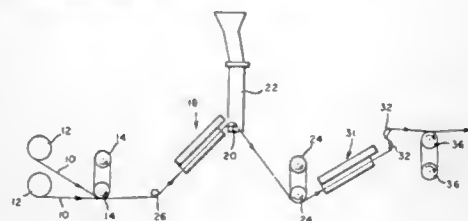


1. An optical recording coating for recording data, comprising:
 - a cermet optical storage layer disposed on a substrate, the layer comprising metal particles dispersed in a solid dielectric matrix, the metal particles comprising a first material selected from the group consisting of gold, silver, nickel, copper, platinum, palladium, rhodium and combinations thereof, the dielectric comprising a second material selected from the group consisting of SiO₂, SnO₂, In₂O₃, GeO₂, TiO₂, Ta₂O₅, ZnO, ZrO₂, Y₂O₃, CdO, Si₃N₄, TiN and other transition metal nitrides and combinations thereof, the layer being constructed and dimensioned such that its reflectance towards a fixed point substantially changes subsequent to being illuminated by high powered light such that information can be stored in the layer by selectively illuminating the layer with the high powered light, the layer being selectively illuminated with the high powered light.
 - 24. A method of optimizing properties of an optical storage layer for storing information by being selectively illuminated with high powered light, comprising the steps of:
 - varying a thickness of the optical storage layer and varying a metal particle atomic fraction as well as a solid dielectric atomic fraction of the optical storage layer so as to optimize an optical reflectance, an optical absorptance, and a thermoconductivity of the optical storage layer so as to be suitable for recording information by being selectively

illuminated with high power light, the optical storage layer comprising a cermet optical storage layer, the cermet comprising metal particles dispersed in a ceramic matrix, the metal particles comprising a first material selected from the group consisting of gold, silver, nickel, copper, platinum, palladium, rhodium and combinations thereof, the ceramic matrix comprising a second material selected from the group consisting of SiO_2 , SnO_2 , In_2O_3 , GeO_2 , TiO_2 , Ta_2O_5 , ZnO , ZrO_2 , Y_2O_3 , CdO , Si_3N_4 , TiN and other transition metal nitrides and combinations thereof.

4,640,861
FIBER REINFORCED THERMOPLASTIC MATERIAL.
Edwin K. Binnersey, and William H. Krueger, both of Wilming-
ton, Del., assignors to E. I. Du Pont de Nemours and Com-
pany, Wilmington, Del.

U.S. Cl. 428—294



1. A fiber reinforced thermoplastic material comprising: an array of synthetic fiber bundles comprised of continuous filaments and a thermoplastic polymer coating substantially all sides of the filaments in the array to form a composite, said fiber bundles comprising from 50 to 60 percent by volume of said composite the uniformity of distribution of said filaments in said composite as measured by the ratio of the mass mean length (L) between fiber bundles in the composite consolidation direction to the mass mean length between fiber bundles in the direction perpendicular thereto, said ratio being from about 0.5 to 1.0.

4,640,862
COATED, HEAT SHRINKABLE EXPANDED
POLYSTYRENE
Sherman Lakes, Lexington, Ky., assignor to Day Star Concepts,
Lexington, Ky.

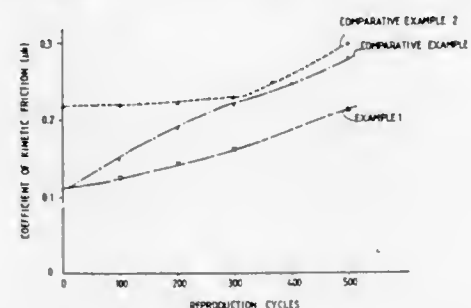
Division of Ser. No. 479,018, Mar. 25, 1983, Pat. No. 4,546,134.
This application Feb. 12, 1985, Ser. No. 700,623
Int. Cl.⁴ B32B 5/14; B05D 3/02; E04C 1/00
U.S. Cl. 428—308.4 11 Claims

U.S. Cl. 428—308.4 11 Claims
1. An expanded polystyrene dropout ceiling tile having a surface coated by applying to said surface an aqueous coating composition comprising:

from about 35% to about 55% of a water soluble salt of a polymer of acrylic acid as a film forming component; from about 15% to about 40% of a plasticizing component; from about 20% to about 40% of a dispersing agent; and a pigment; wherein the percentages of film forming component, plasticizing component and dispersing agent are weight percentages based on the combined total actives in the film forming component, plasticizing component and dispersing agent and wherein said film forming component is present in an amount effective to bind said dispersing agent and said pigment to said surface but ineffective to alter to the heat shrink characteristics of such tile at 550° C.

4,640,863
MAGNETIC RECORDING MEDIA
Yukio Matsumoto, and Masaru Hanayama, both of Mito, Japan,
assignors to Victor Company of Japan, Ltd., Japan
Filed Apr. 27, 1984, Ser. No. 605,673
Claims priority, application Japan, Apr. 30, 1983, 58-77124
Int. Cl.⁴ G11B 5/70

U.S. Cl. 428-323



1. A magnetic recording medium which comprises a flexible support and a magnetic layer formed on the flexible support, the flexible support being made of a resin composition which comprises a thermoplastic resin and particles selected from the group consisting of titanium monoxide and dititanium trioxide dispersed in the thermoplastic resin in an amount of 0.03 to 10 wt% of the composition, said particles having an average size below 2.5 μm .

4,640,864
FACING FOR PLASTIC FOAMED CONSTRUCTION
INSULATION BOARD
John F. Porter, St. Catharines, Canada, assignor to Bay Mills
Limited, St. Catharines, Canada
Filed May 4, 1984, Ser. No. 607,287
Int. Cl.⁴ B32B 23/04, 17/10

U.S. Cl. 428—334 **13 Claims**
1. A plastic foamed construction insulation board facing that is flexible, thin, and light weight and capable of use in manufacturing such board in which the plastic foam is formed on the facing during manufacture of the board consisting essentially of.

(a) paper, said paper having a basis weight of from about 10 pounds to about 20 pounds and having been treated with a treatment comprising materials whose dry weight is about 10% to 100% of the weight of the paper and which treatment coats fibers in said paper with a composition which provides means for reducing the liquid permeability of fibers of said paper, filling interstices in said paper, and imparting to the paper fire retardancy, water repellancy, reduced porosity, and reduced ability to transmit liquids through said paper,

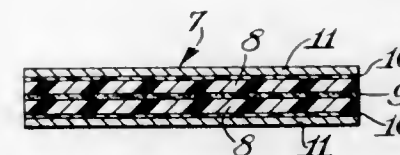
4,640,865
BARRIER FILM STRUCTURES
Gerald M. Lancaster, Surfside; David C. Kelley, Angleton;
Russell H. Cramm, Lake Jackson, all of Tex., and Charles V.
Neywick, Midland, Mich., assignors to The Dow Chemical
Company, Midland, Mich.
Continuation-in-part of Ser. No. 645,990, Aug. 31, 1984, which is
a continuation-in-part of Ser. No. 531,110, Sep. 12, 1983. This
application May 28, 1985, Ser. No. 738,009
Int. Cl.⁴ B32B 27/00

U.S. Cl. 428—421 **14 Claims**
1. An article comprising a carbon monoxide-containing polymer having coated thereon, as an adhering layer, a halopolymer.

wherein said halopolymer layer is one which has been applied to the carbon monoxide-containing polymer as a fine particle aqueous dispersion or latex and dried.

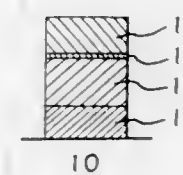
4,640,866
PRINTED CIRCUIT BOARD
Hirosuke Suzuki, Tokorozawa, Japan, assignor to Junkosha
Company Ltd., Tokyo, Japan
Filed Apr. 1, 1985, Ser. No. 718,802
Claims priority, application Japan, Apr. 10, 1984, 59-72472
Int. Cl.⁴ B32B 27/00

U.S. Cl. 428—422



1. A printed circuit board comprising a composite center layer of two layers of solid, sintered, nonporous polytetrafluoroethylene (PTFE) with a central layer of porous, expanded PTFE sandwiched therebetween, each of said solid PTFE layers having a metallic layer bonded to its outer surface by a bonding agent selected from the class consisting of a perfluoroalkylether copolymer (PFA) and tetrafluoroethylene-hexafluoropropylene copolymer (FEP).

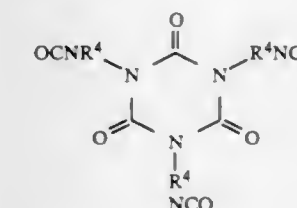
4,640,867
OPTICAL ARTICLE HAVING IMPROVED HEAT
RESISTANCE
Takuji Oyama, and Mamoru Mizuhashi, both of Yokobama,
Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan
Filed May 17, 1985, Ser. No. 735,137
Claims priority, application Japan, May 29, 1984, 59-107619
Int. Cl.⁴ B32B 15/00, 17/06, 9/00, 15/04
U.S. Cl. 428—432 12 Claims



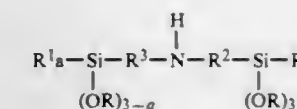
1. An optical article having improved heat resistance, which comprises a substrate and at least one laminated coating formed on the substrate, the laminated coating comprising (A) a highly expansive layer having a high thermal expansion coefficient and (B) a less expansive layer having a thermal expansion coefficient lower than that of the highly expansive layer, wherein the improvement is characterized in that a Ti coating layer or a Cr coating layer is interposed at the interface between the highly expansive layer and the less expansive layer, wherein the said Ti coating layer or the said Cr coating layer is (1) made of Ti metal or Cr metal, or (2) a Ti metal alloy or a Cr metal alloy containing Ti or Cr in an amount of at least 50%, respectively, and wherein the said highly expansive layer is made of a fluoride such as MgF_2 , CeF_3 , Na_3AlF_6 , LaF_3 or a mixture thereof, and the said less expansive layer being made of an oxide such as ZrO_2 , TiO_2 , Al_2O_3 , SiO_2 , Y_2O_3 , Ta_2O_5 , or a mixture thereof.

4,640,868
CLEAR, WEATHER RESISTANT ADHERENT COATING
 Howard I. Penn, Skokie, Ill., assignor to Morton Thiokol Inc.,
 Chicago, Ill.
 Filed Feb. 10, 1986, Ser. No. 828,468

U.S. Cl. 428-446 20 Claims
 1. A composition, upon hydrolysis and curing, providing a protective coating comprising the reaction product of:
 (a) an isocyanurate polyisocyanate having the following formula:



(b) an amino disilane having the formula:



wherein R is a lower alkyl having 1 to about 6 carbon atoms; R¹ is a lower alkyl having 1 to about 4 carbon atoms; R² and R³, which may be the same or different, are each substituted or unsubstituted alkylene radicals having 2 to 18 carbon atoms or arylene radicals having 6 to 18 carbon atoms; and a is an integer having values of 0 to 2.

4,640,869
HARD METAL WATCH CASE WITH A RESISTANT
COATING
Eric Loth, Bienne, Switzerland, assignor to Montres RADO SA,
Lengnau, Switzerland
Filed May 7, 1985, Ser. No. 731,222
Claims priority, application Switzerland, Jun. 7, 1984,
2781/84

Int. Cl.⁴ B32B 9/00, 15/04
U.S. Cl. 428—469 5 Claims

1. A watch case comprising a case body overlaid by a coating, the hardness of the body being greater than 600 HV₁, the coating comprising a first layer obtained by the combination of a metal and an element whose atomic number is less than 9, applied to said body by chemical vapor deposition (CVD) and a second layer having the same composition as the first layer applied onto said first layer by physical vapor deposition (PVD).

4,640,870

LAMINATE STRUCTURE AND PRODUCTION OF THE SAME

Toshiyuki Akazawa; Yoshinari Tanaka, both of Kurashiki, and Takuji Okaya, Nagakakyō, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Apr. 30, 1985, Ser. No. 728,747

Claims priority, application Japan, May 9, 1984, 59-93556

Int. Cl.⁴ B32B 27/06

U.S. Cl. 428-483

1. A laminate structure comprising (a) a layer of a saponified product of an ethylene-vinyl acetate copolymer containing 20 to 55 mole % of ethylene and having a degree of saponification of at least 90 mole % and (B) a layer of hydrophobic thermo-

plastic resin, with (C) a bonding interlayer placed therebetween which comprises a composition of (X) a polymer of ethylene, an acrylic acid ester, and an ethylenically unsaturated carboxylic acid or anhydride thereof and (Y) a polymer of ethylene and an acrylic acid ester, said polymers (X) and (Y) being formulated so that the following formulas (I), (II), (III), and (IV) are satisfied:

$$|V_x - V_y| \leq 0.15 \quad (I)$$

$$0.10 \leq V_x \cdot W_x + V_y \cdot W_y \leq 0.45 \quad (II)$$

$$0.03 \leq C_x \cdot W_x \leq 1 \quad (III)$$

$$0.05 \leq W_x / W_y \leq 10 \quad (IV)$$

where:

V_x: content (in weight fraction) of acrylic acid ester in polymer (X)

V_y: content (in weight fraction) of acrylic acid ester in polymer (Y),

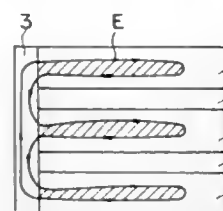
C_x: content (in meq/g) of carboxyl group of ethylenically unsaturated carboxylic acid or anhydride thereof in polymer (X),

W_x: quantity (in weight fraction) of polymer (X), and

W_y: quantity (in weight fraction) of polymer (Y).

4,640,871
MAGNETIC MATERIAL HAVING HIGH PERMEABILITY IN THE HIGH FREQUENCY RANGE
Kazuhiko Hayashi; Yoshitaka Ochiai; Masatoshi Hayakawa; Hideki Matsuda; Wataru Ishikawa; You Iwasaki, and Koichi Aso, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 6, 1985, Ser. No. 773,019
Claims priority, application Japan, Sep. 12, 1984, 59-190973
Int. Cl.⁴ B32B 15/04; G11B 5/147
U.S. Cl. 428—611 3 Claims

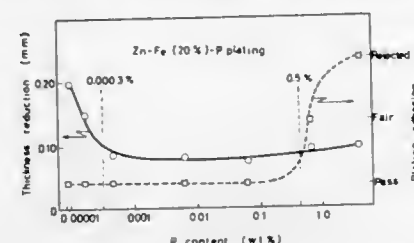


1. A magnetic structure having improved permeability characteristics at high frequencies comprising:
a plurality of magnetic metal layers,
an electrically insulating layer interposed between successive magnetic metal layers to form a laminate therewith, and
a plurality of electrical conductive strips each electrically connecting together at least two of said magnetic metal layers, said strips each having a width less than the width of the surface on which they are located, and being electrically isolated from each other.

4,640,872
CORROSION-RESISTANT STEEL STRIP HAVING ZN-FE-P ALLOY ELECTROPLATED THEREON
Toshio Irie; Kazuaki Kyono; Hajime Kimura, and Shigeo Kurokawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Continuation of Ser. No. 609,752, May 14, 1984, abandoned.
This application Jan. 15, 1986, Ser. No. 818,909
Claims priority, application Japan, May 14, 1983, 58-84584
Int. Cl.⁴ B32B 15/01
U.S. Cl. 428—659 3 Claims

1. A Zn-Fe-P electroplated steel strip having improved corrosion resistance with or without a paint coating and press

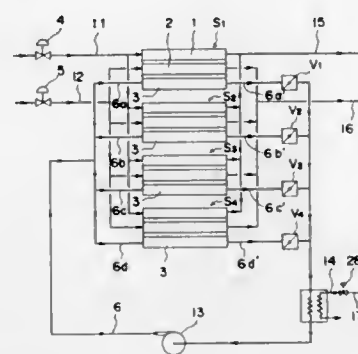
workability for use in automobiles, said steel strip having a Zn-Fe-P ternary alloy electroplated on at least one surface



thereof, said alloy plating consisting essentially of 5% to 30% by weight of iron, 0.0003% to 0.5% by weight of phosphorus, and the balance of zinc based on the weight of the plating.

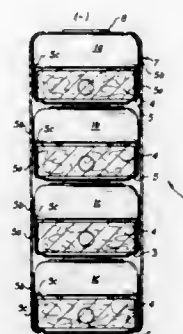
4,640,873
TEMPERATURE CONTROL SYSTEM FOR FUEL CELL POWERPLANT
Osamu Tajima, Hirakata; Makoto Yamada, Katano; Hideo Hagino, Otsu, and Nobuyoshi Nishizawa, Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 18, 1986, Ser. No. 840,794
Claims priority, application Japan, Mar. 19, 1985, 60-55332
Int. Cl.⁴ H01M 8/04
U.S. Cl. 429—24 3 Claims



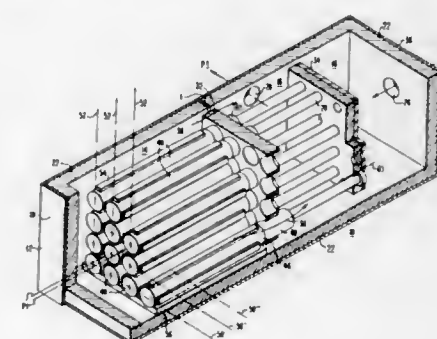
1. A temperature control system for a fuel cell powerplant of the kind wherein the powerplant comprises two or more fuel cell stacks and wherein cooling gas and process gases are separately fed to each fuel cell stack, that comprises
temperature detectors each being arranged in a fuel cell stack;
stack dampers each being arranged in each of inlet or outlet branched pipelines of a circulating pipeline for cooling gas, said circulating pipeline including a blower and an heat exchanger;
means for calculating the average value of operating temperatures of all the cell stacks detected by said temperature detectors, a difference between the average value and each detected temperature of the cell stacks, and a difference between the average value and a predetermined value of the operating temperature of the fuel cell stacks;
a driver for actuating each stack damper in response to the difference between the average value and the detected temperature of each cell stack,
means for controlling the flow rate and/or the temperature of the cooling gas fed to the cell stacks in response to the difference between the average value and the predetermined value of the operating temperature of the cell stacks.

4,640,874
METAL/AIR CELL
Roger W. Kelm, New Richmond, Wis., assignor to Duracell Inc., Bethel, Conn.
Filed Jul. 29, 1985, Ser. No. 759,820
Int. Cl.⁴ H01M 8/24, 12/04, 2/10
U.S. Cl. 429—27 14 Claims



1. A metal/air cell comprising a metal anode, a catalytic air depolarizing cathode and a fluid electrolyte contained within a closed cylindrical cell container of a predetermined height, wherein said cell container is apertured in a position thereof adjacent said cathode to permit ambient air to enter said cell, characterized in that a cylindrical apertured cap is engagingly positioned on said cell container and covers the apertured portion thereof whereby the height of said cell is increased thereby to a required height and ambient air enters said cell through said cap.

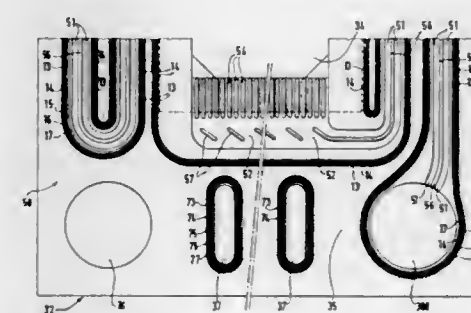
4,640,875
FUEL CELL GENERATOR CONTAINING A GAS SEALING MEANS
Joseph M. Makiel, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 7, 1985, Ser. No. 699,118
Int. Cl.⁴ H01M 8/10, 2/08
U.S. Cl. 429—30 19 Claims



1. A high temperature solid electrolyte electrochemical generator comprising:
(A) an exterior housing;
(B) a gas permeable thermal insulation layer disposed next to and within the exterior housing;
(C) an interior volume defined by the thermal insulation, said volume containing a fuel gas inlet generating chamber and a combustion product chamber containing combustion product outlet means, with a gas permeable partition dividing said fuel gas inlet generating chamber and combustion product chamber;
(D) a plurality of electrochemical cells, having solid electrolyte, disposed within the generating chamber;
(E) means for supplying fuel gas and oxidant gas to the electrochemical cells for reaction in the generating cham-

ber, so that reacted fuel gas passes through the gas permeable partition; and
(F) seal means disposed through the thermal insulation and extending from the exterior housing to the gas permeable partition, so that reacted fuel gas cannot pass from the generating chamber into the combustion product chamber through the thermal insulation, but must pass through the gas permeable partition into the combustion product chamber.

4,640,876
FUEL CELL STRUCTURES
Bernard Warzawski, Paris, and Pierre Fauvel, Limours, both of France, assignors to Occidental Chemical Corp., Niagara Falls, N.Y.
Filed Jul. 8, 1985, Ser. No. 756,128
Claims priority, application France, Jul. 27, 1984, 84 12013
Int. Cl.⁴ H01M 8/02
U.S. Cl. 429—37 10 Claims



1. A fuel cell structure constituted by a plurality of identical juxtaposed cells which are disposed in electrical contact with one another and in which multiple cell forming frames are fixed together in a predetermined elementary frame sequence, the said cell structure including three distributions networks which are common to all of the cells, as follows:
an electrolyte distribution network for distributing electrolyte from an external source and including, in particular, a common inlet channel and a common outlet channel;
a fuel distribution network for distributing fuel from an external source and including, in particular, at least one fuel inlet channel and at least one outlet channel for removing unburnt fuel and inert gases from the cell structure; and
an oxidant distribution network including, in particular, a plurality of oxidant inlet and outlet orifices situated in the bottom and top faces of the cell structure;
each cell additionally comprising:
first and second porous electrodes which are preferably plane in shape with parallel faces, one being a cathode and the other an anode, and each including a specific catalyst;
an electrolyte filling the gap situated between the said electrodes; and
first and second impermeable bipolar current collectors comprising respective first and second frames of plastic material having at least one central conductive zone having channels on each of its faces, the first collector coming into electrical contact via the high points of its cathode face with the external surface of the said cathode, and via its anode face with the external surface of the anode of an adjacent cell, and the second collector coming into electrical contact via the high points of its anode face with the external surface of the said anode, and via its cathode face with the cathode of the other adjacent cell; the oxidizing gas from the said common oxidant distribution network flowing between the said cathode and the cathode face of the first collector and being supplied to the said cathode, and the fuel gas from the said common fuel distribution

network flowing between the said anode and the anode face of the second collector and being supplied to the said anode; the said first and second frames being provided with orifices to allow the electrolyte and the fuel to flow through the cell structure, the said orifices contributing by their juxtaposition to defining the said common inlet and outlet channels;

the said first electrode being applied against a third frame made of plastic material and having a central orifice in the form of a quadrilateral, the top and bottom portions of the third frame including orifices for conveying fuel and electrolyte through the cell structure, said orifices corresponding to the orifices provided in the frames of the collectors, and likewise contributing to the formation of the said inlet and outlet channels for the fuel and the electrolyte, means being provided on one face of the third frame to enable electrolyte to be conveyed from the inlet channel, to an electrolyte compartment situated between the two electrodes, and from the said compartment to an outlet channel, the said means including grooves that open out into set back portions that constitute electrolyte distributing and collecting manifolds disposed on the top and bottom portions of the third frame along two opposite sides of the central orifice and in communication with the electrolyte chamber by means of a plurality of parallel microchannels delimited by ribs,

the second electrode being applied against one of the faces of a fourth frame facing the said current collector, the said fourth frame being made of an insulating plastic material, and being of identical contour to the third frame against which the first electrode is applied having fuel and electrolyte conveying orifices corresponding to those provided in the said third frame, and being applied by a plane face against the face of the said third frame having the grooves and the electrolyte distributing and collecting manifolds,

the frames are fixed together in a predetermined elementary frame sequence to constitute a repetitive stack of cells and to define the said fuel distribution network, the said oxidant distribution network, and the said electrolyte distribution network;

the improvement wherein said frames are made of a molded, deformable material, and wherein at least the fuel and electrolyte distribution networks are surrounded, at least on one face of one of the frames constituting the said elementary frame sequence, by at least one rib integral with said frame, said at least one rib standing proud from said face, and the distance the said at least one rib projects from said face being sufficient to compensate for the statistical average of all the defects in evenness and parallelism of the totality of the frames defining said fuel cell structure, and with at least one groove integrally molded within one of said frames bearing said at least one rib and the frame facing said at least one rib, and said at least one groove lying adjacent to said at least one rib and extending parallel to the said at least one rib to receive excess material from the at least one rib when the cell structure components are fixed together.

4,640,877

PROCESS FOR THE OZONE PROTECTION BY PHOTOPOLYMER-FLEXOPRINTING PLATES BY ALCOHOL-SOLUBLE POLYAMIDES

Hans L. Schröder, Reinheim, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 26, 1985, Ser. No. 716,118

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415044

Int. Cl.⁴ G03F 7/02; G03C 5/16
U.S. Cl. 430—14

12 Claims

1. A process for the ozone protection of an imagewise exposed and developed photopolymer flexographic printing plate having an elastomeric polymeric binder which comprises (a) applying to at least the exposed and developed surface of

the flexographic printing plate a solution of an alcohol-soluble polyamide copolymer having a softening temperature above 120° C. in a solvent mixture consisting essentially of 10 to 90% by weight of n-propanol and 90 to 10% by weight of n-butanol, and

(b) drying the treated flexographic printing plate to remove the solvent mixture whereby a polyamide layer is formed on the surface of the flexographic printing plate.

12. An image bearing photopolymer flexographic printing plate having an elastomeric polymeric binder protected from ozone according to the process of claim 1.

4,640,878

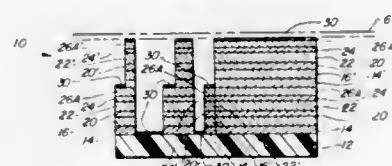
METHOD OF FORMING A PRESSURE SENSITIVE IMAGE TRANSFER SHEET AND THE PRODUCT THEREOF

Robert Evans, and Robert Evans, Jr., both of Stamford, Conn., assignors to Identicolor International, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 710,374, Mar. 11, 1985, Pat. No. 4,596,758. This application Dec. 13, 1985, Ser. No. 808,524
The portion of the term of this patent subsequent to Jan. 24, 2003, has been disclaimed.

Int. Cl.⁴ G03C 1/68, 1/90; G03F 3/00

U.S. Cl. 430—15

23 Claims



18. A pressure sensitive transfer sheet having at least one color ink image on a substrate for color proofing or the like comprising a substrate, a dry release lacquer base layer on the substrate; a dry color ink layer on the dry release lacquer base layer; a dry white ink layer on the dry color ink layer; a fine powder coating on the dry white ink layer; and a hardened photoresist layer on the powered ink layer resulting from exposure of the layered substrate to a radiation source through an image carrying film negative for a predetermined duration forming imaged and nonimaged areas, the hardened photoresist layer being present only over the imaged areas; the lacquer, ink and powdered layers being present only between the substrate and the hardened photoresist layers, where present, and a pressure dry pressure sensitive adhesive layer over the entire surface including both imaged and nonimaged areas.

19. The pressure sensitive transfer sheet according to claim 18 wherein there are plural superimposed imaged areas formed employing different film negative in registry and at least a second different color ink whereby to form a multicolor composite image, each color image characterized by lacquer, ink layers, powdered layers and hardened photoresist layers but only one pressure sensitive adhesive layer being present over the entire outer surface as a final coating.

4,640,879

COPYING PROCESS AND ELECTROPHOTOGRAPHIC ELEMENT UTILIZING A PHOTOCONDUCTIVE PIGMENT DISPERSED IN AN IMPROVED POLYMERIC BINDER

Petrus A. M. R. Simons, Roermond, and Wilhelmus J. Bouts, Reuver, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Aug. 6, 1985, Ser. No. 763,053

Claims priority, application Netherlands, Sep. 13, 1984, 8402805

Int. Cl.⁴ G03G 5/05

U.S. Cl. 430—96

8 Claims

1. A copying process in which a transferable image is formed by charging, exposing image-wise, developing with a developing powder and then transferred onto a copying material whereupon it is fixed, wherein the transferable image is formed on an electrophotographic element comprising a support and a photoconductive layer comprising a photoconductive pigment dispersed in a binder consisting substantially of a copolymer of an acrylic or methacrylic acid ester monomer, a vinyl aryl monomer, and 1% to 3% by weight unsaturated acid wherein 2.5 to 6.0 parts by weight of copolymerized vinyl aryl monomer are present per part by weight of copolymerized acrylic or methacrylic acid ester monomer.

4,640,880

ELECTROPHOTOGRAPHIC PROCESS WITH MAGNETIC BRUSH DEVELOPMENT USING SEMICONDUCTIVE FERRITE CARRIERS

Tsuneaki Kawanishi; Yasuki Mori, both of Hitachi; Koji Noguchi, Fukiage, and Tsutomu Iimura, Tachikawa, all of Japan, assignors to Hitachi Metals Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

PCT No. PCT/JP84/00142, § 371 Date Oct. 24, 1984, § 102(e) Date Oct. 24, 1984, PCT Pub. No. WO84/03955, PCT Pub. Date Oct. 11, 1984

PCT Filed Mar. 28, 1984, Ser. No. 668,877

Claims priority, application Japan, Apr. 1, 1983, 58-55124

Int. Cl.⁴ G03G 9/14

U.S. Cl. 430—106.6

14 Claims

1. A method of electrophotography characterized in that an electrostatic latent image is formed on the surface of a substance layer; in that said electrostatic latent image is developed by a magnetic brush method using semiconductive ferrite carriers and triboelectric magnetic toner with a chargeability to provide the magnetic brush, the ferrite carriers having a saturated magnetization of 20 to 90 emu/g and the magnetic toner having an intrinsic volume resistance exceeding 10¹⁴ Ω·cm when an electric field of a direct current of 4,000 V/cm is applied, with the magnetic brush moving at high speeds and in the same direction relative to the substance layer; and in that the developed toner image is transferred to a transfer member and then fixed.

4,640,881

METHOD FOR THE DISPERSEMENT OF MAGNETIC FILLER IN ONE-PART TONER POWDER AND THE COMPOSITION THEREFOR

William E. Dennis, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 15, 1985, Ser. No. 755,040

Int. Cl.⁴ G03G 9/08, 9/14

U.S. Cl. 430—106.6

5 Claims

1. A homogeneous blend of a thermoplastic organic resin and a magnetic powder in the presence of an oleophilicizing amount of a silanol methylsiloxane resin consisting of siloxane units selected from the group consisting of methylsilsesquioxane unit, dimethylsiloxane unit, trimethylsiloxane unit, and SiO₂ unit in which there is at least one siloxane unit having methyl radicals bonded thereto.

4,640,882

IMAGE FORMING METHOD OF NEGATIVE LATENT IMAGES USING SILICA PARTICLES

Yasuo Mitsuhashi, Yokohama; Masaki Uchiyama; Kazunori Murakawa, both of Tokyo, and Kenji Okado, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1984, Ser. No. 628,839

Claims priority, application Japan, Jul. 19, 1983, 58-131341
Int. Cl.⁴ G03G 9/10

U.S. Cl. 430—110

19 Claims

1. An image forming method comprising the steps of:
(i) forming a negative latent image on a photosensitive member comprising an organic photoconductive material,
(ii) developing said latent image with a positively chargeable dry toner,
(iii) transferring the developed image obtained to a transfer material, and
(iv) cleaning the residual toner on the photosensitive member, wherein said positively chargeable dry toner comprises colored resinous particles and positively chargeable fine silica particles which have been obtained by treating fumed silica particles having a mean primary particle size of 0.001 to 2μ to provide positive chargeability.

4,640,883

METHOD OF FORMING COMPOSITE OR DICHROMATIC IMAGES

Tateki Oka, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 21, 1984, Ser. No. 674,281

Claims priority, application Japan, Nov. 30, 1983, 58-227472
Int. Cl.⁴ G03G 13/08

U.S. Cl. 430—122

7 Claims

1. An image forming method comprising:
a first step of forming on a photosensitive member electrostatic latent images having at least three, different potential levels and including a first electrostatic latent image represented by a first potential relative to a background area potential and a second electrostatic latent image represented by a second potential relative to the background area potential;
a second step of developing said first and second electrostatic latent images by first magnetic brush developing means using two kinds of toners at least one of which is magnetic and which are chargeable to polarities opposite to each other while applying to a developing electrode a bias voltage capable of depositing the magnetic toner on the background potential area thereby selectively depositing the two toners on the first and second latent images and the magnetic toner on the background potential area, and further collecting the deposited magnetic toner from the background potential by second magnetic brush developing means; and
a third step of transferring the developed images onto a paper.

4,640,884

PHOTOSENSITIVE COMPOUNDS AND LITHOGRAPHIC COMPOSITION OR PLATE THEREWITH HAVING O-QUINONE DIAZIDE SULFONYL ESTER GROUP

William Rowe, Califon, and Thomas Dooley, Teaneck, both of N.J., assignors to Polychrome Corp., Yonkers, N.Y.

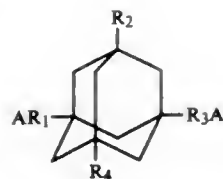
Filed Mar. 29, 1985, Ser. No. 717,988

Int. Cl.⁴ G03C 1/54; C07C 35/22, 113/00

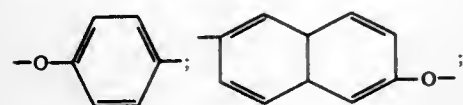
U.S. Cl. 430—165

9 Claims

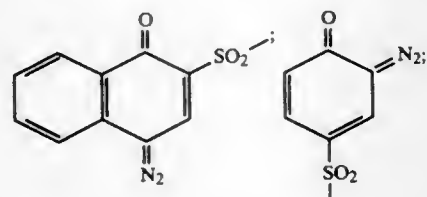
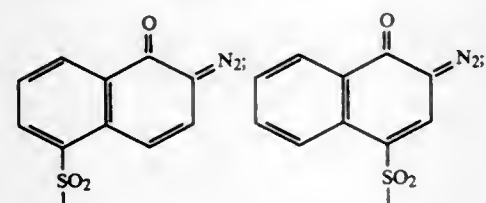
1. A compound having the structural formula



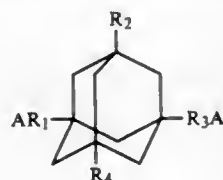
wherein, R_2 and R_4 are hydrogen or an alkyl group having from 1 to 20 carbon atoms;
wherein R_1 and R_3 may be the same or different and are hydrogen,



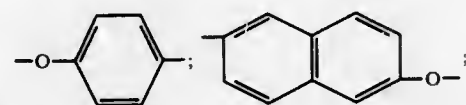
except that R_1 and R_3 may not both be hydrogen, and where X is a halogen and n is 1 to 4; and
wherein A is a quinone diazide from the group consisting of



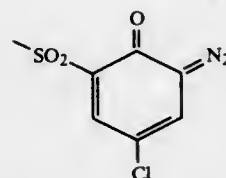
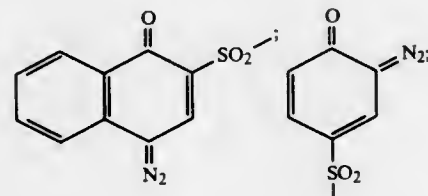
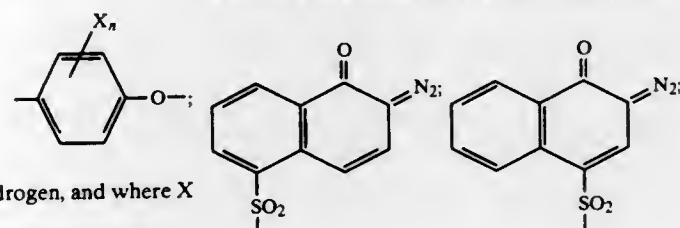
4. A composition comprising a photosensitizer suitable for use in making lithographic printing surfaces, which is the reaction product of (a) an adamantane and (b) a diazo; said reaction product having the structural formula



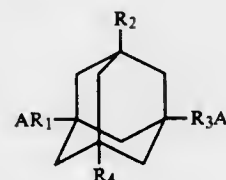
wherein, R_2 and R_4 are hydrogen or an alkyl group having from 1 to 20 carbon atoms;
wherein R_1 and R_3 may be the same or different and are hydrogen,



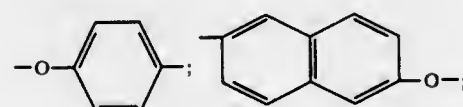
except that R_1 and R_3 may not both be hydrogen, and where X is a halogen and n is 1 to 4; and
wherein A is a quinone diazide from the group consisting of



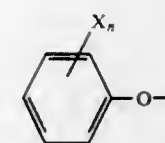
8. A lithographic plate comprising a base support and a photosensitive composition comprising an adamantane derivative having the formula



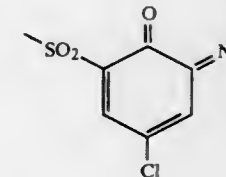
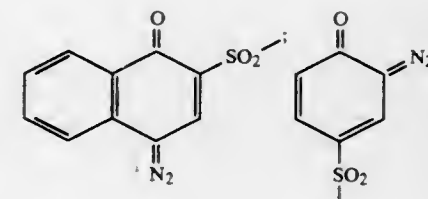
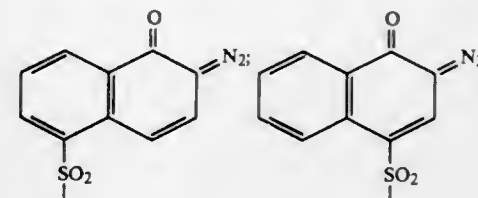
wherein, R_2 and R_4 are hydrogen or an alkyl group having from 1 to 20 carbon atoms;
wherein R_1 and R_3 may be the same or different and are hydrogen;



-continued



except that R_1 and R_3 may not both be hydrogen, and where X is a halogen and n is 1 to 4; and
wherein A is a quinone diazide from the group consisting of



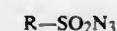
4,640,885 MONO-SULFONYL AZIDE COMPOSITION USED TO PHOTOLYTICALLY DEVELOP A COLORED IMAGE ON A CELLULOSIC MATERIAL

Ronald S. Lenox, Lancaster; Anne L. Schwartz, Columbia, both of Pa., and Charles E. Hoyle, Hattiesburg, Miss., assignors to Armstrong World Industries, Inc., Lancaster, Pa.
Division of Ser. No. 555,298, Nov. 25, 1983, Pat. No. 4,556,625, which is a continuation-in-part of Ser. No. 396,800, Jul. 9, 1982, abandoned. This application Jun. 28, 1985, Ser. No. 749,665
Int. Cl.⁴ G03C 1/72, 1/727

U.S. Cl. 430-197

9 Claims

1. A photolytically active composition for coloring a cellulosic material, said composition consisting essentially of a mixture of poly(N-vinylcarbazole) and at least one sulfonyl azide compound of the formula



wherein R is an aliphatic, aryl aliphatic or aryl radical which contains from 1 to about 25 carbon atoms, wherein the amount of poly(N-vinylcarbazole) and sulfonyl azide compound is a sufficient amount to enable (1) the mixture to become solvent insoluble after exposure to ultra-violet light and (2) the mixture when present on the cellulosic material to photolytically develop on exposure to ultra-violet light to form a colored image.

4,640,886 SUBBED LITHOGRAPHIC PRINTING PLATE

Gary R. Miller, Fort Collins, Colo., and Richard E. Gilson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 10, 1985, Ser. No. 786,013

Int. Cl.⁴ G03C 1/495; C23C 1/08

U.S. Cl. 430-271

9 Claims

1. In a lithographic printing plate comprising an anodized aluminum support material, a hydrophilic subbing layer and a radiation-sensitive layer, the improvement wherein said hydrophilic subbing layer comprises benzoic acid in an amount sufficient to improve the incubation stability of said plate.

4,640,887

PHOTOSENSITIVE IMAGE-FORMING MATERIAL COMPRISED OF CARBOXYL GROUPS DEVELOPABLE IN AQUEOUS ALKALINE BASE SOLUTIONS

Chiaki Nakamura, Tokyo; Koji Oe; Tomonobu Muta, both of Urawa; Toshiaki Sasaki, Kamifukuoka, and Yoshihiro Nishio, Ohmiya, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,547

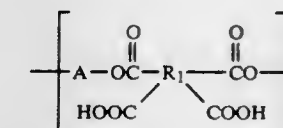
Claims priority, application Japan, Feb. 9, 1984, 59-20739; Mar. 13, 1984, 59-46429

Int. Cl.⁴ G03C 1/71, 1/94; C08G 63/18

U.S. Cl. 430-275

20 Claims

1. A photosensitive image-forming material developable with aqueous alkali developers comprising a support and a photosensitive layer on said support, which is characterized in that a photosensitive resin having the structural units represented by the general formula



[I]

(wherein A represents a linear polyester structural unit containing in its main chain a dicarboxylic acid unit having a photosensitive, unsaturated double bond adjacent to the aromatic ring, and a glycol unit containing an alicyclic ring structure or an aromatic ring structure, and R_1 represents a tetravalent organic group) is contained in the photosensitive layer.

11. The image-forming material of claim 1 in which the photosensitive layer is applied onto a support having a roughened metal surface.

4,640,888

ALIGNMENT MARK ON A SEMICONDUCTOR AND A METHOD OF FORMING THE SAME

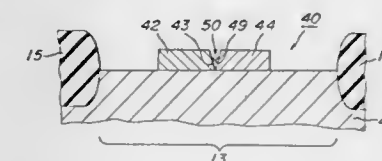
Yoshio Itoh; Hiroshi Ohtsuka; Tadashi Nishimuro, and Norio Moriyama, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan

Division of Ser. No. 619,960, Jun. 12, 1984, abandoned. This application Jan. 17, 1985, Ser. No. 691,977

Claims priority, application Japan, Jun. 16, 1983, 58-106646
Int. Cl.⁴ G03C 5/00; G03F 9/00

U.S. Cl. 430-323

2 Claims



1. A method of forming an alignment mark for registering a

semiconductor wafer, said wafer being registered by scanning an incident light across the alignment mark, the method comprising the steps of:

- preparing a semiconductor substrate;
- providing on the surface of the semiconductor substrate a grid line region to serve as a section for dividing the semiconductor wafer into a plurality of chips;
- providing a first island region of polycrystalline silicon on the grid line region;
- providing a film of phospho-silicate glass on the surfaces of the first island region and the semiconductor substrate;
- subjecting the phospho-silicate glass film to photolithographic etching for forming a second island region adjacent to the first island region, thereby forming an elongated slit having a width of 1 μ m or less between the first and second island regions, said elongated slit serving as the alignment mark by reflecting as only one peak the incident light scanning thereacross.

4,640,889

LIGHT-SENSITIVE SILVER HALIDE MULTI-LAYER COLOR PHOTOGRAPHIC MATERIAL

Kazuo Komorita; Masanobu Miyoshi, and Kaoru Onodera, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

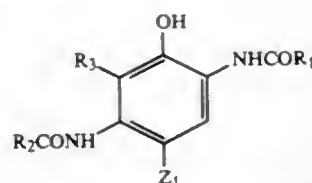
Filed Apr. 15, 1985, Ser. No. 723,048

Claims priority, application Japan, Apr. 20, 1984, 59-80582
Int. Cl.⁴ G03C 1/40, 1/76

U.S. Cl. 430—505

12 Claims

1. A light-sensitive silver halide multi-layer color photographic material having a light-sensitive silver halide emulsion layer on a support, comprising a red-light-sensitive silver halide emulsion layer, a green-light-sensitive silver halide emulsion layer and a blue-light-sensitive silver halide emulsion layer, said red-light-sensitive silver halide emulsion layer being the light-sensitive silver halide emulsion layer farthest from the support and containing mono-dispersed silver halide grains comprising primarily (100) faces and having an average grain size of 0.2 to 0.8 μ m and a non-diffusion cyan coupler represented by the formula:



wherein R₁ represents an aryl group, a cycloalkyl group or a heterocyclic group; R₂ represents an alkyl group or a phenyl group; R₃ represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; Z₁ represents a hydrogen atom, a halogen atom or an eliminable group through the reaction with the oxidized product of an aromatic primary amine type color developing agent.

4,640,890

COLOR PHOTOGRAPHIC MATERIAL WITH LIGHT INSENSITIVE SILVER CHLORIDE

Munehisa Fujita, and Akio Mitsui, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 31, 1985, Ser. No. 760,851

Claims priority, application Japan, Jul. 31, 1984, 59-161238
Int. Cl.⁴ G03C 1/46, 1/40, 7/32

U.S. Cl. 430—504

13 Claims

1. A silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, and at least one blue-sensitive silver halide emulsion layer, with at least one of said light-sensitive silver halide emulsion layers containing a mono-dispersed silver halide emulsion, said color photographic material further comprising

at least one auxiliary layer containing silver halide grains having substantially light-insensitivity and containing more than 75 mole% silver chloride, wherein said auxiliary layer is formed on the outside of the light-sensitive silver halide emulsion layer disposed outermost of the light-sensitive silver halide emulsion layers with respect to the support thereof.

4,640,891

HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Yoshiharu Yabuki; Kozo Sato; Ken Kawata, and Hiroyuki Hirai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

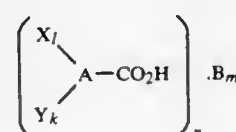
Filed Aug. 23, 1985, Ser. No. 768,655

Claims priority, application Japan, Aug. 24, 1984, 59-175123
Int. Cl.⁴ G03C 1/06, 5/24

U.S. Cl. 430—551

21 Claims

1. A heat developable light-sensitive material comprising a support having thereon at least one heat developable light-sensitive layer comprising a silver halide emulsion and a reducing agent, wherein said light-sensitive material contains a base precursor represented by the following general formula (I):



wherein

A represents an organic residue represented by the following general formula (II):



—CO₂H of formula (I) is bonded to a skeletal carbon atom of the organic residue represented by the formula (II); X represents an electron attractive substituent having a Hammett's sigma value of more than 0;

L represents an integer of 1 to 5 and, when represents 2 or more, a plurality of Xs may be the same or different;

Y represents a substituent having a Hammett's sigma value of 0 or less;

k represents an integer of 0 to 5 and, when k represents 2 or more, a plurality of Ys may be the same or different;

Z represents a divalent organic residue selected from the group consisting of —C=C—, —O—, —S— and —NR—, wherein R represents a hydrogen atom or a substituent selected from the group consisting of an alkyl group, an alkenyl group, an aralkyl group, an aryl group and an acyl group;

the broken line in the general formula (II) represents that the cyclic compound containing Z may be optionally fused with a benzene ring;

B represents a mono- or diacidic base having a pKa value of 7 or more and containing 12 or less carbon atoms; and

n and m represent an integer of 1 or 2 and are in such relation that the number of positive charge is equal to that of negative charge.

4,640,892

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Ken Kawata; Yoshiharu Yabuki; Kozo Sato, and Hiroyuki Hirai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

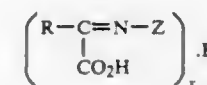
Filed Aug. 26, 1985, Ser. No. 769,275

Claims priority, application Japan, Aug. 24, 1984, 59-176401
Int. Cl.⁴ G03C 1/02

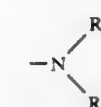
U.S. Cl. 430—617

5 Claims

1. A heat-developable light-sensitive material comprising a support having thereon a silver halide emulsion layer, a reducing agent present in said emulsion layer or in a separate layer, wherein at least one layer contains a base precursor compound represented by formula (I)



wherein R represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted heterocyclic ring group and a substituted or unsubstituted aralkyl group; Z represents



—OR₃, —SR₄, or —CR⁶=CR⁷)_nR⁵

wherein R¹ and R² each represents a hydrogen atom, a substituted or unsubstituted aryl group, a substituted or unsubstituted acyl group, a substituted or unsubstituted alkoxycarbonyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group, a substituted or unsubstituted sulfamoyl group or a substituted or unsubstituted heterocyclic ring group; or R¹ and R² combine together to form a ring;

R³ represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group, a substituted carbamoyl group, a substituted or unsubstituted sulfamoyl group or a substituted or unsubstituted heterocyclic ring group.

R⁴ represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic ring group; p1 R⁵ represents a hydroxyl group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted alkylsulfonylamino group, or a substituted or unsubstituted arylsulfonylamino group;

R⁶ and R⁷, respectively, represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, or a substituted or unsubstituted aryl group, or R⁶ and R⁷ combine together to form a ring; n represents an integer or 1 or 2

B represents an organic base;

x represents an integer of 1 when B is a base having acidity of 1, and x represents an integer of 2 when B is a base having an acidity of 2.

4,640,893

NOVEL RHODAMINE DERIVATIVES AS FLUOROGENIC SUBSTRATES FOR PROTEINASES

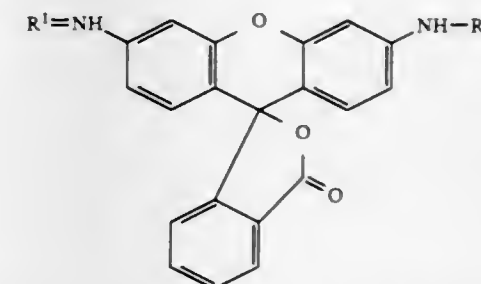
Walter F. Mangel, Urbana, Ill.; Stephen Leytus, Seattle, Wash., and L. Lee Melhado, Urbana, Ill., assignors to University of Illinois, Urbana, Ill.

Division of Ser. No. 546,718, Oct. 28, 1983, Pat. No. 4,557,862.
This application Sep. 27, 1985, Ser. No. 780,852
Int. Cl.⁴ C12Q 1/38; C07K 17/14

U.S. Cl. 435—23

7 Claims

6. A method for attaching a blocked fluorogenic compound to a protein which comprises placing a compound of the formula



wherein R¹ is blocking group and R² is an antigen-specific antibody in the presence of a protein which will react with the antigen-specific antibody, and allowing the antibody to react with the protein.

4,640,894

PRODUCTION OF ISOMALTULOSE USING IMMOBILIZED MICROORGANISMS

Mohammad Munir, Obrigheim, Fed. Rep. of Germany, assignor to Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 290,083, Aug. 4, 1981, abandoned. This application Oct. 30, 1985, Ser. No. 793,005

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038219

Int. Cl.⁴ C12P 19/12; C12N 11/02, 11/10, 11/12

U.S. Cl. 435—100

10 Claims

1. A process for producing isomaltulose by enzymatic conversion of sucrose using dead immobilized cells of an isomaltulose-forming microorganism comprising continuously passing a pure sucrose solution having a concentration of from 45 to 75% by weight sucrose at a temperature of about 45° to 65° C. through a reactor filled with said dead, immobilized cells of an isomaltulose-forming microorganism so that the sucrose is converted to a product containing primarily isomaltulose.

4,640,895

BIPHASIC MEDIA CULTURE APPARATUS

Sherman G. Davis, Shaker Heights, Ohio, assignor to Gibco Division, The Mogul Corporation, Chagrin Falls, Ohio
Filed Oct. 15, 1982, Ser. No. 432,848

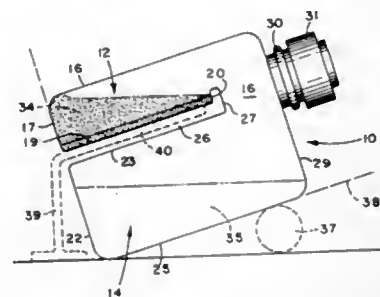
Int. Cl.⁴ C12M 1/24, 1/18, 1/26; B65D 1/04

U.S. Cl. 435—296

3 Claims

1. An apparatus for culturing microbial, mammalian, and plant cells comprising a one piece container made from a transparent material and having only two compartments formed by respective base means and wall means wherein the base and wall means of the first compartment includes a first base and first inner wall and the base and wall means of the second compartment includes a second base coplanar with and spaced from the first base and a second inner wall spaced from the first inner wall to define a recess therebetween, the first compartment for liquifiable but normally solid nutrient medium and the second compartment for liquid nutrient medium, said compartments being separated by the recess and being

discrete from each other with respect to their respective base means and wall means but sharing a common headspace extending between said first and second compartments to provide selective fluid communication therebetween, said headspace being enclosed by a top wall having a neck extending upwardly from said top wall to define a sealable access orifice therein positioned selectively to provide direct communication with either compartment, said neck being closed and hermetically sealed with a screw cap having a puncturable but self



resealing septum therein to permit sample injection for culturing without breaking the hermetic seal between the cap and the neck and a connecting member of material extending between the opposing inner walls of the respective compartments across the recess therebetween, said connecting member being configured to allow the container to be conveniently tilted to permit the solid nutrient medium to gel on a slant in the first compartment and to be conveniently inverted or agitated to wash the liquid medium back and forth over the solid medium.

4,640,896

WHOLE BLOOD CLOTTING TIMER

Peter C. Farrell, Pymble; Christopher D. Bertram, Coogee, and Bruce K. Milthorpe, Naremburn; all of Australia, assignors to Unisearch Limited, Kensington, Australia

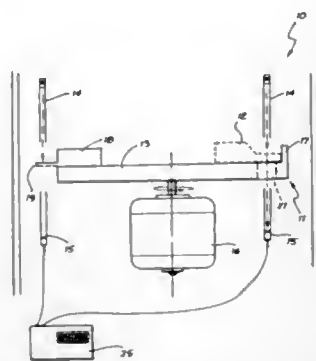
PCT No. PCT/AU82/00180, § 371 Date Jun. 28, 1983, § 102(e) Date Jun. 28, 1983

PCT Filed Nov. 4, 1982, Ser. No. 514,828

Claims priority, application Australia, Nov. 4, 1982, PF1422 Int. Cl. G01N 21/82, 33/86

U.S. Cl. 436-34

1 Claim



1. A method for determining the clotting time for a whole blood sample comprising inserting the whole blood sample into a first, radially inner compartment of a disposable cuvette in a centrifuge, inserting a blood clotting activator into a second, radially outer compartment of that cuvette which is separated from the first compartment by a ridge in the floor of the cuvette, actuating the centrifuge to cause the whole blood sample to flow radially outwardly over the ridge and to mix with the blood clotting activator in a second compartment and simultaneously starting timing means running, continuing the operation of the centrifuge to sediment the blood cells against a radially outer wall of the second compartment, periodically

measuring the optical density of a part of the mixture in the second compartment radially inwardly of said wall thereof which part of the mixture is freed from blood cells, stopping the timing means when the optical density or the time rate of change of the optical density of the mixture reaches a predetermined level, thereafter stopping the centrifuge and indicating the time interval between the starting and stopping of the timing means.

4,640,897

IMMUNOANALYSIS OF BASOPHIL-CONTAINING BLOOD FRACTION FOR DIAGNOSING PARASITOSIS AND ALLERGIES

Francisque Leynadier, and Hervé Luce, both of Paris, France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 163,736, Jun. 27, 1980, abandoned.

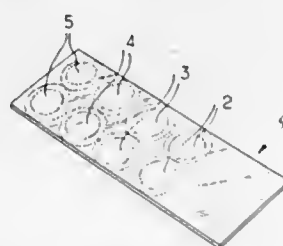
This application May 2, 1983, Ser. No. 489,603

Claims priority, application France, Jun. 28, 1979, 79 16772; May 27, 1980, 80 11689

Int. Cl. G01N 33/566, 33/531, 33/554, 31/00

U.S. Cl. 436-501

17 Claims



1. A process, for diagnosing parasitosis and allergies which cause an increase of the circulating specific immunoglobins, comprising the steps of:

selecting a plurality of slides or dishes, each exhibiting a predetermined number of wells of equal diameter all of which, with the exception of the wells that are to act as controls, contain a predetermined amount of an antigen specific to a parasitosis or allergy to be diagnosed, said antigen having been introduced in the dry state in each of the wells, said predetermined amounts varying from one well column to the next,

a plurality of tubes containing premeasured amounts of a suitable buffer devoid of calcium and magnesium and heparin salts that is not destructive of basophil cells;

a plurality of suitable containers, each containing a liquid of density 1.079-1.085, and

at least one container containing a dilute alcoholic solution of a dye, said dye capable of dyeing basophil cells, said alcoholic solution comprising a mixture of ethanol or methanol with water and at least one of glutaraldehyde, formaldehyde or propylene glycol for fast, simultaneous fixing and dyeing of said slides or dishes; wherein said suitable buffer comprises 4-25 ml of Hepes buffer, molar solution, 0.932-1.2 ml 10% KCl, 850-900 ml 9% NaCl and water, q.s. for 1000 ml at pH 7.4-7.6, and wherein each of the wells of said slides or dishes further contain premeasured amounts of calcium and magnesium in the form of their salts,

mixing a sample of a blood specimen from a human or animal patient assumed afflicted with a parasitosis or with an allergy, with an amount of ethylenediamine tetraacetic acid or one of its salts effective to preserve said blood sample for twenty-four hours;

mixing the preserved whole blood sample with an equal volume of the buffer devoid of calcium, magnesium and heparin salts from said plurality of tubes containing buffer; either injecting under this mixture the density liquid from said plurality of containers containing density liquid or

transferring the blood/buffer mixture to one of said containers containing said density liquid; removing said ring and washing it with the buffer from said plurality of tubes containing buffer, centrifuging, discarding the buffer supernatant, and resuspending said cellular cull to thereby obtain a diagnostic reagent consisting of a suspension of basophil polynuclears carrying specific IgE's;

placing said diagnostic reagent into the wells of said slides or dishes, for about 15 minutes at 37° C.;

performing simultaneous, fast fixing and dyeing of the prepared slide performed with said fixing and dyeing dilute alcoholic solution from said at least one container to selectively dye the cytoplasmic granules of the basophils by contacting the slide or dish, for about 5 to 15 minutes, with the solution;

counting the basophil polynuclears with an optical microscope, respectively in the control wells and in the various wells containing the reagent and various concentrations of antigen; and

comparing the reduction of the number of basophil polynuclears in the wells containing the antigen in various concentrations with the number of basophil polynuclears contained in the control wells, in order to determine the degranulation index (DI):

$$DI = \frac{\text{control BP} - \text{antigen BP}}{\text{control BP}} \times 100$$

whereby, if the DI is above 35%, the presence of the parasitosis or allergy that is sought may be diagnosed.

4,640,898

HOMOGENEOUS FLUORESCENCE LIGAND BINDING ASSAY BASED UPON PREFERENTIAL ALTERATION OF THE RESPECTIVE INTENSITIES OF BOUND AND FREE LABEL BY SOLVENT COMPONENTS

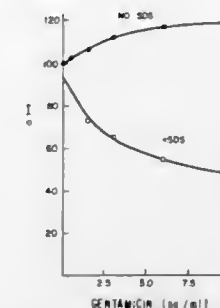
Clarke J. Halfman, Highland Park, Ill., assignor to University of Health Sciences/The Chicago Medical School, North Chicago, Ill.

Filed Aug. 1, 1983, Ser. No. 518,965

Int. Cl. G01N 33/533

U.S. Cl. 436-546

1 Claim



1. A method for conducting a ligand binding assay to determine the concentration of an analyte in a sample containing an unknown amount of the analyte comprising the steps of: preparing an aqueous solution containing the sample, a conjugate comprising the analyte and the fluorescent dye fluorescein, a protein that binds specifically and strongly to the analyte, and the surfactant, sodium dodecyl sulphate, having a micelle threshold, the surfactant concentration being greater than said micelle threshold; and measuring the intensity of fluorescent emission from said solution while irradiating said solution with electromagnetic radiation; said surfactant effecting different fluorescence intensities from bound conjugate and from free conjugate.

4,640,899

MULLITE MATRIX COMPOSITE

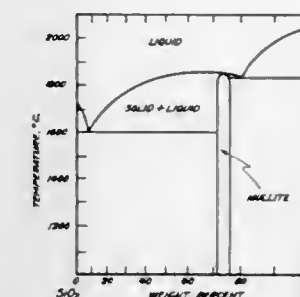
William B. Hillig, Ballston Lake, N.Y., and Solomon Musikant, Paoli, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,199

Int. Cl. C03C 10/04, 14/00; C04B 35/18, 35/58

U.S. Cl. 501-5

60 Claims



1. A composite consisting essentially of a continuous interconnecting polycrystalline mullite phase ranging from about 40% by volume to about 80% by volume of said composite and a polycrystalline inorganic non-oxide filler phase ranging from about 20% by volume to about 60% by volume of the composite, said mullite phase encapsulating at least about 50% by volume of said filler phase and encapsulating and being intermixed with the balance of said filler phase, said filler phase being distributed at least significantly uniformly in said composite, said composite having a porosity of less than about 5% by volume of said composite.

4,640,900

LOW EXPANSION GLASS

Yoshinori Kokubu, Tokyo, and Makoto Moriyasu, Yokohama, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 27, 1984, Ser. No. 635,268

Claims priority, application Japan, Aug. 16, 1983, 58-148808 Int. Cl. B32B 17/06; C03C 3/093; G03F 9/00

U.S. Cl. 501-67

2 Claims

1. A low expansion transparent glass substrate consisting of, all by weight, from 55 to 65% of SiO₂, from 10 to 20% of Al₂O₃, from 2 to 10% of B₂O₃, from 3 to 10% of MgO, from 1 to 8% CaO, from 2 to 10% of ZnO, from 1 to 4% of R₂O where R is an alkali metal atom and of which at least 1% is Na₂O, from 0.1 to 4% of ZrO₂, from 0 to 5% of at least one component of refining agent selected from the group consisting of Cl₂, F₂, Sb₂O₃ and As₂O₃, and SO₃, and from 0 to 3% of R'O where R' is alkaline earth metal atom selected from Ba, Sr and Pb, and said low expansion transparent glass substrate has an expansion coefficient of from 30 to 45 × 10⁻⁷/°C. (from 50° to 350° C.), said glass having a temperature at the softening point of from about 890° C. to not higher than 930° C.

4,640,901

HIGH TEMPERATURE MEMBRANE

Kew-Ho Lee, and Soon-Jai Khang, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Mar. 18, 1985, Ser. No. 712,862

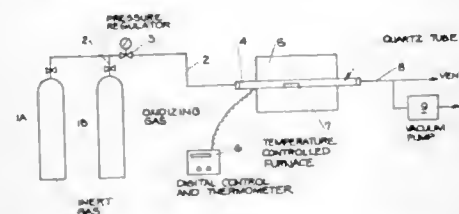
Int. Cl. C04B 38/06

U.S. Cl. 501-81

16 Claims

1. A method of forming a membrane capable of withstanding high temperatures for separating gases comprising the steps of: (1) pyrolyzing a silicon-based material having hydrocarbons and SiO chains in its structure to drive off substantially all hydrocarbons, said pyrolyzed silicon-based material consisting essentially of loosely connected SiO chains, said pyrolyzing being conducted at a temperature range of

from about 500° C. to about 1000° C., for a minimum duration of about 2 hours, in an inert gaseous atmosphere under positive pressure; and
(2) oxidizing said pyrolyzed silicon-based material in an



oxidizing atmosphere to crosslink said SiO radicals to form silica, said oxidizing being conducted at a temperature from about 300° C. to about 1000° C., for a minimum duration of about 2 hours, thereby forming a porous membrane capable of withstanding high temperatures.

4,640,902

LOW THERMAL CONDUCTIVITY $\text{Si}_3\text{N}_4/\text{ZrO}_2$ COMPOSITE CERAMICS

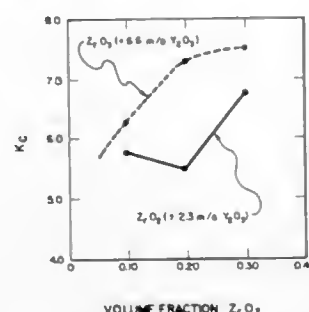
Fred F. Lange, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 31, 1985, Ser. No. 739,807

Int. Cl.⁴ C04B 35/58

U.S. Cl. 501—97

18 Claims



1. A composition for producing low thermal conductivity and high fracture toughness $\text{Si}_3\text{N}_4/\text{ZrO}_2$ composite ceramics substantially free of Zr-oxynitride by sintering, which comprises a mixture of about 50 to about 80% Si_3N_4 , 20 to about 50% ZrO_2 (by volume), and Y_2O_3 as additive in an amount from about 3 to about 7 mole % based on ZrO_2 , sufficient to prevent formation of Zr-oxynitride during sintering.

4,640,903

SILICON NITRIDE SINTERED BODIES AND A METHOD FOR PRODUCING THE SAME

Keiji Matsuhira, and Minoru Matsui, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation-in-part of Ser. No. 502,288, Jun. 8, 1983, Pat. No. 4,558,018. This application Sep. 16, 1985, Ser. No. 776,456

Claims priority, application Japan, Apr. 4, 1983, 58-57915

The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.

Int. Cl.⁴ C04B 35/58

U.S. Cl. 501—97

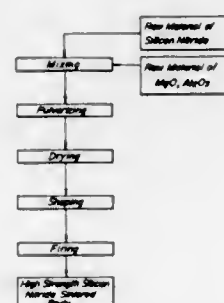
4 Claims

1. Silicon nitride sintered bodies consisting essentially of MgO and Al_2O_3 in a total amount of more than 7% by weight and not more than 30% by weight and in a weight ratio of $\text{MgO}/\text{Al}_2\text{O}_3$ of 5–15, and silicon nitride having an oxygen content of not greater than 2% by weight, said oxygen content being exclusive of the amount of oxygen contained in the MgO and in the Al_2O_3 , wherein crystals in the sintered bodies consist essentially of Si_3N_4 crystals and at least one crystalline

species selected from the group consisting of magnesium sialon represented by the general formula



wherein $0 < x < y < 8$ and forsterite represented by the formula Mg_2SiO_4 as a second phase, wherein a ratio of x to y (x/y) in the general formula of magnesium sialon crystal is equal to or greater than 0.9 but less than 1, and substantially no glass is present at boundaries between the crystalline species.



3. A method for producing silicon nitride sintered bodies, comprising mixing a raw material powder of silicon nitride containing not greater than 2% by weight of oxygen with MgO and Al_2O_3 so that a total amount of MgO and Al_2O_3 is from 7% by weight to 30% by weight and a weight ratio of $\text{MgO}/\text{Al}_2\text{O}_3$ is 5–15, pulverizing said mixture under conditions whereby oxidation of the silicon nitride is substantially prevented, and firing the resulting mixture at a temperature of 1,650°–1,850° C. in nitrogen or in an inert gas atmosphere under substantially atmospheric pressure to result in a silicon nitride sintered body having substantially no glass present at grain boundaries therein.

4,640,904

MULLITE BY REACTIVE HOT PRESSING

William B. Hillig, Ballston Lake, N.Y., and Solomon Musikant, Paoli, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,536

Int. Cl.⁴ C04B 35/18

U.S. Cl. 501—128

12 Claims

1. A body consisting of polycrystalline mullite phase of substantially uniform grain size having an average grain size of less than 2 microns and a porosity of less than about 2% by volume of said body.

7. A process for producing a body consisting essentially of polycrystalline mullite phase of substantially uniform grain size having an average grain size of less than 15 microns and a porosity of less than about 5% by volume which consists essentially of forming a mixture of amorphous aluminosilicate glass powder, alumina powder and nucleating polycrystalline mullite powder, said glass powder consisting essentially of from about 15% by weight to about 40% by weight Al_2O_3 balance SiO_2 and having a liquidus temperature below about 1800° C., said glass powder and alumina powder being present in amounts required to produce mullite, said nucleating mullite powder having a particle size of less than 15 microns and ranging from about 0.1% by weight to about 10% by weight of the total weight of said glass powder and alumina powder, and hot pressing the mixture at a temperature at which said glass is fluid ranging from about 1500° C. to about 1750° C. but below its liquidus temperature under a pressure at least sufficient to force the fluid glass to dissolve said alumina powder and react with it forming said polycrystalline body.

4,640,905

DIELECTRIC COMPOSITIONS

Ian Burn, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 729,479, May 1, 1985. This

application Jan. 7, 1986, Ser. No. 816,844

Int. Cl.⁴ C04B 35/46

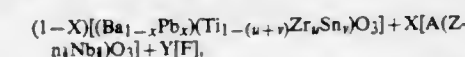
U.S. Cl. 501—137

5 Claims

1. A composition for forming a densified dielectric body at low firing temperatures consisting essentially of a mixture of finely divided particles of:

- BaTiO_3 ,
- $\text{A}(\text{Zn}_1\text{Nb}_1)\text{O}_3$,
- A Curie point shifter selected from BaZrO_3 , PbZrO_3 , BaSnO_3 , PbSnO_3 and mixtures thereof,
- a manganese-doped metal borate flux (F) selected from zinc borates in which the ratio of ZnO to B_2O_3 is 2–4 and mixtures and oxide precursors thereof,

the proportions of a–d. being substantially equivalent stoichiometrically to the formula:



wherein A is selected from Pb, Ba and mixtures thereof

X = 2.5	to 11.5% by weight,
Y = 1.0	to 5.0%
u = 0	to 0.125,
v = 0	to 0.125,
x = 0	to 0.125, and
u + v = 0.015	to 0.125.

4,640,906

CATALYST FOR THE POLYMERIZATION OF OLEFINS

Minoru Terano; Yasushi Yokoyama; Masuo Inoue, and Katsunori Miyoshi, all of Kanagawa, Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1985, Ser. No. 793,750

Claims priority, application Japan, Nov. 1, 1984, 59-229024

Int. Cl.⁴ C08F 4/64

U.S. Cl. 502—104

34 Claims

16. A process for the preparation of a solid catalyst component utilizable for the polymerization of olefins which consists essentially of mixing (a) a dialkoxymagnesium and (b) a diester of an aromatic dicarboxylic acid with (c) a halogenated hydrocarbon to form a suspension and thereafter adding the suspension to (d) a titanium tetrahalide thereby effecting reaction to obtain a solid matter.

4,640,907

POLYMERIZATION CATALYST, PRODUCTION AND USE

Steven A. Best, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,321

Int. Cl.⁴ C08F 4/62, 4/64, 4/68

U.S. Cl. 502—115

34 Claims

1. A transition metal containing solid prepolymerized catalyst component comprising the prepolymerized solid reaction 3 product obtained by treating an inert solid support material in an inert solvent sequentially with (A) an organometallic compound of a Group IIA, IIB or IIIA metal wherein all the metal valencies are satisfied with a hydrocarbon group, (B) an oxygen containing compound selected from ketones, aldehydes, alcohols or mixtures thereof, (C) an acyl halide, (D) at least one transition metal compound of a Group IVB, VB, VIB or VIIB metal, (E) a Group IIIA metal hydrocarbyl dihalide and prepolymerizing the solid with a minor amount of ethylene with the proviso that the inert solid support material can alternatively be treated with (i) the (A) organometallic compound and the (B) oxygen containing compound simultaneously, (ii)

the reaction product of the (A) organometallic compound and (B) oxygen containing compound or (iii) the (B) oxygen containing compound followed by treating with the (A) organometallic compound.

4,640,908

CATALYST FOR THE OXIDATION OF HYDROGEN SULFIDE AND PROCESS FOR THE PREPARATION OF THE CATALYST

Thierry Dupin, Garges/les/Gonesse, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 575,577, Jan. 31, 1984, abandoned. This application Sep. 23, 1985, Ser. No. 778,680

Claims priority, application France, Jan. 31, 1983, 83 01426

Int. Cl.⁴ B01J 21/04, 21/08, 23/02, 23/10

U.S. Cl. 502—243

23 Claims

1. A process for the preparation of an oxidation catalyst comprising (i) hydrothermally treating at least a portion of an active alumina support with an aqueous medium, in liquid or vapor phase, comprising an acid, salt, or mixture thereof which dissociates in water to provide a solution having a pH of less than about 9, at a temperature ranging from about 80° C. to about 250° C. for up to 36 hours, and (ii) thence depositing upon said at least partially hydrothermally treated support a catalytically effective amount of a catalytically active oxide phase which comprises the oxides of at least one of the metals, Fe, Cu, Ag, W, Co, Ni, Bi, Cr and Cd, with the provision (iii) that at least one rare earth oxide, alkaline earth metal oxide, zirconium oxide or silica, or any precursor compound thereof, is incorporated into the catalyst during either of the steps (i) or (ii).

4,640,909

BONDED PHASE OF SILICA AND CARBOALKOXYALKYL SILANES FOR SOLID PHASE EXTRACTION

Hugh E. Ramsden, Scotch Plains, N.J., and Joseph M. Patterson, New Britain, Pa., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

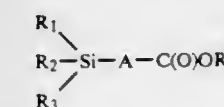
Filed May 7, 1985, Ser. No. 731,530

Int. Cl.⁴ B01J 20/22

U.S. Cl. 502—407

23 Claims

1. A solid phase bonded silica product comprising the reaction product of silica and a carboalkoxyalkyl silane of the formula



in which R is an alkyl radical of from 1 to 3 carbon atoms, A is an alkylene group of from 2 to 4 carbon atoms and R_1 , R_2 and R_3 are the same or different and are selected from the group consisting of halogen, an alkoxy group of from 1 to 6 carbon atoms, an alkoxyalkoxy group of from 2 to 5 carbon atoms and an alkyl group of from 1 to 3 carbon atoms, with the proviso that at least one of R_1 , R_2 and R_3 is other than an alkyl group.

4,640,910

ERYTHROMYCIN A SilyLATED COMPOUNDS AND METHOD OF USE

Hermann Faubl, Libertyville, Ill., and Robert G. Stein, Kenosha, Wis., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 12, 1985, Ser. No. 796,818

Int. Cl.⁴ A61K 31/71; C07H 17/08

U.S. Cl. 514—29

8 Claims

1. A relatively acid stable erythromycin A antibiotic having a plurality of hydroxyl groups, in which one or more of the

hydroxyl groups are replaced by a group of the formula $-\text{O}-\text{SiR}'\text{R}''\text{R}'''$, where R' , R'' , and R''' are hydrogen or C_1 to C_6 alkyl, substituted alkyl, cycloalkyl, alkaryl or alkenyl, provided that R' , R'' , and R''' are not all hydrogen; and pharmaceutically acceptable salts and esters thereof.

6. A pharmaceutical composition in unit dosage form, comprising a therapeutically effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,640,911

ACYLATED SUGAR DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE, AND THEIR USE

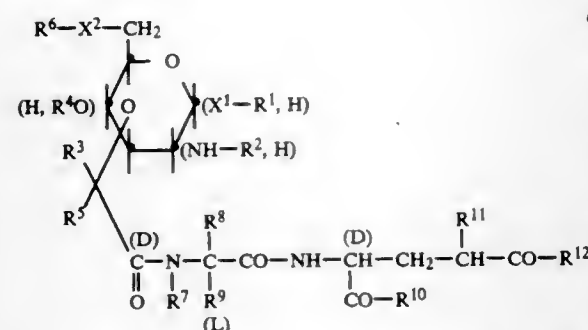
Gerhard Baschang, Bettingen, Switzerland; Albert Hartmann, Grenzach, Fed. Rep. of Germany, and Oskar Wacker, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 29, 1985, Ser. No. 739,269

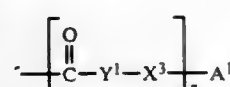
Int. Cl.⁴ A61K 31/70; C08G 18/08; C07K 9/00
U.S. Cl. 514-42

24 Claims

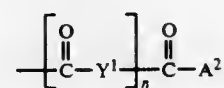
1. A sugar derivative of the formula I



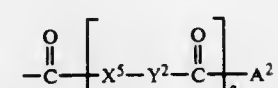
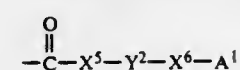
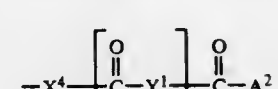
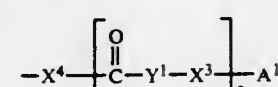
in which the sugar moiety is derived from D-glucose, D-mannose or D-galactose; X^1 represents oxygen, sulphur or the group NH ; X^2 represents oxygen or the group NH ; R^1 , R^4 and R^6 each represents, independently of the others, hydrogen, lower alkanoyl, a radical of the formula Ia,



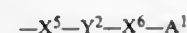
in which n represents 0 or 1; Y^1 represents alkylene having up to and including 18 carbon atoms which may be interrupted by carbonylimino or carbonyloxy and which is unsubstituted or substituted by carboxy, benzyloxycarbonyl, lower alkoxy, amino, lower alkanoylamino, hydroxy and/or lower alkanoyloxy; X^3 represents oxygen or the group NH ; and A^1 represents the acyl radical of a carboxylic acid selected from the group consisting of 6-chloro-5-cyclohexylidene-1-carboxylic acid, 2-[4,5-bis-(4-methoxyphenyl)-oxazol-2-yl]-propionic acid, 2-(5-chloro-4-cyclohexyl-2-hydroxyphenyl)-acetic acid, 2-[4,5-bis-(4-methoxyphenyl)-oxazol-2-yl]-2-methyl-propionic acid, 2-(3-fluoro-4-phenylphenyl)-propionic acid, (±)-5-benzoyl-3H-1,2-dihydro-pyrrolo[a]pyrrole-1-carboxylic acid, 2-[4,1,3-dihydro-1-oxo-2H-isindol-2-yl]-phenyl]-propionic acid, 2-[2-[(2,6-dichlorophenyl)-amino]-phenyl]-acetic acid, 2-[2-[(2,6-dichlorophenyl)-amino]-5-fluorophenyl]-acetic acid, 2-(2,3-dimethylphenyl)aminobenzoic acid, 2-[4,5-bis-(4-methoxyphenyl)-imidazol-2-yl]-2-methylpropionic acid, 2-[(2,6-dichlorophenyl)-amino]-5-fluorophenyl]-acetic acid, 2-(3-benzoylphenyl)-propionic acid, 2-S-[4,5-bis-(4-methoxyphenyl)-thiazol-2-yl]-mercaptoacetic acid, 3-S-[4,5-bis-(4-methoxyphenyl)-thiazol-2-yl]-mercaptopropionic acid, 2-[2-[(2,6-dichloro-4-fluorophenyl)-amino]-phenyl]-acetic acid, 5-(2,4-difluorophenyl)-2-hydroxybenzoic acid, 2-(6-chloro-9H-carbazol-2-yl)-propionic acid, 2-(4-isobutylphenyl)-propionic acid, 1-(4-chlorobenzoyl)-5-methoxy-2-methylindol-3-ylacetic acid, 2-(6-methoxynaph-2-yl)-propionic acid, 2-3-chloro-4-(3-pyrroli-1-yl)-phenyl]-propionic acid, 2-(5H-[1]benzopyrano[2,3-b]-pyridin-7-yl)-propionic acid, 5-(4-methylbenzoyl)-1-methylpyrrol-2-ylacetic acid, 2-[4,5-bis-(4-methoxyphenyl)-oxazol-2-yl]-acetic acid, 1-benzoyl-5-methoxy-2-methylindol-3-ylacetic acid, 2-[3-hydroxybenzyl]-phenyl]-propionic acid and 2-[3-chloro-4-(pyrrol-1-yl)-phenyl]-propionic acid; or R^1 , R^4 and R^6 each represents, independently of the others, a radical of the formula Ib



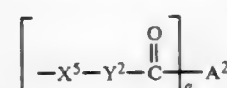
in which n and Y^1 have the meanings mentioned above and A^2 represents lower alkoxy selected from the group consisting of 2-[4,5-bis-(4-methoxyphenyl)-thiazol-2-ylthio]-ethoxy, 2-[4,5-bis-(4-methoxyphenyl)-imidazol-2-yl]-2-methylpropoxy and 3-[4,5-bis-(4-methoxyphenyl)-thiazol-2-ylthio]-propoxy; or R^1 alternatively represents benzyl which is unsubstituted or substituted in the phenyl moiety by lower alkyl, hydroxy, lower alkoxy or halogen; R^2 represents unsubstituted or hydroxy-substituted lower alkanoyl, benzoyl which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, lower alkanoyloxy and/or lower alkanoylamino, or R^2 represents one of the above-mentioned radicals of the formulae Ia and Ib; R^3 represents hydrogen, lower alkyl or cycloalkyl and R^5 represents hydrogen, or R^3 and R^5 together represent lower alkylidene, cycloalkylidene, unsubstituted benzylidene or benzylidene that is halogenated or substituted by lower alkyl in the phenyl radical; R^7 represents hydrogen or lower alkyl, or R^7 and R^9 together represent trimethylene; R^8 represents hydrogen or lower alkyl; R^9 represents hydrogen or lower alkyl that is unsubstituted or substituted by hydroxy, mercapto, lower alkylthio, carboxy, lower alkoxy, carbamoyl, or by a radical of the formula Ic, Id, Ie or If



in which q represents 0 or 1; X^4 represents oxygen or sulphur; and X^5 and X^6 each represents, independently of the other, oxygen or the group NH ; Y^2 represents alkylene having up to and including 18 carbon atoms in which a methylene group may have been replaced by oxygen, sulphur or sulphonyl or which may be interrupted by carbonylimino or carbonyloxy, said alkylene radical Y^2 being unsubstituted or substituted by carboxy, benzyloxycarbonyl, lower alkoxy, amino, lower alkanoylamino, hydroxy and/or lower alkanoyloxy, and the other substituents have the meanings mentioned above; R^{10} and R^{12} each represents, independently of the other, lower alkoxy, hydroxy, amino, lower alkylamino that is substituted by carboxy, by carbamoyl, or by lower alkoxy, and said lower alkylamino radical may be additionally substituted by amino, hydroxy, carboxy, 2-aminoethylthio, 2-aminoethoxy and/or by the sulphy group $-\text{SO}_3\text{H}$, or R^{10} and R^{12} each independently represent a radical of the formula Ig,



in which the substituents have the meanings mentioned above, or a radical of the formula Ih,



in which q , X^5 , Y^2 and A^2 have the meanings mentioned above; and R^{11} represents hydrogen, carboxy, lower alkoxy, carbonyl or carbamoyl, said compound of the formula I having a minimum of one and a maximum of three radicals A^1 and/or A^2 , or a pharmaceutically acceptable salt of such a compound having at least one salt-forming group.

4,640,912

ADMINISTRATION OF "ACTIVE" CHONDROITIN SULFATE A AND "ACTIVE" CHONDROITIN SULFATE C OR MIXTURES THEREOF TO MAMMALS INCLUDING HUMANS

Marvin S. Hausman, 124 Montana Ave., Santa Monica, Calif. 90403

Filed Jun. 9, 1983, Ser. No. 502,446

Int. Cl.⁴ A61K 31/73; C08B 37/00
U.S. Cl. 514-54

6 Claims

1. The method which comprises the administration of "active" chondroitin sulfate A (CSA), "active" chondroitin sulfate C (CSC), or mixtures thereof to mammals including humans to the surfaces of the kidney, renal pelvis, ureter, bladder, urethra and related transitional cell surfaces by the irrigation of said surface with a solution of said drugs or mixtures thereof.

4,640,913

PHOSPHOCHOLINE DERIVATIVES HAVING ANTIHYPERTENSIVE ACTION

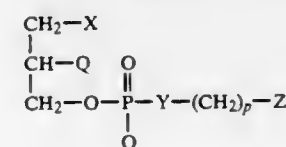
Allan Wissner, Ardsley, N.Y.; Robert E. Schaub, Upper Saddle River, N.J., and Phaik E. Sum, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 10, 1983, Ser. No. 457,097

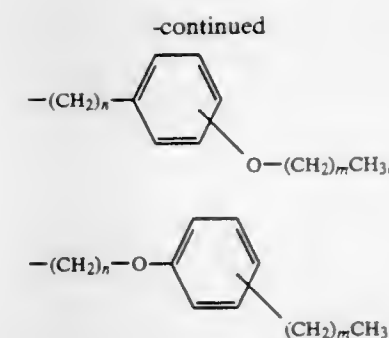
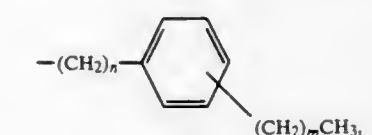
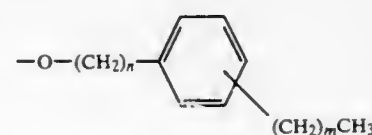
Int. Cl.⁴ A61K 31/185; C07F 9/10
U.S. Cl. 514-77

29 Claims

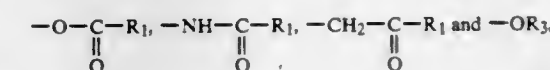
1. Compounds, including the individual R and S enantiomers and racemic mixtures, represented by the formula:



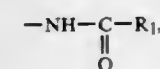
wherein: (a) X is selected from the group consisting of (i) C_1 - C_{24} alkyl; (ii) C_1 - C_{24} alkoxy; (iii)



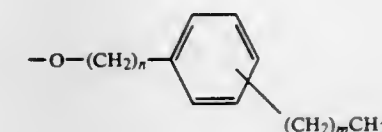
wherein n is an integer from 1 to 25 and m is an integer from 0 to 24 and the sum of n and m is less than or equal to 25; (iv) phenyl; (v) substituted phenyl wherein the substituents are selected from the group consisting of C_1 - C_{20} alkyl, C_1 - C_{20} alkoxy, halogen, trifluoromethyl, phenyl, and substituted phenyl; (vi) phenoxy; and (vii) substituted phenoxy wherein the substituents are selected from the group consisting of C_1 - C_{20} alkyl, C_1 - C_{20} alkoxy, halogen, trifluoromethyl, phenyl, and substituted phenyl; (b) Q is selected from the group consisting of:



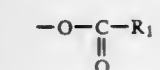
wherein R_1 is selected from the group consisting of (i) hydrogen; (ii) C_1 - C_4 alkyl; (iii) C_1 - C_4 alkoxy; and (iv) C_1 - C_4 alkyl-amino and wherein R_3 is C_1 - C_4 alkyl, with the provisos (i) when Q is



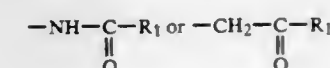
X is C_1 - C_{24} alkoxy or



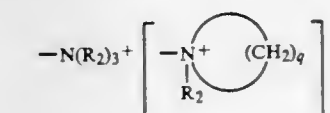
(ii) Q is not



if at the same time R_1 is C_1 - C_4 alkyl, X is C_1 - C_{24} alkoxy and Y is oxygen; (iii) Q is not $-\text{OR}_3$ if at the same time X is C_1 - C_{24} alkoxy and Y is oxygen; and (iv) if Q is

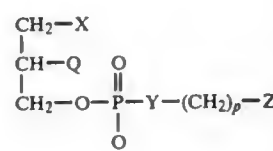


then R_1 is C_1 - C_4 alkyl; (c) Y is oxygen or CH_2 ; (d) p is an integer from 1 to 15 with proviso that when Y is oxygen, p must be greater than 1; and (e) Z is

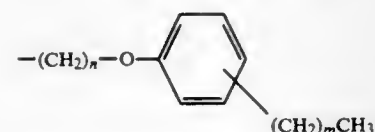
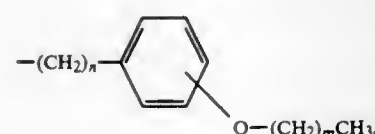
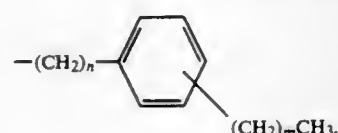
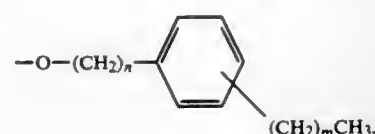


wherein R_2 is hydrogen or C_1 - C_4 alkyl.

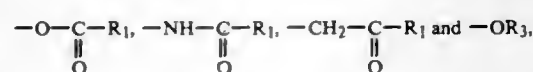
28. A method of treating hypertension in a warm-blooded animal comprising administering to said animal an effective amount of a compound, including the individual R and S enantiomers and racemic mixture, represented by the formula:



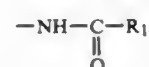
wherein: (a) X is selected from the group consisting of (i) C_1 - C_{24} alkyl; (ii) C_1 - C_{24} alkoxy; (iii)



wherein n is an integer from 1 to 25 and m is an integer from 0 to 24 and the sum of n and m is less than or equal to 25; (iv) phenyl; (v) substituted phenyl wherein the substituents are selected from the group consisting of C_1 - C_{20} alkyl, C_1 - C_{20} alkoxy, halogen, trifluoromethyl, phenyl and substituted phenyl; (vi) phenoxy; and (vii) substituted phenoxy wherein the substituents are selected from the group consisting of C_1 - C_{20} alkyl, C_1 - C_{20} alkoxy, halogen, trifluoromethyl, phenyl and substituted phenyl; (vi) phenoxy; and (vii) substituted phenoxy wherein the substituents are selected from the group consisting of C_1 - C_{20} alkyl, C_1 - C_{20} alkoxy, halogen, trifluoromethyl, phenyl and substituted phenyl; (b) Q is selected from the group consisting of

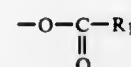
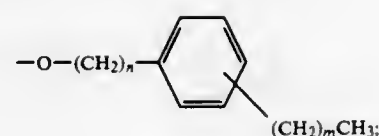


wherein R_1 is selected from the group consisting of (i) hydrogen; (ii) C_1 - C_4 alkyl; (iii) C_1 - C_4 alkoxy; and (iv) C_1 - C_4 alkyl-amino and wherein R_3 is C_1 - C_4 alkyl, with the provisos: (i) when Q is

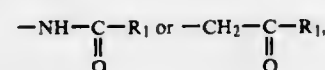


X is C_1 - C_{24} alkoxy or

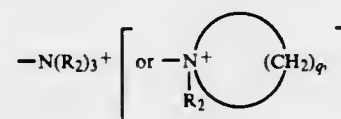
(ii) Q is not



if at the same time R_1 is C_1 - C_4 alkyl, X is C_1 - C_{24} alkoxy and Y is oxygen; (iii) Q is not $-\text{OR}_3$ if at the same time X is C_1 - C_{24} alkoxy and Y is oxygen; (iv) if Q is



then R_1 is C_1 - C_4 alkyl; (c) Y is oxygen or CH_2 ; (d) p is an integer from 1 to 15 with the proviso that when Y is oxygen, p must be greater than 1; and (e) Z is



wherein R_2 is hydrogen or C_1 - C_4 alkyl.

4,640,914

Patent Not Issued For This Number

4,640,915

1-AZABICYCLO[3.2.0]HEPT-2-ENE-2-CARBOXYLIC ACID DERIVATIVES

Masashi Hashimoto, Takarazuka; Matsuhiko Aratani, Daito, and Kozo Sawada, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 18, 1983, Ser. No. 476,860

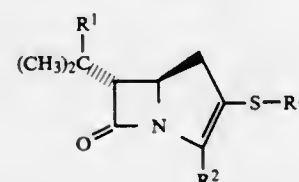
Claims priority, application United Kingdom, Mar. 29, 1982, 8209156; Oct. 18, 1982, 8229675

Int. Cl.⁴ C07D 487/04; A61K 31/40

U.S. Cl. 514-210

4 Claims

1. A compound of the formula



in which R^1 is hydroxy, a protected hydroxy or lower alkoxy group, R^2 is carboxy or an easily eliminable esterified carboxy and R^3 is pyridyl and pharmaceutically acceptable salts thereof.

4,640,916

1,4-BENZOTHAZINE DERIVATIVES, COMPOSITIONS CONTAINING THEM AND METHOD OF USE

Kanji Meguro, Nishinomiya, and Kohel Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 27, 1985, Ser. No. 803,217

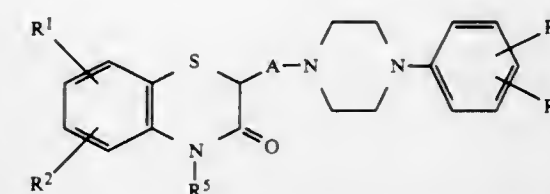
Claims priority, application PCT Int'l Appl., Nov. 28, 1984, PCT/84/566; Apr. 16, 1985, PCT/85/204

Int. Cl.⁴ C07D 417/06; A61K 31/54

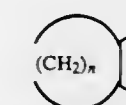
U.S. Cl. 514-222

13 Claims

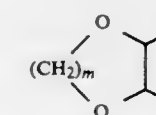
1. A 1,4-benzothiazine derivative of the formula;



wherein R^1 and R^2 independently stand for hydrogen, halogen, a lower alkyl group, a lower alkoxy group or trifluoromethyl group, or R^1 and R^2 , taken together, form a 5-7 membered ring represented by

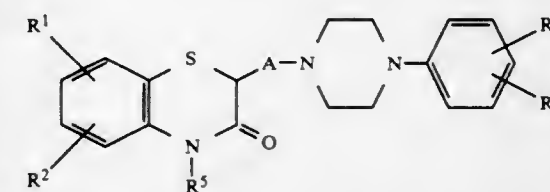


wherein n is an integer of 3 to 5 or a 5-6 membered ring represented by

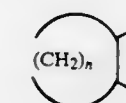


wherein m is 1 or 2, R^3 and R^4 independently stand for hydrogen, halogen, a lower alkyl group, a lower alkoxy group or trifluoromethyl group, R^5 stands for hydrogen or a lower alkyl group, and A stands for an alkylene group or a pharmaceutically acceptable salt thereof.

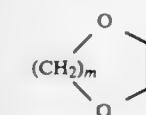
13. A method for prevention or treatment of hypertension or ischemic cardiovascular disease which comprises administering to a patient an effective amount of a 1,4-benzothiazine derivative or a pharmaceutically acceptable salt thereof of the formula:



R^1 and R^2 independently stand for hydrogen, halogen, a lower alkyl group, a lower alkoxy group or trifluoromethyl group, or R^1 and R^2 , taken together, form a 5-7 membered ring represented by



wherein n is an integer of 3 to 5 or a 5-6 membered ring represented by



wherein m is 1 or 2, R^3 and R^4 independently stand for hydrogen, halogen, a lower alkyl group, a lower alkoxy group or trifluoromethyl group, R^5 stands for hydrogen or a lower alkyl group, and A stands for an alkylene group.

4,640,917

2-PHENYL-HEXAHYDRO-1,2,4-TRIAZINE-3,5-DIONES

Manfred Rösner, Eppstein, and Wolfgang Raether, Dreieich, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,798

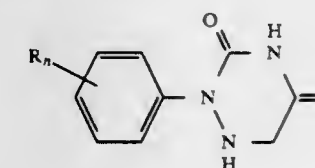
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1984, 3408924

Int. Cl.⁴ C07D 253/06; A61K 31/53, 31/535, 31/54

U.S. Cl. 514-222

6 Claims

1. A substituted 2-phenyl-hexahydro-1,2,4-triazine-3,5-dione of the formula



(I)

in which n is one, two or three and the individual substituents R are independently of one another (a) hydrogen, fluorine, chlorine, bromine, iodine, trifluoromethyl, alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, alkoxy, alkylthio, alkylsulfinyl or alkylsulfonyl each having 1 to 6 carbon atoms in the alkyl moiety, nitro, cyano, amino, alkyl-amino or dialkylamino each having 1 to 12 carbon atoms in the alkyl moiety, piperidino, morpholino, thiomorpholino, 1-pyrrolidinyl, 4-methyl-1-piperazinyl or acylamino having 1 to 6 carbon atoms in the acyl moiety, or (b) a phenoxy, phenylthio, phenylsulfinyl, phenylsulfonyl, benzoyl, benzoylamino or aniline radical which is in each case R_n -substituted, and the alkali metal salts, alkaline earth metal salts or ammonium salts thereof.

6. A process for controlling protozoal diseases, in particular coccidiosis, which comprises administering to an animal a fodder which contains an active compound of the formula I as claimed in claim 1, in a concentration of 0.1-300 ppm, preferably 0.5-50 ppm.

4,640,918

SUBSTITUTED 2-PHENYL-1,3-DIOXOLANES

Ivan Kompis, Oberwil, Switzerland, and Ekkehard Weiss, Inzlingen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 12, 1985, Ser. No. 764,370

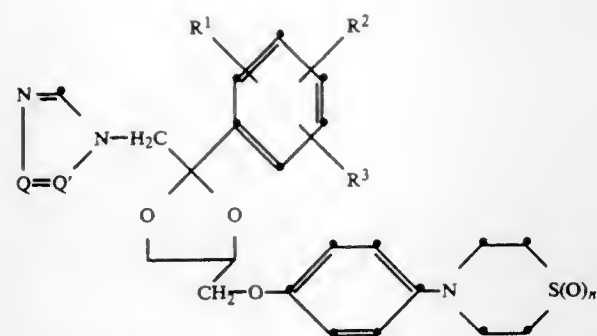
Claims priority, application Switzerland, Aug. 31, 1984, 4177/84

Int. Cl.⁴ A01N 31/54; C07D 417/14

U.S. Cl. 514-222

11 Claims

1. A compound of the formula



wherein one of the symbols Q and Q' is the group $-\text{CH}=\text{}$ and the other is the group $-\text{CH}=\text{}$ or $-\text{N}=\text{}$, R^1 , R^2 and R^3 each independently is hydrogen or halogen and n is the integer 0, 1 or 2, or its pharmaceutically acceptable acid addition salt.

4,640,919
3-SUBSTITUTED CARBACEPHEM COMPOUNDS HAVING ANTIBACTERIAL EFFECT

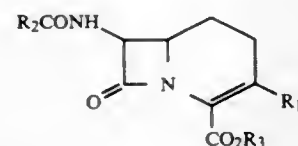
Kenichi Mochida, Hiratsuka; Takehiro Ogasa; Junichi Shimada, both of Machida; Tadashi Hirata, Yokohama; Kiyoshi Sato, Mishima, and Ryo Okachi, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1985, Ser. No. 702,623

Claims priority, application Japan, Feb. 21, 1984, 59-30988
Int. Cl.⁴ A61K 31/53; C07D 251/00, 253/00

U.S. Cl. 514-241

3 Claims

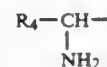
1. A carbacephem compound represented by the formula:



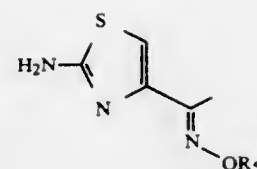
wherein:

R_1 is unsubstituted or substituted heterocyclicthio group, wherein the heterocyclic group is apyridyl, tetrazolyl, thiazolyl, thiadiazolyl, oxazolyl, triazolyl, pyrimidyl, imidazolyl or triazinyl group, and the substituent on these heterocycles is an alkyl group having 1 to 6 carbon atoms, hydroxyl, amino, nitro or $-(\text{CH}_2)_n$ Y group, wherein Y is a hydroxyl, carboxyl or sulfo group, and n is an integer of 1 to 4;

R_2 is a group represented by the formula:

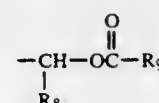


wherein R_4 is a phenyl group optionally substituted with an alkyl group having 1 to 6 carbon atoms, hydroxyl, amino, nitro or carboxyl group, or 2-aminothiazolyl group, or a group represented by the formula:

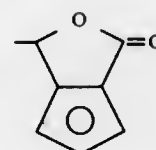


wherein R_5 is an alkyl group having 1 to 7 carbon atoms optionally substituted with a hydroxyl, carboxyl or sulfo group;

R_3 is hydrogen, an alkali metal, an alkaline earth metal, an ammonium group of a basic amino acid, a group represented by the formula:



where R_8 is hydrogen or an alkyl group having 1 to 6 carbon atoms, and R_9 is an alkyl group having 1 to 6 carbon atoms or phenyl group, or a group represented by the formula:



3. An antibacterial composition comprising, as an active ingredient, an effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

4,640,920
4-(CINNOLINYLAMINO OR QUINAZOLINYLAMINO)BENZENESULPHONAMIDES AND INTERMEDIATES THEREFOR

John T. A. Boyle, Cookham, and Richard S. Todd, Burnham, Near Slough, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Filed Jun. 13, 1985, Ser. No. 744,364

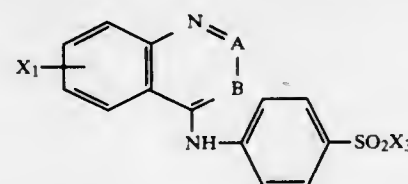
Claims priority, application United Kingdom, Jun. 14, 1984, 8415174; Dec. 19, 1984, 8432091

Int. Cl.⁴ A61K 31/505, 31/50; C07D 471/02, 211/14

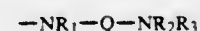
U.S. Cl. 514-248

14 Claims

1. A compound selected from those having the formula I

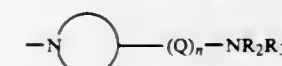


and their pharmaceutically acceptable salts, wherein one of A and B is CH whilst the other one of A and B is N; X_1 is selected from halogen and trifluoromethyl and X_3 is a group having one of the formulae II, III, IV

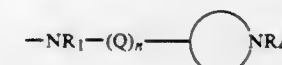


(II)

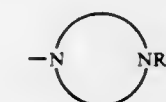
-continued



(III)



(IV)



(V)

wherein Q is lower alkylene; R_1 is hydrogen or lower alkyl; R_2 and R_3 , when separate, are independently lower alkyl and R_2 and R_3 , when linked together, represent a divalent radical such that HNR_2R_3 is a secondary cyclic amine with 5 to 7 ring atoms; R_4 is lower alkyl; n is selected from 0 and 1; the ring illustrated in formulae III and IV is selected from the group consisting of piperidine, pyrrolidine, piperidine substituted on at least one ring carbon atom by lower alkyl and pyrrolidine substituted on at least one ring carbon atom by lower alkyl and the ring illustrated in formula V is selected from piperazine and piperazine substituted on at least one ring carbon atom by lower alkyl.

14. A pharmaceutical composition comprising an anti-hypertensively effective amount of a compound as claimed in claim 1 in association or combination with a pharmaceutically acceptable carrier.

4,640,921
TREATMENT OF SEXUAL DYSFUNCTION WITH BUSPIRONE

Ekkehard Othmer, and Sieglinde C. Othmer, both of Overland Park, Kans., assignors to Bristol-Myers, New York, N.Y.

Filed Feb. 4, 1986, Ser. No. 825,826

Int. Cl.⁴ A61K 31/50, 31/495

U.S. Cl. 514-252

8 Claims

1. A method for treating sexual dysfunction which comprises administering a non-toxic therapeutically effective dose of buspirone or a pharmaceutically acceptable acid addition salt thereof to a patient in need of such treatment.

4,640,922
3N-SUBSTITUTED 3,4-DIHYDROPYRIMIDINES AS AGENTS FOR TREATING DISORDERS OF CARDIOVASCULAR SYSTEM

Hidetaka Cho, Ibaraki; Kazuo Aisaka, Mishima, and Mariko Emon, Matsudo, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Mar. 6, 1985, Ser. No. 708,887

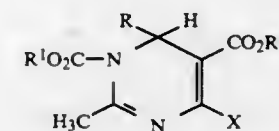
Claims priority, application Japan, Mar. 8, 1984, 59-44729

Int. Cl.⁴ A61K 31/505; C07D 239/02

U.S. Cl. 514-256

4 Claims

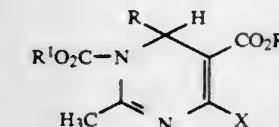
1. A 3N-substituted 3,4-dihydropyrimidine compound of the formula:



wherein R^1 is methyl or ethyl, R^2 is methyl or ethyl, R is phenyl, nitrophenyl, (C_1-C_2) alkylthiophenyl, chlorophenyl, bromophenyl, fluorophenyl, dichlorophenyl or trifluoro-

methyl, X is chloro or methyl and pharmaceutically acceptable acid addition salts thereof.

4. A method for treating disorders of the cardiovascular system in a mammal comprising administering an effective amount of a 3N-substituted 3,4-dihydropyrimidine derivative of the formula:



wherein R^1 is methyl or ethyl, R^2 is methyl or ethyl, R is phenyl, nitrophenyl, (C_1-C_3) alkylthiophenyl, chlorophenyl, bromophenyl, fluorophenyl, dichlorophenyl, or trifluoromethyl, X is chloro or methyl or a pharmaceutically acceptable acid addition salt thereof; and a pharmaceutically acceptable carrier.

4,640,923
METHODS OF COMBATING FUNGI EMPLOYING 2,4-DIAMINO-6-HALOGENO-5-ALKYLTHIO-PYRIMIDINES

Michael Schwamborn, Cologne; Engelbert Kühle, Bergisch-Gladbach; Erich Klanke, Odenthal; Ludwig Eae, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach; Hans-Joachim Santel, Cologne, and Gerd Hünssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 730,939, May 3, 1985. This application Jan. 8, 1986, Ser. No. 816,936

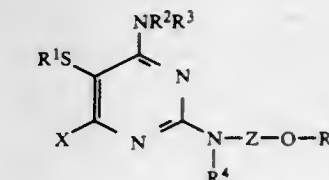
Claims priority, application Fed. Rep. of Germany, May 10, 1984, 3417264

Int. Cl.⁴ A01N 43/54

U.S. Cl. 514-272

6 Claims

1. A method of combating fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of 2,4-diamino-6-halogeno-5-alkylthiopyrimidine of the formula



wherein

X is halogen,

R^1 is alkyl which has 1 to 6 C atoms and which is optionally substituted by halogen,

R^2 is hydrogen or alkyl with 1 to 6 C atoms,

R^3 is hydrogen, alkyl or alkoxyalkyl with 1 to 6 C atoms in each alkyl moiety,

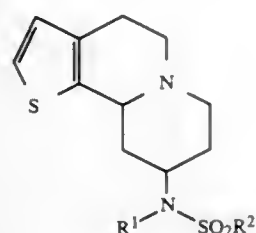
R^4 is hydrogen or alkyl with 1 to 6 C atoms,

Z is a branched or straight-chain alkylene group with 2 to 10 C atoms, and

R^5 is alkyl with 1 to 6 C atoms.

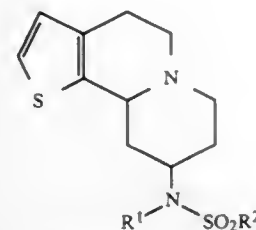
4,640,924
THIENOQUINOLIZINES AND THEIR USE AS
 α_2 -ADRENOCEPTOR ANTAGONISTS
 Alan C. White, Englefield Green; Robin G. Shepherd, Maidenhead, and Barry J. Langham, Slough, all of England, assignors to John Wyeth & Brother Limited, Maidenhead, England
 Filed Aug. 12, 1985, Ser. No. 764,904
 Claims priority, application United Kingdom, Aug. 14, 1984, 8420602

Int. Cl.⁴ A61K 31/38; C07D 455/04
 U.S. Cl. 514—291 5 Claims
 1. A compound selected from the group consisting of a thienoquinolizine of the formula



and a pharmaceutically acceptable acid addition salt thereof, where R¹ is —A¹NR⁵.SO₂R⁶ (where A¹ is a lower alkylene group having 1 to 3 carbon atoms in the chain between the two N atoms, R⁵ is hydrogen or lower alkyl and R⁶ is lower alkyl, halo(lower)alkyl, phenyl or phenyl substituted by one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkyl, loweralkylenedioxy, nitro, amino, loweralkylcarbonylamino, lower alkylamino, diloweralkylamino or trifluoromethyl) and R² is lower alkyl, halo(lower)alkyl, phenyl or phenyl substituted by one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkyl, lower alkylendioxy, nitro, amino, loweralkylcarbonylamino, lower alkylamino, diloweralkylamino or trifluoromethyl.

5. A method of antagonising α_2 adrenoceptors in warm blooded animals which comprises administering to the animal an amount sufficient to antagonise α_2 adrenoceptors of a compound selected from the group consisting of a thienoquinolizine of the formula

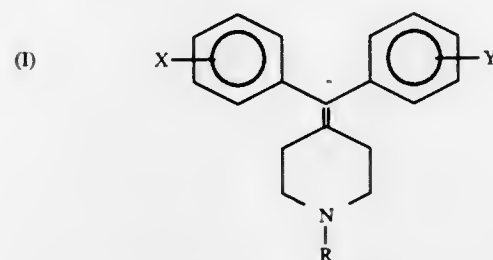


and a pharmaceutically acceptable acid addition salt thereof, where R¹ is —A¹NR⁵.SO₂R⁶ (wherein A¹ is a lower alkylene group having 1 to 3 carbon atoms in the chain between the two N atoms, R⁵ is hydrogen or lower alkyl and R⁶ is lower alkyl, halo(lower)alkyl, phenyl or phenyl substituted by one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkyl, loweralkylenedioxy, nitro, amino, loweralkylcarbonylamino, lower alkylamino, diloweralkylamino or trifluoromethyl) and R² is lower alkyl, halo(lower)alkyl, phenyl or phenyl substituted by one or more substituents selected from the group consisting of halogen, lower alkoxy, lower alkyl, lower alkylendioxy, nitro, amino, loweralkylcarbonylamino, lower alkylamino, diloweralkylamino or trifluoromethyl.

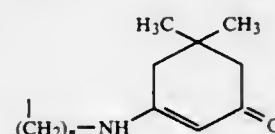
4,640,925
DIPHENYLMETHYLENE PIPERIDINES,
COMPOSITIONS AND USE

David A. Downs, and Haile Teclé, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J. Division of Ser. No. 734,432, May 16, 1985, Pat. No. 4,584,301, which is a division of Ser. No. 500,344, Jun. 2, 1983, Pat. No. 4,540,780. This application Feb. 11, 1986, Ser. No. 828,377
 Int. Cl.⁴ A61K 31/445; C07D 211/70

U.S. Cl. 514—331 6 Claims
 1. Diphenylmethyle piperidine compounds having in free base form the structural formula I:



where R has the structural formula



and where X and Y, which can be the same or different, are H, halogen, halomethyl, alkyl or alkoxy; n is 2, 3 or 4; and pharmaceutically acceptable salts thereof.

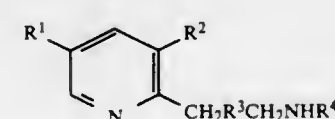
3. A pharmaceutical composition comprising a compound according to claim 1, in combination with a pharmaceutically acceptable carrier.

4,640,926
3,5-SUBSTITUTED-2-PYRIDYLALKYLAMINO-
THIAZOLIDINES HAVING HISTAMINE
H₁-ANTAGONIST ACTIVITY

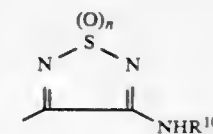
George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England Division of Ser. No. 559,520, Dec. 9, 1983. This application May 17, 1985, Ser. No. 735,011

Claims priority, application United Kingdom, Dec. 14, 1982, 8235590; Aug. 19, 1983, 8322347
 Int. Cl.⁴ C07D 417/12; A61K 31/44

U.S. Cl. 514—333 12 Claims
 1. A compound of formula (I)



or a pharmaceutically acceptable salt thereof; where R¹ is halogen, nitro, amino, C₁₋₄ alkylamino, C₁₋₄ alkanoylamino or C₁₋₄ alkyl; R² is halogen, nitro, amino, C₁₋₄ alkylamino, C₁₋₄ alkanoylamino, C₁₋₄ alkyl, or C₃₋₄ alkoxy; R³ is a C₁₋₃ alkylene group; and R⁴ is a group of formula (5):



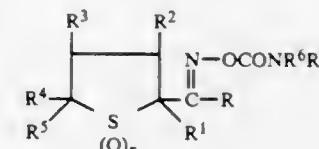
where n is 0, 1 or 2
 R¹⁰ is hydrogen, C₁₋₆ alkyl, or optionally substituted phenyl or phenyl(C₁₋₆)alkyl (the substituents being one or two C₁₋₆ alkyl, or C₁₋₆ alkoxy groups or halogen atoms or a methylenedioxy group); or optionally substituted pyridyl or pyridyl (C₁₋₆) alkyl where the optional substituent is one C₁₋₆ alkyl or C₁₋₆ alkoxy group or halogen atom.

12. A method of blocking histamine H₁-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim 1.

4,640,927
SUBSTITUTED OXIME CARBAMATES
 Richard J. Strunk, Cheshire, and Richard C. Moore, Wallingford; both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 595,156, Mar. 30, 1984, abandoned. This application Jun. 4, 1984, Ser. No. 616,994

Int. Cl.⁴ A01N 43/02; C07D 401/00, 333/22
 U.S. Cl. 514—342 12 Claims
 1. A compound or salt thereof having the structural formula



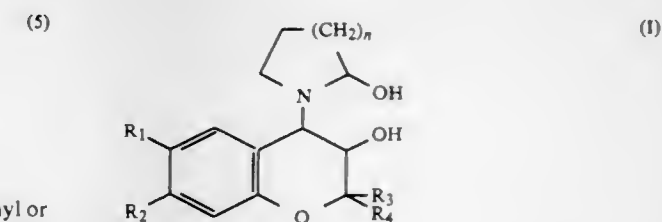
where R is C₁₋₄ alkyl, cyclopropyl, C₂₋₄ alkoxyalkyl, C₂₋₄ alkylthioalkyl, C₄₋₈ dialkylaminoalkyl, C₂₋₄ alkylsulfinylalkyl, C₂₋₄ alkylsulfonylalkyl, phenyl, C₇₋₉ aralkyl, C₇₋₉ alkaryl, furyl, thienyl or pyridyl; R¹ is hydrogen, halo or C₁₋₄ alkyl; R², R³, R⁴ and R⁵ are the same or different and are C₁₋₄alkyl or hydrogen; R⁶ and R⁷ are the same or different and are hydrogen, C₁₋₄ alkyl, allyl, benzyl or tolyl, with the proviso that both R⁶ and R⁷ are not hydrogen; and n is 0, 1 or 2.

4,640,928
4-(2-HYDROXY-1-PYRROLIDINYL AND
1-PIPERIDINYL)-2H-BENZO[B]-PYRAN-3-OL
DERIVATIVES

Kenneth Willcocks, Old Harlow, England, assignor to Beecham Group p.l.c., England

Continuation-in-part of Ser. No. 489,248, Apr. 27, 1983, abandoned. This application Oct. 1, 1985, Ser. No. 782,508
 Claims priority, application United Kingdom, Apr. 28, 1982, 8212359; Zambia, Sep. 15, 1982, 76/82; United Kingdom, Sep. 21, 1982, 8226914

Int. Cl.⁴ C07D 405/04; A61K 31/35
 U.S. Cl. 514—422 8 Claims
 1. A compound of formula (I):



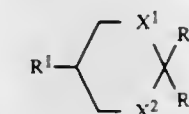
wherein:
 either one of R₁ and R₂ is hydrogen and the other is selected from the class of C₁₋₆ alkylcarbonyl, benzoyl, C₁₋₆ alkoxy-carbonyl, C₁₋₆ alkylcarbonyloxy, C₁₋₆ alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C₁₋₆ alkylsulphanyl, C₁₋₆ alkylsulphonyl, C₁₋₆ alkoxy-sulphonyl, C₁₋₆ alkoxy-sulphanyl, C₁₋₆ alkoxy-carbonylamino, C₁₋₆ alkyl-thiocarbonyl, C₁₋₆ alkoxy-thiocarbonyl, C₁₋₆ alkyl-thiocarbonyloxy, C₁₋₆ alkyl-thiolmethyl, formyl or aminosulphonyl, aminosulphonyl or aminocarbonyl, the amino moiety being optionally substituted by one or two C₁₋₆ alkyl groups, or C₁₋₆ alkylsulphonylamino, C₁₋₆ alkylsulphonylamino C₁₋₆ alkoxy-sulphonylamino or C₁₋₆ alkoxy-sulphonylamino or ethylenyl terminally substituted by C₁₋₆ alkylcarbonyl, nitro or cyano, or —C(C₁₋₆ alkyl)NOH or —C(C₁₋₆ alkyl)NNH₂, or one of R₁ and R₂ is nitro, cyano or C₁₋₃ alkylcarbonyl and the other is methoxy or amino optionally substituted by one or two C₁₋₆ alkyl or by C₂₋₇ alkanoyl;
 one of R₃ and R₄ is hydrogen or C₁₋₄ alkyl and the other is C₁₋₄ alkyl or R₃ and R₄ together are C₂₋₅ polymethylene;
 the azacycle and OH moieties are trans; and n is 1 or 2; or when one or other of R₁ and R₂ is an amino or an amino-containing group, a pharmaceutically acceptable salt thereof.

4,640,929
INSECTICIDALLY, ACARICIDALLY, AND
NEMATOCIDALLY 2-AMINO-1,3-DITHIANE
DERIVATIVES AND PESTICIDAL COMPOSITIONS
THEREFOR

Hiroyuki Mitsudera; Kazuo Konishi, both of Osaka, and Yasuo Sato, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 23, 1983, Ser. No. 525,635
 Claims priority, application Japan, Aug. 27, 1982, 57-149633
 Int. Cl.⁴ A61K 31/38; C07D 339/00, 409/00

U.S. Cl. 514—436 12 Claims
 1. A 1,3-dithiane compound of the formula



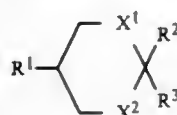
wherein
 R¹ is a di-substituted amino group of the class consisting of di-C₁₋₄-alkylamino, morpholino, pyrrolidino and N(C₁₋₄-alkyl)CN; Groups R² and R³ are such that one of these groups is an electron-withdrawing group of the class consisting of cyano, nitro, carbonyl, a C₁₋₁₀-alkoxycarbonyl, C₆₋₁₀-arylsulfonyl, carbamoyl, mono- or di-C₁₋₁₅-alkylaminocarbonyl, amino-C₁₋₄-alkylaminocarbonyl, C₂₋₄ alkenylaminocarbonyl, hydroxy-C₁₋₄-alkylaminocarbonyl, di-C₁₋₄-alkylaminomethylenaminocarbonyl, C₃₋₆-cycloalkylaminocarbonyl, piperazinocarbonyl, morpholinocarbonyl, pyrrolidinocarbonyl, N-methyl-piperazinocarbonyl, C₆₋₁₀-arylamino-carbonyl which may be substituted with C₁₋₄-alkyl or halogen, C₁₋₄-alkylaminocarbonylaminocarbonyl, hydroxy-C₁₋₄-alkoxy-C₁₋₄-alkylaminocarbonyl, C₁₋₄-alkylcarbonyl, C₁₋₄-alkylcarbonyl, C₆₋₁₀-arylarbonyl, di-C₁₋₄-alkoxyphosphoryl

and di-C₆₋₁₀-aryloxyphosphoryl group and the other group which R₂ and R₃ represent is a hydrogen atom, a hydrocarbon group of the class consisting of a C₁₋₁₅-alkyl, C₃₋₆-cycloalkyl, C₂₋₄-alkenyl, C₃₋₆-cycloalkenyl, C₆₋₁₀-aryl and phenyl-C₁₋₃-alkyl groups, or a heterocyclic group of the class consisting of thienyl, triazolyl, and pyridyl, said hydrocarbon or heterocyclic groups being optionally substituted by amino, hydroxy, cyano, carbamoyl, carboxyl, sulfo, halo, trifluoromethyl, methylenedioxy, C₁₋₄-alkoxy, hydroxy-C₁₋₄-alkoxy, phenoxy, benzoyl, halobenzoylamino, carbonylamino or halophenylaminocarbonylamino groups;

X¹ is —S— or —SO—;

X² is —S—; or a salt thereof.

10. A pesticidal composition which contains in a carrier an insecticidally, acaridically or nematocidally effective amount of a 1,3-dithiane compound of the formula



wherein

R¹ is a di-substituted amino group of the class consisting of d-C₁₋₄-alkylamino, morpholino, pyrrolidino and N(C₁₋₄-alkyl)CN; R² and R³ are such that one of them is an electron-withdrawing group of the class consisting of cyano, nitro, carboxyl, a C₁₋₁₀-alkoxycarbonyl, C₆₋₁₀-arylsulfonyl, carbamoyl, mono- or di-C₁₋₁₅-alkylaminocarbonyl, amino-C₁₋₄-alkylaminocarbonyl, C₂₋₄-alkenylaminocarbonyl, hydroxy-C₁₋₄-alkylaminocarbonyl, di-C₁₋₄-alkylaminomethyleneaminocarbonyl, C₃₋₆-cycloalkylaminocarbonyl, piperazinocarbonyl, morpholinocarbonyl, pyrrolidinocarbonyl, N-methylpiperazinocarbonyl, C₆₋₁₀-arylaminoaminocarbonyl which may be substituted with C₁₋₄-alkyl or halogen, C₁₋₄-alkylaminocarbonylaminocarbonyl, hydroxy-C₁₋₄-alkoxy-C₁₋₄-alkylaminocarbonyl, C₁₋₄-alkylcarbonyl, C₁₋₄-alkylcarbonyl, C₆₋₁₀-arylarbonyl, di-C₁₋₄-alkoxyphosphoryl and di-C₆₋₁₀-aryloxyphosphoryl group and the other group which R₂ and R₃ represent is a hydrogen atom, a hydrocarbon group of the class consisting of a C₁₋₁₅-alkyl, C₃₋₆-cycloalkyl, C₂₋₄-alkenyl, C₃₋₆-cycloalkenyl, C₆₋₁₀-aryl and phenyl-C₁₋₃-alkyl group, or a heterocyclic group of the class consisting of thienyl, triazolyl, and pyridyl, said hydrocarbon or heterocyclic groups being optionally substituted by nitro, amino, hydroxy, cyano, carbamoyl, carboxyl, sulfo, halo, trifluoromethyl, methylenedioxy, C₁₋₄-alkoxy, hydroxy-C₁₋₄-alkoxy, phenoxy, benzoyl, halobenzoylamino, carbonylamino or halophenylaminocarbonylamino group;

X¹ is —S— or —SO—;

X² is —S—, or a salt thereof.

4,640,930

NAPHTHO(1,8-BC)-1,5-THIAZOCINONES

Erno Mohacs, Summit, and Jay P. O'Brien, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 24, 1986, Ser. No. 843,317

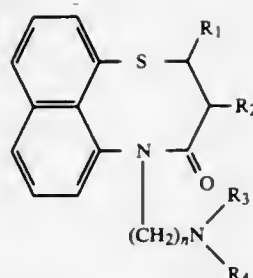
Int. Cl.⁴ A61K 31/55; C07D 281/18

U.S. Cl. 514—431

1. A compound of the formula

33 Claims

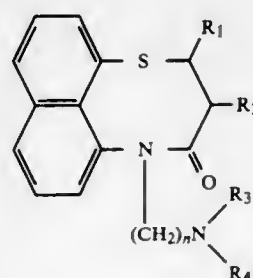
wherein X represents an oxygen atom or a sulfur atom and R represents a hydrogen atom or an alkyl group of 1-4 carbon



wherein R₁ is phenyl substituted with 1 to 3 lower alkoxy groups or 1 to 3 halogens; R₂ is hydroxy or lower alkanoyloxy; R₃ and R₄ are independently lower alkyl or together form a pyrrolidine or piperidine ring, and n is 2 to 4;

or a pharmaceutically acceptable acid addition salt thereof.

28. A method of inducing calcium channel blockage, which comprises administering to a warm-blooded animal in need of such treatment, an effective amount of a compound of the formula



wherein R₁ is phenyl substituted with 1 to 3 lower alkoxy groups or 1 to 3 halogens; R₂ is hydroxy or lower alkanoyloxy; R₃ and R₄ are independently lower alkyl or together form a pyrrolidine or piperidine ring; n is 2 to 4; or a pharmaceutically acceptable acid addition salt thereof.

4,640,931

3-(INDIAN-5-YLOXY (OR THIO))

CYCLOPENTANECARBOXYLIC ACID ANALOGUES

Katsuhiko Imaki, Kyoto; Tadao Okegawa, Yawata, and Yoshinobu Arai, Osaka, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 29, 1985, Ser. No. 792,399

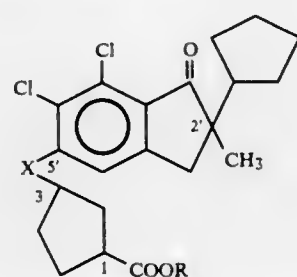
Claims priority, application Japan, Oct. 29, 1984, 59-225818

Int. Cl.⁴ C07C 149/40; A61K 31/215

U.S. Cl. 514—510

7 Claims

1. A 3-(indan-5-yloxy (or thio))cyclopentanecarboxylic acid analogue of the general formula:



(I)

atoms; or a non-toxic salt thereof when R represents a hydrogen atom.

4,640,932

COMPOSITIONS FOR TREATING ACNE VULGARIS AND METHODS OF MAKING AND USING SAME

John Fong; Mitchell S. Wortzman, both of Los Angeles, and Richard A. Scott, Burbank, all of Calif., assignors to Neurogena Corporation, Los Angeles, Calif.

Filed Mar. 18, 1985, Ser. No. 713,211

Int. Cl.⁴ A61K 31/075

U.S. Cl. 514—714

5 Claims

1. A method of producing a facial mask effective for the treatment of acne vulgaris comprising the steps of: forming a slurry containing benzoyl peroxide, an absorbent powder and purified water; grinding said slurry until the particles thereof are 25μ or less; admixing into said slurry sequentially a thickening agent and additional solvent selected from the group consisting of purified water, and mixture of purified water and a lower alkyl alcohol to provide a homogeneous mixture; and collecting said homogeneous mixture into a container.

4,640,933

EXPANDABLE POLYOLEFIN COMPOSITIONS AND PREPARATION PROCESS UTILIZING ISOBUTANE BLOWING AGENT

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 843,422, Mar. 24, 1986, which is a division of Ser. No. 813,315, Dec. 24, 1985. This application May 27, 1986, Ser. No. 868,395

Int. Cl.⁴ C08J 9/14

U.S. Cl. 521—94

4 Claims

1. An expanded polyolefin foam comprising an olefin polymer resin selected from the group consisting of ethylene homopolymers and copolymers of ethylene and a copolymerizable monomer, a stability control agent selected from the group consisting of partial esters of long chain fatty acids with polyols, higher alkyl amines, fatty acid amides, and olefinically unsaturated carboxylic acid copolymers, and a blowing agent selected from the group consisting of (i) isobutane, (ii) a mixture of from 5%–95% isobutane on a molar basis with from 95%–5% of a physical blowing agent selected from the group consisting of chlorofluorocarbons and fluorocarbons having from 1 to 4 carbon atoms, boiling points between —50° and 50° C., and a permeation rate through said olefin polymer resin modified with said stability control agent of less than about 1.2 times the permeation rate of air, and (iii) a mixture of at least 70% isobutane with a physical blowing agent selected from the group consisting of hydrocarbons, chlorocarbons, and chlorofluorocarbons having from 1 to 5 carbon atoms, boiling points between —50° C. and 50° C., and a permeation rate through said olefin polymer resin modified with said stability control agent of greater than about 1.2 times the permeation rate of air.

4,640,934

PROCESS FOR THE PREPARATION OF CELLULAR PRODUCTS AND LAMINATES BASED ON FURAN PREPOLYMERS

Pierre Michel, Villa Le Mandala, La Mure, La Terrasse, 38660 Le Touvet, France

PCT No. PCT/FR84/00015, § 371 Date Sep. 24, 1984, § 102(e) Date Sep. 24, 1984, PCT Pub. No. WO84/02914, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 23, 1984, Ser. No. 662,404

Claims priority, application France, Jan. 23, 1983, 83 01151

Int. Cl.⁴ C08J 9/14

U.S. Cl. 521—103

7 Claims

1. A process for the preparation of cellular products and laminates based on anhydrous furan prepolymers which possess free OH groups comprising the steps of: providing a furan prepolymer comprising a combination of a bis-hydroxymethylfuran resin with a furfuryl alcohol

resin or furfural/phenol or bis-phenol A resin at ambient temperature;

providing a catalytic agent by dissolving a cross-linking and expansion agent selected from the group consisting of silicon tetrachloride and phosphorus oxychloride in a solvent selected from the group consisting of trichlorofluoroethane, trichlorofluoromethane, pentane, carbon tetrachloride, polytetramethyleneglycol ether, neopentylglycol phosphate, brominated neopentylglycol phosphate, tri-β-chloroethyl phosphate and tri-β-chloropropyl phosphate; and

mixing said furan prepolymer and said catalytic agent in an amount of 0.1 to 5% by weight of said furan prepolymer in the absence of acid at ambient temperature under pressure whereby expansion and curing of the furan prepolymer occurs.

4,640,935

ADDITION POLYMERIZABLE ADDUCTS FOR NONAQUEOUS DISPERSIONS

Thomas E. Fisk, and Dwight K. Hoffman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 448,082, Dec. 9, 1982, Pat. No. 4,588,830. This application May 9, 1985, Ser. No. 732,118

Int. Cl.⁴ C08G 18/14

U.S. Cl. 521—137

7 Claims

1. A stable copolymer dispersion comprising
I a polyahl and dispersed therein
II(a) an ethylenic addition copolymerizate of (1) an ethylenic addition polymerizable adduct comprising an ethylenically unsaturated moiety bound through a heteroatomic moiety to at least one lyophilic moiety wherein said adduct in polymerized form is capable of stabilizing a dispersion of a lyophobic polymer in a continuous nonaqueous liquid phase and (2) at least one ethylenically unsaturated monomer other than the adduct ("other monomer"); or
II(b) a mixture of (1) a reaction product of (i) a monoahl or a polyahl and (ii) an addition copolymer of an ethylenic addition polymerizable adduct comprising an ethylenically unsaturated moiety bound through a heteroatomic moiety to at least one lyophilic moiety wherein said adduct in polymerized form is capable of stabilizing a dispersion of a lyophobic polymer in a continuous nonaqueous liquid phase with at least one "other monomer" which is non-reactive with the heteroatomic monomer and the monoahl or polyahl and (2) an ethylenic addition polymer of at least one "other monomer"; or
II(c) a combination of (b) and (c); or
II(d) a combination of (b) and/or (c) and an ethylenic addition polymer of at least one "other monomer", said monoahl or polyahl and adduct being present in reacted form in an amount sufficient to stabilize the dispersion.

4,640,936

PHOTOPOLYMERIZABLE PHOSPHATE-CONTAINING ADHESION PROMOTING DENTAL COMPOSITION

Ralf Janda, Bad Homburg, and Bernhard Eppinger, Wehrheim, both of Fed. Rep. of Germany, assignors to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Mar. 21, 1985, Ser. No. 714,385

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414163

Int. Cl.⁴ C08F 130/02, 230/02, 2/50; C08K 5/07

U.S. Cl. 522—14

14 Claims

1. An adhesion promoting dental composition for use together with a photopolymerizable dental sealing composition consisting essentially of

a solution of (i) 10 to 30% by weight of at least one phosphate selected from the group consisting of methacryloyloxyethyl dihydrogen phosphate and bis-(metha-

cryloyloxyethyl) hydrogen phosphate and (ii) a photopolymerization catalyst comprising camphor quinone and an amine, in acetone.

4,640,937

MODIFIED PHENOLIC RESIN COMPOSITION

Toshiaki Hanyuda, Yokohama, Japan, assignor to Showa High-polymer Co. Ltd., Tokyo, Japan

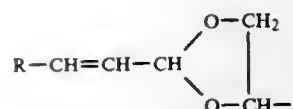
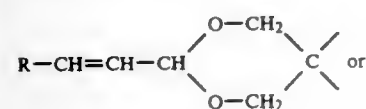
Filed Jul. 19, 1985, Ser. No. 757,523

Int. Cl.⁴ C08F 2/46

U.S. Cl. 522—31

4 Claims

1. A modified phenolic resinous composition curable with active energy rays comprising at least one phenolic compound selected from the group consisting of substituted or unsubstituted mononuclear phenol, bisnuclear phenol linked through a linking group, phenolic novolacs, and polyvinylphenols, at least one compound containing in one molecule at least two unsaturated cycloacetal radicals having the formula:



wherein R represents hydrogen or a methyl group, and an onium salt selected from the group consisting of salts of diaryl-halonium, triarylsulfonium and triarylselenium with tetra-fluorinated boron, hexafluorinated arsenic, hexafluorinated phosphorus, and hexafluorinated antimony.

4,640,938

RADIATION-CURABLE COMPOSITION, A PROCESS FOR PREPARING SAME, AND THE USE THEREOF

Manfred Römer, Stuhl, Peter Woletz, and Klaus Kruger, both of Bremen, all of Fed. Rep. of Germany, assignors to Morton Thiokol GmbH, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,120

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1983, 3339485

Int. Cl.⁴ C08F 8/00

U.S. Cl. 522—79

10 Claims

1. A process for curing a high-energy radiation curable composition, which can be carried out without any protective sheathing in the presence of atmospheric oxygen, comprising the steps of:

- forming a homogeneous admixture of a radiation curable composition consisting essentially of ingredients selected from the group consisting of acrylate or methacrylate based monomers, oligomers and polymers with a waxy material selected from the group consisting of:
 - natural waxes other than paraffin;
 - solvent extraction products of natural waxes other than paraffin;
 - alcohols of natural waxes other than paraffin;
 - esters of natural waxes other than paraffin;
 - carboxylic acids of natural waxes other than paraffin; and
 - mixtures thereof; and
- exposing said homogeneous admixture to radiation, thereby curing said radiation curable composition while said admixture remains homogeneous.

4,640,939
ORGANOPOLYSILOXANE COMPOSITIONS FOR ANTIADHESIVE/RELEASE COATINGS

Jacques Cavezzan, Villeurbanne, and Gerard Soula, Meyzieu, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Oct. 15, 1985, Ser. No. 787,065

Claims priority, application France, Oct. 15, 1984, 84 15745

Int. Cl.⁴ C08F 2/46

U.S. Cl. 522—99

17 Claims

1. A curable organopolysiloxane composition of matter, comprising (1) at least one substantially straight-chain organopolysiloxane having a viscosity ranging from about 50 to 100,000 mPa.s at 25° C. and containing at least x alkenyl unsaturated hydrocarbon groups bonded to a silicon atom, per molecule, wherein x ≥ 2, (2) at least one organohydopolysiloxane crosslinking agent having a viscosity ranging from about 10 to 100,000 mPa.s at 25° C. and containing at least y hydrogen atoms bonded to silicon atoms, per molecule, wherein y ≥ 2, (3) a catalytically effective amount of a platinum group metal crosslinking catalyst, and (4) an effective amount of at least one azodicarboxylate gelation inhibitor which is inert to the activity of said catalyst (3) and which inhibits gel formation at ambient temperatures, but in insufficient amount as to prevent the crosslinking of said polysiloxanes (1) and (2) under cross-linking conditions.

4,640,940

POLYOL TERMINATED SILICONES AND DERIVATIVES THEREOF

Anthony F. Jacobine, Meriden, and David M. Glaser, New Britain, both of Conn., assignors to Loctite Corporation, Newington, Conn.

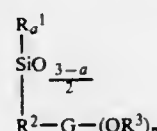
Filed Aug. 13, 1985, Ser. No. 765,292

Int. Cl.⁴ C08F 2/46

U.S. Cl. 522—99

24 Claims

1. A polydiorganosiloxane having at least one repeat unit represented by the formula



where R¹ is an organo group; R² is alkylene or alkenylene; G is a n + 1 valent hydrocarbon, oxyhydrocarbon or poly(oxyhydrocarbon) radical in which some or all of the hydrogen atoms may optionally be substituted by halogen atoms; the R³ groups are H, groups having epoxy functionality, styryl groups which may be optionally substituted, organic groups having photoinitiator activity, aryl sulfonyl carbamyl groups, mercaptoacetyl groups, mixtures of one or more said groups or mixtures of one or more said groups with one or more groups having (meth)acrylic functionality; n is an integer of 2 or more provided that when n is 2 and one of R³ is H then the other R³ group is also H; and a is 0, 1 or 2.

4,640,941

HYDROGELS CONTAINING SILOXANE COMONOMERS

Joonsup Park, and Joseph J. Falcetta, both of Arlington, Tex., assignors to Alcon Laboratories, Fort Worth, Tex.

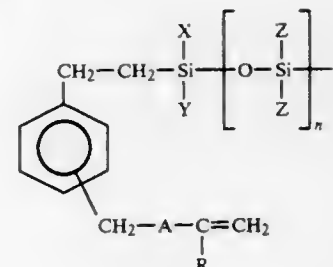
Continuation-in-part of Ser. No. 801,259, Nov. 23, 1985. This application Jan. 7, 1986, Ser. No. 816,766

Int. Cl.⁴ A61K 6/10; C08L 43/00, 43/04; C08F 230/08

U.S. Cl. 523—107

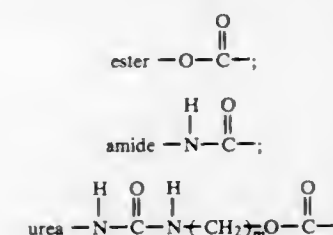
21 Claims

1. A hydrogel polymeric material comprising from about 40% to about 95% of hydrogel forming comonomer material, and from about 5% to about 60% by weight of a siloxane monomer having the formula:



where

(1) "A" is selected from the group consisting of:

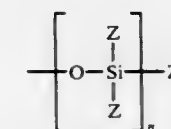


where m is a number and is from 2-4;

(2) R is hydrogen or methyl;

(3) X and Y are selected from the group consisting of C₁ to C₅ alkyl groups, phenyl groups and W groups;

(4) W is a group of the structure



(5) Z is selected from the group consisting of C₁ to C₅ alkyl groups and phenyl groups; and

(6) n is an integer from zero to five.

4,640,942

METHOD OF REDUCING FLUID LOSS IN CEMENT COMPOSITIONS CONTAINING SUBSTANTIAL SALT CONCENTRATIONS

Lance E. Brothers, Ninnekah, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 25, 1985, Ser. No. 780,055

Int. Cl.⁴ C09K 7/00

U.S. Cl. 523—130

24 Claims

1. A method of cementing a conduit in a borehole penetrating an earthen formation by introducing a salt-tolerant cementing composition into the space between said conduit and said formation, wherein said cementing composition comprised:

cement;
water containing in excess of about 10% salt by weight of water, and

a fluid loss additive comprising an admixture of (i) a copolymer or copolymer salt of acrylic acid and 2-acrylamido, 2-methyl propane sulfonic acid or acid salt thereof having a mole ratio of from about 1:5 to about 5:1 and a molecular weight also such that a 10% aqueous solution of said copolymer has a Brookfield viscosity reading at 20 rpm of the U.L. Adapter Spindle in the range of between about 5 to about 50 centipoise present in an amount of from about 0.1% to about 3.0% by weight of dry cement and (ii) at least one member selected from the group consisting of carboxymethylhydroxyethylcellulose and a copolymer or copolymer salt of N,N, dimethylacrylamide and 2-acrylamido, 2-methyl propane sulfonic acid or acid salt

thereof having a mole ratio from about 1:4 to about 4:1 and a molecular weight also such that a 0.1% aqueous solution of said copolymer has a Brookfield viscosity reading at 5 rpm of the U.L. Adapter Spindle in the range of between about 30 and about 250 centipoise present in an amount of from about 0.1% to about 1.0% by weight of dry cement.

4,640,943

SURFACE MODIFIER FOR INORGANIC SUBSTANCES

Kenjiro Meguro, Tokyo; Koichiro Sagawa; Hirofumi Yokota, both of Kawasaki, and Masahiro Takehara, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

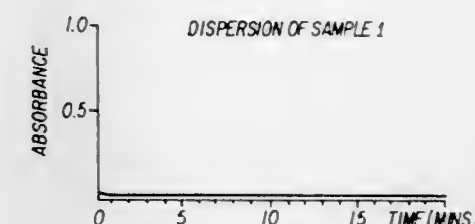
Filed Sep. 21, 1984, Ser. No. 653,024

Claims priority, application Japan, Sep. 22, 1983, 58-175708; Sep. 22, 1983, 58-175709; Jun. 26, 1984, 59-131781

Int. Cl.⁴ C08L 83/00; C04B 14/00; A61K 7/035

U.S. Cl. 523—200

16 Claims



1. An inorganic composition of improved characteristics, comprising:
at least one particulate inorganic substance whose surface is modified by an N-acylated lysine.

4,640,944

INJECTION MOLDABLE POLYAMIDE-IMIDE-PHTHALAMIDE COPOLYMERS CONTAINING POLYETHERIMIDES

Gary T. Brooks, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

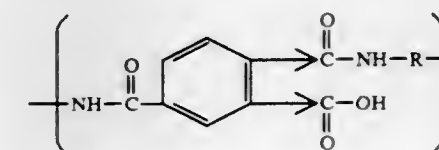
Continuation of Ser. No. 576,137, Jan. 31, 1984, abandoned. This application Jul. 26, 1985, Ser. No. 759,421

Int. Cl.⁴ C08K 9/00; C08L 77/06

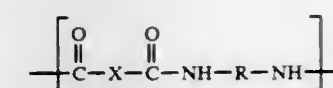
U.S. Cl. 523—205

20 Claims

1. As a composition of matter, a blend of a polyetherimide and an amide-imide-phthalamide copolymer comprising as a first component about 10 to about 40 percent by weight of said polyetherimide moiety and as a second component about 90 to about 60 percent by weight of said amide-imide-phthalamide copolymer comprising recurring polyamide A units of:



which are capable of undergoing imidization, and polyamide B units of:



wherein the molar ratio of A units to B units is about 1 to 1, wherein R is a divalent aromatic hydrocarbon radical and

wherein X is a divalent aromatic radical and \rightarrow denotes isomerization.

4,640,945

DRAG REDUCTION WITH NOVEL HYDROCARBON SOLUBLE POLYAMPHOLYTES

Dennis G. Peiffer, East Brunswick; Ralph M. Kowalik, and Robert D. Lundberg, both of Bridgewater, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 12, 1985, Ser. No. 796,708

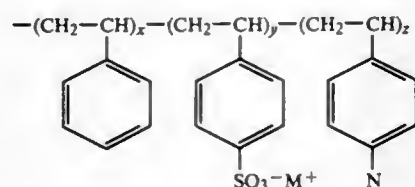
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.⁴ C08J 3/00

U.S. Cl. 523—336

4 Claims

1. A method for reducing the frictional drag of an organic liquid in flow through pipes or conduits having a continuous bore therethrough which comprises adding about 0.001 to about 0.5 grams of a polyampholyte to 100 ml of said organic liquid, wherein the polyampholyte has the formula of:



wherein M is a metal cation selected from the group consisting of Group IA, IIA and IB and IIB of the Periodic Table of Elements; x is 50 to about 98 mole percent; y is about 1 to about 50 mole percent; and z is about 1 to about 50 mole percent; wherein y and z are less than 60 mole percent, wherein the sum of x, y and z is 100 mole percent.

4,640,946

POLYVINYL ALCOHOL BASED WAX-FREE SIZE COMPOSITION

Donald A. Vassallo, and David W. Zunker, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 642,435, Aug. 20, 1984, abandoned. This application Aug. 14, 1985, Ser. No. 765,619

Int. Cl.⁴ C08J 3/04; C08L 3/00; C07C 43/11

U.S. Cl. 524—45

20 Claims

1. A composition consisting essentially of (a) from about 45.5 to about 99.9% by weight of vinyl alcohol polymer selected from the group consisting of polyvinyl alcohol, vinyl alcohol/methyl methacrylate copolymer, and polyvinyl alcohol containing solubilizing comonomers other than methyl methacrylate, said vinyl alcohol polymer having a saponification number of from about 1 to about 160 and a 4 percent solution viscosity of from about 3 to about 70 mPa.s at 20° C.:

- from about 0.1 to about 3 percent by weight of liquid nonionic low ethylene oxide adduct of branched alcohol or mixture of branched alcohols wherein the average ethylene oxide content is from about 1 to about 7 units and the alcohol has an average carbon content of from about 8 to about 18 carbon atoms;
- from 0 to 49.9 percent by weight of starch;
- from 0 to about 5 percent by weight of ethylene oxide oligomer having a molecular weight (number average) of from about 200 to about 800 and
- from 0 to about 49.9 percent by weight of carboxymethyl cellulose,
- from 0 to about 1 percent by weight of at least one auxiliary ethylene oxide adduct selected from the group consisting of low ethylene oxide adduct (containing an average ethylene oxide content of from about 1 to about 7 units) of a linear alcohol or of a mixture of linear alcohols (having an average carbon content of from about 8 to

about 18 units) and medium to high ethylene oxide adduct (containing an average ethylene oxide content of from about 3 to about 40 units) of linear or branched alcohols (having an average carbon content of from about 8 to about 18 units) provided that the combined weight of starch and carboxymethyl cellulose does not exceed the weight of vinyl alcohol polymer.

4,640,947

ADHESIVE MEDIUM FOR THE BONDING OF SURFACES IN THE AMMUNITION CONTAINING EXPLOSIVE CHARGES

Günter Berg, Nonnweiler; Otmar Müller, Nohfelden, and Rainer Esters, Solingen, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,670

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420544

Int. Cl.⁴ C06B 21/00, 45/22

U.S. Cl. 524—109

5 Claims

1. An adhesive medium for the bonding of surfaces in ammunition containing explosive charges, said adhesive medium comprising:

- 12 to 30% by weight of a copolymer;
- 1 to 8% by weight of an oil-free polyester;
- 1 to 8% by weight of epoxy-modified triglyceride;
- 6 to 26% by weight of a pigment composition; and
- 24 to 66% by weight of a polymeric solvent composition, wherein said copolymer consists of approximately 75% vinyl chloride and approximately 25% vinyl monomers.

4,640,948

BENZOTHAZOLE-POLYAMIDE COMPOSITION

Husam A. A. Rasoul, Racine, Wis., assignor to Celanese Corporation, New York, N.Y.

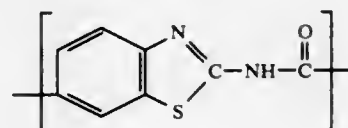
Division of Ser. No. 718,681, Apr. 1, 1985. This application Nov. 12, 1985, Ser. No. 796,715

Int. Cl.⁴ C08G 69/08; C08L 77/10

U.S. Cl. 524—157

7 Claims

1. A polyamide which is comprised of a recurring monomeric unit corresponding to the formula:



4,640,949

STABILIZED POLYOXYMETHYLENE COMPOSITIONS

Mark E. Wagman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1985, Ser. No. 736,613

Int. Cl.⁴ C08K 5/20; C08L 75/06, 75/04

U.S. Cl. 524—227

19 Claims

1. A stabilized thermoplastic polyoxymethylene composition consisting essentially of:

- 40-99.6 weight percent of at least one polyoxymethylene polymer,
- at least one stabilizer blend consisting essentially of
 - 50-97 weight percent based on the total amount of the stabilizer blend of a thermoplastic polyurethane, and
 - 3-50 weight percent based on the total amount of the stabilizer blend of a polyamide, wherein the polyamide is dispersed throughout the polyurethane as a separate phase having substantially all of the polyamide particles with a diameter of less than six microns, wherein the quantity of the stabilizer blend is such that the quantity of component (b)(2) polyamide in the

polyoxymethylene composition is 0.2-5.0 weight percent based on the quantity of polyoxymethylene in the composition, and further wherein the melting temperature of the polyamide is above the melting temperature of the polyoxymethylene polymer, and

(c) from a 0 amount to a complementary amount of at least one additive for such polyoxymethylene composition.

4,640,950

THIXOTROPIC POLYURETHANE RESIN COMPOSITIONS

Kenichi Nishino, Ibaraki; Atsuo Kobayashi, Nishinomiya; Sachio Higashi, Suita; Shinichiro Yamamoto, Hikami, and Kiyoshi Yasuda, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 620,051, Jun. 12, 1984, abandoned, and a continuation-in-part of Ser. No. 743,367, Jun. 11, 1985, abandoned. This application Nov. 12, 1985, Ser. No. 797,031

Claims priority, application Japan, Jun. 22, 1983, 58-113383; Jun. 12, 1984, 59-121099

Int. Cl.⁴ C08K 3/36

U.S. Cl. 524—265

6 Claims

1. A thixotropic polyurethane resin composition which comprises

- (1) a polyurethane prepolymer in the form of liquid or solution,
- (2) colloidal silica and
- (3) a siloxane compound having a polyoxyethylene chain in the molecule and wherein the proportion of the colloidal silica per 100 parts by weight of the polyurethane prepolymer is 0.5 to 50 parts by weight and the proportion of the siloxane compound per 100 parts by weight of colloidal silica is 0.1 to 50 parts by weight.

4,640,951

METHOD OF MANUFACTURE OF FIBER REINFORCED SILICONE ELASTOMER

Olgerts Skostins, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 12, 1986, Ser. No. 838,842

Int. Cl.⁴ C08K 3/36

U.S. Cl. 524—266

7 Claims

1. A method of producing a fiber reinforced silicone elastomer base consisting essentially of

- admixing in a high shear mixer,
 - 100 parts by weight of a polydiorganosiloxane gum,
 - from 0.1 to 5.0 parts by weight of polydiorganosiloxane plasticizer per 10 parts by weight of filler (4),
 - chopped organic or inorganic reinforcing fibers, and when the above is uniformly mixed,
 - from 1 to 60 parts by weight of reinforcing silica filler, and then
- (B) optionally adding a small amount of a nitrogen containing catalyst and
- (C) heating with mixing under vacuum to treat the filler in situ and remove any volatiles, then
- (D) cooling and storing.

4,640,952

PNEUMATIC TIRE HAVING ALL-WEATHER RUNNING PERFORMANCES

Eiji Takiguchi; Kazuaki Yoto, and Toru Oniki, all of Higashikurume, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 10, 1985, Ser. No. 721,725

Claims priority, application Japan, Apr. 10, 1984, 59-69910

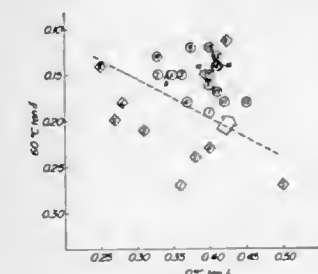
Int. Cl.⁴ B60C 11/00, 1/00

U.S. Cl. 524—296

2 Claims

1. A pneumatic tire having all-weather running performances, which comprises using in the tread thereof a rubber composition containing 30-80 parts by weight of carbon black having an iodine adsorption value (IA) of not less than 70

mg/g and a dibutyl phthalate (DBP) adsorption of not less than 90 ml/100 g and 2-30 parts by weight of an ester type plasticizer selected from the group consisting of phthalic acid derivatives, fatty acid type monobasic acid esters and fatty acid type dibasic acid esters, based on 100 parts by weight of a rubber blend consisting of 97-10 parts by weight of styrene butadiene rubber having a content of bound styrene of 0-30% and a



content of vinyl bond in the butadiene unit of 25-95% (abbreviated as diene rubber-A hereinafter), 3-30 parts by weight of butyl rubber and/or halogenated butyl rubber, and 0-87 parts by weight of another diene rubber other than said diene rubber-A, wherein said rubber composition has a dynamic storage modulus (E') at -20° C. of not more than 260 kg/cm², a loss tangent (tan delta) at 0° C. of not less than 0.30 and a loss tangent (tan delta) at 60° C. of not more than 0.20.

4,640,953

PRECOAT RESIN DISPERSION FOR TUFTED CARPETS

Raymond W. Goss, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 3, 1984, Ser. No. 627,705

Int. Cl.⁴ C08K 5/01

U.S. Cl. 524—476

9 Claims

1. A precoat resin dispersion having a solids content from about 63% to about 69% comprising

- from about 93% to about 99% by weight of at least one resin material selected from the group consisting of C₅-C₉ hydrocarbon resins, C₅ hydrocarbon resins polyterpene resins and esters of rosin having a Ring and Ball softening point of from about 60° C. to about 100° C. in an aqueous dispersion having a solids content from about 53% to about 58%;
- from about 0.5% to about 5%, by weight of the total water content of (a), of at least one water-soluble polymer selected from the group consisting of polyacrylates and cellulose derivatives;
- from about 0.1% to about 2.0% of at least one cationic polyamide-epichlorohydrin resin, by weight of the total solids of (a); and
- optionally, sufficient water so that the solids content of the precoat resin dispersion is from about 63% to about 69%.

4,640,954
POLYMER SUSPENSION CONTAINING A WATER-SOLUBLE POLYMER SUSPENDED IN AN OIL PHASE
 Reiner Schnee, Darmstadt-Arhellgen; Horst Pennewiss, Darmstadt-Neu-Kranichstein, and Gerhard Markert, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany
 Continuation-in-part of Ser. No. 476,050, Mar. 17, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,287
 Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210752

Int. Cl.⁴ C08L 39/00

U.S. Cl. 524—516

11 Claims

1. A polymer suspension comprising
 - (A) 15 to 60 percent, by weight of said suspension, of a continuous organic phase comprising
 - (1) an organic liquid which is immiscible or not fully miscible with water, is capable of forming a continuous organic phase in said suspension, and is selected from the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, esters, and chlorinated hydrocarbons, and
 - (2) 10 to 50 percent, by weight of said organic phase, of a macromolecular emulsifier soluble in said organic liquid and consisting of a mixture of two copolymers, each copolymer being formed from
 - (a) 10 to 50 percent, by weight of the copolymer, of at least one mono-ethylenically unsaturated free-radically polymerizable vinyl monomer having a basic nitrogen atom and selected from the group consisting of N-vinyl pyridine, vinyl imidazole, dialkylaminoalkyl esters of acrylic acid and of methacrylic acid, and dialkylaminoalkyl amides of acrylic acid and of methacrylic acid, and
 - (b) 90 to 50 percent, by weight of the copolymer, of at least one ester formed between a monoethylenically unsaturated mono- or dicarboxylic acid and an alcohol having 6-20 carbon atoms, or from (a) and
 - (c) 90 to 50 percent, by weight of said copolymer, of a mixture of at least one monomer as defined in (b) with at least one vinyl monomer insoluble in water and selected from the group consisting of styrene and lower esters of acrylic and of methacrylic acid,

each of said copolymers being separately prepared by the free radical solution polymerization of a different mixture of monomers (a) and (b) or (a) and (c) as defined above dissolved in the organic liquid forming the continuous phase of said suspension, said different mixtures of monomers comprising different amounts of monomer (a) having a basic nitrogen atom such that (i) the content of basic nitrogen in each of the copolymers formed from said monomer mixtures is from 1.5 to 4.0 percent by weight of basic nitrogen, but (ii) said copolymers differ in their basic nitrogen content by 0.1 to 1.5 percentage points; and

- (B) 85 to 40 percent, by weight of said suspension, of an aqueous phase finely divided in said organic phase and comprising
 - (1) 10 to 50 percent, by weight of said aqueous phase, of water and
 - (2) 90 to 50 percent, by weight of said aqueous phase of a water soluble copolymer comprising
 - (a) 20 to 95 percent, by weight of said copolymer, of acrylamide or methacrylamide and
 - (b) 80 to 5 percent, by weight of said copolymer, of a tertiary ammoniumalkyl ester, quaternary ammoniumalkyl ester, tertiary ammoniumalkyl amide, or quaternary ammoniumalkyl amide of acrylic acid or of methacrylic acid.

4,640,955
TETRAFLUOROETHYLENE FINE POWDER AND PREPARATION THEREOF
 Satish C. Malhotra, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Division of Ser. No. 621,798, Jun. 18, 1984, Pat. No. 4,576,869.
 This application Oct. 29, 1985, Ser. No. 794,046
 Int. Cl.⁴ C08F 14/26

U.S. Cl. 524—546

2 Claims

1. An aqueous dispersion which contains dispersed particles of polymer, which polymer is a non-melt-fabricable tetrafluoroethylene polymer prepared by the aqueous dispersion polymerization procedure in which the last portion of the polymerization is slowed down by stopping addition of initiator so that the end point is at least 5% longer than if initiator addition is continued to the end of the reaction, characterized in that
 - (a) the primary particle size is between 0.1 and 0.5 microns;
 - (b) the standard specific gravity is less than 2.190;
 - (c) the rheometric pressure is at least 250 kg/cm²;
 - (d) the uniformity of strength is at least 75% throughout a lubricant loading range of 4 weight percent which 4 weight percent range is within a lubricant loading level range between 10 and 25 weight percent, at a stretch rate of 100%/second,
 - (e) the uniformity of stretch is at least 75% throughout a stretch rate of between 10 and 100%/second at a lubricant loading level of 17%, and
 - (f) the stress relaxation time is at least 400 second.

4,640,956
IODINE RESISTANT SILICONE RUBBER COMPOSITIONS
 Melvin R. Toub, and Donald L. Finney, both of Clifton Park, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 13, 1985, Ser. No. 744,848
 Int. Cl.⁴ C08K 3/22

U.S. Cl. 524—779

19 Claims

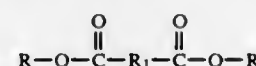
1. In an addition curable silicone composition, the improvement comprising from about 0.25 to about 3 parts by weight per hundred parts by weight of the composition of metallic oxide effective to prevent premature deterioration of the cured composition due to exposure to iodine and/or hydroiodic acid.

4,640,957
POLYIMIDO-ESTER COMPOUNDS AND THERMOSET RESIN COMPOSITIONS CONTAINING SAME
 Robert E. Hefner, Jr., and Douglas L. Hunter, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
 Division of Ser. No. 562,333, Dec. 16, 1983, Pat. No. 4,560,768.
 This application Jun. 13, 1985, Ser. No. 744,188
 Int. Cl.⁴ C08L 67/06, 77/12, 63/10

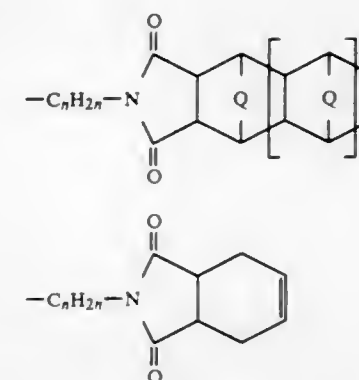
U.S. Cl. 525—44

6 Claims

1. A thermosettable resin composition which comprises
 - (A) about 5 to about 95 percent by weight based on the total composition weight of at least one resin selected from the group consisting of (a) unsaturated polyester resins, (b) unsaturated polyesteramide resins, (c) dicyclopentadiene modified unsaturated polyester resins, (d) dicyclopentadiene modified unsaturated polyesteramide resins, and (e) vinyl ester resins,
 - (B) about 5 to about 95 percent by weight of at least one polymerizable ethylenically unsaturated monomer; and
 - (C) about 1 to about 70 percent by weight of an imido-ester compound having the formula



wherein R is selected from one of the following groups



and R₁ is a divalent radical selected from one of the following groups

- I. —C(X)=CH—
- II. —CH₂—C(=Y)—
- III. —CH=C(Z)—CH₂—

wherein

- n=1-6
 m=0-10
 X=hydrogen or methyl
 Y=methylene or isopropylidene
 Z=hydrogen or —COOR
 Q=methylene.

4,640,958
NOVEL COUPLING AGENT FOR STAR-BLOCK COPOLYMERS
 Paul A. Mancinelli, Aston, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.
 Filed Aug. 21, 1985, Ser. No. 768,073
 Int. Cl.⁴ C08F 297/04, 297/02

U.S. Cl. 525—193

11 Claims

1. In a process for the preparation of star-block homopolymers and copolymers of conjugated diene monomers and/or monovinyl aromatic monomers by the solution polymerization of the monomers with 0.2 to 10 millimoles per mole of monomers of a monolithium initiator and then coupling the resultant lithiated homopolymer or copolymer with a coupling agent, the improvement comprising using as the coupling agent acryloyl chloride wherein the ratio of acryloyl chloride to monolithium initiator is between 1 to 1 and 6 to 1.

6. A star-block polymer having 4 to 10 arms attached to a nucleus made up of more than one molecule of acryloyl chloride; said arms being selected from the group consisting of homopolymers of monovinyl aromatic monomers, homopolymers of conjugated diene monomers, copolymers of monovinyl aromatic monomers and conjugated diene monomers, and mixtures of these.

4,640,959
ABS TYPE RESIN HAVING DISPERSE PARTICLES OF A RUBBER EXHIBITING A HIGH SOLUTION VISCOSITY AND A METHOD FOR ITS PREPARATION
 Narasiah Alle, Terneuzen, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.
 Continuation of Ser. No. 533,038, Sep. 16, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 761,291
 Int. Cl.⁴ C08F 279/04

U.S. Cl. 525—316

16 Claims

1. A method for preparing a rubber-reinforced copolymer comprising mass polymerizing prior to phase inversion a solution of one or more monovinylidene aromatic compounds, one or more unsaturated nitrile compounds and at least 5 percent of a rubber which exhibits a viscosity, as a 5 weight percent solution in styrene, of at least 120 centipoise, said weight percent being based on the total weight of monomers and rubber, at conditions to form a copolymer of the monovinylidene

- (A) aromatic compounds or compounds and unsaturated nitrile compound or compounds having a sufficiently high molecular weight such that, upon phase inversion of the mass polymerization mixture and subsequent sizing of the rubber, the rubber becomes dispersed at a volume average particle size of 1.5 micrometer or less without excessively agitating the polymerization mixture and, after phase inversion and sizing of the rubber particles, continuing polymerization to convert the desired amounts of monovinylidene aromatic compound or compounds and unsaturated nitrile compound or compounds to polymer.

4,640,960
DEGRADATION OF POLY(DIACETYLENES)
 Reinhold J. Leyrer, Ludwigshafen; Gerhard Wegner, Denzlingen, and Michael Mueller, Waldkirch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
 Filed Nov. 27, 1984, Ser. No. 675,430
 Claims priority, application Fed. Rep. of Germany, Dec. 23, 1984, 3346718
 Int. Cl.⁴ C08C 19/04

U.S. Cl. 525—388

17 Claims

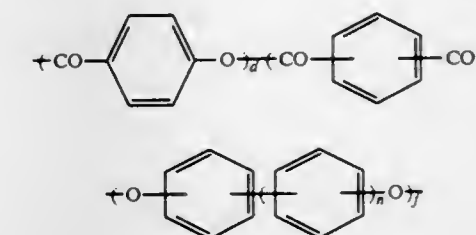
1. A process for reducing the molecular weight of poly(diacetylenes) of the formula $[-C(R^1)-C\equiv C-C(R^2)-]$ wherein R¹ and R² are organic compounds of 1 to 50 carbon atoms comprising preparing an homogeneous mixture of said poly(diacetylene) with a sensitizer which can be activated to form reactive free radicals when treated with chemicals, heat or actinic light, treating said mixture to said activating conditions thereby reducing the molecular weight of said poly(diacetylene).

4,640,961
RESIN COMPOSITION
 Tervio Saito, Shiga; Kuniaki Asai, Osaka; Yasuro Suzuki, Osaka, and Kei Kagiya, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
 PCT No. PCT/JP85/00014, § 371 Date Jun. 13, 1985, § 102(e)
 Date Jun. 13, 1985, PCT Pub. No. WO85/03304, PCT Pub. Date Aug. 1, 1985
 PCT Filed Jan. 17, 1985, Ser. No. 748,060
 Claims priority, application Japan, Jan. 17, 1984, 59-6948
 Int. Cl.⁴ C08L 67/02

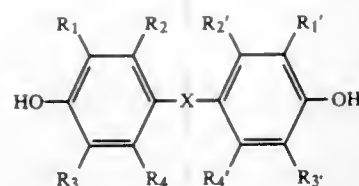
U.S. Cl. 525—444

1 Claim

1. A resin composition comprising from 60 to 97% by weight of a heat-fusible wholly aromatic copolyester consisting of a copolyester represented by the formula:



wherein d, e, and f are not equal to 0 and e/f is from 0.90 to 1.10, and n is 0 or 1 and from 3 to 40% by weight of a polyarylate prepared from a mixture consisting of isophthalic acid or a functional derivative thereof and terephthalic acid or a functional derivative thereof and a bisphenol represented by the formula:



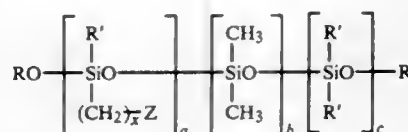
wherein —X— is selected from the group consisting of —O—, —SO₂—, —CO—, —S—, an alkylene group, and an alkylidene group, and R₁, R₂, R₃, R₄, R₁', R₂', R₃', and R₄' are each selected from the group consisting of a hydrogen atom, a halogen atom, and a hydrocarbon group.

4,640,962
SILICONE-MODIFIED POLYESTER RESIN AND
SILICONE-SHEATHED POLYESTER FIBERS MADE
THEREFROM

Robert L. Ostrozynski, Williamsville; George H. Greene, Croton-on-Hudson, and James H. Merrifield, Mt. Kisco, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 11, 1985, Ser. No. 774,962
 Int. Cl.⁴ C08F 283/00

U.S. Cl. 525—474 **60 Claims**
 1. A process for preparing a silicone-modified polyester resin comprising reacting an aromatic dicarboxylic acid or its diester, a diol and a siloxane block polymer of the general formula:



wherein

R is individually a monovalent group selected from the group consisting of alkyl, aryl, acyl, aralkyl and polyoxyalkyl groups;

R' is individually a monovalent group selected from the group consisting of alkyl, aryl, alkenyl, and aralkyl groups containing from 1 to 8 carbon atoms;

Z is selected from the group consisting of alkyl, aryl, aralkyl, alkoxy, polyoxyalkyl, alkenyl and siloxy with the proviso that when Z is siloxy x must equal zero;

a has a value of 0 to 10;

b has a value of 0 to 50,000;

c has a value of 0 to 1,000 and the sum of a + b + c is such that the siloxane block polymer contains at least 9; silicon atoms; and

x has a value of 0, 1, 2 or 3; wherein said reaction takes place in two stages, the first stage being either a transesterification between the diester of the dicarboxylic acid and the diol and siloxane block polymer or an esterification between the dicarboxylic acid and the diol and siloxane block polymer, the second stage being a polycondensation reaction of the transesterification or esterification product wherein said siloxane block polymer constitutes from 0.1 to 10 weight percent, based on the total reaction product and forms uniform domains approximately 0.05 to 6 micron in average size.

4,640,963
METHOD AND APPARATUS FOR RECYCLE OF
ENTRAINED SOLIDS IN OFF-GAS FROM A GAS-PHASE
POLYOLEFIN REACTOR

David R. Kreider, Wheaton, Ill.; Albert McCullum, Friendswood, Tex.; Philip M. Rose, Naperville, and Chi-Hung Lin, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 15, 1985, Ser. No. 702,007
 Int. Cl.⁴ C08F 2/34

U.S. Cl. 526—67 **14 Claims**
 1. In a process for quench-cooled, vapor-phase polymerization of olefin monomer comprising (a) contacting an olefin monomer, or mixture of olefin monomers, with a polymerization catalyst in the presence of hydrogen in a reactor vessel to form polymer product, and (b) removing, condensing and recycling off-gas from such reactor, the improvement comprising separating entrained polymerizing solid fines from said off-gas and recycling such solids directly to the reactor without substantial continued polymerization of such solids while in the presence of a substantially different concentration of hydrogen than in the reactor.

4,640,964
OLEFIN POLYMERIZATION WITH POLYPHOSPHATE
SUPPORTED CHROMIUM CATALYSTS

Marvin M. Johnson, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 626,944, Jul. 2, 1984, Pat. No. 4,547,479.
 This application Jun. 5, 1985, Ser. No. 741,514
 Int. Cl.⁴ C08F 4/24, 4/78

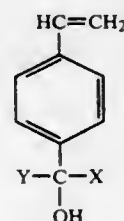
U.S. Cl. 526—134 **12 Claims**
 1. A polymerization process comprising contacting at least one mono-1-olefin containing 2 to 8 carbon atoms per molecule under polymerization conditions with the catalyst comprising: a zerovalent organochromium compound on a predominantly aluminum polyphosphate support said zerovalent organochromium compound being present in an amount sufficient to give 0.001 to 10 weight percent chromium based on the weight of said support plus said chromium compound.

4,640,965
HYDROGEL COMPOSITIONS USING
P-(2-HYDROXYHEXAFLUOROISOPROPYL) STYRENE
AS A COMONOMER

Joseph J. Falcetta, and Joonsup Park, both of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

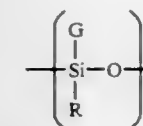
Filed Jan. 7, 1986, Ser. No. 816,768
 Int. Cl.⁴ C08F 12/20

U.S. Cl. 526—242 **21 Claims**
 1. A hydrogel polymeric material based on copolymers comprising from about 40% to about 95% of a comonomer or comonomers that will form a hydrogel and from about 5% to about 60% by weight of a hydroxyfluoroalkyl styrene monomer of the formula:



wherein X and Y are individually the same or different monovalent fluoroalkyl, each selected from the group consisting of perfluoroalkyl, ω-hydrofluoroalkyl, and ω-chloroperfluoroalkyl.

kyl radicals wherein the alkyl or X and Y is C₁ to C₈, or jointly a divalent perfluoroalkylene radical.

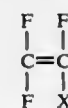


4,640,966
FLUOROOLEFIN COPOLYMER, PROCESS FOR
PRODUCTION THEREOF AND COMPOSITION
CONTAINING SAID COPOLYMER

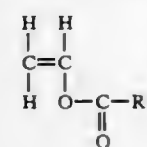
Tomomasa Mitani, Izumi, and Ichiro Mihata, Izumiohtsu, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Nov. 5, 1985, Ser. No. 795,115
 Claims priority, application Japan, Nov. 7, 1984, 59-234327;
 Dec. 18, 1984, 59-266831

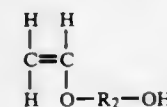
U.S. Cl. 526—249 **11 Claims**
 1. A fluoroolefin copolymer having a hydroxyl value of 20 to 200 mg KOH/g and an inherent viscosity of from 0.05 to 2.0 dl/g obtained by copolymerizing
 (I) 10 to 70 mole % of a fluoroolefin represented by the general formula



wherein X is H, Cl, F, CF₃, OCF₃ or OC₃F₇,
 (II) 5 to 60 mole % of a vinyl carboxylate represented by the general formula



wherein R₁ represents an aliphatic, aromatic or alicyclic hydrocarbon group having 1 to 17 carbon atoms,
 (III) 5 to 70 mole % of an alkyl vinyl ether having an alkyl group with 1 to 8 carbon atoms, and
 (IV) up to 30 mole % of a hydroxyl-containing vinyl ether represented by the general formula



wherein R₂ represents an alkylene group having 1 to 6 carbon atoms.

4,640,967
ULTRAVIOLET RADIATION-CURABLE SILICONE
RELEASE COMPOSITIONS WITH EPOXY AND/OR
ACRYLIC FUNCTIONALITY

Richard P. Eckberg, Round Lake, N.Y., assignor to General Electric Company, N.Y.

Division of Ser. No. 375,676, May 6, 1982, Pat. No. 4,576,999.
 This application Dec. 18, 1985, Ser. No. 810,484
 Int. Cl.⁴ C08G 77/04

U.S. Cl. 528—26 **9 Claims**
 1. An organopolysiloxane having both epoxy and acrylic functional units of the formula

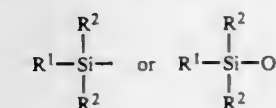
where R is hydrogen or C₍₁₋₃₎ alkyl and G is, independently, an epoxy-functional organic radical of from 2 to 20 carbon atoms, or an acrylic-functional organic radical of from 2 to 20 carbon atoms, with at least 1 polymer unit being epoxy-functional and at least 1 polymer unit being acrylic-functional.

4,640,968
ETHYLIDENE NORBORNYL GROUP-CONTAINING
POLYSILOXANE

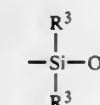
Junichiro Watanabe; Yuichi Funahashi, both of Ohta; Kazuo Sugiura, and Hironori Matsumoto, both of Tokyo, all of Japan, assignors to Toshiba Silicone Co., Ltd., Japan

Filed Oct. 15, 1985, Ser. No. 787,232
 Claims priority, application Japan, Oct. 22, 1984, 59-221539
 Int. Cl.⁴ C08G 77/20

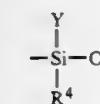
U.S. Cl. 528—32 **6 Claims**
 1. An ethylidene norbornyl group-containing polysiloxane, having a molecular weight in the range of 268 to 10,000,000, and possessing a terminal group represented by the formula:



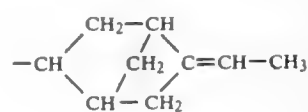
wherein R¹ stands for a substituted or unsubstituted monovalent hydrocarbon group of 1 to 8 carbon atoms, a hydroxyl group, an alkoxy group of 1 to 5 carbon atoms, or at least one of the hydrocarbon groups represented by Y, and each R² stands for the same or different groups selected from the class consisting of hydrogen, substituted or unsubstituted monovalent hydrocarbon groups of 1 to 8 carbon atoms, and a terminal group represented by R¹ wherein R¹ has the same meaning as above, and being substantially in the form of a linear chain, 0 to 100 mol%, providing that 100 mol% is excluded where neither of the R¹'s in the terminal groups is a hydrocarbon group represented by Y, of the component units being represented by the formula:



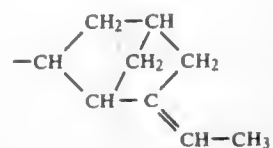
wherein each R³ stands for the same or different groups selected from the class consisting of hydrogen and substituted or unsubstituted monovalent hydrocarbon groups and 100 to 0 mol%, providing that 0 mol% is excluded where neither of the R¹'s in the terminal groups is a hydrocarbon group represented by Y, of the component units being represented by the formula:



wherein R⁴ stands for a substituted or unsubstituted monovalent hydrocarbon group of 1 to 8 carbon atoms and Y stands for



or



4,640,969
OXAZOLINE/POLYOL/POLYISOCYANATE
POLYMERS AND PROCESS

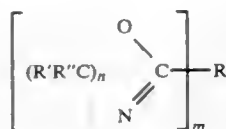
Anil B. Goel, Worthington; Timothy A. Tufts, Columbus, and Peggy A. Blackburn, Plain City, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 7, 1985, Ser. No. 763,107
Int. Cl.⁴ C08G 18/30, 18/36

U.S. Cl. 528—73

18 Claims

1. The process consisting essentially of interpolymerizing an oxazoline, a polyol and a polyisocyanate at a temperature in the range of from about 20° C. to about 100° C. at a pressure in the range of from about atmospheric up to about 50 atmospheres wherein the oxazoline is one conforming to the formula



wherein n represents 2 to 3 and m represents 1 or 2 and when m is 1, R represents an alkyl group containing from 1 to 20 carbon atoms and an alkaryl group containing from 7 to 20 carbon atoms; when m is 2, R represents an alkylene group containing from 1 to 19 carbon atoms and R' and R'' independently represent hydrogen, an alkyl group having from 1 to 10 carbon atoms or an aryl group containing from 6 to 12 carbon atoms.

4,640,970
PROCESS FOR THE PRODUCTION OF POLYAMIDE
IMIDES

Wilfried Zecher, Leverkusen; Klaus Reinking, Wermelskirchen, and Frank Kleiner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

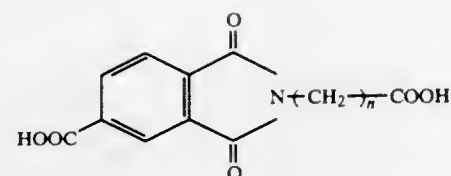
Filed Aug. 21, 1985, Ser. No. 768,102
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431857

Int. Cl.⁴ C08G 73/14

U.S. Cl. 528—73

7 Claims

1. A process for the production of polyamide imides which comprises reacting at a temperature of from 0° to 400° C. polyisocyanates, cyclic polycarboxylic acid anhydrides, lactams and trimellitic imidocarboxylic acids of the formula



wherein
n is an interger from 1 to 20.

4,640,971
MICROSPHERICAL PARTICLES OF RESOLE RESINS
AND PROCESS FOR PRODUCING THE SAME

Yoshiaki Echigo; Mutsunori Yamao; Yoshiyuki Suematu; Tada-shi Ishikura; Keiichi Asami, and Ritsuko Shidei, all of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jul. 17, 1985, Ser. No. 755,769
Claims priority, application Japan, Jul. 17, 1984, 59-150399; Nov. 26, 1984, 59-249086

Int. Cl.⁴ C08G 8/10, 14/06, 14/08

U.S. Cl. 528—129

4 Claims

1. A resole resin in the form of microspherical particles where the surfaces of the particles are partly or entirely covered with a coating of a substantially water-insoluble inorganic salt having a solubility in water not greater than about 0.2 g/1,000 ml at 25° C. and where the particles have a particle size not larger than about 500 μm.

4,640,972
FILAMENT OF POLYIMIDE FROM PYROMELLITIC
ACID DIANHYDRIDE AND 3,4'-OXYDIANILINE

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

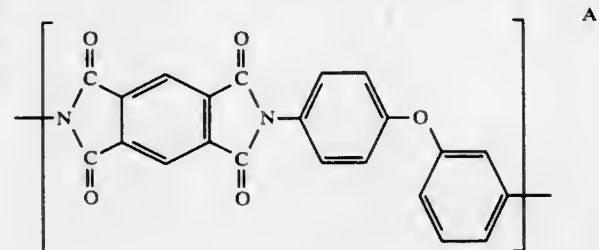
Filed Nov. 15, 1985, Ser. No. 798,512

Int. Cl.⁴ C08G 73/10

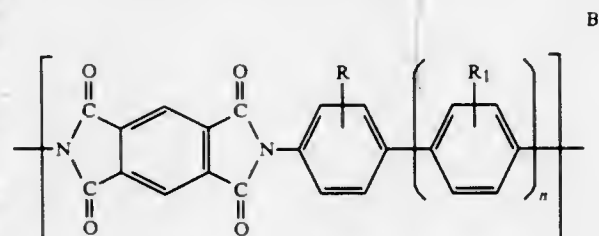
U.S. Cl. 528—188

5 Claims

1. A filament consisting essentially of a polyimide of recurring units of the formula

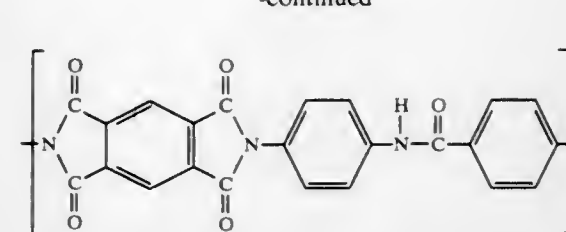


with from 0 to 60 mole %, of units of the formula



or

-continued



where n is 0 or 1; R and R₁, which may be the same or different are selected from halogen, lower alkoxy, hydrogen or lower alkyl.

4,640,973
POLYAMIDE RESIN CAPABLE OF FORMING
CONTAINERS HAVING IMPROVED GAS BARRIER
PROPERTIES FROM PHENYLENE DIOXY DIACETIC
ACID AND NAPHTHALENE DICARBOXYLIC ACID

Burns Davis, and Robert B. Barbee, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1985, Ser. No. 785,132

Int. Cl.⁴ C08G 69/26

U.S. Cl. 528—208

18 Claims

1. A polyamide composition capable of being formed into molded containers having good gas barrier properties comprising the reaction product of

(A) a diamine containing 2 to about 10 carbon atoms, and (B) a diacid component comprising

(i) about 25 to 95 mole percent of at least one first diacid selected from the group consisting of 1,4-phenylenedioxy diacetic acid, 1,3-phenylenedioxy diacetic acid and 1,2-phenylenedioxy diacetic acid, and (ii) 5 to about 75 mole percent of a naphthalene dicarboxylic acid,

wherein said polyamide has an inherent viscosity of about 0.5 to 1.5, measured at 25° C. in a 60/40 by weight mixture of phenol/tetrachloroethane at a concentration of 0.5 g/100 ml.

4,640,974
POLYCYANOARYL ETHER FILMS AND FIBERS

Shigeru Matsuo, and Tomoyoshi Murakami, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

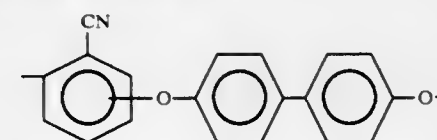
Filed Feb. 18, 1986, Ser. No. 830,652
Claims priority, application Japan, Feb. 22, 1985, 60-32740; Apr. 5, 1985, 60-71209; Apr. 17, 1985, 60-80404; Apr. 23, 1985, 60-85437

Int. Cl.⁴ C08G 67/00

U.S. Cl. 528—211

15 Claims

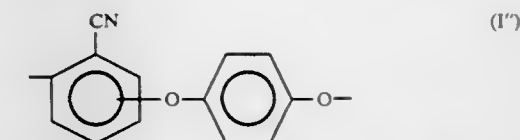
1. A polycyanoaryl ether stretched film which comprises a molded film being composed of (A) a polycyanoaryl ether containing not less than 80 molar % of a repeating unit represented by the formula



and having a number-average molecular weight of 25,000–65,000, (B) a polycyanoaryl ether containing not less than 50 molar % of a repeating unit represented by the formula

C. $\text{CN}-\text{C}_6\text{H}_3(\text{CN})_2-\text{O}-\text{C}_6\text{H}_3(\text{CN})_2-\text{O}-$ (I')

and having a reduced viscosity of 0.4–2.0 dl/g at 60° C. in a solution of a concentration of 0.2 g/dl in p-chlorophenol or (C) a polycyanoaryl ether containing not less than 80 molar % of a repeating unit represented by the formula CN



and having a number-average molecular weight of 30,000–90,000, and having been stretched at a drawing ratio of not less than 1.5 times.

4,640,975
POLYCYANOARYL ETHER AND METHOD OF
PREPARING THE SAME

Shigeru Matsuo, and Tomoyoshi Murakami, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

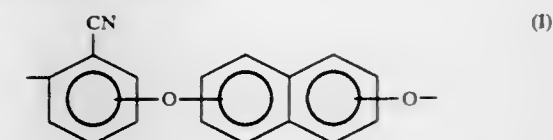
Filed Dec. 26, 1985, Ser. No. 813,620
Claims priority, application Japan, Jan. 10, 1985, 60-1403; Mar. 26, 1985, 60-59466; Apr. 5, 1985, 60-71208

Int. Cl.⁴ C08G 65/40

U.S. Cl. 528—211

18 Claims

1. A polycyano aryl ether which has recurring units represented by the formula:



and has a reduced viscosity of 0.3 dl/g or more at 60° C. in a solution in which the polycyanoaryl ether is dissolved in p-chlorophenol in a concentration of 0.2 g/dl.

4,640,976
PROCESS FOR THE MANUFACTURE OF POLYAMIDE
FROM DIAMINE AND DIAMIDE UTILIZING
OXYGENATED COMPOUND OF CARBON, BORON,
NITROGEN AND SULFUR AS CATALYST

Benedict S. Curatolo, Maple Heights; Robert C. Sentman, Macedonia, and Gerald P. Coffey, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 9, 1985, Ser. No. 763,867
Int. Cl.⁴ C08G 69/00, 69/28

U.S. Cl. 528—336

17 Claims

1. A process for the manufacture of a polyamide comprising polymerizing an α,ω-diamine, an α,ω-diamide in contact with a catalyst at an elevated temperature and pressure, wherein the catalyst comprises an oxygenated compound selected from the group consisting of oxygenated compounds of carbon, oxygenated compounds of boron, oxygenated compounds of nitrogen, oxygenated compounds of sulfur, and mixtures thereof.

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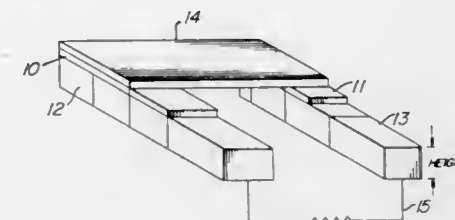
ELECTRICAL

4,640,977
THERMOELECTRIC GENERATOR USING VARIABLE
GEOMETRY WITH SUPPORT PEDESTALS OF
DISSIMILAR MATERIALS THAN THE BASIC
THERMOELECTRIC SEMI-CONDUCTOR ELEMENTS
Wallace Shakun, Atlanta, Ga., assignor to Omnimax Energy
Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 603,009, Apr. 23, 1984. This
application Apr. 16, 1986, Ser. No. 852,487
Int. Cl.⁴ H01L 35/28

U.S. Cl. 136—211

6 Claims



1. A thermoelectric generator comprising two legs of dissimilar thermoelements connected together at one of each of their respective ends, the other of each of their respective ends being adapted to be connected to an electrical load, each of said thermoelements being supported throughout the majority of its height by a separate support pedestal, each of said support pedestals extending beyond the other end of each of said thermoelement legs, the height of said support pedestals being selected by optimizing the effective figure of merit (Z_{eff}) of the thermoelectric generator in accordance with the following equation:

$$Z_{eff} = \frac{|\alpha_n| + |\alpha_p|}{R_{eff} K_{eff}}$$

where α_n is the sum of the Seebeck coefficients of one series of legs of the thermoelectric generator and α_p is the sum of the Seebeck coefficients of the other legs of the thermoelectric generator and R_{eff} is the effective internal resistance of the system and K_{eff} is the effective thermal conductance of the thermoelectric generator.

4,640,978
FOAM-SEALED ELECTRICAL DEVICES AND METHOD
AND COMPOSITION THEREFOR

George J. Kilbane, White Bear Lake, and K. P. Subrahmanian,
Woodbury, both of Minn., assignors to Minnesota Mining and
Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 650,051, Sep. 13, 1984,
abandoned. This application Jul. 15, 1985, Ser. No. 755,006
Int. Cl.⁴ H02G 3/04; C08G 18/14, 18/10

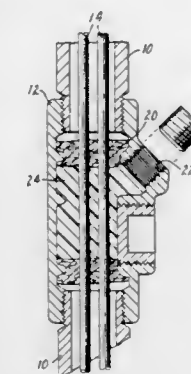
U.S. Cl. 174—23 R

24 Claims

1. A method of sealing electrical fittings or cable duct comprising placing in the hollow portion of the fitting or duct to be sealed a foamable mixture of (a) a prereaction product of excess organic polyisocyanate and polyol and (b) a mixture of trimerizing catalyst capable of providing a cream time of at least about 90 seconds, chanin extending against flame retardant agent, and blowing agent, and allowing the mixture of (a) and (b) to foam and cure in situ to form a removable, friable, flame retardant, solvent resistant, substantially closed cell isocyanurate foam having a density of about 80 to 240 kg/m³.

11. A sealed electrical fitting comprising an electrical fitting filled with a removable friable, flame retardant, solvent resistant, substantially closed cell isocyanurate foam having a density of about 80 to 240 kg/m³, said isocyanurate foam being prepared from a two-part, liquid, foamable, curable composition comprising a mixture of:

(a) in a first part, a prereaction product of excess isocyanate reactant material and polyol, and



(b) in a second part, catalyst, chain extending agent, fire retardant and water.

4,640,979
RADIO-FREQUENCY-TIGHT SHIELD WITH PLANAR
PARTS

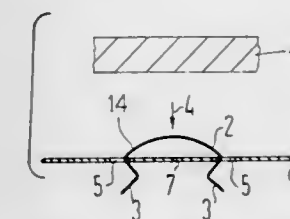
Dieter Schmalzl, Munich, Fed. Rep. of Germany, assignor to
Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of
Germany

Filed Jul. 12, 1984, Ser. No. 630,194
Claims priority, application Fed. Rep. of Germany, Aug. 5,
1983, 3328386

U.S. Cl. 174—35 GC

Int. Cl.⁴ H05K 9/00

6 Claims



1. In a radio-frequency-tight shield for electronic devices, said shield including a frame and panel structure with planar parts, the improvement comprising one of the planar parts having at least one spring element being assembled thereon, said spring element having a center contact portion extending between two end portions, said end portions being bent to form hook-shaped sections for engaging spaced edges formed on the one planar part, said spring being assembled on the one planar part with the center contact portion extending beyond a surface of the one planar part and the hook-shaped sections of the end portions engaging said edges and forming detents to prevent the spring element from becoming removed from the one planar part.

4,640,980
ELECTRO-MAGNETIC SCREENING DEVICE FOR ELECTRICAL CABLING CONSTITUTING BUNDLES OF CABLES COMPRISING TAPPINGS

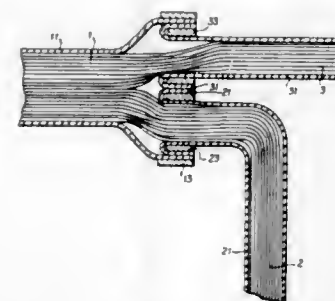
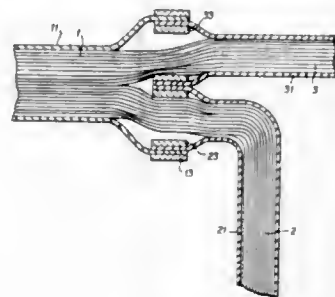
André Batt, Le Mesnil Saint Denis, and Jacques, J. A. Delable, Bonneuil sur Marne, both of France, assignors to Societe Nationale d'Etude et de Construction de Meteor d'Aviation S.N.E.C.M.A., Paris, France

Filed May 24, 1985, Ser. No. 737,492

Claims priority, application France, Jun. 14, 1984, 84 09285 Int. Cl.⁴ H02G 3/00; H01B 7/34

U.S. Cl. 174—36

5 Claims



1. An assembly of electro-magnetic screening devices, comprising:

- a first cable,
- a second cable,
- a third cable, said first, second and third cables being interconnected at a junction,
- a first metallic braided screening sheath enclosing the first cable,
- a second metallic braided screening sheath enclosing the second cable,
- a third metallic braided screening sheath enclosing the third cable, and
- metal rings respectively surrounding each of said cables and a corresponding sheath of said first, second and third sheaths at said junction, the metal ring of the first cable enclosing the remaining rings and end portions of the sheaths and serving to clamp the assembly together.

4,640,981
ELECTRICAL INTERCONNECTION MEANS
 Ronald A. Dery, and Warren C. Jones, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.
 Division of Ser. No. 657,851, Oct. 4, 1984, This application Aug. 14, 1985, Ser. No. 765,625

Int. Cl.⁴ H01R 4/00; H01B 7/08

U.S. Cl. 174—88 R

20 Claims

1. An electrical interconnection means of the type comprising a first insulating substrate having a plurality of conductors on one surface thereof and having an insulating adhesive in covering relationship to the conductors, the adhesive being

flowable under pressure, the interconnecting means being characterized in that:

the conductors are of conductive ink comprising an insulating polymer medium having first and second groups of conductive particles therein, the first group of particles are finely divided particles which are suspended in the medium and form a continuous conductive path along the length of each conductor, the second group of particles are agglomerates of large size particles which are randomly scattered throughout the conductive path and project above the surface of the medium, and

the flowable adhesive extends over the surface of the insulating substrate, conductors, and projecting agglomerates to provide insulation whereby

upon locating and positioning the first insulating substrate conductors in an overlapping conducting relationship to conductors on a second substrate such that the flowable adhesive is disposed between the two substrates and applying pressure



to the positioned conductors and surrounding area, the adhesive flows from the positioned areas and exposes the protruding agglomerates thus bringing the exposed agglomerates into contact and electrical interconnection with the conductors on the second substrate accompanied by the adhesion of the remaining first substrate surface to the surface of the second substrate.

9. An insulating substrate comprising: an insulating member having at least one conductive path means thereon, said conductive path means in the form of a conductive ink including an insulating medium having a first group of finely divided conductive particles uniformly suspended and dispersed throughout said insulating medium and a second group of large size conductive particles randomly scattered throughout said insulating medium, some of the large size conductive particles projecting outwardly from said insulating medium, and an insulating layer secured onto the insulating member covering the conductive path means.

4,640,982
CABLE TERMINATION AND METHOD
 James J. Kasper, and John H. Jeffreys, both of Sheffield Lake, Ohio, assignors to Watteredge-Uniflex, Inc., Avon Lake, Ohio
 Filed Mar. 22, 1985, Ser. No. 714,910
 Int. Cl.⁴ H02G 15/02

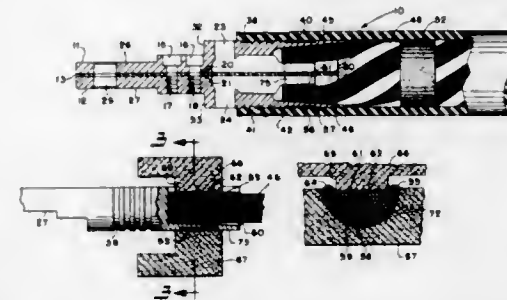
U.S. Cl. 174—75 R

6 Claims

1. A method of forming a cable termination comprising the steps of mechanically connecting a cable to a terminal having a socket formed by a round wall in which said cable end is positioned, and then surrounding said terminal and said cable end with a ring clip, and then pressing said ring clip and said cable end into said socket such that said ring clip is formed into a generally D-shape configuration having a straight wall portion, said straight wall portion being recessed below the edges of said socket, placing the round wall of said socket with said cable end thus mechanically connected thereto in a mating round recess in a refractory electrode of a press resistance welding machine, and then forcing a straight walled refractory electrode against the straight wall portion of said D-shape ring clip while passing current between such electrodes and

through said D-shape ring clip, cable, and terminal to elevate said D-shape ring clip, cable, and terminal to a high welding temperature to form a press resistance welded substantially integral connection.

2. A cable assembly comprising a termination including two electrically insulated half terminals each connected to a cable end by a connection, each of said connections comprising a socket formed by a half round wall of said half terminal, said



half round wall including a groove with a D-shape mechanically crimped ring clip having a straight wall portion positioned therein, said D-shape mechanically crimped ring clip surrounding and crimping a portion of said cable end and said half terminal, a reinforcing plate positioned between said straight wall portion and said cable end, and a press resistance weld forming a substantially integral connection between said cable end and said half terminal.

4,640,983
CONDUCTOR DEVICE, PARTICULARLY FOR AT LEAST PARTIAL INSERTION IN A HUMAN OR ANIMAL BODY, COMPRISING A SPIRAL FORMED FROM AT LEAST ONE CONDUCTOR

Pierre-Andre Comte, Liestal, Switzerland, assignor to Institut Straumann AG, Waldenburg, Switzerland

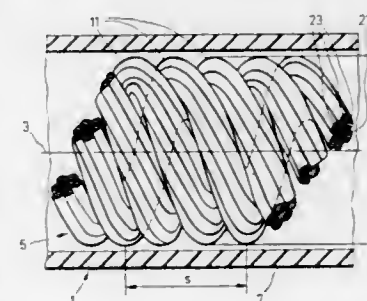
Filed Apr. 8, 1985, Ser. No. 720,550

Claims priority, application Switzerland, Apr. 9, 1984, 1773/84

Int. Cl.⁴ H01B 5/10

U.S. Cl. 174—119 R

18 Claims



inner part thereof a cavity open at one end for insertion therein of a flexible mandrel through said open end to facilitate insertion of said conductor device into said human or animal body.

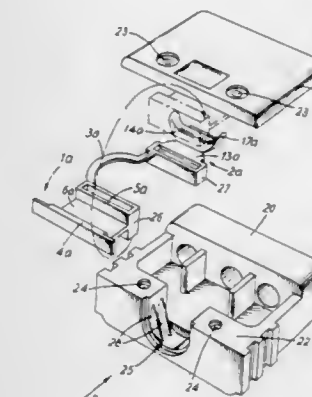
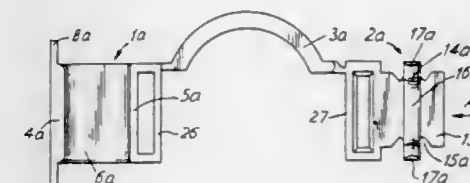
4,640,984
SUPPORT AND STRAIN RELIEF COMBINATION
 Jack W. Kalbfeld, Melville, N.Y., assignor to Union Connector Co., Inc., Roosevelt, N.Y.

Filed Aug. 2, 1984, Ser. No. 637,200

Int. Cl.⁴ H01R 13/58

U.S. Cl. 174—135

1 Claim



1. A support and strain relief comprising the combination of a support having an opening and a strain relief to be engaged in the opening of the support, said strain relief being formed of a resiliently deformable material and including a first portion and an integral second portion, said first portion having a web with elongated linear ribs spaced apart in the direction of intended application to a multi-core cable or a plurality of wires disposed side by side, said web and said ribs defining collectively a trough, said second portion having a base elongated in the direction of intended application of the multi-core cable or the plurality of wires disposed side by side and a linear transverse wall upstanding intermediate the ends of the base, whereby a multi-core cable or a plurality of wires disposed side by side when placed between the first portion and the second portion and when abutted under pressure by said web and said ribs and said wall, will be forced into a U-shaped bend and will be tightly held by friction against movement relative to the strain relief, at least one of said first and second portions including lug means extending from a lateral edge thereof for abutment, when in use, against a surface of said support adja-

- a microcomputer;
- a switch matrix;
- a first plurality of horizontal lines included in the matrix; at least two external lines accessible by the horizontal lines;
- a second plurality of vertical lines accessible by the horizontal lines;
- a plurality of line monitors equal to said first plurality, each line monitor being operatively responsive to a respective horizontal line and each consisting of an analog-to-digital converter connected to the monitored line to sense the voltage on that line and convert that voltage to a digital signal, said converter operatively engaging an AND-gate addressable by said micro-computer to provide a digital indication of any status of the respective horizontal line in response to addressing by said microcomputer;
- a third plurality of selectively switchable crosspoints for selectively associating any horizontal line with any vertical line, said crosspoints selectively controllable by a crosspoint control circuit;

said microcomputer controlling said crosspoint control circuit;

- a data modem responsively connected with a first one of said vertical lines for receiving and sending of data;
- a telephone network responsively connected with another one of said vertical lines, said telephone network connected with a telephone handset having a receiver and a transmitter for voice transmission; and

means for connecting said communications unit with a desktop computer.

4,640,990
TELEPHONE ANSWERING APPARATUS HAVING TWO INTEGRATORS OF DIFFERENT TIME CONSTANTS
 Hideji Kawade, Yamato; Hideaki Takahashi; Yoshiyuki Sato, both of Yokohama, and Yuji Urayama, Maebashi, all of Japan, assignors to Tamura Electric Works Ltd., Tokyo and Victor Company of Japan Limited, Yokohama, both of Japan
 Filed Dec. 28, 1983, Ser. No. 566,461
 Claims priority, application Japan, Dec. 28, 1982, 57-230389
 Int. Cl.⁴ H04M 1/64
 U.S. Cl. 379—77 11 Claims

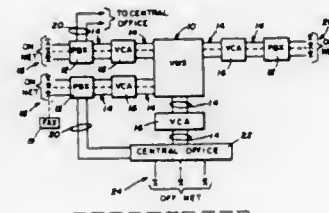


1. A circuit for discriminating a command signal for operating a telephone answering apparatus adapted to be connected to a telephone line to transmit therethrough a recorded message to a calling station and to receive said command signal therefrom, said command signal including a series of tone bursts of a varying number signifying a particular operating mode of said apparatus, the discrimination circuit comprising:
 a mechanical filter for passing components having the frequency of said received command signal;
 a first integrator working cooperatively with said mechanical filter and responsive to the output thereof, said first integrator having a large time constant value for integrating said components passing through said mechanical filter to generate a continuous output signal during the reception of said tone bursts;
 a second integrator having a small time constant value for integrating said received command signal to generate an output signal having an envelope substantially identical to the envelope of said tone bursts; and
 a coincidence gate having first and second input terminals respectively coupled to the outputs of said first and second integrators for generating a coincidence signal when there is a match between the output signals of said first and second integrators.

4,640,991
ELECTRONIC AUDIO COMMUNICATIONS SYSTEMS NETWORK
 Gordon H. Matthews, Plano; Thomas B. Tansil, and Michael L. Fannin, both of Dallas, all of Tex., assignors to VMX, Inc., Dallas, Tex.
 Continuation-in-part of Ser. No. 97,240, Nov. 26, 1979, Pat. No. 4,371,752. This application Sep. 29, 1982, Ser. No. 427,640
 The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
 Int. Cl.⁴ H04M 3/50
 U.S. Cl. 379—88 16 Claims

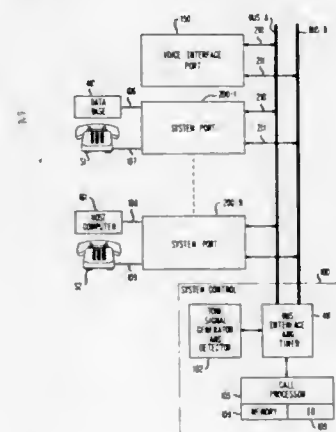
11. A method for enabling communication between remote locations of a user's network telephone facility for storing and forwarding audio messages, comprising:
 accessing one of a plurality of remotely disposed electronic communications systems coupled to one of the telephone facilities of a user's network telephone facility;
 transmitting audio messages and route data to the accessed one of the communications systems from the user's telephone facility through which access was obtained;
 the accessed one of the communications systems processing the audio messages and route data by:
 storing digital representations of the audio messages transmitted from the user's telephone facility;
 storing digital representations of the route data transmitted from the user's telephone facility and associated with the audio messages to indicate an intended recipient of the audio messages,

accessing stored digital representations of the audio messages in response to the route data,
 reproducing the audio messages from the accessed stored digital representations of the audio messages to provide reproduced audio messages,
 converting the stored digital representations of the associated route data to tone digit signals,
 transmitting the tone digit signals and the reproduced audio messages to another one of the communications systems,



receiving tone digit signals for route data and reproduced audio messages associated with the route data transmitted by another one of the communications systems, converting the tone digit signals received from the other of the communications systems to digital representations of the route data, and
 transmitting reproduced audio messages to a telephone facility of a recipient, indicated as the intended recipient by the route data associated with the reproduced audio messages.

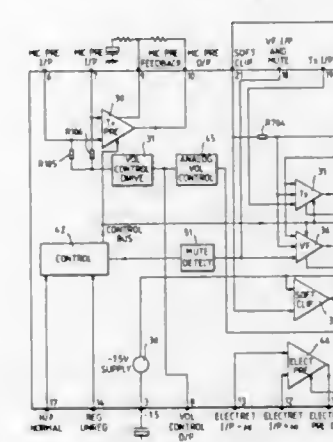
4,640,992
SPEECH RESPONSE INTERFACE CIRCUIT
 Richard C. Rose, Atlanta, Ga., assignor to AT&T Information Systems Inc., Holmdel, N.J.
 Filed Sep. 10, 1984, Ser. No. 649,271
 Int. Cl.⁴ H04M 3/50, 11/00
 U.S. Cl. 379—89 31 Claims



1. A voice response circuit for use in a communications system having a plurality of terminals interconnected for communications purposes by a common network controlled from a communication processor, said voice response circuit comprising
 means for storing digitized voice messages received over

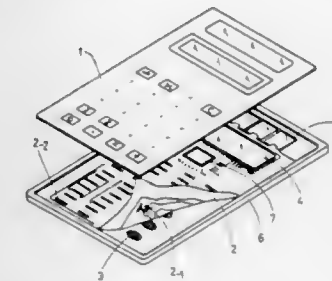
said network from a first specific one of said terminals communicating over said network,
 means controlled jointly by said communication processor and a second specific terminal for establishing communication connections to said network so as to receive control data from others of said terminals communicating over said network,
 means responsive to receipt of said control data from a specific other one of said other terminals for transmitting representations of said received control data to said second specific terminal, and
 means responsive to receipt of instructional data from said second specific terminal for communicating a particular one of said stored voice messages to said specific other terminal over said network.

4,640,993
TELEPHONE SUBSCRIBERS' CIRCUITS
 Edward J. W. Whittaker, Bishops Cleeve, Great Britain, assignor to International Standard Electric Corporation, New York, N.Y.
 Filed Jun. 21, 1985, Ser. No. 747,480
 Claims priority, application United Kingdom, Jun. 28, 1984, 8416414
 Int. Cl.⁴ H04M 1/00
 U.S. Cl. 379—383 1 Claim



1. An electrical integrated circuit for use in a telephone subscriber's instrument, comprising; a plurality of circuit units each adapted for use in one or more of a plurality of different operating modes of the circuit, in which each said circuit unit is connected to the integrated circuit's power supply when in use, and having an electronic switch which when enabled switches its said circuit unit off, and in which the integrated circuit includes a control unit connected to said electronic switches and responsive to signals indicative of the circuit's operating mode to enable the electronic switches for such of the circuit units as are to be switched off, wherein each said electronic switch includes a current mirror arrangement with an input transistor and a plurality of output transistors, in which each said output transistor provides one of the bias currents needed to render its one of the circuit units operational, in which the electronic switch includes a normally cut-off control transistor whose emitter-collector path is connected across the emitter-collector path of the current mirror's input transistor, in which to enable the switch, to disable its said circuit unit, a signal is applied to the base of the control transistor to switch it on, and in which when the control transistor is switched on it diverts current from the input transistor of the current mirror, thus cutting off the current mirror output currents.

4,640,994
ELECTRONIC APPARATUS WITH A FLAT PANEL KEYBOARD UNIT
 Shigeki Komaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
 Continuation of Ser. No. 724,503, Apr. 19, 1985, abandoned, which is a continuation of Ser. No. 568,341, Jan. 5, 1984, abandoned. This application Feb. 7, 1986, Ser. No. 827,199
 Claims priority, application Japan, Jan. 24, 1983, 58-10184
 Int. Cl.⁴ H01H 13/70
 U.S. Cl. 200—5 A 5 Claims

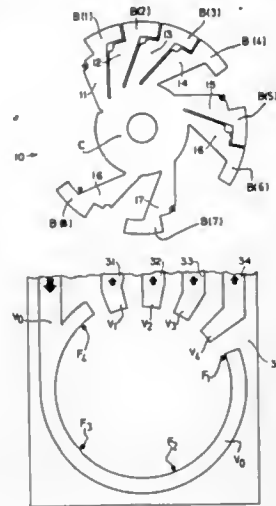


1. A flat panel keyboard comprising:
 a flexible user-actuable surface plate having a plurality of key symbols adhered to the surface thereof which are visible to a user;
 a flexible base with a connecting wiring pattern and key electrode pattern on the rear surface thereof, said key electrode pattern being a pair of electrodes in alignment with said plurality of key symbols;
 a flexible cabinet member having a plurality of integral recessed portions in alignment with said key electrode pattern; and
 a plurality of pressure sensitive conductive means positioned in said plurality of recessed portions, wherein said plurality of key electrode patterns are in continuous surface contact with said plurality of pressure sensitive conductive means so that upon actuation of one of said plurality of key symbols on said flexible user-actuable surface plate, a corresponding electrode pattern is forced against a respective pressure sensitive conductive means, shorting said electrode pattern and generating a signal;
 said surface plate, said flexible base, and said flexible cabinet member being adhered together in a flat compact relationship, said flexible base includes a plurality of slits formed therein on either side of each of said pair of electrodes to facilitate an up-down actuation of said flexible base.

4,640,995
DEVICE FOR SELECTIVELY CONNECTING BETWEEN PARALLEL PATHS AND A COMMON PATH
 Geert J. Naeijer, Louviers, France, assignor to U.S. Philips Corporation, New York, N.Y.
 Continuation of Ser. No. 712,458, Mar. 15, 1985, abandoned, which is a continuation of Ser. No. 514,762, Jul. 18, 1983, abandoned. This application Oct. 23, 1985, Ser. No. 790,634
 Claims priority, application France, Jul. 16, 1982, 82 12445
 Int. Cl.⁴ H01H 21/78
 U.S. Cl. 200—11 DA 20 Claims

1. A connection device comprising:
 a base member having n connection locations and at least n+1 common path locations defined thereon, where n is greater than 2, said connection locations and common path locations being disposed at respective ones of 2ⁿ equally spaced positions lying along a single circle only, concentric about a center,
 means for defining n paths along said base member, each path extending to a respective one of said connection locations,
 means for defining a common path along said base member,

said common path extending to each of said common path locations,
a connection member comprising path means for communicating between 2^n-1 connection positions, each of said connection positions being arranged at a respective one of said 2^n equally spaced positions, and
means disengagingly connecting said connection member to said base member for permitting said connection member



to be oriented at a selected one of said 2^n equally spaced angular positions; said n connection locations being arranged with respect to each other, and said 2^n-1 connection positions being arranged with respect to each other, such that each of said 2^n equally spaced angular positions establishes communication between said common path and a respective one of 2^n distinct combinations of possible connections with said n paths.

4,640,996

IGNITION DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINES

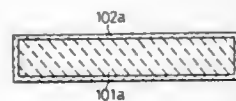
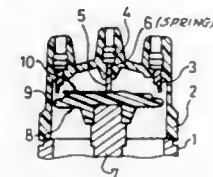
Ichirou Yoshida, Kariya; Morihiro Atsumi, Okazaki; Naotaka Nakamura, Chita; Kenji Yagi, Nagoya; Shunzo Yamaguchi, Okazaki, and Manabu Yamada, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 14, 1985, Ser. No. 744,733

Claims priority, application Japan, Jun. 26, 1984, 59-131544; Mar. 19, 1985, 60-55240

Int. Cl.⁴ H01H 19/00

U.S. Cl. 200—19 R

6 Claims



1. An ignition distributor for an internal combustion engine which has a plurality of ignition plugs and a crankshaft comprising:

a plurality of stationary electrodes, each connected to one of said ignition plugs respectively; and
a rotary electrode coupled to said crank shaft of said internal combustion engine to rotate interlocked therewith, and located opposing each of said stationary electrodes so that a minute gap is formed between said rotary electrode and

each of said stationary electrodes successively, upon rotation of said rotary electrode,
wherein at least one of: (a) each of said plurality of stationary electrodes, and (b) said rotary electrode comprises a main body composed of zinc oxide and ferrite and a surface layer mainly composed of ferrite integrally formed on the surface of said main body.

4,640,997

MULTIPLE FUNCTION CONTROL STALK INCLUDING PIVOTABLE HEADLIGHT DIMMER SWITCH

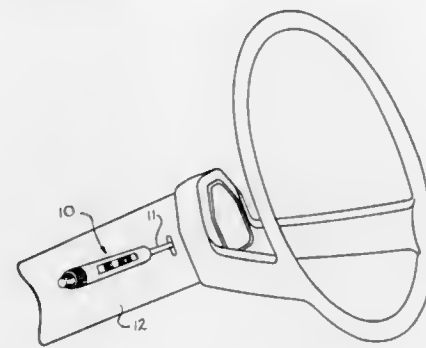
Wendell C. Lane, Jr., Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 11, 1985, Ser. No. 807,501

Int. Cl.⁴ H01H 3/16, 9/00

U.S. Cl. 200—61.54

19 Claims



18. A multiple function control stalk mounted on the outermost end of a turn signal lever extending outwardly from a steering column of a vehicle for controlling the operation of a plurality of controlled devices within the vehicle comprising: an elongated housing including an aperture formed through an innermost end wall thereof;

a first switch mounting assembly disposed within said housing for controlling the operation of a first one of the plurality of controlled devices;

a second switch mounting assembly disposed within said housing for controlling the operation of a second one of the plurality of controlled devices;

a third switch mounting assembly disposed within said housing for controlling the operation of a third one of the plurality of controlled devices, said third switch mounting assembly being secured to the outermost end portion of the turn signal lever, the turn signal lever extending through said housing end wall aperture to said third switch mounting assembly;

means for pivotally connecting said third switch mounting assembly to said housing such that said housing is movable between a first position, wherein said housing is longitudinally aligned with the turn signal lever and said third switch mounting assembly, and a second position, wherein said housing is disposed at an angle relative to the turn signal lever and said third switch mounting assembly;

electrical switch means carried by said third switch mounting assembly and connected to the third one of the controlled devices, said electrical switch means being engageable with said end wall when said housing is pivoted from said first position to said second position for moving said electrical switch means from an opened position to a closed position so as to control the operation of the third one of the controlled devices; and

means for urging said housing toward said first position relative to the turn signal lever while permitting said housing to be pivoted toward said second position relative to the turn signal lever.

4,640,998

PUSH BUTTON SWITCH WITH COMPOUND CONTACT LEVER ACTION

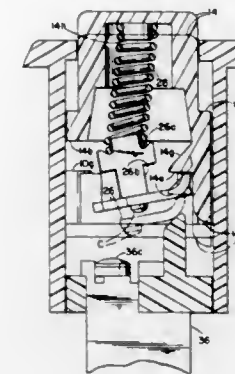
Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Jul. 9, 1985, Ser. No. 753,177

Int. Cl.⁴ H01H 21/42

U.S. Cl. 200—67 A

12 Claims



4,640,999

CONTACT MATERIAL OF VACUUM INTERRUPTER AND MANUFACTURING PROCESS THEREFOR

Yoshiyuki Kashiwagi; Yasushi Noda, both of Tokyo, and Kaoru Kitakizaki, Higashimine, all of Japan, assignors to Kabushiki Kaisha Meidenaha, Japan

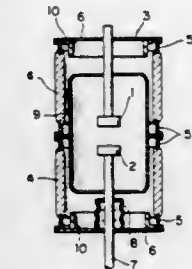
Filed Aug. 8, 1983, Ser. No. 521,172

Claims priority, application Japan, Aug. 9, 1982, 57-138331; Jun. 22, 1983, 58-113290; Jun. 22, 1983, 58-113291

Int. Cl.⁴ H01H 33/66

U.S. Cl. 200—144 B

8 Claims



1. A contact material of composite metal for a vacuum interrupter consisting essentially of:

a porous matrix containing between 10 and 70 weight % molybdenum powder and between 10 and 70 weight % chromium powder diffused into and bonded to each other, said porous matrix comprising insular particles of said molybdenum and chromium powders bonded to each other by sintering; and
between 20 and 70 weight % copper infiltrated into and filling said porous matrix.

4,641,000

ACTUATOR FOR ELECTRICAL CIRCUIT INTERRUPTER USING NITROCELLULOSE TYPE SOLID PROPELLANT

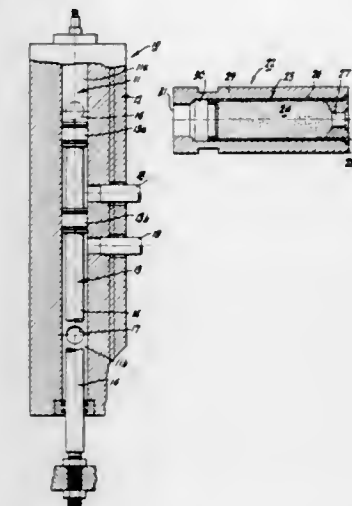
Ronald W. Crookston, Trafford, and Jeffrey R. Meyer, Pittsburgh, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 26, 1984, Ser. No. 665,021

Int. Cl.⁴ H01H 33/28

U.S. Cl. 200—148 R

7 Claims



1. An actuator for an electrical circuit interrupter having a power cylinder for operating said circuit interrupter from a high pressure gas flow said flow being provided by a pressure

12. A push button switch assembly comprising a switch housing having a generally rectangular open top configuration and a bottom wall, a push button movable vertically in said top opening, center fixed contact means provided in said bottom wall and defining a primary and a secondary pivot axis adjacent the upper end thereof, at least one fixed contact also provided in said bottom wall and spaced from said center contact means, a movable contact lever pivotably mounted on said center contact means and having a raised land above said primary pivot axis, said lever having one end portion adapted to abut said one fixed contact in a first limit position for said lever, said lever having a second limit position wherein said lever moves around said primary pivot axis to raise said one end portion above said one fixed contact, biasing means acting between said raised land on said movable contact lever and said push button to urge the push button toward a normal position and to urge said contact lever toward said first or said second limit position according to the position of the lever beyond a mid-position intermediate said first limit position and said second limit position relative said primary pivot axis, said push button having depending abutment means provided thereon, said contact lever having another end portion opposite said one end portion and defining abutment surfaces adjacent said respective lever end portions, said push button abutment means engageable with said abutment surfaces of said contact lever to move said lever from one of said limit positions toward the other of said limit positions in response to initial downward push button movement, and camming means defined by said switch housing for engaging one of said lever end portions as that lever end portion moves into one of its limit positions for shifting said lever slightly on said secondary pivot axis to provide clearance for said depending abutment on said push button during upward return movement of said push button.

generating power unit, said interrupter being of the type having a broad range of operating forces and operating over a wide range of ambient temperatures, such power unit being characterized by a shotgun type shell container being filled with a propellant having the following characteristics:

- (a) spherical nitrocellulose base grains having a high nitrogen content
- (b) a granulation of about 0.020 to 0.038 inches diameter range
- (c) free of deterrent coating
- (d) where said propellant is a small arms ammunition propellant having the properties of type WC 615 or WC 630 manufactured by Olin Corporation of East Alton, Ill. said characteristics providing a said pressure for actuating said interrupter over said wide range of ambient temperatures and accommodating said broad range of operating forces.

4,641,001

CIRCUIT INTERRUPTER

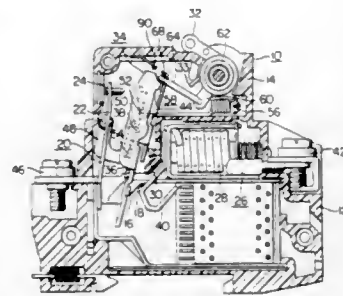
Hiroaki Fujihisa, Fukuyama; Hiroshi Fujii, Okayama; Hiroshi Ohishi, and Yoshiaki Kobayashi, both of Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1985, Ser. No. 723,836
Claims priority, application Japan, Jun. 15, 1984, 59-89969[U]; Jun. 15, 1984, 59-89970[U]

Int. Cl.⁴ H01H 3/00

U.S. Cl. 200—153 G

5 Claims



1. A circuit interrupter comprising: a pair of separable contacts, at least one of which is movable; an operating handle for manually operating said interrupter, and an operating mechanism operatively connected to move said movable contact relative to the other contact for opening and closing said circuit interrupter; said operating mechanism including: a movable contact arm carrying said movable contact at one end and providing a latch surface at the other end; a latch member pivotally mounted on said movable contact arm and having a latching end spaced from said latch surface to form a jaw therebetween; a toggle link mechanism including a first link connected to said operating handle and a second link having one end pivotally connected to said first link and a second end, said toggle link mechanism having an extending position corresponding to an open contact position of said handle and a collapsed position corresponding to a closed contact position of said handle, said second link being adapted to be received and held in said jaw by engagement with said latching end and said latching surface to operate said movable contact arm to manually open and close said contacts by said interrupter upon movement of said handle between open and closed positions, said second end of said second link being slidably released from said jaw by coaction with said latch surface upon movement of said latching end away from said latch surface which is caused by said operating mechanism when said interrupter is tripped; and means including a yieldable member providing a yieldable

stop surface for preventing return movement of said toggle link mechanism from said extended position after the trip operation to a reset position and for yieldably maintaining said toggle link mechanism at a position in which said toggle link mechanism is partly collapsed, said yieldable member being adapted to yield in response to manual effort on said operating handle to release said toggle link mechanism for return movement.

4,641,002

ELECTRICAL CONTACT

Uwe Maixner, Barum, and Dieter Milferstaedt, Tespe-Buetlingen, both of Fed. Rep. of Germany, assignors to Gesellschaft Fuer Kernenergie Iwerwertung in Schiffbau und Schiffahrt GmbH, Fed. Rep. of Germany

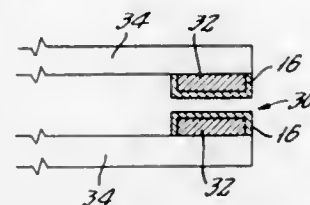
Continuation of Ser. No. 525,968, Aug. 24, 1983, abandoned, which is a division of Ser. No. 057,693, Jul. 16, 1979, Pat. No. 4,413,302. This application Sep. 23, 1985, Ser. No. 779,301

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831791

Int. Cl.⁴ H01H 1/02

U.S. Cl. 200—268

1 Claim



1. A pair of electric contacts, each contact having an electrically conductive metallic body comprising a metal selected from the group consisting of titanium and zirconium, each of said contact bodies forming one of a pair of cooperating, mutually engageable contact surfaces, at least one of said electric contact surfaces having a layer of titanium nitride or zirconium nitride, said layer being intimate and direct contact with the metal of said body without an intervening oxide layer.

4,641,003

LEVER OPERATED SWITCH WITH IMPROVED LEVER INTERCHANGEABILITY

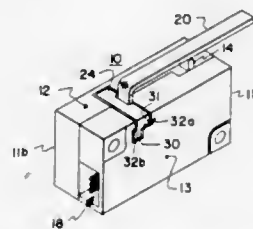
Eugene D. Alfors, Rockford, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 6, 1984, Ser. No. 669,184

Int. Cl.⁴ H01H 3/20

U.S. Cl. 200—332

17 Claims



1. In a device of the type including a housing in which is mounted a mechanism actuated by a plunger extending through a wall of the housing and adapted for reciprocal movement, the plunger being operated in at least one direction by a lever having a laterally oriented pivot portion supported by the housing, the improvement which comprises a retainer adapted to be removably held in a cavity in the housing, said

retainer and at least a portion of the bounding surface of the cavity cooperatively defining a recess configured to hold the pivot portion of the lever captive when said retainer is in place and to release the pivot portion of the lever for the recess when said retainer is removed.

4,641,004

KEY MODULE FOR KEYBOARDS HAVING A DOME-SHAPED KEY MEMBER OF RESILIENT MATERIAL

Jaroslav Keprda, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

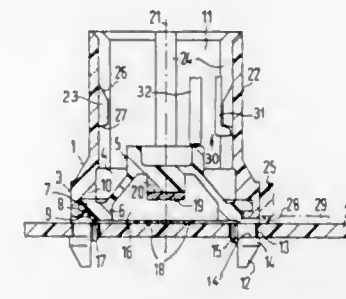
Filed Nov. 9, 1984, Ser. No. 669,794

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 8334679[U]

Int. Cl.⁴ H01H 3/12

U.S. Cl. 200—340

8 Claims



1. A key module for mounting on a base plate which carries at least one fixed contact, said key module comprising: a bell-shaped resilient key member including chamber means defining a contact chamber for the at least one fixed contact carried on the base plate, at least one movable contact mounted on said bell-shaped key member to contact the at least one fixed contact in response to the application of an operating force to said bell-shaped key member, an edge portion defining an open end of said bell-shaped key member, and projection means projecting laterally from and about said edge portion; a one-piece key housing part surrounding said bell-shaped key member and including recess means constituting at least one access opening at essentially right angles relative to the base plate for tightly receiving said projection means to form a composite member with said bell-shaped key member with said projection means pressed and extending through said openings into said recess means; and mounting means extending from said composite member for mounting the same to the base plate with said edge portion pinched therebetween.

4,641,005

FOOD RECEPTACLE FOR MICROWAVE COOKING

Oscar E. Seiferth, Madison, Wis., assignor to James River Corporation, Richmond, Va.

Continuation of Ser. No. 21,258, Mar. 16, 1979, abandoned. This application Jan. 21, 1986, Ser. No. 820,593

Int. Cl.⁴ H05B 6/80

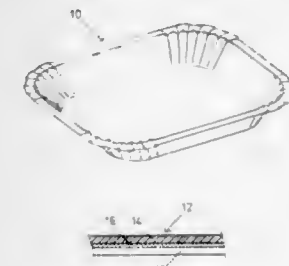
U.S. Cl. 219—10.55 E

8 Claims

1. A laminate for use in a disposable container adapted to heat the surface of a quantity of food when exposed to microwave energy, said laminate comprising: (a) a continuous microwave interactive layer of elemental metal having a thickness which is sufficiently small to cause said microwave interactive layer, when subjected to microwave energy, to heat up to a temperature which is sufficient to heat the surface of food in heat transfer relationship therewith, (b) protective means for said microwave interactive layer, said protective means including a smooth surfaced plastic

film having sufficient stability at high temperature that it will not degrade when the laminate is subjected to sufficient microwave energy to heat the surface of the quantity of food, and

- (c) support means for providing structural support for said interactive layer and said plastic film, said support means being formed of paper stock material having sufficient structural stability at the high temperature necessary for heating the surface of the quantity of food to maintain its physical shape;



wherein said laminate is formed by the process including the successive steps of vacuum depositing said microwave interactive layer onto a smooth surface of said plastic film followed by the step of bonding directly said plastic film upon which said microwave interactive layer has been vacuum deposited to one side of said paper stock material in a manner to cause said plastic film and said microwave interactive layer to be held in bonded relationship with said support means to cause the surface of a quantity of food, when in heat transfer relationship therewith, to be heated when the laminate is subjected to microwave energy.

4,641,006

ROTATING ANTENNA FOR A MICROWAVE OVEN

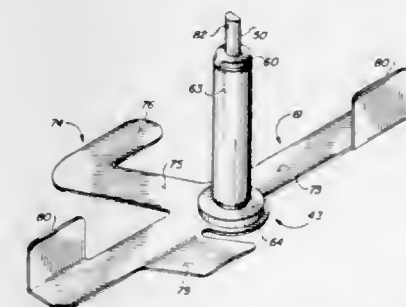
Frank E. Ross, and William H. Hunter, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa

Filed Sep. 30, 1985, Ser. No. 781,797

Int. Cl.⁴ H05B 6/72

U.S. Cl. 219—10.55 F

3 Claims

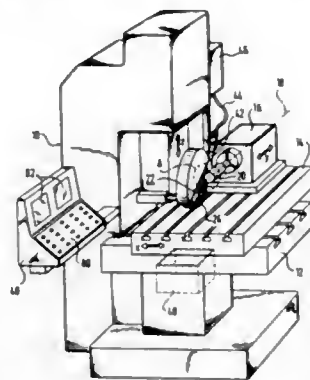


1. A microwave oven, comprising: means including a plurality of walls defining a heating cavity, a source of microwave energy disposed outside of said heating cavity, a waveguide extending between said source of microwave energy and one wall of said means defining a heating cavity, a rotatable antenna disposed at least partially in said heating cavity and electrically insulated from said means defining a heating cavity and from said waveguide, and drive means for rotating said rotatable antenna, said rotatable antenna including receiver means in the form of a probe extending into said waveguide from said heating cavity at a position spaced from said source of microwave energy for receiving microwave energy therefrom, said rotatable antenna further including center-fed elongated sheet metal radiator means disposed in a plane within

said heating cavity spaced from said one wall and electrically connected to said probe for conducting microwave energy therefrom and for radiating said microwave energy from along its length into said heating cavity, said rotatable antenna further including radiation modifying means comprising a sheet metal auxiliary radiating element formed integrally with and extending outwardly from said elongated radiator means, said auxiliary radiating element including a first portion connected to said elongated radiator means and extending outwardly in said plane at an acute angle to one end of said elongated radiator means and a second portion connected to said first portion and extending in said plane toward the other end of said elongated radiator means at an acute angle to said first portion, said radiation modifying means being operable for modifying the relative radiation from portions of said elongated radiator means and defining with said elongated radiator means a rotating radiation pattern providing increased radiation in the central portion as compared to the outer portions of said heating cavity, said rotatable antenna further including impedance balancing means for effectively matching the impedance of said source of microwave energy with the impedance of said heating cavity.

4,641,007

PROCESS AND DEVICE FOR TREATMENT OF METAL-BONDED NONCONDUCTIVE MATERIALS
Horst Lach, Dammstrasse 5, D-6450 Hanau 1, Fed. Rep. of Germany PCT No. PCT/EP82/00221, 8 371 Date Jun. 1, 1983, 8 102(e) Date Jun. 1, 1983, PCT Pub. No. WO83/01216, PCT Pub. Date Apr. 14, 1983
Filed Jun. 1, 1983, Ser. No. 503,157
Claims priority, application European Pat. Off., Oct. 5, 1981, 8 1107929.2; Fed. Rep. of Germany, May 28, 1982, 3220207
Int. Cl.⁴ B23H 5/04, 5/06, 7/30
U.S. Cl. 219—69 M 34 Claims



1. A method for combined electro-erosive machining/mechanical grinding of a workpiece of metal-bonded electrically non-conductive hard materials in an electrically conductive metal matrix comprising the steps of:
 - (a) providing a combined spark erosion-mechanical grinding tool consisting of electrically nonconductive abrasive material in an electrically conductive metal matrix;
 - (b) rotating said tool in close non-contact relationship to said workpiece;
 - (c) applying an electrical potential between said tool and said workpiece thus establishing a circuit effecting spark erosion between juxtaposed metal matrix portions of said tool and said workpiece;
 - (d) moving said tool relative to said workpiece for forming a predetermined profile on said workpiece;
 - (e) adjusting the non-contact distance between said tool and said workpiece in dependence upon the difference in an electrical signal derived from said circuit when metal matrix materials are in juxtaposition of said tool and workpiece for forming the predetermined profile of the metal matrix portion of said workpiece; and
 - (f) moving said tool into grinding contact with said work-

piece when said tool is juxtaposed said electrically non-conductive hard materials of said workpiece for forming the predetermined profile of the electrically nonconductive hard materials of the workpiece in response to an electrical signal derived from said circuit.

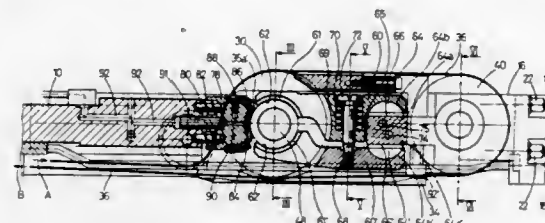
4,641,008

APPARATUS FOR ELECTRICAL RESISTANCE SEAM WELDING BY ROLLERS
Niklaus Portmann, Bellikon, and Alfonso D'Aniello, Urdorf, both of Switzerland, assignors to Elpatronic AG, Switzerland
Filed Nov. 21, 1985, Ser. No. 800,554
Claims priority, application Switzerland, Nov. 23, 1984, 5601/84

Int. Cl.⁴ B23K 11/06

U.S. Cl. 219—84

14 Claims

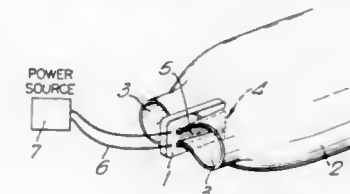


1. An apparatus for electrical resistance seam welding by rollers, said apparatus comprising: a welding arm disposed on a machine upright and having a free end, an internally cooled electrode roller rotatably secured to the free end of the welding arm and having at least one annular contact surface rotating with the electrode roller by which welding current is supplied to the roller, two contact jaws having curved contact surfaces in contact with said at least one annular contact surface rotating with the electrode, each jaw having a contact member bearing against a current-carrying surface associated with the welding arm, spring means associated with the jaws for pressing the curved contact surfaces of the jaws and the contact members against the annular contact surface of the electrode roller and against the current-carrying surface of the welding arm respectively under spring force, a cooling device provided on the arm to supply cooling ducts in the electrode roller with coolant and a lubricating device to supply the annular and the curved contact surfaces with contact oil, and wherein the apparatus is characterized in that the electrode roller (30) includes a spindle (32) which can be clamped onto the welding arm (10) and a rotor (31) which is rotatably mounted on the spindle and which has a narrow disc-shaped center portion (33) and two broad cylindrical hubs (35,35'), the peripheral surfaces (35a, 35a') of which form two rotating annular contact surfaces, the center portion containing, immediately below its outer peripheral surface (33a), an annular cooling duct (37) which is in communication, through substantially radial cooling ducts (39,39'), with axial cooling ducts (43,43') inside the spindle (32) of the electrode roller; the welding arm (10) which acts as an electrical conductor, defines forks (24,24') at the free end (12) and has bearing depressions (26,26') in the ends of the forks (24,24') to receive the spindle (32) of the electrode roller (30); the welding arm (10) is bridged at the free end (12) by a clamping member (14) which is detachably connected thereto and acts as an electrical conductor, and the clamping member has two further bearing depressions (28,28') to receive the spindle of the electrode roller; electrically conductive caps (48,48') are placed on each end of the spindle of the electrode roller and are clamped between adjacent bearing depressions (26,28;26',28') of the arm and the clamping member to transmit current from the welding arm (10) to the clamping member (14); the contact jaws (60,60') are forked at their ends adjacent to the electrode roller and so have a total of four curved contact surfaces (62,62') making contact with the hub surfaces (35a,35a'); the contact members (64,64')

are pivotally mounted in the contact jaws (60,60') and bear, with plane or cambered contact surfaces (64a, 64a'; 16a), against current-carrying surfaces (66,66') on a transverse web (65) of the clamping member; cooling ducts (52,52') are provided in the welding arm (10) and lead into the bearing depressions (26,26') of the arm which cooling ducts are in communication, through bores (48a') in the caps, both with axial cooling ducts (43,43') inside the spindle (32) of the electrode roller and with further cooling ducts (54,54';74,75) provided in the clamping member (14) and leading through the transverse web (65); and at least one felt lubricating segment (78,78') which is urged resiliently against the hub surfaces (35a,35a') and is periodically supplied with contact oil is provided as a lubricating device between the forks (24,24') of the welding arm (10).

4,641,009

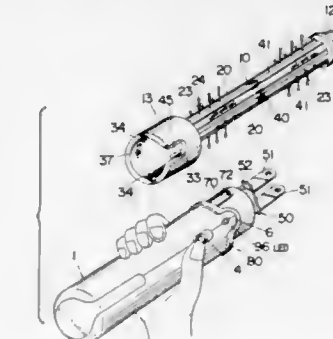
BRANCH-OFF TECHNIQUE
Jan Vansant, Leuven; Noel Overbergh, Bertem; Valere Buickers, Elem-Halen, and Amandus L. E. Pieck, Kortenaeken, all of Belgium, assignors to N.V. Raychem S.A., Diestsesteenweg, Belgium
Filed Jan. 8, 1985, Ser. No. 689,622
Int. Cl.⁴ H05B 3/06; H02G 15/18; B29C 61/02
U.S. Cl. 219—200 22 Claims



1. A branch-off clip which comprises at least two outer legs and an inner leg, so arranged that the clip can be positioned over an outer surface of a sleeve at an end thereof with the outer legs outside the sleeve and the inner leg inside the sleeve to form at least two terminal conduits in the sleeve; the inner leg comprising a heating means.

4,641,010

BATTERY POWERED ELECTRIC HAIR CURLER
Yoshinori Abura, Eiji Tsuji, Kenji Okuyama, and Shuhei Ochi, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Japan
Filed Feb. 4, 1985, Ser. No. 697,934
Claims priority, application Japan, Feb. 15, 1984, 59-26518
Int. Cl.⁴ H05B 3/00; H01C 3/10; A45D 1/04, 2/36
U.S. Cl. 219—222 19 Claims

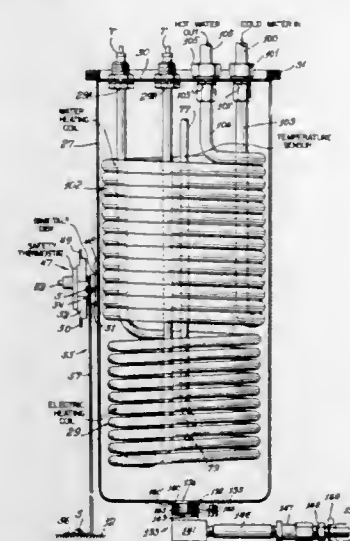


1. A hair curler including an elongated barrel provided with an electric heater for curling hair wound on the barrel and a handle supporting the barrel; said electric heater comprising a

plurality of resistor elements in the form of strips extending along the length of the barrel in generally spaced parallel relationship with one another and being electrically connected in a series by a plurality of bridging segments, and said electric heater being mounted on the exterior of the barrel such that the resistor elements are exposed on the outer surface of the barrel in circumferentially spaced relationship to one another around the barrel with each of the resistor elements being formed to have a generally U-shaped cross section with a pair of opposed legs connected by a web, the resistor elements being mounted on the barrel with their webs exposed on the outer surface of the barrel, the legs depending from opposite sides of the web in such a manner as to leave thereat rounded side edges, and means for connecting the electric heater to a source of electric power.

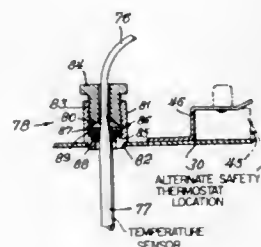
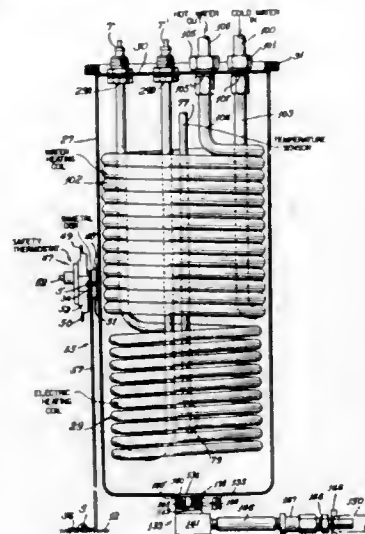
4,641,011

IMPROVED SAFETY THERMOSTAT SYSTEM FOR ELECTRIC BEVERAGE MAKING DEVICE
Melvin F. Roberts, Niles, Ill., assignor to Bloomfield Industries, Inc., Chicago, Ill.
Division of Ser. No. 633,417, Jul. 23, 1984, Pat. No. 4,602,145.
This application Sep. 23, 1985, Ser. No. 780,257
Int. Cl.⁴ H05B 1/02, 3/82; F24H 1/20; A47J 31/00
U.S. Cl. 219—328 5 Claims



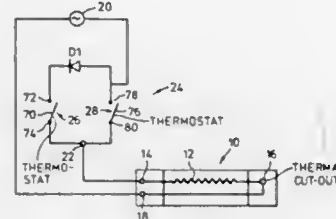
1. In a beverage-making device of the type having a covered water container for storing a quantity of water for use, the water container having an exterior sidewall and being heated by a looped coil-type heating element arranged interiorly thereof, said heating element having a plurality of coil loops, wherein at least one loop of the coil extends around the interior of the water container near the sidewall thereof, and running thermostat means capable of activating said heating element responsive to water temperature changes sensed within said container to maintain the temperature of the stored water in the container at a predetermined value, the improvement comprising a safety thermostat arranged to be capable of deactivating said heating element upon sensing temperature at the exterior sidewall of said container in excess of said predetermined value and a mounting means therefor, said safety thermostat being attached to said mounting means and disposed against the exterior sidewall of the container generally about at or below the midpoint height thereof and close to said at least one coil loop of said heating element, said safety thermostat being in series in an electrical circuit with said running thermostat whereby the running thermostat is capable of being overridden by the safety thermostat upon reaching a temperature in excess of said predetermined value to de-activate the heating element.

4,641,012
THERMOSTAT SENSING TUBE AND MOUNTING SYSTEM FOR ELECTRIC BEVERAGE MAKING DEVICE
 Melvin F. Roberts, Niles, Ill., assignor to Bloomfield Industries, Inc., Chicago, Ill.
 Division of Ser. No. 633,417, Jul. 23, 1984, Pat. No. 4,602,145.
 This application Sep. 23, 1985, Ser. No. 778,908
 Int. Cl.⁴ H05B 1/02, 3/82; F24H 1/20; A47J 31/00
 U.S. Cl. 219—331 6 Claims



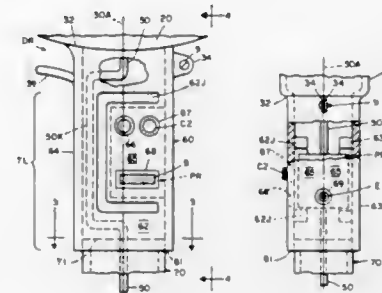
1. In a beverage-making device of the type having a hot water container, a cover mounted on top of the container, and a running thermostat system having a thermostat attached at said cover and communicating through a capillary tube with a temperature sensing means disposed below said cover and extending interiorly of said container, the improvement wherein said temperature sensing means comprises a sensing tube extending for substantially the full height of said container and having an upper end thereof attached at said cover by releasable engaging means, the sensing tube having a diameter of no greater than about 0.30 inches, said capillary tube extending from the upper end of said sensing tube to the thermostat, said sensing tube being rigid and depending freely within the container, said thermostat and sensing tube being cooperative to detect the mean temperature of the water in said container and capable of being quickly responsive to water temperature change in a spread of less than about six degrees Fahrenheit, said releasable engaging means being releasable to permit said sensing tube to be removed from said container through said cover while said cover remains mounted on top of said container.

4,641,013
DUAL STAGE THERMOSTAT AND ELECTRIC SPACE HEATING SYSTEM
 Gerald Dunnigan, Brantford, and Ardeshtir Bandari, West Vancouver, both of Canada, assignors to Westcan Manufacturing Ltd., Vancouver, Canada
 Filed Dec. 14, 1983, Ser. No. 561,486
 Claims priority, application Canada, Mar. 4, 1983, 422882
 Int. Cl.⁴ H05B 1/02; G05D 23/10; H01H 37/12, 37/54
 U.S. Cl. 219—364 9 Claims



7. A space heating system comprising:
- (1) an electrical space heater having a single heater element of at least 1,000 watts,
 - (2) and a dual level thermostat connected to said heater, said thermostat comprising:
 - (a) first temperature dependent electrical switch means operable between open and closed conditions dependent upon the temperature at said first switch means and including first adjustment means for varying the temperature setting at which said first switch means changes between open and closed conditions, said first switch means having first and second terminal means,
 - (b) second temperature dependent electrical switch means operable between open and closed conditions dependent on the temperature at said second switch means and including second adjustment means for varying the temperature setting at which said second switch means changes between open and closed conditions, said second switch means having third and fourth terminal means,
 - (c) said first switch means being set to open at a first temperature and said second switch means being set to open at a second temperature slightly below said first temperature,
 - (d) fifth terminal means connected to said first and third terminal means,
 - (e) a diode means connected between said second and fourth terminal means,
 - (f) sixth terminal means connected to said fourth terminal means and separated from said second terminal means by said diode means,
 - (g) means adapted to connect one of said fifth and sixth terminal means to one terminal of said space heater which space heater includes another terminal for connection to an AC power supply and adapted to connect the other of said fifth and sixth terminal means to said AC power supply,
- so that when the temperature is below said second temperature, full power will be available at said one of said fifth and sixth terminals and when the temperature is between said first and second temperatures, only approximately one-half of the power available from said AC power supply will be available at said one of said fifth and sixth terminals.

4,641,014
HAND-HELD HAIR DRYER HAVING HOUSED RADIO RECEIVER
 Todd A. Bland, 5729 S. 152nd Ave., Omaha, Nebr. 68137
 Filed Apr. 18, 1985, Ser. No. 724,595
 Int. Cl.⁴ H05B 1/00; H04B 1/08; A45D 20/42, 20/12
 U.S. Cl. 219—370 2 Claims

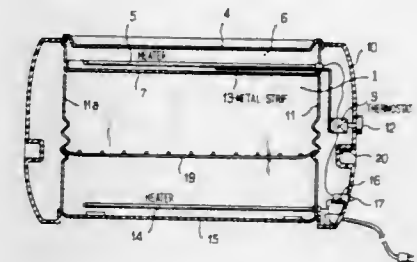


1. Improved hand-held hair drier comprising:
- (A) an elongated tubular barrel portion having an outlet-end and an inlet-end, said barrel between said ends being internally provided with a heating element means of the high-resistance electrical conductor type;
 - (B) a hollow volute portion attached to and communicating with said tubular barrel inlet-end, said volute being internally provided with a rotatable impeller and having air-intake means, whereby impeller rotation causes ambient air to be drawn into the air-intake means and driven through the heating element means and ultimately out the barrel outlet-end as a hotair bath for drying the user's hair;
 - (C) an elongated tubular base portion extending transversely to the longitudinal axis of the barrel and having an upper end attached to said volute and a lower end located remotely from said volute, the major portion of the length of said tubular base having a substantially rectangular cross sectional shape including a pair of substantially parallel opposed base-sides, said opposed base-sides being provided with substantially mirror image indentations cooperating to provide a secure seat adapted to cradle a conventional portable radio receiver, and at least one of said base-sides being provided with window means; and
 - (D) a conventional portable radio receiver comprising control and sound-emission means, said radio receiver being stably seated within the said opposed indented portions of said base-sides, and the radio receiver control and sound-emission means being positioned in registry with said base portion window means.

4,641,015
PORTABLE COOKING APPLIANCE COMPRISING AN OVEN CHAMBER AND A COOKING HOTPLATE
 Jacques Mayeur, Seynod, France, assignor to SEB S.A., Selougey, France
 Filed Jan. 15, 1985, Ser. No. 691,641
 Claims priority, application France, Feb. 3, 1984, 84 01661
 Int. Cl.⁴ F27D 11/00 6 Claims

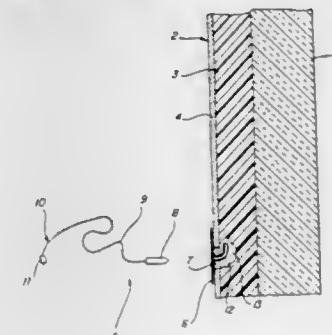
1. A portable cooking appliance comprising a chamber (1) constituting an oven having lateral faces, in which at least one of the lateral faces is closed by a door (3), said chamber having a bottom wall (15), a first electric resistance heating element (14) which extends within said chamber near said bottom wall (15), the appliance being further provided with a cooking hotplate (4) located at the top of the appliance above the oven chamber (1), and a second electric resistance-heating element (5) extending beneath and hotplate and located within a compartment (6), a metal plate (7) between the chamber (1) and the compartment (6), said compartment (6) communicating with the chamber (1) by means of at least one opening (8) through said plate (7), wherein said second resistance-heating element

(5) is connected to the electrical power supply by an adjustable thermostat (9) associated with a temperature probe (13) which extends within said compartment (6) and wherein said first resistance-heating element (14) within the oven chamber (1) is connected directly to the electrical power supply, the power of the first resistance-heating element (14) being lower than that of the second resistance-heating element (5) and being adapted to heat the chamber to a predetermined temperature, the two



- said resistance-heating elements being connected to switch means (16,18) to enable operation of the appliance in the three following conditions:
- a condition in which only the first heating-resistance (14) heats the chamber (1),
 - a condition in which only the second heating-resistance (5) heats the compartment (6), and
 - a condition in which the two heating resistances (14,5) heat both the chamber (1) and compartment (6).

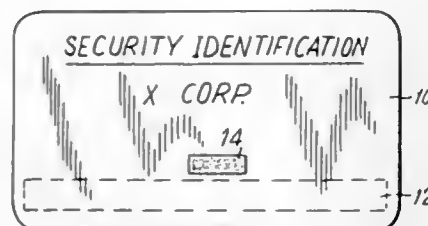
4,641,016
DEVICE FOR FORMING TUNNELS IN COMPOSITE WALL PANELS
 Michel Garcia, 2 place de l'Hôtel de Ville, Miramont De Guyenne, France
 Filed Nov. 28, 1984, Ser. No. 675,643
 Claims priority, application France, Nov. 30, 1983, 83 19262
 Int. Cl.⁴ B23B 49/00; H05B 3/44 9 Claims



1. Device for boring tunnels in the thickness of an insulative material constituting a composite wall panel comprising a layer of said material covered on at least one side with a rigid facing sheet, said device comprising:
- a mobile system incorporating a boring member and a flexible member at an end of which said boring member is mounted;
 - and means for positioning and guiding said mobile system including a removable support exhibiting means for attaching said removable support to a rigid facing sheet in line with an opening formed therein, and bent conduit means for guiding said boring and flexible member to penetrate into said insulative material parallel to said facing sheet in a preset direction and to a desired distance

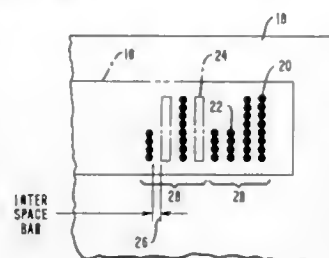
connected to said removable support and adapted to extend beyond said means for attaching.

4,641,017
FRAUD RESISTANT CREDIT CARD SYSTEM
 Herman Lopata, 144 E. Kingsbridge Rd., Mount Vernon, N.Y. 10550, assignor to Herman Lopata, Mount Vernon, N.Y.
 Filed Dec. 15, 1983, Ser. No. 561,638
 Int. Cl.⁴ G06K 7/10
 U.S. Cl. 235—457



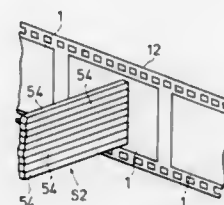
1. Tamper proof credit or identification card, comprising a flat card member adapted to identify an authorized bearer thereof, automatically-readable indicia on one surface of the flat card member containing data relating to the authorized bearer, and a separate reflective hologram disposed on a surface of the flat card member, the automatically-readable indicia being spaced apart from the hologram, the hologram being so constructed that a reference light beam impinging thereon from light source means at one predetermined angle and orientation to said one surface of the card will produce an image at another predetermined angle relative to said reference beam to impinge on sensor means disposed at a predetermined position relative to said light source means.

4,641,018
BAR CODE AND READING AND DECODING DEVICE
 Ali T. Mazumder, and Mohamed S. Kamel, both of Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio
 Filed Nov. 9, 1984, Ser. No. 670,424
 Int. Cl.⁴ G06K 7/10
 U.S. Cl. 235—462



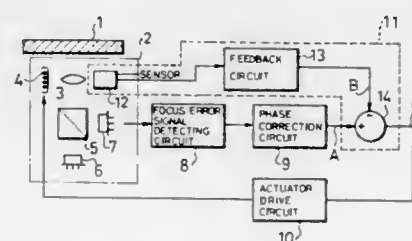
1. A record medium having a background of a given sensible characteristic and having sensible indicia located thereon in a plurality of zones of substantially equal area; each zone representing a predetermined value and comprising a plurality of elements each selected from a group comprising a first element in the form of a bar having a first length, a different sensibility than said background and a given width; a second element in the form of a bar having a different length than said first element, a different sensibility than said background and having a width substantially the same as said given width; and a third element in the form of a space having a width substantially the same as said given width and having the sensible characteristic of said background.

4,641,019
AUTOMATIC NOTCHER WITH JUDGING DEVICE FOR FILM FRAMES TO BE PRINTED
 Kenichi Inatsuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Jun. 3, 1985, Ser. No. 740,457
 Claims priority, application Japan, Jun. 1, 1984, 59-081789 [U]; Jun. 1, 1984, 59-081790 [U]
 Int. Cl.⁴ G01J 1/20; G01N 21/00
 U.S. Cl. 250—201



1. An automatic notcher comprising:
 (a) a conveyor means for conveying a developed film;
 (b) a film density detector which optically detects film densities at a plurality of points, said film density detector including a film frame edge detection portion, a large-spot detection portion and a small-spot detection portion;
 (c) film density reading means for reading film densities from said film density detector every time said film is conveyed a predetermined distance;
 (d) film density memory means for storing the film densities read by said film density reading means;
 (e) frame position judging means for judging a film frame position from the film density data stored in said film density memory means;
 (f) faulty frame judging means including out-of-focus image judging means for judging an out-of-focus image by calculating the intensity of an image pattern edge of said film and the degree of contrast thereof from said film density data; and
 (g) a notcher controlling circuit adapted to actuate a notcher at a notch forming position on said film only for necessary frames in accordance with data from said faulty frame judging means and said frame position judging means, whereby judgement is automatically made as to whether or not each of the frames on said developed film need be printed, and a notch is formed only for frames which need to be printed.

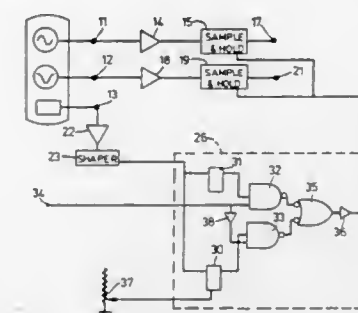
4,641,020
OPTICAL HEAD POSITION CONTROL DEVICE
 Nobuo Iwai, Yokohama, Japan, assignor to Alps Electric Co., Ltd., Japan
 Filed Jul. 27, 1984, Ser. No. 635,261
 Claims priority, application Japan, Jul. 28, 1983, 58-117784 [U]
 Int. Cl.⁴ G01J 1/20
 U.S. Cl. 250—201



1. In an optical head position control device for controlling

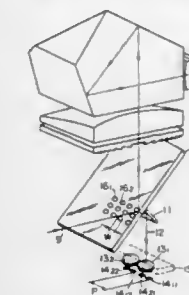
the position of an optical head emitting a source beam and receiving a reflected beam image from a surface of an optical storage medium, said device comprising an objective lens for transmitting the source beam to the surface of the medium and for receiving the reflected beam image, a tracking actuator for driving the objective lens in a radial tracking direction, and a focusing actuator for driving the objective lens in a focusing direction, said focusing actuator being controlled on the basis of a focus error detecting circuit which detects focus error from said reflected beam image and provides an output control signal to said focusing actuator,
 the improvement in which said device further comprises:
 an objective lens focal position sensor for detecting the position of said objective lens in the focusing direction, and
 a focusing feedback circuit for producing a focusing negative feedback signal on the basis of a detection signal from said objective lens focal position sensor, said focusing negative feedback signal being superposed on said output control signal for said focusing actuator.

4,641,021
VARIABLE BANDWIDTH LOW-PASS FILTER FOR LINE TRACER ACCURACY CONTROL
 Enn Vali, Burlington, Canada, assignor to Westinghouse Canada Inc., Hamilton, Canada
 Filed Jan. 22, 1985, Ser. No. 693,540
 Claims priority, application Canada, Mar. 21, 1984, 450133
 Int. Cl.⁴ G05B 1/00, 19/33, 21/02
 U.S. Cl. 250—202



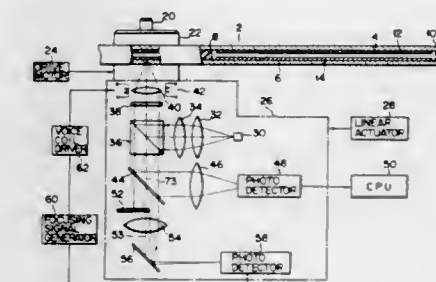
1. A circular scanning optical pattern tracer including an optical scanner, means in said scanner to produce a reference sine wave, a reference cosine wave and a sensing pulse indicative of the time the scan intercepts the pattern, a pair of sample and hold circuits for producing coordinate signals representative of the coordinate velocities required to drive a servo system which moves the machine tangential to the pattern, means to apply said sine wave to one of said sample and hold circuits and means to apply said cosine wave to the other of said sample and hold circuits, means to derive a first and a second sampling pulse from said sensing pulse means and to selectively apply said first or said second sampling pulse to said sample and hold circuits and means to alter the duration of said first sampling pulse over a range of values such that the duration of said sampling pulse determines the frequency response of said sample and hold circuits.

4,641,022
RANGE FINDING DEVICE WITH A SPATIAL LOW-PASS FILTER
 Takashi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 28, 1981, Ser. No. 287,699
 Claims priority, application Japan, Aug. 5, 1980, 55-107397
 Int. Cl.⁴ G01J 1/20; G03B 3/10
 U.S. Cl. 250—204



1. A range finding device comprising:
 an imaging lens for forming an image of a subject on a photo-sensitive material;
 at least two rows of discrete sensors of a predetermined pitch disposed substantially at a focal plane of said imaging lens, each of said rows of sensors reading substantially the same location of the subject when focusing is achieved and substantially different locations of the subject when focusing is not achieved; and
 optical low-pass filter means disposed between said imaging lens and said rows of sensors for lowering a modulation transfer function (an MTF) at a spatial frequency component corresponding to said predetermined pitch so that the MTF is lowered as compared with an MTF at the spatial frequency component in a case where no optical low-pass filter means is provided.

4,641,023
OPTICAL HEAD
 Hideo Ando, and Akihiko Doi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba and Toshiba Automation Equipment Engineering, Ltd., both of Kawasaki, Japan
 Filed Nov. 16, 1984, Ser. No. 671,909
 Claims priority, application Japan, Nov. 16, 1983, 58-215837; Dec. 1, 1983, 58-227526; Mar. 29, 1984, 59-61878
 Int. Cl.⁴ H01J 3/14; G02B 7/02
 U.S. Cl. 250—216



1. An optical head comprising a beam source for generating a light beam, a base supporting said beam source mounted thereon and having a linear expansion coefficient α , a frame supporting said base secured thereto and having a linear expansion coefficient γ , a lens-barrel disposed in and secured to said frame and having a linear expansion coefficient β , and a collimator lens system disposed in and secured to said lens-barrel for collimating the light beam generated from said beam

source, said frame being made of a material having a linear expansion coefficient satisfying either one of the inequalities $\alpha \geq \gamma$ and $\beta \geq \gamma$.

4,641,024
CONVEYOR SYSTEM FOR TRANSFERRING A MASS OF BAR SHAPED ARTICLES, IN PARTICULAR CIGARETTES

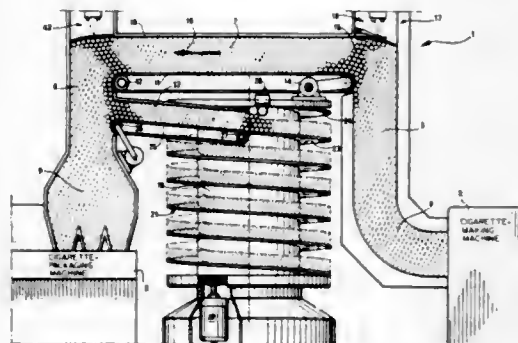
Armando Neri, Bologna, Italy, assignor to G. D. Società per Azioni, Bologna, Italy

Filed Feb. 23, 1984, Ser. No. 582,733

Claims priority, application Italy, Feb. 24, 1983, 3350 A/83
Int. Cl.⁴ G01N 9/04

U.S. Cl. 250—223 R

7 Claims



1. Conveyor system for transferring a mass of bar shaped articles having longitudinal axes, in particular cigarettes, arranged horizontally and one parallel with the other, from at least one machine on which the articles are made to at least one more machine for packing the articles, provided with conveyor means for supporting and transferring the articles with a movement crosswise to the longitudinal axes thereof, said conveyor means defining a plurality of channels connected one to the other; and at least one device for checking or detecting the quantity of the articles at a given position of said conveyor system, called the checking position, for operating the corresponding drive means of said conveyors, an essential feature of the said conveyor system being that said checking device comprises a transducer of analog type that furnishes an output signal whereby the level trend of the articles in the checking position is checked, said output signal proportional to the distance between the transducer and the surface of the level trend of the said articles at the said checking position.

4,641,025
SYSTEM FOR DETERMINING THE POSITION OF THE BOUNDARY BETWEEN SUBSTANCES HAVING DIFFERENT REFRACTIVE INDICES

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 5, 1984, Ser. No. 678,294

Int. Cl.⁴ H03J 5/16

U.S. Cl. 250—227

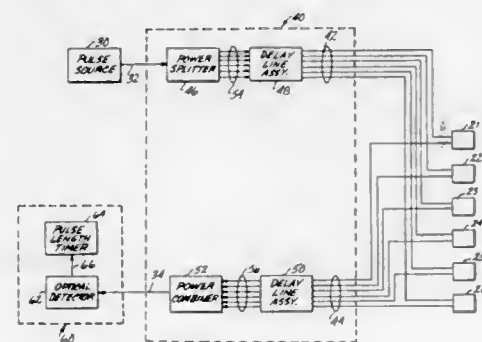
13 Claims

1. An apparatus for determining the position of the boundary between first and second substances having different refractive indices, comprising:

a plurality of N optical sensors positionable along a line that intersects the boundary over a range of boundary positions, each sensor being adapted to vary one of its optical properties depending on whether it is in the first or second substance;

source means for generating an optical source pulse;

interface means responsive to the source pulse for producing an optical response pulse having a time duration propor-



tional to the number of sensors that are in the first substance; and means for measuring the duration of the response pulse.

4,641,026
OPTICALLY ACTIVATED KEYBOARD FOR DIGITAL SYSTEM

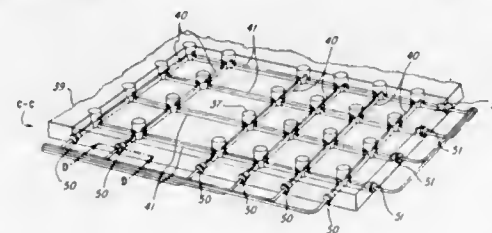
Felix Garcia, Jr., Round Rock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 2, 1984, Ser. No. 576,225

Int. Cl.⁴ G01D 5/34

U.S. Cl. 250—229

13 Claims



1. Manual input apparatus having scanning means, for providing inputs to data handling apparatus, comprising:

(a) key housing means having a matrix of apertures formed through the top surface thereof;

(b) wave guide means formed in the key housing means in a matrix configuration of columns and rows with the intersections of the columns and rows aligned below the apertures;

(c) light source means connected to each column, each light source means being turned on and off in a predetermined order by the scanning means;

(d) light detecting means connected to each row, activated by impinging light to provide a signal indicative of detection;

(e) key means resiliently mounted over each aperture and having a plunger for passing through the aperture when a key means is selected and depressed; and

(f) polarizing means formed by each plunger to reflect light, from a light source means that is turned on at a scanned column when the key means has been depressed, through the row at that intersection to the light detecting means associated with that row wherein each plunger is dimensioned so that when the associated key means is depressed, the plunger intrudes into the wave guide means a predetermined distance, defining a volume between the bottom of each plunger and the bottom of the wave guide means to permit light to pass through the volume in the scanned column to allow detection of other depressed keys in the scanned column and associated rows.

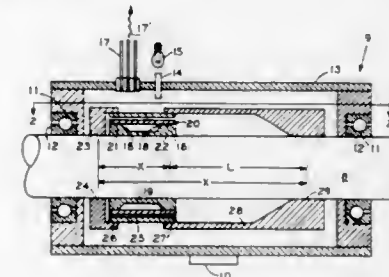
4,641,027
INDICATING POSITIONS
G. Frederick Renner; Richard K. Thatcher; William G. Atterbury, all of Columbus; Jeremy M. Harris, Worthington; Nile F. Hartman, Westerville, and Robert B. McCown, Columbus, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Dec. 18, 1984, Ser. No. 683,120

Int. Cl.⁴ H01J 3/14; G01D 5/34

U.S. Cl. 250—237 G

36 Claims



1. Apparatus for indicating the relative positions in a given direction between a reference point and a test point spaced therefrom and movable relative thereto, comprising reference surface means movable in response to movement of the reference point, and having at least a relevant reference portion that is covered with a plurality of substantially equally spaced lines thereon predominantly in a direction normal to the given direction,

test surface means movable in response to movement of the test point, and having at least a relevant test portion that is substantially similar and parallel to the relevant reference portion of the reference surface means, and covered with a plurality of substantially equally spaced lines thereon predominantly in a direction normal to the given direction,

the relevant portion of each surface means being adjacent and overlapping the relevant portion of the other surface means throughout a useful range of relative positions, and at least one relevant portion being substantially transparent between the lines thereon, and means for illuminating the relevant portions to form moire fringes,

the reference surface means and test surface means being so arranged that relative movement between the test point and the reference point having a component in the given direction varies the angle between the lines on the relevant portions of the respective surface means and thus causes the spacing of the moire fringes formed by the lines to vary as a function of the relative positions between the reference point and the test point in the given direction.

4,641,028
NEUTRON LOGGING TOOL
James A. Taylor, 4213 Bonham, Odessa, Tex. 79762, and Kenneth G. Taylor, 926 W. 38th, Odessa, Tex. 79764
Filed Feb. 9, 1984, Ser. No. 578,710
Int. Cl.⁴ G01V 5/10

U.S. Cl. 250—266

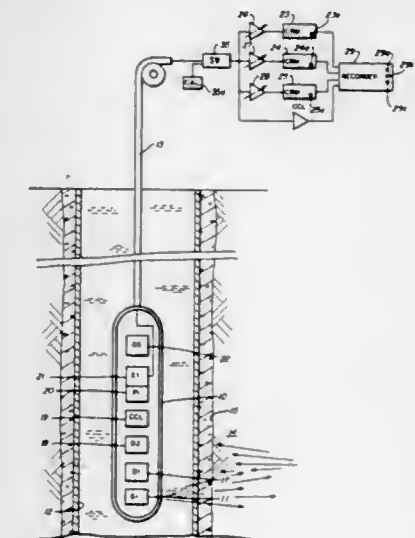
12 Claims

1. A method of logging earth formations traversed by a well bore and utilizing a logging tool having a neutron source and a short spaced and a long spaced thermal neutron detector which produce an independent response as a function of depth of the logging tool in a well bore, comprising the steps of:

moving the logging tool through a well bore to locate a section of the earth formations which has minimum porosity and obtaining measurement responses from each of said long and short spaced detectors;
normalizing the responses of the long and short spaced detectors by matching the sensitivity of response of the long spaced detector to the sensitivity of response of the

short spaced detector for an earth formation which has minimum porosity so that the normalized responses track one another in an earth formation which has minimum porosity;

moving the tool over the length of the well bore to be surveyed while recording the normalized responses of the long and short spaced neutron detectors as a function of depth;



comparing the normalized responses of the long and the short spaced neutron detectors on the basis that the normalized responses match for dense and low porosity formations and that a hydrocarbon bearing formation is indicated when the long spaced response is less than the short spaced response and that a water bearing formation is indicated when the long spaced response is greater than the short spaced response.

4,641,029
PROCESS AND APPARATUS FOR HEATING IONIZING STRIPS

Karl-Eugen Habfast, Kiesselbachstr. 26, D - 2800 Bremen 41; Günter Kappus, Mecklenburgerstr. 37, D - 2805 Stuhr 4; Horst Rache, Brookweg 12, D - 2870 Delmenhorst, and Bernd Windel, Wachmannstr. 151, D - 2800 Bremen 1, all of Fed. Rep. of Germany

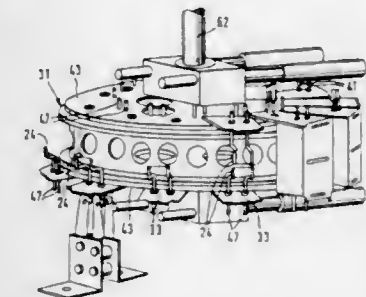
Filed Aug. 8, 1984, Ser. No. 638,758

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1983, 3329401

Int. Cl.⁴ H01J 49/10

U.S. Cl. 250—288

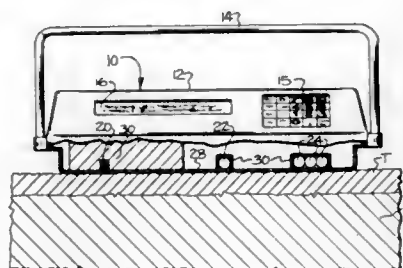
32 Claims



1. A process for the heating of a plurality of ionizing strips having samples thereon used in mass spectrometers, having an ion emission path, and arranged on a magazine wheel to generate a stable ion emission, comprising the following steps:

preheating said samples located on the ionizing strips to a specific temperature and holding at this temperature; thereafter, without the heating operation being interrupted heating-up said samples toward an ionizing temperature; and, after said ionizing temperature has been reached subsequently transferring said samples into a measuring position juxtaposed with said ion emission path without the heating operation being interrupted including the period while said transfer is taking place.

4,641,030
APPARATUS AND METHOD FOR DIRECTLY MEASURING THE DENSITY OF A THIN LAYER
 Ali Regimand, Raleigh, N.C., assignor to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.
 Filed Dec. 13, 1984, Ser. No. 681,302
 Int. Cl.⁴ G01N 23/00
 U.S. Cl. 250-308 7 Claims



1. A nuclear radiation backscatter gauge for directly measuring from a composite material comprised of a relatively thin top layer of material applied over an underlying base material, the density D_T of the top layer, comprising means for emitting nuclear radiation from a source into the relatively thin top layer of material and the underlying base material and for detecting radiation which is scattered therefrom at two geometrically differing source-to-detector relationships; signal processing circuit means for responding to the detected scattered radiation at said two source-to-detector relationships and generating respective signals D_{G1} and D_{G2} representative of the composite densities of the top layer and base layer as measured at the respective source-to-detector relationships, and signal calculating circuit means connected with said signal processing circuit means and operable for determining the density D_T of the top layer from the relationship

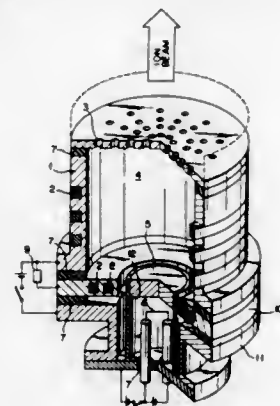
$$D_T = \frac{k_2 D_{G1} - k_1 D_{G2}}{k_2 - k_1},$$

where k_2 and k_1 are empirically derived instrument constants.

4,641,031
ION SOURCE APPARATUS
 Yasuyuki Ito, Yokohama, and Toru Sugawara, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Jan. 9, 1985, Ser. No. 689,943
 Claims priority, application Japan, Feb. 13, 1984, 59-22732
 Int. Cl.⁴ H01J 27/00
 U.S. Cl. 250-423 R 8 Claims

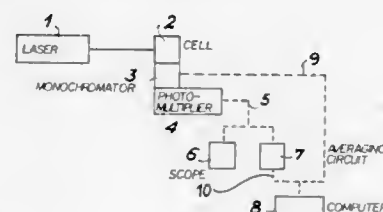
1. An ion source apparatus comprising: a bulk type thermionic cathode which, when heated, emits thermoelectrons; an anode which causes a discharge in cooperation with said thermionic cathode, thereby producing a plasma;

a grid electrode for extracting ions out of said plasma; a magnetic member for confining said plasma within a prescribed region; and



a ferromagnetic body surrounding said thermionic cathode for eliminating lines of magnetic force created by said magnetic member in proximity to the surface of said thermionic cathode.

4,641,032
PROCESS FOR THE DETERMINATION OF TRACES OF URANIUM IN SOLUTION BY TIME RESOLUTION SPECTROFLUORIMETRY
 Patrick Mauchien, Orsay, and Philippe Cauchetier, Massy, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France
 Filed Mar. 15, 1985, Ser. No. 712,175
 Claims priority, application France, Mar. 16, 1984, 84 04094
 Int. Cl.⁴ G01N 21/64
 U.S. Cl. 250-459.1 2 Claims

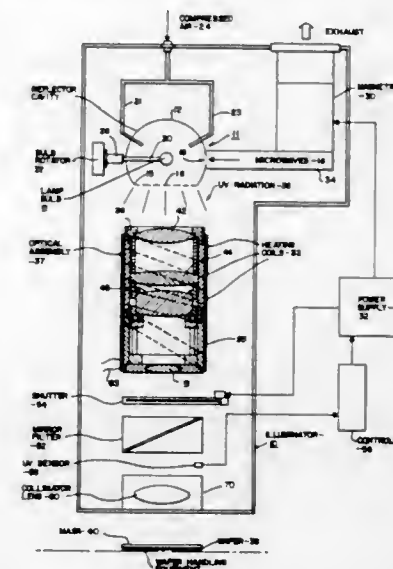


1. A process for the determination of traces of uranium in solution consisting of the steps of exciting the fluorescence of the uranium molecules in the solution by laser pulses, studying the exponential decay curve of said fluorescence for a given wavelength, deducing the value, F_0 , of said same fluorescence at the end of each laser pulse and comparing the deduced value with the value, F'_0 , obtained for a standard uranium solution containing a known uranium quantity.

4,641,033
APPARATUS AND METHOD PREVENTING RADIATION INDUCED DEGRADATION OF OPTICAL ELEMENTS
 Andrei N. Petelin, Rockville; Celia M. Sharp; Michael G. Ury, both of Bethesda, all of Md., and Gene R. Wooden, Sterling, Va., assignors to Fusion Systems Corporation, Rockville, Md.
 Filed Dec. 19, 1984, Ser. No. 683,521
 Int. Cl.⁴ G21G 1/00
 U.S. Cl. 250-492.1 16 Claims

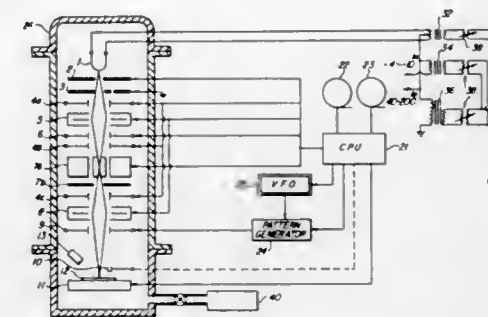
1. In an optical apparatus for transmitting ultraviolet radiation from a source of said ultraviolet radiation to a target to be exposed to said ultraviolet radiation; an optical system having at least one optical element com-

prising a radiation transmissive silica which upon exposure to said ultraviolet radiation at ambient temperature becomes degraded by an absorption of at least one wavelength of said ultraviolet radiation that increases with the time of said exposure, and which upon being annealed at a temperature in the range of about 300° C. to about 400° C. reverses said degradation by a decrease in said absorption; and,



heating means for maintaining said optical element at an elevated temperature in the range of about 280° C. to about 400° C. substantially at all times during transmission of said ultraviolet radiation by said optical system, said elevated temperature being sufficiently high to prevent a significant amount of said degradation.

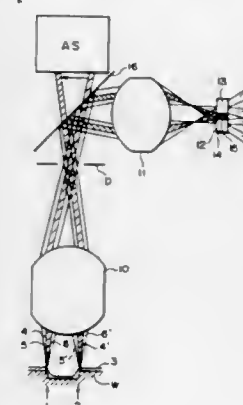
4,641,034
ION IMPLANTATION APPARATUS AND METHOD FOR MASKLESS PROCESSING
 Shigeru Okamura, Ebina, and Takao Taguchi, Isehara, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan
 Filed Dec. 28, 1984, Ser. No. 687,225
 Claims priority, application Japan, Dec. 29, 1983, 58-251453
 Int. Cl.⁴ G01N 23/00
 U.S. Cl. 250-492.2 7 Claims



1. A method of processing a substrate by selective ion implanting directly to patterns on the substrate using a focused ion beam without using masks and scanning a focused ion beam in a step by step movement, said method comprising the steps of: determining the starting and ending points of said scanned substrate measuring an ion beam current by a probe; selecting a clock frequency from an output frequency of a variable frequency oscillator whose frequency can be

varied continuously, said clock frequency for scanning said focused ion beam in a step by step movement and a scanning number based upon said measured ion current for providing a predetermined dosage; and performing said processing of said substrate with said ion beam by the selected combination of said clock frequency and said scanning number.

4,641,035
APPARATUS AND A METHOD FOR POSITION DETECTION OF AN OBJECT STEPPED PORTION
 Akiyoshi Suzuki, Tokyo, and Hideki Ina, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Aug. 21, 1984, Ser. No. 642,760
 Claims priority, application Japan, Aug. 31, 1983, 58-159652
 Int. Cl.⁴ G01N 21/86; G01V 9/04
 U.S. Cl. 250-548 8 Claims

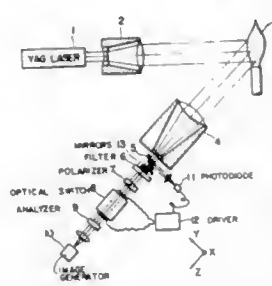


1. An apparatus for detecting a position of an object having a stepped portion and having a substantially transparent surface layer, comprising: illuminating means for illuminating the object with light, so that light is scattered by the stepped portion, and so that light is reflected by the object and then refracted by the transparent layer; sensing means for sensing light that has been scattered by the stepped portion in such a direction as not to be influenced by light reflected by the object and then refracted by the transparent layer; and detecting means for detecting a position of the object on the basis of an output of said sensing means.

4,641,036
METHOD OF AND APPARATUS FOR IMAGING SURFACE OF OBJECT AT HIGH TEMPERATURE
 Jiro Ohno, and Hirokatsu Yashiro, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
 Filed Sep. 21, 1984, Ser. No. 652,946
 Claims priority, application Japan, Sep. 24, 1983, 58-176748
 Int. Cl.⁴ G01N 21/00
 U.S. Cl. 250-574 5 Claims

4. An apparatus for imaging the surface of an object at high temperature, comprising: a light pulse generator provided such as to be opposed to high-temperature object; and

a half-mirror for dividing light, an interference filter, a high-speed optical switch and an image generating mechanism



which are successively disposed on the optical axis of light which is reflected from said object.

4,641,037

ORGANIC METAL NEUTRON DETECTOR

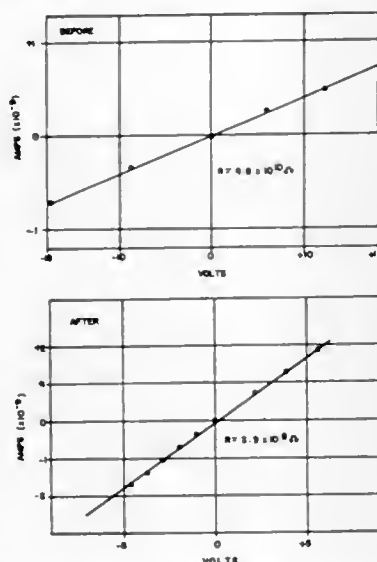
Michael A. Butler, and David S. Ginley, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 21, 1984, Ser. No. 673,969

Int. Cl.⁴ G01T 3/00

U.S. Cl. 250—390

17 Claims



1. A device for detection of neutrons, comprising: as an active neutron sensing element, a conductive organic polymer having both electrical conductivity and a cross-section for said neutrons such that a detectable semipermanent change in said conductivity is caused through impingement of said neutrons on the organic polymer; means operatively associatable with said conductive organic polymer, which is responsive to a property of said polymer altered by impingement of said neutrons on said polymer; and means for associating a permanent or semi-permanent change in said conductivity with the presence of neutrons at the location of said device.

4,641,038

IMAGING DEVICE

Mark G. B. Baker, Edinburgh, Scotland, assignor to Ferranti, plc, Cheshire, England

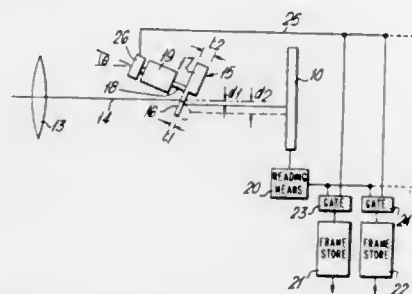
Filed Jun. 22, 1983, Ser. No. 507,677

Claims priority, application United Kingdom, Jun. 24, 1982, 82185550

Int. Cl.⁴ H01J 40/14; H04N 3/12

U.S. Cl. 250—578

18 Claims



1. An imaging device including: a two-dimensional array of photoelectric elements spaced apart in at least one coordinate direction of the array, focusing means operable to produce an image of a subject in a focal plane at the array elements, a substantially planar member arranged to be rotated about an axis and having first and further discrete parallel-faced optically transmissive portions disposed circumferentially about the rotation axis, said portions being movable one at a time through the field of view of the photoelectric elements such that with the first portion thereof in said field of view of the elements a first part of the image is caused to fall upon the elements and with each further portion thereof in the field of view of the elements the image is displaced with respect to the first part in said one coordinate direction to cause a different part of the image associated with each portion to fall upon the elements.

4,641,039

WIND MOTORS AND AEROGENERATORS

Jean Carre, Mailly-la-Ville, France, assignor to Groupment d'Interet Economique Aerogenerateurs Carre, Mailly-la-Ville, France

PCT No. PCT/FR83/00268, § 371 Date Aug. 30, 1984, § 102(e) Date Aug. 30, 1984, PCT Pub. No. WO84/02752, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 30, 1983, Ser. No. 648,174

Claims priority, application France, Dec. 30, 1982, 82 22121; Jun. 8, 1983, 83 09486

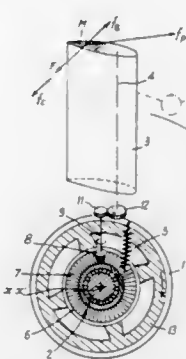
Int. Cl.⁴ F03D 7/04

U.S. Cl. 290—44

20 Claims

1. Aerogenerator or wind-powered engine comprising a rotor with variable-pitch propeller, wherein the blades (3) are mounted to pivot about their respective axes (4), whilst being dynamically out-of-balance and consequently presenting an out-of-balance or disturbing rear mass (M), wherein it comprises compensating means sensitive to the deceleration of the

rotor in order automatically to exert on each blade, in the event of deceleration of the rotor, a force substantially equal to and



opposing the disturbing force created by the kinetic energy of the rear or out-of-balance mass of the blade.

4,641,040

LOW-HEAD HYDROELECTRIC INSTALLATION

Lucien Megnint, Grenoble, France, assignor to Neyrpic, Grenoble, France

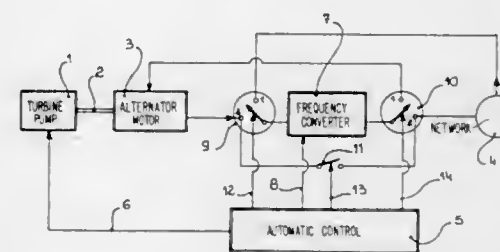
Filed Feb. 25, 1985, Ser. No. 704,981

Claims priority, application France, Feb. 24, 1984, 84 02814

Int. Cl.⁴ H01D 15/10

U.S. Cl. 290—52

5 Claims



1. In a low-head hydroelectric installation, of the type including at least one hydraulic turbo-machine (1) constructed to give optimum efficiency under a defined head of water or pressure head (Hn), called the nominal head, corresponding to a nominal power (Pn) of the installation and for a speed of rotation corresponding to the speed of synchronism (ns) with the frequency of an electric network (4), and at least one rotary electrical machine (3) drive-coupled to said turbo-machine and electrically connected to said network, the improvement comprising

automatic control means (5) enabling rotation of said turbo-machine at its speed of synchronism with the frequency of said network, comprising means (5, 9 to 11) making it possible, when said head of water or pressure head is less than a value (Hd) equal to a defined fraction less than one-half of said nominal head (Hn), to cause said turbo-machine to rotate at a speed lower than said synchronous speed, and consequently to insert between said network and said electrical machine a frequency matching device (7) of maximum power at least less than one-half of said nominal power.

4,641,041

CIRCUIT ARRANGEMENT FOR REGISTERING FALSE RELEASE SIGNALS FOR A RESTRAINT SYSTEM

Bernhard Mattes, Sachsenheim; Eberhard Mausner, Linz, and Wadym Suchowskyj, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

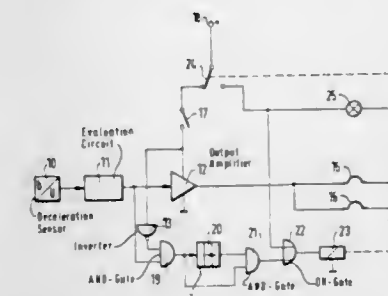
Filed Jun. 19, 1985, Ser. No. 746,297

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425281

Int. Cl.⁴ B60R 21/08; H01H 35/14

U.S. Cl. 307—10 R

7 Claims



1. A circuit arrangement for registering false release signals for a restraint system in a motor vehicle wherein the restraint system includes first release circuit means for generating a first release signal in response to an accident-related deceleration of the vehicle, said first release circuit means including a first deceleration sensor and an evaluation circuit connected to the latter; second release circuit means for responding to a predetermined threshold level of deceleration by generating a second release signal; and, actuating circuit means for actuating said restraint system in response to said first release signal only upon the occurrence of said second release signal simultaneously with said first release signal; said circuit arrangement for registering false release signal comprising:

monitoring circuit means connected to said evaluation circuit for ascertaining the occurrence of said first release signal in the absence of said second release signal from said second release circuit means; and, warning means responsive to the output of said monitoring circuit means for registering the presence of said first release signal in the absence of said second release signal from said second release means thereby establishing said first release signal occurring in this manner as a false release signal.

4,641,042

POWER SUPPLY SYSTEM AND A CONTROL METHOD THEREOF

Yoshiaki Miyazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 20, 1985, Ser. No. 735,738

Claims priority, application Japan, May 25, 1984, 59-104688

Int. Cl.⁴ H02J 3/06, 9/06

U.S. Cl. 307—66

17 Claims

1. A power supply system, comprising: inverter means for converting a DC power into a first AC power; reserved power source means for generating a second AC power; changeover means, connected to receive said first AC power and said second AC power, for outputting one of said first and second AC power, said changeover means being adapted to supply a current to a load; overcurrent detection means for detecting said load current, comparing the detected load current with a predetermined detection level to produce an overcurrent detection signal having a first level when said load current is less

1. A logic circuit having a supply voltage terminal, a plurality of input terminals and a plurality of output terminals, comprising:
 - a first transistor having a base coupled to one of said input terminals, an emitter, and a plurality of collectors coupled to one each of said plurality of output terminals;
 - a second transistor having a base coupled to said input terminal, an emitter coupled to said supply voltage terminal, and a collector coupled to said emitter of said first transistor;
 - a plurality of transistors, each of said plurality of transistors having at least one collector coupled to one each of said plurality of output terminals, an emitter coupled to said emitter of said first transistor, and a base coupled to one of said plurality of input terminals; and
 - a third transistor having a collector coupled to said emitters of said first transistor and said plurality of transistors, an

emitter coupled to said supply voltage terminal, and a base coupled to one of said plurality of input terminals.

4,641,048 DIGITAL INTEGRATED CIRCUIT PROPAGATION DELAY TIME CONTROLLER

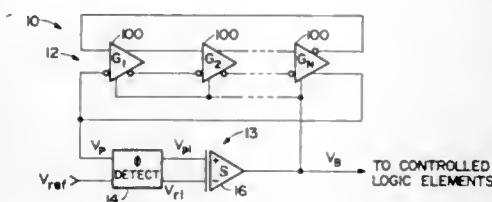
Ira G. Pollock, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 24, 1984, Ser. No. 643,940

Int. Cl.⁴ H03K 5/26

U.S. Cl. 307—591

5 Claims



1. A circuit for monitoring and controlling the propagation delay of logic elements on an integrated circuit comprising: an oscillator having N logic elements of the integrated circuit connected in series to form a ring with the output of each logic element being connected to the input of the succeeding logic element such that a pulse continuously circulates around the ring, the oscillator logic elements having propagation delay characteristics typical of the other logic elements on the integrated circuit, the output of the oscillator being a phase locking signal having a frequency which is a function of the propagation delay of each logic element of the ring, the propagation delay of the logic elements being in part a function of applied bias voltage; and a bias signal generator, having as inputs the phase locking signal and a reference signal having a plurality of pulses of frequency Fref, for comparing the phase locking signal to the reference signal to generate a bias signal proportional to the time integral of the phase difference between the phase locking signal and the reference signal, the bias signal being applied to each logic element on the integrated circuit to automatically control the propagation delay of each logic element to be $1/(N \times Fref)$, the logic elements having similar propagation delay times for a given applied bias signal.

4,641,049 TIMING SIGNAL GENERATOR

Yukio Fukuzo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

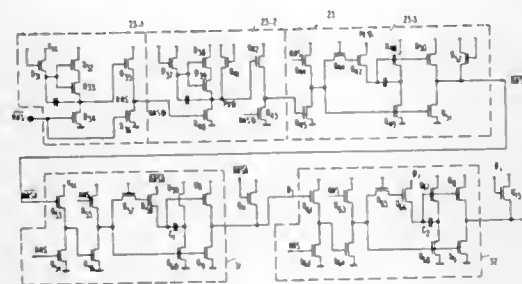
Filed Nov. 9, 1984, Ser. No. 669,979

Claims priority, application Japan, Nov. 11, 1983, 58-211791

Int. Cl.⁴ H03K 5/13, 17/28

U.S. Cl. 307—590

17 Claims



1. In a timing signal generator of the type having a first dynamic delay circuit adapted to generate a first delay signal in

response to a control signal applied to an input terminal thereof, and a second dynamic delay circuit adapted to generate a second delay signal in response to said first delay signal, said first and second dynamic delay circuits sequentially generating said first and second delay signals respectively under the condition of a steady supply of power thereto, said first and second delay signals being generated in a random order when the supply of power is initiated, the improvement comprising a first field effect transistor coupled between the output terminal of said first dynamic delay circuit and a first voltage terminal and having a gate coupled to the input terminal of said first dynamic delay circuit and a second field effect transistor coupled between the output terminal of said second dynamic delay circuit and said first voltage terminal and having a gate coupled to said output terminal of said first dynamic delay circuit, whereby when the supply of power is initiated, the output terminal of said first dynamic delay circuit first generates said first delay signal in response to the control signal at said input terminal thereof and thereafter the output terminal of said second dynamic delay circuit generates said second delay signal.

4,641,050

ELECTRODYNAMIC SHAKERS

Andrew C. Emerson, Royston, and Stephen A. Foster, Clonhill, both of England, assignors to Ling Dynamic Systems Limited, Hertfordshire, England

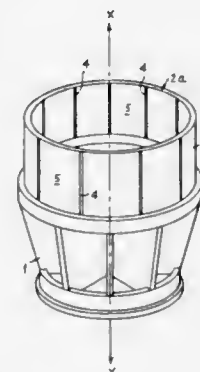
Filed Jan. 18, 1985, Ser. No. 692,756

Claims priority, application United Kingdom, Mar. 20, 1984, 8407248

Int. Cl.⁴ H02K 33/00, 35/00

U.S. Cl. 310—27

4 Claims



1. An armature structure for an electrodynamic shaker comprising an armature support, an armature coil assembly comprising at least one conductor wound into the armature coil mounted on the support, and a cladding of carbon fibers of the armature coil assembly, said cladding having the carbon fibers disposed generally longitudinally of the armature coil assembly, that is to say, said fibers lie along the direction of motion of the armature.

4,641,051

ROTOR FOR AN ELECTRICAL MACHINE WITH AXIAL AND RADIAL COOLING CHANNELS

Herbert Aulinger, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,093

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1984, 3408986

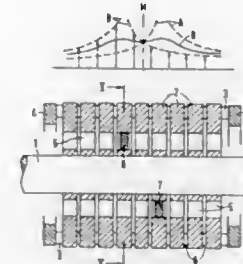
Int. Cl.⁴ H02K 9/14

U.S. Cl. 310—61

10 Claims

7. A rotor for an electrical machine with axial and radial

cooling channels, having equally wide radial cooling channels and equally wide axial cooling channels arranged symmetrically relative to the rotor axis between the rotor metal laminations, so that the cooling air that blows towards an outer radial surface of the rotor is conducted to the axial cooling channels



from both frontal sides of the rotor, characterized by having a plurality of blocking surfaces, each arranged in one of the axial cooling channels respectively at an axial distance from the rotor center and alternating first toward one of the frontal sides and then the other frontal side from the rotor center between respective adjacent axial cooling channels.

4,641,052

INPUT CIRCUIT FOR A STACKED TYPE PIEZO-ELECTRIC ELEMENT DEVICE

Noboru Kobayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

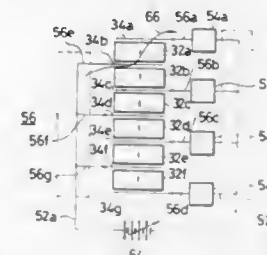
Filed May 14, 1985, Ser. No. 733,913

Claims priority, application Japan, Nov. 1, 1984, 59-229016

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—317

5 Claims



1. A stacked type piezo-electric device for converting electrical energy into mechanical energy comprising: a plurality of stacked piezo-electric elements, each piezo-electric element having electrodes on both sides thereof; a power circuit; a plurality of voltage impression circuit means corresponding to each of said piezo-electric elements, for applying a voltage to each of the electrodes of said piezo-electric elements, said plurality of voltage impression circuit means connected in parallel with one another to said power circuit thereby establishing for each piezo-electric element a current path from said power circuit and through said corresponding voltage impression circuit means for causing said conversion of electrical to mechanical energy; a plurality of circuit breaking means, one of which is connected in the current path of each piezo-electric element for interrupting the current that flows in said current path only when said current exceeds a predetermined value, whereby remaining current, not exceeding said predetermined value, continues to flow in said remaining current paths.

4,641,053

ULTRASONIC LIQUID ATOMIZER WITH AN IMPROVED SOFT START CIRCUIT

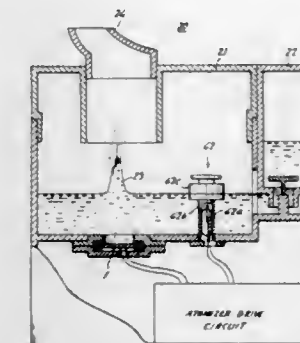
Masaaki Takeda, Osaka, Japan, assignor to Matsushita Seiko Co., Ltd., Japan

Filed Aug. 14, 1984, Ser. No. 640,644

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—317

18 Claims



1. An apparatus for use with an ultrasonic liquid atomizer having a liquid chamber for holding liquid therein and a piezo-electric vibrator for generating pressure rises in said liquid in response to ultrasonic energy, comprising: power supply means connected in use to a mains supply for generating a full-wave rectified supply voltage and a bias voltage; an oscillator having a transistor connected to be biased by said bias voltage and a resonant circuit a part of which is formed by said piezoelectric vibrator, said transistor and said resonant circuit being connected to receive said full-wave rectified supply voltage to generate said ultrasonic energy in said piezoelectric vibrator in the presence of said bias voltage; a soft start circuit connected in circuit between said power supply means and said transistor for periodically interrupting the supply of said bias voltage to said transistor for variable lengths of time during an initial brief interval from the time said bias voltage is applied to said transistor so that the ultrasonic energy occurs in a series of bursts which increase gradually in duration as a function of time during said initial brief interval; and a bias stabilizer effective upon the termination of said initial brief period for preventing said soft start circuit from responding to an unwanted voltage generated by said oscillator.

4,641,054

PIEZOELECTRIC ELECTRO-ACOUSTIC TRANSDUCER

Daisuke Takahata, and Yukiyoichi Sakai, both of Kawashima, Japan, assignors to Nippon Ceramic Company, Limited, Saitama, Japan

Filed Jan. 25, 1985, Ser. No. 748,616

Claims priority, application Japan, Aug. 9, 1984, 59-121408; Nov. 15, 1984, 59-173522; Dec. 19, 1984, 59-192425; Dec. 21, 1984, 59-193720

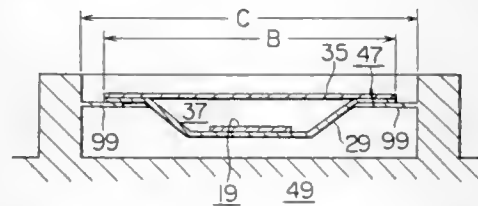
Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—324

12 Claims

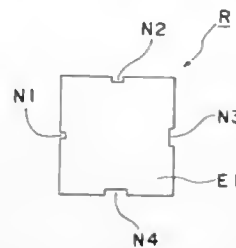
1. A piezoelectric transducer comprising: (a) a piezoelectric oscillating assembly comprising a piezo-electric oscillating element comprising a thin piezoelectric plate and electrodes attached to the opposing surfaces of said thin piezoelectric plate; (b) a first oscillating plate, which is greater in diameter than said piezoelectric oscillating assembly, to which said piezoelectric oscillating assembly is adhered; (c) a second oscillating plate, which is laid over said first

oscillating plate with the edges thereof substantially sealed together so as to define an acoustically sealed space therebetween; and
(d) a support portion defined by said laid, over and sealed together portions of said first and said second oscillating



plates, the edge portion of said support portion being defined by at least the edge portion of said first or said second oscillating plate, wherein the piezoelectric oscillating element is located between said first oscillating plate and said second oscillating plate.

4,641,055
PIEZOELECTRIC RESONATOR WITH NOTCHED SIDES
Yasuhiro Tanaka, Ishikawa, Japan, assignor to Murata Manufacturing Co., Ltd., Nagakakyō, Japan
Filed Mar. 24, 1986, Ser. No. 842,840
Claims priority, application Japan, Apr. 1, 1985, 60-69551
Int. Cl.⁴ H01L 41/08
U.S. Cl. 310-368 3 Claims

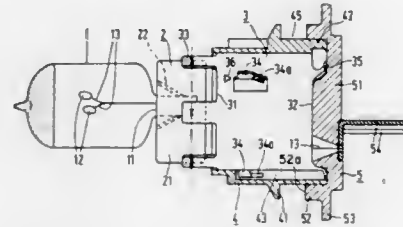


1. A piezoelectric resonator which comprises a piezoelectric substrate of a quadrilateral configuration, and electrode layers provided over opposite main faces of said piezoelectric substrate, said piezoelectric substrate being formed, in four side edges thereof, with notched portions, said notched portions having dimensions and shapes different from each other.

4,641,056
PLASTIC-BASED AUTOMOTIVE HEADLAMP
Rudolf Sanders, and Josephus F. Rijckaert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 22, 1985, Ser. No. 693,402
Claims priority, application Netherlands, Oct. 12, 1984, 8403115
Int. Cl.⁴ H01J 5/60; H01G 5/14
U.S. Cl. 313-51 10 Claims

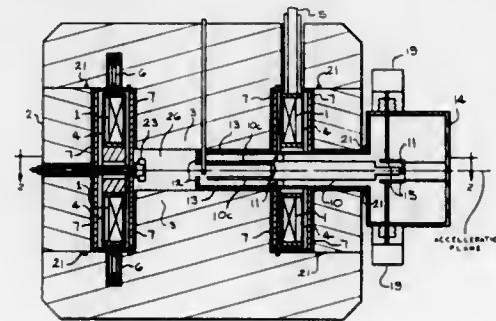
1. An electric lamp having a flanged cap mounting, comprising a translucent lamp vessel having a pinch seal, an electrical element arranged within said vessel, electrical current conductors connected to said element and passing from said vessel, a metal clamping plate having an opening in which the pinch seal is held, and a substantially circular-cylindrical collar, a substantially circular-cylindrical metal sleeve having first and second ends, joined telescopically at said first end to said collar and rigidly secured thereto, a cup-shaped lamp cap of synthetic material in which said

second end is fixed; and which has a bottom portion, a substantially cylindrical wall portion, a mounting flange extending from an outer surface of said wall portion, and, to the side of the flange facing the vessel, a circumferential groove for receiving a sealing ring, and electrical contacts connected to said current conductors and secured to said bottom portion, characterized in that said cap comprises a first substantially circular-cylindrical hollow body formed of synthetic material, and having a circumferential ridge; and a second



body of synthetic material rigidly connected to said first body, and having a disc-shaped portion having an upright edge surrounding said first body at a first end thereof, and a projecting flange forming said mounting flange; said upright edge having an end surface, said end surface and said circumferential ridge forming opposed walls of said circumferential groove; said first and second bodies being rigidly connected to each other, and said metal sleeve and said first body including cooperating means for locking said sleeve to said first body against displacement.

4,641,057
SUPERCONDUCTING SYNCHROCYCLOTRON
Henry G. Blosser, and Bruce F. Milton, both of East Lansing, Mich., Jack Riedel, deceased, late of East Lansing, Mich.; Margaret Riedel (executrix) assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed Jan. 23, 1985, Ser. No. 693,859
Int. Cl.⁴ H05H 13/02
U.S. Cl. 313-62 11 Claims

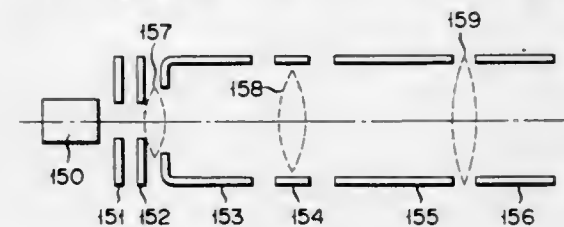


1. In a synchrocyclotron apparatus including source means on the central axis (a-a) inside an acceleration chamber for providing atomic or subatomic charged particles to be spirally accelerated in the cyclotron, with electrical coils around two spaced apart iron magnetic poles, RF generator means connected to an RF accelerating electrodes for accelerating the charged particles synchronously in the acceleration chamber to generate a pulsed beam of the atomic or subatomic particles from the spirally accelerated charged particles, the improvement which comprises:

- a pair of superconducting coils mounted on the poles inside a vessel for containing a liquified gas at about 0° K. to cool the coils;
- electrical supply means for providing a large electrical

current through the coils to create a high magnetic field between the poles;
(c) liquid supply means for providing liquified gas to the coils and vessels; and
(d) support means for holding the coils in position around the poles which thermally insulate the coils from the magnetic poles.

4,641,058
ELECTRON GUN
Shinpei Koshigoe, and Takeshi Fujiwara, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation of Ser. No. 508,534, Jun. 28, 1983, abandoned.
This application Jan. 3, 1986, Ser. No. 815,320
Claims priority, application Japan, Jul. 5, 1982, 57-115447
Int. Cl.⁴ H01J 29/46, 29/50
U.S. Cl. 313-449 12 Claims



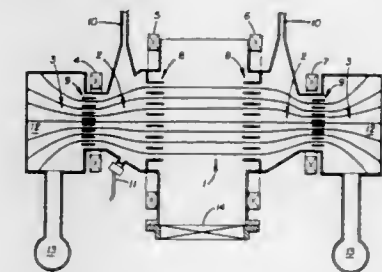
1. An electron gun arrangement, comprising: a cathode for generating an electron beam; and first, second, third and fourth grids, in order of increasing distance from said cathode, the cathode, first grid and second grid constituting a triode, each grid having an opening therein through which said electron beam can pass, said second and third grids together functioning to provide a first asymmetrical electron lens having a focusing action that is stronger along a vertical direction than along a horizontal direction, said third and fourth grids together functioning to provide a second asymmetrical electron lens having a focusing action that is stronger along said horizontal direction than along said vertical direction.
7. An electron gun arrangement, comprising: a cathode for generating an electron beam; and first, second, third, fourth, fifth and sixth grids, in order of increasing distance from said cathode, the cathode, first grid and second grid constituting a triode, each grid having an opening therein through which said electron beam can pass, said second and third grids together functioning to provide a first asymmetrical electron lens having a focusing action that is stronger along a vertical direction than along a horizontal direction, said fifth and sixth grids together functioning to provide a second asymmetrical electron lens having a focusing action that is stronger along said horizontal direction than along said vertical direction.

4,641,059
CATHODE RAY TUBE
Hiroji Sumiyoshi, Tokyo, and Teiji Arae, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 7, 1985, Ser. No. 709,392
Claims priority, application Japan, Mar. 17, 1984, 59-51566
Int. Cl.⁴ H01J 31/00; H04N 5/65
U.S. Cl. 313-477 R 2 Claims

1. A cathode ray tube of the type which comprises a tube body having a face plate, and a safety panel bonded to the front surface of the face plate through an interlayer of a cured adhesive resin composition, said adhesive resin composition comprising an unsaturated alkyd resin obtained from an unsaturated dicarboxylic acid and a dihydric alcohol, a polymerizable monomer capable of dissolving the unsaturated alkyd resin, an organic peroxide catalyst, an organometal compound accelera-

tor, and a chelating agent for the metal in the organometal compound accelerator, said chelating agent being a 1,3-diketone selected from the group consisting of acetylacetone and acetylbenzoylmethane and being present in an amount of 0.05 to 3.0 parts, by weight, for each 100 parts of said resin.

4,641,060
METHOD AND APPARATUS USING ELECTRON CYCLOTRON HEATED PLASMA FOR VACUUM PUMPING
Raphael A. Dandl, San Marcos, Calif., assignor to Applied Microwave Plasma Concepts, Inc., Encinitas, Calif.
Filed Feb. 11, 1985, Ser. No. 700,046
Int. Cl.⁴ H01J 7/24; H05B 31/26
U.S. Cl. 315-111.71 18 Claims



1. A method of producing a gas pumping plasma within an evacuated enclosure having a collimating system consisting of baffle structures and a magnetic field having a central uniform region connected to a source of neutral gas to be pumped, a magnetic mirror intermediate region and a terminating divergent region, comprising the steps of evacuating the enclosure to a selected pressure, feeding high frequency microwave energy of a selected power and frequency into the magnetic mirror intermediate region, establishing the magnetic field at a strength such that an electron cyclotron frequency is made equal to the frequency of the microwave energy within the intermediate region, the electrons within the magnetic mirror intermediate region being heated by the microwave energy up to 100 electron volts, the heated electrons ionizing the neutral gas in the intermediate and central regions, and thereby creating and maintaining a pumping plasma in the intermediate and central regions, providing baffle structures between the central and intermediate regions and between the intermediate and terminal regions, thereby permitting unobstructed flow of plasma along the magnetic field lines to the terminal region while restricting the inward flow of neutral gas resulting from recombination in the terminal region, the plasma being composed of ionized neutral gas from the central and intermediate regions, and maintaining an adequate neutral gas concentration in the intermediate region by controlled supply of make-up gas.
6. In a plasma vacuum pump assembly for producing a gas pumping plasma within an evacuated enclosure including means for developing a magnetic field having a central uniform region connected to a source of neutral gas to be pumped, magnetic mirror means forming a magnetic mirror intermediate region and a terminating divergent region, and a collimating system consisting of baffle structures, the combination comprising means for evacuating the enclosure to a selected pressure, means for feeding high frequency microwave energy of a selected power and frequency into the magnetic mirror intermediate region, means for establishing the magnetic field at a strength such that an electron cyclotron frequency is made equal to the frequency of the microwave energy within the intermediate region, the electrons within the magnetic mirror intermediate region being heated by the microwave energy up to 100 electron volts, the heated electrons ionizing the neutral gas in the intermediate and central regions, and thereby creating and maintaining a pumping plasma in the intermediate and central regions, baffle structures arranged respectively be-

tween the central and intermediate regions and between the intermediate and terminal regions for permitting unobstructed flow of plasma along the magnetic field lines to the terminal region while restricting the inward flow of neutral gas resulting from recombination in the terminal region, the plasma being composed of ionized neutral gas from the central and intermediate regions, and means for controlling a supply of make-up gas in the intermediate region for maintaining an adequate neutral gas concentration therein.

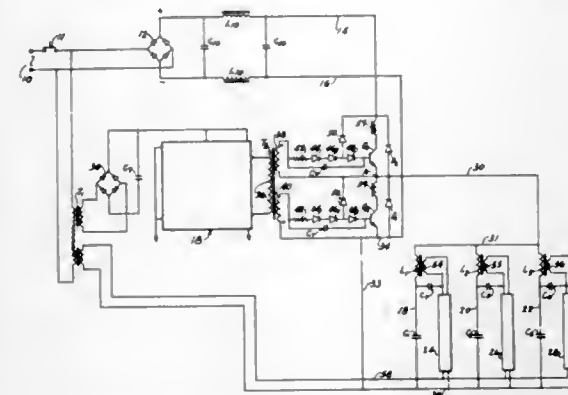
4,641,061
SOLID STATE BALLAST FOR GASEOUS DISCHARGE LAMPS

Robert D. Munson, Tupelo, Miss., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 22, 1985, Ser. No. 725,849
Int. Cl.⁴ H05B 37/02

U.S. Cl. 315—210

10 Claims



1. A solid state ballast for starting and operating a gaseous discharge lamp comprising a D.C. power source voltage a series LC circuit, a coupling capacitor coupling said lamp to said series LC circuit so as to apply the voltage existing across said series capacitor across said lamp, inverter means for driving said series LC circuit at said DC power source voltage and at a selected frequency, said selected frequency being sufficiently high to develop a voltage across said series capacitor adequate to start conduction through said lamp but being substantially below the resonant frequency of said LC circuit, and the value of said coupling capacitor being such that its added reactance after conduction through said lamp is started lowers the resonant frequency of said series LC circuit substantially below said selected frequency.

4,641,062
METHOD AND APPARATUS FOR ADJUSTING THE STATIC CONVERGENCE AND PURITY OF COLOR TELEVISION TUBES

Claude Pons, Grottaferrata, Italy, assignor to Videocolor, Montrouge, France

Continuation of Ser. No. 603,046, Apr. 23, 1984. This application Oct. 17, 1985, Ser. No. 787,717

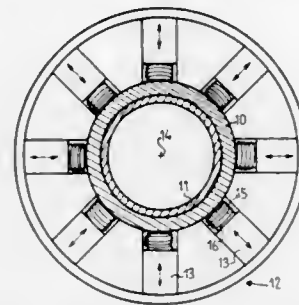
Claims priority, application France, Apr. 26, 1983, 83 06832
Int. Cl.⁴ H01J 29/70, 29/76

U.S. Cl. 315—368

2 Claims

1. Apparatus for adjusting purity and static convergence of a color television tube having a magnetizable ring encircling the neck thereof, comprising:
a plurality of bearing members each displaceable perpendicularly to the longitudinal axis of the tube, each of the bearing members having a core extending from one end thereof;
a corresponding plurality of coils wound around the cores of the bearing members in a one-to-one relationship;
an energization means connected to each of the coils for

energizing the coils to produce magnetic poles within the magnetizable ring; and
electromagnetic bi-directional actuating means connected to the bearing members for individually radially displacing each of the coils and cores against the periphery of the magnetizable ring and in constant contact therewith, irrespective of the diameter of the ring, during the purity



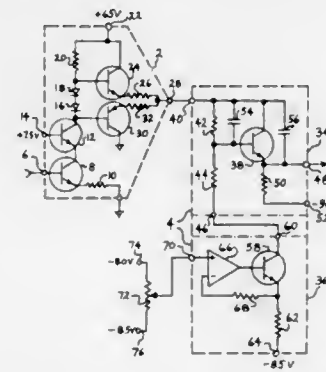
and convergence adjustments, even after repeated adjustments, so that the relationship between currents applied to the coils and the intensity of magnetization is constant, the actuating means further withdrawing each of the bearing members radially away from the periphery of the magnetizable ring after the completion of the adjustments, thereby facilitating easy removal of the apparatus.

4,641,063
VIDEO DRIVER LEVEL SHIFTER
Yosif Smushkovich, 1830 N. La Brea Ave. #2, Los Angeles, Calif. 90046

Filed Dec. 10, 1985, Ser. No. 807,324
Int. Cl.⁴ H01J 29/52; H04N 5/57

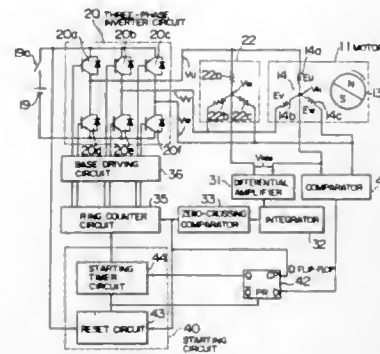
U.S. Cl. 315—383

6 Claims



signal generating means for generating an excitation switch-over signal to switch over and control the exciting current supplied to the armature coils of said armature winding in accordance with variations in a potential difference between a neutral point of said armature winding and a neutral point of said resistance circuit;

an inverter circuit for switching over and controlling the exciting current supplied to the armature coils of said armature winding in accordance with the excitation switch-over signal from said signal generating means; and



detecting means for detecting a stable position where said rotor stops and a direction of revolution and oscillation of said rotor and generating a detection signal indicative thereof when the exciting current is caused to flow through the armature coils for two phases at the start of said brushless motor, in response to a counter electromotive force generated in the armature coil for the other one phase due to the revolution and oscillation of said rotor while the exciting current flows through the armature coils for the two phases, and for supplying a starting signal to said inverter circuit in accordance with the detection signal.

4,641,067

MOTOR CONTROL METHOD AND APPARATUS THEREFOR

Ryuji Iizawa, and Koji Murakami, both of Tokyo, Japan, assignors to Fujitsu Limited, Kawasaki and Aisin Seiki Kabushiki Kaisha, Kariya, both of Japan

Filed Sep. 11, 1985, Ser. No. 774,843

Claims priority, application Japan, Sep. 13, 1984, 59-192210; Sep. 13, 1984, 59-192208; Sep. 13, 1984, 59-192209; Sep. 26, 1984, 59-201001

Int. Cl.⁴ H02P 1/22

U.S. Cl. 318—287

5 Claims

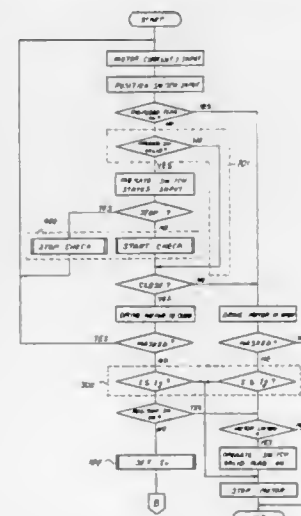
1. The method of controlling operation of an electric motor to change an operating condition of said motor upon the occurrence of an abnormal load condition comprising the steps of:

- initiating a timing means during periods of operation of said motor to establish a series of predetermined time periods ΔT ;
- measuring current I applied to said motor during said periods of operation as a measure of load condition thereof;
- deriving an initial value I_{min} representative of load current at the beginning of each said time period ΔT ;
- Adding a predetermined value ΔX to said value I_{min} to set a reference value I_r representative of said abnormal load condition;
- periodically measuring successive values of I at successive time intervals substantially shorter than time period ΔT ;
- comparing said successive measured values of I with I_r and with said value I_{min} ;
- if within a time period ΔT the value of I should decrease below said value I_{min} and then begin to increase, resetting

said timing means to begin a new time period ΔT and setting a new reference value I_r ; and

(h) if within a time period ΔT the measure value I should increase to equal or exceed the value I_r , recognizing such increase as said abnormal load condition and initiating a change in operating condition of said motor in response thereto.

- A motor control apparatus comprising:
 - an electric motor connectable to an electric power supply circuit to be driven thereby;
 - a manual switch for connecting said motor to said power supply circuit to drive said motor;
 - means for measuring a value I of current applied to said motor as a measure of load on said motor;
 - first clock means arranged to repeatedly measure a predetermined time period ΔT ;
 - means responsive to said first clock means for adding a predetermined value ΔX to a value I_{min} measured at the beginning of each time period ΔT to set a reference value I_r ;



means for storing said reference value I_r and said value I_{min} used to set said reference value I_r ;

second clock means arranged to repeatedly generate signals to establish successive time intervals substantially shorter than time period ΔT ;

first comparing means initiated by said second clock means signals for comparing measured values I at each said time interval with said stored value I_{min} and for detecting a condition when said measured values I begin to rise from a value equal to or less than said stored value I_{min} ;

means responsive to detection of said condition for resetting said first clock means to begin a new time period ΔT and for resetting a new reference value I_r ;

second comparing means initiated by said second clock means signals for comparing said measured values I at each said time interval with said stored reference value I_r to detect when said measured value I equals or exceeds said reference value I_r , and for actuating a control of said motor in response to said detection.

4,641,068

DC MOTOR DRIVING DEVICE

Manabu Sawaki, Saltama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 15, 1985, Ser. No. 765,790

Claims priority, application Japan, Aug. 15, 1984, 59-170259

Int. Cl.⁴ H02P 7/00

U.S. Cl. 318—317

5 Claims

1. A DC motor driving device comprising: a motor driving transistor having an emitter connected to a

first terminal of a DC motor whose rotational speed is voltage-controllable;

voltage supplying means for applying a supply voltage between a collector of said transistor and a second terminal of said DC motor, a potential at said second terminal of said DC motor being employed as a reference potential;

bias supplying means for supplying a bias current to a base of said transistor;

voltage generating source means for generating a fixed reference voltage, with respect to said reference potential, for voltage-controlling said rotational speed, and

diode means for passing current between said base and said voltage generating source means to reduce the effect of the base-emitter voltage of said driving transistor on the voltage applied to said motor.

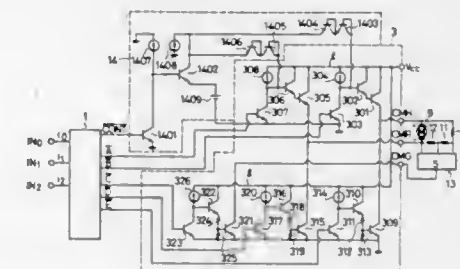
3. A DC motor driving device comprising: a motor driving transistor having an emitter connected to a first terminal of a DC motor;

voltage supplying means for applying a supply voltage between a collector of said transistor and a second terminal of said DC motor, a potential at said second terminal of said DC motor being employed as a reference potential;

bias supplying means for supplying a bias current to a base of said transistor;

a voltage generating source for generating a fixed reference voltage with respect to said reference potential; and

diode means provided to pass current between said base and said voltage generating source;



wherein said driving transistor comprises a Darlington-connected transistor pair, and wherein said diode means comprises first and second transistors each having a base and a collector connected together, said first and second transistors being connected in series with one another.

4. A DC motor driving device comprising: a motor driving transistor having an emitter connected to a first terminal of a DC motor;

voltage supplying means for applying a supply voltage between a collector of said transistor and a second terminal of said DC motor, a potential at said second terminal of said DC motor being employed as a reference potential;

bias supplying means for supplying a bias current to a base of said transistor;

a voltage generating source for generating a fixed reference voltage with respect to said reference potential; and

diode means provided to pass current between said base and said voltage generating source;

wherein said voltage generating source comprises a fixed voltage source having a first terminal connected to said second terminal of said DC motor, a reference transistor having an emitter connected to a second terminal of said fixed voltage source, a first current source connected in series with a collector of said reference transistor, and a second current source connected to a base of said reference transistor.

4,641,069

PLURAL MOTOR CHANGEOVER CONTROL SYSTEM

Yoshiki Fujioka, Yamato, and Mitsuhiko Hirota, Tokyo, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP83/00408, § 371 Date Jul. 10, 1984, § 102(e) Date Jul. 10, 1984, PCT Pub. No. WO84/02040, PCT Pub. Date May 24, 1984

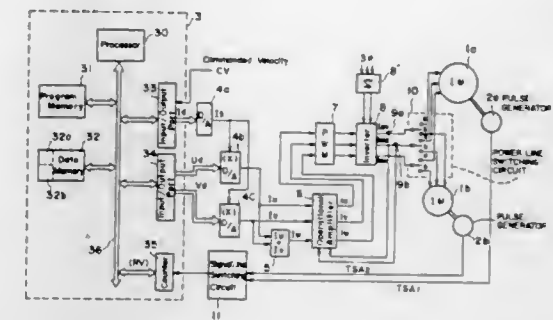
PCT Filed Nov. 11, 1983, Ser. No. 631,559

Claims priority, application Japan, Nov. 13, 1982, 57-199233

Int. Cl.⁴ G05B 11/32

U.S. Cl. 318—625

9 Claims



1. A plural motor changeover control system for a plurality of motors, each having different power output characteristics and in which switching among the motors occurs, said system comprising:

identical sensors connected to said motors;

a single servo control circuit for controlling the motors; and

velocity error-amplitude command means, having conversion tables each corresponding to one of said motors and operatively connected to said single servo control circuit, for selecting the one of the conversion tables corresponding to the motor designated for operation from among said plurality of motors, for fetching an amplitude command, from said selected conversion table, corresponding to a velocity error which is a difference between an actual velocity of said designated motor and a commanded velocity, and for applying the amplitude command to said servo control circuit to control the designated motor each conversion table compensating for the output produced by the corresponding sensor.

4,641,070

DEVICE FOR DETERMINING AND ADJUSTING THE POSITION OF A WEB

Wolfgang Pfizenmaier, Neckargemünd; Heinrich Heidt, Neckarsteinach, and Rolf P. Lehner, Kirchheim/Teck, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed May 19, 1983, Ser. No. 496,220

Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3218866

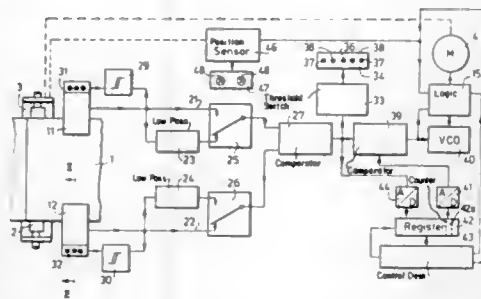
Int. Cl.⁴ G05B 1/06; G01N 21/86; G01V 9/04

U.S. Cl. 318—640

4 Claims

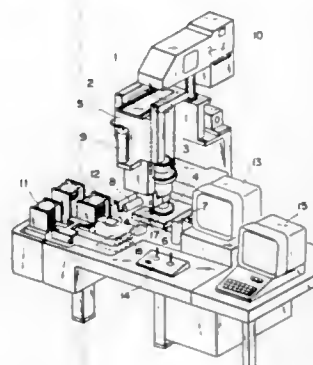
1. Device for determining and adjusting the position of a web, the device having two sensor units each with a respective light source element directed towards the web and a respective photoelectric sensor element responsive to reflected light, a control unit responsive to respective output signals of the two sensor units, and a device connected to the control unit and fed by an adjusting signal from the control unit for adjusting the position of the web, comprising reflectors disposed at a side of the web facing away from the sensor units and projecting beyond respective opposite edges of the web, one of the two elements of one of the sensor units being directed towards one of said opposite edges of the web and the other of the two elements of said one of the sensor units being directed to a reference surface, one of the two elements of the other sensor unit being directed towards the other of said opposite edges of

the web and the other of the two elements of said other sensor unit being also directed to a reference surface, the adjusting signal fed from the control unit to the adjusting device being a function of the difference of the two output signals of the two sensor units, at least one of the two sensor units being coupled via a low-pass filter to the control unit means for feeding a control signal to the control unit for addition to the output signal of one of the sensor units, means for feeding the output signals of the two sensor units to a first comparator having an output signal, means for feeding said output signal of said first comparator and said control signal to the second comparator



having an output delivering a adjusting signal, and means for adding said control signal to the output signal of one of the sensor units as said second comparator responds to said control signal and the output signal of the first comparator, and the device having means for converting from manual to automatic operating mode, including means for storing, at the instant of conversion to the automatic operating mode, said output signal of said first comparator generated during the manual operating mode, and means for feeding said stored output signal of said first comparator to said second comparator as a control signal during the automatic operating mode.

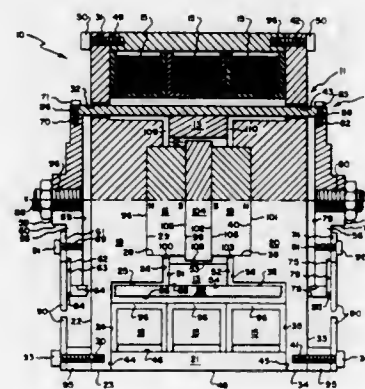
4,641,071
SYSTEM FOR CONTROLLING DRIVE OF A WAFER STAGE
Shigemoto Tazawa, Yokohama, and Naoki Ayata, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1985, Ser. No. 780,034
Int. Cl.⁴ G05B 1/06
U.S. Cl. 318—640 38 Claims



1. A system for controlling a drive of a movable member for carrying a workpiece, said system comprising:
first servo control means for moving the workpiece carrying member at a relatively high speed and for stopping the workpiece carrying member with a relatively low positional accuracy relative to a target position;
second servo control means for moving the workpiece carrying member at a relatively low speed and for stopping

the workpiece carrying member with a relatively high positional accuracy relative to the target position; and means for selecting one of or a combination of said first and second servo control means in accordance with the positional accuracy required of the workpiece carrying member with respect to the target position;
wherein said first servo control means includes means for setting the desired moving speed of the workpiece carrying member in accordance with a speed pattern that is substantially trapezoidal in shape, and wherein said first servo control means further includes means for controlling the moving speed of the workpiece carrying member in accordance with the speed pattern set by said setting means.

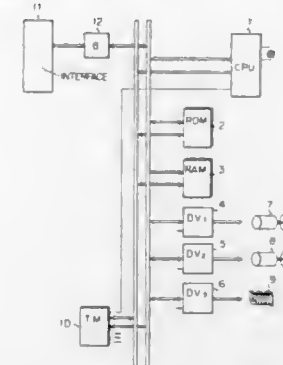
4,641,072
ELECTRO-MECHANICAL ACTUATOR
Richard D. Cummins, Orchard Park, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Continuation-in-part of Ser. No. 537,109, Sep. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 321,340, Nov. 6, 1981, abandoned. This application Jul. 17, 1985, Ser. No. 756,079
Claims priority, application United Kingdom, Nov. 4, 1982, 8231509; Fed. Rep. of Germany, Nov. 9, 1982, 3241254; France, Nov. 16, 1982, 82 19146
Int. Cl.⁴ G05B 11/00; H02K 41/02
U.S. Cl. 318—687 9 Claims



1. An electro-mechanical actuator, comprising:
a body formed of a magnetically-permeable material and having an annular chamber therewithin, said body having an outer portion arranged radially outwardly of said chamber and having an inner portion arranged radially inwardly of said chamber, said body having an opening therethrough which communicates with said chamber, said body having first and second surfaces arranged in spaced facing relation to one another;
an annular armature having one magnetic portion arranged within said chamber and having another non-magnetic portion penetrating said body opening, said armature having a first surface arranged to face said body first surface and having a second surface arranged to face said body second surface, any space between said body first surface and said armature first surface defining a first air gap and any space between said body second surface and said armature second surface defining a second air gap;
suspension means arranged between said body and armature for mounting said armature for movement between said first and second body surfaces;
a coil mounted on said body and selectively operable to create a magnetic field in at least one flux path which passes through said first and second air gaps; and
at least one permanent magnet mounted on said body, each magnet being operatively arranged to create through said

body and armature a first magnetic loop passing through one of said air gaps but not the other of said air gaps and a second magnetic loop passing through said other air gap but not said one air gap.

4,641,073
STEPPER MOTOR CONTROL SYSTEM
Kenji Sawada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 3, 1983, Ser. No. 564,714
Claims priority, application Japan, Dec. 24, 1982, 57-234701
Int. Cl.⁴ H02P 8/00
U.S. Cl. 318—696 29 Claims



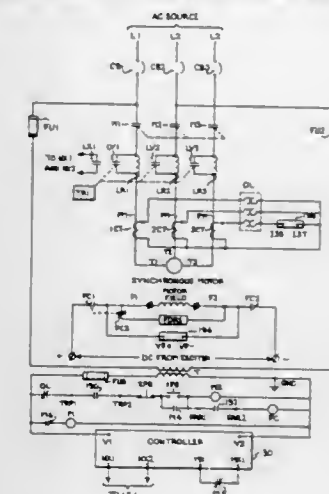
1. A stepper motor control system for rotating a stepper motor by a desired amount of angular displacement, comprising:
a stepper motor, having a rotatable member, for rotating the rotatable member at a rotation speed; and
control means, operatively connected to said stepper motor, for driving said stepper motor through the desired amount of angular displacement when the desired amount of angular displacement is larger than a predetermined amount by accelerating the rotatable member of said stepper motor by supplying an acceleration pulse sequence to said stepper motor until the rotation speed equals a predetermined rotation speed, driving the rotatable member at substantially the predetermined rotation speed, and sequentially decelerating the rotatable member of said stepper motor from the predetermined rotation speed by supplying a decelerating pulse sequence to said stepper motor to stop after the desired amount of angular displacement, and for driving said stepper motor when the desired amount of angular displacement is smaller than the predetermined amount of angular displacement by accelerating the rotatable member of said stepper motor by supplying the acceleration pulse sequence to said stepper motor until the rotation speed equals an intermediate rotation speed slower than the predetermined rotation speed determined according to the desired amount of angular displacement, regulating the rotation speed when the accelerating is stopped so that said stepper motor is able to follow decelerating control, and decelerating the rotatable member of said stepper motor by supplying a portion of the deceleration pulse sequence to said stepper motor after the regulating.

4,641,074
SYNCHRONOUS MOTOR PROTECTION
James W. Hamilton, Jr., Mebane, and Edward A. Long, Chapel Hill, both of N.C., assignors to General Electric Co., Charlottesville, Va.
Filed Sep. 21, 1984, Ser. No. 652,983
Int. Cl.⁴ H02P 5/40
U.S. Cl. 318—706 15 Claims

1. A method of reduced voltage starting protection of synchronous type motors having ac energized stator winding

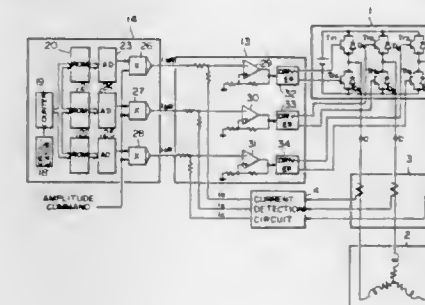
means, and amortisseur winding means that are subject to thermal damage upon energization of the motor for excessive time intervals at operation below synchronous motor speeds, comprising the steps of:

- deriving a first electrical signal indicative of a comparison of the actual accrued motor running time and of the allowable motor running time at any instantaneous actual percentage of synchronous motor speed;
- removing ac energization from the motor responsive to the electrical signal being indicative of actual accrued motor running time exceeding allowable motor running



time at any instantaneous actual percentage of synchronous motor speed;
(c) providing ac energization to the motor for a first start time period at a reduced voltage magnitude that is less than the full rated voltage;
(d) modifying the first electrical signal responsive to ac energization being provided at a reduced voltage magnitude to extend the maximum allowable running time at any instantaneous actual percentage of synchronous speed with respect to the actual running time permitted with ac energization at full rated voltage so that inadvertent removal of ac energization is minimized.

4,641,075
METHOD OF AND APPARATUS FOR CONTROLLING CURRENT OF INVERTER
Katsuhiko Asano, Toyooka; Ynkio Inaguma, Nagoya, and Norio Iwama, Ama, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed May 8, 1984, Ser. No. 608,247
Claims priority, application Japan, May 19, 1983, 58-087962
Int. Cl.⁴ H02P 5/40 18 Claims



1. A method of controlling current of an inverter having a

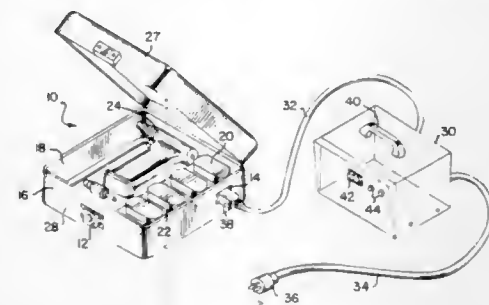
plurality of switching elements which are selectively connected to an anode and a cathode of a DC power source through an ON/OFF control in which output currents of the inverter connected to a three-phase load are detected, and control is effected so that instantaneous values of the output currents are substantially equal to set output current command values, respectively, comprising the steps of:

- providing a phase voltage defined as an ideal phase voltage between an input terminal of each phase load of the three-phase load and a neutral point wherein each ideal phase voltage is represented by a phase voltage obtained when currents of predetermined output wave commands are allowed to flow through said three-phase load, respectively;
- selecting a specific ideal phase voltage having a maximum absolute value of said ideal phase voltages;
- maintaining a specific one of said switching elements associated with a load phase having said specific ideal phase voltage in either one of an ON or OFF state during a period of time when a phase angle of said specific ideal phase voltage is within a predetermined phase angle range;
- detecting output currents of said inverter; and
- ON/OFF controlling the two switching elements other than said specific switching element a plurality of times during the period of said time when the phase angle of ideal phase voltage is within said predetermined phase angle range so that said output current waveforms are substantially equal to respective output current wave commands.

4,641,076
METHOD AND APPARATUS FOR STERILIZING AND CHARGING BATTERIES
Harry A. Linden, Santa Barbara, Calif., assignor to Hall Surgical-Division of Zimmer, Inc., Carpinteria, Calif.
Filed Jan. 23, 1985, Ser. No. 693,881
Int. Cl.⁴ H02J 7/00

U.S. Cl. 320—2

10 Claims

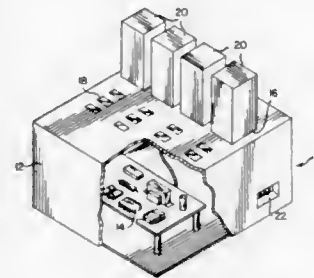


- Apparatus for providing at least one sterile, charged battery for use in a sterile field comprising:
 - a container adapted to permit the entrance of a sterilant and to prevent the entrance of contaminants, said container being adapted to house said battery during sterilization and storage, and said container having means for charging said battery therein while maintaining said battery in a sterile state.

4,641,077
METHOD AND APPARATUS FOR PROVIDING STERILE CHARGED BATTERIES
John H. Pascaloff, Goleta, Calif., assignor to Hall Surgical-Division of Zimmer, Inc., Carpinteria, Calif.
Filed Jan. 23, 1985, Ser. No. 693,882
Int. Cl.⁴ H02J 7/00

U.S. Cl. 320—2

2 Claims

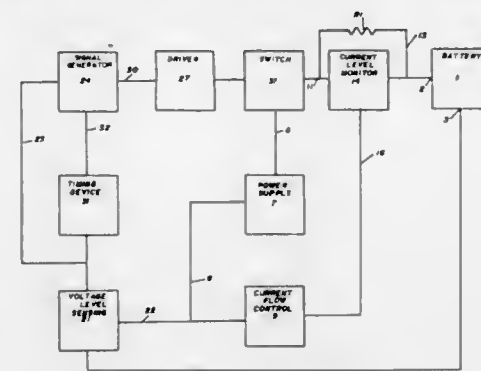


- A method of providing sterile, charged batteries for use in a sterile field comprising the steps of:
 - sterilizing at least one battery and a battery charger, said battery and battery charger being adapted to withstand exposure to the environment present during such sterilizing step;
 - transferring said battery and said battery charger in a sterile state to said sterile field; and
 - charging said battery to a desired voltage with said battery charger in said sterile field.

4,641,078
METHOD FOR CHARGING ELECTRICAL STORAGE BATTERIES
Jimmie N. Short, Lexington, Ky., assignor to Ralph J. Stolle Company, Cincinnati, Ohio
Filed Nov. 13, 1984, Ser. No. 639,090
Int. Cl.⁴ H02J 7/00

U.S. Cl. 320—21

9 Claims

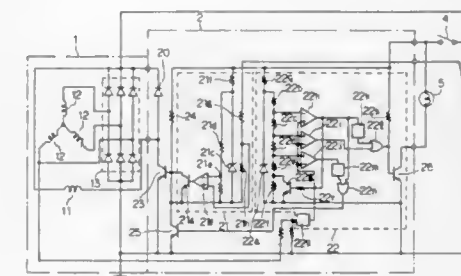


- Apparatus for charging electrical storage battery means including direct current source means to provide said generally linear charging current; current controller means providing a central signal determine the rate of flow of current to said storage battery; switch means connected in series between said direct current source means and said battery means and having signal input means to receive said control signal whereby said switch means is operated by said controller in response to said current flow rate to said battery to regulate rate of current flow to said battery modulator means to receive said control signal and supply an operating signal to cyclical wave generating means to selectively periodically interrupt said cyclical wave generating means.

4,641,079
BATTERY VOLTAGE REGULATING SYSTEM
Hidetoshi Kato, Suzuka; Fuyuky Maebara, Kariya, and Nobuo Mayumi, Oubu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 15, 1985, Ser. No. 702,380
Claims priority, application Japan, Feb. 20, 1984, 59-31209
Int. Cl.⁴ H02J 7/14, 7/24; H02P 9/26, 9/30

U.S. Cl. 320—64

13 Claims

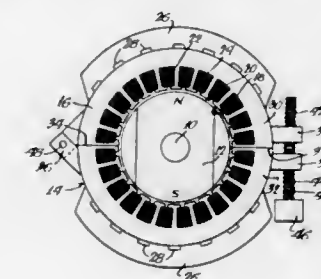


- A system for regulating a voltage on a battery, using generator means for producing a generation voltage at an output terminal thereof, comprising:
 - first control means for comparing said battery voltage with a first reference, and for selectively enabling said generator means based on such comparing;
 - means for producing a second reference which is alterable between a first value and a second value;
 - second control means for comparing said generation voltage with said second reference, and for
 - when said generation voltage is greater than said first value of said second reference:
 - altering said second reference to said second value, and
 - disabling said first control means and selectively enabling and disabling said generator to maintain said battery voltage within a predetermined range of said second reference to prevent overcharging; and
 - when said generation voltage is lower than said second value of said second value of said second reference:
 - altering said second reference to said first value, and
 - enabling said generator to keep said battery voltage from falling too low.

4,641,080
PERMANENT MAGNET GENERATOR WITH FAULT DETECTION
Timothy F. Glennon; Raymond N. Olson, and Donald A. Straznickas, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Oct. 18, 1984, Ser. No. 663,083
Int. Cl.⁴ H02P 9/40

U.S. Cl. 322—49

8 Claims



- In a generating system including a permanent magnet generator, the combination of:
 - a rotor carrying at least one permanent magnet;
 - a stator in proximity to said rotor and normally separated therefrom by a small air gap;
 - at least one electrical winding magnetically associated with said stator and in which current may be induced by a magnetic field generated by said permanent magnet;
 - means mounting said stator and said winding for movement toward and away from said rotor;
 - means for moving said stator and said winding away from said rotor;
 - means for detecting the development of a fault in said winding; and
 - means responsive to said detecting means for operating said moving means;
 - whereby upon detection of the development of a fault in said winding, said winding and said stator will be moved away from said rotor to reduce the magneto motive force available to induce current in said winding to thereby reduce the current induced in said winding to prevent destruction of said permanent magnet generator.

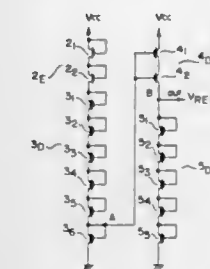
7. A system for regulating a voltage on a battery, using generator means for producing a generation voltage at an output terminal thereof, comprising:

- first control means for comparing said battery voltage with a first reference, and for selectively enabling said generator means based on such comparing;
- means for producing a second reference which is alterable between a first value and a second value;
- second control means for comparing said generation voltage with said second reference, and for
 - when said generation voltage is greater than said first value of said second reference:
 - altering said second reference to said second value, and
 - disabling said first control means and selectively enabling and disabling said generator to maintain said battery voltage within a predetermined range of said second reference to prevent overcharging; and
 - when said generation voltage is lower than said second value of said second value of said second reference:
 - altering said second reference to said first value, and
 - enabling said generator to keep said battery voltage from falling too low.

4,641,081
SEMICONDUCTOR CIRCUIT OF MOS TRANSISTORS FOR GENERATION OF REFERENCE VOLTAGE
Ryoichi Sato, Kashiwa, and Toshio Mimoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 28, 1985, Ser. No. 706,529
Claims priority, application Japan, Feb. 28, 1984, 59-39146
Int. Cl.⁴ G05F 3/16

U.S. Cl. 323—313

8 Claims



- A circuit for producing a constant reference voltage, the reference voltage value being unaffected by variations in a related power source voltage, the circuit comprising:
 - a first set of enhancement type MOS transistors, the number of enhancement type MOS transistors being n, each one of said n transistors having a gate connected to a first active electrode, said n enhancement type MOS transistors being connected in series and having a first active electrode of a first one of said n enhancement type MOS transistors connected to the power source;
 - a first set of depletion type MOS transistors, the number of depletion type MOS transistors being m, each of said m transistors having a gate connected to a first active electrode, said m depletion type MOS transistors being connected in series, a first active electrode of a first one of said m transistors being connected to a second active electrode of the nth transistor of the series connection of said first set of enhancement type MOS transistors and a second active electrode of an mth transistor being connected to ground;
 - a second set of depletion type MOS transistors, the number of depletion type MOS transistors being x, gate electrodes of each of said x depletion type transistors being connected to a gate electrode of the mth transistor of the series connection of said first set of depletion type MOS transistors, said x transistors being connected in series and having a first active electrode of a first one of said x transistors being connected to the power source; and
 - a resistance component connected between a second active electrode of the xth transistor of the series connection of

said second set of depletion transistors and ground, wherein the constant reference voltage is a voltage appearing across said resistance component.

4,641,082

SIX-PORT REFLECTOMETER

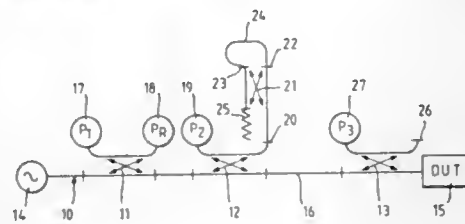
Eric J. Griffin, Malvern; Richard J. Collier, Canterbury, and George Hjipleris, Stevenage, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 25, 1985, Ser. No. 727,227

Claims priority, application United Kingdom, May 24, 1984, 8413339

Int. Cl. G01R 27/06
U.S. Cl. 324—58 B

5 Claims



1. A six-port reflectometer including first, second and third directional couplers arranged to provide a series path for transmission of input radiation from a source to a load, and wherein:
 - (a) the first coupler is connected to first and second detectors;
 - (b) the second coupler is connected to the third directional coupler via a first waveguide and is also connected to a third detector and a fourth directional coupler;
 - (c) the fourth coupler has two ports connected together by a second waveguide and a further port connected to an absorber; and
 - (d) the third coupler is connected to a reflector and to a fourth detector.

4,641,083

METHOD AND APPARATUS FOR SUPERVISING CHARGES IN BLAST FURNACE USING ELECTROMAGNETIC WAVES

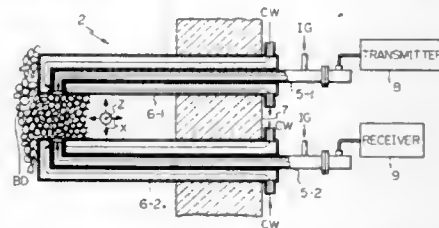
Jiro Ohno, and Hirokatsu Yashiro, both of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,245

Claims priority, application Japan, Aug. 3, 1982, 57-135354; Aug. 4, 1982, 57-135881; Aug. 25, 1982, 57-147967; Nov. 4, 1982, 57-193864; Jul. 5, 1983, 58-121983

Int. Cl. G01R 27/04; C12B 7/24
U.S. Cl. 324—58.5 B

34 Claims



1. A method for supervising charges in a blast furnace, comprising the steps of:
 - (a) radiating microwave radiation into said charges composed of alternating layers of at least ore and coke the wavelength of which radiation is substantially the same as the particle size of each charge;
 - (b) receiving and detecting the microwave radiation which is

reflected or scattered by the charge or transmitted through the charge; and
analyzing the detected microwave radiation so as to distinguish ore and coke based on the reflection or scattering of the microwave radiation by the ore and the transmission of the microwave radiation through the coke.

4,641,084

ION CONCENTRATION MEASURING APPARATUS

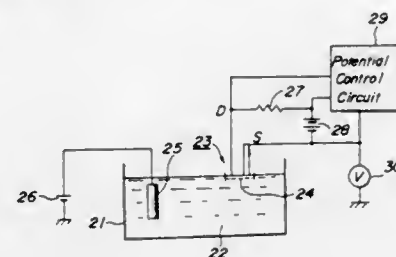
Satsuki Komatsu, Sagami, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1984, Ser. No. 677,865

Claims priority, application Japan, Dec. 15, 1983, 58-235134
Int. Cl. G01N 27/02, 27/26

U.S. Cl. 324—71.5

8 Claims



1. An ion concentration measuring apparatus comprising:
 - (a) a container for holding a test liquid containing at least one kind of ion whose concentration is to be measured;
 - (b) means in contact with the test liquid for maintaining the test liquid at a constant potential;
 - (c) at least one ion sensitive field effect transistor having a gate portion which is selectively sensitive to said ion, drain and source;
 - (d) at least one measuring circuit comprising a constant voltage supply source which is not connected to the earth and which applies a constant voltage across the drain and source of the ion sensitive field effect transistor, a reference resistor connected to the constant voltage supply source and the drain or source, a potential control circuit having inputs connected across the reference resistor and an output connected to the drain or source for controlling a potential at the drain or source in such a manner that a voltage across the reference resistor remains a predetermined value, and a voltmeter for measuring a variation of the potential at the drain or source as a measure of the concentration of ion.

4,641,085

VECTOR NETWORK ANALYZER WITH INTEGRAL PROCESSOR

S. Bruce Donecker, Sebastopol; Ronald D. Stewart, and Wayne L. Frederick, both of Santa Rosa, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 9, 1984, Ser. No. 569,111

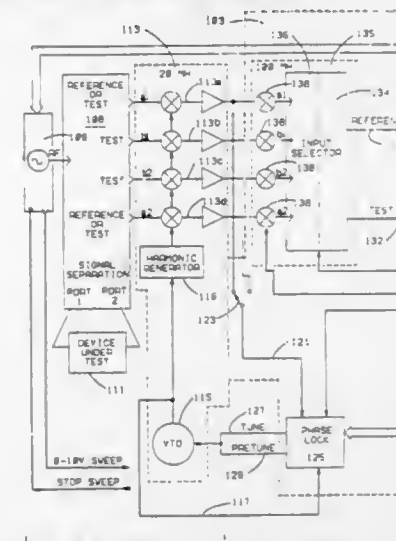
Int. Cl. G01R 23/16

U.S. Cl. 324—77 R

15 Claims

1. A signal separation circuit for a radio frequency (RF) vector network analyzer, comprising:
 - (a) an RF input port for receiving an RF signal;
 - (b) a reversing switch coupled to the RF input port;
 - (c) first and second test ports coupled to the reversing switch for reversibly routing the RF signal to a device under test;
 - (d) first sampling means coupled to the first test port for deriving a first RF sample signal from an RF signal incident on the first test port from the device under test;
 - (e) second sampling means coupled to the second test port for deriving a second RF sample signal from an RF signal incident on the second test port from the device under test;

- a first reference path coupled to the RF signal between the reversing switch and the first test port for providing a first reference signal;
- a second reference path coupled to the RF signal between the reversing switch and the second test port for providing a second RF reference signal; and



- a frequency converter for converting respectively the first and second RF reference signals and the first and second RF sample signals respectively to first and second intermediate frequency (IF) reference signals and first and second IF sample signals.

4,641,086

VECTOR NETWORK ANALYZER WITH INTEGRAL PROCESSOR

John T. Barr, IV; Michael J. Neering; Douglas E. Fullmer; Roger P. Oblad, all of Santa Rosa; Wayne C. Cannon, Forestville, and Glenn E. Elmore, Santa Rosa, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 9, 1984, Ser. No. 568,990

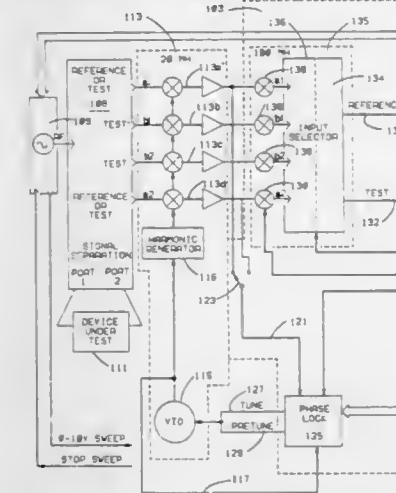
Int. Cl. G01R 23/16

U.S. Cl. 324—77 R

4 Claims

1. An RF network analyzer system for analyzing a device under test (DUT), comprising:
 - (a) an RF signal source having an RF signal output;
 - (b) first control means for controlling operation of the RF signal source, said first control means including means for controlling the frequency changes and retrace of the RF signal output of the RF signal source, and
 - (c) first handshake means coupled to the first control means

- for communicating with the RF signal source;
- a test set coupled to the RF signal source and the DUT, said test set having:
 - (a) an analog signal output;
 - (b) second control means for controlling operation of the test set, and
 - (c) second handshake means coupled to the second control means for communicating with the test set; and



- a main analyzer having:
 - (a) an analog signal input coupled to the analog signal output of the test set;
 - (b) an analog to digital converter for digitizing the analog signal input, said analog to digital converter having a digitized output signal;
 - (c) third handshake means coupled to the first and second handshake means, and
 - (d) a processor coupled to the third handshake means and the analog to digital converter for selecting the frequency changes of the RF signal source, and for processing the digitized measurement output signal during the frequency changes and retrace of the RF signal output.

4,641,087

PHASE COMPARATOR APPARATUS AND METHOD

Frederick E. Coffield, Livermore, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 1, 1985, Ser. No. 697,296

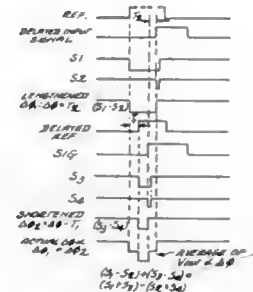
Int. Cl. G01R 25/00

U.S. Cl. 324—83 R

21 Claims

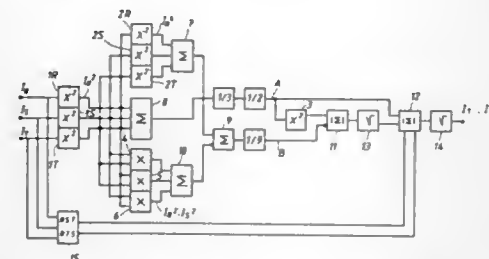
1. A phase comparator for measuring the relative phase difference between first and second electrical signals, said phase comparator comprising:

- a first channel phase comparator means for producing a lengthened phase difference output representing a greater than actual phase difference between said first and second signal;
- a second channel phase comparator means for producing a shortened phase difference output representing a less than actual phase difference between said first and second signals; and



combining means connected to receive said lengthened phase difference output and said shortened phase difference output and to produce an average thereof as a composite output representing the actual phase difference between said first and second signals.

4,641,088
ROOT MEAN SQUARE MEASURING DEVICE FOR NEGATIVE SEQUENCE CURRENT
 Curt Jacobson, Västerås, Sweden, assignor to Asea Aktiebolag, Västerås, Sweden
 Filed Feb. 6, 1985, Ser. No. 698,822
 Claims priority, application Sweden, Feb. 7, 1984, 8400621
 Int. Cl.⁴ G01N 25/00
 U.S. Cl. 324—86 9 Claims



1. A method for determining at least one of the positive sequence current I_1 and the negative sequence current I_2 in a three-phase electrical network under unbalanced load conditions, comprising:
- measuring each phase current I_R , I_S and I_T and the phase sequence RST and RTS;
- calculating the I_1 and I_2 in accordance with the following formula:

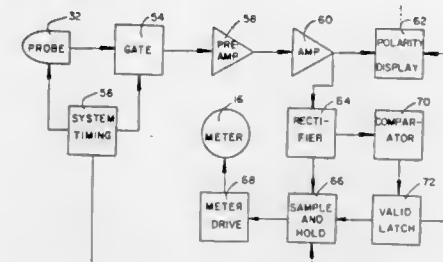
$$I_1, I_2 = \sqrt{|A \pm \sqrt{A^2 - B}|}$$

wherein $A = I_R^2 + I_S^2 + I_T^2/6$ and

$$B = \frac{I_R^4 + I_S^4 - I_T^4 - I_R^2 I_S^2 - I_R^2 I_T^2 - I_S^2 I_T^2}{9}$$

and for the phase sequence RST, I_1 and I_2 are respectively + and -, and for the phase sequence RTS, I_1 and I_2 are respectively - and +.

4,641,089
AMMETER APPARATUS AND METHOD FOR CAPTURING CURRENT READINGS
 Bruce W. Pearman, Colorado Springs, Colo., and Hal A. Huggins, 106 E. Cheyenne Rd., Colorado Springs, Colo. 80906, assignors to Hal A. Huggins, Colorado Springs, Colo.
 Filed Apr. 27, 1983, Ser. No. 489,062
 Int. Cl.⁴ G01R 19/04
 U.S. Cl. 324—103 P 27 Claims



1. Apparatus for measuring a maximum electrical current occurring from a current source during a selected interval of time comprising:
- first and second electric inputs adapted to be electrically connected to said source;
- conversion means connected to said inputs for receiving an electrical current therefrom and producing a signed voltage proportional to the magnitude of said current;
- gate means between at least one of said inputs and said conversion means for passing said current when closed and prohibiting passage of said current when open;
- first display means electrically connected to said conversion means for indicating the polarity of said voltage;
- rectifying circuitry electrically connected to said conversion means and operative to produce a voltage magnitude signal proportional to the absolute value of the signed voltage;
- capture circuitry having a charge-retaining element receiving said voltage magnitude signal and maintaining a charge corresponding to the maximum value of said voltage magnitude signal;
- reset means for discharging said charge-retaining element;
- first timing circuitry for closing said gate means during a first interval of time, for opening said gate means during a second interval of time and for resetting said capture circuitry at the end of said second interval of time, said first timing circuitry means incorporating said reset means and including means for varying the duration of said second interval of time;
- display circuitry means responsive to the charge on said charge-retaining element for generating an output signal having a magnitude proportional to said charge;
- second display means for receiving said output signal and displaying the magnitude of said output signal; and
- power supply means associated with said conversion means and said display circuit means.

4,641,090
POLYPHASE ELECTRICAL SIGNAL MEASURING APPARATUS
 Philip Danby, Chestnut Hill, Mass., assignor to Refac Electronics Corporation, Winsted, Conn.
 Filed Oct. 22, 1984, Ser. No. 663,222
 Int. Cl.⁴ G01R 19/00, 1/38, 29/00
 U.S. Cl. 324—107 11 Claims

1. Apparatus for simultaneously measuring a magnitude and displaying a numerical representation of the measured magnitude for a voltage, current and frequency in a polyphase alternating current system, said apparatus comprising:

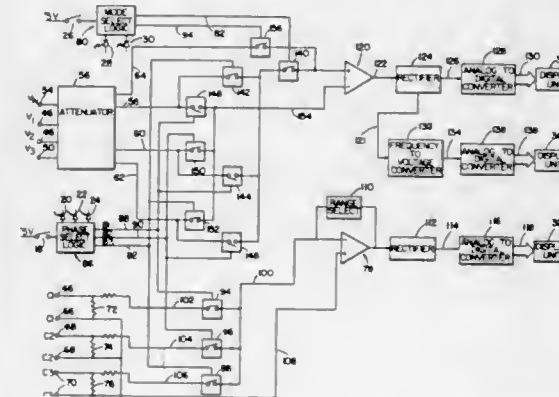
means for coupling said polyphase alternating current system to said apparatus;

means for selectively conditioning said apparatus to operate in either a line-to-line or a line-to-neutral measuring mode; means for selectively choosing for measurement any one phase of said polyphase system coupled to said apparatus; first display means for indication a magnitude of a measured voltage associated with a selected phase;

second display means for indicating a magnitude of a measured current associated with a selected phase;

third display means for indicating a measured frequency associated with a selected phase;

first circuit means for sensing a voltage associated with a selected phase wherein said voltage is sensed line-to-line or line-to-neutral in accordance with said selected measuring mode, said first circuit means including first other circuit means for transforming said sensed voltage into a



digital signal representative of the voltage magnitude of said sensed voltage to drive said first display means;

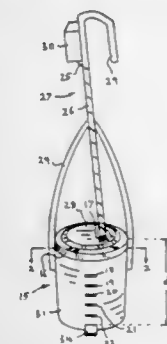
second circuit means for sensing a current associated with a selected phase wherein said current is sensed line-to-line or line-to-neutral in accordance with said selected measuring mode, said second circuit means including second other circuit means for transforming said sensed current into a digital signal representative of the current magnitude of said sensed current to drive said second display means, and

third circuit means for sensing a frequency associated with a selected phase, said third circuit means including other circuit means for transforming said sensed frequency signal into a digital signal representative of said sensed frequency signal to drive said third display means.

4,641,091
DEVICE FOR TESTING AND CALIBRATING TREASURE HUNTING METAL DETECTORS
 Ivan H. Cone, 845 Palmer Blvd., Fortuna, Calif. 95540
 Filed Sep. 17, 1984, Ser. No. 650,699
 Int. Cl.⁴ G01R 35/00; G01V 13/00
 U.S. Cl. 324—202 6 Claims

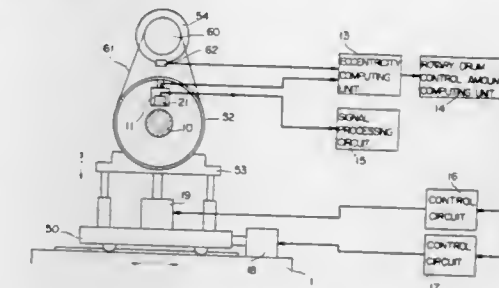
1. A device for testing and calibrating a treasure hunting metal detector, comprising:
- an enclosure;
- a quantity of material of composition of the background material to be encountered in the search environment of said treasure hunting metal detector, said material being contained within said enclosure;
- a plurality of cross members, each of said plurality of cross members extending from a side of said enclosure into said enclosure, each of said plurality of cross members forming an open slot within the interior region of said enclosure and being surrounded by said quantity of material; and

a plurality of slide members adapted to slide within said slots formed within said plurality of cross members, each of



said slide members having a means of carrying a simulated metal treasure.

4,641,092
ROTARY PROBE APPARATUS FOR DETECTING FLAWS IN A TEST OBJECT
 Takahide Sakamoto; Tatsuo Hiroshima, both of Hyogo; Noriyuki Matsubara, and Kenichi Miyata, both of Konomimachi, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
 Filed Jul. 5, 1983, Ser. No. 510,972
 Claims priority, application Japan, Jul. 8, 1982, 57-119421; Jul. 8, 1982, 57-119422
 Int. Cl.⁴ G01N 27/87; G01R 33/12; G01B 7/14
 U.S. Cl. 324—227 20 Claims



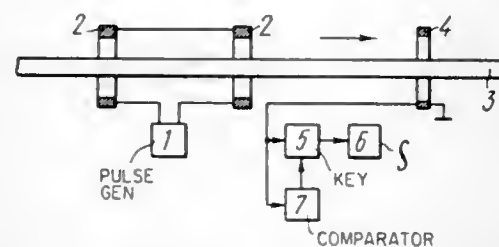
1. A flaw detection apparatus of rotary probe type which rotates a non contact probe at a spaced distance from the peripheral surface of a hot rolled object to be inspected that has a circular transverse cross-section, comprising:
- a rotary member which supports and rotates said probe,
- a guide tube for guiding said object to be inspected toward the center of said rotary member,
- pinch rolls disposed before and after said rotary member, relative position changing means for changing the relative position of said rotary member with respect to said object to be inspected,
- distance detection means mounted on said rotary member for rotation therewith and continually operative to detect a distance between said probe and the peripheral surface of said object to be inspected and providing an output signal indicating said distance between said probe and said peripheral surface of said object, and
- means responsive to said output signal for controlling said relative position changing means to maintain a substantially constant spacing between said probe and said peripheral surface thereby to control lift-off errors during a flaw detection operation caused by variances in the distance between said probe and said object to be inspected.

4,641,093
METHOD AND DEVICE FOR MAGNETIC TESTING OF MOVING ELONGATED FERROMAGNETIC TEST PIECE FOR MECHANICAL PROPERTIES BY UTILIZING THE MAGNITUDE OF REMANENT MAGNETIC FLUX AND A PULSED MAGNETIC FIELD

Mikhail A. Melguy, and Sergel G. Sandomirsky, both of Minsk, U.S.S.R., assignors to Institut Prikladnoi Fiziki Akademii Nauk Belorusskoi SSR, Minsk, U.S.S.R.
 PCT No. PCT/SU81/00062, § 371 Date Mar. 22, 1983, § 102(e) Date Mar. 22, 1983, PCT Pub. No. WO83/00559, PCT Pub. Date Feb. 17, 1983

PCT Filed Jul. 28, 1981, Ser. No. 476,879
 Int. Cl.⁴ G01N 27/72; G01R 33/12
 U.S. Cl. 324—239

3 Claims



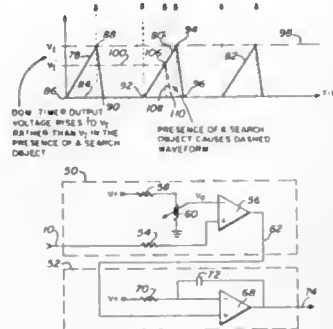
2. A device for magnetic testing of a moving elongated ferromagnetic test piece, comprising:
 - a magnetizing pulse generator;
 - magnetizing coils embracing the test piece and being located therealong, said magnetizing coils are connecting to the magnetizing pulse generator such that the magnetic fields produced by them on the common axis thereof are directed towards each other;
 - a transducer embracing the test piece adapted to convert a gradient of remanent induction to an electrical signal;
 - a measuring circuit connected to the transducer;
 - an indicator connected to the measuring circuit;
 - the measuring circuit includes:
 - a gating means and an integrator connected in series with said gating means, and a comparison circuit adapted to select an instant of time at which a signal at the output of the transducer assumes a zero value, said comparison circuit having its input connected to the transducer and its output electrically connected to a control input of the gating means.

4,641,094
MAGNETOMETER CIRCUIT FOR MEASURING THE PERIOD OF BEAT FREQUENCY MAXIMA

Murphy L. Dalton, Jr., 6035 Aberdeen St., Dallas, Tex. 75230
 Filed Apr. 16, 1984, Ser. No. 600,955
 Int. Cl.⁴ G01R 33/20; G01V 3/14

U.S. Cl. 324—302

6 Claims



1. A magnetometer circuit for use in a magnetic field detec-

tor having polarizable bodies in spaced apart relation, each body having a coil wound thereabout for receiving periodic polarizing current pulses, the coils connected to detector circuitry for producing a beat frequency signal having a response pulse following each of the current pulses, each response pulse having a maximum time width related to the difference in magnetic fields at the bodies, the circuit comprising:

- means for threshold detecting said beat frequency signal pulses to produce a detected signal having a first state when said beat frequency signal pulse exceeds a selected threshold voltage and having a second state when said beat frequency signal pulse is less than said threshold voltage, and
- means for producing respective output pulses for said first states of said detected signal, each said output pulse having an amplitude corresponding to the duration of the corresponding first state of said detected signal for producing constant amplitude output pulses to indicate a no-target background and for producing output pulses having a different amplitude from that of said constant amplitude to indicate detection of the target by said magnetometer circuit.

4,641,095
DETERMINATION OF T1 RELAXATION TIMES USED IN AUTOMATED NUCLEAR MAGNETIC RESONANCE IMAGE SYNTHESIS

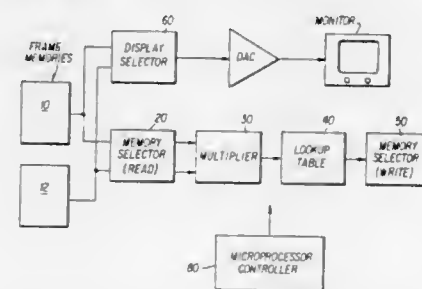
Stephen J. Riederer, Durham, N.C., assignor to Duke University Medical Center, Durham, N.C.

Filed May 15, 1985, Ser. No. 734,101

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—309

8 Claims



1. A method for determining the spin-lattice relaxation time T1 of an image during a Nuclear Magnetic Resonance (NMR) measurement technique on a human body comprising the steps of:

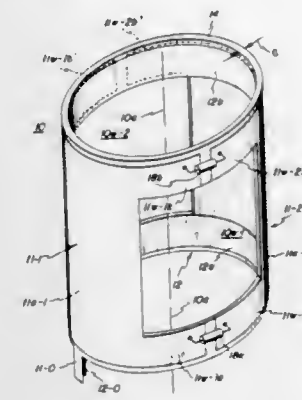
- subjecting said body to magnetic fields in accordance with a NMR technique using a multiple spin-echo pulse sequence at two different predetermined stored pulse repetition times TR1 and TR2;
- measuring a first signal S(TR1) at a first one of (TR1) of said two repetition times including the steps of setting a longitudinal magnetization to an initial predetermined value M0, waiting a first period of time equal to a first pulse repetition time TR1, and then flipping the longitudinal magnetization Mz by 90° into the x-y plane wherein the value of x-y plane magnetization immediately after the step of flipping is said first signal, called the transverse magnetization, which is equal to the value of the longitudinal magnetization immediately prior to the step of flipping and wherein said first signal S(TR1) is expressed by a first equation $S(TR1) = M_0[1 - \exp(-TR1/T1)]$ where M0 is a constant;
- measuring a second signal at a second one TR2 of said two repetition times including the step of setting a longitudinal magnetization to an initial predetermined value M0, waiting a second period of time equal to said second pulse repetition time TR2, and then flipping the longitudinal

4,641,097
ELLIPTICAL CROSS-SECTION SLOTTED-TUBE RADIO-FREQUENCY RESONATOR FOR NUCLEAR MAGNETIC RESONANCE IMAGING
 Paul A. Bottomley, Clifton Park, and John F. Schenck, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 10, 1984, Ser. No. 609,043
 Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—318

21 Claims



1. A slotted-tube radio-frequency resonator, for magnetic resonance imaging at Larmor frequencies associated with a static magnetic field of magnitude greater than about 0.5 Tesla, comprising:
 - first and second complementary outer structure portions, each having a generally I-shaped electrode having a central band with opposed ends and having one of four wing portions extending from each of a pair of opposed locations substantially at each opposed end thereof; each of said first and second complementary outer structure portions being disposed with the end of each of the four wing portions being spaced from a complementary adjacent one of the wing portions of the other outer structure portion and with both of said outer structure portion electrodes forming a tube having a substantially elliptical cross-section in planes substantially perpendicular to a central axis of said resonator;
 - means for reactively coupling each of the wing portion ends to the complementary adjacent wing portion end;
 - first and second guard ring members, each having an elliptical cross-section in a plane substantially perpendicular to the central axis of said resonator and each positioned inwardly of at least the adjacent wing portions at an associated one of the opposed ends of said bands;
 - dielectric means for insulatively separating each of said first and second guard ring members from the overlying outer structure portions;
 - means for applying a first potential to only one selected one of said first and second outer structure portion bands; and
 - means for applying another potential to that one of said first and second guard ring members adjacent to said selected one of said bands.

4,641,096
NUCLEAR MAGNETIC RESONANCE SPECTROMETRY
 Osamu Kamo; Muneki Obuchi, and Kazuhiro Matsushita, all of Tokyo, Japan, assignors to JEOL Ltd., Tokyo, Japan

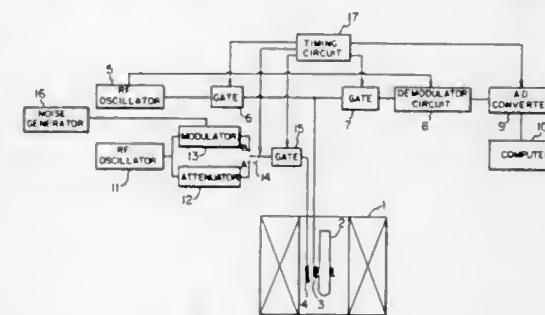
Filed Nov. 26, 1984, Ser. No. 674,733

Claims priority, application Japan, Nov. 30, 1983, 58-226340

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—311

5 Claims



1. A nuclear magnetic spectrometry method comprising the steps of:
 - applying a 90° RF pulse and a 180° RF pulse, said pulses of frequency to affect the nuclei under observation, said 90° and 180° pulses separated by a time interval of t,
 - observing the resulting echo (FID) signal after another time interval of t, and
 - applying a decoupling signal comprising a strong noise-modulated RF signal of a frequency to affect nuclei that are not to be observed, the strong noise-modulated RF signal acting to decouple the nuclei not observed over a broad range, the application of the RF decoupling signal being terminated before the beginning of the observation of the echo signal.

4,641,098
PARALLEL SINGLE TURN SADDLE RESONATOR FOR NUCLEAR MAGNETIC RESONANCE SIGNAL RECEPTION

Francis D. Doty, Columbia, S.C., assignor to Doty Scientific, Inc., Columbia, S.C.

Filed Mar. 15, 1985, Ser. No. 712,080

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—322

2 Claims

1. A parallel single turn saddle resonator for inducing or detecting transverse nuclear magnetization in a sample, said

resonator comprising an even number of inductor loops, said loops formed to the contour of one or more substantially concentric cylindrical surfaces and located symmetrically on at least one axis of a pair of mutually orthogonal axes which



intersect orthogonally the axis of said cylindrical surface(s) at a given point, said loops on a given axis all electrically connected in parallel by suitable coupling means, and each loop including at least one break for the insertion of a capacitor.

4,641,099

METHODS FOR ENHANCING MAPPING OF THERMAL FRONTS IN OIL RECOVERY

David O. Lee, Paul C. Montoya, and James R. Wayland, Jr., all of Albuquerque, N. Mex., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 30, 1984, Ser. No. 595,011
Int. Cl.⁴ G01V 3/00; E21B 47/00

U.S. Cl. 324—323

13 Claims

1. A method for enhancing the resistivity contrasts of a thermal front produced by enhanced oil recovery techniques in a production field, to allow its detection by a controlled source audio frequency magnetotelluric (CSAMT) technique, comprising the steps of:

- preparing a CSAMT-determined topological resistivity map of the production field;
- injecting a solution of a dopant material into the production field at a concentration effective to alter the resistivity associated with the thermal front; said dopant material having a high cation exchange capacity and being soluble in the connate water of the production field;
- preparing a CSAMT-determined topological resistivity map of the production field while said dopant material is moving therethrough; and
- mathematically comparing the maps from step (a) and step (c) to determine the location of the thermal front.

4,641,100

MULTIFREQUENCY METHOD FOR DIRECT AIRBORNE ELECTROMAGNETIC PROSPECTING OF HYDROCARBON DEPOSITS

Jan Dzwiniel, Cracow, Poland, assignor to Instytut Gornictwa Naftowego i Gazownictwa, Cracow, Poland

Filed Jun. 4, 1982, Ser. No. 385,228

Claims priority, application Poland, Jun. 10, 1981, 231633
Int. Cl.⁴ G01V 3/16, 3/165

U.S. Cl. 324—330

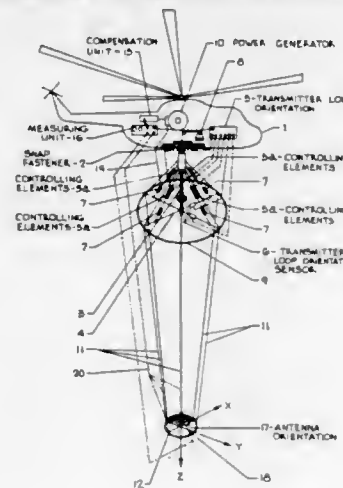
1 Claim

1. A method of direct airborne electromagnetic prospecting of hydrocarbon deposits, comprising the steps of:

- transmitting many primary electromagnetic fields over an area comprising known hydrocarbon bearing and known barren locations, said many primary electromagnetic fields being transmitted from an induction transmitter loop mounted on a helicopter over many frequencies within the range of from 0.1 to 10 Hz, with many helicopter altitudes and with many positions of the plane of the induction transmitter loop;
- detecting, over each of a number of said known hydro-

carbon bearing and known barren locations, any deviation of amplitude and phase of all said many primary electromagnetic fields due to secondary electromagnetic fields over said known locations, said deviations of amplitude and phase being measured separately for each of the orthogonal electromagnetic components H_x , H_y , and H_z by means of three orthogonal induction receiver antennae, and separately for each combination of said frequencies, helicopter altitudes and positions of the plane of the induction transmitter loop;

- storing electronically said amplitude and phase data separately for each known hydrocarbon bearing and known barren location in said area;
- converting said amplitude and phase data for each said known location into a multidimensional vector which represents the geophysical pattern of said known location, each said vector being a function of helicopter flight altitude, frequency, transmitter loop direction and inclination angle and the three induction receiver antenna orientations;
- electronically processing said vectors to obtain the factors of discriminant functions on the basis of pattern recognition theory, cumulatively as flights over said known locations proceed, said discriminant functions being normalized such that they provide values between 0.8 and 1.0 for said locations over said known hydrocarbon bearing



locations, and values of -0.8 to -1.0 over said known barren locations, said values being a measure of probability level of petroleum presence and absence;

- transmitting said many primary electromagnetic fields over any designed number of measuring locations within an area to be explored;
- detecting, at said measuring locations, said deviations of amplitude and phase of said many primary electromagnetic fields due to secondary electromagnetic fields over said area to be explored;
- storing electronically said amplitude and phase data separately for each said measuring location;
- converting said amplitude and phase data into multidimensional vectors which represent the geophysical patterns of measuring locations within said area to be explored, said vectors being functions of flight altitude, frequency, transmitter loop direction and inclination angle, and the orientation of the three induction receiver antennae;
- processing electronically said vectors into a set of probability levels of petroleum presence or absence on the basis of pattern recognition theory cumulatively as flights over said measuring locations proceed, and probability level computed for measuring locations within said area to be explored, with the use of said normalized discriminant

functions, selecting electronically, over said measuring locations within said area to be explored, the measuring locations having a high probability level, i.e. a pattern vector similar to those of points over said known locations; and

- visually indicating and presenting thus computed probability levels on a monitor and providing a map of hydrocarbon occurrence probability contours.

4,641,101

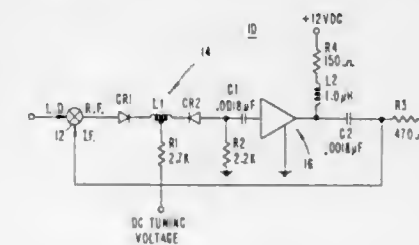
WIDEBAND, MICROWAVE REGENERATIVE DIVIDER WITH VARACTOR TUNING

Harold N. Selim, Wichita, Kans., assignor to IFR, Inc., Wichita, Kans.

Filed Oct. 25, 1984, Ser. No. 664,556
Int. Cl.⁴ H03B 19/05; H03L 7/00

U.S. Cl. 328—25

15 Claims



1. A wideband microwave regenerative divider with varactor tuning, comprising:

- a source of RF capable of producing RF signals at different frequencies above about 1 GHz;
- a mixer having first and second inputs and an output, said first input being coupled to said source; and
- a varactor-tuned filter with means for tuning to a subharmonic of the frequencies of said RF signals, said filter having a varactor and inductor connected together between said mixer output and said second mixer input, and a tuning voltage input connected to said varactor.

4,641,102

RANDOM NUMBER GENERATOR

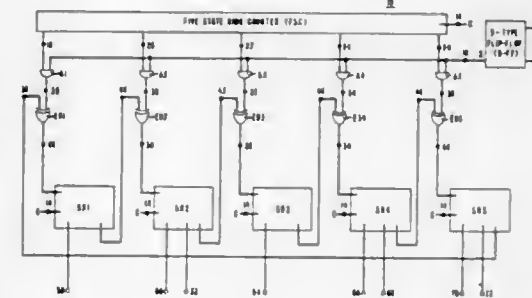
Kenneth B. Coulthart, Hackettstown; Robert C. Fairfield, Randolph, and Robert L. Mortenson, Mountain Lakes, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 17, 1984, Ser. No. 641,913

Int. Cl.⁴ H03K 13/00; H03B 29/00

U.S. Cl. 328—62

4 Claims



1. Circuitry comprising:

- a sample-and-hold circuit having first and second input terminals and an output terminal and being connected to detect successive levels of a signal applied to the first input terminal at points in time which are determined by occurrences of a preselected portion of a repetitive signal applied to the second input terminal and to generate at the

output terminal sample-and-hold output signals which are representative of the levels of the signal applied to the first input terminal, each of the levels of the sample-and-hold output signal being held until the preselected portion of the signal applied to the second input terminal recurs;

a plurality of exclusive-OR gates each of which having first and second input terminals and an output terminal; gating means having an input terminal coupled to the output terminal of the sample-and-hold circuit and having a plurality of output terminals with each one of same coupled to a separate second input terminal of one of the plurality of exclusive-OR gates;

the gating means being adapted to successively apply each of the sample-and-hold output signals to the second input terminal of a different one of each of the plurality of exclusive-OR gates;

a plurality of shift registers, each of the registers comprising a first and a last stage and having an input terminal coupled to the first stage thereof, and further having a first output terminal coupled to a last stage thereof;

the output terminal of each of the exclusive-OR gates being coupled to the input terminal of a separate one of the shift registers;

the first output terminal of a first of the shift registers being coupled to the first input terminal of a second of the exclusive-OR gates;

the first output terminal of each successive shift register being coupled to the first input terminal of the next successive exclusive-OR gate, with the first output terminal of the last shift register being coupled to the first input terminal of the first of the exclusive-OR gates; and circuitry output terminals being coupled to selected stages of the plurality of shift registers.

4,641,103

MICROWAVE ELECTRON GUN

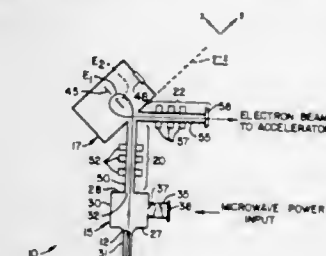
John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306, and Glen A. Westenskow, Palo Alto, Calif., assignors to John M. J. Madey, Palo Alto, Calif.

Filed Jul. 19, 1984, Ser. No. 632,757

Int. Cl.⁴ H01J 29/54, 29/58, 29/80, 29/84

U.S. Cl. 328—228

22 Claims



1. An electron gun comprising:

a thermionic cathode

RF cavity means defining an internal volume for supporting an electromagnetic field having a high-gradient electric component within said volume, said RF cavity means having first and second wall portions, said wall portions being separate from each other, said second wall portion being formed with an exit aperture; and

means for mounting said cathode at a position proximate said first wall portion such that electrons emitted from said cathode enter said volume and are subjected to said electric field component and accelerated thereby so as to pass through said exit aperture;

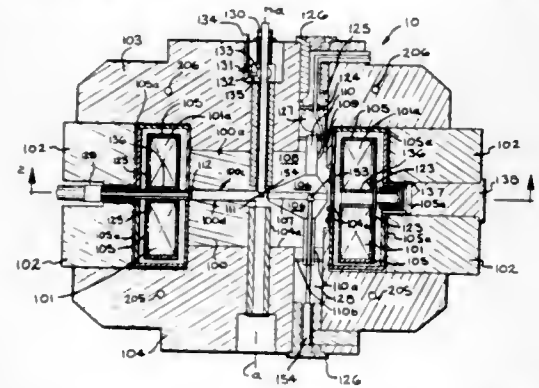
said means for mounting being operable to maintain said cathode at substantially the same RF voltage as said first wall portion and to provide thermal isolation between said cathode and said first wall portion.

4,641,104
SUPERCONDUCTING MEDICAL CYCLOTRON
 Henry G. Blosser, East Lansing, Mich.; Richard J. Burleigh, Berkeley, Calif.; Gabe F. Blosser, Haslett, and Emanuel B. Jemison, Kalamazoo, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Apr. 26, 1984, Ser. No. 604,089
 Int. Cl.⁴ H05H 13/00

U.S. Cl. 328—234

21 Claims



1. In a superconducting cyclotron apparatus which generates a beam of high velocity particles comprising atomic particles and subparticles thereof to be directed at an object to be irradiated from spirally accelerated charged particles around a cyclotron axis which form the beam or which impinge upon a target to produce the beam and including inlet and outlet conduit means for supplying and removing liquified gas to and from a vessel around superconducting coils supplied by electrical leads inside the vessel which pass around spaced apart iron poles so as to generate a magnetic field between the poles when current is supplied to the coils and which function to produce the spirally accelerated charged particles with an oscillatory electrical field, the improvement which comprises:

a Joule-Thompson effect constricted capillary tube leading to a semi-circular tube adjacent to and in heat transfer relationship with both coils and the liquified gas in the vessel, with the semi-circular tube connected to an exit tube from the vessel and cyclotron, wherein in operation of the cyclotron liquified gas is at an elevated pressure P_1 in the vessel and a portion of the liquified gas in the vessel flows through the capillary tube and expands into the semi-circular tube at a pressure P_2 lower than P_1 thus cooling the semi-circular tube and thus the liquified gas in the vessel and the coils and then the liquified gas is removed through the exit tube, and wherein the cooled semi-circular tube subcools the liquified gas in the coil vessel thus preventing the formation of bubbles in this vessel due to heat flowing into the liquified gas in the vessel along the electrical leads supplying current to the coils.

4,641,105
APPARATUS AND METHOD FOR NOISE REDUCTION IN A LINEAR AMPLIFIER
 Neil P. Albough, and Gordon R. Kane, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

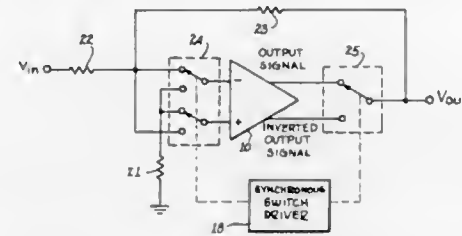
Filed Oct. 7, 1985, Ser. No. 784,992
 Int. Cl.⁴ H03F 3/45

U.S. Cl. 330—9

13 Claims

1. An amplifying circuit comprising:
 a differential amplifier;
 an input switch for applying an input signal to a first terminal of said amplifier during a first period and for applying said input signal to a second terminal of said differential amplifier during a second period, said input switch passing both

D.C. components and A.C. components substantially without attenuation; and
 output switch, said output switch applying a second output terminal of said differential amplifier to an output terminal



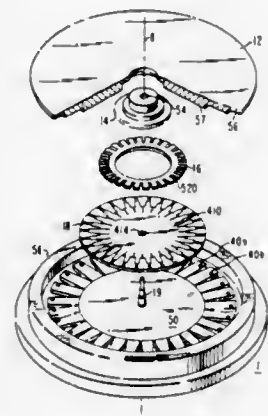
during a first period and for applying the output signal of a first output terminal of said amplifier to an output terminal during said second period, said output switch passing both D.C. components and A.C. components substantially without attenuation.

4,641,106
RADIAL POWER AMPLIFIER
 Erwin F. Belohoubek, Middlesex County, and Daniel W. Bechtel, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 21, 1985, Ser. No. 736,302
 Int. Cl.⁴ H03F 3/60

U.S. Cl. 330—286

17 Claims



16. A power amplifier comprising:
 an input port centered on an axis and adapted for receiving signal to be amplified;
 a first radial transmission line centered on said axis and coupled to said input port for propagating said signal to be amplified radially away from said input port;
 radial transmission line to microstrip transition means centered on said axis and coupled to said radial transmission line for coupling a portion of said signal to be amplified to each of a first plurality of microstrip terminals;
 a plurality equal to said first plurality of coaxial transmission lines, each of said coaxial transmission lines having a first end and a second end, each of said first ends being coupled to one of said first microstrip terminals, and each of said coaxial transmission lines extending at right angles thereto and parallel with said axis;
 an output port on said axis;
 a second radial transmission line centered on said axis and coupled to said output port for propagating amplified signal to said output port;
 microstrip transmission line to radial transmission line transition means centered on said axis for receiving portions of

said amplified signal at a plurality equal to said first plurality of second microstrip terminals and for coupling said portions of said amplified signal to said second radial transmission line; and
 a plurality equal to said first plurality of amplifying means, each of said amplifying means having an input terminal coupled to said second end of one of said coaxial transmission lines for receiving one of said portions of said signal to be amplified, and each of said amplifying means having an output terminal coupled to one of said second microstrip terminals for producing one of said portions of said amplified signal.

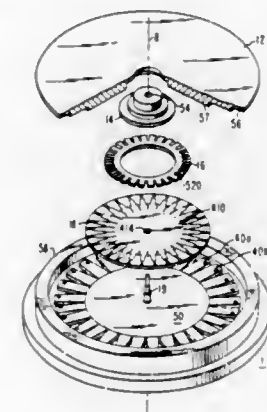
4,641,107
PRINTED CIRCUIT RADIAL POWER COMBINER WITH MODE SUPPRESSING RESISTORS FIRED AT HIGH TEMPERATURE

David Kalokitis, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 21, 1985, Ser. No. 736,346
 Int. Cl.⁴ H03F 3/60; H01P 5/12

U.S. Cl. 330—286

15 Claims



13. An amplifier, comprising:
 a conductive central disc-like member including a central axis and also including first and second flat sides which are parallel to a plane orthogonal to said central axis;
 an input port adapted for receiving signal to be amplified and for coupling said signal to be amplified to a point near the junction of said central axis and said first flat side of said central disc-like member;
 power splitting means coupled to said input port and including a flat conductive member spaced from said first flat side of said central disc-like member to form a first radial waveguide for conveying said signal to be amplified from said input port to points at a first radius therefrom, and also including radial-waveguide-to microstrip transition means for splitting said signal to be amplified into a first plurality of portions, each of said portions appearing on one of a first plurality of microstrip terminals equally spaced along a circle spaced by a second radius from said central axis;
 a second plurality of microstrip terminals spaced by a predetermined distance from said second side of said central disc-like member;
 an output port;
 power combining means coupled to said output port and including a flat conductive portion of a printed circuit board spaced from said second flat side of said central disc-like by a dielectric portion of said printed circuit board to form a second radial waveguide, and also including microstrip to radial waveguide transition means coupled to said second plurality of microstrip terminals and to said second radial waveguide for coupling to said output port combined signal from said second plurality of microstrip terminals, said microstrip to radial waveguide transi-

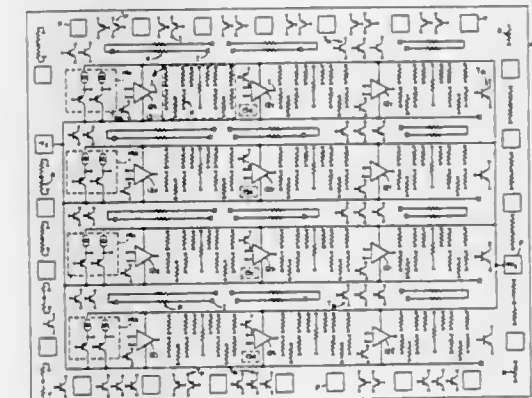
tion means including a plurality equal to said second plurality of radial slots formed in the edge of said second radial waveguide;
 a third plurality of amplifiers, said third plurality being equal to each of said first and second pluralities, each of said amplifiers including an input terminal coupled to one of said first plurality of microstrip terminals and an output terminal coupled one of said second plurality of microstrip terminals, each of said amplifiers also being biased to amplify the signals received from said one of said first microstrip terminals to produce an amplified signal at said one of said second plurality of microstrip terminals;
 a metal ring having an outer diameter less than the outer diameter of said second radial waveguide and including a plurality equal to said second plurality of radial slots each of which is larger than the corresponding radial slot in said radial waveguide, said metal ring being electrically and thermally bonded to said flat conductive portion of said printed circuit board with said slots of said metal ring being registered with said slots in said radial waveguide; and
 resistance means bonded to said metal ring and electrically coupled across said slots in said metal ring.

4,641,108
CONFIGURABLE ANALOG INTEGRATED CIRCUIT
 Harry A. Gill, Jr., Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 16, 1985, Ser. No. 788,194
 Int. Cl.⁴ H03F 3/04

U.S. Cl. 330—307

16 Claims



16. A method of providing an integrated circuit comprising the steps of:
 providing a plurality of active circuit elements interconnected in a first level of a semiconductor body to provide a preconfigured gain stage and a plurality of preconfigured output stages; and
 electrically interconnecting the gain stage to a selected one, or ones, of the plurality of output stages at a second level of the semiconductor body.

4,641,109
CMOS CRYSTAL CONTROLLED OSCILLATOR
 Hiroshi Yokouchi, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

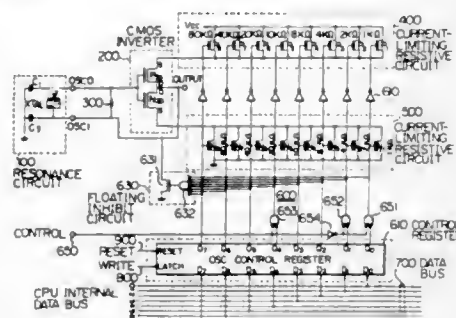
Filed Dec. 11, 1985, Ser. No. 807,877
 Claims priority, application Japan, Dec. 12, 1984, 59-260882

Int. Cl.⁴ H03B 5/30
 U.S. Cl. 331—116 FE

5 Claims

1. A CMOS crystal controlled oscillator for use in a semiconductor device having an internal data bus comprising:
 (a) a CMOS inverter composed of P and N type MOS FETs which are connected in series with each other;

- (b) a crystal element connected between signal input and output nodes of said CMOS inverter;
- (c) a first capacitor connected between said signal input node of said CMOS inverter and a ground potential;
- (d) a second capacitor connected between said signal output node of said CMOS inverter and said ground potential;
- (e) a feedback resistor connected between the signal input and output nodes of said CMOS inverter for providing a DC bias potential to said CMOS inverter;
- (f) a first current-limiting circuit connected between the P type MOS FET of said CMOS inverter and a power source potential for limiting a current through said CMOS inverter; said first current-limiting circuit comprising a plurality of P type MOS FETs which are connected in parallel;



- (g) a second current-limiting circuit connected between said N type MOS FET of said CMOS inverter and said ground potential for limiting a current flowing through said CMOS inverter; said second current-limiting circuit comprising a plurality of N type MOS FETs which are connected in parallel; and
- (h) a control register for controlling said first and second current-limiting circuits based on data on said internal data bus to reduce power consumption of said crystal control oscillator; wherein said plurality of P type MOS FETs are controlled selectively in response to data from said control register and wherein said plurality of N type MOS FETs are controlled selectively in response to data from said control register.

4,641,110

SHIELDED RADIO FREQUENCY TRANSMISSION CABLE HAVING PROPAGATION CONSTANT ENHANCING MEANS

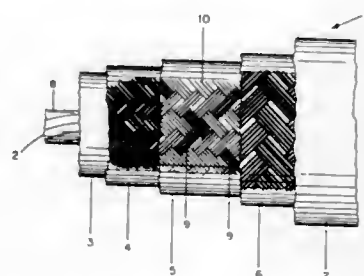
Kenneth L. Smith, Amesbury, Mass., assignor to Adams-Russell Company, Inc., Amesbury, Mass.

Filed Jun. 13, 1984, Ser. No. 620,121

Int. Cl.⁴ H01P 3/06

U.S. Cl. 333-12

23 Claims



1. A cable comprising at least one center conductor, a generally cylindrical dielectric means surrounding said center conductor, an inner metallic sheath generally concentric with said cen-

ter conductor and surrounding said dielectric to contain electromagnetic fields and to define a transmission path within said sheath for transmission of radio-frequency signals with a relatively low propagation function, at least one outer metallic sheath surrounding and separated from said inner metallic sheath to define a second transmission path between said inner and outer metallic sheaths, the space between said separated metallic sheaths containing a dielectric material and an electrically conductive enhancing means, said dielectric material filling a predominate portion of said space, said electrically conductive enhancing means being configured to increase the propagation function of said transmission path between said inner and outer metallic sheaths to a value significantly greater than twice said low propagation function of said transmission path within said inner metallic sheath.

4,641,111

MICROWAVE COUPLER

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

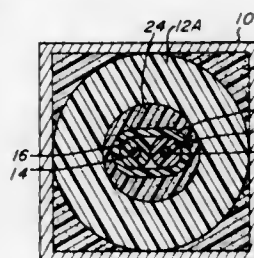
Continuation of Ser. No. 550,774, Nov. 14, 1983, Pat. No. 4,547,753. This application Sep. 12, 1985, Ser. No. 775,310

The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.

Int. Cl.⁴ H01P 5/18

U.S. Cl. 333-115

16 Claims



1. A microwave coupled line device operated over a frequency range having a predetermined center frequency and comprising: means defining an outer conductor, first and second inner conductors at least one of which has insulation bonded thereto and separated by the thickness of said insulation there between, an insulating sleeve disposed in said outer conductor and adapted to accommodate said first and second inner conductors, a means for filling the void between the insulating sleeve and the inner conductors with an insulating material having a relatively high dielectric constant particularly in comparison with the dielectric constant of the insulating sleeve and in the range of a dielectric constant of 2.6-3.5, the means for filling having a dielectric constant selected in comparison with the dielectric constant of the insulating sleeve so as to decrease the even mode velocities so as to approach equalization between the even and odd mode propagation velocities, and means for filling any void between the insulating sleeve and outer conductor.

4,641,112

DELAY LINE DEVICE AND METHOD OF MAKING SAME

Masami Kobayakawa, Saitama, Japan, assignor to Toko, Inc., Tokyo, Japan

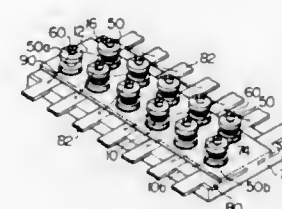
Filed Mar. 4, 1986, Ser. No. 836,099

Claims priority, application Japan, Mar. 12, 1985, 60-35216[U]; Mar. 13, 1985, 60-49710; Mar. 25, 1985, 60-42757[U]; Sep. 25, 1985, 60-146468[U]; Oct. 9, 1985, 60-154818[U]; Oct. 9, 1985, 60-225781; Nov. 14, 1985, 60-175140[U]

Int. Cl.⁴ H03H 7/32, 3/00; H05K 13/04

U.S. Cl. 333-140

21 Claims



1. A lumped constant type delay line device wherein a plurality of cores having coils contiguously wound thereon, are mounted on a plastic base plate, characterized in that said plastic base plate is molded with a plurality of conductor plates each integrally provided with connecting portions and terminals being buried therein in such a manner that said connecting portions are exposed at one surface of said base plate and said terminals extend externally thereof; capacitors are securely connected to said connecting portions; coils are mounted on the other surface of said base plate, said coils having taps thereof connected to electrodes provided on the top end surfaces of the cores respectively; and said electrodes are electrically connected to said terminals respectively.

4,641,113

DELAY LINE DEVICE HAVING SYMMETRICAL DELAY PATH

Julchiro Ozawa, Kyoto, Japan, assignor to Susumu Industrial Co., Ltd., Kyoto, Japan and Thin Film Technology Corporation, North Mankato, Minn.

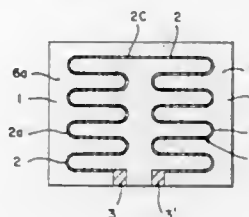
Filed May 2, 1984, Ser. No. 606,292

Claims priority, application Japan, May 2, 1983, 58-78063

Int. Cl.⁴ H01P 9/00

U.S. Cl. 333-161

3 Claims



1. A delay line device which comprises a substrate made of an electrically insulating material, a transmission path formed by a thin film containing copper on one surface of the substrate, said transmission path including at least two parts arranged in a symmetrical manner, and a ground electrode formed on another opposing surface of the substrate, each of said parts being of a zig-zag configuration comprising a plurality of generally straight sections connected by a plurality of bent sections, said parts being adjacent each other and symmetrical about an axis intermediate said parts and extending in a direction perpendicular to said generally straight sections, the uppermost straight sections of said parts being contiguous and electrically connected, first connecting electrodes formed adjacent the lower most straight sections on said one surface of

the substrate and respective ones of said first electrodes being connected with a respective end of the transmission path, and second connecting electrodes formed on said another opposing surface of the substrate and connected with portions of the ground electrode, said second connecting electrodes being spaced from each other.

4,641,114

THICK FILM DELAY LINE COMPRISING A PLURALITY OF STACKED DELAY ASSEMBLIES FORMED BY A PRINTING PROCESS

Herman R. Person, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

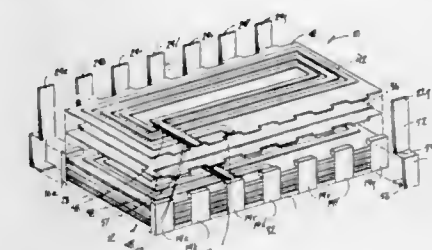
Continuation of Ser. No. 478,841, Mar. 25, 1983, abandoned.

This application Jul. 31, 1985, Ser. No. 761,598

Int. Cl.⁴ H01P 9/00

U.S. Cl. 333-161

3 Claims



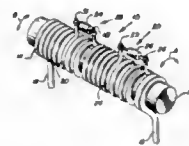
1. A thick film delay line comprising: a dielectric substrate having an upper surface, a lower surface, and a plurality of perimeter edges; at least first, second and third delay circuit assemblies, each of said delay circuit assemblies comprising a solid sheet of conductive material, a first printed layer of dielectric material printed over and completely covering said solid conductive sheet, a spiral conductor printed over said first dielectric layer and having an outer spiral end and an inner spiral end, said inner spiral end crossing over a cross-over portion of said spiral conductor, printed dielectric means interposed between said cross over portion of said spiral conductor and said inner spiral end to prevent electrical contact therebetween, and a second printed dielectric layer printed over and completely covering all of said spiral conductor so that said entire spiral conductor is sandwiched between said first and second printed dielectric layers; said solid conductive sheet of said first delay circuit assembly being printed on said upper surface of said substrate; said solid conductive sheets of said second and third delay circuit assemblies being printed on said second dielectric layers of said first and second delay circuit assemblies, respectively; said third delay circuit assembly being positioned a predetermined height above said upper surface of said substrate; at least a conductive ground contact pad and conductive first, second, third and fourth contact pads mounted to said substrate along one of said peripheral edges thereof in spaced relation to one another, each of said ground, first, second, third and fourth contact pads extending above said upper surface to a height at least equal to said predetermined height of said third delay circuit assembly above said upper surface of said substrate; said inner and outer coil ends of said first delay circuit assembly extending horizontally from between said first and second dielectric layers of said first delay circuit assembly with one of said inner and outer coil ends of said first delay line being electrically connected to said first contact pad and with the other of said inner and outer coil ends of said first delay line being electrically connected to said second contact pad;

said inner and outer coil ends of said second delay circuit assembly extending horizontally from between said first and second dielectric layers of said second delay circuit assembly with one of said inner and outer coil ends of said second delay circuit assembly being electrically connected to said second contact pad and the other of said inner and outer coil ends of said second delay circuit assembly being connected to said third contact pad;

said inner and outer coil ends of said third delay circuit assembly extending horizontally from between said first and second dielectric layers of said third delay circuit assembly with one of said inner and outer coil ends of said third delay circuit assembly being in electrical contact with said third contact pad and the other of said inner and outer coil ends of said third delay circuit assembly being in electrical contact with said fourth contact pad, whereby said conductive coils of said first, second, and third delay circuit assemblies are connected in series with one another;

each of said conductive sheets of said first, second and third delay assemblies having a horizontal lead extending horizontally into electrical contact with said ground contact pad.

4,641,115
RADIO FREQUENCY CHOKES HAVING TWO WINDINGS AND MEANS FOR DAMPENING PARASITIC RESONANCES
 Peter D. Bailey, Phoenix, Ariz., assignor to Texscan Corporation, Phoenix, Ariz.
 Filed Jun. 4, 1984, Ser. No. 617,013
 Int. Cl.⁴ H03H 7/09
 U.S. Cl. 333—181

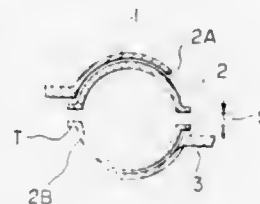


5. A radio frequency choke for use in the frequency duplexing circuits of the equipment of a cable transmission and distribution system over which radio frequency signals and single phase AC power signals are simultaneously transmitted, said radio frequency choke comprising:
- (a) an elongated core of ferromagnetic material;
 - (b) a first conductor wound around said core to form a primary choke winding having a predetermined number of turns and having a first end terminal for coupling said primary choke winding to ground and a second opposite end terminal for coupling said primary choke winding to the cable system;
 - (c) a first swamping circuit means for dampening parasitic resonances which occur in said primary choke winding at the low end of the frequency bandwidth of the radio frequency signals which are transmitted over the cable system, said first swamping circuit means including:
 - I. a second conductor wound around said core to form a first secondary winding having a predetermined number of turns which are fewer than the number of turns of said primary choke winding and having first and second end terminals, and
 - II. a first resistor having a first predetermined value interconnected between the first and second end terminals of the first secondary winding of said first swamping circuit means; and
 - (d) a second swamping circuit means for dampening parasitic resonances which occur in said primary choke winding at the high end of the frequency bandwidth of the radio frequency signals which are transmitted over the

cable system, said second swamping circuit means including:

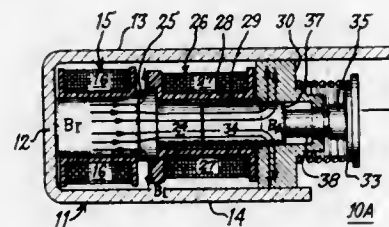
- I. a third conductor wound around said core to form a second secondary winding having a predetermined number of turns which are fewer than the number of turns of said primary choke winding and having first and second end terminals, and
- II. a second resistor having a second predetermined value interconnected between the first and second end terminals of the second secondary winding of said second swamping circuit means.

4,641,116
MICROWAVE FILTER
 Junichi Shibata, and Hiroshi Kojima, both of Saitama, Japan, assignors to Pioneer Ansafone Manufacturing Corporation, Saitama, Japan
 Filed Nov. 25, 1985, Ser. No. 801,995
 Claims priority, application Japan, Nov. 28, 1984, 59-249758
 Int. Cl.⁴ H01P 1/203, 7/08
 U.S. Cl. 333—204



1. A passive microwave bandpass filter, comprising:
- (a) a dielectric substrate;
 - (b) an input matching circuit (1) disposed on the substrate,
 - (c) an output matching circuit (3) disposed on the substrate and having an end portion spaced from an end portion of the input matching circuit, and
 - (d) a unit-wavelength resonator (2) disposed between said end portions of the input and output matching circuits,
 - (e) said unit-wavelength resonator comprising a pair of generally U-shaped strip lines (2A, 2B) disposed opposite each other with ends facing but spaced from each other across equal width gaps (5) to define an otherwise closed loop, and said strip line ends having outwardly extending, parallel stubs (T) defining therebetween said gaps, the width of said gaps and the outwardly extending length of said stubs determining the passband of the filter.

4,641,117
COMBINED ACCESSORY AND TRIP ACTUATOR UNIT FOR ELECTRONIC CIRCUIT BREAKERS
 Henry G. Willard, Wethersfield, Conn., assignor to General Electric Company, New York, N.Y.
 Filed Jul. 29, 1985, Ser. No. 759,979
 Int. Cl.⁴ H01H 83/12
 U.S. Cl. 335—7



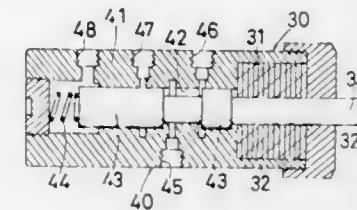
1. A combined trip actuator and undervoltage release for electronic circuit breakers comprising:
- magnetic support means;

a trip coil mounted within said support means having a movable armature extending partially within said trip coil and biased into a tripping position by a compression spring;

an undervoltage release coil within said support means providing a predetermined magnetic holding flux to retain said armature in a non-trip position against said compression spring when said undervoltage release coil is energized by a first predetermined voltage; and

a magnetic flux diverter intermediate said undervoltage release coil and said trip coil for diverting said magnetic holding flux away from said armature when said trip coil is energized to allow said armature to extend to said tripping position under the urgency of said compression spring, said flux diverter comprising a dual-diameter magnetic cylinder the smaller diameter being arranged partially within said trip coil, the larger diameter being arranged in abutment with said undervoltage release coil, said undervoltage release coil providing less than said predetermined holding flux to said armature when said undervoltage release coil is energized by a voltage less than said predetermined voltage whereby said armature becomes extended to said tripping position under the urgency of said compression spring.

4,641,118
ELECTROMAGNET AND ELECTROMAGNETIC VALVE COIL ASSEMBLIES
 Tokuzo Hirose, and Ikuro Inoue, both of Osaka, Japan, assignors to Hirose Manufacturing Co., Ltd., Osaka, Japan
 Filed Jan. 30, 1985, Ser. No. 696,433
 Claims priority, application Japan, Aug. 6, 1984, 59-120856[U]; Aug. 17, 1984, 59-172191
 Int. Cl.⁴ H01F 7/08
 U.S. Cl. 335—282



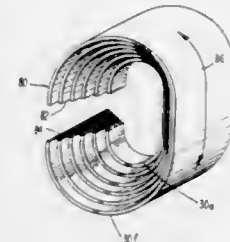
1. An electromagnet comprising:
- a plurality of first planar insulative substrates, each having a spiral shaped conductor on only one side thereof, each spiral shaped conductor extending in a first direction between a radially inner terminal end and a radially outer terminal end thereof;
- a plurality of second planar insulative substrates, each having a spiral shaped conductor on only one side thereof, each spiral shaped conductor extending in a second spiral direction between a radially inner terminal end and a radially outer terminal end thereof, said second spiral direction being a reverse of said first spiral direction;
- said plurality of first planar insulative substrates being stacked in alternating relationship with said plurality of second planar insulative substrates, the stack of said plurality of first and second planar insulative substrates having a hole extending centrally therethrough with respect to each spiral shaped conductor;
- each of said plurality of first planar insulative substrates having said radially inner terminal end connected to a cylindrical conductor extending therethrough and electrically connected to an abutting radially inner terminal end on a respective one of said plurality of second planar insulative substrates;
- each of said plurality of second planar insulative substrates having said radially outer terminal end connected to a cylindrical conductor extending therethrough and electrically

ally connected to an abutting radially outer terminal end on a respective one of said plurality of first planar insulative substrates, whereby each spiral shaped conductor is electrically connected together in series;

a housing having said stack of planar insulative substrates mounted therein; and

a ferromagnetic core slidably received in said hole in said stack of planar insulative substrates, said ferromagnetic core being moved with respect to said stack of planar insulative substrates when a direct electric current is passed through each spiral shaped conductor of said stack of planar insulative substrates.

4,641,119
LAMINAR MAGNET FOR MAGNETIC RESONANCE DEVICE AND METHOD OF MAKING SAME
 John F. Moore, Lake Bluff, Ill., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Apr. 19, 1985, Ser. No. 725,340
 Int. Cl.⁴ H01F 3/00
 U.S. Cl. 335—297

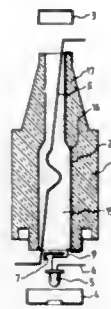


1. A magnet for use in a magnetic resonance imaging device comprising:
- (a) means for generating a magnetic field; and
 - (b) means for providing a return path for said magnetic field including a plurality of ribbon strips of magnetically conductive material, said strips each bent along their lengths to form a curved cross section along the edge of each strip, with said cross section similar in shape from strip to strip, and said strips stacked together to form a return path having a cross-section of said shape.

4,641,120
SAFETY FUSE ASSEMBLY PROVIDED WITH AN ELECTRO-OPTICAL INDICATOR DEVICE
 Karl-Walter Bonfig, Astenweg 17, 5910 Kreuztal; Jorg Himmel, Am Neuen Schacht 41, 5912 Hilchenbach, and Ulrich Kuipers, Grobestrasse 4, 5900 Siegen, all of Fed. Rep. of Germany
 Filed Nov. 13, 1985, Ser. No. 797,574
 Claims priority, application Fed. Rep. of Germany, Nov. 14, 1984, 3441588; Apr. 17, 1985, 3513833
 Int. Cl.⁴ H01H 85/32
 U.S. Cl. 337—242

1. A safety fuse assembly comprising two contacts, a substantially hollow cylindrical insulating body extending between the contacts and having an exterior surface, and an interior surface defining the interior body hollow, a fuse wire extending between said two contacts through the cylinder hollow, an electrically conductive highly resistive layer located on one of said body surfaces, said layer having at least one tapping point,

and an optoelectrical indicator means connected in series to at least one of said layer tapping points,



said optoelectrical indicator means and said electrically conductive highly resistive layer being electrically connected in parallel to said fuse wire.

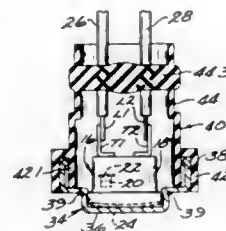
4,641,121 SEALED ELECTRICAL SWITCH AND MOUNTING THEREFOR

Henry J. Boulanger, Nicholasville, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1985, Ser. No. 794,888
Int. Cl.⁴ H01H 37/04, 37/52

U.S. Cl. 337—380

19 Claims



1. A switch having an open ended body with a movable and a stationary electrical contact disposed in the body, the movable contact movable into and out of engagement with the stationary contact, a heat responsive member disposed in the body operatively connected to the movable contact to cause the movable contact to assume one of its positions of engagement or disengagement depending on the temperature of the heat responsive member, a heat conductive cap having a heat sensing surface closing the open end of the body and thermally coupled to the heat responsive member, terminal means on the body to provide electrical connections to the movable and stationary contact and insulated electrical leads connected to the terminal means and projecting from the body, an improved liquid tight seal for the switch comprising a heat conductive metallic cup shaped member having a tubular side wall and closed end formed with a recessed portion in the closed end, the heat conductive cap received in the recessed portion with the heat sensing surface thermally coupled to the closed end, the closed end clampingly engaged with the heat conductive cap, a continuous layer of adhesive about the side wall of the cup shaped member, a plastic sleeve having first and second open ends, one end received over the tubular side wall and the second extending above the switch, the first end of the sleeve being bonded to the side wall through the adhesive to form a liquid tight seal between the sleeve and the cup shaped member, the leads extending through the second end of the sleeve, and the second end of the sleeve being bonded to itself and to the insulation of the leads to form a liquid tight seal between the sleeve and the insulated sleeves of the leads.

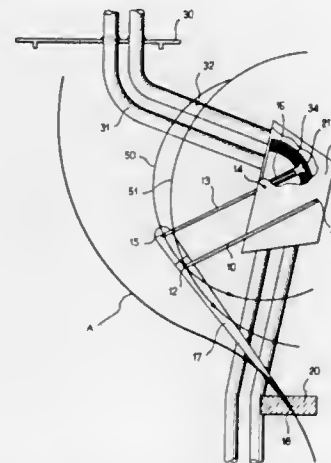
4,641,122 DEVICE FOR MEASURING THE LEVEL OR VOLUME OF LIQUID IN A TANK

Yves Hennequin, La Celle St. Cloud, France, assignor to Jaeger, France

Filed Jan. 16, 1985, Ser. No. 692,058
Claims priority, application France, Jan. 17, 1984, 84 00648
Int. Cl.⁴ H01L 10/14

U.S. Cl. 338—33

12 Claims



1. In a device for detecting the level of liquid in a tank having a level provided with a movable float for following the level of liquid and cooperating with a transducer adapted to generate a signal representative of the position of said float, the improvement comprising:

- a common fixed support,
- two first parallel and approximately horizontal axial supports provided on said common fixed support,
- two arms mounted for pivoting movement on said common fixed support, respectively about said first axial supports,
- two second parallel axial supports spaced from but generally parallel to said two first axial supports, provided respectively on said two arms,
- a movable support member mounted for pivoting movement on said two arms respectively about said second axial supports, and
- a float mounted on said movable support member.

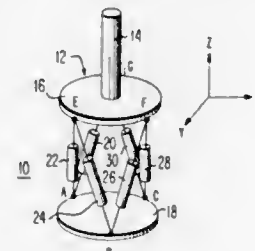
4,641,123 JOYSTICK CONTROL

James M. M. Whitehead, Lindenwold, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 30, 1984, Ser. No. 666,387
Int. Cl.⁴ H01C 10/16

U.S. Cl. 338—128

5 Claims



1. A joystick comprising:
a base;
a handle; and
a plurality of potentiometers coupled between the base and

the handle and directly connected thereto so as to provide at least three degrees of freedom of movement by said handle with respect to the base, the potentiometers connected to the base and handle so that said movement varies the electrical resistance of the potentiometers in relation to the direction and amount of movement.

5. A joystick comprising:

- a base;
- a handle; and
- six potentiometers connected in pairs to three points on said handle and connected in different pairs to three points on said base so as to provide six degrees of freedom of movement by said handle with respect to said base so that the electrical resistance of said potentiometers varies corresponding to the direction and magnitude of said movement.

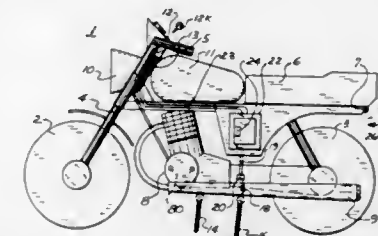
4,641,124 VEHICLE SECURITY ALARM

Dwin S. Davis, P.O. Box 66, Choctaw, Okla. 73020

Filed Sep. 13, 1982, Ser. No. 417,480
Int. Cl.⁴ B60R 25/04

U.S. Cl. 340—64

24 Claims



1. A motorized vehicle having an ignition switch, a vehicle battery, and an ignition system WHEREIN THE IMPROVEMENT COMPRISES

- alarm emitting means capable of being turned on;
- means for disabling said alarm emitting means at least when said ignition switch is on;
- sensing means for turning on said alarm emitting means when said ignition switch is off when said vehicle is disturbed; and
- means for blocking said disabling means when said battery is electrically connected to said ignition system but when said ignition switch is off.

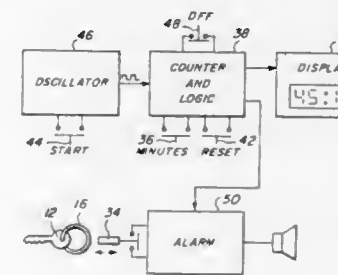
4,641,125 METER BEATER TIMER

Nastazio Pesa, 25-40 31st Ave., Long Island City, N.Y. 11106

Filed Sep. 25, 1985, Ser. No. 779,480

Int. Cl.⁴ G08B 1/00; G04B 47/00; G04F 8/00; A44B 15/00
U.S. Cl. 340—309.15

4 Claims



1. A meter beater timer, comprising in combination:
(a) a timer housing;
(b) an interval timer, contained in said timer housing, wherein

- said interval timer is set to a preset time interval and counts backward from said preset timer toward zero;
- (c) an alarm, contained in said timer housing;
- (d) a stop button operatively coupled to said alarm, wherein said alarm sound when said interval timer has reached zero and wherein said alarm is turned off by depressing said stop button;
- (e) a retractable chain connected to a key ring, such that said retractable chain is extended by the weight of said housing when a key attached to said key chain is inserted into an automobile ignition, and retracts into said timer housing when said key is removed from said ignition thereby releasing tension on said key and said key chain; and,
- (f) means for activating said alarm when said key is removed from said ignition and said retractable chain retracts.

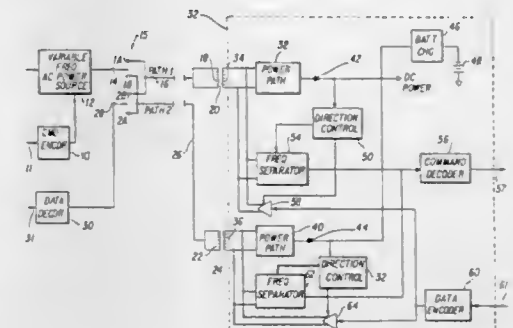
4,641,126 MULTIPLE-MODE ELECTRICAL POWER AND COMMUNICATIONS INTERFACE

Wayne D. Crowe, Houston, Tex., assignor to Ferranti-Subsea Systems, Ltd., London, England

Filed Dec. 7, 1984, Ser. No. 679,186
Int. Cl.⁴ H04M 11/04; H04B 3/20

U.S. Cl. 340—310 A

16 Claims



1. A multiple-mode electrical power and communication interface, comprising:
means for generating an electrical power signal;
command encoding means coupled to said generating means for receiving and encoding command words into command signals exhibiting a plurality of discrete frequencies, and for applying said command signals to said generating means to modulate the instantaneous frequency of said electrical power signal, whereby said electrical power signal includes a command component and a power component;
data decoding means for receiving and decoding data signals;
first and second discrete couplers each having primary and secondary sides;
connecting means for providing electrically distinct first and second signal paths for simultaneously coupling said generating means and said data decoding means via selected ones of said first and second paths to the primary sides of different ones of said first and second couplers, one of said signal paths being coupled by said connecting means to conduct said electrical power signal and the other one of said signal paths being coupled by said connecting means to conduct said data signals;
a network normally located remotely from said command encoding means and separately coupled to said secondary sides of said first and second couplers, including:
command decoding means for decoding said command signals from said command component;
data encoding means for encoding and transmitting information as data signals; and
control means responsive to reception of said power component across said couplers for enabling said command

decoding means to receive said command signals via said one of said signal paths coupled to conduct said electrical power signal, for isolating said data encoding means from said one of said signal paths coupled to conduct said electrical power signal, and for enabling said data encoding means to transmit said data signals via the one of said signal paths coupled to conduct said data signals.

4,641,127

SECURITY AND FIRE PROTECTION SYSTEM

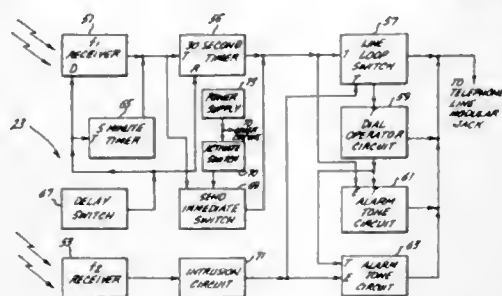
Dennis R. Hogan, 310-7th, Snohomish, Wash. 98290, and John K. Wright, 1695 Arthur, North Bend, Oreg. 97459

Filed Jan. 30, 1985, Ser. No. 696,467

Int. Cl.⁴ G08B 19/00, 1/00

U.S. Cl. 379-40

8 Claims



1. A premises protection system for protecting premises connected to the central office of a telco system by telephone lines against fire and/or intrusion, said premises protection system comprising:

- (a) a telco central office comprising:
 - (1) an operator's console including display means;
 - (2) a switching network for selectively connecting telephone lines together, to other central offices and to said operator's console; and
 - (3) automatic number identification circuitry connected to the display means of said operator's console for causing said display means to display the number of a calling telephone when said switching network connects a telephone line carrying an operator dial signal to said operator's console;
- (b) a plurality of telephone lines, one end of each of said telephone lines connected to said switching network of said telco central office; and
- (c) a plurality of protected premises subsystems, one located at each premise to be protected, each of said premise to be protected also being located at the other end of one of said plurality of telephone lines, each of said protected premises subsystems comprising:
 - (1) a plurality of detector-transmitter units positioned about each of said protected premises, each of said detector-transmitter units including:
 - (i) a detector for detecting a predetermined condition and conditioning an output signal when said condition is detected; and
 - (ii) a transmitter connected to said detector for receiving said conditioned output signal and producing a wireless radio frequency signal when said conditioned output signal is received; and
 - (2) a receiver-alarm unit for:
 - (i) receiving said wireless radio frequency signals produced by said transmitters of said detector-transmitter units;
 - (ii) seizing the telephone line running from said protected premises to said switching network of said telco central office when a wireless radio frequency signal produced by the transmitters of one of said plurality of detector-transmitter units is received;

- (iii) initially transmitting an operator dial signal to said telco central office via said seized telephone line; and
- (iv) subsequently transmitting an alarm tone signal to said telco central office via said seized telephone line.

4,641,128

METHOD OF ENCODING A STREAM OF DATA BITS, ARRANGEMENT FOR PERFORMING THE METHOD AND ARRANGEMENT FOR DECODING THE STREAM OF CHANNEL BITS OBTAINED IN ACCORDANCE WITH THIS METHOD

Kornelis A. Schouhamer Immink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

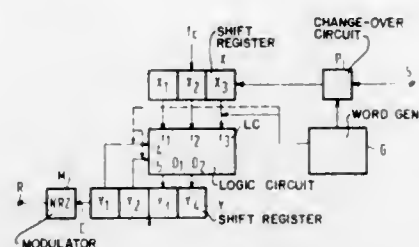
Filed May 23, 1984, Ser. No. 613,126

Claims priority, application Netherlands, Jan. 24, 1984, 8400212

Int. Cl.⁴ H03M 5/14

U.S. Cl. 340-347 DD

11 Claims



1. A method of converting a stream of data bits of a binary source signal into a stream of channel bits of a binary channel signal in a transmission system, more specifically, a system for recording and reproducing a recording signal on a record carrier, the bit stream of the source signal being divided into a contiguous sequence of five authorized source words in accordance with the following Table, which authorized source words are converted into the associated channel words of the Table:

source words	channel words
10	0100
11	1000
0(1)	00
00(1)	0000
000	100100

characterized in that during this encoding operation, a synchronizing word is generated formed by 16 channel bits, the two first and the two last channel bits of this synchronizing word being a logic "0" and the intermediate pattern of channel bits comprises only two logic "ones" separated by nine "zeros", and that in order to obtain an unambiguous conversion of the two source signal data bits preceding a synchronizing word, the beginning of a synchronizing word in the stream of data bits of the source signal is indicated by the insertion of at least one source bit in the form a logic "0".

4,641,129

ANALOG TO DIGITAL CONVERTER WITH PARALLEL AND SUCCESSIVE APPROXIMATION STAGES

Tunc Doluca, Santa Clara, and Ziya G. Boyacigiller, Hayward, both of Calif., assignors to Intersil, Inc., Cupertino, Calif.

Filed Feb. 9, 1984, Ser. No. 578,535

Int. Cl.⁴ H03M 1/00

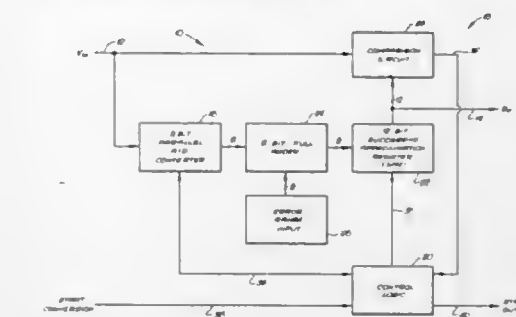
U.S. Cl. 340-347 AD

8 Claims

1. An analog to digital converter for converting an analog input signal to a digital representation having n bits which include a plurality of more significant bits and a plurality of less significant bits, the converter comprising:

flash analog to digital converter means for converting the analog input signal to an approximate digital representation wherein the flash converter includes a plurality of series connected resistors, each resistor having a comparator associated therewith for comparing the analog signal with the voltage at the associated resistor, and encoder means for encoding the output of the comparators to provide the more significant bits of the digital representation;

a register having n bit positions for storing an n-bit digital representation, said bit positions including positions for storing the plurality of more significant bits provided by the flash converter means, and positions corresponding to the plurality of less significant bits;



comparison means for comparing the analog value of the n-bit digital representation stored in the register and the analog input signal and for providing an output in accordance with said comparison;

means responsive to the comparison means for successively testing each less significant bit position of the register and changing the bit values of the bit positions as required so that the analog value of the n-bit digital representation substantially equals the analog input signal wherein the bits stored in the register are an n-bit digital representation of the analog input signals; and

means for subtracting a predetermined amount from the more significant bits prior to storing the more significant bits into the register wherein the amount subtracted is a function of the expected accuracy of the flash converter means.

4,641,130

ANALOG-TO-DIGITAL CONVERTER WITH SCALING OF INPUT SIGNAL

Anthony R. Mastroianni, Bridgewater Township, Somerset County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1985, Ser. No. 717,827

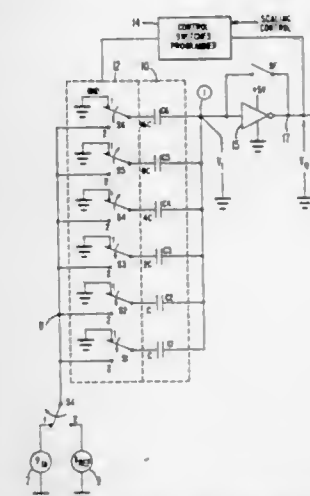
Int. Cl.⁴ H03M 1/18

U.S. Cl. 340-347 AD

11 Claims

1. In a charge-redistribution successive-approximation analog-to-digital (A/D) converter having a precision voltage reference (V_{REF}), in which said charge-redistribution portion of said converter includes a plurality of charge storing means, to which an unknown analog input voltage may be applied whose maximum rated value is greater than said precision reference voltage (V_{REF}), the improvement comprising: control means including switching means coupled to said plurality of charge storing means for applying said unknown analog input voltage to selected ones of said plurality of charge storing means, during a sampling interval, and for subsequently redistributing the accumulated charge among a different number of said charge storing

means for scaling the unknown analog input voltage by a factor approximately equal to the ratio of the value of the



precision reference voltage to the maximum rated value of the unknown analog input voltage.

4,641,131

CIRCUIT ARRANGEMENT FOR CONVERTING A DIGITAL INPUT SIGNAL INTO AN ANALOG OUTPUT SIGNAL

Walter H. Demmer, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

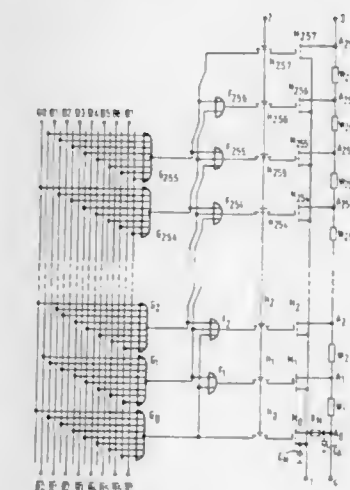
Continuation of Ser. No. 645,381, Aug. 29, 1984. This application Jun. 20, 1986, Ser. No. 878,409

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333067

Int. Cl.⁴ H03M 1/76

U.S. Cl. 340-347 DA

8 Claims

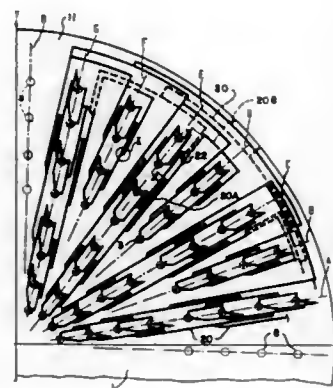


1. A circuit arrangement for converting a digital input signal into an analog output signal, comprising a voltage divider chain having ends, to which at least one reference source is connected, a plurality of taps arranged between the ends of said voltage divider chain, and means for connecting said taps, under control of said digital input signal, to an output at which said analog output signal is derived, characterized in that said connection means interconnects a predetermined number n of said taps, n being an integer greater than 1, and connects said interconnected taps to said output for each value of said digital input signal, whereby said analog output signal is the average

one of the plurality of beam ports; and, means for coupling radio frequency energy directly into an interior portion of the parallel plate region to provide, from the common aperture, a relatively broad beam of radio frequency energy.

4,641,145
MICROWAVE ANTENNA HAVING AN ARRAY OF RADIATING ELEMENTS FOR CIRCULARLY POLARIZED SIGNALS

Emmanuel Rammos, Creteil, France, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 421,937, Sep. 23, 1982. This application Aug. 19, 1985, Ser. No. 767,684
Claims priority, application France, Sep. 23, 1981, 81 17915
Int. Cl.⁴ H01Q 1/38, 21/26
U.S. Cl. 343—798 3 Claims



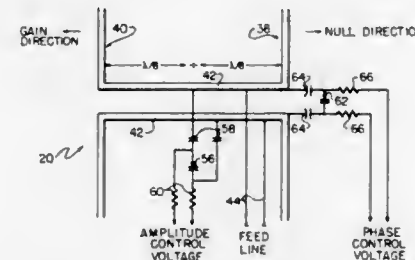
1. A flat microwave antenna comprising:
 - (a) a circular array of printed circuit elements each including first and second orthogonal dipoles separated by a dielectric, linear arrangements of said elements being positioned along respective radial lines of the antenna such that shorter arrangements are interposed between longer arrangements as the radial lines diverge sufficiently to provide adequate space for the shorter arrangements, and such that the density of elements in any sector of the circular array decreases with distance from a center of the array; and
 - (b) first and second printed circuit feedline networks electrically-connecting first and second supply terminals to the first and second dipoles of the elements, respectively, each of said networks extending inwardly from the array periphery between the elements and continuously branching out until one branch is provided for each element, the path length from any dipole along the connecting feedline network to the supply terminal for said dipole being substantially equal to that from any other dipole to its respective supply terminal.

4,641,146
DIPOLE ARRAY WITH PHASE AND AMPLITUDE CONTROL

John B. Gehman, La Jolla, Calif., assignor to General Dynamics Electronics Division, San Diego, Calif.
Division of Ser. No. 629,067, Jul. 9, 1984, Pat. No. 4,595,924, which is a continuation of Ser. No. 308,992, Oct. 6, 1981, abandoned. This application Apr. 8, 1985, Ser. No. 721,054
Int. Cl.⁴ H01Q 21/12, 21/22
U.S. Cl. 343—814 17 Claims

1. A nulling antenna, which comprises:
 - a directive endfire-type array having two centerfed dipole elements, a length of parallel-conductor transmission line electrically-interconnecting the elements, and means for

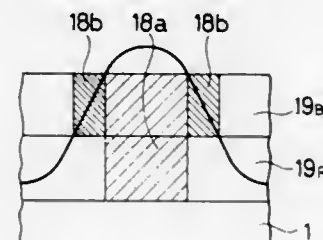
supporting the elements in substantially parallel spaced-apart relation;
two varactor devices electrically-connected across the transmission line, a first varactor device being connected approximately at midline and a second varactor device being connected approximately at an end of the line, including means for electrically isolating each of the



varactor devices from DC potential across the transmission line and for separately varying the DC potential across each varactor device in order to shunt the transmission line with selectively-variable values of reactance; and a selective-variable feedpoint of the transmission line, including means for slidably adjusting the feedpoint to selected locations along the transmission line with a feedline electrically-connected thereto.

4,641,147
THERMAL PRINTER
Yasuhiro Sakura; Hitooshi Nimura, and Mamoru Ishikawa, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1986, Ser. No. 829,613
Claims priority, application Japan, Feb. 22, 1985, 60-33715
Int. Cl.⁴ G01D 15/10
U.S. Cl. 346—76 PH 3 Claims

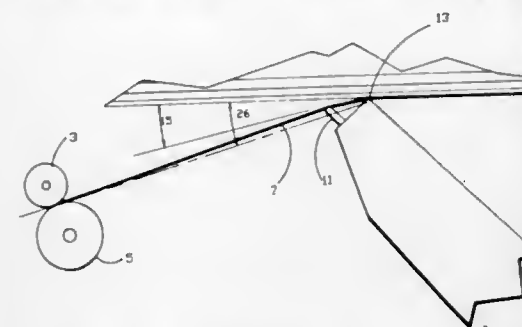


1. A thermal printer comprising: recording papers each having multi-color-forming temperature characteristic; a thermal head containing a multiplicity of heating elements and capable of printing the recording paper over the entire width thereof while being kept in contact therewith during its unidirectional motion; at least two print buffers for feeding print data to control energization of the heating elements of said thermal head; and a current on-time control circuit for differentially setting the on-time periods of a constant current to the heating elements of said thermal head in response to selection of said print buffers under the predetermined condition that a basic color for general print data is formed at a low temperature while a different particular color for specific print data is formed at a high temperature in a printing operation on the recording paper by the heating elements of said thermal head, wherein a temperature gradient is induced relative to the thermal energy generated from said heating elements and transmitted to said recording paper when printing the specific characters in a high-temperature particular-color print mode, and the contours of said specific characters are treated at the low

temperature for the basic color due to said temperature gradient so that each of the printed specific character is edged in the basic color.

4,641,148
THERMAL PRINthead WITH RIBBON EXIT GUIDE
Stanley Dyer; James J. Molloy; Thoi Nguyen; David M. Riherd; William F. Voit, Jr., all of Lexington, and Donald L. West, Winchester, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

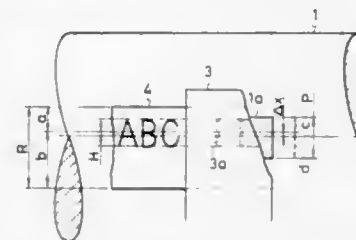
Filed Oct. 31, 1985, Ser. No. 793,597
Int. Cl.⁴ G01D 15/10
U.S. Cl. 346—76 PH 16 Claims



1. A thermal printhead having a set of print elements for printing from a ribbon when said elements are driven, a solid body supporting said print elements, and a wear-resistant ribbon guide member having at least one end integral with a surface for guiding said ribbon after said ribbon has been printed from by said print elements, said one end being embedded in and positioned by said solid body.

4,641,149
THERMAL TRANSFER PRINTER
Masafumi Suzuki, Hitachi; Katsumasa Mikami, Nakamachi; Yousuke Nagano, and Tomoji Kitagishi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

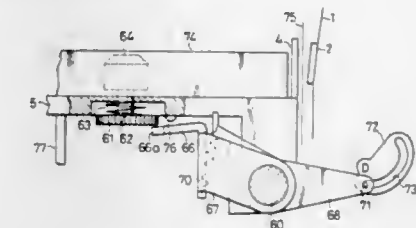
Filed Aug. 22, 1985, Ser. No. 768,319
Claims priority, application Japan, Aug. 29, 1984, 59-178351
Int. Cl.⁴ G01D 15/10
U.S. Cl. 346—76 PH 8 Claims



1. A thermal transfer printer comprising a thermal head, a platen roller being pressed against said thermal head through a thermal transfer printing paper, a carriage mounted with said thermal head and a ribbon cassette and transversely moving along said platen roller, and an ink ribbon having plural columns and being received within said ribbon cassette characterized in that
 - a center of a flat portion being formed on said platen roller of a contact portion of said thermal head and a center of said thermal head are shifted corresponding to an amount of a shift of printing position as against a center of a width of said ink ribbon.

4,641,150
THERMAL PRINTER
Takanobu Matsuura, Takizawa, and Toshiyuki Yamamoto, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 31, 1985, Ser. No. 793,685
Claims priority, application Japan, Oct. 31, 1984, 59-163748[U]
Int. Cl.⁴ G01D 15/10
U.S. Cl. 346—76 PH 3 Claims



1. In a thermal-printer of the type comprising a platen extending longitudinally for supporting a recording paper thereon, a carriage supporting a print head which is reciprocally movable longitudinally along said platen and angularly movable toward said platen for printing and away from said platen for non-printing, said carriage including means for holding a print tape thereon and means including a gear rotatably mounted on said carriage for winding the print tape, a winding rack disposed longitudinally parallel to said platen and having a plurality of teeth arrayed along a printing length thereof, said rack being movable such that its teeth are brought into engagement with said winding gear for winding the print tape for printing and brought out of engagement from said winding gear in order not to wind the print tape during non-printing, and driving means for moving said carriage toward the platen and said rack teeth into engagement with said winding gear for printing and for moving said carriage away from the platen and said rack teeth out of engagement from said winding gear for non-printing,

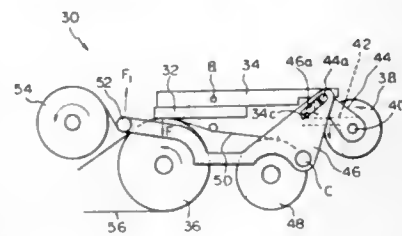
the improvement wherein said driving means comprises said rack having said teeth arrayed on a plate extending longitudinally parallel to said platen and one end of said plate fixed to a lever pivotably mounted at one end of said platen, and pivoting means at said end of said platen for pivoting said lever to bring said plate into or out of contact with a portion of said carriage so as to angularly move it and said print head supported thereon toward and away from said platen and at the same time to bring said rack teeth into and out of engagement with said winding gear on said carriage.

4,641,151
THERMAL TRANSFER RECORDING APPARATUS
Shigeru Kato; Naomi Osada, both of Yokohama; Toshikatsu Ichitoh, Kawasaki; Masae Murata, Yamato, and Masumi Mochizuki, Sagami, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 26, 1985, Ser. No. 813,440
Claims priority, application Japan, Dec. 28, 1984, 59-274566; Dec. 28, 1984, 59-196618[U]
Int. Cl.⁴ G01D 15/10 7 Claims

1. A thermal transfer recording apparatus for recording information on a recording sheet by means of an ink sheet which is interposed between the recording sheet wrapped around a platen roller and a thermal head, comprising:
 - a head support plate carrying the thermal head at one end portion thereof and pivotally movable in a seesaw motion about a fulcrum which is located between said one end portion and another end portion of said head support plate;

a rotary solenoid device for generating a drive force;
a first pressing means for pressing the thermal head against the platen roller by transmitting the drive force generated by said rotary solenoid device to the head support plate to move the head support plate about the fulcrum; and



second pressing means subjected to the tension of the ink sheet during recording for intensifying the pressing force of the head against the platen by transmitting an additional drive force, which is related to the tension of the ink sheet, to the head support plate via the first pressing means.

4,641,152

FIXTURING APPARATUS FOR VIBRATION DAMPENED OPTICAL DISC RECORDING

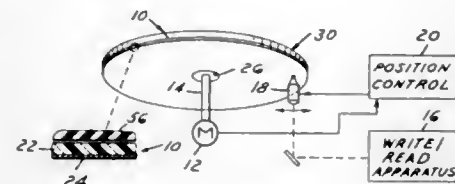
Stephen C. Fedder, Oak Park, and Anthony J. Skudrna, Harsens Island, both of Mich., assignors to Producers Color Service, Inc., Southfield, Mich.

Filed Feb. 24, 1986, Ser. No. 831,828

Int. Cl.⁴ G01D 15/34; G11B 7/24

U.S. Cl. 346—137

12 Claims



11. Apparatus for mounting an optical recording disc to a drive spindle, said apparatus comprising a hub having a conical disc-locating surface defining a hub axis and a planar axially facing shoulder spaced radially from said locating surface for seating engagement with a recording disc received over said locating surface; a plate mounted on said hub and extending radially to a plate periphery; a retaining ring removably mounted at said plate periphery, said ring cooperating with said plate and hub to form an annular channel between said hub shoulder and said ring; and a disc of resilient elastomeric construction positioned in said channel and having a flat axially facing surface remote from said plate and disposed between said shoulder and said plate; said retaining ring having a radially inwardly projecting lip for overlapping and capturing the peripheral edge of a recording disc mounted on said hub and seated against said hub shoulder.

4,641,153

NOTCHED PIEZO-ELECTRIC TRANSDUCER FOR AN INK JET DEVICE

Antonio S. Cruz-Urbe, Cobalt, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 3, 1985, Ser. No. 772,109

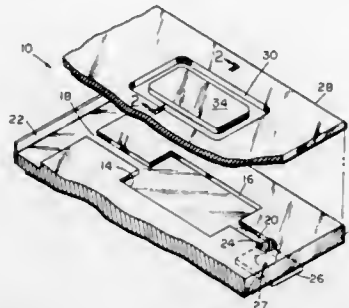
Int. Cl.⁴ G01D 15/18

U.S. Cl. 346—140 R

7 Claims

1. Ink ejecting portion of an ink jet print head, comprising:
a plate;
a cavity in said plate;
a first channel in said plate extending from said said cavity;

a manifold confluent with said first channel;
a second channel in said plate extending from said cavity;
an opening in said plate confluent with said second channel; and



a piezoceramic sheet disposed upon said plate and extending over said cavity to form a chamber therewith, said piezoceramic sheet having a notched configuration in the vicinity of the walls of said cavity.

4,641,154

INK JET APPARATUS WITH RESERVOIR HAVING A TILT VALVE SERVING AS FILL PORT AND AIR VENT

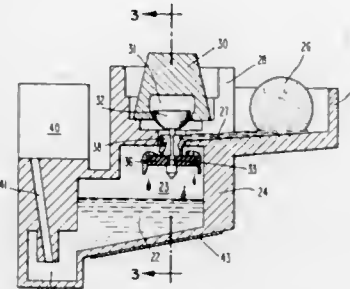
Arthur Mikalsen, Carmel, N.Y., assignor to Exxon Printing Systems, Inc., Brookfield, Conn.

Filed Nov. 2, 1984, Ser. No. 667,903

Int. Cl.⁴ G01D 15/16

U.S. Cl. 346—140 R

12 Claims



1. An ink jet type apparatus having a reservoir, receiving means for receiving a hot melt ink pellet and for melting same, inlet means positioned above said reservoir and in communication with said receiving means and said reservoir for introducing melted ink into said reservoir, ink jet head means in communication with said reservoir for producing ink jet droplets, said inlet means comprising a tilt valve having a normally open position for venting air from said reservoir and providing a fill port for passage of ink into said reservoir, and having a closed position when said reservoir is tilted more than a predetermined angle, and priming means for priming said reservoir and print head, said priming means having displacing means for displacing said tilt valve to said closed position.

4,641,155

PRINTING HEAD FOR INK JET PRINTER

Steven I. Zoltan, Brookfield, Conn., assignor to Advanced Color Technology Inc., Chelmsford, Mass.

Filed Aug. 2, 1985, Ser. No. 761,860

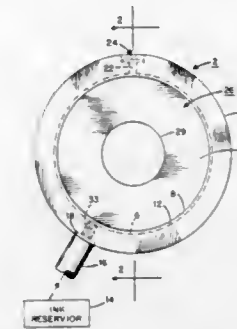
Int. Cl.⁴ G01D 15/18

U.S. Cl. 346—140 R

16 Claims

1. An ink jet printer head system comprising
a printer head having
a housing having therein an annular channel,

an annular diaphragm secured to said housing and forming with said channel an annular ink reservoir,
said housing including an inlet port and an outlet orifice each communicating with said reservoir, and
a piezoelectric transducer comprising



piezoelectric material having an annular surface in mechanical engagement with said diaphragm, and first and second electrodes on opposite sides of said piezoelectric material.

4,641,156

RECORDING APPARATUS WITH DOUBLE FREQUENCY DRIVEN LIQUID CRYSTAL SHUTTER

Morio Ohta; Shizuo Tsuchiya; Yoshito Nakano; Masaru Aikawa, and Seiji Asaumi, all of Musashimurayamashi, Japan, assignors to Casio Computer Co., Ltd. and Casio Electronics Manufacturing Co., Ltd., both of Tokyo, Japan

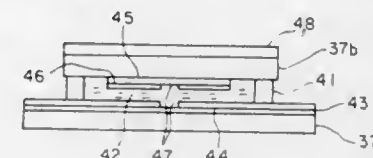
Filed Sep. 14, 1984, Ser. No. 650,521

Claims priority, application Japan, Dec. 30, 1983, 58-249054; Jan. 23, 1984, 59-8607; May 31, 1984, 59-111955

Int. Cl.⁴ G01D 15/14

U.S. Cl. 346—160

10 Claims



1. Recording apparatus for optically writing on a photoreceptor in correspondence with image signals to be recorded comprising:

- a light source for producing light;
- a liquid crystal shutter for selectively transmitting light from said source;
- means for focusing light transmitted by said liquid crystal shutter onto the photoreceptor;
- said liquid crystal shutter being composed of a first transparent substrate provided with n-units of write selecting electrodes, a second transparent substrate provided with a plurality of recording signal electrodes which cross and are opposite the n-units of the write selecting electrodes, and a liquid crystal agent sealed between both substrates and whose dielectric anisotropy becomes zero at a specified frequency f_C ; said write selecting and recording signal electrodes being provided with micro-shutters at the crossings therebetween;
- a first supply means for supplying to the n units of the write selecting electrodes, write selecting signals having a frequency f_H higher than said specified frequency f_C ; and a frequency f_L lower than said specified frequency f_C such that the phase of successive write selecting signals reverses after a time period T_w/n which is $1/n$ of the write cycle time T_w ; and
- a second supply means, responsive to said image signals, for supplying to the recording signal electrodes, recording

signals of frequencies f_H and f_L having amplitudes that are the same as the amplitudes of said write selecting signals;
(g) said first and second supply means being constructed and arranged such that during a selection period, in which a micro-shutter is selected by the write selecting signals, superposed driver signals are applied to the selected micro-shutter, said driver signals having either (i) the frequencies f_L and f_H throughout the selection period, or (ii) the frequency f_H near the start of a selection period and of the frequencies f_L and f_H near the end of a selection period for establishing the on-off state of the selected micro-shutter; (h) said first and second supply means being further constructed and arranged such that, during a non-selection period in which a micro-shutter is not selected by the write selecting signals, said driver signals applied to a non-selected micro-shutter have the frequency f_L near the end of a non-selection period and either (i) the frequencies f_L and f_H near the beginning of a non-selection period, or (ii) no frequency near the beginning of a non-selection period for establishing the on-off state of the non-selected micro-shutter during a preceding selection period.

4,641,157

IMAGE DISPLAY DEVICE

Shigeru Aoi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

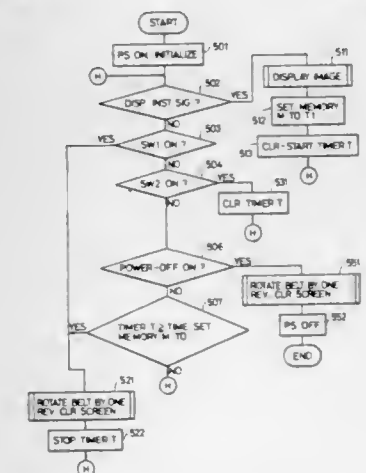
Filed Dec. 13, 1983, Ser. No. 560,839

Claims priority, application Japan, Dec. 20, 1982, 57-222123; Dec. 20, 1982, 57-222124; Dec. 20, 1982, 57-222125

Int. Cl.⁴ G01D 15/14

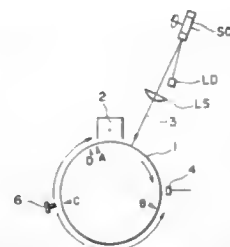
U.S. Cl. 346—160

10 Claims



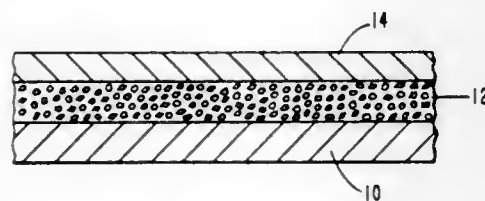
1. An image display device comprising:
a display section for displaying an image;
image forming means having an image carrier, for forming an image on said image carrier so as to display the image on said display section; and
control means for controlling said image forming means, wherein said control means has a non-image area display means for automatically displaying a non-image area at said display section when the same image formed on said image carrier is displayed on said display section over a predetermined period of time.

4,641,158
ELECTROPHOTOGRAPHIC APPARATUS
 Akihiko Takenchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Feb. 7, 1985, Ser. No. 699,185
 Claims priority, application Japan, Feb. 13, 1984, 59-24760; Feb. 13, 1984, 59-24761; Feb. 13, 1984, 59-24762
 Int. Cl.⁴ G01D 15/14
 U.S. Cl. 346—160 26 Claims



1. An electrophotographic apparatus, comprising: an electrophotographic photosensitive member including as a main component amorphous silicon, the photosensitive member being circularly movable by a first station, a second station and a third station repetitively in the order named; charging means, provided at the first station, for charging said photosensitive member; first exposure means, provided at the second station, for exposing said photosensitive member to a semiconductor laser beam of wavelength longer than 700 nm, which is modulated in accordance with information to be recorded on the photosensitive member; and a second exposure means, provided at the third station, for exposing said photosensitive member to light having a peak of a spectral distribution at a wavelength longer than 600 nm.

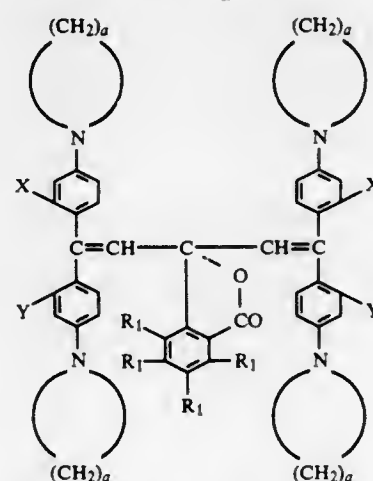
4,641,159
PROTECTIVE BARRIER AND METHOD OF PROVIDING SAME FOR THERMOSENSITIVE SHEET
 Paul W. Seitz, Miamisburg; Maurice W. Lewis, Dayton, and Stephen D. Lakes, West Carrollton, all of Ohio, assignors to NCR Corporation, Dayton, Ohio
 Filed Apr. 18, 1985, Ser. No. 724,381
 Int. Cl.⁴ B41M 5/18
 U.S. Cl. 346—200 2 Claims



1. A thermosensitive sheet comprising a substrate, a thermally reactive coating on the substrate, the thermally reactive coating comprising a color forming dye, a wax, a bisphenol, and a binder, and a protective layer on the thermally reactive coating, the protective layer being capacitor tissue of a thickness to enable heat transfer therethrough for forming thermal images, and of translucent material to permit viewing of the thermal images.

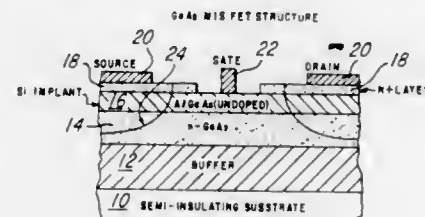
4,641,160
RECORDING SYSTEM UTILIZING PHTHALIDE DERIVATIVES AS COLORLESS CHROMOGENIC MATERIAL
 Mitsuru Kondo; Tomoyuki Okimoto, both of Hyogo, and Nobuo Kanda, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan
 Continuation of Ser. No. 366,338, Apr. 7, 1982, abandoned. This application Nov. 2, 1984, Ser. No. 667,805
 Claims priority, application Japan, Apr. 8, 1981, 56-53678
 Int. Cl.⁴ B41M 5/18
 U.S. Cl. 346—220 1 Claim

1. A heat-sensitive record material which comprises: (a) a heat-sensitive recording layer including a colorless chromogenic material; and (b) an electron accepting acidic reactant material on a base sheet, said colorless chromogenic material being at least one phthalide compound having the formula:



wherein R₁ is chlorine or bromine; each X and Y is hydrogen, alkyl having 1 or 2 carbon atoms, or alkoxy having 1 or 2 carbon atoms; and a is an integer of 4 to 6, but when both X and Y are hydrogen, a is 6.

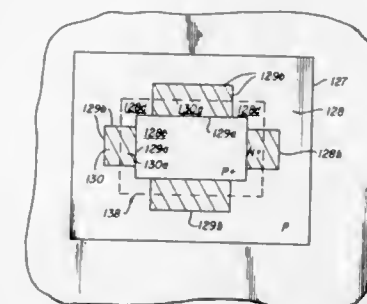
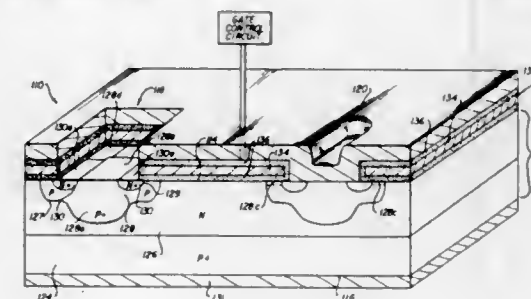
4,641,161
HETEROJUNCTION DEVICE
 Bumman Kim, Richardson, and Hua Q. Tserng, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Filed Sep. 28, 1984, Ser. No. 656,110
 Int. Cl.⁴ H01L 29/80
 U.S. Cl. 357—22 16 Claims



3. A heterojunction device comprising: a channel layer comprising a first semiconductor material and comprising a dopant concentration of at least ten to the 16th per cubic centimeter; a barrier layer overlying said channel layer and comprising a second semiconductor material lattice-matched to said first material and having a bandgap wider than the bandgap of said first semiconductor material and comprising a

net dopant concentration less than ten to the 16th per cubic centimeter; first and second source/drain contacts electrically connected to said channel layer, and a gate electrode abutting said barrier layer and capacitatively coupled to a portion of said channel layer between said source/drain connections.

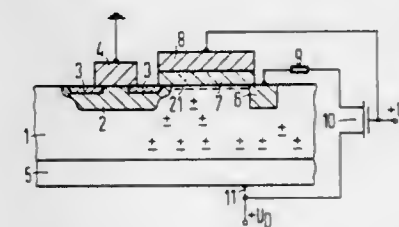
4,641,162
CURRENT LIMITED INSULATED GATE DEVICE
 Hamza Yilmaz, Dewitt, N.Y., assignor to General Electric Company, Research Triangle Park, N.C.
 Filed Dec. 11, 1985, Ser. No. 807,597
 Int. Cl.⁴ H01L 29/06
 U.S. Cl. 357—23.4 15 Claims



1. A semiconductor device comprising: a semiconductor wafer having a drift region of a first conductivity type, said drift region including a major surface; an insulating region including at least one contact window exposing an area of said major surface; a gate electrode separated from said major surface by said insulating region; a cell centrally aligned with said contact window and extending beyond the boundaries thereof, said cell including a base region of a second conductivity type extending from said major surface into said drift region and including a central base portion; said cell further including a plurality of mutually spaced emitter regions of said first conductivity type disposed about said central base portion and adjacent thereto, each of said emitter regions extending from said major surface into said base region and forming a separate emitter-base junction therewith; said major surface area exposed by said contact window including a surface of said central base portion, and further including surface portions of said mutually spaced emitter regions and of said base region intermediate said emitter regions respectively adjoining said central base portion surface; an emitter electrode insulated from said gate electrode and disposed in ohmic contact with said exposed major surface area; and means for applying a bias voltage to said gate electrode to

establish a separate channel in said base region adjacent said major surface between each of said emitter regions and said drift region; whereby said separate emitter-base junctions effect a reduction of the gate periphery of said cell by an amount selected to maintain the maximum current flow from said channels to said emitter regions below the latch-up current level of said cell.

4,641,163
MIS-FIELD EFFECT TRANSISTOR WITH CHARGE CARRIER INJECTION
 Jenő Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
 Filed Jan. 10, 1983, Ser. No. 456,613
 Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200660
 Int. Cl.⁴ H01L 29/78
 U.S. Cl. 357—23.4 11 Claims



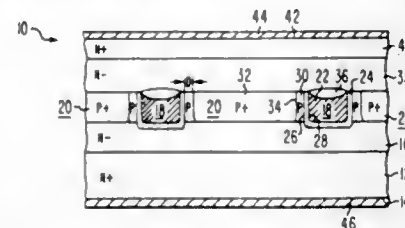
1. MIS-FET assembly, comprising a first MIS-FET having a semiconductor substrate of a first conductivity type with first and second surface, at least one channel zone of a second conductivity type opposite said first conductivity type being embedded in said first surface of said substrate, a source zone of said first conductivity type being embedded in said channel zone, a drain zone adjoining said first surface of said substrate, a drain electrode connected to said second surface of said substrate, an insulating layer disposed on said first surface of said substrate, at least one gate electrode disposed on said insulating layer, and at least one injector zone of said second conductivity type being embedded in said first surface of said substrate defining a pn-junction between said injector zone and said drain zone being disposed under said at least one gate electrode, said gate electrode extending at least to the part of the pn-junction of said injector zone which emerges to the first substrate surface between the injector zone and the drain zone, and a second MIS-FET having a gate electrode and having a source and drain electrodes defining a source-drain path being connected between said injector zone of said first MIS-FET and said drain zone of said first MIS-FET, said gate electrode of said second MIS-FET being electrically connected to said at least one gate electrode of said first MIS-FET.

4,641,164
BIDIRECTIONAL VERTICAL POWER MOS DEVICE AND FABRICATION METHOD
 Gary M. Dolny, Middletown Township, Bucks County, Pa., and Lawrence A. Goodman, Plainsboro, N.J., assignors to RCA Corporation, Princeton, N.J.
 Filed May 30, 1986, Ser. No. 868,633
 Int. Cl.⁴ H01L 29/78, 29/08, 29/44
 U.S. Cl. 357—23.4 3 Claims

1. In a vertical MOSFET device including a silicon wafer having first and second opposing major surfaces, a source electrode disposed on the first surface, a drain electrode disposed on the second surface and an internally disposed insulated gate comprising a conductive electrode surrounded by a gate insulator, the silicon disposed between the insulated gate and each of the major surfaces being monocrystalline and of

first conductivity type and the silicon disposed laterally adjacent to the insulated gate being monocrystalline and of second conductivity type, such that a predetermined voltage applied to the insulated gate creates an inversion channel for a predetermined distance in the laterally adjacent silicon, the improvement comprising:

- a relatively lightly doped region disposed in that portion of the laterally adjacent silicon where the inversion channel is formed and relatively heavy doping in other areas of the laterally adjacent silicon;
- a relatively lightly doped first voltage-supporting region disposed in that portion of the silicon that is contiguous with the insulated gate and is between both the insulated



gate and the first wafer surface and the laterally adjacent silicon and the first wafer surface and a relatively heavily doped silicon region between the first voltage-supporting region and the first surface;

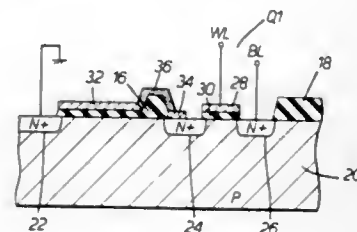
- a relatively lightly doped second voltage-supporting region disposed in that portion of the silicon that is contiguous with the insulated gate and is between both the insulated gate and the second wafer surface and the laterally adjacent silicon and the first wafer surface and a relatively heavily doped silicon region between the second voltage-supporting region and the second surface; and
- an interface between the gate insulator and the laterally adjacent silicon that has a low density of interface states.

4,641,165 DYNAMIC MEMORY DEVICE WITH AN RC CIRCUIT FOR INHIBITING THE EFFECTS OF ALPHA PARTICLE RADIATION

Tetsuya Iizuka, Syuso Fujii, both of Kawasaki, and Yukimasa Uchida, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 15, 1983, Ser. No. 475,554
Claims priority, application Japan, Apr. 28, 1982, 57-70403; May 21, 1982, 57-85742; May 21, 1982, 57-85743; May 21, 1982, 57-85744

Int. Cl.⁴ H01L 27/14
U.S. Cl. 357—23.6 20 Claims



1. A dynamic memory device formed in an integrated semiconductor substrate and subjected to particle radiation comprising:

- a switching transistor having a switching terminal, an input-output terminal and a memory terminal;
- a bit line coupled to said input-output terminal for supplying a charge to said transistor;

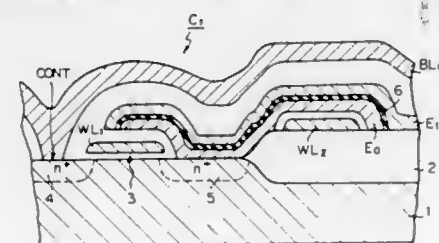
- a word line coupled to said switching terminal for controlling the switching of said transistor;
- a resistance-capacitance circuit means, coupled to said memory terminal and comprising a resistor and a charge store capacitor and having a time constant which is greater than the tunnelling time constant of the particle radiation, for storing the charge supplied from said bit line and for substantially preventing loss of the stored charge due to said particle radiation; and
- a potential reference coupled to said resistance-capacitance circuit means.

4,641,166 SEMICONDUCTOR MEMORY DEVICE HAVING STACKED CAPACITOR-TYPE MEMORY CELLS

Yoshihiro Takemae, Tokyo; Tomio Nakano, Kawasaki, and Kimiaki Sato, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 12, 1983, Ser. No. 560,171
Claims priority, application Japan, Dec. 20, 1982, 57-222079

Int. Cl.⁴ H01L 29/78
U.S. Cl. 357—23.6 10 Claims



- 1. A semiconductor memory device comprising:
- a semiconductor substrate of a first conductivity type;
- a plurality of word lines extending in parallel over said substrate;
- a plurality of sense amplifiers;
- a plurality of pairs of bit lines extending over said substrate transversely to said word lines, each said pair of bit lines being connected to corresponding inputs of a corresponding one of said sense amplifiers, and both of the bit lines of each said pair intersecting each of said word lines; and
- stacked capacitor-type memory cells, each formed in the vicinity of an intersection between a corresponding one of said word lines and a corresponding one of said pairs of said bit lines,

wherein each of said memory cells comprises:

- first and second impurity doped regions of a second conductivity type opposite to said first conductivity type formed in said substrate, each said first impurity doped region being electrically connected to a respective one of said bit lines, said first and second impurity doped regions and a respective portion of said corresponding one of said word lines forming a transfer transistor;
- a first conductive layer electrically connected to said second impurity doped region, for forming a first of two capacitor electrodes, said first conductive layer extending over a respective part of another one of said word lines adjacent to said corresponding word line;
- an insulating layer disposed on said first conductive layer; and
- a second conductive layer, disposed on said insulating layer, for forming the second of said two capacitor electrodes.

4,641,167 SEMICONDUCTOR OPTOELECTRO TRANSDUCER

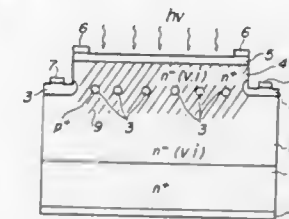
Jun-ichi Nishizawa, Sendai, Japan, assignor to Semiconductor Research Foundation, Japan

PCT No. PCT/JP82/00458, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983, PCT Pub. No. WO83/02038, PCT Pub. Date Jun. 9, 1983

PCT Filed Nov. 30, 1982, Ser. No. 522,153

Claims priority, application Japan, Dec. 1, 1981, 56-194286

Int. Cl.⁴ H01L 27/14, 31/00
U.S. Cl. 357—30 9 Claims



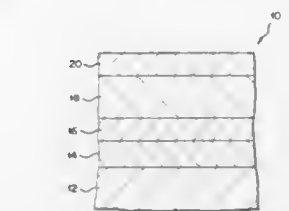
- 1. A semiconductor optoelectro transducer comprising:
- an intrinsic semiconductor material layer of one conductivity type having a channel region which is doped with an element that is excited by infrared light, said element being selected from the group consisting of gold, mercury and zinc;
- two main electrode regions connected to said semiconductor layer adjacent said channel region for supplying a flow of current through the channel region;
- a plurality of gate regions communicating with said channel region without closing communication through said channel region between said two main electrode regions; and
- a portion of said channel region being shaped for receiving infrared light for exciting the element doped into the channel region.

4,641,168 LIGHT SENSITIVE SEMICONDUCTOR DEVICE FOR HOLDING ELECTRICAL CHARGE THEREIN

Mutsuki Yamazaki, and Eiichi Kaga, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 2, 1983, Ser. No. 547,921
Claims priority, application Japan, Jan. 26, 1983, 58-11933; Apr. 6, 1983, 58-61324; Apr. 6, 1983, 58-61325; Apr. 6, 1983, 58-61326; Jul. 19, 1983, 58-130218

Int. Cl.⁴ H01L 27/14, 31/00
U.S. Cl. 357—30 17 Claims



- 1. A light sensitive semiconductor device, comprising:
- a photoconductive layer means for generating carriers

- which carry an electric charge when said photoconductive layer is irradiated with light;
- a conductive base member supporting said photoconductive layer;
- first barrier layer means, provided between said photoconductive layer and said conductive base member, for hindering the movement of an electric charge from said conductive base member to said photoconductive layer, and for permitting the movement of an electric charge from said photoconductive layer to said conductive base member, said first barrier layer means comprising an extrinsic semiconductor; and
- a second barrier layer means, provided between said photoconductive layer and said first barrier layer means for hindering the movement of an electric charge from said conductive base member to said photoconductive layer, and for permitting the movement of an electric charge from said photoconductive layer to said conductive base member, said second barrier layer comprising an extrinsic semiconductor;
- said hindering and permitting by said first and second barrier layer means thereby causing the residual potential of said photoconductive layer to be minimized.

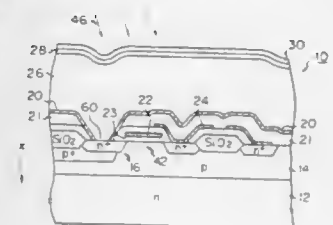
4,641,169 SOLID-STATE IMAGE PICKUP DEVICE WITH SELECTIVE OUTPUT CHARACTERISTICS AND IMAGING APPARATUS USING SAME

Masafumi Inuiya, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 2, 1985, Ser. No. 688,202

Claims priority, application Japan, Jan. 19, 1984, 59-6354

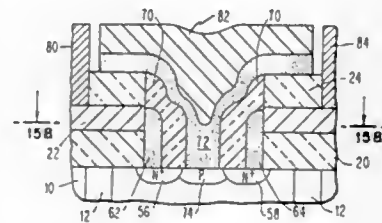
Int. Cl.⁴ H01L 27/14, 31/00
U.S. Cl. 357—30 9 Claims



- 1. A solid-state image pickup device comprising:
- a semiconductor substrate;
- an array of a plurality of photosensitive cells formed on the semiconductor substrate;
- reading means formed on said substrate for selectively reading said plurality of photosensitive cells to produce video signals associated with light incident to the array;
- each of said photosensitive cells including:
- a junction portion formed on said substrate for storing therein photocarriers,
- a layer of metal formed over said substrate and interconnected to said junction portion to collect photocarriers to said junction portion, said layer of metal having an optical opening over at least part of said junction portion to allow incident light access thereto,
- a layer of photoconductive material formed on said metal layer to generate therein photocarriers associated with the incident light, and
- a layer of electrically conductive material formed on said photoconductive layer to form an electrode for receiving a bias voltage, said electrically conductive material being substantially transparent with respect to the incident light; and
- means for varying the value or polarity of said bias voltage to adjust the output characteristics of said video signal.

4,641,170
SELF-ALIGNED LATERAL BIPOLAR TRANSISTORS
 Seiki Ogura, Hopewell Junction; Jacob Riseman, Poughkeepsie; Nivo Rovedo, Poughquag, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation
 Division of Ser. No. 360,629, Dec. 12, 1983, Pat. No. 4,551,906.
 This application Aug. 5, 1985, Ser. No. 762,669
 Int. Cl.⁴ H01L 29/72
 U.S. Cl. 357—35

8 Claims



1. An integrated circuit structure which includes small area lateral bipolar transistors comprising:

a semiconductor body having surface regions thereof isolated from other such regions by a pattern of isolation; at least two narrow width PN junction regions within at least one of said surface regions;

individual substantially vertical conformal conductive layers, each one being essentially rectangular in vertical cross-section with two long edges, and with two short edges equal in width to the vertical conductive layer thickness, said individual vertical conductive layers making electrical contact to said PN junction regions only with one of said two short edges, and with no other electrical contact being made to said PN junction regions other than through another PN junction region;

said at least two PN junction regions form the emitter and collector regions of one of said lateral bipolar transistors; a base PN junction region between and contiguous to said emitter and collector regions;

a substantially horizontal conductive layer in electrical contact with an edge of each of said vertical conductive layers and separated from said emitter and collector regions by a first electrical insulating layer;

a second insulating layer covering said conformal conductive layers and in contact with said emitter and collector regions;

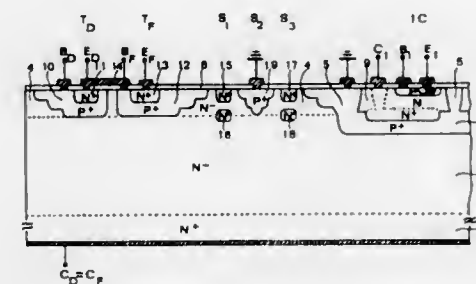
said horizontal conductive layer is patterned so as to have electrically separated conductive lines from one another; a third electrical insulating layer over said patterned horizontal conductive layer;

an electrical ohmic contact to each of the patterned portions of said horizontal conductive layer through an opening in said third electrical insulating layer which effectively makes electrical contact to said emitter and collector regions through said patterned horizontal conductive layer and said vertical conductive layer; and

an electrical ohmic contact to said base region which contact is separated from said vertical conductive layers by said second insulating layer.

4,641,171
MONOLITHICALLY INTEGRATED SEMICONDUCTOR POWER DEVICE
 Franco Bertotti, Milan; Giuseppe Ferla, Catania; Salvatore Musumeci, Riposto, and Salvatore Raciti, Belpasso, all of Italy, assignors to SGS Microelettronica SpA, Agrate Brianza, Italy
 Filed Sep. 17, 1985, Ser. No. 776,961
 Claims priority, application Italy, Sep. 21, 1984, 6620 A/84
 Int. Cl.⁴ H01L 27/02
 U.S. Cl. 357—46

20 Claims



1. A monolithically integrated semiconductor power device structure, comprising at least two power transistors and an integrated control circuit which are integrated monolithically in the same chip, comprising:

a substrate of semiconductor material of a first type of conductivity bounded by an upper surface partially covered by an insulating layer and forming collector regions of said at least two power transistors;

at least three regions of semiconductor material of a second type of conductivity opposite to said first type of conductivity and formed in said substrate from said upper surface below said insulating layer so as to form P-N junctions, a first of said three regions forming an isolation region of said integrated circuit which contains devices of said control circuit of said semiconductor power device, and a second region and a third region forming base regions of said power transistors;

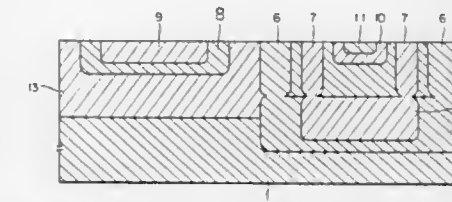
at least a fourth and fifth region of semiconductor material of said first type of conductivity forming emitter regions of said power transistors and formed from said upper surface below said insulating layer in said second and third regions respectively so as to form P-N junctions;

a conductive means which establish ohmic contacts with said substrate and said base and emitter regions of said power transistors;

wherein said two power transistors are connected in a Darlington pair configuration comprising a drive transistor and an output transistor, said output transistor of said Darlington pair being disposed in an intermediate position between said drive transistor of said Darlington pair and said integrated control circuit such that said drive transistor and said control circuit are not in mutual contact and said output transistor completely shields said drive transistor from said control circuit.

4,641,172
BURIED PN JUNCTION ISOLATION REGIONS FOR HIGH POWER SEMICONDUCTOR DEVICES
 Shiro Iwatani, Aioi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 PCT No. PCT/JP82/00339, § 371 Date Apr. 28, 1982, § 102(e)
 Date Apr. 28, 1982, PCT Pub. No. WO84/01053, PCT Pub. Date Mar. 15, 1984
 PCT Filed Aug. 26, 1982, Ser. No. 493,137
 The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
 Int. Cl.⁴ H01L 21/76, 29/70
 U.S. Cl. 357—48

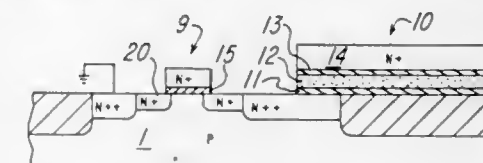
2 Claims



1. A semiconductor device having a plurality of circuit elements comprising:
 a first substrate layer of a first conductivity type and a low resistance;
 a second substrate layer of said first conductivity type and a high resistance containing at least one of said plurality of circuit elements;
 a region of said first conductivity type and a high resistance containing at least one of said plurality of circuit elements, said region being isolated from said first and second substrate layers by an enclosed wall comprising a buried portion of a second conductivity type arranged so as to bridge said first and second substrate layers and another portion contiguous with said buried portion and of said second conductivity type, said another portion being wholly within said second substrate layer.

4,641,173
INTEGRATED CIRCUIT LOAD DEVICE
 Satwinder Malhi, Garland, and David A. Baglee, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Filed Nov. 20, 1985, Ser. No. 799,890
 Int. Cl.⁴ H01L 27/12, 49/02, 29/78, 27/02
 U.S. Cl. 357—51

21 Claims

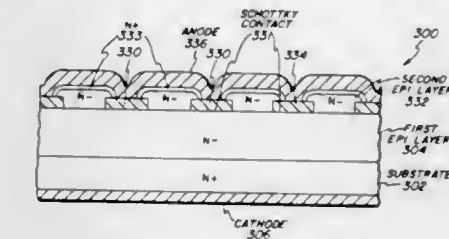


1. A resistive load device comprising:
 a first layer of conductive material serving as one terminal of said load device;
 a first layer of insulating material capable of tunneling electrons directly overlying said first layer of conductive material;
 a layer of resistive material overlying said first insulating layer;
 a second layer of insulating material overlying said resistive material;
 a second layer of conductive material overlying said second layer of insulating material, said second layer of conductive material being connected to serve as another terminal of said resistive load device;
 wherein, at voltages above the tunneling threshold of said

first layer of insulating material, the resistance of said layer of resistive material dominates the resistance of said first layer of insulating material.

4,641,174
PINCH RECTIFIER
 Bantval J. Baliga, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.
 Filed Aug. 8, 1983, Ser. No. 510,520
 Int. Cl.⁴ H01L 29/12
 U.S. Cl. 357—58

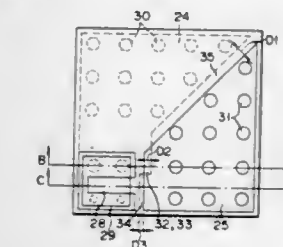
15 Claims



11. A pinch rectifier comprising:
 a body of semiconductor of one type conductivity material having first and second surfaces;
 a first electrode ohmically contacting said body on said first surface;
 a plurality of discrete metal electrode portions disposed in spaced relation on said second surface and making Schottky barrier engagement therewith;
 said body further including an epitaxial layer of one type conductivity disposed on and making ohmic contact with said second surface of said semiconductor body and being contiguous with and making Schottky contact with said plurality of discrete metal electrode portions; and
 a second electrode ohmically contacting said epitaxial layer and said plurality of discrete metal electrode portions;
 said plurality of discrete metal electrode portions defining channel regions therebetween in said body such that under zero or reverse bias conditions, depletion regions formed by said metal electrode portions extend throughout each of said channel regions to block current flow through said channel regions.

4,641,175
BIDIRECTIONAL POWER SWITCH WITH OPTIMIZED EMITTER SPACING NEAR CONTROL ELECTRODE
 Takashi Shiraishi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
 Continuation of Ser. No. 568,914, Jan. 6, 1984, abandoned. This application Apr. 4, 1986, Ser. No. 851,893
 Claims priority, application Japan, Jan. 18, 1983, 58-6414
 Int. Cl.⁴ H01L 29/747
 U.S. Cl. 357—39

8 Claims



1. A semiconductor device comprising:
 a first semiconductor layer of a first conductivity type;
 a second semiconductor layer of a second conductivity type laid upon said first semiconductor layer;

a third semiconductor layer of said first conductivity type laid upon said second semiconductor layer;

a first emitter region of said second conductivity type, with a predetermined pattern, said first emitter region being formed in said first semiconductor layer and forming therein a plurality of first islands of said first semiconductor layer;

a second emitter region of said second conductivity type, with a predetermined pattern, said second emitter region being formed in said third semiconductor layer and forming therein a plurality of second islands of said third semiconductor layer;

an auxiliary emitter region of said second conductivity type formed in said third semiconductor layer, said auxiliary emitter region having a predetermined pattern defining a recess;

a first main electrode on the exposed major surface of said first semiconductor layer, said first main electrode contacting said first semiconductor layer and said first emitter region;

a second main electrode on the exposed major surface of said third semiconductor layer, said second main electrode contacting said third semiconductor layer and said second emitter region;

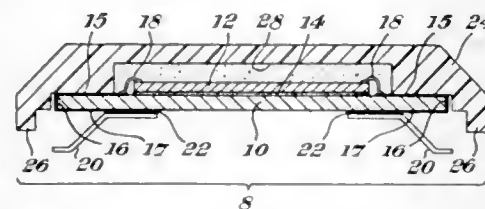
a gate electrode on said exposed major surface of said third semiconductor layer, said gate electrode contacting said third semiconductor layer and said auxiliary emitter region; and

when said first and third semiconductor layers are projected toward a surface parallel to said first and third semiconductor layers, a portion of said first emitter region overlaps a portion of said second emitter region, a portion of said first emitter region is separated from said second emitter region by a separating portion, said overlapping portions and said separating portion being located near said auxiliary emitter region, said separating portion facing said recess of said auxiliary emitter region.

4,641,176 SEMICONDUCTOR PACKAGE WITH CONTACT SPRINGS

Alain Keryhuel, Pavilly, and Christian Meigne, Barentin, both of France, assignors to Burroughs Corporation, Detroit, Mich. Continuation of Ser. No. 763,779, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 705,056, Feb. 26, 1985, abandoned, which is a continuation of Ser. No. 600,291, Apr. 14, 1984, abandoned, which is a continuation of Ser. No. 318,781, Nov. 6, 1981, abandoned. This application Jul. 11, 1986, Ser. No. 885,339

Claims priority, application France, Jan. 26, 1981, 81 01406
Int. Cl.⁴ H01L 23/02, 23/50; H05K 7/12; H01R 13/02
U.S. Cl. 357-74 17 Claims



1. An integrated circuit packaging system, including an integrated circuit package which comprises;

a planar carrier comprising first and second surfaces, said first surface being adapted for having an integrated circuit affixed thereto;

a lid for enclosing said integrated circuit against said first surface;

a plurality of electrical connections for connecting said integrated circuit to said first surface;

a plurality of electrical conductors for continuing said elec-

trical connections from said first to said second surface, and;

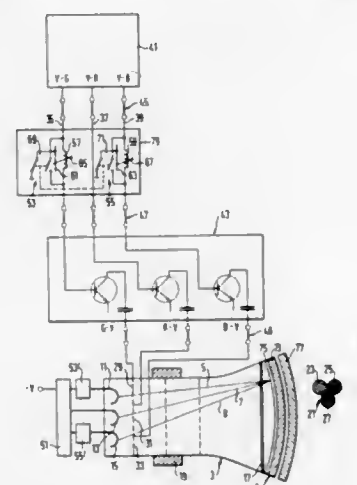
a plurality of elastic contact springs, affixed to project below said second surface, electrically connected to said plurality of conductors, and compressible to press against external contacts to provide electrical connection between an external circuit and said integrated circuit.

4,641,177 PROCESS AND DEVICE FOR PRODUCING A SCREEN IMAGE WITH A THREE-DIMENSIONAL EFFECT IN A TELEVISION RECEIVER

Rolf Ganss, Mexicoring 7, 2000 Hamburg 60, Fed. Rep. of Germany
Continuation of Ser. No. 476,587, Mar. 18, 1983, abandoned.
This application Dec. 16, 1985, Ser. No. 809,844
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210089; May 8, 1982, 3217849
Int. Cl.⁴ H04N 15/00

U.S. Cl. 358-3

24 Claims



1. Process for producing a television receiver screen image which appears three-dimensional when viewed through anaglyphic eye glasses, the image being produced from monoscopic image signals representing monoscopic images in timed sequence, by superimposing two partial images which are mutually offset by a selected partial image distance, in complementary colours matched with the anaglyphic eye glasses, each of the partial images being derived in the form of a different colour excerpt from each the same monoscopic image, characterized in that the partial image distance is created by mutually time-delaying the partial image signals which produce the associated partial images.

4,641,178 METHOD AND APPARATUS FOR PRODUCING STEREOSCOPIC IMAGES

Graham S. B. Street, Reading, England, assignor to Brightad Limited, United Kingdom
Filed Aug. 7, 1984, Ser. No. 638,414
Claims priority, application United Kingdom, Aug. 12, 1983, 8321727
Int. Cl.⁴ H04N 15/00

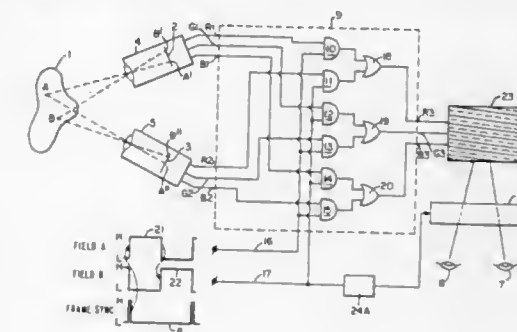
U.S. Cl. 358-3

40 Claims

1. Apparatus for forming a stereoscopic image having first and second spectral components comprising:

image forming means for forming a first image comprising substantially only said first spectral component of a first perspective and said second spectral component of a second perspective during a first period and for forming a second image comprising substantially only said second

spectral component of said first perspective and said first spectral component of said second perspective during a second period; and



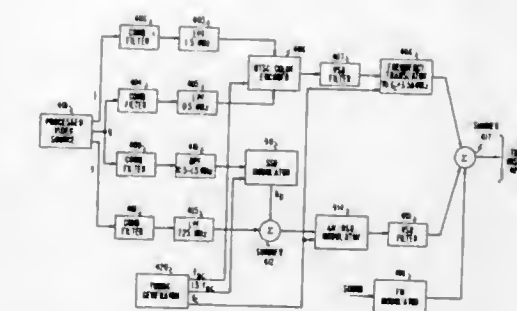
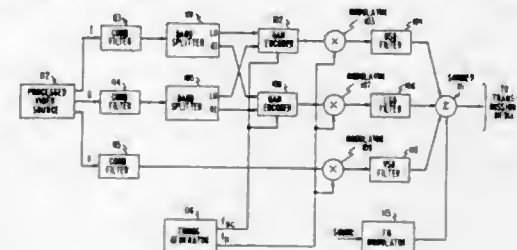
alternating means for alternately forming said first and second images.

4,641,179 ECONOMICAL HIGH-DEFINITION TELEVISION USING A MODULATED-SIGNAL COMBINATION

Joseph L. LoCicero, Riverside; Melih Pazarci, Chicago, and Theodore S. Rzeszewski, Lombard, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 21, 1984, Ser. No. 684,489
Int. Cl.⁴ H04N 11/12

U.S. Cl. 358-12

13 Claims



1. A system for encoding high-definition luminance and chrominance information from a high-definition video source for transmission on a transmission media and said high-definition chrominance information having low-frequency and high-frequency chrominance components, said system comprises:

means for modulating said high-definition luminance information at a transmission carrier frequency;

means for band splitting said high-definition chrominance information into said low-frequency and high-frequency chrominance components;

means for quadrature amplitude modulating said low-frequency chrominance components at a subcarrier frequency;

means for modulating the quadrature amplitude modulated

low-frequency chrominance components at said transmission carrier frequency;

means for filtering the carrier frequency modulated quadrature amplitude modulated low-frequency chrominance components to remove the lower sideband resulting from the carrier frequency modulation;

means for quadrature amplitude modulating said high-frequency chrominance components at said subcarrier frequency;

means for modulating the quadrature amplitude modulated high-frequency chrominance components at said transmission carrier frequency;

means for filtering the carrier frequency modulated quadrature amplitude modulated high-frequency chrominance components to remove the upper sideband resulting from the carrier frequency modulation; and

means for combining the carrier frequency modulated high-definition luminance information and the filtered carrier frequency modulated low-frequency chrominance components and the filtered carrier frequency modulated high-frequency chrominance components for transmission on said transmission media.

9. A system for encoding high-definition luminance and chrominance information from a high-definition video source for transmission on a transmission media and said video source having first and second chrominance components and said second chrominance component having high- and low-frequency segments, said system comprises:

means for band limiting said high-definition luminance information;

means for band limiting the high-frequency segment of said second chrominance component;

means for single sideband modulating said band limited high-frequency segment of said second chrominance component;

means for summing said single sideband modulated high-frequency segment of said second chrominance component and said low-pass limited luminance information;

means for double sideband modulating the summed information;

means responsive to said first chrominance component and said low-frequency segment of said second chrominance component for modulating the latter component and segment;

means responsive to the modulated first chrominance component and low-frequency segment of said second chrominance component for frequency translating the latter; and

means responsive to the frequency translated chrominance component and low-frequency segment of said second chrominance component and the summed information for combining the latter for transmission on said transmission media.

4,641,180 ELECTRONIC CIRCUIT APPARATUS FOR SEPARATING THE LUMINANCE AND COLOR INFORMATION OF A COLOR TELEVISION SIGNAL

Hans-Peter Richter, Griesheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 9, 1984, Ser. No. 598,088
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1983, 3313050

Int. Cl.⁴ H04N 9/78

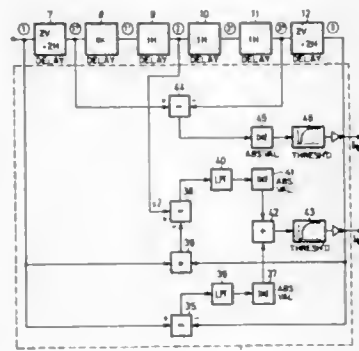
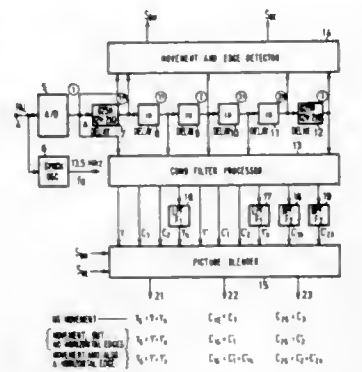
U.S. Cl. 358-31

7 Claims

1. Apparatus for separation of the luminance and the color information of a PAL standard television signal having a quadrature modulated color carrier wave, comprising:

signal delay means (7-12) for delaying said television signal for two television frame periods having input and output connections and having taps for making accessible partially delayed signals, said taps respectively making avail-

able said television signals at delays of one frame less one line, one frame and one frame plus one line:
 a first linear matrix (25, 26, 27) for separating luminance and color information, having inputs respectively connected to said signal delay means at said input connection, said output connection and said tap for signals delayed one frame, for combining the signals at its said respective inputs to produce a luminance signal (Y) by adding together the signals at said input and output of said signal delay means and to produce a first chrominance signal (C₁) by subtracting the signals at said tap for signals delayed one frame from the signals at said input connection of said signal delay means and a second chrominance signal (C₂) by subtracting the signals at said output connection of said signal delay means from the signal at said tap for signals delayed one frame;
 a second linear matrix (28, 29, 30) having inputs respectively connected to said signal delay means at all three said taps



thereof for combining the signals at its said respective inputs to produce a luminance signal (Y') by adding the signals at said tap making available signals delayed by one frame less one line to the signals at said tap making available signals delayed by one frame plus one line and to produce a first chrominance signal (C₁) by subtracting the signals at said tap making available signals delayed by one frame from the signals at said tap making available signals delayed by one frame less one line and a second chrominance signal (C₂) by subtracting the signals at said tap making available signals delayed by one frame plus one line from the signals at said tap making available signals delayed by one frame;
 picture blending means connected to said outputs of said linear matrices and also having a control input for producing blended pictures from said outputs of said linear matrices with a blending mix regarding the respective contributions of said first and second matrices determined by said control input, and
 a picture movement detector circuit having inputs respec-

tively connected to said signal delay means at said input connection thereof, said output connection thereof and said tap for signals delayed one frame and having an output connected to said control input of said picture blending means.

6. Apparatus for separation of the luminance and the color information of an NTSC standard color television signal having a quadrature modulated color carrier wave, comprising:
 signal delay means (71, 72, 73, 74) for delaying said television signal for two television frame periods having input and output connections and having taps for making accessible partially delayed signals, said taps respectively making said television signal available with delays of one frame less one line, one frame, and one frame plus one line;
 a first linear matrix circuit, having inputs respectively connected to said input connection, said output connection and said tap for signals delayed one frame of said signal delay means, for combining the signals at its said respective inputs according to the formula $Y = \frac{1}{2}Z^1 + \frac{1}{2}Z^0 + \frac{1}{2}Z^{-1}$ for producing an output luminance signal and according to the formula $C = -\frac{1}{2}Z^1 + \frac{1}{2}Z^0 - \frac{1}{2}Z^{-1}$ for producing a chrominance output signal, in which formulas Y represents the output luminance signal of said first linear matrix circuit, C represents the output chrominance signal thereof, Z¹ represents the signal at the input connection of said signal delay means, Z⁰ represents the signal at said tap for signals delayed one frame of said signal delay means and Z⁻¹ represents said signal to said output connection of said signal delay means;

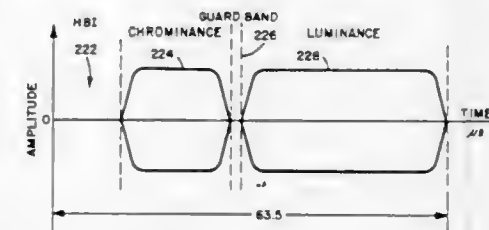
a second linear matrix circuit having inputs connected to said signal delay means respectively at all three of said taps for combining the signals at its said respective inputs according to the formula $Y' = \frac{1}{2}Z^h + \frac{1}{2}Z^0 + \frac{1}{2}Z^{-h}$ for producing a second output luminance signal and according to the formula $C' = -\frac{1}{2}Z^h + \frac{1}{2}Z^0 - \frac{1}{2}Z^{-h}$ for producing a second chrominance output signal in which formulas Y' represents the output luminance signal, C' represents the output chrominance signal, Z^h represents the signal at said tap making said television signal available at a delay of one frame less one line, Z⁰ represents a signal at said tap for signals delayed one frame and Z^{-h} represents said signal at said tap making available a television signal at a delay of one frame plus one line;

picture blending means connected to said outputs of said linear matrix circuits and also having a control input, and
 a picture movement detector having inputs respectively connected to said signal delay means at said input connection thereof, said output connection thereof and said tap for signals delayed one frame, having an output connected to said control input of said picture blending means, and containing means for obtaining first difference signals equal to the absolute value of the difference between the signals at said output of said signal delay means and the signals at said input of said signal delay means, first adding means for obtaining sum signals equal to the sum of said signals at said output of said signal delay means and said signals at said input of said signal delay means, means for obtaining second difference signals equal to the absolute value of the difference between said sum signals and twice the magnitude of said signals at said tap for making available signals delayed one frame, second adding means for adding said first difference signals to said second difference signals to produce second sum signals and inverting means for producing a movement detection signal varying in a manner inverse to the variation of said second sum signals.

4,641,181
 SIGNAL TO NOISE RATIO ENHANCEMENT USING
 BASEBAND SIGNALS IN AN FM TELEVISION SYSTEM
 Joseph G. Mobley, II, Dunwoody, Ga., assignor to Scientific Atlanta, Inc., Atlanta, Ga.
 Continuation of Ser. No. 683,680, Dec. 19, 1984, Pat. No. 4,584,599. This application Feb. 21, 1986, Ser. No. 831,516
 Int. Cl. H04N 5/44

U.S. Cl. 358—36

12 Claims



1. An apparatus for improving the signal-to-noise ratio of a television signal angle modulated with line and field scanned luminance information, comprising:

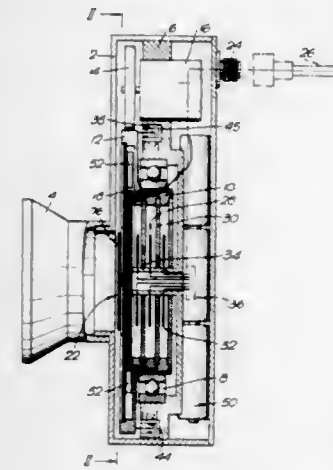
limiter means receiving the television signal, for limiting the amplitude of the television signal to a predetermined value;

a tunable bandpass filter, having a center frequency tunable by a tuning signal, to filter the limited signal from said limiter means;

means for demodulating the filtered signal;

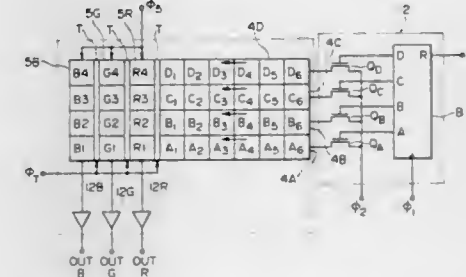
feedback means for delivering the demodulated luminance information to said tunable bandpass filter as the tuning signal, said feedback means comprising delay means for delaying the luminance information by an integral number of line periods.

said converter means is a serial-to-parallel converter comprising M input channels and N output channels; and



said input terminal provides connection for M channels, wherein $N > M$.

4,641,183
 IMAGE PICK-UP APPARATUS
 Takao Kinoshita, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jul. 8, 1983, Ser. No. 511,990
 Claims priority, application Japan, Jul. 16, 1982, 57-124185
 Int. Cl. H04N 9/07
 U.S. Cl. 358—44 16 Claims



1. An image pick-up apparatus comprising:
 (a) a plurality of horizontal shift registers constructed in a plurality of rows, each of said horizontal shift registers comprising charge transfer devices which are serially connected to each other in the horizontal direction, wherein said charge transfer devices accumulate charges corresponding to incident light and transfer said charges in the horizontal direction through different respective channels;
 (b) a plurality of vertical shift registers, each of said vertical shift registers having a plurality of charge transfer cells wherein each of said cells is connected to a corresponding one of the horizontal shift registers; and
 (c) driving means for selectively driving said horizontal shift registers row by row to supply said charges to corre-

4,641,182
 SYSTEMS AND COMPONENTS FOR DETECTING
 ELECTROMAGNETIC RADIATION AND DISPLAYING
 IMAGES PRODUCED THEREBY
 Yehoshua Gur, Jerusalem, Israel, assignor to Gur Optics and Systems, Ltd., Jerusalem, Israel
 Filed Jun. 26, 1984, Ser. No. 624,845
 Claims priority, application Israel, Jun. 26, 1983, 69074
 Int. Cl. H04N 5/225

U.S. Cl. 358—41

26 Claims

24. A display unit for displaying images produced by electromagnetic radiation, comprising:

a housing;

a base element rotatably mounted in said housing;

at least one input terminal for connecting to a source of video signals;

at least one array of mutually spaced output elements located on, and rotatable together with, said base elements;

a plurality of signal transmission means feeding said signals via coupling means through converter means from said input terminal to said array of output elements;

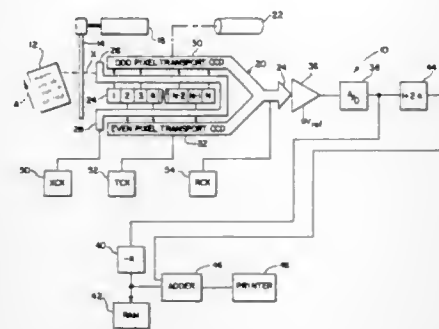
means for imparting to said base element a continuous rotary movement, whereby said output elements, adapted to convert said video signals into light signals, rotating together with said base element and lighting up in response to said signals, create the impression of a continuous output image; characterized in that:

said array comprises a plurality of N input elements;

sponding charge transfer cells of said plurality of vertical shift registers.

4,641,184
ELECTRONIC IMAGE SCANNER AND COPIER SYSTEM WITH COLOR MATRIX IMAGE ENHANCEMENT
Lawrence E. Alston, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 14, 1984, Ser. No. 681,788
Int. Cl.⁴ H04N 1/46
U.S. Cl. 358—75



1. A method for electronically sensing an image and processing the electronic signal information so sensed comprising the step of:

sequentially filtering an image defining light in the primary red, green and blue colors and the complementary yellow, cyan and magenta colors;
sensing said filtered image defining light to provide an electrical output signal having red, green, blue, yellow, cyan and magenta color components thereof; and
processing said electrical output signal to provide an enhanced electrical output signal having enhanced red, green, and blue color components thereof wherein: said enhanced red color component is provided as a function of the color matrixing of said red color component of said electrical output signal with said cyan color component of said electrical output signal, said enhanced green color component is provided as a function of the color matrixing of said green color component of said electrical output signal with said magenta color component of said electrical output signal and said enhanced blue color component is provided as a function of the color matrixing of said blue color component of said electrical output signal with said yellow component of said electrical output signal.

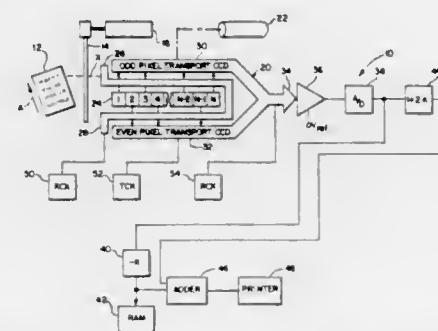
7. Image sensing and processing apparatus comprising: photoresponsive means for sensing the light incident thereto from a subject and providing an electrical output signal therefrom representative of the incident light so sensed; means for sequentially filtering the light sensed by said photoresponsive means in the primary red, green and blue colors and the complementary yellow, cyan and magenta colors so as to establish red, green, blue, yellow, cyan and magenta color components of said electrical output signal; and

signal processing means for providing an enhanced electrical output signal having enhanced red, green and blue color components thereof, said enhanced red color component being determined as a function of the color matrixing of said red color component of said electrical output signal with said cyan color component of said electrical output signal, said enhanced green color component being determined as a function of the color matrixing of said green color component of said electrical output signal with said magenta color component of said electrical output signal, and said enhanced blue color component being determined as a function of the color matrixing of said blue

color component of said electrical output signal with said yellow component of said electrical output signal.

4,641,185
IMAGE SENSING AND PROCESSING APPARATUS AND METHOD
Lawrence E. Alston, Chelmsford, and William T. Freeman, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 18, 1984, Ser. No. 682,894
The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.
Int. Cl.⁴ H04N 1/46
U.S. Cl. 358—75



1. Image sensing and processing apparatus comprising: photoresponsive means for sensing different colors of image defining light incident thereto for each picture element of a selected number of image defining picture elements, and providing a high resolution electrical color separation signal corresponding to each color selected and sensed for each one of said picture elements and a low resolution electrical color separation signal corresponding to each color selected and sensed for selected groupings of said image defining picture elements;
means for storing in memory the low resolution electrical color separation signals; and
signal processing means responsive to the low resolution electrical color separation signals retrieved from said memory and the high resolution electrical color separation signals sensed by said photoresponsive sensing means for providing enhanced high resolution electrical color separation signals for said selected color.

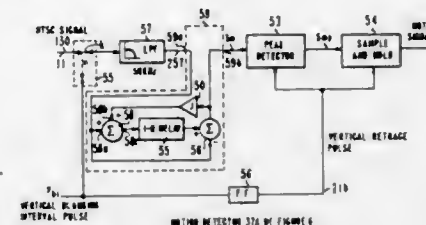
7. A method for electronically sensing an image and processing the electronic signal information so sensed comprising the steps of:

sensing different colors of an image defining light incident thereto for each picture element of a selected number of image defining picture elements and providing a high resolution electrical color separation signal corresponding to each color so sensed for each one of said picture elements and a low resolution electrical color separation signal corresponding to each color so sensed for selected groupings of said image defining picture elements;
storing in memory the low resolution electrical color separation signals; and
providing enhanced high resolution electrical color separation signals for a selected color from the low resolution electrical color separation signals stored in said memory and the high resolution electrical color separation signals sensed by said photoresponsive sensing means for said selected color.

4,641,186
MOTION DETECTOR THAT EXTRACTS MOTION INFORMATION FROM SIDEBANDS OF A BASEBAND TELEVISION SIGNAL
Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 3, 1984, Ser. No. 607,122
Int. Cl.⁴ H04N 7/18
U.S. Cl. 358—105

13 Claims



1. A detector responsive to a first component signal from a television signal for producing therefrom a motion indicative signal, comprising:

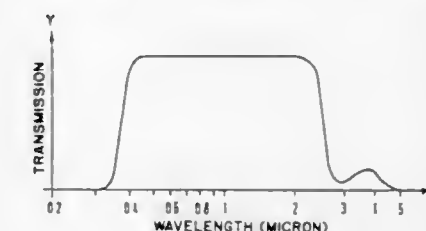
a band pass filter that operates on video lines of said first component signal for extracting from said first component signal a signal portion in a predetermined frequency band, wherein said predetermined frequency band includes substantial spectral content only when said first signal is representative of a non-stationary picture scene, wherein in said filter a given pair of video lines of said television signal are directly coupled for simultaneous operation therebetween only if the time period separating therebetween is substantially shorter than a field time of said television signal;

means coupled to receive said signal portion that is extracted by said filter for producing in accordance with the amplitude thereof, said motion indicative signal; and wherein said predetermined frequency band includes a high end frequency, said high end frequency being below the picture frame repetition rate.

4,641,187
METHOD FOR INCREASING CONTRAST BETWEEN AN OBJECT AND SPACE WHEN PHOTOGRAPHING SUCH AN OBJECT WITH A TELEVISION CAMERA
Norbert Neuroth, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jan. 23, 1985, Ser. No. 694,183
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1984, 3402132
Int. Cl.⁴ H04N 7/18, 5/30
U.S. Cl. 358—106

20 Claims



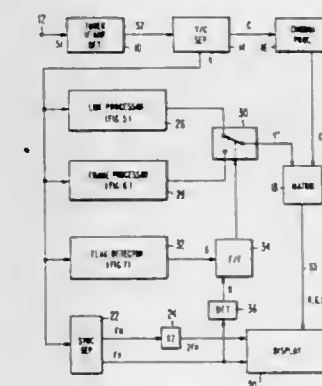
1. A method of increasing the contrast between an object and space when photographing a transparent object, the method comprising: with a radiation source, illuminating a transparent object with radiation in a region of the spectrum having wavelengths to which the transparent object is impermeable; filtering said radiation before impinging on said transparent object to block radiation having wavelengths to which said transparent object is permeable and to pass radiation having wavelengths to which said transparent object is imperme-

able; and, with a camera, photographing said object from the side of the object opposite the radiation source thereby obtaining a contour image of said object, said camera being capable of detecting radiation in the wavelength region being transmitted from the filtering step.

4,641,188
PROGRESSIVE SCAN DISPLAY SYSTEM EMPLOYING LINE AND FRAME MEMORIES
Robert A. Dischert, Burlington, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 31, 1985, Ser. No. 760,909
Int. Cl.⁴ H04N 7/01
U.S. Cl. 358—140

4 Claims

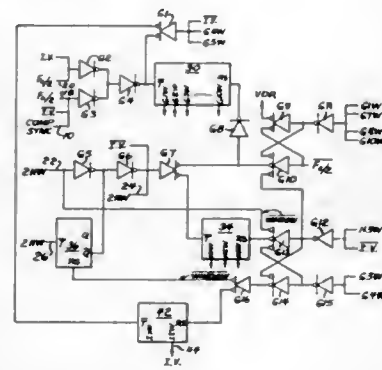


1. a progressive scan display system, comprising:
(a) input means for receiving a video input signal of a given line rate and including an identification signal having a first condition for signifying the presence in said video input signal of a first pair of sequential fields representative of a common scene and having a second condition for signifying the presence in said video input signal of a second pair of sequential fields not representative of a common scene;
(b) first progressive scan processor means coupled to said input means for doubling the line rate of said video input signal including line stores for storing a line of said video input signal and recovering the stored line twice during one line interval to provide a first line store processed video output signal;
(c) second progressive scan processor means coupled to said input means for doubling the line rate of said video input signal including frame store means for storing at least one frame of said video input signal and recovering the stored frame twice during one frame interval to provide a second frame store processed signal;
(d) detector means coupled to said input means for detecting said identification signal and providing a control signal;
(e) display means; and
(f) switch means coupled to receive said frame store processed and line store processed video output signals and responsive to said control signal for coupling said frame store processed video output signal to said display means for display of each said first pair of fields representative of said common scene and for coupling said line store processed video output signal to said display means for display of each said second pair of fields not representative of a common scene.

4,641,189
DIGITAL VERTICAL SYNC FILTER
 Julian E. Warrick, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
 Filed Oct. 11, 1983, Ser. No. 540,740
 Int. Cl.⁴ H04N 5/10

U.S. Cl. 358—154

36 Claims

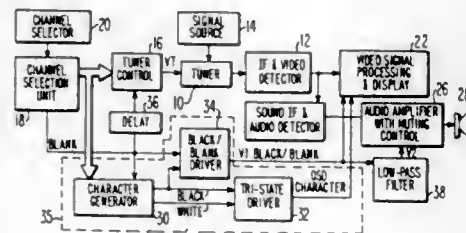


1. A method for extracting vertical sync information from a composite sync signal including (a) horizontal sync signals related to a horizontal frequency and having first durations and (b) vertical sync signals having second durations longer than said first durations, the method comprising the steps of:
 determining respective durations of signals within the composite sync signal;
 detecting the occurrence of a signal within said composite sync signal enduring longer than said first duration, based on said determining step; then
 detecting the occurrence of signals within said composite sync signal enduring for at least a third duration longer than said first duration, based on said determining step; then
 generating a vertical drive signal in response to said second detecting.

4,641,190
MUTING SYSTEM
 William J. Testin, and Juri Tufts, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.
 Filed May 10, 1985, Ser. No. 733,215
 Int. Cl.⁴ H04N 5/60

U.S. Cl. 358—165

12 Claims



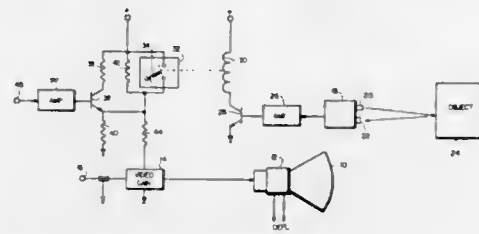
1. In a television receiver, including channel selection means, tuning means for tuning said receiver to a channel, and audio channel signal processing means for providing an audio output, audio muting apparatus comprising:
 muting means associated with said audio channel signal processing means and having selectable muting and non-muting modes of operation wherein, when said muting mode is selected, said audio output is gradually reduced such that, following the lapse of a muting time interval, said audio output is substantially completely muted; and
 control means coupled to each of said tuning means and said muting means and being responsive to said channel selec-

tion means selecting a channel not presently being received for selecting said muting mode so as to begin a period of continuous muting; and thereafter, following the lapse of a first predetermined time delay, longer than said muting time interval, causing said tuning means to tune said receiver to said selected channel.

4,641,191
STANDBY SYSTEM FOR VIDEO DISPLAY
 Leroy Sutton, Wheeling, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
 Filed Dec. 7, 1983, Ser. No. 559,163
 Int. Cl.⁴ H04N 5/57

U.S. Cl. 358—168

1 Claim



1. A video display system comprising:
 a CRT;
 video means including a video gain block for supplying information to said CRT for display;
 a source of B+ potential;
 a pair of resistors serially connected between said source of B+ potential and said gain block, said pair of resistors reducing the B+ potential available to said gain block sufficiently to operate said CRT at a low brightness level;
 sensing means, including an ultrasonic transmitter and an ultrasonic receiver, for detecting the presence of a movable object in a predetermined area adjacent said CRT by reflection of ultrasonic energy;
 switching means coupled to said sensing means for shorting out one of said resistors and enabling full operating potential to be applied to said video gain block for producing a high brightness display responsive to the presence of said movable object in said predetermined area;
 time delay means for maintaining said high brightness display for a time after removal of said movable object from said predetermined area; and
 a transistor having an output circuit coupled across said resistor for overriding said sensing means and producing a high brightness display independent of the presence of said movable object in said predetermined area whenever said transistor is energized.

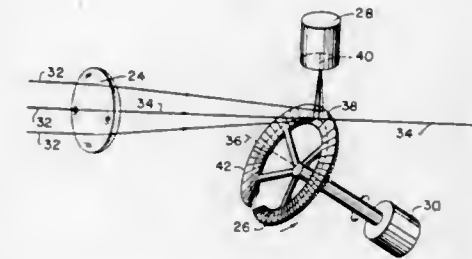
4,641,192
FOCUS-CORRECTED CONVERGENT BEAM SCANNER
 Neal Diepeveen, Fair Lawn, and Robert Bastian, Wyckoff, both of N.J., assignors to Magnavox Government and Industrial Electronics Company, New York, N.Y.
 Filed Dec. 20, 1984, Ser. No. 684,200
 Int. Cl.⁴ H04N 3/08, 3/09

U.S. Cl. 358—206

7 Claims

1. An image pickup device comprising:
 lens means arranged to receive light from a scene and to form an image of the scene in an image surface, said lens means having an optical axis;
 a mirror annulus rotatable about an axis of rotation, said mirror annulus being arranged behind the lens means and having a reflecting surface to reflect light from the scene which is passed through the lens means; and
 detector means arranged to receive light from the scene which has been reflected by the mirror annulus; characterized in that:

the mirror annulus has a circumferential axis which intersects the optical axis through the entire rotation of the mirror annulus;
 the reflecting surface is arranged at a tilt angle about the circumferential axis, the tilt angle of the reflecting surface varying as a function of the position of the reflecting surface along the circumferential axis; and

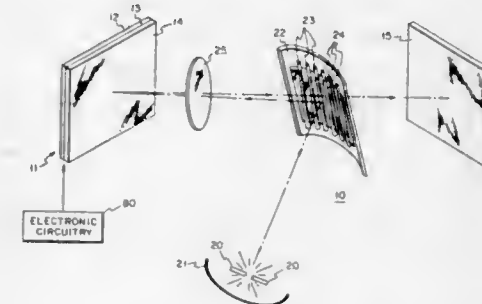


the circumferential axis is arranged on the optical axis at a distance from the lens means, the distance varying as a function of the tilt angle of the reflecting surface such that the image surface is always reflected onto the detector means.

4,641,193
VIDEO DISPLAY APPARATUS AND METHOD
 William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.
 Filed Dec. 7, 1984, Ser. No. 679,227
 Int. Cl.⁴ H04N 5/74

U.S. Cl. 358—233

15 Claims



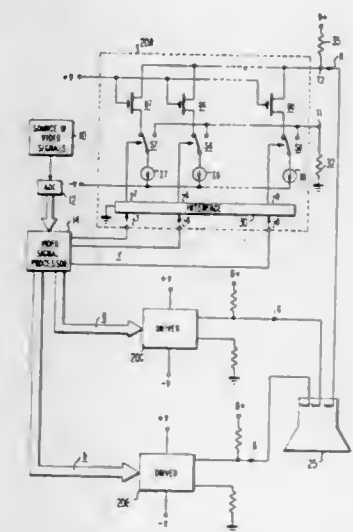
1. Apparatus for receiving frames of video signals and displaying images represented by said video signals, comprising:
 a semiconductor substrate, having an array of columns and rows of devices formed therein, said devices comprising:
 first and second spaced doped regions; an insulator layer disposed over the region between said doped regions; a gate electrode disposed over said insulating region; and a conductive deflection electrode coupled to said second doped region;
 a plurality of column input conductors, each said column input conductor being coupled to the first doped region of the devices of at least one column;
 a plurality of row gate input conductors, each said row gate input conductor being coupled to the gates of the devices of at least one row;
 a video line store;
 means for reading a line of video signals into elements of said line store;
 means for applying the signals from elements of said line store to respective ones of said column input conductors;
 means for successively applying enabling signals to said row gate input conductors;
 means for applying a reference potential to the even rows of devices of said array during one field of a video frame, and for applying said reference potential to the odd rows of

devices of said array during the other field of a video frame;
 a conductive/reflective layer spaced from said deflection electrodes;
 a layer of deformable material disposed between said deflection electrodes and said conductive/reflective layer; and
 optical means for converting deformations of said conductive layer into an image.

4,641,194
KINESCOPE DRIVER IN A DIGITAL VIDEO SIGNAL PROCESSING SYSTEM
 Werner Hinn, Zollikon, Switzerland, assignor to RCA Corporation, Princeton, N.J.
 Filed Aug. 27, 1984, Ser. No. 644,398
 Int. Cl.⁴ H04N 5/68, 9/16

U.S. Cl. 358—242

11 Claims



1. A digital video signal processing system comprising:
 a source of digital signals including a plurality of bits, representative of video information;
 an image display device having an intensity control electrode; and
 a display driver amplifier, having a plurality of inputs for receiving respective bits of said digital signal, for combining signals relating to said bits of said digital signal at an output combining point so as to directly produce at said output combining point an analog signal representing said video information with a magnitude suitable for directly driving said intensity control electrode.

4,641,195
SCANNING SPEED MODULATING APPARATUS FOR TELEVISION RECEIVER
 Fumio Inoue, Yokohama; Masahiro Eto, Fujisawa; Shoei Shimaoka, Yokohama, and Noboru Sakai, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Apr. 19, 1985, Ser. No. 724,832
 Claims priority, application Japan, Apr. 20, 1984, 59-78429
 Int. Cl.⁴ H04N 5/68

U.S. Cl. 358—242

14 Claims

1. A scanning speed modulating apparatus for a television receiver, comprising:
 a horizontal deflecting coil supplied with a horizontal deflecting signal from a horizontal deflecting circuit for deflecting horizontally an electron beam;
 a differentiator circuit for differentiating a waveform of a video signal; and
 a scanning speed modulating signal supply circuit for ampli-

second coupling means for coupling said character signals to said display device;
a user operable programming switch; and
programming control means responsive to the operation of said programming switch for causing said character generator means to generate character signals for displaying a numbered list of said programming modes and for enabling said digit switches to select said programming modes and thereafter being responsive to the operation of one of said digit switches for causing said character generator to generate character signals for displaying prompting instructions for guiding a user to operate said digit switches to enter numerical information for a respectively numbered one of said programming modes.

4,641,206

VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS INCLUDING A NOISE REDUCTION CIRCUIT

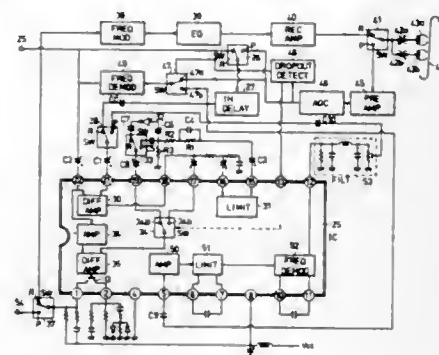
Kasuke Iwafune, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 29, 1984, Ser. No. 584,736

Claims priority, application Japan, Mar. 1, 1983, 58-34126
Int. Cl.⁴ H04N 5/78

U.S. Cl. 360—33.1

3 Claims



1. A video signal recording and reproducing apparatus including a noise reduction circuit, said apparatus comprising:
a frequency modulator for frequency-modulating a recording video signal which is to be recorded;
recording means for recording an output frequency modulated recording video signal of said frequency modulator onto a recording medium;
demodulating means including first means for reproducing the recorded frequency modulated video signal from the recording medium and second means for demodulating the reproduced frequency modulated video signal back into the original video signal;
a noise reduction circuit for reducing a noise component in the output reproduced video signal of said demodulating means by pre-emphasizing portions of the video signal at the time of the recording and correspondingly de-emphasizing the pre-emphasized video signal portions at the time of the reproduction, said noise reduction circuit comprising a first delay circuit having a delay time of one horizontal scanning period for producing a delayed reproduced video signal from an output video signal of said first or second means of said demodulating means, a first differential amplifier supplied directly with the output reproduced video signal of said demodulating means and with the output delayed reproduced video signal of said first delay circuit, a first limiter for amplitude-limiting an output signal of said first differential amplifier, and a subtracting circuit for performing a subtraction between the output reproduced video signal of said demodulating means and an output signal of said first limiter;

a second differential amplifier supplied directly with said recording video signal to one input terminal thereof;
a second delay circuit for delaying said recording video signal by a delay time of one horizontal scanning period, and for supplying a delayed recording video signal to another input terminal of said second differential amplifier;
a second limiter for amplitude-limiting an output video signal component of said second differential amplifier, to a limiting level which is approximately in the same range as a limiting level of said first limiter;
an adding circuit for adding an output limited video signal component of said second limiter to said recording video signal, a common differential amplifier being used as said first and second differential amplifiers, a common delay circuit being used as said first and second delay circuits, a common limiter being used as said first and second limiters; and
circuit means for selectively supplying the output limited video signal component of said common limiter to said subtracting circuit with the phase thereof inverted at the time of the recording, and for selectively supplying the output signal of said common limiter to said subtracting circuit with the phase thereof unchanged at the time of the reproduction, so that said subtracting circuit can also be used as said adding circuit.

4,641,207

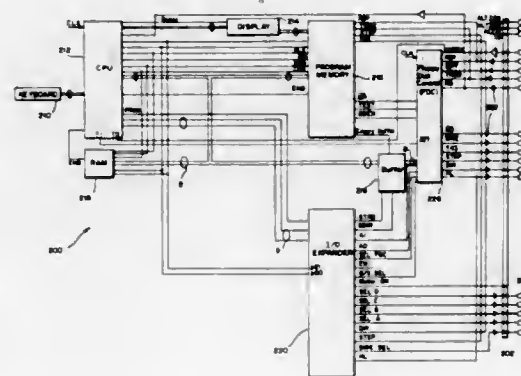
DIAGNOSTIC DEVICE AND METHOD FOR EXAMINING THE OPERATION OF A DISK DRIVE

George D. Green; Lauren M. Laboe, both of 4801 Guilford Rd., College Park, Md. 20740, and Richard Cook, 413 W. Side Dr., Gaithersburg, Md. 20878

Filed Mar. 22, 1983, Ser. No. 477,707

Int. Cl.⁴ G11B 5/02; G06F 11/00, 11/22, 3/02
U.S. Cl. 360—55

36 Claims



1. In a system including (a) a disk drive having a plurality of input terminals and output terminals and (b) a host computer adapted to be connected to the input terminals and the output terminals, an external device for examining the operation of the disk drive and the communication between said host computer and said disk drive, the device comprising:
a plurality of connector points;
means for selectively coupling each connector point to any one of a plurality of input terminals or output terminals of a disk drive when the order of a connector points on the device differs from the order of corresponding terminals on the drive;
switching means for selectively connecting the input and output terminals of said disk drive and said host computer; first means for sensing signals at each of at least some of the input terminals and output terminals, said first means monitoring the communication between said disk drive and said host computer, when said disk drive and said host

computer are interconnected by said switching means, to detect a deviation from standard disk drive responses;
second means for providing signals from the device to the input terminals of the drive, the drive responding to each provided signal at a corresponding input terminal as if a signal from the host computer were received at the same input terminal; and
mode select means for selectively inhibiting the enabling of the second means when the host computer is connected to provide signals to and receive signals from at least some of said terminals.

4,641,208

RECORDING/REPRODUCING APPARATUS

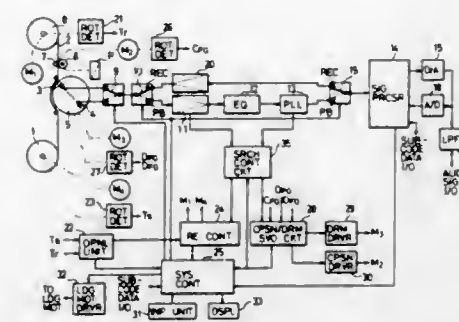
Yoshizumi Inazawa, Kanagawa; Toshihiko Takahashi, Chiba; Toshiyuki Tani, Kanagawa, and Shigeyuki Satomura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 11, 1985, Ser. No. 807,746

Claims priority, application Japan, Dec. 24, 1984, 59-272545
Int. Cl.⁴ G11B 27/28

U.S. Cl. 360—72.2

12 Claims



1. A recording/reproducing apparatus comprising:
head means for recording a plurality of informational signal programs in sequence on a record medium in an initial recording operation of the apparatus;
means operative in said initial recording operation for causing said head means to record on said record medium, at locations corresponding to beginning portions of said informational signal programs, distinctive program identifying signals representing respective numbers arranged in sequence for identifying the respective informational signal programs;
means for causing said head means to record at least one additional informational signal program on said record medium in at least one subsequent recording operation; and
means operative in each said subsequent recording operation for causing said head means to record on said record medium, at a location corresponding to a beginning portion of each said additional informational signal program, a standard program start signal.

4,641,209

DISC TYPE INFORMATION STORAGE AND RETRIEVAL SYSTEM

Robert R. Smith, II, Los Altos Hills, Calif., assignor to Micro Storage Ltd., Manhattan Beach, Calif.

Filed Nov. 28, 1983, Ser. No. 555,892

Int. Cl.⁴ G11B 5/012, 21/06, 23/03

U.S. Cl. 360—86

35 Claims

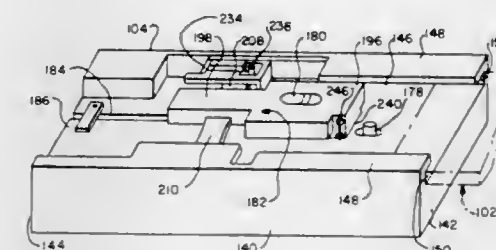
1. An information storage and retrieval assembly, comprising:
(a) a cartridge type of information storage disc arrangement having a cartridge housing and a storage disc including a disc body mounted within said housing for rotation about a central axis of rotation, said body including opposite sides, at least one of which includes information stored or

storable magnetically thereon in a given storage area extending concentrically around said central axis;
(b) an information storage and retrieval arrangement including

(i) means supporting said disc arrangement with the storage disc mounted in its housing in a predetermined operating position for rotation of said disc body about its central axis,
(ii) means including a magnetic read/write head and means supporting said head for movement back and forth along a fixed, straight line path radially across said information containing area on said disc body and in sufficiently close proximity to said area to magnetically store information in order to retrieve information from said area, and
(iii) means for engaging said disc body directly at a location spaced from the disc's central axis but in a way which rotates said disc body about its central axis, in both one direction and in an opposite direction, about said axis, when said disc arrangement is in said predetermined operating position; and
(c) means for moving said read/write head back and forth along said straight line path.

28. An information storage and retrieval assembly, comprising:

(a) an information storage disc arrangement including
(i) a disc shaped body having a central axis of rotation and opposite top and bottom sides, said top side including information stored magnetically thereon in a first area extending concentrically around said central axis,



(ii) a spiral groove in a second area on the top side of said disc body, said groove being concentrically disposed around said central axis and serving as a read head guide track and
(iii) a central hub connected with and extending downward from the bottom side of said disc body in a coaxial relationship with said body and radially inward of said first and second areas, said hub serving as a gear for rotating the disc body about its central axis when the hub itself is rotated; and
(b) an information retrieval arrangement including
(i) means supporting said disc arrangement in a predetermined position for rotation about the central axis of its disc body,
(ii) means for guiding said disc arrangement into said predetermined position along a horizontally extending path only without having to drop the disc arrangement onto an awaiting spindle or like drive mechanism,
(iii) means including a magnetic read/write head for storing the information on or retrieving it from the top side of said disc body,
(iv) means for supporting said read/write head for movement back and forth along a fixed straight line path radially across the information containing area on the top side of said disc body and in sufficiently close proximity to said first area to magnetically store the information on or retrieve it from said area, said read/write head support means including a fixed support structure, a carriage on which said read head is mounted, and a plurality of ball bearings supporting said carriage on said fixed structure for back and forth movement in a

fixed plane along its own straight line path in order to move said read/write head along its straight line path, said fixed support structure and said carriage together defining an elongated race for each of said ball bearings, (v) a needle mounted to and for movement with said carriage and positioned for engagement with said spiral groove such that rotation of the spiral groove in either of opposing directions about said central axis causes said needle to move back and forth along its own straight line path which in turn causes said read/write head support means to move back and forth about its straight line path, thereby moving said read/write head back and forth along its straight line path, and (vi) means for rotating said hub in one direction and an opposing direction around its axis in a controlled manner when said disc arrangement is in said predetermined position whereby said read/write head can be precisely positioned on its straight line path of movement for retrieving information in a controlled, predetermined fashion, said rotating means including a reversible motor which includes an output shaft rotatable both in one direction and an opposing direction about its own axis, said motor being mounted to said support structure, and a gear forming part of said output shaft, said gear being positioned for engagement with said hub when said disc arrangement is placed in said predetermined position, said gear and said hub being configured such that rotation of said gear causes said hub to rotate when the two are in engaging relationship with one another.

4,641,210

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Masao Ohya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

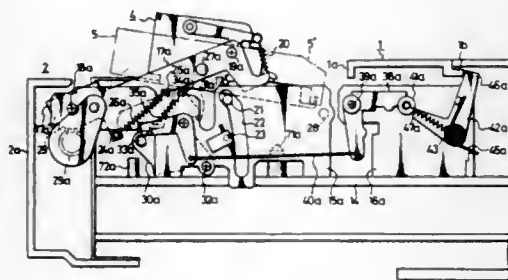
Filed Sep. 20, 1984, Ser. No. 652,580

Claims priority, application Japan, Sep. 24, 1983, 58-146688[U]; Sep. 24, 1983, 58-146690[U]

Int. Cl.⁴ G11B 15/00

U.S. Cl. 360-96.5

9 Claims



1. A magnetic recording and reproducing apparatus, for recording or reproducing a signal on a magnetic tape contained in a tape cassette, comprising:

- a housing including a front panel having an opening formed therein; and
 - a movable section including support means movable substantially horizontally through said opening between an open position in which said movable section extends forwardly from said housing and a closed position in which said movable section is contained within said housing;
- said movable section further including cassette mounting means for receiving said cassette and moving said received cassette relative to said support means between an operative lowered position in which the cassette can move through said opening and a raised eject position out of said housing and in which said cassette may be removed from said apparatus, and a magnetic head assembly mounted on said support means for movement therewith and being

adapted for recording or reproducing a signal on the tape of a cassette in said operative position; said cassette mounting means holding said cassette in said operative position when said movable section is moved to said closed position.

4,641,211

DISK CARTRIDGE LOADING MECHANISM IN A RECORDING AND REPRODUCING APPARATUS

Masao Okita, Furukawa, Kunihiko Gunji, Miyagi, and Yukio Saito, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Japan

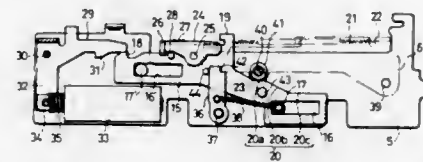
Filed Jul. 23, 1984, Ser. No. 633,141

Claims priority, application Japan, Jul. 21, 1983, 58-112239[U]

Int. Cl.⁴ G11B 5/016, 17/04

U.S. Cl. 360-97

2 Claims



1. In a recording and reproducing apparatus for a disk cartridge comprising:

- (a) means including a cartridge holder adapted to hold a disk cartridge for movement between a first position for moving said cartridge into and out of said apparatus and a second position in which a disk cartridge fully inserted in said cartridge holder is moved to engage a magnetic head in said apparatus, said cartridge holder having an insertion end disposed toward a forward end of said apparatus and a distal end disposed toward a rearward end of said apparatus;
- (b) means including a load lever mounting said cartridge holder for moving said cartridge holder between said first and second positions;
- (c) locking means engageable with said load lever for holding said cartridge holder in said first position prior to full insertion of said disk cartridge in said cartridge holder;
- (d) means including a cam plate movable rearwardly by abutting engagement with a disk cartridge inserted in said cartridge holder of said apparatus;
- (e) said cam plate having a member for moving said locking means to release said load lever when said cam plate is moved to its rearward position, thereby allowing said cartridge holder to move to said second position, and means for moving said cartridge holder from said second position back to said first position upon movement of said cam plate forwardly for ejection of said cartridge;
- (f) wherein the improvement comprises a tension spring mounted between the load lever and the cam plate to bias the load lever toward the second position and at the same time to bias the cam plate forwardly.

4,641,212

APPARATUS FOR LOADING A MAGNETIC DISC AND FOR CONTROLLING THE DRIVING THEREOF

Yuji Yokota, and Akira Osabe, both of Chichibu, Japan, assignors to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Filed Sep. 27, 1983, Ser. No. 536,255

Claims priority, application Japan, Oct. 1, 1982, 57-171053

Int. Cl.⁴ G11B 17/04

U.S. Cl. 360-99

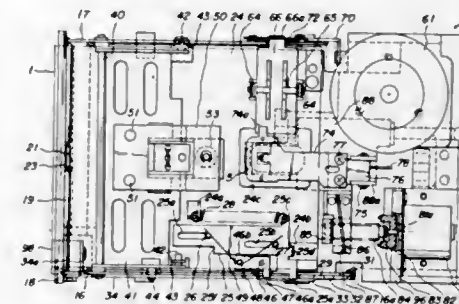
10 Claims

1. A magnetic disc unit having a magnetic head for recording or reproducing information on or from a magnetic disc having a center hub and being accommodated in a cassette, comprising:

- a cassette guide member for carrying said cassette in a manner such that said cassette guide member moves said cas-

sette to a predetermined position in the insertion direction of said cassette in accordance with the insertion of said cassette and for guiding said cassette to a recording/reproducing position at which information is recorded or reproduced on or from said magnetic disc;

- a spindle for rotating said magnetic disc;
- a hub holding member for pushing said center hub of said magnetic disc to said spindle to hold said magnetic disc between said spindle and said hub holding member;
- a transmitting member having



- a first portion for moving said cassette guide member to said recording/reproducing position, and
- a second portion for moving said hub holding member to said spindle, the displacement of said second portion being larger than that of said first portion; and
- a driving member for driving said transmitting member such to move said transmitting member in a manner that said cassette guide member is positioned to said recording/reproducing position, when said cassette guide member reaches said predetermined position.

4,641,213

MAGNETIC HEAD

Yutaka Shimada, Sendai; Takashi Hatanai; Koichi Mukasa, both of Kolde, and Keishi Nakashima, Yunotani, all of Japan, assignors to Alps Electric Co., Ltd., Japan

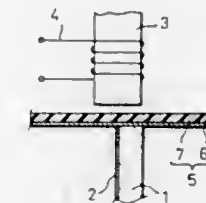
Filed Jul. 16, 1984, Ser. No. 630,900

Claims priority, application Japan, Jul. 16, 1983, 58-128721; Jul. 16, 1983, 58-128724; Jul. 16, 1983, 58-128715

Int. Cl.⁴ G11B 5/12, 5/22

U.S. Cl. 360-125

3 Claims



1. A magnetic head for perpendicular magnetic recording for magnetizing in the thickness direction of a magnetic layer of a magnetic recording medium by disposing the principal magnetic pole of the magnetic head facing a surface of the magnetic layer, wherein said principal magnetic pole is composed of a cobalt-based ternary amorphous alloy containing small amounts of hafnium and tantalum, wherein the content of hafnium is from 1 atom% to 5 atom% and the content of tantalum is from 4 to 10 atom%.

4,641,214

ROTARY HEAD ASSEMBLY WITH PUMP-OUT TYPE SPIRAL GROOVES FOR MORE STABLE TAPE RUNNING

Kiyokazu Imanishi; Hiroyuki Naka, both of Osaka; Yasuo Sakurai, Neyagawa; Takashi Ichihayashi, Hirakata, and Masaru Kishimoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

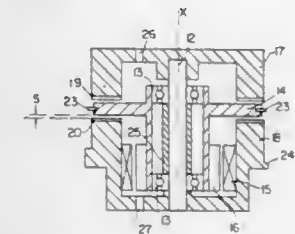
PCT No. PCT/JP83/00270, § 371 Date Apr. 20, 1984, § 102(e) Date Apr. 20, 1984

PCT Filed Aug. 18, 1983, Ser. No. 606,436

Claims priority, application Japan, Aug. 20, 1982, 57-145023 Int. Cl.⁴ G11B 15/60, 5/027

U.S. Cl. 360-130.24

6 Claims



- 1. A rotary head assembly comprising:
- a shaft having a central axis extending in an axial direction;
- an upper stationary cylinder fixedly attached to an upper end of said shaft, said upper cylinder having a lower axial end surface spaced radially from said central axis, said lower axial end surface having pump-out type spiral grooves thereon;
- a lower stationary cylinder fixedly attached to a lower portion of said shaft, said lower cylinder having an upper axial end surface spaced radially from said central axis and being coaxial with said lower axial end surface of said upper cylinder, said upper axial end surface having pump-out type spiral grooves thereon;
- a rotary member rotatably supported on said shaft between said upper cylinder and said lower cylinder, said rotary member having a portion thereof extending between said axial end surfaces of said upper and lower cylinders, said portion having an upper surface which is spaced from said lower axial end surface of said upper cylinder by a minute clearance and a lower surface which is spaced from said upper axial end surface of said lower cylinder by a minute clearance;
- at least one magnetic head mounted on a radially outer surface of said portion of said rotary member, said at least one magnetic head protruding outward from a radially outer surface of said upper cylinder and a radially outer surface of said lower cylinder, said radially outer surfaces of said upper and lower cylinders being nearly equal in diameter; and
- means for rotating said rotary member.

4,641,215

EXPOSURE CONTROL DEVICE FOR ELECTRONIC PHOTOGRAPHING APPARATUS

Akira Katoh; Masatoshi Ida; Kouichi Shijima; Makoto Oishi; Akihiko Hashimoto, and Shinya Takahashi, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,126

Claims priority, application Japan, Mar. 10, 1982, 57-37375

Int. Cl.⁴ H04N 5/78, 9/491

U.S. Cl. 360-35.1

1 Claim

1. An electronic photographing system comprising:

- an objective lens system for receiving incident light from an object;
- first solid state image sensor means for receiving said incident light through said objective lens system for produc-

ing an image signal usable to measure an exposure, and also usable to form a television image signal;

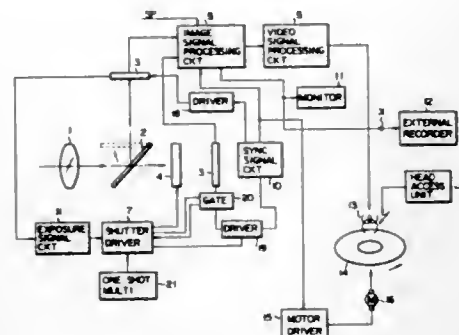
second solid state image sensor means for receiving said incident light through said objective lens system for producing an image signal for still picture recording;

shutter means for blocking the incident light to said second solid state image sensor means at a predetermined timing;

first driving means for driving said first solid state image sensor means so as to enable said first solid state image sensor means to issue the image signal;

second driving means for driving said second solid state image sensor means and including means for generating a plurality of driving pulses including a first driving pulse for reading out an image signal corresponding to a first field and a second driving pulse for reading out an image signal corresponding to a second field;

shutter driving means for driving said shutter means for controlling an exposure time during which said second solid state image sensor means responds to the image signal issued from said first solid state image sensor means, said shutter driving means including an exposure control signal generator means for providing an exposure signal to determine a proper exposure time on the basis of an output signal from said first image sensor means, and said shutter driving means providing a shutter drive pulse based on



said exposure control signal in synchronism with said second driving pulse, said shutter drive pulse having a pulse width corresponding to the exposure time;

gate circuit means for controlling passage of said first and second driving pulse to said second solid state image sensor means so as to inhibit said first and second driving pulses while said shutter drive pulse is present and also to inhibit said second driving pulse anticipant of said first driving pulse immediately after extinction of the shutter drive pulse;

synchronizing signal generator means for generating pulses including first synchronizing pulses and second synchronizing pulses respectively supplied to said first driving means and to said second driving means;

recording means responsive to operation of a shutter release for recording an image data signal on a recording medium, said image data signal corresponding to the image signal issued from a selected one of said first solid state image sensor means and said second solid state image sensor means; and

means coupled to said synchronizing signal generator means for driving said recording medium in synchronism with the operation of at least one of said first driving means and said second driving means under synchronization control based on an output from said synchronizing signal generator means.

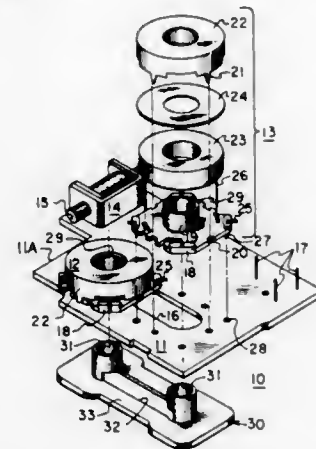
4,641,216 SIGNAL PROCESSOR MODULE FOR GROUND FAULT CIRCUIT BREAKER

Robert A. Morris, Burlington, and Paul T. Rajotte, Plainville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 22, 1985, Ser. No. 725,610
Int. Cl.⁴ H05K 1/11

U.S. Cl. 361-45

7 Claims



1. A ground fault circuit breaker signal processor module comprising:

printed circuit board means containing electric signal processor circuit components on one surface and electrically conductive pins extending through said printed circuit board to an opposite surface for providing electrical connection between said signal processor components and an external circuit;

an apertured neutral excitation current transformer and an apertured differential current transformer spaced apart and arranged side by side on said opposite surface for sensing current through said external circuit;

solenoid means on said opposite surface for responding to electric signals generated within said signal processor circuit upon the occurrence of ground fault current through said external circuit; and

means on said printed circuit board defining an opening for providing electrical access to said neutral excitation and said differential current transformers;

said neutral excitation and differential current transformers being arranged over said opening and a connecting strap being arranged under said opening whereby a first pair of electrically conductive extensions on said connecting strap extend through said opening and at least partially through said neutral excitation and differential current transformer apertures.

4,641,217 TWO POLE GROUND FAULT CIRCUIT BREAKER

Robert A. Morris, Burlington; Paul T. Rajotte; Ronald R. Russell, both of Plainville, and George W. Kiesel, Burlington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 31, 1985, Ser. No. 739,810
Int. Cl.⁴ H02H 3/28; H01H 73/06

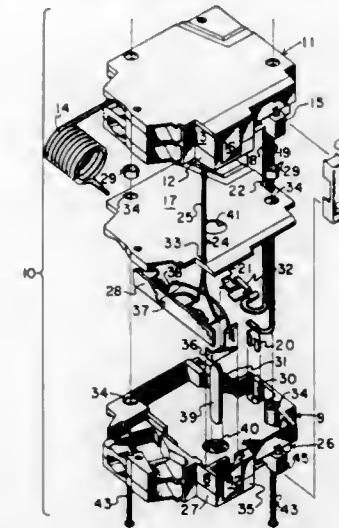
U.S. Cl. 361-45

6 Claims

1. A two pole ground fault circuit breaker comprising:
a first pole circuit breaker with a first molded case and operatively connected with a ground fault circuit module within a second molded case;
a second pole circuit breaker within a third molded case operatively connected with both said ground fault module and said first pole circuit breaker; and

a power supply circuit within a fourth molded case electrically connected with both said first and second pole circuit breakers and said ground fault module for supplying operating power to said ground module from either of said first or second pole circuit breakers;

said power supply circuit comprising the parallel combination of a first diode and varistor connecting between said first pole circuit breaker and said ground fault circuit interrupter for providing first DC operating power to said ground fault module and the parallel combination of a second diode and varistor connecting between said second pole circuit breaker and said ground fault module for



providing second DC operating power to said ground fault module, said power supply and said ground fault module being electrically interconnected by means of a second pair of insulated wire conductors, first ends of said first and second conductors being electrically connected to pins on a printed wire board supporting said power supply circuit, said power supply case comprising means for retaining said printed wire board such that a bottom edge of said printed wire board is perpendicular to a bottom surface of said power supply case and said first diode and varistor are mounted on said printed wire board parallel to said bottom surface.

4,641,218 PROTECTOR WITH CIRCUIT DISABLER

Michael Scalera, Randolph, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 712,246, Mar. 15, 1985, abandoned. This application Jun. 21, 1985, Ser. No. 747,394
Int. Cl.⁴ H02H 3/22

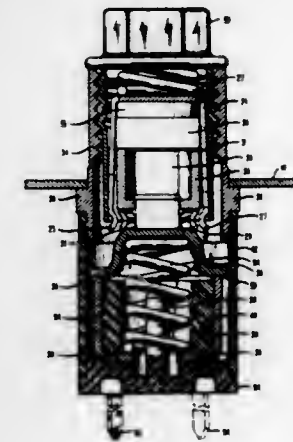
U.S. Cl. 361-119

16 Claims

1. A protector module which protects telecommunications equipment from damage caused by spurious voltages or currents said module comprising

an electrically conductive grounding barrel capable of being housed within one of a plurality of receptacles of a grounding chassis, said grounding barrel having a first internally threaded end and a second smooth surfaced end,
a protector unit having a threaded outer surface mating with said first end of said grounding barrel, and
means for grounding a conductor of a circuit when said protector unit is removed from said grounding barrel, said grounding means mating with said second smooth sur-

face of said grounding barrel, one end of said circuit being connected to said telecommunications equipment



and the other end of said circuit being connected to a telephone central office.

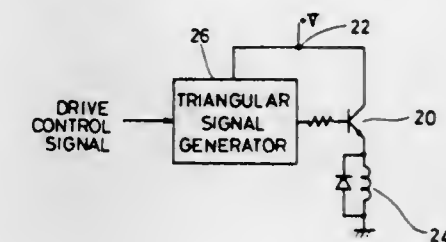
4,641,219 LOW NOISE SOLENOID DRIVE

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1984, Ser. No. 628,714
Claims priority, application Japan, Jul. 12, 1983, 58-127393
Int. Cl.⁴ H01H 47/32

U.S. Cl. 361-153

3 Claims



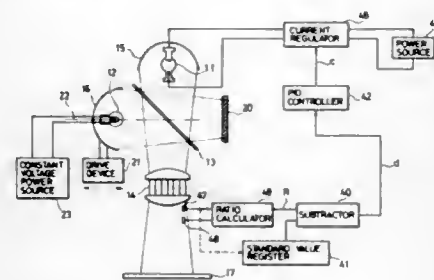
1. A solenoid drive system comprising:
a solenoid coil;
transistor means connected to one end of said solenoid coil;
a driver circuit which controls the operation of said transistor means,
said driver circuit including a triangular signal generator connected to said transistor means for applying a triangular drive signal to an input of said transistor means;
plunger means activated by a force developed in said solenoid coil, said force being directly proportional to said triangular drive signal;
a load connected to one end of said plunger means, wherein said plunger means moves said load from an initial position to an operating position upon activation by the force developed in said solenoid coil,
said initial position corresponding to one point on an increasing slope of said triangular drive signal and said operating position corresponding to another point on said increasing slope,
such that the distance between said one point and said another point, corresponds to the excess force on said load at said operating position, and is minimized.

second sheet includes with the main radiation exit direction an angle of 20° to 40°, wherein projection lines drawn parallel to the main radiation exit direction from the extremities of the short edges of each of the first sheets onto a plane through the centers of the plurality of light sources define a projected length which is substantially equal to the diameter of one light source and which is coincident with the extremities of the diameter of the light source, and wherein projection lines drawn parallel to the main radiation exit direction from the extremities of the short edges of each of the second sheets onto a plane through the centers of the plurality of light sources define a projected length which is substantially equal to the spacing between the extremities of adjacent light sources and which is coincident therewith.

4,641,227
SOLAR SIMULATOR
Masaki Kusuhara, Tokyo, Japan, assignor to Wacom Co., Ltd., Japan

Filed Aug. 15, 1985, Ser. No. 766,124
Claims priority, application Japan, Nov. 29, 1984, 59-252698; May 24, 1985, 60-110542

Int. Cl. F21V 9/00
U.S. Cl. 362-231 15 Claims



1. A solar simulator, comprising a xenon short arc lamp, an incandescent filament lamp, filter means capable of eliminating a near infrared component from the light emitted by said xenon short arc lamp and, at the same time, extracting a near infrared component from the light emitted by said incandescent filament lamp, and a single integrating optical system on which the light emitted by said xenon short arc lamp minus said near infrared component and the light of said near infrared component extracted by said filter means from the light emitted by said incandescent filament lamp impinge.

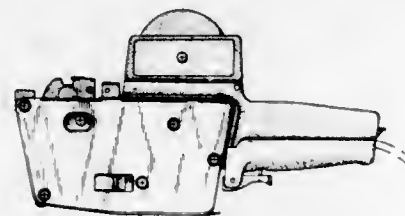
4,641,228
LAMP MOUNTING APPARATUS AND METHOD
Rhett McNair, Anaheim, Calif., assignor to Scientific Component Systems, Inc., Anaheim, Calif.

Filed Aug. 29, 1984, Ser. No. 645,288
Int. Cl. F21V 19/00

U.S. Cl. 362-382 12 Claims

1. Lamp mounting apparatus comprising: connection means having elongated means connected to a electrical connector means and extending downward through opening means in a reflector means, gripper means connected to the elongated means and slideable along the elongated means in an upward direction toward

the electrical connector means for gripping the elongated means and pulling the reflector means upward toward the

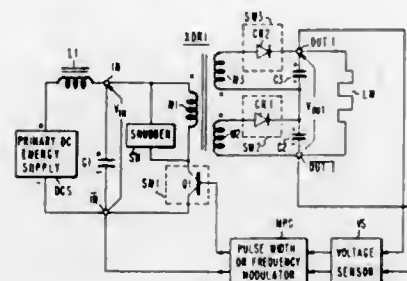


electrical connector means as the gripper means is slid upward along the elongated means.

4,641,229
SWITCHING DC-TO-DC CONVERTERS
Finis C. Easter, Mount Laurel, N.J., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 245,103, Mar. 18, 1981, This application Sep. 2, 1982, Ser. No. 414,481
Int. Cl. H02M 3/335

U.S. Cl. 363-21 22 Claims



1. A switching dc-to-dc converter comprising: first and second input terminals for connecting a primary dc energy supply between; first and second output terminals for connecting a load between; transformer means having at least first and second windings, its windings being continuously transformer-coupled to each other; first switch means for connecting the first winding of said transformer means in a path for input current flow between said first and second input terminals during a first series of time intervals and for disconnecting the first winding from said path during a second series of time intervals interleaved in time with said first series of time intervals; first and second capacitors having first and second capacitances respectively between their first and second plates, the first plate of said first capacitor being connected to said first output terminal, the first plate of said second capacitor being connected to said second output terminal, and the second plates of said first and second capacitors being interconnected at a first node, the ratio of said first capacitance to said second capacitance being equal to a nominal value of the ratio of the durations of time intervals in said first series to the durations of time intervals in said second series, for reducing output voltage ripple between said first and second output terminals; means applying transformed input current from said second winding of said transformer means to said first capacitor for charging said first capacitor during each of said first series of time intervals; and means applying flyback current from one of the windings of said transformer means to said second capacitor for charging

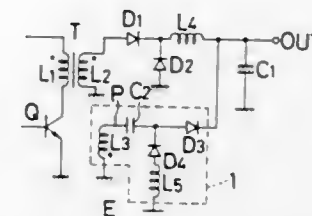
ing said second capacitor during each of said second series of time intervals.

4,641,230
PULSE ABSORPTION CIRCUIT FOR POWER SOURCE CIRCUIT

Sinji Kado, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1984, Ser. No. 687,638
Int. Cl. H02H 7/122

U.S. Cl. 363-56 2 Claims



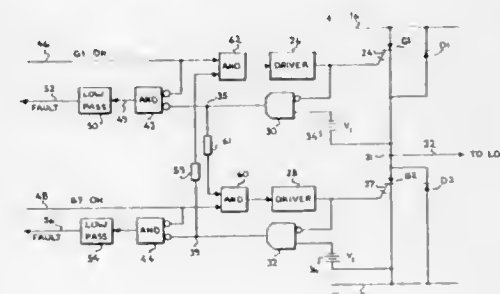
1. A pulse absorption circuit for a switching power source circuit for supplying or cutting off an input current at a primary winding of a transformer upon ON/OFF operation of a switching element, comprising:

- a rectifying circuit having an output terminal, said rectifying circuit including a diode and a smoothing capacitor operatively coupled at a secondary winding side of said transformer for smoothing and rectifying an output of the secondary winding;
- a second capacitor, one end of which is connected to a secondary winding output terminal of the transformer in a phase opposite to a primary winding input terminal thereof;
- a first rectifying element, an anode of which is connected to the other end of said second capacitor and a cathode of which is connected to said output terminal of said rectifying circuit;
- a second rectifying element, a cathode of which is connected to a junction between said first rectifying element and said second capacitor; and
- a conductor inserted between a ground terminal and said second rectifying element.

4,641,231
APPARATUS AND METHOD FOR FAILURE TESTING OF A CONTROL TURN-OFF SEMICONDUCTOR
Loren H. Walker, Salem, and Georges R. E. Lezan, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 6, 1985, Ser. No. 805,646
Int. Cl. H02H 7/122

U.S. Cl. 363-58 24 Claims



1. A method of determining the conductive state of a control

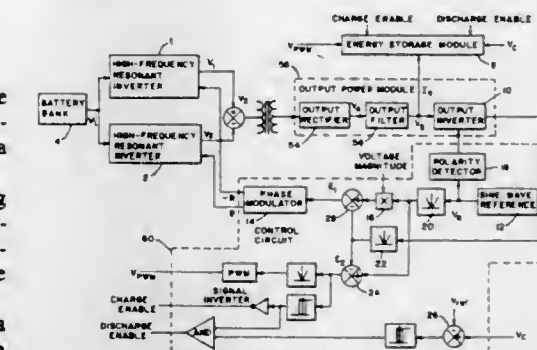
turn-off semiconductor of the type having an anode, a cathode and a control electrode to which signals are applied to control the conducting state of the semiconductor comprising the steps:

- (a) generating a control electrode voltage signal representing the extant voltage at said control electrode; and,
- (b) combining said control electrode signal with a reference voltage signal of predetermined value to develop output signals representing the operational state of said semiconductor.

4,641,232
ELECTRICAL POWER INVERTER HAVING A PHASE MODULATED, TWIN-INVERTER, HIGH FREQUENCY LINK AND AN ENERGY STORAGE MODULE
Ira J. Pitel, Whippany, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 23, 1985, Ser. No. 693,955
Int. Cl. H02P 13/20

U.S. Cl. 363-71 13 Claims



1. An electrical power inverter apparatus, which includes a high frequency link, for converting DC power to AC power, comprising:

- (a) a first high frequency inverter module which produces a first AC voltage at a first output frequency;
- (b) a second high frequency inverter module which produces a second AC voltage at a second output frequency, which is substantially the same as said first output frequency and is out of phase with said first output voltage by a selected angular phase displacement;
- (c) mixing means for mixing said first and second output voltages to produce a high frequency carrier which has a selected base frequency impressed on the sidebands thereof;
- (d) rectifying means for rectifying said carrier;
- (e) filtering means for filtering the rectified carrier;
- (f) output inverting means for inverting the filtered carrier to produce an AC line voltage at said selected base frequency; and
- (g) phase modulating means for adjusting the relative angular phase displacement between the outputs of said first and second high frequency inverter modules to control the base frequency of said AC line voltage.

4,641,233
AC TO DC CONVERTER WITH VOLTAGE REGULATION
Richard D. Roy, Schererville, Ind., assignor to Eaton Corporation, Cleveland, Ohio

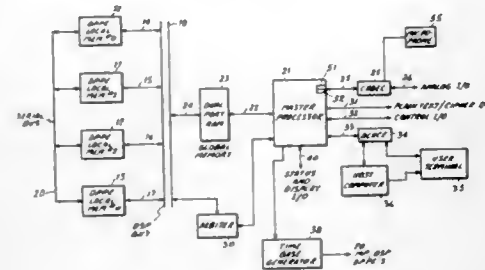
Filed May 3, 1985, Ser. No. 730,009
Int. Cl. H02M 7/06

U.S. Cl. 363-89 3 Claims

1. An arrangement for converting AC input power to DC output power at a reference voltage, comprising: a capacitor; rectifying means for rectifying said AC input power; controllable switching means coupled between the output of

use in providing digital signals according to complicated algorithms, comprising:

- a plurality of dynamically programmable processing elements (DPPE) means, each capable of processing input data in accordance with arithmetic computations to be performed on said data, and each having a bidirectional input/output port and a second bidirectional input/output port,
- a first bus coupled between said input/output ports of said DPPE's for enabling transfer of data between each of said plurality of DPPE elements,
- a second digital signal processing bus coupled to the second input/output ports of said plurality of DPPE element means,



global memory means having an input/output port coupled to said second bus, and a second input/output port coupled to said second input/output port of said global memory for controlling the data to be transmitted via said memory means to said second bus and for receiving data from said second bus as processed by said DPPE's, said master processor having a plurality of bidirectional input/output lines for selectively receiving or transmitting data and for controlling the status of said lines according to the arithmetic computations performed by said plurality of DPPE's.

4,641,239 AUTOMATIC-TRANSFER-TRANSACTION PROCESSING APPARATUS

Sumiyoshi Takesako, Yamato, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

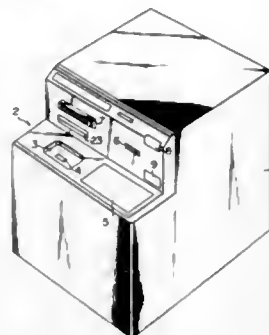
Filed Nov. 19, 1984, Ser. No. 673,088

Claims priority, application Japan, Nov. 17, 1983, 58-216714

Int. Cl.⁴ G06F 15/30

U.S. Cl. 364-408

10 Claims



1. An automatic-transfer-transaction processing apparatus comprising:

- first means for receiving a transfer card on which at least the transferee and the limit data of the card are recorded and from which these pieces of data can be read by a device, and for reading these pieces of data;

second means for transferring a specified amount to the transferee which has been read from the card;

third means for determining, from the limit data, whether or not a new transfer card must be issued; and

fourth means for issuing a new card in accordance with the decision made by the third means.

4,641,240 ELECTRONIC VOTING MACHINE AND SYSTEM

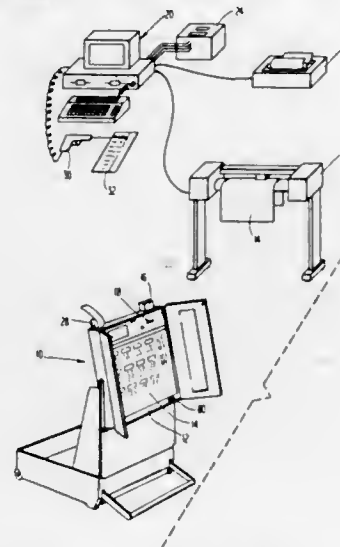
Robert J. Boram, Quakertown, Pa., assignor to R. F. Shoup Corporation, Bryn Mawr, Pa.

Filed May 18, 1984, Ser. No. 608,157

Int. Cl.⁴ G06F 15/20; G07C 13/00

U.S. Cl. 364-409

21 Claims



1. An electronic voting system for use by voters in casting their votes during an election, comprising:

- a computer system for receiving input data relating to offices contested, candidates for said offices and legal restrictions on voting for said offices, and at least one programmable voting machine, said computer system comprising:
 - means for inputting said data;
 - means for storage and manipulation of said data;
 - means for generating a ballot associating said candidates with their respective offices and indicating any such legal restrictions on voting for said candidates;
 - means for generating control signals for supply to said voting machine, said signals including information concerning said candidates and their respective offices and any legal restrictions on their running as well as a first checksum based upon said data;
- programmable read-only memory means including erasable read-only memory means for transporting said signals to said voting machine and for redundantly tabulating the votes cast on said voting machine;
- means for altering data stored in said erasable, read-only memory means upon the voter's having completed casting his votes in order to update a total votes cast for each of said candidates, whereupon said voting machine is adapted to program said erasable read-only memory means with new data indicative of said total votes cast; and
- means for generating a second checksum upon completion of the election, said second checksum based upon the total votes cast at the completion of the election and adapted to indicate an election security breach if said total votes cast does not agree with said second checksum;

said voting machine comprising:

- an array of substantially identical switches, each of said

switches upon actuation thereof indicating a vote cast; and

means for effectively associating said switches with said candidates and with said offices upon supply to said voting machine of said control signals, such that on supply of said signals to said voting machine the voting machine is adapted from an unprogrammed state to a state in which it is programmed to redundantly record the results of a given election.

4,641,241 MEMORY CARTRIDGE FOR ELECTRONIC VOTING SYSTEM

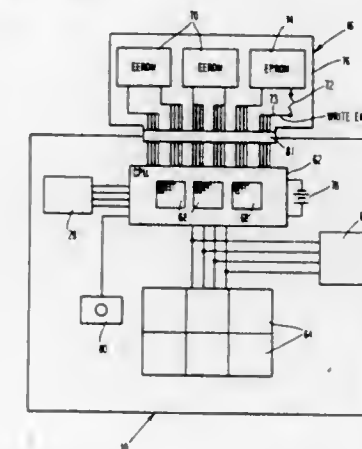
Robert J. Boram, Quakertown, Pa., assignor to R. F. Shoup Corporation, Bryn Mawr, Pa.

Filed May 8, 1984, Ser. No. 608,159

Int. Cl.⁴ G06F 15/20; G07C 13/00

U.S. Cl. 364-409

6 Claims



1. A programmable memory cartridge for use in connection with an electronic election system, said system comprising: computer means for receiving data concerning candidates, their respective offices and legal restrictions on voting thereto; and

- programmable voting machine means, said programmable voting machine means being programmed by supply thereto of said memory cartridge;
- said programmable memory cartridge comprising solid state memory data storage means and being adapted to be electrically connected to said computer means for receipt and storage of data and adapted to be connected to said programmable voting machine means for supply of said data thereto so as to program said programmable voting machine means;

wherein said solid state memory data storage means comprises means for storage of data received from said computer means for supply to said programmable voting machine means, for adapting said programmable voting machine means for use in connection with a particular election, means for storage of election results received from said programmable voting machine means and supply thereof to said computer means for tabulation of the results of the election and means for storing running totals of the votes tallied in connection with a given election, in addition to memory means for storage of the final results output by said voting machine upon conclusion of an election;

wherein said running totals are stored in an electrically erasable read only memory and the final results of said election are stored in a non-electrically erasable read only memory.

4,641,242 RADIATION IMAGE RECORDING AND REPRODUCING SYSTEM

Tsutomu Kimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

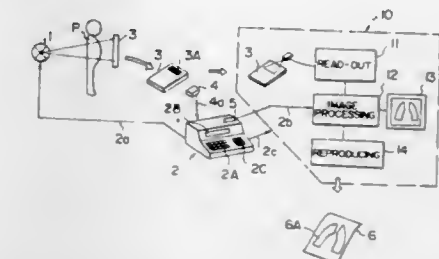
Filed Mar. 8, 1984, Ser. No. 587,717

Claims priority, application Japan, Mar. 11, 1983, 58-40508

Int. Cl.⁴ G01J 1/29

U.S. Cl. 364-414

6 Claims



1. In a radiation image recording and reproducing system wherein a radiation is caused to pass through an object, said system including means for exposing a stimulative phosphor to said radiation passing through said object whereby a radiation image of said object is stored in said stimulative phosphor, means for exposing said stimulative phosphor to stimulating rays to photoelectrically read out said radiation image stored in said stimulative phosphor and obtain an electric image signal, means for subjecting said electric image signal to image processing according to the type of image recording, and means for reproducing a visible image in accordance with said processed electric image signal,

the improvement comprising: means for adjusting the conditions of exposure to said radiation and the processing conditions of said image processing, including means for selecting in a single action the setting conditions predetermined according to the type of image recording.

4,641,243 COMPUTER-CONTROLLED INTERLOCKING SYSTEM FOR A RAILWAY INSTALLATION

Hans O. Hartkopf, Braunschweig, and Adalbert Zillmer, Wolfenbuettel, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

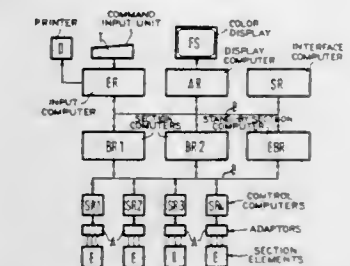
Filed Jun. 28, 1984, Ser. No. 625,530

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323269

Int. Cl.⁴ B61L 21/00; G06F 15/48

U.S. Cl. 364-436

4 Claims



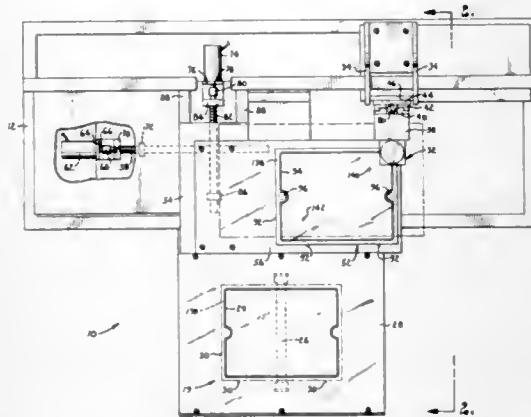
1. A computer-controlled interlocking system for a railway installation which comprises a plurality of sections each of which has an associated plurality of roadway elements, said interlocking system comprising:

a plurality of section computers for respective association with said sections, including means for fail-safe operations; each section computer connected to the associated roadway elements and comprising a respective program memory which is provided with programs relating to the processing of requirements for control, both individual and in relation to routes, of all the associated plurality of roadway elements independently of their presence and arrangement in the relevant section; each section computer also comprising a write/read memory for receiving and storing data relating to the railway installation topography and for receiving and storing data relating to the individual roadway elements in terms of element type, element program, element designation and the arrangement of the elements relative to neighboring elements; and an input computer connected in common to all the section computers, including means for fail-safe operations, said input computer including a read-only memory for storing said data relating to the railway installation topography and the individual roadway elements and to transfer said data to said write/read memories of the section computers during a loading phase which precedes operation of the system.

4,641,244 METHOD AND APPARATUS FOR REGISTERING COLOR SEPARATION FILM

Monti R. Wilson, Overland Park, Kans.; Victor E. Hutchison; William J. Bendure, both of Kansas City, Mo., and Frederick W. Anderson, Olathe, Kans., assignors to Opti-Copy, Inc., Lenexa, Kans.

Filed Apr. 5, 1985, Ser. No. 720,255
Int. Cl.⁴ G06F 15/46, 15/66; H04N 7/18, 1/40
U.S. Cl. 364-475 46 Claims



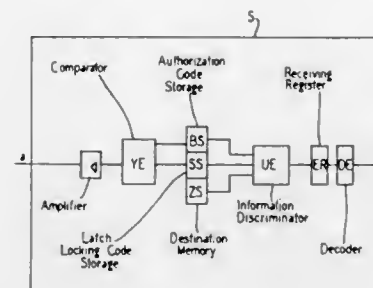
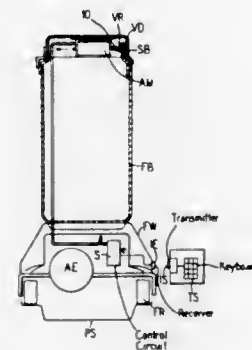
1. A method of registering a pair of color separation films containing halftone dot detail, said method comprising the steps of:
selecting one of the films as a reference film;
selecting first and second spaced apart locations on the reference film;
recording first and second pictures of portions of said reference film which are substantially centered at the respective first and second locations;
recording third and fourth pictures of portions of the other film centered at locations thereon which approximately correspond to but may be offset from the respective first and second locations;
analyzing each of said pictures to obtain a picture analysis therefrom; and
using the picture analyses to assist correlating said pictures to determine the translational movement necessary to

obtain registration of the first and third pictures and the second and fourth pictures.

4,641,245 CONVEYOR SYSTEM COMPRISING ELECTRICALLY DRIVEN CONVEYOR CARS THAT ARE CLOSEABLE BY MEANS OF A COVER

Klaus-Peter Dziggel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 601,155
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3313951
Int. Cl.⁴ B65G 35/00, 43/00
U.S. Cl. 364-478 14 Claims

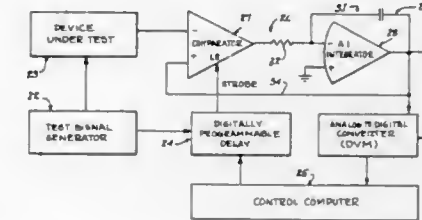


1. A conveyor system, comprising:
electrically driven conveyor cars for movement between dispatch stations and receiving stations each having a container space and a cover for closing said container space,
an electromechanical actuator,
a latch mounted for locking said cover and connected for actuation by said actuator for shifting to a cover locking position, and
control means for controlling release of said latch from the cover locking position, said control means including an authorization evaluation means for control by a latch locking code established in said conveyor car remotely of a receiving station, and said control means blocking release of said latch until a corresponding authorization code is input at a receiving station and evaluated by said authorization evaluation means as corresponding to the latch locking code.

4,641,246 SAMPLING WAVEFORM DIGITIZER FOR DYNAMIC TESTING OF HIGH SPEED DATA CONVERSION COMPONENTS

Joel M. Halbert, and Myron J. Koen, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Oct. 20, 1983, Ser. No. 543,853
Int. Cl.⁴ G01R 23/16; G06F 15/31
U.S. Cl. 364-487 60 Claims



1. A sampling waveform digitizer for the dynamic testing of high-speed data conversion devices comprising:
a source of waveform signal to be tested;
comparator means having at least first, second, and third inputs and at least one comparator output;
means for operably coupling said waveform signal to be tested to said first input of said comparator means;
means for integrating the output signal from said at least one comparator output of said comparator means;
means for feeding back the integrated output signal from the output of said integrating means to said second input of said comparator means to form a comparator-integrator loop means;
a control means for programmably selecting a sample point in the waveform signal being tested;
means responsive to said control means for generating a sequence of programmably narrow strobe pulses;
means for operably coupling said strobe pulses to said third input of said comparator means for repeatedly strobing said comparator means at a selected sample point until said means for feeding back said integrated output signal forces the signal present at the second input of said comparator means to oscillate about the sample value of the input waveform signal being tested at the first input for establishing an equilibrium condition; and
analog-to-digital converter means responsive to an equilibrium condition in said comparator-integrator loop means which results when the integrated output signal oscillates about the sampled value for reading said value and converting same into a digital equivalent value of the amplitude point read for storage, software processing and computer analysis.

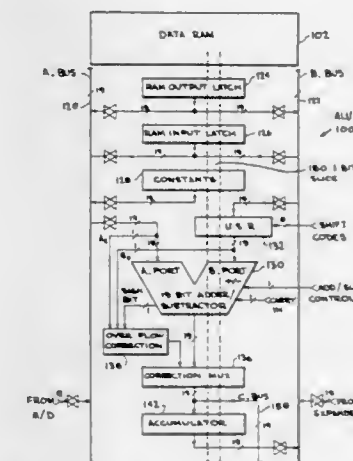
4,641,247 BIT-SLICED, DUAL-BUS DESIGN OF INTEGRATED CIRCUITS

Ronald C. Laugesen, Los Gatos, and Padmanabha I. Venkitakrishnan, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 30, 1985, Ser. No. 771,387
Int. Cl.⁴ G06F 15/60 8 Claims

1. A portion of a monolithic integrated circuit chip performing operations in parallel on a plurality of signals, comprising:
at least two plural-conductor time-division multiplexed bidirectional busses, each having a conductor carrying one of said plurality of signals operated on by said chip portion; and
a plurality of circuit elements each performing parallel operations on a predetermined one of said plurality of signals; wherein each said circuit element is assigned a predeter-

mined time-division slot of at least one of said busses and each said circuit element comprises a plurality of subele-

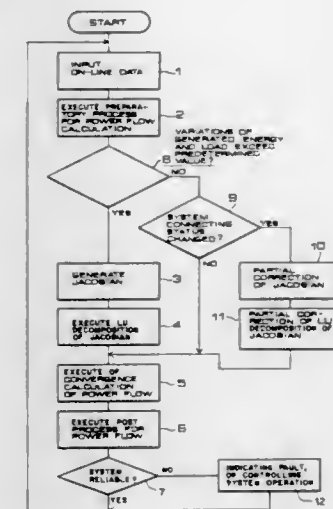


ments each connected to a predetermined one of said conductors of said at least one bus.

4,641,248 METHOD FOR DETERMINING RELIABILITY IN ELECTRIC POWER SYSTEM

Mamoru Suzuki, Tokyo, and Shinta Fukui, Hyogo, both of Japan, assignors to The Tokyo Electric Power Co., Inc. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,351
Claims priority, application Japan, Nov. 17, 1982, 57-201514
Int. Cl.⁴ G05B 9/02 4 Claims



1. A method for determining reliability in an electric power system, comprising the cyclically performed steps of:
inputting various data including data representing generated energy and load amount and connecting status of the power system;
executing a first calculation process with respect to a Jacobian;
executing a second calculation process for converging calculation of power flow;
executing a reliability decision process for determining the reliability of the power system from the result of said first and second calculation processes;
executing a first variation decision process for determining whether any variation shown in the data of the generated

energy and load is less than a predetermined value and carrying out said first calculation process if an affirmative result is obtained;

if a negative result is obtained in said first variation decision process, executing a second variation decision process for determining whether any change in the connecting status for the power system has occurred and carrying out said second calculation process if a negative result regarding the connecting status is obtained in said second decision process;

if an affirmative result is obtained in said second variation decision process, executing a third calculating process for partially correcting of the calculation result of said first calculation process regarding the Jacobian in a preceding cycle and then carrying out said second calculation process; and

executing a process for indicating a fault in the power system in response to a negative result in the reliability decision process.

4,641,249

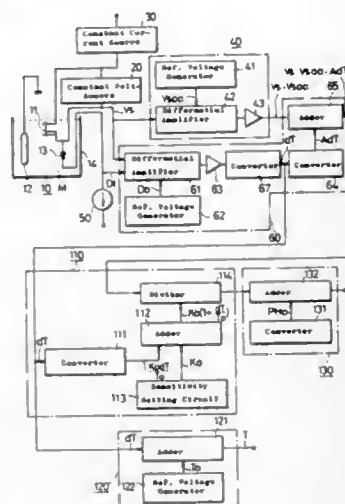
METHOD AND DEVICE FOR COMPENSATING TEMPERATURE-DEPENDENT CHARACTERISTIC CHANGES IN ION-SENSITIVE FET TRANSDUCER
Hidenori Glos; Kenji Kubota, both of Okayama; Michihiro Nakamura, Soja, and Makoto Yano, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan
Filed Jun. 19, 1984, Ser. No. 622,250

Claims priority, application Japan, Jun. 22, 1983, 58-113298; Apr. 24, 1984, 59-82698

Int. Cl. G01N 27/14, 27/46; G06F 15/42

U.S. Cl. 364-496

9 Claims



1. An ion activity monitoring device which comprises: a semi-conductor device including,
 - an ion-sensitive field-effect transistor for detecting the activity of ions in a liquid medium of interest, and developing an ion activity signal indicative thereof, and
 - a temperature sensor for detecting the temperature of the liquid medium of interest and developing a temperature signal indicative thereof;
- a constant current circuit for supplying to the ion-sensitive field-effect transistor a drain current satisfying the following relationship;

$$|Id/\beta| \leq 0.10 \text{ volt}^2$$

wherein I_d represents the drain current and β represents the channel characteristic value of the ion-sensitive field-effect transistor during the operation thereof; and

- a processing circuit, responsive to both the ion activity signal from the ion-sensitive field-effect transistor and the

temperature signal from the temperature sensor, for calculating the concentration of the ions in the liquid medium of interest, said processing circuit including,

temperature zero-adjustment compensating means for effecting a zero adjustment to the ion activity signal from the ion-sensitive field-effect transistor, and a zero adjustment to the temperature, signal from the temperature sensor, and

temperature sensitivity compensating means for adjusting the sensitivity of the monitoring device to the ion activity, based on both the ion activity signal and the temperature signal.

4,641,250

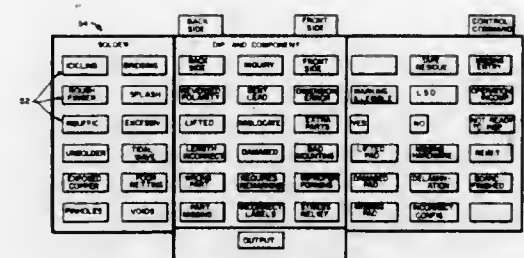
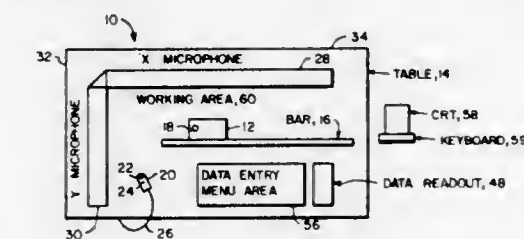
INSPECTION WORKSTATION DATA ENTRY METHOD
David Strong, Millersville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 11, 1984, Ser. No. 619,244

Int. Cl. G06F 15/46, 11/30

U.S. Cl. 364-507

3 Claims



3. An inspection workstation for use in a data entry method, said workstation comprising:

a table, said table having a substantially flat work area, said work area having a straight reference bar thereon, said bar acting as a stop against which an electronic assembly is placed during inspection;

means for receiving a sound in an orthogonal manner, said means for receiving being mounted about said work area, said means for receiving outputting signals upon receipt of an omitted sound, said signals corresponding to an x-y position upon said work area;

means for selectively emitting said sound, said means for emitting being hand transportable about said work area, said means for selectively emitting having aiming means, said aiming means positioning said means for selectively emitting said sound whereby when said emitted sound is received by said means for receiving, said output signals correspond to a position being a target of said aiming means;

a data entry menu, said menu being located near said work area, said menu having a plurality of items, each item being a statement relating to the inspecting of said electronic assembly being inspected, an inspector selecting said statement by use of said means for selectively emitting sound;

a display means, said display means being located near said table, said display means outputting information about said electronic assembly being inspected;

a data input means for inputting information; and

a processing means, said processing means connected to said means for receiving, said display means, and said data input means, said processing means having stored therein the location of said reference bar, information about said electronic assembly, and a program to process defect information of said electronic assembly.

4,641,251

ROBOT

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Tokyo, Japan

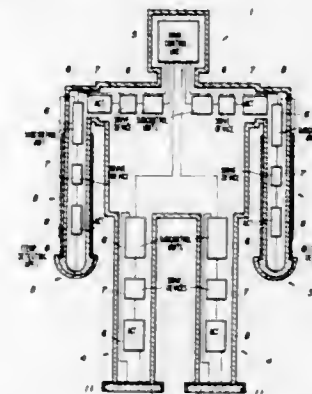
Filed Feb. 15, 1983, Ser. No. 466,521

Claims priority, application Japan, Feb. 16, 1982, 57-22117; Feb. 18, 1982, 57-23565

Int. Cl. G05B 19/42

U.S. Cl. 364-513

29 Claims



1. A robot comprising: a plurality of operating portions, said robot having overall movements and individual movements of the respective operating portions, a main control means for controlling overall movements of the robot; at least one detecting means in each operating portion of the robot for detecting the exterior environment around each of said operating portions; and at least one subcontrol means for individually controlling the operations of each of said operating portions in accordance with output from said main control means and output from the respective said detecting means, means associated with at least one of said main control means and said subcontrol means for providing a learning function for the associated means by which when said operating portions of the robot are initially moved by an external force, the course of movement is memorized and thereafter the same motion can be repeatedly carried out, said means for providing a learning function when the operating portions of the robot are initially moved by an external force comprising means for producing a plot of the course of travel of a specific point on said operating portion during movement of said operating portion; means for dividing said course into a number of intervals; means for replacing the course of travel in each interval by an approximation of a straight line or a circular arc to produce an approximation course of travel consisting of straight lines and circular arcs; and means for memorizing the travel of said specific point along said approximation course of travel, said means for dividing said course of travel of the specific point into a number of intervals and said means for replacing the course of travel of each interval by the straight line or circular arc comprising:
 - (a) means for calculating and temporarily recording locations (designated as passing points) of said specific point corresponding to each state of the robot in the course of

its motion, each of said states being sequentially and time-divisionally recorded to define the motion of the robot;

(b) means for effecting a straight line checking step in which the longest approximation line segment is determined, said segments connecting the starting point of the course of travel (X_0, Y_0, Z_0) and the "i"th passing point (X_i, Y_i, Z_i), (wherein "i" is larger than a predetermined minimum limit value i-min), said passing points being successively located on the course of travel from the starting point (X_0, Y_0, Z_0) to the end point (X_z, Y_z, Z_z), wherein all of deviation distances L_{ij} do not exceed a permissive error E and the value of i is maximum, said distances L_{ij} being defined by the distances between said longest segment and each passing point (X_j, Y_j, Z_j) which is located between said two points, (wherein $j=1, 2, \dots, (i-1)$);

(c) means for effecting a straight line interval setting step when the solution $i=n$ is obtained in means (b), wherein the segment which connects the starting point (X_0, Y_0, Z_0) and the point (X_n, Y_n, Z_n) is set as the interval for the straight line, the data of said segment being recorded;

(d) means for effecting a circular arc checking step when no solution is obtained in means (b), wherein an optimum circular arc is obtained, in which all of the deviation distances D_{kj} do not exceed the permissive error E and the value of j is maximum, said optimum circular arc being selected from circular arcs which are defined by three points consisting of the starting point (X_0, Y_0, Z_0), the "k"th passing point (X_k, Y_k, Z_k) from said starting point (X_0, Y_0, Z_0), (wherein k is larger than a predetermined minimum limit value k-min), and an arbitrary passing point (X_s, Y_s, Z_s) which is located between said two points, said distances D_{kj} being defined by the distances between said circular arc and other passing points (X_l, Y_l, Z_l) which are located between said two points; means for effecting a circular arc interval setting when the solution $j=m$ is obtained in means (d), wherein the circular arc which connects said starting point (X_0, Y_0, Z_0), and said passing points (X_s, Y_s, Z_s) and (X_m, Y_m, Z_m) is set as the interval for the circular arc, and the data of said circular arc are recorded; and

(e) means for repeating the calculations to set the course of travel continuously over the entire interval, in which the end point (X_n, Y_n, Z_n) or (X_m, Y_m, Z_m) of the interval which is obtained by means (c) or (e) is set as the successive starting point, and the same calculations by means (b)-(e) are executed, and repeated successively for the passing points from said starting point to the final end point (X_z, Y_z, Z_z), to produce the continuous approximation course of travel.

4,641,252

ELECTRON BEAM DRAWING CONTROL SYSTEM
Masakazu Tokita, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,982

Claims priority, application Japan, Oct. 1, 1981, 56-156641; Oct. 22, 1981, 56-169328

Int. Cl. G06F 15/00

U.S. Cl. 364-518

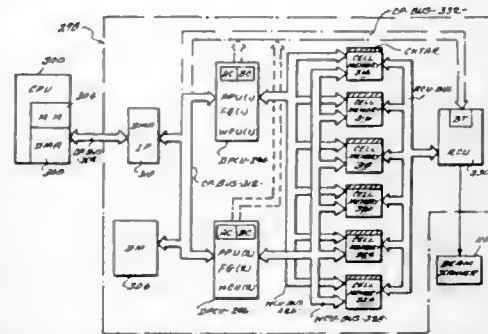
16 Claims

1. An electron beam drawing control system comprising: first memory means for storing parametric data describing at least one of the size, location and shape of figures to be drawn;

a plurality of dot pattern converting means for collectively reading out said parametric data sequentially from said first memory means and for generating dot pattern data corresponding to said figures, said plurality of converting means all operating simultaneously to simultaneously convert a plurality of said parametric data to dot pattern data so that said parametric data representing figures to be drawn is converted more quickly than if a single dot pattern converting means is employed;

a plurality of second memory means for storing dot pattern

data generated by said plurality of dot pattern converting means in the same order as parametric data is read from said first memory means and converted by said plurality of converting means, a plurality of said second memory means being provided to enable said plurality of converting means to store dot pattern data without delay; and

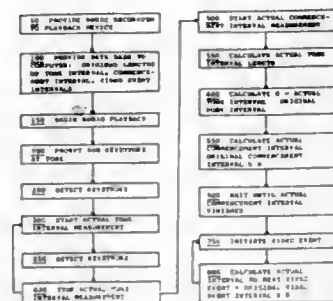


read control means for reading out said dot pattern data from said plurality of second memory means in the same order as said dot pattern data was stored in said second memory means, said plurality of converting means and said plurality of second memory means allowing the rate of data read out by said read control means to be greater than if a single converting means and single second memory means are employed.

4,641,253 PROCESS FOR SYNCHRONIZING COMPUTER VIDEO WITH INDEPENDENT AUDIO

David V. Mastran, Great Falls, Va., assignor to Maximus, Inc., McLean, Va.

Filed Jun. 6, 1984, Ser. No. 617,915
Int. Cl.⁴ G06F 3/153, 15/44; G11B 31/00
U.S. Cl. 364-518 16 Claims



1. A method for synchronous presentation of independent audio program and video program generated by a digital computer, comprising:

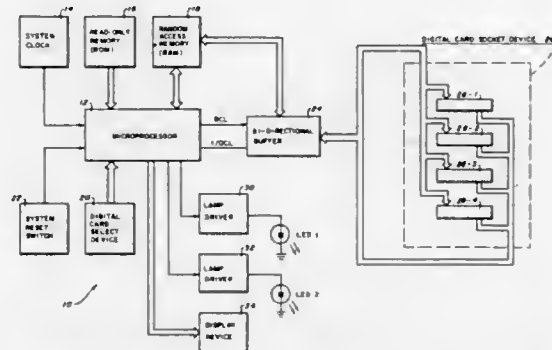
- providing an audio recording to an independent audio playback device, said audio recording comprising at least two consecutive cue tones at known original intervals, followed by an audio program commencing at a known original commencement interval after a last one of said consecutive cue tones;
- providing a database to said computer comprising at least said known original cue tone intervals, said known original commencement interval, and a plurality of original video graphics event intervals for a video program comprising a plurality of videographics events to be synchronized with said audio program;
- starting said audio playback device to play said recording;
- initiating an interval timer in said computer when one of said cue tones is played;
- stopping said interval timer in said computer when a next subsequent one of said cue tones is played, and determin-

- ing an actual time interval between said cue tones as played on said audio playback device;
- repeating steps d and e for each of said known original intervals between said cue tones;
- calculating in the computer a ratio R equal to the actual cue tone interval divided by the corresponding original cue tone interval;
- initiating said interval timer and waiting an actual commencement interval equal to the original commencement interval multiplied by R; and
- repeatedly initiating said interval timer, and display video graphics events, at actual video graphics event intervals corresponding to said original video graphics event intervals multiplied by R.

4,641,254 TEST SET FOR A NAVIGATIONAL SATELLITE RECEIVER

Donald L. Mitchell, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1984, Ser. No. 620,658
Int. Cl.⁴ G01R 31/28; G06F 11/22
U.S. Cl. 364-580 9 Claims



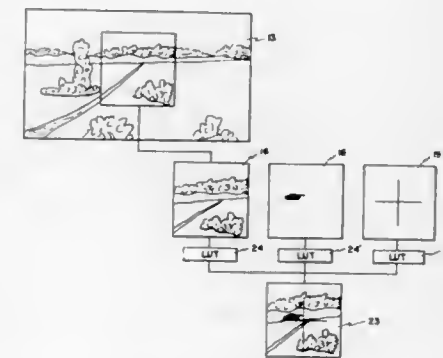
1. A digital card tester section of a test set for detecting the reduced capabilities of an associated navigational satellite receiver, said digital card tester section being configured to generate signals (signatures) for testing and isolating faults in a predetermined number of digital system cards of the associated navigational satellite receiver according to a predetermined program, said digital tester card section comprising:

- a read-only memory (ROM) being configured to store the predetermined program which corresponds to at least the signatures of the predetermined numbers of digital system cards under test;
- a random access memory (RAM) being configured to permit data, in the form of the signatures, and in the form of responses, from the predetermined number of digital cards under test to be stored or retrieved at comparable intervals according to predetermined periodic signals;
- a system clock for generating the predetermined periodic signals for proper synchronization of signatures, responsive signals, and timing signals;
- a microprocessor operatively connected to said ROM, to said RAM and to said system clock for decoding and executing the predetermined program stored in said ROM;
- connection means for operatively connecting the predetermined number of digital system cards under test to said microprocessor and said RAM;
- initialization means operatively connected to said microprocessor for instituting initialization thereof, and of said ROM and said RAM; and
- display means operatively connected to said microprocessor for displaying the output of the RAM for the predeter-

mined number of digital system cards, and for indicating the faults therein

4,641,255 APPARATUS FOR SIMULATION OF VISUAL FIELDS OF VIEW

Thomas Hohmann, Hanau, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany
Continuation of Ser. No. 736,980, May 22, 1985, abandoned, which is a continuation of Ser. No. 443,005, Nov. 19, 1982, abandoned. This application Jan. 21, 1986, Ser. No. 821,509
Int. Cl.⁴ G06F 16/626; G09G 1/14
U.S. Cl. 364-522 7 Claims



1. In apparatus for simulating a visual field of view for training in a battle situation including means for displaying the image of a background on a TV-monitor in the field of view of an optical system used by a person to be trained, said image of said background being digitally stored, and including changeable addressing means whereby different partial cut-outs from said background image may be selectively displayed on said TV-monitor, the improvement comprising:

- a buffer storage memory;
- means for loading a first partial cut-out from said background image into said buffer memory, said means for loading including means for loading a subsequent partial cut-out from said background having a changed address in such manner that so much of said subsequent partial cut-out as overlaps said initial partial cut-out remains in said buffer memory with only so much of said subsequent partial cut-out as differs from said initial cut-out being loaded into the buffer memory, replacing so much of said first partial cut-out as differs from said subsequent partial cut-out, said loading means including first addressing means for selectively controlling said loading of said buffer memory; and
- readout means for selectively coupling said buffer memory to said TV-monitor, said readout means including modulo (m-1) row address counter (37) and a modulo (n-1) column address counter wherein m and n are numbers representing powers of two.

4,641,256 SYSTEM AND METHOD FOR MEASURING ENERGY TRANSMISSION THROUGH A MOVING APERTURE PATTERN

Joseph E. Marchegiano, Wilmington, Del., and Anthony S. Baran, Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 4, 1984, Ser. No. 678,211
Int. Cl.⁴ G01N 21/00, 21/84
U.S. Cl. 364-525 21 Claims

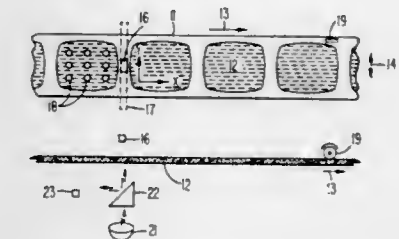
1. A system for measuring energy transmission through an aperture pattern in a longitudinally moving opaque strip of material, comprising:

- means for scanning energy transversely across said strip;
- a CCD (charge coupled device) sensor having at least one

row of pixels arranged substantially perpendicular to said strip, and having at least one pixel centered over said strip when said strip is located at an optimum location; said CCD being positioned to receive said energy through said apertures;

means for defining inspection areas within said aperture pattern where energy transmission through said aperture pattern is measured;

said inspection areas being defined by preselected pixels of said CCD when said CCD is scanned by energy passing through said inspection areas;



encoder means responsive to said longitudinal motion for providing count pulses;

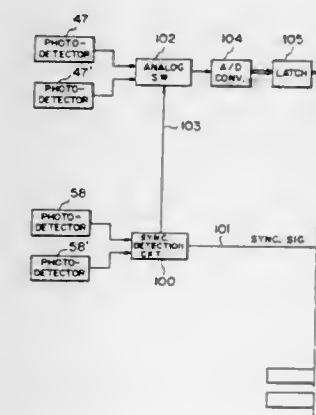
counter means responsive to said count pulses, said inspection areas being scanned by said energy on preselected counts, whereby the energy levels on said preselected CCD pixels is indicative of energy transmission through said aperture patterns; and

adder means responsive to said preselected pixel levels for adding said pixel levels for each of said inspection areas, and providing the energy transmission through each of said inspection areas.

4,641,257 MEASUREMENT METHOD AND APPARATUS FOR ALIGNMENT

Naoki Ayata, Machida, Japan, assignor to Canon Kabushiki Kaisha, Japan

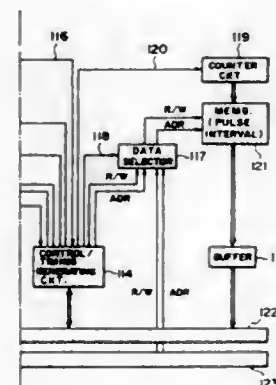
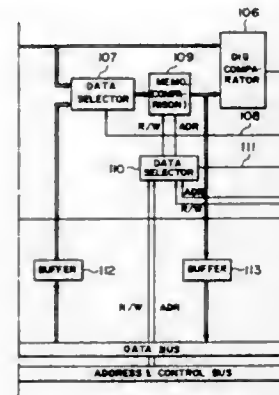
Filed Jul. 2, 1984, Ser. No. 626,990
Claims priority, application Japan, Jul. 7, 1983, 58-122342;
Jul. 7, 1983, 58-122345
Int. Cl.⁴ G01B 11/00; H04N 7/18
U.S. Cl. 364-559 3 Claims



1. A measurement apparatus, comprising:

- detecting means for detecting a mark on each of a plurality of objects and for producing a signal having a peak value in response to the detection of each of the marks, so as to form a series of signals;

peak detecting means for detecting the peak values of the signals;
means for determining a slice level for each of the peak values detected by said peak detecting means; and



means for sequentially comparing the signals with their respective slice levels, as determined by said slice level determining means, and for determining an interval between the marks on the basis of the comparison.

4,641,258

ELECTRONIC COMPUTER WITH AURAL OUTPUT
Tsuyoshi Kawasabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 639,622, Aug. 9, 1984, abandoned, which is a continuation of Ser. No. 442,902, Nov. 19, 1982, abandoned, which is a continuation of Ser. No. 197,592, Oct. 16, 1980, abandoned. This application Sep. 30, 1985, Ser. No. 781,321

Claims priority, application Japan, Oct. 17, 1979, 54-132827
Int. Cl.⁴ G06F 3/16

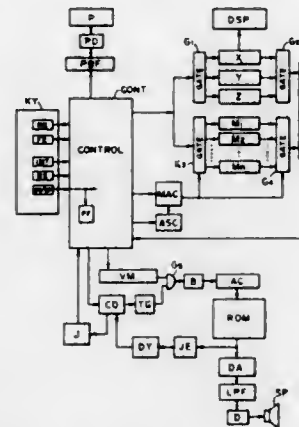
U.S. Cl. 364-710

7 Claims

1. An electronic apparatus for producing a voice output comprising:

- a first manually operable key;
- a second manually operable key;
- data memory means for storing data;
- voice memory means for storing voice information corresponding to said data stored in said data memory means for providing a voice output from said apparatus;
- address means for addressing said data memory means to read out data stored therein;
- first control means connected to and responsive to actuation of said first manually operable key for controlling said address means to address said data memory means in a first order to read out said data therefrom and for controlling the reading out of said voice information from said voice

memory means in accordance with said data read out from said data memory means; and
second control means connected to and responsive to actuation of said second manually operable key upon stopping of the operation of said address means by said first control means for controlling said address means to step back the address of said data memory means addressed in the first



order to a stepped-back address preceding the last address addressed by said address means and for thereby repeating the reading out of said voice information automatically from said voice memory means in accordance with the data read out from said data memory means beginning with said stepped-back address which becomes a start address for reading out data in the first order from said data memory means.

4,641,259

ADAPTIVE SIGNAL PROCESSING ARRAY WITH SUPPRESSION OF COHERENT AND NON-COHERENT INTERFERING SIGNALS

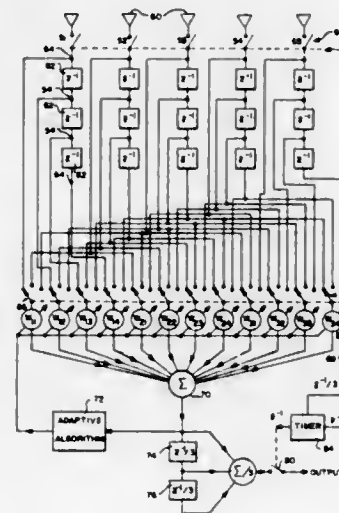
Tiejun J. Shan, and Thomas Kailath, both of Stanford, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jan. 23, 1984, Ser. No. 572,997

Int. Cl.⁴ G06F 15/31

U.S. Cl. 364-724

6 Claims



1. An adaptive signal processing array comprising
a plurality of signal detectors,
a plurality of variable weighting means each connected to

one of said signal detectors for weighting signals from said detectors,
means for grouping said weighting means into sub-groups of less than all of said plurality of weighting means for weighting sub-groups of signals,
first summing means connected with said subgroups of weighting means for summing said weighted signals of each sub-group and producing a first summed signal,
means including an adaptive algorithm processor for operating on said first summed signal and producing a feedback signal, and
means connecting said feedback signal to said plurality of variable weighting means for adjusting the variable weights thereof.

4,641,260

DIGITAL SIGNAL PROCESSING APPARATUS FOR A BLOOD FLOWMETER USING ULTRASOUND DOPPLER EFFECT

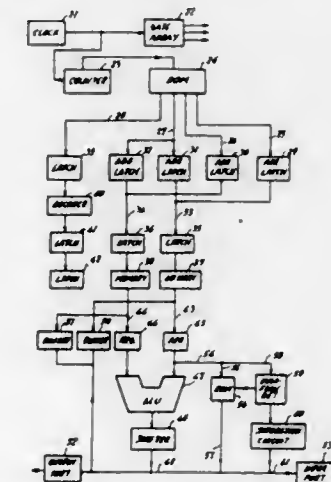
Hiroshi Fukukita, Tokyo; Ryobun Tachita, Kawasaki; Kuniaki Fukaya, Atsugi, and Tetsuhiro Yano, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Dec. 5, 1983, Ser. No. 558,274

Claims priority, application Japan, Dec. 3, 1982, 57-212934

Int. Cl.⁴ G06F 11/00, 15/35, 15/42, 7/34

U.S. Cl. 364-737

6 Claims



1. A digital signal processing apparatus comprising
a digital processing means,
n-bit input and output data bus lines for said digital processing means,
a memory means for transferring and receiving data to and from said digital processing means,
a fixed instruction generating means for generating operating code for said digital processing means and addresses for said memory means,
a read only memory for performing a squaring operation and having a l-bit address input and a k-bit output, the address input of which is bit position m to m+1-1 of the n-bit input data bus line of said digital processing means, and the output data of which is bit position n-k to n-1 of the n-bit output data bus line of said digital processing means, an overflow detecting means having an input of bit positions m+1-1 to n-1 of said n-bit input data bus line, and
a j-bit output digital saturation circuit means connected to bit positions n-j to n-1 of said n-bit output data bus line, where j, k, l, m and n are integers having a relationship expressed by:

$$j, k, l, m < n.$$

4,641,261

UNIVERSAL INTERFACE CIRCUIT FOR MICROPROCESSOR PERIPHERALS

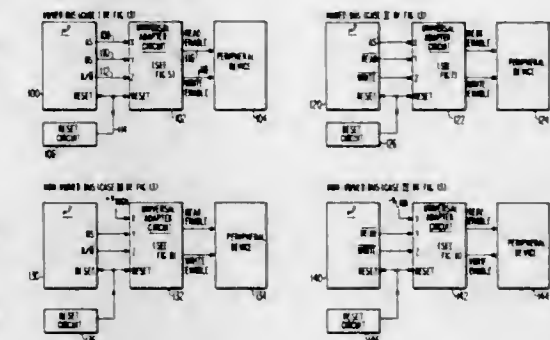
Robert A. Dwyer, Readington Township, Hunterdon County, and Russell G. Ott, Cranford Township, Union County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 21, 1984, Ser. No. 612,427

Int. Cl.⁴ G06F 13/42

U.S. Cl. 364-900

8 Claims



1. A universal interface adapter circuit (UIAC) for connecting between any of four microprocessor types and a peripheral device of the type which functions in response to either a READ ENABLE signal or a WRITE ENABLE signal, the first and second of said four microprocessor types being employed in a multiplexed bus system and having an address strobe output terminal producing an address strobe signal which, when operative, alternates between a high level value and a low level value, said first and third microprocessor types having a read/write output terminal which, when operative, produces a signal the value of which determines whether a read of data or a write of data is occurring and has a data strobe output terminal which, when operative, produces a signal in the form of pulses to indicate when the read or write of data is occurring, said second and fourth microprocessor types having a read output terminal, which, when operative, produces a read output signal to indicate the timing of the read of data and having a write output terminal which, when operative, produces a write signal to indicate the timing of the write of data, the two signals being mutually exclusive, said universal interface adapter circuit comprising, in combination,

a first input terminal connected to said address strobe signal terminal if either of said first and second microprocessor types is connected to said UIAC or connected to a constant level signal, the value of which is dependent on whether said third type or fourth type microprocessor is connected to said UIAC;

second and third input terminals connected respectively to said data strobe signal terminal and read/write signal terminal if either of said first and third microprocessor types is connected to said UIAC or connected respectively to said read and write signal terminals if either of said second and fourth microprocessor types is connected to said UIAC;

first means coupled to said first input terminal for generating a signal the value of which is determinative of whether or not said signal applied to said UIAC first terminal alternates in value and, therefore, for determining whether either of said first and second type microprocessor types is connected to said UIAC or whether either of said third and fourth microprocessor types is so connected;
second means responsive to the signal from said first means when it is of a value indicating that said microprocessor of either of said third and fourth type is connected to said UIAC and responsive to the value of signal at said first input terminal for producing a signal determinative of whether a third microprocessor type is connected to

UIAC or whether a fourth microprocessor type is connected to said UIAC;
 third means responsive to the signal from said first means, when it is of a value indicating said first or second microprocessor type is connected to said UIAC, and responsive to value of signal on said second output terminal for producing a signal determinative of whether said first microprocessor type is connected to said UIAC or said second microprocessor type is connected to said UIAC; and
 fourth means responsive to said signals indicative of which one of said four microprocessor types is connected to said UIAC and to a signal applied to said second and third terminals for producing said READ ENABLE or WRITE ENABLE signal.

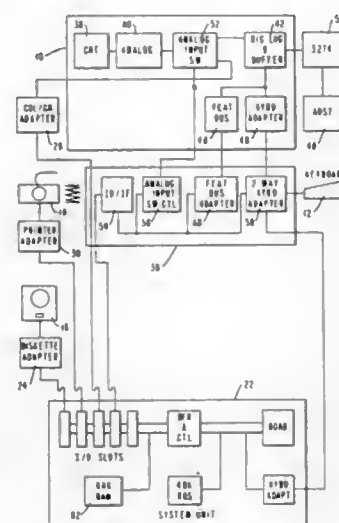
4,641,262 PERSONAL COMPUTER ATTACHMENT FOR HOST SYSTEM DISPLAY STATION

Barry L. Bryan, Woodstock; Martin Drucker, Poughkeepsie; Allen W. McDowell, Lake Katrine; Ira H. Schneider, Kingston, and Gary L. Newkirk, New Paltz, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 473,058, Mar. 7, 1983, abandoned. This application Mar. 2, 1984, Ser. No. 585,813
 Int. Cl. G06Z 15/00, 3/00

U.S. Cl. 364-900

16 Claims



1. A personal computer attachment for a display station of the type that communicates with a host computer for the purpose of accessing data and running programs on said host computer, said display station having a display unit and a keyboard, said display unit including display means for displaying an image, buffer means for supplying image data to said display means, keyboard adapter means for receiving keyboard signals from said keyboard, feature bus means for connecting optional features to said display station, and means for providing an interface to a controller external to said display station and for providing a communication link between said buffer means, said keyboard adapter means and said feature bus means, said personal computer attachment comprising:

- a personal computer system unit including a system bus, a microprocessor, memory means and keyboard adapter connected to said system bus, and input/output means connected to said system bus for providing an interface to external devices, said input/output means including a display adapter having a buffer for supplying image data to a display means,
- switch means disposed between said display means and said buffer means in said display station and also connected to said display adapter for selectively supplying image data

from said buffer means or said display adapter to said display means, and
 an attachment adapter including an input/output interface, a switch control, a two-way keyboard adapter, and a feature bus adapter, said keyboard being connected to said two-way keyboard adapter, and each of said switch control, two-way keyboard adapter and feature bus adapter communicating with said system bus of said personal computer system unit via said input/output interface, said switch control further being connected to a control input of said switch means, said two-way keyboard adapter further being connected to said keyboard adapter means in said display station and to said keyboard adapter in said personal computer system unit, and said feature bus adapter further being connected to said feature bus means in said display station whereby keystroke signals from said keyboard are transmitted by said two-way keyboard adapter via said input/output interface and system bus to said memory means of said personal computer for interpretation by said microprocessor and then retransmitted back to said two-way keyboard adapter and either to said keyboard adapter means in said display station or to said keyboard adapter in said personal computer system unit and said switch control being responsive to a unique keystroke signal generated by said keyboard to control said switch means.

4,641,263 CONTROLLER SYSTEM FOR EMULATING LOCAL PARALLEL MINICOMPUTER/PRINTER INTERFACE AND TRANSFERRING SERIAL DATA TO REMOTE LINE PRINTER

Eugene H. Perlman, Bedford, N.Y., Laurence MacNaughton, III, Hampton, Conn., and Thomas Loucas, Riverside, Conn., assignors to Digital Associates Corporation, Bridgeport, Conn.

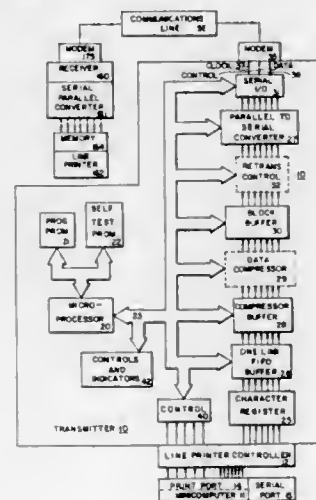
Continuation of Ser. No. 378,793, May 17, 1982, abandoned.

This application Jun. 11, 1984, Ser. No. 618,994

Int. Cl. G06F 3/12, 3/023, 11/10, 15/16

U.S. Cl. 364-900

8 Claims



1. A remote line printer system for printing data at a remote location comprising:

- (a) a conventional minicomputer having a print port dedicated to driving a local line-by-line printer and at which the bits of each data character and each control character appear in parallel, said conventional minicomputer also having a communications port dedicated to transmitting data to a remote location and at which the bits of a data character to be transmitted appear in series;
- (b) line printer controller means coupled to said print port for receiving data character and control character bits in

parallel, said line printer controller means emulating the interface between said conventional minicomputer and a local line-by-line printer;

- (c) character register means coupled to the output of said line printer controller means for storing characters of data;
- (d) block buffer storage means coupled to the output of said character register means for storing a plurality of characters comprising one or more lines of characters to be printed;
- (e) first microprocessor means;
- (f) parallel-to-serial conversion means comprising a circuit controlled by said first microprocessor means coupled to the output of said block buffer storage means and responsive to the parallel bits of data characters for converting the data characters from parallel to serial representation;
- (g) communications means coupled to said parallel-to-serial conversion means and controlled by said first microprocessor means for transmitting character data serially to said remote location;
- (h) data compression means controlled by said first microprocessor means for suppressing trailing blanks and encoding iterations of the same character such that a string of up to 64 characters can be transmitted as a 3-character sequence;
- (i) said first microprocessor means also controlling the encoding and transmission of control status and control signals via said communications means;
- (j) said first microprocessor means also controlling errors by error detection and retransmission to correct errors in character data transmitted by said parallel-to-serial conversion means to said remote location;
- (k) serial-to-parallel conversion means at the remote location coupled to said communications means for converting serial character data to parallel character data; and
- (l) line printer means at the remote location coupled to said serial-to-parallel conversion means for storing the parallel character data and then printing stored characters line by line, said line printer means including error checking means for generating and transmitting, via said communications means, to said parallel-to-serial conversion means a retransmission signal if any character is erroneously received.

4,641,264 METHOD FOR AUTOMATIC TRANSLATION BETWEEN NATURAL LANGUAGES

Yoshihiko Nitta, Fujisawa; Atsushi Okajima, Yokohama, and Fumiyuki Yamano, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,601

Claims priority, application Japan, Sep. 4, 1981, 56-138586

Int. Cl. G06F 15/38

U.S. Cl. 364-900

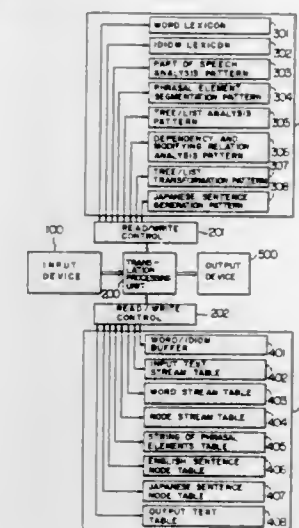
18 Claims

1. An automatic translation method between natural languages using a translation processing apparatus to which an input text sentence composed of a natural language is inputted in the form of an electrical signal from an input device and which carries out predetermined translation processes by referring to an electronic data storage device having a word/idiom lexicon storage area in which target language equivalent information and a plurality of table storage areas in which tables defining predetermined translation rules are stored, said method comprising:

- (a) a first step of assigning parts of speech to a string of words/idioms of the input text sentence inputted from said input device by referring to said word/idiom lexicon storage area of said electronic data storage device so as to provide a corresponding string of parts of speech;
- (b) a second step of dividing the input text sentence transformed in the form of said string of parts of speech into phrasal elements which are minimum units having linguistic meanings and assigning phrasal parts of speech to the

respective phrasal elements by referring to a first table storage area of said electronic data storage device in which a table indicating a relation between patterns of strings of predetermined parts of speech which form the phrasal elements and phrasal parts of speech of the phrasal elements is stored;

- (c) a third step of comparing the sequence of phrasal parts of speech assigned to the phrasal elements and the words/idioms with predetermined strings of parts of speech to assign syntactic roles to the respective phrasal elements and words/idioms, said predetermined strings of parts of speech being stored in a second table storage area of said electronic data storage device together with the syntactic roles associated therewith;
- (d) a fourth step of detecting patterns representing a simple sentence, a clause and a quasi-clause from the string of syntactic roles to transform the input text sentence to a skeleton pattern represented by a combination of said patterns;



- (e) a fifth step of transforming the sequence of simple sentence, clause and quasi-clause inherent to the input language which forms the skeleton pattern to a sequence of simple sentence, clause and quasi-clause inherent to an output language by applying a predetermined transformation rule which is stored in a third table storage area of said electronic data storage device;
- (f) a sixth step of transforming the sequence of syntactic roles inherent to the input language within each of the simple sentence, clause and quasi-clause which forms said transformed skeleton pattern to a sequence of syntactic roles inherent to the output language by applying a predetermined transformation rule; and
- (g) a seventh step of assigning target language equivalents to the respective ones of the transformed string of syntactic roles to generate a sentence in the output language in the form of an electrical output signal.

4,641,265 SYSTEM FOR CONTROLLING THE PROPORTION OF LEAF VEIN IN TOBACCO RAW MATERIAL TREATING PROCESS

Kenichi Kagawa, Hiratsuka, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Jul. 27, 1984, Ser. No. 635,274

Claims priority, application Japan, Jul. 27, 1983, 58-135784

Int. Cl. G05B 13/02; A24B 5/10; G06F 15/46

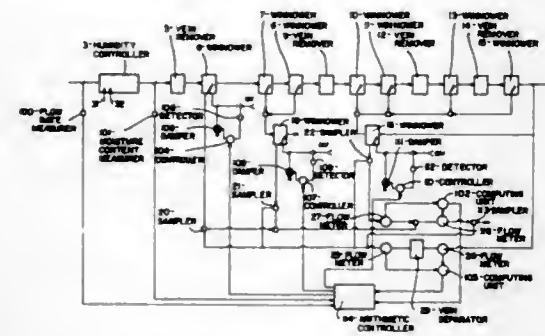
U.S. Cl. 364-153

6 Claims

1. A system for controlling the proportion of leaf vein in leaf

lamina produced in a tobacco leaf treating system having a humidity controller for adjusting the temperature and moisture content of raw leaf tobacco to levels necessary for the removal of leaf vein, means for feeding the raw leaf tobacco into said humidity controller, means for removing leaf vein from leaf lamina, and winnowing means for separating the removed leaf vein and the leaf lamina, said winnowing means having means for blowing air at predetermined velocities in said winnowing means, said control system comprising:

- means for measuring the flow rate of the raw leaf tobacco into said treating system;
- means for measuring the moisture content of the raw leaf tobacco from said humidity controller;
- means for selectively sampling the lamina output of said winnowing means;

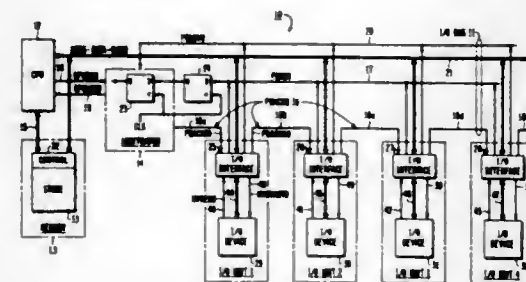


means for measuring the proportion of leaf vein in the lamina samples;

arithmetic controlling means for inputting the flow rate determined by said flow rate measuring means and the moisture content determined by said moisture content measuring means and calculating an optimum air velocity for said winnowing means so that the leaf vein proportion is within a certain range of a predetermined value, said arithmetic controlling means including feedback means for simultaneously inputting the leaf vein proportion determined by said leaf vein proportion measuring means and, based thereon, adjusting the calculated optimum air velocity; and,

means for regulating the air velocity in said winnowing means based on the calculated optimum air velocity.

4,641,266
ACCESS-ARBITRATION SCHEME
 Patrick M. Walsh, Chicago, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Nov. 28, 1983, Ser. No. 555,695
 Int. Cl.⁴ G06F 13/24
 U.S. Cl. 364-200
 23 Claims



1. A processing system comprising:
 a plurality of resource users;
 a resource shared by the plurality of users;

an arbitrator for controlling access by the plurality of users to the resource;

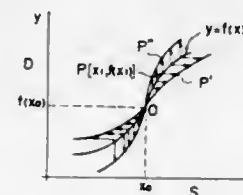
first means coupling the plurality of users to the arbitrator for conveying requests for resource access from the plurality of users to the arbitrator;

second means coupling the arbitrator and the plurality of users in a chain for conveying grants of resource access from the arbitrator to the users;

means associated with each user and coupled to the first conveying means for preventing the associated user from issuing a request for resource access on the first conveying means, while another user has a request for resource access pending with the arbitrator; and

means associated with each user and cooperative with the second conveying means for causing the associated user to continue issuing its issued request for resource access on the first conveying means until termination of receipt at the associated user of a grant of resource access on the second conveying means.

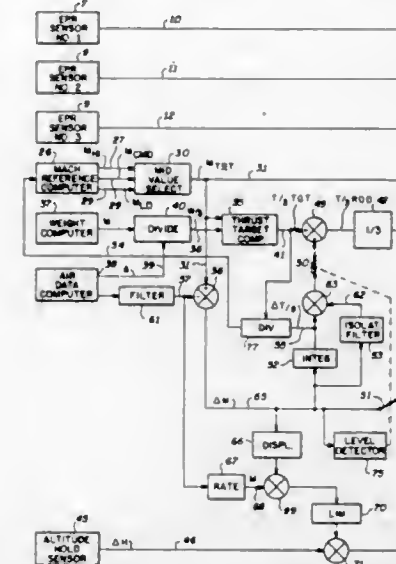
4,641,267
GRADATION CORRECTION CURVE CREATING METHOD AND APPARATUS
 Eichi Asai, Hiroshi Tanaka, and Nobuaki Higashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Nov. 1, 1983, Ser. No. 547,620
 Claims priority, application Japan, Nov. 4, 1982, 57-193770
 Int. Cl.⁴ G06F 15/42; G06G 7/60; H04N 1/40; H01Q 21/00
 U.S. Cl. 364-414
 5 Claims



1. A method of creating a curve for correcting the gradation of a radiation image which is first recorded in a stimulative phosphor as a pattern of radiation energy having a radiation energy level wherein said stimulative phosphor is then scanned with stimulating rays to cause the stimulative phosphor to emit light of an amount proportional to the level of the stored radiation energy, the emitted light is then detected and converted to an electric signal having an electric signal level corresponding to the emitted amount of the light, and a visible image corresponding to said radiation image can then be reproduced on a recording material by use of the electric signal, the method of creating a curve for correcting gradation of the radiation image comprising the steps of:

- creating several reference curves on an orthogonal system of signal level-optical density coordinates wherein the optical density of the visible image reproduced on said recording material is plotted on one coordinate axis and the level of said electric signal is plotted on the other coordinate axis,
- selecting one of said reference curves, and
- rotating the selected reference curve around a point on said reference curve on said coordinate system, and/or parallel-shifting said reference curve on said coordinate system, thereby obtaining a desired gradation correction curve.

4,641,268
CRUISE AIRSPEED CONTROL FOR AIRCRAFT
 Terry L. Zweifel, Phoenix, and Harry Miller, Scottsdale, both of Ariz., assignors to Sperry Corporation, New York, N.Y.
 Filed Jan. 27, 1983, Ser. No. 461,357
 Int. Cl.⁴ G05D 1/08; G06F 15/50
 U.S. Cl. 364-440
 11 Claims



1. A speed control system for aircraft having an automatic throttle control means for controlling the thrust imparted to the aircraft and having first dynamic response characteristics and an automatic altitude control means for controlling pitch attitude to maintain a predetermined altitude and having second dynamic response characteristics comprising:

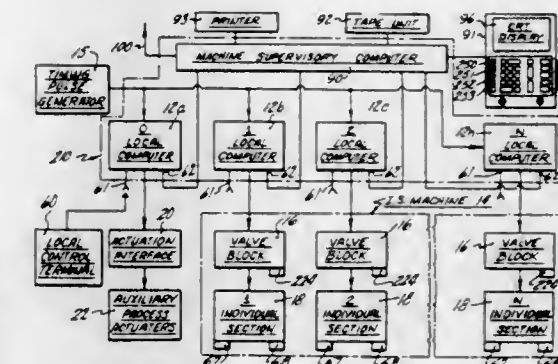
- means providing a speed error signal proportional to the difference between a reference speed and the actual speed,
- means providing an altitude error signal proportional to the difference between a reference altitude and the actual altitude,
- first integrator means responsive to said speed error signal for controlling said throttle control means,
- second integrator means responsive to said altitude error signal and said speed error signal for controlling said altitude control means, and
- isolation filter means responsive to said speed error signal for additionally controlling said throttle control means, said filter having a frequency response to said speed error signal such as to minimize interference between said first and second dynamic response characteristics by accepting long term changes in airspeed and rejecting short term changes in airspeed due to changes in pitch attitude.

4,641,269
PROGRAMMABLE CONTROL SYSTEM FOR GLASSWARE FORMING MACHINES
 Robert J. Japenga, Simsbury, and Paul F. Scott, Granby, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.
 Continuation of Ser. No. 765,566, Aug. 13, 1985, abandoned, which is a continuation of Ser. No. 461,086, Jan. 26, 1983, abandoned. This application Jul. 9, 1986, Ser. No. 883,460
 Int. Cl.⁴ G06F 15/46; C03B 9/40
 U.S. Cl. 364-473
 17 Claims

1. In a glassware forming machine of the "individual section" type including a plurality of sections operable in phased relationship within a cycle of operation of the machine, each of said sections having a complete set of functional components for receiving gobs of molten glass and forming glassware articles in response to control signals which actuate and deactivate said functional components, said glassware forming machine providing a machine synchronizing signal at a predetermined point of each cycle of operation,

a control system for enabling the simultaneous and independent operation of said plurality of sections, comprising:

- a plurality of local computer means, each respectively associated with one of said sections, for producing the component actuating and deactuating signals in coordination with the machine synchronizing signal, and for identifying said component actuating and deactuating signals with said functional components, each of said local computer means comprising:
- unalterable program storage means for storing a section control program to control the operation of said local computer means without regular ongoing communication with any supervisory controller;
- non-volatile memory means for storing selected timing data indicative of actuation and deactuation times of said functional components within each cycle of operation, and for storing machine data which together with said



timing data specify the parameters of said control program; and

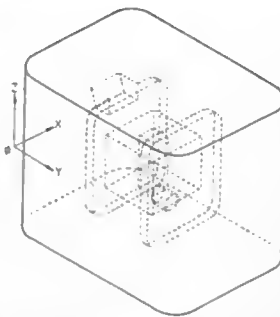
controller means for receiving said machine synchronizing signal and said timing data and machine data and for processing these in accordance with said control program to produce said component actuating and deactuating signals;

- a plurality of interface means, each interposed respectively between one of said local computer means and its associated section for actuating and deactuating the functional components of said section in response to said component actuating and deactuating signals;
- local terminal means for user display, entry, and modification of selected timing and machine data, wherein said local terminal means is capable of handling all parameters of said section control program; and
- bidirectional communication means for connecting said local terminal means to a selected one of said local computer means.

4,641,270
PROCESS FOR MANUFACTURING A MOLD USING THREE-DIMENSIONAL COMPUTER MODELLING
 Paul Laloz, Montigny les Cormeilles, and Hung A. Vo, Orly, both of France, assignors to La Telemecanique Electrique, France
 Filed Apr. 24, 1985, Ser. No. 726,578
 Claims priority, application France, Apr. 25, 1984, 84 06471
 Int. Cl.⁴ G06F 15/46; G05B 19/00; B22D 17/22
 U.S. Cl. 364-476
 4 Claims

1. A process for manufacturing a mold from the shapes of a piece which it is desired to obtain by molding, by computer modelling of the fixed and mobile parts of a mold using a computer assisted design software for visualizing the piece in two and three dimensions, comprising at least the following steps:

modelling and graphic representation of the piece in three dimensions, determination, from the shapes of the piece and/or of its model, of a zero joint plane which forms the main separation plane of the two parts of the mold, modelling and possible graphic representation of the negative of the piece, in three dimensions, within a cubic volume which may have the dimensions of the block of material from which the mold is formed, insertion of the model of the piece in the model of its negative, search for the unstrippable zones by simulating a relative movement between the model of the piece and the two parts of the model of its negative defined by the reference plane, along an axis perpendicular to said plane, and by



determining the contact surfaces between the piece and said parts of the model of the negative, visualization of the contact surfaces by a graphic representation in at least one given plane, the systematic graphic representation, in planes perpendicular to the reference plane, of the sections of the model of the negative passing through the unstrippable zones and determination of the offset joint planes in successive slices of the model of the negative including said zones and of width equal to those of said zones, modelling of the mobile and fixed parts of the mold as a function of the established joint planes, manufacture of a mold whose fixed and mobile parts comprise joint planes and impressions according to the previously established models.

4,641,271 PILING PLANNING METHOD AND PILING SYSTEM OF CARGOES BY PALLETIZING ROBOT

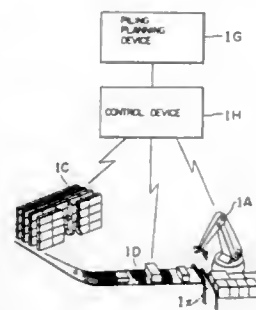
Yozo Konishi, Yokohama; Kichizo Akashi, Ebina; Hideo Watake, Tsuchiura, and Tatsuo Yoshioka, Ichikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 7, 1984, Ser. No. 668,962

Claims priority, application Japan, Nov. 9, 1983, 58-209057; Jul. 19, 1984, 59-150058

Int. Cl.⁴ G06F 15/20

U.S. Cl. 364-478

4 Claims



2. A piling system for cargoes using a palletizing robot

comprising, piling planning means for preparing a piling disposition of cargoes on a pallet, a piling order and a sequence of piling operations in response to data as to various sizes of the plurality of cargoes to be transported, control means receiving data from said piling planning means for controlling a piling operation in accordance with said data, marshalling means receiving said cargoes in an arbitrary order for sending out said cargoes in accordance with the piling order from said control means, supply means for supplying said cargoes from said marshalling means to certain positions on said pallet, and piling means for piling said supplied cargoes on said pallet in accordance with said operation sequence.

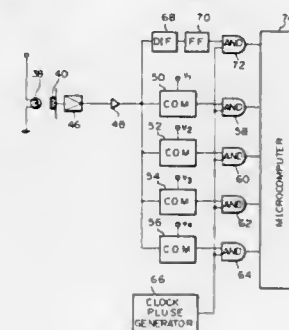
4,641,272 DEVICE FOR SENSING SHEET TRANSPORT CONDITION

Tomio Sasaki, Kawasaki, and Yukio Noguchi, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 28, 1984, Ser. No. 594,151

Claims priority, application Japan, Apr. 5, 1983, 58-59430
Int. Cl.⁴ G06F 15/46; B65H 23/032, 23/18

U.S. Cl. 364-559

8 Claims



1. A device for sensing a transport condition of a sheet, which is being transported along a predetermined transport path, with respect to a transport direction, said device comprising:

a single sensor located in the vicinity of one of laterally opposite ends of the transport path and having a sensing surface which extends over a predetermined area, said single sensor continuously generating a detection signal corresponding to an area of said sensing surface which is occupied by the sheet while the sheet moves past the sensing surface;

a plurality of comparators each being supplied with the detection signal to compare a level of the detection signal with different reference levels which are respectively assigned to said comparators, each of said comparators continuously generating a comparison signal only for a duration in which the level of the detection signal is higher than the reference level assigned thereto;

computer means for comparing a number of the comparators which are generating the comparison signals with a predetermined reference number of the comparators which generate comparison signals while the sheet is in proper transportation, and computing lateral dislocation of the sheet with respect to the transport direction and an amount of the lateral dislocation from a result of the comparison; and

a differentiator having an input connected to the single sensor and an output connected to the computer means for generating a variation rate signal which corresponds to a variation rate in the level of the detection signal output from the single sensor, the computer means being constructed to compare a first predetermined period of time for which an area of the sensing surface of the sensor occupied by the sheet while the sheet properly moves past

the sensing surface remains maximum with a duration of one of the comparison signals output from the comparators which is output for a shortest duration, and deciding that the sheet is skewed with respect to the transport direction when the first predetermined period is shorter than the duration of said one comparison output.

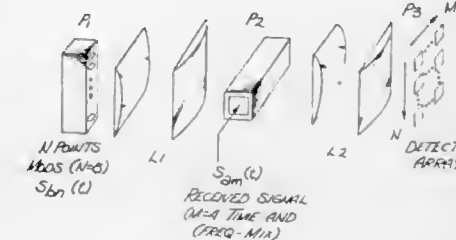
4,641,273 GENERAL TIME, SPACE AND FREQUENCY MULTIPLEXED ACOUSTO-OPTIC CORRELATOR

David Casasent, Pittsburgh, Pa., assignor to Teledyne Industries, Inc., Northridge, Calif.
Continuation-in-part of Ser. No. 712,555, Mar. 15, 1985, and Ser. No. 712,194, Mar. 15, 1985. This application Sep. 13, 1985, Ser. No. 775,647

Int. Cl.⁴ G06G 9/00

U.S. Cl. 364-822

7 Claims



1. A space and frequency multiplexed, time integrating correlator comprising

a plurality (N) of light sources distributed along a first direction, each for emitting light having an intensity or amplitude responsive to a respective one of a plurality of first electric signals applied thereto;

an acousto-optic cell extending in a second direction orthogonal to said first direction and having an input transducer for creating a sound field in said cell responsive to a second electric signal consisting of a plurality (M) frequency multiplexed signals applied thereto;

a first lens means between said plurality of light sources and said acousto-optic cell for substantially uniformly illuminating said acousto-optic cell with light from each of said light sources;

a plurality (NM) of time integrating light detection means equal in number to the number (N) of said light sources times the number (M) of said frequency multiplexed signals, each for providing a signal responsive to the light incident thereto, said light detection means being arranged in an N by M array of light detection means wherein N light detection means are distributed in each of M linear arrays along said first direction and M light detection means are distributed in each of N linear arrays along said second direction; and

a second lens means between said acousto-optic cell and said plurality of light detection means to illuminate light detection means in each of said M linear arrays of N detectors with light originating from a respective one of said light sources, said second lens means also being a means for illuminating each of said M light detection means in each of said N linear arrays with light from said acousto-optic cell within a respective frequency range corresponding to the frequency range of one of said frequency multiplexed signals, whereby each of said light detection means will provide a signal responsive to a respective first signal as correlated with a respective one of said frequency multiplexed signals.

4,641,274 METHOD FOR COMMUNICATING CHANGES MADE TO TEXT FORM A TEXT PROCESSOR TO A REMOTE HOST

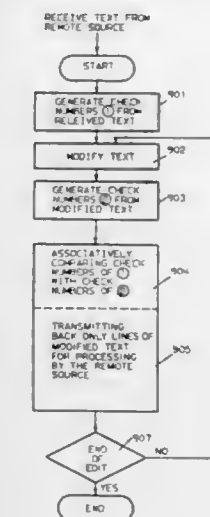
Edgar W. Swank, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 446,732, Dec. 3, 1982, abandoned. This application Aug. 19, 1985, Ser. No. 766,722

Int. Cl.⁴ G06F 15/00

U.S. Cl. 364-900

6 Claims



6. A method of communicating changes made to text formed by lines of characters received from a remote source as electrical signals by an electronic processor to said remote source whereby said processor includes means for storing text, means for receiving, modifying, and transmitting text, and a device for inputting information, each character being represented within the processor and the source as a coded number, comprising the steps of:

(a) generating by said processor and storing in said storing means a respective checking number corresponding to each one of a plurality of lines of characters received from the source, each checking number being formed from the coded numbers by recursively combining and ringshifting said numbers in a predetermined order;

(b) modifying by the processor the received text to form a body of modified lines based upon the information input through the inputting device;

(c) generating by the processor a checking number of each line of modified text; and

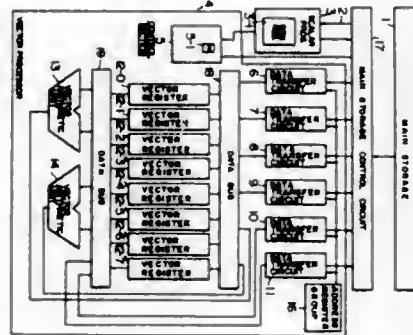
(d) associatively comparing by said processor the checking numbers of consecutive counterpart lines of the modified text with those of the received text and transmitting by said processor back to said remote source the entire text of only those lines which have been modified as denoted by said lines having checking numbers mismatching those of the received text thereby to minimize communication of changes made to the text between the remote source and processor, said step of associatively comparing including the steps of:

(1) comparing the checking numbers of consecutive counterpart lines of the modified and received texts and continuing said comparison linearly until the first mismatch is detected;

(2) performing reciprocal comparison by comparing the next consecutive line checking number of the modified text to the preceding consecutive line checking numbers of the received text and comparing said consecutive line checking number of the received text with the next consecutive line checking numbers of the modified text, the reciprocal comparison continuing until a first match is detected;

(3) repeating steps (1) and (2) until the lines of the received and modified texts become exhausted; and
(4) transmitting to said remote source (a) the entire text of those lines which have been modified as denoted by a mismatch of corresponding checking numbers, and (b) indications of each run of at least a predetermined number of consecutive lines in the modified text whose checking numbers match checking numbers in the received text, said indications representing counts of lines of the received text which have not been modified or lines of received text which have been deleted.

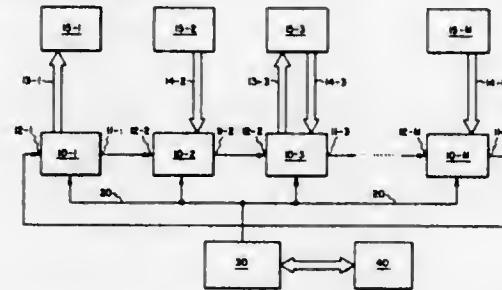
4,641,275
VECTOR PROCESSOR HAVING PAIR PROCESS MODE AND SINGLE PROCESS MODE
Yasuhiko Hatakeyama, Hadano, and Shigeo Nagashima, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 20, 1984, Ser. No. 572,521
Claims priority, application Japan, Mar. 2, 1983, 58-34197
Int. Cl.⁴ G06F 9/00, 9/28
U.S. Cl. 364—900 4 Claims



1. A vector processor for carrying out vector instructions which designate a plurality of vectors by performing operations on vector elements belonging to the vectors comprising:
a main storage;
a plurality of vector registers;
means, including a plurality of vector data transfer circuits, for performing data transfer between said main storage and said vector registers;
means, including a plurality of vector arithmetic units coupled to said vector registers and each capable of performing the same arithmetic operations, for carrying out vector instructions by performing arithmetic operations on vector data received from said vector registers and sending the results to a vector register;
detecting means for detecting whether a vector instruction to be carried out is a first type of vector instruction designating operations between vector elements having the same element number or a second type of vector instruction designating operations between vector elements having different element numbers; and control means responsive to said detecting means for controlling the execution of a vector arithmetic operation in a first or second control mode in response to the type of the vector instruction detected by said detecting means, wherein said first control mode includes dividing vector registers and vector arithmetic units into a plurality of sets and dividing vector data to be operated on by a vector arithmetic instruction into a plurality of vector data portions in parallel using said plurality of sets, and said second control mode includes storing each vector data in corresponding vector registers, thereby to perform the vector arithmetic operation

using the vector arithmetic units which operate together with said vector registers.

4,641,276
SERIAL-PARALLEL DATA TRANSFER SYSTEM FOR VLSI DATA PATHS
Robert J. Dunki-Jacobs, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 22, 1984, Ser. No. 663,609
Int. Cl.⁴ G06F 13/40
U.S. Cl. 364—900 4 Claims



1. Apparatus for transferring a multi-bit data word from a source functional unit to a destination functional unit, said units being two of a plurality of functional units on the same semiconductor chip, each said unit having a unique address, said apparatus comprising:

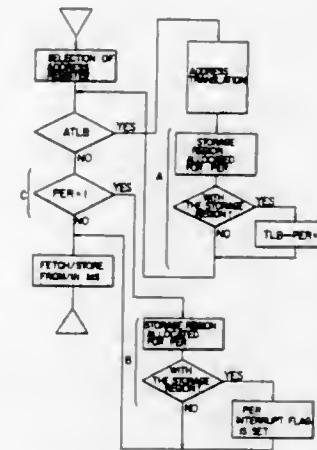
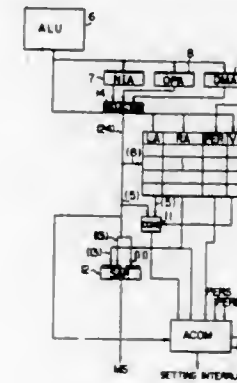
a plurality of multi-stage registers, each such register coupled to a respective one of said units, said registers transferring said data in parallel to and from said units, said registers located on said chip and serially connected to each other with the input to the first register coupled to the output of the last register to form a closed loop serial data path;

control means coupled to said registers and responsive to the addresses of said source and destination functional units for providing control signals to sequentially cause a parallel transfer of said data word from said source unit to its respective multi-stage register, a shifting of said data word through said registers in a manner to move said data word to the respective register of said destination unit, and a parallel transfer of said data word to said destination unit; wherein said control means includes:

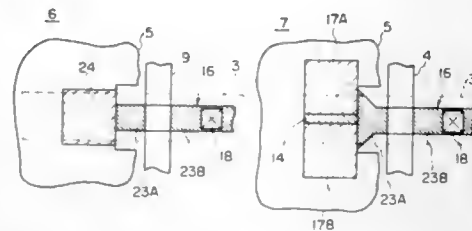
modulus m counting means for counting the bit displacement of said data word while said data word is shifted through said registers of said data path; and

a controller coupled to said counting means for providing said control signals to said registers and for determining the number of shifts necessary to transfer said data word from said respective multi-stage register of said source unit to said respective multi-stage register of said destination unit by presetting said counting means to said source address and incrementing said counting means upon each shift of one bit of said data word until the count of said counting means is equal to said destination address whereupon said data word has been shifted the necessary number of bits to move said data word from said respective multi-stage register of said source unit to said respective multi-stage register of said destination unit.

4,641,277
SYSTEM FOR DETECTING ACCESS TO STORAGE
Kiyoshi Yata, and Hideo Sawada, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 9, 1983, Ser. No. 550,199
Claims priority, application Japan, Nov. 12, 1982, 57-197495
Int. Cl.⁴ G06F 9/00
U.S. Cl. 364—900 3 Claims

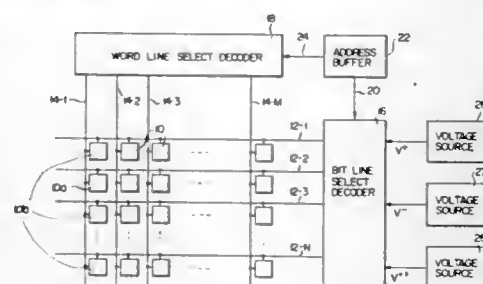


4,641,279
SEMICONDUCTOR MEMORY DEVICE HAVING A DUMMY CELL AND A MEMORY CELL WHICH IS TWICE THE SIZE OF THE DUMMY CELL
 Katsutaka Kimura, Sagami-hara; Ryolchi Hori, Tokyo; Kiyoo Ito, Higashikurume, and Hideo Sunami, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Mar. 7, 1984, Ser. No. 587,080
 Claims priority, application Japan, Mar. 7, 1983, 58/35812
 Int. Cl.⁴ G11C 11/40
 U.S. Cl. 365—149 5 Claims



1. A semiconductor memory device comprising:
 - a plurality of memory cells connected to a plurality of data lines, respectively, and having first capacitors for storing information;
 - a plurality of dummy cells connected to said data lines, respectively, and having second capacitors having a capacitance which is substantially half of a capacitance of said first capacitors; and
 - means connected to selected first and second data lines of said data lines, for differentially detecting signals on said first and second data lines when one of said memory cells connected to said first data line is selected and one of said dummy cells connected to said second data line is selected,
- said first capacitor being comprised of two capacitors each having the same structure as said second capacitor and connected in parallel with each other.

4,641,280
HIGH-DENSITY SEMICONDUCTOR MEMORY DEVICE WITH CHARGE-COUPLED MEMORY CELLS
 Fumio Horiguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Aug. 30, 1984, Ser. No. 645,558
 Claims priority, application Japan, Sep. 9, 1983, 58-165902
 Int. Cl.⁴ G11C 11/40, 13/00
 U.S. Cl. 365—183 9 Claims



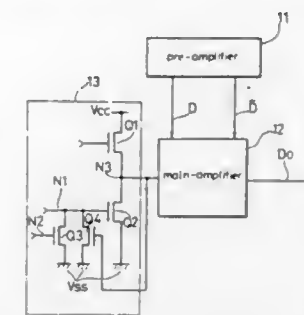
7. A semiconductor memory device of the current readout type comprising:
 - (a) a semiconductive substrate having a first conductivity type;
 - (b) charge-coupling memory cells which are arranged like a matrix over said substrate and are respectively connected to word lines and bit lines which cross substantially perpendicularly with each other, each of said charge-coupling memory cells having,
 - (b1) electrically floating layer which capacitively stores

- digital data supplied from the corresponding bit line in the data writing mode,
- (b2) a first field effect transistor of a second channel conductivity type having a source to which a first voltage at its fixed level is always applied, a gate connected to the corresponding word line and a drain
- (b3) a second field effect transistor of the first channel conductivity type which commonly uses said electrically floating layer as its drain, said second field effect transistor having a gate connected to the corresponding word line and a channel region whose impurity concentration is higher than that of said substrate,
- (b4) a junction type field effect transistor of the first channel conductivity type which is connected with the drain of said first field effect transistor and the corresponding bit line, commonly uses said electrically floating layer as its gate and performs the switching operation in accordance with the data storage in said electrically floating layer in the data reading mode, thereby, when it is made conductive, transmitting said first voltage of said first field effect transistor to the corresponding bit line, and
- (b5) a capacitor formed by said electrically floating layer and connected to said junction type field effect transistor; and
- (c) first decoder means, formed on said substrate so as to be connected to said word lines, for, in the data writing mode, designating one word line which is connected to one selected cell to which data is written and for applying a second voltage such as to make the first field effect transistor included in said selected cell conductive and for allowing the carriers corresponding to the data content of the electrically floating layer included in said selected cell to flow out to said substrate through said second conductive transistor, whereby after the data content of said electrically floating layer is cleared, digital data which is newly supplied from said corresponding bit line is stored in said selected cell; and
- (d) a second decoder means which is formed over said substrate so as to be connected to said bit lines and which, in the data writing mode, applies a third voltage so as to forcibly make second field effect transistors included in the nonselected cells connect to the same word line as that of said selected nonconductive cell, thereby preventing the data contents of the electrically floating layers included in said nonselected cells from being cleared.

4,641,281
DYNAMIC RANDOM ACCESS MEMORY WITH HIDDEN REFRESH CONTROL
 Koichiro Mashiko; Michihiro Yamada, both of Takarazuka; Kazutami Arimoto, Itami; Hiroshi Miyamoto, Toyonaka; Toshifumi Kobayashi, and Yoshikazu Morooka, both of Itama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Aug. 8, 1984, Ser. No. 638,675
 Claims priority, application Japan, Aug. 26, 1983, 58-156701
 Int. Cl.⁴ G11C 7/00
 U.S. Cl. 365—189 1 Claim

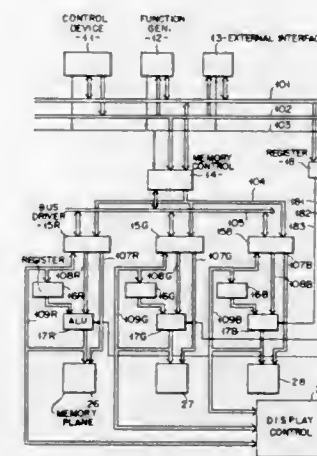
1. A dynamic random access memory comprising:
 - at least one memory cell;
 - pre-amplifier means for amplifying data which is read out from a memory cell accessed by an address signal;
 - main-amplifier means for amplifying an output of the pre-amplifier and outputting an amplified signal;
 - driver circuit means for outputting a driving signal for driving the main-amplifier means,
 - said driver circuit means including a first and a second transistor, wherein a drain of the first transistor is connected to a node corresponding to an output terminal of the driver circuit, with a source of the first transistor being earthed

and with a gate thereof being connected to a drain of the second transistor, and wherein a gate of the second transistor is connected to the node with the source thereof being earthed.



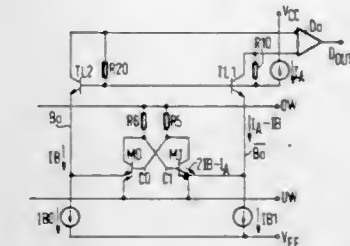
sistor is connected to the node with the source thereof being earthed.

4,641,282
MEMORY SYSTEM
 Shouji Oonuma, Tokyo, Japan, assignor to Tokyo Shiba Denki Kabushiki Kaisha, Kawasaki, Japan
 Filed May 24, 1983, Ser. No. 497,676
 Claims priority, application Japan, May 31, 1982, 57-92861
 Int. Cl.⁴ G11C 7/00; G09B 1/28
 U.S. Cl. 365—189 10 Claims



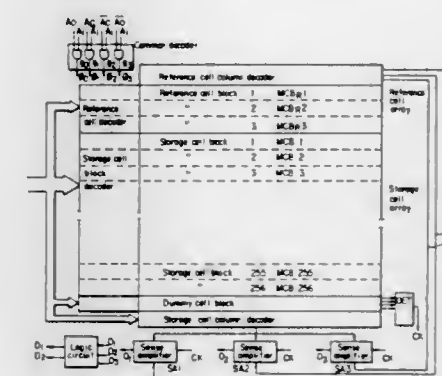
1. A memory system comprising:
 - a plurality of memory planes for storing picture data;
 - memory control means for controlling writing and reading data from said plurality of memory planes;
 - a plurality of operation means coupled in one-to-one relationship with said memory planes for performing logical arithmetic operations on data read from said respective memory planes thereby allowing said logical arithmetic operations to be performed on all of said memory planes simultaneously; and
 - a plurality of first register means coupled in one-to-one relationship with said operation means for holding data from said respective planes.

4,641,283
CIRCUIT FOR READING BIPOLAR STORAGE CELLS
 Wilhelm Wilhelm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
 Filed Jul. 15, 1983, Ser. No. 514,190
 Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227121
 Int. Cl.⁴ G11C 11/40
 U.S. Cl. 365—190 3 Claims



1. Circuit for reading bipolar storage cell, comprising a storage element formed of two fed-back inverters, an upper and a lower word line, each of said inverters being formed of a multi-emitter transistor, each having a first and second emitter, and a load element connected between the upper word line and the collector of a respective one of said multi-emitter transistors, two complementary bit-lines each being connected to the first emitter of a respective one of said multi-emitter transistors, the second emitter being connected to said lower word line, a first potential source, two bit-line current sources each being connected between said first potential source and a respective one of said complementary bit lines, a differential amplifier having two inputs, two read transistors each having a collector-emitter path connected between a respective one of said inputs of said differential amplifier and a respective one of said complementary bit-lines, a second potential source, a read-current source connected between the base of said read transistors and said second potential source, and two resistance elements each being connected between the collector of a respective one of said read transistors and said read current source.

4,641,284
SIGNAL TRANSMISSION CIRCUIT FOR A STORAGE DEVICE
 Yasuo Suzuki, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
 Filed Jan. 29, 1985, Ser. No. 696,142
 Claims priority, application Japan, Jan. 31, 1984, 59-015590
 Int. Cl.⁴ G11C 7/02
 U.S. Cl. 365—210 4 Claims



1. A signal transmission circuit comprising:
 - a common output terminal; and

a plurality of input circuits connected to said common output terminal, each said input circuit comprising,
an input terminal;
a buffer circuit; and
a metal insulator semiconductor (MIS) transistor, wherein the source-drain regions of said MIS transistor are connected to said input terminal and said output terminal, said buffer circuit being connected between said input terminal and the gate electrode of said MIS transistor, wherein said buffer circuit is driven by an input signal selectively applied thereto, wherein said MIS transistor is driven by said buffer circuit to a conductive state whereby said input signal is transmitted from said input terminal to said output terminal.

4,641,285

LINE CHANGE-OVER CIRCUIT AND
SEMICONDUCTOR MEMORY USING THE SAME

Yukio Sasaki, Kokubunji; Kotaro Nishimura, Kodaira, and
Osamu Minato, Tokyo, all of Japan, assignors to Hitachi,
Ltd., Tokyo, Japan

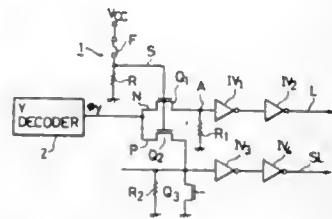
Filed Aug. 13, 1984, Ser. No. 640,508

Claims priority, application Japan, Oct. 26, 1983, 58/199022

Int. Cl.⁴ G11C 11/40

U.S. Cl. 365—210

16 Claims



1. A line change-over circuit, comprising:
 - a first node to which a first signal to be transmitted is supplied;
 - a first transfer gate provided between said first node and a second node and operating as a switch according to a transfer signal;
 - a second transfer gate provided between said first node and a third node and operating as a switch in a complementary manner to said first transfer gate according to said transfer signal;
 - a first switch element coupled to said second node and turning said second node to a first fixed potential when said first transfer gate is kept off, said first switch element being operated as a switch according to said transfer signal; and
 - a second switch element coupled to said third node and turning said third node to a second fixed potential when said first signal is supplied to said second node.

4,641,286

AUXILIARY DECODER FOR SEMICONDUCTOR
MEMORY DEVICE

Kazuhiro Shimotori; Kazuyasu Fujishima; Hideyuki Ozaki, and
Hideshi Miyatake, all of Hyogo, Japan, assignors to Mit-
subishi Denki Kabushiki Kaisha, Tokyo, Japan

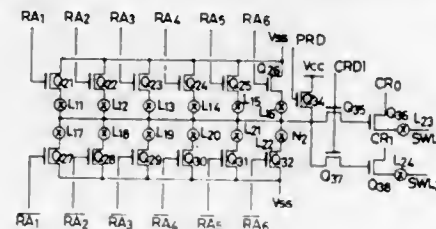
Filed Feb. 16, 1984, Ser. No. 581,000

Claims priority, application Japan, Feb. 17, 1983, 58-26458

Int. Cl.⁴ G11C 8/00

- U.S. Cl. 365—230** **1 Claim**
- 1. A semiconductor memory device comprising:**
- a** line decoder, said line decoder comprising a plurality of MOS first transistors having sources connected to a ground line, drains connected to a first node, and gates receiving respective address signals; an MOS second transistor having a source coupled to said first node, a drain coupled to a power source terminal, and a gate

receiving a precharge signal; a plurality of MOS third transistors having drains connected to said first node and gates receiving a separation signal; a plurality of MOS fourth transistors, in a number equal to the number of said third transistors, having gates connected to sources of corresponding ones of said third transistors, drains receiving corresponding word line drive signals, and sources connected through corresponding fusible links to corresponding word lines; and
an auxiliary line decoder comprising a plurality of MOS fifth transistors having sources connected to said ground line and drains connected through corresponding fusible links to a second node, said fifth transistors being provided in

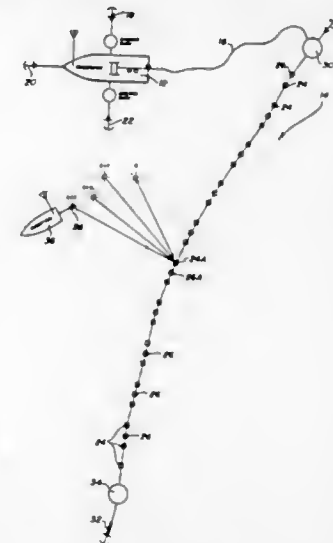


pairs of which the two transistors of each pair receive respective inverted and uninverted address signals; an MOS sixth transistor having a source connected to said second node, a drain connected to said power source terminal and a gate receiving said precharge signal; a plurality of MOS seventh transistors having drains connected to said second node and gates receiving said separation signal; a plurality of MOS eighth transistors, in a number equal to the number of said seventh transistors, having gates connected to sources of corresponding ones of said seventh transistors, drains receiving corresponding word line drive signals, and sources connected through corresponding fusible links to corresponding auxiliary word lines.

4,641,287
METHOD FOR LOCATING AN ON-BOTTOM SEISMIC
CABLE
Walter P. Neeley, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 30, 1984, Ser. No. 605,089
Int. Cl.⁴ G01V 1/38

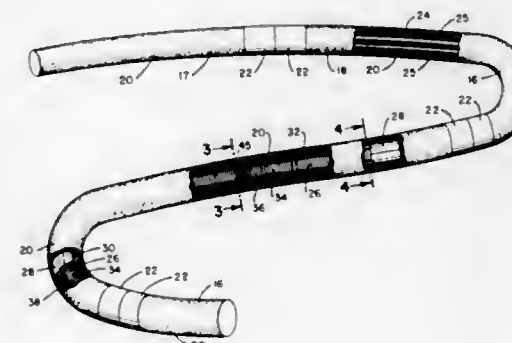
- U.S. Cl. 367—19
- 1 Claim
1. A method for determining the location of an ocean bottom cable having acoustic pulse detectors comprising the steps of: firing an acoustic pulse source at a first location; producing a first response thereto by a first acoustic pulse detector located on the said cable; determining the distance between said first location and said first acoustic pulse detector, said distance defining a spherical surface; firing said acoustic pulse source at a second location; producing a second response thereto by said first acoustic pulse detector; determining the distance between said second location and said first acoustic pulse detector, said distance defining a spherical surface; defining a line of possible locations of said first acoustic pulse detector by the points common to said distance between said first location and said first acoustic pulse detector and to said distance between said second location and said first acoustic pulse detector; firing said acoustic pulse source at a third location; producing a third response thereto by said first acoustic pulse detector; determining the distance between said third location and said first acoustic pulse detector, said distance defining a spherical surface;

identifying two possible locations of said first acoustic pulse detector by the points common to said line of possible locations of said first acoustic pulse detector and said distance between said third location and said first acoustic pulse detector; and
eliminating one of said two possible locations as being above sea level;



providing a depth detector in close proximity to said first acoustic pulse detector;
determining the depth of said first acoustic pulse detector;
and
confirming the location of said first acoustic pulse detector by eliminating locations of said line of possible locations inconsistent with said depth of said first acoustic detector.

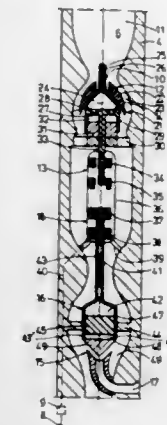
4,641,288
RIBBON TERMINATION MEMBER
George A. McGowan, Westminster, and Robert L. Kaplan, San
Diego, both of Calif., assignors to Hughes Aircraft Company,
Los Angeles, Calif.
Filed Nov. 7, 1985, Ser. No. 796,050
Int. Cl.⁴ G01V 1/38
U.S. Cl. 367—20 14 Claims



1. A strength member arrangement for a towed sonar array comprising:
an elongated flexible strength member extending within and along the length of a sonar array module for carrying the tensile load of said module from one end thereof to the other, the ends of said elongated flexible strength member being joined together to form one continuous loop comprising a first end disposed towards one end of said mod-

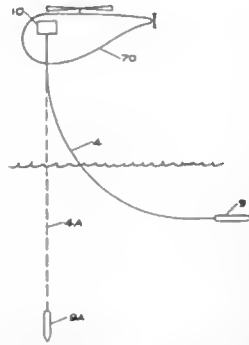
ule, and a second end disposed towards said other end of the module, ; and
rigid termination members coupled to each end of said loop.

4,641,289
PROCESS AND DEVICE FOR TRANSMITTING
INFORMATION OVER A DISTANCE
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to
Norton Christensen, Inc., Salt Lake City, Utah
Filed Jul. 6, 1981, Ser. No. 280,614
Claims priority, application Fed. Rep. of Germany, Jul. 30,
1980, 3028813
Int. Cl.⁴ G01V 1/40
U.S. Cl. 367—85 1 Claim



1. Device for transmitting information over a distance from a bore hole to the surface of the earth during operation of a boring implement which encompasses a rotary drill tool, a drill string and a pump to convey downward flowing flushing liquid, in which the normal working pressure, as increased in pressure by the pump, which exists in a subterranean transmission region of the drill string is altered to form a series of pressure pulses, which is equivalent to a pulse code of digital signals containing the information to be transmitted over a distance and which is sensed at a subterranean region and evaluated at the surface of the earth, in which the pressure change is undertaken by means of a temporally limited, alternating increase in the pressure of the flushing liquid from a predetermined normal operating initial pressure up to a predetermined maximum pressure and reduction of the pressure of the flushing liquid to a pressure value between the maximum pressure and a predetermined minimum pressure which falls below the initial pressure, characterized by the fact that, the initial pressure starts out as the normal working pressure of the flushing liquid in the transmission region of the drill string, the flow channel available to the flushing liquid in the drill string is reduced by a first valve to achieve a pressure increase and by the fact that a direct flow connection between the drill string and the annular space which surrounds it in the bore hole is established by a second valve to achieve pressure reduction below the original pressure, in a predetermined sequential manner, said first valve controlling the amount of flushing liquid flowing through a parallel bypass path within the drill string, both valves being provided with pressure balancing surfaces, both valves supported coaxially in the central region of the flow channel of the drill string and being positionable in intermediate position between fully open and fully closed.

4,641,290
LOW FREQUENCY PORTABLE LIGHTWEIGHT SONAR SYSTEMS AND THEIR METHOD OF DEPLOYMENT FOR GREATLY INCREASING THE EFFICIENCY OF SUBMARINE SURVEILLANCE OVER LARGE AREAS
 Frank Massa, Cohasset, Mass., and Donald P. Massa, 280 Lincoln St., Hingham, Mass. 02043, assignors to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass.
 Filed Nov. 13, 1984, Ser. No. 670,206
 Int. Cl.⁴ G01S 3/80; H04R 1/02
 U.S. Cl. 367—106 19 Claims



14. An improved method for achieving high-speed high-efficiency long-range towed sonar surveillance over very large areas including the following steps:

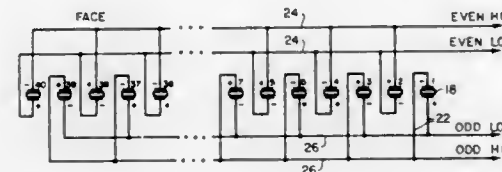
1. Attach by tow cable to a high-speed over-water vehicle an audio frequency towable sonar system capable of operating at a frequency within the approximate range 2 kHz to 5 kHz and contained within a small cylindrical streamlined housing less than one wavelength in diameter at the frequency of operation and capable of detecting the range and bearing of submarine targets within a radius in excess of 10,000 meters in a plane at right angles to the longitudinal axis of the cylindrical structure;
2. With the over-water vehicle at rest or drifting slowly and the longitudinal axis of the towed cylindrical sonar housing held approximately vertical in the water, making several sonar searches over a period of a few minutes to determine the presence of any submarine targets within the radius of detection of the sonar system;
3. Apply power to the over-water vehicle and with the sonar still in tow proceed at high speed to a distant point removed approximately by 50% to 100% of the maximum range of detection of the sonar system from the last sonar search point;
4. Cut power to the over-water vehicle and when the speed has decreased sufficiently so that the longitudinal axis of the cylindrical sonar housing is approximately vertical in the water repeat making several sonar searches over a period of a few minutes and then proceed again at high speed to the next distant point of surveillance.

4,641,291
PHASED ARRAY DOPPLER SONAR TRANSDUCER
 Robert L. Simmons, Sr., San Diego, and Clifton M. Wyant, Santee, both of Calif., assignors to Ametek, Inc., El Cajon, Calif.

Filed Feb. 19, 1985, Ser. No. 702,798
 Int. Cl.⁴ H04B 1/06, 1/02; H04R 17/00; H01L 41/04
 U.S. Cl. 367—157 10 Claims

1. An underwater transducer, comprising:
 a plurality of rectangular planar staves made of a material selected from the group consisting of piezoelectric material and magnetostrictive material, each staff being polarized across its width and having positive and negative longitudinal side edges;
 means for supporting the staves in parallel relationship with one longitudinal side edge of each staff extending in a

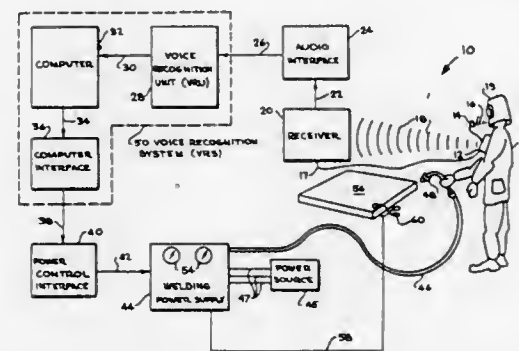
common plane defining an active face, the staves being mechanically decoupled so that they can freely expand and contract across their widths independent of each other, and the staves being oriented such that every other adjacent pair of longitudinal side edges in the active face are positive and the interspersed adjacent pairs of longitudinal side edges in the active face are negative;
 means for providing electrical connection to the positive and negative longitudinal side edges of each of the staves, including first and second even buses and first and second



odd busses, the positive and negative longitudinal side edges of every other staff being connected to the first and second even busses, respectively, and the positive and negative side edges of the interspersed staves being connected to the first and second odd busses, respectively; and

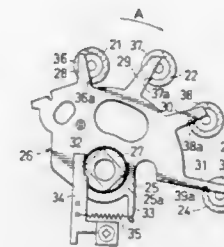
an acoustic center of each longitudinal side edge in the active face being spaced a distance of approximately one-half wavelength of a predetermined operating frequency apart from an acoustic center of an immediately adjacent longitudinal side edge in the active face.

4,641,292
VOICE CONTROLLED WELDING SYSTEM
 George Tunnell, 667 Sandy Hook Ct., Foster City, Calif. 94404; Charles L. Pomernacki, 4162 Barner Ave., Oakland, Calif. 94602, and Jack P. Gregg, 2371 Lockwood Ave., Fremont, Calif. 94538
 Continuation-in-part of Ser. No. 506,101, Jun. 20, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 789,732
 Int. Cl.⁴ G10K 11/00; B23K 9/10
 U.S. Cl. 367—198 24 Claims



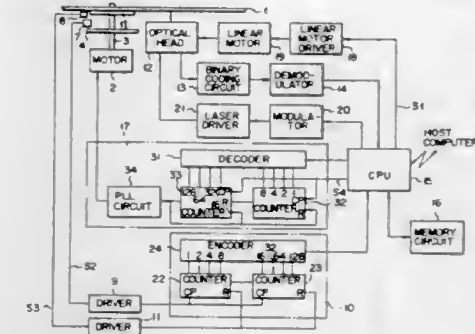
1. Apparatus for a human voice controlled welding system, comprising:
 a transmitter for transmitting an acoustic command signal from the human operator;
 a receiver for receiving the transmitted command signal;
 a voice recognition unit containing previously stored voice recognition information, for comparing the received command signal with the stored information to produce a control signal; and
 a welding power supply connected to a welding torch and responsive to the control signal from the voice recognition unit to vary the power output to the torch as orally commanded by the operator.

4,641,293
CASSETTE TAPE PLAYER COMBINED WITH A RADIO RECEIVER WHICH HAS MULTIPLE PUSH BUTTONS SUCH THAT THE STOP PUSH BUTTON CAN BE USED TO TURN OFF EITHER THE CASSETTE TAPE PLAYER OR THE RADIO RECEIVER
 Toshio Komuro, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
 Filed Feb. 1, 1984, Ser. No. 575,861
 Claims priority, application Japan, Feb. 8, 1983, 58-20328
 Int. Cl.⁴ G11B 31/00
 U.S. Cl. 369—6 5 Claims



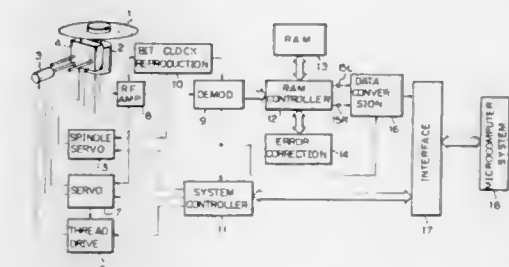
1. A locking and releasing mechanism for a cassette tape player combined with a radio receiver comprising:
 a tape playing mechanism operating as a cassette tape player, a radio signal receiving device functioning as a radio receiver, a plurality of player control buttons connected with said tape playing mechanism to be used for selecting an operation mode of said tape playing mechanism,
 a radio control button connected with said radio signal receiving device to be used for causing the radio signal receiving device to be operative,
 a stop button provided in common to both the tape playing mechanism and the radio signal receiving device to be used for stopping either one of said tape playing mechanism and said radio signal receiving device from operating, and
 a locking and releasing structure which is fitted to be rotatable against a boss on a chassis and having a first portion including a plurality of arms extending radially which engages with one of said player control buttons and a radio control button to be kept in the manipulated and a second portion which engages with said stop button to release one of said player control buttons and radio control button to be kept in the manipulated,
 said locking and releasing structure is operative to keep said radio control button in the manipulated position and directly release one of said player control buttons without operating said stop button from the manipulated position when said radio control button is manipulated under the situation in which said one of said player control buttons has been kept in the manipulated position, and (said locking and releasing structure) is also operative to keep one of said player control buttons in the manipulated position and directly release radio control button without operating said stop button from the manipulated position when one of said player control buttons is manipulated under the situation in which said radio control button has been kept in the manipulated position.

4,641,294
METHOD AND APPARATUS FOR PERFORMING A MEMORY OPERATION ON A FIXED LENGTH BLOCK OF DATA ON A MEMORY DISK
 Tomohisa Yoshimaru, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Jun. 27, 1984, Ser. No. 625,365
 Claims priority, application Japan, Jun. 30, 1983, 58-119357
 Int. Cl.⁴ G11B 7/007 16 Claims



16. A method for performing a memory operation on a block of data on a memory disk, comprising the steps of:
 addressing all areas on the memory disk in terms of one of a plurality of spiral tracks thereon, and one of a plurality of sectors within the spiral track, each sector being a predetermined angular extent of a spiral track;
 storing in a memory a correspondence between block numbers and sectors, tracks, and speed to allow all memory blocks to have a same storage capacity;
 determining a memory block to be addressed;
 reading a sector, track, and speed from said memory corresponding to said addressed block;
 calculating a start address and sector extent sector for said addressed block;
 addressing said addressed block; and
 rotating said memory disk at said speed read in said reading step.

4,641,295
DISC PLAYBACK APPARATUS
 Shunsuke Furukawa; Tadao Suzuki, both of Tokyo, Japan, and Marinos J. B. M. Monen, Colorado Springs, Colo., assignors to Sony Corporation, Tokyo, Japan
 Filed Aug. 27, 1984, Ser. No. 644,265
 Claims priority, application Japan, Sep. 1, 1983, 58-161514
 Int. Cl.⁴ G11B 21/10 24 Claims



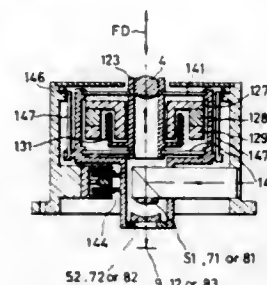
1. A method for arranging digital data having definable informational units on a recording medium disc for subsequent access of specific informational units and playback thereof by disc playback apparatus including the steps of:
 recording main digital data in a track on a disc;

recording subdigital data in the same track on said disc as said main digital data and including in said subdigital data data to selectively reproduce said main digital data; selecting a unit of change of said informational units of said main digital data as indicated by said subdigital data; playing back at least a part of a selected recorded track of said disc; forming a plurality of FRAMES from said main digital data and corresponding subdigital data; arranging a predetermined number of said FRAMES sequentially in parallel to form one BLOCK of said main digital data; selecting a desired informational unit of one of said BLOCKS of said main digital data; using said subdigital data in said one of said blocks to access said selected desired informational unit having a resolution of said selected unit of change of said main digital data; and outputting said reproduced accessed main digital data.

4,641,296
OPTICAL HEAD FOR INFORMATION RECORDING APPARATUS

Katsumi Mizunoe, Yokohama; Junichi Yanai, and Kiyoshi Kimoto, both of Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 25, 1984, Ser. No. 603,655
Claims priority, application Japan, Apr. 28, 1983, 58-73908; Jun. 16, 1983, 58-106315

Int. Cl.⁴ G11B 7/095
U.S. Cl. 369-46 14 Claims



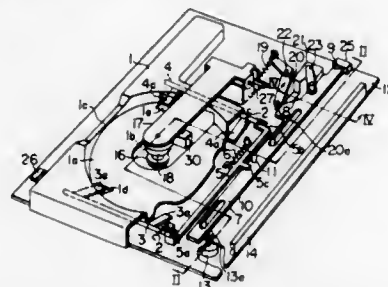
11. An optical head for recording and/or reading information from at least one information recording track on a recording carrier comprising:

- means for producing a beam of radiation;
- objective lens means for condensing said beam of radiation on said recording track, said objective lens means being positioned to pass therethrough said beam of radiation reflected from said recording track;
- first optical means fixedly arranged to condense said beam reflected from said recording track and passed through said objective lens means on a predetermined plane;
- means having a detection plane coincident with said predetermined plane and fixedly arranged to detect said beam;
- second optical means arranged between said first optical means and said detecting means for producing the circle of least confusion on said predetermined plane from said beam passing through said second optical means when the distance between said recording track and said objective lens means is equal to the focal length of said objective lens means; and
- drive means responsive to said detecting means to displace said objective lens means and said second optical means in the same direction.

4,641,297
DEVICE FOR MOUNTING AN INFORMATION CARRYING DISC MEMBER

Masayoshi Watanabe, Toyokawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed May 8, 1984, Ser. No. 608,163
Claims priority, application Japan, May 9, 1983, 58-79400
Int. Cl.⁴ G11B 17/04

U.S. Cl. 369-75.2 3 Claims



- A device for mounting an information carrying disc member comprising:
 - a chassis having a front portion and a rear portion;
 - a movable base having a recessed portion with a diameter slightly larger than the diameter of said information carrying disc member, and being mounted movable on said chassis so that said base may be movable from the front portion to the rear portion of the chassis;
 - a disc-member raising and lowering means for raising and lowering said information carrying disc member within said recessed portion;
 - a motor mounted on said chassis;
 - a rack mounted movably on said movable base so that said rack may be moved from the front portion to the rear portion of said chassis, and being driven by said motor so that said rack may move said movable base from the front portion to the rear portion of the chassis;
 - a latch mounted movable on said movable base, and engaged with an end portion of said rack, said latch being mounted rockably on said movable base so as to rock in a direction away from said end portion of said rack when said latch abuts against said latch guide;
 - a latch guide mounted on said chassis and adapted to abut against said latch so as to disengage said latch from said rack when said information carrying disc member is moved up to a position adjacent a turntable in response to movement of said rack, thereby terminating movement of only said movable base;
 - linkage means for lowering said information carrying disc member onto said turntable in response to the termination of the movement of said movable base;
 - a clamper arm disposed adjacent said turntable and rotatably supporting a clamper arranged to face said turntable, said clamper being supported at a raised position at which said clamper is spaced apart from said turntable; and
 - a control means for lowering said clamper arm in relationship with further movement of said rack, thereby causing said information carrying disc member to be urged against said turntable by said clamper and fixedly held in place thereon.

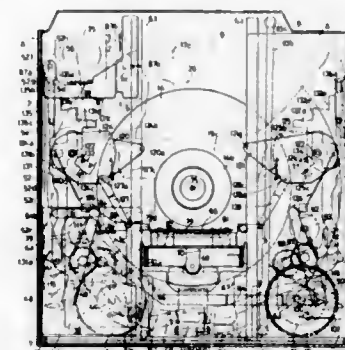
4,641,298
AUTO LOADING DISC PLAYER

Yuji Ikeda, and Takahiro Okajima, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Feb. 6, 1984, Ser. No. 577,402
Claims priority, application Japan, Feb. 2, 1983, 58-18551
Int. Cl.⁴ G11B 25/04, 1/00, 3/60, 17/02

U.S. Cl. 369-77.1 2 Claims

- In an auto loading disc player of a type including a housing having a slot to receive a disc therein, player means dis-

posed in said housing, and drivable disc carrier means for carrying said disc close to a predetermined playing position, the improvement comprising: means defining a carrier path, a pair of drivable guide means disposed bilaterally of said carrier path for said disc for guiding said disc along said carrier path, and a disc diameter discriminator mechanism for engaging with the periphery of said disc to automatically discriminate between diameters of discs while said disc is being moved by said carrier means towards said playing position and at the

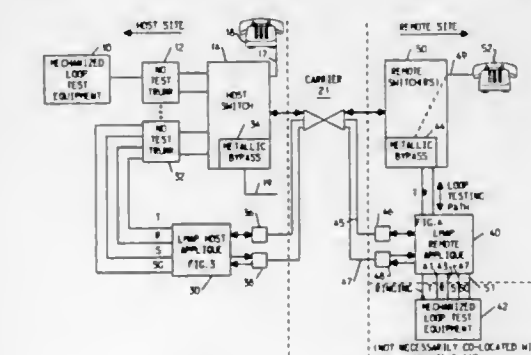


same time when said guide means guides said disc, said disc diameter discriminator mechanism comprising means for driving said guide means in such a manner that a distance between said guide means corresponds to the outer diameter of said disc, said guide means engaging with the periphery of said disc during its conveyance to thus cause said disc to cooperate with said disc carrier means for guiding said disc, said disc carrier means releasing said disc from engagement with said guide means during the period of time when said disc is played.

4,641,299
MECHANIZED LOOP TESTING USING A LOCAL METALLIC ACCESS PORT

Kyran B. Kemper, Mendham, and Robert W. Vetter, Jr., Morristown, both of N.J., assignors to AT&T Company and AT&T Bell Laboratories, both of Murray Hill, N.J.
Filed Sep. 21, 1984, Ser. No. 652,640
Int. Cl.⁴ H04J 1/16, 3/14

U.S. Cl. 370-15 14 Claims



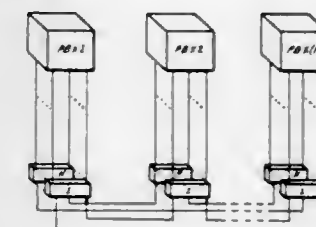
- Apparatus for interconnecting a mechanized loop test equipment with any one of a plurality of telephone loops, one end of said telephone loops being terminated at a remote telephone switch, the other end of said telephone loops being connected to terminal equipment, said remote telephone switch being inter-connected with a host telephone switch via a carrier system, the distance between said host switch and said terminal equipment exceeding a predetermined threshold value, said apparatus comprising:
 - a remote applique circuit, located at said remote switch, for providing a metallic path between said mechanized loop

test equipment and said remote switch and for repeating signals between said mechanized loop test equipment and a host applique circuit, the distance between said terminal equipment and said mechanized loop test equipment being less than said predetermined threshold value, and said host applique circuit, located at said host switch, for providing a path between said mechanized loop test equipment and a no-test trunk circuit located at said host switch, and for repeating signals between said no-test trunk and said remote applique circuit.

4,641,300
DIGITAL TIE LINE

Walter K. Wurst, Wellington, Canada, assignor to ITT Corporation, New York, N.Y.
Filed Sep. 21, 1984, Ser. No. 653,374
Int. Cl.⁴ H04J 1/16, 3/02; H04L 27/10

U.S. Cl. 370-16 17 Claims



- A digital tie line for digital communication systems, comprising:
 - means, coupled to a system bus and an external bus of said systems, for directing signals between each of said buses, comprising means for associating time slot assignments of said signals between said buses,
 - means, connected to said directing means, for controlling said directing means,
 - means for serializing system bus signals prior to directing said serialized system bus signals onto said external bus,
 - means for Manchester encoding said serialized system bus signals for insertion onto said external bus,
 - means for Manchester decoding external bus signals prior to directing said Manchester decoded external bus signals onto said system bus,
 - means for parallelizing said Manchester decoded external bus signals for insertion onto said system bus, and
 - means, coupled to said directing means, for providing a bypass of said external bus, in response to the absence of a dc component of said Manchester encoded serialized system bus signals provided from said Manchester encoded means, by providing a direct path around said digital tie line for external bus signals of one or more other digital tie lines coupled to said external bus.

4,641,301
TELECOMMUNICATION SWITCHING SYSTEM AND PRIORITY ARRANGEMENT USED THEREIN

Francoise C. G. Van Simaey, Brussels; Anna M. C. Lours, Kessel, both of Belgium; Daniel C. Upp, Southbury, Conn.; Alan J. Lawrence, Stratford, Conn., and John M. Cotton, East Norwalk, Conn., assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 15, 1985, Ser. No. 701,904
Claims priority, application Belgium, Feb. 21, 1984, 2/60342
Int. Cl.⁴ H04Q 11/04

U.S. Cl. 370-58 25 Claims

- A telecommunication switching system, comprising:
 - a plurality of terminal circuits providing control data;
 - a common control circuit including first means for processing control data collected from said terminal circuits;

to the clock pulse input of the digital circuit and for delivering the digital stimulus signal to the stimulus input of the digital circuit in synchronism with the clock pulses coupled to the clock pulse input;

delay means having an input and an output, the input of said delay means being connected to the clock pulse output of said transmitter for delaying the clock pulses by a time delay corresponding to the τ second time delay of the digital test signal caused by the digital circuit; and

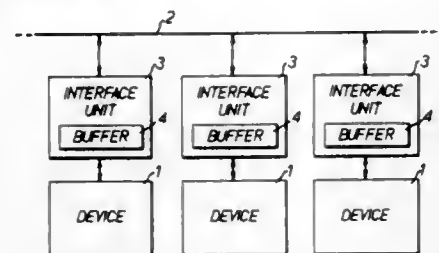
analyzing means having a first input arranged for receiving the digital test signal from the digital circuit and a second input connected to the output of said delay means for receiving the same number of clock pulses, delayed by τ seconds, coupled to the digital circuit, said analyzing means including feedback shift register means for compressing the test signal into a test signature which can be checked for errors by comparison with a desired signature.

4,641,307 DATA PACKET TRANSMISSION USING SHARED CHANNEL

Brian M. Russell, Oldham, Great Britain, assignor to International Computers Limited, London, England
Filed Feb. 21, 1984, Ser. No. 582,183

Claims priority, application United Kingdom, Feb. 22, 1983, 8304950

Int. Cl. H04Q 11/04; H04J 3/02
U.S. Cl. 370-60 15 Claims



1. A method of transmitting data from a source device to a predetermined destination device in a system comprising a plurality of devices, a plurality of interface means, and a common communications channel, each device being coupled to the channel through an associated one of the said interface means, only one of the interface means at a time being permitted to transmit a packet over the channel, the method comprising transferring the data from the source device to its interface means in individual data units with no indication of how the data units are to be grouped into packets, storing the units in storage means in that interface means, and, when the interface means is permitted to transmit a packet, transmitting a packet comprising all the data units stored in the said storage means and not previously transmitted.

4,641,308 METHOD OF INTERNAL SELF-TEST OF MICROPROCESSOR USING MICROCODE

Stephen P. Sacarisen, and Otto N. Fanai, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1984, Ser. No. 567,598
Int. Cl. G06F 11/00

U.S. Cl. 371-16 8 Claims

1. A method of testing a processor device; said device formed at a face of a semiconductor body and having a standard mode of operation and an internal test mode of operation, the device containing:

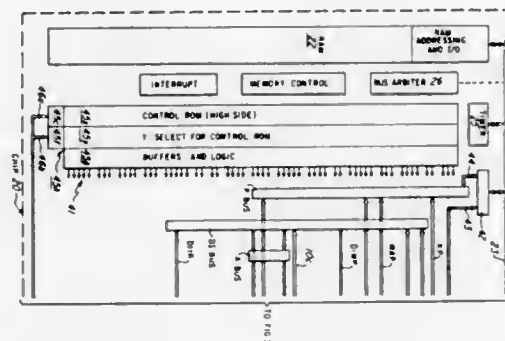
(a) a control ROM at said face, said control ROM having addressing means with an input, the control ROM produc-

ing a plurality of sets of control signals at outputs thereof, each set corresponding to a given address at said input;

(b) a plurality of registers for holding data, each register having a plurality of stages, each stage having at least one input and at least one output and having separate control means for each such input and output;

(c) a plurality of busses, each bus including a set of separate conductive lines, each of said stages of the plurality of registers having at least one of said conductive lines connected to the input or output thereof via said control means;

(d) a plurality of control lines from the control ROM extending along said face, each of said control means in each of said stages of said registers being connected to a different one of said control lines;



(e) said control ROM including an array of cells for storing said plurality of sets of control signals for coupling to said control lines, the cells storing a first plurality of sequences of said sets of control signals to define said standard mode of operation, and for also storing a second plurality of sequences of said sets of control signals to define said test mode of operation;

(f) a plurality of terminals on said device, including a plurality of operating terminals and also test terminals;

(g) said method comprising the steps of applying a first control code to test terminals of said processor device to cause said addressing means of the control ROM to address only said first plurality of sequences; or alternatively applying a second control code to said test terminals to cause said addressing means to address only said second plurality of sequences.

4,641,309 METHOD AND APPARATUS FOR SELECTIVELY COMPENSATING BURST ERRORS OF VARIABLE LENGTH IN SUCCESSIVE DIGITAL DATA WORDS

Kenji Nakano, Ebina, and Hisayoshi Moriwaki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 447,119, Dec. 6, 1982, abandoned. This application Jul. 1, 1985, Ser. No. 750,243

Claims priority, application Japan, Dec. 8, 1981, 56-197437
Int. Cl. G06F 11/10

U.S. Cl. 371-31 40 Claims

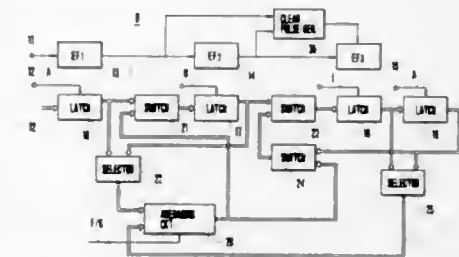
1. A method of selective and digitally compensating burst errors of variable length in successive data words; comprising the steps of:

receiving said successive data words;
identifying those data words which are erroneous and those data words which are correct;
sensing the presence of one of the following error condi-

tions: (a) an erroneous data word preceded and followed, respectively, by correct data words; (b) two successive erroneous data words preceded and followed, respectively, by correct data words; and (c) at least three successive erroneous data words preceded by a correct data word; and

compensating the respectively sensed error condition as follows:

in condition (a), replacing the erroneous data word with a compensated data word which is an average of the correct



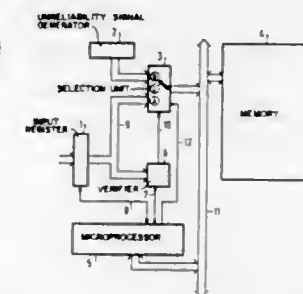
preceding and following data words; in condition (b), replacing the erroneous data words with respective compensated data words derived by a process including averaging said correct preceding and following data words to produce a pseudo data word, and average said pseudo data word with one of said correct preceding and following data words to produce a compensated data word for replacing one of said erroneous data words and in condition (c), replacing at least the first of said successive erroneous data words with the preceding correct data word.

4,641,310 DATA PROCESSING SYSTEM IN WHICH UNRELIABLE WORDS IN THE MEMORY ARE REPLACED BY AN UNRELIABILITY INDICATOR

Theodorus G. J. A. Martens; Frita A. Steenhof, and Johannes J. W. Kalfa, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,710
Claims priority, application Netherlands, Nov. 2, 1983, 8303765

Int. Cl. G06F 11/10; G11C 29/00
U.S. Cl. 371-38 9 Claims



1. In a data processing system comprising data input means connected to receive blocks of data, wherein each data block contains at least one data word and check bits,

a data verifier,

means connecting said data input means to an input of the verifier, the verifier comprising means responsive to the check bits of a received data block for verifying whether the data block contains reliable data, and for generating an unreliability signal when the received data word does not contain reliable data,

a memory, and

means coupling said data input means to said memory for the storage of data words therein;

the improvement wherein the means coupling the data input means to the memory comprises a selection unit, and further comprising a generator for generating an unreliability indicator,

said selection unit having a first input connected to the data input means, a second input connected to receive the unreliability indicator from the generator, and an output coupled to said memory,

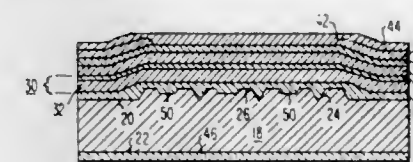
said selection unit comprising means responsive to said unreliability indicator for blocking said first input from said memory and for substituting an unreliability indicator at said second input for the data word portion of a data block that contains unreliable data,

whereby data words stored in said memory and corresponding to unreliable data words received at said first input means are comprised of said unreliability indicator.

4,641,311 PHASE-LOCKED SEMICONDUCTOR LASER ARRAY WITH INTEGRAL PHASE SHIFTERS

Donald E. Ackley, West Amwell Township, Hunterdon County, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Dec. 20, 1983, Ser. No. 563,605

Int. Cl. H01S 3/098
U.S. Cl. 372-18 9 Claims



1. A phase-locked semiconductor laser array comprising a body of semiconductor material having first and second reflecting surfaces with at least said first reflecting surface being partially transparent at the laser wavelength so that light may be emitted therefrom; said body including:

a substrate with a pair of opposed major surfaces with a plurality of substantially parallel channels with lands therebetween in the first major surface and extending between the reflecting surfaces;

a first cladding layer overlying the first major surface of the substrate and the channels;

a laser cavity region overlying the first cladding layer;

a second cladding layer overlying the laser cavity region; and

first and second electrical contacts to the second cladding layer and the second major surface of the substrate respectively;

wherein each channel is spaced from adjacent channels by a distance such that the laser oscillations over adjacent channels are phase-locked to one another; and

alternate channels having means for shifting the phase of laser beams propagating in the cavity region over said alternate channels relative to the phase of laser beams propagating over the adjacent channels.

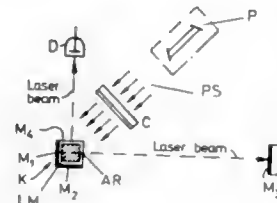
4,641,312

METHOD AND DEVICE FOR PRODUCING INDIVIDUAL SHORT LASER PULSES

Fritz P. Schäfer, Göttingen-Nikolausberg; Sandor Szatmari, Göttingen, and Zolt Bor, Göttingen-Nikolausberg, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Fed. Rep. of Germany
Filed May 4, 1984, Ser. No. 607,320
Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317065; Sep. 16, 1983, 3333575
Int. Cl.⁴ H01S 3/10

U.S. Cl. 372-25

19 Claims



1. In a method of producing an individual laser radiation pulse of predetermined short duration utilizing a single stimutable laser medium common to a first resonator and a second resonator, said first resonator having a low quality factor, a short time constant, and a high laser threshold value, said second resonator having a high quality factor relative to said low quality factor, a long time constant relative to said short time constant and a low laser threshold value relative to said high laser threshold value, the laser medium being excited by a pump pulse having a duration much longer than said short pulse duration and an amplitude sufficient to produce a population inversion in the laser medium exceeding said high laser threshold value, and in which the population inversion is reduced below said high threshold value after emission of a short duration radiation pulse, the improvement comprising the following steps:

- generating said short duration laser pulse by a relaxation process in the first resonator, said relaxation process tending to produce a series of spaced short duration laser radiation pulses, of which the individual short duration laser pulse is the first; and
- after production of said individual short duration laser pulse and before any subsequent relaxation pulse in said series can build up in said first resonator, maintaining the population inversion in said laser medium below said high threshold value in said first resonator by a steady build-up of laser oscillations in said second resonator, said oscillations in said second resonator continuously withdrawing sufficient energy from said laser medium to keep the population inversion therein below said high threshold value in said first resonator until termination of said pump pulse.

4,641,313

ROOM TEMPERATURE METAL VAPOUR LASER

Roderick C. Tobin, Mount Waverley, and Nigel D. Perry, Altona, both of Australia, assignors to Monash University, Clayton, Australia

Filed Aug. 28, 1984, Ser. No. 644,955

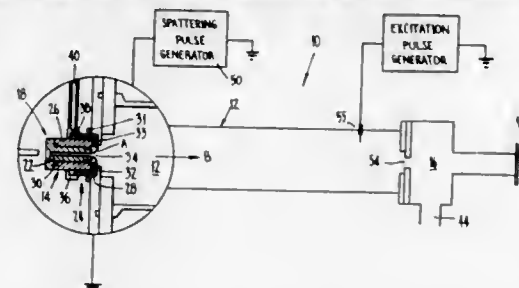
Claims priority, application Australia, Jun. 15, 1984, PG5528
Int. Cl.⁴ H01S 3/22

U.S. Cl. 372-56

4 Claims

1. A room temperature metal vapour laser having an optical cavity, a sputtering cathode and an anode located at one end of said cavity, said sputtering cathode having a sputtering surface exposed to the optical cavity, power supply means for producing a first electrical discharge between the sputtering cathode and the anode to vaporize a metal from the sputtering surface, a gaseous jet means for introducing an inert gas stream into the optical cavity and in flowing contact with said sputtering surface to entrain metal vapour from said sputtering surface

into a collimated beam in the optical cavity, a second electrical discharge means having an electrode adjacent to said collimated beam in the optical cavity separate and remote from the



sputtering cathode surface and said anode for exciting the metal vapour entrained in said inert gas stream such that said discharge is drawn into the collimated metal vapour beam in preference to atmosphere surrounding the beam.

4,641,314

LASER TUBE HOLDER IN A LASER OSCILLATOR

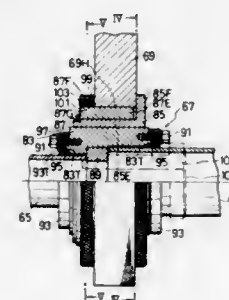
Ryoji Koseki, Buena Park, Calif., assignor to Amada Engineering Service Co., Inc., La Mirada, Calif.

Filed Jan. 6, 1986, Ser. No. 816,252

Int. Cl.⁴ H01S 3/03

U.S. Cl. 372-65

7 Claims



1. A laser oscillator laser tube holder for a laser tube used in a laser oscillator in which a laser oscillator support plate supports a cylindrical joint holder which supports a connecting section of said laser tube in said laser oscillator, comprising: an inner eccentric holder for rotatably supporting said joint holder in a fitting relationship, an eccentric cylindrical section formed in said inner eccentric holder, an outer eccentric holder for rotatably supporting said eccentric cylindrical section of said inner eccentric holder in a fitting relationship, and an eccentric cylindrical section formed in said outer cylindrical holder and rotatably mated with and supported by the laser oscillator support plate.

4,641,315

MODIFIED INVOLUTE FLASHLAMP REFLECTOR

Vaughn G. Draggoo, Livermore, Calif., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1984, Ser. No. 684,251

Int. Cl.⁴ H01S 3/093

U.S. Cl. 372-72

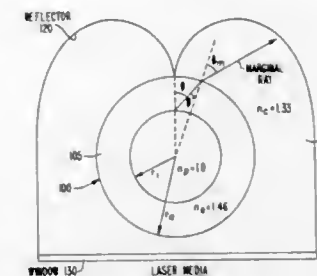
4 Claims

1. A reflector for a laser having a substantially cylindrical flashlamp whose marginal angle, ϕ_m , is less than 90° , said laser reflector comprising a surface of light-reflective material and a cross-section, in a plane perpendicular to the axis of said cylindrical lamp, defined by

$$x = \pm(r \cos \theta + r \sin \phi_m (\cos \phi_m \cos \theta - \sin \phi_m \sin \theta)),$$

and

$$y = r \sin \theta + r \sin \phi_m (\cos \phi_m \sin \theta - \sin \phi_m \cos \theta),$$



where x and y are orthogonal axes of a Cartesian coordinate system which axes intersect at the axis of said flashlamp, where θ represents a varying angle of rotation around said cylindrical flashlamp axis such that $0 \leq \theta < \pi$, and where r is the radius of said cylindrical flashlamp.

4,641,316

D.C. ELECTRON BEAM METHOD AND APPARATUS FOR CONTINUOUS LASER EXCITATION

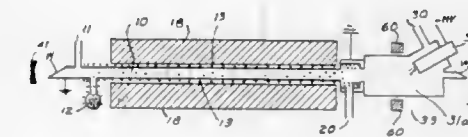
George J. Collins; Jorge J. Rocca, and Jack D. Meyer, all of Ft. Collins, Colo., assignors to Applied Electron Corp., Albuquerque, N. Mex.

Continuation of Ser. No. 353,428, Mar. 1, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,408

Int. Cl.⁴ H01S 3/09

U.S. Cl. 372-74

12 Claims



1. A laser comprising, in combination:

- a single enclosure having an optical axis that is defined by a resonant cavity comprising two mirrors, one at each end thereof, one or both of which is employed to extract power from the laser, the single enclosure being filled with a suitable gas laser medium and being electrically connected to a source of ground potential;
- a glow discharge electron gun contained within said single enclosure and having a solid wall cathode, said solid wall cathode having one or more faces emitting beam electrons, said one or more faces emitting beam electrons being constructed of a high secondary electron emission coefficient material for producing a large number of secondary electrons per incident bombarding ion, said glow discharge electron gun being coupled to receive a source of operating voltage sufficient to cause emission of beam electrons therefrom and being physically positioned to inject those beam electrons into the gas laser medium within the single enclosure, thereby exciting the gas laser medium to become a plasma volume for employment as a laser active medium; and
- means for producing a magnetic field for confining said beam electrons.

4,641,317

SPREAD SPECTRUM RADIO TRANSMISSION SYSTEM

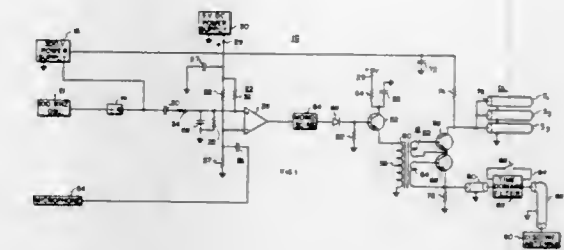
Larry W. Fullerton, Huntsville, Ala., assignor to Charles A. Phillips, Ardmore, Tenn., a part interest

Filed Dec. 3, 1984, Ser. No. 677,597

Int. Cl.⁴ H04B 15/00; H04K 1/00; H04L 27/30

U.S. Cl. 375-1

12 Claims



1. A spread spectrum radio transmission system comprising: a radio transmitter comprising:

- pulse generating means for generating reoccurring pulses, said pulses appearing at a selected time spacing,
- a source of intelligence signals, and
- modulation means responsive to said pulses generating means and said source of intelligence signals for providing as an output a train of pulses wherein the leading edge of pulses is varied in time position as a function of intelligence signal;
- avalanche semiconductor switching means, having a control signal input responsive to said output of said modulation means, a bias power input, and a switched power output, for switching power on and off to said switched power output;
- a D.C. bias source coupled to said bias power input comprising a delay line having a delay of 1 picosecond to 50 nanoseconds and delay line charging means coupled to said delay line for charging said delay line between pulses of said train of pulses;
- transmitting antenna means comprising an aresonant antenna coupled to said switched power output and to space for transmitting a signal received from said switched power output; and
- a radio receiver comprising:

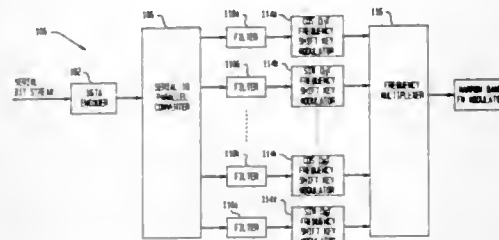
- receiving antenna means comprising an aresonant antenna for receiving transmissions from said transmitting antenna means and for providing as an output electrical pulses responsive to the transmitted pulse signals,
- amplification means responsive to the output of said receiving antenna means for amplifying received pulses,
- synchronous detection means, including signal sensitive windowing means having a signal input responsive to the output of said amplification means, for responding to, and providing an output for, signals appearing within reoccurring windows of time generally coincident with the average time of occurrence of pulses received by said receiving means and including means for being insensitive to received signals appearing between the occurrence of said windows of time,
- signal conversion means for converting the output of said detection means into a replica of signals of said intelligence signals, and
- signal reproduction means responsive to the output of said signal conversion means for reproducing said intelligence signals.

4,641,318

METHOD FOR IMPROVING THE RELIABILITY OF DATA TRANSMISSION OVER RAYLEIGH FADING CHANNELS

Eric J. Addeo, Washington Township, Morris County, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 25, 1985, Ser. No. 727,241
Int. Cl.⁴ H04L 1/02
U.S. Cl. 375—38



12. An apparatus for transmitting a relatively high bit rate stream of data over a Rayleigh fading channel, said apparatus comprising:

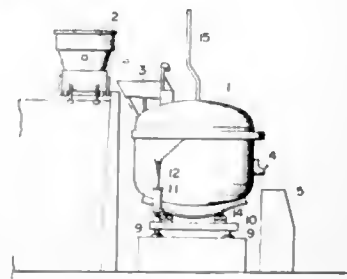
- (a) means for converting said relatively high bit rate stream of data into N parallel relatively low bit rate streams of data;
- (b) a plurality of subcarrier modulating means for modulating each of N separate subcarriers in accordance with the content of a respective bit of said N parallel streams of data for a duration longer than that of the Rayleigh channel fade;
- (c) summing means for summing said N modulated subcarriers for form a composite signal; and
- (d) carrier modulating means for modulating said composite signal onto a carrier having the frequency of said Rayleigh fading channel.

4,641,319

METHOD FOR QUANTITATIVE DISCHARGE OF MOLTEN MATERIAL

Takaatsu Nagai, Tokyo; Masayuki Takada, Nagano; Akira Sato, and Mineo Imamura, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Mar. 23, 1984, Ser. No. 592,576
Claims priority, application Japan, Mar. 31, 1983, 58-53904

Int. Cl.⁴ F27D 3/00
U.S. Cl. 373—84 19 Claims



1. In a method for intermittently charging a molten principal raw material and any supplementary material as needed to provide a specified raw material formulation into a melting furnace and continuously discharging a molten material therefrom, the method for quantitative discharge of the molten material comprising determining the weight of the tiltable melting furnace, said weight changing with the discharging of the molten material, computing the rate of change in weight of the molten material with respect to time from the determined

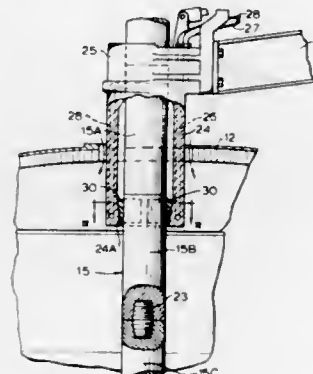
weights of said furnace, and tilting said furnace to a position indicated by comparison of said computed rate of change in weight of the molten material with respect to time and the set rate of change in weight of the molten material with respect to time.

4,641,320

SHROUD FOR FURNACE ELECTRODE

Michael J. Mullen, Sterling, Ill., assignor to Northwestern Steel and Wire Company, Sterling, Ill.
Continuation-in-part of Ser. No. 450,242, Dec. 16, 1982. This application Dec. 18, 1984, Ser. No. 682,937
Int. Cl.⁴ H05B 7/102

U.S. Cl. 373—96 4 Claims



1. An electric arc furnace assembly comprising: a furnace body, a roof removably secured to said furnace body, a plurality of electrode holders positioned above said roof, an electrode adjustably positionable in each holder for controlled insertion into said furnace, each electrode being supported in depending relation with said furnace body solely by the support from its associated holder, a shroud secured to each of said electrode holders and having a lower end extending through said roof into said furnace, each electrode extending through one of said shrouds, each shroud having an internally tapered wall therein, a conductive split ring disposed in the lower end of said shroud, said ring consisting of ring segments having a taper corresponding to the taper of said tapered wall and being free to ride up the inner wall of said shroud when lateral displacement of the electrode extending there-through occurs, the radial spacing between the lower end of said ring and said electrode being sufficiently small to provide substantial flow resistance to corrosive furnace gases tending to pass between said electrode and said ring, said shroud having sufficient axial length to provide a lateral abutment surface for said electrode when said electrode is displaced from its vertical position, thereby reducing the bending moment tending to break said electrode upon such displacement.

4,641,321

COOLED FURNACE HEAD FOR HEAVY-CURRENT RESISTANCE FURNACES

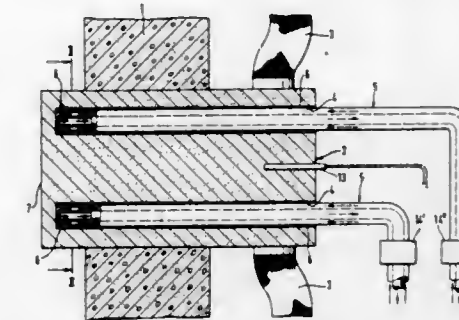
Jürgen Semmler, Donauwörth, Fed. Rep. of Germany, assignor to Stgri GmbH, Augsburg, Fed. Rep. of Germany
Filed Jul. 22, 1985, Ser. No. 757,630

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1984, 3427407

Int. Cl.⁴ H05B 3/00, 3/60
U.S. Cl. 373—120 11 Claims

1. Furnace head for heavy-current resistance furnaces of

refractory masonry, at least one electrode inserted into the masonry, at least one cooling device inserted in the electrode and extending almost the full length of the electrode but stop-



ping short of the end thereof, and means for controlling cooling of the electrode to obtain an electrode temperature which is about the same temperature as the masonry.

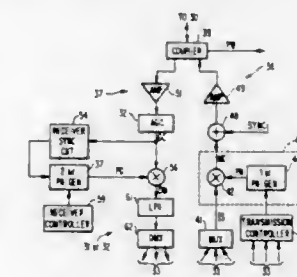
4,641,322

SYSTEM FOR CARRYING OUT SPREAD SPECTRUM COMMUNICATION THROUGH AN ELECTRIC POWER LINE

Satoshi Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,111
Claims priority, application Japan, Oct. 18, 1983, 58-194908; Feb. 2, 1984, 59-17353; Jul. 3, 1984, 59-137609
Int. Cl.⁴ H04B 3/54

U.S. Cl. 375—1 14 Claims



1. A system for use in conveying a transmission signal from a transmission station to a reception station through an electric power line for electric power of a commercial frequency falling within a first frequency range, said electric power line having a variable loss, said transmission station comprising: modulation means responsive to said transmission signal for carrying out spread spectrum modulation of said transmission signal by the use of a first pseudorandom code to produce a modulated signal which is subject to said spread spectrum modulation and which is dispersed in a second frequency range different from said first frequency range; synchronization signal producing means for producing a synchronization signal; and combining means coupled to said electric power line, said modulating means, and said synchronization signal producing means for combining said modulated signal and said synchronization signal into a combined signal to supply said electric power line with said combined signal; said reception station comprising: demodulating means coupled to said electric power line for demodulating said combined signal into a demodulated signal by the use of a second pseudorandom code corresponding to said first pseudorandom code, said demodulated signal comprising a reproduction of said modulated

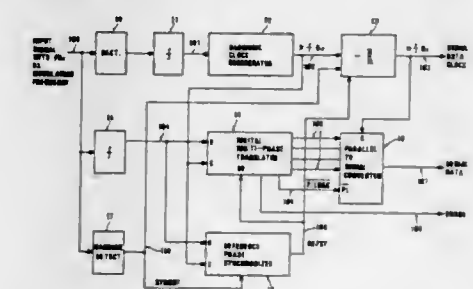
signal and a synchronization component representing said synchronization signal, and having a variable level resulting from said variable loss of the electric power line; clock pulse generating means coupled to said demodulating means for generating a sequence of clock pulses in response to said synchronization component and said variable power level; and means coupled to said clock pulse generating means and said demodulating means for supplying said demodulating means with said second pseudorandom code which is synchronized with said clock pulse sequence.

4,641,323

MULTI-PHASE PSK DEMODULATOR

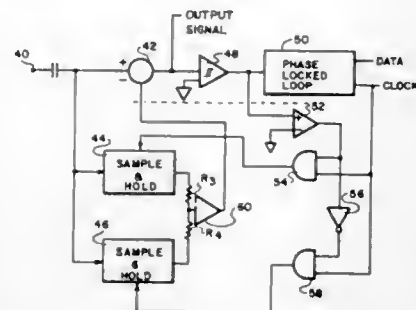
Chung K. Tsang, 175 Bethany Leigh Dr., Scarborough, Ontario M1V 2T6, Canada
Filed Feb. 7, 1983, Ser. No. 464,636
Int. Cl.⁴ H04L 27/16

U.S. Cl. 375—80 12 Claims



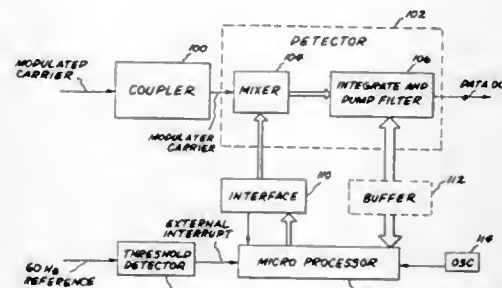
1. A multi-phase PSK (phase shift key) demodulator for operating upon an input signal representing a continuous N-th phase (N=2ⁿ, n being a natural number) PSK modulated source with a predetermined sync preamble and outputting a binary encoded serial data independent of data pattern when said input signal being preemphasized or conditioned, said demodulator comprising:
 - (a) a full wave rectifier means slicing the input signal into an uni-polar signal,
 - (b) a first hard limiter means converting the uni-polar signal into a rectangular clock tracking signal source,
 - (c) a harmonic clock regenerator means receiving said rectangular clock tracking signal source for reproducing a N-th time harmonic frequency source of the carrier independent of signal's data pattern and feeding said harmonic frequency source to a multi-phase translator and reference phase synchronizer,
 - (d) a second hard limiter means converting the input signal into a N-th phase rectangular wave PSK signal,
 - (e) said digital multi-phase translator means responding to clock output of the harmonic clock regenerator and rectangular PSK signal output of second hard limiter for producing a binary parallel data,
 - (f) a frequency divider means dividing said N-th time harmonic frequency source into a serial data clock,
 - (g) a parallel to serial converter means converting said parallel data into a serial one with the application of data clock,
 - (h) a carrier detect means generating a one-shot signal during the preamble period to control the frequency divider and enable a reference phase synchronizer, and,
 - (i) said reference phase synchronizer means extracting the reference phase signal from the preamble sync pattern to synchronize said digital multi-phase translator and frequency divider.

4,641,324
SIGNAL CORRECTION APPARATUS
 Herbert Karsh, Laguna Beach, and Ward M. Calaway, Sierra Madre, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Sep. 14, 1984, Ser. No. 650,596
 Int. Cl.⁴ H04L 25/06
 U.S. Cl. 375—76 14 Claims



4. A method for recovering a baseline corrected self clocking NRZ digital waveform from a self clocking NRZ digital waveform subject to baseline variation, said method comprising the steps of:
 (a) recovering the clocking signal from said baseline corrected self clocking NRZ digital waveform,
 (b) periodically sampling the amplitude of said self clocking NRZ digital waveform,
 (c) storing said sampled amplitude values,
 (d) computing the average of said stored amplitude values,
 (e) subtracting said average from said self clocking NRZ digital waveform to provide a baseline corrected NRZ digital waveform,
 said sampling being synchronously locked for occurrence at the nominal times of occurrence of said NRZ digital waveform peaks, and said synchronous locking being synchronized to said baseline corrected NRZ digital waveform.

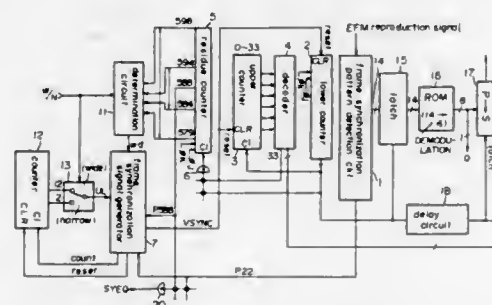
4,641,325
RECEIVER FOR PHASE SHIFT MODULATED CARRIER SIGNALS
 William C. Hughes, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
 Filed Feb. 4, 1985, Ser. No. 697,994
 Int. Cl.⁴ H04L 27/06
 U.S. Cl. 375—97 9 Claims



1. Apparatus for providing a local oscillator signal with a frequency which is at all times equal to a constant multiple of the frequency of a reference waveform, comprising:
 means, responsive to said reference waveform, for providing an interrupt signal upon the occurrence of a predetermined point in each cycle of said reference; and
 digital processing means for providing said local oscillator signal, said digital processing means being responsive to said interrupt signal for determining the number of pulses

of said local oscillator signal provided during one cycle of said reference waveform and for modulating the frequency of said local oscillator such that the number of local oscillator pulses provided during one cycle of said reference waveform is maintained to substantially equal said constant, said digital processing means comprising a microprocessor adapted to provide said local oscillator signal, and responsive to said interrupt signal for determining the number of local oscillator pulses provided during one cycle of said reference waveform and for modulating the number of local oscillator pulses provided to maintain this number to substantially equal said constant.

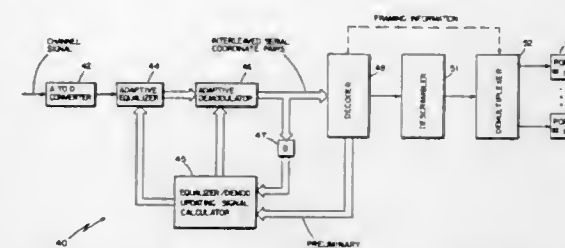
4,641,326
COUNTER CIRCUIT OPERABLE IN SYNCHRONISM WITH FRAME OR DIGITAL DATA SIGNAL
 Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
 Filed Oct. 10, 1984, Ser. No. 659,576
 Claims priority, application Japan, Oct. 14, 1983, 58-190911
 Int. Cl.⁴ H04L 7/00
 U.S. Cl. 375—108 7 Claims



1. A counter circuit operable in synchronism with a frame of a digital data signal in a digital audio system, the frame being composed of a predetermined number of channel bits, said counter circuit comprising:

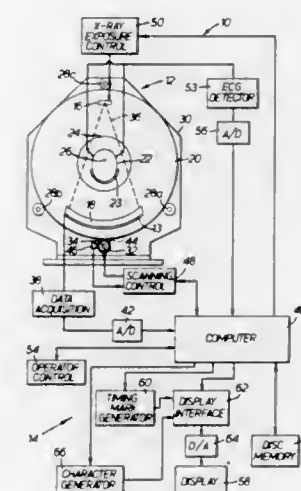
- a frame synchronization detecting means for detecting a frame synchronization signal contained in the digital data signal to produce a frame synchronization detection signal;
- a counter means for counting reproduction clock pulses reproduced from the digital data signal to produce a count signal when the count of said counter means reaches a value corresponding to the predetermined number of channel bits, wherein each reproduction clock pulse corresponds to a channel bit of the frame; and
- a signal feeding means for feeding a reproduction frame synchronization signal to said counter means for resetting the counter means, said signal feeding means being responsive to said frame synchronization detection signal to output said detection signal as said reproduction frame synchronization signal when the detection signal occurs within a predetermined range of the count of the counter means, and said signal feeding means being responsive to said count signal to output said count signal as said reproduction frame synchronization signal when said reproduction frame synchronization signal is not outputted from said frame synchronization signal detecting means within said predetermined range.

4,641,327
FRAME SYNCHRONIZATION IN TRELLIS-CODED COMMUNICATION SYSTEMS
 Lee-Fang Wei, Westwood, Mass., assignor to Codex Corporation, Mansfield, Mass.
 Filed Jul. 9, 1985, Ser. No. 753,182
 Int. Cl.⁴ H04L 7/04; G06F 11/10
 U.S. Cl. 375—114 13 Claims



- Apparatus for maintaining frame synchronization in a communication system comprising
 a transmitter that sends a sequence of signal points in successive time intervals, said signal points being drawn from a constellation of available signal points such that said sequence is one of a set of permissible sequences that is smaller than the set of all possible sequences of said signal points, said sequence of signal points being organized as a series of frames, each frame beginning at a predetermined time, and
 a receiver that determines said predetermined time when each said frame begins in order to maintain frame synchronization with said transmitter, said receiver comprising a decision device for determining said sequence of signal points which were sent by determining the minimum next path metric based on current path metrics and current branch metrics, and
 means for detecting and monitoring the rate of occurrence of non-zero difference between said minimum next path metric and the minimum of said current branch metrics as an indication of loss of frame synchronization.

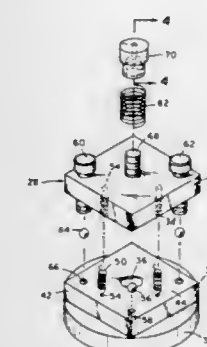
4,641,328
COMPUTED TOMOGRAPHY APPARATUS
 Masakuni Fujise, Nishinasuno, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
 Filed Jul. 21, 1983, Ser. No. 515,904
 Claims priority, application Japan, Jul. 21, 1982, 57-125906
 Int. Cl.⁴ H05G 1/10; 1/64; A61B 6/00
 U.S. Cl. 378—8 5 Claims



1. A computed tomography apparatus for reconstructing

cross-sectional images of a body to be examined corresponding to selected cardiac phases of the cardiac cycle, comprising:
 means for directing a divergent beam of penetrating radiation through the body;
 means for effecting relative angular displacement between the divergent beam of penetrating radiation and the body irrespective of the cardiac cycle of the body;
 means for detecting the penetrating radiation that passes through the body at a number of angular positions of the divergent beam relative to the body during said relative angular displacement to derive sets of detected radiation measurements representative of attenuation of the penetrating radiation by the body;
 display means including a cathode ray tube having a display screen;
 ECG detector means for generating electrocardiogram signals, during said relative angular displacement, corresponding to electrical signals of the heart created during each cardiac cycle;
 means for storing the radiation measurements detected by said detecting means, together with data corresponding to the electrocardiogram signals generated from said ECG detector means said electrocardiogram data being associated with said radiation measurements when such data is acquired in that said radiation measurements are correlated with the various cardiac phases of the cardiac cycles represented in such data;
 sequence control means for selecting specific phases of the cardiac cycle during which cross-sectional images of the examined body will be reconstructed and displayed;
 means for reconstructing the cross-sectional images of the body corresponding to the selected cardiac phases and said detected radiation measurements associated therewith and including display interface means for providing video signals corresponding to said cross-sectional images on said display screen of the cathode ray tube; and
 means for providing on said display screen an electrocardiogram display corresponding to the stored electrocardiogram data in said storing means upon the selection of a specific cardiac phase by said sequence control means.

4,641,329
FIXTURE FOR SUPPORTING AND ALIGNING A SAMPLE TO BE ANALYZED IN AN X-RAY DIFFRACTION APPARATUS
 Lanny A. Green, and Joaquim L. Heck, Jr., both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
 Filed Apr. 23, 1985, Ser. No. 726,562
 Int. Cl.⁴ G01N 23/20
 U.S. Cl. 378—79 7 Claims



1. A fixture for aligning and supporting a sample in a X-ray beam projecting from an X-ray source to an X-ray detector mounted for rotation about a first axis for X-ray diffraction analysis of the sample, comprising base means rotatable on said first axis and supported at a location intermediate said X-ray

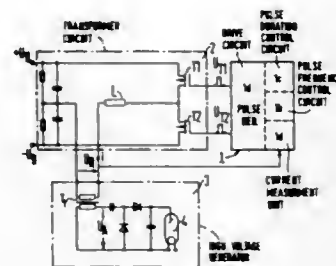
beam source and said X-ray detector, first and second plate means carried by and rotatable with said base means and disposed on said base means in a stacked array along said first axis and with juxtaposed planar surfaces disposed perpendicular to said first axis, yieldable means securing the first plate means to the second plate means for urging the first plate means towards the second plate means, boss means centrally disposed on a surface of said first plate means and extending along said first axis, sample supporting means movably attached to said boss means for selective movement along said first axis and having an elongated receptacle therein extending along said first axis for receiving and supporting a sample-containing capillary on said first axis, and selectively adjustable spacer means for tilting said first plate means and the sample supporting means along at least one other axis for positioning and maintaining the sample-containing capillary on said first axis during rotation of said base means.

4,641,330
HIGH VOLTAGE SUPPLY CIRCUIT FOR AN X-RAY TUBE
Thomas Herwig, Eltville, and Georg Geus, Wiesbaden, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1985, Ser. No. 763,425
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1984, 3431082

Int. Cl.⁴ H05G 1/32, 1/20
U.S. Cl. 378—101

5 Claims



1. In a high voltage supply circuit for an x-ray tube having a pulse generator and a high voltage generator including a high voltage transformer, the improvement comprising:
a drive circuit for said supply circuit including said pulse generator and having means connected to said pulse generator for controlling the pulse frequency of pulses generated by said pulse generator and means connected to said pulse generator for independently controlling the pulse duration of pulses generated by said pulse generator, said means for controlling the pulse frequency initially selecting a pulse frequency for said pulse generator and said means for controlling said pulse duration thereafter regulating the amplitude of the voltage at said high voltage transformer by controlling only said pulse duration.

4,641,331
AUTOMATIC EXPOSURE DEVICE FOR A PANORAMIC X-RAY PHOTOGRAPHING DEVICE
Takao Makino, Otsu, and Shinichi Osada, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

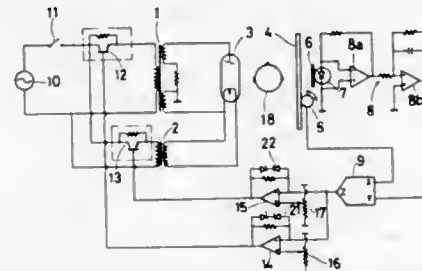
Filed Aug. 1, 1984, Ser. No. 636,689
Claims priority, application Japan, Aug. 2, 1983, 58-142045

Int. Cl.⁴ H05G 1/30, 1/32
U.S. Cl. 378—108

6 Claims

1. An automatic exposure device for a panoramic X-ray photographing apparatus comprising a means for converting a residual X-ray dose penetrating a patient and an X-ray film into an electrical output, a comparing means for comparing the level of said electrical output with a preset level, a tube voltage

feedback control element provided at the primary side of a high voltage transformer, a tube current feedback control element provided at the primary side of a filament transformer, wherein both feedback control elements are simultaneously feedback-controlled by the output of said comparing means, and a means for detecting the feed speed of the X-ray film and



converting the speed into an electrical output so that said electrical output of said residual penetrated X-ray dose and the electrical output of said feed speed may be simultaneously inputted to said comparing means and that the ratio of the two outputs may be delivered as the output of said comparing means.

4,641,332
X-RAY TUBE COMPRISING ANODE DISC ROTATABLY SUPPORTED BY BEARING HAVING PUSH-PULL BEARING ON AN AXIAL FACE

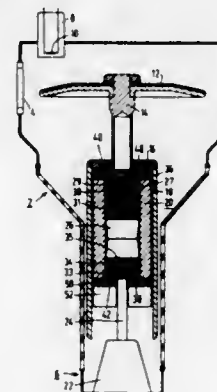
Jan Gerkema, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,945
Claims priority, application Netherlands, Nov. 8, 1983, 8303832

Int. Cl.⁴ H01J 35/10

U.S. Cl. 378—125

10 Claims



1. An X-ray tube comprising an anode disc which is rotatably supported by a bearing member comprising cylindrical and axial face components; the improvement therein comprising said bearing member having a push-pull bearing on an axial face, said axial face having a pattern of helical grooves on it, and a liquid metal lubricant cooperating with said pattern of helical grooves so that a comparatively strong negative pressure occurs on said axial face upon rotation of said bearing member.

4,641,333
METHOD OF MANUFACTURING AN X-RAY TUBE ROTARY ANODE AND AN X-RAY TUBE ROTARY ANODE MANUFACTURED ACCORDING TO THIS METHOD

Laurentius M. J. Goossens; Gerhardus A. te Raa, and Bernhard J. P. van Rhoenen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 9, 1985, Ser. No. 773,725
Claims priority, application Netherlands, Sep. 14, 1984, 8402828

Int. Cl.⁴ H01J 35/10
U.S. Cl. 378—144

8 Claims



1. A method of manufacturing a laminated anode for an X-ray tube, said method comprising the steps of:

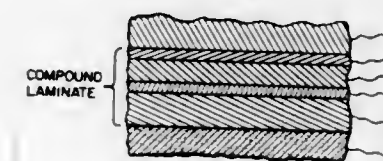
- (a) bonding a target layer consisting essentially of tungsten to a support layer consisting essentially of molybdenum by using a high-speed deformation impact process; and
- (b) increasing the thickness of the support layer to a thickness sufficient to provide a heat sink for high load operation, by using a thermal spraying process to deposit thereon a material consisting essentially of molybdenum, said thermal spraying process being performed at a temperature which is sufficiently low to prevent the temperature of the anode from exceeding 1650° C., but which is sufficiently high to ensure that the deposited material forms a strong bond and has a density which is at least 85% of the theoretical maximum.

4,641,334
COMPOSITE ROTARY ANODE FOR X-RAY TUBE AND PROCESS FOR PREPARING THE COMPOSITE
Thomas M. Devine, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 15, 1985, Ser. No. 702,160
Int. Cl.⁴ H01J 35/10

U.S. Cl. 378—144

14 Claims



1. In an anode assembly for a rotating anode for an X-ray tube wherein a graphite body is joined to the surface of a metal component of said anode assembly, the metal of said metal component being selected from the group consisting of molybdenum, molybdenum alloys, tungsten and tungsten alloys, the improvement wherein said graphite body and the surface of said metal component are separated by a crack-free intermediate compound laminate; said compound laminate consisting of, in sequence, a layer comprising carbide of vanadium and of metal from said metal component metallurgically bonded to said metal component; a layer of metal consisting essentially of vanadium or vanadium alloy metallurgically bonded to said layer of carbide; a zone of interdiffused metals comprising platinum and vanadium, said zone being metallurgically bonded to said layer of vanadium or vanadium alloy and a continuous layer consisting essentially of metal selected from the group consisting of platinum and platinum alloys, said

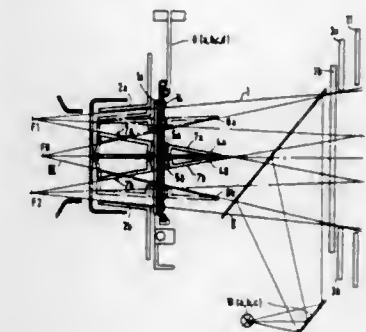
continuous layer being metallurgically bonded to both said zone and said graphite body.

4,641,335
PRIMARY-BEAM COLLIMATOR FOR STEREO RADIOGRAPHIC X-RAY DIAGNOSTIC APPARATUS
Alfred Hahn, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 5, 1985, Ser. No. 720,321
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1984, 3422343

Int. Cl.⁴ G21K 1/04
U.S. Cl. 378—153

1 Claim



1. An improvement to a stereo radiographic X-ray apparatus comprising first, second and third spaced-apart radiation focal points arranged such that the first and second focal points lie in a plane and the third focal point is located intermediate the first and second focal points in the plane, the improvement comprising:

first and second pairs of X-ray opaque shutter leaves, each pair of shutter leaves being associated with a corresponding one of the first and second focal points and positioned to collimate radiation therefrom in planes which are perpendicular to said plane and comprising an internal shutter leaf and an external shutter leaf which are so positioned that the two internal shutter leaves are adjacent each other between the two external shutter leaves and radiation from the third focal point can be collimated by the two internal shutter leaves; and means for independently moving the shutter leaves, such that each of the said pairs of shutter leaves can individually collimate radiation from its corresponding focal point for stereo radiography and the two internal shutter leaves can alternatively collimate radiation from the third focal point and to close shutter apertures through which radiation from the first and second focal points is directed.

4,641,336
FILTER ARRANGEMENT FOR SOFT TISSUE
Jan Gästrin, Espoo, Finland, assignor to Instrumentarium Corp., Finland

Filed Jan. 6, 1984, Ser. No. 568,887
Claims priority, application Finland, Jan. 7, 1983, 830043

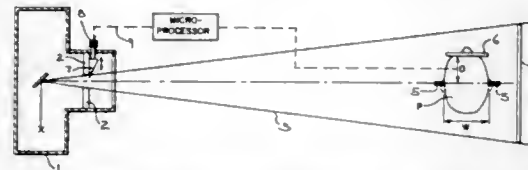
Int. Cl.⁴ G21K 3/00
U.S. Cl. 378—156

7 Claims

1. A soft tissue filter arrangement for providing proper soft tissue exposure in combination with a cephalographic apparatus that images a patient's skull in a sagittal plane, said cephalographic apparatus having a source projecting an X-ray beam along a line of projection extending from the source to an imaging medium, said apparatus having a pair of spaced positioning means disposed between the X-ray beam source and the imaging medium, said pair of positioning means defining a line extending intermediate them that is perpendicular to the imaging medium, said positioning means being engagable with

the sides of the patient's head for positioning the skull of the patient with the sagittal plane parallel to the imaging means, said soft tissue filter arrangement comprising:

measuring means located opposite the positioning means and spaced therefrom in a direction normal to the intermediate line, said measuring means being movable toward and away from the positioning means in the direction normal to the intermediate line for application to one of the forehead or nasion of the patient, said measuring means providing an indication of the dimension between said measuring means when applied to the forehead or nasion and



the intermediate line of the positioning means, said dimension being measured in a direction parallel the patient's sagittal plane; and
a generally V-shaped X-ray filter means of fixed shape, said filter means being located to one side of said measuring means and the positioning means with respect to the X-ray beam line of projection, said filter means being adjustably insertable in the X-ray beam normal to the line of projection in accordance with the indication obtained from said measuring means for being positioned relative to the soft tissue of the patient.

4,641,337

KEY TELEPHONE SYSTEM WITH MEANS FOR OPERATIVELY CONNECTING ANOTHER KEY TELEPHONE SYSTEMS

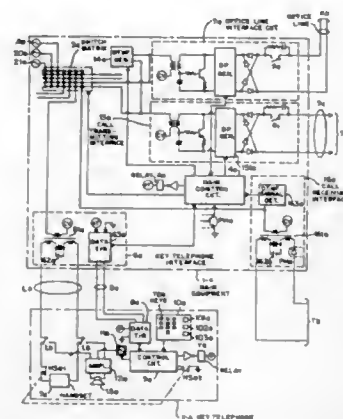
Jouji Tanaka; Tetunobu Watanabe, both of Kawasaki; Yoshiji Tanimoto, and Minoru Okumura, both of Tokyo, all of Japan, assignors to Nitsuko Limited, Kawasaki and Nippon Telegraph and Telephone Corporation, Tokyo, both of Japan
Filed Mar. 25, 1986, Ser. No. 843,707

Claims priority, application Japan, Mar. 25, 1985, 60-58540; Mar. 25, 1985, 60-58541

Int. Cl.⁴ H04Q 5/20

U.S. Cl. 379-162

9 Claims



1. In a key telephone system comprising a main equipment connected to at least one office line and a plurality of key telephone sets connected to said main equipment, said main equipment comprising an office line interface circuit connected to said office line, a plurality of key telephone interface circuits connected to said key telephone sets, respectively, a switching matrix having cross points for selectively connecting one of said key telephone interface circuits to another one and for selectively connecting said office line interface circuit to one of

said key telephone interface circuits, and a main control means connected to said office line interface circuit, said key telephone interface circuits, and said switching matrix and for controlling said switching matrix to perform selected cross-point switching in response to a call request signal, the improvement wherein each of said key telephone sets comprises a system selection key for producing a system call request signal by pushing said system selection key, said main equipment comprising a system interface circuit to be connected to another key telephone system through a connecting line, said switching matrix comprising cross points for selectively connecting one of said key telephone interface circuits to said system interface circuit, and said main control means controlling said switching matrix in response to said system call request signal to connect one of said key telephone interface circuits to said system interface circuit, whereby said key telephone sets may be operatively connected to said another key telephone system through said connecting line.

4,641,338

UNITARY TELEPHONY FRAME ARM EXTENDER

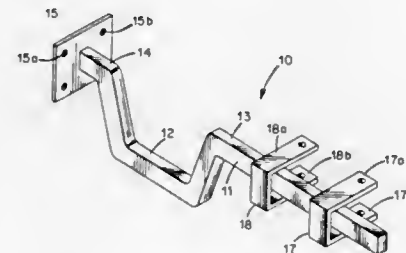
Roger L. Clark, Grabill; Dennis D. Ray, Fort Wayne, and James L. Martin, Avilla, all of Ind., assignors to General Telephone Company of Indiana, Westfield, Ind.

Filed Jul. 8, 1985, Ser. No. 752,866

Int. Cl.⁴ H04M 3/00

U.S. Cl. 379-328

1 Claim



1. A unitary telephony main distribution frame arm extender comprised of:

- (a) a unitary bar having two aligned segments one of which is substantially longer than the other; and
- a generally U-shaped segment joining said aligned segments;
- (b) a flange permanently attached to the shorter of said aligned segments, and adapted for mounting a terminal block;
- (c) at least two unitary C-shaped members permanently attached to the larger of said aligned segments, each of said C-shaped members (C-members) including two parallel legs extending orthogonally from said bar and adapted to engage an arm of a telephony main distribution frame.

4,641,339

VARIABLE BANDWIDTH HANDSFREE TELEPHONE USING SWITCHED CAPACITOR FILTERING

William O. Stottleyer, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 27, 1985, Ser. No. 716,438

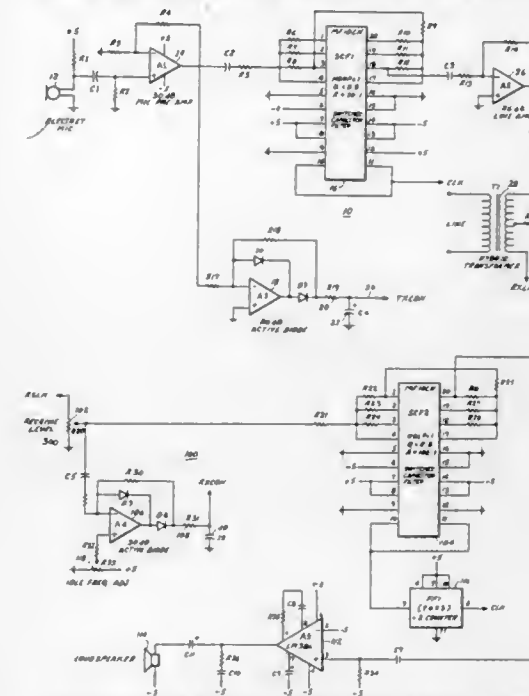
Int. Cl.⁴ H04B 3/20; H04M 9/08

U.S. Cl. 379-391

2 Claims

1. A circuit for providing isolation between two communication signals transmitted in two communication channels, on a transmission path having a frequency bandwidth, comprising: means for providing separate portions of the frequency bandwidth of said transmission path respectively for each of said channels at selected times, said providing means including a switched capacitor filter in each channel, and a clocking circuit for monitoring the communication signal levels of said two channels and generating an output

having a frequency indicative of a stronger of the two signals; and
means for controlling said providing means to prevent simultaneous overlapping in time of the portions, such that the clocking circuit output frequency is varied and controls the bandwidth of each of said channels, as a function of



said stronger of the two signals, said means for controlling including a voltage controlled oscillator responsive to the output of said clocking circuit for varying the switching frequencies of the switched capacitor filters in each channel to maintain a predetermined degree of signal isolation between said channels.

4,641,340

Patent Not Issued For This Number

4,641,341

AUTOMATIC MULTI-SYSTEM AM STEREO RECEIVER USING EXISTING SINGLE-SYSTEM AM STEREO DECODER IC

Leonard R. Kahn, 137 E. 36th St., New York, N.Y. 10016

Filed Aug. 28, 1985, Ser. No. 770,170

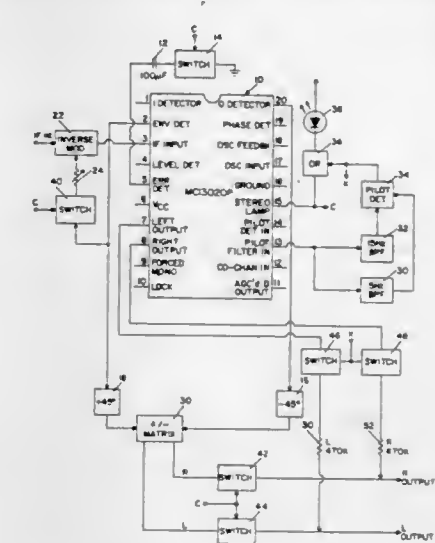
Int. Cl.⁴ H04H 5/00

U.S. Cl. 381-15

5 Claims

1. An AM stereo receiver capable of receiving signals representative of at least first and second different types of AM stereo systems, but using an integrated circuit (IC) stereo signal decoder designed to properly decode only received signals representing said first type of AM stereo system, comprising: means for receiving AM radio frequency signals and for converting said signals to corresponding intermediate frequency (IF) signals;
first means, including an IC designed to properly decode received IF signals representing said first type of AM stereo system, for developing a first pair of left (L) and right (R) stereo audio signals from received IF signals which represent said first type of AM stereo system;
second means, coupled to said IC, for adapting said first means so as to develop a second pair of (L) and (R) stereo audio signals from received IF signals which represent said second type of AM stereo system; and

means coupled to said first and second means for selecting one or the other of said pairs of (L) and (R) stereo audio



signals and for coupling the selected pair to (L) and (R) audio outputs of said receiver.

4,641,342

VOICE INPUT SYSTEM

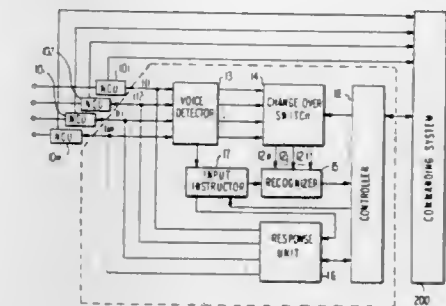
Takao Watanabe, and Masao Watari, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Mar. 19, 1984, Ser. No. 590,660

Claims priority, application Japan, Mar. 17, 1983, 58-44741; Feb. 8, 1984, 59-21115

Int. Cl.⁴ G10L 5/00

U.S. Cl. 381-41

8 Claims



1. A voice input system, comprising:
an input cue signal generating means for producing a first cue signal informing the user that the system is ready to receive the voice input;
a voice detection means for producing a detection signal when the voice signal is being inputted; and
an input instructing means for ordering said input cue signal generating means to issue a second input cue signal when said detection signal exists prior to the end of said input cueing signal.

4,641,343

REAL TIME SPEECH FORMANT ANALYZER AND DISPLAY

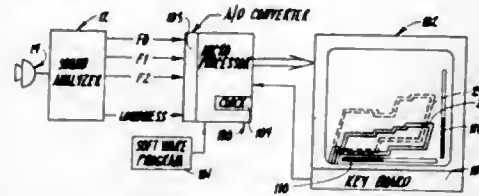
George E. Holland, Walter S. Struve, and John F. Homer, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 22, 1983, Ser. No. 468,463

Int. Cl.⁴ G10L 7/10

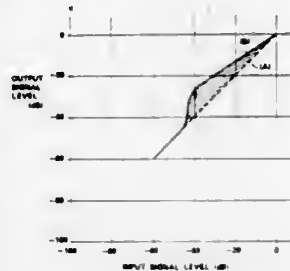
U.S. Cl. 381-48

5 Claims



1. A real time speech analyzer and display, comprising:
 - a first circuit for analyzing sound and including means for receiving sound input and for dividing said sound input into a plurality of frequency ranges, said ranges being continuous and partially overlapping so that there are no gaps between said frequency ranges, each said frequency range containing a frequency formant for said sound input;
 - converting means in said circuit for converting said sound input in said frequency ranges to proportional voltages representing the frequency content of said sound;
 - a microprocessor circuit for processing the voltages from the converting means and including analog to digital converting means for converting the voltages to digital signals, said microprocessor circuit being adaptable for operative use with software programming means for performing a plurality of processing operations on the digital signals;
 - a second circuit connecting said first circuit and said microprocessor circuit for conveying all of the voltages from said converting means to said microprocessor circuit, said voltages representing the sound input contained in said continuous, partially overlapping frequency ranges;
 - a display means connected to said microprocessor circuit for visually presenting traces derived from the output of said microprocessor circuit and representing said sound input; and
 - a control means operatively connected to said microprocessor circuit and said display means for controlling the display of said traces.

- (c) means for controlling a dynamic range of the audio signal in accordance with the detected noise level;
- (d) means for reproducing the controlled audio signal; and



- (e) means for filtering high frequency components out of the audio signal to an extent in accordance with the noise level detected by said detection means.

4,641,345

BODY-SENSIBLE ACOUSTIC DEVICE

Yoshio Takahashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

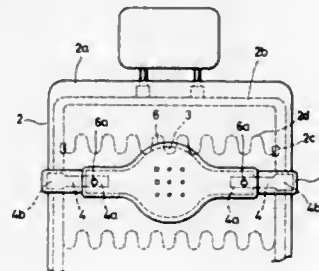
Filed Dec. 28, 1984, Ser. No. 686,965

Claims priority, application Japan, Dec. 29, 1983, 58-203576; Dec. 29, 1983, 58-203582; Dec. 29, 1983, 58-203588; Dec. 29, 1983, 58-203592

Int. Cl.⁴ H04M 1/04

U.S. Cl. 381-86

8 Claims



1. A body-sensible acoustic device, comprising:
 - a drive unit which is driven by acousto-electrical signals;
 - a vibration transmitting member on which said drive unit is mounted; and
 - a pair of clamping members which are coupled to said vibration transmitting member in such a manner as to be slidable with respect to said vibration transmitting member and swingable in a plane including said vibration transmitting member, each clamping member having an arm for holding a side frame provided in a seat body.

4,641,346

SYSTEM FOR THE PRINTING AND READING OF ENCRYPTED MESSAGES

John I. Clark, Milford; Alton B. Eckert, Norwalk, both of Conn., and David M. Warren, Woodmere, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 21, 1983, Ser. No. 515,760

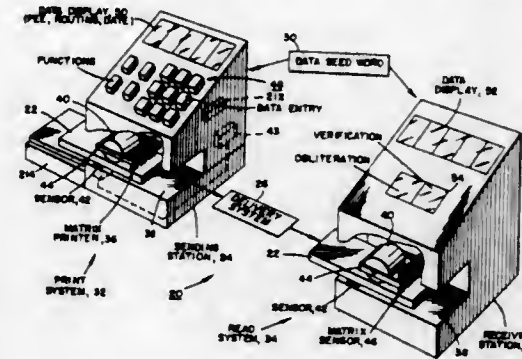
Int. Cl.⁴ G06H 9/00; H04L 9/00

U.S. Cl. 380-3

24 Claims

1. A device for the metering of encrypted postage and similar indicia comprising:
 - (a) an entry means for the entry of data;
 - (b) means coupled to said entry means for storage of said data;
 - (c) character generator means coupled to said storage means, said character generator means comprising a mem-

- ory for storage of character dots in a dot matrix display of characters, and means for reading out data from said memory in a row-by-row format of said matrix;
- (d) an encryption circuit coupled to said storage means for developing a code word that is a function of said data;
- (e) means for imprinting a dot matrix display of characters of



- the data stored in said memory and read out via said reading means means; and
- (f) means coupled to said character generator means and to said encryption circuit for selectively displacing determined dots in said matrix display of characters in accordance with said code word of said encryption circuit without changing the identity of the character.

4,641,347

SYSTEM FOR PRINTING ENCRYPTED MESSAGES WITH A CHARACTER GENERATOR AND BAR-CODE REPRESENTATION

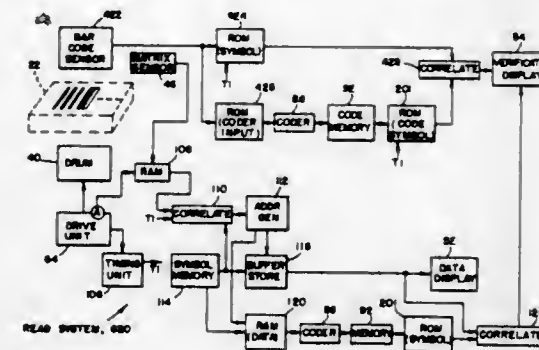
John I. Clark, Milford, and Daniel F. Dlugos, Huntington, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 18, 1983, Ser. No. 515,072

Int. Cl.⁴ G06K 9/00; H04L 9/00

U.S. Cl. 380-3

23 Claims



1. A device for the metering of encrypted postage and similar indicia comprising:
 - an entry means for the entry of data;
 - means coupled to said entry means for the storage of said data;
 - an encryption means for developing a code word representing said data;
 - means for imprinting a dot matrix display of alphanumeric characters in response to the application of signals thereto;
 - means producing code symbols representing said data;
 - means responsive to said code symbols and to said data stored in said storage means for commanding said dot matrix imprinting means to print said code symbols in series with characters corresponding to data stored in said storage means;
 - means for imprinting a bar-code representation of data applied thereto; and
 - means synchronized with said dot matrix imprinting means

- and said bar-code imprinting means, and responsive to data stored in said storage means and said code word for alternately feeding data of said storage means and a code word to said bar-code imprinting means.

4,641,348

TIMING OR LOGIC STATE ANALYZER WITH AUTOMATIC QUALIFIED INFERENTIAL MARKING AND POST PROCESSING OF CAPTURED TRACE DATA

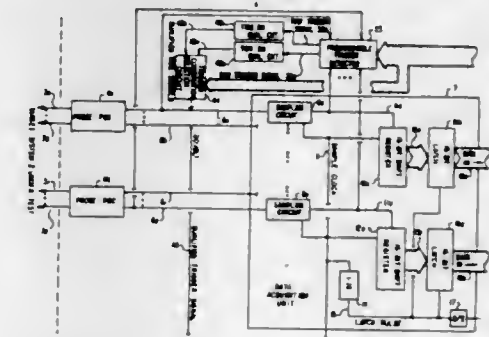
David L. Neuder, and Joel A. Zellmer, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 9, 1983, Ser. No. 550,322

Int. Cl.⁴ G01R 13/32; G06K 9/00

U.S. Cl. 382-1

38 Claims



1. Apparatus for monitoring a plurality of signals in a system under test, the apparatus comprising:
 - means for sampling the values of a plurality of source signals in a workpiece system, for determining the logic values of the samples according to selected thresholds and polarities and for producing according to the samples a plurality of logic signals having successive collections of corresponding logic signal values;
 - means coupled to the logic signals for storing the individual logic signal values within each successive collection thereof;
 - means for defining a logic condition upon at least two consecutive collections of logic signal values and for associating a symbol with the defined logic condition;
 - means responsive to the defined logic condition for searching through the stored logic signal values and for identifying instances therein corresponding to the defined logic condition; and
 - means coupled to the stored collections of logic signal values and responsive to the identified instances for reconstructing an indication of the activity of the plurality of source signals as recorded by the stored successive collections of logic signal values, the reconstructed indication including for each identified instance of the defined logic condition the symbol associated therewith.

4,641,349

IRIS RECOGNITION SYSTEM

Leonard Flom, 1903 Post Rd., Fairfield, Conn. 06403, and Aron Saffir, 3 Ellsworth Ave., Cambridge, Mass. 02130

Filed Feb. 20, 1985, Ser. No. 703,312

Int. Cl.⁴ G06K 9/00

U.S. Cl. 382-2

32 Claims

1. A method of identification of a person, comprising:
 - storing image information of at least a portion of the iris and pupil of the person's eye;
 - illuminating an eye, of an unidentified person having an iris and a pupil;

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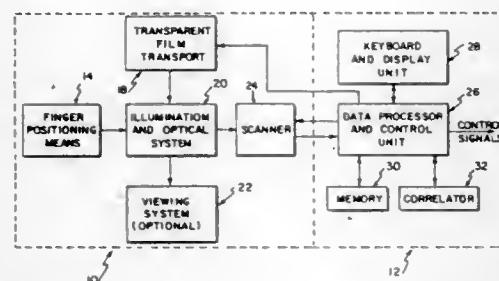
UMI

obtaining at least one image of at least the same portion of the iris and pupil of the eye of the unidentified person; and



comparing at least the iris portion of the obtained image with the stored image information to identify the unidentified person.

4,641,350
FINGERPRINT IDENTIFICATION SYSTEM
Robert F. Bunn, 6803 Pamela Ln., Clinton, Md. 20735
Filed May 17, 1984, Ser. No. 611,131
Int. Cl.⁴ G06K 9/00
U.S. Cl. 382-4 20 Claims



1. A machine method of comparing an $M \times N$ data array to an $X \times Y$ data array, said arrays being representative of fingerprint patterns, comprising the steps of:

- dividing said $X \times Y$ array into a plurality of sub-arrays;
- comprising elements of a sub-array of said $X \times Y$ array with elements of said $M \times N$ array and generating a correlation value indicative of the degree of correlation existing between corresponding elements;
- repeating step B for a plurality of sub-arrays of elements of said $M \times N$ array;
- identifying a highest correlation value generated in step C;
- repeating steps B, C and D for each sub-array of said $X \times Y$ array;
- identifying a relative location of said sub-arrays corresponding to said highest correlation values to provide a measure of relative distortion of said fingerprint patterns; and
- comparing said highest correlation values and said measure of relative distortion to respective predetermined threshold values.

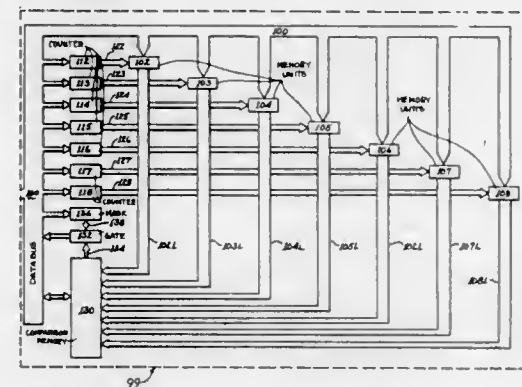
4,641,351
LOGICAL TRANSFORM IMAGE PROCESSOR
Kendall Preston, Jr., 5701 E. Glenn St., Bldg. 36, Tucson, Ariz. 85712
Filed Jul. 25, 1984, Ser. No. 634,261
Int. Cl.⁴ G06K 9/00

U.S. Cl. 382-6 20 Claims
1. An apparatus for processing at least one central voxel in a neighborhood of voxels of a multi-dimensional scene of at least three dimensions, comprising:

acquisition means for acquiring a first plurality of signals, each of said signals representative of a voxel, a plurality of said voxels representative of a multi-dimensional scene of at least three dimensions, said plurality of said voxels arranged in rows, said voxels equally spaced along said rows, said rows in parallel to each other;

storage means for storing said first plurality of signals representing said multi-dimensional scene;
first retrieval means for retrieving at least one of said first plurality of said signals representative of at least one central voxel;

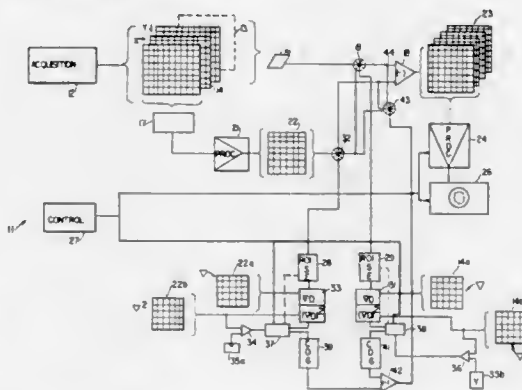
second retrieval means for retrieving a second plurality of said signals representative of at least one multi-dimensional neighborhood of at least three dimensions around said at least one central voxel, said second plurality of said signals being substantially a subset of said first plurality of said signals;



pattern means for providing a plurality of pre-determined pattern signals representative of an plurality of pre-determined multi-dimensional neighborhoods of at least three dimensions around at least one pre-determined central voxel;

comparison means for comparing said second plurality of said signals representative of said multi-dimensional neighborhood of at least three dimensions around said at least one central voxel to said pre-determined pattern signals; processing means for processing said at least one central voxel in response to said comparison means; and transmitting means for transmitting said at least one processed central voxel.

4,641,352
MISREGISTRATION CORRECTION
Paul Fenster, Yair Shimoni, Bilha Nissenson, and Noam Alperin, all of c/o Elscint Ltd., Box 5258, Haifa, Israel
Filed Jul. 12, 1984, Ser. No. 630,326
Int. Cl.⁴ G06K 9/00
U.S. Cl. 382-6 38 Claims

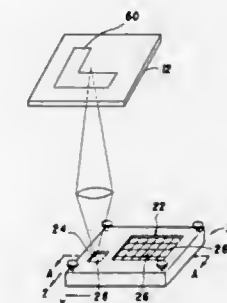


1. A method for correcting for artifacts generated by relative motion between an imaging system and items within a subject being imaged, the motion causing misregistration between different images of the same subject temporally separated and the misregistration causing the artifacts when the

different images are merged, said method comprising the steps of:

obtaining gray level density data for different images of the same subject, said gray level density data including items wherein the gray level density data normally changes as a function of time during a scan period and items wherein the gray level density normally remains substantially the same as a function of time during a scan period;
said items wherein the gray level density data normally remains substantially the same displaying primary and possibly secondary characteristics;
selecting a point on an item displaying gray level density data that normally remains substantially the same, locating said point in said different images;
reducing the effects of the secondary characteristics in the step of locating said point;
obtaining a vector value of the motion causing the misregistration to determined differences between the locations of the point in said different images; and
using said vector value to correct the misregistration between the different images.

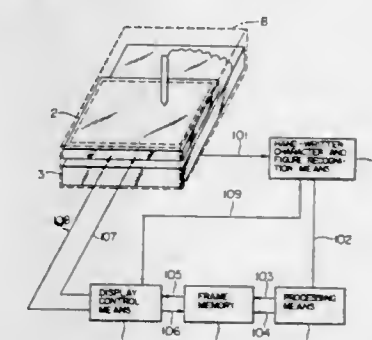
4,641,353
INSPECTION METHOD AND APPARATUS FOR A MASK PATTERN USED IN SEMICONDUCTOR DEVICE FABRICATION
Kenichi Kobayashi, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 10, 1984, Ser. No. 648,911
Claims priority, application Japan, Sep. 16, 1983, 58-170796
Int. Cl.⁴ G06K 9/00, 9/60
U.S. Cl. 382-8 24 Claims



1. An inspection method for a mask pattern used in semiconductor fabrication which uses an optical system for exposing said mask pattern on a fabricated object and printing said mask pattern; thereon, the inspection method comprising the steps of:

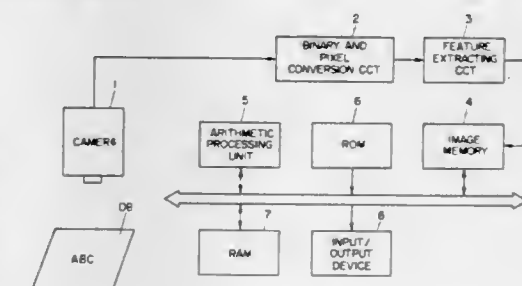
projecting an optical image of said mask pattern onto an image sensor provided on a stage having said fabricated object mounted thereon;
converting said optical image into a sensor video signal;
generating a data video signal from design data used in fabricating said mask pattern, and
comparing said sensor video signal to said data video signal for determining whether said mask pattern is normal.

4,641,354
APPARATUS FOR RECOGNIZING AND DISPLAYING HANDWRITTEN CHARACTERS AND FIGURES
Yasushi Fukunaga, Hitachi; Soehiro Kuzunuki, Katsuta; Hiroshi Shojima, Hitachi; Takamori Yokoyama, Hitachi; Kazuyoshi Koga, Hitachi; Kotaro Hirasawa, Hitachi, and Shinichi Kawada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 28, 1985, Ser. No. 716,944
Claims priority, application Japan, Mar. 30, 1984, 59-60717
Int. Cl.⁴ G06K 9/00
U.S. Cl. 382-13 12 Claims



1. An apparatus for recognizing and displaying handwritten characters and figures comprising input means for reading input stroke information as to a character and a figure each inputted by handwriting, recognition means for carrying out character/figure recognition on the basis of features of the input stroke information, display means including a display screen for displaying the input stroke information and the result of recognition, and processor means responsive to information received from said recognition means for controlling said display means so that said input stroke information is initially displayed on said display screen, and thereafter the result of recognition of the input stroke information as indicated by said recognition means is displayed and the input stroke information which has been used for that recognition is erased from said display screen, while input stroke information which has not contributed to said recognition is retained on said display screen.

4,641,355
PATTERN RECOGNITION APPARATUS
Yusuo Hongo, and Yoshio Nitta, both of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Japan
Filed Jan. 25, 1984, Ser. No. 573,812
Claims priority, application Japan, Jan. 26, 1983, 58-9806
Int. Cl.⁴ G06K 9/62
U.S. Cl. 382-34 2 Claims



1. A pattern recognition apparatus comprising a binary conversion means for converting signals generated from a pattern such as a character or figure recorded on a given medium into binary values, a threshold level feature extracting

means for segmenting the binary pattern values and extracting features of the segments, memory means for storing extracted pieces of information and arithmetic means including means for defining a circumsquare of a given size on an unknown pattern, means for dividing said circumsquare into a plurality of meshes, means for computing a bit matrix of the unknown pattern dependent on whether a segment is present in each of the meshes, means for computing a cluster of characters of the unknown pattern by effecting a prescribed operation on the bit matrix, means for computing deviations serving as indices indicative of similarity between the cluster of characters of the unknown pattern and clusters of characters of respective registered patterns, means for registering the cluster of characters of the unknown pattern as a new cluster of characters when each one of the deviations exceeds a respective preset value, and means for preventing registration of the cluster of characters of the unknown pattern as a new cluster of characters when each one of the deviations does not exceed the respective preset value, wherein the elements of the clusters of characters of the unknown pattern and of the registered patterns are classified into pattern, blank, mask or deformation elements and the deviation between the cluster of characters of the unknown pattern and that of one of the registered patterns is computed by summing the deviations between individual elements of the cluster of characters of the unknown pattern and corresponding elements of the cluster of characters of the one of the registered patterns, where:

- the deviation between a pattern element and another pattern element, a mask element or a deformation element is equal to 0;
- the deviation between a pattern element and a blank element is equal to 1;
- the deviation between a blank element and another blank element or a mask element is equal to 0;
- the deviation between a blank element and a deformation element is equal to 1, if all elements corresponding to the elements of the deformation string to which the deformation element belongs are also blank elements, and is otherwise equal to 0;
- the deviation between a mask element and a pattern element, a blank element, another mask element or a deformation element is equal to 0; and
- the deviation between a deformation element and a pattern element, a mask element or another deformation element is equal to 0.

4,641,356

APPARATUS AND METHOD FOR IMPLEMENTING DILATION AND EROSION TRANSFORMATIONS IN GRAYSCALE IMAGE PROCESSING

Stanley R. Sternberg, Ann Arbor, Mich., assignor to Machine Vision International Corporation, Ann Arbor, Mich.

Filed Aug. 24, 1984, Ser. No. 644,101

Int. Cl.⁴ G06K 9/00

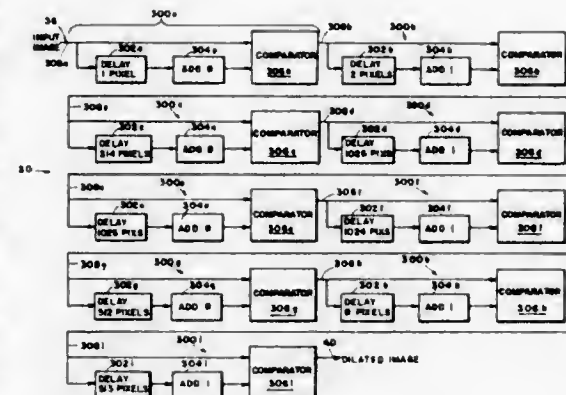
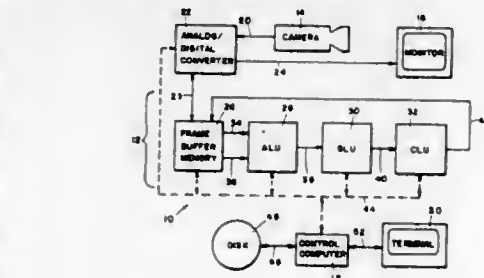
U.S. Cl. 382-49

30 Claims

1. An image processing system for processing at least one start grayscale image each made up of a matrix of points, said system comprising:

serializing means for producing at least one first serial signal including a plurality of multi-bit words each corresponding to one of the points of the associated start image; delay means for delaying selected ones of the first signals to produce at least one delayed serial signal each corresponding to one of the first signals, said delay means

including adder means for adding a desired value to each word delayed by said delay means; and



operating means for performing operations on selected ones of the delayed signals and the first signals to produce at least one output serial signal.

4,641,357

METHOD FOR READING A DOCUMENT IMAGE

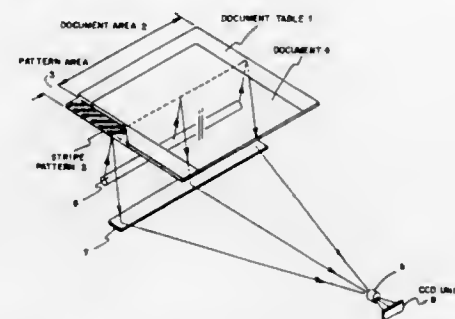
Junichi Satoh, Chigasaki, Japan, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 11, 1985, Ser. No. 710,776

Int. Cl.⁴ G06K 9/18

U.S. Cl. 382-61

11 Claims



1. In a document scanner for converting images on documents into corresponding electronically stored data signals—which operates by optically scanning a document along a line oriented in a first direction, converting images of scanned points along said line into corresponding electrical signals, storing representations of the electrical signals in a buffer store, and providing relative motion between the document and the scanning apparatus in a second direction perpendicular to said first direction to effect scanning of the document in said second direction by repeated scanings in said first direction in coordination with said motion—the improvement comprising:

means separate from the document to be scanned providing a pattern of optically scannable reference lines inclined in a direction oblique to both said first and second directions; means for optically scanning said pattern in a direction parallel to said first direction; means providing relative motion in said second direction between said pattern and said pattern scanning means, in coordination with the relative motion between said document and said document scanning apparatus;

a buffer store; means coupled to said pattern scanning means for detecting discrete increments of displacement of said pattern relative to said first direction corresponding to pel increments of displacement of said document in said second direction; and means coupled to said displacement detecting means, said document scanning apparatus and said buffer store, for transferring samples of said electrical signals from said document scanning apparatus to said buffer store in conjunction with detections of successive discrete increments of displacement by said detecting means; whereby an image on a document may be effectively scanned in said second direction in uniform increments of displacement regardless of variations in and/or interruptions of the relative motion between the document and the document scanning apparatus.

4,641,358

OPTICAL MARK READER

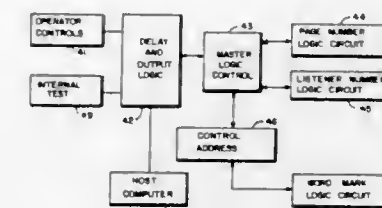
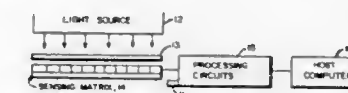
Bruce R. Archambeault, Nashua, N.H., and David P. Rancour, W. Lafayette, Ind., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 18, 1984, Ser. No. 662,476

Int. Cl.⁴ G06K 9/20

U.S. Cl. 382-68

4 Claims



1. An apparatus for use with a host computer for detecting and locating discrete opaque regions a distal surface of a translucent sheet member, said apparatus comprising:

an illumination source illuminating said surface with electromagnetic wave energy; a sensing means, said sensing means containing sets of an odd number of light sensitive transistor circuits, each of said sets being fixed in a proximate relationship to the distal surface of said sheet member, each set thereof being in register with a discrete region of said sheet member and having an output responsive to translucent and opaque conditions thereof; voting circuits, each of which are electrically connected to one of said sets of said light sensitive transistor circuits in said sensing means, each of said voting circuits generating a vote signal of logic 1 when a majority of said light

sensitive transistors in the set are covered by a mark and a logic 0 when a majority of said light sensitive transistor are not covered by a mark; and a word output logic circuit which receives said vote signals from said voting circuits and reports said vote signals to said host computer.

4,641,359

TWO-DIMENSIONAL IMAGE READ-OUT DEVICE

Katsushi Okibayashi, Ikoma; Masataka Itoh, Tenri, and Shohichi Katoh, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

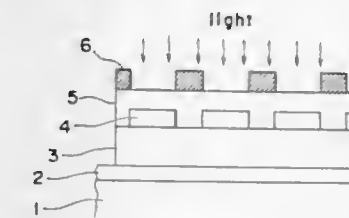
Filed Jul. 10, 1984, Ser. No. 629,339

Claims priority, application Japan, Jul. 11, 1983, 58-126317

Int. Cl.⁴ G06K 9/28

U.S. Cl. 382-68

18 Claims



1. A two-dimensional image read-out device comprising: (a) a photoconducting layer having first and second surfaces; (b) a plurality of X electrodes shaped as stripes applied on the first surface of said photoconducting layer and arranged in parallel with each other; and (c) a plurality of Y electrodes applied on the second surface of said photoconducting layer, opposite to the surface on which said X electrodes are applied, and arranged in parallel with each other in a direction perpendicular to said X electrodes; said X and Y electrodes being made of electrically conductive material, with at least one of said pluralities of said X or Y electrodes being made of transparent or translucent material to allow the passage of a light from an image through said one of said pluralities of said X or Y electrodes to said photoconducting layer; a side of said two-dimensional image read-out device upon which said light from said image is incident being covered by an opaque material except over a plurality of picture elements formed from said photoconducting layer which are positioned at the intersections of said X and Y electrodes.

4,641,360

CARRYING BAG WITH INTERLOCKING HANDLE PORTIONS

Helmut Frank, Munich, Fed. Rep. of Germany, assignor to Manzinger Papierwerke KG, Munich, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,399

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1984, 8405096[U]; Mar. 27, 1984, 8409385[U]; Jun. 29, 1984, 8419598[U]

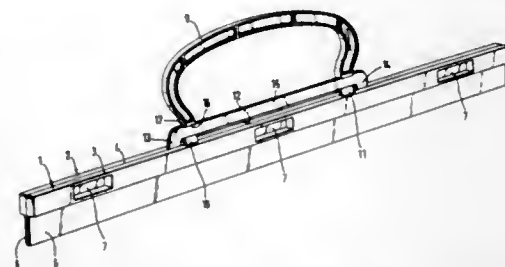
Int. Cl.⁴ B65D 33/16

U.S. Cl. 383-15

8 Claims

1. A handle for a bag, said handle comprising: a first stiffening bar adapted to be secured adjacent to a top of a bag on a first wall of the bag; a second stiffening bar adapted to be secured adjacent to the top of the bag on a second wall of the bag which is located opposite to said first wall; a U-shaped handle having a crosspiece and legs, said legs being integral with said first stiffening bar; a U-shaped member having a crosspiece and legs, said legs being integral with said second stiffening bar,

- a groove defined in each of the legs of said U-shaped handle at a portion of said legs adjacent to said first stiffening bar, said grooves being located at a distance above said first stiffening bar which is substantially equal to a distance that the crosspiece of said U-shaped member projects from said second stiffening bar,
- a slot defined by said U-shaped member and said second stiffening bar for receipt of said U-shaped handle through said slot so that when said U-shaped handle is inserted through said slot, the crosspiece of said U-shaped member



- fits within and is locked in place in said grooves by the weight of contents in the bag pulling downwardly on said stiffening bars, and
- an opening defined between a lowermost surface of the crosspiece of the U-shaped handle and an uppermost surface of the crosspiece of said U-shaped member when the crosspiece of said U-shaped member is locked in said grooves, said opening receiving the hand of a person grasping the bag by the crosspiece of said U-shaped handle.

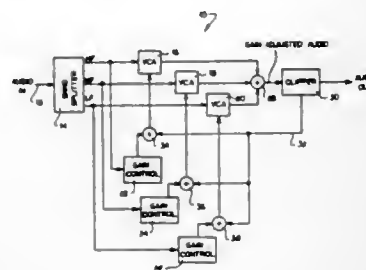
4,641,361 MULTI-BAND AUTOMATIC GAIN CONTROL APPARATUS

Thomas J. Rosback, Quincy, Ill., assignor to Harris Corporation, Quincy, Ill.

Filed Apr. 10, 1985, Ser. No. 721,903
Int. Cl.⁴ H03G 3/00

U.S. Cl. 381-103

20 Claims



1. Audio signal processing apparatus comprising: band splitter means responsive to an input audio signal for separating the audio signal into plural frequency components;
- plural gain adjustment means for each controlling the gain of an associated one of said components, each said gain adjustment means including variable gain means for gain adjusting the corresponding component, and feed forward control means for controlling the gain of said variable gain means as a function of the magnitude of the associated said component;
- signal combining means for combining the gain adjusted components provided by said plural gain adjustment means to thereby form a gain adjusted audio signal; and
- limiter means for preventing the combined signal from exceeding predetermined amplitude constraints, said limiter means including means for simultaneously reducing the

gains of all said variable gain means whenever said gain adjusted audio signal exceeds said constraints.

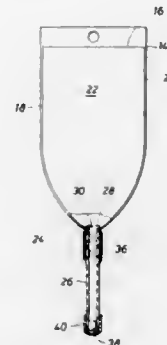
4,641,362 PROTECTIVE DISPENSING ASSEMBLY FOR ULTRAPURE LIQUIDS

Charles B. Muller, Houston, Tex., assignor to C. Muller & Associates, Inc., Houston, Tex.

Filed Oct. 25, 1984, Ser. No. 664,854
Int. Cl.⁴ B65D 30/10

U.S. Cl. 383-115

11 Claims



1. A flexible inert dispensing container construction for ultrapure liquid materials, comprising:
- (a) a pair of fluorocarbon sheets disposed in heat sealed assembly with one another and defining an internal chamber for containing ultrapure liquid material, said fluorocarbon sheets cooperatively forming a bottom opening, each of said fluorocarbon sheets forming an integral tab located below said bottom opening;
- (b) a length of fluorocarbon tubing extending through said bottom opening and having one end thereof in communication with said internal chamber;
- (c) said tabs of each of said fluorocarbon sheets being wrapped peripherally about said fluorocarbon tubing and being of a configuration forming a circumferential overlapping joint with said tubing which is of at least partially spiral-like form; and
- (d) means securing said tab means in liquid tight assembly with said tubing.

4,641,363 COMMUNITY ANTENNA TELEVISION COMMUNICATION SYSTEM

Yonosuke Hasegawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 19, 1985, Ser. No. 777,809
Claims priority, application Japan, Sept. 19, 1984, 59-197628
Int. Cl.⁴ H04N 7/18

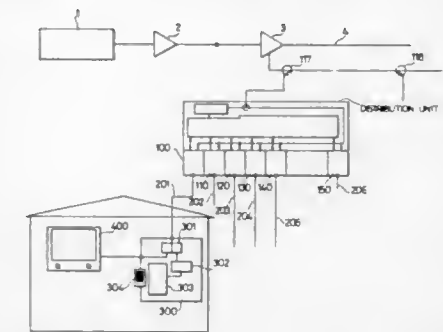
U.S. Cl. 455-4

3 Claims

1. A CATV communication system comprising: a plurality of subscribers' terminals, said subscribers' terminals being divided into groups, a center for producing television programs and for communicating bidirectionally with said subscribers' terminals, a plurality of distribution units, one of said distribution units being provided for each of said groups of subscribers' terminals, each of said distribution units being coupled between one of its group of subscribers' terminals and said center, each of said distribution units comprising a main central processing unit for performing bidirectional communications with said center, at least one subsidiary central processing unit for performing bidirectional communications with said subscribers' terminals, RAM and ROM memory means, ad-

dress and data bus means coupled to said memory means, and switching means for controlling access to said bus means by

ceived and detected combination of the respective satellite unit address words and the word complements.



said main central processing unit and said subsidiary processing unit with priority to said main central processing unit.

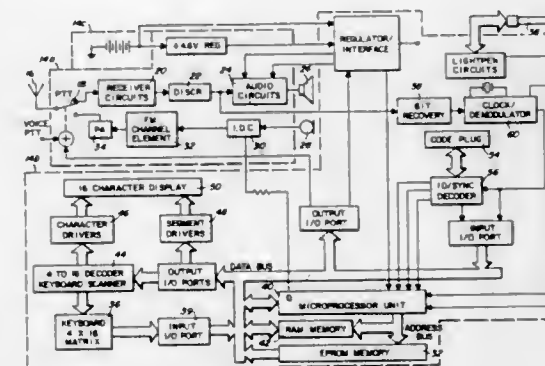
4,641,364 FUNCTION CODING VIA DIGITAL ADDRESSES IN A TWO-WAY SYSTEM

Robert H. Bass, Sunrise; Macko, Tamarac, and Robert K. Lockhart, Jr., Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,762
Int. Cl.⁴ H04B 7/00

U.S. Cl. 455-32

6 Claims



1. An arrangement for providing increased channel efficiency in a two-way communications system which includes a Control Unit and a multiplicity of satellite units, each unit being addressable by a unique two-word address, and comprising in combination:

a two-way communications link coupled between the Control Unit and each satellite unit;

detector means in the Control Unit and in each satellite unit for detecting the two-word coded address of the respective unit in signals received from the link;

logic means coupled to each detector means for detecting the complement of each respective address code word;

memory means coupled to each detector means and logic means for storing any detected combination of the respective address words and the word complements, and any immediately subsequent data;

microprocessor means coupled to the memory means in each unit for automatically providing at least one appropriate response to each detected address combination;

transmission means coupled to each microprocessor means for transmitting said responses to the communications link; and

manual input means in each satellite unit for entering into the respective memory at least one combination of the words and word complements of the Control Unit address for providing at least one appropriate response to one re-

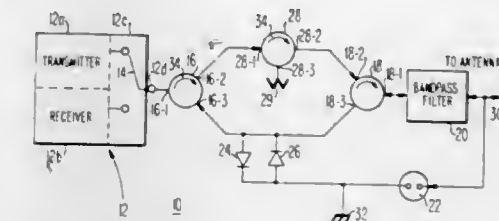
4,641,365 OVERPOWER PROTECTION FOR A RADIO FREQUENCY TRANSCEIVER

Charles Montini, Jr., Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 23, 1984, Ser. No. 643,418
Int. Cl.⁴ H04B 1/48

U.S. Cl. 455-78

11 Claims



1. A power limiter circuit for a radio frequency transceiver of the type which has a receiver portion, a transmitter portion and a transmit/receive switch coupled to the receiver portion, the transmitter portion and an antenna port, said power limiter comprising in combination:

a three port isolator;

first and second three port circulators, a first port of said first circulator being adapted for coupling to said antenna port on said transceiver, a first port of said second circulator being adapted for coupling to an antenna means, a second port of each of said two circulators being coupled to first and second ports respectively of said isolator to pass signal input at said first circulator first port to said second circulator first port, a third port of each of said two circulators being coupled together to pass a signal input at said second circulator first port to said first circulator first port; and

means for limiting the power received at said receiver portion of a signal input at said second circulator first port, said means comprising means coupled between the connection joining said third ports of said first and second circulators and circuit ground.

4,641,366 PORTABLE RADIO COMMUNICATION APPARATUS COMPRISING AN ANTENNA MEMBER FOR A BROAD-BAND SIGNAL

Yukio Yokoyama; Katsuji Kimura, both of Tokyo, and Naohisa Goto, Kanagawa, all of Japan, assignors to NEC Corporation and Naohisa Goto, both of Japan

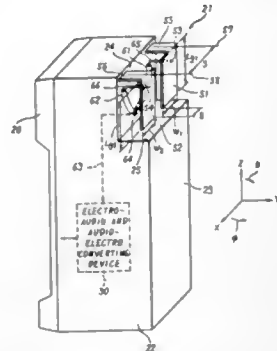
Filed Oct. 3, 1985, Ser. No. 783,823
Claims priority, application Japan, Oct. 4, 1984, 59-208627
Int. Cl.⁴ H04B 1/38

U.S. Cl. 455-89

7 Claims

1. In a portable radio communication apparatus comprising a handset having a side surface, a recessed surface, and a connecting surface between said side and said recessed surfaces, an antenna member, a conductive plate member fixing said antenna member to said recessed surface so that said antenna member does not protrude outwardly of said side surface, electro-audio and audio-electro converting means housed in and coupled to said handset for converting a received electric signal to a received audio signal and a transmitting audio signal to a transmitting electric signal, and a conductive line member for feeding said transmitting electric signal to said antenna member and for receiving said received electric signal from said antenna member, the improvement wherein:
- said antenna member comprises a first and a second antenna

having different resonance frequencies and a first and a second predetermined point, respectively; said plate member comprising a first and a second conductive plate fixing said first and said second antennae to said recessed surface, respectively; said conductive line member comprising a first, a second, and a common conductive line, said first and said second

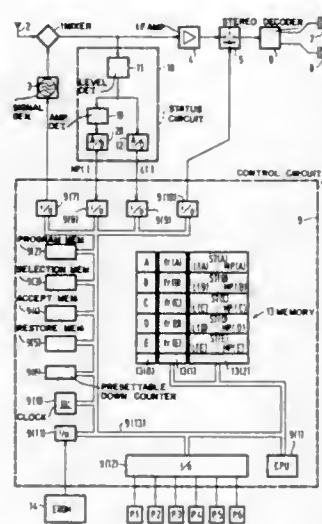


conductive lines connecting said common conductive line to said first and said second predetermined points, respectively, said common conductive line being connected to said electro-audio and audio-electro converting means to feed said transmitting electric signal to said first and said second antennae and to receive said received electric signal from said first and said second antennae.

4,641,367
RECEIVER FOR FM SIGNALS WITH TRANSMITTER STATUS CODE STORAGE
Theodorus H. M. Van Deursen, and Derk J. C. Wassink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 500,721, Jun. 3, 1983, abandoned. This application May 20, 1985, Ser. No. 736,518
Claims priority, application Netherlands, Jun. 15, 1982, 8202416

Int. Cl.⁴ H03J 7/18; H04B 1/10
U.S. Cl. 455—161

6 Claims



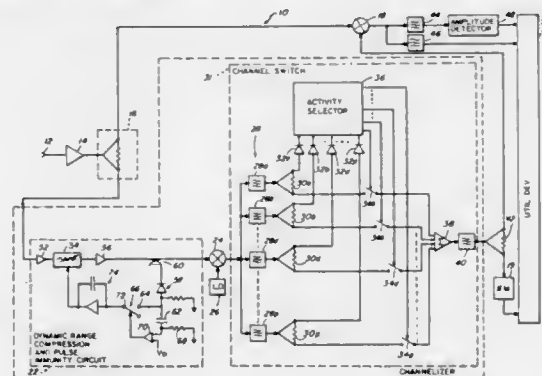
1. In a receiver for receiving FM signals transmitted by a plurality of FM transmitters transmitting the same program at different carrier frequencies, said receiver having a first memory field having a plurality of addressable memory locations each storing a predetermined fixed tuning datum, each of said

tuning datum corresponding to the frequency of one of said carrier frequencies, said receiver further having generator means for generating demodulator signals each having a frequency corresponding to a tuning datum applied to said generator means, and a mixing circuit connected to said generator means for generating mixing circuit output signals in response to received FM signals and said demodulator signals, said mixing circuit output signals having at least one characteristic indicative of the quality of reception of said program at the carrier frequency corresponding to the so-applied tuning datum, the improvement comprising:

status circuit means having an input coupled to said mixing circuit for producing status code words signifying respective values of said quality-indicative characteristic of said mixer circuit output signals;
a second memory field having a plurality of addressable second memory locations, each storing a status code word associated with a corresponding tuning datum stored in said first memory field; and
control circuit means including a programmable processor connected to said status circuit means, first and second memory fields, generator means and mixing circuit for periodically upgrading reception, said control circuit means operable during a SELECT operation at predetermined time intervals for applying at least selected ones of said tuning datum from said first memory field sequentially to said signal generator means for tuning each of a plurality of FM signals, whereby said status circuit means creates a new status code word for each signal tuned in response to so-applied tuning datum, said control circuit means during said SELECT operation replacing said associated status code words in said addressable second memory field locations by said new status code words, said control circuit means selecting from said new status code words the code word signifying the highest value of said quality-indicative characteristic, thereby generating an optimum status code word, and said control circuit means applying during an ACCEPT operation the tuning datum associated with said optimum status code word to said generator means subsequent to one of said predetermined time intervals.

4,641,368
RADIO FREQUENCY RECEIVER
William B. Sullivan, Jr., Verona, N.J., assignor to Raytheon Company, Lexington, Mass.
Division of Ser. No. 423,411, Sep. 24, 1982, Pat. No. 4,535,286, which is a division of Ser. No. 90,811, Nov. 2, 1979, Pat. No. 4,363,139. This application Mar. 20, 1985, Ser. No. 716,784
Int. Cl.⁴ H04B 1/16
U.S. Cl. 455—239

2 Claims



1. In a radio frequency receiver for receiving radio frequency continuous wave and pulse signals, the receiver having an automatic gain control circuit for controlling the receiver gain, the automatic gain control circuit being adapted to

change the receiver gain in response to the received continuous wave signals while not changing the receiver gain in response to the received pulse signals, the automatic gain control circuit comprising:

- variable attenuator means, fed by the received continuous wave and pulse signals, for attenuating such signals in accordance with a first control signal;
 - limiting amplifier means fed by the variable attenuator means;
 - detector means fed by the limiting amplifier means;
 - integrator means for providing the first control signal;
 - blocking means, fed by the detecting means, for passing rapidly varying detected signals and inhibiting slowly varying detected signals and direct current;
 - comparator means, fed by the blocking means, for producing a second control signal when the amplitude of the signals from the blocking means exceeds a predetermined value; and
 - coupling means, responsive to the second control signal, for selectively coupling the detector means and the integrator means;
- wherein the coupling means decouples the detector means from the integrator means when a pulse signal is received.

4,641,370
HOUSING ASSEMBLY FOR PORTABLE RADIO APPARATUS WITH ONE-PIECE BASEPLATE AND BATTERY CONTAINER

Takashi Oyamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 571,270, Jan. 16, 1984, abandoned. This application Jul. 21, 1986, Ser. No. 885,734
Claims priority, application Japan, Jan. 18, 1983, 58-4952[U]; Apr. 27, 1983, 58-63429[U]; May 13, 1983, 58-71231[U]

U.S. Cl. 455—348
Int. Cl.⁴ H04B 1/08

29 Claims



15. A housing structure for a portable radio apparatus, comprising:

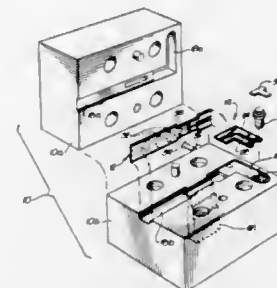
- a housing which is open at an end thereof and has a volume for accommodating said radio apparatus;
- an end closing member dimensioned to close the open end of said housing;
- a battery container section for containing a battery for said radio apparatus, said battery container section being molded integrally with said end closing member forming a part of said end closing member;
- a printed circuit board on which said radio apparatus is mounted, said board having a contour which conforms to said end closing member and to said battery container section, said end closing member and said battery container section supporting said board; and
- a locking mechanism for locking said printed circuit board to said end closing member and to said battery container section.

4,641,369
LOCAL OSCILLATOR AND MIXER ASSEMBLY
Albert J. Grote, Venice; Ragbir S. Tahim, Buena Park, and Kai Chang, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 29, 1984, Ser. No. 676,324
Int. Cl.⁴ H04B 1/26

U.S. Cl. 455—327

11 Claims



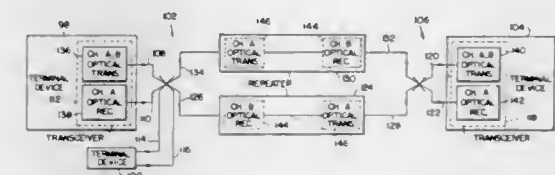
1. A radio-frequency (rf) mixer and local oscillator assembly, comprising:

- a conductive housing having an integral rf input waveguide; oscillator means installed in the housing;
- an rf mixer installed in the same housing and located in the rf input waveguide, for coupling an input rf signal directly to the mixer;
- transmission line means coupled to the oscillator means and to the mixer, for transmitting a local oscillator (LO) signal from the oscillator means to the mixer; whereby the mixer and oscillator means are integrated into a single compact assembly;
- an intermediate-frequency output line from the mixer, including low-pass filter means, the output line and low-pass filter means also being integrated into the same housing.

4,641,371
MULTI-STAR FIBER OPTIC NETWORK
Harold B. Shutterly, Edgewood Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 16, 1985, Ser. No. 692,254
Int. Cl.⁴ H04B 9/00

U.S. Cl. 455—601

26 Claims



1. A fiber optic network for interconnecting a plurality of terminal devices each having a transceiver with an optical transmitter for emitting optical signals and an optical receiver for receiving optical signals, comprising:

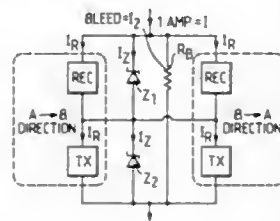
- a first star having a plurality of light input and exit ports for connection to the optical transmitters and receivers, re-

spectively, of transceivers in terminal devices, said first star additionally having a further light input port and a further light exit port;
 a second star having a plurality of light input and exit ports for connection to the optical transmitters and receivers, respectively, of transceivers in other terminal devices, said second star additionally having a further light input port and a further light exit port; and
 means connecting said further light exit port of said first star to said further light input port of said second star and connecting said further light exit port of said second star to said further light input port of said first star for adding gain to optical signals conveyed from one star to the other while avoiding reflections back and forth between said stars, said means including an upstream repeater having optical receiver means for receiving an optical signal from said further light exit port of said first star and optical transmitter means for emitting an optical signal to said further light input port of said second star, and including a downstream repeater having optical receiver means for receiving an optical signal from said further light exit port of said second star and optical transmitter means for emitting an optical signal to said further light input port of said first star, the optical transmitter means of each repeater emitting optical signals to which the optical receiver means of the other repeater is insensitive,
 wherein the optical transmitters in the transceivers of the terminal devices include means for emitting optical signals on a plurality of channels having the same optical wavelength, and wherein for each repeater the optical receiver means includes means for receiving optical signals on one channel and the optical transmitter means includes means for emitting optical signals on at least one different channel.

4,641,372
POWER FEEDING SUBMARINE TELECOMMUNICATIONS SYSTEMS
 Patrick S. Kelly, London; Thomas Oswald; Alan J. Jeal, both of Dartford; Stephen E. Hill, South Darenth, and Robert Murphy, Sevenoaks, all of England, assignors to STC PLC, London, England

Filed Sep. 20, 1984, Ser. No. 652,467
 Claims priority, application United Kingdom, Sep. 22, 1983, 8325430

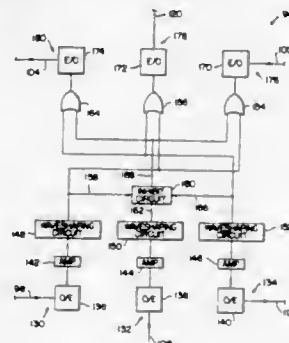
Int. Cl.⁴ H04B 9/00
 U.S. Cl. 455—601 10 Claims



1. A telecommunications system comprising:
 a main cable which branches at a branching unit into two separate branch cables towards one end of the system;
 the main cable and at least one of the branch cables having current-fed signal regenerators;
 the branch cables each including a connection to a current supply source so that, during normal operation, electrical current for supplying a main path regenerator is fed via both branch cables;
 the branch regenerator including a current by-pass circuit to automatically bypass any extra current beyond the requirements of the branch regenerator so that, in the event of a fault in the other one of the branch cables, the current

supply to said one of the branch cables can be increased to fulfill the main path regenerator current requirement; and
 said branching unit including means for preventing back current flowing back to earth at the fault.

4,641,373
T-CONNECTION FIBER-OPTIC REPEATER
 Harold B. Shutterly, Edgewood Boro., Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Feb. 5, 1985, Ser. No. 698,333
 Int. Cl.⁴ H04B 9/00
 U.S. Cl. 455—601 26 Claims

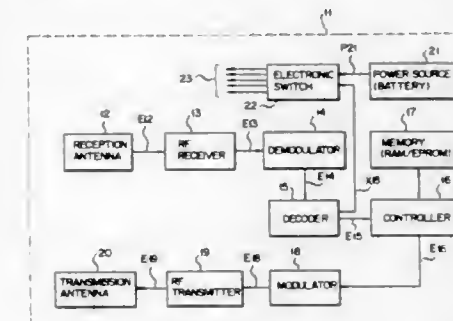


1. A T-connection fiber-optic repeater for use in a multi-star fiber-optic network, comprising:
 first receiving means for receiving optical signals from a device at a first location and generating electrical signals corresponding thereto;
 second receiving means for receiving optical signals from a star at a second location and generating electrical signals corresponding thereto;
 third receiving means for receiving optical signals from a device at a third location and generating electrical signals corresponding thereto;
 first transmitting means responsive to said electrical signals generated by said first and third receiving means for emitting optical signals to said star when said first or third receiving means receives optical signals;
 second transmitting means responsive to said electrical signals generated by said second and third receiving means for emitting optical signals to said device at said first location when said second or third receiving means receives optical signals;
 third transmitting means responsive to said electrical signals generated by said first and second receiving means for emitting optical signals to said device at said third location when said first or second receiving means receives optical signals; and
 inhibit means connected to said first, second, and third receiving means for inhibiting said second and third transmitting means from responding to said electrical signals generated by said second receiving means whenever said first or third receiving means receives optical signals.

4,641,374
INFORMATION MEDIUM
 Masumi Oyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Aug. 10, 1984, Ser. No. 639,422
 Int. Cl.⁴ H04B 9/00
 U.S. Cl. 455—603 13 Claims

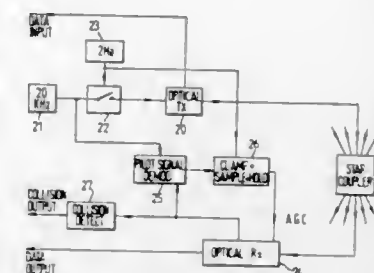
1. An information medium used for receiving/delivering information from/to an exterior device, comprising:
 receiver means for receiving a modulated input signal from the exterior device;
 demodulator means coupled to said receiver means for demodulating said modulated input signal to provide specific

information which is formed of a binary signal having a given bit pattern;
 decoder means coupled to said demodulator means for decoding said specific information to provide a decoded instruction corresponding to whatever binary signal is provided by said demodulator;
 memory means for storing given data;
 control means coupled to said decoder means and memory means, for controlling a write or read operation of said



memory means in accordance with the contents of said decoded instruction;
 battery means for generating electric power; and
 switch means coupled to said decoder means and battery means, for selectively activating any of said receiver means, demodulator means, memory means and control means by said electric power; the selection of said switch means for the power supply depending on the contents of said specific information.

4,641,375
LOCAL AREA NETWORK
 Andrew Dean, Stansted, England, assignor to International Standard Electric Corporation, New York, N.Y.
 Filed Mar. 7, 1985, Ser. No. 708,995
 Claims priority, application United Kingdom, Mar. 8, 1984, 8406077
 Int. Cl.⁴ H04B 9/00; H04J 1/02
 U.S. Cl. 455—607 3 Claims

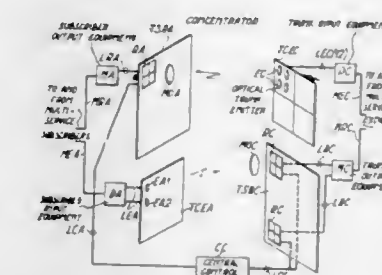


1. An optical fibre transmission system, which includes optical transceiver stations each having its transmitter coupled via a length of optical fibre to a star coupler and its receiver coupled via another length of optical fibre to the star coupler, so that with n stations there are 2n lengths of optical fibre coupled to the star coupler, wherein each said station includes means to generate a pilot signal specific to that station, which pilot signal is transmitted at a level which is low compared with the level used for data transmission, and wherein means in each said station receives its said pilot signal after it has passed from the station's transmitter via one length of optical fibre to the star coupler and from that star coupler via another length of optical fibre to the station's receiver, the level of the pilot signal being monitored on reception so that the attenuation to which signals conveyed via the system is monitored, wherein

the pilot signal is a tone which is transmitted at a level which is low compared with that of data signals, e.g. of an amplitude 0.5% of a data signal, and wherein each said station connected to the star coupler is allocated its own tone frequency, further comprising:

a reference signal generator coupled by optical fibres to the star coupler which includes means, responsive to a calibration request from a said station sending a first reference signal, for emitting a signal at twice the frequency of the signal which it received, and
 means at the said station to measure the signal level, and to adjust the station, on the basis of that level.

4,641,376
MULTI-CHANNEL MULTI-CELL OPTOELECTRONIC SWITCHING NETWORKS FOR MULTI-SERVICE TELECOMMUNICATIONS SYSTEMS
 Boris Rozenwaig, 8, rue P.J. Redouté, 92360 Meudon-la-Forêt, and Yves Robin-Champigneul, 4, rue Georges Ville, 75116 Paris, both of France
 Continuation of Ser. No. 490,234, Apr. 29, 1983, abandoned.
 This application Aug. 27, 1985, Ser. No. 769,808
 Claims priority, application France, Apr. 30, 1982, 82 07589
 Int. Cl.⁴ H04B 9/00 10 Claims

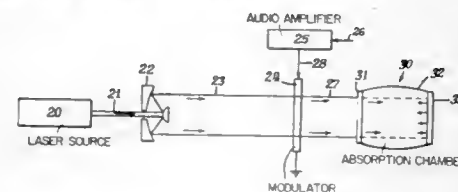


1. An optical switching network for selectively coupling plural input information signals to plural subscriber stations from a multi-service exchange that derives the information signals, the optical switching network comprising an array of optical transmitting cells responsive to said input signals so that an optical signal is derived by one of said cells in response to the information in each information signal, an array of optical receiving cells responsive to the optical signals derived by said transmitting cells, said receiving cell array being divided into plural zones each including at least the same number of cells as in the transmitting cell array, optical projection means between said arrays arranged so there is a correspondence of the information signals from the cells of the transmitting array with cells of each zone in the receiving array, each receiving cell deriving a first signal that represents the optical signal incident thereon, means for selectively coupling the first signals of each zone to a single output so that one output is provided for each zone, and means for combining the outputs of the plural zones onto a single signal transmitting structure that is coupled to the plural subscriber stations.

4,641,377
PHOTOACOUSTIC SPEAKER AND METHOD
 William F. Rush, Tinley Park; James E. Haebler, Brookfield, and Peter Lyenko, Calumet City, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.
 Filed Apr. 6, 1984, Ser. No. 597,705
 Int. Cl.⁴ H04B 9/00 21 Claims

1. A photoacoustic speaker comprising a laser beam source means, a modulating means capable of modulating the intensity of said laser beam in response to audio signal inputs producing a corresponding modulated laser beam, and an elongated

sealed gas absorption chamber having a laser transparent window in one end in the path of said laser beam, a rigid end opposite to said window, said gas absorption chamber having elongated thin flexible side walls, said two ends and said flexi-



ble side walls confining gas capable of absorption of said modulated laser beam thereby producing pressure waves which impinge on said elongated flexible side walls of said chamber to produce sound and transmit said sound exterior to said chamber.

4,641,378

FIBER OPTIC COMMUNICATION MODULE

Matthew L. McConnell, Boulder, and William A. Gibson, Lafayette, both of Colo., assignors to Raycom Systems, Inc., Boulder, Colo.

Filed Jun. 6, 1984, Ser. No. 617,905
Int. Cl. H04B 9/00

U.S. Cl. 455-619

1 Claim

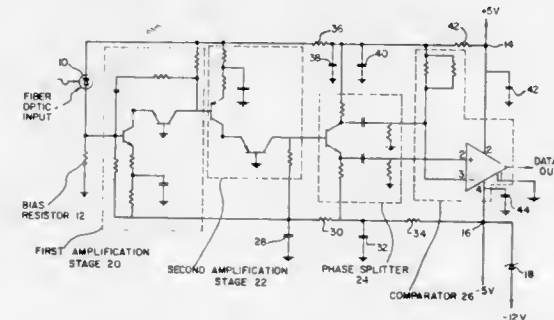
1. A receiver circuit for a fiber optic receiver apparatus comprising:

detector means for transforming optical input signals received on a fiber optic link cable into electrical signals;
first amplification means for providing a first input impedance and a first predetermined amplification of said electrical signals comprising:
a first pair of transistors arranged in a cascode configuration for providing a high frequency response of said first amplification means by minimizing the effects of virtual capacitance in said transistor pair;
emitter degeneration means connected to one of said transis-

tors for precisely controlling gain of said cascode configuration;

negative feedback means connecting the output with the input of the transistor pair for precisely controlling input impedance of said first amplification stage in response to said gain of said cascode configuration to provide a uniform response of said receiver circuit for response variations of said detector means;

second amplification means for providing a second predetermined amplification of said electrical signals, said second amplification means having a second cascode transistor pair configuration connected to said first pair of transis-



tors for providing a high frequency response of said amplification means by minimizing effects of virtual capacitance in said second transistor pair;

impedance converter means for providing a high input impedance to said second amplification stage, a low output impedance and a predetermined amplification of said electrical signals and further comprising a common emitter configuration having a collector and emitter output; and

comparison means connected to the collector and emitter output for producing an output signal whenever the electrical signals from said converter means exceed a predetermined threshold level.

DESIGNS

FEBRUARY 3, 1987

288,020

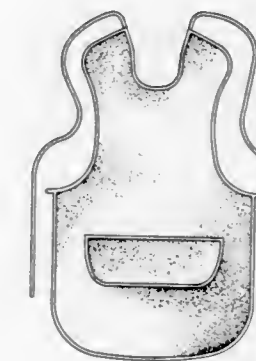
APRON

Celeen K. Miller, P.O. Box 124 - R.R. #1, Perkasi, Pa. 18944

Filed Sep. 17, 1984, Ser. No. 651,097

Term of patent 14 years

U.S. Cl. D2-226



288,022

BIB WITH LONG SLEEVES

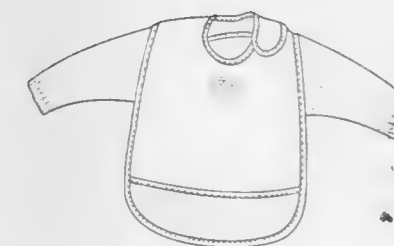
Karen D. Marconi, East Aurora, N.Y., assignor to The Quaker

Oats Company, Chicago, Ill.

Filed Feb. 7, 1984, Ser. No. 577,868

Term of patent 14 years

U.S. Cl. D2-227



288,023

NOVELTY SUN VISOR

Jennifer Laughlin, Clearwater, Fla., assignor to B. O. Wyss, St.

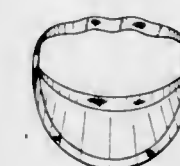
Louis, Mo.; E. L. Wyss, Alton, Ill. and R. G. Heywood, St.

Louis, Mo., part interest to each

Filed Apr. 26, 1984, Ser. No. 603,915

Term of patent 14 years

U.S. Cl. D2-252



288,021

BIB WITH STRAIGHT ARMS

Karen D. Marconi, East Aurora, N.Y., assignor to The Quaker

Oats Company, Chicago, Ill.

Filed Feb. 2, 1984, Ser. No. 576,261

Term of patent 14 years

U.S. Cl. D2-227



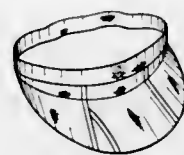
288,024
NOVELTY SUN VISOR
Jennifer Laughlin, Clearwater, Fla., assignor to B. O. Wyss, St. Louis, Mo.; E. L. Wyss, Alton, Ill. and R. G. Heywood, St. Louis, Mo., part interest to each
Filed Apr. 26, 1984, Ser. No. 603,921
Term of patent 14 years
U.S. Cl. D2—252



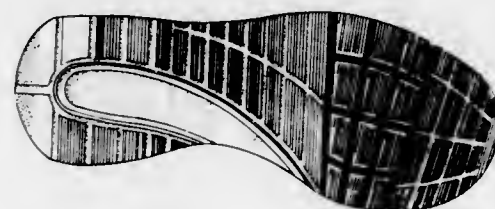
288,025
NOVELTY SUN VISOR
Jennifer Laughlin, Clearwater, Fla., assignor to B. O. Wyss, St. Louis, Mo.; E. L. Wyss, Alton, Ill. and R. G. Heywood, St. Louis, Mo., part interest to each
Filed Apr. 26, 1984, Ser. No. 604,217
Term of patent 14 years
U.S. Cl. D2—252



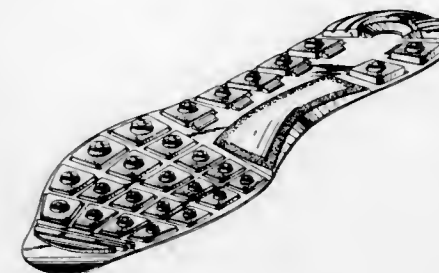
288,026
NOVELTY SUN VISOR
Jennifer Laughlin, Clearwater, Fla., assignor to B. O. Wyss, St. Louis, Mo.; E. L. Wyss, Alton, Ill. and R. G. Heywood, St. Louis, Mo., part interest to each
Filed Apr. 27, 1984, Ser. No. 604,539
Term of patent 14 years
U.S. Cl. D2—252



288,027
FLEXIBLE SOLE FOR ATHLETIC SHOE
Raymond F. Tonkel, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., Chesterfield, Mo.
Continuation-in-part of Ser. No. 618,914, Jun. 8, 1984. This application Nov. 23, 1984, Ser. No. 674,535
Term of patent 14 years
U.S. Cl. D2—320



288,028
SHOE SOLE
Jacques Chassaing, Neuwiller Les Saverne, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France
Filed Nov. 1, 1983, Ser. No. 547,630
Claims priority, application France, May 3, 1983, 831642
Term of patent 14 years
U.S. Cl. D2—320



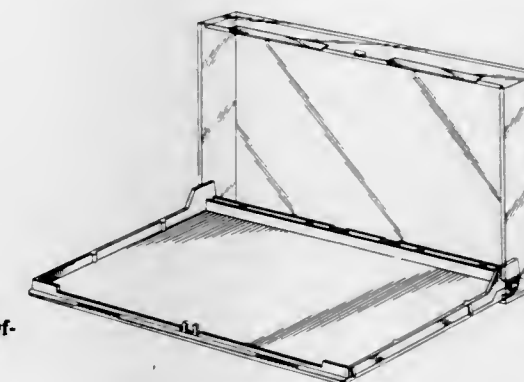
288,029
NECKWRAP
Robert G. Parr, 220 Yonge Street, P.O. Box 504, Galleria Offices Eaton Centre, Toronto, Canada (M5B 2H1)
Filed Oct. 30, 1984, Ser. No. 675,134
Term of patent 14 years
U.S. Cl. D2—602



288,030
BOOTJACK
Charles L. Lauhoff, Rte. 2, Box 578, Amarillo, Tex. 79101
Filed Jun. 22, 1984, Ser. No. 623,415
Term of patent 14 years
U.S. Cl. D2—642



288,031
CASSETTE STORAGE CONTAINER
Paul J. Gelardi, Cape Porpoise, and Robert B. MacLeod, Jr., Biddeford, both of Me., assignors to Shape Inc., Biddeford, Me.
Filed Jun. 7, 1984, Ser. No. 618,235
Term of patent 14 years
U.S. Cl. D3—35



288,032
SKI AND SKI POLE CARRIER
Michael D. Gainey, 2620 Del Monte La., Reno, Nev. 89511
Filed Jun. 15, 1984, Ser. No. 621,015
Term of patent 14 years
U.S. Cl. D3—36



288,033
PORTFOLIO

Carmen M. Lodico, New York, and Lloyd Elliot, Riverdale, both of N.Y., assignors to Greenleaf Lodico Ltd., New York, N.Y.
Filed May 7, 1984, Ser. No. 607,612
Term of patent 14 years

U.S. Cl. D3—71



288,034
FOOT HYGIENE BRUSH

Griffith C. Miller, Norman, Okla., assignor to Dr. Miller's Health Care Products, Inc., Norman, Okla.
Filed Apr. 5, 1985, Ser. No. 720,429
Term of patent 14 years

U.S. Cl. D4—120

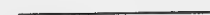
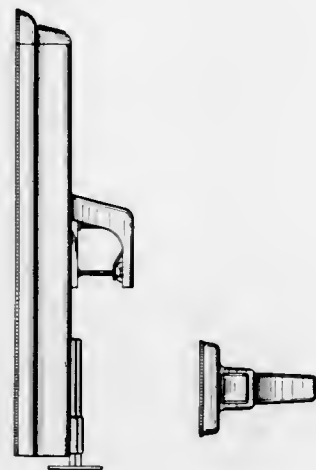


288,035
TELESCOPING TIE RACK HOUSING

Fred Hollinger, Kings Park, and Paul Ross, Pleasantville, both of N.Y., assignors to E & B Giftware, Inc., Mount Vernon, N.Y.

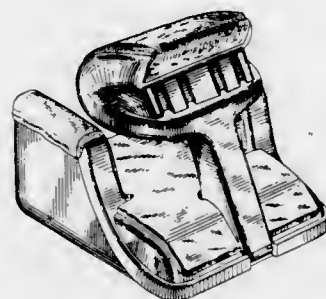
Filed Mar. 21, 1984, Ser. No. 592,413
Claims priority, application United Kingdom, Sep. 21, 1983, 1015243

Term of patent 14 years
U.S. Cl. D6—324



288,036
CHILD'S CAR SEAT

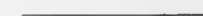
Edward M. Johnson, Jr., 814 Oxford Ave., Matteson, Ill. 60463
Filed Jul. 3, 1984, Ser. No. 627,391
Term of patent 14 years
U.S. Cl. D6—333



288,037
CHAIR FOR USE BY A BEAUTICIAN

Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Dec. 23, 1983, Ser. No. 564,697
Term of patent 14 years

U.S. Cl. D6—335



288,038
VIDEO CASSETTE DISPLAY RACK

Verne R. Henning, 3248 Owasso Heights Rd., Shoreview, Minn. 55112

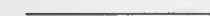
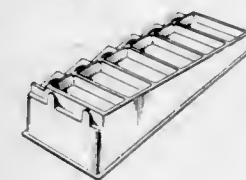
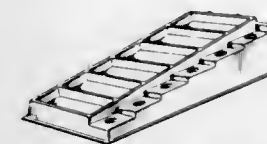
Filed Sep. 6, 1984, Ser. No. 647,689
Term of patent 14 years
U.S. Cl. D6—458



288,039
DISPLAY TRAY

Pierre LeBlanc, Weston, Canada, assignor to Pierre LeBlanc Consulting Services, Ltd., Mississauga, Canada
Filed Apr. 3, 1984, Ser. No. 596,316
Term of patent 14 years

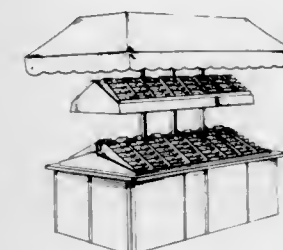
U.S. Cl. D6—468



288,040
DISPLAY STAND

Pierre LeBlanc, Weston, Canada, assignor to Pierre LeBlanc Consulting Services, Ltd., Mississauga, Canada
Filed May 29, 1984, Ser. No. 614,756
Term of patent 14 years

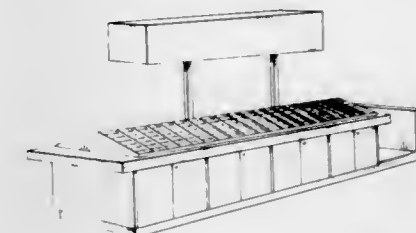
U.S. Cl. D6—473



288,041
DISPLAY STAND

Pierre LeBlanc, Weston, Canada, assignor to Pierre LeBlanc Consulting Services, Ltd., Mississauga, Canada
Filed May 29, 1984, Ser. No. 614,757
Term of patent 14 years

U.S. Cl. D6—473



VOL
1075

ISS

1

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3

1987

UMI

288,042

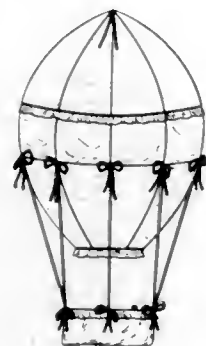
RECEPTACLE OR SIMILAR ARTICLE

Phyllis M. Breeze, Cotter; Jay T. Westcott, Mountain Home; Jean Wilkinson, Batesville, all of Ark., and Anita G. Gragett, Memphis, Tenn., assignors to White River Industries, Inc., Cotter, Ark.

Filed Aug. 10, 1984, Ser. No. 639,821

Term of patent 14 years

U.S. Cl. D6—563



288,043

SURVIVAL BLANKET

Peder Gjendemsjo, Tomrefjord, Norway, assignor to A/S More Tekstilsfabrikk, Gaseid, Norway

Filed Jun. 4, 1984, Ser. No. 617,037

Term of patent 14 years

U.S. Cl. D6—603



288,044

FOOD CUP

Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,094

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—6



288,045

TEA CUP OR SIMILAR ARTICLE

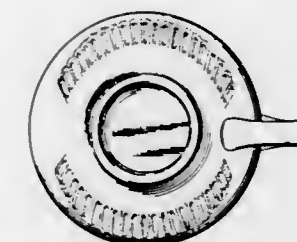
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,090

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—9



288,047

SOUP BOWL OR SIMILAR ARTICLE

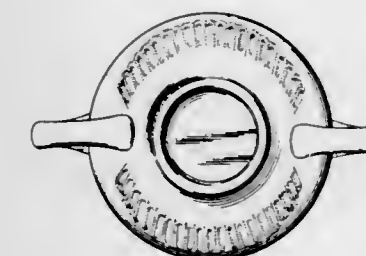
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,088

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—20



288,046

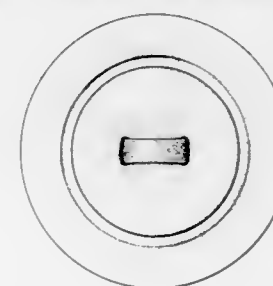
SUGAR BOWL

Robin Levien, London, England, assignor to American Commercial, Incorporated, Secaucus, N.J.

Filed Dec. 28, 1983, Ser. No. 566,221

Term of patent 14 years

U.S. Cl. D7—17

VOL
1075

ISS

1

FE

3

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UMI

288,048

SOUP BOWL OR SIMILAR ARTICLE

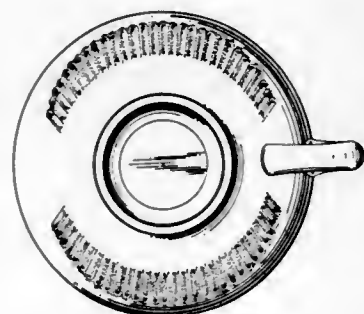
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,089

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—20



288,049

SOUP BOWL OR SIMILAR ARTICLE

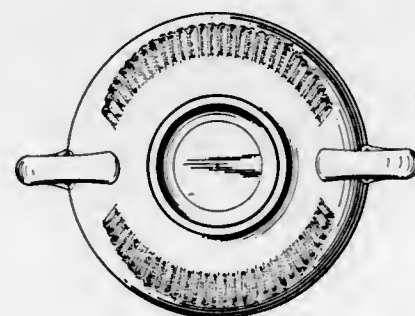
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,291

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—20



288,050

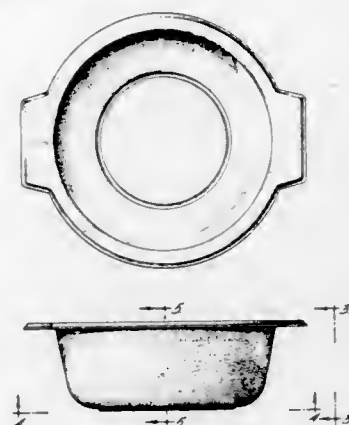
FOOD BOWL

Charles E. Fox, Haddonfield, N.J., and Frank H. Terwilliger, Swarthmore, Pa., assignors to Campbell Soup Company, Camden, N.J.

Filed Sep. 4, 1984, Ser. No. 646,530

Term of patent 14 years

U.S. Cl. D7—20



288,051

SOUP BOWL OR SIMILAR ARTICLE

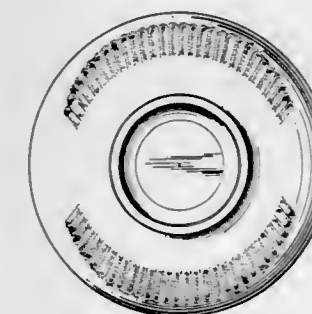
Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,292

The portion of the term of this patent subsequent to Feb. 3, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—28



288,052

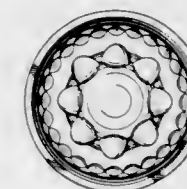
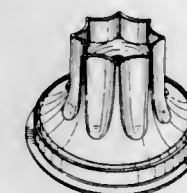
GELATIN MOLD OR THE LIKE

Robert H. C. M. Daenen, Blakmeers, and Pieter K. J. DeCoster, Priester, both of Belgium, assignors to Dart Industries Inc., Del.

Filed Aug. 9, 1983, Ser. No. 521,783

Term of patent 14 years

U.S. Cl. D7—43



VOL

1075

ISS

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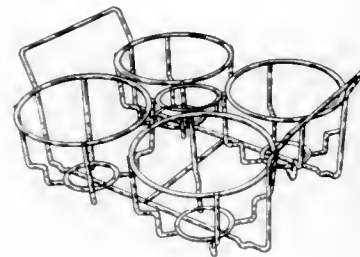
288,053

SALADWARE CADDY

Dale T. Maza, Box 87A, Rte. #1, Stephenson, Va. 22656; Larry S. Hawkins, Rte. 1, Box 114H, Winchester, Va. 22601, and George B. Lahman, Jr., N70 W. 26423, Thousand Oaks, Sussex, Wis. 53089

Filed May 15, 1984, Ser. No. 610,516
Term of patent 14 years

U.S. Cl. D7—58



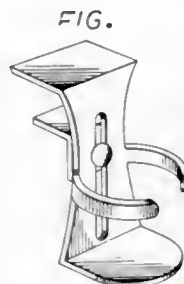
288,054

DESK ATTACHABLE CUP HOLDER

Sheila Schulte, 16444 Cornuta, Apt. 6, and Antonio DiMatteo, 16310 Conuta, Apt. 125, both of, Bellflower, Calif. 90706

Filed Jul. 2, 1984, Ser. No. 627,213
Term of patent 14 years

U.S. Cl. D7—70



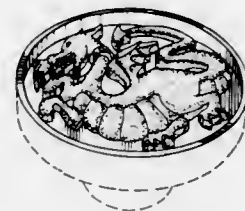
288,056

OUTER FRONT FACE OF A UTENSIL KNOB

Stefan A. Bloom, 12 Fay Dr., East Hanover, N.J. 07936

Filed Sep. 19, 1983, Ser. No. 533,404
Term of patent 14 years

U.S. Cl. D7—393



288,058

LAWN SPRINKLER LOCATOR

Randell D. Ball, 1141 Elk, Yukon, Okla. 73099

Filed May 17, 1984, Ser. No. 611,218
Term of patent 14 years

U.S. Cl. D8—1



288,059

OIL CAN OPENER WITH INTEGRAL FUNNEL

Tyler C. Fling, 715 Spring Dr., Walnut Creek, Calif. 94598

Filed Feb. 21, 1984, Ser. No. 581,567
Term of patent 14 years

U.S. Cl. D8—34



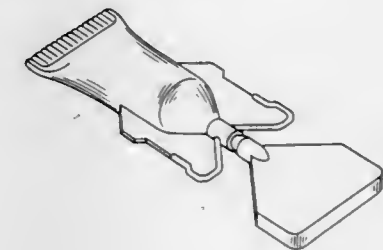
288,061

DISPENSING TUBE FOR LIQUID OR PASTE-LIKE SUBSTANCES

Helge S. Bek, Nodebo, and Stig Jorgensen, Hillerød, both of Denmark, assignors to Pharmacia AS, Hillerød, Denmark

Filed Jul. 16, 1984, Ser. No. 630,983
Claims priority, application Denmark, Jan. 17, 1984, 48/84
Term of patent 14 years

U.S. Cl. D9—302



288,062

COMBINED GREETING CARD AND CANDY PACKAGE

David B. Aronson, 165 Mansfield St., Sharon, Mass. 02067

Filed Sep. 10, 1984, Ser. No. 649,066
Term of patent 14 years

U.S. Cl. D9—332



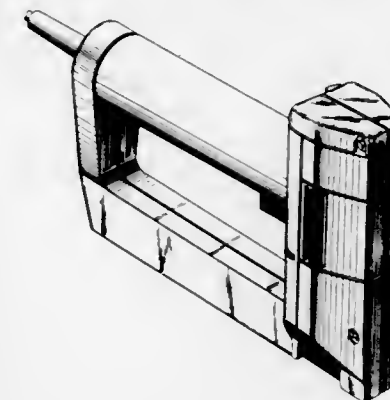
288,060

ELECTRIC FLUSH STAPLER

Robert I. Somers, Raleigh, N.C., assignor to Black & Decker, Inc., Newark, Del.

Filed Apr. 2, 1984, Ser. No. 595,604
Term of patent 14 years

U.S. Cl. D8—69



288,063

PACKAGING CONTAINER

Frank S. Tyler, Kent, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,184
Claims priority, application United Kingdom, Jan. 24, 1984, 1017502

Term of patent 14 years

U.S. Cl. D9—425



288,055

ROASTER

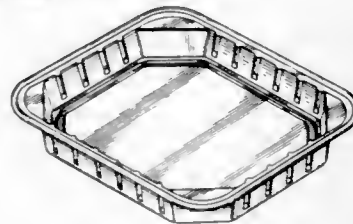
Frederick D. Alexander, Arlington Heights, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.

Filed Apr. 9, 1984, Ser. No. 598,193

The portion of the term of this patent subsequent to Jan. 20, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—354



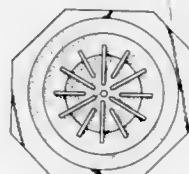
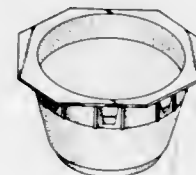
288,057

DRIP COFFEEMAKER BREWING BASKET

Joseph P. Webster, St. Charles, Mo., assignor to Newco Enterprises, Inc., St. Charles, Mo.

Filed Jun. 11, 1984, Ser. No. 619,376
Term of patent 14 years

U.S. Cl. D7—400



VOL

1075

ISS

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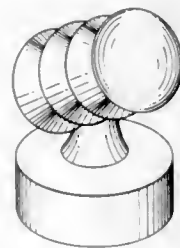
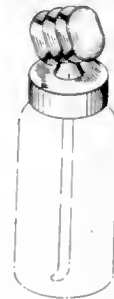
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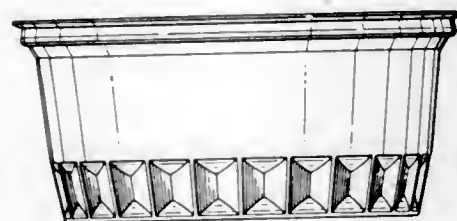
1987

UMI

288,064
**COMBINED BULB AND CAP FOR A DROPPER
 APPLICATOR**
 James F. Gager, New York, N.Y., assignor to Estee Lauder Inc.,
 New York, N.Y.
 Filed Dec. 23, 1983, Ser. No. 565,154
 Term of patent 14 years
 U.S. Cl. D9—436



288,065
PACKAGING CONTAINER
 Frank S. Tyler, Kent, England, assignor to Lever Brothers Com-
 pany, New York, N.Y.
 Filed Jul. 19, 1984, Ser. No. 632,183
 Claims priority, application United Kingdom, Jan. 24, 1984,
 1017503
 Term of patent 14 years
 U.S. Cl. D9—429



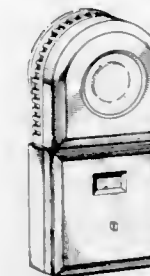
288,066
COMBINED WATCH AND BRACELET
 Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A.,
 Villars-Sur-Glane, Switzerland
 Filed Oct. 13, 1983, Ser. No. 541,705
 Claims priority, application France, Apr. 14, 1983, 831 388
 Term of patent 14 years
 U.S. Cl. D10—32



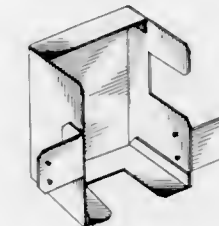
288,067
WRIST WATCH
 Eric Bonnet, La Chaux-De-Fonds, Switzerland, assignor to Jean
 Lassale S.A., Geneva, Switzerland
 Filed Jul. 7, 1983, Ser. No. 511,795
 Claims priority, application Hague, Jan. 7, 1983, 72914
 Term of patent 14 years
 U.S. Cl. D10—39



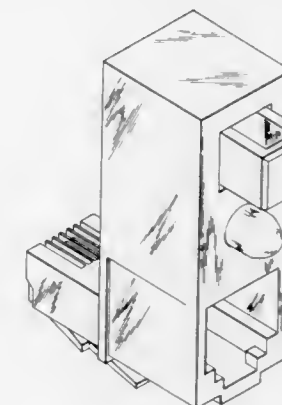
288,068
AUTOMATIC THERMOSTAT CONTROL
 Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corpora-
 tion, Aurora, Ill.
 Filed Jun. 20, 1984, Ser. No. 622,871
 Term of patent 14 years
 U.S. Cl. D10—50



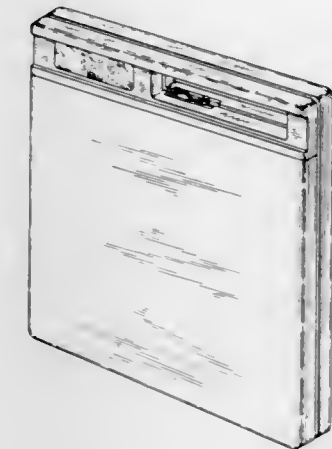
288,069
SECURITY BOX FOR A WATER HEATER THERMOSTAT
 Robert W. Fair, 600 W. "E" St., #10, Colton, Calif. 92324, and
 Robert A. Fair, 915 Scenic Dr., San Bernardino, Calif. 92408
 Filed May 16, 1983, Ser. No. 494,718
 Term of patent 14 years
 U.S. Cl. D10—60



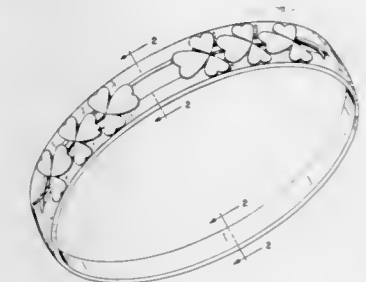
288,070
TELEPHONE LINE STATUS INDICATOR
 Woodrow W. Williams, Stamford, Conn., assignor to GTE Ser-
 vice Corporation, Danvers, Mass.
 Filed Jul. 5, 1984, Ser. No. 627,934
 Term of patent 14 years
 U.S. Cl. D10—78



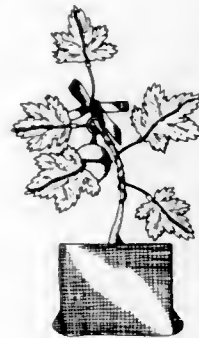
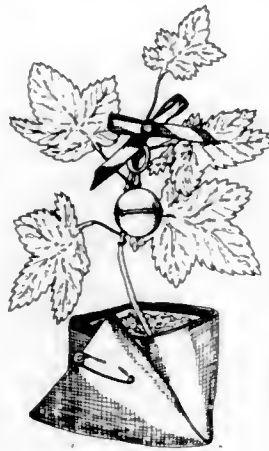
288,071
SCALE
 Ronald L. Muller, Old Saybrook, Conn., assignor to North
 American Phillips Corporation, New York, N.Y.
 Filed Aug. 27, 1984, Ser. No. 644,591
 Term of patent 14 years
 U.S. Cl. D10—92



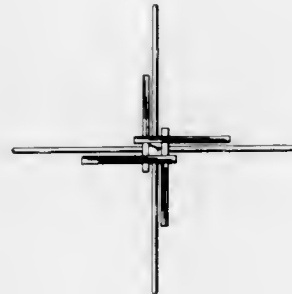
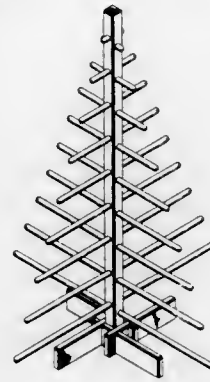
288,072
RING
 Dorothy Winters, Rte. 1, Box 298A, Gate City, Va. 24251
 Filed Apr. 19, 1984, Ser. No. 602,072
 Term of patent 14 years
 U.S. Cl. D11—33



288,073
ARTIFICIAL POTTED TREE
 John S. Jakubek, P.O. Box 16069, Pittsburgh, Pa. 15220
 Filed Jun. 28, 1984, Ser. No. 625,834
 Term of patent 14 years
 U.S. Cl. D11-118



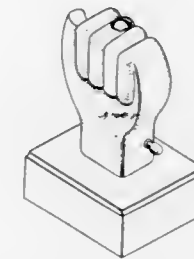
288,074
CHRISTMAS TREE
 Robert M. Vogel, 414 Frances St., Key West, Fla. 33040
 Filed Jul. 23, 1984, Ser. No. 633,651
 Term of patent 14 years
 U.S. Cl. D11-118



288,075
TENNIS TROPHY
 Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
 Filed Aug. 15, 1984, Ser. No. 641,063
 Term of patent 14 years
 U.S. Cl. D11-160



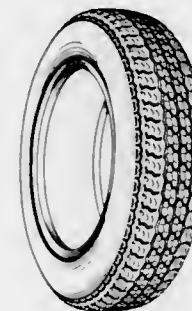
288,076
HAND STATUE OR SIMILAR ARTICLE
 Milford R. Wheeler, 3340 Jonakin Dr., Nashville, Tenn. 37211
 Filed May 11, 1984, Ser. No. 609,198
 Term of patent 14 years
 U.S. Cl. D11-160



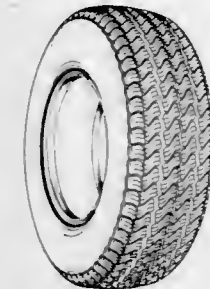
288,077
MOTORCYCLE TIRE
 Toru Osawa, and Hideaki Nishio, both of Saitama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
 Filed Dec. 3, 1984, Ser. No. 677,445
 Claims priority, application Japan, Jun. 1, 1984, 59-22298
 Term of patent 14 years
 U.S. Cl. D12-142



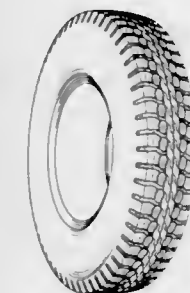
288,078
AUTOMOBILE TIRE
 Hirotugu Hasegawa, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed May 16, 1984, Ser. No. 610,807
 Claims priority, application Japan, Nov. 24, 1983, 58-51106
 Term of patent 14 years
 U.S. Cl. D12-146



288,079
AUTOMOBILE TIRE
 Kenji Takehara, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed Jul. 10, 1984, Ser. No. 629,470
 Claims priority, application Japan, Feb. 10, 1984, 59-4621
 Term of patent 14 years
 U.S. Cl. D12-146



288,080
AUTOMOBILE TIRE
 Toshio Koyama, Fukushima, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed May 17, 1984, Ser. No. 611,079
 Claims priority, application Japan, Mar. 28, 1984, 59-12269
 Term of patent 14 years
 U.S. Cl. D12-146



288,081
AUTOMOBILE TIRE
 Tetsuhito Tsukagoshi, Tokyo; Tamotsu Matsunuma, and Shigeo Makino, both of Saitama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
 Filed Dec. 10, 1984, Ser. No. 680,027
 Claims priority, application Japan, Jul. 31, 1984, 59-32060
 Term of patent 14 years
 U.S. Cl. D12-147



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288,082
AUTOMOBILE TIRE
Kozaburo Nakaseko, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Sep. 11, 1984, Ser. No. 649,380
Claims priority, application Japan, Jul. 2, 1984, 59-27520
Term of patent 14 years
U.S. Cl. D12—147



288,083
AUTOMOBILE TIRE
Akihiro Takeuchi, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed May 17, 1984, Ser. No. 611,078
Claims priority, application Japan, Mar. 28, 1984, 59-12266
Term of patent 14 years
U.S. Cl. D12—148



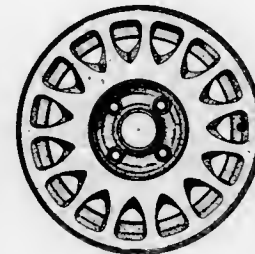
288,084
AUTOMOBILE TIRE
Kenji Hatakenaka, Hyogo, Japan, assignor to Sumitomo Rubber Industries Ltd., Kobe, Japan
Filed May 16, 1984, Ser. No. 610,806
Claims priority, application Japan, Mar. 28, 1984, 59-12267
Term of patent 14 years
U.S. Cl. D12—151



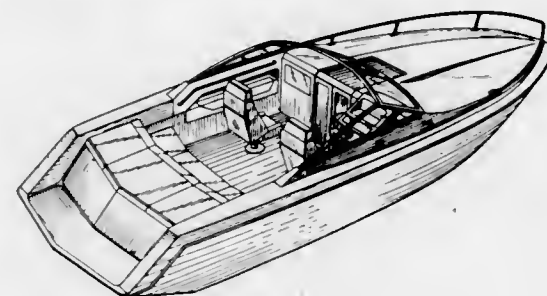
288,085
AUTOMOBILE GRILL
Koji Nagano, Kawasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 21, 1984, Ser. No. 642,892
Term of patent 14 years
U.S. Cl. D12—163



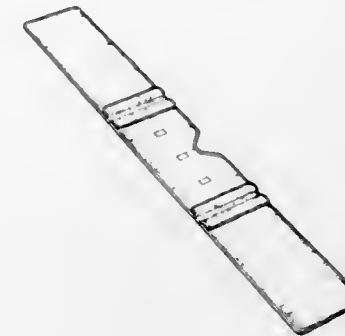
288,086
WHEEL
Björn E. A. Envall, Vänersborg, and Ralph Jonsson, Trollhättan, both of Sweden, assignors to Saab-Scania Aktiebolag, Trollhättan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,952
Claims priority, application Sweden, Oct. 26, 1983, 832771
Term of patent 14 years
U.S. Cl. D12—209



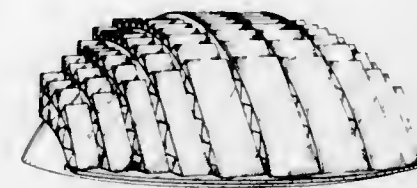
288,087
BOAT
Allan B. Hegg, Lloyd S. Makowski, both of Manistee, and James S. Phares, Farmington Hills, all of Mich., assignors to Century Boat Company, Manistee, Mich.
Filed Sep. 18, 1984, Ser. No. 651,799
Term of patent 14 years
U.S. Cl. D12—315



288,088
CARRYING POUCH FOR A CATAMARAN SAILBOAT
Gary Griffin, 316 Anderson, Hurst, Tex. 76053, and Richard Griffin, 1502 Woodridge, Euless, Tex. 76040
Filed Nov. 5, 1984, Ser. No. 668,551
Term of patent 14 years
U.S. Cl. D12—317



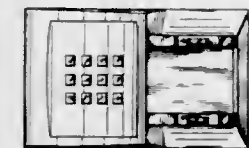
288,089
SOLAR VOLTAIC GENERATOR
Richard T. Headrick, 5200 Irvine Blvd., Space #24, Irvine, Calif. 92714
Filed Oct. 11, 1983, Ser. No. 540,448
Term of patent 14 years
U.S. Cl. D13—3



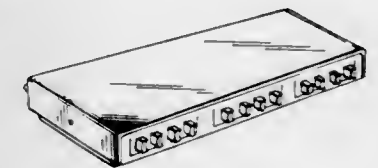
288,090
FRAME FOR AN AUDIO SPEAKER
Larry E. Lewis, 1630 S. 1400 E., Salt Lake City, Utah 84105, and Jerry D. Senninger, 2251 E. 6720 S., Salt Lake City, Utah 84121
Filed May 8, 1984, Ser. No. 608,143
Term of patent 14 years
U.S. Cl. D14—33



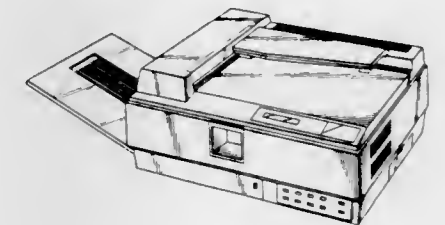
288,091
TELEPHONE SET
Kenneth Reichenstein, Floral Park, N.Y., assignor to Webcor Electronics, Inc., Long Island, N.Y.
Filed Jul. 28, 1983, Ser. No. 518,090
Term of patent 14 years
U.S. Cl. D14—53



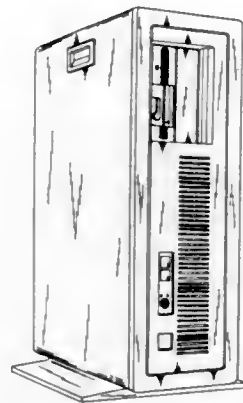
288,092
VIDEO SELECTOR
Bruce R. Towell, Sea Cliff, and Arthur Rey, Oyster Bay, both of N.Y., assignors to BP Electronics, Inc., Hauppauge, N.Y.
Filed Jun. 4, 1984, Ser. No. 616,932
Term of patent 14 years
U.S. Cl. D14—84



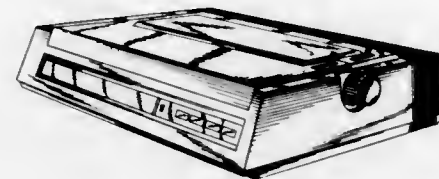
288,093
FACSIMILE TRANSCIEVER
Yoshiyuki Fujiyama; Hidemi Watanabe; Toshihiro Kumano; Minoru Terakado, and Yoshitatsu Okiyama, all of Nagano, Japan, assignors to Matsushita Graphic Communications Systems Inc., Japan
Filed Jun. 11, 1984, Ser. No. 619,241
Claims priority, application Japan, Feb. 6, 1984, 59-4015
Term of patent 14 years
U.S. Cl. D14—94



288,094
FLOOR STANDING PERSONAL COMPUTER
Myron F. Davis; Fred E. Goetz; James C. Harris, all of Boca Raton; Steven E. Howell, Lantana; Willis Y. Jordan, III, Boca Raton; Robert W. Lloyd, West Palm Beach; Randall W. Martin, Boca Raton; David F. O'Connor, Delray Beach, and Frederick Parker, Jr., South Palm Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 15, 1984, Ser. No. 619,415
Term of patent 14 years
U.S. Cl. D14—100



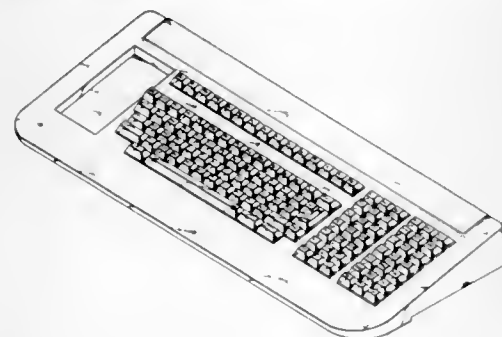
288,096
PRINTER
Shigemasa Kato, Zama, and Sanae Takada, Chofu, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1984, Ser. No. 652,768
Claims priority, application Japan, Mar. 28, 1984, 58-12048
Term of patent 14 years
U.S. Cl. D14—111



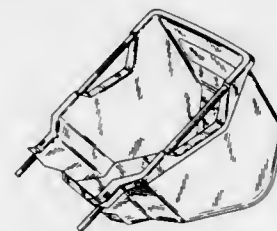
288,097
KEYBOARD SUPPORT
Mark A. Harter, Hamilton, and Raoul J. Schoumaker, Wyoming, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 13, 1984, Ser. No. 630,807
Term of patent 14 years
U.S. Cl. D14—114



288,095
KEYBOARD
Lewis W. Bennett, Nashua, N.H., assignor to Itek Graphix Corp., Waltham, Mass.
Filed Apr. 18, 1984, Ser. No. 601,408
Term of patent 14 years
U.S. Cl. D14—100



288,098
COLLECTOR BOX FOR LAWNMOWERS, LAWNRAKERS, OR THE LIKE
Alan Trelford, Surrey, and Laurence T. Cunningham, Stockton-on-Tees, both of England, assignors to Black & Decker Inc., Newark, Del.
Filed Oct. 3, 1984, Ser. No. 657,235
Claims priority, application United Kingdom, Apr. 13, 1984, 1019087
Term of patent 14 years
U.S. Cl. D15—17



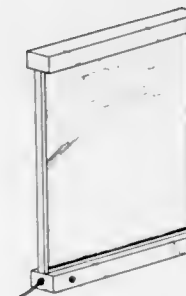
288,099
WORK PIECE SUPPORT
Roger E. Abitz, 41844 Sunnydale La., Northville, Mich. 48167
Filed Dec. 7, 1984, Ser. No. 679,542
Term of patent 14 years
U.S. Cl. D15—140



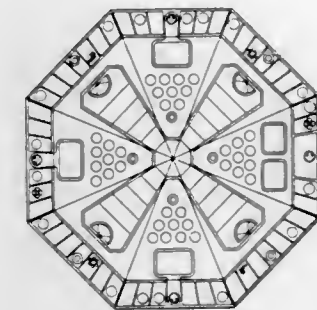
288,100
TYPE FACE
Karl Gerstner, Leonhardsgraben 52, CH-4061 Basel, Switzerland
Filed Aug. 7, 1984, Ser. No. 638,590
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, URA-TY 7/84
Term of patent 14 years
U.S. Cl. D18—24

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Ii Jj Kk Ll Mm
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Xx Yy Zz

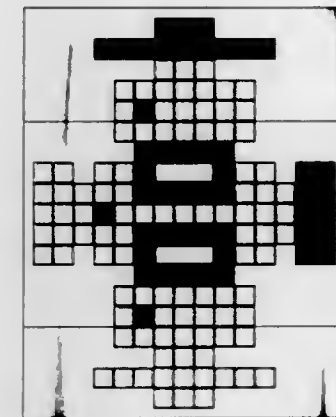
288,101
ILLUMINATED SIGN
William A. Rohrer, III, Ann Arbor, Mich., assignor to Versalite, Inc., Ann Arbor, Mich.
Filed Feb. 24, 1984, Ser. No. 583,414
Term of patent 14 years
U.S. Cl. D20—10



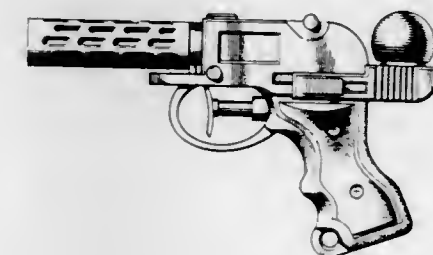
288,102
GAME BOARD
Alfred J. Galea, Toorak, and Stephen Chapman, Doncaster, both of Australia, assignors to John Gale Pty, Ltd., Australia
Filed Sep. 4, 1984, Ser. No. 646,542
Claims priority, application Australia, Apr. 12, 1984, 7153/84
Term of patent 14 years
U.S. Cl. D21—33



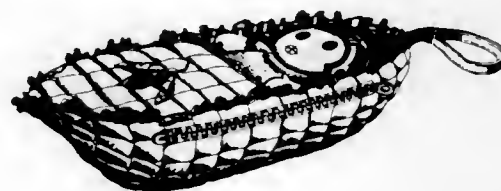
288,103
GAMEBOARD
Kenneth J. Ray, 5217 Sberbrooke, West, Appt. 60, Montreal, Quebec, Canada (H4A 1T6)
Filed Aug. 27, 1984, Ser. No. 644,576
Term of patent 14 years
U.S. Cl. D21—34



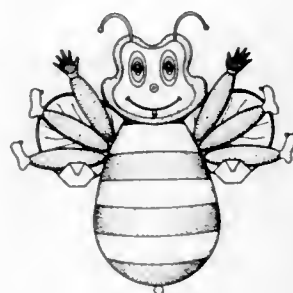
288,104
TOY GUN
Francis M. L. Barthropp, 4371 Marine Dr., West Vancouver, British Columbia, Canada (V7V 1P3)
Filed Aug. 15, 1984, Ser. No. 641,007
Term of patent 14 years
U.S. Cl. D21—147



288,105
COMBINED DOLL AND HOLDER
 John Hollingshead, 1213 W. Third St., Sioux City, Iowa 51102,
 and Anna Barnes, R.R. 1, Sioux City, Iowa 51108
 Filed Jun. 1, 1984, Ser. No. 616,231
 Term of patent 14 years
 U.S. Cl. D21-167



288,106
STUFFED TOY BEE FIGURE
 James B. Dotson, Jr., 1170 Poplar St., Alcoa, Tenn. 37701
 Filed Apr. 24, 1984, Ser. No. 603,518
 Term of patent 14 years
 U.S. Cl. D21-185



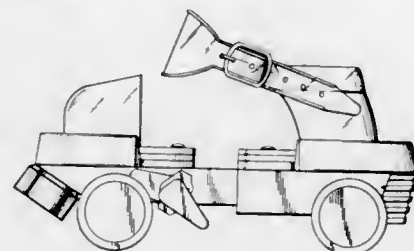
288,107
EYE FOR FIGURE TOY
 Gentry L. Akens, II, 25404 Pine Creek La., Wilmington, Calif.
 90744, and H. Joe Ware, 6410 Rio Linda, Rancho Palos
 Verdes, Calif. 90274
 Filed Mar. 21, 1984, Ser. No. 592,301
 Term of patent 14 years
 U.S. Cl. D21-189



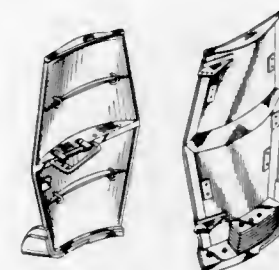
288,108
PHYSICAL EXERCISER
 Hiroshi Hata, Osaka, Japan, assignor to Hata Sporting Goods
 Industries Limited, Osaka, Japan
 Filed Jun. 19, 1984, Ser. No. 622,190
 Term of patent 14 years
 U.S. Cl. D21-198



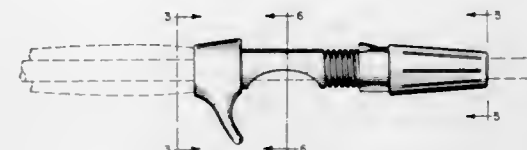
288,109
ROLLER SKATE
 Reuben B. Klammer, Los Angeles, Calif., assignor to The Quaker
 Oats Company, Chicago, Ill.
 Filed Nov. 1, 1983, Ser. No. 547,647
 The portion of the term of this patent subsequent to Jan. 27,
 2001, has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D21-226



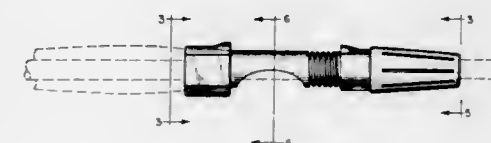
288,110
OTTER BOARD
 Koichi Tozaki, Tokyo, Japan, assignor to Nichimo Kabushiki
 Kaisha, Tokyo, Japan
 Filed Sep. 11, 1984, Ser. No. 649,519
 Term of patent 14 years
 U.S. Cl. D22-135



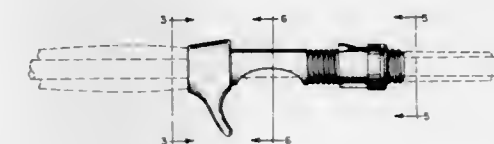
288,111
HANDLE BODY FOR A FISHING ROD
 Casey J. Childre, Foley, Ala., assignor to Lew Childre & Sons,
 Inc., Foley, Ala.
 Filed Mar. 12, 1984, Ser. No. 588,523
 The portion of the term of this patent subsequent to Feb. 3, 2001,
 has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D22-142



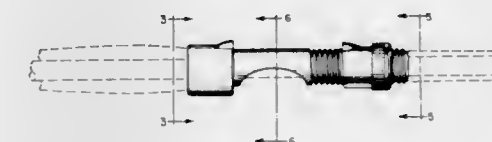
288,112
HANDLE BODY FOR A FISHING ROD
 Casey J. Childre, Foley, Ala., assignor to Lew Childre & Sons,
 Inc., Foley, Ala.
 Filed Mar. 12, 1984, Ser. No. 588,525
 The portion of the term of this patent subsequent to Feb. 3, 2001,
 has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D22-142



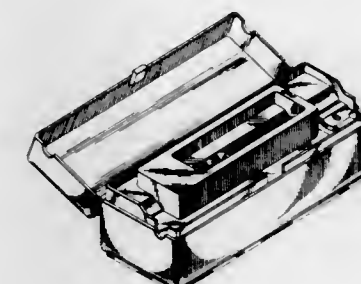
288,113
HANDLE BODY FOR A FISHING ROD
 Casey J. Childre, Foley, Ala., assignor to Lew Childre & Sons,
 Inc., Foley, Ala.
 Filed Mar. 12, 1984, Ser. No. 588,526
 The portion of the term of this patent subsequent to Feb. 3, 2001,
 has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D22-142



288,114
HANDLE BODY FOR A FISHING ROD
 Casey J. Childre, Foley, Ala., assignor to Lew Childre & Sons,
 Inc., Foley, Ala.
 Filed Mar. 12, 1984, Ser. No. 588,527
 The portion of the term of this patent subsequent to Feb. 3, 2001,
 has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D22-142



288,115
PORTABLE WATER PURIFIER UNIT
 Calvin W. McCausland, Springville, and Louis A. Palombo,
 Spanish Fork, both of Utah, assignors to Nature's Sunshine
 Products, Inc., Spanish Fork, Utah
 Filed Jun. 20, 1984, Ser. No. 622,717
 Term of patent 14 years
 U.S. Cl. D23-3



288,116
YOKE FOR A SPRINKLER
 William R. McLennan, Easton, Pa., and Robert Rung, Hopatcong, N.J., assignors to Victaulic Company of America, Easton, Pa.

Filed Jun. 12, 1984, Ser. No. 619,806
 The portion of the term of this patent subsequent to Jan. 27, 2001, has been disclaimed.
 Term of patent 14 years

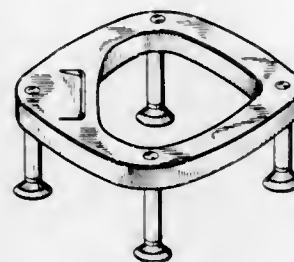
U.S. Cl. D23—7



288,118
BATH RING FOR INFANTS
 Richard Boucher, Fitchburg, Mass., assignor to Sanitoy, Inc., Fitchburg, Mass.

Filed Jun. 11, 1984, Ser. No. 619,114
 Term of patent 14 years

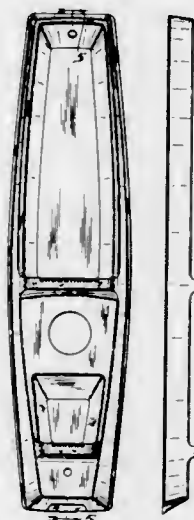
U.S. Cl. D23—69



288,119
COVER FOR A BATHTUB PLUMBING UNIT
 Charles P. Hill, Indianapolis, and Anthony G. Spangler, Westfield, both of Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed Jun. 15, 1983, Ser. No. 504,664
 Term of patent 14 years

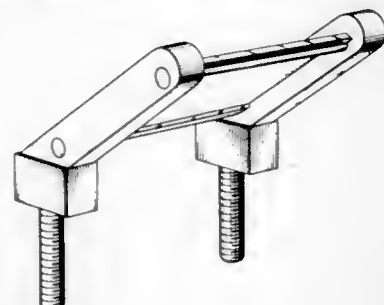
U.S. Cl. D23—69



288,117
BATHTUB SPOUT
 Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,177
 Term of patent 14 years

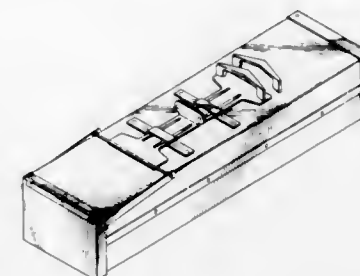
U.S. Cl. D23—32



288,120
FIREPLACE AND WOOD STOVE ASH REMOVER
 Gene C. Carter, Box 730, Morgan, Utah 84050

Filed Feb. 19, 1985, Ser. No. 702,955
 Term of patent 14 years

U.S. Cl. D23—131



288,123
DENTAL MATERIAL DISPENSER
 Richard E. Welsh, Milford, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jun. 6, 1984, Ser. No. 616,671
 Term of patent 14 years

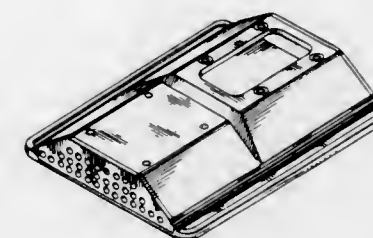
U.S. Cl. D24—10



288,121
VENTILATOR FOR CONTAINER
 Masaki Takahashi, Kawasaki, and Shigeo Mizuno, Yamato, both of Japan, assignors to Nishiyama Corporation, Japan

Filed May 25, 1984, Ser. No. 614,340
 Term of patent 14 years

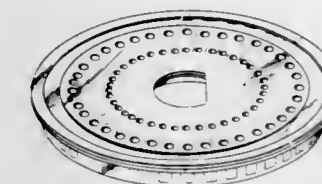
U.S. Cl. D23—139



288,124
CENTRIFUGAL ANALYZER ROTOR
 Romas A. Brickus, Brookline, Mass.; Thomas O. Tiffany, Spokane, Wash., and Hamid Keramaty, Lexington, Mass., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed May 31, 1984, Ser. No. 615,626
 Term of patent 14 years

U.S. Cl. D24—31

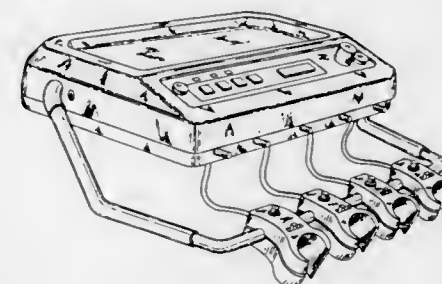


288,122
COMBINED CONTROL UNIT AND HOLDER FOR DENTAL EQUIPMENT

George McGaha, Charlotte; Dan Truette, Pineville, both of N.C.; Ned Landan, Westport, Conn., and Bill Hardin, Charlotte, N.C., assignors to Pelton & Crane Company, Charlotte, N.C.

Filed Dec. 19, 1983, Ser. No. 562,689
 Term of patent 14 years

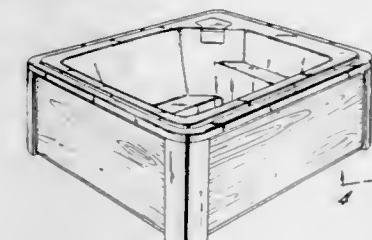
U.S. Cl. D24—5



288,125
SPA
 Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Co., Carlsbad, Calif.

Filed Apr. 25, 1984, Ser. No. 603,721
 Term of patent 14 years

U.S. Cl. D24—38

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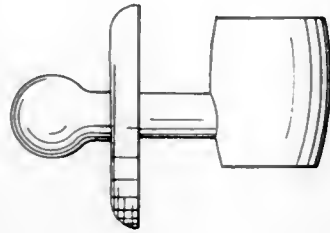
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288,126
INFANT PACIFIER
 Jacqueline Haupt, P.O. Box 528, LaCygne, Kans. 66040
 Filed Dec. 19, 1983, Ser. No. 563,212
 Term of patent 14 years
 U.S. Cl. D24—45



288,129
SURGICAL SUCTION COLLECTOR
 Beverly W. Taylor, Hermann, Mo., assignor to Blanke Plastic Company, Hermann, Mo.
 Filed Feb. 15, 1984, Ser. No. 580,562
 Term of patent 14 years
 U.S. Cl. D24—56



288,127
BABY BOTTLE OR SIMILAR ARTICLE
 William Simmons, 8302 Gumwood Cir., Westminster, Calif. 92683
 Filed Feb. 17, 1984, Ser. No. 581,310
 Term of patent 14 years
 U.S. Cl. D24—47



288,130
COMBINED VIAL AND CLOSURE
 Mark E. Larkin, Lindenhurst, and Edward S. Tripp, Park City, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
 Filed Jun. 11, 1984, Ser. No. 619,520
 Term of patent 14 years
 U.S. Cl. D24—56



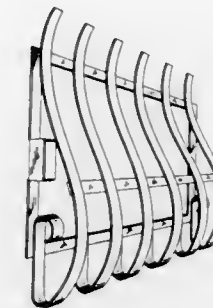
288,128
INFANT NURSER OR SIMILAR ARTICLE
 Leonard A. White, Gurnee, and James L. Cabernoch, Cary, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
 Filed Apr. 12, 1984, Ser. No. 599,424
 Term of patent 14 years
 U.S. Cl. D24—47



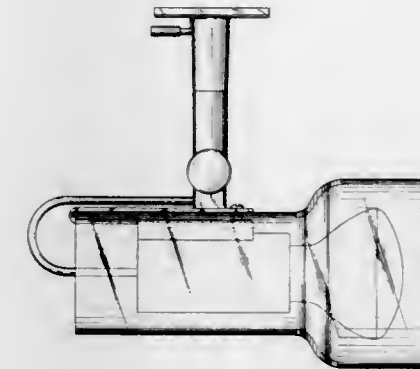
288,131
INSULATED PANEL FOR ROLLING GATES
 Sebastian Magro, 78-47 75th St., Glendale, N.Y. 11385
 Filed Nov. 2, 1983, Ser. No. 547,779
 Term of patent 14 years
 U.S. Cl. D25—49



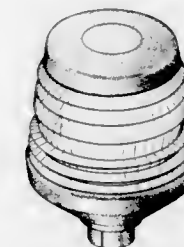
288,132
SECURITY GRILLE
 Milton L. Howard, 21 Banbury La., Bloomfield, Conn. 06002
 Filed Oct. 24, 1983, Ser. No. 544,838
 Term of patent 14 years
 U.S. Cl. D25—53



288,135
LIGHTING FIXTURE
 Anthony Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
 Filed Aug. 10, 1984, Ser. No. 639,599
 Term of patent 14 years
 U.S. Cl. D26—63

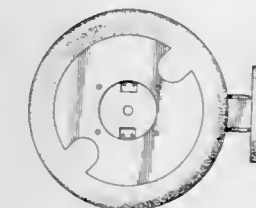
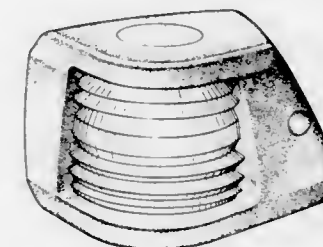


288,133
NAVIGATION LIGHT
 Rudiger Schmidt, Bremen, Fed. Rep. of Germany, assignor to Ahlemann & Schlatter GmbH, Fed. Rep. of Germany
 Filed Nov. 15, 1984, Ser. No. 671,674
 Term of patent 14 years
 U.S. Cl. D26—28



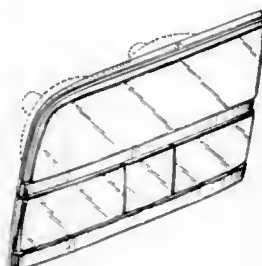
288,136
WALL LAMP
 Murray C. Pfister, San Francisco, Calif., assignor to Boyd Lighting Company, San Francisco, Calif.
 Filed May 16, 1984, Ser. No. 611,023
 Term of patent 14 years
 U.S. Cl. D26—87

288,134
NAVIGATION LIGHT
 Rudiger Schmidt, Bremen, Fed. Rep. of Germany, assignor to Ahlemann & Schlatter GmbH, Fed. Rep. of Germany
 Filed Nov. 15, 1984, Ser. No. 671,743
 Term of patent 14 years
 U.S. Cl. D26—28

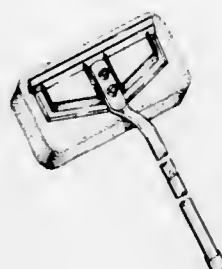


288,137
COMBINED AUTOMOBILE TAILLIGHT LENS AND COVER

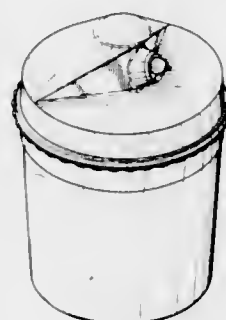
Hiroshi Hirano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 13, 1984, Ser. No. 650,113
Term of patent 14 years
U.S. Cl. D26—120



288,138
TUB SCRUBBING DEVICE
Brenner E. Smith, Greenfield, Mass., assignor to J. H. Smith & Company, Greenfield, Mass.
Filed Jan. 14, 1985, Ser. No. 691,146
Term of patent 14 years
U.S. Cl. D32—42



288,139
COMBINED BUCKET AND DISPENSING LID
Joost van Berne, Dongen; Gerardus J. van der Vlies, Heusden, both of Netherlands, and John A. Howard, Bedford, England, assignors to Lever Brothers Company, New York, N.Y.
Filed Mar. 9, 1984, Ser. No. 587,747
Claims priority, application United Kingdom, Sep. 9, 1983, 1015036
Term of patent 14 years
U.S. Cl. D32—53



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A.T.B. S.p.A.: See—
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AB A.K. Eriksson: See—
Jansson, Kurt, 4,640,171, Cl. 83-797.000.
AB Volvo: See—
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Abbes, Claude; Rouaud, Christian; Valla, Jean; Forges, Robert; and de Villepoix, Raymond, to Commissariat a l'Energie Atomique. Tight connection device. 4,640,530, Cl. 285-18.000.
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Abe, Hiroki: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatamoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
Abel, Kent W.: See—
Ales, Thomas M.; Strohbeen, David T.; Damico, Joyce A.; Van Gompel, Paul T.; and Abel, Kent W., 4,639,949, Cl. 2-400.000.
Abo, Toshimi; and Hata, Yoshitaka, to Nissan Motor Company, Limited. System and method for controlling intake air flow for an internal combustion engine. 4,640,243, Cl. 123-399.000.
Abura, Yoshinori; Tsuji, Eiji; Okuyama, Kenji; and Ochi, Shuhei, to Matsushita Electric Works, Ltd. Battery powered electric hair curler. 4,641,010, Cl. 219-222.000.
Ackert, Peter, to IDN Inventions and Development of Novelties AG. Container having automatic doors and for accommodating data storage media. 4,640,415, Cl. 206-387.000.
Ackley, Donald E., to RCA Corporation. Phase-locked semiconductor laser array with integral phase shifters. 4,641,311, Cl. 372-18.000.
Adamantech, Inc.: See—
Tamborski, Christ; and Clark, Leland C., Jr., 4,640,833, Cl. 424-5.000.
Adams, James H.; Burgess, Jerry L.; and Wagers, William C., to Combustion Engineering, Inc. Segmented electrode collecting panel assembly. 4,640,695, Cl. 55-130.000.
Adams, John T.; and Bohan, John E., Jr., to Honeywell Inc. Printed wiring board means with isolated voltage source means. 4,641,043, Cl. 307-117.000.
Adams-Russell Company, Inc.: See—
Smith, Kenneth L., 4,641,110, Cl. 333-12.000.
Adams, Sherman C., to Alcan Aluminum Corporation. Roller assembly with stabilizer elements for sliding panels. 4,639,970, Cl. 16-90.000.
Addeo, Eric J., to Bell Communications Research, Inc. Method for improving the reliability of data transmission over Rayleigh fading channels. 4,641,318, Cl. 375-38.000.
Adell, Robert, to U.S. Product Development Company. Hip belt. 4,639,948, Cl. 2-338.000.
Advanced Color Technology Inc.: See—
Zoltan, Steven I., 4,641,155, Cl. 346-140.00R.
Advanced Micro Devices, Inc.: See—
Brown, Candice H., 4,640,010, Cl. 29-832.000.
Laugesen, Ronald C.; and Venkitakrishnan, Padmanabha I., 4,641,247, Cl. 364-490.000.
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Isaacson, Philip O., 4,640,295, Cl. 128-748.000.
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Lecuru, Daniel; and Choffy, Jean-Pierre, 4,640,133, Cl. 73-639.000.
Afghan, Madjid; and Sponselee, Josephus G., to Shell Oil Company. Process for the preparation of silica spheres. 4,640,807, Cl. 264-13.000.
Agan Chemical Manufacturers Ltd.: See—
Gabe, Julian; and Makepeace, Richard J., 4,640,705, Cl. 71-93.000.
Agricultural Genetics Company, Limited: See—
Boulter, Donald; Gatehouse, Angharad M. R.; Gatehouse, John A.; and Cox, Roger B., 4,640,836, Cl. 424-195.100.
Aguilar, Henry. Rocker-recliner chair. 4,640,546, Cl. 297-260.000.
Ahola, Raimo: See—
Myllyla, Risto; Kopola, Harri; Kostamovaara, Juha; and Ahola, Raimo, 4,640,514, Cl. 273-310.000.
Aiba, Masahiko, to Sharp Kabushiki Kaisha. Low noise solenoid drive. 4,641,219, Cl. 361-153.000.
Aikawa, Masaru: See—
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,641,156, Cl. 346-160.000.
Aisaka, Kazuo: See—
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Aisin Seiki Kabushiki Kaisha: See—
Iizawa, Ryuji; and Murakami, Koji, 4,641,067, Cl. 318-287.000.
Nakagawa, Takeo; and Suzuki, Kiyoshi, 4,640,156, Cl. 82-1.00C.
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Meguro, Kenjiro; Sagawa, Koichiro; Yokota, Hirofumi; and Takehara, Masahiro, 4,640,943, Cl. 523-200.000.
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Akashi, Kichizo: See—
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Akazawa, Toshiyuki; Tanaka, Yoshinari; and Okaya, Takuji, to Kuraray Co., Ltd. Laminate structure and production of the same. 4,640,870, Cl. 428-483.000.
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Maehara, Toshifumi; and Kurata, Masayuki, 4,640,391, Cl. 188-353.000.
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Hartmann, Hans; and Kerschbaum, Ewald, 4,640,382, Cl. 181-175.000.
Akkerman, Neil H.; and Hare, John P., to AVA International Corporation. Kickover tool. 4,640,350, Cl. 166-117.500.
Akoshima, Shigeru: See—
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Albaugh, Neil P.; and Kane, Gordon R., to Burr-Brown Corporation. Apparatus and method for noise reduction in a linear amplifier. 4,641,105, Cl. 330-9.000.
Albert Bocker GmbH & Co. Kg., Firma: See—
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Park, Joonsup; and Falcetta, Joseph J., 4,640,941, Cl. 523-107.000.
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Falcetta, Joseph J.; and Park, Joonsup, 4,640,965, Cl. 526-242.000.
Ales, Thomas M.; Strohbeen, David T.; Damico, Joyce A.; Van Gompel, Paul T.; and Abel, Kent W., to Kimberly-Clark Corporation. Elastic form-fitting closure constructions for disposable garments. 4,639,949, Cl. 2-400.000.
Alfors, Eugene D., to Honeywell Inc. Lever operated switch with improved lever interchangeability. 4,641,003, Cl. 200-332.000.
All States Inc.: See—
Shely, William W.; and Wells, Peter M., 4,640,479, Cl. 248-56.000.
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Allen and Bennett, Inc.: See—
Allen, Loy F., 4,640,349, Cl. 166-68.500.
Allen, Kenneth D.: See—
Brogdon, James W.; Allen, Kenneth D.; Barton, John S.; and Hicks, Raymond J., 4,640,153, Cl. 74-789.000.
Allen, Loy F., to Allen and Bennett, Inc. Flexible sucker rod unit. 4,640,349, Cl. 166-68.500.
Allied Corporation: See—
Eastman, James M., 4,640,093, Cl. 60-39.281.
Elsenbaumer, Ronald L.; Miller, Granville G.; and Toth, James E., 4,640,006, Cl. 29-623.100.
Pitel, Ira J., 4,641,232, Cl. 363-71.000.
Almada, Edward M. Metallic seal with interlocking J-shaped lips. 4,640,516, Cl. 277-236.000.
Alnot, Patrick R.; Auerbach, Daniel J.; Brundie, Christopher R.; and Miller, Dolores C., to International Business Machines Corporation. Process for accelerating Pd/Sn seeds for electroless copper plating. 4,640,718, Cl. 134-2.000.
Alperin, Noam: See—
Fenster, Paul; Shimoni, Yair; Nissenson, Bilha; and Alperin, Noam, 4,641,352, Cl. 382-6.000.
Alps Electric Co., Ltd.: See—
Iwai, Nobuo, 4,641,020, Cl. 250-201.000.
Matsuura, Takanobu; and Yamamoto, Toshiyuki, 4,641,150, Cl. 346-76.0PH.
Nakanowatari, Jun; Machida, Mitsuo; Okamoto, Toshiyuki; and Nakura, Yoshihiro, 4,640,581, Cl. 350-331.00R.
Okita, Masao; Gunji, Kunihiko; and Saito, Yukio, 4,641,211, Cl. 360-97.000.

Shimada, Yutaka; Hatanai, Takashi; Mukasa, Koichi; and Nakashima, Keishi, 4,641,213, Cl. 360-125,000.

Alston, Lawrence E., to Polaroid Corporation. Electronic image scanner and copier system with color matrix image enhancement. 4,641,184, Cl. 358-75,000.

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Koseki, Ryoji, 4,641,314, Cl. 372-65,000.

Amaray International Corporation: See—
Northrup, Allan R.; and Tomkinson, John G., 4,640,416, Cl. 206-425,000.

Amemiya, Ikuzo: See—
Goto, Hajime; Amemiya, Ikuzo; Nakayama, Masanobu; and Hatano, Yoshinobu, 4,639,988, Cl. 29-25,350.

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Ossian, William F., 4,640,852, Cl. 428-35,000.

American Cyanamid Company: See—
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Anderson, J. Edward C.; and Osborn, Merritt A., to Bares Group, The. Crimping tool. 4,640,117, Cl. 72-410,000.

Anderson, James E.; and Holmes, Terry L., to Oscar Mayer Foods Corporation. Apparatus for coating materials onto elongated foodstuffs. 4,640,219, Cl. 118-24,000.

Anderson, Raymond G.; and Anderson, Doris E. Releasable fastening means and method for clothing items, particularly caps, brassiers, and nursing brassiers. 4,640,287, Cl. 128-460,000.

Ando, Hideo; and Doi, Akihiko, to Kabushiki Kaisha Toshiba; and Toshiba Automation Equipment Engineering, Ltd. Optical head. 4,641,023, Cl. 250-216,000.

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Anzai, Katsushi: See—
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Aoi, Shigeru, to Canon Kabushiki Kaisha. Image display device. 4,641,157, Cl. 346-160,000.

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Asai, Eiichi; Tanaka, Hiroshi; and Higashi, Nobuaki, to Fuji Photo Film Co., Ltd. Gradation correction curve creating method and apparatus. 4,641,267, Cl. 364-414,000.

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Asaoka, Keizo: See—
Koiwai, Sakae; Asaoka, Keizo; Shirasawa, Katsuhiko; Watanabe, Hiroyuki; and Honda, Junichi, 4,640,001, Cl. 29-572,000.

Asaumi, Seiji: See—
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Asea Aktiebolag: See—
Jacobsson, Curt, 4,641,088, Cl. 324-86,000.

Asea Stal AB: See—
Brannstrom, Roine, 4,640,205, Cl. 110-347,000.

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Riner, Wilbur L.; and Watson, Bruce W., 4,640,989, Cl. 379-94,000.

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Goel, Anil B.; Tufts, Timothy A.; and Blackburn, Peggy A., 4,640,969, Cl. 528-73,000.

Streets, Roger L.; Rabito, Thomas G.; and Peresie, David N., 4,640,730, Cl. 156-334,000.

Ashworth, John F. H. Trawl doors. 4,640,037, Cl. 43-9,000.

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Assinder, Ivar; Supran, Michael K.; and Thompson, Geoffrey A. K., to Thomas J. Lipton, Inc. Food processing method to avoid non-enzymatic browning. 4,640,840, Cl. 426-399,000.

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Coulthart, Kenneth B.; Fairfield, Robert C.; and Mortenson, Robert L., 4,641,102, Cl. 328-62,000.

Kemper, Kyran B.; and Vetter, Robert W., Jr., 4,641,299, Cl. 370-15,000.

LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,641,179, Cl. 358-12,000.

Scalera, Michael, 4,641,218, Cl. 361-119,000.

Walsh, Patrick M., 4,641,266, Cl. 364-200,000.

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Blair, Christon R.; and Parker, Kenneth B., 4,640,647, Cl. 405-224,000.

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Atterbury, William G.: See—
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Audeh, Costandi A., to Mobil Oil Corporation. Process for the elimination of pyrite. 4,640,692, Cl. 44-1,05R.

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Auinger, Herbert, to Siemens Aktiengesellschaft. Rotor for an electrical machine with axial and radial cooling channels. 4,641,051, Cl. 310-61,000.

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Hong, Ki C.; Griston, Suzanne; and Ault, Joseph W., 4,640,355, Cl. 166-269,000.

Ault, Russell L.: See—
Harris, Ronald R.; and Ault, Russell L., 4,640,065, Cl. 52-204,000.

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Green, Robert, 4,640,239, Cl. 123-146,50A.

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AVA International Corporation: See—
Akkerman, Neil H.; and Hare, John P., 4,640,350, Cl. 166-117,500.

Avison, Gerald; Teape, John W.; and Willer, Paul H. F., to Bowthorpe-Hellermann Limited. Automatic tie gun. 4,640,320, Cl. 140-93,00A.

Ayala, Henry. Reinforcing bar support clip. 4,640,063, Cl. 52-127,300.

Ayata, Naoki, to Canon Kabushiki Kaisha. Measurement method and apparatus for alignment. 4,641,257, Cl. 364-559,000.

Ayata, Naoki: See—
Tazawa, Shigemoto; and Ayata, Naoki, 4,641,071, Cl. 318-640,000.

Ayers, Ray R.: See—
Simpson, Wayne F.; Ayers, Ray R.; and Patterson, Robert W., 4,640,645, Cl. 405-63,000.

Azzopardi, Michael J.: See—
Moore, Robert W.; and Azzopardi, Michael J., 4,640,657, Cl. 414-347,000.

Baba, Toru, to Kioritz Corporation. Mowing apparatus. 4,640,084, Cl. 56-12,700.

Babcock & Wilcox Company, The: See—
Flora, John H.; and Powers, Thomas, Jr., 4,640,132, Cl. 73-602,000.

Badin, Suzan; Moulin, Jean-Francois; Delattre, Luc; and Renan, Patrice, to Essilor International Cie Generale d'Optique. Grinding machine for guided or non-guided beveling or grooving of an ophthalmic lens. 4,640,055, Cl. 51-101,0LG.

Baglee, David A.: See—
Malhi, Sarwinder; and Baglee, David A., 4,641,173, Cl. 357-51,000.

Bailey, Peter D., to Texscan Corporation. Radio frequency chokes having two windings and means for dampening parasitic resonances. 4,641,115, Cl. 333-181,000.

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Looney, Raymond H., 4,640,304, Cl. 137-202,000.

Baker, Mark G. B., to Ferranti, plc. Imaging device. 4,641,038, Cl. 250-578,000.

Baker Oil Tools, Inc.: See—
Wetzel, Rodney J., 4,640,370, Cl. 175-4,600.

Bakken, John A. Chain saw carriage. 4,640,170, Cl. 83-794,000.

Balding, David P.; Hsu, Li-Chien; and Gordon, Lucas S., to American Hospital Supply Corporation. Stress crack reduction in polycarbonate parts. 4,640,819, Cl. 422-22,000.

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McMahon, Raymond D.; Jellovitz, John C.; Vaile, James T.; Renn, Gregory J.; and Ondeck, Elmer J., 4,640,165, Cl. 83-346,000.

Baliga, Bantval J., to General Electric Company. Pinch rectifier. 4,641,174, Cl. 357-58,000.

Ballard, Donna J.: See—
Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., 4,640,837, Cl. 426-94,000.

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Ford, George W., Jr.; and Palmer, Darrel R., 4,640,440, Cl. 222-190,000.

Ballendux, Gerardus M.: See—
Quick, David C.; McCormick, Stephen J.; and Ballendux, Gerardus M., 4,640,152, Cl. 74-767,000.

Ballester, Edwin, to Cozzoli Machine Co. Method and apparatus for filling a receptacle with a material. 4,640,322, Cl. 141-5,000.

Bandari, Ardeshir: See—
Dunnigan, Gerald; and Bandari, Ardeshir, 4,641,013, Cl. 219-364,000.

Banks, Christopher P.; and Irving, Edward, to Ciba-Geigy Corporation. Method of electrocoating metallic surfaces. 4,640,753, Cl. 204-181,700.

Bannon, Robert P.; and Marple, Stanley, to Shell Oil Company. Multistage condensation process. 4,640,743, Cl. 203-87,000.

Baran, Anthony S.: See—
Marchegiano, Joseph E.; and Baran, Anthony S., 4,641,256, Cl. 364-555,000.

Barbee, Robert B.: See—
Davis, Burns; and Barbee, Robert B., 4,640,973, Cl. 528-208,000.

Barbee, Steven G.; Devine, Gregory P.; Patrick, William J.; and Seeley, Gerard, to International Business Machines Corporation. Vacuum deposition system with improved mass flow control. 4,640,221, Cl. 118-689,000.

Bares Group, The: See—
Anderson, J. Edward C.; and Osborn, Merritt A., 4,640,117, Cl. 72-410,000.

Barker, Don P. S.: See—
Van Hoomissen, Robert L.; Briscoe, Terry L.; and Barker, Don P. S., 4,640,496, Cl. 254-415,000.

Barker, Irvy T.: See—
Printiss, Frederick H., Sr.; and Barker, Irvy T., 4,640,536, Cl. 285-367,000.

Barker, Laurence S.: See—
Redding, Thomas P.; and Barker, Laurence S., 4,640,602, Cl. 355-3,05H.

Barnett, Gary A., to M. Lowenstein Corporation. Synthetic leather sheet material products. 4,640,858, Cl. 428-90,000.

Barr, John D.; and Fuller, John M., to NL Industries, Inc. Drill bit and cutter therefor. 4,640,375, Cl. 175-410,000.

Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., to Hewlett-Packard Company. Vector network analyzer with integral processor. 4,641,086, Cl. 324-77,00R.

Barr, William A. Valve assembly for use in brake pressure control unit. 4,640,554, Cl. 303-6,00C.

Barry, John C. Emergency air access and signal. 4,640,278, Cl. 128-206,120.

Bartell Industries Ltd.: See—
Zelenka, Frank, 4,640,553, Cl. 299-39,000.

Barton, John S.: See—
Brogdon, James W.; Allen, Kenneth D.; Barton, John S.; and Hicks, Raymond J., 4,640,153, Cl. 74-789,000.

Baschang, Gerhard; Hartmann, Albert; and Wacker, Oskar, to Ciba-Geigy Corporation. Acylated sugar derivatives, processes for their manufacture, and their use. 4,640,911, Cl. 514-42,000.

BASF Aktiengesellschaft: See—
Leyrer, Reinhold J.; Wegner, Gerhard; and Mueller, Michael, 4,640,960, Cl. 525-388,000.

Naarmann, Herbert; Koehler, Gernot; and Schlag, Johannes, 4,640,749, Cl. 204-59,00R.

BASF Corporation: See—
Deck, Charles F.; and Carson, James E., 4,640,791, Cl. 252-75,000.

Bass, Robert H.; Macko, William J.; and Lockhart, Robert K., Jr., to Motorola, Inc. Function coding via digital addresses in a two-way system. 4,641,364, Cl. 455-32,000.

Bastian, Robert: See—
Diepeveen, Neal; and Bastian, Robert, 4,641,192, Cl. 358-206,000.

Bates, William T. D., to Bilbate Limited. Fluid sampling device. 4,640,297, Cl. 128-765,000.

Batesville Casket Company, Inc.: See—
Craft, William K., 4,639,985, Cl. 27-19,000.

Batt, Andre; and Delabie, Jacques, J. A., to Societe Nationale d'Etude et de Construction de Moteur d'Aviation S.N.E.C.M.A. Electro-magnetic screening device for electrical cabling constituting bundles of cables comprising tappings. 4,640,980, Cl. 174-36,000.

Battelle Memorial Institute: See—
Renner, G. Frederick; Thatcher, Richard K.; Atterbury, William G.; Harris, Jeremy M.; Hartman, Nile F.; and McCown, Robert B., 4,641,027, Cl. 250-237,00G.

Rosenberg, Harvey S., 4,640,825, Cl. 423-235,000.

Battiston, Joseph, Jr.: See—
Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., 4,640,301, Cl. 135-67,000.

Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., to Tubular Fabricators Industry, Inc. Foldable walker with plunger actuated latch assembly. 4,640,301, Cl. 135-67,000.

Bauder, Albrecht: See—
Schiel, Christian; and Bauder, Albrecht, 4,639,990, Cl. 29-116,00R.

Baummann, Arthur N., to International Minerals & Chemical Corp. Separation of dissolved substances from wet process phosphoric acid. 4,640,828, Cl. 423-321.00R.

Baumgartner, Alan S.; Moore, Patrick D.; and VanDahm, Richard A., to Milliken Research Corporation. Colored thermoplastic resin composition containing a colorant having an alkylenoxy-substituted chromophore group. 4,640,690, Cl. 8-506.000.

Baumgartner, Josef: See—
Stalder, Herbert; Baumgartner, Josef; and Wurml, Arthur, 4,640,089, Cl. 57-401.000.

Baxter Travenol Laboratories, Inc.: See—
Cabernoch, James L., 4,640,425, Cl. 215-11.00E.
White, Leonard A., 4,640,424, Cl. 215-11.00R.

Bay Mills Limited: See—
Porter, John F., 4,640,864, Cl. 428-334.000.

Bayer Aktiengesellschaft: See—
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,640,923, Cl. 514-272.000.
Zeher, Wilfried; Reinking, Klaus; and Kleiner, Frank, 4,640,970, Cl. 528-73.000.

Baylor College of Medicine: See—
Sheng, Hwai-Ping; Garza, Cutberto; Winter, Dean C.; and Deskins, William G., 4,640,130, Cl. 73-579.000.

BBC Brown, Boveri & Company, Limited: See—
Duerig, Thomas; Escudier, Marcel; and Keller, Jakob, 4,640,806, Cl. 264-9.000.

Beard, Robert W., to Oximetrix, Inc. Combination surgical scalpel and electrosurgical instrument. 4,640,279, Cl. 128-303.140.

Bechtle, Daniel W.: See—
Belohoubek, Erwin F.; and Bechtle, Daniel W., 4,641,106, Cl. 330-286.000.

Becker, Scott T.; Bergman, Michael J.; and Lee, Shueh-Mien, to Signetics Corporation. NOR gate with logical low output clamp. 4,641,046, Cl. 307-448.000.

Beckwith, Elaine C.: See—
Williams, Robert M.; and Beckwith, Elaine C., 4,640,826, Cl. 423-263.000.

Becton Dickinson and Company: See—
Carroll, Richard J.; Luderer, Albert A.; Smith, Ward C.; and Zine, Anthony R., Jr., 4,640,785, Cl. 210-782.000.

Beecham Group p.l.c.: See—
Willocks, Kenneth, 4,640,928, Cl. 514-422.000.

Beestman, George B., to Monsanto Company. High concentration encapsulation by interfacial polycondensation. 4,640,709, Cl. 71-100.000.

Belanger, Inc.: See—
Belanger, James A., 4,640,631, Cl. 384-297.000.

Belanger, James A., to Belanger, Inc. Plastic bearing and one piece housing assembly. 4,640,631, Cl. 384-297.000.

Bell, Cecil R., Jr.: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.

Bell Communications Research, Inc.: See—
Addeo, Eric J., 4,641,318, Cl. 375-38.000.

Bell, Donald G.: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.

Belohoubek, Erwin F.; and Bechtle, Daniel W., to RCA Corporation. Radial power amplifier. 4,641,106, Cl. 330-286.000.

Bendure, William J.: See—
Wilson, Monti R.; Hutchison, Victor E.; Bendure, William J.; and Anderson, Frederick W., 4,641,244, Cl. 364-475.000.

Benteler-Werke AG: See—
Hartmann, Franz-Josef; and Hefendehl, Heinz, 4,640,115, Cl. 72-98.000.

Berfield, Robert C., to Shop-Vac Corporation. Dolly with tank latch. 4,640,521, Cl. 280-47.340.

Berg, Gunter; Muller, Otmar; and Esters, Rainer, to Diehl GmbH & Co. Adhesive medium for the bonding of surfaces in the ammunition containing explosive charges. 4,640,947, Cl. 524-109.000.

Berger, Richard. Tear pump contact lens. 4,640,594, Cl. 351-160.00R.

Bergman, Michael J.: See—
Becker, Scott T.; Bergman, Michael J.; and Lee, Shueh-Mien, 4,641,046, Cl. 307-448.000.

Berlese, Remo. Motorcycle boot with positive air circulation. 4,640,027, Cl. 36-131.000.

Bernklau, Daniela: See—
Schmid, Ralf; Johann, Bernklau, Daniela; and Knapke, Erwin, 4,640,626, Cl. 374-57.000.

Bertling, Hannes; and Leiber, Heinz, to Robert Bosch GmbH. System and method for supplying fluid under pressure for a vehicle brake system. 4,640,555, Cl. 303-10.000.

Bertotti, Franco; Ferla, Giuseppe; Musumeci, Salvatore; and Raciti, Salvatore, to SGS Microelectronics SpA. Monolithically integrated semiconductor power device. 4,641,171, Cl. 357-46.000.

Bertram, Christopher D.: See—
Farrell, Peter C.; Bertram, Christopher D.; and Milthorpe, Bruce K., 4,640,896, Cl. 436-34.000.

Bessam-Aire, Inc.: See—
Hicks, Roger J.; and Hufgard, John W., 4,640,696, Cl. 55-227.000.

Best, Steven A., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,640,907, Cl. 502-115.000.

Betz, John J. E. Protective method and apparatus. 4,639,945, Cl. 2-22.000.

Beutier, Didier; and Predali, Jean-Jacques, to Societe Miniere et Metallurgique de Penroya. Process for recovering silver from sulfate solutions. 4,640,710, Cl. 75-108.000.

Beyeler Machines, S.A.: See—
Dieperink, Willem; and Vrugink, Arend, 4,640,113, Cl. 72-21.000.

Beyers, Billy W., Jr., to RCA Corporation. Television system scheduler with on-screen menu type programming prompting apparatus. 4,641,205, Cl. 360-33.100.

Bhat, Deepak G.; Shah, Dhirajal C.; Kyle, John R.; and Woerner, Paul F., to GTE Valeron. Coated silicon nitride cutting tool and process for making. 4,640,693, Cl. 51-295.000.

Bickar, Ray: See—
Norcia, John A.; Bickar, Ray; and Wheatley, William M., 4,640,323, Cl. 141-18.000.

Bigo, Jean. Light push chairs of the foldable type. 4,640,519, Cl. 280-42.000.

Bigott, Jeffrey J. Telescopic roller. 4,640,404, Cl. 193-35.0TE.

Bilbale Limited: See—
Bates, William T. D., 4,640,297, Cl. 128-765.000.

Billings, William G., to Phillips Petroleum Company. Process for upgrading carbonaceous material comprising liquid extraction and flash pyrolysis of extraction residue. 4,640,760, Cl. 208-390.000.

Binder, Hans, to USM Corporation. Automatic join and sew process for shoes. 4,639,964, Cl. 12-142.0LC.

Binnersley, Edwin K.; and Krueger, William H., to Du Pont de Nemours, E. I., and Company. Fiber reinforced thermoplastic material. 4,640,861, Cl. 428-294.000.

Bio-Dynamics Research & Development Corporation: See—
Simmons, James A., 4,640,134, Cl. 73-648.000.

Bird, Graham J.; Farquharson, Graeme J.; and Watson, Keith G., to ICI Australia Limited. Herbicidal cyclohexane-1,3-dione derivatives. 4,640,708, Cl. 71-98.000.

Birritella, Mark S., to Motorola, Inc. Complex direct coupled transistor logic. 4,641,047, Cl. 307-454.000.

Bitrolf, Ehrenfried: See—
Diener, Jorg; and Bitrolf, Ehrenfried, 4,640,124, Cl. 73-116.000.

Bittner, Friedrich; Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; and Splett, Erich, to Degussa Aktiengesellschaft. Process for the production of sodium polysulfides from the elements sodium and sulfur. 4,640,832, Cl. 423-562.000.

Blackburn, James R., to Jim Blackburn Designs, Inc. Handle bar mounted quick disconnect bottle cage. 4,640,449, Cl. 224-41.000.

Blackburn, Peggy A.: See—
Goel, Anil B.; Tufts, Timothy A.; and Blackburn, Peggy A., 4,640,969, Cl. 528-73.000.

Blair, Christon R.; and Parker, Kenneth B., to Atlantic Richfield Company. Offshore well apparatus and method. 4,640,647, Cl. 405-224.000.

Blancheton, Jean-Paul; Calvas, Jacques; Michel, Alain H.; and Vonau, Vincent, to Institut Francais de Recherche pour l'Exploitation de la Mer - IFREMER. Intensive shrimp breeding process. 4,640,227, Cl. 119-2.000.

Bland, Todd A. Hand-held hair dryer having housed radio receiver. 4,641,014, Cl. 219-370.000.

Blaw Knox Corporation: See—
Moore, James G.; Obey, James H.; and Pinkel, Edward B., 4,640,740, Cl. 159-13.100.

Blecher, Peter, to Ermossa AG. Floor plate. 4,640,073, Cl. 52-403.000.

Blickle, Peter, to Hoechst Aktiengesellschaft. Process for the preparation of 3-hydroxy-3-methylglutaric acid. 4,640,750, Cl. 204-79.000.

Blizzard, Cyril A. M., to Pratt & Whitney Canada Inc. Apparatus for improving acceleration in a multi-shaft gas turbine engine. 4,640,091, Cl. 60-39.290.

Blomback, Birger; and Okada, Masahisa, to New York Blood Center, Inc. Fibrin gel-containing filter. 4,640,778, Cl. 210-484.000.

Bloomfield Industries, Inc.: See—
Roberts, Melvin F., 4,641,011, Cl. 219-328.000.
Roberts, Melvin F., 4,641,012, Cl. 219-331.000.

Bloor, Stephen T.: See—
Clark, Peter J.; Hudd, Anthony W.; Bloor, Stephen T.; and Roller, Erling, 4,640,335, Cl. 164-440.000.

Blosser, Gabe F.: See—
Blosser, Henry G.; Burleigh, Richard J.; Blosser, Gabe F.; and Jemison, Emanuel B., 4,641,104, Cl. 328-234.000.

Blosser, Henry G.; and Milton, Bruce F., to Board of Trustees operating Michigan State University. Superconducting synchrocyclotron. 4,641,057, Cl. 313-62.000.

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Blum, Richard S. Pill dispenser. 4,640,560, Cl. 312-234.100.

Board of Trustees operating Michigan State University: See—
Blosser, Henry G.; and Milton, Bruce F., 4,641,057, Cl. 313-62.000.
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Bochumer Eisenhutte Heintzmann GmbH & Co. Kg: See—
Koppers, Manfred; Bohnes, Karlheinz; and Amling, Friedel, 4,640,650, Cl. 405-290.000.

Bocker, Albert, to Albert Bocker GmbH & Co. Kg., Firma. Elevator comprising telescopic sections, and a locking device therefor. 4,640,387, Cl. 182-213.000.

Boden, Ogden W. Cord lock device. 4,639,978, Cl. 24-134.00R.

Bodenseewerk Perkin-Elmer & Co., GmbH: See—
Huber, Bernhard, 4,640,677, Cl. 431-89.000.

Bodine, Albert G.; and Gregory, James N. Sonic cementing. 4,640,360, Cl. 166-286.000.

Boeing Company, The: See—
Brooks, John R., 4,641,236, Cl. 364-171.000.
Draggou, Vaughn G., 4,641,315, Cl. 372-72.000.
Drago, Raymond, 4,640,149, Cl. 74-462.000.

Jensen, Tom M.; Yoshimura, Frederick T.; and Jensen, Deborah P., 4,640,525, Cl. 280-642.000.

Miller, Glen E., 4,641,025, Cl. 250-227.000.

Pace, James W., 4,640,477, Cl. 244-214.000.

Zoerb, Melvin C., 4,640,475, Cl. 244-111.000.

Boerema, Edward T.: See—
Watjer, Sheldon J.; and Boerema, Edward T., 4,640,542, Cl. 296-37.800.

Boffardi, Bennett P.: See—
Persinski, Leonard J.; Walker, Jerry L.; and Boffardi, Bennett P., 4,640,793, Cl. 252-82.000.

Bogert, Stephen R.: See—
Engel, William K.; and Bogert, Stephen R., 4,640,095, Cl. 60-443.000.

Bogren, Ingemar S. B. Apparatus for forming and inserting an internal lid in a container. 4,640,373, Cl. 156-380.200.

Bohan, John E., Jr.: See—
Adams, John T.; and Bohan, John E., Jr., 4,641,043, Cl. 307-117.000.

Bohler, Walter: See—
Tracy, David H.; O'Brien, Michael J.; and Bohler, Walter, 4,640,627, Cl. 374-121.000.

Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, to Ciba-Geigy Corporation. 2-phenoxypropionic acid cyanamides as herbicides. 4,640,703, Cl. 71-92.000.

Bohnes, Karlheinz: See—
Koppers, Manfred; Bohnes, Karlheinz; and Amling, Friedel, 4,640,650, Cl. 405-290.000.

Boisson, Gerard, to Schlumberger Technology Corporation. Method for actuating a tool in a well at a given depth and tool allowing the method to be implemented. 4,640,354, Cl. 166-250.000.

Bokmiller, David J.; and Heck, Samuel C., to Sani-Fresh International, Inc. Cleaning system. 4,640,638, Cl. 401-145.000.

Bolgen Aktiebolag: See—
Dyvik, Frostein; and Borve, Kjetil, 4,640,751, Cl. 204-105.00R.

Bonal, Jean, to Jeumont-Schneider Corporation. A-C or D-C to D-C converter for dual current locomotives with D-C motors. 4,641,234, Cl. 363-124.000.

Bonfig, Karl-Walter; Himmel, Jorg; and Kuipers, Ulrich. Safety fuse assembly provided with an electro-optical indicator device. 4,641,120, Cl. 337-242.000.

Bonnyay, Laszlo: See—
Pietzsch, Kurt E.; and Bonnyay, Laszlo, 4,640,775, Cl. 210-387.000.

Bor, Zsolt: See—
Schafer, Fritz P.; Szatmari, Sandor; and Bor, Zsolt, 4,641,312, Cl. 372-25.000.

Boram, Robert J., to R. F. Shoup Corporation. Electronic voting machine and system. 4,641,240, Cl. 364-409.000.

Boram, Robert J., to R. F. Shoup Corporation. Memory cartridge for electronic voting system. 4,641,241, Cl. 364-409.000.

Borden, Inc.: See—
Matuszak, Edward A.; Lee, Yanien; and Gilmore, Stephen R., 4,640,843, Cl. 426-560.000.

Bordignon, Abramo, to A.T.B. S.p.A. Tape wiping brush, particularly for magnetic tape cassettes and the like. 4,639,967, Cl. 15-256.500.

Borenstein, David E., to Phillips Petroleum Company. Filament jet entangler. 4,639,986, Cl. 28-272.000.

Borghese, Camillo: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.

Borjesson, Tore L., to AB Volvo. Axially engaging twin plate friction clutch with adjustment means. 4,640,399, Cl. 192-70.250.

Borve, Kjetil: See—
Dyvik, Frostein; and Borve, Kjetil, 4,640,751, Cl. 204-105.00R.

Bottomley, Paul A.; and Schenck, John F., to General Electric Company. Elliptical cross-section slotted-tube radio-frequency resonator for nuclear magnetic resonance imaging. 4,641,097, Cl. 324-318.000.

Boulanger, Henry J., to Texas Instruments Incorporated. Sealed electrical switch and mounting therefor. 4,641,121, Cl. 337-380.000.

Boulter, Donald; Gatehouse, Angharad M. R.; Gatehouse, John A.; and Cox, Roger B., to Agricultural Genetics Company, Limited. Plant protection method. 4,640,836, Cl. 424-195.100.

Bouts, Wilhelmus J.: See—
Simons, Petrus A. M. R.; and Bouts, Wilhelmus J., 4,640,879, Cl. 430-96.000.

Bowthorpe-Hellermann Limited: See—
Avison, Gerald; Teape, John W.; and Willer, Paul H. F., 4,640,320, Cl. 140-93.00A.
Walker, John G., 4,640,319, Cl. 140-93.00A.

Boyacigiller, Ziya G.: See—
Doluca, Tunc; and Boyacigiller, Ziya G., 4,641,129, Cl. 340-347.0AD.

Boyle, John T. A.; and Todd, Richard S., to John Wyeth & Brother Limited. 4-cinnolinylamino or quinoxalinylamino benzenesulphonamides and intermediates therefor. 4,640,920, Cl. 514-248.000.

Boyles, William C.; Hagge, Douglas R.; and Johnston, Clifford V., to Cardinal Industries, Inc. Torsion-absorbing highway semitrailer. 4,640,528, Cl. 280-789.000.

Braddock, John C.; and Braddock, Kathy M. Non-competitive game for two or more players. 4,640,510, Cl. 273-1.00R.

Braddock, Kathy M.: See—
Braddock, John C.; and Braddock, Kathy M., 4,640,510, Cl. 273-1.00R.

Brademeyer, David L.; and Welch, Timothy M., to General Motors Corporation. Quick take-up master cylinder valve arrangement. 4,640,098, Cl. 60-578.000.

Brader, David G.: See—
Kaplan, Gary M.; Karau, Robert T.; Winney, Norman E., Jr.; and Brader, David G., 4,640,413, Cl. 206-232.000.

Bradley, Gerald R. Sublimation printing apparatus. 4,640,191, Cl. 101-470.000.

Bradley, John W. Vehicle rear seat sun visor. 4,640,543, Cl. 296-97.00K.

Brammell, Terrence N., to Trans-Guard Industries Inc. Security seal. 4,640,538, Cl. 292-323.000.

Brandenstein, Manfred; Hetterich, Hermann; and Horling, Peter, to SKF Kugellagerfabriken GmbH. Arrangement for the axial positioning and holding of a machine part in a thin wall sleeve or the like. 4,640,632, Cl. 384-537.000.

Brandt, Bertil, to Socared S.A. Rope and a mooring device, particularly for clamping goods mooring ships and anchoring floating landing stages, buoys, navigation marks and the like. 4,640,212, Cl. 114-230.000.

Brannstrom, Roine, to Asea Stal AB. Method of drying granular fuel in a fluidized bed combustion plant and a combustion plant with a drying device. 4,640,205, Cl. 110-347.000.

Bratke, Dieter N.: See—
Gallion, Georg A.; Bratke, Dieter N.; Helbig, Klaus; and Reuter, Karl F., 4,640,450, Cl. 224-331.000.

Brauer, Melvin: See—
Simone, Dominic; and Brauer, Melvin, 4,640,801, Cl. 260-407.000.

Braun, Eugene R.; and Schultz, Gary R., to Eaton Corporation. Central tire inflation system. 4,640,331, Cl. 152-417.000.

Bray, Richard L., to Eastman Kodak Company. Simplex to duplex copier apparatus. 4,640,607, Cl. 355-14.00R.

Bredemeier-Klonki, Volker: See—
Annecke, Karl-Heinz; and Bredemeier-Klonki, Volker, 4,641,306, Cl. 371-25.000.

Breimeier, Kurt; Eickhoff, Heinrich; Erdmann, Hans-Walter; and Kuhn, Hans D., to Fulgurt GmbH & Co., Kommanditgesellschaft. Sashes and matching frames for windows and glass doors. 4,640,054, Cl. 49-504.000.

Bresson, Clarence R.; and Louthan, Rector P., to Phillips Petroleum Company. Ore flotation and flotation agents for use therein. 4,640,789, Cl. 252-61.000.

Brian, Rene, to Pomagalski SA. Rocker arm assembly with a fixing collar for an aerial tramway installation. 4,640,197, Cl. 104-179.000.

Bridgestone Corporation: See—
Takiguchi, Eiji; Yuto, Kazuaki; and Oniki, Toru, 4,640,952, Cl. 524-296.000.

Brightad Limited: See—
Street, Graham S. B., 4,641,178, Cl. 358-3.000.

Briscoe, Terry L.: See—
Van Hoomissen, Robert L.; Briscoe, Terry L.; and Barker, Don P. S., 4,640,496, Cl. 254-415.000.

Bristol-Myers: See—
Othmer, Ekkehard; and Othmer, Sieglinde C., 4,640,921, Cl. 514-252.000.

Bristol-Myers Company: See—
Kim, Choung U.; and Misco, Peter F., Jr., 4,640,799, Cl. 540-350.000.

British Gas Corporation: See—
Stafford, Trevor G., 4,640,732, Cl. 156-358.000.

Brogdon, James W.; Allen, Kenneth D.; Barton, John S.; and Hicks, Raymond J., to Teledyne Industries, Inc. Accessory drive for a turbine engine. 4,640,153, Cl. 74-789.000.

Bromberg, Yury: See—
Kucher, Alexander; Krasnov, Igor; and Bromberg, Yury, 4,640,384, Cl. 182-51.000.

Brookey, Robert L.: See—
Clifton, Ted G.; and Brookey, Robert L., 4,640,351, Cl. 166-127.000.

Brooks, Gary T., to Standard Oil Company (Indiana). Injection moldable polyamide-imide-phthalamide copolymers containing polyetherimides. 4,640,944, Cl. 523-205.000.

Brooks, John R., to Boeing Company. The. Programmable machine tool control system. 4,641,236, Cl. 364-171.000.

Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., to Crucible Materials Corporation. Method and assembly for producing extrusion-clad tubular product. 4,640,815, Cl. 419-8.000.

Brosius, Karl S.: See—
Haswell, Walter T., Jr.; Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., 4,640,814, Cl. 419-8.000.

Brothers, Lance E., to Halliburton Company. Method of reducing fluid loss in cement compositions containing substantial salt concentrations. 4,640,942, Cl. 523-130.000.

Brown, Candice H., to Advanced Micro Devices, Inc. Method of making a package utilizing a self-aligning photoexposure process. 4,640,010, Cl. 29-832.000.

Brown, Omar L., to Dayton Reliable Tool & Mfg. Co. Two-out belt system. 4,640,116, Cl. 72-352.000.

Brull, Maurice A., to Tensidyne Scientific Corporation. Method of making a device for monitoring fatigue life. 4,639,997, Cl. 29-407.000.

Brundie, Christopher R.: See—

Alnot, Patrick R.; Auerbach, Daniel J.; Brundie, Christopher R.; and Miller, Dolores C., 4,640,718, Cl. 134-2.000.

Brunette Machine Works, Ltd.: See—

Hards, John E., 4,640,160, Cl. 83-71.000.

Bruning, Eugene, to Caterpillar Inc. Air-fuel ratio control system having a fluid-powered broken-link mechanism. 4,640,247, Cl. 123-388.000.

Brunner, Hans-Georg, to Ciba-Geigy Corporation. Cyclohexenonecarboxylic acid derivatives with herbicidal and plant growth regulating properties. 4,640,706, Cl. 71-94.000.

Bruns, John H. Modular multi-storage building. 4,640,214, Cl. 114-263.000.

Brunswick Corporation: See—

Ohler, Steven W., 4,640,470, Cl. 242-84.20A.

Bryan, Barry L.; Drucker, Martin; McDowell, Allen W.; Schneider, Ira H.; and Newkirk, Gary L., to International Business Machines Corporation. Personal computer attachment for host system display station. 4,641,262, Cl. 364-900.000.

Buback, John, to Massey-Ferguson Inc. Multiratio constant mesh change speed transmission. 4,640,146, Cl. 74-359.000.

Buckley, Alan: See—

Choe, Eui W.; Buckley, Alan; and Garito, Anthon F., 4,640,800, Cl. 260-396.00N.

Buekers, Valere: See—

Vansant, Jan; Overbergh, Noel; Buekers, Valere; and Pieck, Amandus L. E., 4,641,009, Cl. 219-200.000.

Bulger, Ray P. Illuminated child's tray. 4,640,033, Cl. 40-324.000.

Bunch, Matthew L.; Price, J. B.; and Stitz, Robert W., to Spectrum CVD, Inc. CVD heat source. 4,640,224, Cl. 118-725.000.

Bundschuh, Robert L. Pump dispenser with slidable trigger. 4,640,444, Cl. 222-321.000.

Bunn, Robert F. Fingerprint identification system. 4,641,350, Cl. 382-4.000.

Bunschoten, Gerrit K., to Lever Brothers Company. Liquid-dispensing container. 4,640,441, Cl. 222-207.000.

Burgess, Jerry L.: See—

Adams, James H.; Burgess, Jerry L.; and Wagers, William C., 4,640,695, Cl. 55-130.000.

Burghoffer, Patrick; Pourprix, Michel; and Poussier, Patrick, to Commissariat a l'Energie Atomique. Aerosol sampler with cascade impaction and uniform deposition. 4,640,140, Cl. 73-863.220.

Burke Company, The: See—

Grist, Warren W.; and Kelly, David L., 4,640,491, Cl. 249-219.00W.

Burke, William B. Interactive book-puzzle instructional entertainment system. 4,640,512, Cl. 273-157.00R.

Burleigh, Richard J.: See—

Blosser, Henry G.; Burleigh, Richard J.; Blosser, Gabe F.; and Jemison, Emanuel B., 4,641,104, Cl. 328-234.000.

Burleson, James C., to Ozo-Tek, Inc. Method and apparatus for the generation and utilization of ozone and singlet oxygen. 4,640,782, Cl. 210-748.000.

Burn, Ian, to Du Pont de Nemours, E. I., and Company. Dielectric compositions. 4,640,905, Cl. 501-137.000.

Burr-Brown Corporation: See—

Albaugh, Neil P.; and Kane, Gordon R., 4,641,105, Cl. 330-9.000.

Halbert, Joel M.; and Koen, Myron J., 4,641,246, Cl. 364-487.000.

Burroughs Corporation: See—

Keryhuel, Alain; and Meigne, Christian, 4,641,176, Cl. 357-74.000.

Butler, Michael A.; and Ginley, David S., to United States of America, Energy. Organic metal neutron detector. 4,641,037, Cl. 250-390.000.

Buzzese, Vincent J.; and Dohmert, Mario, Jr. Head restraint for backboards. 4,640,275, Cl. 128-133.000.

C. Muller & Associates, Inc.: See—

Muller, Charles B., 4,641,362, Cl. 383-115.000.

Cabernoch, James L., to Baxter Travenol Laboratories, Inc. One-piece nursing container with means for storing nipple. 4,640,425, Cl. 215-11.00E.

Cagle's Inc.: See—

Olson, Harold D., 4,639,974, Cl. 17-46.000.

Calaway, Ward M.: See—

Karsh, Herbert; and Calaway, Ward M., 4,641,324, Cl. 375-76.000.

Calgon Corporation: See—

Persinski, Leonard J.; Walker, Jerry L.; and Boffardi, Bennett P., 4,640,793, Cl. 252-82.000.

California Institute of Technology: See—

Atzman, Michael; Johnson, William L.; and Verhoeven, John D., 4,640,816, Cl. 419-24.000.

Calvas, Jacques: See—

Blancheton, Jean-Paul; Calvas, Jacques; Michel, Alain H.; and Vonau, Vincent, 4,640,227, Cl. 119-2.000.

Cambridge Instrument Company plc, The: See—

Michalik, John K., 4,640,616, Cl. 356-136.000.

Cameron, Robert W. Composite metallic core line. 4,640,179, Cl. 87-6.000.

Camosso, Domenico; Colanzi, Franco; and Ragazzoni, Silvio, to RIV-SKF Officine di Villar Perosa S.p.A. Oiltight hydraulic tappet for controlling an internal combustion engine valve. 4,640,238, Cl. 123-90.550.

Campbell, Neil: See—

Sedlacek, Robert S.; and Campbell, Neil, 4,640,228, Cl. 119-15.000.

Campoli, Ralph F., to General Defense Corporation. Rocket launching cartridge case and assembly. 4,640,195, Cl. 102-430.000.

Canada Wire and Cable Limited: See—

Eastwood, H. Keith; and Rivett, Paul W. J., 4,640,576, Cl. 350-96.230.

Canadian Patents & Development Ltd./Societe Canadienne des Brevets et d'Exploitation Ltd.: See—

Zajic, James E.; and Gerson, Donald F., 4,640,767, Cl. 208-390.000.

Cangialosi, Ignazio: See—

Winner, Kurt W.; and Cangialosi, Ignazio, 4,640,048, Cl. 49-181.000.

Cannon, Wayne C.: See—

Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., 4,641,086, Cl. 324-77.00R.

Canon Denshi Kabushiki Kaisha: See—

Yokota, Yuji; and Osabe, Akira, 4,641,212, Cl. 360-99.000.

Canon Kabushiki Kaisha: See—

Aoi, Shigeru, 4,641,157, Cl. 346-160.000.

Ayata, Naoki, 4,641,257, Cl. 364-559.000.

Hirabayashi, Hiromitsu; and Sakurai, Masaaki, 4,640,600, Cl. 355-3.0FU.

Honma, Toshio, 4,640,603, Cl. 355-3.00R.

Kawanabe, Tsuyoshi, 4,641,258, Cl. 364-710.000.

Kinoshita, Takao, 4,641,183, Cl. 358-44.000.

Mitsubishi, Yasuo; Uchiyama, Masaki; Murakawa, Kazunori; and Okado, Kenji, 4,640,882, Cl. 430-110.000.

Miyagi, Ken, 4,641,197, Cl. 358-280.000.

Miyagi, Ken, 4,641,199, Cl. 358-280.000.

Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.

Nojiri, Hidetoshi, 4,640,585, Cl. 350-413.000.

Ono, Takeshi, 4,641,133, Cl. 340-540.000.

Ozawa, Toshiaki; Yamada, Yasuaki; and Kondo, Hiroatsu, 4,640,634, Cl. 400-144.200.

Suzuki, Akiyoshi; and Ina, Hideki, 4,641,035, Cl. 250-548.000.

Suzuki, Takashi, 4,641,022, Cl. 250-204.000.

Takeuchi, Akihiko, 4,641,158, Cl. 346-160.000.

Tanaka, Shinya, 4,640,588, Cl. 350-516.000.

Tazawa, Shigemoto; and Ayata, Naoki, 4,641,071, Cl. 318-640.000.

Cant Investments Pty. Limited: See—

Cant, Peter R., 4,640,784, Cl. 210-776.000.

Cant, Peter R., to Cant Investments Pty. Limited. Method and apparatus for cleaning swimming pools. 4,640,784, Cl. 210-776.000.

Cardinal Industries, Inc.: See—

Boyles, William C.; Hagge, Douglas R.; and Johnston, Clifford V., 4,640,528, Cl. 280-789.000.

Cardiovascular Devices, Inc.: See—

Cooper, Robert P., 4,640,820, Cl. 422-68.000.

Careborg, Bengt R., to Mo och Domsjo Aktiebolag. Baby pacifier. 4,640,282, Cl. 128-360.000.

Carey, Nancy L.: See—

Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., 4,640,837, Cl. 426-94.000.

Cargill Detroit Corporation: See—

Fisher, Lee K., 4,639,963, Cl. 12-1.00A.

Carlswitch, Inc.: See—

Sorenson, Richard W., 4,640,998, Cl. 200-67.00A.

Carlson, William L., Jr., to General Signal Corporation. Involute valve closure. 4,640,492, Cl. 251-163.000.

Carminati, Armelle; de Buyer, Edouard; Monomakhoff, Nicolas; and Chanut, Roland, to Carminati, Armelle; de Buyer, Edouard; and Monomakhoff, Nicolas. Device for moving a patient from his bed. 4,639,955, Cl. 5-81.00B.

Carroll, James E.: See—

Hoskins, John T.; Zillig, Steven R.; and Carroll, James E., 4,640,534, Cl. 285-158.000.

Carpenter, Frank, to Lake Charles Instruments, Inc. Rotary metering device useful with abrasive fluids. 4,640,125, Cl. 73-259.000.

Carre, Jean, to Groupement d'Interet Economique Aerogenerateurs Carre. Wind motors and aerogenerators. 4,641,039, Cl. 290-44.000.

Carroll, Richard J.; Luderer, Albert A.; Smith, Ward C.; and Zine, Anthony R., Jr., to Becton Dickinson and Company. Separation of lymphocytes and monocytes from blood samples. 4,640,785, Cl. 210-782.000.

Carron, Alain: See—

Simonin, Marcel; Garbe, Bernard; and Carron, Alain, 4,640,047, Cl. 49-47.000.

Carson, James E.: See—

Deck, Charles F.; and Carson, James E., 4,640,791, Cl. 252-75.000.

Carter, George B.; and Manby, Alan P., to IMI Kynoch Limited. Methods of priming explosive devices. 4,640,724, Cl. 149-109.600.

Casas, Alain: See—

Martinet, Roland; and Casas, Alain, 4,640,311, Cl. 137-884.000.

Casasent, David, to Teledyne Industries, Inc. General time, space and frequency multiplexed acousto-optic correlator. 4,641,273, Cl. 364-822.000.

CasChem, Inc.: See—

Simone, Dominic; and Brauer, Melvin, 4,640,801, Cl. 260-407.000.

Casier, Yves; Cassagne, Philippe; Gicquel, Sylvain; and Junet, Roland, to Gaz de France. Method of producing hot air and hot water for sanitary purposes and apparatus for carrying out the said method. 4,640,458, Cl. 237-17.000.

Casio Computer Co., Ltd.: See—

Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,641,156, Cl. 346-160.000.

Casio Electronics Manufacturing Co., Ltd.: See—

Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,641,156, Cl. 346-160.000.

Cassagne, Philippe: See—

Casier, Yves; Cassagne, Philippe; Gicquel, Sylvain; and Junet, Roland, 4,640,458, Cl. 237-17.000.

Caterpillar Inc.: See—

Bruning, Eugene, 4,640,247, Cl. 123-388.000.

Engel, William K.; and Bogert, Stephen R., 4,640,095, Cl. 60-443.000.

Garman, James A.; and Swift, Stephen D., 4,639,995, Cl. 29-402.080.

Whalen, Charles E.; and Hoover, Wilbur G., 4,640,771, Cl. 210-167.000.

Cauchetier, Philippe: See—

Mauchien, Patrick; and Cauchetier, Philippe, 4,641,032, Cl. 250-459.100.

Cause Consequence Analysis, Inc.: See—

Williams, Leslie P., 4,640,461, Cl. 239-317.000.

Cavezzan, Jacques; and Soula, Gerard, to Rhone-Poulenc Specialites Chimiques. Organopolysiloxane compositions for antiadhesive/-release coatings. 4,640,939, Cl. 522-99.000.

Celanese Corporation: See—

Choe, Eui W.; Buckley, Alan; and Garito, Anthon F., 4,640,800, Cl. 260-396.00N.

Rasoul, Husam A. A., 4,640,948, Cl. 524-157.000.

Centro Spemiale Metallurgico S.p.A.: See—

Podrini, Maurizio, 4,640,757, Cl. 204-206.000.

Ceraver, S.A.: See—

Garcera, Daniel; and Gillot, Jacques, 4,640,774, Cl. 210-323.200.

Cerdan-Diaz, Juan M.; Sanders, Michael J.; and Wellar, Mark E., to Kenneco Corporation. Spray-applied ceramic fiber insulation. 4,640,848, Cl. 427-426.000.

Chaix, Jean-Edmond; and Metteey, Michel, to Commissariat a l'Energie Atomique. Joining means between two pipes having retractable bearing members. 4,640,537, Cl. 285-368.000.

Chang, Kai: See—

Grote, Albert J.; Tahim, Raghib S.; and Chang, Kai, 4,641,369, Cl. 455-327.000.

Chang, Long Fei, to Owens-Illinois, Inc. High gas barrier plastic closure. 4,640,428, Cl. 215-270.000.

Chanut, Roland: See—

Carminati, Armelle; de Buyer, Edouard; Monomakhoff, Nicolas; and Chanut, Roland, 4,639,955, Cl. 5-81.00B.

Chapell, Harry F., to Sage Laboratories, Inc. Microwave coupler. 4,641,111, Cl. 333-115.000.

Chardon, Georges; and Chomienne, Andre, to Faure Roux. Woven straps with transverse contractions. 4,640,317, Cl. 139-431.000.

Chasan, Dow B. System for removing air from waterbed. 4,639,961, Cl. 5-508.000.

Chase, Paul E.: See—

Opitz, Charles L.; and Chase, Paul E., 4,641,137, Cl. 342-52.000.

Chavoya, Robert: See—

Murray, Leroy J.; Olson, Lawrence N.; Chavoya, Robert; and Wade, James, 4,640,735, Cl. 156-584.000.

Chemie Linz Aktiengesellschaft: See—

Heinemann, Zoltan; and Konig, Heinz, 4,640,356, Cl. 166-272.000.

Chen, Chi-wan; and Schwing, Gregory W., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,640,704, Cl. 71-92.000.

Chevron Research Company: See—

Hong, Ki C.; Griston, Suzanne; and Ault, Joseph W., 4,640,355, Cl. 166-269.000.

Salentine, Christopher G., 4,640,827, Cl. 423-279.000.

Chikamori, Sunao: See—

Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.

Children's Hospital Research Foundation: See—

Tamborski, Christ; and Clark, Leland C., Jr., 4,640,833, Cl. 424-5.000.

Chin, Te-Chien. Male organ jacket. 4,640,270, Cl. 128-79.000.

Chisholm, Bruce. Gutter cleaning tool. 4,640,540, Cl. 294-55.000.

Chisso Corporation: See—

Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, 4,640,795, Cl. 252-299.500.

Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorioka, Kazunori, 4,640,796, Cl. 252-299.610.

Cho, Hidetsura; Aisaka, Kazuo; and Emon, Mariko, to Suntory Limited. 3N-substituted 3,4-dihydropyrimidines as agents for treating disorders of cardiovascular system. 4,640,922, Cl. 514-256.000.

Choe, Eui W.; Buckley, Alan; and Garito, Anthon F., to Celanese Corporation. Quinodimethane compositions. 4,640,800, Cl. 260-396.00N.

Choffy, Jean-Pierre: See—

Lecuru, Daniel; and Choffy, Jean-Pierre, 4,640,133, Cl. 73-639.000.

Chomienne, Andre: See—

Chardon, Georges; and Chomienne, Andre, 4,640,317, Cl. 139-431.000.

Choong, John: See—

Magid, Robert; and Choong, John, 4,640,642, Cl. 403-157.000.

Chore-Time Equipment, Inc.: See—

Swartzendruber, Ray E.; and Coffman, Keith, 4,640,229, Cl. 119-51.110.

Van Rooijen, Gerardus H., 4,640,230, Cl. 119-52.0AF.

Chou, Tai-Sheng, to Mobil Oil Corporation. Injection of LPG into TCC unit. 4,640,763, Cl. 208-78.000.

Chrisman, Robert H.: See—

Grover, George M.; and Chrisman, Robert H., 4,640,347, Cl. 165-104.260.

Chrysler Motors Corporation: See—

Hermann, John T., 4,640,535, Cl. 285-158.000.

Ciba-Geigy Corporation: See—

Banks, Christopher P.; and Irving, Edward, 4,640,753, Cl. 204-181.700.

Baschang, Gerhard; Hartmann, Albert; and Wacker, Oskar, 4,640,911, Cl. 514-42.000.

Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, 4,640,703, Cl. 71-92.000.

Brunner, Hans-Georg, 4,640,706, Cl. 71-94.000.

Diel, Peter J.; and Maier, Ludwig, 4,640,701, Cl. 71-86.000.

Citizen Watch Co., Ltd.: See—

Kushida, Hachiro, 4,640,625, Cl. 368-280.000.

Nakai, Toshihiko; and Kaneko, Masahiko, 4,640,635, Cl. 400-664.000.

Claas Ohg: See—

Rupperecht, Karl, 4,640,085, Cl. 56-14.600.

Clark, John I.; Eckert, Alton B.; and Warren, David M., to Pitney Bowes Inc. System for the printing and reading of encrypted messages. 4,641,346, Cl. 380-3.000.

Clark, John I.; and Dlugos, Daniel F., to Pitney Bowes Inc. System for printing encrypted messages with a character generator and bar-code representation. 4,641,347, Cl. 380-3.000.

Clark, Leland C., Jr.: See—

Tamborski, Christ; and Clark, Leland C., Jr., 4,640,833, Cl. 424-5.000.

Clark, Peter J.; Hudd, Anthony W.; Bloor, Stephen T.; and Roller, Erling, to IMI Refiners Ltd. Casting apparatus. 4,640,335, Cl. 164-440.000.

Clark, Roger L.; Ray, Dennis D.; and Martin, James L., to General Telephone Company of Indiana. Unitary telephony frame arm extender. 4,641,338, Cl. 379-328.000.

Cleland, Andrew J., to Engelhard Corporation. High bulking pigment and method of making same. 4,640,716, Cl. 106-161.000.

Clifton, Ted G.; and Brookey, Robert L., to Arrow Oil Tools, Inc. Sealing packer. 4,640,351, Cl. 166-127.000.

Climax France S.A.: See—

Martinet, Roland; and Casas, Alain, 4,640,311, Cl. 137-884.000.

Coachmen Industries, Inc.: See—

McElmurry, Terry J.; Davis, H. Coleman; Leftwich, William B.; and Markel, David, 4,639,953, Cl. 5-43.000.

Coburn, Robert E.; and Matthews, John A., to United Technologies Corporation. Combustion chamber rear outer seal. 4,640,092, Cl. 60-39.360.

Codex Corporation: See—

Wei, Lee-Fang, 4,641,327, Cl. 375-114.000.

Coffey, Gerald P.: See—

Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,640,976, Cl. 528-336.000.

Coffield, Frederick E., to United States of America, Energy. Phase comparator apparatus and method. 4,641,087, Cl. 324-83.00R.

Coffman, Keith: See—

Swartzendruber, Ray E.; and Coffman, Keith, 4,640,229, Cl. 119-51.110.

Colanzi, Franco: See—

Camosso, Domenico; Colanzi, Franco; and Ragazzoni, Silvio, 4,640,238, Cl. 123-90.550.

Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., to General Foods Corporation. Coating composition for microwave cooking. 4,640,837, Cl. 426-94.000.

Coleman, G. A. John, to Universal Leaf Tobacco Company, Incorporated. High-pressure water-jet stripping of tobacco. 4,640,300, Cl. 131-318.000.

Coles, Donald K. Electronic musical instrument. 4,640,173, Cl. 84-1.010.

Collier, Richard J.: See—

Griffin, Eric J.; Collier, Richard J.; and Hjiipieris, George, 4,641,082, Cl. 324-58.00B.

Collins, George J.; Rocca, Jorge J.; and Meyer, Jack D., to Applied Electron Corp. D.C. electron beam method and apparatus for continuous laser excitation. 4,641,316, Cl. 372-74.000.

Combustion Engineering, Inc.: See—

Adams, James H.; Burgess, Jerry L.; and Wagers, William C., 4,640,695, Cl. 55-130.000.

Holmes, Myron L.; and Smolensky, Leo A., 4,640,201, Cl. 110-245.000.

Musto, Richard L.; and Dunn, Mark R., 4,640,464, Cl. 241-34.000.

Comienco Limited: See—

Trevison, Robert L.; McKee, William E.; and Hunnel, Larry B., 4,640,438, Cl. 220-359.000.

Commissariat a l'Energie Atomique: See—

Abbes, Claude; Rouaud, Christian; Valla, Jean; Forges, Robert; and de Villepoix, Raymond, 4,640,530, Cl. 285-18.000.

Burghoffer, Patrick; Pourprix, Michel; and Poussier, Patrick, 4,640,140, Cl. 73-863.220.

- Chais, Jean-Edmond; and Metteey, Michel, 4,640,537, Cl. 285-368.000.
- Mauchien, Patrick; and Cauchetier, Philippe, 4,641,032, Cl. 250-459.100.
- Communications Transfer Corp.: See—
Kaplan, Gary M.; Karau, Robert T.; Winney, Norman E., Jr.; and Brader, David G., 4,640,413, Cl. 206-232.000.
- Compagnie Generale d'Automatisme CGA-HBS: See—
Simonin, Marcel; Garbe, Bernard; and Carron, Alain, 4,640,047, Cl. 49-47.000.
- Compressor Controls Corp.: See—
Staroselsky, Naum; and Mirsky, Saul, 4,640,665, Cl. 415-1.000.
- Comte, Pierre-Andre, to Institut Straumann AG. Conductor device, particularly for at least partial insertion in a human or animal body, comprising a spiral formed from at least one conductor, 4,640,983, Cl. 174-119.00R.
- Con-Vey/Keystone, Inc.: See—
Jacobsen, Marvin A., 4,640,655, Cl. 414-119.000.
- Concast AG: See—
Kumagai, Ken, 4,640,338, Cl. 164-448.000.
- Condon, Harry F. Handle with alternate tool orientation, 4,640,155, Cl. 81-439.000.
- Cone, Ivan H. Device for testing and calibrating treasure hunting metal detectors, 4,641,091, Cl. 324-202.000.
- Conlon, Thomas R. Connector for structural systems, 4,640,572, Cl. 339-252.00R.
- Conrad, Ulrich; Moser, Peter; and Gruber, Gerhard, to Daimler-Benz Aktiengesellschaft. Internal combustion engine exhaust gas recycling arrangement, 4,640,256, Cl. 123-568.000.
- Consiglio Nazionale Delle Ricerche: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Construction Forms, Inc.: See—
Klemm, Robert E., 4,640,533, Cl. 285-62.000.
- Cook, Richard: See—
Green, George D.; Laboe, Lauren M.; and Cook, Richard, 4,641,207, Cl. 360-55.000.
- Cooper, Frank W., Jr.; Howard, Bruce A.; and Snyder, David A., to Westinghouse Electric Corp. Suspension of tools for sleeving of tubes of steam generator, 4,639,994, Cl. 29-402.010.
- Cooper, Robert P., to Cardiovascular Devices, Inc. Flow-through housing with blood gas sensors, 4,640,820, Cl. 422-68.000.
- Cordis Corporation: See—
DeCote, Robert, Jr.; and Tarjan, Peter P., 4,640,285, Cl. 128-419.0PT.
- Corfield, John R.; and Miller, Andrew S., to Lilly Industries Ltd. Intermediates for the preparation of penicillin and cephalosporin compounds, 4,640,798, Cl. 540-312.000.
- Corsette, Douglas F. Manually operated dispensing pump, 4,640,443, Cl. 222-321.000.
- Cosson, Colin; and Hopper, Laurence E. Silk screen transfer printing apparatus for cylindrical objects, 4,640,188, Cl. 101-39.000.
- Costello, Thomas J.: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.
- Cotton, John M.: See—
Van Simaeys, Françoise C. G.; Leurs, Anna M. C.; Upp, Daniel C.; Lawrence, Alan J.; and Cotton, John M., 4,641,301, Cl. 370-58.000.
- Coulthart, Kenneth B.; Fairfield, Robert C.; and Mortenson, Robert L., to AT&T Bell Laboratories. Random number generator, 4,641,102, Cl. 328-62.000.
- Coupré, Francois, to Gaz de France. Device for evacuating into the ambient air combustion products from a condensation boiler, 4,640,232, Cl. 122-7.00R.
- Cox, Roger B.: See—
Boulter, Donald; Gatehouse, Angharad M. R.; Gatehouse, John A.; and Cox, Roger B., 4,640,836, Cl. 424-195.100.
- Cozzoli Machine Co.: See—
Ballester, Edwin, 4,640,322, Cl. 141-5.000.
- Craft, William K., to Batesville Casket Company, Inc. Snap-in casket dish, 4,639,985, Cl. 27-19.000.
- Craig Medical Products, Limited: See—
Steer, Peter L., 4,640,494, Cl. 251-354.000.
- Craighead, Lawrence W., to Minnesota Mining and Manufacturing Company. Biomedical electrode, 4,640,289, Cl. 128-639.000.
- Cramm, Russell H.: See—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,640,865, Cl. 428-421.000.
- Cristian, Athos, to SASIB S.p.A. Device for wrapping a junction band around a pair of cigarettes, 4,640,013, Cl. 131-94.000.
- Croll, Theodore P. Hand-held light filter, 4,640,685, Cl. 433-141.000.
- Crookston, Ronald W.; and Meyer, Jeffry R., to Electric Power Research Institute, Inc. Actuator for electrical circuit interrupter using nitrocellulose type solid propellant, 4,641,000, Cl. 200-148.00R.
- Crotti, Aldo, to Italtorator Meccanica ITM S.p.A. Bearing seal for endless track rollers, 4,640,559, Cl. 305-11.000.
- Crowe, Wayne D., to Ferranti-Subsea Systems, Ltd. Multiple-mode electrical power and communications interface, 4,641,126, Cl. 340-310.00A.
- Crucible Materials Corporation: See—
Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., 4,640,815, Cl. 419-8.000.
- Haswell, Walter T., Jr.; Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., 4,640,814, Cl. 419-8.000.
- Cruz-Urbe, Antonio S., to Pitney Bowes Inc. Notched piezo-electric transducer for an ink jet device, 4,641,153, Cl. 346-140.00R.
- Cukon, Viktor. Golf club adjusting machine, 4,640,017, Cl. 33-508.000.
- Cummins, James M.: See—
Cummins, Michael; Cummins, James M.; and Theys, Raymond A., 4,640,142, Cl. 74-501.00R.
- Cummins, Michael; Cummins, James M.; and Theys, Raymond A., to NI Industries, Inc. Adjustable automobile mirror system, 4,640,142, Cl. 74-501.00R.
- Cummins, Richard D., to Moog Inc. Electro-mechanical actuator, 4,641,072, Cl. 318-687.000.
- Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., to Standard Oil Company, The. Process for the manufacture of polyamide from diamine and diamide utilizing oxygenated compound of carbon, boron, nitrogen and sulfur as catalyst, 4,640,976, Cl. 528-336.000.
- Cutburth, Ronald W., to United States of America, Energy. Support mechanism for a mirrored surface or other arrangement, 4,640,591, Cl. 350-632.000.
- Daido, Toshihiko; Matsubara, Hideo; and Hirakushi, Shuzo, to Koyo Seiko Kabushiki Kaisha; and Koyo Jidoki Kabushiki Kaisha. Apparatus for controlling a steering force of a handle in automobiles, 4,640,380, Cl. 180-141.000.
- Daimler-Benz Aktiengesellschaft: See—
Conrad, Ulrich; Moser, Peter; and Gruber, Gerhard, 4,640,256, Cl. 123-568.000.
- Dainippon Ink and Chemicals, Inc.: See—
Mitani, Tomomasa; and Mihata, Ichiro, 4,640,966, Cl. 526-249.000.
- Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiki; and Nishio, Yoshihiro, 4,640,887, Cl. 430-275.000.
- Dale Electronics, Inc.: See—
Person, Herman R., 4,641,114, Cl. 333-161.000.
- Dalling, N. Lawrence; and Gordon, Linda A., to Survival Technology, Inc. Audible signal autoinjector training device, 4,640,686, Cl. 434-262.000.
- Dalmau Guell, Jose M., to Jumberca, S.A. Needle selection arrangement for a circular knitting machine, 4,640,104, Cl. 66-222.000.
- Dalton, Murphy L., Jr. Magnetometer circuit for measuring the period of beat frequency maxima, 4,641,094, Cl. 324-302.000.
- D'Amico, Arnaldo: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Damico, Joyce A.: See—
Ales, Thomas M.; Stroheen, David T.; Damico, Joyce A.; Van Gompel, Paul T.; and Abel, Kent W., 4,639,949, Cl. 2-400.000.
- Dana Corporation: See—
Lanc, Wendell C., Jr., 4,640,997, Cl. 200-61.540.
- Danby, Philip, to Refac Electronics Corporation. Polyphase electrical signal measuring apparatus, 4,641,090, Cl. 324-107.000.
- Dandl, Raphael A., to Applied Microwave Plasma Concepts, Inc. Method and apparatus using electron cyclotron heated plasma for vacuum pumping, 4,641,060, Cl. 315-111.710.
- Daniele, Joseph J., to Xerox Corporation. High resolution, high efficiency I.R. LED printing array fabrication method, 4,639,999, Cl. 29-569.00L.
- D'Aniello, Alfonso: See—
Portmann, Niklaus; and D'Aniello, Alfonso, 4,641,008, Cl. 219-84.000.
- Darrow, John O. G., to American Standard Inc. Fail-safe one and only one signal checking circuit, 4,641,045, Cl. 307-350.000.
- Davis, Burns; and Barbec, Robert B., to Eastman Kodak Company. Polyamide resin capable of forming containers having improved gas barrier properties from phenylene dioxy diacetic acid and naphthalene dicarboxylic acid, 4,640,973, Cl. 528-208.000.
- Davis, Dwin S. Vehicle security alarm, 4,641,124, Cl. 340-64.000.
- Davis, H. Coleman: See—
McElmurry, Terry J.; Davis, H. Coleman; Leftwich, William B.; and Markel, David, 4,639,953, Cl. 5-43.000.
- Davis, Haggai D. Diverter including apparatus for breaking up large pieces of formation carried to the surface by the drilling mud, 4,640,372, Cl. 175-208.000.
- Davis, Sherman G., to Gibco Division, The Mogul Corporation. Biphasic media culture apparatus, 4,640,895, Cl. 435-296.000.
- Day, George D.; Flack, John K.; Gollledge, Ian; Hillary, Christopher J.; Pike, John V.; and Watson, Michael H., to International Business Machines Corporation. Adjustable support for display monitor, 4,640,485, Cl. 248-422.000.
- Day Star Concepts: See—
Lakes, Sherman, 4,640,862, Cl. 428-308.400.
- Dayton Reliable Tool & Mfg. Co.: See—
Brown, Omar L., 4,640,116, Cl. 72-352.000.
- DCI Marketing: See—
Hornblad, Richard P.; and Sorensen, Gerald R., 4,640,029, Cl. 40-5.000.
- De La Rue Giori S.A.: See—
Hernandez, Manolo, 4,640,189, Cl. 101-177.000.
- Dean, Andrew, to International Standard Electric Corporation. Local area network, 4,641,375, Cl. 455-607.000.

- Dearden, Guy L.; and Hayden, Owen, to National Nuclear Corporation Limited. Tube-in-shell heat exchangers, 4,640,343, Cl. 165-70.000.
- de Buyer, Edouard: See—
Carminati, Armelle; de Buyer, Edouard; Monomakhoff, Nicolas; and Chanut, Roland, 4,639,955, Cl. 5-81.00B.
- Deck, Charles F.; and Carson, James E., to BASF Corporation. Water-based functional fluids thickened by the interaction of an associative polyether thickener and certain fatty acid amides, 4,640,791, Cl. 252-75.000.
- Decker, Joseph A., Jr.; Fiore, Joseph F., Jr.; and Katz, Stanley A., to Igloo Corporation. Accessory bag for containers, 4,640,392, Cl. 190-108.000.
- DeCote, Robert, Jr.; and Tarjan, Peter P., to Cordis Corporation. Sense margin evaluation system and method for use same, 4,640,285, Cl. 128-419.0PT.
- Deere & Company: See—
Dobberpuhl, Dale R.; and Stricker, David K., 4,640,378, Cl. 180-53.100.
- Kittle, Carl E.; LaFave, Arthur J.; and Olson, David L., 4,640,368, Cl. 172-430.000.
- Koltlookian, Sarkis A., 4,640,401, Cl. 192-85.00R.
- Teich, Christian M., 4,640,522, Cl. 280-460.00A.
- Wittren, Richard A., 4,640,094, Cl. 60-385.000.
- DeGasperis, Paolo: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Deguchi, Yutaka; and Tsuchida, Yasuyuki, to Sanyo Electric Co., Ltd. Patent image reproducing electrophotographic machine, 4,640,601, Cl. 355-3.00R.
- Degussa Aktiengesellschaft: See—
Bittner, Friedrich; Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; and Splett, Erich, 4,640,832, Cl. 423-562.000.
- De Guzman, Luis: See—
Tenenbaum, Marcos; De Guzman, Luis; and Tenenbaum, Daniel M., 4,640,102, Cl. 62-294.000.
- DeHaven, Vernet F.; and Warin, Francis J., to ARES, Inc. Shell feeding apparatus for guns, 4,640,182, Cl. 89-47.000.
- Dehne, Clarence A., to Jervis B. Webb Company. Track member and track for conveyor trolleys, 4,640,196, Cl. 104-94.000.
- Delabie, Jacques, J. A.: See—
Bati, Andre; and Delabie, Jacques, J. A., 4,640,980, Cl. 174-36.000.
- Delattre, Luc: See—
Badin, Suzan; Moulin, Jean-Francois; Delattre, Luc; and Renan, Patrice, 4,640,055, Cl. 51-101.0LG.
- Dellorlano, Fred M., Jr.: See—
Massa, Frank; and Massa, Donald P., 4,641,290, Cl. 367-106.000.
- Demmer, Walter H., to U.S. Philips Corporation. Circuit arrangement for converting a digital input signal into an analog output signal, 4,641,131, Cl. 340-347.0DA.
- Dennis, Mahlon D., to Strata Bit Corporation. Rotary drill bit, 4,640,374, Cl. 175-393.000.
- Dennis, William E., to Dow Corning Corporation. Method for the dispersement of magnetic filler in one-part toner powder and the composition therefor, 4,640,881, Cl. 430-106.600.
- DeRenzo, Joseph M. Figure eight shoe tie system, 4,640,025, Cl. 36-50.000.
- Derfling, Dennis J.; van den Heuvel, Anthony P.; and Edgner, Nihat S., to Motorola, Inc. Mounting system for stress relief in surface mounted components, 4,641,222, Cl. 361-403.000.
- Derman, Jay S., to Z-Lock Company, Inc. Device for preventing unauthorized use of a cassette tape deck, 4,640,106, Cl. 70-14.000.
- Dery, Ronald A.; and Jones, Warren C., to AMP Incorporated. Electrical interconnection means, 4,640,981, Cl. 174-88.00R.
- Desanta, Simon, to Kusch & Co. Stizmobelwerke KG. Chair with an adjustable backrest, 4,640,548, Cl. 297-320.000.
- Deskins, William G.: See—
Sheng, Hwai-Ping; Garza, Cutberto; Winter, Dean C.; and Deskins, William G., 4,640,130, Cl. 73-579.000.
- Destree, Xavier P.; and Lazzari, Angelo A., to Eurosteel S.A. Industrial floor and construction method, 4,640,648, Cl. 405-229.000.
- Deutz-Allis Corporation: See—
Quick, David C.; McCormick, Stephen J.; and Ballendux, Gerardus M., 4,640,152, Cl. 74-767.000.
- de Villepoix, Raymond: See—
Abbes, Claude; Rouaud, Christian; Valla, Jean; Forges, Robert; and de Villepoix, Raymond, 4,640,530, Cl. 285-18.000.
- Devine, Gregory P.: See—
Barbee, Steven G.; Devine, Gregory P.; Patrick, William J.; and Seeley, Gerard, 4,640,221, Cl. 118-689.000.
- Devine, Thomas M., Jr., to General Electric Company. Composite rotary anode for X-ray tube and process for preparing the composite, 4,641,334, Cl. 378-144.000.
- DeVries, Robert A., to Dow Chemical Company, The. Method for recovering protic acids using reversible bases, 4,640,831, Cl. 423-481.000.
- DH Technology, Inc.: See—
Hebert, Donald G., 4,640,633, Cl. 400-124.000.
- Diatec Polymers: See—
Sortwell, Edwin T., 4,640,622, Cl. 366-76.000.
- Didier-Werke AG: See—
Geller, Heinrich; Nold, Peter; Schermer, Heinz; and Rave, Ortwin, 4,640,447, Cl. 222-603.000.
- Diehl GmbH & Co.: See—
Berg, Gunter; Muller, Otmar; and Esters, Rainer, 4,640,947, Cl. 524-109.000.
- Diel, Peter J.; and Maier, Ludwig, to Ciba-Geigy Corporation. Herbi-cidal phosphonic acid and phosphinic acid derivatives, 4,640,701, Cl. 71-86.000.
- Diener, Jorg; and Bitroff, Ehrenfried, to Richard Wolf GmbH. Telescopes, 4,640,124, Cl. 73-116.000.
- Dieperink, Willem; and Vrugink, Arend, to Beyeler Machines, S.A. Sheet-bending press incorporating a device for continuous monitoring of the bending angle, 4,640,113, Cl. 72-21.000.
- Diepeveen, Neal; and Bastian, Robert, to Magnavox Government and Industrial Electronics Company. Focus-corrected convergent beam scanner, 4,641,192, Cl. 358-206.000.
- Diesel Kiki Co., Ltd.: See—
Matsunaga, Masahiro, 4,640,241, Cl. 123-198.00F.
- Digital Associates Corporation: See—
Perlman, Eugene H.; and MacNaughton, Laurence, III, 4,641,263, Cl. 364-900.000.
- D'Intino, Adamo M.: See—
Fish, Aaron M.; Mazoff, Stanley S.; D'Intino, Adamo M.; and Somasundaram, Hariharan, 4,640,110, Cl. 70-269.000.
- Director General of Agency of Industrial Science and Technology: See—
Mori, Masaaki; Sano, Akira; Horiuchi, Yushi; and Okumura, Yoshihiro, 4,640,023, Cl. 34-57.00A.
- Dischert, Robert A., to RCA Corporation. Progressive scan display system employing line and frame memories, 4,641,188, Cl. 358-140.000.
- Dlugos, Daniel F.: See—
Clark, John I.; and Dlugos, Daniel F., 4,641,347, Cl. 380-3.000.
- Dobberpuhl, Dale R.; and Stricker, David K., to Deere & Company. Power take-off system and isolation mounting therefor, 4,640,378, Cl. 180-53.100.
- Doboy Packaging Machinery, Inc.: See—
Eaves, Fred W., 4,640,408, Cl. 198-460.000.
- Dr. Ing. H.c.f. Porsche Aktiengesellschaft: See—
Ziegler, Gerhard; Gregotsch, Karl; and von Sivers, Rolf, 4,640,240, Cl. 123-193.00C.
- Dohnert, Mario, Jr.: See—
Buzzese, Vincent J.; and Dohnert, Mario, Jr., 4,640,275, Cl. 128-133.000.
- Doi, Akihiko: See—
Ando, Hideo; and Doi, Akihiko, 4,641,023, Cl. 250-216.000.
- Doi, Koichi, to Nissan Motor Company, Limited. Air conditioner, 4,640,183, Cl. 98-2.010.
- Dola, Frank P.; Siwinski, Paul P.; and Zwiag, Grover A., to AMP Incorporated. Adaptor for coupling a cable to a connector, 4,640,569, Cl. 339-143.00R.
- Dolly Varden Fishing Lures: See—
Smith, Dale C., 4,640,040, Cl. 43-42.000.
- Dolny, Gary M.; and Goodman, Lawrence A., to RCA Corporation. Bidirectional vertical power MOS device and fabrication method, 4,641,164, Cl. 357-23.400.
- Doluca, Tunc; and Boyacigiller, Ziya G., to Intersil, Inc. Analog to digital converter with parallel and successive approximation stages, 4,641,129, Cl. 340-347.0AD.
- Donecker, S. Bruce; Stewart, Ronald D.; and Frederick, Wayne L., to Hewlett-Packard Company. Vector network analyzer with integral processor, 4,641,085, Cl. 324-77.00R.
- Donn Incorporated: See—
Goodworth, John P., II, 4,640,064, Cl. 52-145.000.
- Dooley, Thomas: See—
Rowe, William; and Dooley, Thomas, 4,640,884, Cl. 430-165.000.
- Dorner, Friedrich: See—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; Wober, Gunter; Philippitsch, Anton; Linnau, Yendra; Dorner, Friedrich; Trambauer, Karl; and Frechinger, Wolfgang, 4,640,834, Cl. 424-94.000.
- Dorr-Oliver Incorporated: See—
Pietzsch, Kurt E.; and Bonnyay, Laszlo, 4,640,775, Cl. 210-387.000.
- Doshi, Pratap K.; and Wilson, John F., to Westinghouse Electric Corp. Soluble burnable absorber rod for a nuclear reactor, 4,640,813, Cl. 376-327.000.
- Doty, Francis D., to Doty Scientific, Inc. Parallel single turn saddle resonator for nuclear magnetic resonance signal reception, 4,641,098, Cl. 324-322.000.
- Doty, Peter A.: See—
Soderquist, Mark E.; Muthyala, Ramaiah; Larson, William A.; and Doty, Peter A., 4,640,786, Cl. 252-8.551.
- Doty Scientific, Inc.: See—
Doty, Francis D., 4,641,098, Cl. 324-322.000.
- Douglas, Larry D., to Multiflex International, Inc. Umbilical safety joint, 4,640,163, Cl. 83-175.000.
- Doutney, George J., to Pitney Bowes Inc. Method and apparatus for neutralizing residual charge on a photoconductive surface, 4,640,599, Cl. 355-3.0CH.
- Dow Chemical Company, The: See—
Alle, Narasiah, 4,640,959, Cl. 525-316.000.
- DeVries, Robert A., 4,640,831, Cl. 423-481.000.
- Fisk, Thomas E.; and Hoffman, Dwight K., 4,640,935, Cl. 521-137.000.
- Grierson, Jeffrey G.; Jones, Carol A.; and Spears, William D., 4,640,818, Cl. 422-15.000.
- Hefner, Robert E., Jr.; and Hunter, Douglas L., 4,640,957, Cl. 525-44.000.

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 Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,640,865, Cl. 428-421.000.
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 Wright, Donald R., 4,640,080, Cl. 53-449.000.
 Dow Corning Corporation: See—
 Dennis, William E., 4,640,881, Cl. 430-106.600.
 Groenhof, Eugene D.; Romenesko, David J.; and Streu, Rick D., 4,640,792, Cl. 252-78.300.
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 Donecker, S. Bruce; Stewart, Ronald D.; and Frederick, Wayne L., 4,641,085, Cl. 324-77.00R.
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 Heckaman, Douglas E.; Higman, Roger H.; and Frisco, Jeffrey A., 4,641,140, Cl. 342-371.000.
 Fritz, Harald, to Siemens Aktiengesellschaft. Strain gauge device for measuring multicomponent forces and torques, 4,640,139, Cl. 73-862.040.
 Fromme, Heinrich. Adjustable swivel chair, 4,640,547, Cl. 297-301.000.
 Fromson, Robert E.; Kossowsky, Ram; and Nunamaker, Charles S., to Westinghouse Electric Corp. Cemented carbide cutting tools and processes for making and using, 4,640,169, Cl. 83-685.000.
 Fuji Electric Co., Ltd.: See—
 Hongo, Yusuo; and Nitta, Yoshio, 4,641,355, Cl. 382-34.000.
 Yokoyama, Shotaro; and Nishibe, Takashi, 4,640,613, Cl. 356-1.000.
 Fuji Electric Corporate Research and Development, Ltd.: See—
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 Aoyama, Kazunori, 4,640,473, Cl. 242-197.000.
 Asai, Eiichi; Tanaka, Hiroshi; and Higashi, Nobuaki, 4,641,267, Cl. 364-414.000.
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 Hashiue, Masakazu; and Ogawa, Masashi, 4,640,759, Cl. 204-299.00R.
 Inatsuki, Kenichi, 4,641,019, Cl. 250-201.000.
 Inuiya, Masafumi, 4,641,169, Cl. 357-30.000.
 Kawata, Ken; Yabuki, Yoshiharu; Sato, Kozo; and Hirai, Hiroyuki, 4,640,892, Cl. 430-617.000.
 Kimura, Tsutomu, 4,641,242, Cl. 364-414.000.
 Ohgoda, Makoto; and Tamura, Kaoru, 4,640,507, Cl. 271-245.000.
 Ohta, Takahiro; Inuiya, Masafumi; and Fujimura, Ikuo, 4,641,198, Cl. 358-285.000.
 Okano, Takeshi; Nakaoka, Sadaaki; and Ohashi, Saichiro, 4,640,597, Cl. 353-79.000.
 Yabuki, Yoshiharu; Sato, Kozo; Kawata, Ken; and Hirai, Hiroyuki, 4,640,891, Cl. 430-551.000.
 Fujihisa, Hiroaki; Fujii, Hiroshi; Ohishi, Hirotoshi; and Kobayashi, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter, 4,641,001, Cl. 200-153.00G.
 Fujii, Hideji; Hayakawa, Takayuki; Sato, Shigeru; and Yanagihara, Eiichi, to Hitachi, Ltd.; and Hitachi Medical Corporation. Method of producing ionization chamber detector, 4,640,729, Cl. 156-257.000.
 Fujii, Hiroshi: See—
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 Iizuka, Tetsuya; Fujii, Syuso; and Uchida, Yukimasa, 4,641,165, Cl. 357-23.600.
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 Tsubakimoto, Tsuneo; Fujikawa, Iwao; and Kushino, Mitsuo, 4,640,584, Cl. 350-344.000.
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 Yabushita, Masaharu; Nohmi, Makoto; Fujikura, Nobuyuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,641,237, Cl. 364-200.000.
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 Matsushima, Katsuaki; Fujioka, Yasuhiro; Sasaki, Takeshi; Fujine, Manabu; and Yamamoto, Kouji, 4,640,184, Cl. 98-2.150.
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 Fujioka, Yoshiki; and Hirota, Mitsuhiro, to Fanuc Ltd. Plural motor changeover control system, 4,641,069, Cl. 318-625.000.
 Fujisawa Pharmaceutical Co., Ltd.: See—
 Hashimoto, Masashi; Aratani, Matsuhiko; and Sawada, Kozo, 4,640,915, Cl. 514-210.000.

Fujise, Masakuni, to Tokyo Shibaura Denki Kabushiki Kaisha. Computed tomography apparatus, 4,641,328, Cl. 378-8.000.
 Fujishima, Kazuyasu: See—
 Shimotori, Kazuhiro; Fujishima, Kazuyasu; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,641,286, Cl. 365-230.000.
 Fujita, Munehisa; and Mitsui, Akio, to Fuji Photo Film Co., Ltd. Color photographic material with light insensitive silver chloride, 4,640,890, Cl. 430-504.000.
 Fujitsu Limited: See—
 Iizawa, Ryuji; and Murakami, Koji, 4,641,067, Cl. 318-287.000.
 Kobayashi, Kenichi, 4,641,353, Cl. 382-8.000.
 Okamura, Shigeru; and Taguchi, Takao, 4,641,034, Cl. 250-492.200.
 Sawada, Kenji, 4,641,073, Cl. 318-696.000.
 Suzuki, Yasuo, 4,641,284, Cl. 365-210.000.
 Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,641,166, Cl. 357-23.600.
 Fujiwara, Hideyuki: See—
 Ono, Takahiro; Akutsu, Takao; and Fujiwara, Hideyuki, 4,640,299, Cl. 131-303.000.
 Fujiwara, Takeshi: See—
 Koshigoe, Shinpei; and Fujiwara, Takeshi, 4,641,058, Cl. 313-449.000.
 Fukami, Akira: See—
 Miyoshi, Akio; and Fukami, Akira, 4,640,436, Cl. 220-359.000.
 Fukaya, Kuniaki: See—
 Fukukita, Hiroshi; Tachita, Ryobun; Fukaya, Kuniaki; and Yano, Tsutomu, 4,641,260, Cl. 364-737.000.
 Fukaya, Takeo: See—
 Kishida, Takao; and Fukaya, Takeo, 4,640,118, Cl. 73-9.000.
 Fukui, Masahiro: See—
 Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, 4,640,795, Cl. 252-299.500.
 Fukui, Shinta: See—
 Suzuki, Mamoru; and Fukui, Shinta, 4,641,248, Cl. 364-492.000.
 Fukukita, Hiroshi; Tachita, Ryobun; Fukaya, Kuniaki; and Yano, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Digital signal processing apparatus for a blood flowmeter using ultrasound Doppler effect, 4,641,260, Cl. 364-737.000.
 Fukunaga, Yasushi; Kusunuki, Soshiro; Shojima, Hiroshi; Yokoyama, Takahiro; Koga, Kazuyoshi; Hirasawa, Kotaro; and Kawada, Shinichi, to Hitachi, Ltd. Apparatus for recognizing and displaying handwritten characters and figures, 4,641,354, Cl. 382-13.000.
 Fukuroi, Takeo; and Inazawa, Keichi, to Nippon Notion Kogyo Co., Ltd. Hook for a hook-and-eye fastener, 4,639,983, Cl. 24-689.000.
 Fukuyama, Yasuo: See—
 Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, 4,640,808, Cl. 264-46.500.
 Fukuzo, Yukio, to NEC Corporation. Timing signal generator, 4,641,049, Cl. 307-590.000.
 Fukuzumi, Shuzo: See—
 Kawamura, Yoshihisa; and Fukuzumi, Shuzo, 4,640,249, Cl. 123-425.000.
 Fulgurit GmbH & Co., Kommanditgesellschaft: See—
 Breimeier, Kurt; Eickhoff, Heinrich; Erdmann, Hans-Walter; and Kuhn, Hans D., 4,640,054, Cl. 49-504.000.
 Fuller, John M.: See—
 Barr, John D.; and Fuller, John M., 4,640,375, Cl. 175-410.000.
 Fullerton, Larry W., to Phillips, Charles A., a part interest. Spread spectrum radio transmission system, 4,641,317, Cl. 375-1.000.
 Fullmer, David M., to Xerox Corporation. Screw fastening method, 4,639,996, Cl. 29-407.000.
 Fullmer, Douglas E.: See—
 Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., 4,641,086, Cl. 324-77.00R.
 Funae, Keizo: See—
 Taki, Yoshihiro; Akado, Hajime; Funae, Keizo; and Inukai, Satoshi, 4,640,779, Cl. 210-493.500.
 Funahashi, Yuichi: See—
 Watanabe, Junichiro; Funahashi, Yuichi; Sugiura, Kazuo; and Matsumoto, Hironori, 4,640,968, Cl. 528-32.000.
 Furukawa, Shunsuke; Suzuki, Tadao; and Momen, Marinos J. B. M., to Sony Corporation. Disc playback apparatus, 4,641,295, Cl. 369-32.000.
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 Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Ioyama, Toyoshiro; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.
 Fusion Systems Corporation: See—
 Petelin, Andrei N.; Sharp, Celia M.; Ury, Michael G.; and Wooden, Gene R., 4,641,033, Cl. 250-492.100.
 G. D. Società per Azioni: See—
 Mattei, Riccardo, 4,640,656, Cl. 414-303.000.
 Neri, Armando, 4,641,024, Cl. 250-223.00R.
 Gabe, Julian; and Makepeace, Richard J., to Agan Chemical Manufacturers Ltd. Method for combatting blackgrass in cereal crops and compositions therefor, 4,640,705, Cl. 71-93.000.
 Gacsay, Lóránt; to Sulzer Brothers Limited. Projectile weaving machine, 4,640,315, Cl. 139-1.00C.
 Gal, Uzi, to UZI R & D Associates. Grip and stock assembly for facilitating use of a compact gun, 4,640,036, Cl. 42-72.000.
 Gallion, George A.; Bratke, Dieter N.; Helbig, Klaus; and Reuter, Karl F., to General Motors Corporation. Roof rack for motor vehicles, 4,640,450, Cl. 224-331.000.
 Gamble, William L., to W. E. Bassett Company, The. Nail clipper, 4,640,011, Cl. 30-28.000.

Gannaway, Edwin L., to Tecumseh Products Company. Rotary compressor lubrication arrangement, 4,640,669, Cl. 417-410.000.
 Ganrot, Bertil A.: See—
 Svengren, Anders G.; and Ganrot, Bertil A., 4,640,670, Cl. 425-142.000.
 Ganss, Rolf. Process and device for producing a screen image with a three-dimensional effect in a television receiver, 4,641,177, Cl. 358-3.000.
 Garavuso, Gerald M.; Liang, Shwu-Jian; and Thettu, Raghulunga R., to Xerox Corporation. Paddle wheel feeder, 4,640,504, Cl. 271-113.000.
 Garbe, Bernard: See—
 Simonin, Marcel; Garbe, Bernard; and Carron, Alain, 4,640,047, Cl. 49-47.000.
 Garbe, Dietmar R. Spirometer accessory, 4,640,293, Cl. 128-716.000.
 Garcerá, Daniel; and Gillot, Jacques, to Ceraver, S.A. Assembly of mounted tubular filter members inside an envelope, 4,640,774, Cl. 210-323.200.
 García, Félix, Jr., to Texas Instruments Incorporated. Optically activated keyboard for digital system, 4,641,026, Cl. 250-229.000.
 García, Michel. Device for forming tunnels in composite wall panels, 4,641,016, Cl. 219-523.000.
 Garito, Anthon F.: See—
 Choe, Eui W.; Buckley, Alan; and Garito, Anthon F., 4,640,800, Cl. 260-396.00N.
 Garman, James A.; and Swift, Stephen D., to Caterpillar Inc. Method of retaining and repairing a track joint, 4,639,995, Cl. 29-402.080.
 Garritano, Ronald F.; O'Connor, John J.; and Papayanopolos, Manuel E., to Rheometrics, Inc. Impact testing apparatus, 4,640,120, Cl. 73-12.000.
 Garza, Cutberto: See—
 Sheng, Hwai-Ping; Garza, Cutberto; Winter, Dean C.; and Deskins, William G., 4,640,130, Cl. 73-579.000.
 Gastrin, Jan, to Instrumentarium Corp. Filter arrangement for soft tissue, 4,641,336, Cl. 378-156.000.
 Gatehouse, Angharad M. R.: See—
 Boulter, Donald; Gatehouse, Angharad M. R.; Gatehouse, John A.; and Cox, Roger B., 4,640,836, Cl. 424-195.100.
 Gatehouse, John A.: See—
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 Casier, Yves; Cassagne, Philippe; Gicquel, Sylvain; and Junet, Roland, 4,640,458, Cl. 237-17.000.
 Couprie, Francois, 4,640,232, Cl. 122-7.00R.
 GCA Corporation: See—
 Edmark, Karl W., III, 4,640,619, Cl. 356-372.000.
 Gebrüder Kommerling Kunststoffwerke GmbH: See—
 Haffer, Dieter, 4,640,078, Cl. 52-731.000.
 Gehman, John B., to General Dynamics Electronics Division. Dipole array with phase and amplitude control, 4,641,146, Cl. 343-814.000.
 Gehrig, Manfred: See—
 Forster, Adrian; and Gehrig, Manfred, 4,640,841, Cl. 426-425.000.
 Geiger, Wolfgang: See—
 Kastel, Walter; and Geiger, Wolfgang, 4,640,135, Cl. 73-716.000.
 Geiser, Markus; and Vandevor, Claude, to Sameca S.A. Process for loading a lathe with bars to be machined and loading device for carrying out of the process, 4,640,157, Cl. 82-2.700.
 Geller, Heinrich; Nold, Peter; Schermer, Heinz; and Rave, Ortwin, to Didier-Werke AG. Molten metal immersion pouring spout, 4,640,447, Cl. 222-603.000.
 General Aluminum Products, Inc.: See—
 Trumley, Richard L., 4,640,061, Cl. 52-71.000.
 General Defense Corporation: See—
 Campoli, Ralph F., 4,640,195, Cl. 102-430.000.
 General Dynamics Electronics Division: See—
 Gehman, John B., 4,641,146, Cl. 343-814.000.
 General Electric Company: See—
 Baliga, Banival J., 4,641,174, Cl. 357-58.000.
 Devine, Thomas M., Jr., 4,641,334, Cl. 378-144.000.
 Dunki-Jacobs, Robert J., 4,641,276, Cl. 364-900.000.
 Eckberg, Richard P., 4,640,967, Cl. 528-26.000.
 Hamilton, James W., Jr.; and Long, Edward A., 4,641,074, Cl. 318-706.000.
 Hillig, William B.; and Musikan, Solomon, 4,640,899, Cl. 501-5.000.
 Hillig, William B.; and Musikan, Solomon, 4,640,904, Cl. 501-128.000.
 Hughes, William C., 4,641,325, Cl. 375-97.000.
 Kushner, Gerald J.; and Toma, Daniel N., 4,640,105, Cl. 68-23.300.
 Morris, Robert A.; and Rajotte, Paul T., 4,641,216, Cl. 361-45.000.
 Morris, Robert A.; Rajotte, Paul T.; Russell, Ronald R.; and Kiesel, George W., 4,641,217, Cl. 361-45.000.
 Sawyer, Steven D.; Hill, William D.; Wilson, Patricia A.; and Steiner, William M., 4,640,812, Cl. 376-245.000.
 Toub, Melvin R.; and Finney, Donald L., 4,640,956, Cl. 524-779.000.
 Walker, Loren H.; and Lezan, Georges R. E., 4,641,231, Cl. 363-58.000.
 Willard, Henry G., 4,641,117, Cl. 335-7.000.
 Yilmaz, Hamza, 4,641,162, Cl. 357-23.400.
 General Electric Company: See—
 Bottomley, Paul A.; and Schenck, John F., 4,641,097, Cl. 324-318.000.

General Foods Corporation: See—
Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., 4,640,837, Cl. 426-94.000.

General Motors Corporation: See—
Brademeyer, David L.; and Welch, Timothy M., 4,640,098, Cl. 60-578.000.

Eppler, Peter C., 4,640,472, Cl. 242-107.000.

Gallion, George A.; Bratke, Dieter N.; Helbig, Klaus; and Reuter, Karl F., 4,640,450, Cl. 224-331.000.

Ordo, Richard A., 4,640,294, Cl. 192-70.2.

Stoltman, Donald D., 4,640,248, Cl. 423-399.000.

General Signal Corporation: See—
Carlson, William L., Jr., 4,640,492, Cl. 251-163.000.

General Telephone Company of Indiana: See—
Clark, Roger L.; Ray, Dennis D.; and Martin, James L., 4,641,338, Cl. 379-328.000.

George, Melvin J., to Ford Motor Company. Flexible printed circuit connector. 4,640,561, Cl. 339-17.00F.

Georgopoulos, George, to Levolor Loretzen, Inc. Apparatus for producing simultaneously a plurality of Venetian blinds. 4,639,987, Cl. 29-24.500.

Gerber, Heinz J., to Gerber Scientific Inc. Marking apparatus. 4,640,222, Cl. 118-697.000.

Gerber Scientific Inc.: See—
Gerber, Heinz J., 4,640,222, Cl. 118-697.000.

Gerkema, Jan, to U.S. Philips Corporation. X-ray tube comprising anode disc rotatably supported by bearing having push-pull bearing on an axial face. 4,641,332, Cl. 378-125.000.

Gerson, Donald F.: See—
Zajic, James E.; and Gerson, Donald F., 4,640,767, Cl. 208-390.000.

Gesellschaft Fuer Kernenergie Ierwertung in Schiffbau und Schiffahrt GmbH: See—
Maixner, Uwe; and Milferstaedt, Dieter, 4,641,002, Cl. 200-268.000.

GETRAG Getriebe- und Zahnradfabrik GmbH: See—
Knodel, Gunter; and Helms, Georg, 4,640,141, Cl. 74-357.000.

Geus, Georg: See—
Hervig, Thomas; and Geus, Georg, 4,641,330, Cl. 378-101.000.

Geze GmbH: See—
Maier, Helmut; Storandt, Ralf; Guenther, Heinz, deceased; Guenther, Renate, legal representative; and Guenther, Sabine, legal representative, 4,640,051, Cl. 49-348.000.

Gibco Division, The Mogul Corporation: See—
Davis, Sherman G., 4,640,895, Cl. 435-296.000.

Gibot, Claude, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Process and installation for cooling a viscous and in particular food product. 4,640,099, Cl. 62-62.000.

Gibson, William A.: See—
McConnell, Matthew L.; and Gibson, William A., 4,641,378, Cl. 455-619.000.

Gicquel, Sylvain: See—
Casier, Yves; Cassagne, Philippe; Gicquel, Sylvain; and Junet, Roland, 4,640,458, Cl. 237-17.000.

Gigliotti, Fred. Checkbook recording device. 4,640,018, Cl. 33-562.000.

Gill, Gurdev S., to Owens-Corning Fiberglass Corporation. Apparatus for packaging loose fibrous material. 4,640,082, Cl. 53-523.000.

Gill, Harry A., Jr., to Raytheon Company. Configurable analog integrated circuit. 4,641,108, Cl. 330-307.000.

Gillmore, Stephen R.: See—
Matuszak, Edward A.; Lee, Yanien; and Gillmore, Stephen R., 4,640,843, Cl. 426-560.000.

Gillot, Jacques: See—
Garcera, Daniel; and Gillot, Jacques, 4,640,774, Cl. 210-323.200.

Gilson, Richard E.: See—
Miller, Gary R.; and Gilson, Richard E., 4,640,886, Cl. 430-271.000.

Ginley, David S.: See—
Butler, Michael A.; and Ginley, David S., 4,641,037, Cl. 250-390.000.

Gion, Hidenori; Kubota, Kenji; Nakamura, Michihiro; and Yano, Makoto, to Kuraray Co., Ltd. Method and device for compensating temperature-dependent characteristic changes in ion-sensitive FET transducer. 4,641,249, Cl. 364-496.000.

Glaser, David M.: See—
Jacobine, Anthony F.; and Glaser, David M., 4,640,940, Cl. 522-99.000.

Glenn, Douglas J.: See—
Glenn, Julian H.; and Glenn, Douglas J., 4,640,208, Cl. 112-265.100.

Glenn, Julian H.; and Glenn, Douglas J., 4,640,209, Cl. 112-429.000.

Glenn, Julian H.; and Glenn, Douglas J., to Glenn, Douglas J. Method and apparatus for forming decorative fabrics. 4,640,208, Cl. 112-265.100.

Glenn, Julian H.; and Glenn, Douglas J., to Glenn, Douglas J. Decorative fabrics. 4,640,209, Cl. 112-429.000.

Glenn, William E., to New York Institute of Technology. Video display apparatus and method. 4,641,193, Cl. 358-233.000.

Glennon, Timothy F.; Olson, Raymond N.; and Straznickas, Donald A., to Sundstrand Corporation. Permanent magnet generator with fault detection. 4,641,080, Cl. 322-49.000.

Glessner, Louis S. Portable blade sharpener. 4,640,058, Cl. 51-211.00R.

Goddard, John B., to U.S. Vanadium Corporation. Alkaline leaching of vanadium bearing residues. 4,640,823, Cl. 423-68.000.

Goel, Anil B.; Tufts, Timothy A.; and Blackburn, Peggy A., to Ashland Oil, Inc. Oxazoline/polyol/polyisocyanate polymers and process. 4,640,969, Cl. 528-73.000.

Goguen, Peter J., to Jones and Vining, Incorporated. Phosphorescent polymer-containing compositions and articles made therefrom. 4,640,797, Cl. 252-301.360.

Goins, Joan. Back brace having strap with widened middle portion for pad. 4,640,269, Cl. 128-78.000.

Goldstein, Vladimir, to Sunwell Engineering Company Limited. Refrigeration system. 4,640,100, Cl. 62-197.000.

Golledge, Ian: See—
Day, George D.; Flack, John K.; Golledge, Ian; Hillary, Christopher J.; Pike, John V.; and Watson, Michael H., 4,640,485, Cl. 248-422.000.

Goodman, Lawrence A.: See—
Dolny, Gary M.; and Goodman, Lawrence A., 4,641,164, Cl. 357-23.400.

Goodworth, John P., II, to Donn Incorporated. Suspension ceiling system combining snap-up pans and lay-in panels. 4,640,064, Cl. 52-145.000.

Goossens, Laurentius M. J.; te Raa, Gerhardus A.; and van Rheeën, Bernhard J. P., to U.S. Philips Corporation. Method of manufacturing an X-ray tube rotary anode and an X-ray tube rotary anode manufactured according to this method. 4,641,333, Cl. 378-144.000.

Gordon, Linda A.: See—
Dalling, N. Lawrence; and Gordon, Linda A., 4,640,686, Cl. 434-262.000.

Gordon, Lucas S.: See—
Balding, David P.; Hsu, Li-Chien; and Gordon, Lucas S., 4,640,819, Cl. 422-22.000.

Gorman, Mark D., to Armco Inc. High temperature ferritic steel. 4,640,722, Cl. 148-325.000.

Goss, Raymond W., to Hercules Incorporated. Precoat resin dispersion for tufted carpets. 4,640,953, Cl. 524-476.000.

Goto, Hajime; Amemiya, Ikuzo; Nakayama, Masanobu; and Hatano, Yoshinobu, to Kanagawa Mfg., Co., Ltd. Method of making quartz oscillators. 4,639,988, Cl. 29-25.350.

Goto, Naohisa: See—
Yokoyama, Yukio; Kimura, Katsuji; and Goto, Naohisa, 4,641,366, Cl. 455-89.000.

Goto, Yasuyuki: See—
Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, 4,640,795, Cl. 252-299.500.

Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Ioyama, Toyoshiro; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.

Gotou, Masakazu: See—
Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,640,218, Cl. 118-19.000.

Gould, Alan P.: See—
McKibben, Kenneth D.; Gould, Alan P.; Groh, Craig J.; and Wuepper, Thomas E., 4,639,968, Cl. 15-304.000.

Goyarts, Wynand M., to Ingersoll-Rand Company. Slide bar mining bolting machine. 4,640,369, Cl. 173-42.000.

Grabak, Raymond C.; Howe, Robert K.; and Schafer, David E., to Monsanto Company. 2-chloro-4-trifluoromethyl-thiazolecarbothioic acids useful as herbicidal safeners. 4,640,702, Cl. 71-90.000.

Gradl, Reinhard: See—
Schimmel, Gunther; and Gradl, Reinhard, 4,640,824, Cl. 423-185.000.

Graham, Neil A., to AE PLC. Oil cleaning assemblies for engines. 4,640,772, Cl. 210-295.000.

Gray, Robert R.; and Lindahl, Thomas G. Pulse jet combustor dehydration cone construction. 4,640,682, Cl. 432-58.000.

Green Bay Packaging Inc.: See—
Stacey, Ralph E., 4,640,456, Cl. 229-122.000.

Green, Gary J.; McVeigh, Harry A.; Penick, Joe E.; and Yan, Tsoung Y., to Mobil Oil Corporation. Method of burning low hydrogen content fuels. 4,640,675, Cl. 431-2.000.

Green, George D.; Laboe, Lauren M.; and Cook, Richard. Diagnostic device and method for examining the operation of a disk drive. 4,641,207, Cl. 360-55.000.

Green, Lanny A.; and Heck, Joaquim L., Jr., to United States of America, Energy. Fixture for supporting and aligning a sample to be analyzed in an X-ray diffraction apparatus. 4,641,329, Cl. 378-79.000.

Green, Robert, to Austin Rover Group Limited. Distributor for spark ignition internal combustion engine. 4,640,239, Cl. 123-146.50A.

Greenberg, Donald S. Seismic activated valve. 4,640,303, Cl. 137-38.000.

Greene, Franklin R.; Stern, Howard S.; and Wayne, Jerome D., to E-Z-Em, Inc. Mouth guard for use with a diagnostic instrument. 4,640,273, Cl. 128-136.000.

Greene, George H.: See—
Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., 4,640,962, Cl. 525-474.000.

Gregg, Jack P.: See—
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Gregg, James S.: See—
Mobley, Lawrence R.; and Gregg, James S., 4,640,414, Cl. 206-287.000.

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Bodine, Albert G.; and Gregory, James N., 4,640,360, Cl. 166-286.000.

Gregotsch, Karl: See—
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Grein, Lutz; and Matthiensen, Gunter, to Leybold-Heraeus GmbH. Method of making a metal seal for flanged joints and a seal made by said method. 4,640,455, Cl. 228-176.000.

Grevling, Gerhard; Hofgen, Gunther; and Zeitz, Rudiger, to International Standard Electric Corporation. TACAN beacon. 4,641,142, Cl. 342-399.000.

Grierson, Jeffrey G.; Jones, Carol A.; and Spears, William D., to Dow Chemical Company. The Corrosion inhibition of metals in water systems using aminophosphonic acid derivatives in combination with manganese. 4,640,818, Cl. 422-15.000.

Griffin, Eric J.; Collier, Richard J.; and Hijipieris, George, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the Six-port reflectometer. 4,641,082, Cl. 324-58.00B.

Grimby, F. Norman, to Shell Oil Company. Process for the production of dichlorohydrin. 4,640,754, Cl. 204-182.400.

Grina, Larry D.: See—
Kapusinski, Maria M.; Liu, Christopher S.; Hart, William P.; and Grina, Larry D., 4,640,788, Cl. 252-51.50R.

Grisar, Alexander: See—
Wolter, Albrecht; Hartmann, Rolf; Herchenbach, Horst; and Grisar, Alexander, 4,640,203, Cl. 110-346.000.

Grist, Warren W.; and Kelly, David L., to Burke Company, The. Water corner lock assembly. 4,640,491, Cl. 249-219.00W.

Griston, Suzanne: See—
Hong, Ki C.; Griston, Suzanne; and Ault, Joseph W., 4,640,355, Cl. 166-269.000.

Groenhof, Eugene D.; Romensko, David J.; and Streu, Rick D., to Dow Corning Corporation. Silicone brake fluid having reduced air solubility. 4,640,792, Cl. 252-78.300.

Groh, Craig J.: See—
McKibben, Kenneth D.; Gould, Alan P.; Groh, Craig J.; and Wuepper, Thomas E., 4,639,968, Cl. 15-304.000.

Grote, Albert J.; Tahim, Raghib S.; and Chang, Kai, to TRW Inc. Local oscillator and mixer assembly. 4,641,369, Cl. 455-327.000.

Groupement d'Interet Economique Aerogenerateurs Carre: See—
Carre, Jean, 4,641,039, Cl. 290-44.000.

Grover, George M.; and Chrisman, Robert H., to Q-dot Corporation. Heat pipe. 4,640,347, Cl. 165-104.260.

Gruber, Gerhard: See—
Conrad, Ulrich; Moser, Peter; and Gruber, Gerhard, 4,640,256, Cl. 123-568.000.

Grumman Aerospace Corporation: See—
Kules, Madeline A., 4,640,114, Cl. 72-22.000.

Gschwend, Hans: See—
Matt, Lukas; Mark, Fritz; and Gschwend, Hans, 4,640,452, Cl. 227-131.000.

GTE Communication Systems Corporation: See—
Reimer, William A., 4,641,224, Cl. 361-424.000.

GTE Products Corporation: See—
Horsch, Wilfried, 4,640,373, Cl. 175-272.000.

GTE Valeron: See—
Bhat, Deepak G.; Shah, Dhirajlal C.; Kyle, John R.; and Woerner, Paul F., 4,640,693, Cl. 51-295.000.

Guenther, Heinz, deceased: See—
Maier, Helmut; Storandt, Ralf; Guenther, Heinz, deceased; Guenther, Renate, legal representative; and Guenther, Sabine, legal representative, 4,640,051, Cl. 49-348.000.

Guenther, Renate, legal representative: See—
Maier, Helmut; Storandt, Ralf; Guenther, Heinz, deceased; Guenther, Renate, legal representative; and Guenther, Sabine, legal representative, 4,640,051, Cl. 49-348.000.

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Gulf Canada Corporation: See—
Woods, H. John; and Souhrada, Frank, 4,640,762, Cl. 208-56.000.

Gullickson, M. Roy. Hay drying apparatus. 4,640,021, Cl. 34-15.000.

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Gur Optics and Systems, Ltd.: See—
Gur, Yehoshua, 4,641,182, Cl. 358-41.000.

Gur, Yehoshua, to Gur Optics and Systems, Ltd. Systems and components for detecting electromagnetic radiation and displaying images produced thereby. 4,641,182, Cl. 358-41.000.

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Escher, James C., 4,640,508, Cl. 272-128.000.

Haage, Manfred: See—
Fischer, Artur; Onasch, Jurgen; and Haage, Manfred, 4,640,654, Cl. 411-55.000.

Habfast, Karl-Eugen; Kappus, Gunter; Rache, Horst; and Windel, Bernd. Process and apparatus for heating ionizing strips. 4,641,029, Cl. 250-288.000.

Habich, Adolph B.; and Hunt, Ronald E., to International Business Machines Corporation. Envelope hopper for feed and delivery. 4,640,502, Cl. 271-4.000.

Hackelsberger, Eberhard. Steam juice extractor. 4,640,186, Cl. 99-495.000.

Haener, Juan. Interlocking building block. 4,640,071, Cl. 52-286.000.

Hafele, Walter; Kramer, Manfred; Schmieder, Dietmar; and Warga, Johann, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,640,255, Cl. 123-495.000.

Haffer, Dieter, to Gebruder Kommerling Kunststoffwerke GmbH. Composite bar. 4,640,078, Cl. 52-731.000.

Haga, Toru: See—
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Hagan, John: See—
Walter, Gerard S.; and Hagan, John, 4,640,571, Cl. 339-242.000.

Hagemann, Franz-Josef; and Hewing, Bernd. Floor board assembly. 4,640,067, Cl. 52-220.000.

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Hahn, Alfred, to Siemens Aktiengesellschaft. Primary-beam collimator for stereo radiographic x-ray diagnostic apparatus. 4,641,335, Cl. 378-153.000.

Haines, Peter R., to MCG Plastics Limited. Screw caps for containers. 4,640,430, Cl. 215-330.000.

Halberg, Leslie I.: See—
Tykulsky, Alexander; Thiele, Karl E.; and Halberg, Leslie I., 4,640,292, Cl. 128-661.000.

Halbert, Joel M.; and Koen, Myron J., to Burr-Brown Corporation. Sampling waveform digitizer for dynamic testing of high speed data conversion components. 4,641,246, Cl. 364-487.000.

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Hall, James W. Folding utility horse. 4,640,386, Cl. 182-155.000.

Hall, Mitchell A., to Monarch Tool & Manufacturing Company. Coin chute construction and method of making same. 4,640,405, Cl. 194-235.000.

Hall, Robert C.: See—
Hartle, Ronald J.; and Hall, Robert C., 4,640,310, Cl. 137-883.000.

Hall, Stephen, to Intalite International N.V. Clip for a suspended ceiling. 4,640,077, Cl. 52-665.000.

Hall Surgical-Division of Zimmer, Inc.: See—
Linden, Harry A., 4,641,076, Cl. 320-2.000.

Peterson, Drew, 4,639,980, Cl. 24-306.000.

Hall Surgical-Division of Zimmer, Inc.: See—
Pascloff, John H., 4,641,077, Cl. 320-2.000.

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Brothers, Lance E., 4,640,942, Cl. 523-130.000.

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Hamilton, David M., Jr., to Shell Oil Company. Selective tricyclic hydrogenation and cracking process and catalyst suitable for such hydroconversion. 4,640,764, Cl. 208-110.000.

Hamilton, James W., Jr.; and Long, Edward A., to General Electric Co. Synchronous motor protection. 4,641,074, Cl. 318-706.000.

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Matsumoto, Yukio; and Hanayama, Masaru, 4,640,863, Cl. 428-323.000.

Haneda, Satoshi: See—
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Hanley, Michael: See—
Turner, Michael J. B.; Hanley, Michael; and Hartwell, Eric S., 4,640,231, Cl. 119-155.000.

Hansel, Paul H.: See—
Roberts, Ernest E.; Hansel, Paul H.; and Hudgens, William O., 4,640,734, Cl. 156-562.000.

Hansen, Otto D.; and Nielsen, Bent K. Method and a system for peeling crustaceans. 4,639,976, Cl. 17-45.000.

Hansen, Paul E.; and Marquardt, Susan K., to Minnesota Mining and Manufacturing Company. Inelastic, heat-elasticizable sheet material for diapers. 4,640,859, Cl. 428-105.000.

Hanssler, Gerd: See—
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,640,923, Cl. 514-272.000.

Hanyuda, Toshiaki, to Showa Highpolymer Co. Ltd. Modified phenolic resin composition. 4,640,937, Cl. 522-31.000.

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Harara, Mitsuhiro: See—
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Hards, John E., to Brunette Machine Works, Ltd. Sweep-data-responsive, high-speed, continuous-log-travel bucking apparatus. 4,640,160, Cl. 83-71.000.

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Akkerman, Neil H.; and Hare, John P., 4,640,350, Cl. 166-117.500.

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Kind, Stuart S.; Sanger, David G.; Twibell, John D.; and Hargraves, John, 4,640,035, Cl. 40-625.000.

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Heckaman, Douglas E.; Higman, Roger H.; and Frisco, Jeffrey A., 4,641,140, Cl. 342-371.000.
Rosbach, Thomas J., 4,641,361, Cl. 381-103.000.
Harris, Jeremy M.: See—
Renner, G. Frederick; Thatcher, Richard K.; Atterbury, William G.; Harris, Jeremy M.; Hartman, Nile F.; and McCown, Robert B., 4,641,027, Cl. 250-237.00G.
Harris, Robert B., to S. C. Johnson & Son, Inc. Tarnish remover/metal polish formulation comprising a metal iodide, an acid, and water. 4,640,713, Cl. 106-3.000.
Harris, Ronald R.; and Ault, Russell L., to Owens-Corning Fiberglass Corporation. Structural member. 4,640,065, Cl. 52-204.000.
Harrison, Robert W. Dual-chambered oil changing container. 4,640,431, Cl. 220-1.00C.
Hart, William P.: See—
Kapusinski, Maria M.; Liu, Christopher S.; Hart, William P.; and Grina, Larry D., 4,640,788, Cl. 252-51.50R.
Hartig, Franz; Fischer, Matthias; and Tamm, Dagwin, to Fichtel & Sachs AG. Clutch disc. 4,640,402, Cl. 192-106.200.
Hartkopf, Hans O.; and Zillmer, Adalbert, to Siemens Aktiengesellschaft. Computer-controlled interlocking system for a railway installation. 4,641,243, Cl. 364-436.000.
Hartle, Ronald J.; and Hall, Robert C., to Nordson Corporation. Variable air-piloted air regulator system. 4,640,310, Cl. 137-883.000.
Hartman, Murray: See—
Martin, Frank J.; Hartman, Murray; and Saunders, Randy, 4,640,985, Cl. 174-138.00F.
Hartman, Nile F.: See—
Renner, G. Frederick; Thatcher, Richard K.; Atterbury, William G.; Harris, Jeremy M.; Hartman, Nile F.; and McCown, Robert B., 4,641,027, Cl. 250-237.00G.
Hartmann, Albert: See—
Baschang, Gerhard; Hartmann, Albert; and Wacker, Oskar, 4,640,911, Cl. 514-42.000.
Hartmann, Franz-Josef; and Hefendehl, Heinz, to Benteler-Werke AG. Straightening device. 4,640,115, Cl. 72-98.000.
Hartmann, Hans; and Kerschbaum, Ewald, to AKG Akustische u. Kino-Geräte GmbH. Acoustic frictional resistance construction and method of producing an acoustic frictional resistance using a laser. 4,640,382, Cl. 181-175.000.
Hartmann, Rolf: See—
Wolter, Albrecht; Hartmann, Rolf; Herchenbach, Horst; and Grieser, Alexander, 4,640,203, Cl. 110-346.000.
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Harvey Hubbell Incorporated: See—
Jorgensen, Robert W.; Lewis, Thomas E.; and Kesler, Gregory J., 4,640,433, Cl. 220-266.000.
Hasegawa, Akira, to Toyota Jidosha Kabushiki Kaisha. Steering mechanism of rack-and-pinion type. 4,640,148, Cl. 74-422.000.
Hasegawa, Akira: See—
Yoshida, Hiroshi; and Hasegawa, Akira, 4,639,981, Cl. 24-401.000.
Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Plywood. 4,640,857, Cl. 428-57.000.
Hasegawa, Satoshi, to NEC Corporation. System for carrying out spread spectrum communication through an electric power line. 4,641,322, Cl. 375-1.000.
Hasegawa, Yonosuke, to Pioneer Electronic Corporation. Community antenna television communication system. 4,641,363, Cl. 455-4.000.
Hashimoto, Akihiko: See—
Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, 4,641,215, Cl. 360-35.100.
Hashimoto, Masashi; Aratani, Matsuhiko; and Sawada, Kozo, to Fujisawa Pharmaceutical Co., Ltd. 1-azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid derivatives. 4,640,915, Cl. 514-210.000.
Hashiue, Masakazu; and Ogawa, Masashi, to Fuji Photo Film Co., Ltd. Supported medium for electrophoresis and supports therefor. 4,640,759, Cl. 204-299.00R.
Hashizume, Kiyozo: See—
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Hashizume, Masao, to Kumahira Safe Co., Inc. Locking device for a door on safe or the like apparatus. 4,640,111, Cl. 70-314.000.
Hasircoglu, Alexander W., to Du Pont de Nemours, E. I., and Company. Ejecting latch for electrical connectors. 4,640,565, Cl. 339-45.00M.
Haswell, Walter T., Jr.; Brosius, Karl S.; Justus, Scott B.; and Salvatori, David A., to Crucible Materials Corporation. Method for producing clad tubular product. 4,640,814, Cl. 419-8.000.
Hata, Yoshitaka: See—
Abo, Toshiaki; and Hata, Yoshitaka, 4,640,243, Cl. 123-399.000.
Hatakeyama, Yasuhiko; and Nagashima, Shigeo, to Hitachi, Ltd. Vector processor having pair process mode and single process mode. 4,641,275, Cl. 364-900.000.
Hatanai, Takashi: See—
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Hatano, Yoshinobu: See—
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Hauni-Werke Korber & Co. KG.: See—
Komossa, Werner; Hausler, Nikolaus; and Elsner, Uwe, 4,640,059, Cl. 51-5.00D.
Haupt, Otmur, to Thyssen Industrie Aktiengesellschaft. Axle control mechanism for rail vehicles. 4,640,198, Cl. 105-168.000.
Hauser, Thomas M., to Mentor Corporation. Urine collection catheter. 4,640,688, Cl. 604-352.000.
Hausler, Nikolaus: See—
Komossa, Werner; Hausler, Nikolaus; and Elsner, Uwe, 4,640,059, Cl. 51-5.00D.
Hausman, Marvin S. Administration of "active" chondroitin sulfate A and "active" chondroitin sulfate C or mixtures thereof to mammals including humans. 4,640,912, Cl. 514-54.000.
Hayakawa, Masatoshi: See—
Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.
Hayakawa, Takayuki: See—
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Uehara, Keijiro; Higuchi, Hisayuki; and Hayasaka, Akio, 4,640,721, Cl. 148-188.000.
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Hayden, Owen: See—
Dearden, Guy L.; and Hayden, Owen, 4,640,343, Cl. 165-70.000.
Hayes, Michael E.; Hood, Craig C.; Miller, Ronald E.; and Sharpe, Robert, to Petroleum Fermentations N.V. Method for printed circuit board and/or printed wiring board cleaning. 4,640,719, Cl. 134-40.000.
Heamon, Mark L., to Swiss Aluminium Ltd. Filtration apparatus. 4,640,497, Cl. 266-227.000.
Heater, Thomas J.: See—
Martin, Robert A.; and Heater, Thomas J., 4,640,333, Cl. 164-246.000.
Martin, Robert A.; and Heater, Thomas J., 4,640,728, Cl. 156-245.000.
Hebert, Donald G., to DH Technology, Inc. High-speed wire print head with wire print position shift apparatus. 4,640,633, Cl. 400-124.000.
Heck, Joaquim L., Jr.: See—
Green, Lanny A.; and Heck, Joaquim L., Jr., 4,641,329, Cl. 378-79.000.
Heck, Samuel C.: See—
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Wudl, Fred; Kobayashi, Masao; and Heeger, Alan, 4,640,748, Cl. 204-59.00R.
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Hartmann, Franz-Josef; and Hefendehl, Heinz, 4,640,115, Cl. 72-98.000.
Hefner, Robert E., Jr.; and Hunter, Douglas L., to Dow Chemical Company. The Polyimido-ester compounds and thermoset resin compositions containing same. 4,640,957, Cl. 525-44.000.
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Pfizenmaier, Wolfgang; Heidt, Heinrich; and Lehner, Rolf P., 4,641,070, Cl. 318-640.000.
Heidt, Heinrich: See—
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Heimann GmbH: See—
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Heistand, Robert H., II: See—
Khouri, Issam A.; Heistand, Robert H., II; and Kohatsu, Iwao, 4,641,221, Cl. 361-321.000.
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Helbig, Klaus: See—
Gallion, Georg A.; Bratke, Dieter N.; Helbig, Klaus; and Reuter, Karl F., 4,640,450, Cl. 224-331.000.
Held, Kurt. Apparatus for the electrodeposition of a coating on an endless belt. 4,640,758, Cl. 204-272.000.
Helleur, Donald E. Method and apparatus for controlling the size of an opening through which a product is metered. 4,640,742, Cl. 162-212.000.
Helms, Georg: See—
Knodel, Gunter; and Helms, Georg, 4,640,141, Cl. 74-357.000.

Hemler, Paul F.; and Rohr, William A., to United States of America, Air Force. Hermetic chip carrier compliant soldering pads. 4,640,499, Cl. 267-160.000.
Henkel, Gunter, to N.V. Optimed. Method for manufacturing a spectacle lens for myopes. 4,640,587, Cl. 350-432.000.
Hennequin, Yves, to Jaeger. Device for measuring the level or volume of liquid in a tank. 4,641,122, Cl. 338-33.000.
Hentschel, Volker, to Hochtief Aktiengesellschaft vorm Gebr. Helfmann. Apparatus for the construction of tunnels and shafts. 4,640,646, Cl. 405-141.000.
Heraud, Roger A.; and Amiel, Jacques, to Societe de Traitement Automatique—Contrôle et Etancheité "T R A C E". Apparatus for leak testing at least one wall portion and/or a volume delimited by said wall portion, and a method of determining optimum parameters for said leak testing. 4,640,122, Cl. 73-49.200.
Herchenbach, Horst: See—
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Hercules Incorporated: See—
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Hermann, John T., to Chrysler Motors Corporation. Quick hose connector. 4,640,535, Cl. 285-158.000.
Hernandez, Manolo, to De La Rue Giori S.A. Rotary multicolor machine for simultaneously printing both sides of a paper web or sheet. 4,640,189, Cl. 101-177.000.
Herrington, Fox J., to Mobil Oil Corporation. Substantially frictionless universal connecting device. 4,640,640, Cl. 403-57.000.
Herrscher, Albert: See—
Link, Helmut F.; Trautmann, Gunther; and Herrscher, Albert, 4,640,158, Cl. 82-3.000.
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Brandenstein, Manfred; Hetterich, Hermann; and Horling, Peter, 4,640,632, Cl. 384-537.000.
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Kroning, Michael; Holzler, Georg; and Heumüller, Roland, 4,640,131, Cl. 73-600.000.
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Hewlett-Packard Company: See—
Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., 4,641,086, Cl. 324-77.00R.
Donecker, S. Bruce; Stewart, Ronald D.; and Frederick, Wayne L., 4,641,085, Cl. 324-77.00R.
Neuder, David L.; and Zellmer, Joel A., 4,641,348, Cl. 382-1.000.
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- Imazumi, Haruo; and Kobayashi, Satoru, to Junkosha Company, Ltd. Leak detecting device, 4,640,123, Cl. 73-61.10R.
- Imaki, Katsuhiko; Okegawa, Tadao; and Arai, Yoshinobu, to Ono Pharmaceutical Co., Ltd. 3-(indian-5-yloxy (or thio)) cyclopentanecarboxylic acid analogues, 4,640,931, Cl. 514-510.000.
- Imamura, Mineo: See—
Nagai, Takatsuo; Takada, Masayuki; Sato, Akira; and Imamura, Mineo, 4,641,319, Cl. 373-84.000.
- Imanishi, Kiyokazu; Naka, Hiroyuki; Sakurai, Yasuo; Ichiyonagi, Takashi; and Kishimoto, Masaru, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly with pump-out type spiral grooves for more stable tape running, 4,641,214, Cl. 360-130.240.
- IMI Kynoch Limited: See—
Carter, George B.; and Manby, Alan P., 4,640,724, Cl. 149-109.600.
- IMI Refiners Ltd.: See—
Clark, Peter J.; Hudd, Anthony W.; Bloor, Stephen T.; and Roller, Erling, 4,640,335, Cl. 164-440.000.
- Immuno Aktiengesellschaft für Chemisch-Medizinische Produkte: See—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; Wober, Gunter; Philapitsch, Anton; Linnau, Yendra; Dörner, Friedrich; Trambauer, Karl; and Frechinger, Wolfgang, 4,640,834, Cl. 424-94.000.
- Impey, Thomas T. Double disc gate valve, 4,640,302, Cl. 137-15.000.
- Ina, Hideki: See—
Suzuki, Akiyoshi; and Ina, Hideki, 4,641,035, Cl. 250-548.000.
- Inaguma, Yukio: See—
Asano, Katsuhiko; Inaguma, Yukio; and Iwama, Norio, 4,641,075, Cl. 318-811.000.
- Inamori, Mikio: See—
Takenoya, Hideaki; Inamori, Mikio; and Shomura, Eiichi, 4,640,210, Cl. 112-456.000.
- Inamoto, Kiyoshi, to Sharp Kabushiki Kaisha. Corona discharger for separating copy paper from photoreceptor in electrophotographic copying machine, 4,640,606, Cl. 355-14.0TR.
- Inatsuki, Kenichi, to Fuji Photo Film Co., Ltd. Automatic notcher with judging device for film frames to be printed, 4,641,019, Cl. 250-201.000.
- Inazawa, Keichi: See—
Fukuroi, Takeo; and Inazawa, Keichi, 4,639,983, Cl. 24-689.000.
- Inazawa, Yoshizumi; Takahashi, Toshihiko; Tani, Toshiyuki; and Satomura, Shigeyuki, to Sony Corporation. Recording/reproducing apparatus, 4,641,208, Cl. 360-72.200.
- Indal, Inc.: See—
Rushford, Calvin R., 4,640,046, Cl. 49-44.000.
- Indescor Hydrodynamics Inc.: See—
Puchala, Ryszard J.; and Miko, Stephen J., 4,640,644, Cl. 404-75.000.
- Index Werke Komm.-Ges. Hahn & Tessky: See—
Link, Helmut F.; Trautmann, Gunther; and Herrscher, Albert, 4,640,158, Cl. 82-3.000.
- Ingersoll-Rand Company: See—
Goyarts, Wynand M., 4,640,369, Cl. 173-42.000.
- Inoue, Fumio; Eto, Masahiro; Shimaoka, Shoji; and Sakai, Noboru, to Hitachi, Ltd. Scanning speed modulating apparatus for television receiver, 4,641,195, Cl. 358-242.000.
- Inoue, Ikuo: See—
Hirose, Tokuzo; and Inoue, Ikuo, 4,641,118, Cl. 335-282.000.
- Inoue-Japax Research Incorporated: See—
Inoue, Kiyoshi, 4,641,251, Cl. 364-513.000.
- Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Robot, 4,641,251, Cl. 364-513.000.
- Inoue, Masuo: See—
Terano, Minoru; Yokoyama, Yasushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,640,906, Cl. 502-104.000.
- Inoue, Yasuhiro: See—
Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, 4,640,329, Cl. 152-209.00R.
- Institut Français de Recherche pour l'Exploitation de la Mer - IFREMER: See—
Blancheton, Jean-Paul; Calvas, Jacques; Michel, Alain H.; and Vonau, Vincent, 4,640,227, Cl. 119-2.000.
- Institut Pasteur: See—
Leynadier, Francisque; and Luce, Herve, 4,640,897, Cl. 436-501.000.
- Institut Prikladnoi Fiziki Akademii Nauk Belorusskoi SSR: See—
Melguy, Mikhail A.; and Sandomirsky, Sergei G., 4,641,093, Cl. 324-239.000.
- Institut Straumann AG: See—
Comte, Pierre-Andre, 4,640,983, Cl. 174-119.00R.
- Institute of Gas Technology: See—
Rush, William F.; Huebler, James E.; and Lysenko, Peter, 4,641,377, Cl. 381-111.000.

Instrumentarium Corp.: See—
Gastrin, Jan, 4,641,336, Cl. 378-156.000.
Instytut Gornictwa Naftowego i Gazownictwa: See—
Dzwiniel, Jan, 4,641,100, Cl. 324-330.000.
Insul Company, Inc.: See—
LaBate, Michael D.; and Perri, Joseph, 4,640,498, Cl. 266-272.000.
Intalite International N.V.: See—
Hall, Stephen, 4,640,077, Cl. 52-665.000.
International Business Machines Corporation: See—
Alnot, Patrick R.; Auerbach, Daniel J.; Brundle, Christopher R.; and Miller, Dolores C., 4,640,718, Cl. 134-2.000.
Barbee, Steven G.; Devine, Gregory P.; Patrick, William J.; and Seeley, Gerard, 4,640,221, Cl. 118-689.000.
Bryan, Barry L.; Druckerman, Martin; McDowell, Allen W.; Schneider, Ira H.; and Newkirk, Gary L., 4,641,262, Cl. 364-900.000.
Day, George D.; Flack, John K.; Gollidge, Ian; Hillary, Christopher J.; Pike, John V.; and Watson, Michael H., 4,640,485, Cl. 248-422.000.
Dyer, Stanley; Molloy, James J.; Nguyen, Thoi; Riherd, David M.; Voit, William F., Jr.; and West, Donald L., 4,641,148, Cl. 346-76.0PH.
Fredericks, Edward C.; and Nanda, Madan M., 4,640,738, Cl. 156-656.000.
Habich, Adolph B.; and Hunt, Ronald E., 4,640,502, Cl. 271-4.000.
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,641,170, Cl. 357-35.000.
Satoh, Junichi, 4,641,357, Cl. 382-61.000.
Swank, Edgar W., 4,641,274, Cl. 364-900.000.
International Computers Limited: See—
Russell, Brian M., 4,641,307, Cl. 370-60.000.
International Glide Mfg. Corp.: See—
Neville, Donald G., 4,640,486, Cl. 248-425.000.
International Minerals & Chemical Corp.: See—
Baumann, Arthur N., 4,640,828, Cl. 423-321.00R.
International Standard Electric Corporation: See—
Dean, Andrew, 4,641,375, Cl. 455-607.000.
Greving, Gerhard; Hofgen, Gunther; and Zeitz, Rudiger, 4,641,142, Cl. 342-399.000.
Sodergard, Bengt, 4,640,666, Cl. 415-121.00B.
Van Simaey, Françoise C. G.; Leurs, Anna M. C.; Upp, Daniel C.; Lawrence, Alan J.; and Cotton, John M., 4,641,301, Cl. 370-58.000.
Whittaker, Edward J. W., 4,640,993, Cl. 379-383.000.
Intersil, Inc.: See—
Doluca, Tunc; and Boyacigiller, Ziya G., 4,641,129, Cl. 340-347.0AD.
Inui, Takayasu: See—
Matsuda, Yukinobu; and Inui, Takayasu, 4,640,245, Cl. 123-339.000.
Inuiya, Masafumi; to Fuji Photo Film Co., Ltd. Solid-state image pickup device with selective output characteristics and imaging apparatus using same, 4,641,169, Cl. 357-30.000.
Inuiya, Masafumi: See—
Ohta, Takahiro; Inuiya, Masafumi; and Fujimura, Ikuo, 4,641,198, Cl. 358-285.000.
Inukai, Satoshi: See—
Taki, Yoshihiro; Akado, Hajime; Funae, Keizo; and Inukai, Satoshi, 4,640,779, Cl. 210-493.500.
Iowa State University Research Foundation, Inc.: See—
Holland, George E.; Struve, Walter S.; and Homer, John F., 4,641,343, Cl. 381-48.000.
Irie, Toshio; Kyono, Kazuaki; Kimura, Hajime; and Kurokawa, Shigeo; to Kawasaki Steel Corporation. Corrosion-resistant steel strip having Zn-Fe-P alloy electroplated thereon, 4,640,872, Cl. 428-659.000.
Irvine, Robert: See—
Luperti, Harry E.; Irvine, Robert; and Luvana, Anthony, 4,640,506, Cl. 271-212.000.
Irving, Edward: See—
Banks, Christopher P.; and Irving, Edward, 4,640,753, Cl. 204-181.700.
Irwin, Robert S.; to Du Pont de Nemours, E. I., and Company. Filament of polyimide from pyromellitic acid dianhydride and 3,4'-oxydianiline, 4,640,972, Cl. 528-188.000.
Isaacson, Philip O.; to Aequitron Medical, Inc. Tocodynamometer, 4,640,295, Cl. 128-748.000.
Isakson, Gary A.; and Larson, Curtis L.; to Minnesota Mining and Manufacturing Company. Self-venting vapor-tight microwave oven package, 4,640,838, Cl. 426-107.000.
Ishikawa, Mamoru: See—
Sakura, Yasuhiro; Nimura, Hitoshi; and Ishikawa, Mamoru, 4,641,147, Cl. 346-76.0PH.
Ishikawa, Masahiro: See—
Ohdake, Eishu; Oikawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.
Ishikawa, Wataru: See—
Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.
Ishikura, Tadashi: See—
Echigo, Yoshiaki; Yamao, Mutsunori; Suematu, Yoshiyuki; Ishikura, Tadashi; Asami, Keichi; and Shidei, Ritsuko, 4,640,971, Cl. 528-129.000.
Ishizaka, Takao: See—
Mine, Susumu; and Ishizaka, Takao, 4,640,005, Cl. 29-599.000.

Isoyama, Toyoshio: See—
Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Isoyama, Toyoshio; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.
Italttractor Meccanica ITM S.p.A.: See—
Crotti, Aldo, 4,640,559, Cl. 305-11.000.
Ito, Kiyoo: See—
Kimura, Katsutaka; Hori, Ryoichi; Ito, Kiyoo; and Sunami, Hideo, 4,641,279, Cl. 365-149.000.
Ito, Toshihiko: See—
Yamamoto, Shinichi; Ito, Toshihiko; and Asano, Mitsuru, 4,640,454, Cl. 228-161.000.
Ito, Tsuneo: See—
Yokoi, Shinichi; and Ito, Tsuneo, 4,640,809, Cl. 264-61.000.
Ito, Yasuyuki; and Sugawara, Toru; to Kabushiki Kaisha Toshiba. Ion source apparatus, 4,641,031, Cl. 250-423.00R.
Itoh, Masataka: See—
Okibayashi, Katsushi; Itoh, Masataka; and Katoh, Shohichi, 4,641,359, Cl. 382-68.000.
Itoh, Yoshio; Ohtsuka, Hiroshi; Nishimuro, Tadashi; and Moriyama, Norio; to Oki Electric Industry Co., Ltd. Alignment mark on a semiconductor and a method of forming the same, 4,640,888, Cl. 430-323.000.
ITT Corporation: See—
Kneib, Kristine N., 4,641,238, Cl. 364-200.000.
Stottlemeyer, William O., 4,641,339, Cl. 379-391.000.
Wurst, Walter K., 4,641,300, Cl. 370-16.000.
Iwafune, Kasuke; to Victor Company of Japan, Ltd. Video signal recording and reproducing apparatus including a noise reduction circuit, 4,641,206, Cl. 360-33.100.
Iwai, Nobuo; to Alps Electric Co., Ltd. Optical head position control device, 4,641,020, Cl. 250-201.000.
Iwama, Norio: See—
Asano, Katsuhiko; Inaguma, Yukio; and Iwama, Norio, 4,641,075, Cl. 318-811.000.
Iwasaki, You: See—
Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.
Iwashita, Yukihiko: See—
Hoshikawa, Jun; and Iwashita, Yukihiko, 4,640,583, Cl. 350-343.000.
Iwata Electric Works Co., Ltd.: See—
Nakamoto, Takayuki, 4,640,274, Cl. 128-321.000.
Iwatani, Shiro; to Mitsubishi Denki Kabushiki Kaisha. Buried PN junction isolation regions for high power semiconductor devices, 4,641,172, Cl. 357-48.000.
J-Jet Konstruktion HB: See—
Olsson, John; Olsson, Bertil; and Olsson, Gunnar, 4,640,234, Cl. 123-557.000.
J. M. Voith GmbH: See—
Schiel, Christian; and Bauder, Albrecht, 4,639,990, Cl. 29-116.00R.
J. T. Baker Chemical Company: See—
Ramsden, Hugh E.; and Patterson, Joseph M., 4,640,909, Cl. 502-407.000.
Jacobine, Anthony F.; and Glaser, David M.; to Loctite Corporation. Polyol terminated silicones and derivatives thereof, 4,640,940, Cl. 522-99.000.
Jacobsen, Marvin A.; to Con-Vey/Keystone, Inc. Continuous feeding apparatus, 4,640,655, Cl. 414-119.000.
Jacobsson, Curt; to Asea Aktiebolag. Root mean square measuring device for negative sequence current, 4,641,088, Cl. 324-86.000.
Jaeger: See—
Hennequin, Yves, 4,641,122, Cl. 338-33.000.
James River Corporation: See—
Seifert, Oscar E., 4,641,005, Cl. 219-10.55E.
Janda, Ralf; and Eppinger, Bernhard; to Kulzer & Co. GmbH. Photopolymerizable phosphate-containing adhesion promoting dental composition, 4,640,936, Cl. 522-14.000.
Jannusch, Reiner: See—
Lehmann, Elke; and Jannusch, Reiner, 4,640,216, Cl. 114-340.000.
Janome Sewing Machine Co., Ltd.: See—
Takenoya, Hideaki; Inamori, Mikio; and Shomura, Eiichi, 4,640,210, Cl. 112-456.000.
Jansch, Peter A. G.; to Saab-Scania Aktiebolag. Device for measuring oil level in an internal combustion engine, 4,640,126, Cl. 73-290.00R.
Janssen, Jeffrey R.; to Minnesota Mining and Manufacturing Company. Graphic design article, 4,640,727, Cl. 156-240.000.
Jansson, Kurt; to AB A.K. Eriksson. Band saw installation with vertically spaced guides, 4,640,171, Cl. 83-797.000.
Japan Solar Energy Co., Ltd.: See—
Koiwai, Sakae; Asaoka, Keizo; Shirasawa, Katsuhiko; Watanabe, Hiroyuki; and Honda, Junichi, 4,640,001, Cl. 29-572.000.
Japan Tobacco Inc.: See—
Kagawa, Kenichi, 4,641,265, Cl. 364-153.000.
Okumoto, Yutaka, 4,640,168, Cl. 83-677.000.
Ono, Takahiro; Akutsu, Takao; and Fujiwara, Hideyuki, 4,640,299, Cl. 131-303.000.
Japenga, Robert J.; and Scott, Paul F.; to Emhart Industries, Inc. Programmable control system for glassware forming machines, 4,641,269, Cl. 364-473.000.
Jeal, Alan J.: See—
Kelly, Patrick S.; Oswald, Thomas; Jeal, Alan J.; Hill, Stephen E.; and Murphy, Robert, 4,641,372, Cl. 455-601.000.
Jeffreys, John H.: See—
Kasper, James J.; and Jeffreys, John H., 4,640,982, Cl. 174-75.00R.

Jellovitz, John C.: See—
McMahon, Raymond D.; Jellovitz, John C.; Vaile, James T.; Renn, Gregory J.; and Ondeck, Elmer J., 4,640,165, Cl. 83-346.000.
Jemison, Emanuel B.: See—
Blosser, Henry G.; Burleigh, Richard J.; Blosser, Gabe F.; and Jemison, Emanuel B., 4,641,104, Cl. 328-234.000.
Jensen, Deborah P.: See—
Jensen, Tom M.; Yoshimura, Frederick T.; and Jensen, Deborah P., 4,640,525, Cl. 280-642.000.
Jensen, Tom M.; Yoshimura, Frederick T.; and Jensen, Deborah P.; to Boeing Company. The Folding wheelchair, 4,640,525, Cl. 280-642.000.
JEOL Ltd.: See—
Kamo, Osamu; Ohuchi, Muneki; and Matsushita, Kazuhiro, 4,641,096, Cl. 324-311.000.
Jershin, James T. Apparatus for supporting a fishing rod holder, 4,640,038, Cl. 43-17.000.
Jervis B. Webb Company: See—
Dehne, Clarence A., 4,640,196, Cl. 104-94.000.
Jeumont-Schneider Corporation: See—
Bonai, Jean, 4,641,234, Cl. 363-124.000.
Jidosha Kiki Co. Ltd.: See—
Kobayashi, Michio, 4,640,097, Cl. 60-554.000.
Jim Blackburn Designs, Inc.: See—
Blackburn, James R., 4,640,449, Cl. 224-41.000.
Jing-Sheng, Tseng. Super-thin enuresis alarm, 4,640,276, Cl. 128-138.00A.
John A. Kitchen Ltd.: See—
Kitchen, John A., 4,640,674, Cl. 431-1.000.
John Wyeth & Brother Limited: See—
Boyle, John T. A.; and Todd, Richard S., 4,640,920, Cl. 514-248.000.
White, Alan C.; Shepherd, Robin G.; and Langham, Barry J., 4,640,924, Cl. 514-291.000.
Johnsen, Kenneth D.; and Fletcher, Alan J.; to Rockwell International Corporation. Plug for hole sealing, 4,640,434, Cl. 220-287.000.
Johnson, Ken A. Portable beverage chiller, 4,640,101, Cl. 62-294.000.
Johnson, Marvin M.; and McDaniel, Max P.; to Phillips Petroleum Company. Olefin polymerization with polyphosphate supported chromium catalysts, 4,640,964, Cl. 526-134.000.
Johnson, Roger E.; to White Consolidated Industries, Inc. High temperature, zero leakage packing assembly, 4,640,305, Cl. 137-312.000.
Johnson, William L.: See—
Atzmon, Michael; Johnson, William L.; and Verhoeven, John D., 4,640,816, Cl. 419-24.000.
Johnston, Clifford V.: See—
Boyles, William C.; Hagge, Douglas R.; and Johnston, Clifford V., 4,640,528, Cl. 280-789.000.
Jones, Carol A.: See—
Grierson, Jeffrey G.; Jones, Carol A.; and Spears, William D., 4,640,813, Cl. 422-15.000.
Jones, Lloyd G.; to Mobil Oil Corporation. Multistep method for viscous hydrocarbon recovery, 4,640,357, Cl. 166-273.000.
Jones, Theodore L.; to RCA Corporation. Method of forming fiber optic cable termination, 4,640,725, Cl. 156-85.000.
Jones and Vining, Incorporated: See—
Goguen, Peter J., 4,640,797, Cl. 252-301.360.
Jones, Warren C.: See—
Dery, Ronald A.; and Jones, Warren C., 4,640,981, Cl. 174-88.00R.
Jorgensen, Robert W.; Lewis, Thomas E.; and Kesler, Gregory J.; to Harvey Hubbell Incorporated. Eccentric knockouts for metal boxes, 4,640,433, Cl. 220-266.000.
Joyce, Thomas F.; and Kelly, Richard P.; to Honeywell Information Systems Inc. Control store memory read error resiliency method and apparatus, 4,641,305, Cl. 371-12.000.
Joyer, Auvin H. Funnel stock/sauce separator, 4,640,185, Cl. 99-495.000.
Jumberca, S.A.: See—
Dalmau Guell, Jose M., 4,640,104, Cl. 66-222.000.
Junet, Roland: See—
Casier, Yves; Cassagne, Philippe; Gicquel, Sylvain; and Junet, Roland, 4,640,458, Cl. 237-17.000.
Jungwirth, Dieter; and Mannhart, Also; to Dycherhoff & Widmann Ag. Anchoring and coupling device for tendons in prestressed concrete, 4,640,068, Cl. 52-223.00L.
Junkosha Company, Ltd.: See—
Imazumi, Haruo; and Kobayashi, Satoru, 4,640,123, Cl. 73-61.10R.
Suzuki, Hirotsuke, 4,640,866, Cl. 428-422.000.
Jurgens, Rainer; to Norton Christensen, Inc. Process and device for transmitting information over a distance, 4,641,289, Cl. 367-85.000.
Justus, Scott B.: See—
Brosius, Karl S.; Justus, Scott B.; and Salvatori, David A., 4,640,815, Cl. 419-8.000.
Haswell, Walter T., Jr.; Brosius, Karl S.; Justus, Scott B.; and Salvatori, David A., 4,640,814, Cl. 419-8.000.
Kabushiki Kaisha Furukawa Seisakusho: See—
Kawaguchi, Masashi; and Yasumune, Masaru, 4,640,081, Cl. 53-510.000.
Kabushiki Kaisha Komatsu Seisakusho: See—
Matsuda, Yukinobu; and Inui, Takayasu, 4,640,245, Cl. 123-339.000.
Kabushiki Kaisha Meidensha: See—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,640,999, Cl. 200-144.00B.
Kabushiki Kaisha Morita Seisakusho: See—
Makino, Takao; and Osada, Shinichi, 4,641,331, Cl. 378-108.000.

Kabushiki Kaisha Seiko Epson: See—
Hoshikawa, Jun; and Iwashita, Yukihiko, 4,640,583, Cl. 350-343.000.
Oguchi, Kikuo; and Uchikawa, Yoshiro, 4,640,582, Cl. 350-333.000.
Kabushiki Kaisha Toshiba: See—
Ando, Hideo; and Doi, Akihiko, 4,641,023, Cl. 250-216.000.
Horiguchi, Fumio, 4,641,280, Cl. 365-183.000.
Ito, Yasuyuki; and Sugawara, Toru, 4,641,031, Cl. 250-423.00R.
Kobayashi, Noboru, 4,641,052, Cl. 310-317.000.
Miyazawa, Yoshiaki, 4,641,042, Cl. 307-66.000.
Moore, John F., 4,641,119, Cl. 335-297.000.
Nagasaka, Hiroko; and Motegi, Nawoto, 4,640,737, Cl. 156-643.000.
Oyama, Masumi, 4,641,374, Cl. 455-603.000.
Saito, Tomotaka, 4,641,278, Cl. 365-78.000.
Sato, Masaki, 4,640,000, Cl. 29-571.000.
Shigemasa, Takashi; and Ichikawa, Yoshinori, 4,641,235, Cl. 364-149.000.
Shiraishi, Hajime, 4,641,044, Cl. 307-269.000.
Takesako, Sumiyoshi, 4,641,239, Cl. 364-408.000.
Yoshimaru, Tomohisa, 4,641,294, Cl. 369-32.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Asano, Katsuhiko; Inaguma, Yukio; and Iwama, Norio, 4,641,075, Cl. 318-811.000.
Kaga, Eiichi: See—
Yamazaki, Mutsuki; and Kaga, Eiichi, 4,641,168, Cl. 357-30.000.
Kagawa, Kenichi; to Japan Tobacco Inc. System for controlling the proportion of leaf vein in tobacco raw material treating process, 4,641,265, Cl. 364-153.000.
Kagiya, Kei: See—
Saito, Teruo; Asai, Kuniaki; Suzuki, Yasuro; and Kagiya, Kei, 4,640,961, Cl. 525-444.000.
Kagota, Nobuhiko; and Senoh, Hideaki; to Mitsubishi Paper Mills, Ltd. Alcohol-based flexographic ink for use in backcarbon papers, 4,640,714, Cl. 106-21.000.
Kahn, Leonard R. Automatic multi-system AM stereo receiver using existing single-system AM stereo decoder IC, 4,641,341, Cl. 381-15.000.
Kailath, Thomas: See—
Shan, Tiejun J.; and Kailath, Thomas, 4,641,259, Cl. 364-724.000.
Kajimura, Haruhiko; Nagano, Hiroo; and Miura, Minoru; to Sumitomo Metal Industries, Ltd. Dual-phase stainless steel with improved resistance to corrosion by nitric acid, 4,640,817, Cl. 420-50.000.
Kajitani, Kazuo: See—
Iba, Yoichi; Kimura, Tadashi; and Kajitani, Kazuo, 4,640,586, Cl. 350-414.000.
Kalbfeld, Jack W.; to Union Connector Co., Inc. Support and strain relief combination, 4,640,984, Cl. 174-135.000.
Kalfs, Johannes J. W.: See—
Martens, Theodor G. J. A.; Steenhof, Frits A.; and Kalfs, Johannes J. W., 4,641,310, Cl. 371-38.000.
Kalokitis, David; to RCA Corporation. Printed circuit radial power combiner with mode suppressing resistors fired at high temperature, 4,641,107, Cl. 330-286.000.
Kamai, Kenichiro; to Nippondenso Co., Ltd. Electronic fuel injection control with variable injection timing, 4,640,253, Cl. 123-475.000.
Kamaike, Hiroshi; to Mitsubishi Denki Kabushiki Kaisha. System for controlling a motor, 4,640,389, Cl. 187-119.000.
Kambic, Raymond V.; to R. R. Brink Locking Systems, Inc. Security door knob and escutcheon, 4,640,112, Cl. 70-452.000.
Kamel, Mohamed S.: See—
Mazumder, Ali T.; and Kamel, Mohamed S., 4,641,018, Cl. 235-462.000.
Kamijo, Takao: See—
Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, 4,640,329, Cl. 152-209.00R.
Kamiyama, Yoshiyasu: See—
Nishida, Yuji; Kamiyama, Yoshiyasu; and Okuno, Koichi, 4,640,773, Cl. 210-321.100.
Kamo, Osamu; Ohuchi, Muneki; and Matsushita, Kazuhiro; to JEOL Ltd. Nuclear magnetic resonance spectrometry, 4,641,096, Cl. 324-311.000.
Kanagawa Mfg., Co., Ltd.: See—
Goto, Hajime; Amemiya, Ikuzo; Nakayama, Masanobu; and Hatano, Yoshinobu, 4,639,988, Cl. 29-25.350.
Kanda, Nobuo: See—
Kondo, Mitsuru; Okimoto, Tomoyuki; and Kanda, Nobuo, 4,641,160, Cl. 346-220.000.
Kane, Gordon R.: See—
Albaugh, Neil P.; and Kane, Gordon R., 4,641,105, Cl. 330-9.000.
Kaneko, Masahiko: See—
Nakai, Toshihiko; and Kaneko, Masahiko, 4,640,635, Cl. 400-664.000.
Kano, Atsushi: See—
Kozuka, Nobuhiko; Koyama, Shigeo; and Kano, Atsushi, 4,640,604, Cl. 355-3.00R.
Kanzaki Paper Manufacturing Co., Ltd.: See—
Kondo, Mitsuru; Okimoto, Tomoyuki; and Kanda, Nobuo, 4,641,160, Cl. 346-220.000.
Kaplan, Gary M.; Karau, Robert T.; Winney, Norman E., Jr.; and Brader, David G.; to Communications Transfer Corp. Universal package for prerecorded computer disk and associated instructional material, 4,640,413, Cl. 206-232.000.

- Kaplan, Robert L.: See—
McGowan, George A.; and Kaplan, Robert L., 4,641,288, Cl. 367-20.000.
- Kapoor, Anoop, to Westinghouse Electric Corp. Nuclear fuel rod loading fixture for use in a remote repair system, 4,639,993, Cl. 29-400.00N.
- Kapoor, Ashok K.: See—
Thomas, Michael E.; Vora, Madhukar B.; and Kapoor, Ashok K., 4,640,004, Cl. 29-590.000.
- Kappus, Gunter: See—
Habfast, Karl-Eugen; Kappus, Gunter; Rache, Horst; and Windel, Bernd, 4,641,029, Cl. 250-288.000.
- Kapuscinski, Maria M.; Liu, Christopher S.; Hart, William P.; and Grina, Larry D., to Texaco Inc. Hydrocarbon compositions containing polyolefin graft polymers, 4,640,788, Cl. 252-51.50R.
- Karau, Robert T.: See—
Kaplan, Gary M.; Karau, Robert T.; Winney, Norman E., Jr.; and Brader, David G., 4,640,413, Cl. 206-232.000.
- Karsh, Herbert; and Calaway, Ward M., to Eastman Kodak Company. Signal correction apparatus, 4,641,324, Cl. 375-76.000.
- Kasai, Junichi; and Imai, Hiroshi, to Nissan Motor Company, Limited. Audio equipment, 4,641,344, Cl. 381-57.000.
- Kasai, Kazumi, to Nippon Notion Kogyo Co., Ltd. Releasable buckle, 4,639,982, Cl. 24-616.000.
- Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, to Kabushiki Kaisha Meidensha. Contact material of vacuum interrupter and manufacturing process therefor, 4,640,999, Cl. 200-144.00B.
- Kasper, James J.; and Jeffreys, John H., to Watteredge-Uniflex, Inc. Cable termination and method, 4,640,982, Cl. 174-75.00R.
- Kastel, Walter; and Geiger, Wolfgang, to Endress u. Hauser GmbH u. Co. Sensor, 4,640,135, Cl. 73-716.000.
- Kataishi, Ryuichiro: See—
Seki, Hiroshi; and Kataishi, Ryuichiro, 4,640,628, Cl. 374-141.000.
- Kataoka, Keiji; and Saito, Susumu, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Lens-on-disc type optical scanning apparatus, 4,640,573, Cl. 350-6.100.
- Katchka, Jay R.; Yeaman, George A.; and McKinney, Richard W., to Robertshaw Controls Company. Burner control device, system and method of making the same, 4,640,676, Cl. 431-54.000.
- Kato, Hidetoshi; Maehara, Fuyuki; and Mayumi, Nobuo, to Nippondenso Co., Ltd. Battery voltage regulating system, 4,641,079, Cl. 320-64.000.
- Kato, Hidetoshi: See—
Musha, Kazuhiko; Tago, Kohichi; and Kato, Hidetoshi, 4,641,196, Cl. 358-246.000.
- Kato, Hiroyuki; and Yamana, Toshifumi, to Rinnai Kabushiki Kaisha. Ceramic burner plate for gas combustion, 4,640,261, Cl. 126-39.00J.
- Kato, Shigeru; Osada, Naomi; Ichitoh, Toshikatsu; Murata, Masae; and Mochizuki, Masumi, to Victor Company of Japan, Limited. Thermal transfer recording apparatus, 4,641,151, Cl. 346-76.0PH.
- Kato, Takeo: See—
Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, 4,640,329, Cl. 152-209.00R.
- Kato, Tetsuro: See—
Nakamura, Yoshiyuki; Kato, Tetsuro; and Ebihara, Norio, 4,641,202, Cl. 358-313.000.
- Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, to Olympus Optical Co., Ltd. Exposure control device for electronic photographing apparatus, 4,641,215, Cl. 360-35.100.
- Katoh, Shohichi: See—
Okibayashi, Katsushi; Itoh, Masataka; and Katoh, Shohichi, 4,641,359, Cl. 382-68.000.
- Katz, Marcella M. Flexible non-distortable handcraft sheet material and method of applying printed designs thereto, 4,640,529, Cl. 281-5.000.
- Katz, Stanley A.: See—
Decker, Joseph A., Jr.; Fiore, Joseph F., Jr.; and Katz, Stanley A., 4,640,392, Cl. 190-108.000.
- Kavanaugh, Mark A.: See—
Hoffman, Robert K.; Kavanaugh, Mark A.; and Franson, David C., 4,640,309, Cl. 137-596.180.
- Kawada, Shinichi: See—
Fukunaga, Yasushi; Kuzunuki, Soshiro; Shojima, Hiroshi; Yokoyama, Takanori; Koga, Kazuyoshi; Hirasawa, Kotaro; and Kawada, Shinichi, 4,641,354, Cl. 382-13.000.
- Kawade, Hideji; Takahashi, Hideaki; Sato, Yoshiyuki; and Urayama, Yuji, to Tamura Electric Works Ltd.; and Victor Company of Japan Limited. Telephone answering apparatus having two integrators of different time constants, 4,640,990, Cl. 379-77.000.
- Kawaguchi, Masashi; and Yasumune, Masaru, to Kabushiki Kaisha Furukawa Seisakusho. Automatic packaging apparatus, 4,640,081, Cl. 53-510.000.
- Kawai, Katsuhiko: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiko; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.
- Kawakami, Eigo: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.
- Kawamura, Yoshihisa; and Fukuzumi, Shuzo, to Nissan Motor Company, Limited. System for controlling an ignition timing in an internal combustion engine and method therefor, 4,640,249, Cl. 123-425.000.
- Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Electronic computer with aural output, 4,641,258, Cl. 364-710.000.
- Kawanishi, Tsuneki; Mori, Yasuki; Noguchi, Koji; and Iimura, Tsutomu, to Hitachi Metals Co., Ltd.; and Hitachi, Ltd. Electrophotographic process with magnetic brush development using semiconductive ferrite carriers, 4,640,880, Cl. 430-106.600.
- Kawasaki Jukogyo Kabushiki Kaisha: See—
Nakano, Hideaki; and Ozu, Tadashi, 4,640,236, Cl. 123-41.790.
- Kawasaki Steel Corporation: See—
Irie, Toshio; Kyono, Kazuaki; Kimura, Hajime; and Kurokawa, Shigeo, 4,640,872, Cl. 428-659.000.
- Kawata, Ken; Yabuki, Yoshiharu; Sato, Kozo; and Hirai, Hiroyuki, to Fuji Photo Film Co., Ltd. Heat-developable light-sensitive material, 4,640,892, Cl. 430-617.000.
- Kawata, Ken: See—
Yabuki, Yoshiharu; Sato, Kozo; Kawata, Ken; and Hirai, Hiroyuki, 4,640,891, Cl. 430-551.000.
- Keller, Jakob: See—
Dueng, Thomas; Escudier, Marcel; and Keller, Jakob, 4,640,806, Cl. 264-9.000.
- Kelley, David C.: See—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,640,865, Cl. 428-421.000.
- Kelly, David L.: See—
Grist, Warren W.; and Kelly, David L., 4,640,491, Cl. 249-219.00W.
- Kelly, Patrick S.; Oswald, Thomas; Jeal, Alan J.; Hill, Stephen E.; and Murphy, Robert, to STC PLC. Power feeding submarine telecommunications systems, 4,641,372, Cl. 455-601.000.
- Kelly, Richard P.: See—
Joyce, Thomas F.; and Kelly, Richard P., 4,641,305, Cl. 371-12.000.
- Kelm, Roger W., to Duracell Inc. Metal/air cell, 4,640,874, Cl. 429-27.000.
- Kemper, Kyran B.; and Vetter, Robert W., Jr., to AT&T Company; and AT&T Bell Laboratories. Mechanized loop testing using a local metallic access port, 4,641,299, Cl. 370-15.000.
- Kendall Company, The: See—
Lewis, Terry D., 4,640,128, Cl. 73-866.500.
- Kennecott Corporation: See—
Cerdan-Diaz, Juan M.; Sanders, Michael J.; and Wellar, Mark E., 4,640,848, Cl. 427-426.000.
- Kensinger, Roger C. Convertible bedding assembly and mattress, 4,639,952, Cl. 5-13.000.
- Keprda, Jaroslav, to Siemens Aktiengesellschaft. Key module for keyboards having a dome-shaped key member of resilient material, 4,641,004, Cl. 200-340.000.
- Kern, Donald W. Ozone injection method and apparatus, 4,640,783, Cl. 210-760.000.
- Kerschbaum, Ewald: See—
Hartmann, Hans; and Kerschbaum, Ewald, 4,640,382, Cl. 181-175.000.
- Keryhuel, Alain; and Meigne, Christian, to Burroughs Corporation. Semiconductor package with contact springs, 4,641,176, Cl. 357-74.000.
- Kesler, Gregory J.: See—
Jorgensen, Robert W.; Lewis, Thomas E.; and Kesler, Gregory J., 4,640,433, Cl. 220-266.000.
- Khang, Soon-Jai: See—
Lee, Kew-Ho; and Khang, Soon-Jai, 4,640,901, Cl. 501-81.000.
- Khoshnevisan, Mohsen: See—
Tracy, John M.; Yeh, Pochi A.; and Khoshnevisan, Mohsen, 4,640,618, Cl. 356-345.000.
- Khoury, Issam A.; Heistand, Robert H., II; and Kohatsu, Iwao, to Dow Chemical Company, The. Thin tape for dielectric materials, 4,641,221, Cl. 361-321.000.
- Kibe, Satoshi: See—
Mori, Makihiko; Kibe, Satoshi; and Maeda, Toyohiro, 4,640,761, Cl. 208-44.000.
- Kiel, Bernd: See—
Fauk, Gerhard; Kiel, Bernd; and Ulrich, Helmut, 4,640,556, Cl. 303-22.00R.
- Kiesel, George W.: See—
Morris, Robert A.; Rajotte, Paul T.; Russell, Ronald R.; and Kiesel, George W., 4,641,217, Cl. 361-45.000.
- Kikuchi, Hiroshi: See—
Niinomi, Tatsuya; and Kikuchi, Hiroshi, 4,640,663, Cl. 414-730.000.
- Kikuchi, Toshiyuki: See—
Higashi, Haruki; Yashiki, Seiji; Waki, Kouichirou; and Kikuchi, Toshiyuki, 4,640,394, Cl. 192-3.290.
- Kilbane, George J.; and Subrahmanian, K. P., to Minnesota Mining and Manufacturing Company. Foam-sealed electrical devices and method and composition therefor, 4,640,978, Cl. 174-23.00R.
- Kim, Bumman; and Tserng, Hua Q., to Texas Instruments Incorporated. Heterojunction device, 4,641,161, Cl. 357-22.000.
- Kim, Choung U.; and Misco, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics, 4,640,799, Cl. 540-350.000.
- Kimball, David J.: See—
Sylvester, Judith M.; and Kimball, David J., 4,640,790, Cl. 252-62.540.
- Kimberly-Clark Corporation: See—
Ales, Thomas M.; Strohbeen, David T.; Damico, Joyce A.; Van Gompel, Paul T.; and Abel, Kent W., 4,639,949, Cl. 2-400.000.
- Sallee, Lorry F.; and Popp, Robert L., 4,640,726, Cl. 156-85.000.
- Kimoto, Kiyoshi: See—
Mizunoe, Katsumi; Yanai, Junichi; and Kimoto, Kiyoshi, 4,641,296, Cl. 369-46.000.

- Kimura, Hajime: See—
Irie, Toshio; Kyono, Kazuaki; Kimura, Hajime; and Kurokawa, Shigeo, 4,640,872, Cl. 428-659.000.
- Kimura, Katsuji: See—
Yokoyama, Yukio; Kimura, Katsuji; and Goto, Naohisa, 4,641,366, Cl. 455-89.000.
- Kimura, Katsutaka; Hori, Ryoichi; Ito, Kiyoo; and Sunami, Hideo, to Hitachi, Ltd. Semiconductor memory device having a dummy cell and a memory cell which is twice the size of the dummy cell, 4,641,279, Cl. 365-149.000.
- Kimura, Shigeaki: See—
Oe, Tsutomu; Kimura, Shigeaki; Yuzaki, Yoshinori; and Ozaki, Tadao, 4,640,453, Cl. 228-17.700.
- Kimura, Tadashi: See—
Iba, Yoichi; Kimura, Tadashi; and Kajitani, Kazuo, 4,640,586, Cl. 350-414.000.
- Kimura, Tsutomu, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing system, 4,641,242, Cl. 364-414.000.
- Kind, Stuart S.; Sanger, David G.; Twibell, John D.; and Hargraves, John, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Identifying means, 4,640,035, Cl. 40-625.000.
- Kinki Denki Co., Ltd.: See—
Tomita, Masao, 4,640,794, Cl. 252-194.000.
- Kinoshita, Takao, to Canon Kabushiki Kaisha. Image pick-up apparatus, 4,641,183, Cl. 358-44.000.
- Kinoshita, Taketoshi: See—
Shimizu, Kimihiko; Nakahara, Tsuguji; Kinoshita, Taketoshi; Takatsuka, Jun; and Igarashi, Michiko, 4,640,835, Cl. 424-94.000.
- Kioritz Corporation: See—
Baba, Toru, 4,640,084, Cl. 56-12.700.
- Kirkhill Rubber Company: See—
Mock, Donald E., 4,640,314, Cl. 138-162.000.
- Kirsch, Bernhard. Ski boot with release mechanism, 4,640,026, Cl. 36-117.000.
- Kishida, Takao; and Fukaya, Takeo, to Toa Harbor Works, Co., Ltd. Method of and apparatus for measuring pile skin friction, 4,640,118, Cl. 73-9.000.
- Kishimoto, Masaru: See—
Imanishi, Kiyokazu; Naka, Hiroyuki; Sakurai, Yasuo; Ichihyanagi, Takashi; and Kishimoto, Masaru, 4,641,214, Cl. 360-130.240.
- Kitagawa Industries Co., Ltd.: See—
Matsui, Kazuhiro, 4,640,639, Cl. 403-24.000.
- Kitagishi, Tomoji: See—
Suzaki, Masafumi; Mikami, Katsumasa; Nagano, Yousuke; and Kitagishi, Tomoji, 4,641,149, Cl. 346-76.0PH.
- Kitajima, Eiji: See—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Yamazaki, Heima; Kitajima, Eiji; and Sunada, Tomonori, 4,640,822, Cl. 422-111.000.
- Kitakizaki, Kaoru: See—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,640,999, Cl. 200-144.00B.
- Kitano, Kisei: See—
Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, 4,640,795, Cl. 252-299.500.
- Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Itoyama, Toyohiro; and Nigorioka, Kazunori, 4,640,796, Cl. 252-299.610.
- Kitchen, John A., to John A. Kitchen Ltd. Pulse combustion apparatus, 4,640,674, Cl. 431-1.000.
- Kittle, Carl E.; LaFave, Arthur J.; and Olson, David L., to Deere & Company. Draft sensor including strain sensor coupled to load strap, 4,640,368, Cl. 172-430.000.
- Klapper, Kenneth K.: See—
Widener, Wade H.; and Klapper, Kenneth K., 4,640,407, Cl. 198-389.000.
- Klaren, Dick G., to Esmil B.V. Apparatus for carrying out physical and/or chemical processes, more specifically a heat exchanger of the continuous type, 4,640,339, Cl. 165-1.000.
- Klauke, Erich: See—
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hansler, Gerd, 4,640,923, Cl. 514-272.000.
- Kleiner, Frank: See—
Zecher, Wilfried; Reinking, Klaus; and Kleiner, Frank, 4,640,970, Cl. 528-73.000.
- Klemm, Robert E., to Construction Forms, Inc. Adjustable pipe extender for high pressure lines carrying abrasive materials, 4,640,533, Cl. 285-62.000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—
Steinbiss, Eberhard; Herchenbach, Horst; and Wolter, Albrecht, 4,640,681, Cl. 432-14.000.
- Wolter, Albrecht; Hartmann, Rolf; Herchenbach, Horst; and Grieser, Alexander, 4,640,203, Cl. 110-346.000.
- Knapek, Erwin: See—
Schmid, Ralf; Otto, Johann; Bernklau, Daniela; and Knapek, Erwin, 4,640,626, Cl. 374-57.000.
- Kneib, Kristine N., to ITT Corporation. Multiprocessor system employing dynamically programmable processing elements controlled by a master processor, 4,641,238, Cl. 364-200.000.
- Knodel, Gunter; and Helms, Georg, to GETRAG Getriebe- und Zahnradfabrik GmbH. Gearbox-transmission with synchronized reverse gear, 4,640,141, Cl. 74-357.000.
- Knorr-Bremse AG: See—
Saumweber, Eckart; and Schmitt, Otto, 4,640,390, Cl. 188-73.370.
- Knothe, Herbert; and Roschmann, Klaus, to Teldec Schallplatten GmbH. Process for producing a cutting base, 4,640,745, Cl. 204-5.000.
- Koa Oil Company, Limited: See—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Yamazaki, Heima; Kitajima, Eiji; and Sunada, Tomonori, 4,640,822, Cl. 422-111.000.
- Kobayashi, Atsuo: See—
Nishino, Kenichi; Kobayashi, Atsuo; Higashi, Sachio; Yamamoto, Shinichiro; and Yasuda, Kiyoshi, 4,640,950, Cl. 524-265.000.
- Kobayashi, Kenichi, to Fujitsu Limited. Inspection method and apparatus for a mask pattern used in semiconductor device fabrication, 4,641,353, Cl. 382-8.000.
- Kobayashi, Masao: See—
Wudl, Fred; Kobayashi, Masao; and Heeger, Alan, 4,640,748, Cl. 204-59.00R.
- Kobayashi, Michio, to Jidosha Kiki Co. Ltd. Brake booster, 4,640,097, Cl. 60-554.000.
- Kobayashi, Noboru, to Kabushiki Kaisha Toshiba. Input circuit for a stacked type piezo-electric element device, 4,641,052, Cl. 310-317.000.
- Kobayashi, Satoru: See—
Imazumi, Haruo; and Kobayashi, Satoru, 4,640,123, Cl. 73-61.10R.
- Kobayashi, Takehiro: See—
Murakami, Hideo; and Kobayashi, Takehiro, 4,640,471, Cl. 242-84.530.
- Kobayashi, Teruo; and Uchida, Sadao, to Toyoda Gosei Co., Ltd. Steering wheel with integrally-skinned foamed thermoplastic resin-covered handwheel core having flow mark-obscuring abrasion-resistant coating, 4,640,150, Cl. 74-552.000.
- Kobayashi, Toshifumi: See—
Mashiko, Koichiro; Yamada, Michihiro; Arimoto, Kazutami; Miyamoto, Hiroshi; Kobayashi, Toshifumi; and Morooka, Yoshiakazu, 4,641,281, Cl. 365-189.000.
- Kobayashi, Yoshiaki: See—
Fujihisa, Hiroaki; Fujii, Hiroshi; Ohishi, Hiroto; and Kobayashi, Yoshiaki, 4,641,001, Cl. 200-153.00G.
- Kodama, Katsuhiko; and Yamazoe, Hisamitsu, to Nippondenso Co., Ltd. Engine control with exhaust gas recirculation, 4,640,257, Cl. 123-571.000.
- Koehler, Gernot: See—
Naarmann, Herbert; Koehler, Gernot; and Schlag, Johannes, 4,640,749, Cl. 204-59.00R.
- Koen, Myron J.: See—
Halbert, Joel M.; and Koen, Myron J., 4,641,246, Cl. 364-487.000.
- Koenig, Linda S. Restraining garment with detachable bib, 4,639,946, Cl. 2-49.00R.
- Koerner, Rudi. Apparatus for casting materials for false teeth, 4,640,334, Cl. 164-287.000.
- Koga, Kazuyoshi: See—
Fukunaga, Yasushi; Kuzunuki, Soshiro; Shojima, Hiroshi; Yokoyama, Takanori; Koga, Kazuyoshi; Hirasawa, Kotaro; and Kawada, Shinichi, 4,641,354, Cl. 382-13.000.
- Kohatsu, Iwao: See—
Khoury, Issam A.; Heistand, Robert H., II; and Kohatsu, Iwao, 4,641,221, Cl. 361-321.000.
- Kohayakawa, Masami, to Toko, Inc. Delay line device and method of making same, 4,641,112, Cl. 333-140.000.
- Kohno, Teruo, to Victor Company of Japan, Limited. Camera holder, 4,640,481, Cl. 248-126.000.
- Koike, Akihiko: See—
Koike, Yuzuru; Koike, Akihiko; and Ueno, Masayuki, 4,640,244, Cl. 123-339.000.
- Koike, Yuzuru; Koike, Akihiko; and Ueno, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Idling speed feedback control method for internal combustion engines, 4,640,244, Cl. 123-339.000.
- Koiwai, Sakae; Asaka, Keizo; Shirasawa, Katsuhiko; Watanabe, Hiroyuki; and Honda, Junichi, to Japan Solar Energy Co., Ltd. Solar cell manufacturing method, 4,640,001, Cl. 29-572.000.
- Kojima, Hiroshi: See—
Shibata, Junichi; and Kojima, Hiroshi, 4,641,116, Cl. 333-204.000.
- Kokubu, Yoshinori; and Moriyasu, Makoto, to Asahi Glass Company, Ltd. Low expansion glass, 4,640,900, Cl. 501-67.000.
- Kolb, Dieter; and Pieper, Norbert, to Fichtel & Sachs AG. Friction clutch with tangential leaf springs, 4,640,398, Cl. 192-70.180.
- Kollektivgesellschaft Eberhard, Steiner & Dr. Stocker: See—
Steiner, Paul; and Stocker, Bruno, 4,640,451, Cl. 227-76.000.
- Koltookian, Sarkis A., to Deere & Company. Vehicle clutch lube control system, 4,640,401, Cl. 192-85.00R.
- Komaki, Shigeki, to Sharp Kabushiki Kaisha. Electronic apparatus with a flat panel keyboard unit, 4,640,994, Cl. 200-5.00A.
- Komatsu, Moriyuki: See—
Noda, Kazushi; Komatsu, Moriyuki; and Mitsunaga, Hiroshi, 4,640,340, Cl. 165-41.000.
- Komatsu, Satsuki, to Olympus Optical Co., Ltd. Ion concentration measuring apparatus, 4,641,084, Cl. 324-71.500.
- Komorita, Kazuo; Miyoshi, Masanobu; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide multi-layer color photographic material, 4,640,889, Cl. 430-505.000.
- Komossa, Werner; Hausler, Nikolaus; and Eisner, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for grinding the knives in tobacco cutting machines, 4,640,059, Cl. 51-5.00D.
- Kompis, Ivan; and Weiss, Ekkehard, to Hoffmann-La Roche Inc. Substituted 2-phenyl-1,3-dioxolanes, 4,640,918, Cl. 514-222.000.
- Komuro, Toshio, to Sony Corporation. Cassette tape player combined with a radio receiver which has multiple push buttons such that the

- stop push button can be used to turn off either the cassette tape player or the radio receiver. 4,641,293, Cl. 369-6.000.
- Kondo, Hiroatsu: See—
Ozawa, Toshiaki; Yamada, Yasuaki; and Kondo, Hiroatsu, 4,640,634, Cl. 400-144.200.
- Kondo, Mitsuru; Okimoto, Tomoyuki; and Kanda, Nobuo, to Kanzaki Paper Manufacturing Co., Ltd. Recording system utilizing phthalide derivatives as colorless chromogenic material. 4,641,160, Cl. 346-220.000.
- Konig, Heinz: See—
Heinemann, Zoltan; and Konig, Heinz, 4,640,356, Cl. 166-272.000.
- Konishi, Kazuo: See—
Mitsudera, Hiroyuki; Konishi, Kazuo; and Sato, Yasuo, 4,640,929, Cl. 514-436.000.
- Konishi, Yozo; Akashi, Kichizo; Watase, Hideo; and Yoshioka, Tatsuo, to Hitachi, Ltd. Piling planning method and piling system of cargoes by palletizing robot. 4,641,271, Cl. 364-478.000.
- Konishiroku Photo Industry Co., Ltd.: See—
Konomura, Kazuo; Miyoshi, Masanobu; and Onodera, Kaoru, 4,640,889, Cl. 430-505.000.
- Shoji, Hisashi; Haneda, Satoshi; and Hiratsuka, Seichiro, 4,641,200, Cl. 358-296.000.
- Kopola, Harri: See—
Myllyla, Risto; Kopola, Harri; Kostamovaara, Juha; and Ahola, Raimo, 4,640,514, Cl. 273-310.000.
- Koppers, Manfred; Bohnes, Karlheinz; and Amling, Friedel, to Bochumer Eisenhütte Heintzmann GmbH & Co. Kg. Hydraulically operated unit for roof support. 4,640,650, Cl. 405-290.000.
- Koroscil, Anthony, to American Cyanamid Company. Chemiluminescent light container. 4,640,193, Cl. 102-336.000.
- Koseki, Ryoji, to Amada Engineering Service Co., Inc. Laser tube holder in a laser oscillator. 4,641,314, Cl. 372-65.000.
- Koshigoe, Shinpei; and Fujiwara, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron gun. 4,641,058, Cl. 313-449.000.
- Kosowsky, Ram: See—
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- Kostamovaara, Juha: See—
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- Kowalczyk, Thaddeus. Security eyes for prevention of car accidents. 4,641,136, Cl. 340-903.000.
- Kowalik, Ralph M.: See—
Peiffer, Dennis G.; Kowalik, Ralph M.; and Lundberg, Robert D., 4,640,945, Cl. 523-336.000.
- Koyama, Shigeo: See—
Kozuka, Nobuhiko; Koyama, Shigeo; and Kano, Atsushi, 4,640,604, Cl. 355-3.00R.
- Koyo Jidoki Kabushiki Kaisha: See—
Daido, Toshihiko; Matsubara, Hideo; and Hirakushi, Shuzo, 4,640,380, Cl. 180-141.000.
- Koyo Seiko Kabushiki Kaisha: See—
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Rubik, Erno, 4,640,062, Cl. 52-109.000.
- Kozuka, Nobuhiko; Koyama, Shigeo; and Kano, Atsushi, to Mita Industrial Co., Ltd. Electrostatic photographic copying machine provided with a movable sorter. 4,640,604, Cl. 355-3.00R.
- Kraftwerk Union Aktiengesellschaft: See—
Kroning, Michael; Holzler, Georg; and Heumuller, Roland, 4,640,131, Cl. 73-600.000.
- Leuker, Wilhelm; Stipsits, Gunter; and Thiel, Bernhard, 4,640,121, Cl. 73-40.50A.
- Weber, Robert; and Forster, Josef, 4,640,346, Cl. 165-95.000.
- Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., to Mobil Oil Corporation. Apparatus for injecting liquid hydrocarbon feed and steam into a catalytic cracking zone. 4,640,463, Cl. 239-424.000.
- Kramer, Manfred: See—
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- Krasnov, Igor: See—
Kucher, Alexander; Krasnov, Igor; and Bromberg, Yury, 4,640,384, Cl. 182-51.000.
- Kratz, Walter. Reflector for linear light sources. 4,641,226, Cl. 362-218.000.
- Kreider, David R.; McCallum, Albert; Rose, Philip M.; and Lin, Chih-Hung, to Standard Oil Company (Indiana). Method and apparatus for recycle of entrained solids in off-gas from a gas-phase polyolefin reactor. 4,640,963, Cl. 526-67.000.
- Kremsmünster, Austria: See—
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- Kriov, Alexandre, to Minister for Industry and Decentralization of the State of New South Wales. The. Ultra high pressure water log debarking. 4,640,327, Cl. 144-340.000.
- Kroning, Michael; Holzler, Georg; and Heumuller, Roland, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for the ultrasonic testing of bolts with a wall thickness discontinuity. 4,640,131, Cl. 73-600.000.
- Krueger, William H.: See—
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- Kruger, Klaus: See—
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- Krukas, David: See—
Lerner, Joseph S.; and Krukas, David, 4,640,731, Cl. 156-355.000.
- Kubo, Junichi, to Nippon Oil Co., Ltd. Method for cracking heavy hydrocarbon oils. 4,640,765, Cl. 208-110.000.
- Kubo, Tateo: See—
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- Kubota, Kenji: See—
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- Kudo, Sinji, to Stanley Electric Co., Ltd. Pulse absorption circuit for power source circuit. 4,641,230, Cl. 363-56.000.
- Kuhbauch, Gerd, to Robert Bosch GmbH. Windshield wiper device. 4,639,966, Cl. 15-250.230.
- Kuhle, Engelbert: See—
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- Kuhnel, Hans D.: See—
Breimeier, Kurt; Eickhoff, Heinrich; Erdmann, Hans-Walter; and Kuhnel, Hans D., 4,640,054, Cl. 49-504.000.
- Kuipers, Ulrich: See—
Bonfig, Karl-Walter; Himmel, Jorg; and Kuipers, Ulrich, 4,641,120, Cl. 337-242.000.
- Kuka Wehrtechnik GmbH: See—
Schiele, August; and Huber, Wolfgang, 4,640,181, Cl. 89-46.000.
- Kules, Madeline A., to Grumman Aerospace Corporation. Automated process for cold working holes. 4,640,114, Cl. 72-22.000.
- Kullmann, Jorg: See—
Kullmann, Rolf; and Kullmann, Jorg, 4,640,172, Cl. 83-835.000.
- Kullmann, Rolf; and Kullmann, Jorg, to Wilhelm H. Kullmann Wikus-Sagenfabrik. Saw blade. 4,640,172, Cl. 83-835.000.
- Kulzer & Co. GmbH: See—
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- Kumagai, Ken, to Concast AG. Roller apron for casting of support-profiles or sectional shapes and blooms in a continuous casting installation. 4,640,338, Cl. 164-448.000.
- Kumagai, Naotake: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Kumagata Safe Co., Inc.: See—
Hashizume, Masao, 4,640,111, Cl. 70-314.000.
- Kumura, Yukimasa: See—
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- Kuo, Yue. Semiconductor spin coating method. 4,640,846, Cl. 427-82.000.
- Kuraray Co., Ltd.: See—
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- Gion, Hidenori; Kubota, Kenji; Nakamura, Michihiro; and Yano, Makoto, 4,641,249, Cl. 364-496.000.
- Kurata, Masayuki: See—
Machara, Toshifumi; and Kurata, Masayuki, 4,640,391, Cl. 188-353.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Okada, Yoshio; and Igarashi, Yuriko, 4,640,847, Cl. 427-150.000.
- Kurk, Robert L. Wood cutting apparatus. 4,640,161, Cl. 83-104.000.
- Kurokawa, Shigeo: See—
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- Kuroki, Satoshi: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.
- Kurotobi, Yohji: See—
Ohishi, Toshio; and Kurotobi, Yohji, 4,640,698, Cl. 55-502.000.
- Kurotori, Tsuneo: See—
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- Kurtz, Thomas D. Door hinge shim. 4,639,971, Cl. 16-247.000.
- Kurzbock, Erich, to Teufelberger Gesellschaft m.b.H. Rope. 4,640,178, Cl. 87-6.000.
- Kusch & Co. Stizmobelwerke KG: See—
Desanta, Simon, 4,640,548, Cl. 297-320.000.
- Kuse, Kazuki, to Yoshida Kogyo K. K. Apparatus for combining fastener stringers. 4,640,008, Cl. 29-767.000.
- Kushida, Hachiro, to Citizen Watch Co., Ltd. External member for a watch. 4,640,625, Cl. 368-280.000.
- Kushino, Mitsuo: See—
Tsubakimoto, Tsuneo; Fujikawa, Iwao; and Kushino, Mitsuo, 4,640,584, Cl. 350-344.000.
- Kushner, Gerald J.; and Toma, Daniel N., to General Electric Company. Automatic washer suspension system. 4,640,105, Cl. 68-23.300.
- Kusuhara, Masaki, to Wacom Co., Ltd. Solar simulator. 4,641,227, Cl. 362-231.000.
- Kuze, Takashi: See—
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- Kuzunuki, Soshiro: See—
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- Kyle, John R.: See—
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- Kyono, Kazuaki: See—
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- Kyowa Hakkō Kogyo Co., Ltd.: See—
Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, 4,640,919, Cl. 514-241.000.
- La Telemecanique Electrique: See—
Lalloz, Paul; and Vo, Hung A., 4,641,270, Cl. 364-476.000.
- Lab Products, Inc.: See—
Sedlacek, Robert S.; and Campbell, Neil, 4,640,228, Cl. 119-15.000.
- Labas, Nicholas: See—
Schraff, Raymond J.; Miller, Thomas M.; and Labas, Nicholas, 4,640,202, Cl. 110-336.000.
- LaBate, Michael D.; and Perti, Joseph, to Insul Company, Inc. Horizontally and vertically movable elevated apparatus for placing slag retaining means in tapping converters. 4,640,498, Cl. 266-272.000.
- Laboe, Lauren M.: See—
Green, George D.; Laboe, Lauren M.; and Cook, Richard, 4,641,207, Cl. 360-55.000.
- Lach, Horst. Process and device for treatment of metal-bonded nonconductive materials. 4,641,007, Cl. 219-69.00M.
- LaFave, Arthur J.: See—
Kittle, Carl E.; LaFave, Arthur J.; and Olson, David L., 4,640,368, Cl. 172-430.000.
- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Gibot, Claude, 4,640,099, Cl. 62-62.000.
- Lake Charles Instruments, Inc.: See—
Carpenter, Frank, 4,640,125, Cl. 73-259.000.
- Lakes, Sherman, to Day Star Concepts. Coated, heat shrinkable expanded polystyrene. 4,640,862, Cl. 428-308.400.
- Lakes, Stephen D.: See—
Seitz, Paul W.; Lewis, Maurice W.; and Lakes, Stephen D., 4,641,159, Cl. 346-200.000.
- Lakin, Kenneth M.: See—
Wang, Jin S.; Lakin, Kenneth M.; and Landin, Allen R., 4,640,756, Cl. 204-192.180.
- Lalloz, Paul; and Vo, Hung A., to La Telemecanique Electrique. Process for manufacturing a mold using three-dimensional computer modelling. 4,641,270, Cl. 364-476.000.
- Lamond, Lee T.; and Staton, Richard D., to Fichtel & Sachs Industries. Support column with gravity dependent retention means. 4,640,484, Cl. 248-407.000.
- Lamot, Jerzy. Wear plate for flush valve assembly. 4,639,951, Cl. 4-392.000.
- Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Newkirk, Charles V., to Dow Chemical Company. The. Barrier film structures. 4,640,865, Cl. 428-421.000.
- Landin, Allen R.: See—
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- Lane, Wendell C., Jr., to Dana Corporation. Multiple function control stalk including pivotable headlight dimmer switch. 4,640,997, Cl. 200-61.540.
- Lange, Fred F., to Rockwell International Corporation. Low thermal conductivity Si₃N₄/ZrO₂ composite ceramics. 4,640,902, Cl. 501-97.000.
- Lange, Ludwig: See—
Bittner, Friedrich; Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; and Splett, Erich, 4,640,832, Cl. 423-562.000.
- Langer, Rudolf, to Lindauer Dormier Gesellschaft mbH. Guide track for a tentering chain. 4,639,984, Cl. 26-89.000.
- Langham, Barry J.: See—
White, Alan C.; Shepherd, Robin G.; and Langham, Barry J., 4,640,924, Cl. 514-291.000.
- Lanscioni, Richard. Golf glove. 4,639,947, Cl. 2-161.00A.
- La Porte, Allen R. Device for picking up small pieces of litter. 4,640,539, Cl. 294-19.100.
- Larsen, Hans-Ole, to Mia-Lens Production A/S. Mold for making contact lenses, either the male or female mold sections being relatively more flexible. 4,640,489, Cl. 249-122.000.
- Larson, Curtis L.: See—
Isakson, Gary A.; and Larson, Curtis L., 4,640,838, Cl. 426-107.000.
- Larson, William A.: See—
Soderquist, Mark E.; Muthyala, Ramaiah; Larson, William A.; and Doty, Peter A., 4,640,786, Cl. 252-8.551.
- Laser Precision Corporation: See—
Hughes, Norman S.; and Doyle, Walter M., 4,640,617, Cl. 356-326.000.
- Lashley, Lester; Lashley, R. Craig; and Lashley, Russel E. Armor for motorcycles. 4,639,944, Cl. 2-2.000.
- Lashley, R. Craig: See—
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- Lasswell, Patrick G.: See—
Phillips, James E.; and Lasswell, Patrick G., 4,640,002, Cl. 29-574.000.
- Lathery, Willie M.: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.
- Lattion, Andre, to Sulzer Brothers Limited. Automat location system. 4,640,088, Cl. 57-263.000.
- Laugesen, Ronald C.; and Venkitakrishnan, Padmanabha I., to Advanced Micro Devices, Inc. Bit-sliced, dual-bus design of integrated circuits. 4,641,247, Cl. 364-490.000.
- Laursen, Henning; Mosgaard, John; Nielson, Otto V.; and Poland, Clark L., to Scan Web of North America, Inc. System for producing an air laid web. 4,640,810, Cl. 264-518.000.
- Lawrence, Alan J.: See—
Van Simaey, Françoise C. G.; Leurs, Anna M. C.; Upp, Daniel C.; Lawrence, Alan J.; and Cotton, John M., 4,641,301, Cl. 370-58.000.
- Lawrence, Ventura J.; Metcalf, Charles G.; and Silva, Lawrence H., to Tractor Plow Co., Inc. Roll-over disc plow. 4,640,367, Cl. 172-225.000.
- Lawson, Philip A. Method and apparatus for nondetrimental reduction of infant crying behavior. 4,640,267, Cl. 128-1.00R.
- Lazzari, Angelo A.: See—
Destree, Xavier P.; and Lazzari, Angelo A., 4,640,648, Cl. 405-229.000.
- LeaRon, Inc.: See—
Nobel, Fred I.; and Schram, David N., 4,640,746, Cl. 204-15.000.
- LeBlanc Corporation, The: See—
LeBlanc, James R., 4,640,563, Cl. 339-32.00M.
- LeBlanc, James R., to LeBlanc Corporation, The. Universal clasp structure for external electrode probes. 4,640,563, Cl. 339-32.00M.
- Lechon, Alain; and Viard, Alain, to Societe Nationale Elf Aquitaine (Production). Load carrying connection and hydraulic fluid transmission device. 4,640,096, Cl. 60-547.100.
- Lecuru, Daniel; and Choffy, Jean-Pierre, to Aerospatiale Societe Nationale Industrielle. Ultrasonic testing device provided with a rolling means. 4,640,133, Cl. 73-639.000.
- Lee, David O.; Montoya, Paul C.; and Wayland, James R., Jr., to United States of America. Energy. Methods for enhancing mapping of thermal fronts in oil recovery. 4,641,099, Cl. 324-323.000.
- Lee, Kew-Ho; and Khang, Soon-Jai, to University of Cincinnati. High temperature membrane. 4,640,901, Cl. 501-81.000.
- Lee, Shueh-Mien: See—
Becker, Scott T.; Bergman, Michael J.; and Lee, Shueh-Mien, 4,641,046, Cl. 307-448.000.
- Lee, Yanien: See—
Matuszak, Edward A.; Lee, Yanien; and Gillmore, Stephen R., 4,640,843, Cl. 426-560.000.
- Leftwich, William B.: See—
McElmurry, Terry J.; Davis, H. Coleman; Leftwich, William B.; and Markel, David, 4,639,953, Cl. 5-43.000.
- Leggett & Platt, Incorporated: See—
Wells, Thomas J.; and Serafini, Angelo, 4,639,957, Cl. 5-248.000.
- Lehmann, Eike; and Jannusch, Reiner, to Howaldtswerke-Deutsche Werft, Aktiengesellschaft. Device for reducing vibrations of periscopes. 4,640,216, Cl. 114-340.000.
- Lehner, Rolf P.: See—
Pfizenmaier, Wolfgang; Heidt, Heinrich; and Lehner, Rolf P., 4,641,070, Cl. 318-640.000.
- Leiber, Heinz: See—
Bertling, Hannes; and Leiber, Heinz, 4,640,555, Cl. 303-10.000.
- Leibfried, Wolfgang: See—
Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, 4,640,739, Cl. 156-659.100.
- Leigh-Monstevens, Keith V., to Automotive Products plc. Quick connect cylinder mount structure. 4,640,478, Cl. 248-27.100.
- Leis, Johann: See—
Leitgeb, Paul; Leis, Johann; and Winkler, Dietmar, 4,640,694, Cl. 55-26.000.
- Leitgeb, Paul; Leis, Johann; and Winkler, Dietmar, to Linde Aktiengesellschaft. Adsorption process. 4,640,694, Cl. 55-26.000.
- Leland Stanford Junior University, The Board of Trustees of the: See—
Shan, Tiejun J.; and Kailath, Thomas, 4,641,259, Cl. 364-724.000.
- Lembeck, Theo, to W. Schlafhorst & Co. Fiber conducting channel of an OE friction spinning device. 4,640,090, Cl. 57-401.000.
- Lemonnier, Jean, to Millipore Corporation. Membrane device for sterility testing. 4,640,777, Cl. 210-433.200.
- Lenox, Ronald S.; Schwartz, Anne L.; and Hoyle, Charles E., to Armstrong World Industries, Inc. Mono-sulfonyl azide composition used to photolytically develop a colored image on a cellulosic material. 4,640,885, Cl. 430-197.000.
- Lerner, Joseph S.; and Krukas, David, to Loveshaw Corporation, The. Apparatus for taping cartons. 4,640,731, Cl. 156-355.000.
- Lerner, Reuben. Combined head rest, sun shade and bag. 4,639,958, Cl. 5-418.000.
- Lescha Maschinenfabrik GmbH: See—
Schmid, Dieter, 4,640,465, Cl. 241-37.500.
- Leuker, Wilhelm; Stipsits, Gunter; and Thiel, Bernhard, to Kraftwerk Union Aktiengesellschaft. Method for finding a leak in pressure-carrying vessels and apparatus for carrying out the method. 4,640,121, Cl. 73-40.50A.

Leurs, Anna M. C.: See—
Van Simaey, Françoise C. G.; Leurs, Anna M. C.; Upp, Daniel C.; Lawrence, Alan J.; and Cotton, John M., 4,641,301, Cl. 370-58.000.

Lever Brothers Company: See—
Bunschoten, Gerrit K., 4,640,441, Cl. 222-207.000.

Levino, Andre J., to Westinghouse Electric Corp. Electrical insulation taping machine with uniform tape tensioning. 4,640,086, Cl. 57-3.000.

Levolor Lorentzen, Inc.: See—
Georgopoulos, George, 4,639,987, Cl. 29-24.500.

Levy, Zubin. Sensory stimulation enclosure. 4,640,266, Cl. 128-1.00R.

Lew, Hyok S. Edge reinforced cabinet door with built-in door hardware. 4,640,053, Cl. 49-501.000.

Lewis, George L., to AT&T Information Systems Inc. Wire and cable organizing sleeve. 4,640,032, Cl. 40-316.000.

Lewis, Maurice W.: See—
Seitz, Paul W.; Lewis, Maurice W.; and Lakes, Stephen D., 4,641,159, Cl. 346-200.000.

Lewis, Terry D., to Kendall Company, The. Mechanism for proper alignment of sensor probes with fluid sample chamber. 4,640,128, Cl. 73-866.500.

Lewis, Thomas E.: See—
Jorgensen, Robert W.; Lewis, Thomas E.; and Kesler, Gregory J., 4,640,433, Cl. 220-266.000.

Leybold-Heraeus GmbH: See—
Grein, Lutz; and Matthiessen, Gunter, 4,640,455, Cl. 228-176.000.

Schmidt, Lothar, 4,640,136, Cl. 73-753.000.

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Leyrer, Reinhold J.; Wegner, Gerhard; and Mueller, Michael, to BASF Aktiengesellschaft. Degradation of poly(diacetylenes). 4,640,960, Cl. 525-388.000.

Leytus, Stephen: See—
Mangel, Walter F.; Leytus, Stephen; and Melhado, L. Lee, 4,640,893, Cl. 435-23.000.

Lezan, Georges R. E.: See—
Walker, Loren H.; and Lezan, Georges R. E., 4,641,231, Cl. 363-58.000.

Liang-Jr Lee: See—
Fan, Cheng-Kuo, 4,640,306, Cl. 137-390.000.

Liang, Shwu-Jian: See—
Garavuso, Gerald M.; Liang, Shwu-Jian; and Thettu, Ragbulinga R., 4,640,504, Cl. 271-113.000.

Licht, Wayne P.; and Hofstatter, Alfred F., to Metals Ltd. Method of object consolidation employing graphite particulate. 4,640,711, Cl. 75-248.000.

Liff, Walter H. Bird watering apparatus. 4,640,226, Cl. 119-1.000.

Lilly Industries Ltd.: See—
Corfield, John R.; and Miller, Andrew S., 4,640,798, Cl. 540-312.000.

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Kreider, David R.; McCullum, Albert; Rose, Philip M.; and Lin, Chi-Hung, 4,640,963, Cl. 526-67.000.

Lindahl, Thomas G.: See—
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Lindauer Dornier Gesellschaft mbH: See—
Langer, Rudolf, 4,639,984, Cl. 26-89.000.

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Lindenberg, Josef: See—
Schnepp-Pesch, Wolfram; and Lindenberg, Josef, 4,640,296, Cl. 128-754.000.

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Emerson, Andrew C.; and Foster, Stephen A., 4,641,050, Cl. 310-27.000.

Link, Helmut F.; Trautmann, Gunther; and Herrscher, Albert, to Index Werke Komm.-Ges. Hahn & Tessky. Multiple-spindle automatic lathe. 4,640,158, Cl. 82-3.000.

Linnau, Yendra: See—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; Wober, Gunter; Philapitsch, Anton; Linnau, Yendra; Dornier, Friedrich; Trambauer, Karl; and Frechinger, Wolfgang, 4,640,834, Cl. 424-94.000.

Liu, Christopher S.: See—
Kapusinski, Maria M.; Liu, Christopher S.; Hart, William P.; and Grina, Larry D., 4,640,788, Cl. 252-51.50R.

Liversidge, Barry P. Co-axial cable stripping tool and end portion preparation method. 4,640,009, Cl. 29-828.000.

Livesey, Declan B.; and Toma, Petre, to Texaco Canada Resources Ltd. Bitumen production through a horizontal well. 4,640,359, Cl. 166-276.000.

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Schmeal, W. R.; Singhal, S. N.; and Lo, K. H., 4,640,853, Cl. 428-35.000.

LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., to AT&T Bell Laboratories. Economical high-definition television using a modulated-signal combination. 4,641,179, Cl. 358-12.000.

Lock Jaws, Inc.: See—
Ferraro, Thomas A., 4,640,518, Cl. 279-123.000.

Lockhart, Robert K., Jr.: See—
Bass, Robert H.; Macko, William J.; and Lockhart, Robert K., Jr., 4,641,364, Cl. 455-32.000.

Lockheed Electronics Co., Inc.: See—
Opitz, Charles L.; and Chase, Paul E., 4,641,137, Cl. 342-52.000.

Opitz, Charles L., 4,641,138, Cl. 342-61.000.

Loctite Corporation: See—
Jacobine, Anthony F.; and Glaser, David M., 4,640,940, Cl. 522-99.000.

Loctite (Ireland) Limited: See—
Woods, John G.; and Rooney, John M., 4,640,849, Cl. 427-54.100.

London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, to Sara Lee Corporation. Apparatus for forming and presenting bias cut gussets in the formation of panty hose garments. 4,640,162, Cl. 83-152.000.

Lone Star Industries, Inc.: See—
Heitzmann, Richard E.; Fitzgerald, Mark; and Sawyer, James L., 4,640,715, Cl. 106-85.000.

Long, Edward A.: See—
Hamilton, James W., Jr.; and Long, Edward A., 4,641,074, Cl. 318-706.000.

Looney, Raymond H., to Baird Manufacturing Company. Overflow vent valve. 4,640,304, Cl. 137-202.000.

Lopata, Herman, to Lopata, Herman. Fraud resistant credit card system. 4,641,017, Cl. 235-457.000.

Lord Corporation: See—
Trull, Michael W.; and Powell, Richard C., 4,640,137, Cl. 73-862.040.

Loth, Eric, to Montres RADO SA. Hard metal watch case with a resistant coating. 4,640,869, Cl. 428-469.000.

Lounds, Bernard C. Router attachment. 4,640,324, Cl. 144-134.00D.

Louthan, Rector P.: See—
Bresson, Clarence R.; and Louthan, Rector P., 4,640,789, Cl. 252-61.000.

Lovatt, John. Collet chuck. 4,640,517, Cl. 279-2.00R.

Loveshaw Corporation, The: See—
Lerner, Joseph S.; and Krukas, David, 4,640,731, Cl. 156-355.000.

Lowe, Anthony E.: See—
Meyer, Richard A.; and Lowe, Anthony E., 4,640,138, Cl. 73-862.040.

Lower, Jerry L., to Zimmer, Inc. Bone screw. 4,640,271, Cl. 128-92.0YF.

Lowry, Bobby, to Lowry, June A. Protective bulk pack container for ice cream cones. 4,640,418, Cl. 206-499.000.

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Leynadier, Francisque; and Luce, Herve, 4,640,897, Cl. 436-501.000.

Lucius, Werner, to Webasto-Werk W. Baier GmbH & Co. Heater, especially a heater for vehicles. 4,640,262, Cl. 126-110.00B.

Luderer, Albert A.: See—
Carroll, Richard J.; Luderer, Albert A.; Smith, Ward C.; and Zine, Anthony R., Jr., 4,640,785, Cl. 210-782.000.

Ludwig, Frank, to P.T.E. Inc.; and American Energy Services, Inc. Utility pole tester. 4,640,119, Cl. 73-12.000.

Lugo, Steven H. Signal flag apparatus for water skiing. 4,640,213, Cl. 114-253.000.

Lukianoff, Sergei G. Hand held sanding device. 4,640,060, Cl. 51-391.000.

Lundberg, Robert D.: See—
Peiffer, Dennis G.; Kowalik, Ralph M.; and Lundberg, Robert D., 4,640,945, Cl. 523-336.000.

Lundergan, Robert G.; and McClune, Donald W., to AMP Incorporated. Detachable sealed multicontact electrical connector. 4,640,567, Cl. 339-94.00M.

Luoma, Robert P., II; and Willis, Frank M., to Du Pont de Nemours, E. I., and Company. Plasmapheresis filtration module having pressure balancing and sealing means. 4,640,776, Cl. 210-433.200.

Luperti, Harry E.; Irvine, Robert; and Luvara, Anthony, to Pitney Bowes Inc. Reverse collating machine. 4,640,506, Cl. 271-212.000.

Luvara, Anthony: See—
Luperti, Harry E.; Irvine, Robert; and Luvara, Anthony, 4,640,506, Cl. 271-212.000.

Lysenko, Peter: See—
Rush, William F.; Huebler, James E.; and Lysenko, Peter, 4,641,377, Cl. 381-111.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: See—
Holzapfel, Klaus, 4,640,190, Cl. 101-348.000.

M C G Plastics Limited: See—
Haines, Peter R., 4,640,430, Cl. 215-330.000.

M. Lowenstein Corporation: See—
Barnett, Gary A., 4,640,858, Cl. 428-90.000.

MacCarthy, Donald W., Sr. Idler pulley adjuster. 4,640,687, Cl. 474-101.000.

MacDonald, Robert D., to Masco Corporation. Thermostatic valve assembly. 4,640,457, Cl. 236-12.110.

Machida, Mitsuo: See—
Nakanowatari, Jun; Machida, Mitsuo; Okamoto, Toshiyuki; and Nakura, Yoshihiro, 4,640,581, Cl. 350-331.00R.

Machine Vision International Corporation: See—
Sternberg, Stanley R., 4,641,356, Cl. 382-49.000.

Macierewicz, Jacek J., to ELP Products Ltd. Unplugging of heavy fraction outlet hydrocyclone. 4,640,780, Cl. 210-512.200.

Mackintosh, Charles. System for rolling and unrolling a ground cover. 4,640,469, Cl. 242-55.000.

Macko, William J.: See—
Bass, Robert H.; Macko, William J.; and Lockhart, Robert K., Jr., 4,641,364, Cl. 455-32.000.

MacNaughton, Laurence, III: See—
Perlman, Eugene H.; and MacNaughton, Laurence, III, 4,641,263, Cl. 364-900.000.

Madey, John M. J.; and Westenskow, Glen A., to Madey, John M. J. Microwave electron gun. 4,641,103, Cl. 328-228.000.

Maeda, Masahiko: See—
Suzuki, Masami; Hirota, Tatsuya; and Maeda, Masahiko, 4,640,022, Cl. 34-48.000.

Maeda, Toyohiro: See—
Mori, Makihiko; Kibe, Satoshi; and Maeda, Toyohiro, 4,640,761, Cl. 208-44.000.

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Kato, Hidetoshi; Machara, Fuyuki; and Mayumi, Nobuo, 4,641,079, Cl. 320-64.000.

Machara, Toshifumi; and Kurata, Masayuki, to Akebono Brake Industry Company, Ltd. Automatic stop valve device for vehicle brake systems. 4,640,391, Cl. 188-353.000.

Magid, Robert; and Choong, John, to Magid, Robert. Bendable elbow connector. 4,640,642, Cl. 403-157.000.

Magnavox Government and Industrial Electronics Company: See—
Diepeveen, Neal; and Bastian, Robert, 4,641,192, Cl. 358-206.000.

Magourou, Yves L., to Societe de Exploitation des Procédes Marechal. Electric cable connector handle. 4,640,568, Cl. 339-103.00R.

Maier, Helmut; Storandt, Ralf; Guenther, Heinz, deceased; by Guenther, Renate, legal representative; and by Guenther, Sabine, legal representative, to Geze GmbH. Adjustment mechanism for tiltable glazed sashes. 4,640,051, Cl. 49-348.000.

Maier, Ludwig: See—
Diel, Peter J.; and Maier, Ludwig, 4,640,701, Cl. 71-86.000.

Maixner, Uwe; and Milferstaedt, Dieter, to Gesellschaft Fuer Kernenergie Ieverwertung in Schiffbau und Schiffahrt GmbH. Electrical contact. 4,641,002, Cl. 200-268.000.

Makepeace, Richard J.: See—
Gabe, Julian; and Makepeace, Richard J., 4,640,705, Cl. 71-93.000.

Makiel, Joseph M., to Westinghouse Electric Corp. Fuel cell generator containing a gas sealing means. 4,640,875, Cl. 429-30.000.

Makino, Masayuki: See—
Yotsutani, Akio; Makino, Masayuki; Saegusa, Noboru; and Sone, Tomoshi, 4,640,986, Cl. 379-60.000.

Makino, Takamoto: See—
Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,640,218, Cl. 118-19.000.

Makino, Takao; and Osada, Shinichi, to Kabushiki Kaisha Morita Seisakusho. Automatic exposure device for a panoramic X-ray photographing device. 4,641,331, Cl. 378-108.000.

Malhi, Satwinder; and Baglee, David A., to Texas Instruments Incorporated. Integrated circuit load device. 4,641,173, Cl. 357-51.000.

Malhotra, Satish C., to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene fine powder and preparation thereof. 4,640,955, Cl. 524-546.000.

Manby, Alan P.: See—
Carter, George B.; and Manby, Alan P., 4,640,724, Cl. 149-109.600.

Mancinelli, Paul A., to Atlantic Richfield Company. Novel coupling agent for star-block copolymers. 4,640,958, Cl. 525-193.000.

Manco Corporation: See—
Pravda, Milton F., 4,640,344, Cl. 165-86.000.

Mangel, Walter F.; Leytus, Stephen; and Melhado, L. Lee, to University of Illinois. Novel rhodamine derivatives as fluorogenic substrates for proteinases. 4,640,893, Cl. 435-23.000.

Mannhart, Also: See—
Jungwirth, Dieter; and Mannhart, Also, 4,640,068, Cl. 52-223.00L.

Manseth, Robert A. Method and apparatus for aerially transporting loads. 4,640,474, Cl. 244-31.000.

Manspeaker, Edward L. Balance game. 4,640,509, Cl. 273-1.0GF.

Manzinger Papierwerke KG: See—
Frank, Helmut, 4,641,360, Cl. 383-15.000.

Marchegiano, Joseph E.; and Baran, Anthony S., to RCA Corporation. System and method for measuring energy transmission through a moving aperture pattern. 4,641,256, Cl. 364-525.000.

Mardon Illingworth, Ltd.: See—
Dudzik, Henryk, 4,640,493, Cl. 251-342.000.

Marino, Michael; and Rudis, Thomas C. Tamper-resistant closure. 4,640,427, Cl. 215-232.000.

Mark, Fritz: See—
Matt, Lukas; Mark, Fritz; and Gschwend, Hans, 4,640,452, Cl. 227-131.000.

Markel, David: See—
McElmurry, Terry J.; Davis, H. Coleman; Leftwich, William B.; and Markel, David, 4,639,953, Cl. 5-43.000.

Marker International: See—
Sedlmair, Gerhard, 4,640,524, Cl. 280-611.000.

Markert, Gerhard: See—
Schnee, Reiner; Pennewiss, Horst; and Markert, Gerhard, 4,640,954, Cl. 524-516.000.

Marocco, Giuseppe, to Technomarmi Maiera S.p.A.; and Seifag S.r.l. Composite slab incorporating a sheet of marble or similar natural stone, for the formation of facings for building, interior decoration and the like. 4,640,850, Cl. 428-15.000.

Marple, Stanley: See—
Bannon, Robert P.; and Marple, Stanley, 4,640,743, Cl. 203-87.000.

Marquardt, Susan K.: See—
Hansen, Paul E.; and Marquardt, Susan K., 4,640,859, Cl. 428-105.000.

Marsault, Jean-Jacques: See—
Semedard, Jean-Claude; Marsault, Jean-Jacques; Peyrelongue, Jean-Pierre; and Vallee, Gerard, 4,640,480, Cl. 248-62.000.

Marten, Edward N. Rock saw unit for hard rock earth formations. 4,640,551, Cl. 299-1.000.

Martens, Theodor G. J. A.; Steenhof, Frits A.; and Kalfs, Johannes J. W., to U.S. Philips Corporation. Data processing system in which unreliable words in the memory are replaced by an unreliability indicator. 4,641,310, Cl. 371-38.000.

Martin, Eugene G.; and Risser, Dale M., to Favorite Manufacturing, Inc. Thigh deboner. 4,639,972, Cl. 17-11.000.

Martin, Frank J.; Hartman, Murray; and Saunders, Randy, to Schlumberger Canada Limited. Snap-fitting transformer terminal cover. 4,640,985, Cl. 174-138.00F.

Martin, Hans, to Sueddeutsche Kuehlerfabrik Julius Fr., Behr GmbH & Co. KG. Apparatus for controlling the coolant medium circulation of an internal combustion engine. 4,640,235, Cl. 123-41.030.

Martin, James L.: See—
Clark, Roger L.; Ray, Dennis D.; and Martin, James L., 4,641,338, Cl. 379-328.000.

Martin, Robert A.; and Heater, Thomas J., to Ford Motor Company. Foam pattern assembly for use in evaporative casting process. 4,640,333, Cl. 164-246.000.

Martin, Robert A.; and Heater, Thomas J., to Ford Motor Company. Method of joining foam patterns for evaporative casting process. 4,640,728, Cl. 156-245.000.

Martinet, Roland; and Casas, Alain, to Climax France S.A. Modular system of distribution. 4,640,311, Cl. 137-884.000.

Masak, Raymond J., to United States of America, Air Force. Coherent dual automatic gain control system. 4,641,141, Cl. 342-379.000.

Masco Corporation: See—
MacDonald, Robert D., 4,640,457, Cl. 236-12.110.

Mashiko, Koichiro; Yamada, Michihiro; Arimoto, Kazutami; Miyamoto, Hiroshi; Kobayashi, Toshifumi; and Morooka, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Dynamic random access memory with hidden refresh control. 4,641,281, Cl. 365-189.000.

Mason, Daniel P. Truck crane conversion to crawler crane. 4,640,421, Cl. 212-175.000.

Mason, James H. Macpherson strut alignment gauge and straightening apparatus. 4,640,015, Cl. 33-181.0AT.

Massa, Donald P.: See—
Massa, Frank; and Massa, Donald P., 4,641,290, Cl. 367-106.000.

Massa, Frank; and Massa, Donald P., to Dellorlano, Fred M., Jr.; and Massa, Donald P. Low frequency portable lightweight sonar systems and their method of deployment for greatly increasing the efficiency of submarine surveillance over large areas. 4,641,290, Cl. 367-106.000.

Massey-Ferguson Inc.: See—
Buback, John, 4,640,146, Cl. 74-359.000.

Mastran, David V., to Maximus, Inc. Process for synchronizing computer video with independent audio. 4,641,253, Cl. 364-518.000.

Mastroianni, Anthony R., to RCA Corporation. Analog-to-digital converter with scaling of input signal. 4,641,130, Cl. 340-347.0AD.

Matsubara, Hideo: See—
Daido, Toshihiko; Matsubara, Hideo; and Hirakushi, Shuzo, 4,640,380, Cl. 180-141.000.

Matsubara, Noriyuki: See—
Sakamoto, Takahide; Hiroshima, Tatsuo; Matsubara, Noriyuki; and Miyata, Kenichi, 4,641,092, Cl. 324-227.000.

Matsuda, Hideki: See—
Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.

Matsuda, Yukinobu; and Inui, Takayasu, to Kabushiki Kaisha Komatsu Seisakusho. Method of controlling an engine mounted on a construction vehicle. 4,640,245, Cl. 123-339.000.

Matsuhiro, Keiji; and Matsui, Minoru, to NGK Insulators, Ltd. Silicon nitride sintered bodies and a method for producing the same. 4,640,903, Cl. 501-97.000.

Matsui, Kazuhiro, to Kitagawa Industries Co., Ltd. Printed circuit board holding appliance. 4,640,639, Cl. 403-24.000.

Matsui, Minoru: See—
Matsuhiro, Keiji; and Matsui, Minoru, 4,640,903, Cl. 501-97.000.

Matsukawa, Yutaka: See—
Tsuchiya, Yukio; and Matsukawa, Yutaka, 4,640,381, Cl. 181-144.000.

Matsumoto, Hironori: See—
Watanabe, Junichiro; Funahashi, Yuichi; Sugiura, Kazuo; and Matsumoto, Hironori, 4,640,968, Cl. 528-32.000.

Matsumoto, Yukio; and Hanayama, Masaru, to Victor Company of Japan, Ltd. Magnetic recording media. 4,640,863, Cl. 428-323.000.

Matsunaga, Masahiro, to Diesel Kiki Co., Ltd. Fuel injection apparatus for diesel engines. 4,640,241, Cl. 123-198.00F.

Matsuo, Shigeru; and Murakami, Tomoyoshi, to Idemitsu Kosan Company Limited. Polycyanoaryl ether films and fibers. 4,640,974, Cl. 528-211.000.

Matsuo, Shigeru; and Murakami, Tomoyoshi, to Idemitsu Kosan Company Limited. Polycyanoaryl ether and method of preparing the same. 4,640,975, Cl. 528-211.000.

Matsuoka, Tsutomu: See—
Nakamura, Saburo; Matsuoka, Tsutomu; Yamauchi, Hirofumi; and Sahara, Masanori, 4,640,252, Cl. 123-446.000.

Matsusaka, Yoshihide, to AMP Incorporated. Electrical connector housing. 4,640,566, Cl. 339-91.00R.

- Matsushima, Katsuaki; Fujioka, Yasuhiro; Sasaki, Takeshi; Fujine, Manabu; and Yamamoto, Kouji, to Toyota Jidosha Kabushiki Kaisha. Mounting structure for a roof duct. 4,640,184, Cl. 98-2.150.
- Matsushita Electric Industrial Co., Ltd.: See—
Fukukita, Hiroshi; Tachita, Ryobun; Fukaya, Kuniaki; and Yano, Tsutomu, 4,641,260, Cl. 364-737.000.
- Imanishi, Kiyokazu; Naka, Hiroyuki; Sakurai, Yasuo; Ichiyonagi, Takashi; and Kishimoto, Masaru, 4,641,214, Cl. 360-130.240.
- Nakada, Seichi; Hanada, Tooi; and Watanabe, Masao, 4,640,028, Cl. 38-77.700.
- Noda, Kazushi; Komatsu, Moriyuki; and Mitsunaga, Hiroshi, 4,640,340, Cl. 165-41.000.
- Matsushita Electric Works, Ltd.: See—
Abura, Yoshinori; Tsuji, Eiji; Okuyama, Kenji; and Ochi, Shuhei, 4,641,010, Cl. 219-222.000.
- Matsushita, Kazuhiro: See—
Kamo, Osamu; Ohuchi, Muneki; and Matsushita, Kazuhiro, 4,641,096, Cl. 324-311.000.
- Matsushita Seiko Co., Ltd.: See—
Takeda, Masaaki, 4,641,053, Cl. 310-317.000.
- Matsuura, Takahiro; and Yamamoto, Toshiyuki, to Alps Electric Co., Ltd. Thermal printer. 4,641,150, Cl. 346-76.0PH.
- Matsuyama, Noboru: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Kazuhiro; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.
- Matt, Lukas; Mark, Fritz; and Gschwend, Hans, to Hilti Aktiengesellschaft. Device for driving nails or similar fastening elements. 4,640,452, Cl. 227-131.000.
- Mattei, Riccardo, to G. D. Societa per Azioni. Device for supplying rod-shaped articles, for example cigarettes, to a processing machine. 4,640,656, Cl. 414-303.000.
- Mattes, Bernhard; Mausner, Eberhard; and Suchowskyj, Wadym, to Robert Bosch GmbH. Circuit arrangement for registering false release signals for a restraint system. 4,641,041, Cl. 307-10.00R.
- Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., to VMX, Inc. Electronic audio communications systems network. 4,640,991, Cl. 379-88.000.
- Matthews, John A.: See—
Coburn, Robert E.; and Matthews, John A., 4,640,092, Cl. 60-39.360.
- Matthiensen, Gunter: See—
Grein, Lutz; and Matthiensen, Gunter, 4,640,455, Cl. 228-176.000.
- Matuszak, Edward A.; Lee, Yanien; and Gillmore, Stephen R., to Borden, Inc. Low fat content food chips and method of preparation. 4,640,843, Cl. 426-560.000.
- Mauchien, Patrick; and Cauchetier, Philippe, to Commissariat a l'Energie Atomique. Process for the determination of traces of uranium in solution by time resolution spectrofluorimetry. 4,641,032, Cl. 250-459.100.
- Mausner, Eberhard: See—
Mattes, Bernhard; Mausner, Eberhard; and Suchowskyj, Wadym, 4,641,041, Cl. 307-10.00R.
- Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: See—
Schafer, Fritz P.; Szatmari, Sandor; and Bor, Zsolt, 4,641,312, Cl. 372-25.000.
- Maximus, Inc.: See—
Mastran, David V., 4,641,253, Cl. 364-518.000.
- May, William A. Internally flavored hulled cereal grain and process for preparation. 4,640,842, Cl. 426-534.000.
- Mayeur, Jacques, to SEB S.A. Portable cooking appliance comprising an oven chamber and a cooking hotplate. 4,641,015, Cl. 219-386.000.
- Maytag Company, The: See—
Ross, Frank E.; and Hunter, William H., 4,641,006, Cl. 219-10.55F.
- Mayumi, Nobuo: See—
Kato, Hidetoshi; Machara, Fuyuki; and Mayumi, Nobuo, 4,641,079, Cl. 320-64.000.
- Mazda Motor Corporation: See—
Higashi, Haruki; Yashiki, Seiji; Waki, Kouichirou; and Kikuchi, Toshiyuki, 4,640,394, Cl. 192-3.290.
- Nakamura, Saburo; Matsuoka, Tsutomu; Yamauchi, Hirofumi; and Sahara, Masanori, 4,640,252, Cl. 123-446.000.
- Mazoff, Stanley S.: See—
Fish, Aaron M.; Mazoff, Stanley S.; D'Intino, Adamo M.; and Somasundaram, Hariharan, 4,640,110, Cl. 70-269.000.
- Mazumder, Ali T.; and Kamel, Mohamed S., to NCR Corporation. Bar code and reading and decoding device. 4,641,018, Cl. 235-462.000.
- McClune, Donald W.: See—
Lundergan, Robert G.; and McClune, Donald W., 4,640,567, Cl. 339-94.00M.
- McConkey, Stephen E.: See—
Patell, Farrokh A.; and McConkey, Stephen E., 4,640,312, Cl. 138-109.000.
- McConnell Dowell Constructors Limited: See—
Pope, Paul B., 4,640,532, Cl. 285-41.000.
- McConnell, Matthew L.; and Gibson, William A., to Raycom Systems, Inc. Fiber optic communication module. 4,641,378, Cl. 455-619.000.
- McConway & Torley Corporation: See—
Elliott, William O., 4,640,422, Cl. 213-155.000.
- McCormick, Stephen J.: See—
Quick, David C.; McCormick, Stephen J.; and Ballendux, Gerardus M., 4,640,152, Cl. 74-767.000.
- McCown, Robert B.: See—
Renner, G. Frederick; Thatcher, Richard K.; Atterbury, William G.; Harris, Jeremy M.; Hartman, Nile F.; and McCown, Robert B., 4,641,027, Cl. 250-237.00G.
- McCullum, Albert: See—
Kreider, David R.; McCullum, Albert; Rose, Philip M.; and Lin, Chi-Hung, 4,640,963, Cl. 526-67.000.
- McDaniel, Max P.: See—
Johnson, Marvin M.; and McDaniel, Max P., 4,640,964, Cl. 526-134.000.
- McDermott, Daniel R. Gravity-conveyor chute section. 4,640,403, Cl. 193-34.000.
- McDonnell Douglas Corporation: See—
Wear, Frederick C.; and McKinney, Howard F., 4,640,020, Cl. 34-1.000.
- McDowell, Allen W.: See—
Bryan, Barry L.; Druckerman, Martin; McDowell, Allen W.; Schneider, Ira H.; and Newkirk, Gary L., 4,641,262, Cl. 364-900.000.
- McElmurry, Terry J.; Davis, H. Coleman; Leftwich, William B.; and Markel, David, to Coachmen Industries, Inc. Rollover back sofa bed. 4,639,953, Cl. 5-43.000.
- McGovern, Stephen J.: See—
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,640,463, Cl. 239-424.000.
- McGowan, George A.; and Kaplan, Robert L., to Hughes Aircraft Company. Ribbon termination member. 4,641,288, Cl. 367-20.000.
- McIntosh, Harold A., to Robertshaw Controls Company. Protective shield for external parts of a control arrangement. 4,641,223, Cl. 361-424.000.
- McKay, Scott A. Garment lock. 4,640,420, Cl. 211-4.000.
- McKee, William E.: See—
Trevison, Robert L.; McKee, William E.; and Hunnel, Larry B., 4,640,438, Cl. 220-359.000.
- McKibben, Kenneth D.; Gould, Alan P.; Groh, Craig J.; and Wuepper, Thomas E., to Seaton SSK Engineering Inc. Machine for cleaning castings. 4,639,968, Cl. 15-304.000.
- McKinney, Howard F.: See—
Wear, Frederick C.; and McKinney, Howard F., 4,640,020, Cl. 34-1.000.
- McKinney, Richard W.: See—
Katchka, Jay R.; Yeaman, George A.; and McKinney, Richard W., 4,640,676, Cl. 431-54.000.
- McLendon, Martin. Motion interconversion apparatus. 4,640,144, Cl. 74-56.000.
- McMahon, Raymond D.; Jellovitz, John C.; Vaile, James T.; Renn, Gregory J.; and Ondeck, Elmer J., to Baldwin Technology Corporation. Rotary knife system. 4,640,165, Cl. 83-346.000.
- McNair, Rhett, to Scientific Component Systems, Inc. Lamp mounting apparatus and method. 4,641,228, Cl. 362-382.000.
- McNamara, James R.; and Piazza, Denis L. Vehicle construction. 4,640,544, Cl. 296-181.000.
- McVeigh, Harry A.: See—
Green, Gary J.; McVeigh, Harry A.; Penick, Joe E.; and Yan, Tsoung Y., 4,640,675, Cl. 431-2.000.
- Meckley, Charles O. Automatic attitude adjuster for kite. 4,640,476, Cl. 244-155.00R.
- Mednis, Juris M., to Universal Symetrics Corporation. Multiple variable container package. 4,640,423, Cl. 215-10.000.
- Megint, Lucien, to Neyrpic. Low-head hydroelectric installation. 4,641,040, Cl. 290-52.000.
- Meguro, Kanji; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. 1,4-benzothiazine derivatives, compositions containing them and method of use. 4,640,916, Cl. 514-222.000.
- Meguro, Kenjiro; Sagawa, Koichiro; Yokota, Hirofumi; and Takehara, Masahiro, to Ajinomoto Co., Inc. Surface modifier for inorganic substances. 4,640,943, Cl. 523-200.000.
- Meigne, Christian: See—
Keryhuell, Alain; and Meigne, Christian, 4,641,176, Cl. 357-74.000.
- Meinan Machinery Works, Inc.: See—
Hasegawa, Katsuji, 4,640,857, Cl. 428-57.000.
- Melguy, Mikhail A.; and Sandomirsky, Sergei G., to Institut Prikladnoi Fiziki Akademii Nauk Belorusskoi SSR. Method and device for magnetic testing of moving elongated ferromagnetic test piece for mechanical properties by utilizing the magnitude of remanent magnetic flux and a pulsed magnetic field. 4,641,093, Cl. 324-239.000.
- Melhado, L. Lee: See—
Mangel, Walter F.; Leytus, Stephen; and Melhado, L. Lee, 4,640,893, Cl. 435-23.000.
- Mentor Corporation: See—
Hauser, Thomas M., 4,640,688, Cl. 604-352.000.
- MERO-Werke Dr.-Ing Max Mengerlinghausen GmbH & Co.: See—
Radtko, Manfred, 4,640,854, Cl. 428-35.000.
- Merrifield, James H.: See—
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- Metals Ltd.: See—
Licht, Wayne P.; and Hofstatter, Alfred F., 4,640,711, Cl. 75-248.000.
- Metcalf, Charles G.: See—
Lawrence, Ventura J.; Metcalf, Charles G.; and Silva, Lawrence H., 4,640,367, Cl. 172-225.000.
- Mettey, Michel: See—
Chaix, Jean-Edmond; and Mettey, Michel, 4,640,537, Cl. 285-368.000.

- Meyer, Jack D.: See—
Collins, George J.; Rocca, Jorge J.; and Meyer, Jack D., 4,641,316, Cl. 372-74.000.
- Meyer, Jeffrey R.: See—
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- Meyer, Richard A.; and Lowe, Anthony E., to MTS Systems Corporation. Multiple axis load sensitive transducer. 4,640,138, Cl. 73-862.040.
- Meyer, Steven D.; and Raven, Peter B., to Texas College of Osteopathic Medicine. Self-contained breathing apparatus. 4,640,277, Cl. 128-204.230.
- Meyman, Usher. Rotary engine. 4,640,242, Cl. 123-246.000.
- Mia-Lens Production A/S: See—
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- Michalik, John K., to Cambridge Instrument Company plc, The. Automatic refractometer. 4,640,616, Cl. 356-136.000.
- Michel, Alain H.: See—
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- Michel, Pierre. Process for the preparation of cellular products and laminates based on furan prepolymers. 4,640,934, Cl. 521-103.000.
- Micro Storage Ltd.: See—
Smith, Robert R., II, 4,641,209, Cl. 360-86.000.
- Migliore, Neil. Assembly system with clip for installing marble panels. 4,640,076, Cl. 52-509.000.
- Mihata, Ichiro: See—
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- Mikalsen, Arthur, to Exxon Printing Systems, Inc. Ink jet apparatus with reservoir having a tilt valve serving as fill port and air vent. 4,641,154, Cl. 346-140.00R.
- Mikami, Katsumasa: See—
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- Miko, Stephen J.: See—
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- Millerstædt, Dieter: See—
Maixner, Uwe; and Millerstædt, Dieter, 4,641,002, Cl. 200-268.000.
- Miller, Andrew S.: See—
Corfield, John R.; and Miller, Andrew S., 4,640,798, Cl. 540-312.000.
- Miller, Dolores C.: See—
Ainot, Patrick R.; Auerbach, Daniel J.; Brundle, Christopher R.; and Miller, Dolores C., 4,640,718, Cl. 134-2.000.
- Miller, Gary R.; and Gilson, Richard E., to Eastman Kodak Company. Subbed lithographic printing plate. 4,640,886, Cl. 430-271.000.
- Miller, Glen E., to Boeing Company. The. System for determining the position of the boundary between substances having different refractive indices. 4,641,025, Cl. 250-227.000.
- Miller, Granville G.: See—
Eisenbaumer, Ronald L.; Miller, Granville G.; and Toth, James E., 4,640,006, Cl. 29-623.100.
- Miller, Harry: See—
Zweifel, Terry L.; and Miller, Harry, 4,641,268, Cl. 364-440.000.
- Miller, Richard L. Apparatus for storing and relating visual data and computer information. 4,641,203, Cl. 358-335.000.
- Miller, Ronald E.: See—
Hayes, Michael E.; Hood, Craig C.; Miller, Ronald E.; and Sharpe, Robert, 4,640,719, Cl. 134-40.000.
- Miller, Thomas M.: See—
Schraff, Raymond J.; Miller, Thomas M.; and Labas, Nicholas, 4,640,202, Cl. 110-336.000.
- Miller, William J., to Racal Data Communications Inc. High speed packet switching arrangement. 4,641,302, Cl. 370-60.000.
- Milliken Research Corporation: See—
Baumgartner, Alan S.; Moore, Patrick D.; and VanDahm, Richard A., 4,640,690, Cl. 8-506.000.
- Millipore Corporation: See—
Lemonnier, Jean, 4,640,777, Cl. 210-433.200.
- Milthorpe, Bruce K.: See—
Farrell, Peter C.; Bertram, Christopher D.; and Milthorpe, Bruce K., 4,640,896, Cl. 436-34.000.
- Milton, Bruce F.: See—
Blosser, Henry G.; and Milton, Bruce F., 4,641,057, Cl. 313-62.000.
- Mimoto, Toshio: See—
Sato, Yoichi; and Mimoto, Toshio, 4,641,081, Cl. 323-313.000.
- Minato, Osamu: See—
Sasaki, Yukio; Nishimura, Kotaro; and Minato, Osamu, 4,641,285, Cl. 365-210.000.
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- Minister for Industry and Decentralization of the State of New South Wales, The: See—
Krilov, Alexandre, 4,640,327, Cl. 144-340.000.
- Minnesota Mining and Manufacturing Company: See—
Craighead, Lawrence W., 4,640,289, Cl. 128-639.000.
- Hansen, Paul E.; and Marquardt, Susan K., 4,640,859, Cl. 428-105.000.
- Isakson, Gary A.; and Larson, Curtis L., 4,640,838, Cl. 426-107.000.
- Janssen, Jeffrey R., 4,640,727, Cl. 156-240.000.
- Kilbane, George J.; and Subrahmanian, K. P., 4,640,978, Cl. 174-23.00R.
- Minolta Camera Kabushiki Kaisha: See—
Oka, Tateki, 4,640,883, Cl. 430-122.000.
- Yasumoto, Hitoshi; and Tanimoto, Tetsuyuki, 4,640,609, Cl. 355-37.000.
- Mirsky, Saul: See—
Staroselsky, Naum; and Mirsky, Saul, 4,640,665, Cl. 415-1.000.
- Misco, Peter F., Jr.: See—
Kim, Choung U.; and Misco, Peter F., Jr., 4,640,799, Cl. 540-350.000.
- Mita Industrial Co., Ltd.: See—
Kozuka, Nobuhiko; Koyama, Shigeo; and Kano, Atsushi, 4,640,604, Cl. 355-3.00R.
- Mitani, Tomomasa; and Mihata, Ichiro, to Dainippon Ink and Chemicals, Inc. Fluorolefin copolymer, process for production thereof and composition containing said copolymer. 4,640,966, Cl. 526-249.000.
- Mitchell, Donald L., to United States of America, Navy. Test set for a navigational satellite receiver. 4,641,254, Cl. 364-580.000.
- Mitsubishi Denki Kabushiki Kaisha: See—
Fujihira, Hiroaki; Fujii, Hiroshi; Ohishi, Hirotoshi; and Kobayashi, Yoshiaki, 4,641,001, Cl. 200-153.00G.
- Iwatani, Shiro, 4,641,172, Cl. 357-48.000.
- Kamaike, Hiroshi, 4,640,389, Cl. 187-119.000.
- Mashiko, Koichiro; Yamada, Michihiko; Arimoto, Kazutami; Miyamoto, Hiroshi; Kobayashi, Toshifumi; and Morooka, Yoshikazu, 4,641,281, Cl. 365-189.000.
- Shimotori, Kazuhiro; Fujishima, Kazuyasu; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,641,286, Cl. 365-230.000.
- Suzuki, Mamoru; and Fukui, Shinta, 4,641,248, Cl. 364-492.000.
- Mitsubishi Jidosha Kogyo Kabushiki Kaisha: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiko; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatamoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: See—
Oe, Tsutomu; Kimura, Shigeaki; Yuzaki, Yoshinori; and Ozaki, Tadao, 4,640,453, Cl. 228-17.000.
- Mitsubishi Paper Mills, Ltd.: See—
Kagota, Nobuhiro; and Senoh, Hideaki, 4,640,714, Cl. 106-21.000.
- Mitsudera, Hiroyuki; Konishi, Kazuo; and Sato, Yasuo, to Takeda Chemical Industries, Ltd. Insecticidally, acaricidally, and nematocidally 2-amino-1,3-dithiane derivatives and pesticidal compositions therefor. 4,640,929, Cl. 514-436.000.
- Mitsuhashi, Yasuo; Uchiyama, Masaki; Murakawa, Kazunori; and Okado, Kenji, to Canon Kabushiki Kaisha. Image forming method of negative latent images using silica particles. 4,640,882, Cl. 430-110.000.
- Mitsui, Akio: See—
Fujita, Munehisa; and Mitsui, Akio, 4,640,890, Cl. 430-504.000.
- Mitsui Mining and Smelting Co., Ltd.: See—
Ueno, Kuniki; and Takahashi, Naotomi, 4,640,747, Cl. 204-37.100.
- Mitsunaga, Hiroshi: See—
Noda, Kazushi; Komatsu, Moriyuki; and Mitsunaga, Hiroshi, 4,640,340, Cl. 165-41.000.
- Miura, Minoru: See—
Kajimura, Haruhiko; Nagano, Hiroo; and Miura, Minoru, 4,640,817, Cl. 420-50.000.
- Miyagi, Ken, to Canon Kabushiki Kaisha. Image processing method or apparatus. 4,641,197, Cl. 358-280.000.
- Miyagi, Ken, to Canon Kabushiki Kaisha. Image reading apparatus. 4,641,199, Cl. 358-285.000.
- Miyakawa, Seiichi; Tatsumi, Susumu; and Sakamoto, Koji. Method and apparatus for detecting toner concentration of two-component dry developer. 4,640,129, Cl. 73-866.000.
- Miyamoto, Hiroshi: See—
Mashiko, Koichiro; Yamada, Michihiko; Arimoto, Kazutami; Miyamoto, Hiroshi; Kobayashi, Toshifumi; and Morooka, Yoshikazu, 4,641,281, Cl. 365-189.000.
- Miyamoto, Shoji: See—
Yabushita, Masaharu; Nohmi, Makoto; Fujikura, Nobuyuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,641,237, Cl. 364-200.000.
- Miyata, Kenichi: See—
Sakamoto, Takahide; Hiroshima, Tatsuo; Matsubara, Noriyuki; and Miyata, Kenichi, 4,641,092, Cl. 324-227.000.
- Miyatake, Hideshi: See—
Shimotori, Kazuhiro; Fujishima, Kazuyasu; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,641,286, Cl. 365-230.000.
- Miyazawa, Yoshiaki, to Kabushiki Kaisha Toshiba. Power supply system and a control method thereof. 4,641,042, Cl. 307-66.000.
- Miyoshi, Akio; and Fukami, Akira, to Sumitomo Metal Mining Co., Ltd. Hermetic sealing cover and a method of producing the same. 4,640,436, Cl. 220-359.000.
- Miyoshi, Katsuyoshi: See—
Terano, Minoru; Yokoyama, Yasushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,640,906, Cl. 502-104.000.
- Miyoshi, Masanobu: See—
Komorita, Kazuo; Miyoshi, Masanobu; and Onodera, Kaoru, 4,640,889, Cl. 430-505.000.
- Mizoguchi, Saburo, to Sharp Kabushiki Kaisha. Humidifier blowoff portion. 4,640,804, Cl. 261-81.000.
- Mizuhashi, Mamoru: See—
Oyama, Takuji; and Mizuhashi, Mamoru, 4,640,867, Cl. 428-432.000.
- Mizukado, Masayoshi; Morishita, Akio; and Muto, Yoshihiro, to Yamazaki Machinery Works, Ltd. Turret punch press. 4,640,166, Cl. 83-552.000.

Mizunoe, Katsumi; Yanai, Junichi; and Kimoto, Kiyoshi, to Nippon Kogaku K.K. Optical head for information recording apparatus. 4,641,296, Cl. 369-46.000.

Mizusawa, Nobutoshi: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.

Mo och Domsjo Aktiebolag: See—
Careborg, Bengt R., 4,640,282, Cl. 128-360.000.

Mobil Oil Corporation: See—
Audeh, Costandi A., 4,640,692, Cl. 44-1.0SR.
Chou, Tai-Sheng, 4,640,763, Cl. 208-78.000.
Green, Gary J.; McVeigh, Harry A.; Penick, Joe E.; and Yan, Tsoung Y., 4,640,675, Cl. 431-2.000.
Herrington, Fox J., 4,640,640, Cl. 403-57.000.
Jones, Lloyd G., 4,640,357, Cl. 166-273.000.
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,640,463, Cl. 239-424.000.
Neeley, Walter P., 4,641,287, Cl. 367-19.000.
Page, Ronald D., 4,640,552, Cl. 299-24.000.
Rubin, Mae K., 4,640,829, Cl. 423-328.000.
Sampath, Krishnaswamy, 4,640,358, Cl. 166-274.000.

Mobley, Joseph G., II, to Scientific Atlanta, Inc. Signal to noise ratio enhancement using baseband signals in an FM television system. 4,641,181, Cl. 358-36.000.

Mobley, Lawrence R.; and Gregg, James S., to Samsonite Corporation. Locking trolley for garment bag with improved hanger retention. 4,640,414, Cl. 206-287.000.

Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, to Kyowa Hakko Kogyo Co., Ltd. 3-substituted carbapem compounds having antibacterial effect. 4,640,919, Cl. 514-241.000.

Mochizuki, Manabu: See—
Ariyama, Kenzo; Kurotori, Tsuneo; and Mochizuki, Manabu, 4,640,605, Cl. 355-4.000.

Mochizuki, Masfumi: See—
Kato, Shigeru; Osada, Naomi; Ichitoh, Toshikatsu; Murata, Masae; and Mochizuki, Masfumi, 4,641,151, Cl. 346-76.0PH.

Mock, Donald E., to Kirkhill Rubber Company. Enclosed conduit. 4,640,314, Cl. 138-162.000.

Modern Mfg. Co. Inc.: See—
Stuck, Matthew A., 4,640,079, Cl. 53-390.000.

Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, to Robert Bosch GmbH. Process of producing galvanic layers of solder of precise contour on inorganic substrates. 4,640,739, Cl. 156-659.100.

Mody, Dinesh I.; Rasmussen, James E.; and Ryaboy, Mikhail Y., to Fisher Scientific Company. Analysis apparatus. 4,640,821, Cl. 422-81.000.

Moffat, Ian. Method of adding extra floors on existing buildings. 4,640,070, Cl. 52-236.300.

Mohacsi, Erno; and O'Brien, Jay P., to Hoffmann-La Roche Inc. Naphtho(1,8-bc)-1,5-thiazocinones. 4,640,930, Cl. 514-431.000.

Molloy, James J.: See—
Dyer, Stanley; Molloy, James J.; Nguyen, Thoi; Rihard, David M.; Voit, William F., Jr.; and West, Donald L., 4,641,148, Cl. 346-76.0PH.

Monarch Tool & Manufacturing Company: See—
Hall, Mitchell A., 4,640,405, Cl. 194-235.000.

Monash University: See—
Tobin, Roderick C.; and Perry, Nigel D., 4,641,313, Cl. 372-56.000.

Monen, Marinus J. B. M.: See—
Furukawa, Shunsuke; Suzuki, Tadao; and Monen, Marinus J. B. M., 4,641,295, Cl. 369-32.000.

Monett, Edward. Springless diaphragms and method of producing same. 4,640,272, Cl. 128-127.000.

Monomakhoff, Nicolas: See—
Carminati, Arelle; de Buyer, Edouard; Monomakhoff, Nicolas; and Chanut, Roland, 4,639,955, Cl. 5-81.00B.

Monsanto Company: See—
Beestman, George B., 4,640,709, Cl. 71-100.000.
Grabiak, Raymond C.; Howe, Robert K.; and Schafer, David E., 4,640,702, Cl. 71-90.000.

Montijo, Robert. Super memory educational game of skill and chance. 4,640,513, Cl. 273-249.000.

Montini, Charles, Jr., to RCA Corporation. Overpower protection for a radio frequency transceiver. 4,641,365, Cl. 455-78.000.

Montoya, Paul C.: See—
Lee, David O.; Montoya, Paul C.; and Wayland, James R., Jr., 4,641,099, Cl. 324-323.000.

Montres RADIO SA: See—
Loth, Eric, 4,640,869, Cl. 428-469.000.

Moog Inc.: See—
Cummins, Richard D., 4,641,072, Cl. 318-687.000.

Moore, James G.; Obey, James H.; and Pinkel, Edward B., to Blaw Knox Corporation. Apparatus for evaporative stripping. 4,640,740, Cl. 159-13.100.

Moore, John F., to Kabushiki Kaisha Toshiba. Laminar magnet for magnetic resonance device and method of making same. 4,641,119, Cl. 335-297.000.

Moore, Patrick D.: See—
Baumgartner, Alan S.; Moore, Patrick D.; and VanDahm, Richard A., 4,640,690, Cl. 8-506.000.

Moore, Richard C.: See—
Strunk, Richard J.; and Moore, Richard C., 4,640,927, Cl. 514-342.000.

Moore, Robert W.; and Azzopardi, Michael J. Carton loading method and system. 4,640,657, Cl. 414-347.000.

Moraly, Paul, to Sarkis S.A. Process and tool for boring cavity holes, more especially in concrete plaster or similar walls. 4,640,371, Cl. 175-61.000.

Morbioli, Rene J.; and Ney, Jean C., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation - S.N.E.C.M.A. Elutriation apparatus for the purification and separation of powders of different densities. 4,640,768, Cl. 209-37.000.

Mori, Giorgio B. Kiln for firing heavy ceramics. 4,640,683, Cl. 432-134.000.

Mori, Makihiko; Kibe, Satoshi; and Maeda, Toyohiro, to Osaka Gas Company Limited. Process for preparing pitch. 4,640,761, Cl. 208-44.000.

Mori, Masaaki; Sano, Akira; Horiuchi, Yushi; and Okumura, Yoshihiro, to Director General of Agency of Industrial Science and Technology. Apparatus for manufacturing powdered silicon nitride. 4,640,023, Cl. 34-57.00A.

Mori, Yasuki: See—
Kawanishi, Tsuneaki; Mori, Yasuki; Noguchi, Koji; and Iimura, Tsutomu, 4,640,880, Cl. 430-106.600.

Morishita, Akio: See—
Mizukado, Masayoshi; Morishita, Akio; and Muto, Yoshihiro, 4,640,166, Cl. 83-552.000.

Morita, Kouichi: See—
Nagano, Eiki; Haga, Toru; Sato, Ryo; and Morita, Kouichi, 4,640,707, Cl. 71-96.000.

Moriwaki, Hisayoshi: See—
Nakano, Kenji; and Moriwaki, Hisayoshi, 4,641,309, Cl. 371-31.000.

Moriyama, Norio: See—
Itoh, Yoshio; Ohtsuka, Hiroshi; Nishimuro, Tadashi; and Moriyama, Norio, 4,640,888, Cl. 430-323.000.

Moriyasu, Makoto: See—
Kokubu, Yoshinori; and Moriyasu, Makoto, 4,640,900, Cl. 501-67.000.

Morooka, Yoshikazu: See—
Mashiko, Koichiro; Yamada, Michihiro; Arimoto, Kazutami; Miyamoto, Hiroshi; Kobayashi, Toshifumi; and Morooka, Yoshikazu, 4,641,281, Cl. 365-189.000.

Morris, Robert A.; and Rajotte, Paul T., to General Electric Company. Signal processor module for ground fault circuit breaker. 4,641,216, Cl. 361-45.000.

Morris, Robert A.; Rajotte, Paul T.; Russell, Ronald R.; and Kiesel, George W., to General Electric Company. Two pole ground fault circuit breaker. 4,641,217, Cl. 361-45.000.

Mortenson, Robert L.: See—
Coulthart, Kenneth B.; Fairfield, Robert C.; and Mortenson, Robert L., 4,641,102, Cl. 328-62.000.

Morton Thiokol GmbH: See—
Romer, Manfred; Woletz, Peter; and Kruger, Klaus, 4,640,938, Cl. 522-79.000.

Morton Thiokol Inc.: See—
Penn, Howard I., 4,640,868, Cl. 428-446.000.

Moser, Peter: See—
Conrad, Ulrich; Moser, Peter; and Gruber, Gerhard, 4,640,256, Cl. 123-568.000.

Mosgaard, John: See—
Laursen, Henning; Mosgaard, John; Nielson, Otto V.; and Poland, Clark L., 4,640,810, Cl. 264-518.000.

Motegi, Nawoto: See—
Nagasaka, Hiroko; and Motegi, Nawoto, 4,640,737, Cl. 156-643.000.

Motorola, Inc.: See—
Bass, Robert H.; Macko, William J.; and Lockhart, Robert K., Jr., 4,641,364, Cl. 455-32.000.
Birritella, Mark S., 4,641,047, Cl. 307-454.000.
Derfiny, Dennis J.; van den Heuvel, Anthony P.; and Edguer, Nihat S., 4,641,222, Cl. 361-403.000.

Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, to Freund Industrial Co., Ltd. Tablet coating apparatus. 4,640,218, Cl. 118-19.000.

Moulin, Jean-Francois: See—
Badin, Suzan; Moulin, Jean-Francois; Delattre, Luc; and Renan, Patrice, 4,640,055, Cl. 51-101.0LG.

MTS Systems Corporation: See—
Meyer, Richard A.; and Lowe, Anthony E., 4,640,138, Cl. 73-862.040.

Mueller, Michael: See—
Leyrer, Reinhold J.; Wegner, Gerhard; and Mueller, Michael, 4,640,960, Cl. 525-388.000.

Mueller, Walter B.: See—
Ferguson, Daniel J.; Schirmer, Henry G.; and Mueller, Walter B., 4,640,856, Cl. 428-36.000.

Muhle, Manfred. Multipart thermally insulated metal profile for facade structures or roof structures. 4,640,072, Cl. 52-403.000.

Mukasa, Koichi: See—
Shimada, Yutaka; Hatanai, Takashi; Mukasa, Koichi; and Nakashima, Keishi, 4,641,213, Cl. 360-125.000.

Mullen, Michael J., to Northwestern Steel and Wire Company. Shroud for furnace electrode. 4,641,320, Cl. 373-96.000.

Muller, Charles B., to C. Muller & Associates, Inc. Protective dispensing assembly for ultrapure liquids. 4,641,362, Cl. 383-115.000.

Muller, Otmar: See—
Berg, Gunter; Muller, Otmar; and Esters, Rainer, 4,640,947, Cl. 524-109.000.

Multiflex International, Inc.: See—
Douglas, Larry D., 4,640,163, Cl. 83-175.000.

Munir, Mohammad, to Sueddeutsche Zucker-Aktiengesellschaft. Production of isomaltulose using immobilized microorganisms. 4,640,894, Cl. 435-100.000.

Munson, Robert D., to Emerson Electric Co. Solid state ballast for gaseous discharge lamps. 4,641,061, Cl. 315-210.000.

Murakami, Hideo; and Kobayashi, Takehiro, to Ryobi Ltd. Clutch releasing and braking mechanism for fishing reel. 4,640,471, Cl. 242-84.530.

Murakami, Koji: See—
Iizawa, Ryuji; and Murakami, Koji, 4,641,067, Cl. 318-287.000.

Murakami, Tomoyoshi: See—
Matsuo, Shigeru; and Murakami, Tomoyoshi, 4,640,974, Cl. 528-211.000.
Matsuo, Shigeru; and Murakami, Tomoyoshi, 4,640,975, Cl. 528-211.000.

Murakawa, Kazunori: See—
Mitsuhashi, Yasuo; Uchiyama, Masaki; Murakawa, Kazunori; and Okado, Kenji, 4,640,882, Cl. 430-110.000.

Murasugi, Takashi; Suga, Masaaki; and Niikura, Yasuhiro, to Nissan Motor Company, Limited. Slip control mechanism for friction clutch in torque converter of automatic power transmission. 4,640,395, Cl. 192-3.310.

Murata Manufacturing Co., Ltd.: See—
Tanaka, Yasuhiro, 4,641,055, Cl. 310-368.000.

Murata, Masae: See—
Kato, Shigeru; Osada, Naomi; Ichitoh, Toshikatsu; Murata, Masae; and Mochizuki, Masfumi, 4,641,151, Cl. 346-76.0PH.

Murphy, Robert: See—
Kelly, Patrick S.; Oswald, Thomas; Jeal, Alan J.; Hill, Stephen E.; and Murphy, Robert, 4,641,372, Cl. 455-601.000.

Murray, Leroy J.; Olson, Lawrence N.; Chavoy, Robert; and Wade, James. Cylinder assembly covering remover. 4,640,735, Cl. 156-584.000.

Musha, Kazuhiko; Tago, Kohichi; and Kato, Hidetoshi, to Sony Corporation. Metal ring preventing implosion of cathode-ray tube. 4,641,196, Cl. 358-246.000.

Musikant, Solomon: See—
Hillig, William B.; and Musikant, Solomon, 4,640,899, Cl. 501-5.000.
Hillig, William B.; and Musikant, Solomon, 4,640,904, Cl. 501-128.000.

Musto, Richard L.; and Dunn, Mark R., to Combustion Engineering, Inc. Roller mill control system. 4,640,464, Cl. 241-34.000.

Musumeci, Salvatore: See—
Bertotti, Franco; Ferla, Giuseppe; Musumeci, Salvatore; and Raciti, Salvatore, 4,641,171, Cl. 357-46.000.

Muta, Tomonobu: See—
Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiaki; and Nishio, Yoshihiro, 4,640,887, Cl. 430-275.000.

Muthyala, Ramaiah: See—
Soderquist, Mark E.; Muthyala, Ramaiah; Larson, William A.; and Doty, Peter A., 4,640,786, Cl. 252-8.551.

Muto, Yoshihiro: See—
Mizukado, Masayoshi; Morishita, Akio; and Muto, Yoshihiro, 4,640,166, Cl. 83-552.000.

Myllyla, Risto; Kopola, Harri; Kostamovaara, Juha; and Ahola, Raimo, to Noptel Ky. Optoelectronic target practice apparatus. 4,640,514, Cl. 273-310.000.

N.I.T. Co., Ltd.: See—
Nakanishi, Wataru, 4,640,649, Cl. 405-237.000.

Naajier, Geert J., to U.S. Philips Corporation. Device for selectively connecting between parallel paths and a common path. 4,640,995, Cl. 200-11.0DA.

Naarmann, Herbert; Koehler, Gernot; and Schlag, Johannes, to BASF Aktiengesellschaft. Electrically conductive pyrrole copolymers and their preparation. 4,640,749, Cl. 204-59.00R.

Nagai, Masayuki: See—
Hayashi, Motomu; Nagai, Masayuki; and Akoshima, Shigeru, 4,640,066, Cl. 52-208.000.

Nagai, Takaatsu; Takada, Masayuki; Sato, Akira; and Imamura, Mineo, to Nippon Steel Corporation. Method for quantitative discharge of molten material. 4,641,319, Cl. 373-84.000.

Nagano, Eiki; Haga, Toru; Sato, Ryo; and Morita, Kouichi, to Sumitomo Chemical Company, Ltd. Tetrahydrophthalimides and their herbicidal use. 4,640,707, Cl. 71-96.000.

Nagano, Hiroo: See—
Kajimura, Haruhiko; Nagano, Hiroo; and Miura, Minoru, 4,640,817, Cl. 420-50.000.

Nagano, Yousuke: See—
Suzaki, Masafumi; Mikami, Katsumasa; Nagano, Yousuke; and Kitagishi, Tomoji, 4,641,149, Cl. 346-76.0PH.

Nagasaka, Hiroko; and Motegi, Nawoto, to Kabushiki Kaisha Toshiba. Dry etching method of compound semiconductor. 4,640,737, Cl. 156-643.000.

Nagasawa, Yoshiaki: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiro; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.

Nagashima, Shigeo: See—
Hatakeyama, Yasuhiko; and Nagashima, Shigeo, 4,641,275, Cl. 364-900.000.

Nagata, Masami; Yanase, Sumio; and Setaka, Yousuke, to Nippondenso Co., Ltd. Control apparatus for brushless motor. 4,641,066, Cl. 318-254.000.

Naka, Hiroyuki: See—
Imanishi, Kiyokazu; Naka, Hiroyuki; Sakurai, Yasuo; Ichianagi, Takashi; and Kishimoto, Masaru, 4,641,214, Cl. 360-130.240.

Nakada, Seiichi; Hanada, Tooi; and Watanabe, Masao, to Matsushita Electric Industrial Co., Ltd. Combination steam iron and steamer. 4,640,028, Cl. 38-77.700.

Nakagawa, Takeo; and Suzuki, Kiyoshi, to Research Development Corp.; and Aisin Seiki Kabushiki Kaisha. Production of short metal fibers. 4,640,156, Cl. 82-1.00C.

Nakahara, Tsuguji: See—
Shimizu, Kimihiro; Nakahara, Tsuguji; Kinoshita, Taketoshi; Takatsuka, Jun; and Igarashi, Michiko, 4,640,835, Cl. 424-94.000.

Nakai, Ken: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.

Nakai, Toshihiko; and Kaneko, Masahiko, to Citizen Watch Co., Ltd. Method for inhibiting printing during ribbon reversal. 4,640,635, Cl. 400-664.000.

Nakamoto, Takayuki, to Iwata Electric Works Co., Ltd. Surgical needle extractor having a disposable chuck, a chuck and a handle. 4,640,274, Cl. 128-321.000.

Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiaki; and Nishio, Yoshihiro, to Dainippon Ink and Chemicals, Inc. Photosensitive image-forming material comprised of carboxyl groups developable in aqueous alkaline base solutions. 4,640,887, Cl. 430-275.000.

Nakamura, Michihiro: See—
Gion, Hidenori; Kubota, Kenji; Nakamura, Michihiro; and Yano, Makoto, 4,641,249, Cl. 364-496.000.

Nakamura, Naotaka: See—
Yoshida, Ichirou; Atsumi, Morihiro; Nakamura, Naotaka; Yagi, Kenji; Yamaguchi, Shunzo; and Yamada, Manabu, 4,640,996, Cl. 200-19.00R.

Nakamura, Saburo; Matsuoka, Tsutomu; Yamauchi, Hirofumi; and Sahara, Masanori, to Mazda Motor Corporation. Fuel injection system for diesel engine. 4,640,252, Cl. 123-446.000.

Nakamura, Yoshiyuki; Kato, Tetsuro; and Ebihara, Norio, to Sony Corporation. Skip field color recording apparatus. 4,641,202, Cl. 358-313.000.

Nakane, Mototaka; and Tanaka, Shizuo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Automatic wear compensation mechanism. 4,640,400, Cl. 192-70.250.

Nakanishi, Wataru, to N.I.T. Co., Ltd. Method and apparatus for forming an underground solidification structure. 4,640,649, Cl. 405-237.000.

Nakano, Hideaki; and Ozu, Tadashi, to Kawasaki Jukogyo Kabushiki Kaisha. Liquid-cooled cylinder assembly in internal-combustion engine. 4,640,236, Cl. 123-41.790.

Nakano, Kenji; and Moriwaki, Hisayoshi, to Sony Corporation. Method and apparatus for selectively compensating burst errors of variable length in successive digital data words. 4,641,309, Cl. 371-31.000.

Nakano, Tomio: See—
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,641,166, Cl. 357-23.600.

Nakano, Yoshito: See—
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asami, Seiji, 4,641,156, Cl. 346-160.000.

Nakanowatari, Jun; Machida, Mitsuo; Okamoto, Toshiyuki; and Nakura, Yoshihiro, to Alps Electric Co., Ltd. Flexible printed circuit board for a display device. 4,640,581, Cl. 350-331.00R.

Nakaoka, Sadaaki: See—
Okano, Takeshi; Nakaoka, Sadaaki; and Ohashi, Saichiro, 4,640,597, Cl. 353-79.000.

Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, to Sumitomo Rubber Industries, Ltd. Radial tire for motorcycles. 4,640,329, Cl. 152-209.00R.

Nakashima, Keishi: See—
Shimada, Yutaka; Hatanai, Takashi; Mukasa, Koichi; and Nakashima, Keishi, 4,641,213, Cl. 360-125.000.

Nakayama, Masanobu: See—
Goto, Hajime; Amemiya, Ikuzo; Nakayama, Masanobu; and Hatanai, Yoshinobu, 4,639,988, Cl. 29-25.350.

Nakazawa, Mitsunobu: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.

Nakura, Yoshihiro: See—
Nakanowatari, Jun; Machida, Mitsuo; Okamoto, Toshiyuki; and Nakura, Yoshihiro, 4,640,581, Cl. 350-331.00R.

Namur, Marc, to Schutz-Werke GmbH & Co. KG. Adjustment fixture for wishbone booms board-sailing devices. 4,640,211, Cl. 114-97.000.

Nanda, Madan M.: See—
Fredericks, Edward C.; and Nanda, Madan M., 4,640,738, Cl. 156-656.000.

Nash, Henry G. Means for securing tubes to a tube sheet. 4,640,192, Cl. 102-307.000.

National Nuclear Corporation Limited: See—
Dearden, Guy L.; and Hayden, Owen, 4,640,343, Cl. 165-70.000.

National Research Development Corporation: See—
Turner, Michael J. B.; Hanley, Michael; and Hartwell, Eric S., 4,640,231, Cl. 119-155.000.

Naumanen, Esko: See—
Hetemaa, Kalevi; Naumanen, Esko; and Vainio, Frans, 4,640,459, Cl. 238-122.000.

Naumann, Reinhard, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Sheet-separating and conveying suction device. 4,640,503, Cl. 271-103.000.

NCR Corporation: See—
Hilbrink, Johan O., 4,641,135, Cl. 340-784.000.
Mazumder, Ali T.; and Kamel, Mohamed S., 4,641,018, Cl. 235-462.000.
Placke, Dale L.; and Weeks, Donald L., 4,640,505, Cl. 271-209.000.
Seitz, Paul W.; Lewis, Maurice W.; and Lakes, Stephen D., 4,641,159, Cl. 346-200.000.

NEC Corporation: See—
Fukuzo, Yukio, 4,641,049, Cl. 307-590.000.
Hasegawa, Satoshi, 4,641,322, Cl. 375-1.000.
Oyamada, Takashi, 4,641,370, Cl. 455-348.000.
Watanabe, Takao; and Watari, Masao, 4,641,342, Cl. 381-41.000.
Yokoyama, Yukio; Kimura, Katsuji; and Goto, Naohisa, 4,641,366, Cl. 455-89.000.
Yotsutani, Akio; Makino, Masayuki; Saegusa, Noboru; and Sone, Tomoshi, 4,640,986, Cl. 379-60.000.

Neefe, Charles W. Method of selectively tinting cast lenses. 4,640,805, Cl. 264-1.100.

Neelley, Walter P., to Mobil Oil Corporation. Method for locating an on-bottom seismic cable. 4,641,287, Cl. 367-19.000.

Neering, Michael J.: See—
Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., 4,641,086, Cl. 324-77.00R.

Nelson, Gerald C. Gate for artificial log. 4,640,263, Cl. 126-164.000.

Nelson Industries, Inc.: See—
Printiss, Frederick H., Sr.; and Barker, Irvy T., 4,640,536, Cl. 285-367.000.

Neppel, Franz; Schwabe, Ulrich; and Hieber, Konrad, to Siemens Aktiengesellschaft. Method for the manufacture of gate electrodes formed of double layers of metal silicides having a high melting point and doped polycrystalline silicon. 4,640,844, Cl. 427-38.000.

Neri, Armando, to G. D. Societa per Azioni. Conveyor system for transferring a mass of bar shaped articles, in particular cigarettes. 4,641,024, Cl. 250-223.00R.

Nesbitt, Richard L.; and Sievers, Ricky R. Flower saddle for tombstones. 4,640,045, Cl. 47-66.000.

Nestec S.A.: See—
Hsu, Sheng-Hsiung, 4,640,839, Cl. 426-285.000.
Svengren, Anders G.; and Ganrot, Bertil A., 4,640,670, Cl. 425-142.000.

Neuder, David L.; and Zellmer, Joel A., to Hewlett-Packard Company. Timing or logic state analyzer with automatic qualified inferential marking and post processing of captured trace data. 4,641,348, Cl. 382-1.000.

Neuroth, Norbert, to Schott Glaswerke. Method for increasing contrast between an object and space when photographing such an object with a television camera. 4,641,187, Cl. 358-106.000.

Neutrogena Corporation: See—
Fong, John; Wortzman, Mitchell S.; and Scott, Richard A., 4,640,932, Cl. 514-714.000.

Neville, Donald G., to International Glide Mfg. Corp. Seat swivel apparatus. 4,640,486, Cl. 248-425.000.

New York Blood Center, Inc.: See—
Blomback, Birger; and Okada, Masahisa, 4,640,778, Cl. 210-484.000.

New York Institute of Technology: See—
Glenn, William E., 4,641,193, Cl. 358-233.000.

Newberry, Claude A. Movable staging scaffold system for building construction. 4,640,383, Cl. 182-38.000.

Newkirk, Gary L.: See—
Bryan, Barry L.; Drucker, Martin; McDowell, Allen W.; Schneider, Ira H.; and Newkirk, Gary L., 4,641,262, Cl. 364-900.000.

Ney, Jean C.: See—
Morbioli, Rene J.; and Ney, Jean C., 4,640,768, Cl. 209-37.000.

Neyrpac: See—
Megnint, Lucien, 4,641,040, Cl. 290-52.000.

Neywick, Charles V.: See—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,640,865, Cl. 428-421.000.

NGK Insulators, Ltd.: See—
Matsuhira, Keiji; and Matsui, Minoru, 4,640,903, Cl. 501-97.000.

NGK Spark Plug Co., Ltd.: See—
Yokoi, Shinichi; and Ito, Tsuneo, 4,640,809, Cl. 264-61.000.

Nguyen, Thoi: See—
Dyer, Stanley; Molloy, James J.; Nguyen, Thoi; Rihard, David M.; Voit, William F., Jr.; and West, Donald L., 4,641,148, Cl. 346-76.0PH.

NI Industries, Inc.: See—
Cummins, Michael; Cummins, James M.; and Theys, Raymond A., 4,640,142, Cl. 74-501.00R.

Nicklasson, Christer: See—
Wing, Anders; and Nicklasson, Christer, 4,640,520, Cl. 280-47.310.

Nielsen, Bent K.: See—
Hansen, Otto D.; and Nielsen, Bent K., 4,639,976, Cl. 17-48.000.

Nielson, Otto V.: See—
Laursen, Henning; Mosgaard, John; Nielson, Otto V.; and Poland, Clark L., 4,640,810, Cl. 264-518.000.

Nigorikawa, Kazunori: See—
Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.

Niikura, Yasuhiro: See—
Murasugi, Takashi; Suga, Masaaki; and Niikura, Yasuhiro, 4,640,395, Cl. 192-3.310.

Niinomi, Tatsuya; and Kikuchi, Hiroshi, to Hitachi, Ltd. Balancer and controlling method thereof. 4,640,663, Cl. 414-730.000.

Nikkiso Co., Ltd.: See—
Arakawa, Kohei, 4,640,830, Cl. 423-346.000.
Yamada, Yasuyuki, 4,640,445, Cl. 222-386.500.

Nikko Kakozai Co., Ltd.: See—
Hattori, Morihisa, 4,640,288, Cl. 128-505.000.

Nimura, Hitoshi: See—
Sakura, Yasuhiro; Nimura, Hitoshi; and Ishikawa, Mamoru, 4,641,147, Cl. 346-76.0PH.

Ninomiya, Masakazu, to Nippondenso Co., Ltd. Air-fuel ratio control system. 4,640,254, Cl. 123-492.000.

Nippon Ceramic Company, Limited: See—
Takahata, Daisuke; and Sakai, Yukiyoshi, 4,641,054, Cl. 310-324.000.

Nippon Chemipharm Company, Ltd.: See—
Shimizu, Kimihiro; Nakahara, Tsuguji; Kinoshita, Takatoshi; Takatsuka, Jun; and Igarashi, Michiko, 4,640,835, Cl. 424-94.000.

Nippon Filcon Co., Ltd.: See—
Tsuneo, Ishino, 4,640,741, Cl. 162-202.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Tomisawa, Norio, 4,641,326, Cl. 375-108.000.

Nippon Kogaku K.K.: See—
Mizunoe, Katsumi; Yanai, Junichi; and Kimoto, Kiyoshi, 4,641,296, Cl. 369-46.000.

Nippon Notion Kogyo Co., Ltd.: See—
Fukuroi, Takeo; and Inazawa, Keichi, 4,639,983, Cl. 24-689.000.
Kasai, Kazumi, 4,639,982, Cl. 24-616.000.

Nippon Oil Co., Ltd.: See—
Kubo, Junichi, 4,640,765, Cl. 208-110.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: See—
Tsubakimoto, Tsuneo; Fujikawa, Iwao; and Kushino, Mitsuo, 4,640,584, Cl. 350-344.000.

Nippon Soken, Inc.: See—
Yamamoto, Shinichi; Ito, Toshihiko; and Asano, Mitsuru, 4,640,454, Cl. 228-161.000.

Nippon Steel Corporation: See—
Nagai, Takaatsu; Takada, Masayuki; Sato, Akira; and Imamura, Mineo, 4,641,319, Cl. 373-84.000.
Ohno, Jiro; and Yashiro, Hirokatsu, 4,641,036, Cl. 250-574.000.
Ohno, Jiro; and Yashiro, Hirokatsu, 4,641,083, Cl. 324-58.50B.

Nippon Telegraph and Telephone Corporation: See—
Tanaka, Jouji; Watanabe, Tetunobu; Tanimoto, Yoshiji; and Okumura, Minoru, 4,641,337, Cl. 379-162.000.

Nippondenso Co., Ltd.: See—
Kamai, Kenichiro, 4,640,253, Cl. 123-475.000.
Kato, Hidetoshi; Maehara, Fuyuki; and Mayumi, Nobuo, 4,641,079, Cl. 320-64.000.
Kodama, Katsuhiko; and Yamazoe, Hisamitsu, 4,640,257, Cl. 123-571.000.
Nagata, Masami; Yanase, Sumio; and Setaka, Yousuke, 4,641,066, Cl. 318-254.000.
Ninomiya, Masakazu, 4,640,254, Cl. 123-492.000.
Nomura, Yoshihisa; Oka, Hiroyuki; and Otsuki, Hiromi, 4,640,558, Cl. 303-119.000.
Taki, Yoshihiro; Akado, Hajime; Funae, Keizo; and Inukai, Satoshi, 4,640,779, Cl. 210-493.500.
Yoshida, Ichirou; Atsumi, Morihiro; Nakamura, Naotaka; Yagi, Kenji; Yamaguchi, Shunzo; and Yamada, Manabu, 4,640,996, Cl. 200-19.00R.

Nishibe, Takashi: See—
Yokoyama, Shotaro; and Nishibe, Takashi, 4,640,613, Cl. 356-1.000.

Nishida, Yuji; Kamiyama, Yoshiyasu; and Okuno, Koichi, to Nitto Electric Industrial Co., Ltd. Membrane separation apparatus. 4,640,773, Cl. 210-321.100.

Nishikawa, Hiromitsu: See—
Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,640,050, Cl. 49-280.000.

Nishikawa, Kohei: See—
Meguro, Kanji; and Nishikawa, Kohei, 4,640,916, Cl. 514-222.000.

Nishikawa, Masahiko, to Pegasus Sewing Machine Mfg. Co., Ltd. Hemming apparatus. 4,640,206, Cl. 112-143.000.

Nishimoto, Naomichi: See—
Ichinoi, Yutaka; and Nishimoto, Naomichi, 4,641,201, Cl. 358-310.000.

Nishimura, Jinichi. Rotating heat exchanger. 4,640,345, Cl. 165-92.000.

Nishimura, Kotaro: See—
Sasaki, Yukio; Nishimura, Kotaro; and Minato, Osamu, 4,641,285, Cl. 365-210.000.

Nishimura, Sadanori; and Sekine, Noboru, to Honda Giken Kogyo Kabushiki Kaisha. Control device for vehicular transmission. 4,640,393, Cl. 192-0.052.

Nishimura, Sadanori, to Honda Giken Kogyo Kabushiki Kaisha. Device for controlling the operation of clutch for fluid torque converter. 4,640,396, Cl. 192-331.000.

Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, to Canon Kabushiki Kaisha. Opti-

cal display utilizing thermally formed bubble in a liquid core waveguide. 4,640,592, Cl. 350-96.320.

Nishimuro, Tadashi: See—
Itoh, Yoshio; Ohtsuka, Hiroshi; Nishimuro, Tadashi; and Moriyama, Norio, 4,640,888, Cl. 430-323.000.

Nishino, Kenichi; Kobayashi, Atsuo; Higashi, Sachio; Yamamoto, Shinichiro; and Yasuda, Kiyoshi, to Takeda Chemical Industries, Ltd. Thixotropic polyurethane resin compositions. 4,640,950, Cl. 524-265.000.

Nishio, Yoshihiro: See—
Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiaki; and Nishio, Yoshihiro, 4,640,887, Cl. 430-275.000.

Nishizawa, Jun-chi, to Semiconductor Research Foundation. Semiconductor optoelectro transducer. 4,641,167, Cl. 357-30.000.

Nishizawa, Nobuyoshi: See—
Tajima, Osamu; Yamada, Makoto; Hagino, Hideo; and Nishizawa, Nobuyoshi, 4,640,873, Cl. 429-24.000.

Nissan Motor Company, Limited: See—
Abo, Toshimi; and Hata, Yoshitaka, 4,640,243, Cl. 123-399.000.
Doi, Koichi, 4,640,183, Cl. 98-2.010.
Hosaka, Akio; and Yamamoto, Akito, 4,640,250, Cl. 123-425.000.
Kasai, Junichi; and Imai, Hiroshi, 4,641,344, Cl. 381-57.000.
Kawamura, Yoshihisa; and Fukuzumi, Shuzo, 4,640,249, Cl. 123-425.000.
Murasugi, Takashi; Suga, Masaaki; and Niikura, Yasuhiro, 4,640,395, Cl. 192-3.310.
Shibahata, Yasuji; Tsubota, Yasumasa; and Uno, Takaaki, 4,640,379, Cl. 180-140.000.
Wakai, Shinzi, 4,640,316, Cl. 139-1.00R.

Nissen, Bilha: See—
Fenster, Paul; Shimoni, Yair; Nissen, Bilha; and Alperin, Noam, 4,641,352, Cl. 382-6.000.

Nitsch, Manfred: See—
Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, 4,640,739, Cl. 156-659.100.

Nitsuko Limited: See—
Tanaka, Jouji; Watanabe, Tetunobu; Tanimoto, Yoshiji; and Okumura, Minoru, 4,641,337, Cl. 379-162.000.

Nitta, Yoshihiko; Okajima, Atsushi; and Yamano, Fumiyuki, to Hitachi, Ltd. Method for automatic translation between natural languages. 4,641,264, Cl. 364-900.000.

Nitta, Yoshio: See—
Hongo, Yusuo; and Nitta, Yoshio, 4,641,355, Cl. 382-34.000.

Nitto Electric Industrial Co., Ltd.: See—
Nishida, Yuji; Kamiyama, Yoshiyasu; and Okuno, Koichi, 4,640,773, Cl. 210-321.100.

NL Industries, Inc.: See—
Barr, John D.; and Fuller, John M., 4,640,375, Cl. 175-410.000.

Nobel, Fred I.; and Schram, David N., to LeaRon, Inc. Bath and process for plating tin/lead alloys on composite substrates. 4,640,746, Cl. 204-15.000.

Noda, Kazushi; Komatsu, Moriyuki; and Mitsunaga, Hiroshi, to Toyoda Gosei Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Heated or cooled steering wheel. 4,640,340, Cl. 165-41.000.

Noda, Yasushi: See—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,640,999, Cl. 200-144.00B.

Noguchi, Koji: See—
Kawanishi, Tsuneaki; Mori, Yasuki; Noguchi, Koji; and Jimura, Tsutomu, 4,640,880, Cl. 430-106.600.

Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Yamazaki, Heima; Kitajima, Eiji; and Sunada, Tomonori, to Koa Oil Company, Limited. Apparatus for producing bulk mesophase. 4,640,822, Cl. 422-111.000.

Noguchi, Yukio: See—
Sasaki, Tomio; and Noguchi, Yukio, 4,641,272, Cl. 364-559.000.

Nohmi, Makoto: See—
Yabushita, Masaharu; Nohmi, Makoto; Fujikura, Nobuyuki; Miyamoto, Shoji; and Ihara, Hirokazu, 4,641,237, Cl. 364-200.000.

Nojiri, Hidetoshi, to Canon Kabushiki Kaisha. Semiconductor thin film lens. 4,640,585, Cl. 350-413.000.

Nold, Peter: See—
Geller, Heinrich; Nold, Peter; Schermer, Heinz; and Rave, Ortwin, 4,640,447, Cl. 222-603.000.

Noma, Takashi: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.

Nomura, Yoshihisa; Oka, Hiroyuki; and Otsuki, Hiromi, to Toyota Jidosha Kabushiki Kaisha; and Nippondenso Co., Ltd. Anti-skid brake system. 4,640,558, Cl. 303-119.000.

Noptel Ky: See—
Myllyla, Risto; Kopola, Harri; Kostamovaara, Juha; and Ahola, Raimo, 4,640,514, Cl. 273-310.000.

Norcia, John A.; Bickar, Ray; and Wheatley, William M., to Ram Automotive Company. Portable system for filling bottles with nitrous oxide. 4,640,323, Cl. 141-18.000.

Nordson Corporation: See—
Hartle, Ronald J.; and Hall, Robert C., 4,640,310, Cl. 137-883.000.

North American Philips Corporation: See—
't Hoen, Pieter, 4,640,291, Cl. 128-660.000.

Northrop Corporation: See—
Poland, David A., 4,640,501, Cl. 269-21.000.

Northrup, Allan R.; and Tomkinson, John G., to Amaray International Corporation. Disk storage and carrying case. 4,640,416, Cl. 206-425.000.

Northwestern Steel and Wire Company: See—
Mullen, Michael J., 4,641,320, Cl. 373-96.000.

Norton Christensen, Inc.: See—
Jurgens, Rainer, 4,641,289, Cl. 367-85.000.

Nouveaux Security Products Limited: See—
Zebede, Alan R.; and Hutchins, Derek R., 4,640,052, Cl. 49-383.000.

Nunamaker, Charles S.: See—
Fromson, Robert E.; Kossowsky, Ram; and Nunamaker, Charles S., 4,640,169, Cl. 83-685.000.

Nuncio, Theodore. Contaminant sealing system and method. 4,640,075, Cl. 52-484.000.

N.V. Optimed: See—
Henkel, Gunter, 4,640,587, Cl. 350-432.000.

N.V. Raychem S.A.: See—
Vansant, Jan; Overbergh, Noel; Buekers, Valere; and Pieck, Amandus L. E., 4,641,009, Cl. 219-200.000.

N.V. W.A. Hoek's Machine: See—
Hoek, Cornelis; and van Ditten, Jurjen L., 4,640,031, Cl. 40-306.000.

Obenshain, D. Noel. Door closer mechanism. 4,639,969, Cl. 16-70.000.

Obey, James H.: See—
Moore, James G.; Obey, James H.; and Pinkel, Edward B., 4,640,740, Cl. 159-13.100.

Oblad, Roger P.: See—
Barr, John T., IV; Neering, Michael J.; Fullmer, Douglas E.; Oblad, Roger P.; Cannon, Wayne C.; and Elmore, Glenn E., 4,641,086, Cl. 324-77.00R.

O'Brien, Jay P.: See—
Mohacsi, Erno; and O'Brien, Jay P., 4,640,930, Cl. 514-431.000.

O'Brien, Michael J.: See—
Tracy, David H.; O'Brien, Michael J.; and Bohler, Walter, 4,640,627, Cl. 374-121.000.

Occidental Chemical Corp.: See—
Warzawski, Bernard; and Fauvel, Pierre, 4,640,876, Cl. 429-37.000.

Oce-Nederland B.V.: See—
Holtman, Lodewijk T., 4,640,409, Cl. 198-624.000.

Simons, Petrus A. M. R.; and Bouts, Wilhelmus J., 4,640,879, Cl. 430-96.000.

Ochi, Shuhei: See—
Abura, Yoshinori; Tsuji, Eiji; Okuyama, Kenji; and Ochi, Shuhei, 4,641,010, Cl. 219-222.000.

Ochiai, Yoshitaka: See—
Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.

O'Connor, John J.: See—
Garritano, Ronald F.; O'Connor, John J.; and Papayanopoulos, Manuel E., 4,640,120, Cl. 73-12.000.

Oe, Koji: See—
Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiaki; and Nishio, Yoshihiro, 4,640,887, Cl. 430-275.000.

Oe, Tsutomu; Kimura, Shigeaki; Yuzaki, Yoshinori; and Ozaki, Tadao, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for fabricating multi-layer spiral tubes. 4,640,453, Cl. 228-17.700.

Ogasa, Takehiro: See—
Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, 4,640,919, Cl. 514-241.000.

Ogawa, Masashi: See—
Hashiue, Masakazu; and Ogawa, Masashi, 4,640,759, Cl. 204-299.00R.

Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, to Chisso Corporation. 5-alkyl-2-(3,4-difluorophenyl)pyrimidine and nematic liquid crystal composition containing same. 4,640,795, Cl. 252-299.500.

Ogawa, Tetsuya: See—
Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.

Ogawa, Toshiyuki: See—
Higaya, Toshiaki; Ogura, Masaaki; Yano, Takato; Hashizume, Kiyozo; Ogawa, Toshiyuki; and Seko, Nachio, 4,640,608, Cl. 355-15.000.

Oguchi, Kikuo; and Uchikawa, Yoshiro, to Kabushiki Kaisha Seiko Epson. System for driving a liquid crystal matrix display so as to avoid crosstalk. 4,640,582, Cl. 350-333.000.

Ogura, Masaaki: See—
Higaya, Toshiaki; Ogura, Masaaki; Yano, Takato; Hashizume, Kiyozo; Ogawa, Toshiyuki; and Seko, Nachio, 4,640,608, Cl. 355-15.000.

Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., to International Business Machines Corporation. Self-aligned lateral bipolar transistors. 4,641,170, Cl. 357-35.000.

Ohashi, Saichiro: See—
Okano, Takeshi; Nakaoka, Sadaaki; and Ohashi, Saichiro, 4,640,597, Cl. 353-79.000.

Ohdake, Eishu; Oikawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, to Ricoh Company, Ltd. Copying method for bookbinding. 4,640,611, Cl. 355-77.000.

- Ohgoda, Makoto; and Tamura, Kaoru, to Fuji Photo Film Co., Ltd. Device for feeding and positioning recording medium. 4,640,507, Cl. 271-245.000.
- Ohi Seisakusho Co., Ltd.: See—
Yamagishi, Jun; and Nishikawa, Hiromitsu, 4,640,050, Cl. 49-280.000.
- Ohishi, Hirotoshi: See—
Fujihisa, Hiroaki; Fujii, Hiroshi; Ohishi, Hirotoshi; and Kobayashi, Yoshiaki, 4,641,001, Cl. 200-153.00G.
- Ohishi, Toshio; and Kurotobi, Yohji, to Honda Giken Kogyo Kabushiki Kaisha. Air cleaner device. 4,640,698, Cl. 55-502.000.
- Ohler, Steven W., to Brunswick Corporation. Magnetically actuated line feathering system for spin cast reels. 4,640,470, Cl. 242-84.20A.
- Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, to Hoya Corporation. Process for producing glass product having gradient of refractive index. 4,640,699, Cl. 65-3.150.
- Ohno, Jiro; and Yashiro, Hirokatsu, to Nippon Steel Corporation. Method of and apparatus for imaging surface of object at high temperature. 4,641,036, Cl. 250-574.000.
- Ohno, Jiro; and Yashiro, Hirokatsu, to Nippon Steel Corporation. Method and apparatus for supervising charges in blast furnace using electromagnetic waves. 4,641,083, Cl. 324-58.50B.
- Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asami, Seiji, to Casio Computer Co., Ltd.; and Casio Electronics Manufacturing Co., Ltd. Recording apparatus with double frequency driven liquid crystal shutter. 4,641,156, Cl. 346-160.000.
- Ohta, Takahiro; Inuiya, Masafumi; and Fujimura, Ikuo, to Fuji Photo Film Co., Ltd. Method of and apparatus for recording video signal associated with photographic image. 4,641,198, Cl. 358-285.000.
- Ohtsuka, Hiroshi: See—
Itoh, Yoshio; Ohtsuka, Hiroshi; Nishimuro, Tadashi; and Moriyama, Norio, 4,640,888, Cl. 430-323.000.
- Ohuchi, Muneki: See—
Kamo, Osamu; Ohuchi, Muneki; and Matsushita, Kazuhiro, 4,641,096, Cl. 324-311.000.
- Ohya, Masao, to Sony Corporation. Magnetic recording and reproducing apparatus. 4,641,210, Cl. 360-96.500.
- Okawa, Tomohiro: See—
Ohdake, Eishu; Okawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.
- Oishi, Makoto: See—
Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, 4,641,215, Cl. 360-35.100.
- Oka, Hiroyuki: See—
Nomura, Yoshihisa; Oka, Hiroyuki; and Otsuki, Hiromi, 4,640,558, Cl. 303-119.000.
- Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Method of forming composite or dichromatic images. 4,640,883, Cl. 430-122.000.
- Okachi, Ryo: See—
Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, 4,640,919, Cl. 514-241.000.
- Okada, Masahisa: See—
Blomback, Birger; and Okada, Masahisa, 4,640,778, Cl. 210-484.000.
- Okada, Yoshio; and Igarashi, Yuriko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Partially pressure-sensitive recording paper. 4,640,847, Cl. 427-150.000.
- Okado, Kenji: See—
Mitsuhashi, Yasuo; Uchiyama, Masaki; Murakawa, Kazunori; and Okado, Kenji, 4,640,882, Cl. 430-110.000.
- Okajima, Atsushi: See—
Nitta, Yoshihiko; Okajima, Atsushi; and Yamano, Fumiyouki, 4,641,264, Cl. 364-900.000.
- Okajima, Takahiro: See—
Ikeda, Yuji; and Okajima, Takahiro, 4,641,298, Cl. 369-77.100.
- Okamoto, Toshiyuki: See—
Nakanowatari, Jun; Machida, Mitsuo; Okamoto, Toshiyuki; and Nakura, Yoshihiro, 4,640,581, Cl. 350-331.00R.
- Okamura, Shigeru; and Taguchi, Takao, to Fujitsu Limited. Ion implantation apparatus and method for maskless processing. 4,641,034, Cl. 250-492.200.
- Okano, Takeshi; Nakaoka, Sadaaki; and Ohashi, Saichiro, to Fuji Photo Film Co., Ltd. Micro-reader. 4,640,597, Cl. 353-79.000.
- Okaya, Takuji: See—
Akazawa, Toshiyuki; Tanaka, Yoshinari; and Okaya, Takuji, 4,640,870, Cl. 428-483.000.
- O'Keefe, Michael; and Fox, John R., to S.R. Gent plc. Detachable guide for a sewing machine operating station. 4,640,207, Cl. 112-236.000.
- Okegawa, Tadao: See—
Imaki, Katsuhiko; Okegawa, Tadao; and Arai, Yoshinobu, 4,640,931, Cl. 514-510.000.
- OKI Electric Industry Co., Ltd.: See—
Hiroshi, Yokouchi, 4,641,109, Cl. 331-116.0FE.
- Itoh, Yoshio; Ohtsuka, Hiroshi; Nishimuro, Tadashi; and Moriyama, Norio, 4,640,888, Cl. 430-323.000.
- Okibayashi, Katsushi; Itoh, Masataka; and Katoh, Shohichi, to Sharp Kabushiki Kaisha. Two-dimensional image read-out device. 4,641,359, Cl. 382-68.000.
- Okimoto, Tomoyuki: See—
Kondo, Mitsuru; Okimoto, Tomoyuki; and Kanda, Nobuo, 4,641,160, Cl. 346-220.000.
- Okita, Masao; Gunji, Kunihiko; and Saito, Yukio, to Alps Electric Co., Ltd. Disk cartridge loading mechanism in a recording and reproducing apparatus. 4,641,211, Cl. 360-97.000.
- Okumoto, Yutaka, to Japan Tobacco Inc. Apparatus for cutting cigarettes. 4,640,168, Cl. 83-677.000.
- Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, to Yamauchi Rubber Industry Co., Ltd. Method for making magnetic rolls. 4,640,808, Cl. 264-46.500.
- Okumura, Minoru: See—
Tanaka, Jouji; Watanabe, Tetunobu; Tanimoto, Yoshiji; and Okumura, Minoru, 4,641,337, Cl. 379-162.000.
- Okumura, Yoshihiro: See—
Mori, Masaaki; Sano, Akira; Horiuchi, Yushi; and Okumura, Yoshihiro, 4,640,023, Cl. 34-57.00A.
- Okuno, Koichi: See—
Nishida, Yuji; Kamiyama, Yoshiyasu; and Okuno, Koichi, 4,640,773, Cl. 210-321.100.
- Okuyama, Kenji: See—
Abura, Yoshinori; Tsuji, Eiji; Okuyama, Kenji; and Ochi, Shuhei, 4,641,010, Cl. 219-222.000.
- Olson, David L.: See—
Kittle, Carl E.; LaFave, Arthur J.; and Olson, David L., 4,640,368, Cl. 172-430.000.
- Olson, Harold D., to Cagle's Inc. Thigh deboner. 4,639,974, Cl. 17-46.000.
- Olson, Lawrence N.: See—
Murray, Leroy J.; Olson, Lawrence N.; Chavoya, Robert; and Wade, James, 4,640,735, Cl. 156-584.000.
- Olson, Raymond N.: See—
Glennon, Timothy F.; Olson, Raymond N.; and Straznickas, Donald A., 4,641,080, Cl. 322-49.000.
- Olsson, Bertil: See—
Olsson, John; Olsson, Bertil; and Olsson, Gunnar, 4,640,234, Cl. 123-557.000.
- Olsson, Gunnar: See—
Olsson, John; Olsson, Bertil; and Olsson, Gunnar, 4,640,234, Cl. 123-557.000.
- Olsson, John; Olsson, Bertil; and Olsson, Gunnar, to J-Jet Konstruktion HB. Method of running an internal combustion engine with alternative fuels. 4,640,234, Cl. 123-557.000.
- Olympus Optical Co., Ltd.: See—
Iba, Yoichi; Kimura, Tadashi; and Kajitani, Kazuo, 4,640,586, Cl. 350-414.000.
- Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, 4,641,215, Cl. 360-35.100.
- Komatsu, Satsuki, 4,641,084, Cl. 324-71.500.
- Omnimax Energy Corporation: See—
Shakun, Wallace, 4,640,977, Cl. 136-211.000.
- Onasch, Jürgen: See—
Fischer, Artur; Onasch, Jürgen; and Haage, Manfred, 4,640,654, Cl. 411-55.000.
- Ondeck, Elmer J.: See—
McMahon, Raymond D.; Jellovitz, John C.; Vaile, James T.; Renn, Gregory J.; and Ondeck, Elmer J., 4,640,165, Cl. 83-346.000.
- O'Neill, John C. Apparatus for retaining fishing rods in a boat. 4,640,039, Cl. 43-21.200.
- Oniki, Toru: See—
Takiguchi, Eiji; Yuto, Kazuaki; and Oniki, Toru, 4,640,952, Cl. 524-296.000.
- Ono Pharmaceutical Co., Ltd.: See—
Imaki, Katsuhiko; Okegawa, Tadao; and Arai, Yoshinobu, 4,640,931, Cl. 514-510.000.
- Ono, Takahiro; Akutsu, Takao; and Fujiwara, Hideyuki, to Japan Tobacco Inc. Drying and conditioning apparatus for tobacco. 4,640,299, Cl. 131-303.000.
- Ono, Takeshi, to Canon Kabushiki Kaisha. Communication apparatus which alerts operator to preset automatic operation. 4,641,133, Cl. 340-540.000.
- Onodera, Kaoru: See—
Komorita, Kazuo; Miyoshi, Masanobu; and Onodera, Kaoru, 4,640,889, Cl. 430-505.000.
- Onoyama, Toshiaki: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiko; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.
- Opitz, Charles L.; and Chase, Paul E., to Lockheed Electronics Co., Inc. Radar apparatus for determining range to an agitated reflective target. 4,641,137, Cl. 342-52.000.
- Opitz, Charles L., to Lockheed Electronics Co., Inc. Radar apparatus for detecting an agitated reflective target. 4,641,138, Cl. 342-61.000.
- Opti-Copy, Inc.: See—
Wilson, Monti R.; Hutchison, Victor E.; Bendure, William J.; and Anderson, Frederick W., 4,641,244, Cl. 364-475.000.
- Ordo, Richard A., to General Motors Corporation. Assembly method and apparatus for spline-type connection. 4,640,294, Cl. 192-70.2.
- Osabe, Akira: See—
Yokota, Yuji; and Osabe, Akira, 4,641,212, Cl. 360-99.000.
- Osada, Naomi: See—
Kato, Shigeru; Osada, Naomi; Ichitoh, Toshikatsu; Murata, Masae; and Mochizuki, Masumi, 4,641,151, Cl. 346-76.0PH.
- Osada, Shinichi: See—
Makino, Takao; and Osada, Shinichi, 4,641,331, Cl. 378-108.000.
- Osaka Gas Company Limited: See—
Mori, Makihiko; Kibe, Satoshi; and Maeda, Toyohiro, 4,640,761, Cl. 208-44.000.
- Osborn, Merritt A. Epicyclic power transmission. 4,640,154, Cl. 74-805.000.

- Osborn, Merritt A.: See—
Anderson, J. Edward C.; and Osborn, Merritt A., 4,640,117, Cl. 72-410.000.
- Oscar Mayer Foods Corporation: See—
Anderson, James E.; and Holmes, Terry L., 4,640,219, Cl. 118-24.000.
- Oshima, Noritsugu: See—
Takeda, Hiroshi; Oshima, Noritsugu; Kubo, Tateo; and Sakaguchi, Kenichi, 4,640,673, Cl. 425-297.000.
- Ossian, William F., to American Can Company. Multiple layer films containing oriented layers of nylon and ethylene vinyl alcohol copolymer. 4,640,852, Cl. 428-35.000.
- Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., to Union Carbide Corporation. Silicone-modified polyester resin and silicone-sheathed polyester fibers made therefrom. 4,640,962, Cl. 525-474.000.
- Oswald, Thomas: See—
Kelly, Patrick S.; Oswald, Thomas; Jeal, Alan J.; Hill, Stephen E.; and Murphy, Robert, 4,641,372, Cl. 455-601.000.
- Othmer, Ekkehard; and Othmer, Sieglind C., to Bristol-Myers. Treatment of sexual dysfunction with buspirone. 4,640,921, Cl. 514-252.000.
- Othmer, Sieglind C.: See—
Othmer, Ekkehard; and Othmer, Sieglind C., 4,640,921, Cl. 514-252.000.
- Otis Engineering Corporation: See—
Taylor, Frank H., 4,640,363, Cl. 166-317.000.
- Otsuki, Hiromi: See—
Nomura, Yoshihisa; Oka, Hiroyuki; and Otsuki, Hiromi, 4,640,558, Cl. 303-119.000.
- Ott, Russell G.: See—
Dwyer, Robert A.; and Ott, Russell G., 4,641,261, Cl. 364-900.000.
- Otto, Johann: See—
Schmid, Ralf; Otto, Johann; Bernklau, Daniela; and Knapke, Erwin, 4,640,626, Cl. 374-57.000.
- Ounuma, Shouji, to Tokyo Shbaura Denki Kabushiki Kaisha. Memory system. 4,641,282, Cl. 365-189.000.
- Overbergh, Noel: See—
Vansant, Jan; Overbergh, Noel; Buekers, Valere; and Pieck, Amandus L. E., 4,641,009, Cl. 219-200.000.
- Owen, Richard K.: See—
Wood, Marcus B.; and Owen, Richard K., 4,640,030, Cl. 40-158.00R.
- Owens-Corning Fiberglass Corporation: See—
Gill, Gurdev S., 4,640,082, Cl. 53-523.000.
- Harris, Ronald R.; and Ault, Russell L., 4,640,065, Cl. 52-204.000.
- Owens-Illinois, Inc.: See—
Chang, Long Fei, 4,640,428, Cl. 215-270.000.
- St. Clair, David L., 4,640,855, Cl. 428-36.000.
- Oximetrix, Inc.: See—
Beard, Robert W., 4,640,279, Cl. 128-303.140.
- Oy Partek AB: See—
Paakkinen, Ilmari, 4,640,074, Cl. 52-410.000.
- Oyama, Masumi, to Kabushiki Kaisha Toshiba. Information medium. 4,641,374, Cl. 455-603.000.
- Oyama, Takuji; and Mizuhashi, Mamoru, to Asahi Glass Company, Ltd. Optical article having improved heat resistance. 4,640,867, Cl. 428-432.000.
- Oyamada, Takashi, to NEC Corporation. Housing assembly for portable radio apparatus with one-piece baseplate and battery container. 4,641,370, Cl. 455-348.000.
- Ozaki, Hideyuki: See—
Shimotori, Kazuhiro; Fujishima, Kazuyasu; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,641,286, Cl. 365-230.000.
- Ozaki, Tadao: See—
Oe, Tsutomu; Kimura, Shigeaki; Yuzaki, Yoshinori; and Ozaki, Tadao, 4,640,453, Cl. 228-17.700.
- Ozawa, Juichiro, to Sumusum Industrial Co., Ltd.; and Thin Film Technology Corporation. Delay line device having symmetrical delay path. 4,641,113, Cl. 333-161.000.
- Ozawa, Kunitaka: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.
- Ozawa, Motoo, to Honda Giken Kogyo K.K. Radiator for vehicles, having improved mountability into vehicles. 4,640,341, Cl. 165-41.000.
- Ozawa, Toshiaki; Yamada, Yasuaki; and Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Printer with improved carriage and character wheel driving means. 4,640,634, Cl. 400-144.200.
- Ozo-Tek, Inc.: See—
Burlison, James C., 4,640,782, Cl. 210-748.000.
- Ozu, Tadahiro: See—
Nakano, Hideaki; and Ozu, Tadahiro, 4,640,236, Cl. 123-41.790.
- P.T.E. Inc.: See—
Ludwig, Frank, 4,640,119, Cl. 73-12.000.
- Paakkinen, Ilmari, to Oy Partek AB. Concrete building unit of a sandwich structure and a truss element and an insulating plate for such a building unit. 4,640,074, Cl. 52-410.000.
- Pace, James W., to Boeing Company, The. Closing device for an airfoil. 4,640,477, Cl. 244-214.000.
- Page, Ronald D., to Mobil Oil Corporation. Method and apparatus for splitting ice masses. 4,640,552, Cl. 299-24.000.
- Palazzo, David T. Double wall storage tank for liquids and method of making same. 4,640,439, Cl. 220-445.000.
- Paley, Gary, to Trine Products Corporation. Template for installation of electric door strikes. 4,640,019, Cl. 33-563.000.
- Palmer, Karl V.; and Park, David B. Conveying system of the type in which plastic carriers are mounted on plastic links of a conveyor chain. 4,640,410, Cl. 198-803.010.
- Palmer, Leif. Method of and means for holding a securing member in an existing attachment slit. 4,639,950, Cl. 2-422.000.
- Palmer, Darrel R.: See—
Ford, George W., Jr.; and Palmer, Darrel R., 4,640,440, Cl. 222-190.000.
- Panizza, Ettore; and Premoli, Ercole, to Fiat Auto S.p.A. Anti-skid device for motor vehicles. 4,640,557, Cl. 303-100.000.
- Paoletti, Antonio: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Papanicolaou, Nicolas A., to United States of America, Navy. Method of making planar geometry Schottky diode using oblique evaporation and normal incidence proton bombardment. 4,640,003, Cl. 29-576.00B.
- Papayanopolos, Manuel E.: See—
Garritano, Ronald F.; O'Connor, John J.; and Papayanopolos, Manuel E., 4,640,120, Cl. 73-12.000.
- Park, Chung P., to Dow Chemical Company, The. Expandable polyolefin compositions and preparation process utilizing isobutane blowing agent. 4,640,933, Cl. 521-94.000.
- Park, David B.: See—
Palmer, Karl V.; and Park, David B., 4,640,410, Cl. 198-803.010.
- Park, Joonsup; and Falcetta, Joseph J., to Alcon Laboratories. Hydrogels containing siloxane comonomers. 4,640,941, Cl. 523-107.000.
- Park, Joonsup: See—
Falcetta, Joseph J.; and Park, Joonsup, 4,640,965, Cl. 526-242.000.
- Parker Hannifin Corporation: See—
Hoffman, Robert K.; Kavanaugh, Mark A.; and Franson, David C., 4,640,309, Cl. 137-596.180.
- Parker, Kenneth B.: See—
Blair, Christon R.; and Parker, Kenneth B., 4,640,647, Cl. 405-224.000.
- Parks, Hal. Impeller and compaction refuse collection system. 4,640,659, Cl. 414-503.000.
- Paroli, Paolo: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Parsons, David M. Device for moving an automobile with disabled wheels. 4,640,495, Cl. 254-8.00B.
- Pascaloff, John H., to Hall Surgical-Division of Zimmer, Inc. Method and apparatus for providing sterile charged batteries. 4,641,077, Cl. 320-2.000.
- Patell, Farrokh A.; and McConkey, Stephen E., to Shaw Industries Ltd. Prefabricated thermally insulated pipeline section. 4,640,312, Cl. 138-109.000.
- Patrick, William J.: See—
Barbee, Steven G.; Devine, Gregory P.; Patrick, William J.; and Seeley, Gerard, 4,640,221, Cl. 118-689.000.
- Patterson, Joseph M.: See—
Ramsden, Hugh E.; and Patterson, Joseph M., 4,640,909, Cl. 502-407.000.
- Patterson, Robert W.: See—
Simpson, Wayne F.; Ayers, Ray R.; and Patterson, Robert W., 4,640,645, Cl. 405-63.000.
- Pavlov, Ivan K., to Essex Group, Inc. High speed wire cutter. 4,640,164, Cl. 83-304.000.
- Pazarci, Melih: See—
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,641,179, Cl. 358-12.000.
- Pearce, Thomas M.: See—
Files, William C.; Pellerin, Norvin L.; Rodboon, Somsak S.; and Pearce, Thomas M., 4,640,024, Cl. 34-133.000.
- Pearman, Bruce W.; and Huggins, Hal A., to Huggins, Hal A. Ammeter apparatus and method for capturing current readings. 4,641,089, Cl. 324-103.00P.
- Pegasus Sewing Machine Mfg. Co., Ltd.: See—
Nishikawa, Masahiko, 4,640,206, Cl. 112-143.000.
- Peiffer, Dennis G.; Kowalik, Ralph M.; and Lundberg, Robert D., to Exxon Research and Engineering Company. Drag reduction with novel hydrocarbon soluble polyampholytes. 4,640,945, Cl. 523-336.000.
- Peletan, Rene, to Framatome. Apparatus with linear movement. 4,640,811, Cl. 376-228.000.
- Pellerin Milnor Corporation: See—
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- Pellerin, Norvin L.: See—
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- Penn, Howard L., to Morton Thiokol Inc. Clear, weather resistant adherent coating. 4,640,868, Cl. 428-446.000.
- Pennewiss, Horst: See—
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- Penney, C. Bradford; and Sharrah, Raymond L., to Streamlight, Inc. Archery shooting bow with stabilizing flashlight. 4,640,258, Cl. 124-24.00R.
- Peresie, David N.: See—
Streets, Roger L.; Rabito, Thomas G.; and Peresie, David N., 4,640,730, Cl. 156-334.000.
- Perez, Manuel. Adjustable flexible dual gas mixing assembly. 4,640,260, Cl. 126-39.00E.
- Perkin-Elmer Corporation, The: See—
Schlesinger, Eugene R., 4,640,580, Cl. 350-274.000.
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- Perlman, Eugene H.; and MacNaughton, Laurence, III, to Digital Associates Corporation. Controller system or emulating local parallel minicomputer/printer interface and transferring serial data to remote line printer. 4,641,263, Cl. 364-900.000.
- Perri, Joseph: See—
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- Perrin, Denis. Flame shield for cigarette lighter and cigarette lighter including said flame shield. 4,640,679, Cl. 431-146.000.
- Perry, Nigel D.: See—
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- Persinski, Leonard J.; Walker, Jerry L.; and Boffardi, Bennett P., to Calgon Corporation. Synergistic scale and corrosion inhibiting admixtures containing carboxylic acid/sulfonic acid polymers. 4,640,793, Cl. 252-82.000.
- Person, Herman R., to Dale Electronics, Inc. Thick film delay line comprising a plurality of stacked delay assemblies formed by a printing process. 4,641,114, Cl. 333-161.000.
- Pesa, Nastazio. Meter beater timer. 4,641,125, Cl. 340-309.150.
- Petelin, Andrei N.; Sharp, Celia M.; Ury, Michael G.; and Wooden, Gene R., to Fusion Systems Corporation. Apparatus and method preventing radiation induced degradation of optical elements. 4,641,033, Cl. 250-492.100.
- Peterson, Drew, to Hall Surgical, Division of Zimmer, Inc. Tubing organizer. 4,639,980, Cl. 24-306.000.
- Petrocco, Giovanni: See—
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- Petroleum Fermentations N.V.: See—
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- Peyrelongue, Jean-Pierre: See—
Semedard, Jean-Claude; Marsault, Jean-Jacques; Peyrelongue, Jean-Pierre; and Vallee, Gerard, 4,640,480, Cl. 248-62.000.
- Pfizenmaier, Wolfgang; Heidt, Heinrich; and Lehner, Rolf P., to Heidelberger Druckmaschinen AG. Device for determining and adjusting the position of a web. 4,641,070, Cl. 318-640.000.
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- Phillips, James E.; and Lasswell, Patrick G., to University of Delaware. The. Method and apparatus for increasing the durability and yield of thin film photovoltaic devices. 4,640,002, Cl. 29-574.000.
- Phillips Petroleum Company: See—
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- Piazza, Denis L.: See—
McNamara, James R.; and Piazza, Denis L., 4,640,544, Cl. 296-181.000.
- Pieck, Amandus L. E.: See—
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- Pieper, Norbert: See—
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- Pietzsch, Kurt E.; and Bonnyay, Laszlo, to Dorr-Oliver Incorporated. Vacuum filter for the separation of solids from liquids. 4,640,775, Cl. 210-387.000.
- Pike, August A.: See—
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- Pike, John V.: See—
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- Pinkel, Edward B.: See—
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- Pioneer Ansafone Manufacturing Corporation: See—
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- Pioneer Electronic Corporation: See—
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- Sawaki, Manabu, 4,641,068, Cl. 318-317.000.
- Takahashi, Yoshio, 4,641,345, Cl. 381-86.000.
- Tsuchiya, Yukio; and Matsukawa, Yutaka, 4,640,381, Cl. 181-144.000.
- Pitel, Ira J., to Allied Corporation. Electrical power inverter having a phase modulated, twin-inverter, high frequency link and an energy storage module. 4,641,232, Cl. 363-71.000.
- Pitney Bowes Inc.: See—
Clark, John I.; Eckert, Alton B.; and Warren, David M., 4,641,346, Cl. 380-3.000.
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Doutney, George J., 4,640,599, Cl. 355-3.00H.
Luperti, Harry E.; Irvine, Robert; and Luvara, Anthony, 4,640,506, Cl. 271-212.000.
- Pitt, Peter N. E. Time computer and display device. 4,640,624, Cl. 368-111.000.
- Placke, Dale L.; and Weeks, Donald L., to NCR Corporation. Document guide mechanism. 4,640,505, Cl. 271-209.000.
- Pless, Peter; and Andersen, Henning R. Esophageal electrode probe useful for electrical stimulation of the heart. 4,640,298, Cl. 128-784.000.
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- Poland, Clark L.: See—
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- Poland, David A., to Northrop Corporation. Holding fixture. 4,640,501, Cl. 269-21.000.
- Polaroid Corporation: See—
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- Rogers, Howard G., 4,640,482, Cl. 248-168.000.
- Pollock, Ira G., to Tektronix, Inc. Digital integrated circuit propagation delay time controller. 4,641,048, Cl. 307-591.000.
- Polson, Gary R., to Strength, Tech, Inc. Barbell collar. 4,639,979, Cl. 24-270.000.
- Polychrome Corp.: See—
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- Polydrain, Inc.: See—
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- Pomagalski SA: See—
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- Pomernacki, Charles L.: See—
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- Pons, Claude, to Videocolor. Method and apparatus for adjusting the static convergence and purity of color television tubes. 4,641,062, Cl. 315-368.000.
- Pope, Paul B., to McConnell Dowell Constructors Limited. Joining means and method for joining metal members. 4,640,532, Cl. 285-41.000.
- Popp, Robert L.: See—
Sallee, Lorry F.; and Popp, Robert L., 4,640,726, Cl. 156-85.000.
- Porter, John F., to Bay Mills Limited. Facing for plastic foamed construction insulation board. 4,640,864, Cl. 428-334.000.
- Porter, Richard M.: See—
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- Pourprie, Michel: See—
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- Powell, Richard C.: See—
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- Powers, Thomas, Jr.: See—
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- Prameta Präzisionsmetall- und Kunststoffzeugnisse G. Baumann & Co.: See—
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- Pratt & Whitney Canada Inc.: See—
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- Pravda, Milton F., to Manco Corporation. Self-cleaning, rotary heat exchanger. 4,640,344, Cl. 165-86.000.
- Predali, Jean-Jacques: See—
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- Premoli, Ercole: See—
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- Preston, Kendall, Jr. Logical transform image processor. 4,641,351, Cl. 382-6.000.

- Price, J. B.: See—
Bunch, Matthew L.; Price, J. B.; and Stütz, Robert W., 4,640,224, Cl. 118-725.000.
- Prickett, Robert J., to Raytheon Company. Broad beamwidth lens feed. 4,641,144, Cl. 343-754.000.
- Prince Corporation: See—
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- Printiss, Frederick H., Sr.; and Barker, Irvy T., to Nelson Industries, Inc. Tube clamp assembly. 4,640,536, Cl. 285-367.000.
- Prior Scientific Instruments Limited: See—
Turner, Charles F. R.; and Wingfield, John V., 4,640,578, Cl. 350-239.000.
- Pritchard, Dalton H., to RCA Corporation. Motion detector that extracts motion information from sidebands of a baseband television signal. 4,641,186, Cl. 358-105.000.
- Procter & Gamble Company, The: See—
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- Producers Color Service, Inc.: See—
Fedder, Stephen C.; and Skudrna, Anthony J., 4,641,152, Cl. 346-137.000.
- Puchala, Ryszard J.; and Miko, Stephen J., to Indescor Hydrodynamics Inc. Method and apparatus for removal of surface material. 4,640,644, Cl. 404-75.000.
- Purhonen, Hannu: See—
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- Purifoy, George G., Jr. Conversion adapter for buoyancy compensator vest. 4,640,215, Cl. 114-315.000.
- Pusch, Gunter. Broad band camouflage screen having a frequency dependent radar attenuation. 4,640,851, Cl. 428-17.000.
- Q-dot Corporation: See—
Grover, George M.; and Chrisman, Robert H., 4,640,347, Cl. 165-104.260.
- Quick, David C.; McCormick, Stephen J.; and Ballendux, Gerardus M., to Deutz-Allis Corporation. Multi-speed planetary transmission. 4,640,152, Cl. 74-767.000.
- Quillen, Jeffrey B.; and Spahn, James G. Recliner for medical convalescence. 4,639,960, Cl. 5-455.000.
- Quinn, Bevan P. Disc pulverizer. 4,640,468, Cl. 241-199.100.
- R. F. Shoup Corporation: See—
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- R. R. Brink Locking Systems, Inc.: See—
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- Rabito, Thomas G.: See—
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- Racal Data Communications Inc.: See—
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- Rache, Horst: See—
Habfast, Karl-Eugen; Kappus, Gunter; Rache, Horst; and Windel, Bernd, 4,641,029, Cl. 250-288.000.
- Raciti, Salvatore: See—
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- Radtke, Manfred, to MERO-Werke Dr.-Ing. Max Mengerhausen GmbH & Co. Self-supporting composite plate, especially for double floors. 4,640,854, Cl. 428-35.000.
- Raether, Wolfgang: See—
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- Ragazzoni, Silvio: See—
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- Rajotte, Paul T.: See—
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- Ralph J. Stolle Company: See—
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- Ram Automotive Company: See—
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- Rammos, Emmanuel, to U.S. Philips Corporation. Microwave antenna having an array of radiating elements for circularly polarized signals. 4,641,145, Cl. 343-798.000.
- Ramsden, Hugh E.; and Patterson, Joseph M., to J. T. Baker Chemical Company. Bonded phase of silica and carboalkoxyalkyl silanes for solid phase extraction. 4,640,909, Cl. 502-407.000.
- Rancour, David P.: See—
Archambeault, Bruce R.; and Rancour, David P., 4,641,358, Cl. 382-68.000.
- Ranks Hovis McDougall plc: See—
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- Rasmussen, James E.: See—
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- Rasmussen, Rolf B. Vacuum lift clamp device for handling of paper rolls. 4,640,661, Cl. 414-619.000.
- Rasmussen, Vagn N.; and Hougaard, Finn, to Eskofot A/S. Reproduction camera. 4,640,610, Cl. 355-73.000.
- Rasoul, Husam A. A., to Celanese Corporation. Benzothiazole-polyamide composition. 4,640,948, Cl. 524-157.000.
- Rave, Ortwin: See—
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- Raven, Peter B.: See—
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- Ray, Dennis D.: See—
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- Raychaudhuri, Dipankar, to RCA Corporation. Announced retransmission random access system. 4,641,304, Cl. 370-95.000.
- Raycom Systems, Inc.: See—
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- Raytheon Company: See—
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- Refac Electronics Corporation: See—
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- Reger, Philip R., to American Manufacturing Company, Inc. Condition-responsive switching circuit. 4,641,132, Cl. 340-540.000.
- Regimand, Ali, to Troxler Electronic Laboratories, Inc. Apparatus and method for directly measuring the density of a thin layer. 4,641,030, Cl. 250-308.000.
- Reich, William N., to Spectrolyte, Inc. Microscope illuminator. 4,640,589, Cl. 350-523.000.
- Reichle & De Massari AG Elektro-Ingenieure: See—
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- Reimer, William A., to GTE Communication Systems Corporation. Electromagnetic interference reducing assembly. 4,641,224, Cl. 361-424.000.
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- Rempfler, Hermann: See—
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- Research Development Corp.: See—
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- Reuter, Karl F.: See—
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- Rexair, Inc.: See—
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- Rheinmetall GmbH: See—
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- Rheometrics, Inc.: See—
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- Rhine, Art. Mechanical roping steer. 4,640,515, Cl. 273-339.000.
- Rhone-Poulenc Specialites Chimiques: See—
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- Richard Wolf GmbH: See—
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- Richardson, Daniel E., to Shure Manufacturing Corporation. Pass-through transaction drawer with removable deal tray. 4,640,200, Cl. 109-19.000.
- Richter, Hans-Peter, to Robert Bosch GmbH. Electronic circuit apparatus for separating the luminance and color information of a color television signal. 4,641,180, Cl. 358-31.000.
- Richter, Wolfgang; and Durl, Bernd, to Hoechst Aktiengesellschaft. Pad dyeing process for wool. 4,640,691, Cl. 8-543.000.
- Ricoh Company, Ltd.: See—
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- Riederer, Stephen J., to Duke University Medical Center. Determination of T1 relaxation times used in automated nuclear magnetic resonance image synthesis. 4,641,095, Cl. 324-309.000.
- Rieter Machine Works: See—
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- Riherd, David M.: See—
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- Risser, Dale M.: See—
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- Ritchie, Ian T., to Andus Corp. Optical recording coating. 4,640,860, Cl. 428-143.000.
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- Rivera, Jeremias C., Jr., to Scully-Jones Corp. Coolant delivery system. 4,640,652, Cl. 409-136.000.
- Rivett, Paul W. J.: See—
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- Robert Bosch GmbH: See—
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- Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, 4,640,739, Cl. 156-659.100.
- Richter, Hans-Peter, 4,641,180, Cl. 358-31.000.
- Roberts & Associates Water and Waste Treatment Limited: See—
Roberts, Charles G., 4,640,307, Cl. 137-448.000.
- Roberts, Bobby S. Muscular rehabilitation apparatus for exercising human body appendages. 4,640,268, Cl. 128-25.00R.
- Roberts, Charles G., to Roberts & Associates Water and Waste Treatment Limited. Float valve. 4,640,307, Cl. 137-448.000.
- Roberts, David; and Williams, Michael R., to Ranks Hovis McDougall plc. Testing samples. 4,640,614, Cl. 356-36.000.
- Roberts, Ernest E.; Hansel, Paul H.; and Hudgens, William O., to Atlantic Richfield Company. Method and apparatus for assembling large panels. 4,640,734, Cl. 156-562.000.
- Roberts, Melvin F., to Bloomfield Industries, Inc. Improved safety thermostat system for electric beverage making device. 4,641,011, Cl. 219-328.000.
- Roberts, Melvin F., to Bloomfield Industries, Inc. Thermostat sensing tube and mounting system for electric beverage making device. 4,641,012, Cl. 219-331.000.
- Roberts, W. F. Dual purpose closure for heat exchangers. 4,640,348, Cl. 165-158.000.
- Robertshaw Controls Company: See—
Katchka, Jay R.; Yeaman, George A.; and McKinney, Richard W., 4,640,676, Cl. 431-54.000.
- McIntosh, Harold A., 4,641,223, Cl. 361-424.000.
- Robin-Champigneul, Yves: See—
Rozenwaig, Boris; and Robin-Champigneul, Yves, 4,641,376, Cl. 455-607.000.
- Robinton, Michael A., to Robinton Products, Inc. Telephone interrupter. 4,640,988, Cl. 379-90.000.
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- Robotic Vision Systems, Inc.: See—
Schmidt, Richard, 4,640,620, Cl. 356-376.000.
- Roca, Abel. Wave generator for waterbeds. 4,639,959, Cl. 5-451.000.
- Rocca, Jorge J.: See—
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- Rockaway Corporation: See—
Varga, LeRoy M.; and Yermal, Michael F., 4,640,321, Cl. 140-93.00C.
- Rockwell International Corporation: See—
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Lange, Fred F., 4,640,902, Cl. 501-97.000.
Tracy, John M.; Yeh, Pochi A.; and Khoshnevisan, Mohsen, 4,640,618, Cl. 356-345.000.
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- Rogers, Howard G., to Polaroid Corporation. Foldable tripod. 4,640,482, Cl. 248-168.000.
- Rohm GmbH: See—
Schnee, Reiner; Pennewiss, Horst; and Markert, Gerhard, 4,640,954, Cl. 524-516.000.
- Rohr, William A.: See—
Hemler, Paul F.; and Rohr, William A., 4,640,499, Cl. 267-160.000.
- Roller, Erling: See—
Clark, Peter J.; Hudd, Anthony W.; Bloor, Stephen T.; and Roller, Erling, 4,640,335, Cl. 164-440.000.
- Romenesko, David J.: See—
Groenhof, Eugene D.; Romenesko, David J.; and Streu, Rick D., 4,640,792, Cl. 252-78.300.
- Romer, Manfred; Woletz, Peter; and Kruger, Klaus, to Morton Thiokol GmbH. Radiation-curable composition, a process for preparing same, and the use thereof. 4,640,938, Cl. 522-79.000.
- Romo, H. Duane. Insert for converting a conventional home oven into a pizza oven. 4,640,265, Cl. 126-337.00R.
- Rooney, John M.: See—
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- Rosback, Thomas J., to Harris Corporation. Multi-band automatic gain control apparatus. 4,641,361, Cl. 381-103.000.
- Roschmann, Klaus: See—
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- Rose, Millard F., to United States of America, Navy. Gun-firing system. 4,640,180, Cl. 89-8.000.
- Rose, Philip M.: See—
Kreider, David R.; McCullum, Albert; Rose, Philip M.; and Lin, Chi-Hung, 4,640,963, Cl. 526-67.000.
- Rose, Richard C., to AT&T Information Systems Inc. Speech response interface circuit. 4,640,992, Cl. 379-89.000.
- Rose, Thomas H., to Eastern Technical Associates, Inc. Transmissometer and optical elements therefor. 4,640,621, Cl. 356-434.000.
- Rosenberg, Harvey S., to Battelle Memorial Institute. Process for simultaneous removal of SO₂ and NO_x from gas streams. 4,640,825, Cl. 423-235.000.
- Rosner, Manfred; and Raether, Wolfgang, to Hoechst Aktiengesellschaft. 2-phenyl-hexahydro-1,2,4-triazine-3,5-diones. 4,640,917, Cl. 514-222.000.
- Ross, Frank E.; and Hunter, William H., to Maytag Company, The. Rotating antenna for a microwave oven. 4,641,006, Cl. 219-10.55F.
- Rouaud, Christian: See—
Abbes, Claude; Rouaud, Christian; Valla, Jean; Forges, Robert; and de Villepoix, Raymond, 4,640,530, Cl. 285-18.000.
- Rovedo, Nivo: See—
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,641,170, Cl. 357-35.000.
- Rowe, Lacy A. Fishing lure. 4,640,042, Cl. 43-42.150.
- Rowe, William; and Dooley, Thomas, to Polychrome Corp. Photosensitive compounds and lithographic composition or plate therewith having o-quinone diazide sulfonyl ester group. 4,640,884, Cl. 430-165.000.
- Roy, Richard D., to Eaton Corporation. AC to DC converter with voltage regulation. 4,641,233, Cl. 363-89.000.
- Rozenwaig, Boris; and Robin-Champigneul, Yves. Multi-channel multi-cell optoelectronic switching networks for multi-service telecommunications systems. 4,641,376, Cl. 455-607.000.
- Rubik, Erno, to Kozponti Valto-es Hitelbank Rt. Framework truss with variable cantilever length. 4,640,062, Cl. 52-109.000.
- Rubin, Mae K., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-50 using dibenzylidimethylammonium ions and the product produced. 4,640,829, Cl. 423-328.000.
- Ruderian, Max J. Hot and cold direct contact applicator. 4,640,284, Cl. 128-399.000.
- Rudis, Thomas C.: See—
Marino, Michael; and Rudis, Thomas C., 4,640,427, Cl. 215-232.000.
- Runyon, Robert C., to Substrate Systems, Inc. Computer memory disc and method for machining same. 4,640,651, Cl. 409-132.000.
- Rupprecht, Karl, to Claas Ohg. Harvester thresher. 4,640,085, Cl. 56-14.600.
- Rush, William F.; Huebler, James E.; and Lysenko, Peter, to Institute of Gas Technology. Photoacoustic speaker and method. 4,641,377, Cl. 381-111.000.
- Rushford, Calvin R., to Indal, Inc. Revolving door collapsing mechanism. 4,640,046, Cl. 49-44.000.
- Russell, Brian M., to International Computers Limited. Data packet transmission using shared channel. 4,641,307, Cl. 370-60.000.

- Russell, Ronald R.: See—
Morris, Robert A.; Rajotte, Paul T.; Russell, Ronald R.; and Kiesel, George W., 4,641,217, Cl. 361-45.000.
- Russo, Vitaliano: See—
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- Ryaboy, Mikhail Y.: See—
Mody, Dinesh I.; Rasmussen, James E.; and Ryaboy, Mikhail Y., 4,640,821, Cl. 422-81.000.
- Ryobi Ltd.: See—
Murakami, Hideo; and Kobayashi, Takehiro, 4,640,471, Cl. 242-84.530.
- Rzeszewski, Theodore S.: See—
LoCicero, Joseph L.; Pazarci, Melih; and Rzeszewski, Theodore S., 4,641,179, Cl. 358-12.000.
- S. C. Johnson & Son, Inc.: See—
Harris, Robert B., 4,640,713, Cl. 106-3.000.
- S.R. Gent plc: See—
O'Keefe, Michael; and Fox, John R., 4,640,207, Cl. 112-236.000.
- Saab Marine Electronics Aktiebolag: See—
Edvardsson, Kurt O., 4,641,139, Cl. 342-124.000.
- Saab-Scania Aktiebolag: See—
Jansch, Peter A. G., 4,640,126, Cl. 73-290.00R.
- Sacarisen, Stephen P.; and Fanini, Otto N., to Texas Instruments Incorporated. Method of internal self-test of microprocessor using microcode. 4,641,308, Cl. 371-16.000.
- Sach, George S., to Smith Kline & French Laboratories Limited. 3,5-Substituted-2-pyridylalkylaminothiadiazoles having histamine H₁-antagonist activity. 4,640,926, Cl. 514-333.000.
- Saegusa, Noboru: See—
Yotsutani, Akio; Makino, Masayuki; Saegusa, Noboru; and Sone, Tomoshi, 4,640,986, Cl. 379-60.000.
- Safir, Aran: See—
Flom, Leonard; and Safir, Aran, 4,641,349, Cl. 382-2.000.
- Sagawa, Koichiro: See—
Meguro, Kenjiro; Sagawa, Koichiro; Yokota, Hirofumi; and Takehara, Masahiro, 4,640,943, Cl. 523-200.000.
- Sage Laboratories, Inc.: See—
Chapell, Harry F., 4,641,111, Cl. 333-115.000.
- Sahara, Masanori: See—
Nakamura, Saburo; Matsuoka, Tsutomu; Yamauchi, Hirofumi; and Sahara, Masanori, 4,640,252, Cl. 123-446.000.
- St. Clair, David L., to Owens-Illinois, Inc. Plastic container with integral spout. 4,640,855, Cl. 428-36.000.
- Saito, Gunji, to Honda Giken Kogyo Kabushiki Kaisha. Cultivator. 4,640,366, Cl. 172-42.000.
- Saito, Susumu: See—
Kataoka, Keiji; and Saito, Susumu, 4,640,573, Cl. 350-6.100.
- Saito, Teruo; Asai, Kuniki; Suzuki, Yasuro; and Kagiya, Kei, to Sumitomo Chemical Company, Limited. Resin composition. 4,640,961, Cl. 525-444.000.
- Saito, Tomotaka, to Kabushiki Kaisha Toshiba. Memory device with a register interchange function. 4,641,278, Cl. 365-78.000.
- Saito, Yukio: See—
Okita, Masao; Gunji, Kunihiko; and Saito, Yukio, 4,641,211, Cl. 360-97.000.
- Sakagami, Shigeru: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiro; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.
- Sakaguchi, Kenichi: See—
Takeda, Hiroshi; Oshima, Noritsugu; Kubo, Tateo; and Sakaguchi, Kenichi, 4,640,673, Cl. 425-297.000.
- Sakai, Hiroyuki: See—
Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, 4,640,699, Cl. 65-3.150.
- Sakai, Noboru: See—
Inoue, Fumio; Eto, Masahiro; Shimaoka, Shoji; and Sakai, Noboru, 4,641,195, Cl. 358-242.000.
- Sakai, Yukiyoshi: See—
Takahata, Daisuke; and Sakai, Yukiyoshi, 4,641,054, Cl. 310-324.000.
- Sakamoto, Koji: See—
Miyakawa, Seiichi; Tatsumi, Susumu; and Sakamoto, Koji, 4,640,129, Cl. 73-866.000.
- Sakamoto, Takahide; Hiroshima, Tatsuo; Matsubara, Noriyuki; and Miyata, Kenichi, to Sumitomo Metal Industries, Ltd. Rotary probe apparatus for detecting flaws in a test object. 4,641,092, Cl. 324-227.000.
- Sakamoto, Takao, to Tachikawa Spring Co., Ltd. Seat suspension. 4,640,488, Cl. 248-588.000.
- Sakura, Yasuhiro; Nimura, Hitoshi; and Ishikawa, Mamoru, to Tokyo Electric Co., Ltd. Thermal printer. 4,641,147, Cl. 346-76.0PH.
- Sakurai, Masaaki: See—
Hirabayashi, Hiromitsu; and Sakurai, Masaaki, 4,640,600, Cl. 355-3.0FU.
- Sakurai, Yasuo: See—
Imanishi, Kiyokazu; Naka, Hiroyuki; Sakurai, Yasuo; Ichianagi, Takashi; and Kishimoto, Masaru, 4,641,214, Cl. 360-130.240.
- Salentine, Christopher G., to Chevron Research Company. Trihydrated potassium triborate and process for reacting two borates in the solid state. 4,640,827, Cl. 423-279.000.
- Sajle, Ernst. Dressing-grinding process and electronically controlled grinding machine. 4,640,057, Cl. 51-165.870.
- Sallee, Lorry F.; and Popp, Robert L., to Kimberly-Clark Corporation. Heat activation process and apparatus for heat shrinkable material. 4,640,726, Cl. 156-85.000.
- Salter, Anthony J. Pipe supports. 4,640,487, Cl. 248-571.000.
- Salvatora, David A.: See—
Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., 4,640,815, Cl. 419-8.000.
- Haswell, Walter T., Jr.; Brosius, Karl S.; Justus, Scott B.; and Salvatora, David A., 4,640,814, Cl. 419-8.000.
- Sameca S.A.: See—
Geiser, Markus; and Vandevor, Claude, 4,640,157, Cl. 82-2.700.
- Sampath, Krishnaswamy, to Mobil Oil Corporation. Oil recovery process employing a complexed polysaccharide. 4,640,358, Cl. 166-274.000.
- Samsonite Corporation: See—
Mobley, Lawrence R.; and Gregg, James S., 4,640,414, Cl. 206-287.000.
- Sanders Associates, Inc.: See—
Apostolos, John T., 4,641,143, Cl. 342-445.000.
- Sanders, Michael J.: See—
Cerdan-Diaz, Juan M.; Sanders, Michael J.; and Wellar, Mark E., 4,640,848, Cl. 427-426.000.
- Sanders, Rudolf; and Rijckaert, Josephus F., to U.S. Philips Corporation. Plastic-based automotive headlamp. 4,641,056, Cl. 313-51.000.
- Sandhaus, Jeffrey. Closure having integral formed sealing means. 4,640,429, Cl. 215-320.000.
- Sandomirsky, Sergei G.: See—
Melguy, Mikhail A.; and Sandomirsky, Sergei G., 4,641,093, Cl. 324-239.000.
- Sanger, David G.: See—
Kind, Stuart S.; Sanger, David G.; Twibell, John D.; and Hargraves, John, 4,640,035, Cl. 40-625.000.
- Sani-Fresh International, Inc.: See—
Bokmiller, David J.; and Heck, Samuel C., 4,640,638, Cl. 401-145.000.
- Sano, Akira: See—
Mori, Masaaki; Sano, Akira; Horiuchi, Yushi; and Okumura, Yoshihiro, 4,640,023, Cl. 34-57.00A.
- Santalini, Antonio, to Rockwell-Rimoldi S.p.A. Electromechanical friction brake for actuating and stopping a rotating element in predetermined positions. 4,640,397, Cl. 192-18.00B.
- Santel, Hans-Joachim: See—
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hansler, Gerd, 4,640,923, Cl. 514-272.000.
- Sanyo Electric Co., Ltd.: See—
Deguchi, Yutaka; and Tsuchida, Yasuyuki, 4,640,601, Cl. 355-3.00R.
- Suzuki, Masami; Hirota, Tatsuya; and Maeda, Masahiko, 4,640,022, Cl. 34-48.000.
- Tajima, Osamu; Yamada, Makoto; Hagino, Hideo; and Nishizawa, Nobuyoshi, 4,640,873, Cl. 429-24.000.
- Sara Lee Corporation: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.
- Sarkis S.A.: See—
Moraly, Paul, 4,640,371, Cl. 175-61.000.
- Sasaki, Issei, to Sasaki, Issei; and Seiko Instruments & Electronics Ltd., a part interest. Liquid refractometer. 4,640,615, Cl. 356-130.000.
- Sasaki, Takeshi: See—
Matsushima, Katsuaki; Fujioka, Yasuhiro; Sasaki, Takeshi; Fujine, Manabu; and Yamamoto, Kouji, 4,640,184, Cl. 98-2.150.
- Sasaki, Tomio; and Noguchi, Yukio, to Ricoh Company, Ltd. Device for sensing sheet transport condition. 4,641,272, Cl. 364-559.000.
- Sasaki, Toshiki: See—
Nakamura, Chiaki; Oe, Koji; Muta, Tomonobu; Sasaki, Toshiki; and Nishio, Yoshihiro, 4,640,887, Cl. 430-275.000.
- Sasaki, Yukio; Nishimura, Kotaro; and Minato, Osamu, to Hitachi, Ltd. Line change-over circuit and semiconductor memory using the same. 4,641,285, Cl. 365-210.000.
- SASIB S.p.A.: See—
Cristian, Athos, 4,640,013, Cl. 131-94.000.
- Sato, Akira: See—
Nagai, Takaatsu; Takada, Masayuki; Sato, Akira; and Imamura, Mineo, 4,641,319, Cl. 373-84.000.
- Sato, Kimiaki: See—
Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, 4,641,166, Cl. 357-23.600.
- Sato, Kiyoshi: See—
Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, 4,640,919, Cl. 514-241.000.
- Sato, Kozo: See—
Kawata, Ken; Yabuki, Yoshiharu; Sato, Kozo; and Hirai, Hiroyuki, 4,640,892, Cl. 430-617.000.
- Yabuki, Yoshiharu; Sato, Kozo; Kawata, Ken; and Hirai, Hiroyuki, 4,640,891, Cl. 430-551.000.
- Sato, Masaki, to Kabushiki Kaisha Toshiba. Method of manufacturing semiconductor device. 4,640,000, Cl. 29-571.000.
- Sato, Noboru, to Sony Corporation. Method for producing magnetic medium. 4,640,755, Cl. 204-192.000.
- Sato, Ryo: See—
Nagano, Eiiki; Haga, Toru; Sato, Ryo; and Morita, Kouichi, 4,640,707, Cl. 71-96.000.
- Sato, Ryoichi; and Mimoto, Toshio, to Sharp Kabushiki Kaisha. Semiconductor circuit of MOS transistors for generation of reference voltage. 4,641,081, Cl. 323-313.000.

Sato, Shigeru: See—
Fuji, Hideji; Hayakawa, Takayuki; Sato, Shigeru; and Yanagihara, Eiichi, 4,640,729, Cl. 156-257.000.

Sato, Shinsaku; and Yamagata, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Methods of controlling operation of multistage hydraulic machines. 4,640,664, Cl. 415-1.000.

Sato, Yasuo: See—
Mitsudera, Hiroyuki; Konishi, Kazuo; and Sato, Yasuo, 4,640,929, Cl. 514-436.000.

Sato, Yoshiyuki: See—
Kawade, Hideji; Takahashi, Hideaki; Sato, Yoshiyuki; and Urayama, Yuji, 4,640,990, Cl. 379-77.000.

Satoh, Junichi, to International Business Machines Corp. Method for reading a document image. 4,641,357, Cl. 382-61.000.

Satomura, Shigeyuki: See—
Inazawa, Yoshizumi; Takahashi, Toshihiko; Tani, Toshiyuki; and Satomura, Shigeyuki, 4,641,208, Cl. 360-72.200.

Sauer, John E.: See—
Krambeck, Frederick J.; McGovern, Stephen J.; and Sauer, John E., 4,640,463, Cl. 239-424.000.

Saumweber, Eckart; and Schmitt, Otto, to Knorr-Bremse AG. Brake lining carrier for disk brakes having divided lining elements. 4,640,390, Cl. 188-73.370.

Saunders, Randy: See—
Martin, Frank J.; Hartman, Murray; and Saunders, Randy, 4,640,985, Cl. 174-138.00F.

Sawa, Shigeki; and Ueda, Hiroshi, to Shibuya Kogyo Co. Ltd. Method of curing athlete's foot by laser beam irradiation. 4,640,283, Cl. 123-395.000.

Sawada, Hideo: See—
Yata, Kiyoshi; and Sawada, Hideo, 4,641,277, Cl. 364-900.000.

Sawada, Kenji, to Fujitsu Limited. Stepper motor control system. 4,641,073, Cl. 318-696.000.

Sawada, Kozo: See—
Hashimoto, Masashi; Aratani, Matsuhiko; and Sawada, Kozo, 4,640,915, Cl. 514-210.000.

Sawaki, Manabu, to Pioneer Electronic Corporation. DC motor driving device. 4,641,068, Cl. 318-317.000.

Sawyer, James L.: See—
Heitzmann, Richard E.; Fitzgerald, Mark; and Sawyer, James L., 4,640,715, Cl. 106-85.000.

Sawyer, Steven D.; Hill, William D.; Wilson, Patricia A.; and Steiner, William M., to General Electric Company. Nuclear system test simulator. 4,640,812, Cl. 376-245.000.

Scalera, Michael, to AT&T Bell Laboratories. Protector with circuit disabler. 4,641,218, Cl. 361-119.000.

Scan Web of North America, Inc.: See—
Laursen, Henning; Mosgaard, John; Nielson, Otto V.; and Poland, Clark L., 4,640,810, Cl. 264-518.000.

Scarinci, Fernando: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.

Schafer, David E.: See—
Grabiak, Raymond C.; Howe, Robert K.; and Schafer, David E., 4,640,702, Cl. 71-90.000.

Schafer, Fritz P.; Szatmari, Sandor; and Bor, Zolt, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Method and device for producing individual short laser pulses. 4,641,312, Cl. 372-25.000.

Schaich, Josef. Four stroke piston engine. 4,640,237, Cl. 123-79.00C.

Schartzman, Everett H. Integral spring flexure for use with high speed rotating shafts. 4,640,653, Cl. 409-233.000.

Schaub, Robert E.: See—
Wissner, Allan; Schaub, Robert E.; and Sum, Phaik E., 4,640,913, Cl. 514-77.000.

Schaublin, Donna S.: See—
Schaublin, John M.; and Schaublin, Donna S., 4,640,109, Cl. 70-202.000.

Schaublin, John M.; and Schaublin, Donna S. Removable latch handle locking device. 4,640,109, Cl. 70-202.000.

Schellstede, Herman J. Well penetration apparatus and method. 4,640,362, Cl. 166-298.000.

Schenck, John F.: See—
Bottomley, Paul A.; and Schenck, John F., 4,641,097, Cl. 324-318.000.

Schermer, Heinz: See—
Geller, Heinrich; Nold, Peter; Schermer, Heinz; and Rave, Ortwin, 4,640,447, Cl. 222-603.000.

Schieber, Hans, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG. Double head flat knitting machine. 4,640,103, Cl. 66-64.000.

Schiel, Christian; and Bauder, Albrecht, to J. M. Voith GmbH. Roll for treating webs, preferably webs of paper. 4,639,990, Cl. 29-116.00R.

Schiele, August; and Huber, Wolfgang, to Kuka Wehrtechnik GmbH. Automatic gun loading device for a tank. 4,640,181, Cl. 89-46.000.

Schilling, Thaddeus A. Portable gas-fired forced-draft heater. 4,640,680, Cl. 431-350.000.

Schimmel, Gunther; and Gradl, Reinhard, to Hoechst Aktiengesellschaft. Process for making alkali metal phosphate solutions containing little fluorine. 4,640,824, Cl. 423-185.000.

Schirmer, Henry G.: See—
Ferguson, Daniel J.; Schirmer, Henry G.; and Mueller, Walter B., 4,640,856, Cl. 428-36.000.

Schlag, Johannes: See—
Naarmann, Herbert; Koehler, Gernot; and Schlag, Johannes, 4,640,749, Cl. 204-59.00R.

Schlesinger, Eugene R., to Perkin-Elmer Corporation. The Optical chopper with high rate of focus dither. 4,640,580, Cl. 350-274.000.

Schlumberger Canada Limited: See—
Martin, Frank J.; Hartman, Murray; and Saunders, Randy, 4,640,985, Cl. 174-138.00F.

Schlumberger Technology Corporation: See—
Boisson, Gerard, 4,640,354, Cl. 166-250.000.

Schmalzl, Dieter, to Siemens Aktiengesellschaft. Radio-frequency-tight shield with planar parts. 4,640,979, Cl. 174-35.00C.

Schmeal, W. R.; Singhal, S. N.; and Lo, K. H., to Shell Oil Company. Fiber wound plastic beverage can. 4,640,853, Cl. 428-35.000.

Schmid, Dieter, to Lescha Maschinenfabrik GmbH. Chopper for garden refuse or the like. 4,640,465, Cl. 241-37.500.

Schmid, Ralf; Otto, Johann; Bernklau, Daniela; and Knapke, Erwin, to Siemens Aktiengesellschaft. Method and apparatus for localizing weak points within an electrical circuit. 4,640,626, Cl. 374-57.000.

Schmidt, Eugene H. Row following guidance device for a tractor-drawn row crop implement. 4,640,365, Cl. 172-26.000.

Schmidt-Kufke, Klaus-Peter; and Feld, Gerhard. Tubular ventilator. 4,640,803, Cl. 261-64.300.

Schmidt, Lothar, to Leybold-Heraeus GmbH. Method for the processing of measurement data in a gas friction vacuum meter and a gas friction vacuum meter equipped with a circuit for the practice of this method. 4,640,136, Cl. 73-753.000.

Schmidt, Richard, to Robotic Vision Systems, Inc. Arrangement for rapid depth measurement using lens focusing. 4,640,620, Cl. 356-376.000.

Schmidt, Robert R.: See—
Schwamborn, Michael; Kühle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,640,923, Cl. 514-272.000.

Schmieder, Dietmar: See—
Hafele, Walter; Kramer, Manfred; Schmieder, Dietmar; and Warga, Johann, 4,640,255, Cl. 123-495.000.

Schmitt, Otto: See—
Saumweber, Eckart; and Schmitt, Otto, 4,640,390, Cl. 188-73.370.

Schnee, Reiner; Pennewiss, Horst; and Markert, Gerhard, to Rohm GmbH. Polymer suspension containing a water-soluble polymer suspended in an oil phase. 4,640,954, Cl. 524-516.000.

Schneider, Dieter, to VDO Adolf Schindling AG. Electrothermal measurement of levels compensated for ambient temperature. 4,640,127, Cl. 73-295.000.

Schneider, Ira H.: See—
Bryan, Barry L.; Druckerman, Martin; McDowell, Allen W.; Schneider, Ira H.; and Newkirk, Gary L., 4,641,262, Cl. 364-900.000.

Schnepp-Pesch, Wolfram; and Lindenberg, Josef. Biopsy cannula. 4,640,296, Cl. 128-754.000.

Scholles, Herbert: See—
Witt, Wolfram; and Scholles, Herbert, 4,640,194, Cl. 102-425.000.

Schott Glaswerke: See—
Neuroth, Norbert, 4,641,187, Cl. 358-106.000.

Schou, Carl E. Self-locking differential with hexagonal drive rod. 4,640,143, Cl. 74-650.000.

Schouhamer Immink, Kornelis A., to U.S. Philips Corporation. Method of encoding a stream of data bits, arrangement for performing the method and arrangement for decoding the stream of channel bits obtained in accordance with this method. 4,641,128, Cl. 340-347.0DD.

Schraff, Raymond J.; Miller, Thomas M.; and Labas, Nicholas, to ELTECH Systems Corporation. Readily repairable and lightweight cover for a heated vessel. 4,640,202, Cl. 110-336.000.

Schram, David N.: See—
Nobel, Fred I.; and Schram, David N., 4,640,746, Cl. 204-15.000.

Schroder, Hans L., to Du Pont de Nemours, E. I., and Company. Process for the ozone protection by photopolymer-flexoprinting plates by alcohol-soluble polyamides. 4,640,877, Cl. 430-14.000.

Schuettenberg, Alexander D., to Phillips Petroleum Company. Gasoline compositions containing branched chain amines or derivatives thereof. 4,640,787, Cl. 252-51.50A.

Schuh, Frank J., to Atlantic Richfield Company. Electrode well and method of completion. 4,640,353, Cl. 166-248.000.

Schultz, Gary R.: See—
Braun, Eugene R.; and Schultz, Gary R., 4,640,331, Cl. 152-417.000.

Schulz, Peter: See—
Stusack, Hans; and Schulz, Peter, 4,640,167, Cl. 83-649.000.

Schurter, Rolf: See—
Bohner, Beat; Rempfler, Hermann; and Schurter, Rolf, 4,640,703, Cl. 71-92.000.

Schutz-Werke GmbH & Co. KG: See—
Namur, Marc, 4,640,211, Cl. 114-97.000.

Schwabe, Ulrich: See—
Neppi, Franz; Schwabe, Ulrich; and Hieber, Konrad, 4,640,844, Cl. 427-38.000.

Schwamborn, Michael; Kühle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Methods of combatting fungi employing 2,4-diamino-6-halogeno-5-alkylthio-pyrimidines. 4,640,923, Cl. 514-272.000.

Schwan-Stabilo Schwanhauser GmbH & Co.: See—
Hofmann, Hans J., 4,640,636, Cl. 401-96.000.

Schwartz, Anne L.: See—
Lenox, Ronald S.; Schwartz, Anne L.; and Hoyle, Charles E., 4,640,885, Cl. 430-197.000.

Schwarz, Otto: See—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; Wober, Gunter; Philapitsch, Anton; Linnau, Yendra; Dörner, Friedrich; Trambauer, Karl; and Frechinger, Wolfgang, 4,640,834, Cl. 424-94.000.

Schweitzer, Edmund O., Jr. Test point mounted voltage monitoring system. 4,641,220, Cl. 361-187.000.

Schwing, Gregory W.: See—
Chen, Chi-wan; and Schwing, Gregory W., 4,640,704, Cl. 71-92.000.

Scientific Atlanta, Inc.: See—
Mobley, Joseph G., II, 4,641,181, Cl. 358-36.000.

Scientific Component Systems, Inc.: See—
McNair, Rhett, 4,641,228, Cl. 362-382.000.

Scott, Paul F.: See—
Japenga, Robert J.; and Scott, Paul F., 4,641,269, Cl. 364-473.000.

Scott, Richard A.: See—
Fong, John; Wortzman, Mitchell S.; and Scott, Richard A., 4,640,932, Cl. 514-714.000.

Scully-Jones Corp.: See—
Rivera, Jeremias C., Jr., 4,640,652, Cl. 409-136.000.

Seaton SSK Engineering Inc.: See—
McKibben, Kenneth D.; Gould, Alan P.; Groh, Craig J.; and Wuepper, Thomas E., 4,639,968, Cl. 15-304.000.

SEB S.A.: See—
Mayeur, Jacques, 4,641,015, Cl. 219-386.000.

Sedlacek, Robert S.; and Campbell, Neil, to Lab Products, Inc. Animal cage assembly with reusable filter cap. 4,640,228, Cl. 119-15.000.

Sedlmair, Gerhard, to Marker International. Ski binding with screw retaining construction. 4,640,524, Cl. 280-611.000.

Seeley, Gerard: See—
Barbee, Steven G.; Devine, Gregory P.; Patrick, William J.; and Seeley, Gerard, 4,640,221, Cl. 118-689.000.

Seifag S.r.l.: See—
Marocco, Giuseppe, 4,640,850, Cl. 428-15.000.

Seiferth, Oscar E., to James River Corporation. Food receptacle for microwave cooking. 4,641,005, Cl. 219-10.55E.

Seiko Epson Kabushiki Kaisha: See—
Shinohara, Toshihide, 4,640,593, Cl. 351-169.000.

Seiko Instruments & Electronics Ltd.: See—
Sasaki, Issei, 4,640,615, Cl. 356-130.000.

Seitz, Paul W.; Lewis, Maurice W.; and Lakes, Stephen D., to NCR Corporation. Protective barrier and method of providing same for thermosensitive sheet. 4,641,159, Cl. 346-200.000.

Seki, Hiroshi; and Kataishi, Ryuichiro. Composite fire sensor. 4,640,628, Cl. 374-141.000.

Sekine, Noboru: See—
Nishimura, Sadanori; and Sekine, Noboru, 4,640,393, Cl. 192-0.052.

Seko, Nachio: See—
Higaya, Toshiaki; Ogura, Masaaki; Yano, Takato; Hashizume, Kiyozo; Ogawa, Toshiyuki; and Seko, Nachio, 4,640,608, Cl. 355-15.000.

Selim, Harold N., to IFR, Inc. Wideband, microwave regenerative divider with varactor tuning. 4,641,101, Cl. 328-25.000.

Semedard, Jean-Claude; Marsault, Jean-Jacques; Peyrelongue, Jean-Pierre; and Vallee, Gerard, to Stein Industrie. Device for supporting pipes having a low thickness. 4,640,480, Cl. 248-62.000.

Semiconductor Energy Laboratory Co., Ltd.: See—
Yamazaki, Shunpei, 4,640,845, Cl. 427-38.000.

Semiconductor Research Foundation: See—
Nishizawa, Jun-ichi, 4,641,167, Cl. 357-30.000.

Semmler, Jürgen, to Sigi GmbH. Cooled furnace head for heavy-current resistance furnaces. 4,641,321, Cl. 373-120.000.

Senoh, Hideaki: See—
Kagota, Nobuhiro; and Senoh, Hideaki, 4,640,714, Cl. 106-21.000.

Sentman, Robert C.: See—
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,640,976, Cl. 528-336.000.

Serafini, Angelo: See—
Wells, Thomas J.; and Serafini, Angelo, 4,639,957, Cl. 5-248.000.

Setaka, Yousuke: See—
Nagata, Masami; Yanase, Sumio; and Setaka, Yousuke, 4,641,066, Cl. 318-254.000.

Setliff, Harold: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.

Seto, Takashi: See—
Ohdake, Eishu; Oikawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.

Sevastakis, Gus. Continuous casting apparatus. 4,640,337, Cl. 164-443.000.

SGS Microelectronica SpA: See—
Bertotti, Franco; Ferla, Giuseppe; Musumeci, Salvatore; and Raciti, Salvatore, 4,641,171, Cl. 357-46.000.

Shah, Dhirajlal C.: See—
Bhat, Deepak G.; Shah, Dhirajlal C.; Kyle, John R.; and Woerner, Paul F., 4,640,693, Cl. 51-295.000.

Shakun, Wallace, to Omnimax Energy Corporation. Thermoelectric generator using variable geometry with support pedestals of dissimi-

lar materials than the basic thermoelectric semi-conductor elements. 4,640,977, Cl. 136-211.000.

Shallenberger, John M.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Locking tube removal and replacement tool and method in a reconstitutable fuel assembly. 4,639,998, Cl. 29-426.500.

Shamie, Louis. Mattress support for crib. 4,639,956, Cl. 5-93.00R.

Shan, Tiejun J.; and Kailath, Thomas, to Leland Stanford Junior University. The Board of Trustees of the. Adaptive signal processing array with suppression of coherent and non-coherent interfering signals. 4,641,259, Cl. 364-724.000.

Sharon, Harold M., to United Technologies Corporation. Process for producing a new edge on an airfoil blade particularly the fan blade for a gas turbine engine. 4,639,991, Cl. 29-156.80B.

Sharp, Celia M.: See—
Petelin, Andrei N.; Sharp, Celia M.; Ury, Michael G.; and Wooden, Gene R., 4,641,033, Cl. 250-492.100.

Sharp Kabushiki Kaisha: See—
Aiba, Masahiko, 4,641,219, Cl. 361-153.000.

Inamoto, Kiyoshi, 4,640,606, Cl. 355-14.0TR.

Komaki, Shigeki, 4,640,994, Cl. 200-5.00A.

Mizoguchi, Saburo, 4,640,804, Cl. 261-81.000.

Okibayashi, Katsushi; Itoh, Masataka; and Katoh, Shohichi, 4,641,359, Cl. 382-68.000.

Sato, Ryoichi; and Mimoto, Toshio, 4,641,081, Cl. 323-313.000.

Sharpe, Robert: See—
Hayes, Michael E.; Hood, Craig C.; Miller, Ronald E.; and Sharpe, Robert, 4,640,719, Cl. 134-40.000.

Sharrah, Raymond L.: See—
Penney, C. Bradford; and Sharrah, Raymond L., 4,640,258, Cl. 124-24.00R.

Shaw Industries Ltd.: See—
Patell, Farrokh A.; and McConkey, Stephen E., 4,640,312, Cl. 138-109.000.

Shaw, Stephen K.: See—
London, J. Reid; Bell, Cecil R., Jr.; Edwards, A. Russell; Lathery, Willie M.; Efrid, Lee A.; Porter, Richard M.; Shaw, Stephen K.; Costello, Thomas J.; Pike, August A.; Bell, Donald G.; and Setliff, Harold, 4,640,162, Cl. 83-152.000.

Shell Oil Company: See—
Afghan, Madjid; and Sponselee, Josephus G., 4,640,807, Cl. 264-13.000.

Bannon, Robert P.; and Marple, Stanley, 4,640,743, Cl. 203-87.000.

Drent, Eit, 4,640,802, Cl. 260-410.90R.

Grimsby, F. Norman, 4,640,754, Cl. 204-182.400.

Hamilton, David M., Jr., 4,640,764, Cl. 208-110.000.

Hughes, Victor B., 4,640,781, Cl. 210-520.000.

Post, Martin F. M.; Sie, Swan T.; and Sudholter, Ernst J. R., 4,640,766, Cl. 208-111.000.

Schmeal, W. R.; Singhal, S. N.; and Lo, K. H., 4,640,853, Cl. 428-35.000.

Simpson, Wayne F.; Ayers, Ray R.; and Patterson, Robert W., 4,640,645, Cl. 405-63.000.

Vanmeurs, Peter; Waxman, Monroe H.; and Vinegar, Harold J., 4,640,352, Cl. 166-245.000.

Shely, William W.; and Wells, Peter M., to All States Inc. Strain relief grommet. 4,640,479, Cl. 248-56.000.

Sheng, Hwai-Ping; Garza, Curberto; Winter, Dean C.; and Deskins, William G., to Baylor College of Medicine. Method and apparatus for acoustically measuring the volume of an object. 4,640,130, Cl. 73-579.000.

Shepard, Joseph F.: See—
Ogura, Seiki; Riseman, Jacob; Rovedo, Nivo; and Shepard, Joseph F., 4,641,170, Cl. 357-35.000.

Shepherd, Robin G.: See—
White, Alan C.; Shepherd, Robin G.; and Langham, Barry J., 4,640,924, Cl. 514-291.000.

Sherwin, Gary W., to Westinghouse Electric Corp. Shielded, self-preparing electrode suitable for electroencephalographic mapping. 4,640,290, Cl. 128-642.000.

Shiau, Jgi J. Inherently effectively damped coiled spring. 4,640,500, Cl. 267-168.000.

Shibahata, Yasuji; Tsubota, Yasumasa; and Uno, Takaaki, to Nissan Motor Co., Ltd. Vehicle steering control system. 4,640,379, Cl. 180-140.000.

Shibata, Junichi; and Kojima, Hiroshi, to Pioneer Ansafone Manufacturing Corporation. Microwave filter. 4,641,116, Cl. 333-204.000.

Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiro; Sakagami, Shigeru; and Onoyama, Toshiaki, to Toyota Shatai Kabushiki Kaisha. Moving coil type linear motor. 4,641,065, Cl. 318-135.000.

Shibuya Kogyo Co. Ltd.: See—
Sawa, Shigeki; and Ueda, Hiroshi, 4,640,283, Cl. 128-395.000.

Shidei, Ritsuko: See—
Echigo, Yoshiaki; Yamao, Mutsunori; Suematu, Yoshiyuki; Ishikura, Tadashi; Asami, Keiichi; and Shidei, Ritsuko, 4,640,971, Cl. 528-129.000.

Shigemasa, Takashi; and Ichikawa, Yoshinori, to Kabushiki Kaisha Toshiba. Process control apparatus with process dependent switching between process control modes. 4,641,235, Cl. 364-149.000.

Shijima, Kouichi: See—
Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, 4,641,215, Cl. 360-35.100.

Shimada, Junichi: See—
Mochida, Kenichi; Ogasa, Takehiro; Shimada, Junichi; Hirata, Tadashi; Sato, Kiyoshi; and Okachi, Ryo, 4,640,919, Cl. 514-241.000.

Shimada, Yutaka; Hatanai, Takashi; Mukasa, Koichi; and Nakashima, Keishi, to Alps Electric Co., Ltd. Magnetic head, 4,641,213, Cl. 360-125.000.

Shimaoka, Shoji: See—
Inoue, Fumio; Eto, Masahiro; Shimaoka, Shoji; and Sakai, Noboru, 4,641,195, Cl. 358-242.000.

Shimizu, Hiroshi, to Yasunaga Engineering Kabushiki Kaisha. Device for feeding work to machine tool, 4,640,259, Cl. 125-16.00R.

Shimizu, Kenichi: See—
Ohdake, Eishu; Okawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.

Shimizu, Kimihiko; Nakahara, Tsugui; Kinoshita, Takatoshi; Takatsuka, Jun; and Igarashi, Michiko, to Nippon Chemphar Company, Ltd. Plasminogen activator derivatives, 4,640,835, Cl. 424-94.000.

Shimoni, Yair: See—
Fenster, Paul; Shimoni, Yair; Nissenson, Bilha; and Alperin, Noam, 4,641,352, Cl. 382-6.000.

Shimotori, Kazuhiro; Fujishima, Kazuyasu; Ozaki, Hideyuki; and Miyatake, Hideshi, to Mitsubishi Denki Kabushiki Kaisha. Auxiliary decoder for semiconductor memory device, 4,641,286, Cl. 365-230.000.

Shingaki, Seiichi: See—
Ohmi, Shigeaki; Shingaki, Seiichi; Sakai, Hiroyuki; and Asahara, Yoshiyuki, 4,640,699, Cl. 65-3.150.

Shinohara, Toshihide, to Seiko Epson Kabushiki Kaisha. Progressive multifocal ophthalmic lenses, 4,640,593, Cl. 351-169.000.

Shiraishi, Hajime, to Kabushiki Kaisha Toshiba. Clock generator with reset and initialization circuitry, 4,641,044, Cl. 307-269.000.

Shiraishi, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Bidirectional power switch with optimized emitter spacing near control electrode, 4,641,175, Cl. 357-39.000.

Shirakawa, Hiromu: See—
Motoyama, Shimesu; Gotou, Masakazu; Shirakawa, Hiromu; and Makino, Takamoto, 4,640,218, Cl. 118-19.000.

Shirasawa, Katsuhiko: See—
Koiwai, Sakae; Asaoka, Keizo; Shirasawa, Katsuhiko; Watanabe, Hiroyuki; and Honda, Junichi, 4,640,001, Cl. 29-572.000.

Shirashoji, Hisashi: See—
Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, 4,640,329, Cl. 152-209.00R.

Shoemaker, John R., to AMP Incorporated. Surface mounting means for printed circuit board, 4,640,562, Cl. 339-17.00F.

Shoji, Hisashi; Hameda, Satoshi; and Hiratsuka, Seiichi, to Konishiroku Photo Industry Co., Ltd. Image reproducing apparatus with variable AC bias, 4,641,200, Cl. 358-296.000.

Shojima, Hiroshi: See—
Fukunaga, Yasushi; Kuzunuki, Soshio; Shojima, Hiroshi; Yokoyama, Takanori; Koga, Kazuyoshi; Hirasawa, Kotaro; and Kawada, Shinichi, 4,641,354, Cl. 382-13.000.

Shomura, Eiichi: See—
Takenoya, Hideaki; Inamori, Mikio; and Shomura, Eiichi, 4,640,210, Cl. 112-456.000.

Shop-Vac Corporation: See—
Berfield, Robert C., 4,640,521, Cl. 280-47.340.

Short, Jimmie N., to Ralph J. Stolle Company. Method for charging electrical storage batteries, 4,641,078, Cl. 320-21.000.

Showa Highpolymer Co., Ltd.: See—
Hanyuda, Toshiaki, 4,640,937, Cl. 522-31.000.

Shukla, Dipak P.; Sinclair, Keith; and Smith, Kevin A., to Tate & Lyle Public Limited Company. Sugar process, 4,640,717, Cl. 127-58.000.

Shure Manufacturing Corporation: See—
Richardson, Daniel E., 4,640,200, Cl. 109-19.000.

Shutterly, Harold B., to Westinghouse Electric Corp. Multi-star fiber optic network, 4,641,371, Cl. 455-601.000.

Shutterly, Harold B., to Westinghouse Electric Corp. T-connection fiber-optic repeater, 4,641,373, Cl. 455-601.000.

Sibalis, Dan, to Drug Delivery Systems Inc. Transdermal drug applicator and electrodes therefor, 4,640,689, Cl. 604-20.000.

Sie, Swan T.: See—
Post, Martin F. M.; Sie, Swan T.; and Sudholter, Ernst J. R., 4,640,766, Cl. 208-111.000.

Siemens Aktiengesellschaft: See—
Auinger, Herbert, 4,641,051, Cl. 310-61.000.

Dziggel, Klaus-Peter, 4,641,245, Cl. 364-478.000.

Fritz, Harald, 4,640,139, Cl. 73-862.040.

Hahn, Alfred, 4,641,335, Cl. 378-153.000.

Hartkopf, Hans O.; and Zillmer, Adalbert, 4,641,243, Cl. 364-436.000.

Keprda, Jaroslav, 4,641,004, Cl. 200-340.000.

Neppel, Franz; Schwabe, Ulrich; and Hieber, Konrad, 4,640,844, Cl. 427-38.000.

Schmalz, Dieter, 4,640,979, Cl. 174-35.00G.

Schmid, Ralf; Otto, Johann; Bernklau, Daniela; and Knapke, Erwin, 4,640,626, Cl. 374-57.000.

Tihanyi, Jeno, 4,641,163, Cl. 357-23.400.

Vogl, Herbert, 4,641,303, Cl. 370-84.000.

Wilhelm, Wilhelm, 4,641,283, Cl. 365-190.000.

Sievers, Ricky R.: See—
Nesbitt, Richard L.; and Sievers, Ricky R., 4,640,045, Cl. 47-66.000.

Sigler, Perry J. Explosive rodent trap, 4,640,043, Cl. 43-84.000.

Signetics Corporation: See—
Becker, Scott T.; Bergman, Michael J.; and Lee, Shueh-Mien, 4,641,046, Cl. 307-448.000.

Sigri GmbH: See—
Semmler, Jurgen, 4,641,321, Cl. 373-120.000.

Silva, Lawrence H.: See—
Lawrence, Ventura J.; Metcalf, Charles G.; and Silva, Lawrence H., 4,640,367, Cl. 172-225.000.

Simmons, James A., to Bio-Dynamics Research & Development Corporation. Apparatus and method for analyzing acoustical signals, 4,640,134, Cl. 73-648.000.

Simmons, Robert L., Sr.; and Wyant, Clifton M., to Ametek, Inc. Phased array Doppler sonar transducer, 4,641,291, Cl. 367-157.000.

Simone, Dominic; and Brauer, Melvin, to CasChem, Inc. Graft polyols, 4,640,801, Cl. 260-407.000.

Simonin, Marcel; Garbe, Bernard; and Carron, Alain, to Compagnie Generale d'Automatisme CGA-HBS. Two-way pedestrian access control system, 4,640,047, Cl. 49-47.000.

Simons, Petrus A. M. R.; and Bouts, Wilhelmus J., to Océ-Nederland B.V. Copying process and electrophotographic element utilizing a photoconductive pigment dispersed in an improved polymeric binder, 4,640,879, Cl. 430-96.000.

Simpson, Wayne F.; Ayers, Ray R.; and Patterson, Robert W., to Shell Oil Company. Containment boom system, 4,640,645, Cl. 405-63.000.

Sinclair, Keith: See—
Shukla, Dipak P.; Sinclair, Keith; and Smith, Kevin A., 4,640,717, Cl. 127-58.000.

Singhal, S. N.: See—
Schmeal, W. R.; Singhal, S. N.; and Lo, K. H., 4,640,853, Cl. 428-35.000.

Siwinski, Paul P.: See—
Dola, Frank P.; Siwinski, Paul P.; and Zwieg, Grover A., 4,640,569, Cl. 339-143.00R.

SKF Kugellagerfabriken GmbH: See—
Brandenstein, Manfred; Hetterich, Hermann; and Horling, Peter, 4,640,632, Cl. 384-537.000.

Skostins, Olgeris, to Dow Corning Corporation. Method of manufacture of fiber reinforced silicone elastomer, 4,640,951, Cl. 524-266.000.

Skudrna, Anthony J.: See—
Fedder, Stephen C.; and Skudrna, Anthony J., 4,641,152, Cl. 346-137.000.

Skvaril, Joseph. Self-containing package system for storage and transportation of pre-fabricated portions of a building structure and the assembly thereof, 4,640,412, Cl. 206-321.000.

Slade, Luman C. Safety lock apparatus for an electrical plug, 4,640,107, Cl. 70-57.000.

Smith, Dale C., to Dolly Varden Fishing Lures. Cyclic fishing lure containing a slidable fishhook assembly, 4,640,040, Cl. 43-42.000.

Smith, Edward H.: See—
Draper, Robert; and Smith, Edward H., 4,640,233, Cl. 122-488.000.

Smith, Kenneth L., to Adams-Russell Company, Inc. Shielded radio frequency transmission cable having propagation constant enhancing means, 4,641,110, Cl. 333-12.000.

Smith, Kevin A.: See—
Shukla, Dipak P.; Sinclair, Keith; and Smith, Kevin A., 4,640,717, Cl. 127-58.000.

Smith Kline & French Laboratories Limited: See—
Sach, George S., 4,640,926, Cl. 514-333.000.

Smith, Robert R., II, to Micro Storage Ltd. Disc type information storage and retrieval system, 4,641,209, Cl. 360-86.000.

Smith, Lloyd B., to United Coal Company. Apparatus for extracting water from solid fines or the like, 4,640,770, Cl. 210-144.000.

Smith, Ward C.: See—
Carroll, Richard J.; Luderer, Albert A.; Smith, Ward C.; and Zine, Anthony R., Jr., 4,640,785, Cl. 210-782.000.

Smith, William H.; and Vinson, Edward F., to Halliburton Company. Thermally responsive aqueous silicate mixtures and use thereof, 4,640,361, Cl. 166-288.000.

Smolensky, Leo A.: See—
Holmes, Myron L.; and Smolensky, Leo A., 4,640,201, Cl. 110-245.000.

Smushkovich, Yosif. Video driver level shifter, 4,641,063, Cl. 315-383.000.

Snyder, David A.: See—
Cooper, Frank W., Jr.; Howard, Bruce A.; and Snyder, David A., 4,639,994, Cl. 29-402.010.

Sobieralski, Theodore J., to Dow Chemical Company. The impure zinc powder, preparation thereof, and use as a selective reductant for pentachloropyridine, 4,640,712, Cl. 75-251.000.

Socared S.A.: See—
Brandt, Bertil, 4,640,212, Cl. 114-230.000.

Societe d'Exploitation des Procédés Marechal: See—
Magourou, Yves L., 4,640,568, Cl. 339-103.00R.

Societe de Traitement Automatique—Contrôle et Etancheité "T R A C E": See—
Heraud, Roger A.; and Amiel, Jacques, 4,640,122, Cl. 73-49.200.

Societe Minière et Metallurgique de Penroya: See—
Beutier, Didier; and Predali, Jean-Jacques, 4,640,710, Cl. 75-108.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: See—
Batt, Andre; and Delabie, Jacques, J. A., 4,640,980, Cl. 174-36.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation - S.N.E.C.M.A.: See—
Morboli, Rene J.; and Ney, Jean C., 4,640,768, Cl. 209-37.000.

Societe Nationale Elf Aquitaine (Production): See—
Lechon, Alain; and Viard, Alain, 4,640,096, Cl. 60-547.100.

Sodergard, Bengt, to International Standard Electric Corporation. Centrifugal pump, 4,640,666, Cl. 415-121.00B.

Soderquist, Mark E.; Muthyala, Ramaiah; Larson, William A.; and Doty, Peter A., to Dow Chemical Company, The. Phosphonium salt-containing corrosion inhibitors for high density brines, 4,640,786, Cl. 252-8.551.

Somasundaram, Hariharan: See—
Fish, Aaron M.; Mazoff, Stanley S.; D'Intino, Adamo M.; and Somasundaram, Hariharan, 4,640,110, Cl. 70-269.000.

Sone, Tomoshi: See—
Yotsutani, Akio; Makino, Masayuki; Saegusa, Noboru; and Sone, Tomoshi, 4,640,986, Cl. 379-60.000.

Sony Corporation: See—
Furukawa, Shunsuke; Suzuki, Tadao; and Monen, Marinus J. B. M., 4,641,295, Cl. 369-32.000.

Hayashi, Kazuhiko; Ochiai, Yoshitaka; Hayakawa, Masatoshi; Matsuda, Hideki; Ishikawa, Wataru; Iwasaki, You; and Aso, Koichi, 4,640,871, Cl. 428-611.000.

Inazawa, Yoshizumi; Takahashi, Toshihiko; Tani, Toshiyuki; and Satomura, Shigeyuki, 4,641,208, Cl. 360-72.200.

Komuro, Toshio, 4,641,293, Cl. 369-6.000.

Musha, Kazuhiko; Tago, Kohichi; and Kato, Hidetoshi, 4,641,196, Cl. 358-246.000.

Nakamura, Yoshiyuki; Kato, Tetsuro; and Ebihara, Norio, 4,641,202, Cl. 358-313.000.

Nakano, Kenji; and Moriwaki, Hisayoshi, 4,641,309, Cl. 371-31.000.

Ohyama, Masao, 4,641,210, Cl. 360-96.500.

Sato, Noboru, 4,640,755, Cl. 204-192.200.

Sumiyoshi, Hiroji; and Arai, Teiji, 4,641,059, Cl. 313-477.00R.

Takei, Shinzo; Yokoyama, Junji; and Takagi, Makoto, 4,640,700, Cl. 65-59.220.

Sorensen, Gerald R.: See—
Hornblad, Richard P.; and Sorensen, Gerald R., 4,640,029, Cl. 40-5.000.

Sorenson, Richard W., to Carlingswitch, Inc. Push button switch with compound contact lever action, 4,640,998, Cl. 200-67.00A.

Sortwell, Edwin T., to Diatex Polymers. Dispersion of dry polymers into water, 4,640,622, Cl. 366-76.000.

Souhrada, Frank: See—
Woods, H. John; and Souhrada, Frank, 4,640,762, Cl. 208-56.000.

Soula, Gerard: See—
Cavezzan, Jacques; and Soula, Gerard, 4,640,939, Cl. 522-99.000.

Southern Steel Company: See—
Young, Quentin H., 4,640,108, Cl. 70-129.000.

Spahn, James G.: See—
Quillen, Jeffrey B.; and Spahn, James G., 4,639,960, Cl. 5-455.000.

Spears, William D.: See—
Grierson, Jeffrey G.; Jones, Carol A.; and Spears, William D., 4,640,818, Cl. 422-15.000.

Spectrolyte, Inc.: See—
Reich, William N., 4,640,589, Cl. 350-523.000.

Spectrum CVD, Inc.: See—
Bunch, Matthew L.; Price, J. B.; and Stitz, Robert W., 4,640,224, Cl. 118-725.000.

Speed, Philip, to Hoskins Limited. Maternity bed, 4,639,954, Cl. 5-63.000.

Spellman, Francis T., Jr., to Hy-Lite Mfg. Co., Inc. Fork lift attachment for tractor, 4,640,662, Cl. 414-642.000.

Speranza, Daniel R., to AMF Incorporated. Bowling ball return mechanism, 4,640,511, Cl. 273-49.000.

Sperry Corporation: See—
Zweifel, Terry L.; and Miller, Harry, 4,641,268, Cl. 364-440.000.

Spitzenberger, Kurt: See—
Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, 4,640,739, Cl. 156-659.100.

Splett, Erich: See—
Bittner, Friedrich; Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; and Splett, Erich, 4,640,832, Cl. 423-562.000.

Sponselee, Josephus G.: See—
Afghan, Madjid; and Sponselee, Josephus G., 4,640,807, Cl. 264-13.000.

Stacey, Ralph E., to Green Bay Packaging Inc. One-piece folded box construction having a hinged wall, 4,640,456, Cl. 229-122.000.

Stafford, Trevor G., to British Gas Corporation. Apparatus for fusion joining of thermoplastic pipes, 4,640,732, Cl. 156-358.000.

Stalder, Herbert; Baumgartner, Josef; and Wurml, Arthur, to Rieter Machine Works. Method and device for spinning a yarn in accordance with the open end-friction spinning principle, 4,640,089, Cl. 57-401.000.

Standard Oil Company, The: See—
Curatolo, Benedict S.; Sentman, Robert C.; and Coffey, Gerald P., 4,640,976, Cl. 528-336.000.

Standard Oil Company (Indiana): See—
Brooks, Gary T., 4,640,944, Cl. 523-205.000.

Howe, Arthur T., 4,640,744, Cl. 204-1.00R.

Kreider, David R.; McCullum, Albert; Rose, Philip M.; and Lin, Chi-Hung, 4,640,963, Cl. 526-67.000.

Stanley Electric Co., Ltd.: See—
Kudo, Sinji, 4,641,230, Cl. 363-56.000.

Stanley Jigs, Inc.: See—
Stanley, Lonnie D., 4,640,041, Cl. 43-42.130.

Stanley, Lonnie D., to Stanley Jigs, Inc. Spinner bait with arms of different diameter, 4,640,041, Cl. 43-42.130.

Stanley, Robert K. Interlining of pipelines for transporting sewage, water, slurries, liquid and gaseous hydrocarbons, and the like, 4,640,313, Cl. 138-141.000.

Stadynamics, Inc.: See—
Thomson, Thomas H., 4,640,286, Cl. 128-421.000.

Staroselsky, Naum; and Mirsky, Saul, to Compressor Controls Corp. Method for controlling a multicompressor station, 4,640,665, Cl. 415-1.000.

Staton, Richard D.: See—
Lamond, Lee T.; and Staton, Richard D., 4,640,484, Cl. 248-407.000.

STC PLC: See—
Kelly, Patrick S.; Oswald, Thomas; Jeal, Alan J.; Hill, Stephen E.; and Murphy, Robert, 4,641,372, Cl. 455-601.000.

Stearns, R. Dewey, III. Water driven shower massager, 4,640,462, Cl. 239-383.000.

Steenhof, Frits A.: See—
Martens, Theodorus G. J. A.; Steenhof, Frits A.; and Kalfs, Johannes J. W., 4,641,310, Cl. 371-38.000.

Steer, Peter L., to Craig Medical Products, Limited. Tap or valve, 4,640,494, Cl. 251-354.000.

Stein Industrie: See—
Semedard, Jean-Claude; Marsault, Jean-Jacques; Peyrelongue, Jean-Pierre; and Vallee, Gerard, 4,640,480, Cl. 248-62.000.

Stein, Robert G.: See—
Faulb, Hermann; and Stein, Robert G., 4,640,910, Cl. 514-29.000.

Steinbiss, Eberhard; Herchenbach, Horst; and Wolter, Albrecht, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the removal of harmful and waste materials by combustion, 4,640,681, Cl. 432-14.000.

Steiner, Paul; and Stocker, Bruno, to Kollektivgesellschaft Eberhard, Steiner & Dr. Stocker. Combination hole punch and stapler, 4,640,451, Cl. 227-76.000.

Steiner, William M.: See—
Sawyer, Steven D.; Hill, William D.; Wilson, Patricia A.; and Steiner, William M., 4,640,812, Cl. 376-245.000.

Stenmark, Lars. Infrared-sensitive detector consisting of Pelier element, 4,641,134, Cl. 340-567.000.

Stern, Howard S.: See—
Greene, Franklin R.; Stern, Howard S.; and Waye, Jerome D., 4,640,273, Cl. 128-136.000.

Sternberg, Stanley R., to Machine Vision International Corporation. Apparatus and method for implementing dilation and erosion transformations in grayscale image processing, 4,641,356, Cl. 382-49.000.

Sterzer, Fred, to RCA Corporation. Microwave hyperthermia with dielectric lens focusing, 4,640,280, Cl. 128-804.000.

Stewart, Ronald D.: See—
Donecker, S. Bruce; Stewart, Ronald D.; and Frederick, Wayne L., 4,641,085, Cl. 324-77.00R.

Stipsits, Gunter: See—
Leuker, Wilhelm; Stipsits, Gunter; and Thiel, Bernhard, 4,640,121, Cl. 73-40.50A.

Stitz, Robert W.: See—
Bunch, Matthew L.; Price, J. B.; and Stitz, Robert W., 4,640,224, Cl. 118-725.000.

Stocker, Bruno: See—
Steiner, Paul; and Stocker, Bruno, 4,640,451, Cl. 227-76.000.

Stojanovski, Stojan. Tool holder with plurality of cutting inserts, 4,640,159, Cl. 82-36.00A.

Stol, Israel; and Appleman, Robert H., to Westinghouse Electric Corp. Corrosion resistant steam generator and method of making same, 4,639,992, Cl. 29-157.00R.

Stoltman, Donald D., to General Motors Corporation. Failsafe drive-by-wire engine controller, 4,640,248, Cl. 423-399.000.

Stone, Catharine E.: See—
Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., 4,640,837, Cl. 426-94.000.

Storandt, Ralf: See—
Maier, Helmut; Storandt, Ralf; Guenther, Heinz, deceased; Guenther, Renate, legal representative; and Guenther, Sabine, legal representative, 4,640,051, Cl. 49-348.000.

Stork PMT B.V.: See—
van der Eerden, Henricus F. J. M., 4,639,973, Cl. 17-11.000.

van der Eerden, Henricus F. J. M., 4,639,975, Cl. 17-11.000.

Stottlemeyer, William O., to ITT Corporation. Variable bandwidth handsfree telephone using switched capacitor filtering, 4,641,339, Cl. 379-391.000.

Strata Bit Corporation: See—
Dennis, Mahlon D., 4,640,374, Cl. 175-393.000.

Strate, Edward A., to United States of America, Air Force. Electrical cone connector, 4,640,570, Cl. 339-182.00R.

Straznickas, Donald A.: See—
Glennon, Timothy F.; Olson, Raymond N.; and Straznickas, Donald A., 4,641,080, Cl. 322-49.000.

Streamlight, Inc.: See—
Penney, C. Bradford; and Sharrah, Raymond L., 4,640,258, Cl. 124-24.00R.

Street, Graham S. B., to Brightad Limited. Method and apparatus for producing stereoscopic images, 4,641,178, Cl. 358-3.000.

Streets, Roger L.; Rabito, Thomas G.; and Peresie, David N., to Ashland Oil, Inc. Method of adhering roofing materials, 4,640,730, Cl. 156-334.000.

Strength, Tech, Inc.: See—
Polson, Gary R., 4,639,979, Cl. 24-270.000.

- Streu, Rick D.: See—
Groenhof, Eugene D.; Romenesko, David J.; and Streu, Rick D., 4,640,792, Cl. 252-78.300.
- Stricker, David K.: See—
Dobberpuhl, Dale R.; and Stricker, David K., 4,640,378, Cl. 180-53.100.
- Strohbeen, David T.: See—
Ales, Thomas M.; Strohbeen, David T.; Damico, Joyce A.; Van Gompel, Paul T.; and Abel, Kent W., 4,639,949, Cl. 2-400.000.
- Strong, David, to United States of America, Air Force. Inspection workstation data entry method. 4,641,250, Cl. 364-507.000.
- Strunk, Richard J.; and Moore, Richard C., to Uniroyal Chemical Company, Inc. Substituted oxime carbamates. 4,640,927, Cl. 514-342.000.
- Struve, Walter S.: See—
Holland, George E.; Struve, Walter S.; and Homer, John F., 4,641,343, Cl. 381-48.000.
- Stuck, Matthew A., to Modern Mfg. Co. Inc. Device for packaging plants. 4,640,079, Cl. 53-390.000.
- Stump, Lee E., to Timesavers, Inc. Vertically self-centering feed assembly. 4,640,056, Cl. 51-138.000.
- Sturdy, H. David, to Sturdy Truck Equipment, Incorporated. Road and engine speed governor with power demand control. 4,640,246, Cl. 123-350.000.
- Sturdy Truck Equipment, Incorporated: See—
Sturdy, H. David, 4,640,246, Cl. 123-350.000.
- Sturm, Gerd-Jochen; and Wehking, Wolfgang, to Prameta Prazisionsmetall- und Kunststoffzeugnisse G. Baumann & Co. Tourniquet. 4,640,281, Cl. 128-327.000.
- Stusack, Hans; and Schulz, Peter, to Franz Sachs & Co. KG. Tape dispenser. 4,640,167, Cl. 83-649.000.
- Subrahmanian, K. P.: See—
Kilbane, George J.; and Subrahmanian, K. P., 4,640,978, Cl. 174-23.00R.
- Substrate Systems, Inc.: See—
Runyon, Robert C., 4,640,651, Cl. 409-132.000.
- Suchowerskyj, Wadym: See—
Mattes, Bernhard; Mausner, Eberhard; and Suchowerskyj, Wadym, 4,641,041, Cl. 307-10.00R.
- Suddeutsche Kuehlerfabrik Julius Fr., Behr GmbH & Co. KG: See—
Martin, Hans, 4,640,235, Cl. 123-41.030.
- Suddeutsche Zucker-Aktiengesellschaft: See—
Munir, Mohammad, 4,640,894, Cl. 435-100.000.
- Sudholter, Ernst J. R.: See—
Post, Martin F. M.; Sie, Swan T.; and Sudholter, Ernst J. R., 4,640,766, Cl. 208-111.000.
- Suematsu, Toshio: See—
Harada, Osamu; Suematsu, Toshio; Takeda, Yuji; and Anzai, Katsushi, 4,640,251, Cl. 123-425.000.
- Suematu, Yoshiyuki: See—
Echigo, Yoshiaki; Yamao, Mutsunori; Suematu, Yoshiyuki; Ishikura, Tadashi; Asami, Keiichi; and Shidei, Ritsuko, 4,640,971, Cl. 528-129.000.
- Suga, Masaaki: See—
Murasugi, Takashi; Suga, Masaaki; and Niikura, Yasuhiro, 4,640,395, Cl. 192-3.310.
- Sugai, Shinzo; Yamane, Shigemitsu; and Kuze, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Lead frame and method for manufacturing the same. 4,640,723, Cl. 148-411.000.
- Sugawara, Toru: See—
Ito, Yasuyuki; and Sugawara, Toru, 4,641,031, Cl. 250-423.00R.
- Sugimori, Shigeru: See—
Ogawa, Tetsuya; Kitano, Kisei; Goto, Yasuyuki; Fukui, Masahiro; and Sugimori, Shigeru, 4,640,795, Cl. 252-299.500.
- Yoshida, Naoyuki; Kitano, Kisei; Furukawa, Yoshito; Ogawa, Tetsuya; Sugimori, Shigeru; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,640,796, Cl. 252-299.610.
- Sugiura, Kazuo: See—
Watanabe, Junichiro; Funahashi, Yuichi; Sugiura, Kazuo; and Matsumoto, Hironori, 4,640,968, Cl. 528-32.000.
- Sugiura, Kenji: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.
- Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Recording and reproducing system for recording both analogue and digital information on and from a disc. 4,641,204, Cl. 358-341.000.
- Sullivan, William B., Jr., to Raytheon Company. Radio frequency receiver. 4,641,368, Cl. 455-239.000.
- Sulzer Brothers Limited: See—
Gacsay, Lorant, 4,640,315, Cl. 139-1.00C.
- Hintsch, Otto; and Ernst, Hanspeter, 4,640,318, Cl. 139-439.000.
- Lattion, Andre, 4,640,088, Cl. 57-263.000.
- Trepp, Christian, 4,640,667, Cl. 417-52.000.
- Sum, Phaik E.: See—
Wissner, Allan; Schaub, Robert E.; and Sum, Phaik E., 4,640,913, Cl. 514-77.000.
- Sumitomo Chemical Company, Ltd.: See—
Nagano, Eiki; Haga, Toru; Sato, Ryo; and Morita, Konichi, 4,640,707, Cl. 71-96.000.
- Sumitomo Chemical Company, Limited: See—
Saito, Teruo; Asai, Kuniaki; Suzuki, Yasuro; and Kagiya, Kei, 4,640,961, Cl. 525-444.000.
- Sumitomo Electric Industries, Ltd.: See—
Tsuno, Koichi, 4,640,577, Cl. 350-96.250.
- Sumitomo Metal Industries, Ltd.: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.
- Kajimura, Haruhiko; Nagano, Hiroo; and Miura, Minoru, 4,640,817, Cl. 420-50.000.
- Sakamoto, Takahide; Hiroshima, Tatsuo; Matsubara, Noriyuki; and Miyata, Kenichi, 4,641,092, Cl. 324-227.000.
- Sumitomo Metal Mining Co., Ltd.: See—
Miyoshi, Akio; and Fukami, Akira, 4,640,436, Cl. 220-359.000.
- Sumitomo Rubber Industries, Ltd.: See—
Nakasaki, Eiji; Shirashoji, Hisashi; Hoshikawa, Katsuyuki; Kamijo, Takao; Ikeda, Kazushige; Inoue, Yasuhiro; and Kato, Takeo, 4,640,329, Cl. 152-209.00R.
- Sumiyoshi, Hiroji; and Arae, Teiji, to Sony Corporation. Cathode ray tube. 4,641,059, Cl. 313-477.00R.
- Sun Coast Plastics, Inc.: See—
Dutt, Herbert V., 4,640,435, Cl. 220-307.000.
- Sunada, Tomonori: See—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Yamazaki, Heima; Kitajima, Eiji; and Sunada, Tomonori, 4,640,822, Cl. 422-111.000.
- Sunami, Hideo: See—
Kimura, Katsutaka; Hori, Ryoichi; Ito, Kiyoo; and Sunami, Hideo, 4,641,279, Cl. 365-149.000.
- Sundstrand Corporation: See—
Glennon, Timothy F.; Olson, Raymond N.; and Straznickas, Donald A., 4,641,080, Cl. 322-49.000.
- Suntory Limited: See—
Cho, Hidetsura; Aisaka, Kazuo; and Emon, Mariko, 4,640,922, Cl. 514-256.000.
- Sunwell Engineering Company Limited: See—
Goldstein, Vladimir, 4,640,100, Cl. 62-197.000.
- Supran, Michael K.: See—
Assinder, Ivar; Supran, Michael K.; and Thompson, Geoffrey A. K., 4,640,840, Cl. 426-399.000.
- Survival Technology, Inc.: See—
Dalling, N. Lawrence; and Gordon, Linda A., 4,640,686, Cl. 434-262.000.
- Susumu Industrial Co., Ltd.: See—
Ozawa, Juichiro, 4,641,113, Cl. 333-161.000.
- Sutton, Leroy, to Zenith Electronics Corporation. Standby system for video display. 4,641,191, Cl. 358-168.000.
- Suzaki, Masafumi; Mikami, Katsumasa; Nagano, Yousuke; and Kitagishi, Tomoji, to Hitachi, Ltd. Thermal transfer printer. 4,641,149, Cl. 346-76.0PH.
- Suzuki, Akiyoshi; and Ina, Hideki, to Canon Kabushiki Kaisha. Apparatus and a method for position detection of an object stepped portion. 4,641,035, Cl. 250-548.000.
- Suzuki, Hirosuke, to Junkosha Company Ltd. Printed circuit board. 4,640,866, Cl. 428-422.000.
- Suzuki, Kiyoshi: See—
Nakagawa, Takeo; and Suzuki, Kiyoshi, 4,640,156, Cl. 82-1.00C.
- Suzuki, Mamoru; and Fukui, Shinta, to Tokyo Electric Power Co., Inc., The, and Mitsubishi Denki Kabushiki Kaisha. Method for determining reliability in electric power system. 4,641,248, Cl. 364-492.000.
- Suzuki, Masami; Hirota, Tatsuya; and Maeda, Masahiko, to Sanyo Electric Co., Ltd. Clothes dryer. 4,640,022, Cl. 34-48.000.
- Suzuki, Nobuhiko. Brush for cleaning clothes. 4,639,965, Cl. 15-104.00A.
- Suzuki, Shigeru: See—
Ohdake, Eishu; Oikawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.
- Suzuki, Tadao: See—
Furukawa, Shunsuke; Suzuki, Tadao; and Monen, Marinus J. B. M., 4,641,295, Cl. 369-32.000.
- Suzuki, Takao: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.
- Suzuki, Takashi, to Canon Kabushiki Kaisha. Range finding device with a spatial low-pass filter. 4,641,022, Cl. 250-204.000.
- Suzuki, Yasuo, to Fujitsu Limited. Signal transmission circuit for a storage device. 4,641,284, Cl. 365-210.000.
- Suzuki, Yasuro: See—
Saito, Teruo; Asai, Kuniaki; Suzuki, Yasuro; and Kagiya, Kei, 4,640,961, Cl. 525-444.000.
- Suzumura, Masanaga: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Svengren, Anders G.; and Ganrot, Bertil A., to Nestec S.A. Preparation of a rolled pastry product. 4,640,670, Cl. 425-142.000.
- Swallow, Nancy A.: See—
Coleman, Edward C.; Wagner, Jeffrey D.; Ballard, Donna J.; Stone, Catharine E.; Swallow, Nancy A.; and Carey, Nancy L., 4,640,837, Cl. 426-94.000.
- Swank, Edgar W., to International Business Machines Corporation. Method for communicating changes made to text form a text processor to a remote host. 4,641,274, Cl. 364-900.000.
- Swartzendruber, Ray E.; and Coffman, Keith, to Chore-Time Equipment, Inc. Apparatus for feeding livestock. 4,640,229, Cl. 119-51.110.

- Swift, Stephen D.: See—
Garman, James A.; and Swift, Stephen D., 4,639,995, Cl. 29-402.080.
- Swiss Aluminium Ltd.: See—
Heamon, Mark L., 4,640,497, Cl. 266-227.000.
- Sylvester, Judith M.; and Kimball, David J., to Dow Corning Corporation. Dispersant composition for magnetic media. 4,640,790, Cl. 252-62.540.
- Szatmari, Sandor: See—
Schafer, Fritz P.; Szatmari, Sandor; and Bor, Zsolt, 4,641,312, Cl. 372-25.000.
- 't Hoen, Pieter, to North American Philips Corporation. Bi-plane phased array for ultrasound medical imaging. 4,640,291, Cl. 128-660.000.
- Tachikawa Spring Co., Ltd.: See—
Sakamoto, Takao, 4,640,488, Cl. 248-588.000.
- Tachikawa Spring Co. Ltd.: See—
Yokota, Masaaki, 4,640,549, Cl. 297-410.000.
- Tachita, Ryobun: See—
Fukukita, Hiroshi; Tachita, Ryobun; Fukaya, Kuniaki; and Yano, Tsutomu, 4,641,260, Cl. 364-737.000.
- Tago, Kohichi: See—
Musha, Kazuhiko; Tago, Kohichi; and Kato, Hidetoshi, 4,641,196, Cl. 358-246.000.
- Tagoku, Izumi: See—
Ohdake, Eishu; Oikawa, Tomohiro; Shimizu, Kenichi; Seto, Takashi; Ishikawa, Masahiro; Suzuki, Shigeru; and Tagoku, Izumi, 4,640,611, Cl. 355-77.000.
- Taguchi, Takao: See—
Okamura, Shigeru; and Taguchi, Takao, 4,641,034, Cl. 250-492.200.
- Taguchi, Yukiyasu: See—
Yasukawa, Masao; and Taguchi, Yukiyasu, 4,640,147, Cl. 74-409.000.
- Tahim, Raghib S.: See—
Grote, Albert J.; Tahim, Raghib S.; and Chang, Kai, 4,641,369, Cl. 455-327.000.
- Tajima, Osamu; Yamada, Makoto; Hagino, Hideo; and Nishizawa, Nobuyoshi, to Sanyo Electric Co., Ltd. Temperature control system for fuel cell powerplant. 4,640,873, Cl. 429-24.000.
- Takada, Masayuki: See—
Nagai, Takatsu; Takada, Masayuki; Sato, Akira; and Imamura, Mineo, 4,641,319, Cl. 373-84.000.
- Takagi, Hiroshi: See—
Nishimura, Yukuo; Asano, Toshiaki; Mizusawa, Nobutoshi; Kawakami, Eigo; Haruta, Masahiro; Noma, Takashi; Takagi, Hiroshi; Nakazawa, Mitsunobu; and Ozawa, Kunitaka, 4,640,592, Cl. 350-96.320.
- Takagi, Makoto: See—
Takei, Shinzo; Yokoyama, Junji; and Takagi, Makoto, 4,640,700, Cl. 65-59.220.
- Takahashi, Hideaki: See—
Kawade, Hideji; Takahashi, Hideaki; Sato, Yoshiyuki; and Urayama, Yuji, 4,640,990, Cl. 379-77.000.
- Takahashi, Naotomi: See—
Ueno, Kunitki; and Takahashi, Naotomi, 4,640,747, Cl. 204-37.100.
- Takahashi, Shinya: See—
Katoh, Akira; Ida, Masatoshi; Shijima, Kouichi; Oishi, Makoto; Hashimoto, Akihiko; and Takahashi, Shinya, 4,641,215, Cl. 360-35.100.
- Takahashi, Shizuo; and Yamashita, Kiyoshi, to Tokyo Automatic Machinery Works, Ltd. Apparatus for producing bags and packing articles therein. 4,640,083, Cl. 53-551.000.
- Takahashi, Toshihiko: See—
Inazawa, Yoshizumi; Takahashi, Toshihiko; Tani, Toshiyuki; and Satomura, Shigeyuki, 4,641,208, Cl. 360-72.200.
- Takahashi, Yoshio, to Pioneer Electronic Corporation. Body-sensible acoustic device. 4,641,345, Cl. 381-86.000.
- Takahata, Daisuke; and Sakai, Yukiyo, to Nippon Ceramic Company, Limited. Piezoelectric electro-acoustic transducer. 4,641,054, Cl. 310-324.000.
- Takatsuka, Jun: See—
Shimizu, Kimihiro; Nakahara, Tsuguji; Kinoshita, Taketoshi; Takatsuka, Jun; and Igarashi, Michiko, 4,640,835, Cl. 424-94.000.
- Takeda Chemical Industries, Ltd.: See—
Meguro, Kanji; and Nishikawa, Kohei, 4,640,916, Cl. 514-222.000.
- Mitsudera, Hiroyuki; Konishi, Kazuo; and Sato, Yasuo, 4,640,929, Cl. 514-436.000.
- Nishino, Kenichi; Kobayashi, Atsuo; Higashi, Sachio; Yamamoto, Shinichiro; and Yasuda, Kiyoshi, 4,640,950, Cl. 524-265.000.
- Takeda, Hiroshi; Oshima, Noritsugu; Kubo, Tateo; and Sakaguchi, Kenichi, to Toyo Seikan Kaisha, Ltd. Compression molding apparatus. 4,640,673, Cl. 425-297.000.
- Takeda, Masaaki, to Matsushita Seiko Co., Ltd. Ultrasonic liquid atomizer with an improved soft start circuit. 4,641,053, Cl. 310-317.000.
- Takeda, Yuji: See—
Harada, Osamu; Suematsu, Toshio; Takeda, Yuji; and Anzai, Katsushi, 4,640,251, Cl. 123-425.000.
- Takehara, Masahiro: See—
Meguro, Kenjiro; Sagawa, Koichiro; Yokota, Hirofumi; and Takehara, Masahiro, 4,640,943, Cl. 523-200.000.
- Takei, Shinzo; Yokoyama, Junji; and Takagi, Makoto, to Sony Corporation. Method for attaching a stud pin to a cathode ray tube panel. 4,640,700, Cl. 65-59.220.
- Takemae, Yoshihiro; Nakano, Tomio; and Sato, Kimiaki, to Fujitsu Limited. Semiconductor memory device having stacked capacitor-type memory cells. 4,641,166, Cl. 357-23.600.
- Takenoya, Hideaki; Inamori, Mikio; and Shomura, Eiichi, to Janome Sewing Machine Co., Ltd. Computer controlled sewing machine. 4,640,210, Cl. 112-456.000.
- Takesako, Sumiyoshi, to Kabushiki Kaisha Toshiba. Automatic-transfer-transaction processing apparatus. 4,641,239, Cl. 364-408.000.
- Takeuchi, Akihiko, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 4,641,158, Cl. 346-160.000.
- Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Kitchen utensil. 4,640,467, Cl. 241-152.00R.
- Takeuchi Tekko Kabushiki Kaisha: See—
Takeuchi, Shigeo, 4,640,467, Cl. 241-152.00R.
- Taki, Yoshihiro; Akado, Hajime; Funae, Keizo; and Inukai, Satoshi, to Nippondenso Co., Ltd. Filter element. 4,640,779, Cl. 210-493.500.
- Takiguchi, Eiji; Yuto, Kazuaki; and Oniki, Toru, to Bridgestone Corporation. Pneumatic tire having all-weather running performances. 4,640,952, Cl. 524-296.000.
- Takizawa, Morio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Sliding friction member for lens sliding ring. 4,640,579, Cl. 350-255.000.
- Takizawa, Shozo: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Tamborski, Christ; and Clark, Leland C., Jr., to Adamantech, Inc.; and Children's Hospital Research Foundation. Use of perfluorobromalkyl ethers as X-ray contrast agents. 4,640,833, Cl. 424-5.000.
- Tamura Electric Works Ltd.: See—
Kawade, Hideji; Takahashi, Hideaki; Sato, Yoshiyuki; and Urayama, Yuji, 4,640,990, Cl. 379-77.000.
- Tamura, Kaoru: See—
Ohgoda, Makoto; and Tamura, Kaoru, 4,640,507, Cl. 271-245.000.
- Tanaka, Atsuo: See—
Okumura, Kunio; Fukuyama, Yasuo; and Tanaka, Atsuo, 4,640,808, Cl. 264-46.500.
- Tanaka, Hiroshi: See—
Asai, Eiichi; Tanaka, Hiroshi; and Higashi, Nobuaki, 4,641,267, Cl. 364-414.000.
- Tanaka, Honami: See—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Yamazaki, Heima; Kitajima, Eiji; and Sunada, Tomonori, 4,640,822, Cl. 422-111.000.
- Tanaka, Jouji; Watanabe, Tetunobu; Tanimoto, Yoshiji; and Okumura, Minoru, to Nitsuko Limited; and Nippon Telegraph and Telephone Corporation. Key telephone system with means for operatively connecting another key telephone systems. 4,641,337, Cl. 379-162.000.
- Tanaka, Shinya, to Canon Kabushiki Kaisha. Stereoscopic microscope including a rotatable light beam distributing means with a surface having distributing and non-distributing areas. 4,640,588, Cl. 350-516.000.
- Tanaka, Shizuo: See—
Nakane, Mototaka; and Tanaka, Shizuo, 4,640,400, Cl. 192-70.250.
- Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Vehicle suspension apparatus. 4,640,526, Cl. 280-707.000.
- Tanaka, Yasuhiro, to Murata Manufacturing Co., Ltd. Piezoelectric resonator with notched sides. 4,641,055, Cl. 310-368.000.
- Tanaka, Yoshinari: See—
Akazawa, Toshiyuki; Tanaka, Yoshinari; and Okaya, Takuji, 4,640,870, Cl. 428-483.000.
- Tani, Toshiyuki: See—
Inazawa, Yoshizumi; Takahashi, Toshihiko; Tani, Toshiyuki; and Satomura, Shigeyuki, 4,641,208, Cl. 360-72.200.
- Taniguchi, Yasutaka: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Tanimoto, Tetsuyuki: See—
Yasumoto, Hitoshi; and Tanimoto, Tetsuyuki, 4,640,609, Cl. 355-37.000.
- Tanimoto, Yoshiji: See—
Tanaka, Jouji; Watanabe, Tetunobu; Tanimoto, Yoshiji; and Okumura, Minoru, 4,641,337, Cl. 379-162.000.
- Tanner, Risto; and Purhonen, Hannu. Means for indicating direction and a method of determining a direction. 4,640,016, Cl. 33-356.000.
- Tansil, Thomas B.: See—
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,640,991, Cl. 379-88.000.
- Targa, Giorgio; and Russo, Vitaliano. Rope-making machine. 4,640,087, Cl. 57-58.360.
- Tarjan, Peter P.: See—
DeCote, Robert, Jr.; and Tarjan, Peter P., 4,640,285, Cl. 128-419.0PT.
- Tate & Lyle Public Limited Company: See—
Shukla, Dipak P.; Sinclair, Keith; and Smith, Kevin A., 4,640,717, Cl. 127-58.000.
- Tate, Ralph, Jr.; and Woods, John T., to Whirlpool Corporation. Refrigeration apparatus cabinet construction utilizing prepainted steel panels. 4,640,432, Cl. 220-75.000.
- Tatemoto, Minoru: See—
Tanaka, Tadao; Chikamori, Sunao; Harara, Mitsuhiro; Taniguchi, Yasutaka; Suzumura, Masanaga; Tatemoto, Minoru; Kumagai, Naotake; Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.

- Naotake, Abe, Hiroki; and Takizawa, Shozo, 4,640,526, Cl. 280-707.000.
- Tatsumi, Susumu: See—
Miyakawa, Seiichi; Tatsumi, Susumu; and Sakamoto, Koji, 4,640,129, Cl. 73-866.000.
- Taylor, Arthur D.; and Upson, Thomas M., to Engelhard Corporation. Method for producing silver colored brazing alloy. 4,640,752, Cl. 204-141.500.
- Taylor, Frank H., to Otis Engineering Corporation. Bleedoff tool for well test system. 4,640,363, Cl. 166-317.000.
- Taylor, James A.; and Taylor, Kenneth G. Neutron logging tool. 4,641,028, Cl. 250-266.000.
- Taylor, Kenneth G.: See—
Taylor, James A.; and Taylor, Kenneth G., 4,641,028, Cl. 250-266.000.
- Taylor, William D. Safety vehicle. 4,640,527, Cl. 280-781.000.
- Tazawa, Shigemoto; and Ayata, Naoki, to Canon Kabushiki Kaisha. System for controlling drive of a wafer stage. 4,641,071, Cl. 318-640.000.
- Teape, John W.: See—
Avison, Gerald; Teape, John W.; and Willer, Paul H. F., 4,640,320, Cl. 140-93.00A.
- Technomarmi Maiera S.p.A.: See—
Marocco, Giuseppe, 4,640,850, Cl. 428-15.000.
- Tecle, Haile: See—
Downs, David A.; and Tecle, Haile, 4,640,925, Cl. 514-331.000.
- Tecumseh Products Company: See—
Gannaway, Edwin L., 4,640,669, Cl. 417-410.000.
- Teich, Christian M., to Deere & Company. Draft link sway block. 4,640,522, Cl. 280-460.00A.
- Tektronix, Inc.: See—
Pollock, Ira G., 4,641,048, Cl. 307-591.000.
- Teldec Schallplatten GmbH: See—
Knothe, Herbert; and Roschmann, Klaus, 4,640,745, Cl. 204-5.000.
- Teledyne Continental Motors: See—
Edelmayer, Thomas C., 4,640,641, Cl. 403-150.000.
- Teledyne Industries, Inc.: See—
Brogdon, James W.; Allen, Kenneth D.; Barton, John S.; and Hicks, Raymond J., 4,640,153, Cl. 74-789.000.
- Casasent, David, 4,641,273, Cl. 364-822.000.
- Tenenbaum, Daniel M.: See—
Tenenbaum, Marcos; De Guzman, Luis; and Tenenbaum, Daniel M., 4,640,102, Cl. 62-294.000.
- Tenenbaum, Marcos; De Guzman, Luis; and Tenenbaum, Daniel M. Self-cooling container for beverages. 4,640,102, Cl. 62-294.000.
- Tensidyne Scientific Corporation: See—
Brull, Maurice A., 4,639,997, Cl. 29-407.000.
- te Raa, Gerhardus A.: See—
Goossens, Laurentius M. J.; te Raa, Gerhardus A.; and van Rheenen, Bernhard J. P., 4,641,333, Cl. 378-144.000.
- Terano, Minoru; Yokoyama, Yasushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, to Toho Titanium Co., Ltd. Catalyst for the polymerization of olefins. 4,640,906, Cl. 502-104.000.
- Testin, William J.; and French, Michael P., to RCA Corporation. Television power supply shutdown circuit. 4,641,064, Cl. 315-411.000.
- Testin, William J.; and Tufts, Juri, to RCA Corporation. Muting system. 4,641,190, Cl. 358-165.000.
- Teufelberger Gesellschaft m.b.H.: See—
Kurzbock, Erich, 4,640,178, Cl. 87-6.000.
- Texaco Canada Resources Ltd.: See—
Livesey, Declan B.; and Toma, Petre, 4,640,359, Cl. 166-276.000.
- Texaco Inc.: See—
Kapusinski, Maria M.; Liu, Christopher S.; Hart, William P.; and Grina, Larry D., 4,640,788, Cl. 252-51.50R.
- Texas College of Osteopathic Medicine: See—
Meyer, Steven D.; and Raven, Peter B., 4,640,277, Cl. 128-204.230.
- Texas Instruments Incorporated: See—
Boulanger, Henry J., 4,641,121, Cl. 337-380.000.
- Garcia, Felix, Jr., 4,641,026, Cl. 250-229.000.
- Kim, Bumman; and Tserng, Hua Q., 4,641,161, Cl. 357-22.000.
- Malhi, Satinder; and Baglee, David A., 4,641,173, Cl. 357-51.000.
- Sacarsen, Stephen P.; and Fanini, Otto N., 4,641,308, Cl. 371-16.000.
- Texscan Corporation: See—
Bailey, Peter D., 4,641,115, Cl. 333-181.000.
- Thatcher, Richard K.: See—
Renner, G. Frederick; Thatcher, Richard K.; Atterbury, William G.; Harris, Jeremy M.; Hartman, Nile F.; and McCown, Robert B., 4,641,027, Cl. 250-237.00G.
- Thettu, Raghulinga R.: See—
Garavuso, Gerald M.; Liang, Shwu-Jian; and Thettu, Raghulinga R., 4,640,504, Cl. 271-113.000.
- Theurer, Josef, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Ballast cleaning machine with preliminary sifting conveyor. 4,640,364, Cl. 171-16.000.
- Theys, Raymond A.: See—
Cummins, Michael; Cummins, James M.; and Theys, Raymond A., 4,640,142, Cl. 74-501.00R.
- Thiel, Bernhard: See—
Leuker, Wilhelm; Stipsits, Gunter; and Thiel, Bernhard, 4,640,121, Cl. 73-40.50A.
- Thiele, Karl E.: See—
Tykulsky, Alexander; Thiele, Karl E.; and Halberg, Leslie L., 4,640,292, Cl. 128-661.000.
- Thin Film Technology Corporation: See—
Ozawa, Juichiro, 4,641,113, Cl. 333-161.000.
- Thomas, Arthur, to Ford Motor Company. Dimensional checking tool. 4,640,014, Cl. 33-143.00L.
- Thomas J. Lipton, Inc.: See—
Assinder, Ivar; Supran, Michael K.; and Thompson, Geoffrey A. K., 4,640,840, Cl. 426-399.000.
- Thomas, Michael E.; Vora, Madhukar B.; and Kapoor, Ashok K., to Fairchild Camera & Instrument Corp. Method and structure for inhibiting dopant out-diffusion. 4,640,004, Cl. 29-590.000.
- Thomas, Perry W. Razor construction. 4,640,012, Cl. 30-41.000.
- Thompson, Geoffrey A. K.: See—
Assinder, Ivar; Supran, Michael K.; and Thompson, Geoffrey A. K., 4,640,840, Cl. 426-399.000.
- Thomson, Thomas H., to Staodynamics, Inc. Optimized nerve fiber stimulation. 4,640,286, Cl. 128-421.000.
- Thyssen Industrie Aktiengesellschaft: See—
Haupt, Otmar, 4,640,198, Cl. 105-168.000.
- Tihanyi, Jenő, to Siemens Aktiengesellschaft. MIS-field effect transistor with charge carrier injection. 4,641,163, Cl. 357-23.400.
- Timesavers, Inc.: See—
Stump, Lee E., 4,640,056, Cl. 51-138.000.
- TL Systems Corporation: See—
Trechsel, Hans W., 4,640,448, Cl. 222-636.000.
- Toa Harbor Works, Co., Ltd.: See—
Kishida, Takao; and Fukaya, Takeo, 4,640,118, Cl. 73-9.000.
- Tobin, Roderick C.; and Perry, Nigel D., to Monash University. Room temperature metal vapour laser. 4,641,313, Cl. 372-56.000.
- Todd, Richard S.: See—
Boyle, John T. A.; and Todd, Richard S., 4,640,920, Cl. 514-248.000.
- Toelle, Alvin D., to Ex-Cell-O Corporation. Fluid control valve. 4,640,308, Cl. 137-596.180.
- Toho Titanium Co., Ltd.: See—
Terano, Minoru; Yokoyama, Yasushi; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,640,906, Cl. 502-104.000.
- Tokita, Masakazu, to Toshiba Kikai Kabushiki Kaisha. Electron beam drawing control system. 4,641,252, Cl. 364-518.000.
- Toko, Inc.: See—
Kohayakawa, Masami, 4,641,112, Cl. 333-140.000.
- Tokyo Automatic Machinery Works, Ltd.: See—
Takahashi, Shizuo; and Yamashita, Kiyoshi, 4,640,083, Cl. 53-551.000.
- Tokyo Electric Co., Ltd.: See—
Sakura, Yasuhiro; Nimura, Hitoshi; and Ishikawa, Mamoru, 4,641,147, Cl. 346-76.0PH.
- Tokyo Electric Power Co., Inc.: See—
Suzuki, Mamoru; and Fukui, Shinta, 4,641,248, Cl. 364-492.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Oonuma, Shouji, 4,641,282, Cl. 365-189.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Fujise, Masakuni, 4,641,328, Cl. 378-8.000.
- Iizuka, Tetsuya; Fujii, Syuso; and Uchida, Yukimasa, 4,641,165, Cl. 357-23.600.
- Koshigoe, Shinpei; and Fujiwara, Takeshi, 4,641,058, Cl. 313-449.000.
- Mine, Susumu; and Ishizaka, Takao, 4,640,005, Cl. 29-599.000.
- Sato, Shinsaku; and Yamagata, Ichiro, 4,640,664, Cl. 415-1.000.
- Shiraishi, Takashi, 4,641,175, Cl. 357-39.000.
- Sugai, Shinzo; Yamane, Shigemi; and Kuze, Takashi, 4,640,723, Cl. 148-411.000.
- Yamazaki, Mutsuki; and Kaga, Eiichi, 4,641,168, Cl. 357-30.000.
- Toma, Daniel N.: See—
Kushner, Gerald J.; and Toma, Daniel N., 4,640,105, Cl. 68-23.300.
- Toma, Petre: See—
Livesey, Declan B.; and Toma, Petre, 4,640,359, Cl. 166-276.000.
- Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Counter circuit operable in synchronism with frame or digital data signal. 4,641,326, Cl. 375-108.000.
- Tomita, Masao, to Kinki Denki Co., Ltd. Impulse rocket propellant. 4,640,794, Cl. 252-194.000.
- Tomkinson, John G.: See—
Northrup, Allan R.; and Tomkinson, John G., 4,640,416, Cl. 206-425.000.
- Tomm, Dagwin: See—
Hartig, Franz; Fischer, Matthias; and Tomm, Dagwin, 4,640,402, Cl. 192-106.200.
- Tornell, Goran. Stirring member for liquid suspensions in sealed spray containers. 4,640,623, Cl. 336-342.000.
- Toshiba Automation Equipment Engineering, Ltd.: See—
Ando, Hideo; and Doi, Akihiko, 4,641,023, Cl. 250-216.000.
- Toshiba Ceramics Co., Ltd.: See—
Arakawa, Kazumi; Hirao, Toshiyuki; Sugiura, Kenji; Kuroki, Satoshi; Hiraki, Sei; Suzuki, Takao; and Nakai, Ken, 4,640,336, Cl. 164-440.000.
- Toshiba Kikai Kabushiki Kaisha: See—
Tokita, Masakazu, 4,641,252, Cl. 364-518.000.
- Toshiba Silicone Co., Ltd.: See—
Watanabe, Junichiro; Funahashi, Yuichi; Sugiura, Kazuo; and Matsumoto, Hironori, 4,640,968, Cl. 528-32.000.
- Toth, James E.: See—
Elsenbaumer, Ronald L.; Miller, Granville G.; and Toth, James E., 4,640,006, Cl. 29-623.100.
- Toub, Melvin R.; and Finney, Donald L., to General Electric Company. Iodine resistant silicone rubber compositions. 4,640,956, Cl. 524-779.000.

- Toyo Seikan Kaisha, Ltd.: See—
Takeda, Hiroshi; Oshima, Norisugu; Kubo, Tateo; and Sakaguchi, Kenichi, 4,640,673, Cl. 425-297.000.
- Toyoda Gosei Co., Ltd.: See—
Kobayashi, Teruo; and Uchida, Sadao, 4,640,150, Cl. 74-552.000.
- Noda, Kazushi; Komatsu, Moriyo; and Mitsunaga, Hiroshi, 4,640,340, Cl. 165-41.000.
- Toyota Jidosha Kabushiki Kaisha: See—
Harada, Osamu; Suematsu, Toshio; Takeda, Yuji; and Anzai, Katsushi, 4,640,251, Cl. 123-425.000.
- Hasegawa, Akira, 4,640,148, Cl. 74-422.000.
- Hayashi, Motomu; Nagai, Masayuki; and Akoshima, Shigeru, 4,640,066, Cl. 52-208.000.
- Matsushima, Katsuaki; Fujioka, Yasuhiro; Sasaki, Takeshi; Fujine, Manabu; and Yamamoto, Kouji, 4,640,184, Cl. 98-2.150.
- Nakane, Mototaka; and Tanaka, Shizuo, 4,640,400, Cl. 192-70.250.
- Nomura, Yoshihisa; Oka, Hiroyuki; and Otsuki, Hiromi, 4,640,558, Cl. 303-119.000.
- Yasukawa, Masao; and Taguchi, Yukiyasu, 4,640,147, Cl. 74-409.000.
- Toyota Shatai Kabushiki Kaisha: See—
Shibuki, Osamu; Matsuyama, Noboru; Nagasawa, Yoshiaki; Kawai, Katsuhiko; Sakagami, Shigeru; and Onoyama, Toshiaki, 4,641,065, Cl. 318-135.000.
- Tozaki, Hiroshi: See—
Watanabe, Yuki; and Tozaki, Hiroshi, 4,640,612, Cl. 355-87.000.
- Tractor Plow Co., Inc.: See—
Lawrence, Ventura J.; Metcalf, Charles G.; and Silva, Lawrence H., 4,640,367, Cl. 172-225.000.
- Tracy, David H.; O'Brien, Michael J.; and Bohler, Walter, to Perkin-Elmer Corporation. The Apparatus for monitoring a plasma torch. 4,640,627, Cl. 374-121.000.
- Tracy, John M.; Yeh, Pochi A.; and Khoshnevisan, Mohsen, to Rockwell International Corporation. Phase conjugate relative position sensor. 4,640,618, Cl. 356-345.000.
- Trambauer, Karl: See—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; Wober, Gunter; Philapitsch, Anton; Linnau, Yendra; Dörner, Friedrich; Trambauer, Karl; and Frechinger, Wolfgang, 4,640,834, Cl. 424-94.000.
- Trans-Guard Industries Inc.: See—
Brammell, Terrence N., 4,640,538, Cl. 292-323.000.
- Trautmann, Gunther: See—
Link, Helmut F.; Trautmann, Gunther; and Herrscher, Albert, 4,640,158, Cl. 82-3.000.
- Trechsel, Hans W., to TL Systems Corporation. Volume adjustment device for powder filling apparatus. 4,640,448, Cl. 222-636.000.
- Trepp, Christian, to Sulzer Brothers Limited. Apparatus for conveying and compressing a gaseous medium. 4,640,667, Cl. 417-52.000.
- Trevison, Robert L.; McKee, William E.; and Hunnel, Larry B., to Comienzo Limited. Cover for semiconductor device packages. 4,640,438, Cl. 220-359.000.
- Trine Products Corporation: See—
Paley, Gary, 4,640,019, Cl. 33-563.000.
- Troxler Electronic Laboratories, Inc.: See—
Regimand, Ali, 4,641,030, Cl. 250-308.000.
- Trull, Michael W.; and Powell, Richard C., to Lord Corporation. Tactile sensor. 4,640,137, Cl. 73-862.040.
- Trumley, Richard L., to General Aluminum Products, Inc. Roll-formed frame for portable enclosures. 4,640,061, Cl. 52-71.000.
- TRW Inc.: See—
Grote, Albert J.; Tahim, Raghib S.; and Chang, Kai, 4,641,369, Cl. 455-327.000.
- Tsang, Chung K. Multi-phase PSK demodulator. 4,641,323, Cl. 375-80.000.
- Tserng, Hua Q.: See—
Kim, Bumman; and Tserng, Hua Q., 4,641,161, Cl. 357-22.000.
- Tsubakimoto, Tsuneco; Fujikawa, Iwao; and Kushino, Mitsuo, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Spacers for liquid crystal display device. 4,640,584, Cl. 350-344.000.
- Tsubota, Yasumasa: See—
Shibahata, Yasuji; Tsubota, Yasumasa; and Uno, Takaaki, 4,640,379, Cl. 180-140.000.
- Tsubouchi, Haruyoshi: See—
Yoshioka, Masahiro; and Tsubouchi, Haruyoshi, 4,640,630, Cl. 384-129.000.
- Tsuchida, Yasuyuki: See—
Deguchi, Yutaka; and Tsuchida, Yasuyuki, 4,640,601, Cl. 355-3.00R.
- Tsuchiya, Shizuo: See—
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asami, Seiji, 4,641,156, Cl. 346-160.000.
- Tsuchiya, Yuki; and Matsukawa, Yutaka, to Pioneer Electronic Corporation. Wall-mounted resin speaker cabinet. 4,640,381, Cl. 181-144.000.
- Tsuji, Eiji: See—
Abura, Yoshinori; Tsuji, Eiji; Okuyama, Kenji; and Ochi, Shuhei, 4,641,010, Cl. 219-222.000.
- Tsukada, Keizo; and Yamagata, Masato. Cordless telephone. 4,640,987, Cl. 379-62.000.
- Tsuneco, Ishino, to Nippon Filcon Co., Ltd. Forming fabric for use in a papermaking machine. 4,640,741, Cl. 162-202.000.
- Tsuno, Koichi, to Sumitomo Electric Industries, Ltd. Image fiber with a mechanism for rotating a field of view. 4,640,577, Cl. 350-96.250.
- Tubular Fabricators Industry, Inc.: See—
Battiston, Joseph D., Sr.; and Battiston, Joseph, Jr., 4,640,301, Cl. 135-67.000.
- Tucciarone, Aldo: See—
Antonini, Bruno; Borghese, Camillo; D'Amico, Arnaldo; DeGasperis, Paolo; Paoletti, Antonio; Paroli, Paolo; Petrocco, Giovanni; Tucciarone, Aldo; and Scarinci, Fernando, 4,640,629, Cl. 374-178.000.
- Tufts, Jerold W. Platform device. 4,640,483, Cl. 248-311.200.
- Tufts, Timothy A.: See—
Goel, Anil B.; Tufts, Timothy A.; and Blackburn, Peggy A., 4,640,969, Cl. 528-73.000.
- Tufts, Juri: See—
Testin, William J.; and Tufts, Juri, 4,641,190, Cl. 358-165.000.
- Tunnell, George; Pomernacki, Charles L.; and Gregg, Jack P. Voice controlled welding system. 4,641,292, Cl. 367-198.000.
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Demmer, Walter H., 4,641,131, Cl. 340-347.0DA.
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Naumann, Reinhard, 4,640,503, Cl. 271-103.000.

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Weeks, Donald L.: See—
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Wei, Lee-Fang, to Codex Corporation. Frame synchronization in trellis-coded communication systems, 4,641,327, Cl. 375-114.000.

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 Wright, Donald R., to Dow Chemical Company. The Process to form generally rigid cushion packages from loose fill dunnage, 4,640,080, Cl. 53-449.000.
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 Yamada, Yasuyuki, to Nikkiso Co., Ltd. Portable and wearable injector of mini size, 4,640,445, Cl. 222-386.500.
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 Sato, Shinsaku; and Yamagata, Ichiro, 4,640,664, Cl. 415-1.000.
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 Tsukada, Keizo; and Yamagata, Masato, 4,640,987, Cl. 379-62.000.
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 Yanagihara, Eiichi: See—
 Fujii, Hideji; Hayakawa, Takayuki; Sato, Shigeru; and Yanagihara, Eiichi, 4,640,729, Cl. 156-257.000.
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 Yananton, Patrick. Odorless animal litter unit, 4,640,225, Cl. 119-1.000.
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 Higashi, Haruki; Yashiki, Seiji; Waki, Kouichirou; and Kikuchi, Toshiyuki, 4,640,394, Cl. 192-3.290.
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 Yilmaz, Hamza, to General Electric Company. Current limited insulated gate device, 4,641,162, Cl. 357-23.400.
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 Meguro, Kenjiro; Sagawa, Koichiro; Yokota, Hirofumi; and Takehara, Masahiro, 4,640,943, Cl. 523-200.000.
 Yokota, Masaaki, to Tachikawa Spring Co. Ltd. Headrest for a vehicle seat, 4,640,549, Cl. 297-410.000.
 Yokota, Yuji; and Osabe, Akira, to Canon Denshi Kabushiki Kaisha. Apparatus for loading a magnetic disc and for controlling the driving thereof, 4,641,212, Cl. 360-99.000.
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- Yoshimura, Frederick T.: See—
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- Yoshioka, Masahiro; and Tsubouchi, Haruyoshi, to Hitachi, Ltd. Turbocharger bearing assembly. 4,640,630, Cl. 384-129.000.
- Yoshioka, Tatsuo: See—
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- Yotsutani, Akio; Makino, Masayuki; Saegusa, Noboru; and Sone, Tomoshi, to NEC Corporation. Mobile radio communication system. 4,640,986, Cl. 379-60.000.
- Young, Quentin H., to Southern Steel Company. Door locking system. 4,640,108, Cl. 70-129.000.
- Yuto, Kazuaki: See—
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- Yuzaki, Yoshinori: See—
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- Z-Lock Company, Inc.: See—
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- Zajic, James E.; and Gerson, Donald F., to Canadian Patents & Development Ltd./Societe Canadienne des Brevets et d'Exploitation Ltd. Hydrocarbon extraction agents and microbiological processes for their production. 4,640,767, Cl. 208-390.000.
- Zebedee, Alan R.; and Hutchins, Derek R., to Nouveaux Security Products Limited. Hinge bolt set. 4,640,052, Cl. 49-383.000.
- Zecher, Wilfried; Reinking, Klaus; and Kleiner, Frank, to Bayer Aktiengesellschaft. Process for the production of polyamide imides. 4,640,970, Cl. 528-73.000.
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- Zelenka, Frank, to Bartell Industries Ltd. Brake system for cutters of surface cleaning cutter cage. 4,640,553, Cl. 299-39.000.
- Zellmer, Joel A.: See—
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- Zenith Electronics Corporation: See—
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- Warrick, Julian E., 4,641,189, Cl. 358-154.000.
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- Zigman, Donald J. Mobile terminal mounting stand. 4,640,199, Cl. 108-6.000.
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- Zillig, Steven R.: See—
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- Zillmer, Adalbert: See—
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- Zimmer, Inc.: See—
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- Zimmermann, Herbert: See—
Modic, Fedor; Leibfried, Wolfgang; Nitsch, Manfred; Spitzenberger, Kurt; and Zimmermann, Herbert, 4,640,739, Cl. 156-659.100.
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- Zodiac: See—
Feronniere, Michel, 4,640,217, Cl. 114-345.000.
- Zoerb, Melvin C., to Boeing Company. The. Aircraft wheel brake control system and method. 4,640,475, Cl. 244-111.000.
- Zoltan, Steven I., to Advanced Color Technology Inc. Printing head for ink jet printer. 4,641,155, Cl. 346-140.00R.
- Zunker, David W.: See—
Vassallo, Donald A.; and Zunker, David W., 4,640,946, Cl. 524-45.000.
- Zweifel, Terry L.; and Miller, Harry, to Sperry Corporation. Cruise airspeed control for aircraft. 4,641,268, Cl. 364-440.000.
- Zwieg, Grover A.: See—
Dola, Frank P.; Siwinski, Paul P.; and Zwieg, Grover A., 4,640,569, Cl. 339-143.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF FEBRUARY, 1987

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bigelow-Sanford, Inc.: See—
Wind, Joseph H., Re. 32,344, Cl. 206-599.000.
- Ciba-Geigy Corp.: See—
Neher, Robert; and Riniker, Bernhard, Re. 32,347, Cl. 514-12.000.
- Completion Tool Company: See—
Wood, Edward T., Re. 32,345, Cl. 277-34.000.
- Hilts, Robert L.: See—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., Re. 32,343, Cl. 166-322.000.
- Klamer, Reuben B.; and Mortonson, Robert J., to Trend Products Group. Trainer/learner skate. Re. 32,346, Cl. 280-11.200.
- Meaders, Michael W.: See—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., Re. 32,343, Cl. 166-322.000.
- Mortonson, Robert J.: See—
Klamer, Reuben B.; and Mortonson, Robert J., Re. 32,346, Cl. 280-11.200.
- Neher, Robert; and Riniker, Bernhard, to Ciba-Geigy Corp. Hypocalcaemic peptides and process for their manufacture. Re. 32,347, Cl. 514-12.000.
- Otis Engineering Corporation: See—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., Re. 32,343, Cl. 166-322.000.
- Riniker, Bernhard: See—
Neher, Robert; and Riniker, Bernhard, Re. 32,347, Cl. 514-12.000.
- Speegle, Steven C.: See—
Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., Re. 32,343, Cl. 166-322.000.
- Trend Products Group: See—
Klamer, Reuben B.; and Mortonson, Robert J., Re. 32,346, Cl. 280-11.200.
- Vinzant, Michael B.; Speegle, Steven C.; Meaders, Michael W.; and Hilts, Robert L., to Otis Engineering Corporation. Well safety valve. Re. 32,343, Cl. 166-322.000.
- Wind, Joseph H., to Bigelow-Sanford, Inc. Shipping pallet and a package formed therefrom. Re. 32,344, Cl. 206-599.000.
- Wood, Edward T., to Completion Tool Company. Packer valve arrangement. Re. 32,345, Cl. 277-34.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Campcore Inc.: See—
Fitzpatrick, John R., B1 3,820,292, Cl. 52-81.000.
- Dichiara, Anthony J. Quick-connect vent tube structure. B1 3,736,966, 2-3-87, Cl. 141-392.000.
- Fitzpatrick, John R., to Campcore Inc. Building structure. B1 3,820,292, 2-3-87, Cl. 52-81.000.
- Flexible Packaging Research and Consulting: See—
Goglio, Luigi, B1 3,799,427, Cl. 383-103.000.
- Goglio, Luigi, to Flexible Packaging Research and Consulting. Degassing valve for hermetically sealed flexible containers and a container provided with the valve. B1 3,799,427, 2-3-87, Cl. 383-103.000.
- Mullenberg, Ralph. Clamping assembly. B1 3,958,888, 2-3-87, Cl. 403-13.000.

LIST OF DESIGN PATENTEES

- A/S More Tekstilfabrikk: See—
Gjendemsjo, Peder, 288,043, Cl. D6-603.000.
- Abbott Laboratories: See—
Larkin, Mark E.; and Tripp, Edward S., 288,130, Cl. D24-56.000.
- Abitz, Roger E. Work piece support. 288,099, 2-3-87, Cl. D15-140.000.
- Adidas Fabrique de Chaussures de Sport: See—
Chassaing, Jacques, 288,028, Cl. D2-320.000.
- Ahlemann & Schlatter GmbH: See—
Schmidt, Rudiger, 288,133, Cl. D26-28.000.
- Schmidt, Rudiger, 288,134, Cl. D26-28.000.
- Akens, Gentry L., II; and Ware, H. Joe. Eye for figure toy. 288,107, 2-3-87, Cl. D21-189.000.
- Alexander, Frederick D., to Ekco Products, Inc. Roaster. 288,055, 2-3-87, Cl. D7-354.000.
- American Commercial, Incorporated: See—
Levien, Robin, 288,046, Cl. D7-17.000.
- Aronson, David B. Combined greeting card and candy package. 288,062, 2-3-87, Cl. D9-332.000.
- Ball, Randall D. Lawn sprinkler locator. 288,058, 2-3-87, Cl. D8-1.000.
- Barnes, Anna: See—
Hollingshead, John; and Barnes, Anna, 288,105, Cl. D21-167.000.
- Barthropp, Francis M. L. Toy gun. 288,104, 2-3-87, Cl. D21-147.000.
- Baxter Travenol Laboratories, Inc.: See—
White, Leonard A.; and Cabernoch, James L., 288,128, Cl. D24-47.000.
- Bek, Helge S.; and Jorgensen, Stig, to Pharmacia AS. Dispensing tube for liquid or paste-like substances. 288,061, 2-3-87, Cl. D9-302.000.
- Bennett, Lewis W., to Itek Graphics Corp. Keyboard. 288,095, 2-3-87, Cl. D14-100.000.
- Black & Decker, Inc.: See—
Somers, Robert L., 288,060, Cl. D8-69.000.
- Trelford, Alan; and Cunningham, Laurence T., 288,098, Cl. D15-17.000.
- Blanke Plastic Company: See—
Taylor, Beverly W., 288,129, Cl. D24-56.000.
- Bloom, Stefan A. Outer front face of a utensil knob. 288,056, 2-3-87, Cl. D7-393.000.
- Bonnet, Eric, to Jean Lassale S.A. Wrist watch. 288,067, 2-3-87, Cl. D10-39.000.
- Boucher, Richard, to Sanitoy, Inc. Bath ring for infants. 288,118, 2-3-87, Cl. D23-69.000.
- Boyd Lighting Company: See—
Pfister, Murray C., 288,136, Cl. D26-87.000.
- BP Electronics, Inc.: See—
Towell, Bruce R.; and Rey, Arthur, 288,092, Cl. D14-84.000.
- Breeze, Phyllis M.; Wescoat, Jay T.; Wilkinson, Jean; and Grugett, Anita G., to White River Industries, Inc. Receptacle or similar article. 288,042, 2-3-87, Cl. D6-563.000.
- Brickus, Romas A.; Tiffany, Thomas O.; and Keramaty, Hamid, to Fisher Scientific Company. Centrifugal analyzer rotor. 288,124, 2-3-87, Cl. D24-31.000.
- Bridgestone Corporation: See—
Osawa, Toru; and Nishio, Hideaki, 288,077, Cl. D12-142.000.
- Tsukagoshi, Tetsuhito; Matsunuma, Tamotsu; and Makino, Shigeo, 288,081, Cl. D12-147.000.
- Cabernoch, James L.: See—
White, Leonard A.; and Cabernoch, James L., 288,128, Cl. D24-47.000.

Campbell Soup Company: See—
Fox, Charles E.; and Terwilliger, Frank H., 288,050, Cl. D7-20.000.
Carter, Gene C. Fireplace and wood stove ash remover. 288,120, 2-3-87, Cl. D23-131.000.
Century Boat Company: See—
Hegg, Allan B.; Makowski, Lloyd S.; and Phares, James S., 288,087, Cl. D12-315.000.
Chapman, Stephen: See—
Galea, Alfred J.; and Chapman, Stephen, 288,102, Cl. D21-33.000.
Chassaing, Jacques, to Adidas Fabrique de Chaussures de Sport. Shoe sole. 288,028, 2-3-87, Cl. D2-320.000.
Childre, Casey J., to Lew Childre & Sons, Inc. Design for a handle body for a fishing rod. 288,111, 2-3-87, Cl. D22-142.000.
Childre, Casey J., to Lew Childre & Sons, Inc. Handle body for a fishing rod. 288,112, 2-3-87, Cl. D22-142.000.
Childre, Casey J., to Lew Childre & Sons, Inc. Handle body for a fishing rod. 288,113, 2-3-87, Cl. D22-142.000.
Childre, Casey J., to Lew Childre & Sons, Inc. Handle body for fishing rod. 288,114, 2-3-87, Cl. D22-142.000.
Cunningham, Laurence T.: See—
Trelford, Alan; and Cunningham, Laurence T., 288,098, Cl. D15-17.000.
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., to Dart Industries Inc. Gelatin mold or the like. 288,052, 2-3-87, Cl. D7-43.000.
Dart Industries Inc.: See—
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., 288,052, Cl. D7-43.000.
Davis, Myron F.; Goetz, Fred E.; Harris, James C.; Howell, Steven E.; Jordan, Willis Y., III; Lloyd, Robert W.; Martin, Randall W.; O'Connor, David F.; and Parker, Frederick, Jr., to International Business Machines Corporation. Floor standing personal computer. 288,094, 2-3-87, Cl. D14-100.000.
DeCoster, Pieter K. J.: See—
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., 288,052, Cl. D7-43.000.
Dentsply Research & Development Corp.: See—
Welsh, Richard E., 288,123, Cl. D24-10.000.
DiMatteo, Antonio: See—
Schulte, Sheila; and DiMatteo, Antonio, 288,054, Cl. D7-70.000.
Dr. Miller's Health Care Products, Inc.: See—
Miller, Griffith C., 288,034, Cl. D4-120.000.
Donato, Anthony, to Lightolier Incorporated. Lighting fixture. 288,135, 2-3-87, Cl. D26-63.000.
Dotson, James B., Jr. Stuffed toy bee figure. 288,106, 2-3-87, Cl. D21-185.000.
E & B Giftware, Inc.: See—
Hollinger, Fred; and Ross, Paul, 288,035, Cl. D6-324.000.
Ekco Products, Inc.: See—
Alexander, Frederick D., 288,055, Cl. D7-354.000.
Elliot, Lloyd: See—
Lodico, Carmen M.; and Elliot, Lloyd, 288,033, Cl. D3-71.000.
Envall, Born E. A.; and Jonsson, Ralph, to Saab-Scania Aktiebolag. Wheel. 288,086, 2-3-87, Cl. D12-209.000.
Estee Lauder Inc.: See—
Gager, James F., 288,064, Cl. D9-436.000.
Fair, Robert A.: See—
Fair, Robert W.; and Fair, Robert A., 288,069, Cl. D10-60.000.
Fair, Robert W.; and Fair, Robert A. Security box for a water heater thermostat. 288,069, 2-3-87, Cl. D10-60.000.
Fenne, Kenneth R., to Pittway Corporation. Automatic thermostat control. 288,068, 2-3-87, Cl. D10-50.000.
Fisher Scientific Company: See—
Brickus, Romas A.; Tiffany, Thomas O.; and Keramaty, Hamid, 288,124, Cl. D24-31.000.
Fling, Tyler C. Oil can opener with integral funnel. 288,059, 2-3-87, Cl. D8-34.000.
Fox, Charles E.; and Terwilliger, Frank H., to Campbell Soup Company. Food bowl. 288,050, 2-3-87, Cl. D7-20.000.
Fujiyama, Yoshiyuki; Watanabe, Hidemi; Kumano, Toshihiro; Terakado, Minoru; and Okiyama, Yoshitatsu, to Matsushita Graphic Communications Systems Inc. Facsimile transceiver. 288,093, 2-3-87, Cl. D14-94.000.
Gager, James F., to Estee Lauder Inc. Combined bulb and cap for a dropper applicator. 288,064, 2-3-87, Cl. D9-436.000.
Gainey, Michael D. Ski and ski pole carrier. 288,032, 2-3-87, Cl. D3-36.000.
Galea, Alfred J.; and Chapman, Stephen, to John Gale Pty, Ltd. Game board. 288,102, 2-3-87, Cl. D21-33.000.
Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape Inc. Cassette storage container. 288,031, 2-3-87, Cl. D3-35.000.
Gerstner, Karl. Type face. 288,100, 2-3-87, Cl. D18-24.000.
Gjendemsjo, Peder, to A/S More Tekstilfabrikk. Survival blanket. 288,043, 2-3-87, Cl. D6-603.000.
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Griffin, Gary; and Griffin, Richard. Carrying pouch for a catamaran sailboat. 288,088, 2-3-87, Cl. D12-317.000.
Griffin, Richard: See—
Griffin, Gary; and Griffin, Richard, 288,088, Cl. D12-317.000.

Grugett, Anita G.: See—
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GTE Service Corporation: See—
Williams, Woodrow W., 288,070, Cl. D10-78.000.
Hardin, Bill: See—
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Harris, James C.: See—
Davis, Myron F.; Goetz, Fred E.; Harris, James C.; Howell, Steven E.; Jordan, Willis Y., III; Lloyd, Robert W.; Martin, Randall W.; O'Connor, David F.; and Parker, Frederick, Jr., 288,094, Cl. D14-100.000.
Harter, Mark A.; and Schoumaker, Raoul J., to Westinghouse Electric Corp. Keyboard support. 288,097, 2-3-87, Cl. D14-114.000.
Hasegawa, Hirotsugu, to Sumitomo Rubber Industries, Ltd. Automobile tire. 288,078, 2-3-87, Cl. D12-146.000.
Hata, Hiroshi, to Hata Sporting Goods Industries Limited. Physical exerciser. 288,108, 2-3-87, Cl. D21-198.000.
Hata Sporting Goods Industries Limited: See—
Hata, Hiroshi, 288,108, Cl. D21-198.000.
Hatakenaka, Kenji, to Sumitomo Rubber Industries Ltd. Automobile tire. 288,084, 2-3-87, Cl. D12-151.000.
Haupt, Jacqueline. Infant pacifier. 288,126, 2-3-87, Cl. D24-45.000.
Hawkins, Larry S.: See—
Maza, Dale T.; Hawkins, Larry S.; and Luhman, George B., Jr., 288,053, Cl. D7-58.000.
Headrick, Richard T. Solar voltaic generator. 288,089, 2-3-87, Cl. D13-3.000.
Hegg, Allan B.; Makowski, Lloyd S.; and Phares, James S., to Century Boat Company. Boat. 288,087, 2-3-87, Cl. D12-315.000.
Henning, Verne R. Video cassette display rack. 288,038, 2-3-87, Cl. D6-458.000.
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Laughlin, Jennifer, 288,023, Cl. D2-252.000.
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Laughlin, Jennifer, 288,025, Cl. D2-252.000.
Laughlin, Jennifer, 288,026, Cl. D2-252.000.
Hill, Charles P.; and Spangler, Anthony G., to Masco Corporation of Indiana. Tub and shower shell. 288,119, 2-3-87, Cl. D23-69.000.
Hirano, Hiroshi, to Nissan Motor Co., Ltd. Combined automobile taillight lens and cover. 288,137, 2-3-87, Cl. D26-120.000.
Hollinger, Fred; and Ross, Paul, to E & B Giftware, Inc. Telescoping tie rack housing. 288,035, 2-3-87, Cl. D6-324.000.
Hollingshead, John; and Barnes, Anna. Doll. 288,105, 2-3-87, Cl. D21-167.000.
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Laughlin, Jennifer, to Wyss, B. O.; Wyss, E. L.; and Heywood, R. G., part interest to each. Novelty sun visor. 288,024, 2-3-87, Cl. D2-252.000.
Laughlin, Jennifer, to Wyss, B. O.; Wyss, E. L.; and Heywood, R. G., part interest to each. Novelty sun visor. 288,025, 2-3-87, Cl. D2-252.000.
Laughlin, Jennifer, to Wyss, B. O.; Wyss, E. L.; and Heywood, R. G., part interest to each. Novelty sun visor. 288,026, 2-3-87, Cl. D2-252.000.
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LeBlanc, Pierre, to Pierre LeBlanc Consulting Services, Ltd. Display stand. 288,041, 2-3-87, Cl. D6-473.000.
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Childre, Casey J., 288,112, Cl. D22-142.000.
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Lewis, Larry E.; and Senninger, Jerry D. Frame for an audio speaker. 288,090, 2-3-87, Cl. D14-33.000.
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Luhman, George B., Jr.: See—
Maza, Dale T.; Hawkins, Larry S.; and Luhman, George B., Jr., 288,053, Cl. D7-58.000.
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McCausland, Calvin W.; and Palombo, Louis A., to Nature's Sunshine Products, Inc. Portable water purifier unit. 288,115, 2-3-87, Cl. D23-3.000.
McGaha, George; Truette, Dan; Landan, Ned; and Hardin, Bill, to Pelton & Crane Company. Combined control unit and holder for dental equipment. 288,122, 2-3-87, Cl. D24-5.000.
McLennan, William R.; and Rung, Robert, to Victaulic Company of America. Yoke for a sprinkler. 288,116, 2-3-87, Cl. D23-7.000.
Miller, Celeen K. Apron. 288,020, 2-3-87, Cl. D2-226.000.

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Osawa, Toru; and Nishio, Hideaki, 288,077, Cl. D12-142.000.
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Nissan Motor Co., Ltd.: See—
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CLASS 164	4,640,753	331	4,640,407	431	4,640,796	122	4,640,494	42	4,640,528	706	4,640,581
246	4,640,754	34	4,640,408	432	4,640,797	214	4,640,495	47.31	4,640,529	811	4,640,582
287	4,640,755	35 TE	4,640,409	433	4,640,798	219 W	4,640,496	47.34	4,640,530	CLASS 320	4,640,583
440	4,640,756	235	4,640,410	434	4,640,799	CLASS 250	4,640,497	480 A	4,640,531	2	4,640,584
443	4,640,757	CLASS 165	4,640,411	435	4,640,800	201	4,640,498	491 D	4,640,532	44	4,640,585
448	4,640,758	1	4,640,412	436	4,640,801	202	4,640,499	611	4,640,533	21	4,640,586
CLASS 166	4,640,759	41	4,640,413	437	4,640,802	203	4,640,500	642	4,640,534	64	4,640,587
1	4,640,760	69	4,640,414	438	4,640,803	204	4,640,501	707	4,640,535	CLASS 322	4,640,588
69	4,640,761	70	4,640,415	439	4,640,804	205	4,640,502	781	4,640,536	49	4,640,589
86	4,640,762	803.01	4,640,416	440	4,640,805	206	4,640,503	789	4,640,537	313	4,640,590
92	4,640,763	CLASS 200	4,640,417	441	4,640,806	207	4,640,504	CLASS 281	4,640,538	CLASS 323	4,640,591
95	4,640,764	5 A	4,640,418	442	4,640,807	208	4,640,505	CLASS 285	4,640,539	CLASS 324	4,640,592
104.26	4,640,765	11 DA	4,640,419	443	4,640,808	209	4,640,506	18	4,640,540	58 B	4,640,593
158	4,640,766	19 R	4,640,420	444	4,640,809	210	4,640,507	24	4,640,541	58.5 B	4,640,594
CLASS 166	4,640,767	61.54	4,640,421	445	4,640,810	211	4,640,508	41	4,640,542	71.5	4,640,595
68.5	4,640,768	144 B	4,640,422	446	4,640,811	212	4,640,509	158	4,640,543	77 R	4,640,596
117.5	4,640,769	148 B	4,640,423	447	4,640,812	213	4,640,510	367	4,640,544	83 R	4,640,597
127	4,640,770	153 G	4,640,424	448	4,640,813	214	4,640,511	368	4,640,545	103 P	4,640,598
245	4,640,771	268	4,640,425	449	4,640,814	215	4,640,512	44	4,640,546	107	4,640,599
248	4,640,772	332	4,640,426	450	4,640,815	216	4,640,513	52	4,640,547	202	4,640,600
250	4,640,773	340	4,640,427	451	4,640,816	217	4,640,514	CLASS 290	4,640,548	227	4,640,601
269	4,640,774	CLASS 200	4,640,428	452	4,640,817	218	4,640,515	CLASS 292	4,640,549	239	4,640,602
272	4,640,775	5 C	4,640,429	453	4,640,818	219	4,640,516	CLASS 294	4,640,550	302	4,640,603
273	4,640,776	11 DA	4,640,430	454	4,640,819	220	4,640,517	CLASS 296	4,640,551	309	4,640,604
274	4,640,777	19 R	4,640,431	455	4,640,820	221	4,640,518	CLASS 298	4,640,552	311	4,640,605
276	4,640,778	61.54	4,640,432	456	4,640,821	222	4,640,519	CLASS 299	4,640,553	318	4,640,606
286	4,640,779	144 B	4,640,433	457	4,640,822	223	4,640,520	CLASS 300	4,640,554	322	4,640,607
288	4,640,780	148 B	4,640,434	458	4,640,823	224	4,640,521	CLASS 302	4,640,555	323	4,640,608
298	4,640,781	153 G	4,640,435	459	4,640,824	225	4,640,522	CLASS 304	4,640,556	324	4,640,609
317	4,640,782	268	4,640,436	460	4,640,825	226	4,640,523	CLASS 306	4,640,557	330	4,640,610
322	4,640,783	332	4,640,437	461	4,640,826	227	4,640,524	CLASS 308	4,640,558	CLASS 328	4,641,101
CLASS 171	4,640,784	340	4,640,438	462	4,640,827	228	4,640,525	CLASS 310	4,640,559	25	4,641,102
16	4,640,785	CLASS 200	4,640,439	463	4,640,828	229	4,640,526	CLASS 312	4,640,560	62	4,641,103
CLASS 172	4,640,786	5 A	4,640,440	464	4,640,829	230	4,640,527	CLASS 314	4,640,561	228	4,641,104
26	4,640,787	11 DA	4,640,441	465	4,640,830	231	4,640,528	CLASS 316	4,640,562	234	4,641,105
42	4,640,788	19 R	4,640,442	466	4,640,831	232	4,640,529	CLASS 318	4,640,563	9	4,641,106
225	4,640,789	61.54	4,640,443	467	4,640,832	233	4,640,530	CLASS 320	4,640,564	286	4,641,107
430	4,640,790	144 B	4,640,444	468	4,640,833	234	4,640,531	CLASS 322	4,640,565	307	4,641,108
CLASS 173	4,640,791	148 B	4,640,445	469	4,640,834	235	4,640,532	CLASS 324	4,640,566	CLASS 331	4,641,109
42	4,640,792	153 G	4,640,446	470	4,640,835	236	4,640,533	CLASS 326	4,640,567	116 FE	4,641,110
CLASS 174	4,640,793	268	4,640,447	471	4,640,836	237	4,640,534	CLASS 328	4,640,568	12	4,641,111
23 R	4,640,794	332	4,640,448	472	4,640,837	238	4,640,535	CLASS 330	4,640,569	115	4,641,112
35 GC	4,640,795	340	4,640,449	473	4,640,838	239	4,640,536	CLASS 332	4,640,570	140	4,641,113
36	4,640,796	CLASS 200	4,640,450	474	4,640,839	240	4,640,537	CLASS 334	4,640,571	161	4,641,114
75 R	4,640,797	5 A	4,640,451	475	4,640,840	241	4,640,538	CLASS 336	4,640,572	CLASS 353	4,640,597
88 R	4,640,798	11 DA	4,640,452	476	4,640,841	242	4,640,539	CLASS 338	4,640,573	218	4,641,226
119 R	4,640,799	19 R	4,640,453	477	4,640,842	243	4,640,540	CLASS 340	4,640,574	231	4,641,227
135	4,640,800	61.54	4,640,454	478	4,640,843	244	4,640,541	CLASS 342	4,640,575	CLASS 355	4,640,598

CLASSIFICATION OF PATENTS

181	4,641,115		382	4,641,228	56	4,641,313	157	4,640,642	90	4,640,858
204	4,641,116	CLASS 354		65	4,641,314	CLASS 404		105	4,640,859	
		173.1	4,640,598	72	4,641,315		4,640,643	143	4,640,860	
	CLASS 335			74	4,641,316		4,640,644	294	4,640,861	
7	4,641,117	CLASS 355				CLASS 373		308.4	4,640,862	
282	4,641,118	3 FH	4,640,599	84	4,641,319		4,640,645	323	4,640,863	
297	4,641,119	3 CH	4,640,600	96	4,641,320		4,640,646	334	4,640,864	
		3 R	4,640,601	120	4,641,321		4,640,647	421	4,640,865	
	CLASS 336		4,640,603				4,640,648	446	4,640,866	
342	4,640,623		4,640,604	CLASS 364		CLASS 374		432	4,640,867	
		3 SH	4,640,602	149	4,641,235		4,640,649	446	4,640,868	
		4	4,640,605	153	4,641,265		4,640,650	469	4,640,869	
242	4,641,120	14 R	4,640,607	171	4,641,236			483	4,640,870	
380	4,641,121	15	4,640,606	200	4,641,237			611	4,640,871	
	CLASS 338		4,640,608		4,641,238			659	4,640,872	
33	4,641,122	37	4,640,609		4,641,266	CLASS 375				
128	4,641,123	73	4,640,610	408	4,641,239		132	4,640,651	CLASS 429	
		77	4,640,611	409	4,641,240		136	4,640,652		
	CLASS 339	87	4,640,612		4,641,241		233	4,640,653		
17 F	4,640,561			414	4,641,242				24	4,640,873
	4,640,562	CLASS 356			4,641,247				27	4,640,874
		1	4,640,613		4,641,267				30	4,640,875
32 M	4,640,563	36	4,640,614		4,641,243				37	4,640,876
40	4,640,564	130	4,640,615	436	4,641,268					CLASS 430
45 M	4,640,565	136	4,640,616	440	4,641,269		119	4,640,655		
91 R	4,640,566	326	4,640,617	473	4,641,244		303	4,640,656	14	4,640,877
94 M	4,640,567	345	4,640,618	475	4,641,269		347	4,640,657	15	4,640,878
103 R	4,640,568	372	4,640,619	476	4,641,270	CLASS 376	462	4,640,658	96	4,640,879
143 R	4,640,569	376	4,640,620	478	4,641,245		503	4,640,659	106.6	4,640,880
182 R	4,640,570	434	4,640,621	487	4,641,271		563	4,640,660		4,640,881
242	4,640,571			490	4,641,246		619	4,640,661		4,640,882
252 R		CLASS 357		492	4,641,248	CLASS 378	642	4,640,662	110	4,640,883
		22	4,641,161	496	4,641,249		730	4,640,663	122	4,640,884
		23.4	4,641,162	503	4,641,250				165	4,640,885
64	4,641,124		4,641,163	517	4,641,251				197	4,640,886
309.15	4,641,125		4,641,164	518	4,641,252		1	4,640,664	271	4,640,886
310 A	4,641,126	23.6	4,641,165		4,641,253		121 B	4,640,665	275	4,640,887
347 AD	4,641,129		4,641,166	522	4,641,254			4,640,666	323	4,640,888
	4,641,130	30	4,641,167	525	4,641,255				504	4,640,890
347 DA	4,641,131		4,641,168	526	4,641,256				505	4,640,889
347 DD	4,641,132		4,641,169	559	4,641,257		52	4,640,667	551	4,640,891
540	4,641,133	35	4,641,170	580	4,641,258	CLASS 379	354	4,640,668	617	4,640,892
	4,641,133	39	4,641,171	710	4,641,259		410	4,640,669		CLASS 431
567	4,641,134	46	4,641,172		4,641,260				1	4,640,674
784	4,641,135	48	4,641,173	727	4,641,261		8	4,640,814	2	4,640,675
903	4,641,136	51	4,641,174	822	4,641,273		24	4,640,816	54	4,640,676
		58	4,641,176	900	4,641,261				75	4,640,678
	CLASS 342	74			4,641,262				89	4,640,677
52	4,641,137				4,641,263	CLASS 420	50	4,640,817	146	4,640,679
61	4,641,138				4,641,264				350	4,640,680
124	4,641,139	3			4,641,274	CLASS 422	15	4,640,818		CLASS 432
371	4,641,140		4,641,178		4,641,275		22	4,640,819	14	4,640,681
379	4,641,141	12	4,641,179		4,641,276		68	4,640,820	58	4,640,682
399	4,641,142	31	4,641,180		4,641,277	CLASS 380	81	4,640,821	134	4,640,683
445	4,641,143	36	4,641,181				111	4,640,822		CLASS 433
		41	4,641,182							
	CLASS 343	44	4,641,183	78	4,641,278				110	4,640,684
754	4,641,144	75	4,641,184	149	4,641,279		68	4,640,823	141	4,640,685
798	4,641,145		4,641,185	183	4,641,280	CLASS 381	185	4,640,824		CLASS 434
814	4,641,146	105	4,641,186	189	4,641,281		235	4,640,825		
		106	4,641,187		4,641,282		263	4,640,826	262	4,640,686
	CLASS 346	140	4,641,188	190	4,641,283		279	4,640,827		CLASS 435
76 PH	4,641,147	154	4,641,189	210	4,641,284		321 R	4,640,828		
	4,641,148	165	4,641,190		4,641,285			4,640,829	23	4,640,893
	4,641,149	168	4,641,191	230	4,641,286			4,640,830	100	4,640,894
	4,641,150	206	4,641,192					4,640,831	296	4,640,895
	4,641,151	233	4,641,193			CLASS 366		4,640,832		CLASS 436
137	4,641,152	242	4,641,194	76	4,640,622					
140 R	4,641,153		4,641,195			CLASS 382			34	4,640,896
	4,641,154	246	4,641,196		4,641,287				501	4,640,897
	4,641,155	280	4,641,197	19	4,641,288		5	4,640,833	546	4,640,898
160	4,641,156	285	4,641,198	85	4,641,289		94	4,640,834		CLASS 455
	4,641,157		4,641,199	106	4,641,290	CLASS 383		4,640,835		
	4,641,158	296	4,641,200	157	4,641,291		195.1	4,640,836	4	4,641,363
200	4,641,159	310	4,641,201	198	4,641,292				32	4,641,364
220	4,641,160	313	4,641,202						78	4,641,365
		335	4,641,203			CLASS 368			89	4,641,366
		341	4,641,204		4,640,624		142	4,640,670	161	4,641,367
	CLASS 350			180	4,640,625		149	4,640,671	239	4,641,368
6.1	4,640,573			211			192 R	4,640,672	327	4,641,369
96.11	4,640,574			280		CLASS 384	297	4,640,673	348	4,641,370
96.20	4,640,575	33.1	4,641,205						601	4,641,371
96.23	4,640,576		4,641,206	6	4,641,293	CLASS 385				4,641,372
96.25	4,640,577	35.1	4,641,215	32	4,641,294		94	4,640,837		4,641,373
96.32	4,640,592	55	4,641,207	46	4,641,295		107	4,640,838		
239	4,640,578	72.2	4,641,208	75.2	4,641,297	CLASS 386		4,640,839	603	4,641,374
255	4,640,579	86	4,641,209	77.1	4,641,298			4,640,840	807	4,641,375
274	4,640,580	96.5	4,641,210					4,640,841		4,641,376
331 R	4,640,581	97	4,641,211			CLASS 387		4,640,842	619	4,641,378
333	4,640,582	99	4,641,212					4,640,843		
343	4,640,583	125	4,641,213	15	4,641,299					CLASS 474
344	4,640,584	130.24	4,641,214	16	4,641,300	CLASS 388				
413	4,640,585			58	4,641,301		38	4,640,844	101	4,640,887
414	4,640,586			60	4,641,302			4,640,845		CLASS 501
432	4,640,587	45	4,641,216		4,641,307	CLASS 400	54.1	4,640,846	5	4,640,899
516	4,640,588		4,641,217	84	4,641,303		82	4,640,847	67	4,640,900
523	4,640,589	119	4,641,218	95	4,641,304		150	4,640,848	81	4,640,901
632	4,640,590	153	4,641,219			CLASS 401	426		97	4,640,902
	4,640,591	187	4,641,220							4,640,903
		321	4,641,221	12	4,641,305				128	4,640,904
	CLASS 351	403	4,641,222	16	4,641,308				137	4,640,905
160 R	4,640,594	424	4,641,223	25	4,641,306	CLASS 403				CLASS 502
	4,640,595		4,641,224	31	4,641,309					
169	4,640,593	429	4,641,225	38	4,641,310					
211	4,640,596									
		CLASS 362								
	CLASS 353									
79	4,640,597	218	4,641,226	18	4,641,311				104	4,640,906
		231	4,641,227	25	4,641,312				115	4,640,907
									243	4,640,908
									407	4,640,909

CLASSIFICATION OF PATENTS

CLASS 514	291	4,640,924	CLASS 522	14	4,640,936	45	4,640,946	193	4,640,958	73	4,640,969
12	Re.32,347	331	4,640,925	14	4,640,936	45	4,640,946	316	4,640,959	129	4,640,971
29	4,640,910	333	4,640,926	31	4,640,937	109	4,640,947	388	4,640,960	188	4,640,972
42	4,640,911	342	4,640,927	79	4,640,938	157	4,640,948	444	4,640,961	208	4,640,973
54	4,640,912	422	4,640,928	99	4,640,939	227	4,640,949	474	4,640,962	211	4,640,974
77	4,640,913	431	4,640,930	265	4,640,950	266	4,640,951	67	4,640,963	336	4,640,976
210	4,640,915	436	4,640,929	296	4,640,952	476	4,640,953	134	4,640,964	312	4,640,978
222	4,640,916	510	4,640,931	516	4,640,954	546	4,640,955	242	4,640,965	350	4,640,979
	4,640,917	714	4,640,932	779	4,640,956	44	4,640,957	249	4,640,966	352	4,640,988
241	4,640,918										
248	4,640,919										
252	4,640,920										
256	4,640,921										
272	4,640,922										
	4,640,923										

CLASSIFICATION OF DESIGNS

D2—	226	288,020		473	288,040		69	288,060		147	288,080	D18—	24	288,100		131	288,120			
	227	288,021			288,041		302	288,061			288,081	D20—	10	288,101		139	288,121			
		288,022		563	288,042		332	288,062			288,082	D21—	33	288,102		5	288,122			
252		288,023		603	288,043		425	288,063		148	288,083		34	288,103		10	288,123			
		288,024		6	288,044		429	288,065		151	288,084		147	288,104		31	288,124			
		288,025		9	288,045		436	288,064		163	288,085		167	288,105		38	288,125			
		288,026		17	288,046		32	288,066		209	288,086		185	288,106		45	288,126			
320		288,027		20	288,047		39	288,067		315	288,087		189	288,107		47	288,127			
		288,028			288,048		50	288,068		317	288,088		198	288,108		56	288,128			
602		288,029			288,049		60	288,069		D13—	3	288,089		226	288,109		56	288,130		
642		288,030			288,050		78	288,070		D14—	33	288,090		135	288,110		49	288,131		
D3—	35	288,031		28	288,051		92	288,071			53	288,091		142	288,111		D25—	56	288,132	
	36	288,032		43	288,052		33	288,072			84	288,092			288,112		53	288,133		
	71	288,033		58	288,053		118	288,073			94	288,093			288,113		D26—	28	288,134	
D4—	120	288,034		70	288,054			288,074			100	288,094			288,114		63	288,135		
D6—	324	288,035		354	288,055		160	288,075			111	288,095		D23—	3	288,115		28	288,136	
	333	288,036		393	288,056			288,076			114	288,096			7	288,116		87	288,137	
	335	288,037		400	288,057		D12—	142	288,077		114	288,097			32	288,117		120	288,138	
	458	288,038		1	288,058		146	288,078		D15—	17	288,098			69	288,118		D32—	42	288,139
	468	288,039		34	288,059			288,079			140	288,099				288,119		53	288,140	

CLASSIFICATION OF PLANTS

P—	43	5,873	74	5,870	5,871	88	5,872
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STATUTORY INVENTION REGISTRATIONS

42—	17	H211	1405	H202	374	H203	648	H204	356—	124.5	H220	376—	261	H209
60—	243	H221	43.01	H217	487	H215	313—	302	H216	356	H212	434—	22	H218
73—	4 R	H206	210	H210	342—	134	H205	357—	75	H208	564—	437	H214	
89—	1.8	H213	275.9	H207	156—	169	H219							

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
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	4,640,491	4,640,491	4,641,288		4,639,959	4,640,868	4,641,121
	4,640,695	4,640,500	4,641,291		4,639,970	4,640,893	4,641,148
	4,641,317	4,640,501	4,641,292		4,640,101	4,640,898	4,640,024
02 :	4,640,645	4,640,529	4,641,314		4,640,193	4,640,910	4,640,125
		4,640,541	4,641,315		4,640,260	4,640,944	4,640,268
04 :	4,639,946	4,640,546	4,641,324		4,640,267	4,640,963	4,640,362
	4,640,213	4,640,570	4,641,369		4,640,285	4,641,003	4,640,372
	4,640,224	4,640,589	4,640,025	08 :	4,640,313	4,641,011	4,639,969
	4,640,457	4,640,591	4,640,032		4,640,435	4,641,012	4,640,003
	4,640,659	4,640,596	4,640,053		4,640,439	4,641,080	4,640,344
	4,641,047	4,640,617	4,640,058		4,640,444	4,641,119	4,640,403
	4,641,105	4,640,618	4,640,075		4,640,460	4,641,179	4,640,499
	4,641,115	4,640,633	4,640,187		4,640,476	4,641,189	4,640,554
	4,641,246	4,640,653	4,640,286		4,640,528	4,641,191	4,640,704
	4,641,268	4,640,657	4,640,414		4,640,543	4,641,220	4,640,704
	4,641,351	4,640,676	4,640,886		4,640,569	4,641,222	4,641,033
05 :	4,640,109	4,640,687	4,641,089		4,640,688	4,641,224	4,641,207
	4,640,446	4,640,711	4,641,316		4,640,719	4,641,266	4,641,250
		4,640,712	4,641,348		4,640,769	4,641,320	4,641,254
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	4,639,977	4,640,756	4,639,991	09 :	4,641,140	4,641,377	4,640,174
	4,639,978	4,640,783	4,640,011		4,641,193	4,639,953	4,640,228
	4,639,980	4,640,806	4,640,092		4,641,302	4,639,960	4,640,292
	4,640,004	4,640,812	4,640,201		4,641,364	4,640,093	4,640,330
	4,640,010	4,640,819	4,640,222		4,639,974	4,640,173	4,640,482
	4,640,017	4,640,820	4,640,506	13 :	4,640,418	4,640,229	4,640,512
	4,640,030	4,640,827	4,640,580		4,640,563	4,640,269	4,640,752
	4,640,060	4,640,846	4,640,599		4,640,651	4,640,271	4,640,797
	4,640,063	4,640,902	4,640,627		4,640,294	4,640,294	4,640,821
	4,640,071	4,640,912	4,640,637		4,640,432	4,640,432	4,641,090
	4,640,106	4,640,932	4,640,735		4,640,516	4,640,516	4,641,110
	4,640,128	4,640,988	4,640,878		4,641,064	4,640,538	4,641,184
	4,640,144	4,641,046	4,640,927		4,641,181	4,641,064	4,641,185
	4,640,223	4,641,060	4,640,940	15 :	4,640,572	4,641,190	4,641,185
	4,640,266	4,641,063	4,640,998	17 :	4,639,944	4,641,205	4,641,221
	4,640,270	4,641,076	4,641,117		4,639,947	4,641,233	4,641,290
	4,640,279	4,641,077	4,641,153		4,639,951	4,641,338	4,641,305
	4,640,284	4,641,085	4,641,155		4,639,971	4,640,045	4,641,327
	4,640,291	4,641,086	4,641,216		4,639,995	4,640,094	4,639,962
	4,640,302	4,641,087	4,641,269		4,640,095	4,640,287	4,639,963
	4,640,303	4,641,091	4,641,285		4,640,112	4,640,368	4,640,046
	4,640,314	4,641,103	4,641,346		4,640,164	4,640,401	4,640,061
	4,640,355	4,641,108	4,641,347		4,640,165	4,640,665	4,640,080
	4,640,360	4,641,129	4,641,349		4,640,247	4,641,006	4,640,119
	4,640,367	4,641,144	4,640,002	10 :	4,640,404	4,641,343	4,640,142
	4,640,383	4,641,146	4,640,421		4,640,424	4,640,039	4,640,143
	4,640,384	4,641,209	4,640,776		4,640,424	4,640,921	4,640,145
	4,640,385	4,641,223	4,640,861		4,640,425	4,641,101	4,640,146
	4,640,420	4,641,228	4,640,905		4,640,464	4,641,244	4,640,155
	4,640,443	4,641,238	4,640,949		4,640,479	4,640,105	4,640,159
	4,640,449	4,641,247	4,640,953		4,640,622	4,640,161	4,640,196
	4,640,469	4,641,259	4,640,972		4,640,652	4,640,405	4,640,308
					4,640,744	4,640,862	4,640,309

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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4,640,326	4,640,423	4,640,788	4,640,505	4,640,675	4,640,766
4,640,331	4,640,463	4,640,799	4,640,511	4,640,685	4,640,782
4,640,333	4,640,692	4,640,814	4,640,595	4,640,725	4,640,805
4,640,433	4,640,716	4,640,823	4,640,696	4,640,793	4,640,818
4,640,456	4,640,763	4,640,843	4,640,722	4,640,813	4,640,853
4,640,462	4,640,800	4,640,848	4,640,730	4,640,815	4,640,865
4,640,478	4,640,801	4,640,899	4,640,825	4,640,829	4,640,907
4,640,535	4,640,837	4,640,904	4,640,833	4,640,875	4,640,941
4,640,542	4,640,842	4,640,913	4,640,839	4,640,885	4,640,957
4,640,545	4,640,884	4,640,956	4,640,855	4,640,958	4,640,965
4,640,561	4,640,909	4,640,962	4,640,895	4,641,000	4,640,991
4,640,631	4,640,930	4,640,967	4,640,901	4,641,045	4,641,026
4,640,669	4,640,945	4,640,984	4,640,933	4,641,132	4,641,028
4,640,693	4,641,102	4,641,017	4,640,969	4,641,137	4,641,094
4,640,697	4,641,106	4,641,072	4,640,976	4,641,138	4,641,126
4,640,728	4,641,107	4,641,097	4,640,982	4,641,164	4,641,161
4,640,786	4,641,123	4,641,125	4,641,027	4,641,240	4,641,173
4,640,790	4,641,130	4,641,135	4,641,135	4,641,241	4,641,287
4,640,791	4,641,186	4,641,154	4,641,159	4,641,273	4,641,308
4,640,792	4,641,188	4,641,162	4,639,979	4,641,371	4,641,362
4,640,826	4,641,192	4,641,170	4,640,192	4,641,373	4,640,040
4,640,831	4,641,218	4,641,174	4,640,304	Re: 32,344	4,640,440
4,640,881	4,641,229	4,641,203	4,640,348	4,639,986	4,640,151
4,640,925	4,641,232	4,641,262	4,640,351	4,640,323	50 : 4,639,951
4,640,935	4,641,261	4,641,263	4,640,361	4,640,407	51 : 4,640,042
4,640,951	4,641,299	4,641,276	4,640,760	4,640,690	4,640,132
4,641,057	4,641,304	4,641,325	4,640,787	4,640,856	4,640,177
4,641,104	4,641,311	4,641,334	4,640,789	4,640,858	4,640,180
4,641,136	4,641,318	4,641,341	4,640,942	4,641,098	4,640,300
4,641,152	4,641,365	3,736,966	4,640,964	4,640,369	4,640,686
4,641,356	4,641,368	4,640,110	4,641,124	4,640,658	4,640,738
27 : 4,640,056	4,640,347	4,640,137	4,640,043	4,640,770	4,641,231
4,640,138	4,640,671	4,640,162	4,640,134	4,640,973	4,641,253
4,640,289	4,641,037	4,640,170	4,640,170	4,641,329	53 : 4,640,007
4,640,295	4,641,099	4,640,209	4,640,386	Re: 32,343	4,640,179
4,640,448	4,639,956	4,640,215	4,640,413	Re: 32,345	4,640,214
4,640,492	4,639,996	4,640,246	4,640,474	4,639,948	4,640,263
4,640,727	4,639,999	4,640,325	4,640,496	4,639,952	4,640,265
4,640,838	4,640,019	4,640,497	4,640,540	4,640,033	4,640,416
4,640,859	4,640,034	4,640,562	4,640,655	4,640,041	4,640,438
4,640,978	4,640,076	4,640,567	4,640,682	4,640,044	4,640,475
4,641,043	4,640,114	4,640,621	4,641,048	4,640,108	4,640,477
28 : 4,641,061	4,640,185	4,640,643	4,639,972	4,640,130	4,640,490
29 : 4,639,957	4,640,221	4,640,981	4,639,992	4,640,163	4,640,525
4,640,012	4,640,242	4,640,997	4,639,993	4,640,277	4,640,564
4,640,020	4,640,248	4,641,030	4,639,994	4,640,332	4,640,619
4,640,176	4,640,273	4,641,074	4,639,998	4,640,349	4,641,025
4,640,200	4,640,322	4,641,095	4,640,018	4,640,350	4,641,127
4,640,204	4,640,411	4,641,339	4,640,036	4,640,352	4,641,236
4,640,662	4,640,426	4,640,483	4,640,049	4,640,353	54 : 4,640,955
4,640,702	4,640,429	4,639,968	4,640,086	4,640,357	55 : 4,639,949
4,640,709	4,640,504	4,639,985	4,640,149	4,640,358	4,640,029
4,640,038	4,640,510	4,640,064	4,640,169	4,640,363	4,640,069
4,640,365	4,640,513	4,640,065	4,640,191	4,640,370	4,640,079
4,641,014	4,640,534	4,640,082	4,640,233	4,640,374	4,640,152
32 : 4,641,114	4,640,560	4,640,098	4,640,258	4,640,392	4,640,199
4,639,945	4,640,594	4,640,107	4,640,290	4,640,461	4,640,219
4,640,410	4,640,602	4,640,116	4,640,305	4,640,502	4,640,378
33 : 4,640,226	4,640,607	4,640,117	4,640,342	4,640,515	4,640,408
4,641,143	4,640,616	4,640,154	4,640,388	4,640,527	4,640,495
4,641,358	4,640,620	4,640,182	4,640,422	4,640,539	4,640,533
34 : 4,639,987	4,640,640	4,640,202	4,640,427	4,640,551	4,640,536
4,640,006	4,640,678	4,640,275	4,640,484	4,640,575	4,640,713
4,640,048	4,640,684	4,640,310	4,640,498	4,640,638	4,640,726
4,640,120	4,640,689	4,640,337	4,640,508	4,640,647	4,640,852
4,640,195	4,640,731	4,640,406	4,640,509	4,640,715	4,640,874
4,640,225	4,640,736	4,640,428	4,640,518	4,640,734	4,640,948
4,640,272	4,640,740	4,640,434	4,640,521	4,640,743	4,641,005
4,640,280	4,640,746	4,640,442	4,640,565	4,640,754	56 : 4,640,680
4,640,301	4,640,778				

DESIGN PATENTS

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288,113	288,132	288,119	288,057	288,047	288,073
288,114	288,123	288,105	288,129	288,048	288,116
05 : 288,042	288,023	288,126	32 : 288,032	288,049	288,076
06 : 288,054	288,024	288,031	33 : 288,095	288,051	288,106
288,059	288,025	288,062	34 : 288,037	288,064	288,030
288,069	288,026	288,118	288,050	288,092	288,088
288,089	288,074	288,124	288,056	288,117	288,090
288,107	288,075	288,138	288,021	288,131	288,115
288,109	288,094	288,087	288,022	288,060	288,120
288,125	288,036	288,097	288,033	288,122	288,053
288,127	288,055	288,099	288,035	288,034	288,072
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06 : 5,873					
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
All cases:	1015.00
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Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

Sept. 30, 1986. DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Board of Appeals Decisions Rendered
in the Month of Dec. 1986

Affirmed	171
Affirmed in Part	41
Reversed	78
Total	290

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 7, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,429,419 through 4,430,758
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . \$ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) \$ 225.00
By other than a small entity \$ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 \$ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) \$ 55.00
By other than a small entity \$ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable \$ 500.00"

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge

are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 23, 1986,
DUE TO FAILURE TO PAY MAINTENANCE
FEES

Patent Number	Serial Number	Issue Date
4,359,791	06/216,171	11/23/82
4,359,796	06/289,800	11/23/82
4,359,797	06/257,371	11/23/82
4,359,809	06/246,930	11/23/82
4,359,823	06/218,644	11/23/82
4,359,825	06/241,608	11/23/82
4,359,835	06/223,060	11/23/82
4,359,870	06/351,899	11/23/82
4,359,872	06/302,279	11/23/82
4,359,879	06/221,912	11/23/82
4,359,887	06/217,208	11/23/82
4,359,892	06/216,468	11/23/82
4,359,931	06/225,941	11/23/82
4,359,939	06/256,114	11/23/82
4,359,942	06/216,417	11/23/82
4,359,951	06/228,472	11/23/82
4,359,966	06/249,334	11/23/82
4,359,972	06/273,683	11/23/82
4,359,977	06/222,223	11/23/82
4,359,985	06/227,684	11/23/82
4,359,995	06/217,466	11/23/82
4,360,001	06/270,923	11/23/82
4,360,002	06/217,841	11/23/82
4,360,005	06/230,307	11/23/82
4,360,006	06/248,715	11/23/82
4,360,012	06/235,723	11/23/82
4,360,015	06/263,685	11/23/82
4,360,035	06/295,807	11/23/82
4,360,036	06/269,797	11/23/82
4,360,045	06/221,789	11/23/82
4,360,060	06/269,778	11/23/82
4,360,062	06/243,108	11/23/82
4,360,066	06/236,449	11/23/82
4,360,079	06/339,038	11/23/82
4,360,105	06/257,713	11/23/82
4,360,135	06/313,743	11/23/82
4,360,138	06/230,597	11/23/82
4,360,147	06/267,175	11/23/82
4,360,153	06/235,710	11/23/82
4,360,172	06/221,545	11/23/82
4,360,187	06/275,267	11/23/82
4,360,190	06/243,898	11/23/82
4,360,198	06/232,192	11/23/82
4,360,199	06/218,614	11/23/82
4,360,215	06/261,502	11/23/82
4,360,235	06/251,383	11/23/82
4,360,256	06/253,403	11/23/82
4,360,270	06/234,500	11/23/82
4,360,285	06/223,899	11/23/82
4,360,328	06/273,672	11/23/82
4,360,332	06/314,125	11/23/82
4,360,335	06/297,230	11/23/82
4,360,339	06/230,216	11/23/82
4,360,344	06/249,643	11/23/82
4,360,347	06/243,971	11/23/82
4,360,348	06/236,476	11/23/82
4,360,360	06/250,107	11/23/82
4,360,363	06/349,423	11/23/82
4,360,394	06/230,225	11/23/82
4,360,424	06/255,779	11/23/82
4,360,427	06/251,350	11/23/82
4,360,430	06/260,707	11/23/82
4,360,432	06/300,871	11/23/82
4,360,436	06/296,543	11/23/82
4,360,454	06/274,854	11/23/82

4,360,459	06/251,172	11/23/82
4,360,467	06/299,704	11/23/82
4,360,468	06/306,771	11/23/82
4,360,475	06/252,050	11/23/82
4,360,525	06/306,974	11/23/82
4,360,530	06/320,262	11/23/82
4,360,533	06/330,543	11/23/82
4,360,539	06/275,070	11/23/82
4,360,559	06/288,774	11/23/82
4,360,584	06/245,158	11/23/82
4,360,604	06/327,929	11/23/82
4,360,608	06/268,057	11/23/82
4,360,646	06/258,707	11/23/82
4,360,659	06/260,874	11/23/82
4,360,666	06/266,030	11/23/82
4,360,667	06/266,031	11/23/82
4,360,668	06/266,266	11/23/82
4,360,671	06/308,635	11/23/82
4,360,680	06/282,905	11/23/82
4,360,699	06/333,708	11/23/82
4,360,740	06/298,318	11/23/82
4,360,755	06/221,953	11/23/82
4,360,765	06/237,994	11/23/82
4,360,847	06/222,410	11/23/82
4,360,852	06/249,850	11/23/82
4,360,862	06/215,880	11/23/82
4,360,896	06/230,177	11/23/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,922,377, Re. S.N. 929,425, Filed Nov. 12, 1986, Cl. 426/645, HEAT-PROCESSED DEHYDRATED BACTERIOLOGICALLY-STABLE PORK RIND PRODUCT AND PROCESS FOR PREPARING SAME, Kenneth F. Whittle, Owner of Record: *Protein Foods (U.K.) Ltd., Tipton, England*, Attorney or Agent: Richard E. Fichter, et al., Ex. Gp.: 130

4,477,164, Re. S.N. 919,835, Filed Oct. 15, 1986, Cl. 354/286, CAMERA SYSTEM OPERABLE IN ACCORDANCE WITH STORED MEMORY, Masaaki Nakai, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Platon N. Mandros, et al., Ex. Gp.: 210

4,487,345, Re. S.N. 940,293, Filed Dec. 11, 1986, Cl. 224/155, BACKPACK CHAIR, Mel P. Pierce, et al., Owner of Record: *Inventor*, Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 240

4,487,939, Re. S.N. 940,241, Filed Dec. 10, 1986, Cl. 548/311, N-(HYDROXYMETHYL)-N-(1,3-DIHYDROXYMETHYL-2,5-DIOXO-4-IMIDAZOLIDINYL)-N'-(HYDROXYMETHYL)UREA, Philip A. Berke, et al., Owner of Record: *Sutton Laboratories, Inc., Chatham, N.J.*, Attorney or Agent: J. Ernest Kenney, et al., Ex. Gp.: 120

4,497,323, Re. S.N. 941,041, Filed Dec. 12, 1986, Cl. 128/68, EXHAUST VALVE HAVING A CONSTANT BLEED RATE, Masahiro Matsuura, et al., Owner of Record: *Matsushita Electric Works, Ltd., Kadma-Shi, Japan*, Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 330

4,512,889, Re. S.N. 941,306, Filed Dec. 12, 1986, Cl. 210/225, FILTER PRESS, Ichiro Noda, et al., Owner of Record: *Ishigaki Kiko Co., Ltd., Tokyo, Japan*, Attorney or Agent: Timothy L. Tilton, et al., Ex. Gp.: 130

4,513,045, Re. S.N. 940,718, Filed Dec. 11, 1986, Cl. 428/137, SHEET TYPE FELT, Alfredo A. Bondoc, et

al., Owner of Record: *GAF Corp., Delaware*, Attorney or Agent: Joshua J. Ward, et al., Ex. Gp.: 150

4,515,522, Re. S.N. 941,686, Filed Dec. 15, 1986, Cl. 414/747, PIPELAYING APPLIANCE, John T. Sonerud, Owner of Record: *Inventor*, Attorney or Agent: Wallace D. Newcomb, et al., Ex. Gp.: 310

4,527,578, Re. S.N. 927,817, Filed Nov. 6, 1986, Cl. 134/57R, AUTOMATIC VEHICLE WASHER, Julian L. Klein, et al., Owner of Record: *Ryko Manufacturing Co.*, Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 240

4,531,094, Re. S.N. 932,572, Filed Nov. 20, 1986, Cl. 324/309, METHODS AND APPARATUS OF OBTAINING NMR SPECTRA, Roger J. Ordidge, et al., Owner of Record: *Oxford Scientific Ltd.*, Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 260

4,544,209, Re. S.N. 939,512, Filed Nov. 13, 1986, Cl. 301/37AT, MOTOR VEHICLE WHEEL CENTER INCLUDING AN ANTI-THEFT FEATURE, Martin Braungart, Owner of Record: *BBS Kraftfahrzeugtechnik, GmbH & Co. KG, Schidtach, West Germany*, Attorney or Agent: Richard E. Dick, et al., Ex. Gp.: 310

4,561,154, Re. S.N. 939,065, Filed Dec. 8, 1986, Cl. 24/136K, WEDGE-TYPE ROPE SOCKET CONNECTION AND METHOD, Terry L. Briscoe, Owner of Record: *Esco Corp., Portland, Oreg.*, Attorney or Agent: Jerome F. Fallon, Ex. Gp.: 350

4,569,198, Re. S.N. 930,101, Filed Nov. 15, 1986, Cl. 60/203.1, HEATER/EMITTER ASSEMBLY, Gordon L. Cann, Owner of Record: *Techninon, Inc., Irvine, Calif.*, Attorney or Agent: Leonard W. Sherman, et al., Ex. Gp.: 340

4,591,101, Re. S.N. 940,356, Filed Dec. 11, 1986, Cl. 239/533.12, THROTTLING-PINTLE NOZZLE FOR FUEL INJECTION IN AN INTERNAL-COMBUSTION ENGINE, Manfred Fortnagel, Owner of Record: *Daimler-Benz Aktiengesellschaft, Stuttgart, West Germany*, Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 310

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Survey of Registered Practitioners in Patent Cases

Pursuant to 37 CFR 10.11(b), a survey letter was mailed on Nov. 18, 1986 from the Office of Enrollment and Discipline (OED) to all practitioners in patent cases whose last names begin with A through D. Enclosed with the letter is a data sheet which must be completed and returned to OED as soon as possible. All data sheets returned to OED will be acknowledged. Failure by a practitioner to submit a completed data sheet within the time period specified in the survey letter will result in the practitioner being removed from the register in accordance with 37 CFR 10.11(b).

If your last name begins with A through D and you have not received a data sheet or if you returned the data sheet to OED and you did not receive an acknowl-

edgment within three (3) months after returning the data sheet to OED, please contact Patricia M. Jordan at (703) 557-1728.

Dec. 2, 1985. CAMERON WEIFFENBACH,
*Director, Office of
Enrollment & Discipline.*

Reinstatement to Roster of Attorneys and Agents

The following is a list of persons whose names have been previously removed from the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.11(b), and are being reinstated in view of the required fee and information they have furnished the Office of Enrollment & Discipline.

Jan. 14, 1987. CAMERON WEIFFENBACH,
*Director, Office of
Enrollment and Discipline.*

de Gorter, Benjamin, 3 Avenue Vavin, Paris, France 75006
Deppenbrock, Bonnie L., 706 Wage Dr., SW, Leesburg, Va. 22075
Finlayson, Joseph A., Jr., 8410 Indian Head Hwy., Fort Washington, Md. 20744
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Milks, William C., III, Townsend & Townsend, 2000 Stewart St. Tower, One Market Plz., San Francisco, Calif. 94105
Piggott, Donald J., P.O. Box 9338, Portland, Oreg. 97207
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Tang, Henry Y. S., Brumbaugh, Graves, Donohue & Raymond, 30 Rockefeller Plz., New York, N.Y. 10112
Tarr, Howard C., 5995 Eldergardens St., San Diego, Calif. 92120
Taylor, Kenneth M., Jr., Corning Glass Works, SP FR-12, Corning, N.Y. 14831
Tenenbaum, Leon E., 67 Prospect Ave., Ardsley, N.Y. 10502
Thienpont, Frank R., 230 W. Monroe St., Chicago, Ill. 60606
Thompson, Alan H., 630 N. Wildwood Ave., Glendora, Calif. 91740
Thorpe, Calvin E., Thorpe, North & Western, 9662 S. State, Sandy, Utah 84070
Tobia, Annette M., 56 Battle Ave., Princeton, N.J. 08540
Tobor, Ben D., Tudzin & Tobor, 777 N. Eldridge, Suite 650, Houston, Tex. 77079
Torres, Carlos A., P.O. Box 756, 2131 Peachridge Rd., Brookshire, Tex. 77423
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Toth, Victor J., 2719 Soapstone Dr., Reston, Va. 22091
Trigg, Hastings S., 3707 John Barnes La., Fairfax, Va. 22033
Tucker, Laurey D., Hubbard, Thurman, Turner & Tucker, 2100 One Galleria Tower, Dallas, Tex. 75240
Turner, Perry E., P.O. Drawer E, Northridge, Calif. 91328
Twomey, Thomas N., Harris Corp., Semiconductor Sector, P.O. Box 883, Melbourne, Fla. 32901
Uebler, Ernest A., Mortenson & Uebler, P.A., Suite 4, 1601 Milltown Rd., Wilmington, Del. 19808
Uilkema, John K., Limbach, Limbach & Sutton, 2001 Ferry Bldg., San Francisco, Calif. 94111
Uretsky, Jack L., 206 N. Grant, Hinsdale, Ill. 60521
Utecht, Francis A., Fulwider, Patton, Rieber, Lee & Utecht, 11 Golden Shore, Suite 510, Long Beach, Calif. 90802

Valliere, A. James, Norand Corp., 550 Second St., S.E., Cedar Rapids, Iowa 52401
Vandenberg, John D., Kenyon & Kenyon, One Broadway, New York, N.Y. 10004
van Loo, William J., Jr., 1727 Bahia Vista St., Sarasota, Fla. 33579
Vargo, Paul M., Dressler, Goldsmith, Shore, Sutker & Milnamow, 1800 Prudential Plz., E. Randolph St., Chicago, Ill. 60601
Vogele, Allan W., TRW, Inc., 1900 Richmond Rd., Cleveland, Ohio 44124
Waite, Frank R., 16 Sorrel Dr., Wilmington, Del. 19803
Walford, Craig W., M. W. Kellogg Co., Three Greenway Plz., Houston, Tex. 77046
Walker, Alfred M., 742 Veterans Memorial Hwy., Hauppauge, N.Y. 11788
Waraksa, Mirek A., 595 Bay St., Suite 1200, Toronto, Ont., Canada M5G 2C2
Ward, John P., Kerr-McGee Corp., Kerr-McGee Ctr., Oklahoma City, Okla. 73125
Wasp, Edmund J., Nordson Corp., 555 Jackson St., Amherst, Ohio 44001
Wasserman, Abraham, 440 S. Doheny Dr., Beverly Hills, Calif. 90211
Webb, William A., William, Brinks, Olds, Hofer, Gilson & Lione, Ltd., Suite 4100, One IBM Plz., Chicago, Ill. 60611
Weber, Robert C., 25 Greenbrier Rd., Buffalo, N.Y. 14226
Weinstein, Louis, Weinstein & Kimmelman, Suite 2410 Two Mellon Bank Ctr., Philadelphia, Pa. 19102
Weisz, Louis J., Oldham, Oldham & Weber Co., L.P.A., 1225 W. Market St., Akron, Ohio 44313
Welch, Ronald D., Allied Corp., 401 N. Bendix Dr., South Bend, Ind. 46620
West, Paul B., Ladas & Parry, 26 W. 61st St., New York, N.Y. 10023
Westerman, William F., Armstrong, Nikaido, Marmelstein & Kobovcik, 1725 K St., N.W., Suite 912, Washington, D.C. 20006
Wheeler, David E., 1308 Cleveland Ave., Canton, Ohio 44703
Wiener, Bernard N., IBM Corp., 2000 Purchase St., Purchase, N.Y. 10577
Williamson, Walter L., Nynex Enterprises, 441 Ninth Ave., New York, N.Y. 10001
Winger, Jon C., O'Donnell, Steutermann & Winger, Suite 612, 200 W. Broadway, Louisville, Ky. 40202
Winick, Steven J., Ademco 165 Eileen Way, Syosset, N.Y. 11791
Wisser, Scott A., Kenyon & Kenyon, One Broadway, New York, N.Y. 10004
Wolfe, Frank A., 909 Fifth Ave., Ford City, Pa. 16226
Wood, Donald L., Krass & Young, 2855 Coolidge, Suite 210, Troy, Mich. 48084
Woolcott, Kenneth J., Hybritech, Inc., P.O. Box 269006, San Diego, Calif. 92126
Wozny, Thomas M., Andrus, Sceales, Starke & Sawall, 735 N. Water St., Milwaukee, Wis. 53202
Wu, Jack H., Foxboro Co., Pat. Dept. 187 (52-1J), 38 Neponset Ave., Foxboro, Mass. 02035
Yablon, Jay R., New York State Legislative Commission on Science & Technology, 99 Washington Ave., Suite 704, Albany, N.Y. 12210
Yablonsky, Rebecca, One University Plz., Hackensack, N.J. 07601
Yarmovsky, Max, 64 Bryant Dr., Livingston, N.J. 07039
Young, Philip, 19 W. 34th St., New York, N.Y. 10001
Youngs, Maynard L., Travenol Laboratories, Inc., One Baxter Pkwy., Deerfield, Ill. 60015
Yungman, Bruce A., Hilliard-Lyons Patent Mgmt., Inc., 545 S. Third St., Louisville, Ky. 40202
Zelenka, Michael J., U.S. Army Communications Electronics Comm., AMSEL-LG-LP, Fort Monmouth, N.J. 07703

Zelson, Steve T., Pennie & Edmonds, 1155 Ave. of the Americas, New York, N.Y. 10036
Zieg, Robert L., Borg-Warner Corp., 200 S. Michigan Ave., Chicago, Ill. 60604
Zlatos, Stephen E., Woodard, Weikart, Emhardt & Naughton, One Indiana Sq., Suite 2600, Indianapolis, Ind. 46204
Zurawsky, Lawrence G., Zurawsky & Keck, Suite 415 Lawyers Bldg., 428 Forbes Ave., Pittsburgh, Pa. 15219

Reinstatement to Roster of Attorneys and Agents

The following is a list of persons whose names have been previously endorsed as being inactive on the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.6(d), and are being reinstated in view of information they have furnished the Office of Enrollment & Discipline.

Jan. 14, 1987. CAMERON WEIFFENBACH,
*Director, Office of
Enrollment & Discipline.*

Camby, John J., 4405 Burlington Pl., N.W., Washington, D.C. 20016
Wilhite, Billy J., 2520 Rocky Branch Rd., Vienna, Va. 22180

Patents Available for License or Sale

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers. Applications for license may be addressed to Counsel Patent and Legal Operation, Corporate Research and Development, General Electric Co., P.O. Box 8, Bldg. K-1, Rm. 4A70, Schenectady, N.Y. 12301

4,567,651. PROCESS FOR PRODUCING A BUBBLE PRESSURE BARRIER.
4,618,428. PROCESS FOR RECOVERY OF ZINC FROM PLATING WASTE SOLUTION.
4,048,654. STEROPHONIC TELEVISION SOUND TRANSMISSION SYSTEM, Eugene M. Cummings, Lockwood, Alex, FitzGibbon & Cummings, Three First National, Plz., Chicago, Ill. 60602, (312) 782-4860.
4,149,282. BATHTUB SUPPORT GRIP (FRONT PULL), Ernest Browning, 2383 Zollinger Rd., Columbus, Ohio 43221, (614) 486-5813.
4,276,484. METHOD AND APPARATUS FOR CONTROLLING CURRENT IN INDUCTIVE LOADS, C. Riverds, P.O. Box 4757, Woodbridge, Va. 22194.
4,507,155. CLEANING COMPOSITION AND METHOD, Robert H. Cheek, 1042 Buchanan St., N.E., Washington, D.C. 20017, (202) 296-5500.
4,561,554. CONTAINER FOR PRODUCE, FRUITS, GROCERIES AND THE LIKE, Edmund J. Swincickil, 1460 South St., Apt. 11, Toledo, Ohio 43609.
4,580,593. DISK VALVE FOR CORROSIVE FLUIDS, Gunter Herberholz, c/o Antonelli, Terry & Wands, 1919 Pennsylvania Ave., NW., Suite 600, Washington, D.C. 20006.
S.N. 782,023. ATHLETES FOOT MEDICATION, Russell Copen, 3709 Morse Ave., #7, Sacramento, Calif. 95821.
S.N. 816,248. POPCORN RUBBER, Russell Copen, 3709 Morse Ave., #7, Sacramento, Calif. 95821.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 10, 1987

Re. 32,211	4,587,373	4,607,174	4,614,515
Re. 32,230	4,588,077	4,607,377	4,614,532
4,213,724	4,588,443	4,607,573	4,614,684
4,399,813	4,589,408	4,607,646	4,614,825
4,421,824	4,590,410	4,607,948	4,615,032
4,429,111	4,592,331	4,608,172	4,615,213
4,432,310	4,592,985	4,608,465	4,616,041
4,515,623	4,594,447	4,608,689	4,617,102
4,531,379	4,595,658	4,608,784	4,617,106
4,538,021	4,596,210	4,609,265	4,617,686
4,540,841	4,597,233	4,609,555	4,618,378
4,545,949	4,597,998	4,609,883	4,618,895
4,550,092	4,598,744	4,610,097	4,619,240
4,553,835	4,599,645	4,610,402	4,619,348
4,555,438	4,600,678	4,610,680	4,619,812
4,555,773	4,601,916	4,611,094	4,619,817
4,562,656	4,602,132	4,611,163	4,620,366
4,568,399	4,602,261	4,611,642	4,620,898
4,569,736	4,603,020	4,611,654	4,621,502
4,571,814	4,603,487	4,612,937	4,622,268
4,574,106	4,603,646	4,612,984	4,622,450
4,576,879	4,605,384	4,613,094	4,623,419
4,577,356	4,605,401	4,613,199	4,623,436
4,580,036	4,605,524	4,613,201	4,623,461
4,580,159	4,605,647	4,613,484	4,623,668
4,582,773	4,606,381	4,614,262	4,624,140
4,585,747	4,606,865	4,614,277	4,626,348
4,586,428	4,606,975	4,614,380	

Disclaimers

4,396,959.—*Joel N. Harrison*, Campbell; *Donald V. Daniels*, Santa Cruz and *David A. Brown*, Saratoga, Calif. DATA TRANSDUCER POSITION CONTROL SYSTEM FOR ROTATING DISK DATA STORAGE EQUIPMENT. Patent dated Aug. 2, 1983. Disclaimer filed Apr. 27, 1984, by the assignee, *Quantum Corp.*

Hereby enters this disclaimer to claims 21, 22, 23, 24, 25, 26, 27 and 28 of said patent.

4,453,538.—*John K. Whitney*, Orchard Park, N.Y. MEDICAL APPARATUS. Patent dated June 12, 1984. Disclaimer filed Dec. 6, 1985, by the assignee, *Gaymar Industries, Inc.*

Hereby enters this disclaimer to claims 15, 16, 17, 18, 19 and 20 of said patent.

4,493,726.—*Kurt Burdeska*, Basel, Switzerland; *Guglielmo Kabas*, deceased, late of Aesch, Switzerland, by *Anni Kabas-Maskulinski*, heir; *Hans-Georg Brunner*, Lausen and *Werner Fory*, Basel, Switzerland. PHE-NYLPYRIMIDINES AS ANTIDOTES FOR PRO-

TECTING CULTIVATED PLANTS AGAINST PHYTOTOXIC DAMAGE CAUSED BY HERBICIDES. Patent dated Jan. 15, 1985. Disclaimer filed Oct. 27, 1986, by the assignee, *Ciba-Geigy Corp.*

Hereby enters this disclaimer to claim 24 of said patent.

4,532,934.—*George J. Kelen*, New York, N.Y. PACE-MAKER MONITORING RECORDER AND MALFUNCTION ANALYZER. Patent dated Aug. 6, 1985. Disclaimer filed Aug. 28, 1986, by the assignee, *Del Mar Avionics*.

The term of this patent subsequent to Sept. 29, 1998 has been disclaimed.

4,533,843.—*Joseph C. McAlexander, III*, Sugarland; *Lionel S. White, Jr.*; and *G. R. Mohan Rao*, Houston, Tex. HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH VOLTAGE BOOST FOR ROW ADDRESS LINES. Patent dated Aug. 6, 1985. Disclaimer filed Sept. 22, 1986, by the assignee, *Texas Instruments, Inc.*

The term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

4,537,028.—*Albert L. Humke*, Cedar Falls, Iowa. EX-HAUST PORT. Patent dated Aug. 27, 1985. Disclaimer filed Nov. 24, 1986, by the assignee, *Deere & Co.*

Hereby enters this disclaimer to all claims of said patent.

4,593,224.—*Kazimir Palac*, Carpentersville, Ill. TENSION MASK CATHODE RAY TUBE. Patent dated June 3, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to claims 18, 20 and 21 of said patent.

4,593,225.—*Leonard Dietch*, Skokie and *Kazimir Palac*, Carpentersville, Ill. TENSION MASK COLOR CATHODE RAY TUBE. Patent dated June 3, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,595,857.—*William A. Rowe*, Palatine and *Paul Strauss*, Chicago, Ill. TENSION MASK COLOR CATHODE RAY TUBE APPARATUS. Patent dated June 17, 1986. Disclaimer filed Nov. 24, 1986, by the assignee, *Zenith Electronics Corp.*

Hereby enters this disclaimer to claim 10 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 3, 1987

PATENT EXAMINING GROUPS

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CHEMICAL EXAMINING GROUPS

GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY,
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ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director 3-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—
R. F. WHITE, Director 8-29-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND
COMPOSITIONS, GROUP 150—J. O. THOMAS, Director 7-25-85

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG,
Director 2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director 10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director 3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M.
BLIX, Director 7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ,
Director 7-18-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—
S. G. KUNIN, Director 11-06-84
DESIGN, GROUP 290—K. L. CAGE, Director 6-15-84

MECHANICAL EXAMINING GROUPS

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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director 4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION,
GROUP 330—R. E. AEGERTER, Director 3-15-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director .. 6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—
A. L. SMITH, Director 6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during January 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents Numbers 3,487,470 to 3,492,671, inclusive
Plant Patents Numbers 2,959 to 2,966 inclusive

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REEXAMINATIONS

FEBRUARY 10, 1987

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

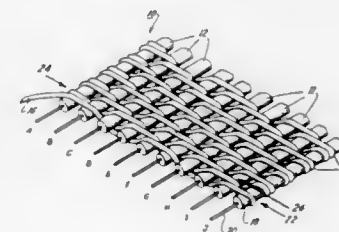
B1 3,909,508 (629th) WOVEN ELECTRICALLY CONDUCTIVE CABLE AND METHOD

Edgar A. Ross, Greenville, S.C., assignor to Woven Electronics Corp., Greenville, S.C.

Reexamination Request No. 90/000,928, Dec. 26, 1985.
Reexamination Certificate for Patent No. 3,909,508, issued Sep. 30, 1975, Ser. No. 427,561, Dec. 26, 1973.

Continuation of Ser. No. 38,469, May 18, 1970, abandoned.
Int. Cl.⁴ H01B 7/00

U.S. Cl. 174—117 M



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 8 is cancelled.

Claims 1-7 and 9 are determined to be patentable as amended.

New claims 10-12 are added and determined to be patentable.

1. A woven electrically conductive cable comprising, in combination, a plurality of elongated, substantially parallel electrical conductors forming warp members of said cable, means for insulating said conductors with respect to one another, easily removable binding means for said conductors, said binding means comprising only a single continuous weft thread woven between and binding said conductors together in a *twill weave* pattern which is staggered in the weft direction, said weft thread passing over at least two adjacent conductors in each [of a plurality of passes] *pass through said cable in a manner that the point of interweaving of said weft thread and said conductors is displaced in the weft direction by one conductor on each pass through said cable, and one end of said weft thread being not bound with said conductors so that it is free to be pulled longitudinally of said conductors to free one end of said conductors from said binding means.*

7. A method of preparing a woven, electrically conductive cable for making electrical connections to a plurality of elongated, substantially parallel electrical conductors therein, said method comprising the steps of providing a woven electrically conductive cable having a plurality of elongated electrical conductors, only a single continuous weft thread woven between and binding said conductors together in a *twill weave* pattern which is staggered in the weft direction, said weft thread passing over at least two adjacent conductors in each [of a plurality of passes] *pass through said cable in a manner that the point of interweaving of said weft thread and said conductors is displaced in the weft direction by one conductor on each pass through said cable, one end of said weft thread being not bound with said conductors, and pulling said weft thread in the longi-*

tudinal direction of said conductors to remove said weft thread from said cable at an end of said cable.

B1 3,957,084 (630th) DEVICE FOR CARRYING FLEXIBLE CABLES OR PIPES FROM A FIXED CONNECTION POINT TO A MOBILE CONSUMER BY MEANS OF A FLEXIBLE TUBE

Werner Jung, Rheydt, Fed. Rep. of Germany, assignor to Ka-trapat AG, Zug, Switzerland

Reexamination Request No. 90/000,900, Nov. 6, 1985.
Reexamination Certificate for Patent No. 3,957,084, issued May 18, 1976, Ser. No. 441,104, Feb. 11, 1974.

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1973, 7305486[U]

Int. Cl.⁴ F16L 11/00

U.S. Cl. 138—122



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 5-16 is confirmed.

Claims 1-4 are cancelled.

6. A device according to claim 1, wherein the spacer devices consist of a continuous flexible strip fixedly arranged in the said peripheral portion of the tube.

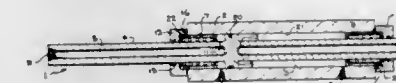
B1 3,994,539 (631st) SELF-CONTAINED ACTIVATED SLIDE APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Nathan Gottlieb, 27406 Pierce, Southfield, Mich. 48076

Reexamination Request No. 90/000,908, Nov. 15, 1985.
Reexamination Certificate for Patent No. 3,994,539, issued Nov. 30, 1976, Ser. No. 598,078, Jul. 22, 1975.

Int. Cl.⁴ F16C 29/04

U.S. Cl. 384—49



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 3-5 is confirmed.

Claims 1 and 2 are cancelled.

5. A slide apparatus comprising, in combination: first means having a first internal fluid pressure structure; second means having a second internal fluid pressure structure;

said first means and said second means being slidable relative to one another;
 at least a portion of said second means being disposed within said first means;
 bearing means disposed between said first means and said second means;
 third means operably connected to said first and second means for distributing and controlling at least one fluid medium within said first internal fluid pressure structure and said second internal fluid pressure structure to produce relative motion between said first means and said second means;
 said first means includes a housing;
 said first internal fluid pressure structure includes an elongated chamber formed within the interior of said housing;
 said second means comprises a single piston rod having a piston disposed substantially centrally along said piston rod;
 said second internal fluid pressure structure including a first chamber extending from said piston to a first end of said piston rod, and a second chamber extending from said piston to a second end of said piston rod;
 said housing and said piston rod being slidable relative to one another;
 at least a portion of said piston rod is disposed within said housing
 said bearing means is affixed to said housing and contacts the outer surface of said piston rod;
 said third means includes a first passageway providing a fluid communication path between said elongated chamber within said housing and the exterior of said housing;
 said third means includes a second passageway providing a fluid communication path between the exterior of said housing and said elongated chamber within said housing at a location remote from said first passageway;
 said third means also includes a third passageway providing a fluid communication path between said elongated chamber within said housing and said first chamber within said piston rod; and
 said third means includes a fourth passageway providing a fluid communications path between said elongated chamber within said housing and said second chamber within said piston rod.

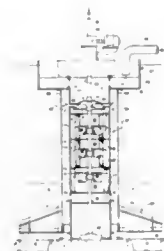
B1 4,055,494 (632nd)

THICKENING DEVICE AND METHOD

Robert C. Emmett, Jr., Salt Lake City, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Reexamination Request No. 90/000,872, Oct. 4, 1985.
 Reexamination Certificate for Patent No. 4,055,494, issued Oct. 25, 1977, Ser. No. 768,315, Feb. 14, 1977.

Int. Cl.⁴ B01D 21/01; C02F 1/56
 U.S. Cl. 210—715



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-21 are cancelled.

New claims 22-40 are added and determined to be patentable.

22. Apparatus for continuously separating suspended solids from a feed stream liquor by gravity settling comprising:

- (a) a liquid holding tank for containing a body of liquid in generally quiescent condition;
- (b) a tubular column mounted within said liquid holding tank extending generally vertically therein;
- (c) means for introducing feed liquor into the interior of said tubular column at the upper end of the column;
- (d) annular baffle means extending generally horizontally around the tubular column on the inside of the column dividing the column interiorly into a plurality of mixing compartments, one below another, for sequentially receiving the feed liquor, said baffle means being centrally open for downward flow of said liquor through said compartments;
- (e) a shaft extending down through the column and centrally through the baffle means;
- (f) means for driving the shaft;
- (g) mixing means on the shaft in each compartment, rotatable with the shaft for stirring the downwardly flowing liquor;
- (h) means for introducing a flocculating reagent into each of said compartments as the liquor is flowing downwardly through the compartments, the flocculating agent introduced into each compartment being mixed therein with the downwardly flowing liquor for enhancing the flocculation of suspended solids in the liquor;
- (i) the tubular column having means for preventing swirls from being established in said compartments;
- (j) the lowermost of said compartments being in discharge communication with the interior of said tank for discharging the flocculated feed liquor from the column into a sludge stratum in the tank;
- (k) raking means in said tank to urge solids settled in the tank to underflow discharge; and
- (l) overflow means mounted on the tank for removal of clarified supernatant from the tank.

B1 4,373,058 (633rd)

POLYMER CONCRETE COMPRISING FURFURYL ALCOHOL RESIN

Lowell C. Horton, Pensacola Beach, Fla., assignor to The Horton Co.

Reexamination Request Nos. 90/000,422, Jul. 18, 1983 and 90/000,803, Jun. 17, 1985.

Reexamination Certificate for Patent No. 4,373,058, issued Feb. 8, 1983, Ser. No. 244,811, Mar. 17, 1981.

Int. Cl.⁴ C08L 71/06; C08K 3/34, 3/36
 U.S. Cl. 524—705

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-10 is confirmed.

1. A polymer concrete composition comprising by weight about 40% to about 70% coarse mineral aggregate ranging in size from about 1½ inches to about 0.187 inch, about 20% to 55% fine mineral aggregate ranging from about 0.187 inch to about 0.0059 inch; about 2% to about 15% silica flour; about 8% to about 12% furfuryl alcohol monomer polymerized in situ by the addition of an acid catalyst contained in amounts of about 8% to about 12% by weight of said monomer, said mineral aggregates having a pH less than about 7.0, and the moisture content of the mineral aggregates being less than about 1% by weight.

B1 4,433,070 (634th)

CULTURED ONYX PRODUCTS AND METHODS THEREFOR

Gilbert B. Ross, Northridge, and Theodore E. Stevens, Azusa, both of Calif., assignors to Contempart Originals, Inc.

Reexamination Request No. 90/001,011, May 20, 1986.
 Reexamination Certificate for Patent No. 4,433,070, issued Feb. 21, 1984, Ser. No. 146,749, May 5, 1980.

Int. Cl.⁴ C08L 67/06; C09D 5/29; B44F 9/04
 U.S. Cl. 523—171

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 7, 13-15, 17, 22, 23 and 26 are determined to be patentable as amended.

Claims 2-6, 8-12, 16, 18-21, 24 and 25, dependent on an amended claim, are determined to be patentable.

1. A shaped structure having a polishable cultured onyx, cultured marble, or like mineral-appearing surface of predetermined hardness, said structure comprising a locally discontinuous phase comprising a synthetic organic resin portion hardened to said predetermined hardness and a visually distinguishable continuous phase comprising a synthetic organic resin portion separately hardened to said predetermined hardness with said discontinuous phase intimately distributed therein, said discontinuous phase comprising from about 5% to 55% of the weight of the product, whereby said structure surface is simulatable in phase undifferentiated relation.

B1 4,485,759 (635th)

PLANETARY SUBSTRATE SUPPORT APPARATUS FOR VAPOR VACUUM DEPOSITION COATING

Henry E. Brandolf, Inver Grove Heights, Minn., assignor to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Reexamination Request No. 90/000,854, Sep. 13, 1985.
 Reexamination Certificate for Patent No. 4,485,759, issued Dec. 4, 1984, Ser. No. 458,902, Jan. 19, 1983.

Int. Cl.⁴ B05C 11/14
 U.S. Cl. 118—503

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 21, 23, 31 and 35 are cancelled.

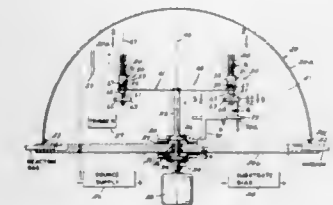
Claims 1, 10, 12, 13, 17, 29, 30, 32, and 33 are determined to be patentable as amended.

Claims 2-9, 11, 14-16, 18-20, 22, 24-28, 34, 36 and 37, dependent on an amended claim, are determined to be patentable.

New claims 38-40 are added and determined to be patentable.

1. A substrate holder apparatus for rotatably supporting substrates within an evacuated electric arc physical vapor deposition chamber during coating processes, wherein the substrate is biased at a voltage significantly different from that of the coating plasma particles, comprising:

- (a) a base member configured and arranged for mounting in [a] an electric arc physical vapor deposition chamber, said base member defining at least one work station thereon, said base member being configured to be centrally rotatably supported within said chamber;
- (b) means for supporting said base member from a central position of said base member;
- [(b)] (c) means operatively connected with said base [member] support means and located external of said chamber for moving said base member in a manner causing said work station to traverse a closed path within said chamber;



(d) bias means operatively connected with said base member for providing an electrical bias voltage to said base member;

[(c)] (e) a substrate holder suitable for holding at least one substrate to be coated, rotatably mounted to said base member at said work station for rotation about an auxiliary axis, said substrate holder being normally free to move about said auxiliary axis as said substrate holder traverses said closed path; [and]

(f) bearing means operatively engaging said substrate holder for rotatably mounting said substrate holder on said base member and for electrically connecting said substrate holder to said electrical bias voltage;

[(d)] (g) activating means electrically connected at the same bias voltage as said substrate holder, adjacent said closed path for engaging and rotating said substrate holder a predetermined number of degrees about said auxiliary axis as it passes in proximity to said activating means; whereby a substrate carried by said substrate holder is selectively rotated about said auxiliary axis as the substrate is carried along said closed path; and

(h) means for electrically isolating said base member and said activating means from said chamber.

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REISSUES

FEBRUARY 10, 1987

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

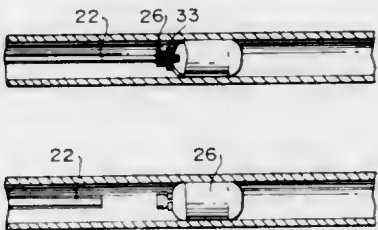
Re. 32,348 MINIATURE BALLOON CATHETER METHOD AND APPARATUS

Paul H. Pevsner, 4121 King Crest Pkwy., Richmond, Va. 23221
Original No. 4,085,757, dated Apr. 25, 1978, Ser. No. 681,676,
Apr. 29, 1976. Application for reissue Dec. 31, 1979, Ser. No.
108,932

Int. Cl.⁴ A61M 25/00

U.S. Cl. 128—325

14 Claims



11. In a miniaturized balloon catheter assembly adapted for use in diagnostic and therapeutic procedures in connection with small vessels comprising: a cannula having means at a proximal end for attachment to a source of pressurized fluid and having a small outer diameter for insertion into small vessels, an inflatable tubular balloon having a mouth portion and mounted at the distal end of the cannula in fluid communication therewith, the cannula and balloon adapted to be carried by the fluid in the vessel to a desired location therein, whereupon introduction of an amount of pressurized fluid flow from the source of pressurized fluid will inflate the balloon to fix it in position, activation means responsive to a further amount of pressure to initiate a desired procedure within the small vessel at the desired location, said balloon being detachably mounted at the distal end of said cannula;

the subassembly of a sealing means which, when the cannula and balloon are positioned at the desired location in the human vessel, seals the mouth portion of the balloon, said sealing means including elastomeric self-sealing plug material positioned in the mouth of the inflatable balloon adjacent to the end of the cannula, an expandable circumferential band on the outer surface of the inflatable balloon in concentric position with respect to the plug material therein, said subassembly further comprising a pin having a passageway therethrough and one end mounted at the distal end of the cannula with the passageway therein in communication with the passageway through the cannula and the other end of the pin positioned through a small opening in the self-sealing plug material into fluid communication with the inflatable balloon on the side of the plug material distal from the cannula and when in that position expanding the circumferential band, so that when the balloon is detached from the distal end of the cannula the pin is removed from the plug material, whereupon the elastomeric self-sealing plug material and the expandable circumferential band will close the opening in the plug material and the mouth portion of the balloon to retain the balloon in inflated condition.

Re. 32,349

HAIR ROLLER

Dov Z. Glucksman, 193 St. Botolph St., Boston, Mass. 02115
Original No. 5,101,983, Ser. No. 254,869, Apr. 16, 1981. Application for reissue May 16, 1984, Ser. No. 610,840

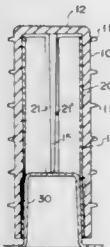
Int. Cl.⁴ A45D 2/17

U.S. Cl. 132—33 R

9 Claims

10. A hair curling roller adapted to be heated by being positioned on a cone-frustum shaped post of a hair roller heating apparatus, consisting of a hollow, cylindrical outer body of a plastic material, provided with external hair gripping means, said body having a closed upper end and an open lower end; and of a

metallic insert in the shape of a cylindrical tube of a length substantially equal to the length of the hollow portion of said outer body, said insert being slit longitudinally over its entire length, and being provided with a plurality of slots extending from the lower



edge of said tube to a predetermined distance from said lower edge, said slots forming a slotted skirt and whereby said slotted skirt of said inserts expands to the slope of the post and adheres to it on most of its surface.

Re. 32,350

THERMAL CONVECTION COUNTER STREAMING SEDIMENTATION AND FORCED CONVECTION GALVANIZATION METHOD FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING

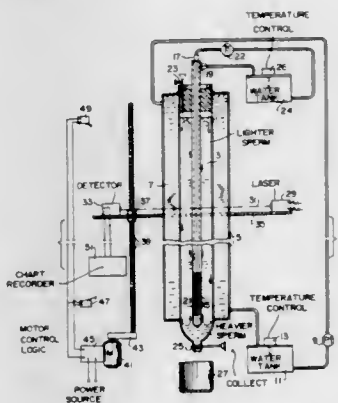
Bhairab C. Bhattacharya, 297 Moore St., Princeton, N.J. 08540, assignor to Bhairab C. Bhattacharya and Manju Bhattacharya, both of Princeton, N.J.

Original No. 4,092,229, dated May 30, 1978, Ser. No. 734,243, Oct. 20, 1976. Continuation-in-part of Ser. No. 641,501, Dec. 17, 1975, Pat. No. 4,067,465, which is a division of Ser. No. 526,378, Nov. 22, 1974, Pat. No. 3,976,197. Application for reissue Apr. 29, 1982, Ser. No. 373,143

Int. Cl.⁴ B01D 57/02; C25B 7/00; G01N 27/26

U.S. Cl. 204—180.1

21 Claims



1. A method of separating sperm cells of differing densities and electrical potentials from semen comprising the steps of: mixing semen with a liquid suspending medium; immobilizing the sperm by cooling the mixture; applying both positive and negative buoyant forces to the sperm whereby more dense sperm attain a different level in the liquid medium than less dense sperm; applying galvanic force to a portion of said medium containing an unbalanced sperm population as a result of the preceding step while circulating said medium by convection so as to separate sperm having different net electrical cell surface potentials; and withdrawing a fraction of the medium containing the desired sperm.

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PLANT PATENTS

GRANTED FEBRUARY 10, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,874

PEACH TREE—DAVID SUN

Thomas O. Chamberlin, Sr., Visalia, Calif., assignor to Metzler Investments, Calif. and Metropolitan Life Insurance Company, both of Del Ray, Calif.

Filed May 29, 1985, Ser. No. 739,014

Int. Cl.⁴ A01H 5/03

U.S. Cl. Plt.—43

1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described broadly characterized by its cling fruit having a skin of very high dark red to bright yellow color, very firm yellow flesh having excellent holding quality on the tree, as well as its shipping and storage quality, and ripening for harvest about June 1 and reaching full maturity about June 4 in the San Joaquin Valley of California.

5,875

KALANCHOE PLANT NAMED FLAMBOYANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,112

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Flamboyant, as illustrated and described, and particularly characterized by its distinct light orange flower color, dense symmetrical foliage and branching, early and floriferous flowering habit, and its excellent keeping qualities.

5,876

KALANCHOE PLANT NAMED BINGO

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,113

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Bingo, as illustrated and described, and particularly characterized by its bright pink flower color, floriferous habit, dense and relatively small leaves, early flowering, and its excellent keeping qualities.

5,877

KALANCHOE PLANT NAMED CHERRY JUBILEE

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 15, 1985, Ser. No. 712,121

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of Kalanchoe plant named Cherry Jubilee, as illustrated and described, and particularly characterized by its cherry rose flower color, dense and symmetrical full growth, excellent basal and secondary branching, excellent keeping qualities, and by its pinkish white mature stigmas.

5,878

CHRYSANTHEMUM NAMED 'ORANGE REFLA'

Martinus van der Jagt, Ter Aar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Filed Oct. 25, 1984, Ser. No. 664,874

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plts.—74

1 Claim

1. A new and distinct cultivar of Chrysanthemum named 'Orange Refla', as described and illustrated in the foregoing specification and accompanying drawings.

5,879

DIEFFENBACHIA PLANT (TROPIC SUN)

Edmond J. A. Hollevoet, Temse, Belgium, assignor to L. Gary LeBoss, Homestead, Fla.

Filed Apr. 2, 1985, Ser. No. 719,115

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—88

1 Claim

1. A new and distinct variety of Dieffenbachia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general similarity to the parent variety, *Dieffenbachia amoena* cv. Tropic Snow, but having the characteristic of producing multiple basal stems which form a clump of canes, while maintaining the upright form and height of the parent, and having a greater degree of variegated foliage coloration and slightly shorter petioles and leaves.

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PATENTS

GRANTED FEB. 10, 1987

ERRATA

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CLASS	PATENT NO.
128-663	4,641,668
152-158	4,641,670
420-033	4,642,135
165-160	4,642,149
380-048	4,642,424
379-057	4,642,425
370-013	4,642,426
427-214	4,642,447
379-107	4,642,635
380-011	4,642,688

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PATENTS

GRANTED FEBRUARY 10, 1987

GENERAL AND MECHANICAL

4,641,379

FACE MASK

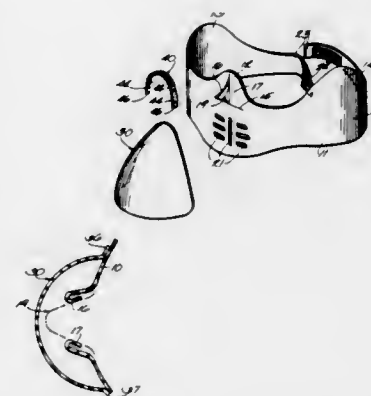
Thomas S. Martin, 4045 Hwy. 33 West, West Bend, Wis. 53095

Filed Apr. 25, 1986, Ser. No. 855,553

Int. Cl.⁴ A41D 13/00; A62B 18/02

U.S. Cl. 2—9

3 Claims



1. A protective face mask for snowmobiling and the like having two joinable ends and a center line over the wearer's nose, and comprising:

- (a) a flexible body portion covering substantially all of the face below the eyes of a wearer;
- a relatively narrow center rise formed in said body portion;
- broad left and right lateral cheek rises formed in said body portion;
- bands formed from the ends of said body portion;
- a means for joining said bands together;
- at least a pair of flaps formed by a nose cut at the vertical center line of said body portion below said center rise said flaps being sized and shaped to curl inwardly to flexibly contact the sides of the wearer's nose without displacement where said flaps contact the nose creating a seal around the nose and substantially preventing the mask from resting on the bridge of the wearer's nose;
- at least one mouth opening formed in said body portion below said nose cut;
- (b) a flexible skirt over the nose and mouth area having a top edge;
- a generally inverted U-shaped seam located along the edge of said center rise and passing downwardly and outwardly along said top edge from said center rise on opposite sides of said nose cut and said mouth openings along which the entire top edge of said flexible skirt is affixed to the outer surface of said body portion.

4,641,380

ARTICLE OF HEADWEAR CONVERTIBLE BETWEEN HAT AND NECKWARMER AND METHOD

Howard D. Epstein, 249 Shore Dr. No. 6, Winthrop, Mass. 02152

Filed Nov. 25, 1985, Ser. No. 801,209

Int. Cl.⁴ A42B 1/06

U.S. Cl. 2—209.1

8 Claims

1. An articles of headwear which is selectively convertible between a neck warmer and a head covering, said article comprising:

- (a) a covering having a tubular sidewall and first and second open non-tapered ends;
- (i) said sidewall having a side slit therein, said side slit extending substantially inwardly of said covering from

said covering first end and being in communication with said covering first end;

(b) closure means including first and second closure portions;

(i) said first closure portion being permanently mounted in said article generally along said side slit and enabling selective closure of said side slit; said first closure portion permitting selective opening of said side slit from said covering first end inwardly of said covering;

(ii) said second closure portion being permanently mounted in said article generally along said covering first end and enabling selective closure of said covering first end;



(c) whereby in a first mode of operation said article of headwear is utilizable as a head covering by selective closure of said first and second closure portions and fitting said covering over a wearer's head by means of said covering second end; and

(d) whereby in a second mode of operation said article of headwear is utilizable as a neck warmer by selective opening of said first and second closure portions and pulling said covering over a wearer's head to position said covering around the wearer's neck, with the wearer's head extending outwardly from one of said covering ends.

4,641,381

DISPOSABLE UNDERPANTS, SUCH AS INFANT'S TRAINING PANTS AND THE LIKE

William M. Heran; Glen R. Fleischer; Joyce A. Damico, all of Winnebago County, and Paul T. Van Gompel, Outagamie County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 10, 1985, Ser. No. 690,351

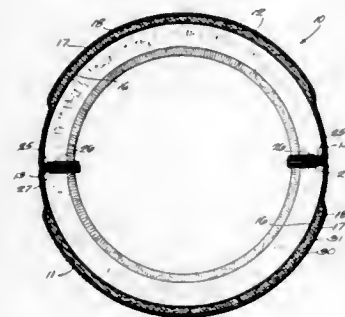
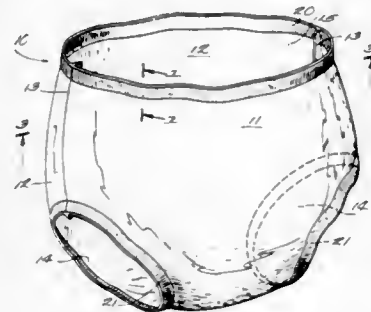
Int. Cl.⁴ A41B 9/12; A61F 13/16

U.S. Cl. 2—400

8 Claims

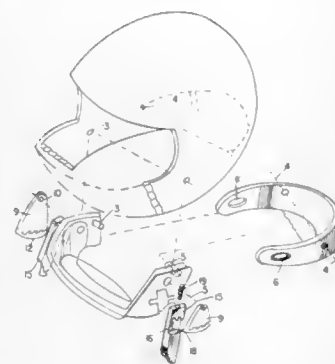
1. In a three-dimensional disposable underpant including a liquid pervious inner bodyside liner having opposed marginal side edges, a liquid impervious outer cover having opposed marginal side edges and being generally superimposed over said liquid pervious inner bodyside liner, an absorbent batt disposed between said liquid pervious inner bodyside liner and said liquid impervious outer cover, said liquid pervious inner bodyside liner and said liquid impervious outer cover having respective portions of their marginal side edges joined together to form a pair of side seams, a waist opening, and a pair of leg openings, and elastic means extending about said openings for providing elasticity thereto, the improvement comprising: said liquid impervious outer cover comprising an inner layer

of liquid impervious plastic material adjacent said absorbent batt and an outer layer of nonwoven fibrous material



substantially superimposed over and contiguous with said inner layer.

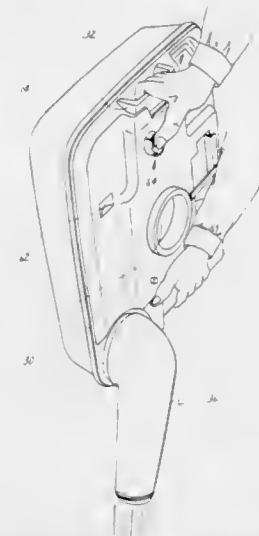
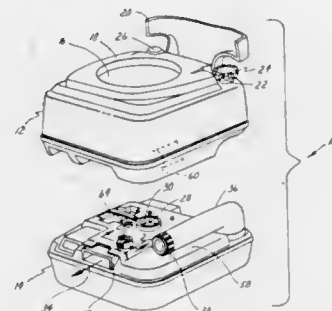
4,641,382
HELMET FASTENING DEVICE
Jean Gessalin, Hameau Grande Fontaine, 77131 Touquin, France
Filed Aug. 20, 1984, Ser. No. 642,411
Claims priority, application France, Aug. 19, 1983, 83 13579
Int. Cl.⁴ A42B 3/02
U.S. Cl. 2—421 6 Claims



1. A fastening device for a protective helmet for motorcyclists and other helmet wearers wherein said fastening device prevents said helmet from being pulled off a wearer in the event of a shock and ensures that said helmet will be stable when worn by a wearer, said device comprising:
(a) a front chin strap journaled on a first pair of elongate pins extending through the shell of the helmet to project to the inside of said helmet, said chin strap positioned to fit under the chin of a wearer;
(b) a rear arch pivoted on a second, distinct pair of fixed pins

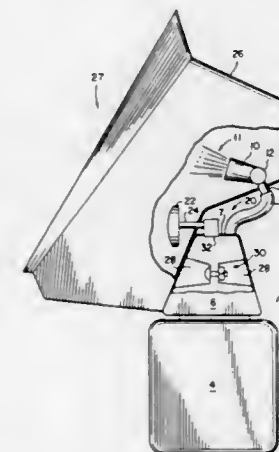
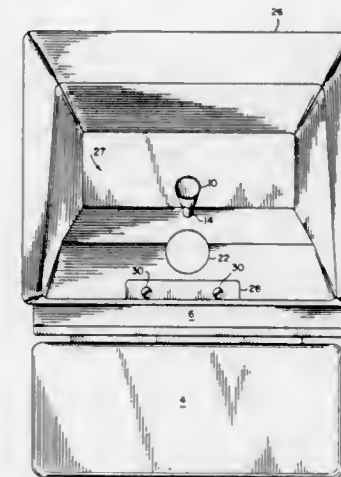
located inside said helmet, said arch positioned to rest against a nape of the neck of a wearer; and
(c) two fingers located inside said chin strap that engage oblong slots located in said rear arch whereby movement between said chin strap and said rear arch is synchronized.

4,641,383
PORTABLE TOILET HOLDING TANK SPOUT
Charles L. Sargent; John M. Antos, both of Ann Arbor; John A. Hoffman, Brighton, and John T. Cameron, Dearborn Heights, all of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.
Continuation of Ser. No. 578,326, Feb. 13, 1984, abandoned, which is a continuation of Ser. No. 383,410, Jun. 1, 1982. This application Mar. 12, 1985, Ser. No. 710,528
Int. Cl.⁴ E03D 1/00; A47K 11/02, 11/03
U.S. Cl. 4—323 12 Claims



1. In a portable toilet comprising a holding tank having a discharge spout on the exterior of the holding tank through which contents of the holding tank are emptied and closure means for opening and closing the discharge spout, the improvement wherein the discharge spout is rotatably mounted in an aperture in the wall of the holding tank for rotation over a range of positions, and in which the aperture is keyed and the spout has one end correspondingly keyed so as to be fully insertable into and removable from the aperture only at one rotational position of the spout and the keys are constructed such that when the one end of the spout is fully inserted into the aperture and the spout rotated to other than said one position it cannot be separated from the holding tank.

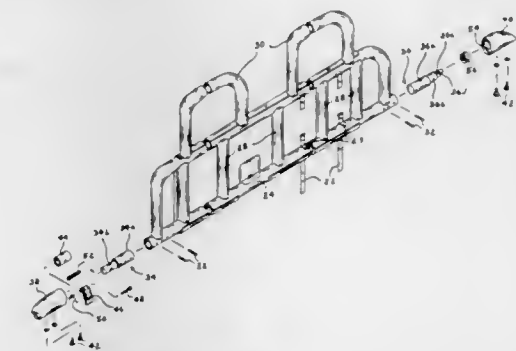
4,641,384
BATTERY OPERATED EYEWASH SYSTEM
David Landsberger, Livingston, and John Broeils, Wyckoff, both of N.J., assignors to Maddak, Inc., Pequannock, N.J.
Filed Feb. 14, 1986, Ser. No. 829,627
Int. Cl.⁴ A61H 33/00, 33/04
U.S. Cl. 4—620 7 Claims



1. A battery operated eyewash system of the type including liquid spraying means having a tank containing a liquid and a rechargeable battery operated pump arranged with the tank, whereby operation of the pump through a switch sprays the liquid through a nozzle, characterized by:
a rigid hood secured in front of the liquid spraying means, with the nozzle thereof extending in an opening in the front of the hood;
actuating means for actuating the switch to operate the pump for spraying liquid through the nozzle;
manually operable means for operating the actuating means extending in the front of the hood; and
the hood opening in the front of the hood accepting the face of a user, whereby the user positions the eyes for receiving the liquid sprayed through the nozzle when the switch actuating means is manually operated through the operating means to operate the pump to spray the liquid through the nozzle.
7. A battery operated eyewash system characterized by:
a tank for containing the liquid;
a rechargeable battery operated pump arranged with the tank and disposed in a housing secured to the tank;
liquid conduit means coupled to the pump and including a spray nozzle;
a switch associated with the pump and arranged on the

pump housing for operating the pump to pump liquid from the tank through the liquid conduit means and the spray nozzle;
a rigid hood secured to the pump housing so as to be in front of said housing and tank;
the hood having an opening in the front thereof, and the spray nozzle extending in said opening;
actuating means arranged on the pump housing and arranged with the switch to operate the pump;
manually operable means extending in the front of the hood for operating the actuating means; and
the hood opening accepting the face of a user, whereby the user positions the eyes for receiving the liquid sprayed through the nozzle when the switch actuating means is manually operated through the operating means to operate the pump to spray liquid through the nozzle.

4,641,385
ARMBOARD RAIL
Gerald Peters, Elyria; Eugene P. Hayton, Medina, and Raymond A. Failor, Seville, all of Ohio, assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jul. 29, 1985, Ser. No. 759,987
Int. Cl.⁴ A61G 1/00
U.S. Cl. 5—82 R 5 Claims



1. A rail assembly comprising:
an elongate member having a first end and a second end;
first and second opposing support means, each of said support means including an opening for pivotably supporting said first and second ends of said elongate member, respectively, said elongate member being movable within said respective openings along its longitudinal axis;
means for resiliently urging said elongate member towards said first support means;
said first end of said elongate member including a hinge pin extending within said opening within said first support means, said hinge pin including at least one cylindrical portion and at least one non-cylindrical portion;
said first support means including non-cylindrical walls defining at least a portion of said opening therein, said hinge pin being pivotable within said opening within said first support means when in a first axial position with respect thereto and being restrained from pivotable movement when said non-cylindrical portion of said pin is within said non-cylindrical walls defining said opening within said first support means;
a protective rail secured to said elongate member; and
means for preventing axial movement of said elongate member along its longitudinal axis.

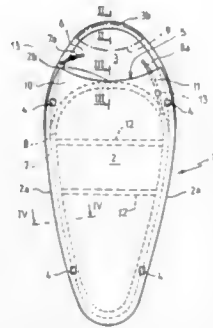
4,641,386
METHOD OF AND DEVICE FOR RESTRAINING THE SLEEPING BODY OF AN ASTRONAUT IN CONDITIONS OF WEIGHTLESSNESS

Stoewer Heinz, Ln Kaag Dorp, and Ockels Wubbo, An Maas-tricht, both of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

Filed Jul. 1, 1985, Ser. No. 750,171
 Int. Cl.⁴ A47C 29/00

U.S. Cl. 5—413

8 Claims



1. A device for restraining the sleeping body of an astronaut in conditions of weightlessness, said device comprising:

- (a) a sleeping bag comprising an upper and a lower sheet, made of fire-retardant material cloth, and provided with fastening means for fastening said device to a fixed object, said upper and lower sheets each having a linking edge, along which they are secured, and a free edge delimiting an aperture through which the astronaut can wedge himself into said sleeping bag and
- (b) means for stressing by stretching said upper and lower sheets, in order to press substantially uniformly the astronaut's body simultaneously in a downward and upward direction, respectively, with a pressure selectively variable by the astronaut before going to sleep, said means comprising a first inflatable and deflatable continuous tube secured to and extending around the periphery of said upper sheet and a second inflatable and deflatable continuous tube secured to and extending around the periphery of said lower sheet, said first and second continuous tube each being provided with an inflating and deflating hose equipped with a valve, said hoses being positioned in the vicinity of the astronaut's head and within reach of either of the astronaut's hands,
- (c) wherein an upper portion of said lower sheet juts out from the free edge of said upper sheet, said upper portion being sized, shaped, and positioned to support the astronaut's head and to place it into an Earth-like "normal" position.

4,641,387

BED ENCLOSURE

Daniel A. Bondy, Sylvania; Judith A. East, Toledo, and Christina M. Rizzo, Sylvania, all of Ohio, assignors to St. Vincent Medical Center, Toledo, Ohio

Filed Feb. 6, 1986, Ser. No. 826,098
 Int. Cl.⁴ E04C 1/40

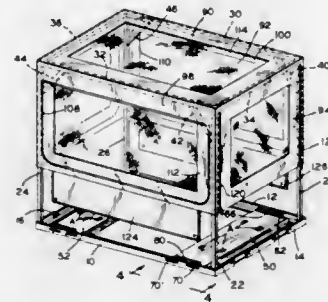
U.S. Cl. 5—508

6 Claims

1. An enclosure for a bed having spaced apart leg supports comprising:

- (a) a framework for encompassing the bed, said framework including a floor engaging base frame;
- (b) means associated with the floor engaging base frame of said framework including selectively adjustable horizontally disposed plate means provided with spaced apart apertures for retaining the leg supports to militate against

relative movement between the bed and said framework; and



(c) means for covering said framework to provide a confining zone above the bed and interiorly of said covering means.

4,641,388

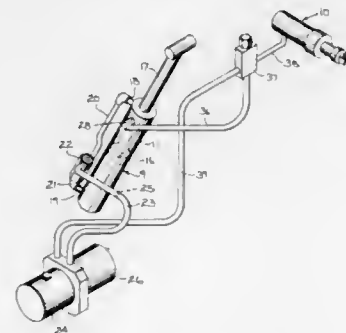
HYDRAULIC CONTROL SYSTEM FOR A DOCKBOARD

David E. Bennett, deceased, late of Waukesha, and by Barbara E. Bennett, personal representative, Milwaukee, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Filed Aug. 1, 1984, Ser. No. 636,688
 Int. Cl.⁴ E01D 1/00

U.S. Cl. 14—71.7

1 Claim



1. A hydraulically operated dockboard to be mounted on a loading dock, comprising a supporting structure connected to the dock, a ramp hinged at its rear edge to the supporting structure and movable between a generally horizontal position and an upwardly inclined position, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an outwardly extended position, a first hydraulic cylinder unit interconnecting the ramp structure and the supporting structure, means for supplying hydraulic fluid to said first cylinder unit, a predetermined working pressure in said first cylinder unit raising said ramp from the horizontal position to the upwardly inclined position, a second cylinder unit interconnecting the ramp and the lip, second supply means for supplying hydraulic fluid to the second cylinder unit to move the lip from the pendant position to the extended position, said second supply means including a supply line connected to said first cylinder unit, a lip line connected to said second cylinder unit, a return line connected to a storage reservoir for said hydraulic fluid, and control valve means interconnecting said supply line, said lip line and said return line, said valve means having a first position wherein said lip line is connected to said return line and having a second position wherein said lip line is connected to said supply line, biasing means for urging said valve means to said first position, said first cylinder unit being constructed and arranged so that elevation of said ramp to a given position will act to supply fluid at said working pressure from said first cylinder unit to

said supply line, means responsive to said working pressure in the supply line for moving said valve means from the first position to the second position and supplying fluid at said working pressure from said first cylinder unit through said supply line, through said valve means and through said lip line to said second cylinder unit to move the lip from the pendant to the extended position, downward movement of said ramp from said upwardly inclined position providing a back pressure in said supply line sufficient to maintain said valve means in said second position, said valve means being arranged and constructed so that engagement of the extended lip with the bed of a carrier located in front of said dock will release the pressure in said supply line and enable said biasing means to return said control valve means to said first position, movement of said carrier away from said dock causing said lip to fall by gravity from the extended toward the pendant position, downward pivoting movement of said lip acting to displace fluid from said second cylinder unit through said control valve and said return line to said reservoir.

4,641,389

WINDSHIELD WIPER SYSTEM

Bruno Egner-Walter, Heilbronn; Eckhardt Schmid, Brackenheim, and Wolfgang Scholl, Gemmrigheim, all of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Bietighheim-Bissingen, Fed. Rep. of Germany

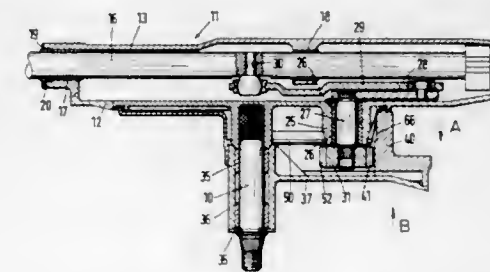
Filed Apr. 26, 1985, Ser. No. 727,820

Claims priority, application Fed. Rep. of Germany, May 10, 1984, 3417268

Int. Cl.⁴ B60S 1/26

U.S. Cl. 15—250.21

19 Claims



1. A reciprocating wiper system comprising:
 a gearing having first and second toothed wheels in meshed engagement with each other;
 a crank connected to said first wheel;
 a reciprocating element coupled to said crank;
 a wiper shaft carrying said first wheel, said second wheel being stationary relative to said wiper shaft;
 at least one wheel of said first or second wheels having a restraining element thereon, said restraining element preventing said first and second wheels from being axially moved into engagement with each other during assembly except when one tooth of one of said first or second wheels is in alignment with a predetermined space between adjacent teeth of the other wheel of said first or second wheels, said crank being in a predetermined position when said one tooth meshes said adjacent teeth.

4,641,390

WINDSHIELD WIPER EXTENSION MECHANISM

Klaus A. Michalke, Sterling Heights, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Sep. 23, 1985, Ser. No. 779,349

Int. Cl.⁴ B60S 1/32, 1/40

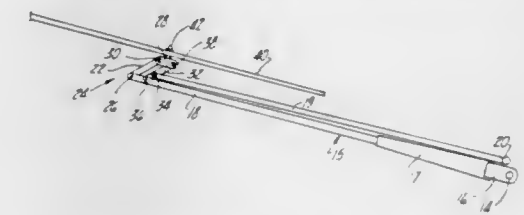
U.S. Cl. 15—250.23

1 Claim

1. On a vehicle body including a windshield having a lower edge, a windshield wiper mechanism for said windshield comprising, a wiper blade having proximate and distal ends, an oscillatable wiper shaft disposed adjacent one lower edge of

said windshield and rotatable in alternate directions between a first park position and a second position, a wiper arm having one end drivingly connected to said wiper shaft for rotation therewith throughout a stroke of predetermined angular extent, a pivot shaft disposed adjacent said wiper shaft, a drag arm having one end pivotally connected to said pivot shaft, said wiper arm being of greater length than said drag arm, the improvement comprising:

a three-line parallelogram arrangement extending substantially parallel with the plane of said windshield and connecting said wiper blade to the free end of said wiper arm and the free end of said drag arm, said three-line parallelogram including a pair of outer and inner links and a blade support link, said outer link having its one end pivotally connected to said wiper arm free end, and its other end pivotally connected to said blade support link, said blade support link having its other end pivotally connected to one end of said inner link, said inner link disposed in parallel coplanar relation with said outer link and having its other end pivotally connected to an intermediate point



on said wiper arm, said inner link having an intermediate point thereon pivotally connected to said drag arm free end, whereby said pair of inner and outer links, said blade support link and the portion of said wiper arm between its said free end and its said intermediate point define said parallelogram arrangement, and pin means extending at right angles from said blade support link substantially in the plane thereof in a normal direction away from said wiper arm, said pin means connecting said wiper blade to said second link for movement parallel to said wiper arm, whereby said mechanism operative to position said wiper blade distal end at a radial minimum location when said blade is at said first park position adjacent said windshield one lower edge, and wherein said mechanism operative to traverse said wiper blade upper end on an arc that progressively increases in radial extent relative to a circular arc traversed by said wiper arm free end, such that said blade distal end being positioned at a radially maximum location when said blade is at said second position defined by a predetermined angle with said blade at said first park position adjacent said windshield one lower edge.

4,641,391

COMPACT DIGITAL DISC CLEANER APPARATUS

Robert J. De brey, Edina, Minn., assignor to Geneva Group of Companies, Inc., Eden Prairie, Minn.

Filed Dec. 31, 1985, Ser. No. 814,977

Int. Cl.⁴ G11B 3/58

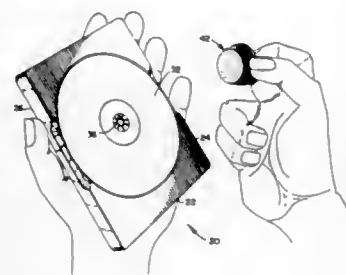
U.S. Cl. 15—104.94

16 Claims

1. A compact digital disc cleaner apparatus for cleaning compact digital discs, comprising:

- a housing having oppositely facing top and bottom surfaces, the top surface including pedestal means for positioning thereon a compact digital disc, the pedestal means defining circular recess means for receipt of the compact digital disc, second recess means interconnecting the circular recess means with an outer edge of the housing thereby facilitating grasping of the compact digital disc when positioned in the circular recess means, the bottom surface of the housing including a plurality of receptacle means, each configured for receipt of cleaning pad assembly

means, the cleaning pad assembly means including a handle member and a wetted cleaning pad sealed from outside



ambient air, whereby the cleaning pad does not dry out for an extended period of time.

4,641,392 MULTIPURPOSE CLEANING AND TRANSPORTATION SYSTEM

Camiel Huisma, Airdrie, Canada, assignor to Oy Wärttilä Ab, Helsinki, Finland

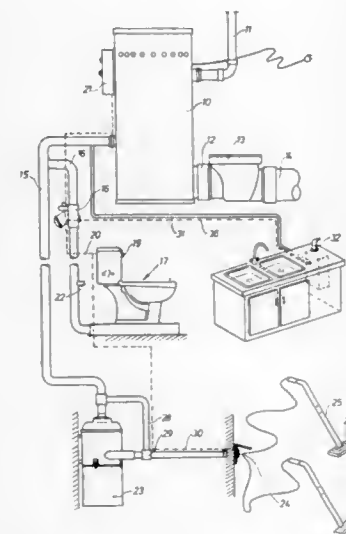
Filed Aug. 5, 1985, Ser. No. 762,721

Claims priority, application Sweden, Aug. 8, 1984, 8404014

Int. Cl.⁴ A47L 5/38

U.S. Cl. 15—302

11 Claims



1. A building having a container for collecting liquid, a main pipe system connected to the container and having branches that terminate at several locations through the building, pump means for exhausting air from the main pipe system, and closure devices at the terminations of said branches, whereby the pump means establish a partial vacuum in the main pipe system, a first of the closure devices being a normally-closed socket for detachably receiving a dust cleaning tool so that air is drawn into the main pipe system by way of the dust cleaning tool and said socket and a second of the closure devices being a normally-closed valve, and wherein the building also has a sewage-producing unit connected to the main pipe system by way of the normally-closed valve.

4,641,393 CABINET HINGE

Horst Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

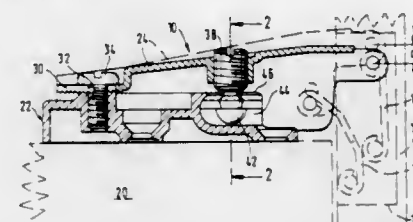
Filed Jul. 31, 1985, Ser. No. 760,764

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 3429636

Int. Cl.⁴ E05D 7/04

U.S. Cl. 16—241

9 Claims



1. A hinge comprising: an elongated mounting plate to be fastened to a supporting wall of a piece of furniture, and an elongated supporting arm mounted for longitudinal adjustment on said mounting plate, said supporting arm having a first longitudinal end area with an open-ended first longitudinal slot, a mounting screw screwed into said mounting plate and having a shaft passing through said first slot, said supporting arm having a second end area with a tap therethrough, said mounting plate having an open-ended second longitudinal slot at an end area adjacent said tap, a setscrew screwed into said tap and having connected thereto a neck portion of reduced diameter and holding means below said neck portion in said second slot, said holding means being a sphere having a circumferential annular groove formed in rotational symmetry with respect to the longitudinal central axis of said setscrew, said second slot having a narrow longitudinal mouth securing said holding means from being lifted out of said second slot towards said supporting arm.

4,641,394 SPRING-BIASED FURNITURE DOOR HINGE PROVIDING INCREASED OPENING ANGLE

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

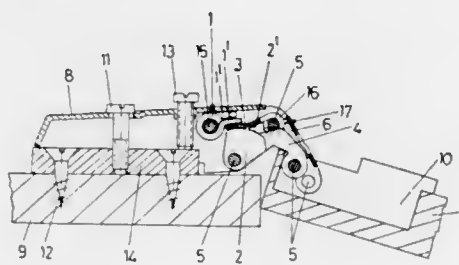
Filed Apr. 17, 1985, Ser. No. 724,285

Claims priority, application Austria, May 7, 1984, 1497/84

Int. Cl.⁴ E05D 3/06

U.S. Cl. 16—302

1 Claim



1. A hinge for mounting a door on an article of furniture, said hinge comprising:
a hinge arm to be mounted on a furniture side wall;
a hinge casing to be mounted on a furniture door;
inner and outer hinge links pivotally mounted to said hinge arm and to said hinge casing by respective hinge link axes, thereby defining a quadrilateral hinge link mechanism connecting said hinge casing to said hinge arm;

a cam member on said inner hinge link at a first said hinge link axle connecting said inner hinge link to said hinge arm, said cam member having a guide surface;
a pressure member having a first end pivotally mounted about a second said hinge link axle connecting said outer hinge link to said hinge arm and a second end;
a leg spring rolled about a bolt mounted on said hinge arm, said leg spring having a leg urging said second end of said pressure member toward said guide surface of said cam member and pivoting said pressure member about said second hinge link axle connecting said outer hinge link to said hinge arm;
said bolt being located at a position opposed to said pressure member such that said leg of said leg spring moves about said bolt in a first circular arc and said second end of said pressure member moves about said second hinge link axle in a second circular arc intersecting said first circular arc;
said first end of said pressure member including a portion rolled around said second hinge link axle, said rolled portion having therethrough a slot, and said inner hinge link extending into said slot when said hinge is in an open position thereof, thereby increasing the opening angle of said hinge.

4,641,395 DOWN RIGGER BOOM HINGE

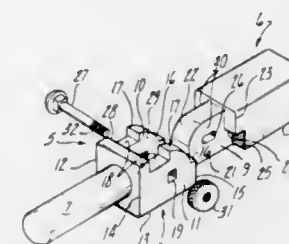
Adam J. Banks, 13755 Jenny Dr., Warren, Mich. 48093

Filed Sep. 20, 1985, Ser. No. 778,569

Int. Cl.⁴ A01K 97/10; F16M 13/00

U.S. Cl. 16—348

3 Claims



1. A hinge having automatic execution of stays at the end points of travel, comprising:

- a stationary hinge element, one end of which having means to connect to a stationary object, the other terminating in a hinge base from which emanates from opposite sides thereof two parallel projections, forming a "U" shaped member, each said parallel projections having a lip, a circularly curved surface, a slot, and an aperture;
- a rotatable hinge element, one end of which having means to connect to an object to be rotated, the other end of which having a lip and a projection member which inserts into said "U" shaped member, having a circularly curved surface of convex shape and having an elongated aperture therein which aligns with said aperture in each of said parallel projections when said projection member is inserted into said "U" shaped member; and,
- a pin which inserts through said aligned apertures thereby holding said stationary and said rotatable hinge elements together, and forming a pivot point about which said rotatable hinge element may pivot in relation to said stationary hinge element, guided by sliding interaction of the respective surfaces of said stationary and rotatable hinge elements including the sliding interaction of said circularly curved surface of convex shape on said projection member in relation to the surface of said hinge base of said "U" shaped member, where one end of travel is defined by interlocking of said lips, and the other end of travel is defined by said lip of said rotatable hinge element inserting into said slot in said stationary hinge element.

4,641,396 FURNITURE HINGE WITH AXLE MEMBERS MOUNTING HINGE LINKS TO HINGE CASING AND RETAINED IN HOLDING FLANGES

Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft mbH, Höchst, Austria

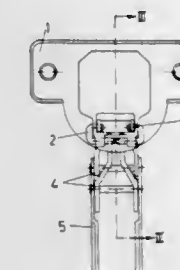
Filed Mar. 20, 1985, Ser. No. 714,085

Claims priority, application Austria, Apr. 17, 1984, 1278/84
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.⁴ E05D 3/06

U.S. Cl. 16—370

6 Claims



1. A furniture hinge comprising:
a hinge arm to be mounted on a first furniture part;
a hinge casing to be fitted to a second furniture part, said hinge casing having a bottom, walls extending from said bottom, and at least one holding flange punched from one said wall and extending into the interior of said hinge casing, said holding flange having two sides connected to said hinge casing and defining with said hinge casing a channel extending transversely thereof;
inner and outer hinge links having first ends pivoted to said hinge arm and second ends pivoted to said hinge casing; and
means pivotally mounting said second end of said outer hinge link to said hinge casing, said mounting means comprising first and second axle members, each said axle member including first and second journals extending parallel to each other and joined by a transversely extending connecting member, said first journals being shorter than said second journals, said first and second axle members being positioned as mirror images of each other with said journals extending through spaced side walls of said hinge casing into said interior thereof, with said first journals directed toward each other along substantially the same axis with a space therebetween, and with said second journals directed toward each other along substantially the same axis, said second end of said outer hinge link being pivotally mounted on said first journals, and said second journals extending into and being pivotally retained within said channel between said holding flange and said hinge casing.

4,641,397 DRAFTING MECHANISM FOR SPINNING MACHINES

Giancarlo Mondini, Winterthur; Walter Hefti, Ettenhausen, and Siegfried Kaufmann, Wil, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Mar. 26, 1985, Ser. No. 716,232

Claims priority, application Switzerland, Mar. 30, 1984, 1621/84

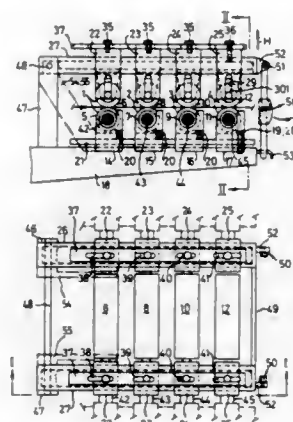
Int. Cl.⁴ D01H 5/74

U.S. Cl. 19—258

13 Claims

1. A drafting mechanism for spinning machines for drafting a staple fiber web, a staple fiber sliver, or a staple fiber slubbing, comprising a plurality of roller pairs including at least one input roller pair, one intermediate roller pair, and one output roller pair, each of said roller pairs including a lower

roller and a pressure roller having opposed end regions; means for supporting said rollers and including a first group of support elements receiving said lower rollers and arranged so that at least some of said support elements of said first group are displaceable relative to each other, and a second group of support elements receiving said pressure rollers, the support



elements of at least one of said groups of support elements being connectable with one another at said opposed end regions of the respective rollers; and further comprising connecting means for connecting the support elements of said at least one group of said support elements and including at least one connecting element.

4,641,398

DEVICE FOR PROVIDING AN ARTICULATED COUPLING BETWEEN TWO COMPLEMENTARY SERIES OF BELT-FASTENERS

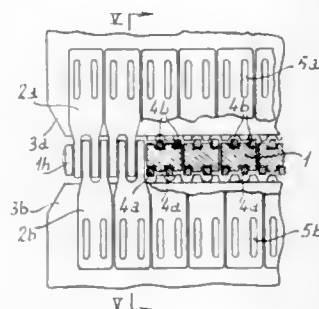
Jean-Francois Schick, Paris, France, assignor to Goro S.A., Chelles, France

Filed Nov. 18, 1985, Ser. No. 799,723

Claims priority, application France, Dec. 11, 1984, 84 18870

Int. Cl.⁴ F16G 3/02

U.S. Cl. 24—33 R



1. A device for providing an articulated coupling between the hinge-knuckles of two complementary series of belt-fasteners fixed respectively on each edge of the end portions of a conveyor belt to be joined together, wherein:

said device is constituted by a series of independent elements designed in the general form of rod segments having a circular cross-section and placed one after another in succession transversely of the conveyor belt, the length of each rod segment being of limited value corresponding to a maximum to the length of the hinge-knuckles of two belt-fasteners located in oppositely-facing relation; and said elements have relatively displaced portions each corresponding to the width of one hinge-knuckle so as to ensure that said elements are thus stationarily fixed in the longitudinal direction after position.

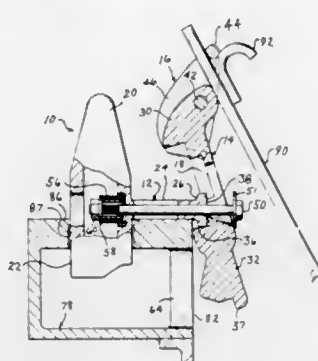
4,641,399
INTERCONNECTING CONTAINER LOCK
Robert G. Jackson, 401 N. 8th St., P.O. Box 277, Benton Harbor, Mich. 49022

Filed Sep. 18, 1985, Ser. No. 777,275

Int. Cl.⁴ B65D 25/02

U.S. Cl. 24—287

7 Claims



1. A container lock assembly adapted for interlocking overlying corner blocks, said corner blocks having opposed horizontal openings and exposed vertical openings, said lock assembly comprising a lock arm and a load component, said load component including a load plate and projection means extending from opposite sides of said load plate for positioning within said corner block opposed horizontal openings, said lock arm pivotally connected to said load component and including an upper retainer means and a lower retainer means, said lock arm being pivotal relative to said load component between a locked position wherein said lock arm upper and lower retainer means are positioned for fitting within said corner block vertical openings to secure said blocks against vertical separation and an unlocked position wherein at least one of said retainer means is positioned for release from a said corner block vertical opening.

4,641,400

AIRTIGHT, WATERTIGHT MECHANICAL SEAM FOR JOINING PANELS OF INDUSTRIAL STRENGTH FABRICS

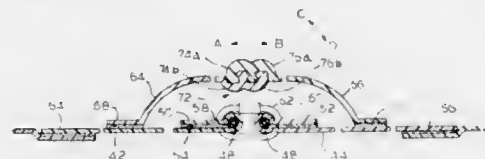
Jack Moreland, Dolton, Ill., assignor to MPC Containment Systems, Ltd., Chicago, Ill.

Filed Aug. 15, 1983, Ser. No. 523,657

Int. Cl.⁴ A44B 17/00

U.S. Cl. 24—389

4 Claims



1. A mechanical seam for joining confronting edges of two or more large area panels of industrial fabric which together form a containment protection membrane for covering large surfaces on the earth to prevent moisture, chemicals, or pollutants from leaking through the soil membrane, said seam comprising:

a. mechanical connector means including at least a cable embedded in and running along the entire length of each of said confronting edges for resisting longitudinal stress along the entire length of said confronting edges, and a plurality of fastener means distributed along said entire length for mechanically joining the cable in each of said confronting edges of said large area panels at a plurality of points along said entire length to keep the large area panels from pulling apart, said cables in adjoining large area panels being generally parallel to each other when the membrane is loaded by pulling forces acting within the membrane; said mechanical connector means comprising

a serpentine cable having the form of a series of catenary arches immobilized on confronting edges of said large area panels with the arches of the catenary positioned to resist and support against loading strain acting within the fabric and being oriented to support the forces within said fabric when said large area panels are bearing a load, the immobilization of said serpentine cable in the large area panels positioning the catenary arches in adjoining large area panels to be aligned and to come together in a confronting relationship when the panels are joined in order to uniformly distribute stresses within said panels;

b. an elongated panel flap attached to each of said large area panels which form said membrane, said panel flaps being bonded to said large area panels near and running along the entire length of each of said confronting edges, said panel flap being bonded to said large area panel at a location which is more distant than said cable from the confronting edge; and

c. all plastic slide closure means attached to each of said panel flaps for joining and sealing said panel flaps when closed, said slide closure and said panel flaps covering said mechanical connector means including said fastener means joining said cables, said plastic slide closure means giving said membrane a continuous and unbroken large-area-panel-to-large-area-panel watertight sealing surface.

4,641,401

SOCKET FOR SNAP FASTENER

Yoshihiko Hasegawa, Kawasaki, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 593,334, Mar. 26, 1984,

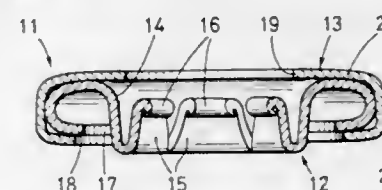
abandoned. This application Aug. 30, 1985, Ser. No. 771,333

Claims priority, application Japan, May 9, 1983, 58-67843

Int. Cl.⁴ A41F 1/02

U.S. Cl. 24—681

4 Claims



1. A socket constituting the female member of a snap fastener, which comprises a metal spring button part including an annular base, an inner portion extending inwardly and downwardly from the inner portion of said annular base, and further extending inwardly and upwardly and split into flaps which terminate with tongues arranged circularly for elastic engagement with a stud as the male member of the snap fastener, an outer portion curvedly extending outwardly and downwardly from the outer portion of said annular base and then inwardly to form portions to guide and receive the legs of a backing member of the snap fastener, and a cover plate having a circular opening of a larger diameter than the inside diameter of the circle defined by said tongues, said cover plate being secured to the periphery on the tongue side of said annular base, said cover plate being upwardly spaced from said tongues so as to allow said tongues to clear said cover plate at any flexing position of said tongues.

4,641,402

BRANCH-OFF CLIP AND ASSEMBLY

Jan Vansant, Leuven, and Noel M. M. Overbergh, Bertem, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Nov. 28, 1983, Ser. No. 556,211

Claims priority, application United Kingdom, Nov. 29, 1982, 8234001

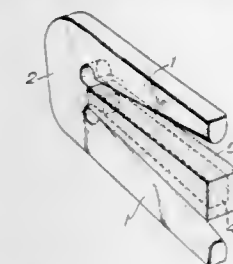
Int. Cl.⁴ B29C 27/24

U.S. Cl. 24—703

7 Claims

1. A clip which comprises at least two outer legs and an

inner leg, so arranged that the clip can be positioned over the outer surface of a recoverable sleeve at an end thereof with the outer legs outside the sleeve and the inner leg inside the sleeve; the inner leg comprising a heat-activatable sealing material, and a heat conductive means for conducting heat from the outer legs to the sealing material, in which the heat conductive means comprises a metal prong which substantially entirely



melts at or shortly after activation of the sealing material and wherein the dimensional integrity of at least part of the heat conductive means weakens on heating at or shortly after activation of the sealing material, thus reducing the thermal connection, or reducing the rigidity of at least a portion of the inner leg, or both.

4,641,403

MACHINE FOR FLAME PROCESSING OF TEXTILE FABRIC WEBS

Walter Osthoff, Otmar Hohenester, both of Wuppertal, and Anton Gessner, Remscheid, all of Fed. Rep. of Germany, assignors to Osthoff Senge GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

PCT No. PCT/DE84/00199, § 371 Date May 29, 1985, § 102(e)

Date May 29, 1985, PCT Pub. No. WO85/01530, PCT Pub.

Date Apr. 11, 1985

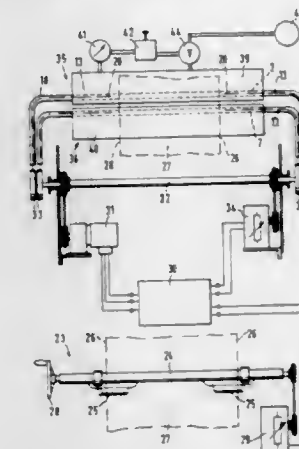
PCT Filed Sep. 29, 1984, Ser. No. 740,047

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335304

Int. Cl.⁴ D06C 9/02

U.S. Cl. 26—3

13 Claims



1. A singeing machine for flame processing of webs of textile goods comprising a burner means including a combustion chamber means opening into a singeing slot, a gas mixing chamber means connected to said combustion chamber means by a mixture feed slot means, damper means adjustable from ends thereof for at least partially sealing said mixture feed slot means to enable an adjustment of a flame width, said damper means including at least one flexible sealing strip means for said mixture feed slot means, said at least one flexible sealing strip means being insertable from at least one end of said burner means and being gas permeable to an extent sufficient to feed an ignition flame.

4,641,404

POROUS WARP SIZING APPARATUS

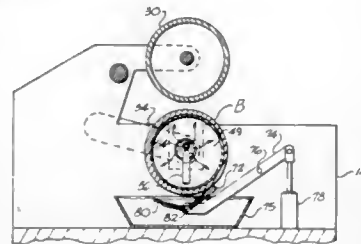
Scott O. Seydel; William D. Letbetter, both of 80 Broad St., NW., Atlanta, Ga. 30303, and William H. Cutts, P.O. Box 748, Clemson, S.C. 29631

Continuation-in-part of Ser. No. 308,449, Oct. 5, 1981, Pat. No. 4,513,485. This application Apr. 26, 1985, Ser. No. 727,867

Int. Cl.⁴ D02H 5/02

U.S. Cl. 28—178

17 Claims



10. Apparatus for applying a sizing material to individual warp yarns passing between a pressure roll and an application roll wherein said yarns are arranged generally side by side in a warp sheet and a metered amount of sizing material is pressed into said warp yarns wherein said application roll is driven by a drive means and includes a hollow interior, a continuous cylindrical application surface formed on the outside surface of said application roll having an extent for applying sizing material generally across the entire width of said warp yarn sheet passing through a nip of said rolls; a cylindrical porous distribution layer next adjacent said application surface for distributing said sizing material onto said application surface; a porous flow control membrane carried adjacent an interior boundary region of said distribution layer in fluid communication with said hollow interior of said application roll; said porous membrane including porous material having a pore size substantially smaller than the pore size of the porous material of said distribution layer to meter the flow of sizing material through said distribution layer and onto said application surface; delivery means for delivering a pressurized sizing material into said hollow interior of said application roll in fluid flow communication with said flow control membrane while warp yarns are passing through the nip of said rolls and said apparatus.

4,641,405

SERVO SYSTEM METHOD AND APPARATUS SERVO VALVE APPARATUS THEREFOR AND METHOD OF MAKING SAME

C. Brad Green, Mesa; William Dobson, Scottsdale, and Stephen G. Abel, Mesa, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 15, 1984, Ser. No. 641,113

Int. Cl.⁴ B21D 53/00; B23P 15/00

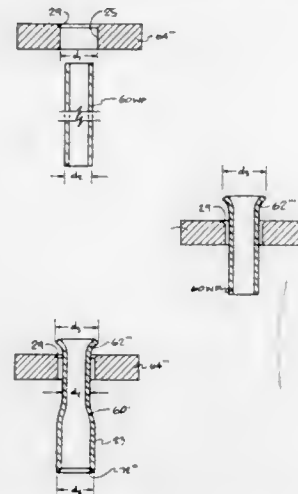
U.S. Cl. 29—157.1 R

14 Claims

1. The method of making a pressure balanced servo valve apparatus of closed-center type comprising the steps of:

- (a) forming a poppet member work piece having a body portion of outer diameter d_2 and one of a head portion end or seat portion end having a respective outer diameter (d_3 or d_4) exceeding d_2 ;
- (b) forming a seat member having an aperture therethrough of inner diameter d_1 larger than diameter d_2 and less than diameter (d_3 or d_4) and defining a seat circumscribing said aperture and substantially of sealing diameter d_1 ;
- (c) uniting the products of steps (a) and (b) by inserting said poppet member work piece body portion through said aperture;
- (d) expanding said poppet member work piece body portion at the end thereof opposite said one end to define the other of said head portion end or seat portion end having a respective outer diameter (d_3 or d_4) also exceeding d_2 ; and
- (e) utilizing steps a-d to permanently retain said poppet

member and said seat member in relatively movable cooperating union whereby said seat member and said poppet



member are sealingly and movably cooperable at said head portion and said seat to selectively control fluid flow therebetween.

4,641,406

METHOD OF FORMING A RACK MEMBER

Peter R. Rogers, Chepstow, Wales, assignor to Cam Gears Limited, Hertfordshire, United Kingdom

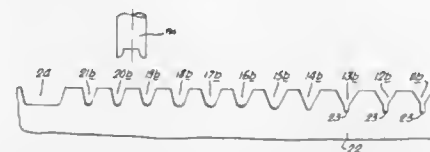
Filed Dec. 19, 1983, Ser. No. 562,714

Claims priority, application United Kingdom, Dec. 31, 1982, 8237076

Int. Cl.⁴ B21H 5/00

U.S. Cl. 29—159.2

8 Claims



1. A method of forming a workpiece into a rack having a linear array of teeth located between opposite ends of the rack, the teeth in the linear array being disposed at a plurality of final tooth angles, said method comprising the steps of:

- (a) cutting a linear array of teeth in a workpiece, at least certain of the teeth in the linear array of cut teeth having a tooth angle which is both less than the largest tooth angle of the plurality of final tooth angles and greater than the smallest tooth angle of the plurality of final tooth angles, and thereafter, deforming at least said certain teeth to have tooth angles corresponding to said final tooth angles.

4,641,407

TOOLING FOR ELASTOMERIC SWAGING MACHINE

Gerald G. Blevins, Edmonds; Fred Johnson, Jr.; Frank R. Lentz, both of Seattle, and John P. Root, Kingston, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 14, 1985, Ser. No. 734,026

Int. Cl.⁴ B21D 41/02; B23P 11/00

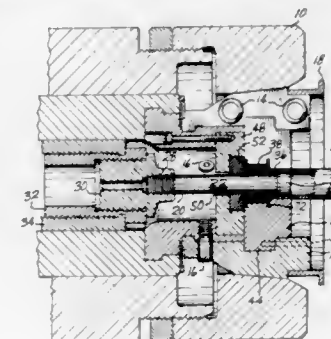
U.S. Cl. 29—237

2 Claims

- (a) A swaging machine comprising: a drawbolt having an axial shaft and a radial pressure surface; a tubular elastomeric expander received onto the shaft and positioned to be compressed by the pressure surface when the drawbolt is pulled axially; and

tooling for use in attaching a tube to an inner surface of a ferrule, said inner surface having circumferential grooves thereon and terminating in a radial shoulder which one end of the tube abuts against, said tooling comprising the combination of:

- (a) die means including a main split die body surrounding said draw bolt and radially moveable towards said draw bolt, a split die insert having an interior cavity shaped to closely receive a particular type of ferrule, and means for releasably securing the die insert in said body; and
- (b) anvil means abutting radial surface portions of the die insert and having an axial opening through which the shaft of the drawbolt extends; said anvil means including a main body portion having an insert cavity surrounding said opening, and a removable anvil insert closely receivable into said insert cavity and having fixed means for contain-



ing the elastomeric expander and preventing said expander from extruding along the drawbolt; said anvil insert abutting radial surface portions of a ferrule received in the interior cavity of the die insert; said means for containing including bearing means through which the shaft of the drawbolt slides and a radial abutting surface at one end of the bearing means that abuts the radial end of said expander opposite said pressure surface on the drawbolt; said means for containing being fixed relative to the die means when the drawbolt is pulled axially to compress the elastomeric expander; and said means for containing including a boss on the anvil insert that terminates in said radial abutting surface, that has an outer circumferential surface extending axially from said radial abutting surface, and that is dimensioned to be received into said ferrule with said outer circumferential surface adjacent to an inner circumferential surface of said ferrule.

4,641,408

PLUGGER GUIDE FOR ALIGNING AN END PLUG AND A FUEL ROD TUBE END

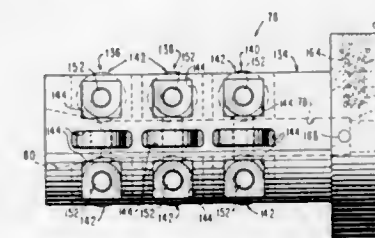
Kenneth K. Klapper, and David A. Boatwright, both of West Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 3, 1985, Ser. No. 730,141

Int. Cl.⁴ B25B 27/14

U.S. Cl. 29—271

11 Claims



1. Apparatus for guiding a hollow tubular end of a nuclear

fuel rod tube toward an end plug for application of said end plug into said tube end, said apparatus comprising:

- (a) a guide housing having an elongated central longitudinal bore with one end for receiving the end plug and an opposite end for receiving the fuel rod tube end;
- (b) a plurality of sets of rolling elements disposed in said housing at axially spaced positions along and about said bore thereof, said rolling elements in each set being positioned in fixed relation with respect to one another to receive the fuel rod tube end therebetween and align the tube end with the end plug as the tube end is moved through said bore and into engagement with the end plug; and
- (c) retaining means disposed adjacent to said one end of said housing bore for engaging the end plug so as to maintain it in a stationary seated position at said one end of said housing bore.

4,641,409

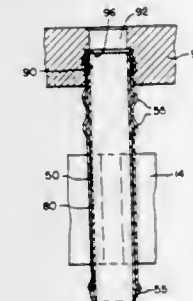
RECONSTITUTING A NUCLEAR REACTOR FUEL ASSEMBLY

John M. Shallenberger, O'Hara Township, Allegheny County, and Stephen J. Ferlan, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 422,224, Sep. 23, 1982, abandoned. This application May 24, 1984, Ser. No. 613,833

Int. Cl.⁴ B21K 21/16; B23P 17/04, 23/00; G21C 3/30
U.S. Cl. 29—401.1

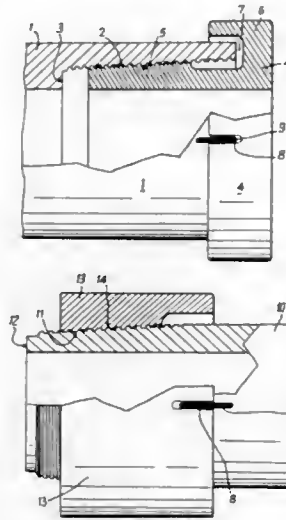
8 Claims



1. A method for reconstituting a nuclear reactor fuel assembly having its uppermost control rod guide thimble sleeves coaxially disposed within its first top nozzle adaptor plate control rod passageways and attached to its first top nozzle adaptor plate, comprising:

- (a) circumferentially cutting the sleeve walls below the area of attachment to sever the sleeves from the first adaptor plate;
- (b) removing the first top nozzle, including the first adaptor plate, from the cut sleeves;
- (c) obtaining a second top nozzle with its adaptor plate having a plurality of its control rod passageways with a groove axially disposed below the corresponding area on the first top nozzle adaptor plate from which the sleeves were severed;
- (d) inserting the cut sleeves into the second top nozzle adaptor plate control rod passageways to an axial distance above said grooves; and
- (e) circumferentially bulging a corresponding plurality of the inserted cut sleeves into said grooves.

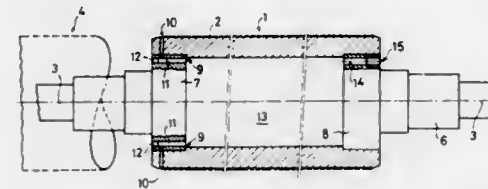
4,641,410
METHOD AND APPARATUS FOR MAKING A JOINT FOR STEEL TUBES
 Bernard A. Plaquin, and Louis Fradin, both of Aulnoye, France, assignors to Vallourec, Paris, France
 Filed Mar. 22, 1985, Ser. No. 714,970
 Claims priority, application France, Mar. 22, 1984, 84 04432
 Int. Cl.⁴ B23Q 17/00; G01B 3/48, 3/40
 U.S. Cl. 29—407 2 Claims



1. Process for manufacturing a pipe joint comprising one male element with an external conical threading and a torque limitative shoulder at its end and one female element with a corresponding internal conical threading and an inside corresponding torque limitative shoulder consisting of:
 pre-machining the male and the female elements;
 final machining the threadings of the male and of the female elements;
 providing a male thread gauge corresponding to the threading of the female element and a female thread gauge corresponding to the threading of the male element, each of said gauges being provided with an index disposed on a generatrix, the position of said indexes being such that when the male and the female gauges are screwed together by hand, said indexes are located on the same generatrix;
 engaging by hand said male thread gauge on the female element and noting a mark on the female element on the same generatrix as the index of said male thread gauge;
 engaging by hand said female thread gauge on the male element and noting a mark on the male element on the same generatrix as the index of said female thread gauge;
 providing a male threaded mandrel made of a steel with high mechanical characteristics having on its end the shape that the external torque limitative shoulder of the male element must have after its machining is completed, said male threaded mandrel being provided with an index located on the same generatrix as the index of said female gauge when said female gauge is screwed by hand onto said male threaded mandrel;
 providing a female threaded mandrel made of a steel with high mechanical characteristics having the internal shape that the internal torque limitative shoulder of the female element must have after its machining is completed, said female threaded mandrel being provided with an index located on the same generatrix as the index of said male gauge when said male gauge is screwed by hand into said female threaded mandrel;
 screwing said male threaded mandrel into the female element until the generatrix of the index of the male threaded mandrel is positioned at a predetermined distance beyond the generatrix of the index of the female element and

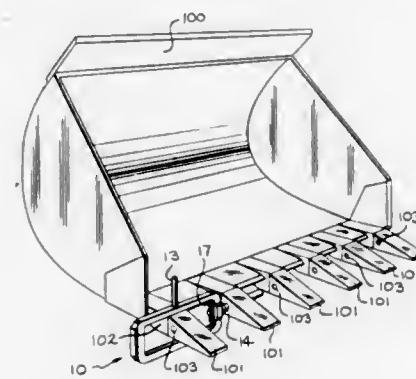
disengaging the male threaded mandrel from the female element;
 screwing said female threaded mandrel onto the male element until the generatrix of said index of the female threaded mandrel is positioned at a predetermined distance beyond the generatrix of the index of the male element and disengaging the female mandrel from the male element.

4,641,411
METHOD AND APPARATUS FOR THE MANUFACTURE OF A SCREEN ROLLER
 Antonius M. Meulen, Helmond, Netherlands, assignor to Stork Screens B.V., Boxmeer, Netherlands
 Filed Apr. 24, 1985, Ser. No. 726,488
 Claims priority, application Netherlands, May 2, 1984, 8401401
 Int. Cl.⁴ B23P 12/00; B21B 31/08; B41F 13/10
 U.S. Cl. 29—424 3 Claims



1. A method of making a screen roller having a support cylinder encircled by a tightly fitting sieve-like screen comprising the steps of:
 providing a cylindrical sieve-like screen having an internal diameter slightly less than the outside diameter of the support cylinder;
 coating the screen to render it substantially fluid impervious;
 applying fluid pressure between the screen and the support cylinder to expand the screen to fit over the support cylinder and while maintaining it expanded sliding the screen and support cylinder axially together;
 removing the fluid pressure to allow the screen to contract into tightly fitting engagement around the support cylinder; and
 treating the screen to remove the fluid impervious coating from its outer surface.

4,641,412
PIN DRIVING TOOL
 Glenn E. Olger, 14460 Robson Rd., Bath, Mich. 48808
 Filed Sep. 19, 1985, Ser. No. 777,688
 Int. Cl.⁴ B23P 19/00, 11/00
 U.S. Cl. 29—426.5 8 Claims



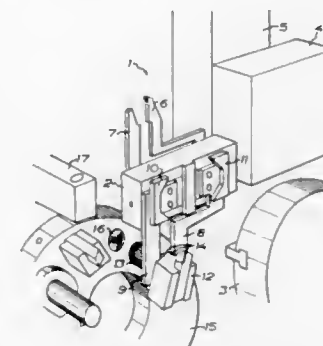
1. A pin driving tool for inserting or removing pins from teeth on a digging means, comprising:

(a) a rectangular driving bar having a longitudinal driving axis, said bar including spaced apart side rails on opposite sides of the axis and opposed first and second ends between said rails, said rails and said ends forming an opening large enough to enable said driving bar to be positioned around one of such teeth, said second end having an opening opposite the first end along the axis;
 (b) a driving punch means removably mounted in said hole, said punch means having two ends, one end being shaped for removing or inserting one of such pins from said teeth on said digging means, said other end having fastening means for fastening said punch means to said driving bar;
 (c) a holding means removably connected to said fastening end of said punch means to fasten said punch means to said driving bar and to allow the mounting of different punches in the driving bar;
 (d) a handle means mounted to one of said side rails of said driving bar perpendicular to the driving axis for holding the tool in one hand; whereby said driving bar is fitted around a first tooth with the punch means engaged with a pin on an adjacent tooth with the punch means engaged with a pin on an adjacent tooth to enable the pin on the adjacent tooth to be removed or inserted.

6. A method for removing or inserting pins which comprises:

(a) providing a pin driving tool for inserting or removing a pin which holds teeth in place on a digging means bucket where the tool comprises a driving bar having a longitudinal driving axis with spaced apart side rails on opposite sides of the axis and opposed first and second ends between the rails defining an opening which fits around at least one first tooth on a digging means having a plurality of spaced apart teeth each held in place by pins on the digging means, wherein the first end is for driving the bar, and a drive punch means mounted on the second end of the bar along the axis and shaped for removing or inserting one of the pins holding the teeth on the digging means, wherein the tool fits with the opening around the first tooth with the punch means engaged with the pin on a next adjacent second tooth to be removed or inserted;
 (b) placing the driving bar between the plurality of teeth with the drive punch means against the pin; and
 (c) driving the bar at the first end to remove or insert the pin.

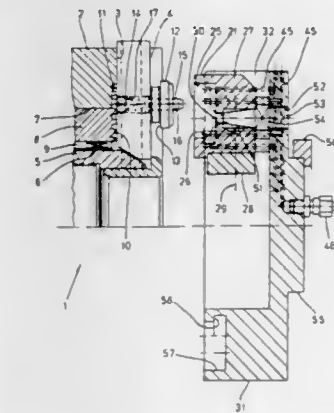
4,641,413
TOOL CHANGER
 Ellert Hallqvist, Västerås, Sweden, assignor to SMT Machine Company AB, Sweden
 Continuation-in-part of Ser. No. 262,733, May 12, 1981, abandoned. This application Sep. 2, 1983, Ser. No. 528,997
 Claims priority, application Sweden, May 13, 1980, 8003582
 The portion of the term of this patent subsequent to Feb. 10, 2002, has been disclaimed.
 Int. Cl.⁴ B23Q 3/155, 7/04
 U.S. Cl. 29—568 4 Claims



1. In a workpiece exchanger apparatus for automatic ex-

change of workpieces to be secured in an automatic machine tool with longitudinal rails, said exchanger comprising a carriage mounted on said rails, means for driving said carriage along said rails, a slide mounted on said carriage, means for moving said slide vertically along said carriage, first and second jaw pairs mounted on a jaw mount extending laterally from said slide to grip longitudinally oriented workpieces, means for sliding said jaw pairs in the horizontal direction transverse to said rails, and means for rotating said jaw pairs about a horizontal axis transverse to said rails, the improvement comprising a pair of gripping devices secured to each jaw pair, each said pair of gripping devices adapted to grip a tool.

4,641,414
PALLET FOR SEATING INTERCHANGEABLE CLAMPING JAWS OF A CHUCK
 Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weisshaupt GmbH, Fed. Rep. of Germany
 Filed Dec. 10, 1984, Ser. No. 679,759
 Claims priority, application Fed. Rep. of Germany, Dec. 13, 1983, 3345012
 Int. Cl.⁴ B23Q 3/157
 U.S. Cl. 29—568 21 Claims



1. A pallet assembly for seating interchangeable clamping jaws on base jaws distributed in a pattern on a chuck, with each base jaw having an axially movable spring detent, comprising:
 a pallet having a plurality of radially extending open-faced recesses distributed in the pattern of the base jaws, each recess being bounded by a floor of said pallet;
 a clamping jaw disposed in each open-faced recess, said jaw being spaced above said floor, each radially extending open-faced recess being wider in a circumferential direction than a clamping jaw disposed therein for guiding each clamping jaw with lateral clearance;
 a plurality of clamping bolts on each side of each recess for entering each recess and engaging a clamping jaw in a respective recess, each clamping bolt mounted for movement with a selected limit to said pallet for movement in one of said open-faced recesses to engage and disengage a clamping jaw therein;
 pressure means associated with said pallet and with each clamping bolt for biasing each clamping bolt into engagement with a respective clamping jaw to hold the respective clamping jaw in its open-faced recess;
 each clamping jaw having a seating hole for receiving one of the spring detents of a base jaw and for locking the clamping jaw to the base jaw when the clamping jaw is removed from said pallet; and
 an unlocking bolt fixed in each open-faced recess and extending axially into said seating hole of a clamping jaw in said open-faced recess, each unlocking bolt engageable with a spring detent for dislodging the spring detent from a seating hole to permit unlocking of the clamping jaw from a base jaw, each unlocking bolt having a collar

engaged on said floor and against which the clamping jaw for said unlocking bolt is engaged for supporting the clamping jaw axially spaced from said floor.

4,641,415

TOOL AND ATTACHMENT GRIPPING AND RELEASING MEANS

Jean-Pierre Charra, Saint Etienne, France, assignor to Berthiez-Saint-Etienne, France

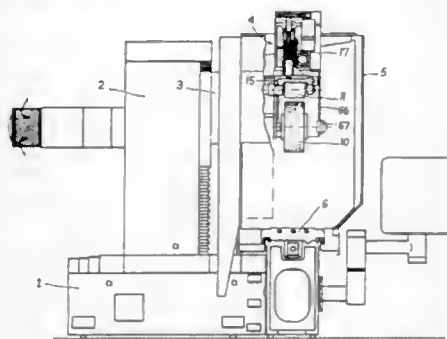
Filed May 17, 1985, Ser. No. 735,045

Claims priority, application France, May 18, 1984, 84 07789

Int. Cl.⁴ B23Q 3/157; B24B 45/00

U.S. Cl. 29—568

9 Claims



1. Tool and attachment gripping and releasing means for a machine tool and in particular for a grinding machine comprising a contour grinding head whereupon are mounted a rotary spindle carrying a wheelhead and a carriage carrying a wheel dresser roll, said machine including a maneuvering means comprising a gripping collet for engaging both said wheelhead and said carriage to enable the removal and replacement of said wheelhead and said carriage, and thrusting means operable to actuate said gripping means to engage said wheelhead and said carriage, wherein said wheelhead and carriage are provided on one of their ends with a compartment or recess having a slot adapted to be engaged by said gripping collet of said maneuvering means, and said thrusting means further operable to selectively actuate means for locking said grinding wheelhead on the machine spindle and to selectively actuate means for locking said dresser roll cartridge on a movable support.

4,641,416

METHOD OF MAKING AN INTEGRATED CIRCUIT STRUCTURE WITH SELF-ALIGNED OXIDATION TO ISOLATE EXTRINSIC BASE FROM EMITTER

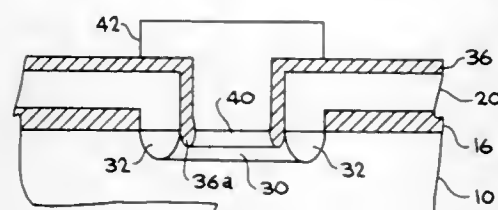
Ali Iranmanesh, Mountain View, and Christopher O. Schmidt, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 4, 1985, Ser. No. 707,730

Int. Cl.⁴ H01L 21/302, 21/265

U.S. Cl. 29—576 W

10 Claims



6. An improved method for forming an active device in an integrated circuit structure having self-aligned contacts wherein an intrinsic base is formed over a buried collector in a silicon substrate and one or more extrinsic base segments are formed adjacent to said intrinsic base to provide said self-

aligned contact through the integrated circuit structure above said extrinsic base segments, the improvement comprising:

- (a) forming a layer of polysilicon doped with impurities over said silicon substrate to form said extrinsic base segments by subsequent diffusion of said impurities from said polysilicon layer into said substrate and to form said self-aligned contacts;
- (b) selectively etching an opening in said polysilicon layer to expose a portion of a underlying silicon substrate to permit formation of an intrinsic base region in said exposed silicon; and
- (c) forming an isolating oxide region between said extrinsic base segment and an emitter electrode subsequently formed in contact with said intrinsic base, said forming comprising the following steps:
 - (1) etching the sidewalls of said opening to expose a further portion of said silicon substrate adjacent said intrinsic base region
 - (2) etching away at least a portion of said exposed silicon substrate; and
 - (3) forming said isolation oxide in said etched away portion of said substrate by oxidizing a portion the sidewall of said opening in said polysilicon layer and silicon in said substrate adjacent said etched away portion;

whereby formation of parasitic P-N junctions between said emitter and said adjacent extrinsic base segment is prevented by said isolation oxide formed therebetween.

4,641,417

PROCESS FOR MAKING MOLYBDENUM GATE AND TITANIUM SILICIDE CONTACTED MOS TRANSISTORS IN VLSI SEMICONDUCTOR DEVICES

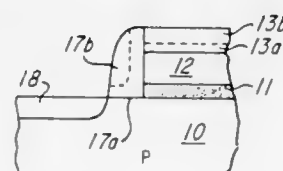
James M. McDavid, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 624,075, Jun. 25, 1984. This application Sep. 3, 1985, Ser. No. 771,873

Int. Cl.⁴ H01L 21/441

U.S. Cl. 29—571

14 Claims



1. A method of making a transistor device, comprising the steps of:

- forming a gate electrode on a face of a silicon body, with an oxide coating on the top of said gate electrode,
- forming oxide coatings on the sidewalls of said gate electrode by depositing oxide and anisotropically etching, wherein said oxide coatings on the top and sidewalls of the gate electrode are created by separate depositions but are sealed together to be impervious at the interfaces between the oxide coatings,
- applying a layer of metal over said face and reacting said metal with the silicon of the face in areas not covered by the gate electrode and sidewall oxide,
- and thereafter removing unreacted metal from said face by etching without disturbing the gate electrode.

4,641,418

MOLDING PROCESS FOR SEMICONDUCTOR DEVICES AND LEAD FRAME STRUCTURE THEREFOR

Dennis Meddles, Torrance, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

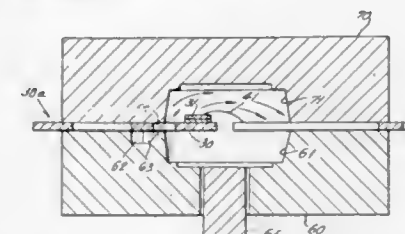
Division of Ser. No. 412,928, Aug. 30, 1982, Pat. No. 4,556,896.

This application Sep. 10, 1985, Ser. No. 774,346

Int. Cl.⁴ H01L 21/56

U.S. Cl. 29—588

12 Claims



1. The process of molding a plastic housing onto a semiconductor lead frame assembly comprising the steps of: enclosing said semiconductor lead frame assembly between an upper mold cavity and a lower mold cavity; injecting molten plastic into a runner formed in said lower mold cavity; leading said molten plastic from said runner through a restricted mold gate opening in said lead frame assembly and into said upper mold cavity; filling the volume formed between said upper and lower cavities with molten plastic from the top thereof, thereby forcing air within said volume to flow out of said volume through pin ejectors in said lower cavity; the rate of flow of said plastic into said volume being controlled by the area of said mold gate opening.

4,641,419

FABRICATING AN INTEGRATED CIRCUIT DEVICE HAVING A VERTICAL PNP TRANSISTOR

Satoshi Kudo, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

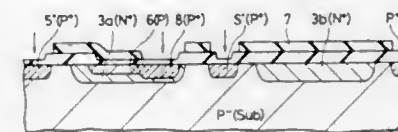
Filed Mar. 18, 1985, Ser. No. 712,761

Claims priority, application Japan, Mar. 16, 1984, 59-49060

Int. Cl.⁴ H01L 21/74, 21/265

U.S. Cl. 29—591

36 Claims



1. A process for producing semiconductor devices comprising the steps of:

- (1) selectively introducing impurities of a first type of conductivity into one main surface of a semiconductor substrate to form first and second semiconductor regions that are spaced from each other;
- (2) selectively introducing impurities of the first type of conductivity into said first semiconductor region and into a portion of said second semiconductor region to increase the impurity concentration in said first semiconductor region and to form a third semiconductor region having an impurity concentration higher than that of said second semiconductor region in a portion of said second semiconductor region;
- (3) after the step (2), depositing a semiconductor layer on said one main surface of said semiconductor substrate, said semiconductor layer having a main surface opposite the surface adjacent the substrate;
- (4) selectively introducing impurities of the second type of conductivity opposite to said first type of conductivity into said semiconductor layer to form a fourth semicon-

ductor region that extends to said second semiconductor region of the lower impurity concentration from the main surface of said semiconductor layer; and

- (5) introducing impurities of the first type of conductivity into a portion of said fourth semiconductor region and into said semiconductor layer that corresponds to said third semiconductor region to form a fifth semiconductor region in said fourth semiconductor region and to form a sixth semiconductor region in said semiconductor layer, said sixth semiconductor region reaching said third semiconductor region.

4,641,420

METALIZATION PROCESS FOR HEADLESS CONTACT USING DEPOSITED SMOOTHING MATERIAL

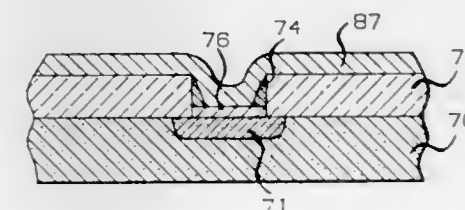
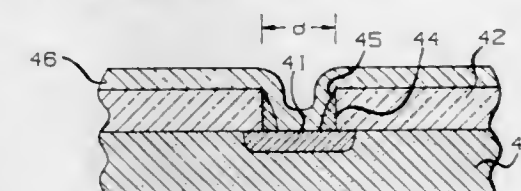
Kuo-Hua Lee, Lower Macungie Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1984, Ser. No. 645,549

Int. Cl.⁴ H01L 21/285

U.S. Cl. 29—511

37 Claims



1. A method of making an article including the step of making an electrical contact to an underlying doped semiconductor region by steps comprising forming an opening in an overlying dielectric material,

characterized by the further steps of thereafter forming a layer of a material that is more conductive than said doped semiconductor region on said doped semiconductor region, conformally depositing a dielectric smoothing material onto the more conductive layer and the sidewall of said opening, removing the dielectric smoothing material from the central portion of the more conductive layer while maintaining a smoothing region of the dielectric smoothing material in contact with the sidewall of the opening, and depositing conducting material at least onto the central portion of the more conductive layer and onto the smoothing region.

30. A method of making an article including the step of making an electrical contact to an underlying region by steps comprising forming an opening having a substantially straight sidewall in an overlying dielectric material,

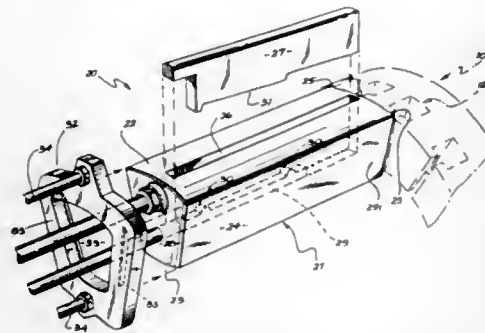
characterized by the further steps of conformally depositing a smoothing material onto said underlying region and the sidewall of said opening, anisotropically removing said smoothing material from the central portion of said underlying region while maintaining a smoothing region of said smoothing material in contact with said sidewall, and thereafter sputtering a metal at least onto the central portion of said underlying region and onto the smoothing region, wherein said underlying region is a metal silicide region.

4,641,421
METHOD OF FORMING AND INSTALLING FIELD WINDINGS

Louis Stanley, New South Wales, Australia, assignor to Card-O-Matic Pty. Limited, New South Wales, Australia
Division of Ser. No. 587,306, Mar. 7, 1984, Pat. No. 4,594,775.
This application Sep. 9, 1985, Ser. No. 774,248
Claims priority, application Australia, Mar. 31, 1983, 8708
Int. Cl.⁴ H02K 15/06

U.S. Cl. 29—596

13 Claims



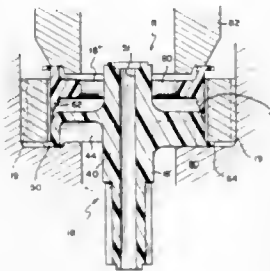
1. A method of forming and installing field windings in a core of an axial flux induction electric machine, said method including the steps of: providing a core wound from metal strip having holes formed along an edge thereof and spaced longitudinally of the strip so that said holes form radially extending slots in a radial face of the core, which slots are provided to receive field windings; spirally winding a length of wire about a former so that the wire forms a plurality of convolutions; aligning the former with two of the slots in said radial face so that the former extends generally normal to said face; and moving the convolutions from the former in said two slots so that the convolutions extend through and between said two slots to thereby form a field winding.

4,641,422
METHOD OF MAKING A PERMANENT MAGNET ROTOR FOR A SYNCHRONOUS MOTOR

Robert F. Weaver, Jamestown, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Division of Ser. No. 894,517, Apr. 7, 1978, abandoned, which is a continuation of Ser. No. 668,314, Mar. 18, 1976, abandoned.
This application Mar. 16, 1984, Ser. No. 660,601
Int. Cl.⁴ H02K 15/02

U.S. Cl. 29—598

2 Claims



1. A method of forming a permanent magnet rotor comprising: providing as one piece, an elongated body portion and a circular disc extending from said elongated body portion between opposed ends thereof and having an outer periphery; positioning a ring about said elongated body portion be-

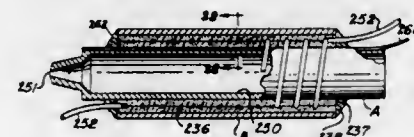
tween said opposed ends such that said ring is substantially in line with said disc near said outer periphery only; positioning a permanent magnet having at least one recess therein about said ring and said circular disc; and applying an ultrasonic vibration to at least one of said ring and said circular disc to bond same together near said outer periphery, at least a portion of said ring and said circular disc being melted and flowing into at least said recess whereby said permanent magnet is secured in place.

4,641,423
METHOD OF MAKING ELECTRICALLY HEATED NOZZLES AND NOZZLE SYSTEMS

Walter R. Crandell, Elmhurst, Ill., assignor to Fast Heat Element Manufacturing Co., Inc., Elmhurst, Ill.
Division of Ser. No. 328,747, Dec. 8, 1981, Pat. No. 4,492,556, which is a continuation of Ser. No. 951,609, Oct. 16, 1978, Pat. No. 4,303,544, which is a continuation-in-part of Ser. No. 705,996, Jul. 16, 1976, Pat. No. 4,120,086, which is a continuation-in-part of Ser. No. 516,618, Oct. 21, 1974, Pat. No. 3,970,821. This application May 17, 1984, Ser. No. 611,141
The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.
Int. Cl.⁴ H05B 3/00

U.S. Cl. 29—611

8 Claims



1. In a method of making an annular configured electric heater for supplying heat to a fluid melt stream of moldable material directed centrally through the heater comprising providing uncured strips of ceramic particles impregnated to a high density and bound together in a heat dissipatable binder material and each having a predetermined thickness, providing an electrical resistance wire having resistive properties such that when assembled in said heater and coupled to an electrical source said heater generates heat sufficient to maintain a melt stream directed through said heater in fluid condition, assembling said resistance wire between said uncured strips of ceramic particles, compressing said assembled uncured strips and resistance wire together to substantially eliminate air voids between said strips, containing said uncured strips and resistance wire between inner and outer metallic layers, heating said compressed strips and resistance wire while contained between said inner and outer metallic layers to a temperature sufficient to dissipate a substantial portion of said binder material with said ceramic particles remaining as a void-free compacted mass embedding said resistance wire, and prior to said heating, forming said uncured strips, resistance wire, and metallic layers into a desired annular configuration.

4,641,424
APPARATUS FOR FINISHING SLIDE FASTENER CHAIN WITH REINFORCING STRIP

Toshiaki Sodenno, Toyama; Keiichi Yoshieda, Kurobe, and Syuichi Honmoto, Uozu, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 13, 1985, Ser. No. 765,143
Claims priority, application Japan, Aug. 15, 1984, 59-124605[U]

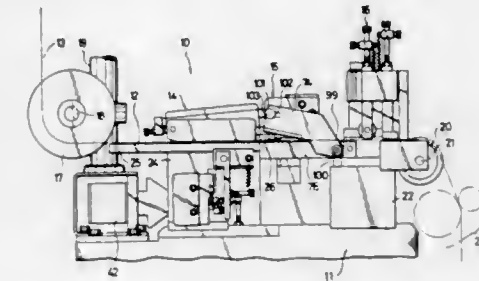
Int. Cl.⁴ A41H 37/06; B21D 53/50
U.S. Cl. 29—766

8 Claims

1. An apparatus for finishing a slide fastener chain composed of a pair of slide fastener stringers having coupling element rows and a reinforcing strip attached to the slide fastener stringers transversely across an element-free space and including a central excessive portion lying in the element-free space

adjacent to endmost coupling elements of the coupling element rows, said apparatus comprising:

- a base;
- means defining a feed path on said base along which the slide fastener chain can be fed;
- a chain guide unit on said base and including means partly defining said feed path, said chain guide unit including a sensor for detecting the reinforcing strip and a stop movable transversely into said feed path in response to detection of said reinforcing strip by said sensor, said stop including steps for engaging said endmost coupling elements, respectively, to stop said slide fastener chain;
- a cutter unit on said base and including a cutter movable transversely into said feed path for cutting off said central excessive portion from said reinforcing strip in response to engagement of said steps with said endmost coupling elements, and a pair of pressure pads disposed one on each side of said cutter of resiliently holding said slide fastener stringers in advance of the cutting of said central excessive portion by said cutter; and



- a chain tensioner unit including a first support block on said base, a second support block vertically movably mounted on said first support block, a first vertical rod vertically slidably fitted in said second support block, a pressure gripper supported on a lower end of said first vertical block and movable transversely into said feed path for resiliently holding said slide fastener chain in response to engagement of said steps with said endmost coupling elements, a second vertical rod vertically slidably fitted in said second support block, a presser roller supported on a lower end of said second vertical rod, said presser roller being disposed upstream of said pressure gripper and movable transversely into said feed path for tensioning said slide fastener chain in timed relation to said presser gripper to forcibly press said endmost coupling elements against said steps, said chain tensioner unit being positioned downstream of said cutter unit in the direction in which said slide fastener chain is fed along said feed path, whereby said reinforcing strip can be accurately positioned with respect to said cutter.

4,641,425
METHOD OF MAKING ALUMINA INTERCONNECTION SUBSTRATE FOR AN ELECTRONIC COMPONENT

Jacques Dubuisson, Paris; Pascal Le Gal, Magny Le Hongre, and René Bouterin, Montlhéry, all of France, assignors to Interconnexions Ceramiques SA, Courbevoie, France
Division of Ser. No. 679,724, Dec. 10, 1984, This application Aug. 13, 1985, Ser. No. 765,087

Claims priority, application France, Dec. 8, 1983, 83 19689
Int. Cl.⁴ H05K 3/36

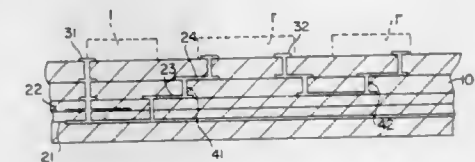
U.S. Cl. 29—830

8 Claims

1. A method of manufacturing an interconnection substrate for electronic components formed by sintering a stack of sheets of dielectric material, at least some of said sheets having conductive patterns thereon, said substrate having conductive emerging portions for connecting the terminals of said component(s) with at least one internal sheet being provided with conductive tracks for providing interconnection between layers and with said emerging portions in accordance with a

pre-established pattern, wherein the method comprises the steps of:

- preparing a raw dielectric composition comprising 92% to 98% Al_2O_3 and a melting agent based on magnesia and titania having a composition corresponding to a ratio by weight of TiO_2 to MgO in the range of 1:0.5 to 1:6;
- forming said raw dielectric composition into individual sheets of material;
- making holes through said individual sheets by means of a high speed twist drill, or by means of a punch;
- filling the holes with a first metallization ink, said ink comprising an organic vehicle, a free metal from the group



consisting of palladium and silver-palladium alloys, and Al_2O_3 in a concentration range of 2% to 5%; silk screening the individual sheets with a deposit of a second metallization ink, said ink comprising an organic vehicle, a free metal from the group including palladium and silver-palladium alloys, the composition of said second metallization ink being substantially free of Al_2O_3 ; stacking the individual sheets; agglomerating the resulting block of sheets under heat and under pressure; evacuating the organic vehicle from the inks; and sintering the agglomerated sheets together by high temperature firing under an oxidizing atmosphere.

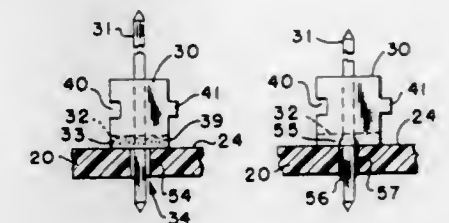
4,641,426
SURFACE MOUNT COMPATIBLE CONNECTOR SYSTEM WITH MECHANICAL INTEGRITY

John E. Hartman, Painesville, and John T. Venaleck, Madison, both of Ohio, assignors to Associated Enterprises, Inc., Painesville, Ohio

Filed Jun. 21, 1985, Ser. No. 747,343
Int. Cl.⁴ H05K 3/30; H01R 9/00

U.S. Cl. 29—839

31 Claims



- An electrical component for mechanical mounting and electrical connection with respect to plated through holes of a printed circuit board compatibly with a surface mount attaching process, comprising an electrically non-conducting body, and plural generally elongate contact means extending from said body for insertion into such plated through holes, and said component having reservoir means for retaining solder type material for melting, for flow into respective plated through holes, and for re-solidifying to mechanically and electrically couple said component to such printed circuit board, and said reservoir means comprising a reservoir in said body.
- A method for attaching an electrical component to a

printed circuit board compatibly with surface mount attaching processes, such printed circuit board having electrically conductive traces and plated through holes, such component having generally linearly extending contacts and a reservoir of solder type material, comprising

using automated equipment to position such component with respect to such printed circuit board and to insert linearly extending contacts of such component into respective plated through holes in such printed circuit board while positioning such reservoir of solder type material in proximity to such holes, applying thermal energy to melt such solder type material to flow into such respective holes, and allowing such solder type material to solidify to form a mechanical and electrical connection of respective contacts in respective plated through holes.

4,641,427
**METHOD AND APPARATUS FOR APPLYING TWO
PIECE CONNECTOR BLOCKS TO MULTICONDUCTOR
CABLE**

Charles E. Shields, 655 Woodland, Crystal Lake, Ill. 60014

Continuation of Ser. No. 351,595, Feb. 23, 1982, Pat. No.

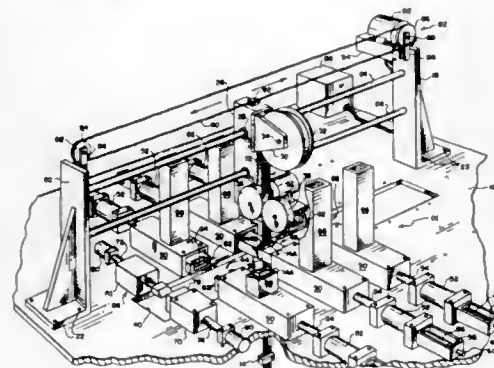
4,580,340. This application Jul. 19, 1985, Ser. No. 756,503

The portion of the term of this patent subsequent to Apr. 8, 2003,
has been disclaimed.

Int. Cl.⁴ H01R 43/04; B23P 19/00

U.S. Cl. 29—857

25 Claims



1. A method of forming cable assemblies comprising:
advancing a cable vertically downward a first selected distance;
attaching a first connector to the cable;
feeding the cable vertically downward a second selected distance;
attaching a second connector to the cable;
feeding the cable vertically downward a third selected distance; and,
attaching a third connector to the cable.

14. An apparatus for automatically forming cable assemblies, each cable assembly including a selected length of cable with at least one connector attached thereto, the apparatus comprising:

a cable supply support assembly mounted on a track member for translating movement therealong;
a cable supply means for storing and feeding cable therefrom, the cable supply means being mounted on the cable supply supporting assembly such that the cable feeds vertically downward therefrom;
a cable advancing means for advancing the cable vertically downward from the cable supply means, the cable advancing means being mounted on the cable supply support assembly vertically below the cable supply means;
a translating means for selectively translating said cable supply supporting assembly along the track member, the

translating means being operatively connected with the track member;

a plurality of connector attaching means each operatively connected with the track member for attaching a selected type of connector to the cable, the connector attaching means being stationarily mounted in a generally horizontal array and vertically below the cable supply means and the cable advancing means such that translating the cable supply supporting assembly along the track member selectively positions the cable adjacent each of the connector attaching means; and,

control means for selectively causing the translating means to translate the cable supply supporting assembly to preselected positions along the track member such that the cable is selectively disposed adjacent a selected one of the connector attaching means, for controlling the advancing means for selectively controlling advancement of the cable, and for controlling the connector attaching means for selectively causing attachment of selected types of connectors at selected locations along the cable.

4,641,428
**AUTOMATIC METHOD OF MAKING TERMINATED
COAXIAL LEADS**

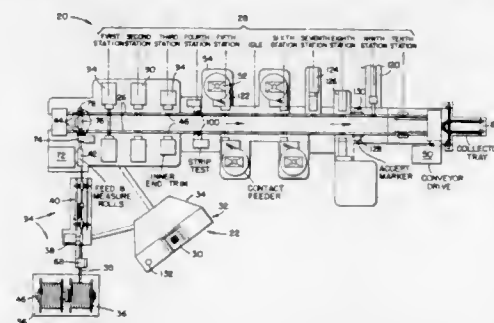
James D. Anderson, Norwalk, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Oct. 4, 1985, Ser. No. 784,395

Int. Cl.⁴ H01R 43/04

U.S. Cl. 29—863

20 Claims



1. An automatic process for producing terminated coaxial cable jumpers in a predetermined quantity to predetermined lengths and with predetermined end styles comprising the steps of:

feeding coaxial cable having inner and outer conductors and inner and outer insulation from a reel in the direction of a free end so that it forms a U-shaped loop extending away from the free end;
measuring the length of the cable extending from the reel;
gripping the cable at a first location proximate to but spaced from the free end;
when a predetermined length of the cable has been reached, gripping the cable at a second location distant from the free end;
severing the cable from the spool at a location spaced from the second location in a direction away from the free end to thereby form a jumper of predetermined length;
stripping at least one end of the jumper to expose predetermined lengths of the inner conductor and the outer conductor thereof;
testing the stripped jumper to determine whether it meets preestablished standards; and
rejecting a jumper which fails to meet the preestablished standards.

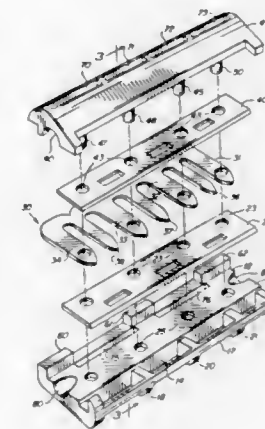
4,641,429
**RAZOR BLADE CARTRIDGE UNIT WITH DUAL
BLADES**
Michael R. Abatemarco, P.O. Box 17252, Fountain Hills, Ariz. 85268

Filed Dec. 24, 1984, Ser. No. 685,490

Int. Cl.⁴ B26B 19/14

U.S. Cl. 30—41

9 Claims



1. A disposable razor blade cartridge unit including in combination:

a base member having a front wall and a rear wall, with a guard portion spaced outwardly from the front wall to define a slot and having a blade support surface thereon;
a first planar blade located on the support surface of said base member and having a cutting edge located above the slot and extending parallel to said guard portion;
a second planar blade having a cutting edge spaced upwardly and rearwardly of the cutting edge of said first blade;

an elongated spacer between said first and second blades and having a plurality of forwardly extending fingers connected to a spine member to define a plurality of forwardly open channels therebetween, said spine member being spaced rearwardly of at least one of said blades;

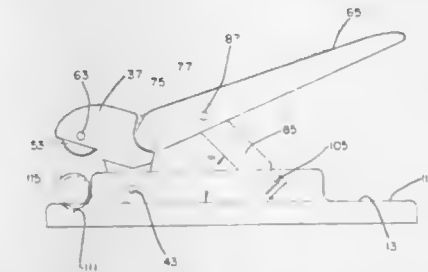
a cap member located on said second blade and interconnected with said base member for clamping together said first blade, said spacer, and said second blade between said cap member and said base member in a permanent non-moveable fixed relationship in the cartridge unit, said cap member and said base member having a plurality of aligned slots therethrough spaced rearwardly of the rear edge of said one of said blades and aligned with the channels between said fingers of said spacer at the ends of the channels where said fingers connect to said spine member to permit fluid flow therethrough in directions upwardly through the slots in said cap member and downward through the slots in said base member; and

at least two spaced-apart support pillars on said base member adjacent the rear wall thereof between said base member and said cap member to form at least one exit port between said base member and said cap member in communication with the channels between said fingers of said spacer, whereby shaving residue accumulating between said first and second blades may be passed through the channels between said fingers and out of the unit through the slots in said cap member and the exit port, while said blades and said spacer are in an operative assembled relationship.

4,641,430
NUT SPLITTER
Marlin D. Hahn, San Angelo, Tex., assignor to Texan Nut Sheller Pecan Company, San Angelo, Tex.
Filed Dec. 13, 1985, Ser. No. 808,646
Int. Cl.⁴ A47J 43/26

U.S. Cl. 30—120.5

5 Claims



1. A nut splitter, comprising:

a base for supporting the splitter upon a planar surface;
a jaw having a cutting wheel rotatably mounted thereon, the jaw being pivotally mounted on the base and being movable between an open position allowing placement of a nut on the base and a closed position in which the cutting wheel contacts the nut;

a lever arm having a pivot end which is pivotally attached to the jaw and an opposite length terminating in a free end which forms a handle for applying force to the jaw to move the jaw between the open and closed positions;

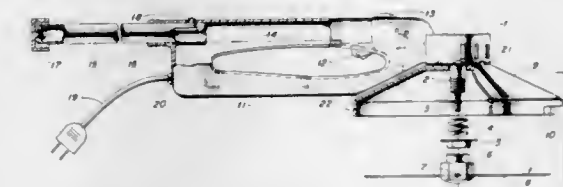
an elongate bar pivotally attached at one end to a point intermediate the pivot end and free end of the lever arm and having an opposite end which abuts a stop on the base, whereby the bar serves as a fulcrum point for the lever arm in applying force to the jaw; and

wherein the jaw has a cam region defined by an external sloping surface and wherein the lever arm has a mating cam surface comprising an external sloping surface on the pivot end thereof arranged to make rolling contact with the cam region of the jaw so that movement of the lever arm about the fulcrum point serves to move the cutting wheel into contact with the nut.

4,641,431
HEDGE TRIMMER
Anthony D. Leming, 414 W. Muskogee, Sulphur, Okla. 73086,
and Luther C. Dawson, Rte. 1, Box 215H, Davis, Okla. 73030
Filed Nov. 18, 1985, Ser. No. 798,838
Int. Cl.⁴ B26B 27/00

U.S. Cl. 30—276

13 Claims



1. A hedge trimmer comprising in combination

(a) a circular cutter guard having a lip projecting from the lower edge of said guard and extending around a major segment of the periphery of said guard with an opening extending along a minor segment of said periphery,
(b) a rotatable shaft extending through the center of said guard and opposite said lip,
(c) means for rotating said shaft at high revolutions per minute attached to said shaft above said guard, and further comprising

- (d) means for providing selective positioning of said guard and said opening in said lip about said shaft as desired prior to use,
 (e) a wire whip attached to said rotatable shaft within said lip and extending radially from said shaft toward said lip, and
 (f) a handle and control means mounted above said guard on said rotating means, whereby the wire whip can be caused to rotate rapidly and cut hedge effectively.

3. A hedge trimmer comprising

- (a) an electric motor in a housing for rapidly rotating
 (b) a wire whip cutting element attached to
 (c) a drive shaft on said motor,
 (d) an attachment means mounted on the motor housing concentric with the drive shaft for holding
 (e) a dish-shaped whip and chip guard to protect the operator, said guard adapted on its lower edge with a lip and an opening
 (f) or slot therein to expose the whip to the hedge,
 (g) a whip holder means, comprising a metal plug with drill holes and set screws, for attaching and holding the wire whip on the shaft of the motor at the lip of the guard,
 (h) a hollow double-element handle attached to the side of the motor housing to provide hand grips and accommodations for
 (i) switch means for controlling the motor,
 (j) an opening and space at the back end of the top member of the handle for attaching and/or storing
 (k) an extension handle for reaching high bushes,
 (l) means for retaining a short extension handle in the storage space,
 (m) other means for attaching and holding extension handles in the extended position, and
 (n) means for admitting and retaining a power lead at the back end of the bottom member of the hollow handle.

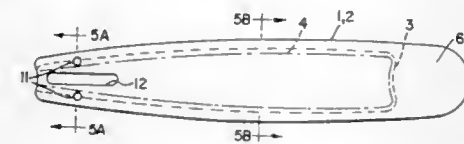
4,641,432

CHAIN SAW GUIDE BAR AND METHOD OF CONSTRUCTION

Takeshi Kume, Amagasaki, Japan, assignor to Suehiro Seiko Kabushiki Kaisha, Miki City, Japan
 Continuation of Ser. No. 467,156, Feb. 16, 1983, abandoned.
 This application Mar. 26, 1985, Ser. No. 716,329
 Int. Cl.⁴ B23D 57/02

U.S. Cl. 30—383

4 Claims

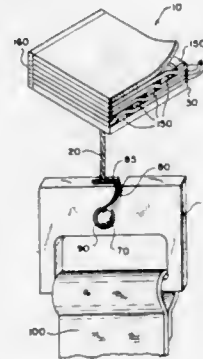


1. A guide bar for a chain saw, comprising two similar side plates and a center plate, said center plate and said side plates having peripheral edges and said side plates overlapping said edge of said center plate, portions of said center plate being flat against portions of said side plates, said center plate peripheral edge being spaced from the peripheral edges of the side plates over a substantial portion of the circumference of said center plate, said spacing forming a chain saw guide groove between the edges of the side plates and said center plate having a thickness that is substantially equal to the width of said guide groove, and a laser weld seam through said overlapping portions of said side and center plates closely adjacent said chain saw guide groove and the peripheral edge of said center plate, said seam forming a substantially continuous narrow weld seam substantially laterally through said side and center plates, said bar having a rearward mounting portion and a forward portion, and in said forward portion said center plate having an opening formed centrally thereof, said opening forming a band, and said laser weld seam extending through said band.

4,641,433
FASTENING SYSTEM
 Peter Sing, 168-10 84th Ave., Jamaica Hill, N.Y. 11432
 Filed Dec. 24, 1985, Ser. No. 813,063
 Int. Cl.⁴ G01B 3/10

U.S. Cl. 33—137 R

15 Claims

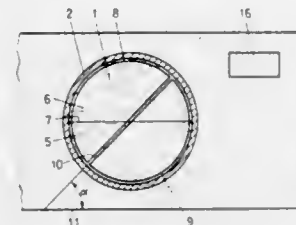


1. A fastening device for temporarily securing an end of an elongate member at a fixed position, comprising:
 (a) a tape pad comprising:
 (i) a support member;
 (ii) a plurality of leaves, at least a portion of one side of each leaf being covered with an adhesive material to give each leaf an adhesive quality, the leaves stacked together to leave a first leaf exposed and affixed to the support member, so that the first leaf can be temporarily secured to a surface, and, if the adhesive quality of the first leaf deteriorates, the first leaf can be removed to expose a second leaf;
 (b) a connecting member having a first free end, and a second end fastened to the support member; and
 (c) means for affixing the first free end of the connecting member to a free end of the elongate member.

4,641,434
INCLINATION MEASURING DEVICE
 Max Engler, Solothurnerstrasse 187, 4600 Olten, Switzerland
 Continuation-in-part of Ser. No. 574,589, Jan. 27, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,370
 Claims priority, application Switzerland, Jan. 28, 1983, 502/83
 Int. Cl.⁴ G01C 9/06, 9/20

U.S. Cl. 33—366

4 Claims



1. An inclination measuring instrument comprising a cylindrical chamber with two planar, parallel, radial end walls, a first of the end walls being plated with at least two condenser plates, the two plates defining a gap between them and being plated with a solid dielectric layer, and the chamber containing equal amounts, by volume, of two non-intermixing, non-inter-soluble liquids of different specific gravity and different electrolytic properties.

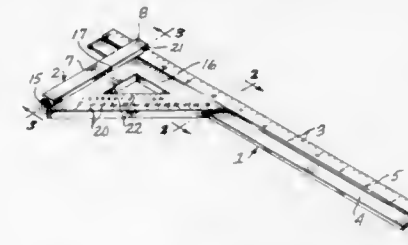
4,641,435
COMBINATION SQUARE
 Victor K. Brown, 1518 79th Ave. SE, Everett, Wash. 98205
 Filed Oct. 31, 1985, Ser. No. 793,524
 Int. Cl.⁴ B43L 7/00

U.S. Cl. 33—427

6 Claims

1. In a combination square for marking a line on the face of

a board having a linear edge, such square including an elongated rule having a straight longitudinal edge and a planar longitudinal marginal portion adjacent to such edge, a stock thicker than the rule and having a straight edge, and means for locking the stock at any location along the length of the rule with the stock extending perpendicular to the rule, the improvement comprising the stock including a pivot point engageable against the board edge for rotation of the stock and rule relative to the board edge about said pivot point with said



planar longitudinal marginal portion of the rule contiguously engaged against the board face, the stock further including a protractor portion having a flat face coplanar with the planar longitudinal marginal portion of the rule for contiguously engaging and steadying the stock as it is rotated and a scale of angle calibration markings indicating the angle of the rule relative to the board edge when said pivot point is engaged against the board edge with the rule longitudinal marginal portion contiguously engaged against the face of the board.

4,641,436
RULER

Ching B. Tzen, and Tzu P. Liang, both of No. 259, Chung Ming South Road, Taichung City, Taiwan
 Filed Jun. 27, 1986, Ser. No. 879,626
 Int. Cl.⁴ G01B 3/02

U.S. Cl. 33—483

2 Claims



1. An improved ruler comprising a multiplicity of identical vertical scales, a horizontal scale, two vertical slots which are positioned near the ends of said ruler, a horizontal slot which is positioned at the bottom end of said ruler adjacent to said horizontal scale, two horizontal alignment arrows having tips extending to the left and right edges of said ruler and which are collinear with said horizontal slots and two vertical alignment arrows having tips which extend to the top edge of said ruler and which are collinear to said vertical slot, said slots intersecting so as to form a square U-shaped slot.

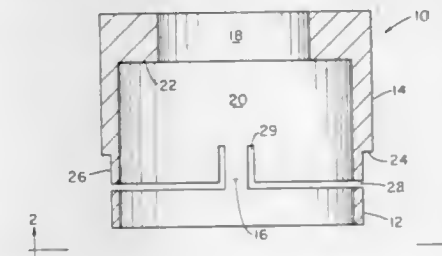
4,641,437
GAUGE FOR COMPARING CIRCUMFERENCES
 W. Coy Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.
 Filed Nov. 1, 1984, Ser. No. 667,131
 Int. Cl.⁴ G01B 3/34; B07C 5/00

U.S. Cl. 33—522

14 Claims

1. A gauge for comparing a circumferential length around an object with a specified circumferential length, the gauge comprising:
 an endless substantially circular band having sufficient flexibility to be deformed out-of-round, and said band also having a specified inner circumferential length to be compared with a circumference around the object; and
 means for supporting said band coaxially with the circumfer-

ence of the object to be compared and which allows said band to flex and deform in circumscribing and uniformly contacting the circumference around the object to be

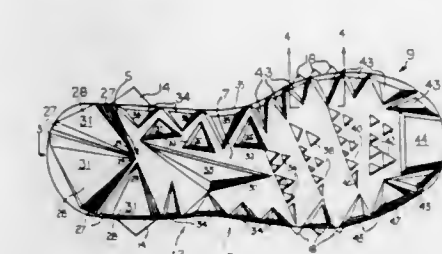
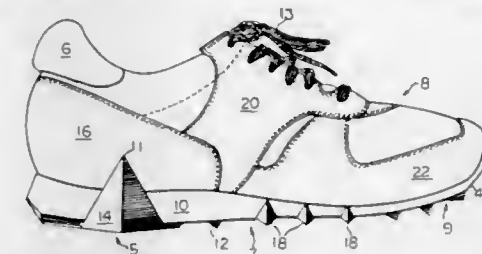


compared when the object and said band have axial movement relative to one another to accomplish such circumscribing and thereby establish whether the object circumference is within a specified length tolerance.

4,641,438
ATHLETIC SHOE FOR RUNNER AND JOGGERS
 Bruce A. Laird, and Richard A. Laird, both of Box 169, R.D. #1, Northampton, Pa. 18067
 Filed Nov. 15, 1984, Ser. No. 671,699
 Int. Cl.⁴ A43B 13/04, 13/00

U.S. Cl. 36—59 C

13 Claims



1. In an athletic shoe intended for runners having a body weight exceeding one hundred forty pounds having a shoe upper covering, an interior sole, a shoe upper, a heel counter and a toe end including a toe box, an elastomeric outer sole including a heel area, a midstance and a toe-off area and an outer sole outside edge and inside edge, the improvement comprising an outer sole formed of resilient material having thereon a plurality of triangular faced, slope sided, prism shaped, canted studs distributed circumferentially around and laterally and longitudinally thereon, said outer sole bottom in a predetermined configuration including three circumferential studs in the heel area and wherein said three heel studs are oriented and canted so that the apexes of each of their triangular faces converge proximate said heel areas' forward center and wherein said three heel studs are sized to substantially cover said heel area to maximize the displacement of impact force when a runner's heel touches the ground, said predetermined configuration also including three sets of studs in said midstance area, said first midstance area set comprising a single elongated, longitudinally disposed stud oriented to receive the

impact of the runner's foot when it touches ground in the pronation phase of impact, and wherein said longitudinal studs triangular face is canted toward the shoe's inside edge, said second midstance area set comprising three arch studs longitudinally disposed with respect to each other throughout said sole's arch area and interspersed between opposed facing, circumferential studs and said elongated studs, said arch studs being canted toward said adjacent circumferential opposed studs and said circumferential studs being canted toward adjacent arch studs, said third set of midstance studs comprising an alpha, beta and gamma row of lateral metatarsal studs, said rows being generally parallel to each other with said metatarsal stud's triangular faces being canted toward said sole outside edge.

4,641,439

ROCK DIGGING APPARATUS

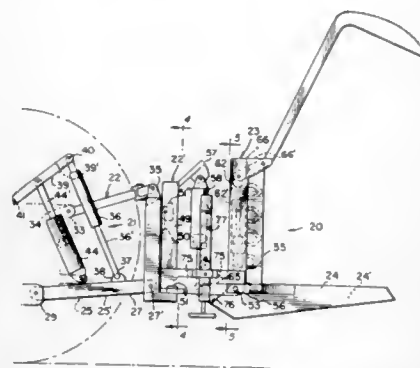
Frank A. Shirek, Rte. #1, Box 65, Adams, N. Dak. 58210

Filed Feb. 25, 1985, Ser. No. 704,705

Int. Cl.⁴ A01B 43/00

U.S. Cl. 37-2 R

2 Claims



1. A load moving apparatus comprising a first frame, a second frame, a support frame having lugs at three points, said support frame being adapted to be pivotally mounted to a three point connection of a tractor having fluid actuated means to raise and lower the three point connection with respect to the tractor, said first frame having lug receiving means to detachably receive the lugs of the support frame, whereby actuation of the means to raise and lower the three point connection may detachably engage the support frame with the first frame to support the first frame thereon to raise and lower said first frame with respect to said tractor, said second frame being pivotally mounted to said first frame whereby raising and lowering of said first frame will raise and lower the second frame, a fluid actuated piston and cylinder means connected between said first and second frame which upon actuation acts to selectively pivot said second frame with respect to said first frame about said pivotal mounting, a plurality of load lifting spikes mounted to said second frame and projecting rearward therefrom, a pivotally mounted grapple on said second frame, a fluid actuated piston and cylinder means connected between said second frame and said grapple which upon actuation acts to selectively pivot said grapple on its pivotal mounting for encircling over a load once located on said spikes.

4,641,440

MAP HOLDER

Vladimir Agranov, 6036 Richmond Hwy. #204, Alexandria, Va. 22303

Filed Apr. 30, 1985, Ser. No. 729,064

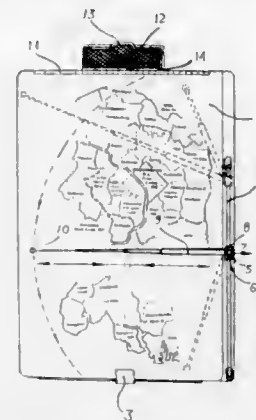
Int. Cl.⁴ G09F 3/18

U.S. Cl. 40-10 A

4 Claims

1. A map holder, comprising a bottom plate arranged to support a map and having two first sides spaced from one another and two second sides spaced from one another and extending transversely to

said first sides, said bottom plate having also a predetermined plane; an elongated pointing element having a pointing end and a connecting end spaced from one another in a direction of elongation of said pointing element, said pointing element being pivotable substantially in said plane of said bottom plate and about said connecting end so that during said pivoting of said pointing element said pointing end moves over a circumference with a center at said connecting end, said pointing element being also telescopically extendable and retractable in the direction of elongation of said point-



ing element from and toward said connecting end and radially of said circumference so that during said telescopic extension and retraction of said pointing element said pointing end moves over a radius of said circumference, whereby by said pivoting of said pivoting element about a center located at said connecting end and by said telescopic extension and retraction of said pivoting element from and toward said connecting end said pointing end of said pointing element can reach and point to any point on a map supported by said bottom plate; and means for connecting said connecting end of said pointing element pivotally with said bottom plate.

4,641,441

FRAME RETAINING CLIP

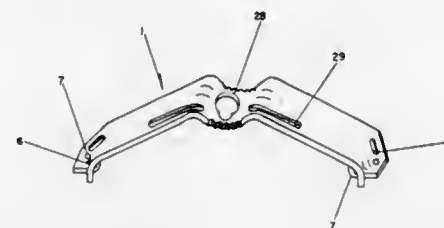
Robert B. Roth, 519 E. 86th St., New York, N.Y. 10025

Filed Feb. 21, 1984, Ser. No. 582,561

Int. Cl.⁴ A47G 1/06; G09F 1/12

U.S. Cl. 40-156

6 Claims



1. An improved picture frame retaining clip comprising a resilient strip with a flat central portion and said flat central portion having a bent end on each side of the central portion, each bent end is bent away from the central portion in the same direction and to the same degree of bending and in addition each bent end is offset from the central portion with said offset in the opposite direction of the bend of each end.

4,641,442

DISPLAY UNITS

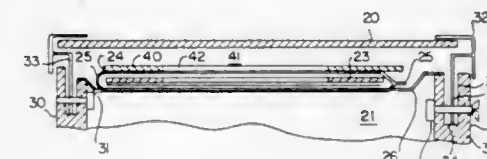
Alan M. Filmer, Auckland, New Zealand, assignor to Development Finance Corporation of New Zealand, Limited, Auckland, New Zealand

Filed Jun. 12, 1985, Ser. No. 743,919

Int. Cl.⁴ G09F 13/12

U.S. Cl. 40-219

5 Claims



1. A display unit comprising a light box containing a series of light units, one surface of said light box comprising a sheet of material which in use will transmit light from the interior of the light box outwardly, but which gives a darkened glass effect when light is directed towards the sheet of material from exterior of the light box, indicia bearing means including translucent and masked areas mounted within the light box, the construction and arrangement being such that on the light source within said light box being illuminated, said indicia will be displayed through said sheet of material and when said light box is not illuminated, said sheet of material will give a darkened glass effect wherein said masked areas have a reflective surface and said sheet material has a reflective surface both said reflective surfaces defining walls of a space between them, giving a multi image view of indicia when illuminated.

4,641,443

IDENTIFICATION CARRIER FOR ELECTRIC LINES

Manfred Wilmes, Detmold, Fed. Rep. of Germany, assignor to C. A. Weldmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,464

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343064

Int. Cl.⁴ G09F 3/00

U.S. Cl. 40-316

9 Claims



1. In an identification carrier intended for an electrical line having a two-winged sleeve-like body that surrounds the line and has a projection on one face and an accommodation for the projection on an opposite face, the improvement wherein the body of the carrier has a clip closure and has clamping elements displaceable by a line when a clip closure is closed around the line and wherein the projection and its accommodation comprise a snap-in connection, whereby the identification carrier can be used for lines having differing diameters.

4,641,444

LINE VIEWER

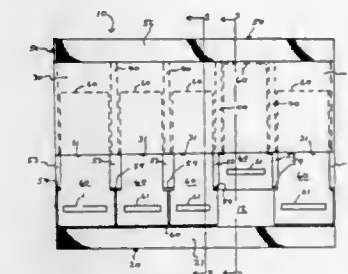
Robert G. Signor, 525 Herr's Ridge Rd., Gettysburg, Pa. 17325

Filed Apr. 26, 1985, Ser. No. 727,522

Int. Cl.⁴ B41J 11/64

U.S. Cl. 40-352

15 Claims



1. A limited line viewer assembly comprising: a plurality of slide assemblies (60) arranged in a ruler structure, said slide assemblies (60) being slideable in passages formed by upper walls (30), lateral walls (40) and bottom walls (50), said limited line viewer assembly further comprising a front wall (20), means for sliding said slide assemblies (60) into adjacent relation to said front wall (20) to provide means for closing an aperture (12) formed between said front wall (20) and said bottom walls (50), means for sliding said slide assemblies (60) away from said front wall (20) to provide means for opening an aperture (12) formed between said front wall (20) and said bottom wall (50), means whereby data may be viewed through said aperture (12) such that said data is viewed within the confines of the limited line viewer assembly, means whereby some of the plural slide assemblies (60) may be open and some may be closed so that only desired data is viewed within the confines of the limited line viewer assembly, wherein said slide assemblies (60) have securing tabs (62) mounted on a lower surface thereof and means whereby said tabs (62) abut a leading edge (54) of said bottom wall (50) in the closed position of the slide assembly and means whereby said securing tabs (62) rest in a securing notch (55) formed in the upper surface of said bottom wall (50) in the open position of the slide assembly, wherein said slide assemblies (60) rest entirely on said bottom wall means (50) in an open position of the device and wherein said slide assemblies (60) extend over an edge (54) of said bottom wall means (50) in a closed position of the device.

4,641,445

NOVELTY DISPLAY DEVICE

Frank R. Rossi, 8830 Trinity, Detroit, Mich. 48228

Filed Aug. 22, 1985, Ser. No. 768,067

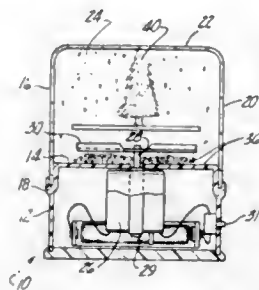
Int. Cl.⁴ G09F 19/00

U.S. Cl. 40-410

6 Claims

1. A display device comprising: a base having a top, a container positioned on said base top, said container being constructed of a transparent material and forming a substantially closed and air containing chamber, a fan blade contained within said chamber adjacent the bottom of said chamber, means for rotatably driving said fan blade, and light weight particulate matter contained within said chamber so that, upon rotation of said fan blade, said fan blade

circulates said particulate matter through said air within said chamber thereby simulating a snowfall, a display figure secured to said rotatable driving means, wherein said display figure has two sides and comprising letter indicia on both sides of said display figure, said letter indicia being such that the letter indicia on both sides of



said display figure together form at least one recognizable word while the letter indicia on a single side of said display figure does not form a recognizable word wherein said rotatable driving means alternately displays said sides of said display figure at a sufficiently high speed to form a recognizable word.

4,641,446

APPARATUS AND METHOD FOR PRODUCING A MULTISIDED, MULTICOLORED DISPLAY

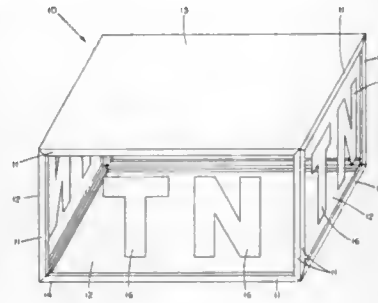
Thomas L. Jackson, 2222 Cass St., Fort Wayne, Ind. 46808

Filed Mar. 11, 1985, Ser. No. 710,329

Int. Cl.⁴ G09F 13/00

U.S. Cl. 40-444

7 Claims



1. An apparatus for producing a multisided display, comprising: a plurality of modules, said modules being positioned in a matrix structure; each said module being an enclosure having at least one exposed light scattering sides; means for illuminating said sides, including a plurality of common sources of different colored light; a plurality of symbols; means for positioning said symbols between said illuminating means and said light scattering sides; said modules being positioned in a matrix structure.

4,641,447

CONCEALED INVENTORY CONTROL DEVICE

Edward R. Tausevich, 67 Bramblewood La., Braintree, Mass. 02184

Filed Feb. 27, 1985, Ser. No. 706,177

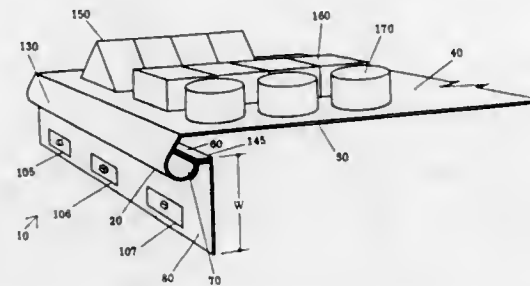
Int. Cl.⁴ G09F 19/00

U.S. Cl. 40-530

10 Claims

1. A concealed inventory control device for readily identifying and accounting for objects arranged in sequential front to back and side to side alignment comprising: means for readily identifying said objects arranged in front

to back and side to side alignment on a means for supporting the objects; means for concealing the means for readily identifying, comprising a lip means extending downwardly from the forward edge of the means for supporting; means for moving the means for readily identifying between a first viewable position and a second non-viewable position, the means for moving comprising a hinge and a means for attaching the hinge to the means for readily identifying and the means for supporting or the means for



concealing, the hinge being selected from the group consisting of flexibly resilient material and pin and aperture means; and, means for holding the means for readily identifying in the second non-viewable position; wherein the means for readily identifying comprises a lip means extending downwardly from the forward edge of the means for supporting and wherein the hinge is attached to the means for concealing in substantially parallel arrangement to the forward edge of the means for supporting.

4,641,448

POST CAP APPARATUS

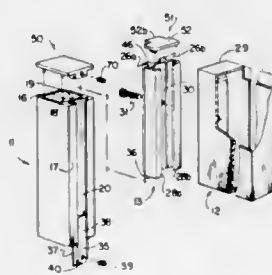
Ronald W. Cobb, Covington; Charles A. Lollis, Mableton, both of Ga., and Nancy S. Crane, Warrior, Ala., assignors to Apco Graphics, Inc., Atlanta, Ga.

Filed Jan. 18, 1985, Ser. No. 693,006

Int. Cl.⁴ G09F 15/00

U.S. Cl. 40-606

8 Claims



6. In a sign including a hollow post having an open free end, an elongated channel on a side of the post and having an open end adjacent the open end of the post, and an elongated open slot extending between the elongated channel and the exterior of the post, the improvement comprising: a sign support member received in said channel at a predetermined location spaced longitudinally inwardly from the open end of the channel so as to leave a terminal longitudinal portion of the channel unoccupied, said support member having means extending through said slot for operative association with a message display; said sign support member having an open end facing the same direction as said open ends of the post and the channel, but displaced longitudinally inwardly therefrom;

a support member cap fitting into and closing said open end of the sign support member, so as to render the open end of the sign support member substantially invisible; a post cap fitting on and closing said open end of the post, said post cap having an edge located adjacent said open end of the elongated channel; said post cap having a flange extending longitudinally from said edge into the open end of the channel to contact and retain said support member cap in said open end; and means operatively associated with said post cap for selective engagement with said post so as to secure the post cap to the post, whereby the secured post cap retains said support member cap in place and thereby prevents removal of said sign support member from the post.

4,641,449

ANTI-LOCK UP MECHANISM FOR REVOLVERS

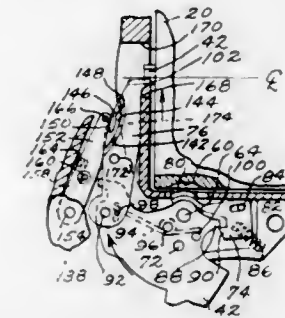
Mitchell A. Kaplan, Annapolis, Md.; Kiyoshi Norikane, Park Forest, Ill., and Jack W. London, Austin, Tex., assignors to Trident Engineering, Inc., Annapolis, Md.

Filed Nov. 19, 1984, Ser. No. 672,924

Int. Cl.⁴ F41C 1/00, 17/08

U.S. Cl. 42-65

6 Claims



1. In a hand gun including a frame having a hand grip, a barrel extending outwardly from said frame and having an axis, a cylinder mounted on said frame for indexed step-by-step rotational movement about an axis parallel to the axis of said barrel, said cylinder having a series of cartridge chambers disposed in annularly spaced relation about the axis of said cylinder in positions to be successively axially aligned with said barrel in successive indexed step-by-step rotational movements thereof, a hammer pivotally mounted on said frame for movement between a cocked position and a firing position toward which it is spring urged, a cylinder stop mounted on said frame for movement between a cylinder locking position toward which said cylinder stop is spring urged and a cylinder releasing position, said cylinder having a plurality of indexing ratchet teeth thereon, a hand having an end spring urged to engage successive ratchet teeth, a trigger pivotally mounted on said frame for manual movement from a forward position into a rearward position through a firing stroke including a relatively large cocking segment and a relatively small firing segment and for spring urged movement from said rearward position into said forward position through a return stroke including a first segment corresponding to said firing segment and a second segment corresponding to said cocking segment, said trigger having (1) an engageable and disengageable connection with said cylinder stop, (2) a pivotal connection with said hand and (3) an engageable and releasable connection with said hammer such that when (A) said trigger is moved through the cocking segment of its firing stroke (1) said cylinder stop is engagingly moved into its cylinder releasing position and then disengaged for spring urged movement into its cylinder locking position in response to the completion of the next indexed movement of said cylinder (2) said hand is moved to engage the end thereof with a ratchet tooth after said cylinder stop has been moved into the cylinder releasing position so as to effect movement of said cylinder through its next indexed movement

and (3) said hammer is moved into its cocked position and (B) when said trigger is subsequently moved through the firing segment of its firing stroke said hammer is released for spring urged movement from its cocked position into its firing position to discharge a cartridge in the cartridge chamber aligned with said barrel, said hammer having a thumb engaging spur by which said hammer can be (A) manually moved into its cocked position so as to cause the trigger to move therewith through the cocking segment of its firing stroke and (B) manually moved back into a battery position adjacent its firing position so as to allow said trigger to be spring urged for movement through the second segment of the return stroke which if manually controlled until after the hammer has been returned under manual control to its battery position results in a manually controlled movement of the trigger through the second segment of its return stroke so as to cause the following three functions to occur (1) movement of said hand into a position to engage the end thereof with the next ratchet tooth, (2) engagement of said trigger with said cylinder stop while the latter is in its locked position and (3) engagement of said trigger with said hammer, the improvement which comprises means for insuring that during a manually controlled movement of the trigger through the second segment of the return stroke following a manual hammer movement back into its battery position function (1) will occur after function (2) so that said trigger can be manually moved into its rearward position from any position within the manually controlled second segment of the return stroke of said trigger thus preventing the trigger from being locked against such movement as would be the case when function (1) occurs before function (2) and the manual movement of the trigger toward its rearward position is commenced after function (1) has been accomplished and before function (2) has been accomplished.

4,641,450

TUBE HAVING STRAIN-HARDENED INSIDE COATING

Eberhard Moll, Schellenberg, Liechtenstein; Marcel Lardon, Malenfeld, and Edgar Müller, Salez, both of Switzerland, assignors to Balzers Aktiengesellschaft, Fed. Rep. of Germany

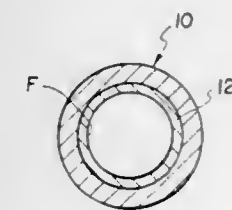
Filed Apr. 18, 1985, Ser. No. 724,990

Claims priority, application Switzerland, Apr. 19, 1984, 1969/84

Int. Cl.⁴ F41C 21/02, 21/04; F41F 17/08

U.S. Cl. 42-76.02

5 Claims



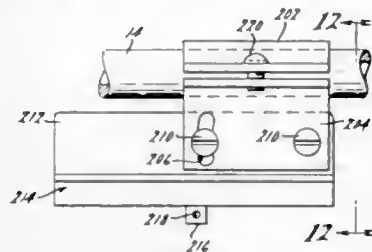
4. A method of manufacturing a tube having an interior layer with an inner surface comprising: providing a tube member having an inner tubular surface; applying an interior layer on the inner tubular surface, the interior layer being made of material which is harder than that of said tube member; and strain hardening the tube by reducing the area of the inner surface of the interior layer by a factor of at least $\Delta F/F = 1 \times 10^{-3}$ where ΔF is the amount of reduction of the area of the inside surface of the interior layer and F is the total area of the inner surface of the interior layer.

4,641,451

BIPOD MOUNTING DEVICE AND MUZZLE BRAKE
 Gerald Harris, Rte. 1, P.O. Box 33, Barlow, Ky. 42024
 Division of Ser. No. 367,544, Apr. 12, 1982, Pat. No. 4,470,216.
 This application Sep. 11, 1984, Ser. No. 649,525
 Int. Cl.⁴ F41C 29/00

U.S. Cl. 42—85

4 Claims



1. An apparatus for attaching a bipod to a firearm, said apparatus comprising:

a base having a mounting plate, a mounting bracket on the bottom edge of said mounting plate extending generally transversely thereto, and a mounting lug extending downwardly from said mounting bracket, said mounting bracket and mounting plate being generally inverted T-shaped in cross section with said mounting bracket having upturned lateral edge portions;

mounting means for attaching said base to a firearm, said mounting means having a mounting flange longitudinally angularly adjustably attached to said mounting plate, said mounting plate and said mounting flange being in parallel engaging relationship and selectively adjustably attached to each other by means of a pair of fasteners, one of said pair of fasteners extending through an arcuate aperture in one of said mounting plate and said mounting flange, said arcuate aperture being positioned to allow longitudinally angular adjustment of said mounting plate with respect to said mounting flange, said mounting flange extending from a split sleeve portion of said means for attaching said base to a firearm, said split sleeve portion having a longitudinal inner bore for clampingly receiving a barrel of a firearm and said split sleeve portion exerting clamping force in a direction substantially parallel to the plane of said mounting flange.

4,641,452

APPARATUS FOR HOOKING AND POSSIBLY BAITING OF A FISHING LINE

Kolbjørn Bjørshol, N-6560 Langoyneet, Norway
 PCT No. PCT/NO85/00044, § 371 Date Mar. 19, 1986, § 102(e)
 Date Mar. 19, 1986, PCT Pub. No. WO86/00783, PCT Pub.
 Date Feb. 13, 1986

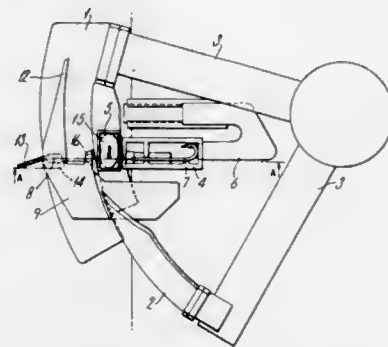
PCT Filed Jul. 26, 1985, Ser. No. 851,138
 Claims priority, application Norway, Jul. 30, 1984, 843059
 Int. Cl.⁴ A01K 83/00, 91/04

U.S. Cl. 43—4

11 Claims

1. An apparatus for hooking and possibly baiting of a fishing line provided with snoods, each snood having a head adapted to be releasably connected to the neck of a fishing hook, comprising a hook magazine for placing hooks in a stack, a pusher for moving the hooks into engagement with respective snood heads, a stationary retainer element (9) and a cooperating movable retainer element (1) for retaining snood heads (8) and

for connecting them to hook necks, and a drive mechanism for moving the movable retainer element in order to release the



snood heads after the pusher (6) has moved the hook necks into engagement with the respective snood heads.

4,641,453

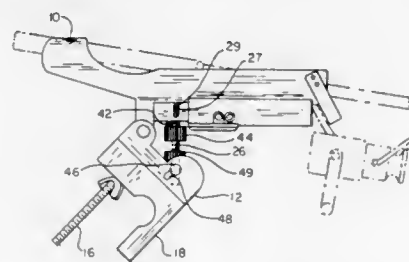
FISHING ROD HOLDER HAVING INTEGRAL ALARM AND MOUNTING STRUCTURE

Joseph M. Roberts, Sr., P.O. Box 2383, Alameda, Calif. 94501
 Filed Sep. 18, 1985, Ser. No. 777,095

Int. Cl.⁴ A01K 77/12

U.S. Cl. 43—17

6 Claims



1. A fishing rod holder comprising a holster portion for receiving and holding a rod, alarm means integral with said holster portion and including a switch which is actuated by pivoting of said holster portion on a mount means in response to the pull of a fish, mount means including a mount member pivotally attached to said holster portion, a first bolt extending from said mount member, and bracket means engaging said first bolt, a second bolt, said second bolt extending into said alarm means and engaging said switch upon pivoting of said holster portion and, spring means positioned about said second bolt and engaging said alarm means for yieldably separating said second bolt and said switch and thereby adjusting force required to actuate said alarm means.

4,641,454

PROTECTIVE SOCK FOR ROD AND REEL

Douglas M. Ray, 7416 NE. 69th St., Vancouver, Wash. 98662,
 and Richard H. Weibl, 6209 NE. 70th St., Vancouver, Wash.
 98661

Filed Aug. 9, 1985, Ser. No. 764,086

Int. Cl.⁴ A01K 97/08

U.S. Cl. 43—26

5 Claims

1. A protective sock for enclosing a bundle comprising a fishing reel mounted to the handle end of a fishing rod, and a plurality of rod segments, said sock comprising a substantially cylindrical sleeve having ends at least equal in diameter constructed of an outer layer of waterproof material and an inner layer of nonabrasive material, and including a pair of constrict-

ing tape means disposed at opposite ends of said cylindrical sleeve, each one of said constricting tape means having cooper-



atively mating closure means for closing each end snugly about said bundle, thereby enclosing the fishing reel within the sleeve.

4,641,455

SONIC FISHING BAIT

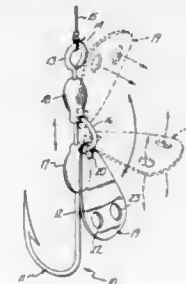
Carl T. Johnson, 5716 Abbott Ave. South, Minneapolis, Minn.
 55410

Filed Sep. 19, 1985, Ser. No. 777,920

Int. Cl.⁴ A01K 85/01

U.S. Cl. 43—42.13

7 Claims



1. A fishing bait comprising a hook portion and a shank portion, said shank portion having upper and lower protuberances and an arcuate part projecting out from the longitudinal axis of the shank portion between the protuberances, said protuberances and arcuate part being fixedly secured to, or integral with, said shank portion, a vane pivotally secured at one end thereof to said arcuate part between the protuberances and free to pivotally move from engagement with one protuberance into engagement with the other protuberance so that when said bait is used for jigging by moving it up and down the vane alternately engages the protuberances to produce sound waves, said vane having at least one aperture therethrough in the portion of the vane extending beyond the protuberances to allow water to pass through the vane to increase the ease with which the vane can move back and forth between the protuberances and hence to affect the frequency of the sound waves.

4,641,456

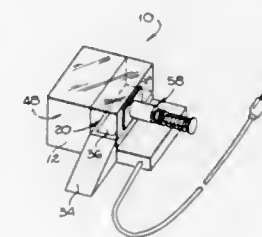
MOUSE TRAP

Robert Boharski, 7914 W. 92nd St., Hickory Hills, Ill. 60457
 Filed Jan. 14, 1985, Ser. No. 691,206

Int. Cl.⁴ A01M 1/12

U.S. Cl. 43—73

4 Claims



1. A mouse trap comprising, a housing defining an entrance space having a longitudinal

direction and having an opening to the exterior to enable a mouse from the exterior to walk thereto, the housing having a pit on one side of and immediately adjacent the entrance space, a pusher including a plate positioned with the plate on the other side of and immediately adjacent the entrance space, spaced control elements in the entrance space positioned so as to enable them to be bridged in response to a mouse entering the entrance space, and the control elements being operable in response to being so bridged for actuating the pusher,

the housing also including a trap door normally closing the entrance space to the pit, but yielding in response to a mouse being pushed thereagainst and enabling a mouse to be thereby pushed into the pit, and the trap door thereafter re-assuming a closed position trapping the mouse in the pit, and the housing thereby being capable of so trapping the mouse in live condition,

circuitry including an electric valve having a control gate in series with the solenoid and operable for normally holding the solenoid inactive, and

the circuitry also including said control gate in series with said control elements and with the electrical source and the mouse upon touching the control elements completes circuit through the control elements and gate and the electrical source, and thereby completes circuit through the electric valve and energizes the solenoid.

4,641,457

PLANTING SYSTEM

Nils H. Sandin, Landskronavägen 30, Dösjebro, Sweden (240 23)
 Continuation of Ser. No. 387,879, Jun. 3, 1982, abandoned. This

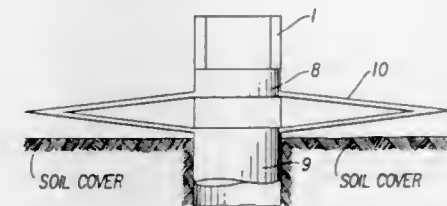
application Oct. 1, 1984, Ser. No. 656,409

Claims priority, application Sweden, Oct. 30, 1980, 8007634

Int. Cl.⁴ A01G 7/00; A01C 11/02

U.S. Cl. 47—9

10 Claims



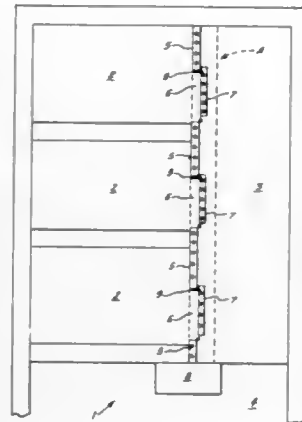
1. A device used to contain a plant for planting in soil, comprising a sleeve having a wall formed with cutouts extending in the longitudinal direction of the sleeve between a circumferentially extending upper part and a lower end integrally formed with the wall of the sleeve, the lower end being formed open to facilitate penetration of the sleeve into the soil, said sleeve being sufficiently rigid so as to be driven substantially completely into the soil without breaking; and

further comprising an anchoring device including an upper edge part and a lower edge part connected together by plural strips extending in the longitudinal direction, said strips having plural kerfs formed in a plane lying transverse to the strips, said anchoring device adapted to surround the sleeve so that the lower edge part of the anchoring device during planting is pressed upwards as a force is applied to press the sleeve downwards into the soil, and the lower edge part causing the strips to buckle and fold toward each other about the kerfs so that the folded strips overlies a soil cover and thereby retain the cover on the soil.

4,641,458
JAIL DOOR OPERATING AND LOCKING MECHANISM
 Walter R. Pilcher, and James W. Pilcher, both of 1044 O'Neal
 La., Baton Rouge, La. 70816

Filed Nov. 1, 1985, Ser. No. 794,310
 Int. Cl.⁴ E05B 53/00
 U.S. Cl. 49—20

16 Claims

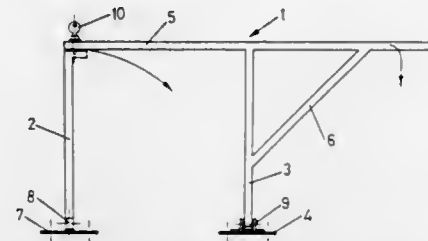


1. A jail door operating and locking mechanism, comprising:
 - a. at least one fixed frame across the front of a plurality of aligned jail cells and having a plurality of passageways therethrough;
 - b. a plurality of sliding cell doors, each said door slidingly movable across one said passageway;
 - c. a plurality of door carriage weldment means, each fixedly connected to each said cell door, for imparting sliding movement to said cell doors between open and closed positions;
 - d. a plurality of vertical lock bars, slidingly positioned in said frame such that at least one said lock bar is provided for each said door, each said lock bar having a locked position whereby said cell door is locked with relation to said frame, and an unlocked position, whereby said cell door is free to travel between said open and closed positions;
 - e. a plurality of means, each positioned over each said cell door, for transferring motive power to each said door carriage weldment means;
 - f. a plurality of lock bar positioner means, each fixedly attached to said means for transferring motive power and operatively connected to at least one said vertical lock bar, for moving said lock bar between said locked and unlocked positions;
 - g. a plurality of power means, for propelling said means for transferring motive power, each said power means operatively engageable with one said means for transferring motive power and operable from a remote location;
 - h. a continuous bar means, slidingly positioned above said doors, for manually operating said lock bar positioner means and said means for transferring motive power; and
 - i. a plurality of means for activating manual door operation, each operable from a remote location and selectively and linkingly engageable with said continuous bar means and one said means for transferring motive power such that movement of said continuous bar means will operate a desired number of said means for transferring motive power.

4,641,459
PARKING SPACE BLOCKING DEVICE
 Jesus G. Mesa, Cadiz, Spain, assignor to Progesco, S.A., Cadiz, Spain

Filed Mar. 5, 1986, Ser. No. 836,436
 Claims priority, application Spain, Mar. 25, 1985, 285,601
 Int. Cl.⁴ E01F 13/00
 U.S. Cl. 49—35

3 Claims

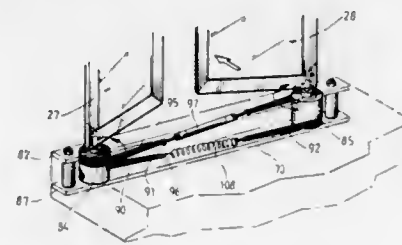


1. A device to block car parking spaces, comprising a collapsible gate and a collapsible anchoring post; the gate and post being pivotally jointed at their bases about two perpendicular and independent axes to base plates or footings affixed to the ground; the gate comprising a flat structure including at least one pole and a crossbar mutually perpendicular to each other, with said pole pivotally jointed at its bottom end to one of said base plates, while its top end is affixed to the crossbar which extends in a position parallel to the jointing axis of said pole and is of such length as to rest with one of its ends on the free end of said post when said post and said gate are in a vertical position; and a blocking lock on mutual points of support of said crossbar and post.

4,641,460
SEMI-MANUALLY OPERATED SERVICE WINDOW
 Carl P. Kriegel, Houston, Tex., assignor to M.C.E. Window, Inc., Houston, Tex.

Filed Jun. 24, 1986, Ser. No. 878,293
 Int. Cl.⁴ E05C 7/06
 U.S. Cl. 49—115

22 Claims

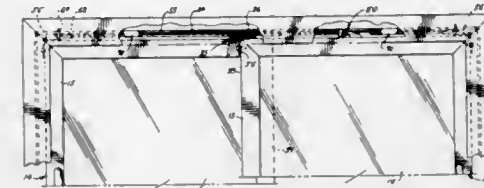


1. An access window comprising:
 - (a) at least one hinged window member;
 - (b) a rotor member operatively coupled to said window member; and
 - (c) a flexible linkage operatively coupling said rotor member to a fixed or rotational support such that a relatively slight rotational movement of said window member from a fixed position causes said flexible linkage and said rotor to swing said window member along a relatively long arcuate path compared to the distance covered by said slight rotational movement;
 said rotor equipped with at least one circumferential groove, said groove being capable of accommodating said flexible linkage, the radial distance between the outer surface of a portion of said groove and the center of said rotor exceeding the radial distance between the outer surface of another portion of said groove and the center of said rotor.

4,641,461
SLIDING DOOR ASSEMBLY
 Francis M. Niekrazz, Palos Park; Melvin C. Kasper, La Grange Park, and Gerald J. Bockwinkel, Mundelein, all of Ill., assignors to Ardeo, Inc., Chicago, Ill.

Filed Feb. 22, 1985, Ser. No. 704,395
 Int. Cl.⁴ E05D 15/06
 U.S. Cl. 49—404

5 Claims



1. A door assembly for mounting in the opening of a wall, comprising a stationary door frame, at least one movable door mounted within said frame for translational movement between a fully closed position and an open position, said frame comprising an outer frame member having a mounting flange for mounting on an end face of said wall opening and a vertical flange for positioning on one side of said wall, an inner frame member adapted for telescopic and adjustable mounting within said outer frame member and having a mounting flange positionable in close fitting relation to the mounting flange of said outer member and a vertical flange positionable adjacent a side of said wall opposite the side the vertical flange of said outer frame member is positioned, the bottom portion of said inner frame member having means for supporting said door for relative movement, self-moving means for said door including a flexible tubular member, means for affixing one end of said tubular member to said inner frame member, a follower secured to the other end of said tubular member for loose positioning in an active position adjacent a side of said door for urging said door in one direction of movement and follower retaining means mounted on the upper portion of said inner frame member, said follower being selectively removable from said active position adjacent the side of said door and manually positionable in an inactive position in said retaining means for permitting removal of said door from said frame without disassembly of said self-moving mechanism or removal thereof from said frame.

4,641,462
DEVICE FOR OPENING AND CLOSING A SLIDING-DOOR
 Jan J. G. Markus, Griendstraat 11, Krimpen aan den IJssel, Netherlands
 Filed Apr. 11, 1985, Ser. No. 721,967
 Claims priority, application Netherlands, Apr. 26, 1984, 8401339

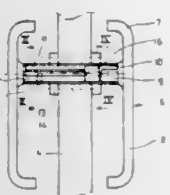
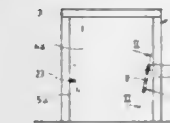
Int. Cl.⁴ E05B 1/00, 7/00

U.S. Cl. 49—460

11 Claims

1. A device for opening and closing a sliding-door slidable between a final open position and a final closed position in a door-frame having two horizontally spaced-apart vertical posts, in particular for a sliding-door of the type wherein rollers by which the door is carried sink into recesses in a guide-rail when the door is in front of a doorway in a wall so that the door is moved towards the wall, and, when opening, the door has to be lifted to bring the rollers onto a carrying surface of the guide-rail, said device comprising: at least one lever rotatable with a rotation shaft and having two arms, one arm of which is provided with a push-off cam and the other arm of which forms an operating handle, the rotation shaft of the lever being supported in the door in such a manner that, when the door has almost reached either of said final open or said final closed positions, the lever can assume a position which is inclined in respect of a vertical line, so that the operating handle will be at a larger distance from an immediately adja-

cent one of the posts of the door-frame than the rotation shaft of the lever when the door has almost reached a final position; a cylindrical sleeve fixed in the door, in which sleeve a part connected with the lever is rotatably mounted; means for limiting the angle of rotation of the lever with respect to the sleeve so that the lever may assume two extreme lever posi-

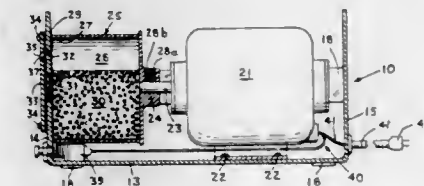


tions; and annular element mounted in the cylindrical sleeve and comprising an outer and an inner casing which are not rotatable with respect to the sleeve and the levers, respectively; and flexible elements mounted between these casings in such a manner that the lever is biased to that lever position which the lever assumes when the door is closed.

4,641,463
KEY DEBURRING AND POLISHING ASSEMBLY
 Eric L. Bianco, 448 W. Second Ave., Roselle, N.J. 07203
 Filed Mar. 22, 1985, Ser. No. 714,983
 Int. Cl.⁴ B24B 31/02

U.S. Cl. 51—7

15 Claims



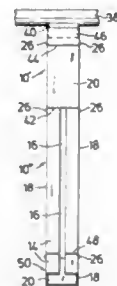
1. A key deburring and polishing assembly comprising,
 - a. frame means,
 - b. driving means in said frame means having rotatable shaft extending therefrom,
 - c. a cylindrical drum defining a deburring and polishing chamber having, an opening at one end and means at an end remote therefrom for fixedly connecting the cylindrical container to the rotatable shaft of the driving means for rotation therewith,
 - d. abrading material disposed in the deburring and polishing chamber of said cylindrical container,
 - e. an end plate on said frame means disposed for spaced and operative association with the open end of the cylindrical container to prevent said abrading material from escaping when the cylindrical container is being rotated,
 - f. said end plate having, a slot therethrough to permit a key to be inserted for contact with the abrading material in the cylindrical container when the container is rotated by the driving means, and
 - g. securing means on an outer wall of the end plate, removably securing the key within the slot and cooperating with said slot to permit a portion of said key to extend into the cylindrical drum.

4,641,464 DOWNPIPE

Karl G. Andersson, deceased, late of Risögrund, Sweden (by Marianne Berglund, heir), and Bengt Paulsson, Järnforsen, Sweden, assignors to AB Siba-Verken, Järnforsen, Sweden
Filed Mar. 12, 1985, Ser. No. 711,004
Claims priority, application Sweden, Mar. 12, 1984, 8401359; May 25, 1984, 8402832

Int. Cl.⁴ E04D 13/08
U.S. Cl. 52—16

12 Claims



1. A downpipe, connectable to guttering on the outsides of building structures, comprising:

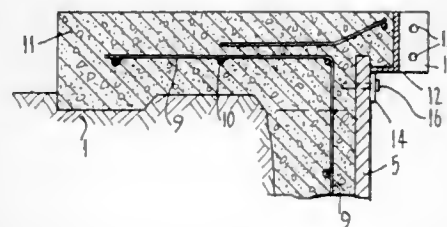
- at least an upper tubular section and a lower tubular section, each section having a front side including an open longitudinally extending slot and a solid rear side disposed opposite said front side; and
- a longitudinal joint between said upper and lower sections produced by slightly compressing the upper section and inserting it in the lower section, the front side of said upper section being disposed adjacent the rear side of the lower section at said joint.

4,641,465 POOL CONSTRUCTION AND PANEL SUPPORT MEMBER

Michael Boyle, New South Wales, Australia, assignor to Arabelle Limited, Australia

Filed Feb. 28, 1985, Ser. No. 706,570
Claims priority, application Australia, Feb. 29, 1984, PG3843
Int. Cl.⁴ E04G 17/02, 21/00
U.S. Cl. 52—127.1

4 Claims



4. A panel support member for use in a method of constructing an overhanging concrete edge and an in-ground concrete pool, said support member comprising:

- an angle section with two arms,
- depending lugs extending at right angles from an edge of one arm of the angle section in a direction opposite to the extent of the other arm thereof,
- a transverse lug extending from an end of said other arm transversely to the extent of both arms and in a direction opposite to the extent of said one arm, and
- said angle section having respective bores in said depending lugs and said transverse lug for receiving bolts there-through.

4,641,466 WINDOW

Jaakko Ranninen; Heikki Savioja, both of Alavus; Antti Koivula, Sulkavankyla; Jorma Saariaho, Alavus; Reijo Sihto, Alavus, and Yrjo Valimaki, Alavus, all of Finland, assignors to Oy Partek Ab, Parainen, Finland

Filed May 8, 1985, Ser. No. 751,439
Int. Cl.⁴ E06B 7/12

U.S. Cl. 52—171

9 Claims



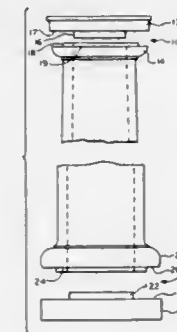
1. A window comprising an inner glass and an outer glass and provided with a channel for circulation air and/or fresh air, characterized in that the inner glass facing a room is formed into an electric heating element and that a surface of the outer glass is provided with a coating for reflecting heat radiating outwards from the heating element back into the room.

4,641,467 COLUMN CONSTRUCTION

A. J. Dupuis, Jr., 127 W. White St., Opelousas, La. 70570-3596
Filed Jan. 21, 1986, Ser. No. 821,011
Int. Cl.⁴ E04H 12/00

U.S. Cl. 52—297

6 Claims



1. A column assembly for buildings comprising a main column shaft made of concrete and that is annular in cross-section, a base and a capital at the lower and upper ends of the shaft respectively, the base comprising a base member having a flat upper face, a circular key mounted on the upper face of the base, an annular key formed integral with the lower end of the shaft and concentric with the shaft axis, the lower end of the shaft having an integral annular molding which has an outer diameter that is substantially greater than the exterior diameter of the lower portion of the shaft and also having a lower annular face coincident with a plane normal to the axis of the shaft and surrounding the annular key, the vertical dimension of the annular key being such that when the shaft is assembled on the base member with the annular key embracing the circular key, the annular key carries the load applied to the shaft and provides an annular gap between the upper face of the base mem-

ber and the said lower annular face of the annular molding, said annular gap being filled with non-load bearing grouting.

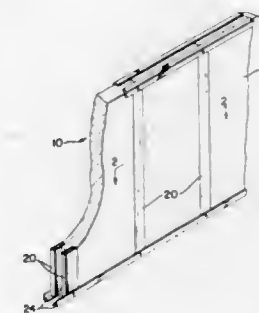
4,641,468 PANEL STRUCTURE AND BUILDING STRUCTURE MADE THEREFROM

Jack Slater, Islington, Canada, assignor to Cano International, N.V., Curacao, Netherlands

Continuation of Ser. No. 442,110, Nov. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 300,460, Sep. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 272,162, Jun. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 43,568, May 29, 1979, abandoned. This application Aug. 30, 1985, Ser. No. 771,030

Int. Cl.⁴ E04C 1/00
U.S. Cl. 52—309.4

5 Claims



1. A fabricated composite load bearing panel serving as a building wall or the like comprising a plurality of modular elongated integral slabs of rigid foam insulating plastic material rectangular in section and each slab having two pairs of opposed surfaces, one pair of opposed surfaces having opposed substantially parallel recesses disposed centrally of said surfaces and extending from end to end thereof, splines of rigid foam heat insulating plastic material substantially filling said recesses and maintaining adjacent ones of said slabs in assembled relation with surfaces of adjacent slabs being disposed in full surface contact, certain of said slabs having an additional pair of laterally opposed substantially parallel recesses in the other pair of said surfaces, said additional recesses extending from end to end of said slabs, hollow tubular metal framing members securely surface bonded by adhesive means to said slabs and substantially occupying said additional recesses, said foam plastic material providing a thermal barrier between opposed framing members, and at least the outer surfaces of said framing members being flat and forming substantial continuations of said surfaces of said slabs.

4,641,469 PREFABRICATED INSULATING PANELS

Edward F. Wood, 258 Fairview Dr., Mundelein, Ill. 60060

Filed Jul. 18, 1985, Ser. No. 756,787
Int. Cl.⁴ E04C 1/00, 2/38

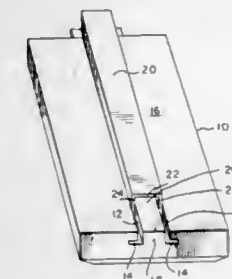
U.S. Cl. 52—309.12

27 Claims

1. An exterior insulation panel comprising:
a panel body having front, back, longitudinal side and lateral side surfaces;

- at least one preformed channel into said back surface of said panel extending from one side surface to another side surface, said preformed channel including a first portion projecting through said panel from said back surface toward said front surface and a second portion continuous with said first portion projecting within said panel toward at least one of said side surfaces other than those between which the channel extends;
- a flanged rigidifying means for strengthening said panel body which is slidably and matingly disposed within and

extending substantially along the length of said channel, said rigidifying means also including means for structur-



ally supporting said panel on the exterior surface of a building.

4,641,470 CONSTRUCTION ELEMENT

Werner Baumberger, 25, chemin du Point-du-Jour 1202 -

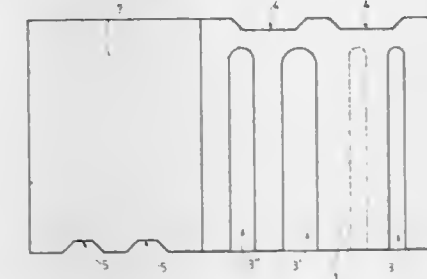
Geneve, Switzerland
Filed Jul. 31, 1985, Ser. No. 761,228

Claims priority, application Switzerland, Aug. 15, 1984, 03914/84

Int. Cl.⁴ E04B 5/04

U.S. Cl. 52—309.17

9 Claims



1. Construction element having dimensions of height, width and thickness, comprising a first bearing part formed from a light concrete having compression resistance between 25 and 175 kg/cm² and an apparent density between 900 and 1250 kg/m³, said bearing part comprising elongated cylindrical cavities extending in said height dimension, elongated in said width dimension, and arranged in alternating rows in said thickness dimension, said cavities forming about 25% by volume of said bearing part; and a second insulating part formed from a hydraulic binder based on cement, a first synthetic resin and an expanded mineral filler, said insulating part having an apparent density of at most 270 kg/m³, said bearing part having a greater extent in said thickness dimension than said insulating part, said bearing and insulating parts being fixed together along a plane substantially perpendicular to said thickness dimension.

4,641,471 FASTENER FOR SECURING ROOFING MATERIAL TO CEMENTITIOUS ROOF DECKS

Kenneth E. Young, Greenville, S.C.; Hubert T. Dudley, Chelmsford, and Robert T. Frohlich, Bedford, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 2, 1978, Ser. No. 882,859
The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.

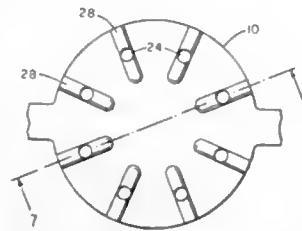
Int. Cl.⁴ F16B 15/02, 15/04

U.S. Cl. 52—361

8 Claims

1. An improved sheet metal nail for attaching a base ply of a multi-ply built-up roofing membrane to a soft not fully cured

cementitious construction material and over which nail and ply fluid asphalt is to be applied after installation, said nail having a generally flat disc-shaped head serving as a washer to hold said base ply down and a narrower hollow penetrating shank depending from the lower planar surface of said head, said shank being comprised of a pair of overlapping, channel-shaped legs, at least one of said legs being adapted to expand relative to the other during insertion into said construction material to thereby capture said construction material within said hollow shank and lock the nailing element in the construction material; said head having broad upper and lower opposed planar surfaces and narrow terminal end surfaces, the width of



said head across its narrowest dimension being at least about 1.75 inches, said head having a plurality of openings therethrough distributed around its outer extremity which openings extend from said upper planar surface to said lower planar surface, said head further having at least one embossment raised from at least one of its said planar surfaces communicating with said opening and edge of said head and acting as an asphalt-conducting channel, whereby fluid asphalt applied over said nail and said base ply is permitted to fill said openings and also to flow between said head and said base ply in order to bond the portion of the base ply beneath said tab and increase the resistance of the roofing membrane to uplifting by wind.

4,641,472

FASTENER FOR SECURING ROOFING MATERIAL TO CEMENTITIOUS ROOF DECKS HAVING REMOVABLE TAB

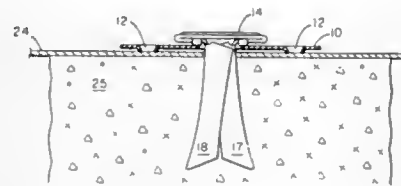
Kenneth E. Young, Greenville, S.C.; Hubert T. Dudley, Chelmsford, and Robert T. Frohlich, Bedford, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 2, 1978, Ser. No. 882,709

Int. Cl.⁴ F16B 15/02, 15/04

U.S. Cl. 52—361

8 Claims



1. The combination of roofing material for waterproofing a roofing deck and a holder for securing said roofing material to the deck, comprising said roofing material including at least one layer of resilient sheet material engaging said deck and a layer of waterproof adhesive covering said resilient sheet material, said adhesive being flowable when it is applied and substantially non-flowable after it sets, said holder including a generally flat body having upper and lower surfaces and an outer edge, means for penetrating said resilient sheet material and attaching said holder to the deck with a substantial portion of said lower surface engaging said sheet material, said holder having a plurality of raised portions extending generally radially inwardly from said outer edge, each of said raised portions

having an upper convex surface and a lower concave surface in which said convex surfaces extend above said upper surface of said body and said concave surfaces define hollow spaces below said raised portions which extend to said outer edge and permit flowable adhesive to flow thereto, and said holder having a plurality of apertures extending through said raised portions and communicating with said hollow spaces to permit flowable adhesive to flow into the hollow spaces and form enlarged plugs, whereby said resilient sheet material is attached to the deck by said holder and said penetrating means and thereafter flowable adhesive is applied to said resilient sheet material and said upper surface of said holder and said adhesive flows into the outer ends of said hollow spaces and through the openings to form enlarged plugs in the hollow spaces which are integrally connected to the adhesive above said holder when said adhesive sets.

2. An improved fastener for attaching a base ply of a multiply built-up roofing membrane to a soft not fully cured cementitious construction material and over which ply fluid asphalt is to be applied after installation, said fastener being comprised of (a) a centrally located nailing element positioned within (b) a separate base ply bonding element non-integral with said nailing element, said central nailing element having a generally flat planar head serving as a washer to hold said base ply down and a narrower hollow penetrating shank depending from the lower planar surface of said head, said shank being comprised of a pair of overlapping, channel-shaped legs and being adapted to expand during insertion into said construction material to thereby capture said construction material within it and lock the nailing element in the construction material; said base ply bonding element being in the form of a generally flat tab having broad upper and lower opposed planar surfaces, narrow terminal end surfaces and a central opening penetrated by said shank, said central opening being narrower than said nailing element head in order that at least a portion of said lower surface of said head bears on the said upper planar surface of said tab, said tab being wider in crosswise dimension than said nailing element head so that a portion of said tab extends beyond said head, said tab having a plurality of additional openings therethrough distributed around its portion extending beyond said head which openings extend from said upper planar surface to said lower planar surface, said tab further having at least one embossment raised from at least one of its said planar surfaces communicating between at least one of said additional openings and a said terminal end surface of said tab, said embossment acting as an asphalt-conducting channel, whereby fluid asphalt applied over said fastener and said base ply is permitted to fill said additional openings and also to flow between said tab and said base ply in order to bond the portion of the base ply beneath said tab and increase the resistance of the roofing membrane to uplifting by wind.

4,641,473

CLIP CONSTRUCTION FOR WALL ARRANGEMENT

Ronald F. Trezza, P.O. Box 764, Melville, N.Y. 11747

Filed Dec. 23, 1985, Ser. No. 812,233

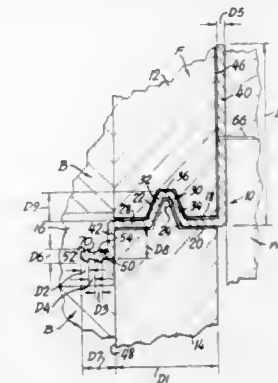
Int. Cl.⁴ E04B 5/00

U.S. Cl. 52—410

4 Claims

1. A clip construction adapted for retaining a body of material against a wall which includes siding sections in generally endwise abutting relation, said clip construction comprising a central portion adapted to lie between said siding sections, parallel further portions extending perpendicularly from the central portion at spaced positions on the central portion and being adapted to lie on opposite sides of said siding sections, and protruding means on at least one of said further portions and adapted for being embedded in said body to retain said body against said wall, the other of said further sections being adapted for connection to the wall, said central portion including groove means defining a trapezoidal groove extending generally in parallel with said further portions, said protruding means including a flange on and extending from said one fur-

ther portion and parallel ridges extending along and on opposite sides of said flange and being spaced from and at least generally parallel to said one further portion, said ridges hav-



ing profiles which are arrowhead-shaped and which point in a direction away from said one further portion, said ridges being solid and having faces which are parallel to said one further portion.

4,641,474

STA-PUT WALLBOARD JOINER

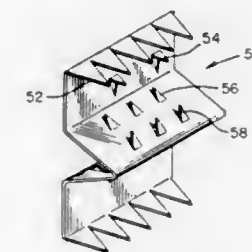
Robert C. Cannarsa, 21 Townsend St., Glen Head, N.Y. 11545

Filed Sep. 11, 1985, Ser. No. 774,703

Int. Cl.⁴ E02D 37/00; E02G 23/00

U.S. Cl. 52—514

4 Claims



1. A fastener for securing a section of wallboard fitted into an opening in a wall of wallboard construction comprising metal clip means having a pair of spaced flat surfaces substantially in the same plane as, and having teeth to penetrate, the adjacent exposed surfaces of said section of wallboard and said wall of wallboard when the former is inserted into said opening so that said spaced flat surfaces of said metal clip become flush with the surfaces of said section and will when said teeth fully penetrate said section and wall, V-shaped extension means comprising a pair of legs joined at the edges removed from said flat surfaces extending into the space between said section and wall, and teeth on the outside of and on both legs of said V-shaped extension directed toward said spaced flat surfaces so that when said clip is first mounted on said section of wallboard and the latter is then inserted into said opening in the wall of teeth on said clip will resist movement of said section once fully mounted in said opening flush with said wall, said spaced flat surfaces being flush against the surfaces of said wall and section simplifying the subsequent taping of the joint between said section and said wall on the exposed surfaces thereof.

4,641,475

MOISTURE RESISTANT SEAM ASSEMBLY

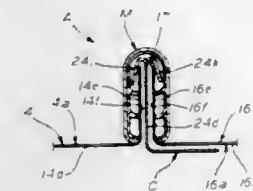
Jack A. Berridge, Houston, Tex., assignor to Berridge Manufacturing Co., Houston, Tex.

Continuation of Ser. No. 549,629, Nov. 7, 1983, abandoned. This application May 5, 1986, Ser. No. 859,793

Int. Cl.⁴ E04D 1/36

U.S. Cl. 52—584

6 Claims



1. A moisture resistant seam assembly for use with adjoining channel-shaped surface covering members having generally parallel, adjoining mating flanges which form an elongate seam therebetween, comprising:

- a. an elongate seal member comprising resilient material and including a plurality of elongate ridges; and
- b. an elongate cover member for positioning over such mating flanges and seam, and comprising substantially elongate first and second side portions connected by an elongate top portion so that said side portions may generally face each other from opposite sides of said mating flanges with said top portion covering said seam;
- c. wherein said seal member is mountable generally within said cover member to overlie said mating flanges, at least in part, without intervening said mating flanges, with said cover member so positioned over said mating flanges, and such that at least one said seal member ridge may sealingly engage the outer surface of each of said mating flanges, said seal member being held toward said flanges by said side portions of said cover member, to seal said seam.

4,641,476

ROOF EDGE CONSTRUCTION

Russell Webb, Woodfin, and John B. Hickman, Asheville, both of N.C., assignors to W. P. Hickman Company, Asheville, N.C.

Filed May 13, 1985, Ser. No. 733,641

Int. Cl.⁴ E04D 1/36

U.S. Cl. 52—60

36 Claims



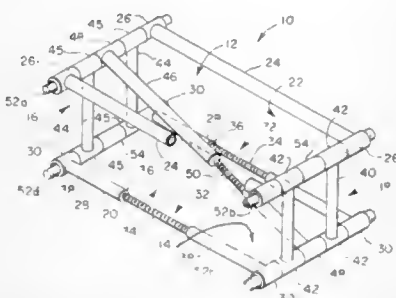
1. An assembly for forming a raised roof edge on a building structure having a generally horizontal roof and a generally vertical outer face, said assembly comprising:

- a dam member having a generally vertical dam portion with an inwardly directed face for confronting the outer face of the building structure, said generally vertical dam portion further having an upper dam portion and a lower dam edge portion, said dam member including a sloping dam portion extending generally downwardly and inwardly generally from said upper dam portion, and attachment

means for attaching said generally vertical dam portion to the outer face of the building structure with said upper dam portion protruding upwardly above the roof of the building structure;

- a fascia member installable on said dam member and having a generally concave upper portion for receiving said upper dam portion therein and a lower channel portion for receiving said lower dam edge portion therein when said fascia member is installed on said dam member; and
- a spring clip member for interposition between said fascia member and said dam member when said fascia member is installed thereon, said spring clip member having a generally vertical spring clip member positionable in a generally confronting relationship with said generally vertical dam portion, a first sloping portion extending generally downwardly and inwardly generally from said vertical spring clip portion when said spring clip member is positioned on said dam member, said spring clip member further having a lower spring clip edge portion on said first sloping portion, and a second sloping portion extending generally upwardly generally from said lower spring clip edge portion, at least said second sloping portion being resiliently deflectable generally downwardly and outwardly toward said first sloping portion when said fascia member is installed on said dam member with said spring clip member interposed therebetween said first sloping portion of said spring clip member confronting said sloping dam portion when said spring clip member is interposed between said fascia member and said dam member and said fascia member is installed on said dam member.

4,641,477
ADJUSTABLE MODULAR BUILDING
 Herman A. Schleck, Lamar Tower, Suite 2108, 2929 Buffalo Speedway, Houston, Tex. 77098
 Filed Jan. 6, 1986, Ser. No. 816,436
 Int. Cl.⁴ E04B 1/342, 1/343, 1/32, 1/348
 U.S. Cl. 52—646 12 Claims



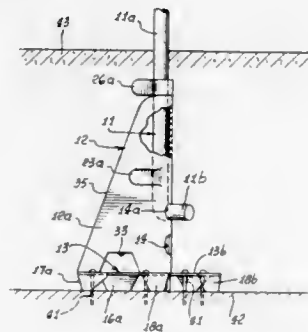
1. An adjustable modular building unit comprising:
 - a generally rectangular top side;
 - a left side and a right side which depend from said top side;
 - a bottom side connecting said left side and said right side;
 - side connecting means for rotatably connecting adjacent said sides, including a top-left connecting means, a top-right connecting means, a bottom-left connecting means, and a bottom-right connecting means;
 - a bottom adjusting means for adjusting the length of said bottom side;
 - a diagonal brace member extending diagonally between two of said side connecting means whereby said sides are held against relative rotation;
 - brace connecting means for rotatably connecting said brace member to the two side connecting means; and
 - a brace adjusting means for adjusting the length of said brace member.

4,641,478
CONSTRUCTION BOLT HOLDER

E. Delbert Nelson, Jr., 10245 Parr Ave., Sunland, Calif. 91040
 Filed Jan. 27, 1986, Ser. No. 830,321
 Int. Cl.⁴ E04C 5/12

U.S. Cl. 52—704

11 Claims



1. A mount for a construction bolt to be embedded in poured concrete and including said bolt in combination with the mount comprising:
 - (a) a standard having a supportable base, and defining a support for the lower end of the bolt, so that the bolt shank projects upwardly, the standard including first and second upright sections which are relatively angled to define a vertical fold, the bolt having a shank proximate the fold, the base including first and second sections integral with the respective standard first and second sections,
 - (b) the standard having surfaces and openings whereby the poured concrete can flow onto and through the standard, and below the support and the bolt lower end, to anchor the standard with the bolt held in upright position, one of said openings located at the fold and passing a turned end defined by the bolt to locate the bolt relative to the standard,
 - (c) there being at least one retainer on the standard proximate the fold and above said one opening, for retaining the bolt shank to the standard, proximate the vertical fold.

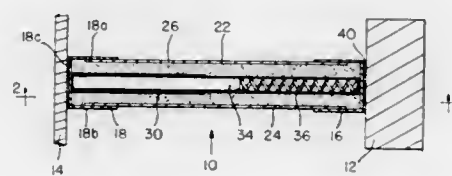
4,641,479
CLOSURE INSERT FOR USE IN BUILDING CONSTRUCTION

Jay B. Spurlock, 17629 Maple Valley Rd., SE., Maple Valley, Wash. 98038

Filed Jul. 2, 1984, Ser. No. 626,745
 Int. Cl.⁴ E04H 5/00

U.S. Cl. 52—241

4 Claims



1. A self-contained insert for use in building construction to close the area between an exterior portion of the building such as a wall or a window mullion and an interior element such as a wall or column without altering either the exterior portion of the building or the interior element, the insert comprising:
 - two opposing, vertical, inwardly opening U-shaped end channel members, each of said channel members comprising two parallel extending side walls and an intermediate end wall, the end walls of the two channel members each having an outer surface which is adapted to provide substantial, continuous contact with the exterior portion of

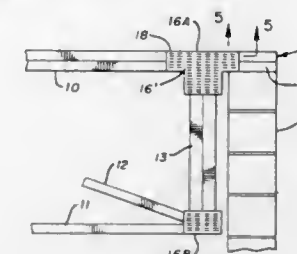
- the building and the interior element, respectively, when the closure insert is in place;
- two opposing, vertical, flat side panel members, extending respectively between, opposing side walls of the two channel members, with the channel members overlapping the side panel members, each panel member having top and bottom edges and two side edges and exterior and interior panel surfaces, wherein the exterior panel surface of each panel member, in the area adjacent the respective side edges thereof, fits flush against the interior surface of the respective opposing side walls of the channel members, and wherein the two panel members are not connected directly to each other or to said channel members, so that the two panel members are free to move independently relative to said channel members and each other, in response to relative movement between the exterior portion of the building and the interior element;
- insulation positioned between said first and second panel members for maintaining the flush contact between the panel members and the side walls of the channel members; and
- a plurality of spring-biased, telescoping spacer members which extend between the two channel members, tending to maintain the end walls of the channel members in contact with the exterior portion of the building and the interior element, respectively.

4,641,480
COMBINATION CONNECTOR PLATE AND TAIL TRUSS
 Edgar A. Mort, Poland, Ohio, assignor to Inter-Lock Steel Company, Inc., East Palestine, Ohio

Filed Jun. 3, 1985, Ser. No. 740,854
 Int. Cl.⁴ E04C 3/12

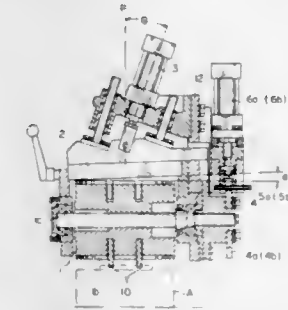
U.S. Cl. 52—693

2 Claims



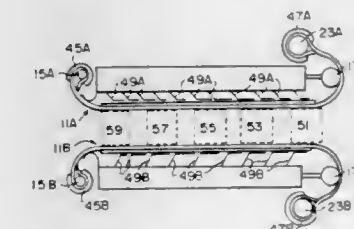
1. An improvement in a tail truss having upper and lower chords, diagonal webs and vertical end sections connecting said chords and end extensions on said upper chord extending beyond said vertical end sections; the improvement comprising a structural joint consisting of a combination of said vertical end sections, the end extensions on said upper chord, the portions of said upper chord adjacent said vertical end sections T-shaped connector plates joining each of said vertical end sections to said portions of said upper chord adjacent each of said vertical end sections and the end extensions of said upper chord, said upper and lower chords, diagonal webs and vertical end sections being formed of wooden members and each of said T-shaped connector plates consisting of a metal plate having a vertical portion and a horizontal portion and having a multiplicity of struck out nails thereon formed therefrom at right angles thereto and embedded in said vertical end sections and said upper chord and end extensions thereof with said horizontal portions of said T-shaped connector plates extending along said upper chord and along said end extensions thereof so as to hold said end extensions in axial alignment with said upper chord from which they extend, said T-shaped connector plates being applied to both sides of said tail truss and having said vertical portions affixed to said vertical end sections with said horizontal portions being affixed to said upper chord on both sides of said vertical end section.

4,641,481
DEVICE FOR CUTTING A NARROW STRIP OF CONTINUOUS ARTICLES FOR PACKAGING
 Göran Brosten, Richmond Surrey, England, assignor to Tetra Pak International Aktiebolag, Lund, Sweden
 Filed Sep. 11, 1985, Ser. No. 774,756
 Claims priority, application Japan, Sep. 12, 1984, 59-191400
 Int. Cl.⁴ B26D 5/10; B32B 31/00
 U.S. Cl. 53—128 1 Claim



1. A device for cutting a narrow strip of continuous articles for packaging including a cutting drum which has a plurality of feed grooves formed on an external peripheral surface thereof at predetermined intervals to be intermittently rotated and for arranging the continuous article for packaging, which are supplied to said external peripheral surface, to be cut into individual packages by means of actuating a cutter from the outside of said cutting drum to said continuous article for packaging, characterized in that said cutter is actuated transversely to the cutting drum in a slanting direction in which said cutter forms an angle with respect to a perpendicular line drawn at a right angle to said continuous articles for packaging on said cutting drum and is mounted with an inclination such that the lower end of said cutter corresponds to its advancing end and in the cross direction of its edge, contacts with the top of said continuous articles for packaging first when said cutter is actuated.

4,641,482
HEAT STATION FOR A HEAT SEALING SYSTEM
 Bruce E. Metz, Wilmington, Del., assignor to Athena Controls Inc., Plymouth Meeting, Pa.
 Filed Oct. 6, 1982, Ser. No. 433,001
 The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
 Int. Cl.⁴ B65B 51/12
 U.S. Cl. 53—388 11 Claims



1. A sealing station having an entrance location and an exit location for sealing at least part of some sealable material which makes up at least part of a package, wherein said package is moved along a path through said sealing station comprising in combination: flexible heat transfer means extending along said path and having two opposing sides so that one of said sides comes into contact with at least some portion of sealable material of a package which is being moved along said

path; flexible heat generating means comprising a plurality of separate heat generating segments secured directly to the other side of said flexible heat transfer means to provide heat thereto for transferring heat to said sealable material coming in contact with said one side of said flexible heat transferring means, each generating segment connected with independent and separate energy source means and formed so that the heat generating segment disposed closest to said entrance location on each of said first and second transfer means provides more heat to sealable material coming in contact therewith than any other of said heat generating segments and force exertion means disposed along the length of said path to come into contact with each of said plurality of flexible heat generating means, and formed to segmentally push said flexible heat generating means which in turn pushes said flexible heat transfer means into contact with said sealable material along the length of said path.

4,641,483

CONTAINER HOLDER FITTING DEVICE

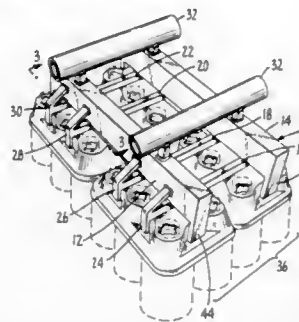
Warren Yamauchi, 16326 Rainbow Ridge Rd., Carbon Canyon, Calif. 91710

Filed Sep. 6, 1985, Ser. No. 773,375

Int. Cl.⁴ B65B 27/04

U.S. Cl. 53—390

11 Claims



1. A device for forcing a flexible, contoured holder over the necks of a predetermined arrangement of containers, the holder being of the type having a first flat upper surface, openings for receiving the necks of the containers and shoulders spaced along its periphery, each shoulder having a second flat upper surface below and parallel with the first flat upper surface, the device comprising:

- a pair of horizontal pipes arranged parallel to, and spaced apart from each other,
- a plurality of cross bars connected perpendicularly to the pipes and arranged parallel to, and spaced apart from each other,
- each of the cross bars having a downwardly extending leg at each end for engagement with a corresponding shoulder of the holder,
- each downwardly extending leg having a length approximately equal to the vertical distance between the first and second surfaces whereby the cross bars bear against the first surface while the downwardly extending legs bear against the second surface of the holder, and
- handle means for manually applying a downward force to the pipes.

4,641,484

HAY BALE WRAPPING MACHINE

Frank E. Popelka, 2221 Big Bend Rd., Ely, Iowa 52227

Filed Jul. 8, 1985, Ser. No. 752,655

Int. Cl.⁴ B65B 13/02; A01D 39/00

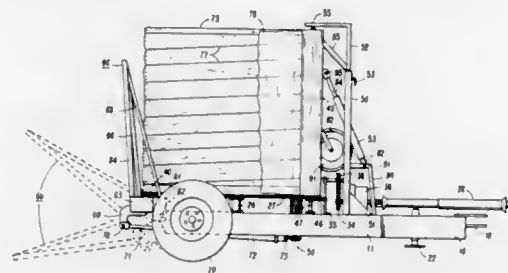
U.S. Cl. 53—399

12 Claims

1. A machine for wrapping the periphery of large cylindrical hay bales comprising:

- (a) a supporting, generally horizontal frame having forward and rearward ends;

- (b) means supporting the frame for travel over the ground;
 - (c) transport means adjacent the forward end of the frame for moving the frame over the ground;
 - (d) a generally horizontal bale wrapping table carried by the frame adjacent its rearward end and mounted for rotation about a generally vertical axis;
 - (e) first powered means for selectively rotating the table;
 - (f) bale wrap mounting means carried by the machine and disposed adjacent the table for supporting a cylindrical roll of sheet material for rotation about a generally vertical axis;
 - (g) bale handling means carried by the machine for engaging a bale lying on its peripheral side on the ground and disposing one end of the same on the bale wrapping table for rotation therewith,
- the bale handling means after wrapping of the bale thereupon redispersing the wrapped bale back onto the ground on its peripheral side; and



- (h) second powered means for selectively operating the bale handling means.

10. A method of wrapping a large cylindrical hay bale disposed upon the ground, the bale having a pair of opposite ends and a cylindrical peripheral surface therebetween having an axis, the method comprising:

- (a) lifting the bale from the ground;
- (b) positioning the lifted bale so that said axis is substantially vertical;
- (c) fixing one transverse end of a length of sheet material relative to the bale so that said material end extends substantially across said bale surface between said bale ends;
- (d) rotating the bale about said axis while feeding the sheet material onto said bale surface so that the same is wrapped around with the sheet material; and
- (e) securing a second end of the sheet material to the bale.

4,641,485

CONTAINER STUFFING APPARATUS AND METHOD

Richard Schmidt, Ambler, Pa., and Joseph A. Pizzo, Sr., Cherry Hill, N.J., assignors to Enviro-Spray Systems Incorporated, Montgomeryville, Pa.

Division of Ser. No. 704,595, Feb. 25, 1985, Pat. No. 4,594,834.

This application Dec. 3, 1985, Ser. No. 805,126

Int. Cl.⁴ B65B 63/02, 63/04

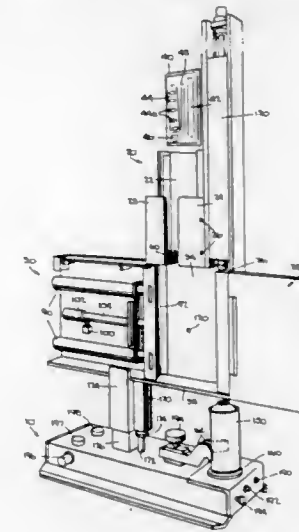
U.S. Cl. 53—429

13 Claims

1. A method for inserting flexible sheet products into containers, each of said products comprising an expandable pouch for pressurizing a container, said pouch including burstable means for generating pressurizing gas within said pouch, the method comprising the steps of:

- compressing the planar sides of said sheet product so as to burst said burstable means;
- receiving said sheet product after said step of compressing in a chamber means having opposing substantially flat inner side surfaces and first and second ends;
- forcing said sheet product in said chamber against one of said flat surfaces and spacing it away from the other of said surfaces;
- deforming said sheet product into an elongate folded shape

by moving said first end toward the second end to contact one edge of said product and to force said sheet product



against said second end while said one surface guides said sheet product; and
inserting said elongate sheet product into said container.

4,641,486

METHOD AND AN ARRANGEMENT FOR PACKING MACHINES

Eros Zannoni, Rubiera, Italy, assignor to Tetra-Dev Co., Modena, Italy

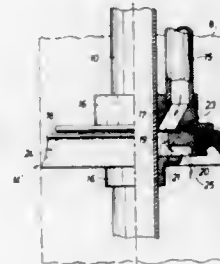
Filed Jul. 25, 1985, Ser. No. 758,886

Claims priority, application Sweden, Jul. 31, 1984, 8403925

Int. Cl.⁴ B65B 31/00

U.S. Cl. 53—433

14 Claims



12. In a packing machine of the type in which a tube of packing advances continuously downward while liquid contents are supplied to the interior of the tube to a lower zone in said tube through a fixed filling pipe and gas is supplied to said lower zone through a seal between said filling pipe and said tube, the improvement comprising a seal ring, collar means on said filling pipe, said seal ring being mounted in said collar means, said collar means and said seal ring including means for allowing radial movement of said seal ring relative to said filling pipe, and a flexible sealing element on said seal ring for engaging the interior of said tube and maintaining a seal between said tube and said filling pipe.

4,641,487

MACHINE AND METHOD FOR CUTTING, SHAPING AND CANNING MEAT, FISH AND THE LIKE

Andrea Darcchio, Parma, Italy, assignor to FMC Corporation, Chicago, Ill.

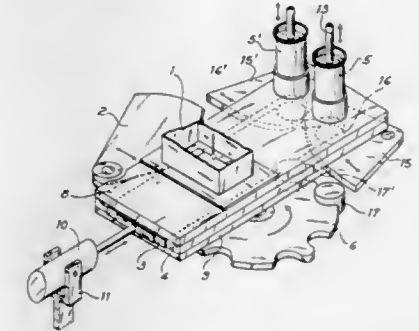
Filed Oct. 4, 1985, Ser. No. 784,424

Claims priority, application Italy, Oct. 18, 1984, 23219 A/84

Int. Cl.⁴ B65B 63/00

U.S. Cl. 53—435

2 Claims



1. A method of packaging sliced meat products such as fish comprising the steps of confining the slices in a cavity formed with wall portions corresponding to the configuration of a portion of the package, compressing the slices to make intimate and forceable contact with the walls of the cavity, said compression being effective to compact the slice sufficiently to achieve a substantially consistent density, cutting the compressed slice with a hollow cutter having a peripheral cutting edge shaped to conform with the shape of the package and concurrently retaining the cut slice in the hollow portion of the cutter, opening the cavity and positioning a package in the projected area of the cutter at the cavity opening, moving the cutter retaining the cut slice into the package, and displacing the cut slice relative to the cutter and into the package and while withdrawing the cutter therefrom.

4,641,488

APPARATUS AND METHOD FOR WRAPPING PACKAGES WITH HEAT SHRINKABLE MATERIAL

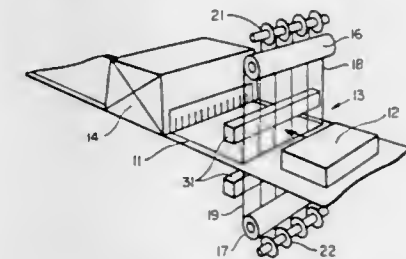
Ernest J. Garr, 3587 Powell Dr., Lafayette, Calif. 94549

Filed Jul. 6, 1983, Ser. No. 511,544

Int. Cl.⁴ B65B 11/52, 11/58

U.S. Cl. 53—442

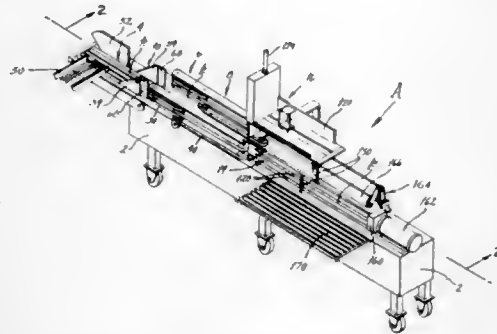
15 Claims



1. In apparatus for wrapping a package with heat shrinkable material; means for encircling the package with a film of heat shrinkable material, means for encircling a portion of the package with a reinforcing band of heat shrinkable material of substantially lesser width than the film, and means for simultaneously heating the film and the reinforcing band to shrink both the film and the band tightly about the package.

4,641,489
MACHINE FOR HANDLING SIGNATURES
 James R. Wood, Salem, Ill., assignor to World Color Press, Inc., Effingham, Ill.
 Filed Sep. 28, 1984, Ser. No. 655,259
 Int. Cl.⁴ B65B 13/20, 35/44
 U.S. Cl. 53—529

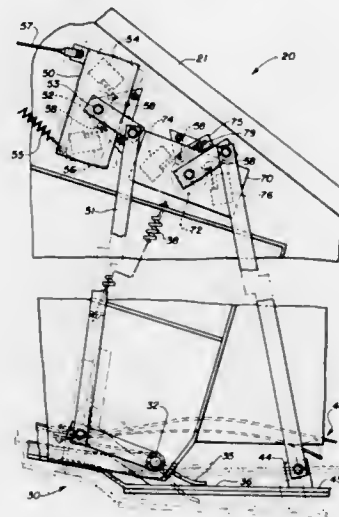
22 Claims



1. A machine for handling a succession of flexible sheets, such as signatures, to obtain a discrete bundle of sheets from the succession, said machine comprising: first and second aligned conveyors located along a path along which the sheets are advanced, each of the conveyors being configured to support the sheets in an edge-standing condition with the sheets being bowed forwardly in the direction of advance so that the midportion of each sheet leads the side edges for that sheet, each of the conveyors further having moving surfaces against which the sheets are positioned such that the sheets move with the moving surfaces, the moving surfaces of the second conveyor being along the sides of that conveyor; the second conveyor being located immediately after the first conveyor such that the sheets pass from the moving surfaces of the first conveyor to the moving surfaces of the second conveyor; drive means for normally advancing the moving surfaces of the first and second conveyors in unison, with the surfaces of the first conveyor normally moving at a velocity no less than the surfaces of the second conveyor and for further momentarily increasing the speed of the surfaces for the second conveyor to a velocity greater than the velocity of the surfaces for the first conveyor so as to produce at the location where the second conveyor leads away from the first conveyor a region of looseness in the succession of sheets; a parting member located along the path at the location where the region of looseness develops and normally being retracted from the path; means for extending the parting member generally vertically into the path so that it passes between two of the sheets in the region of looseness and for thereafter moving the parting member forwardly to create a distinct gap in the succession of sheets, so as to isolate a bundle of sheets ahead of the gap; retaining elements located along the sides of the path in the region where the second conveyor leads away from the first conveyor and being movable between retracted and extended positions, the retaining elements normally being in their retracted positions where they are located to the sides of the path so as not to interfere with the bowed sheets as they pass from the first conveyor to the second conveyor, the retaining elements when in their extended positions projecting into the path at the region of looseness such as to prevent the sides of sheets that are behind the parting member from coming against and being propelled by the moving side surfaces of the second conveyor; and means for projecting the retaining elements into the path about when the parting member moves forwardly in the path so that the retaining elements prevent sheets that are behind the parting member from moving forwardly with the parting member as the parting member creates the gap.

4,641,490
HEADER HEIGHT/LATERAL FLOAT CONTROL FOR COMBINE HEADER
 Edward J. Wynn, Leola; Glenn A. Musser, and Lawrence M. Halls, both of New Holland, all of Pa., assignors to New Holland Inc., New Holland, Pa.
 Filed Apr. 12, 1985, Ser. No. 722,585
 Int. Cl.⁴ A10D 75/28
 U.S. Cl. 56—10.2

13 Claims



8. A mechanism for controlling the movements of a crop harvesting header mounted on a harvesting machine to permit said header to follow changes in ground contour, said header being operably associated with header lift means for powering a generally vertically movement relative to said harvesting machine and with a header tilt means for powering a transverse tilting movement of said header relative to said harvesting machine, comprising:

a height sensor having a sensor bar rotatably mounted on said header and extending between transversely spaced ends of said header, said sensor bar having a plurality of fingers movable with the changes in ground contour relative to the header to cause rotation of said sensor bar;

first and second tilt sensors connected to the ground engaging members adjacent the transverse ends of said header, respectively, said tilt sensors being movable with the corresponding ground engaging member with changes in the ground contour relative to said header; and

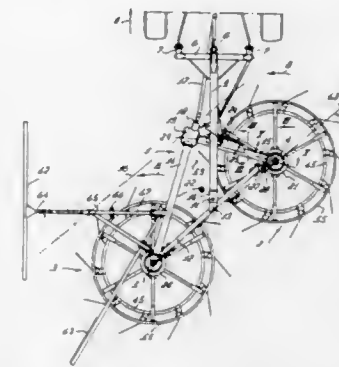
control means operably interconnecting said sensors and said header lift means and said header tilt means to actuate said header lift means and said header tilt means in response to the sensing of changes in ground contour relative to said header by said sensors, said first and second tilt sensors being connected in series such that said header tilt means is not actuated unless said first and second tilt sensors are in different positions.

4,641,491
AGRICULTURAL MACHINE
 Edwin van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely, N.V., Maasland, Netherlands
 Filed Mar. 6, 1985, Ser. No. 708,639
 Int. Cl.⁴ A01B 73/00
 U.S. Cl. 56—228

37 Claims

1. An agricultural machine comprising:
 a frame including means adapted for connection to a three-point lifting device of a tractor which are so constructed and arranged that said frame can be raised by said three-point lifting device;
 a sub-assembly comprising a working member of the machine; and

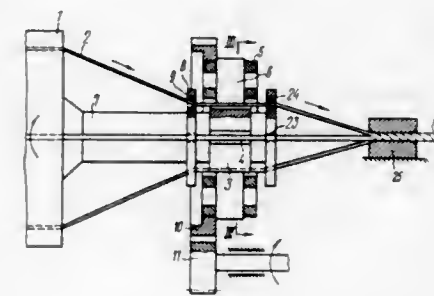
connecting means connecting said sub-assembly to said frame for pivotal displacement between a working position and a transport position about an upwardly extending pivotal axis which, in the working position is inclined to the rear with respect to the intended direction of operative travel of the machine, from bottom of top;



the center of gravity of said sub-assembly, when in said working position, being spaced from said pivotal axis so that when the machine is lifted by a tractor's three-point lifting device it is displaceable by gravity from said working position to said transport position when the tractor and machine are supported by a substantially level surface.

4,641,492
ROPE-TWISTING MACHINE FOR MAKING ROPES
 Mikhail F. Glushko, Viktor K. Skalsky, and Anatoly D. Zakhryamin, all of Odessa, U.S.S.R., assignors to Odessky Nauchno-Issledovatel'sky Otdel Stalnykh, Odessa, U.S.S.R.
 Filed Nov. 21, 1984, Ser. No. 673,612
 Int. Cl.⁴ D07B 7/00
 U.S. Cl. 57—9

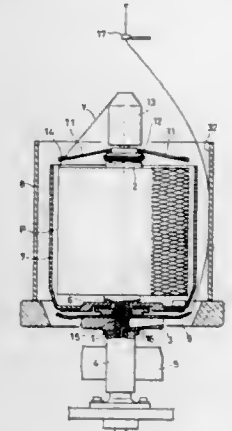
8 Claims



1. A rope-twisting machine for making ropes comprising arranged on a base in succession:
 a rotor carrying rope elements;
 a mandrel rigidly connected to said rotor;
 shaping grooves provided in said mandrel;
 a casing arranged concentrically around said mandrel and capable of relative rotation with said rotor; and
 pressure rollers mounted in said casing for rolling on an outer periphery of said mandrel as the mandrel is rotated to press the rope elements into said shaping grooves to deform the rope elements to the shape of the shaping grooves, the axes of said pressure rollers being disposed in planes passing through the axis of rotation of the rotor.

4,641,493
LUBRICANT APPLICATOR FOR TWO-FOR-ONE TWISTER
 Mitsuo Fukunaga, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan
 Filed Jan. 10, 1985, Ser. No. 690,665
 Claims priority, application Japan, Jan. 21, 1984, 59-6712[U]
 Int. Cl.⁴ D01H 13/30, 7/86
 U.S. Cl. 57—296

5 Claims



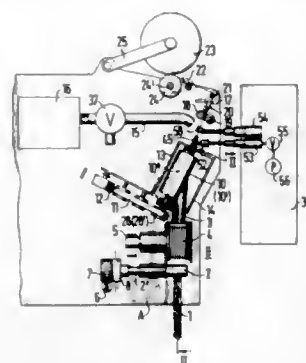
1. A yard lubrication device in a two-for-one twister comprising:
 a spindle having a substantially vertical spindle shaft capable of supporting a yarn package thereon,
 a tenser disposed adjacent an upper portion of said spindle shaft above the location of said yarn package
 a guide surface having an aperture therein mounted on said tenser,
 means for drawing yarn from said yarn package across said guide surface and through said aperture disposed in said guide surface,
 a lubrication element protruding from a portion of said guide surface,
 means for adjusting the degree of protrusion of said lubrication element from said guide surface, and
 means for intermittently bringing said yarn into contact with said lubrication element as said yarn is drawn from said yarn package through said aperture.

4,641,494
DEVICE FOR FEEDING-IN A THREAD END INTO A SPINNING NIP OF A FRICTION SPINNING MACHINE
 Hans Raasch, and Heinz-Georg Wassenhoven, both of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany
 Filed Dec. 4, 1985, Ser. No. 805,327
 Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 3444427
 Int. Cl.⁴ D01H 15/02, 1/135
 U.S. Cl. 57—401

5 Claims

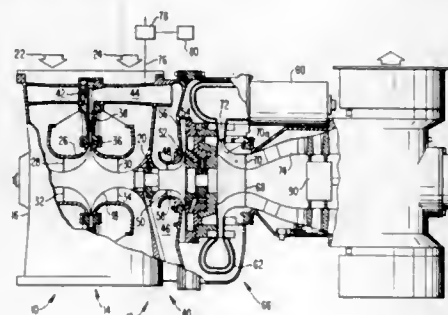
1. Device for feeding-in a thread end through a thread draw-off channel of a thread guiding element into a spinning nip of a friction spinning device, comprising a pressurized-gas injection device in the thread guiding element for producing an air flow in the thread draw-off channel opposite in direction to that of a thread draw-off direction of a spinning operation in

the friction spinning device, whereby a thread end is entrained thereby, the thread draw-off channel continuing along the



spinning nip from a termination thereof in the thread guiding element.

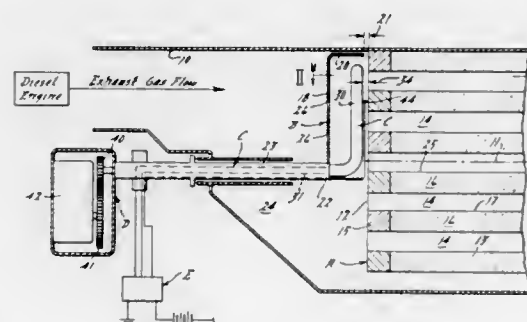
4,641,495
DUAL ENTRY RADIAL TURBINE GAS GENERATOR
R. Jan Mowill, Oslo, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway
Filed Feb. 5, 1985, Ser. No. 698,586
Int. Cl.⁴ F02C 3/10
U.S. Cl. 60—39.161 26 Claims



1. A high efficiency, single spool gas turbine gas generator comprising:
 - (a) compressor means for providing an overall pressure ratio of greater than about 15:1, said compressor means including:
 - (i) a first stage, double-entry centrifugal air compressor having a pair of entrances and a common exit,
 - (ii) a second stage, centrifugal air compressor positioned adjacent to said first stage compressor, said second compressor stage having an entrance that is flow-connected to said first stage common exit and also having a second stage exit, and
 - (iii) a shaft assembly for mechanically interconnecting said first and said second stage for rotation at the same angular speed;
 - (b) combustor means operatively connected to the second stage exit for receiving the compressed air and combustion fuel using the compressed air to generate combustion gases;
 - (c) a single stage radial inflow turbine having an inlet and an outlet, said turbine being operatively connected directly to said shaft assembly drive and also being flow connected to said combustor means for receiving at said turbine inlet, and partially expanding, the combustion gases; and
 - (d) exhaust means flow connected to said turbine outlet for channeling the partially expanded combustion gases for further external work-producing expansion, and wherein
 - (i) said first and said second compressor stages each having a configuration selected to provide a pressure ratio

of said first compressor stage greater than about twice the pressure ratio of said second compressor stage, and (ii) said first and second compressor stages each having a configuration selected to exhibit a respective specific speed each greater than about 0.60 at about optimum efficiency.

4,641,496
CONTINUOUS ROTARY REGENERATION SYSTEM FOR A PARTICULATE TRAP
Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 17, 1984, Ser. No. 682,523
Int. Cl.⁴ F01N 3/02
U.S. Cl. 60—274 8 Claims

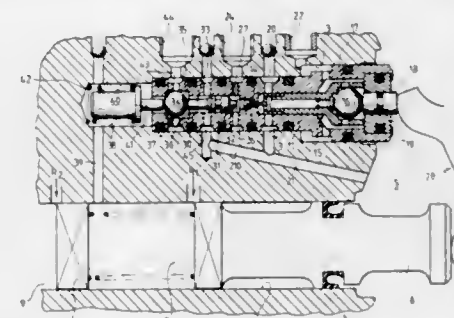


1. An apparatus for continuously regenerating a particulate trap for an internal combustion engine, the apparatus having means for normally conducting exhaust gas flow of the engine to and through the entrance face of the trap, the entrance face of the trap being a circle, the trap having a plurality of generally aligned flow channels extending from the entrance face and along which columns of said particulates are collected, the apparatus comprising:
 - (a) movable means effective to shield a sector of said circle of said trap entrance face from the full flow of said exhaust gas, while permitting a portion of said exhaust gas flow to bleed therethrough at a flow rate substantially less than the flow rate of said exhaust gas flow;
 - (b) electrical resistance heating means having a moveable heating element carried only by said shield and interposed between said filter trap face and said shield; and
 - (c) means for substantially moving said shield and element conjointly about the apex of said sector to traverse the entire frontal entrance face of said trap to ignite one or more columns of the particulates in said trap aligned with said shield and element, said ignited particles and bleed flow causing oxidation to proceed throughout the extent of said columns of particulates without need of additional exterior heat.

4,641,497
DEVICE FOR GENERATING BRAKING PRESSURE FOR A BRAKING INSTALLATION WITH TWIN CIRCUITS
Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Feb. 15, 1985, Ser. No. 701,906
Claims priority, application France, Feb. 22, 1984, 84 02654
Int. Cl.⁴ B60T 13/58, 17/00; F15B 7/00
U.S. Cl. 60—563 9 Claims

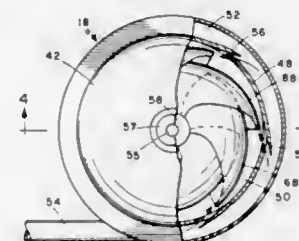
1. A device for generating braking pressure for a braking installation including at least two braking circuits, particularly for a motor vehicle, including a casing enclosing a working chamber intended to be joined to a first braking circuit, a sliding actuating piston having a first end exposed to the working chamber and defining, at a second end, a first braking

pressure chamber intended to be joined to a braking circuit, control valve means for admitting selectively into the working chamber fluid pressure from a source of fluid pressure, and an actuating plunger intended to be joined to a brake pedal and projecting into the working chamber to be coupled mechanically with the first end of the actuating piston and with the control valve means, characterized in that the device includes a master cylinder piston exposed on one side to pressure existing in the first braking pressure chamber and defining on the other side a second braking pressure chamber intended to be joined to a second braking circuit, a high pressure chamber intended to be joined permanently to the source of fluid pres-



sure and communicating with the control valve means and with one end of a bore in which is mounted slidably and sealingly a mode selector piston coupled to three-way valve means, the three-way valve means pushed elastically in a direction toward the mode selector piston and capable of putting an output orifice of the casing, intended to be joined to the first braking circuit, into communication with one of the working chamber and first braking pressure chamber, the braking pressure chambers communicating, in a rest position of the device, with at least one reservoir, the three-way valve means comprising a ball situated in an intermediate enlargement of the bore and defining with the bore two annular seats facing one another and communicating with the output orifice.

4,641,498
GEOHERMAL TURBINE
Peter Markovitch, Los Angeles, and Philip H. Klepesch, La Jolla, both of Calif., assignors to Geothermal Energy Development Corporation, La Jolla, Calif.
Filed Sep. 30, 1982, Ser. No. 430,406
Int. Cl.⁴ F01D 1/36; F03G 7/04
U.S. Cl. 60—641.2 12 Claims

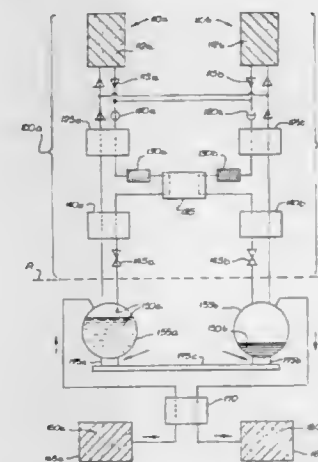


1. A two-phase fluid turbine comprising:
 - a housing having a generally cylindrical rotor chamber;
 - a plurality of nozzles for communicating fluid to said chamber at spaced points around the periphery of said chamber;
 - a manifold for communicating pressurized fluid from a source to said nozzles; and
 - a rotor mounted coaxially within said rotor chamber and including a plurality of radially converging blades mounted around a central hub, each blade overlapping the next adjacent blade by a sufficient amount to form converging flow guiding channels between the opposing overlapping faces of adjacent blades for directing flow

from the exterior to the interior of the rotor, each blade having a radially outward tip positioned for interruption of fluid from said nozzles; said blades defining spiral evolute segments diminishing in radius and width in the direction of rotation.

4,641,499
TEN DEGREE KELVIN HYDRIDE REFRIGERATOR
Jack A. Jones, North Hollywood, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 14, 1985, Ser. No. 701,486
Int. Cl.⁴ F17C 11/00 11 Claims

U.S. Cl. 62—48



1. A refrigeration system for operation at temperatures lower than 20 degrees Kelvin, the system comprising:
 - liquefying means for producing a volume of liquid hydrogen from gaseous hydrogen;
 - a liquid hydrogen container for containing the volume of liquid hydrogen produced by the liquefying means;
 - an absorption vessel containing a chemical sorbent which absorbs gaseous hydrogen, the absorption vessel communicating with the liquid hydrogen container; and
 - cooling means for cooling the sorbent, wherein when the cooling means is activated, the sorbent absorbs gaseous hydrogen from the liquid hydrogen container to thereby freeze the hydrogen contained therein and thereafter sublime the frozen hydrogen.

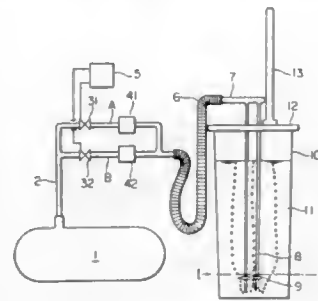
4,641,500
METHOD OF MAKING ICE HAVING A STRIPED PATTERN AND AN APPARATUS FOR MAKING THE SAME

Hidehiro Hosokawa, Yokohama; Yoshimichi Iida, Saitama, and Hisatsugu Takahashi, Chiba, all of Japan, assignors to Nichirei Corporation, Tokyo, Japan
Filed May 28, 1985, Ser. No. 738,465
Claims priority, application Japan, May 28, 1984, 59-106672
Int. Cl.⁴ F25C 1/18 5 Claims

U.S. Cl. 62—70

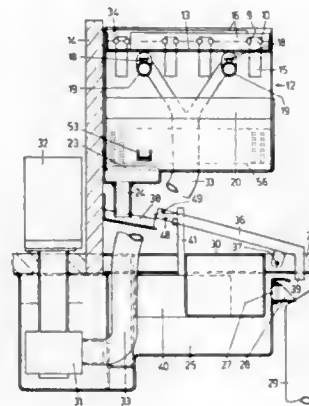
1. A method of making ice having a striped pattern which comprises the step of cooling and freezing raw water containing at least one soluble material, said cooling and freezing of the raw water being performed while simultaneously agitating the raw water during all or part of the cooling and freezing step, said agitating of the raw water being alternately repeated in two steps, the first step being with agitating the raw water

with a degree of agitation effective to form a transparent ice layer and the second step being without agitating or with



agitating the raw water with a degree of agitation effective to form a semi-transparent ice layer.

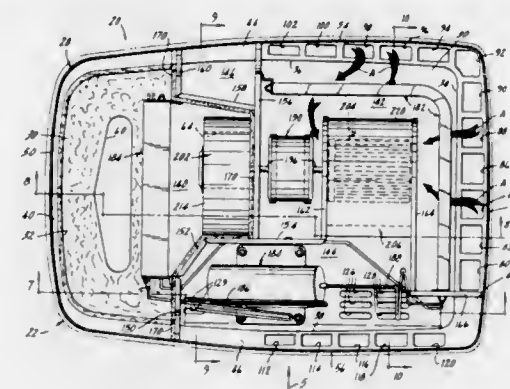
4,641,501
DEVICE FOR MAKING ICE CUBES
Marcellus C. P. L. Simkens, Hoogweg 24, B - 8050 Wingene, Belgium
Filed Feb. 6, 1986, Ser. No. 826,901
Claims priority, application Belgium, Feb. 14, 1985, 901732
Int. Cl.⁴ F25D 17/02
U.S. Cl. 62—188 16 Claims



1. A device for making ice cubes, which device comprises:
a cooling device with at least one cooling element,
a water circuit which comprises:
a water tank,
means for feeding water from the water tank to the cooling element,
and
means for returning the excess water, which has not been converted to ice, to the water tank,
means for supplying before the ice formation water to said water tank,
water discharge means,
means for thawing somewhat after the ice formation, that ice formed on the cooling element, so that said ice is released from said cooling element,
a control device which so controls the means for supplying water to the water tank, the means for feeding water to the cooling element and the means for thawing somewhat the ice after its formation, that, before forming the ice, some water is added to the water tank, after adding said water, the supply is stopped, and as soon as enough ice has been formed on the cooling element, the means for feeding water from the water tank to the cooling element, stop the water feed, and the means for thawing somewhat the ice are started,
and
means for diverting during ice formation, a portion of that

water circulating in the water circuit and leading same to the water discharge means, said means for diverting a portion of the water comprising a movable water-guiding member which is mounted in or on the water circuit, which member is movable between a position wherein at least a portion of the water flowing in said circuit is diverted to the water discharge means and a position wherein diverting does not occur, and which member is controlled by the control device so as to move from one position to the other in function of the water level in the water tank.

4,641,502
ROOF MOUNT AIR CONDITIONER
Roger L. Aldrich, LaGrange, Ind.; Peter C. Bodett, Sturgis, Mich., and Richard E. Kelly, Orland, Ind., assignors to The Duo-Therm Corporation, Ind.
Continuation of Ser. No. 690,097, Jan. 9, 1985, abandoned. This application Jul. 9, 1986, Ser. No. 883,581
Int. Cl.⁴ B60H 10/02
U.S. Cl. 62—244 32 Claims

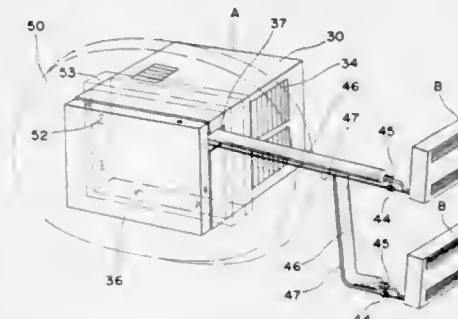


1. An air conditioning unit comprising a cabinet with an assemblage of mechanical refrigeration system components mounted in an operable array in said cabinet and including a condenser coil disposed in a condenser coil compartment with said cabinet, said cabinet comprising a base pan having said components mounted thereon and a removable shroud mounted over said base pan to cover said components, wherein the improvement comprises said base pan having a bottom wall and an upstanding perimeter wall connected to said bottom wall having at its upper edge an outwardly protruding porch flange to provide an overhang ledge extending at least partially along the perimeter of said base pan, said ledge having air inlet and outlet means therein providing air flow communication between ambient air exteriorly of said cabinet and said interior condenser coil compartment of said unit.

11. An air conditioning unit adapted for roof mounting on a recreational vehicle or the like and presenting an overall low profile appearance thereon comprising a cabinet having a base pan and a cover with an assemblage of mechanical refrigeration system components mounted in an operable array in said cabinet on said base pan, said cabinet being generally rectangular in plan view with its front and rear ends forming the narrower ends thereof and adapted to be juxtaposed respectively to the front and rear ends of the vehicle, said cabinet having bulkhead means therein sub-dividing the interior of said cabinet into at least an evaporator coil compartment at the interior front of said cabinet and a condenser coil compartment extending from said evaporator coil compartment to the interior rear of said cabinet, wherein the improvement comprises having said components include first and second low profile centrifugal blowers disposed respectively in said evaporator and condenser compartments for inducing air flow respectively there-through and oriented with their rotational axes extending front

to rear in said cabinet, an electric motor coaxially disposed between said blowers and having a drive shaft on which said blowers are fixedly drivingly mounted for direct rotation therewith for concurrent operation thereof, and a rotary hermetic compressor disposed in a cylindrical casing and oriented with its longitudinal axis generally horizontal generally parallel to said blower axes and with its maximum vertical dimension below that of said blowers to thereby reduce the overall vertical dimension of said unit components to provide a low profile cabinet.

4,641,503
OUTDOOR UNIT FOR AN AIR CONDITIONING APPARATUS OF THROUGH-THE-WALL MULTITYPE
Tadashi Kobayashi, Urawa, Japan, assignor to Daikin Industries Ltd., Osaka, Japan
Filed Dec. 17, 1985, Ser. No. 809,874
Claims priority, application Japan, Jan. 19, 1985, 60-5947[U]
Int. Cl.⁴ F25D 23/12
U.S. Cl. 62—259.1 7 Claims

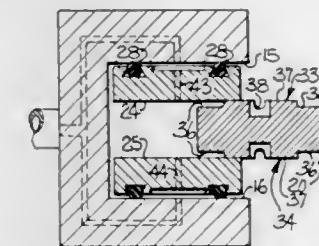


1. An air conditioning apparatus comprising an outdoor unit for mounting within an opening extending from an interior wall to an exterior wall of a building and at least one indoor unit for mounting within a room of the building, said outdoor unit comprising:

- an outdoor unit casing, having a front portion and a rear portion, for mounting within the opening extending from an interior wall to an exterior wall of a building;
- a tray removably provided within said casing;
- a sectioning means provided on said tray for sealing said forward portion from said rearward portion of said casing;
- an outdoor unit air conditioning means for controlling and changing the temperature of a circulation fluid that is circulated to said at least one indoor unit, said outdoor unit air conditioning means is provided in the rear portion of said casing, said outdoor unit air conditioning means is supported by said tray;
- an electrical control means for controlling the operation of said outdoor unit air conditioning means, said electrical control means is provided in the front portion of said casing, said electrical control means is supported by said tray;
- an outdoor unit connection means for releasably coupling said outdoor unit air conditioning means of said outdoor unit to said at least one indoor unit, said outdoor unit connection means is provided in the front portion of said outdoor unit casing, said outdoor unit connection means is supported by said tray;
- a front cover means, at least partially removable from said outdoor unit casing, for providing an individual quick and easy access to said forward portion of said outdoor unit for releasably coupling said outdoor unit to said at least one indoor unit by means of said outdoor unit connection means, for allowing the individual quick and easy access to said electrical control means, and for providing an opening in said outdoor casing for removal of said tray supporting said outdoor unit air conditioning means, said

electrical control means and said outdoor unit connection means as a unit.

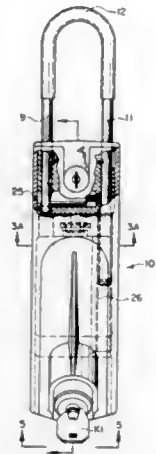
4,641,504
YARN HEATING CHAMBER
Walter Runkel, Erich Lenk, and Karl Bauer, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany
Filed Jun. 11, 1985, Ser. No. 743,436
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3422031
Int. Cl.⁴ D06B 3/04
U.S. Cl. 68—5 E 13 Claims



1. A heating chamber for thermally processing an advancing yarn, and comprising

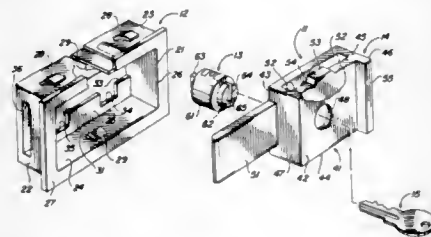
- a housing having a pair of transversely spaced apart and parallel side walls which extend in the longitudinal direction, with each of the side walls including generally parallel, inwardly facing side wall surfaces,
- a pair of longitudinally extending outer plates disposed between said side walls, with each of said outer plates having an outer surface opposing the inwardly facing side wall surface of the adjacent side wall, and an opposite, inner surface,
- a longitudinally extending central plate disposed between said outer plates and having opposite outer surfaces opposing respective ones of the inner surfaces of the two outer plates, with each of the opposite outer surfaces of the central plate including a discontinuity extending along the longitudinal length thereof, and with said central plate being laterally movable with respect to said two outer plates for movement between an operative position wherein the opposing surfaces of said plates overlies each other and said discontinuities define a relatively narrow yarn passage on each side of said central plate, and a threading position wherein said discontinuities are separated from the inner surfaces of said two outer plates to facilitate threading of yarns into the discontinuities,
- heating duct means for introducing a hot pressurized vapor into said yarn passage when said plates are in the operative position, and
- means for biasing said two outer plates inwardly toward each other so as to resiliently engage said central plate therebetween when in said operative position wherein each of said inwardly facing side wall surfaces and the opposing outer surface of the adjacent outer plate define a contact pressure gap therebetween, and said biasing means comprises a portion of said heating duct means which communicates with each of said gaps for conducting a portion of said hot pressurized vapor thereto.

4,641,505
SECURITY DEVICE FOR REAL ESTATE BROKERS
 Thomas A. Maurice, 9111 Orangevale Ave., Orangevale, Calif. 95662
 Continuation-in-part of Ser. No. 433,981, Dec. 27, 1982, Pat. No. 4,532,783. This application Mar. 1, 1985, Ser. No. 707,383
 Int. Cl.⁴ E05B 65/48
 U.S. Cl. 70—63 22 Claims



1. A lock comprising, in combination, a housing having an interior and a portal communicating said interior with areas external said housing, said portal having two sides provided with opposed facing trackways, a sliding door cover dimensioned to occlude said portal by sliding within said trackways, a solidary locking means fixedly securing said sliding door on said housing, actuation of said solitary locking means moving said cover from locking engagement with said housing to exposing said housing interior, a shackle supported by said housing having a first segment extending beyond said housing and a second segment within said housing yet not accessible from said housing interior, whereby access to said interior does not provide communication with said shackle second segment, and shackle locking means passing through said housing isolated from said interior and operatively connected to lock and unlock said shackle, said shackle locking means inaccessible from said interior to thereby provide two distinct locking systems.

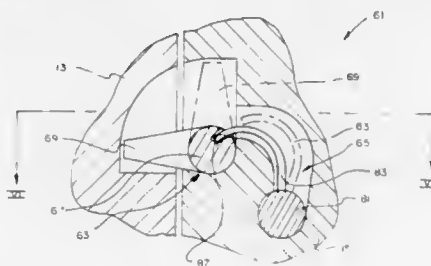
4,641,506
SLIDING BOLT LOCKING DEVICE
 James E. Boucher, Leominster, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.
 Filed Apr. 9, 1985, Ser. No. 721,413
 Int. Cl.⁴ E05B 65/06
 U.S. Cl. 70—129 11 Claims



1. A locking device comprising: housing means adapted for mounting in one part of an enclosure so as to be fixed to and immovable with respect

thereto, said housing defining first and second engagement surfaces; bolt means retained by said housing means and adapted for reciprocating movement therein between open and latched positions; said bolt means comprising a latch portion adapted when in said latched position to engage another part of the enclosure movable relative to the one part thereof; a key operated cylinder lock retained by and movable with said bolt means during said reciprocating movement, said lock being rotatable between locked and unlocked positions; and a locking member retained by and movable both reciprocally and rotationally with said lock and adapted to be engaged with said first and second engagement surfaces and prevent said reciprocating movement of said bolt means with said lock in said locked position; and to be disengaged from said first and second engagement surfaces to allow said reciprocating movement of said bolt means with said lock in said unlocked position and wherein said first engagement surface engages said locking member with said lock in said locked position and said bolt means in said latched position and said second engagement surface engages said locking member with said lock in said locked position and said bolt in said open position.

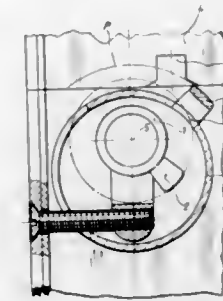
4,641,507
LOCK MECHANISM
 Betty J. Demonbreun, Memphis, Tenn., assignor to W. Stuart McCloy, Jr. and W. Stuart McCloy, Sr., both of Memphis, Tenn.
 Filed Feb. 6, 1984, Ser. No. 577,517
 Int. Cl.⁴ E05B 35/12; E05G 3/00
 U.S. Cl. 70—339 2 Claims



1. A lock mechanism for preventing unauthorized entry through a door member of the type movably associated with a door jamb, said lock mechanism comprising: (a) first lock means movably associated with said door jamb for movement between a locked position in which said door member is locked in a closed position and an unlocked position; said first lock means including a body member and including a lug member mounted relative to said body member thereof for extending between said door jamb and said door member when said first lock means is in said locked position, said first lock means having two cavities that are aligned along said body member thereof; and (b) second lock means movably associated with said first lock means for movement between a locked position in which said first lock means is locked in said locked position and an unlocked position; said second lock means including a body member and including two arms that are aligned along said body member thereof and that are fixedly mounted on said body member thereof and extending outwardly thereof for lockably engaging said body member of said first lock means by extending into respec-

tive ones of said cavities of said first lock means when said second lock means is in said locked position.

4,641,508
LOCK WITH BOLT ENLARGEMENT
 Dieter Günther, Berlin, Fed. Rep. of Germany, assignor to Zeiss Ikon Aktiengesellschaft, Fed. Rep. of Germany
 Filed Jul. 25, 1985, Ser. No. 758,823
 Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427970
 Int. Cl.⁴ E05B 17/04
 U.S. Cl. 70—380 3 Claims

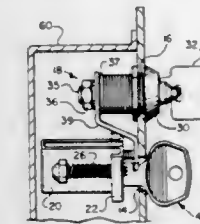


1. A lock having: a lock beard; a rotatable ring surrounding said lock beard, said ring having a recess for engagement by said lock beard, whereby said ring rotates with said lock beard upon engagement there-with; a stop formed on said ring; a bolt having a tumbler plate and said tumbler plate having a notch formed therein for cooperation with the stop formed on said ring; said lock characterized in that: said lock beard, said ring and said bolt and tumbler plate all lie in one plane; the radius described by said lock beard upon rotation is less than the distance between the rotational axis of the lock beard and the parallel sides of the bolt notch in said tumbler plate; said stop is provided on the outside circumference on said ring and is engageable with said bolt notch; a rotatable lock cylinder having said lock beard therein, said cylinder rotatable about said rotational axis; and said ring surrounding said lock cylinder being rotatable about a different axis.

4,641,509
MASTER KEYBOARD
 Ronnie K. Batchelor, 109 S. Carolina Ave., Spencer, N.C. 28145, and Ronnie R. Rowe, 207 Eastwood Dr., Salisbury, N.C. 28144
 Filed Oct. 16, 1985, Ser. No. 787,958
 Int. Cl.⁴ E05B 11/00
 U.S. Cl. 70—388 11 Claims

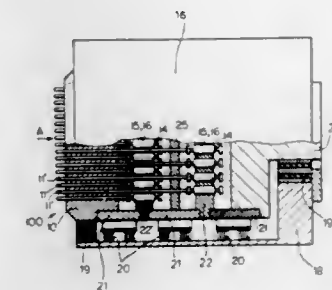
1. A device for the retention, protection and control of keys, comprising: a. a face plate being provided with at least one slot adapted to receive at least one key having a notch adjacent the head of such key adapted to accept an arm of a universal locking mechanism; b. a universal locking mechanism fixed to said plate, spaced from and associated with such slot, such locking mechanism being controllable by a universal key, said mechanism carrying a stop means thereon; c. a receptacle associated with and mounted about said slot on the reverse side of said plate to receive said at least one key; d. biasing means attached to the reverse side of said plate and

engaging said receptacle for urging said receptacle toward said plate; e. an arm fixed to the universal locking mechanism on the reverse side of said plate, and adapted to move into a first position to cover a portion of said slot and engage said



notch on said at least one key when at one limit of its movement, and to move to a second position remote from said slot when at the other limit of its movement; and f. a movement limiting means associated with said arm for engagement with said stop means at the limit of movement of said arm.

4,641,510
ELECTROMAGNETICALLY OPERATED PEENING TOOL
 Rainer Mitsching, Mehring, and Heinz Nennstiel, Koenigsbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany
 Filed Oct. 28, 1985, Ser. No. 791,790
 Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442089
 Int. Cl.⁴ B21J 7/16
 U.S. Cl. 72—53 12 Claims



1. An electromagnetically operated peening tool, comprising housing means, a plurality of peening needles for work hardening a work piece surface, carrier means for movably supporting and guiding said peening needles in said housing means, electromagnetic drive means for operating said peening needles in a back and forth movement, each peening needle having its own magnetic needle armature for cooperation with said electromagnetic drive means, each peening needle further having a tool end extending out of said carrier means for impacting a work piece surface.

4,641,511

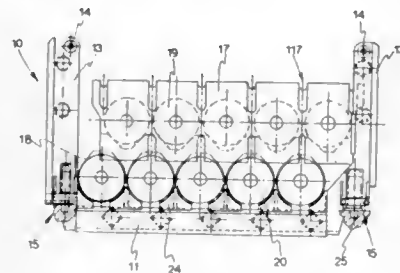
STRAIGHTENING MACHINES, AND STRAIGHTENING MACHINES THUS IMPROVED

Alfredo Poloni, Ronchi dei Legionari, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy
Filed Nov. 2, 1984, Ser. No. 667,832

Claims priority, application Italy, Nov. 21, 1983, 83505 A/83
Int. Cl.⁴ B21D 1/02, 1/14

U.S. Cl. 72—160

9 Claims



1. A straightening machine for rolled, extruded, or drawn products, comprising:

a frame;

upper straightening rollers and lower straightening rollers mounted in said frame, said upper straightening rollers being offset relative to said lower straightening rollers;

carrier means mounted within said frame comprising engagement means for engaging a lifting device to vertically withdraw said carrier means from the frame, and cradle means capable of at least momentary support of at least a part of said straightening rollers;

upper and lower supports for said upper and lower straightening rollers, said upper support containing a plurality of said upper straightening rollers and said lower support containing a plurality of said lower straightening rollers, said lower supports being vertically movable with respect to said upper supports, said upper and lower supports having cooperating faces which engage each other at least momentarily during withdrawal of said carrier means from the frame; and

means on said frame and carrier for at least momentarily positioning said carrier means on said frame by engagement of said carrier means with said frame.

4,641,512

PLANT TO FORM AND COOL COILS

Antonino Duri, Pradamano, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Italy

Filed Aug. 30, 1985, Ser. No. 771,041

Claims priority, application Italy, Sep. 19, 1984, 60460/84[U]
Int. Cl.⁴ B21B 43/04; B21F 21/00; C21D 8/06

U.S. Cl. 72—201

6 Claims

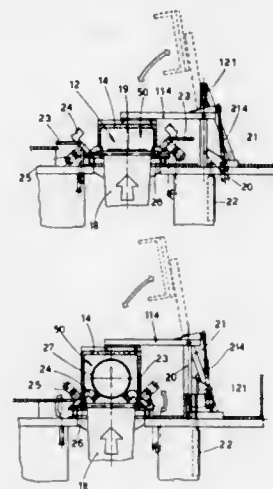
1. A plant to form and cool metal coils, comprising:

- a conveyor for horizontal coils;
- conveyor means for vertical coils located adjacent said conveyor adapted to convey vertical coils directly above said conveyor, said conveyor means being movable from an inactive to a working position;
- at least one coil-forming head to form horizontal and vertical coils and place the same on one of said conveyor and said conveyor means;

a movable cooling hood having a top wall and spaced-apart depending opposed side walls, said hood being movable from a first lower position over horizontal coils on the conveyor to a second upper position over vertical coils on the conveyor means;

movable side walls adapted to move from an inactive position when said cooling hood is in its first position to a working position adjacent to and coplanar with the depending side walls of the cooling hood when the cooling

hood is in its second position, whereby said movable side walls together with said hood form a cooling tunnel; and



a station for receiving either horizontal or vertical coils and forming wound bundles.

4,641,513

COLD ROLLING PROCESS FOR TUBES, BY MEANS OF A PILGER ROLLING MILL AND THE ROLLING MILL FOR ITS EXECUTION

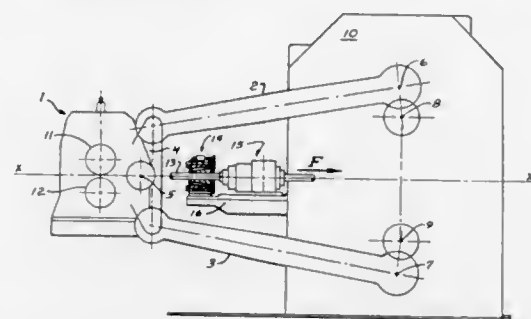
Pierre Peytavin, Neuilly, France, assignor to Vallourec, France
Filed Jul. 30, 1984, Ser. No. 635,458

Claims priority, application France, Aug. 1, 1983, 83 12922

Int. Cl.⁴ B21B 21/04

U.S. Cl. 72—214

5 Claims



1. A process for cold rolling a tubular blank by means of a Pilger rolling mill, the blank rolled between a mandrel lodged inside the blank and a pair of rolls supported on a stand, the process comprising the steps of:

(a) oscillating the stand parallel to the axis of the blank between a downstream neutral point and an upstream neutral point;

(b) driving the rolls in alternating directions in synchronism with the motions of the stand relative to the blank to work the blank during both downstream and upstream stand motions;

(c) moving the blank downstream relative to the stand when the stand is near the downstream neutral point; and

(d) providing holding back means downstream of the stand;

(e) holding back the blank against upstream motion, the holding back being accomplished by said holding back means

whereby upstream motion of the blank is prevented and the portion of the blank which is already rolled will be prevented from re-entering the rolling phase.

4,641,514

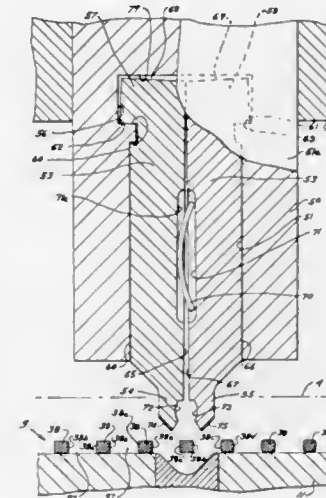
TOOLING FOR MANUFACTURE OF ELECTRICAL CONTACTS

John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312
Division of Ser. No. 295,748, Aug. 24, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 553,168

Int. Cl.⁴ B21D 41/00

U.S. Cl. 72—400

4 Claims



1. In a progressive die having punch pad and die pad bolsters relatively reciprocal along an axis and punch and die means respectively mounted thereon for stamping electrical contacts, each contact having a contact body, the tooling comprising:

a pair of closely spaced strikers, each striker having head means including an interior working surface, the working surfaces facing one another and each said head means being configured to permit entry of the heads respectively into the spaces on opposite side edges of a contact body in a strip being worked by punch and die means whereby the working surfaces can respectively engage said opposite side edges for upsetting the same and to permit exit respectively from said spaces after the working operation; and means connected to the punch pad bolster and to the die pad bolster, said means:

(a) mounting the strikers on said punch pad bolster;

(b) providing for the strikers as mounted on said punch pad bolster to reciprocate simultaneously with the punch pad bolster, along said axis;

(c) providing for the strikers as mounted on said punch pad bolster to move toward and away from one another in a plane containing said vertical axis;

(d) providing for the strikers as mounted on said punch pad bolster to be positioned for said head means to respectively enter said spaces and to move in said plane toward one another when punch pad bolster is in the working stroke to cause the working surfaces to engage said opposite edges and upset the same to form operating surfaces thereon; and

(e) providing for the strikers as mounted on said punch pad bolster to move in said plane away from one another for said head means to disengage the working surfaces from a worked contact body and to exit from said spaces when the punch pad bolster is in the return stroke.

4,641,515

INTERMEDIATE STORAGE IN A TRANSFER PRESS

Hermann Braun, Eisligen; Helmut Dumschat, Donzdorf; Kurt Strommer, Kuchen, and Sieghard Mueller, Ottenbach, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goepfingen, Fed. Rep. of Germany

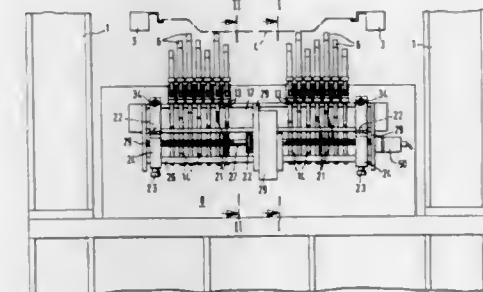
Filed Mar. 11, 1985, Ser. No. 710,089

Claims priority, application European Pat. Off., Mar. 20, 1984, 84103029.9

Int. Cl.⁴ B21J 13/08

U.S. Cl. 72—405

12 Claims



1. An intermediate storage mechanism in a transfer press installation having multiple working areas spaced apart from one another for making essentially large and different surface configuration workpieces which are conveyed to an idling stage area between said at least two working areas, comprising: a plurality of storage template means with at least two storage template means per workpiece of different configuration, each of said at least two storage template means having a support surface means matched to a bottom surface of the same workpiece, the storage template means being liftable at least in the generally vertical direction to store a workpiece, lifting means for lifting the said at least two storage template means corresponding to the configuration of the workpiece to be stored, and at least one adjusting means operable to provide a relative movement between the at least two storage template means to be respectively lifted and the lifting means to position the lifting means into lifting position, relative to the at least two template means to be lifted.

4,641,516

BENDING TOOL

Masao Satoh, Hatano, Japan, assignor to Amada Metals Company, Limited, Japan

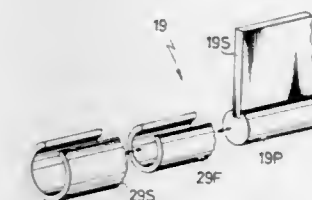
Filed Oct. 9, 1984, Ser. No. 658,703

Claims priority, application Japan, Oct. 13, 1983, 58-157297[U]

Int. Cl.⁴ B21D 37/04

U.S. Cl. 72—481

6 Claims



1. A bending tool for a press comprising:

a fixed punch having its external peripheral surface of an arcuate shape and mounted on the lower edge of a shank section of the press, the diameter of which is greater than the width of said shank section, means for rigidly fixing the fixed punch to the shank section,

and a plurality of semicylindrical punches which are detachably and telescopically mounted on the fixed punch.

4,641,517
CONTROL SYSTEM ACTUATOR POSITION SYNTHESIS FOR FAILURE DETECTION

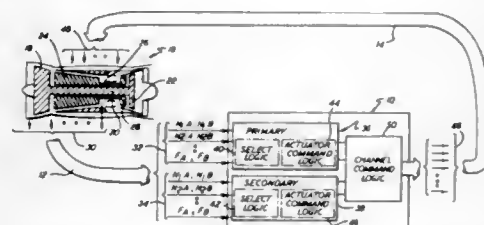
Wayne R. Spock, Canton, and Peter J. Urbanik, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1984, Ser. No. 683,887

Int. Cl.⁴ G01M 15/00

U.S. Cl. 73—116

3 Claims



1. Apparatus for diagnosing failures in an actuator loop of a digital electronic engine control (DEEC) which controls the actuator position in each of a plurality of successive sample intervals in dependence on the difference signal magnitude between an actuator position command signal sample and an actual actuator position signal sample selected from one of two sensed actuator position signals provided from first and second position sensors associated with the actuator, comprising:

- model means, for simulating the signal response of the actuator loop to the difference signal magnitude between the actuator position command signal sample and the selected actual position signal sample from a preceding sample interval, to provide a synthesized actuator position signal sample representative of the expected actuator position in a present sample interval;
- signal selection means, responsive to the actual position signal samples of each sensed actuator position signal and responsive to said synthesized signal sample, for determining the difference signal magnitude between each actual position sample and said synthesized sample to select for use by the DEEC, a first one of the actual samples whose difference value is within a maximum position difference limit,
- for rejecting for use in a sample interval an actual sample having a difference signal value greater than said maximum position limit,
- for providing a fail signal identifying as failed any of said position sensors providing an actual signal sample having a difference magnitude greater than said maximum limit in a successive number of sample intervals; and
- recording means, for recording each of said fail signals from said selection means to provide a failure diagnosis record for the actuator loop.

4,641,518
PROCESS FOR THE NON-DESTRUCTIVE INSPECTION OF SURFACE DEFECTS

David J. Hutchings, Wiesloch, Fed. Rep. of Germany, assignor to Brent Chemicals International PLC, Buckinghamshire, Great Britain

PCT No. PCT/EP84/00362, § 371 Date Jul. 25, 1985, § 102(e) Date Jul. 25, 1985, PCT Pub. No. WO85/02464, PCT Pub. Date Jun. 6, 1985

PCT Filed Nov. 16, 1984, Ser. No. 762,065

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342855

Int. Cl.⁴ G01N 21/91

U.S. Cl. 73—104

17 Claims

1. A process for the non-destructive inspection of surface

defects, where initially a solution with one or more dyes having substantially no emission under UV-light is applied to the surface being inspected and the excess solution is removed after the dye has penetrated the surface defects of the surface being inspected, the surface is then coated with an absorbent fluorescent developer leaving behind an absorbent fluorescent developer coating that in daylight is in high contrast to the color to the color of the dye initially applied and contains at least one fluorescent component such that the absorbent fluorescent developer coating fluoresces under UV-light, so that when UV-light is applied to said surface being inspected its surface defects appear thereunder as blackened portions within the lightemitting ambient resulting from fluorescing by the absorbent fluorescent developer coating, the improvement being that the absorbent fluorescent developer used has its at least one fluorescent component exclusively constituted by at least one optical brightener in a proportion between 0.02 and 2.0% by weight of the total absorbent fluorescent developer weight.

4,641,519
DEVICE FOR THE DETERMINATION OF ROTATIONAL SPEED

Hans-Christof Klein, Hattersheim; Ulrich Armonier; Hermann Oesterle, both of Lauf, and Juergen Jendroska, Liederbach, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

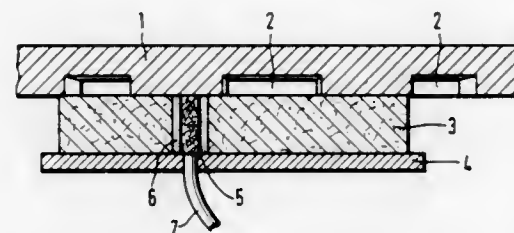
Filed Jul. 15, 1985, Ser. No. 755,680

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425825

Int. Cl.⁴ G01L 5/28

U.S. Cl. 73—129

17 Claims



1. A device for determining the rotational speed of a rotating component, in particular of a brake disc of an automotive vehicle brake, said brake disc containing recesses shaped at preferably regular angular distances and lying opposite to a probe, wherein a contact element (5) is employed as the probe which is movable into abutment on the brake disc (1) and which, when overriding each recess (2), interrupts an electric circuit comprising an evaluation circuit.

4,641,520
SHEAR WAVE TRANSDUCER FOR STRESS MEASUREMENTS IN BOREHOLES

Nai-Hsien Mao, Castro Valley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1984, Ser. No. 643,348

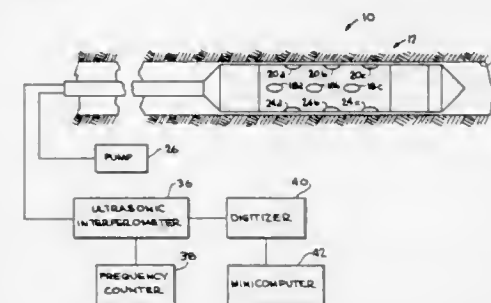
Int. Cl.⁴ G01V 1/40; E21B 49/00

U.S. Cl. 73—151

8 Claims

1. A method for determining stress around a borehole, comprising: generating a radially polarized shear wave in the borehole at two positions spaced apart by 90°; transmitting the radially polarized shear waves in a direction along the borehole; measuring the velocity of the radially polarized shear waves; generating a tangentially polarized shear wave in the borehole at two positions spaced apart by 90°;

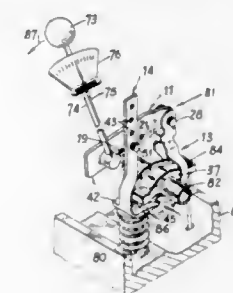
transmitting the tangentially polarized shear waves in a direction along the borehole; measuring the velocity of the tangentially polarized shear waves;



calculating the stress induced shear wave velocity anisotropy from the measured velocities; and calculating the stress from the shear wave velocity anisotropy according to a predetermined relationship.

4,641,521
VALVE-SPRING TOOL
Manuel Lawrence, 32 Lanovette St., Meriden, Conn. 06450
Filed Mar. 4, 1985, Ser. No. 708,024
Int. Cl.⁴ G01M 13/00; G01L 1/04
U.S. Cl. 73—161

6 Claims

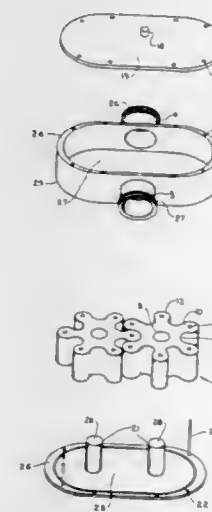


1. A tool having particular utility for testing the tension characteristics of a valve spring mounted with a valve spring washer about a valve stem on an engine having a respective rocker arm mounted on a pedestal, comprising: an elongate base member having a beam configuration; first attachment means being pivotally attachable to a first end portion of said base member, and having a downwardly extending arm member with a pair of lower anchor prongs extending in a direction generally normal to said arm member, said pair of anchor prongs being dimensioned to enable each being insertable between the engine pedestal and the valve spring rocker arm; second attachment means being pivotally attachable to an intermediate portion of said base member, and having a downwardly extending second arm member with a pair of compressor prongs extending in a direction generally normal to said second arm member and generally normal to the extended direction of said pair of anchor prongs, said pair of compressor prongs being dimensioned for being insertable between a portion of the rocker arm and the valve spring washer with each one of said pair of compressor prongs being disposed on a respective side of the valve stem, and having a lower plate member extending outwardly from said arm member in a direction opposite to the extended direction of said compressor prongs and having an elongate slot, and having an adjustment means extending through said elongate slot and being

adjustable for selectively extending a member in selected vertical disposition; and a torque wrench means attachable to said base member and being manually actuable for causing said base member to pivot at said first attachment means so that said second attachment means being urged downwardly to depress the valve spring without depression of the valve stem, and having means for indicating the torque to depress the valve spring.

4,641,522
BEARING-LESS POSITIVE DISPLACEMENT FLOWMETER
William J. Lopresti, 15935 Notting Hill Dr., Lutz, Fla. 33549
Filed Apr. 3, 1985, Ser. No. 719,418
Int. Cl.⁴ G01F 3/10
U.S. Cl. 73—261

13 Claims



1. A fluid metering apparatus comprising, a chamber comprising an oblated chamber having two opposed radiused portions separated by two opposed linear portions and first and second flat end plates connected to opposite end faces of the oblated chamber, a fluid inlet disposed in one of the two opposed linear portions of the oblated chamber, a fluid outlet disposed in the other of the two linear portions of the oblated chamber, the inlet and outlet having an axis bisecting the chamber, two non-metallic intermeshing rotors, each having a plurality of singly radiused lobes equidistantly spaced apart by singly radiused nadirs, rotatably mounted within the chamber in intermeshed relationship between the first and second flat plates, the rotors having overall radii corresponding to the radiused portions of the oblated chamber and the radiused lobes being in the radiused portion of the oblated chamber, and intermeshing at a point near a center of the chamber, whereby fluid entering the chamber through the inlet causes the lobes of corresponding rotors to move in a rotary direction, marker means, disposed in each of the plurality of lobes, and single pickup and indicating means, on a plate in the center of the chamber adjacent the marker means, and responsive to the marker means in both rotors for picking up passage of the markers and for indicating a quantity of electrical signals for both lobe means, the quantity being determined proportionate to rotational speed of the two rotors, said chamber acting as a guide for said rotors and restricting each to rotary movement.

4,641,523

LIQUID LEVEL GAUGE

Jan Andreasson, Mullsjö, Sweden, assignor to Skandiafabriken AB, Mullsjö, Sweden

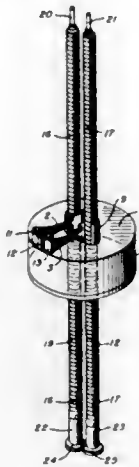
Filed Dec. 20, 1984, Ser. No. 684,366

Claims priority, application Sweden, Jan. 4, 1984, 8400037; Nov. 13, 1984, 8405679

Int. Cl.⁴ G01F 23/60

U.S. Cl. 73—313

13 Claims



1. In a liquid level indicator system having a resistance component, a contact component adjustably engaging said resistance component, and a float mounted for movement relative to said resistance component for adjustably varying the engagement of said contact component with said resistance component upon movement of said float; the improvement comprising the resistance component including two vertically elongate bodies, said bodies being in parallel laterally spaced relation to each other, each of said bodies terminating in opposed ends generally coextensive with the ends of the other body, and an outer electrically conductive layer about each body between the opposed ends thereof, the float surrounding said elongate bodies for vertical movement therealong, said float comprising opposed parallel spaced end discs with a guide means therebetween, said end discs having aligned apertures therethrough slidably receiving the elongate bodies through said guide means and precluding relative rotation between the float and the elongate bodies, and the contact component comprising two conductive contacts in electrical contact with each other, each contact engaging against a separate one of said electrically conductive layers on the bodies, and means fixing said contacts to said float for vertical movement therewith along said vertically elongate bodies.

4,641,524

OPTICAL HUMIDITY SENSOR

Jeffrey A. Tarvin, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Aug. 15, 1985, Ser. No. 765,727

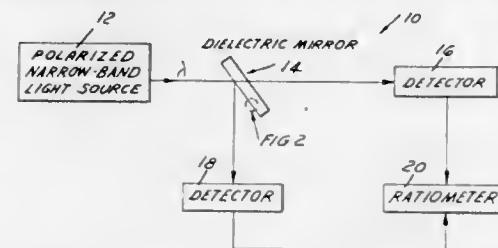
Int. Cl.⁴ G01W 1/00

U.S. Cl. 73—335

17 Claims

1. A humidity sensor comprising porous dielectric means for adsorbing moisture from a surrounding atmosphere, a narrow-band light source for directing light energy onto said dielectric means at preselected nominal wavelength, said porous dielectric means comprising at least one layer of porous dielectric construction having quarter-wave thickness as a function of said preselected nominal wavelength and index of refraction of said porous dielectric construction, and means positioned to intercept light energy incident on said dielectric means from

said source for indicating humidity in the atmosphere surrounding said dielectric means as a function of variations in



light transmission/reflection characteristics of said dielectric means.

4,641,525

METHOD AND APPARATUS FOR CHECKING THE WALL THICKNESS OF A LAYER

Hubert Merki, Brewster, N.Y., assignor to Zumbach Electronic AG, Orpund, Switzerland

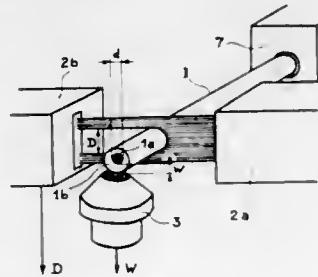
Filed Jun. 10, 1985, Ser. No. 743,298

Claims priority, application Switzerland, Jun. 18, 1984, 2939/84

Int. Cl.⁴ G01B 7/10

U.S. Cl. 73—432.1

16 Claims



1. A method of checking the wall thickness of a layer wherein the wall thickness is measured at various points of the layer by determining the distance of a coated inner part from the accessible outer surface of the layer, to ascertain maxima and minima of the measured distance values, whereby in addition to said maxima and minima of the wall thickness, at least maxima and minima of one external dimension of a member embodying said layer, this external dimension being simultaneously measured, and data relating to at least one further quantity is derived from the difference between said maxima and minima of the wall thickness and the difference between said maxima and minima of the external dimension, for minimizing the effect of drift and non linearity upon said measured wall thickness values and said external dimension values.

4,641,526

METHOD AND APPARATUS FOR ESTIMATING SOUND SOURCE POSITION

Shigeru Izumi, Tokyo; Makoto Senoh, Ibaraki; Koji Tsumaki, Hitachi, and Kenji Miyata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1984, Ser. No. 617,500

Claims priority, application Japan, Jun. 6, 1983, 58-99401

Int. Cl.⁴ G01N 29/00

U.S. Cl. 73—572

11 Claims

1. An apparatus for estimating a position of a sound source, comprising:

(a) a plurality of sound detecting means installed on a structure with a predetermined spacing for detecting a sound generated at a location in said structure;

(b) first storage means for storing at least one of peak value data and signal arrival time data of sound signals originating in at least one known sound source position in said structure and obtained through said sound detecting means;

(c) second storage means for storing a correspondence table indicating relations between pattern differences between said known sound source position and a number of predetermined positions of said structure and the real distances between said known sound source position and said number of predetermined positions;

determine the state of the joint junction of said first object to said second object.

4,641,528

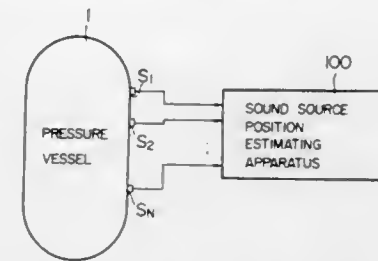
SPECIMEN ANALYSIS INSTRUMENT ASSEMBLY
John W. Clayland, Jr., Placerville, and Carl P. Daniel, El Dorado Hills, both of Calif., assignors to American Hospital Supply Corp., Deerfield, Ill.

Filed Sep. 16, 1985, Ser. No. 776,200

Int. Cl.⁴ C12M 1/34; G01S 5/18

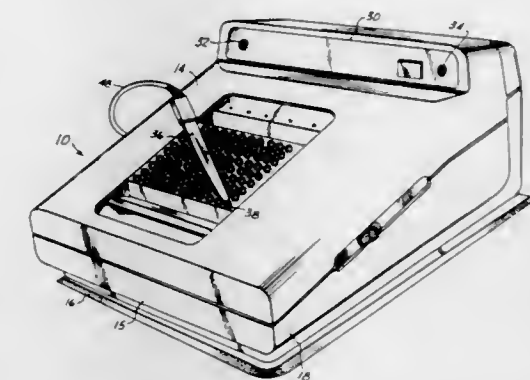
U.S. Cl. 73—597

8 Claims



(d) pattern difference calculating means for arithmetically determining pattern differences on the basis of data stored in said first storage means and data of the sound signals originating in said unknown sound source position and detected through said detecting means which corresponds to data stored in said first storage means; and

(e) signal processing means for reading said real distances from said correspondence table stored in said second storage means on the basis of the pattern differences arithmetically determined by said pattern difference calculating means.



1. An assembly for identifying the results of a specimen analysis wherein such specimen analysis occurs in an array of discrete cells, the assembly comprising:

a housing having top, bottom, end walls, and sidewalls; an array receiving means on the top wall for receiving and holding an array of discrete cells in a fixed position; an ultrasonic signal producing means for selectively producing an ultrasonic signal adjacent a cell in the array in which the results of the analysis are to be identified and for providing an initializing electrical signal; a first transducer means on the top wall for converting an ultrasonic signal from the ultrasonic signal producing means to a first electrical signal; a second transducer means on the top wall for converting an ultrasonic signal from the ultrasonic signal producing means to a second electrical signal; and conversion means electrically operatively connected to the ultrasonic signal producing means, the first transducer means, and to the second transducer means for comparing the initializing electrical signal to the first electrical signal and second electrical signal to identify the cell above which the ultrasonic signal was produced.

4,641,529

PIPELINE INSPECTION DEVICE USING ULTRASONIC APPARATUS FOR CORROSION PIT DETECTION

Donald E. Lorenzi; Helmut F. Wagerer, both of Des Plaines, and Lev Spevak, Chicago, all of Ill., assignors to Magnaflux Pipeline Services, Inc., Stamford, Conn.

Filed Apr. 12, 1984, Ser. No. 599,481

Int. Cl.⁴ G01N 29/04

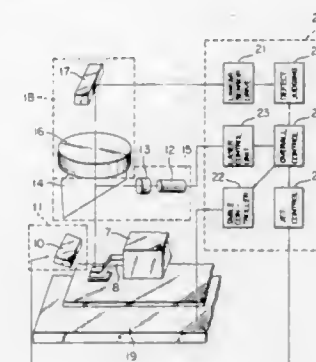
U.S. Cl. 73—601

6 Claims

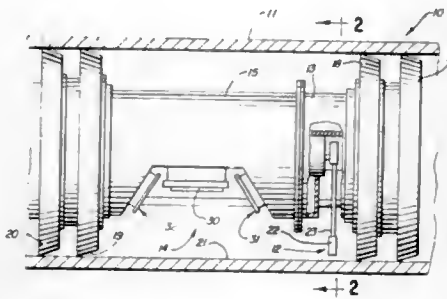
1. In a device for pipeline inspection, ultrasonic apparatus including ultrasonic transducer means for transmitting ultrasonic energy to the internal surface of a pipeline and for receiving energy therefrom to develop electrical signals, and detector means for responding to said electrical signals to produce output signals in response to corrosion pits in said internal surface of the pipeline, photographic apparatus for producing a photograph of a portion of the internal surface of the pipeline, support and drive means for supporting said ultrasonic apparatus and said photographic apparatus for movement

2. An inspection method for joint junction states comprising the steps of:

applying a vibration in a contactless fashion to a first object joined to a second object; applying a turbulence to said vibration applied to said first object; optically detecting a vibratory state of said first object in a contactless fashion; and analyzing the detected vibratory state of said first object to



within the pipeline, and control means for controlling operation of said apparatus from output signals of said detector means to produce photographs of portions of the pipeline having corrosion pits detected by said ultrasonic apparatus, said support and drive means comprising a central housing section, and forward and rearward resilient cup means secured to forward and rearward ends of said central housing section, said photographic apparatus being supported in said central housing section to operate in a protected space between said



forward and rearward cup means, said ultrasonic transducer means being located between said forward and rearward cup means, and said ultrasonic transducer means being located behind said forward cup means and forwardly with respect to said photographic apparatus, and delay means for responding to said output signals to operate said photographic apparatus after a time delay approximately equal to the time required for said device to travel a distance equal to the longitudinal distance from said ultrasonic transducer means to a central viewing axis of said photographic apparatus.

4,641,530

ACOUSTIC MICROSCOPE FOR ANALYZING AN OBJECT IN DEPTH HAVING ASPHERICAL LENSES
Jacques Attal, Montpellier, and Gaston Cambon, St. Gely du Fesc, both of France, assignors to Centre National de la Recherche Scientifique, France

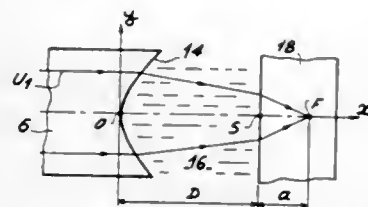
Filed Sep. 12, 1985, Ser. No. 775,268

Claims priority, application France, Sep. 12, 1984, 84 13988

Int. Cl.⁴ G01N 29/04

U.S. Cl. 73—606

5 Claims



1. An acoustic microscope permitting the analysis of an object in depth comprising two identical bars positioned in an extension of one another and provided at their facing ends with a cavity, said cavities defining at least one focussing lens and at least one objective lens, said two identical lenses having coinciding foci being linked by a liquid drop in which the object to be analysed can be immersed, the bars being provided at their other ends with a piezoelectric transducer, said transducers being able to produce ultrasonics focussed within the object by the focussing lens and to detect ultrasonics reflected or transmitted by the object via the objective lens, means for analysing the ultrasonics reflected or transmitted by the object and means for displacing the object in the focal plane of the two lenses, wherein the lenses have in each case a shape defined by the parametric equations:

$$x = N \frac{\left[D + na - \frac{na}{\cos r} \right] \cos [\text{Arc} \sin(n \sin r)] - D}{\cos [\text{Arc} \sin(n \sin r)] - N} \text{ and}$$

$$y = a \tan r + (D - x) \tan [\text{Arc} \cdot \sin(n \sin r)]$$

in which N represents the relative refractive index n_2/n_1 , n_1 being the index of the material forming the bars and n_2 the index of the liquid, n representing the relative refractive index n_3/n_2 , in which n_3 is the index of the material forming the object, D represents the distance between the vertex of the lens and the surface of the object, a the distance between the surface of the object and the focal point of the lens and r the parameter, x being taken along the optical axis of the lens and y along the axis perpendicular to said optical axis.

4,641,531

ULTRASONIC INSPECTION APPARATUS AND METHOD FOR LOCATING MULTIPLE DEFECTS IN ECCENTRIC WALL TUBULAR GOODS

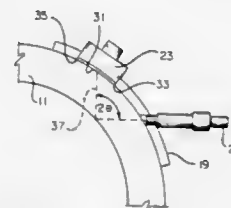
Roger D. Reeves, 821 Pinegrove, Longview, Tex. 75604, and Dale F. Hawkey, #8-205-Chatelain Drive, St. Albert, Canada

Filed Mar. 27, 1986, Ser. No. 844,513

Int. Cl.⁴ G01N 29/04

U.S. Cl. 73—622

10 Claims



1. An ultrasonic inspection apparatus for locating multiple defects in eccentric wall tubular goods, comprising: a plurality of ultrasonic transducers arranged in mated pairs, each of the mated pairs comprising a sender element for transmitting an ultrasonic shear wave which travels in a first direction along the tubular goods being examined, and a receiver element for receiving a reflected ultrasonic wave component from the tubular goods and for transforming it into an electrical signal; and wherein each sender element is a point focus transducer having sufficiently high resolution to maintain detectability of defects in the tubular goods and wherein each receiver element is a wide focal width transducer having a large effective beam width area to compensate for eccentricity in the wall of the tubular goods.

4,641,532

APPARATUS FOR ADJUSTABLY MOUNTING ULTRASONIC TESTING DEVICES

Edwin H. Rohrer, Springfield Township, Clark County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 27, 1984, Ser. No. 686,806

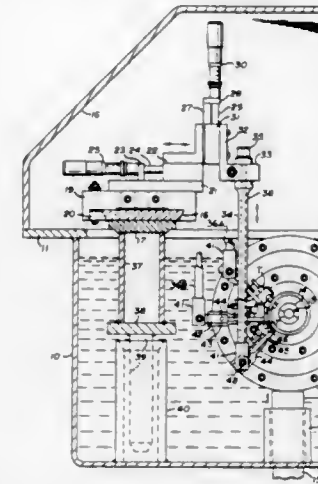
Int. Cl.⁴ G01N 29/04

U.S. Cl. 73—637

7 Claims

1. An improvement in apparatus for adjustably mounting an ultrasonic testing device in an ultrasonic tester having an open top container with an opening in a peripheral wall thereof, means in said opening for positioning a rod having a weld area to be tested in said container, first support means mounted on said container and extending over and depending into said container and movable horizontally and vertically; the improvement comprising adjustable second support means on said first support means forming an arcuate path on a portion of

a circle centered on said weld area of said rod and on a common plane with said rod and third support means positioning said ultrasonic testing device on said arcuate path whereby the focal depth of said ultrasonic testing device is uniformly fo-



cused on said weld area to be tested when said third support means and said ultrasonic testing device thereon are moved on said arcuate path and liquid in said container at a predetermined elevation.

4,641,533

PRESSURE MEASURING APPARATUS

Fritz Mueller, Ingelfingen-Criesbach, and Lothar Pienta, Ingelfingen, both of Fed. Rep. of Germany, assignors to Gebrueder Mueller Apparatebau GmbH & Co. KG, Ingelfingen-Criesbach, Fed. Rep. of Germany

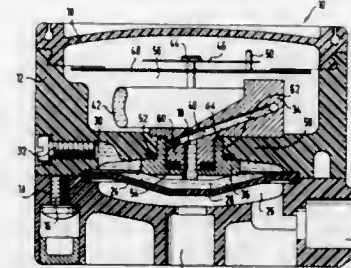
Filed Nov. 21, 1985, Ser. No. 800,542

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1984, 3442624

Int. Cl.⁴ G01L 7/04, 7/08

U.S. Cl. 73—706

6 Claims



1. Apparatus for measuring the pressure of a fluid; comprising: a manometer having a casing;

diaphragm means for transmitting the pressure of the fluid to said manometer, said diaphragm means being directly incorporated within said casing of said manometer and forming with the latter an integrated unit wherein said diaphragm means includes a diaphragm separating a first chamber in said casing from a second chamber, said first chamber being filled with a transfer fluid and said second chamber containing the fluid whose pressure is to be measured, said casing including an upper casing portion and a lower casing portion connected to each other, said diaphragm having a circumference clamped between said upper and lower casing portions; measuring means accommodated within said upper casing portion, said casing being completely filled with said

transfer fluid above said diaphragm up to said measuring means wherein said upper casing portion is provided with an radially inwardly extending collar provided with a central opening and arranged above said diaphragm; and support means projecting into said opening to seal said first chamber from a remaining upper space within said upper casing portion, said support means including a manometer carrier having an extension piece projecting into said opening at a distance to said collar, a retaining ring connected to said extension piece to close said opening and a pair of gaskets to seal off said remaining upper space from said first chamber.

4,641,534

HOLDING DEVICE

Ortwin Schneider, Weiterstadt, and Nikolaos Georgitsis, Heusenstamm, both of Fed. Rep. of Germany, assignors to Erweka Apparatebau GmbH, Heusenstamm, Fed. Rep. of Germany

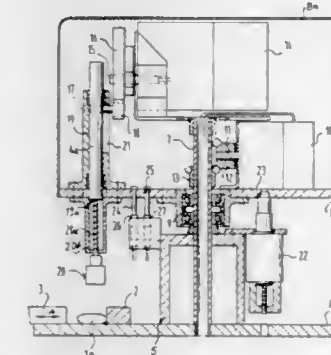
Filed Oct. 1, 1985, Ser. No. 782,503

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1985, 8516163[U]

Int. Cl.⁴ G01N 3/02

U.S. Cl. 73—856

16 Claims



1. A holding device for holding test samples, in particular tablets, in a testing station for measuring the breaking strength of the test samples comprising

a supporting structure carrying a movable mounting support supporting a plurality of press pads which are adapted to the shapes of the test samples, each press pad being adapted to one particular sample shape, and which press pads are adapted to hold said test samples on a base plate, a drive means for moving said mounting support in such a manner that the press pad suitable for the respective sample is brought into an operating position in the testing station, and

lowering means for lowering the respective press pad just being in the operating position down to the base plate in order to hold said sample in said testing station.

4,641,535

FLOWMETER

Salvatore C. Malguarnera, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jun. 28, 1985, Ser. No. 750,097

Int. Cl.⁴ G01F 1/36; G01N 9/26, 11/04

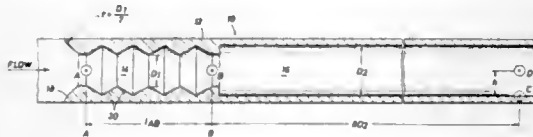
U.S. Cl. 73—861.01

21 Claims

1. A flowmeter having no moving parts and enabling determination of the density, flow rate and viscosity parameters of an unknown fluid, said flowmeter comprising:

an elongated cylindrical member defining a constricted portion of a first diameter and an adjacent downstream full diameter portion of a second larger diameter; first and second pressure sensors fixed, respectively, at the entry and the exit of said constricted portion; and third and fourth pressure sensors fixed in said full diameter

portion at a distance of at least eight times the second diameter from the junction of said constricted and said full diameter portions, wherein said fourth pressure sensor is aligned with said third pressure sensor in a plane extend-



ing normal to the axis of said meter whereby differential pressure readings can be obtained and used to determine the density, flow rate and viscosity of a fluid passing therethrough.

4,641,536

ELECTROMAGNETIC FLOW METER

Hans E. Jacobsen; Henning M. Hansen, both of Nordborg; John Nyrup, Sonderborg; Henry Hansen, Gråsten, and Konstantin Lassithiotakis, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

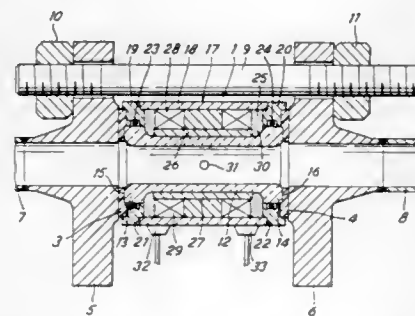
Filed Jun. 13, 1985, Ser. No. 744,230

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1984, 3423921

Int. Cl.⁴ G01F 1/38

U.S. Cl. 73—861.12

2 Claims



1. An electromagnetic flow meter, comprising, a tubularly shaped ceramic measuring tube, tubularly shaped housing means surrounding said measuring tube in spaced relation thereto to provide a hollow space therebetween, a pole shoe and coil arrangement of a magnetic system mounted in said hollow space in operable relation to said measuring tube, said measuring tube having two radially outwardly projecting flanges at opposite ends thereof, said housing means having radially inwardly projecting flanges with surface in radial abutting and sealing engagement with surfaces of said tube flanges, and annularly shaped sealing disks provided at both ends of said tube and housing means in axially abutting and sealing engagement with said tube and said housing means to form a pressure tight capsule, there being circumferential seals provided between said abutting tube and housing flange surfaces.

4,641,537

ELECTROMAGNETIC FLOW METER

Henning M. Hansen; Hans E. Jacobsen, both of Nordborg; Henry Hansen, Gråsten; Konstantin Lassithiotakis, Langeskov; Allan S. Pedersen, and John Nyrup, both of Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

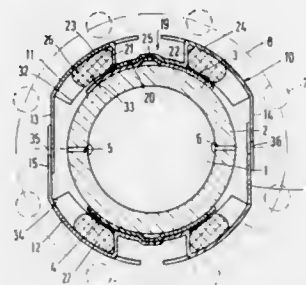
Filed Jan. 16, 1986, Ser. No. 819,383

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501768

Int. Cl.⁴ G01F 1/58

U.S. Cl. 73—861.12

8 Claims



1. An electromagnetic flow meter, comprising, a cylindrically shaped tube section, two magnetic poles each having a core section carrying a winding attached to the outside of and on diametrically opposite sides of said tube section, each of said poles having a pole shoe curved to fit the curvature of said tube section, two outer yoke members formed of sheet metal and having casing portions thereof in surrounding relation to said tube section, each said yoke member being formed with a U-shaped section to form said core section having legs which join the corresponding one of said casing portions and which includes a central web section in abutting engagement with the corresponding one of said pole shoes, and each said winding having substantially rectangular coils disposed between the corresponding one of said pole shoes and the corresponding ones of said outer yoke member casing portions.

4,641,538

LIGHTWEIGHT ELECTRONIC TORQUE WRENCH

Georges Heyraud, Saint Just Malmont, France, assignor to Forges Stephanoises S.A., Saint-Etienne, France

Filed Jul. 22, 1985, Ser. No. 757,613

Claims priority, application France, Jul. 23, 1984, 84 11916

Int. Cl.⁴ B25B 23/142

U.S. Cl. 73—862.26

6 Claims



1. An electronic torque wrench comprising:
a rigid metallic sleeve of generally regular section extending along a tool axis and having a front end and an opposite handle end;
a holder integrally formed with
a flat rear part extending generally diametrically of the axis in the front end of the sleeve and having a pair of outer edges radially outwardly engaging the sleeve in surface contact,
a front socket part adapted to receive a wrench fitting engageable with the element to be torqued and wholly out of contact with the sleeve, and
a flat intermediate web part interconnecting the front and rear parts, extending diametrically of the axis and generally perpendicular to the rear part, having a pair of

oppositely directed faces, and wholly out of contact with the sleeve, the web part being substantially only capable of flexing perpendicular to itself and parallel to the rear part;
a strain gauge on at least one face of the web part, whereby flexing of the web part varies the electrical characteristics of the strain gauge;
electronic circuitry connected to the strain gauge for forming an output corresponding to the flexing of the web part; and
means for displaying the output.

4,641,539

SENSOR RESPONDING TO THE ACTION OF A FORCE

Vaclav F. Vilimek, Viecht, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

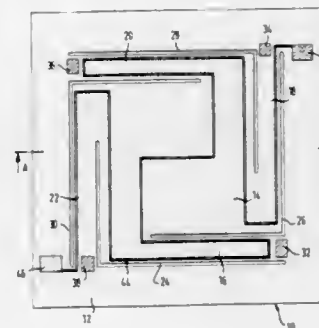
Filed Jul. 5, 1985, Ser. No. 752,277

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429250

Int. Cl.⁴ G01L 1/22, 1/26

U.S. Cl. 73—862.67

6 Claims



1. A sensor responding to the action of a force, comprising:
a base body,
a force take-up element,
at least one support element which deforms under the influence of a force acting on the force take-up element, connecting the force take-up element and the base body,
a measuring member which reacts to the deformation with a change of a physical parameter, disposed in the deformation region between said at least one support element and the force take-up element,
an uninterrupted conductor path extending from a first terminal land on the base body via each support element and the force take-up element to a second terminal land on the base body,
and an evaluation circuit connected to the measuring member, including a current passage test circuit connected to the terminal lands on the base body which on detection of an interruption of the current passage through the conductor path renders the evaluation circuit inoperative.

4,641,540

BULK MATERIAL SAMPLING APPARATUS

Jack J. Ellis, 2453 Indian Tree Run, Glencoe, Mo. 63038

Filed May 1, 1985, Ser. No. 729,523

Int. Cl.⁴ G01N 1/20

U.S. Cl. 73—863.53

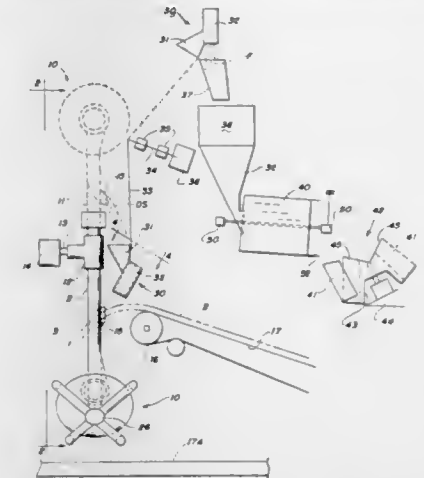
15 Claims

9. Bulk material sampling apparatus for collecting a sample of the bulk material from a free falling stream, the apparatus comprising:

- (a) conveyor means in a first elevation for moving bulk material in a primary flow direction having a free falling stream therein;
- (b) sample cutter means rotatable in a closed path about an axis above the first elevation of said conveyor means and

aligned for cutting transversely through said free falling stream;

(c) bucket means carried by said sample cutter means for receiving a sample of bulk material cut from the free falling stream by said cutter, said bucket being movable with said sample cutter means about said cutter axis to a second elevation above said primary flow stream for discharging the sample in a second free falling stream; and



(d) means operably mounted in a position for cutting a sample of bulk material from said second free falling stream at said second elevation, said operably mounted means being positioned above said primary flow stream such that bulk material missed by said sample cutting means returns to said primary flow by gravity in a free fall.

4,641,541

INTERNAL MASS SPECTROMETER INTERFACE TO A GAS CHROMATOGRAPH

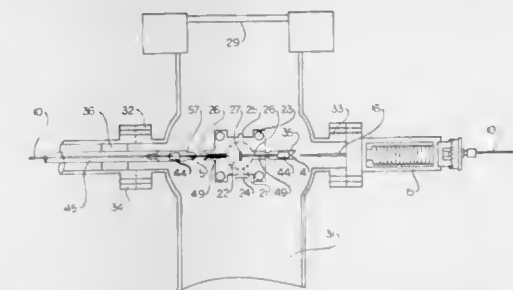
Daryl Sharp, 317 Woodhaven, Chapel Hill, N.C. 27514

Filed Feb. 11, 1986, Ser. No. 828,178

Int. Cl.⁴ G01N 30/72

U.S. Cl. 73—864.81

20 Claims



1. A gas chromatograph/mass spectrometer interface system for connecting a gas chromatograph output means to a mass spectrometer source, which comprises:

- (a) an output column having a first end and a second end;
- (b) an elongated rigid interface body having a first interface end and a second interface end, and having an interface gap positioned between the first interface end and the second interface end, said first interface end having a first bore extending therethrough to the interface gap for insertion of the gas chromatograph output means, said second interface end having a second bore extending therethrough to the interface gap for insertion of the output column, the output column being positioned such that its second end is located within the second bore, and said first

- bore and said second bore being axially aligned across the interface gap;
- (c) a means for moving the gas chromatograph output means through the first bore, across the interface gap and into the second bore;
- (d) a means for securing the interface to a mass spectrometer such that the first end of the output column is positioned in the mass spectrometer source; and
- (e) a vacuum means connected to the mass spectrometer source.

4,641,542

SWING MECHANISM FOR WINDER NOZZLES

Masato Kamei, Tokyo, Japan, assignor to Kamei Machine Co., Ltd., Tokyo, Japan

PCT No. PCT/JP84/00359, § 371 Date May 31, 1985, § 102(e) Date May 31, 1985

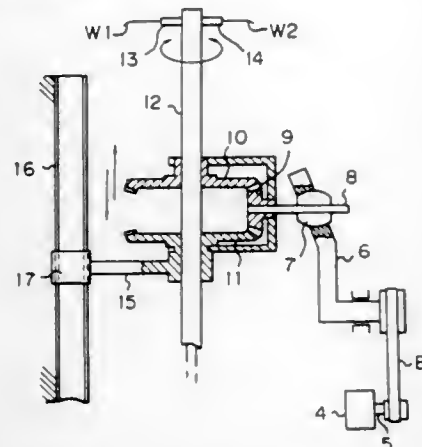
PCT Filed Jul. 11, 1984, Ser. No. 744,557

Claims priority, application Japan, Apr. 9, 1984, 59-69068

Int. Cl.⁴ F16H 37/16

U.S. Cl. 74—23

1 Claim



1. A swing mechanism for winder nozzles on a stator winder having bipolar field cores comprising
- a bevel gear secured to a prime shaft coupled to a crank by means of a universal joint,
- facing bevel gears arranged in meshing engagement with said secured bevel gear,
- a tube coupled to one of said facing bevel gears and provided with nozzles,
- a rotation stopper coupled sideways to the other of said facing bevel gears and having a slider, and
- a guide rail for said slider arranged side-by-side with said tube.

4,641,543

INTERMEDIATE SHAFT THRUST BALANCE

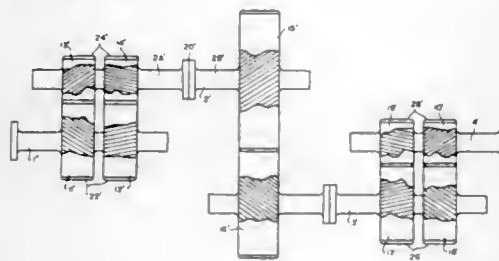
Thurman W. Jessup, 130 Jeanine Way, Anaheim, Calif. 92806

Filed Oct. 12, 1984, Ser. No. 660,114

Int. Cl.⁴ F16H 57/00, 1/06, 1/20

U.S. Cl. 74—410

4 Claims



1. Gearing system comprising:
- a first shaft having a double helical gear set comprising a first

gear and a second gear, the helix angles of said first and second gears being opposite and unequal;

a second shaft having: (1) a double helical gear set comprising a third gear meshing with said first gear, and a fourth gear meshing with said second gear; and (2) a single helical fifth gear;

said third and fourth gears being of opposite and unequal helix angles and having substantially equal face widths, thereby resulting in substantially equal tangential face loading;

a third shaft having a single helical sixth gear meshing with said fifth gear;

said second shaft constituting an intermediate shaft between said first and third shafts;

the inequality between the helix angles of said third and fourth gears, when the gears are substantially equally loaded, producing a first axial thrust on said second shaft; the helix angle of said fifth gear producing a second axial thrust on said second shaft opposite and substantially equal to said first axial thrust;

the meshing of said double helical gear sets substantially locking said second shaft against axial motion relative to said first shaft;

the substantial equalizing of said axial thrusts obviating the need for thrust bearings on said second shaft.

4,641,544

MOTION TRANSMITTING AND TIMING MECHANISM

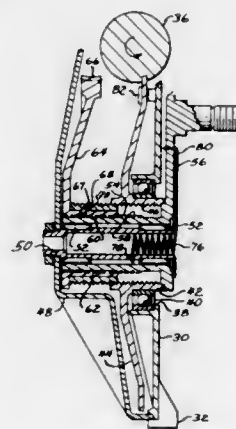
David E. Russ, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 15, 1985, Ser. No. 787,316

Int. Cl.⁴ F16H 55/02

U.S. Cl. 74—435

10 Claims



1. A motion transmitting and timing mechanism comprising:
- an input gear;
- a timing gear rotatable about an axis and meshed with said input gear;
- an output gear rotatable about said axis and shiftable along said axis into position in and out of a plane including said input gear, said output gear having a toothed sector;
- means normally maintaining said toothed sector out of axial alignment with said input gear;
- means responsive to rotation of said timing gear for axially moving said output gear between said positions; and
- means operated by said timing gear and engageable with said output gear when said output gear is in said plane for moving said toothed sector into mesh with said input gear.

4,641,545

SINGLE LEVER CONTROL ARRANGEMENT

Bernd Rabe, Dellfeld, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

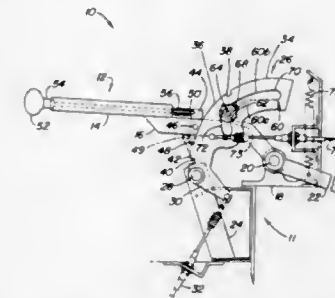
Filed Apr. 19, 1985, Ser. No. 725,182

Claims priority, application European Pat. Off., May 5, 1984, 84105076.8

Int. Cl.⁴ G05G 9/08

U.S. Cl. 74—476

6 Claims



1. A control arrangement for controlling at least two devices carried by the same machine, each device being engageable responsive to an actuator, comprising:
- a frame carried by the machine;
- a primary control lever connected to the actuator of the first device and carried by the frame for rocking motion about a first pivot axis between first and second positions corresponding respectively to engagement and disengagement of the first device;
- a secondary control lever connected to the actuator of the second device and carried by the frame for rocking motion about a second pivot axis between first and second positions corresponding to respective engagement and disengagement of the second device, said second pivot axis being approximately parallel to and spaced from and in fixed relation to the first pivot axis;
- a camming arrangement including a first camming element carried by the primary lever and a second camming element carried by the secondary lever, one of said elements including camming surfaces and the other of said elements including a cam follower engageable by the camming surfaces, said camming surfaces including a first range defining a circular arc concentric with the first pivot axis when engaged by the cam follower and a second range contiguous with the first but diverging from the circular arc of the first range so that as the primary lever is moved within the first range, the first device is engaged while the secondary lever remains stationary and as the primary lever is moved in the second range, the secondary lever is displaced by the camming surface so that the second device is engaged; and
- means for arresting movement of the primary lever so as to impede its movement through a position corresponding to the junction between the first and second ranges.

4,641,546

CRANKSHAFT ASSEMBLY FOR SMALL GASOLINE MOTORS

Karl Mettler, Triesen, Liechtenstein, assignor to Etablissement Supervis, Vaduz, Liechtenstein

Filed Dec. 3, 1984, Ser. No. 677,294

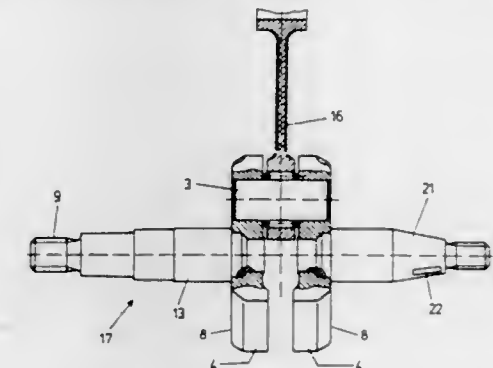
Int. Cl.⁴ F16C 3/10

U.S. Cl. 74—598

7 Claims

1. Crankshaft, such as used in small gasoline motors for lawn mowers, chain saws, two-wheeled vehicles, motor-driven hand-tools and the like, comprising at least one shaft pin, at least one crank web and at least one crank bolt, each said shaft pin, crank web and crank bolt being formed as a separate member, said web is provided with axially extending openings therethrough, said shaft pin is inserted into one of said openings and said crank pin into the other said opening and said pins

are integrally interconnected with said web, said crank web is formed of one of a stamped strip metal and a forged sintered part, said shaft pin and crankpin are shaped from cylindrical blanks in an extrusion operation, said shaft pin and crankpin are weldably connected to said crank web, wherein the improvement comprises that said web has an outer face and an inner face, said openings in said web comprise a first opening for said at least one shaft pin and a second opening for said crankpin with said first opening having a first axially extending section extending from said inner face toward said outer face and a second axially extending section coaxial with said first axially extending section and extending from the end of said first axially extending section spaced from said inner face to said outer face, said first axially extending section having a smaller diameter than said second axially extending section, the end of said second axially extending section adjacent said first axially extending section forms a first annular shoulder extending substantially perpendicularly to the axis of the opening and facing toward said outer face, a first end of said shaft pin has a first axially extending section extending from the first end thereof toward a second end and a second axially extending section coaxial with and extending from said first axially extending section toward the second end of said shaft pin, said shaft pin having a radially outwardly extending second shoulder at the end of said second axially extending section thereof spaced from said first axially extending section, said second shoulder extending substantially perpendicularly of said shaft



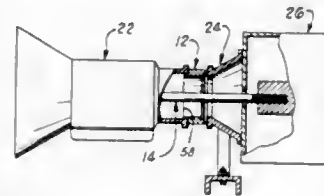
pin axis and radially outwardly from said second axially extending section of said shaft pin, said first axially extending section of said shaft pin having a diameter corresponding to the diameter of the first axially extending section of said first opening and said second axially extending section of said shaft pin having a diameter corresponding to the diameter of said second axially extending section of said first opening so that said shaft pin fits in sliding engagement within the first opening in said web, said shaft pin has an axially extending conically tapered shoulder between the adjacent ends of said first and second axially extending sections of said shaft pin whereby said shaft pin is insertable into the first opening until the smaller diameter end of said conically tapered shoulder contacts in circular line contact the radially inner edge of said first shoulder in said first opening and thereby defining a triangular space therebetween, said shaft pin is forcibly axially displaceable relative to said first opening until said second axially extending section of said shaft pin is in complete contact with said second axially extending section of said first opening for the axial length thereof to said second shoulder at the end of said second axially extending section of said shaft pin spaced from said first axially extending section thereof, and at the same time permitting the tapered shoulder to be deformed into said triangular space and in abutting contact with said first shoulder so that when said web and said first and second diameter sections of said shaftpin is heated, a weld connection is defined at the area of the deformation of said tapered shoulder.

4,641,547
AUTOMATIC TRANSMISSION ADAPTER KIT
 Roger L. Stich, 6500 NW. Grand, #143, Oklahoma City, Okla. 73116, and William D. Neal, 920 W. Main, Moore, Okla. 73160

Filed Aug. 29, 1983, Ser. No. 527,273
 Int. Cl.⁴ F16H 57/02

U.S. Cl. 74—606 R

29 Claims



1. In a four-wheel-drive vehicle apparatus having a power train including an automatic transmission and a transfer case, an automatic transmission adapter kit for installation of a replacement automatic transmission of shorter length than an original automatic transmission in said four-wheel-drive vehicle, comprising:

- an extension housing interposed between said replacement automatic transmission and said transfer case;
- an output shaft, having a first end which engages said replacement automatic transmission and a second end which engages said transfer case;
- first sealing means for sealing between said extension housing and said replacement automatic transmission;
- second sealing means for sealing between said extension housing and said transfer case; and
- fastening means for connecting said extension housing between said replacement automatic transmission and said transfer case.

4,641,548
DRIVE LINE FOR A TRACK-LAYING VEHICLE
 C. J. Greenwood, Leyland, United Kingdom, assignor to Leyland Vehicles Limited, Leyland, England

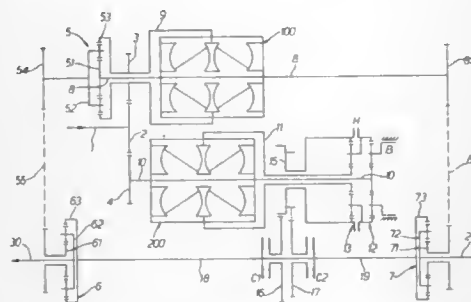
Filed Aug. 27, 1984, Ser. No. 644,804

Claims priority, application United Kingdom, Aug. 25, 1983, 8322937

Int. Cl.⁴ F16H 37/10; B62D 11/16

U.S. Cl. 74—691

8 Claims



1. A drive line for a track-laying vehicle having speed shaft steering, comprising two track drive shafts and a drive transmission whose output drives a shaft coupled to both track drive shafts by way of epicyclic gears having further inputs for steering, whereby the said shaft normally rotates while the vehicle is stationary, characterised in that the drive transmission has a continuously-variable ratio, and in that the drive transmission drives the shaft by way of a transfer system operable in at least low regime I and low regime II modes, the transfer system having a summing epicyclic gear arranged to

sum the input and the output of the drive transmission and to provide a summed output, and coupling means for coupling the said summed output to the said shaft in either rotational sense to select either low regime I or low regime II, the changeover between low regime I and low regime II occurring synchronously, with the said shaft being stationary at the changeover point, low regime I being operable for vehicle velocities from rest to a first predetermined velocity, and low regime II being operable from the first to a second, higher, predetermined velocity.

4,641,549
MULTIPLE STAGE GEARBOX SHIFTABLE UNDER LOAD

Helmut Muller, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

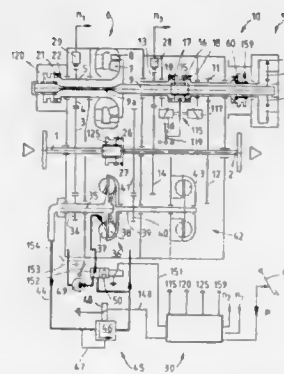
Filed Apr. 22, 1985, Ser. No. 725,417

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1984, 3415909

Int. Cl.⁴ F16H 47/00

U.S. Cl. 74—732

13 Claims



1. A change spur gear assembly for a vehicle transmission which has a transmission input shaft and individual gear stages shiftable by detent clutches having sliding sleeves and deflective detents comprising:

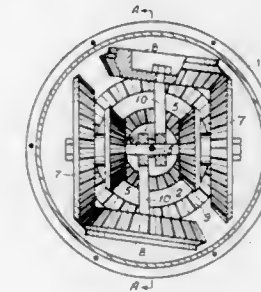
- a starting member having a fillable and emptiable hydrodynamic circuit whose primary wheel is connected with a first layshaft and whose secondary wheel is connected with a layshaft of the change gear;
- a synchronizing device which is effective for all gears and arranged on a second layshaft for bringing the detent clutch halves to equal speed for shifting, said synchronizing device including a hydrodynamic servocutch with variable charge and having a primary vane wheel arranged on the second layshaft and having a secondary vane wheel on an intermediate shaft and connected through a gear unit with the transmission output shaft;
- the gearing of the secondary vane wheel of the servocutch to the transmission output shaft is so selected that the clutch can at force of flow effectuate, through the second layshaft and intermediate shaft, an output speed which is between 5 and 15 percent higher than maximum speed;
- control means which effectuates synchronism of the detent clutches participating in the shifting through which an automatic gear change is triggered in accordance with a change signal formed from momentary values of the input variables of engine capacity, transmission input speed, and transmission output speed, which changeover takes place with the following steps: filling the hydrodynamic servocutch, disengaging the shift detent which is engaged with the present gear, adjusting the slip of the hydrodynamic servocutch to a set value coordinated with the gear to be shifted next for the ratio of output speed to the input speed of the transmission, engaging the shift detent coordinated

with the new gear, and emptying the hydrodynamic servocutch.

4,641,550
AUTOMATIC TRANSMISSION UTILIZING GYROSCOPIC SATELLITE GEARS
 Usher Meyman, 230 Ocean Pkwy., Brooklyn, N.Y. 11218
 Filed Apr. 29, 1985, Ser. No. 728,500
 Int. Cl.⁴ F16H 3/74

U.S. Cl. 74—751

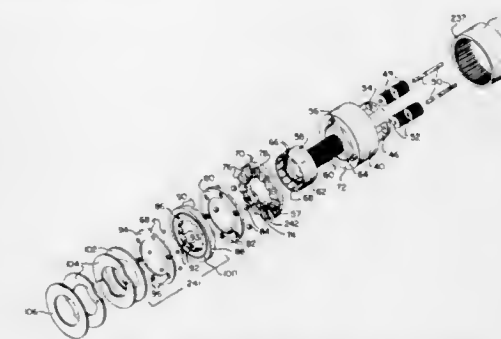
4 Claims



1. An automatic transmission, comprising a driving shaft and a driven shaft defining an axis of the transmission and rotating about said axis;
- a first gear drive including central gears mounted on said shafts, and satellite gears engaging with said central gears;
- a second gyroscopic gear drive including central gears, a carrier, and gyroscopic satellite gears engaging with said central gears of said second gear drive and mounted on said carrier;
- elements connecting said gear drives with one another and transmitting gyroscopic moments from said second gear drive to said first gear drive; and
- a reactor engaging with said central gears of said second gyroscopic gear drive.

4,641,551
APPARATUS FOR TRANSLATING ROTATIONAL MOTION AND TORQUE
 John H. Pascaloff, Galeta, Calif., assignor to Hall Surgical, division of Zimmer, Inc., Carpinteria, Calif.
 Filed Dec. 27, 1983, Ser. No. 565,414
 Int. Cl.⁴ F16H 57/10; 5/52; B23B 47/14
 U.S. Cl. 74—785

2 Claims



1. Apparatus for transmitting rotational motion and torque from a rotating input shaft to an output shaft comprising: a geared drive member coupled by a gear assembly to the input shaft, rotation of the input shaft causing rotation of the geared drive member through said gear assembly, said geared drive member defining a recess adapted to receive an engaging member;
- a drive plate so coupled to the input shaft that rotation of the input shaft causes corresponding rotation of said drive

plate, said drive plate defining a recess for receiving said engaging member;

a coupling member so coupled to the output shaft that rotation of said coupling member causes corresponding rotation of the output shaft, said engaging member being mounted to said coupling member;

said coupling member, said geared drive member and said drive plate being mounted for relative movement between (i) said geared drive member and said drive plate and (ii) said coupling member, receipt of said engaging member by a said recess being achieved by said relative movement;

said drive plate or said geared drive member being capable of transmitting rotational motion and torque to said coupling member when said recess of said drive plate or said geared drive member receives said engaging member; and

means for causing said relative movement between said coupling member, said drive plate and said geared drive member.

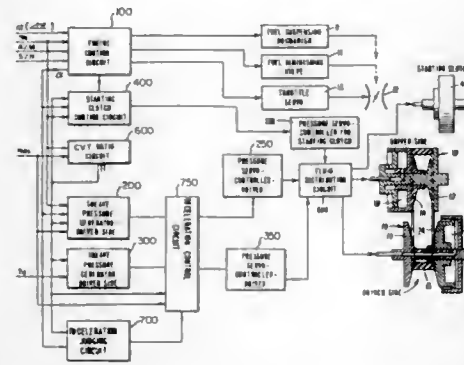
4,641,552
RINGGEARLESS TWIN SUN PLANETARY POWER AMPLIFIER
 Eugene Kuryczak, 238 Murray St., Elizabeth, N.J. 07202
 Continuation-in-part of Ser. No. 257,323, Apr. 22, 1981, abandoned. This application Jan. 22, 1985, Ser. No. 581,620
 Int. Cl.⁴ F16H 1/28, 3/44
 U.S. Cl. 74—802

3 Claims



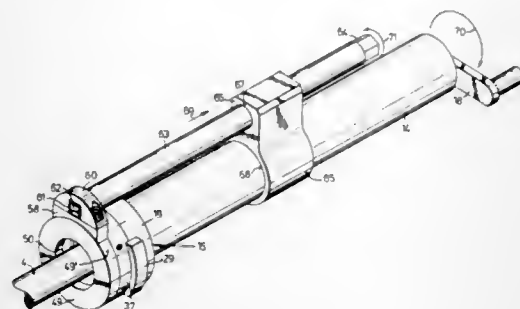
1. A ringgearless twin sun planetary power amplifier comprising a planetary gear arrangement in a housing and means within to mount: a centrally positioned braked reaction sun gear, concentric to the said reaction sun gear with a rigidly affixed driving gear, a rotatable input axle, extending outside the said housing providing means for driving connection with a power source, opposite and concentric to the said input axle, a carrier with a rigidly affixed carrier shaft, passing through and journaled from the said reaction sun gear and housing providing means of connection with a load, on the said carrier providing means parallel to the axis of rotation of the said carrier with a rigidly affixed driven and driving planet gear in a location where the said driving planet gear meshes with the said reaction sun gear, a rotatable planet axle, instituting the driving connection with the said carrier, a rotatable idler axle with a rigidly affixed driven idler gear meshing with the driving gear on the said input axle and a rigidly affixed driving idler gear meshing with the driven gear on the said planet axle is mounted on the said carrier providing means in a position that institutes the said meshing of gears thereof, and all the said meshed gears constitute a gear train, which reduces the angular speed of the said carrier in respect to the input speed as determined by a speed reduction ratio factor, that is a sum of one revolution of the said carrier plus the product of ratios between the number of teeth of the meshing pairs of gears, defining the centers as the axes of their rotations.

4,641,553
CONTROL SYSTEM AND METHOD FOR A POWER DELIVERY SYSTEM HAVING A CONTINUOUSLY VARIABLE RATIO TRANSMISSION
 Hideyuki Kobayashi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
 Filed Sep. 3, 1985, Ser. No. 771,842
 Claims priority, application Japan, Sep. 13, 1984, 59-190667
 Int. Cl.⁴ B60K 41/12, 41/18
 U.S. Cl. 74—866 3 Claims



1. A CVT control method comprising the steps of: delivering a signal indicative of a reference transmission gear ratio to a driver means of a stepless variable speed gear according to signals produced by detecting running conditions of a vehicle to which the method is applied; judging the vehicle to decelerate, according to both a signal produced in response to the accelerator pedal of the vehicle and a signal indicative of the transmission gear ratio of the vehicle; and modifying the signal indicative of the reference transmission gear ratio so as to conform to the transmission gear ratio determined by the speed of the vehicle, according to both a signal produced by the judgment made as described above and a signal indicative of the speed of the vehicle.

4,641,554
WRENCH FOR EFFECTING SCREW CONNECTIONS OF INACCESSIBLE PARTS OF MOTOR VEHICLES
 Horst Klann, Terra-Wohnpark 12, D-7730 Villingen-Schwenningen, BRD, Fed. Rep. of Germany
 Filed Jan. 10, 1985, Ser. No. 690,164
 Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 8400871[U]
 Int. Cl.⁴ B25B 13/48
 U.S. Cl. 81—55 9 Claims



1. A wrench for an inaccessible screw connection of a motor vehicle, the screw connection having a first part (6) with a large diameter cylindrical portion (13) a threaded portion (3), an axially extending portion (8) connected to said large diameter portion, a radially extending stop surface (23), a pair of

diametrically opposed parallel wrench flats (11, 12) on an end of the large diameter portion which is opposite from the axially extending portion, the screw connection also having a second part (4) with a threaded portion (2) screwed to the threaded portion (3) of the first part (6), and a pair of diametrically opposed parallel wrench flats (9, 10), said wrench comprising: a hollow tube (14) having one end with a wrench profile (16) for use in rotating said tube, and an opposite end with a radial stop part (22, 88) for engagement with the stop surface of the screw connection, said tube having a length between its ends which is at least as long as a length of the axially extending portion (8) of the screw connection so that when said stop part of said tube is engaged with the stop surface of the screw connection, said tube extends over the axially extending portion of the screw connection to bring said opposite end of said tube into the vicinity of the large diameter portion of the screw connection;

a ring-shaped wrench head (15, 73) connected to said opposite end of said tube, said wrench head being fixed to said tube at least against relative axial movement between said tube and said wrench head, said wrench head having a cylindrical opening (20, 80) of a diameter at least as large as the diameter of the large diameter portion (13) of the screw connection so that when said tube is moved axially over the axially extending portion of the screw connection, said cylindrical opening of said wrench head moves axially over the large diameter portion of the screw connection;

first wrench means (29, 91) having opposite jaws (30, 96), said first wrench means being operatively connected to said wrench head for radial movement of said opposite jaws into engagement with the wrench flat (11, 12) of the first part (6) of the screw connection when the large diameter portion of the screw connection is in said cylindrical opening of said wrench head;

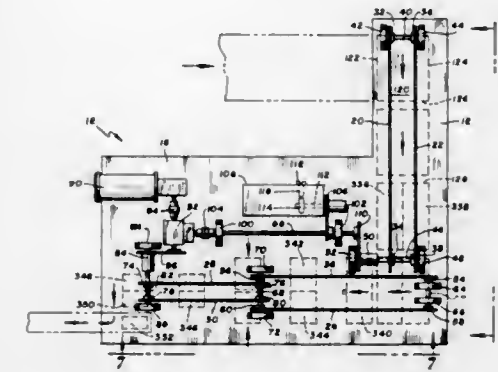
a ring part (49) mounted for rotation to said wrench head, axial holding means (46, 47) being engaged between said wrench head and said ring part for holding said ring part at a fixed axial position on said wrench head, said ring part having an inner recess (51) which is sufficiently large for the passage of the large diameter portion (13) of the screw connection, said recess having opposite bearing surfaces (54, 55) and said recess communicating with said cylindrical opening of said wrench head;

a fork wrench (58, 58') having a web forming a back portion and first and second fork legs interconnected with said web to form opposite jaws, said opposite jaws having facing parallel surfaces for engagement with the pair of wrench flats (9, 10) of the second part (4) of the screw connection, said fork wrench having outside bearing surfaces engageable with said bearing surfaces of said recess (51) of said ring part (59) when said fork wrench (58, 58') is engaged in said recess of said ring part, said ring part having a radially extending opening therethrough extending from an exterior of said ring part into said recess thereof for receiving said fork wrench;

rod means (59, 63) operatively connected to said fork wrench (58, 58') for rotationally holding said fork wrench when said fork wrench is in said recess and for thereby rotationally holding said ring part, with respect to said tube so that with said opposite jaws of said first wrench means engaged with the wrench flat of the first part of the screw connection, the first part of the screw connection can be rotated with respect to the second part of the screw connection; and

said opposite jaws of said first wrench means being spaced from each other when they are engaged with the wrench flats of the first part of the screw connection, by a distance smaller than the diameter of the large diameter portion of the screw connection.

4,641,555
PAPER HANDLING SYSTEM
 Dewey A. Johnson, 599 Summit Ave., St. Paul, Minn. 55102; Gregory P. Hamlin, 1307 Portland Ave., St. Paul, Minn. 55104, and Gary W. Schukar, 3494 Rolling View Ct., White Bear Lake, Minn. 55110
 Filed Jan. 31, 1986, Ser. No. 824,627
 Int. Cl.⁴ B26D 7/32
 U.S. Cl. 83—29 23 Claims



1. An apparatus for dividing sheets of material into pluralities of comparatively smaller sheet sections, and for collating the smaller sheet sections, including:

means forming a longitudinally directed first path, and a transversely directed second path beginning at a downstream end of the first path;

a first conveying means for moving a first stack longitudinally on said first path, each stack including at least one sheet of material with all sheets in the stack aligned in a predetermined orientation;

a first cutting means along said first path for cutting the first stack in the longitudinal direction to form two first stack portions;

said first conveying means further adapted for moving the first stack portions simultaneously and longitudinally on said first path from said first cutting means to a first collating station at the downstream end of the first path, thereby to elevate one of said first stack portions above the other first stack portion;

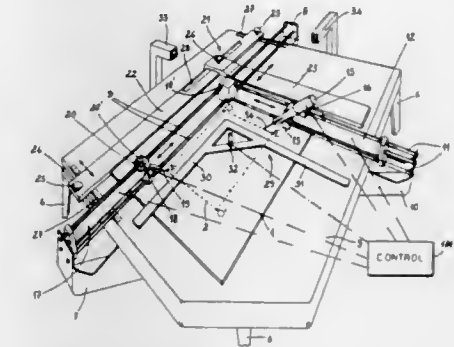
a first alignment means at the first collating station for vertically aligning said first stack portions, with the elevated first stack portion directly on top of the other first stack portion, to combine said stack portions into a single second stack, said first alignment means including a second conveying means for moving the second stack in the transverse direction on the second path;

a second cutting means along said second path for cutting the second stack in the transverse direction to form two second stack portions;

said second conveying means further adapted for moving the second stack portions simultaneously and transversely on the second path from the second cutting means to a second collating station, thereby to elevate one of the second stack portions above the other second stack portion; and

a second alignment means at the second collating station, including a pre-merging means for moving the elevated second stack portion toward the other second stack portion in the longitudinal direction to cause the elevated second portion to at least slightly overlap the other second stack portion, said second alignment means further including a merging means downstream of said pre-merging means for merging the second stack portions to form a single third stack of sheet sections.

4,641,556
METHOD OF AND APPARATUS FOR THE CUTTING OF WINDOWS IN MATS
 Gerard G. Vigneron, 28, avenue Jean Jaures, Modane (Savoie), and Jean C. R. Brulé, Les Neyrolles (Ain), both of France
 Filed Mar. 19, 1985, Ser. No. 713,424
 Claims priority, application France, Mar. 22, 1984, 84 05113
 Int. Cl.⁴ B26F 1/38; B26D 3/00, 5/12
 U.S. Cl. 83—36 9 Claims



1. A method of cutting rectangular windows in blanks to form mats for display purposes, comprising the steps of:

positioning a blank of sheet material on a support surface so that a vertex of a first potential corner of a window to be formed in said blank is positioned at a reference point on said surface for all sizes of mats corresponding to a junction of the path of two blades displaceable mutually perpendicular and upon rotation;

forming a pair of cuts with said blades respectively along two perpendicular lines fixed with respect to the surface in said blank adapted to form two adjoining sides of a rectangular window therein;

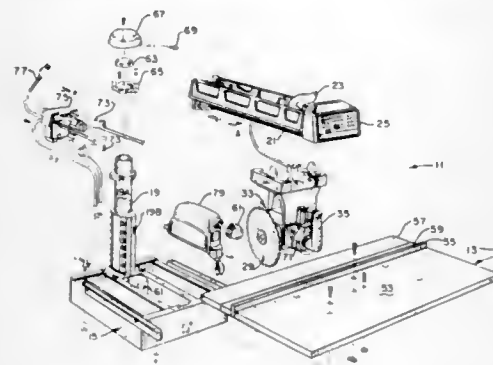
rotating said blank in its plane through 180° to position a point of said blank corresponding to a vertex of a diagonally opposite corner of said window at said reference point; and

forming two mutually perpendicular cuts in the blank with said blades whereby said cuts delimit a rectangular window in said blank to form said mat.

4,641,557
ELECTRONICALLY CONTROLLED POWER SAW
 Robert E. Steiner, St. Louis County; Karmen D. Cox, St. Charles County; Daniel A. Terpstra; James J. Metzger, Jr., both of St. Louis County, and Steven H. Plume, St. Charles County, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
 Filed Dec. 26, 1984, Ser. No. 685,918
 Int. Cl.⁴ B26D 5/30
 U.S. Cl. 83—71 54 Claims

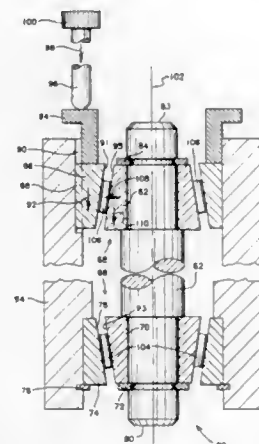
1. A bench power saw comprising: a table for supporting a workpiece; means adapted for driving a saw blade or the like around its rotational axis to cut the workpiece; means for sensing the elevation of the rotational axis with respect to a reference elevation; manually operable means for entering a desired final elevation of the rotational axis; and means responsive to the entering of a desired final elevation of the rotational axis for moving said axis to said elevation, said moving means including a positioning motor which when energized changes the elevation of the rotational axis; wherein the manually operable means further includes

means for requesting a continuing change in elevation, the moving means being responsive to said request to continue



changing the elevation within preset limits until the request ceases or the preset limits are reached.

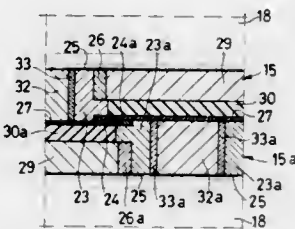
4,641,558
ROTATABLE SHAFT ASSEMBLY
Wolfgang Hoffmann, Modesto, Calif., assignor to B & H Manufacturing Company, Ceres, Calif.
Filed Aug. 16, 1985, Ser. No. 766,394
Int. Cl.⁴ B26D 7/26
U.S. Cl. 83—152



1. A precision centerable, rotatable shaft assembly, which comprises: a first shaft having a first end and a second end, a first housing extending generally axially along said shaft, said shaft being journaled in said housing by a first roller bearing assembly connected to said first shaft proximate to the first end of said first shaft, said first roller bearing assembly including a first inner race fixedly attached to said shaft, a first outer race fixedly attached to said first housing, and a plurality of rollers positioned between the first inner and outer races, the first outer race having an inner surface tapering toward said shaft approaching the first end of said shaft, a second roller bearing assembly connected to said first shaft proximate to the second end of said first shaft, said second roller bearing assembly including a second inner race fixedly attached to said shaft, a second outer race axially movable within said first housing toward said first roller bearing assembly, and a plurality of rollers positioned between the second inner and outer races, the second outer race having an inner surface tapering away from said shaft approaching said first roller bearing assembly, and adjustable means including a micrometer connected to supply force to a force applying member movable axially along

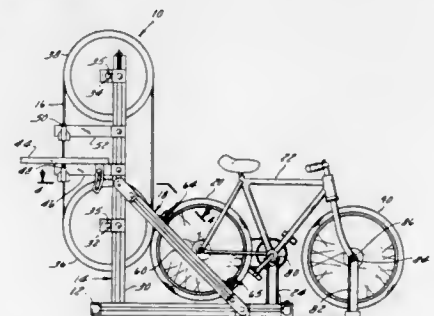
said shaft toward the first shaft end urging the second outer race toward said first roller bearing assembly.

4,641,559
EQUIPMENT FOR SLITTING CONTINUOUS TAPES INTO STRIPS WITH SHAPED SIDE PROFILE, IN PARTICULAR FOR METAL SHEET
Giovanni P. Castiglioni, Castellanza, Italy, assignor to F.I.C.I. Finanziaria Industriale Commerciale Immobiliare S.p.A., Milan, Italy
Filed Jan. 7, 1986, Ser. No. 816,898
Claims priority, application Italy, Jan. 23, 1985, 19197 A/85
Int. Cl.⁴ B23D 25/12; B26D 1/62
U.S. Cl. 83—333



1. Equipment for the continuous slitting of tapes of material, in particular tapes of metal plate and the like, into longitudinal strips with shaped side profile, essentially of sinusoidal and/or mixed outline, of the type comprising a base onto which a stand is positioned, supporting a pair of slitting cylinders, means for driving the rotation of said cylinders and related motor means being provided, said slitting cylinders essentially having a set of blades with shaped peripheral cutting edges, said blades being positioned on said cylinders in superimposed and staggered fashion, such as to provide a conjugated coupling of the shears type, characterized in that said slitting cylinders support rigidly said set of blades positioned on shafts alternatively with said cutting edges facing and not facing to each other, said blades being formed as bells provided with central and axial bores, and such as to receive between an inner surface of them and the surface of the supporting shaft a spacer ring, between two blades facing to each other at least a couple of radially elastic means and between two blades not facing to each other at least a spacer element.

4,641,560
PORTABLE SELF-POWERED BAND SAW
William Kolberg, 709 Lincoln Ave., Green Bay, Wis. 54303
Filed Dec. 9, 1985, Ser. No. 806,607
Int. Cl.⁴ B23D 55/06
U.S. Cl. 83—788



1. A portable saw assembly comprising a base, a frame assembly mounted on said base, a pair of wheels mounted on said frame in a common plane, a continuous band saw mounted on said wheels, a wheel guide assembly mounted on said base to

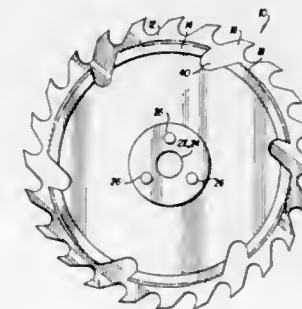
define a bicycle wheel support, a sprocket support member mounted on said base in a spaced relation to said guide assembly whereby a bicycle supported on said sprocket member with the rear wheel aligned in said guide assembly will bear on said saw blade wheel and can be used to drive the saw blade wheels.

4,641,561
DISC-SHAPED TOOL
Ernst Salje, Schulheide 4, Bendestorf, Fed. Rep. of Germany (D-2106), and Jorg Plester, Wendeburg, Fed. Rep. of Germany, assignors to Ernst Salje, Bendestorf, Fed. Rep. of Germany
Filed Feb. 13, 1986, Ser. No. 828,880
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1985, 3504826
Int. Cl.⁴ B27B 33/08
U.S. Cl. 83—835



1. A disc-shaped tool comprising a disc-like base, cutting means on the periphery of the tool, a vibration-reducing structure on at least one side of the base, the vibration-reducing structure comprising a layer of visco-elastic material and a covering on it, the base having a continuous groove in the said at least one side, the covering having an outer edge region extending into the groove, and at least one holding means elastically joining at least one of the rear and outer end surfaces of the covering to the base inside the groove.

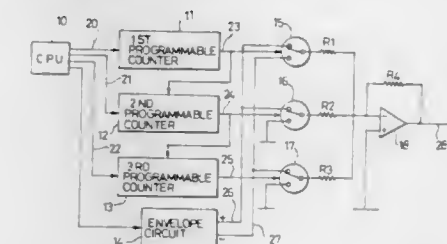
4,641,562
CUTTING TOOL FOR MAKING A SMOOTH SAW CUT
William Clarke, Bremen, Ga., assignor to Bremen Associates Incorporated, Bremen, Ga.
Filed Aug. 16, 1985, Ser. No. 766,287
Int. Cl.⁴ B27B 33/02
U.S. Cl. 83—837



1. A saw blade comprising:
a first saw blade having a plurality of teeth projecting radially from a periphery thereof;
a second saw blade having a plurality of teeth projecting radially from a periphery thereof, said second saw blade having a greater number of teeth than the first saw blade; the first saw blade having a greater diameter and smaller thickness than the second saw blade, the teeth of the first

saw blade being larger than the teeth of the second saw blade; and
means for coaxially mounting the first and second saw blades together.

4,641,563
ELECTRONIC MUSICAL INSTRUMENT
Yoichi Nagashima, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan
Filed Jul. 29, 1985, Ser. No. 760,315
Claims priority, application Japan, Jul. 31, 1984, 59-162049
Int. Cl.⁴ G10H 1/02, 1/057, 5/04
U.S. Cl. 84—1.01



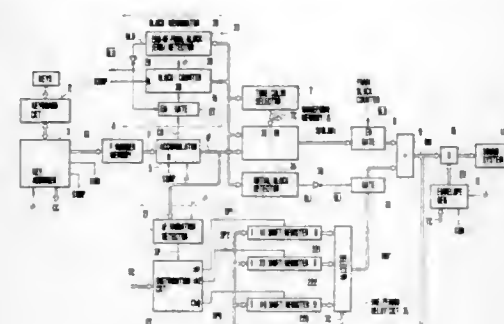
1. An electronic musical instrument which is provided with a first programmable counter for generating a reference clock signal corresponding to a musical frequency, and a plurality of cascade-connected programmable counters which are each triggered by the preceding programmable counter, whereby a primary waveform is generated as a multilevel signal which takes one of a plurality of levels for each period specified by one of the cascade-connected programmable counters, a first programmable counter for generating a reference clock signal corresponding to the musical frequency, a second programmable counter which is triggered by the first programmable counter, a third programmable counter which is triggered by the second programmable counter and a fourth programmable counter which is triggered by the third programmable counter, whereby the primary waveform is generated as a ternary signal which takes a first level for a period specified by the second programmable counter, a second level for a period specified by the fourth programmable counter and a third level for a period specified by the third programmable counter and for the remaining period.

4,641,564
MUSICAL TONE PRODUCING DEVICE OF WAVEFORM MEMORY READOUT TYPE
Shimaji Okamoto, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jun. 15, 1984, Ser. No. 621,246
Claims priority, application Japan, Jun. 17, 1983, 58-109945; Mar. 3, 1984, 59-40720
Int. Cl.⁴ G10H 1/06

1. A musical tone producing device of a waveform readout type, comprising:
reference waveform memory means for storing reference waveform data constituting a reference waveform, said reference waveform being similar to each of divided waveforms belonging to a plurality of blocks into which a musical tone waveform of a musical tone to be produced is divided;
difference waveform memory means for storing difference waveform data which comprises a plurality of block difference waveform data, each of said block difference waveform data constituting difference waveform representing a difference between said reference waveform and each of said divided waveforms;

readout means connected to said reference waveform memory means and said difference waveform memory means for reading out said reference waveform data and for reading out successively said block difference waveform data;

adding means connected to said reference waveform mem-

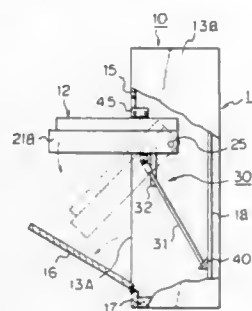


ory means and said difference waveform memory means for adding said reference waveform data and each of said block difference waveform data and for outputting successively added results respectively corresponding to said divided waveforms; and
sound means connected to said adding means for producing said musical tone according to said added results.

4,641,565
UPRIGHT PIANO
Hiroki Tachida; Takane Sato, and Shigeaki Sato, all of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 30, 1985, Ser. No. 728,781
Claims priority, application Japan, May 1, 1984, 59-062985; Dec. 21, 1984, 59-192859

Int. Cl.⁴ G10C 3/12
U.S. Cl. 84—431



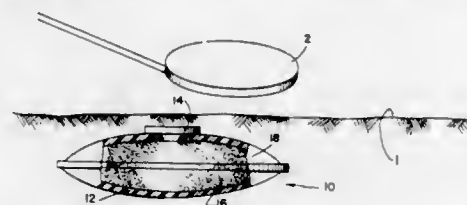
1. An improved upright piano, comprising: a substantially box-type main casing,
a plate arranged substantially vertically along the rear side of said main body,
a keyboard unit pivoted at its rear end to said main casing in a vertically turnable arrangement, and
a holder unit including elongated stays, each of which is pivoted, at one end, to the bottom of said keyboard unit in a vertically turnable arrangement and detachably engaged, at the other end, in a seat mounted on the lower portion of said plate,
whereby said keyboard unit is held substantially horizontally when said stay is engaged in said seat, said keyboard, said stay and said seat thereby coupled in a triangular support arrangement, and
whereby said keyboard unit is fully accommodated in a

lower space in said main casing when said stay is disengaged from said seat.

4,641,566
METHOD FOR DETECTING BURIED LAND MINES BY NON-DESTRUCTIVE MEANS

Robert L. Pomeroy, 29 Clarence Street, Dartmouth, Devon, England

Filed Jun. 22, 1983, Ser. No. 506,770
Int. Cl.⁴ F42D 5/02; G01V 3/11; G21H 5/02
U.S. Cl. 89—1.13



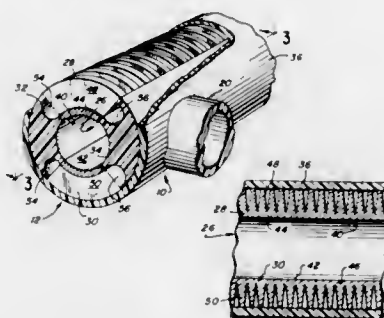
8. A method of detecting non-metallic buried mines comprising,
depositing material on a suspected mine field,
allowing the material to disperse into the ground,
detecting differential levels of material in the ground, and
locating suspected mines according to detected differential levels of material, wherein the depositing comprises spraying a liquid solution containing metal ions over the suspected mine field, said solution providing a leach that concentrates on or about buried mines, said leach being detectable by detector means capable of distinguishing between greater and lesser concentrations of metal ions.

4,641,567
BARREL ASSEMBLY FOR ELECTROMAGNETIC RAIL GUN

Richard L. Creedon, San Diego, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Filed May 31, 1983, Ser. No. 499,206
Int. Cl.⁴ F41F 1/02

U.S. Cl. 89—8



1. A rail gun barrel assembly defining an elongated bore, said barrel assembly comprising:
a pair of elongated, generally parallel conductive rails extending along opposite sides of the bore and being symmetrical about the longitudinal axis defined by the bore;
a pair of elongated insulating members disposed generally coextensively with said rails, said insulating members having passages formed in them for carrying coolant fluid;
an elongated, generally cylindrical outer shell disposed substantially coaxially of the bore for radially constraining said rails and insulating members, said outer shell having ports formed through it to enable coolant to pass there-through;
coolant supply means for supplying coolant fluid through

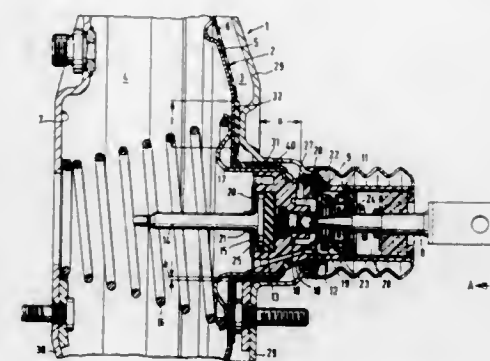
some of said ports into said passages in said insulating members; and
coolant drain means for draining coolant from said passages of said insulating members through others of said ports;
each of said rails comprising a longitudinally extending inner portion for carrying current and a plurality of transverse fins extending radially outward from said inner portion to said shell to react bursting forces generated in said bore; each of said fins being tapered in thickness so as to be of approximately constant longitudinal circular sectional area at each radius throughout;
whereby radial compressive stresses in each of said fins due to bursting forces generated in said bore are substantially equalized over the radial dimension of each of said fins due to the approximately constant longitudinal circular sectional area at each radius of each of said fins.

4,641,568
VACUUM-OPERATED BRAKE POWER BOOSTER

Peter Boehm, Frankfurt am Main; Peter Volz, Darmstadt; Gilbert Bischoff, Hattersheim; Sigmund Booten, Oberursel; Klaus Engert, Buerstadt, and Albin Loew, Karben, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1985, Ser. No. 710,926
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3411027

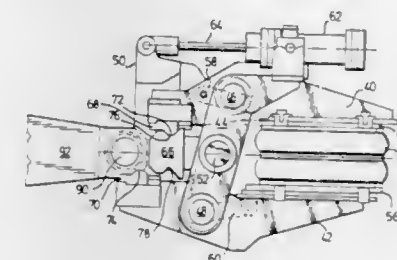
Int. Cl.⁴ F15B 9/10
U.S. Cl. 91—369 A



1. A vacuum-operated brake power booster with a movable wall sealed off relative to the vacuum housing and with a piston rod coupled with a brake pedal and serving to actuate a control valve by means of which a power chamber of the brake power booster is connectible at option either to vacuum or to a more elevated differential pressure, said control valve being furnished with a control valve piston adapted to slide axially within a control valve body, said control valve piston acting on the end of a push-rod sliding the piston of the master cylinder, a reaction element interposed between said control valve piston and said push-rod, and an air deflector element in the annular clearance formed between a peripheral surface of said control valve body and a neck portion of said vacuum housing to affect the flow of air in said annular clearance, said air deflector element retained to said control valve body in a manner such that said air deflector element moves jointly with said movable wall in the longitudinal direction of the vacuum-operated brake power booster.

4,641,569
CALENDER SELF-LOCKING LOADING MECHANISM
Rodney M. Smith, and Jiri Masek, both of Montreal, Canada, assignors to Valmet-Dominion Inc., Lachine, Canada
Filed Apr. 5, 1985, Ser. No. 720,244
Claims priority, application Canada, Apr. 12, 1984, 451888
Int. Cl.⁴ F01B 19/00; B30B 3/04

U.S. Cl. 92—43



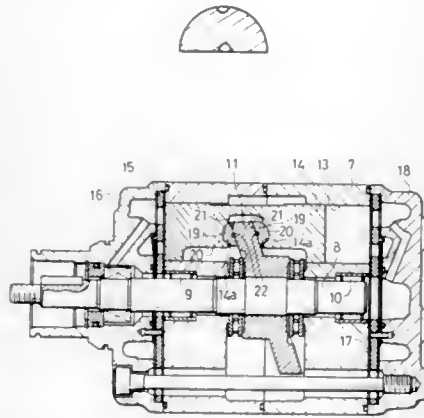
1. Pressure actuator selectively operative to provide force output in a selected one of two substantially opposite directions comprising a frame, a first and second arms, a link means pivotally connected at each of its opposite ends to one of said arms, means pivotally mounting said link means to said frame at a point substantially midway between the pivotal connections of said link with said arms, a pair of opposed pressure pads mounted one on each of said arms on one side of said link and an extensible actuator interposed between said arms on the opposite side of said link to said pressure pads, each of said pressure pads being formed with a locking means, a locking bar interposed between said arms on said one side of said link in a position to be engaged by each of said pressure pads when its respective arm is in a reactive position, cooperating locking means on said locking bar to cooperate with said locking means on said pressure pads when said pressure pads are in reactive position, means for moving said arms by pivoting of said link about its pivotal mounting on said frame thereby to move said arms between a position wherein the first arm is in a reactive position and said second arm is in an active position and a second position wherein said first arm is in an active position and the second arm is in a reactive position, said locking means on each of said pads engaging with its said cooperating locking means on said locking bar when its respective arm is, so that forces applied by said pad in reactive position against its cooperating locking means lock said arm in said reactive position in said reactive position and operating on said locking bar to prevent movement of the said arm in said reactive position, said pivotal connection between said link and said arm in said active position permitting said arm in said active position to pivot and thereby apply a pressure via its pressure pad against a load when said extensible actuator is actuated.

4,641,570
SWASH PLATE TYPE COMPRESSOR HAVING A CENTER CAVITY IN SURFACE OF PISTON SHOE
Kenichiro Futamura; Keiichiro Obitsu, both of Toyota; Tatsuhiko Fukuoka, Aichi; Kenji Takenaka; Yoshio Itakura, both of Kariya, and Hiroshi Koga, Chiryu, all of Japan, assignors to Taiho Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan
Continuation of Ser. No. 630,587, Jul. 10, 1984, abandoned. This application Apr. 29, 1986, Ser. No. 858,580
Claims priority, application Japan, Jul. 20, 1983, 58-132106
Int. Cl.⁴ F01B 3/00; F04B 1/18

U.S. Cl. 92—71

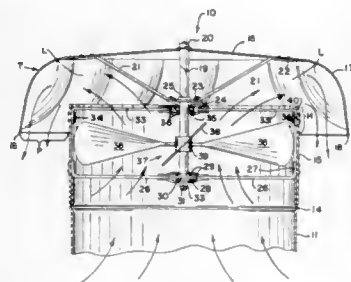
1. A swash plate type compressor comprising
a cylinder block which has at least one cylinder bore which extends parallel to a rotatable shaft;
a swash plate rotated by said rotatable shaft within said

cylinder block and having a sliding surface transverse to said rotatable shaft;
a piston attached movably within said cylinder bore; and
a shoe which intervenes between said piston and said swash plate and reciprocates said piston by rotation of said swash plate,



wherein said shoe has a substantially non-deformable surface which contacts said sliding surface of said swash plate, said substantially non-deformable surface being provided with a cavity which forms an opening to said shoe and which terminates within said shoe, the area of said opening being from 0.3% to 20% of the area of said surface of said shoe.

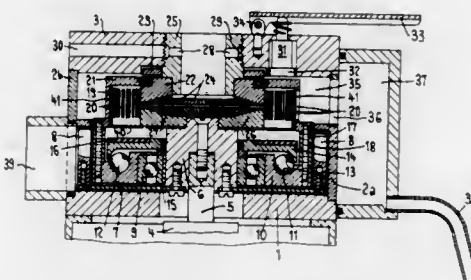
4,641,571
TURBO FAN VENT
William J. Anderson; Wayne R. Anderson, and Larry D. Robinson, all of Taylorsville, Miss., assignors to Enamel Products & Plating Co., McKeesport, Pa.
Filed Jul. 15, 1985, Ser. No. 754,907
Int. Cl.⁴ F23L 17/10
U.S. Cl. 98—72



1. A turbo fan vent capable of being rotated by wind currents comprising:
a turbine having a solid upper wall and side wall, said side wall having a plurality of closed louvers therearound, said side wall having a height substantially less than its diameter;
a rotary shaft removably fastened at a top end thereof to the upper wall of the turbine by releasable lock means associating thereat;
a plurality of braces extending from connections to the upper wall of the turbine and terminating at a bracket means, the bracket means being arranged along the rotary shaft below said releasable lock means and having an opening therethrough slidably receiving said rotary shaft therein, whereby upon unlocking said releasable lock

means, the turbine, braces and bracket means are slidably removable from the rotary shaft;
collar means vertically overlapping a portion of said side wall and having a diameter substantially less than said turbine side wall, said collar means supporting interiorly thereof upper and lower bearing means supportably and rotatably holding said rotary shaft;
said upper bearing means journalling said rotary shaft below said bracket means and being supported by a plurality of radial collar braces extending from connections to the collar means;
said lower bearing means being a thrust-type bearing assembly arranged generally at the lower end of the rotary shaft, and being supported by a plurality of radial cross braces extending from connections to the collar means;
a fan assembly having a plurality of fan blades arranged within said collar and said fan blades each being centrally affixed to hub means secured to said rotary shaft at a location therealong between said upper and lower bearing means, whereby upon the rotation of said turbine, said fan assembly spins in response thereto whereby to create an upward ventilating draft towards said turbine and outwardly therefrom in a passageway defined between said turbine side wall and collar.

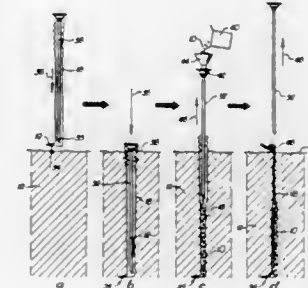
4,641,572
MACHINE WITH A CENTRIFUGAL DRUM
Franz Varga, Murten, Switzerland, assignor to Rotorcafe AG, Switzerland
Filed Jan. 18, 1985, Ser. No. 692,580
Claims priority, application Switzerland, Feb. 10, 1984, 651/84
Int. Cl.⁴ A47J 31/22, 31/42
U.S. Cl. 99—286



1. An apparatus for centrifuging liquid from a wet material, comprising:
a centrifugal drum having a removable cover mounted along a front side thereof;
stripper means adjacent said centrifugal drum for removing residue from the centrifuged material within said centrifugal drum;
drive means for rotatably driving said centrifugal drum and said stripper means at substantially the same number of revolutions per minute for centrifuging the liquid from the material; and
braking means, for reducing the rate of rotation of said centrifugal drum relative to that of said stripper means for providing axial extraction of said residue from the centrifugal drum when said cover is removed therefrom.

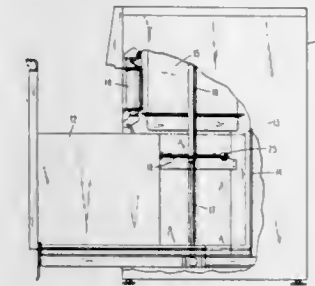
4,641,573
APPARATUS FOR FUMIGATING BULK-STORED COMMODITIES
Lawrence H. Gunn, Montrose, Calif., assignor to Pestcon Systems, Inc., Alhambra, Calif.
Division of Ser. No. 493,011, May 9, 1983, Pat. No. 4,579,714.
This application Jan. 27, 1986, Ser. No. 823,023
Int. Cl.⁴ A23L 3/34
U.S. Cl. 99—482

13 Claims



1. A fumigant placement and residue removal assembly for use in placing solid fumigant within a body of grain or other bulk-stored commodity, comprising:
an elongated sleeve having an open end and a closed end, said sleeve being composed of gas-permeable, flexible fabric; and
an elongated, rigid filler pipe having opposite open ends, said filler pipe being disposed in said sleeve with a loose sliding fit with one end of the pipe near, but spaced from, the closed end of the sleeve and with the other end of the pipe outside the sleeve whereby the rigid pipe holds the flexible sleeve in an open condition along the length of the pipe and leaves a short flexible flap beyond the end of the pipe;
said filler pipe having a hollow interior defining a passage within said sleeve for delivering solid fumigant from outside said sleeve to the interior thereof at the end of the filler pipe within the sleeve;
whereby fumigant may be placed within a body of grain or other bulk-stored commodity by placing the sleeve therein with the filler pipe in the sleeve and then pouring fumigant into the filler pipe from outside the sleeve and progressively withdrawing the pipe from the sleeve while said flexible flap is anchored in the body of grain or other bulk-stored commodity.

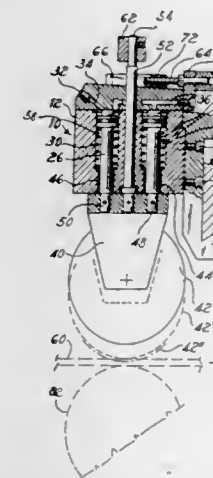
a protective cover means surrounding said screw means, said cover means pivotably retained to and moving with said



ram and extending at least to the drawer when said ram is in the second position.

4,641,575
DEVICE FOR EMBOSSING AND/OR CREASING SHEET, OR ROLL MATERIAL
Elio Cavagna, Melegnano, Italy, assignor to Elio Cavagna S.r.l., Melegnano, Italy
Filed Dec. 17, 1985, Ser. No. 810,028
Int. Cl.⁴ B41F 1/07
U.S. Cl. 101—23

7 Claims



4,641,574
POWER SCREW PROTECTOR FOR REFUSE COMPACTOR
Paul B. Chesnut, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 4, 1985, Ser. No. 804,463
Int. Cl.⁴ B30B 1/18
U.S. Cl. 100—229 A

22 Claims

1. In a refuse compactor comprising a frame, a refuse drawer within the frame and a ram, screw means within the frame for movably supporting the ram alternatively in a first refuse compacting position within the drawer and a second position above the drawer, and drive means for driving said screw means to reciprocate said ram between said first and second positions:

1. Device for embossing and/or creasing paper in sheet, or rolls, including a fixed structure, at least a tool holder, movable selectively and a system to adjust the degree of approach of the tool to the counter-roller, where the fixed structure is complete with a mobile, central rod, two symmetrical, side chambers where two pistons slide, with the relative stems, opposed by elastic means and a calibrated passage to supply a pressurised fluid in the upper part of each chamber; the tool-holder is fixed to the free-ends of the central rod and of the stems; and the system to adjust the degree of approach, includes a means to obtain an approximate approach and a means to achieve micro-metric adjustment of the extent of the said approach.

4,641,576
CLAMPING DEVICE FOR PRINTING PLATES AND PRINTING CLOTHS ON PRINTING MACHINES
 Klaus Güthling, Adolf J. Meyer, and Manfred Miethe, all of Lüneburg, Fed. Rep. of Germany, assignors to Fa. Wilhelm Bareschee, Lüneburg, Fed. Rep. of Germany
 PCT No. PCT/EP85/00188, § 371 Date Dec. 3, 1985, § 102(e) Date Dec. 3, 1985, PCT Pub. No. WO85/05075, PCT Pub. Date Nov. 21, 1985

PCT Filed Apr. 26, 1985, Ser. No. 817,936
 Claims priority, application Fed. Rep. of Germany, May 2, 1984, 3416187

Int. Cl.⁴ B41F 27/06, 7/22
 U.S. Cl. 101—415.1

1 Claim



1. A clamping device for holding and tensioning one end of a flexible printing plate wrapped around the outer surface of a rotatable printing cylinder, said one end of the plate defining a reverse bent, acutely angled, stiffened edge, said device comprising:

- (a) an elongate, axially bored shaft (10) rotatably disposed in a longitudinal recess (20) extending inwardly from the outer surface of the cylinder and axially parallel thereto,
- (b) a pair of elongate chordal slots (11, 12) extending inwardly from opposite sides of the shaft and towards each other at an obtuse angle having an apex oriented towards an outer surface of the shaft and away from the axial bore thereof, said slots:
 - (1) terminating short of an intersection therebetween,
 - (2) having parallel opposite sidewalls to define constant slot widths, and
 - (3) said slot widths being sufficient to closely accommodate a reverse bent stiffened edge of a printing plate, and
- (c) a torque bar (13) disposed in the shaft bore and operatively coupled to the shaft for biasing said shaft towards a neutral position whereat the slots are symmetrically disposed on opposite sides of a radius of the cylinder passing through the shaft axis such that a printing plate stiffened edge may be inserted into a slot from either side of the shaft upon the rotation thereof against the biasing force of the torque bar and the plate thereafter tensioned against the cylinder surface to thus accommodate the rotation of the cylinder in either direction during a printing operation.

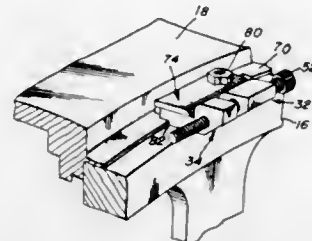
4,641,577
APPARATUS FOR ADJUSTING THE PLATE SEGMENT OF AN OFF-SET LITHOGRAPHIC PRINTER
 Peter K. Sweeny, 2411 Woolson Rd., Chattanooga, Tenn. 37406
 Filed Apr. 12, 1985, Ser. No. 722,595
 Int. Cl.⁴ B41F 1/28

U.S. Cl. 101—415.1

18 Claims

1. In an off-set lithographic printer having a rotational cylindrical drum including skeletal frame members and an image carrying plate segment mounted on said frame members, adjusting apparatus for changing the position of the plate segment relative to the frame members to align the image produced by said printer, said apparatus comprising a first block including a threaded bore extending therethrough, a second block including a threaded bore extending therethrough, a

screw threadedly extending through the bores of both said first and said second blocks, means for securing said first block to one of said frame members adjacent said plate segment, a circumferentially extending slot formed in the plate segment adjacent to said first block, said slot opening toward said blocks and having edges defining the circumferential extents of the slot, each of said first and second blocks having protuber-

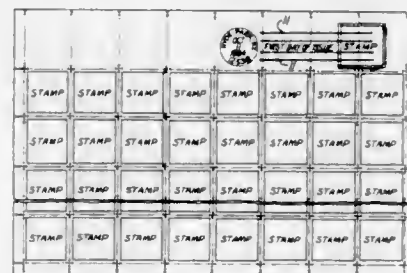


ances extending remotely from the screw receiving threaded bores disposed in said slot, whereby rotation of said screw effects movement of said second block relative to said first block for abutting one of said edges of said slot by a surface of the protuberance of said second block to move the plate segment with the second block relative to said frame members, and a releasable clamp for securing the plate segment to at least the first block and thus the frame member in selected positions.

4,641,578
METHOD AND DEVICE FOR AUTHENTICATION OF FIRST DAY OF ISSUE STAMPS
 Antonio A. Versaci, 2528 Peters La., Schenectady, N.Y. 12309
 Filed Jun. 12, 1985, Ser. No. 743,783
 Int. Cl.⁴ B65P 27/04

U.S. Cl. 101—426

17 Claims



1. A method for first day of issue authentication of a sheet of original stamps containing a selvage edge integrally formed with the sheet of stamps during printing; said method comprising affixing an extra original stamp of the same issue as the sheet of original stamps being authenticated in-line with an exposed portion of the selvage edge, and applying the First Day of Issue cancellation seal which includes a bulls eye containing the date and name of the post office performing the authentication and a portion of the killer bar cancellation segments of the cancellation seal to the exposed portion of the selvage edge in a manner such that the terminal ends of the killer bar cancellation segments of the seal impinge upon and cancel the extra original stamp affixed in-line with the exposed selvage edge portion of the sheet of stamps being authenticated.

4,641,579
PRINTING FOUNTAIN SOLUTION
 Irwin B. Bernstein, Homewood, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.
 Continuation-in-part of Ser. No. 377,978, May 13, 1982, abandoned. This application Nov. 21, 1984, Ser. No. 677,206
 Int. Cl.⁴ C09D 5/20

U.S. Cl. 101—451

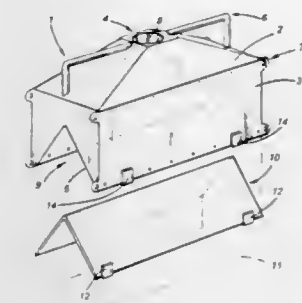
19 Claims

1. A method of practicing a lithographic printing process which includes a continuous dampening system, said method comprising the steps of preparing an aqueous fountain solution for maintaining desensitization of printing plates, applying said fountain solution and an ink by a continuous dampening system to a lithographic plate and transferring an image from the plate to a surface, the improvement comprising preparing a thickened solution free of isopropyl alcohol the thickened solution comprising a thickening agent selected from the group consisting of hydroxypropylmethyl cellulose, polyvinyl pyrrolidone, polyacrylamide, polyalkylene glycol, or mixtures thereof and mixing said thickened solution with said fountain solution in an amount to provide the fountain solution with a viscosity of between about 20 seconds and about 22 seconds as measured by a Shell #1 cup at printing temperatures, thereby providing an alcohol-free, viscosity controlled fountain solution.

4,641,581
DUAL-FUNCTION STORAGE CONTAINER FOR PRILLED EXPLOSIVE
 Chris A. Welckert, Ralston, and Gordon K. Briosi, Medicine Hat, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
 Filed Sep. 21, 1984, Ser. No. 653,110
 Claims priority, application Canada, Sep. 23, 1983, 437390
 Int. Cl.⁴ F42B 1/02

U.S. Cl. 102—307

11 Claims

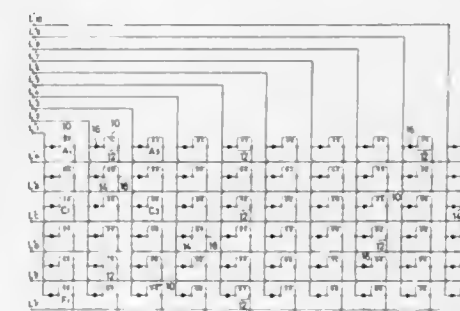


1. A storage container for a particulate, pourable explosive, comprising:
 a plastic container with top, side and bottom walls, the top wall including a filling opening and the bottom wall having a downwardly concave shape;
 closure means for closing the filling opening;
 a metal liner conforming in shape to the bottom wall of the container; and
 fastening means for selectively fastening the metal liner to the outside of the bottom of the container.

4,641,580
CIRCUIT APPARATUS FOR OPERATING FIREWORKS IGNITION
 Motohiro Ogatsu, Fuchu, Japan, assignor to Marutamaya Ogatsu Fireworks Co., Ltd., Tokyo, Japan
 Filed May 6, 1985, Ser. No. 731,239
 Claims priority, application Japan, May 14, 1984, 59-94553
 Int. Cl.⁴ F23Q 7/02

U.S. Cl. 102—217

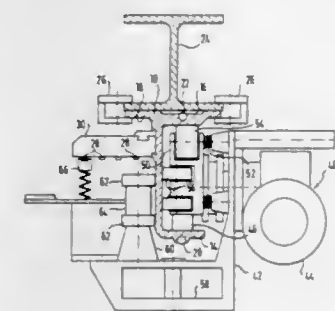
6 Claims



1. A circuit apparatus for operating fireworks ignition comprising: a group of ignition operating switch means each having a plural number of pole means, positive terminal means and negative terminal means on the output side of said ignition operating switch means and connected respectively with each of positive line means commonly used for each file and with each of negative line means commonly used for each step of a circuit means, said positive line means and said negative line means being lined up in a plurality of vertical steps and horizontal files; an ignition pilot lamp means commonly connected with a pole of each of said ignition operating switch means to be lighted when even one of said ignition operating switch means is closed; and a group of block operation switch means having a plural number of pole means to perform on/off operation of a power source supply means in common with each file of said group of ignition operating switch means.

4,641,582
ELECTRIC OVERHEAD TROLLEY CONVEYOR
 Georg Uttscheid, Madronstrasse 17., D-8201 Rosenheim, Fed. Rep. of Germany
 Filed May 9, 1985, Ser. No. 732,510
 Claims priority, application Fed. Rep. of Germany, May 21, 1984, 3418866
 Int. Cl.⁴ B61B 3/02; E01B 25/22
 U.S. Cl. 104—93

3 Claims



1. A lower chord electric trolley conveyor comprising a rail having a vertical web and upper and lower flanges extending therefrom, said upper flange being directly connected to a support structure, and an electric trolley having a drive wheel engaging the upper surface of the lower flange of the rail and receiving current from a bus bar carried by the rail, characterized in that said upper flange extends from the vertical web of the rail from both sides while the lower flange extends only from one side, that the electric trolley wraps around the lower part of the rail and includes counter pressure rolls preceding and following the drive wheel in relation to the direction of

movement of the trolley, said counter pressure rolls engaging the surface of the upper flange facing the lower flange, that support rolls carried by the trolley engage both sides of the vertical web of the rail, and that the bus bar is attached to the side of the vertical web of the rail facing away from the drive wheel.

4,641,583

FREE ROTATION SPROCKET, DRAG CHAIN CONVEYOR SYSTEM

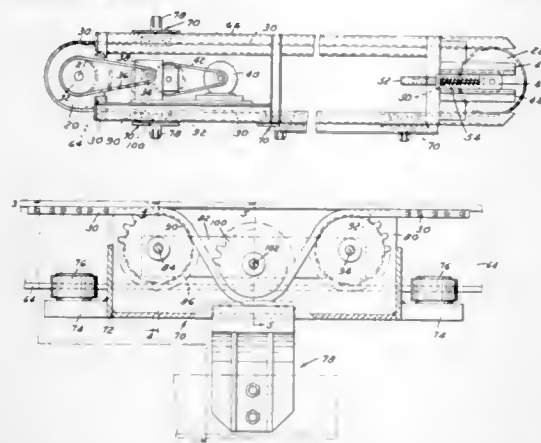
Earl J. Harrington, Oxford, Mich., assignor to Overhead Conveyor Company, Ferndale, Mich.

Filed Jul. 26, 1984, Ser. No. 634,553

Int. Cl.⁴ B61B 3/00

U.S. Cl. 104—172.1

2 Claims



1. A conveyor system in which a continuously moving power-driven chain drive is provided with a plurality of conveyor trolleys to be moved in a predetermined path by said chain drive and in which a plurality of chain engaging free rotating first sprockets on said trolley are positioned to guide said chain in a loop diverging from the general alignment of said chain wherein said loop creates a drag resistance which causes said trolley to move with said chain in said path when the path of the trolley is unobstructed,

that improvement in which opposed C-channels are disposed in spaced relation to provide a guide path for said first sprockets, at least two of said plurality of first sprockets being mounted for free rotation on axes extending transversely to said C-channels, support rollers on each end of said axes positioned to run on opposed ledges formed by one side of said C-channels, spaced members on said conveyor trolleys supported vertically on said axes on opposite sides of each said two sprockets, and guide rollers spaced longitudinally on said trolleys positioned between said opposed ledges to provide a horizontal guide for said trolleys.

2. A conveyor system in which a continuously moving power-driven chain drive is provided with a plurality of conveyor trolleys to be moved in a predetermined path by said chain drive, that improvement which comprises a plurality of chain engaging free rotating first sprockets on said trolley positioned to guide said chain in a loop diverging from the general alignment of said chain wherein said loop creates a drag resistance which causes said trolley to move with said chain in said path when the path of the trolley is unobstructed, drive sprockets spaced longitudinally from each other on parallel axes carrying the chain drive in a closed loop path, one of said drive sprockets being power driven to move said chain in said closed loop path, means mounting one of said drive sprockets for sliding motion transversely, to its axis, means biasing said last one of said drive sprockets in a direction away from the other of said drive sprockets to maintain a tension on said chain drive, and power means to move said last one of said drive sprockets in said same direction to increase the tension on said chain drive and control the acceleration of said trolleys.

4,641,584 ELECTRICALLY DRIVEN DETACHABLE GONDOLA LIFT OR CHAIR LIFT

Jean-Jacques Bertrand, Fontaine, France, assignor to Pomagalski, S.A., Fontaine, France

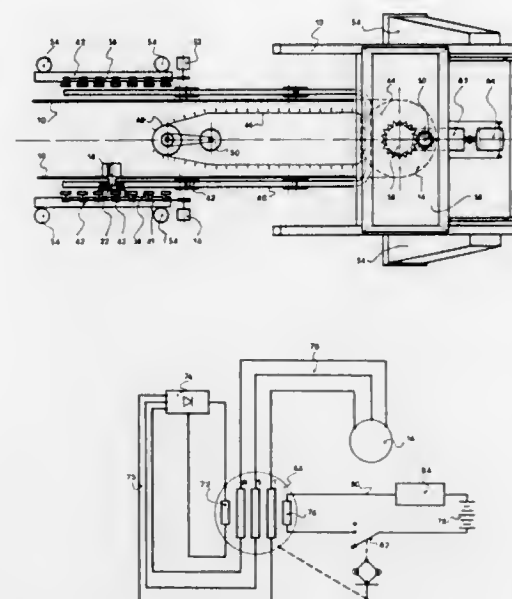
Filed Oct. 1, 1985, Ser. No. 782,302

Claims priority, application France, Oct. 15, 1984, 84 15865

Int. Cl.⁴ B61B 11/00

U.S. Cl. 104—173.2

6 Claims



1. Aerial ropeway transport installation, notably a detachable chair lift or gondola lift, comprising:

two end stations, end bull-wheels, on which a rope runs extending in an endless loop between the two stations, a bull-wheel motor for driving said bull-wheels in rotation, cars or chairs, which can be coupled to the rope in the loop and detached from the rope in the stations, transfer rails located in the stations, on which the cars or chairs run detached from the rope, driving means for driving the cars or chairs running on said transfer rails,

a synchronous electric motor to drive said driving means, an electrical alternator and a kinematic chain connecting the alternator to the station bull-wheel to ensure that the alternator rotates at a multiple speed of that of said station bull-wheel,

and an electrical connection between said alternator and said synchronous electric motor to supply the latter with the alternating current produced by the alternator and to ensure synchronous rotation of the motor.

4,641,585

TERMINAL FOR A DETACHABLE GRIP CHAIRLIFT FOR GONDOLA LIFT

Serge Tarassoff, Fontaine, France, assignor to Pomagalski, S.A., Fontaine, France

Filed Apr. 26, 1984, Ser. No. 604,144

Claims priority, application France, May 2, 1983, 83 07397

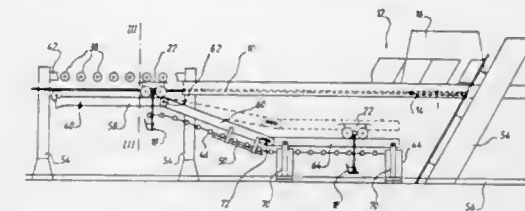
Int. Cl.⁴ B61B 11/00, 9/00

U.S. Cl. 104—173.2

5 Claims

1. A terminal for an aerial ropeway, in particular a chairlift or a gondola lift, having an endless continuously moving cable extending along uphill and downhill runs, and trucks with detachable grips for selectively coupling the chairs or gondolas to said cable, the terminal comprising:

a cable return sheave, a transfer rail extending in the terminal between the uphill and the downhill runs of the cable, said trucks being uncoupled from the cable in the terminal and running on said transfer rail, a grip release located at the entrance of the terminal adjacent said transfer rail for actuating a detachable grip to uncouple a truck from said cable, said transfer rail including successively a first section located at a first level adjacent the entrance of the terminal and having decelerating means for decelerating the truck uncoupled from the cable, a second section inclined downwardly relative to said first level, a third substantially horizontal adjustable section located at a second level, a fourth section inclined upwardly relative to said first level, and a fifth section located at the first level adjacent the exit of the terminal and having accelerating means for accelerating the truck



uncoupled from the cable to synchronize the speed of the truck with the speed of the cable, a grip actuator located at the exit of the terminal adjacent said transfer rail for actuating said detachable grip to couple the truck onto the cable, truck drive means for driving the truck along the transfer rail at slow speed, a loading and/or unloading area located along said third horizontal section, a framework on which said return sheave, said first and fifth sections, said grip release and said grip actuator are rigidly secured at said first level for the free passage of the chairs or gondolas therebelow regardless of the snow level in said terminal, and lifting means linked to said third section for adjusting said second level of the third section relative to the first level in accordance with the snow level at said loading and/or unloading area.

4,641,586

MAGNETIC SUSPENSION RAILWAY

Luitpold Miller, and Hans-Georg Raschbichler, both of Otterbrunn, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

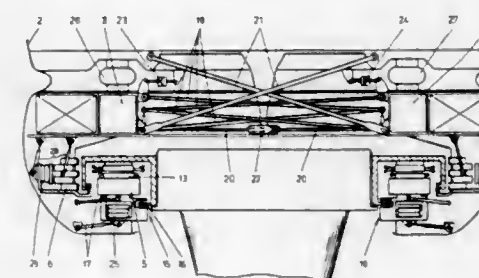
Filed Feb. 9, 1981, Ser. No. 232,587

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004704

Int. Cl.⁴ B60L 13/06

U.S. Cl. 104—284

5 Claims



1. In a suspension system for a magnetic suspension railway vehicle that is to travel in a longitudinal direction on a track having supporting rails, the suspension system including a plurality of hover frames distributed in the longitudinal direc-

tion and disposed on both sides of the vehicle, spring means connected to the hover frame for supporting the vehicle and for coupling the vehicle to the hover frames, a supporting magnet resiliently mounted to each hover frame for interacting with one of the supporting rails to support, guide, drive and brake and vehicle on the rail, a transverse magnet resiliently mounted to each hover frame for interacting with one of the supporting rails to laterally guide the vehicle with respect to the rail, gap control loop means connected to the supporting magnet and the transverse magnet of each hover frame for regulating a gap distance between each supporting and transverse magnet and the supporting rail interacting therewith, the gap control loop means having a plurality of autonomous gap control loops, the improvement comprising:

- each of said supporting and transverse magnets including at least four coils;
- each transverse magnet having adjacent coils with coil lengths selected so that, within each transverse magnet, coil peripheries of adjacent coils lie side-by-side and do not coincide;
- said coils of said supporting magnet and of said magnet being divided into two identical groups, the coils of each group being distributed over the total length of its respective magnet, each group being arranged so as to apply torques to its respective magnet with respect to the rails which is required for stabilization of a pitch movement for its respective magnet;
- the coils of each group being operatively connected to a separate autonomous gap control loop of the gap control loop means; and
- glide means connected to each of the supporting magnets and to each of the transverse magnets for engagement with one of the supporting rails to limit a free relative movement between the supporting and transverse magnets and the supporting rail.

4,641,587

SUSPENDED MOTORIZED VEHICLE

Fernand Dalliard, Villeneuve, Switzerland, assignor to Ateliers de Constructions Mecaniques de Vevey S.A., Switzerland

Filed Jul. 3, 1984, Ser. No. 627,611

Claims priority, application Switzerland, Jul. 4, 1983, 3747/83

Int. Cl.⁴ B61B 3/02

U.S. Cl. 105—3

7 Claims



1. A suspended motorized vehicle for transporting passengers and/or freight comprising a body (28) suspended on wheels (11) some of which are driving wheels and which travel on two laterally spaced apart tracks (2), the gauge between same being constant, said vehicle suspended from said tracks (2) by a plurality of central unitary forks each (8) having two prongs (9) directed upward above the horizontal plane of said tracks and straddling said tracks (2), the plane passing through the axes of said prongs (9) being perpendicular to the lengthwise direction of said tracks (2), the end of each said prong including a joint (18) provided by a horizontal shaft, an equalizing bar (12) pivotally supported by each said shaft in a vertical plane parallel to a respective one of said tracks, each end of each said equalizing bar (12) provided with one said wheel (11) mounted upon a bearing (13), each said wheel travelling on an adjacent one of said tracks (2), motor means (43) connected to at least one said wheel of each said equalizing bar of at least one said fork for rotating said driving wheels, and said unitary forks (8) each connected in their middle (10) to said body of the

vehicle by a thrust bearing (20, 39) pivoting around a vertical shaft, wherein said body (28) of the vehicle is divided into several sections each having means connecting a respective section to at least one adjacent section, each said section including walls, a ceiling and a floor, said connecting means comprising elastic bellows (29) connecting two consecutive said sections to assure the continuity of said walls, ceilings and floors, and wherein each said body section (28) of the vehicle is surmounted by a rigid frame (33) connected to a respective section, said frame including a fastening connecting it to that of at least one adjacent said body section, said fastening disposed between two said frames and located between two consecutive said bodies, a sleeve (10) attached to a medial portion of each said fork, said fastening including a spherical connection (20) allowing oscillations between adjacent ones of said frames both in horizontal and vertical planes, and said thrust bearing connecting said fork sleeves to said body by means of said frame (33).

4,641,588

HEAT SHIELD

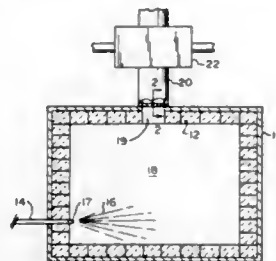
Edward M. Winter, Columbus; David E. Price, Plain City, and James E. Hook, Marengo, all of Ohio, assignors to Columbia Gas System Service Corp., Columbus, Ohio

Filed Jul. 8, 1985, Ser. No. 752,658

Int. Cl.⁴ F23J 15/00

U.S. Cl. 110—203

12 Claims



1. In the combination with a furnace, a heat radiation shield, the combination comprising, means for forming a furnace, an inlet to said furnace to admit fuel and oxygen, a burner connected to said inlet, said burner being mounted in operable position with the means forming the furnace to promote the combustion of the fuel and oxygen to produce heat and combustion products, an outlet from said furnace, said heat radiation shield being of porous material and mounted in said outlet, said shield and outlet being configured to require that substantially all combustion products exiting said furnace through said outlet pass through the pores of said shield, the shield having the property of passing combustion gases without changing their chemical properties except for reducing the nitrous oxide content, said shield combining its pore size and its thickness to shield the environment beyond the shield from direct heat radiation from inside the furnace.

4,641,589

PROCESS FOR THE RAPID ASSEMBLY OF ELEMENTS COMPOSING A STRUCTURE

Joseph Recasens, Sorgues, France, assignor to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed Feb. 25, 1985, Ser. No. 704,916

Claims priority, application France, Feb. 27, 1984, 84 02935

Int. Cl.⁴ F23B 7/00

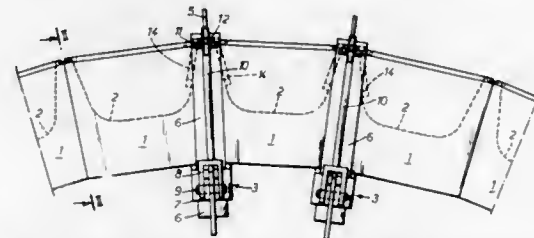
U.S. Cl. 110—341

7 Claims

1. A process for the assembly of at least one adjacent pair of

component structural elements to form an upright structure, each of said elements having a recess, comprising the steps of: arranging said elements flat on the ground in the desired relative configuration;

temporarily joining together said elements side-by-side into an assembled unit by a device comprising a post, a pair of opposed, spaced jaw members mounted on said post for relative movement toward and away from one another, a



pair of wing members affixed to one of said jaw members, said wing members extending from opposite sides of said one jaw member and toward the other of said jaw members, said wing members respectively engaging said recess of said elements, and means for clamping said jaw members together about said joined elements, lifting said device and said assembled unit and placing the same in a final position of the structure; and removing said device from said elements.

4,641,590

LIQUID HEATING SYSTEM

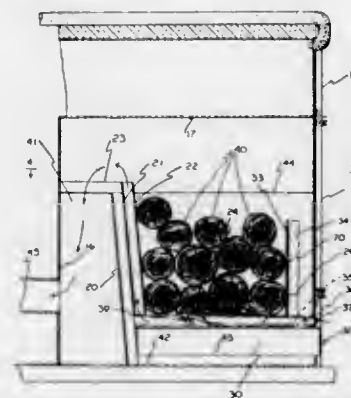
William T. Pope, Rte. 2, P.O. Box 37, Creekview Dr., Lucama, N.C. 27851

Filed Jul. 12, 1985, Ser. No. 754,294

Int. Cl.⁴ F23B 7/00

U.S. Cl. 110—341

2 Claims



1. The method of creating a complete burn of combustible fuel within a heating system having a firebox at least partially surrounded by a liquid reservoir comprising: placing fuel within a firebox having a knee wall extending upwardly from the bottom of said firebox so as to define a primary and secondary chamber on opposite side of said knee wall, said fuel being placed in said primary chamber adjacent said knee wall so as to create an air passage extending generally horizontally below said fuel and upwardly between said knee wall and said fuel; creating a fire core within said fuel; using negative pressure to create a streamlined air flow through said air passage, over the top of said knee wall and into said secondary chamber, said air flow moving at a speed where only a portion of the air flow can enter said fire core to support combustion of the fuel and to carry byproducts of said combustion upwardly from the fire core such that said byproducts combine with said streamlined air flow at the top of said knee wall and create a self-supporting after-burn in said secondary chamber whereby a clean burning, virtually pollution-free heating means is provided.

4,641,591

ADJUSTABLE DRIVE SHAFT FOR MULTI-HEAD SEWING MACHINE

Pietro Draghicchio, Corsico, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

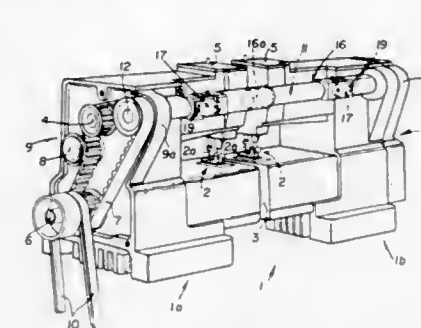
Filed Dec. 12, 1985, Ser. No. 807,926

Claims priority, application Italy, Apr. 30, 1985, 21675/85[U]

Int. Cl.⁴ D05B 25/00, 35/02

U.S. Cl. 112—155

6 Claims



1. In a sewing machine designed to perform stitches simultaneously on the opposite edges of a workpiece of the type with a gap between the needles where said workpiece is arranged during sewing, said machine consisting of two sewing machines located opposite and adjacent each other, one of the right-hand type and the other of the left-hand type, and an external drive shaft connecting said two machines so that one is driven by the other, wherein said drive shaft is provided with a universal joint at each of its ends and a sleeve expansion coupling at its middle area, said drive shaft being detachably fixed, at its ends, to two hubs, rotatably mounted on columns of said two machines and arranged parallel to and alongside an upper shaft of said two machines.

4,641,592

UPPER LOOPER PROVIDED WITH A HOLE AND USED FOR MAKING AN OVEREDGE STITCH WITH THREE THREADS IN SEWING MACHINES

Franco Marchesi, Pavia, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

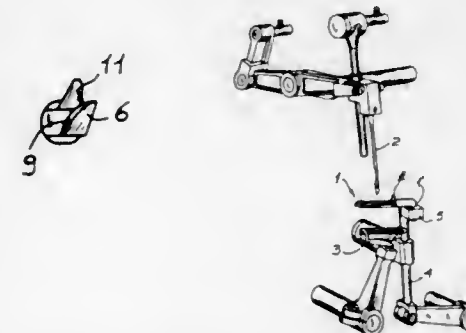
Filed Mar. 6, 1985, Ser. No. 708,913

Claims priority, application Italy, Jul. 31, 1984, 22761/84[U]

Int. Cl.⁴ D05B 57/06

U.S. Cl. 112—162

3 Claims



1. An upper looper of substantially rectilinear form provided with a hole and used for making an overedge stitch with three threads in overlock sewing machines having also a needle and a lower looper, wherein said upper looper comprises, at its end provided with a hole, a tip which is curved in the direction of the lower looper, a rounded and bulged projection adjoining the said curved tip which rounded and bulged projection faces the stitches already formed and is provided, on its upper edge with an inclined chamfer adapted to facilitate the transferring

of the thread from the lower looper onto the upper looper, and wherein the substantially rectilinear profile of the upper looper is interrupted by substantially vertical and upwardly projecting lug designed to define a guide and stop member for the thread of the lower looper, said lug being disposed suitably mid-way along the length of the upper looper.

4,641,593

ZIGZAG AND TRANSPORT DEVICE FOR SEWING MACHINES

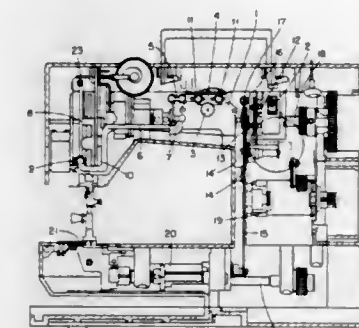
Fernando C. Echavarrio, Pº de San Andres, 8 Eibar (Guipuzcoa), Spain

Filed Oct. 15, 1985, Ser. No. 787,436

Int. Cl.⁴ D05B 3/02

U.S. Cl. 112—443

3 Claims



1. A sewing machine of the type having a chassis, a main motor, and material drive features, wherein the improvement comprises:

a needle bar having a supporting piece attached thereto, a first rack piece mounted on the chassis for reciprocating movement, said first rack having at one end a hingedly connected middle piece, and at an opposite end a hingedly connected lever, said lever being fastened to the chassis and having a free end pivotally connected to said supporting piece, first stepper motor means for providing a zigzag motion to the machine needle, said motor means having a drive shaft which reciprocates said rack to impart zigzag motion to said needle, means for causing variations in the reciprocating motion of the rack so as to change the zigzag motion of the needle, a feeding device, an eccentric linked to a shaft which is powered by the main motor, a second rack piece which through a middle piece is pivotally linked to a connecting rod, said connecting rod having an upper end biased against said eccentric by a spring, and a lower end connected to an axle which in turn is connected to the feeding device of the machine, and second stepping motor means for imparting a shifting movement to said second rack piece, said motor means having a second drive shaft which is connected to said connecting rod, thereby providing forward and backward shifting motion to said feeding device.

4,641,594

CANOE CONVERSION KIT

Harry Birkett, 4648-83 Street NW., Calgary, Alberta, Canada (T3B 2R2)

Filed Sep. 23, 1985, Ser. No. 778,946

Claims priority, application Canada, Oct. 26, 1984, 466465

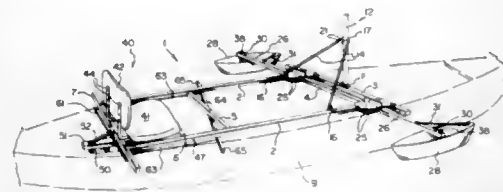
Int. Cl.⁴ B62B 15/00

U.S. Cl. 114—43

5 Claims

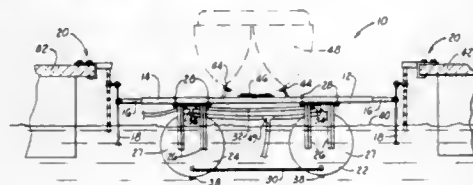
1. An iceboat kit for converting a canoe to a sailboat, com-

prising substantially rectangular frame means for mounting on the top side edges of the canoe between the bow and stern thereof, said frame means including front crossbar means and rear crossbar means for supporting the frame means on the canoe side edges; first bracket means on said front crossbar means for mounting a sail mast on said frame means; arm means



adapted to extend outwardly from said front crossbar means for carrying pontoons on ice runners, seat means on said frame means proximate said rear crossbar means; and ice runner means on said frame means beneath said seat means, whereby when free of a canoe the kit can be used alone as an iceboat and, when mounted on a canoe, the kit converts the canoe to a sailboat.

4,641,595
BOAT LIFT WITH SELF ALIGNING ATTACHMENT
James A. Pritchett, R.R. #2, Box 456, Grove, Okla. 74344
Filed May 13, 1985, Ser. No. 733,087
Int. Cl.⁴ B63C 1/00
U.S. Cl. 114-44 4 Claims



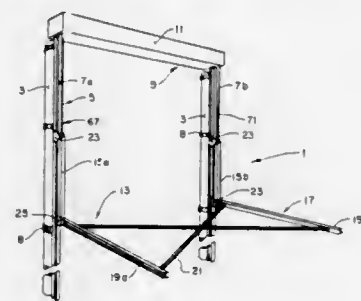
1. A boat lift with boat aligning attachment, the lift used for raising and lowering a boat in a boat slip, the slip disposed between spaced apart parallel dock sides, the boat lift comprising:

- a pair of telescoping cross members perpendicular to the dock sides and having a boat support frame thereon for supporting the boat when the lift is raised;
- at least one tank attached to the cross members;
- means for pumping air into the tank and raising the lift and valve means for receiving water into to tank and lowering the lift;
- four rigid vertical alignment shafts, the top of the shafts attached to and suspended from four height adjustment assemblies secured to the dock sides, the alignment shafts including dampening blocks attached to the top of the shafts for providing flexible movement of the shafts on the height adjustment assembly; and
- a bearing housing attached to the opposite ends of the cross member and including a plurality of ball bearings disposed in the housing and positioned around each alignment shaft for providing a bearing surface as the cross members are raised and lowered on the vertical alignment shafts.

4,641,596
BOAT DOCK AND LIFT
Layton J. Repogle, 4430 Emminence, Berkeley, Mo. 63134, and Truman B. Repogle, 6442 Vita, Affton, Mo. 63123
Filed Jun. 3, 1985, Ser. No. 740,424
Int. Cl.⁴ B63C 3/06
U.S. Cl. 114-44 5 Claims

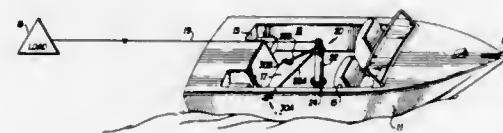
1. A boat dock and boat lift comprising a frame having a pair of spaced upright members and a horizontal cross member

extending between said upright members, a lift mounted on said frame, said lift having a support engageable with a boat hull, said lift being movable between a lowered position in which said support is below the surface of the water such that a boat may be floated into position above said support, and a raised position in which said support engages said boat hull from below and lifts the boat clear of the water, said lift having a pair of upright arms each of which is in generally face-to-face relation with a respective one of said frame upright members, means for movably mounting said lift upright arms on said frame upright members as said lift is moved between its raised and lowered positions, and means carried by said frame and connected to said lift upright arms for moving said lift between its raised and lowered position while maintaining said support in a generally horizontal position, this last said moving means comprising a piston and cylinder unit having one end thereof fixed with respect to said cross member, and the other end thereof movable with respect to said cross member, a first



pulley block secured to said cross member, a second pulley block slidable on said cross member and connected to said other end of said piston and cylinder unit, each of said pulley blocks having one or more pulleys journaled thereon, a first flexible cable having one end thereof secured with respect to said frame and being entrained around certain of said pulleys on said first and second pulley blocks, and having its other end secured to one of said lift upright arms, and a second flexible cable having one end thereof secured with respect to said frame and being entrained around others of said pulleys on said first and second pulley blocks and having its other secured to the other end of said lift upright arms so that upon actuation of said piston and cylinder unit, said second pulley block is forcibly moved on said cross member toward or away from said first pulley block thereby to move the other ends of said first and second cables an equal distance in generally vertical direction so as to ensure that said lift is maintained in its above said horizontal position as it is moved between its raised and lowered positions.

4,641,597
TOW APPARATUS AND METHOD OF INSTALLATION
Harold G. Paxton, 1901 Sorrento Pl., Richmond, Va. 23233
Continuation-in-part of Ser. No. 690,542, Jan. 11, 1985, Pat. No. 4,561,375. This application Mar. 27, 1985, Ser. No. 716,736
The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.
Int. Cl.⁴ B63B 21/56
U.S. Cl. 114-253 4 Claims

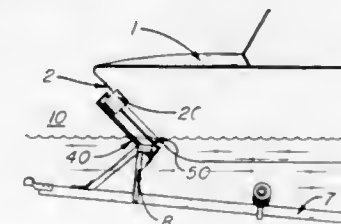


1. Tow apparatus installable in a movable craft for towing a load situated behind said craft, said craft having at least one

interior surface including an essentially planar portion thereof, said apparatus comprising:

- an essentially vertical post member adapted to have means connectable to said load secured thereto;
- means for anchoring said vertical post member to a planar portion associated with one of said interior surfaces;
- at least one support member having an upper end thereof connectable to said vertical post member proximate the top of said vertical post member; and,
- means for anchoring said support member to a planar portion associated with one of said interior surfaces, said support member anchoring means comprising:
- footing means, said footing means comprising a footing plate and two footing walls perpendicular thereto, said walls extending from one side of said plate to form a channel therebetween, said footing means being insertable into a complementary shaped aperture in said planar portion of said interior surface in a manner whereby said footing plate abuts said planar portion and said footing walls extend into said aperture;
- ankle means, said ankle means being positionable in at least a storage position and a utility position, said ankle means in said storage position being essentially entirely accommodated in said footing channel, said ankle means in said utility position having a distal portion thereof extending beyond said footing plate and at an angle thereto, said distal portion of said ankle means having thereon means for mating with a lower end of said support member;
- means for selectively moving said ankle means between said storage position and said utility position;
- post receptacle means, said post receptacle means comprising a receptacle plate and a receptacle cylinder, said receptacle cylinder being insertable into a complementary shaped aperture in a planar portion of said interior surface and connected to an underside of said receptacle plate, said receptacle plate having an aperture therein to accommodate said lower end of said vertical post member, said receptacle cylinder having a major axis perpendicular to the plane of said receptacle plate and aligned with said receptacle plate aperture, said receptacle cylinder being essentially hollow for reception therein of said lower end of said post; and,
- means for locking said vertical post member into said receptacle cylinder.

4,641,598
BOAT-TRAILER LATCH
Donald F. Hodges, Box 486, Ontario, Oreg. 97914
Filed Mar. 26, 1985, Ser. No. 716,268
Int. Cl.⁴ B60P 3/10
U.S. Cl. 114-344 10 Claims

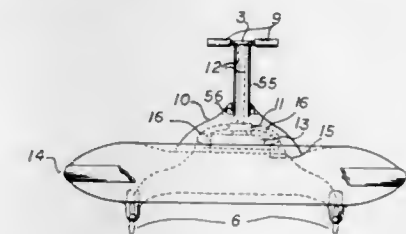


1. Boat latch apparatus for securing a boat to a trailer at varying water levels, said apparatus comprising:

- First latch means comprising a framework, at least one latch door pivotally engaging said framework to define a retentive enclosure when said door is in a closed position, and means for mounting said first latch means to the bow of a boat; and
- second latch means comprising a framework and an elongated latch pin affixed to the framework, said framework pivotally engaging a trailer adjacent the forwardmost end

of the trailer, and said elongated latch pin operable to strike said door of said first latch means at a position along the length of said latch pin to open said door, and to be retained by said door and said framework of said first latch means.

4,641,599
SPEED MANEUVERING WATER CRAFT AND CONTROLS
Charles E. Thomas, 998 E. Main St., #77, El Cajon, Calif. 92020, and Richard Harvey, 10828 Buggywhip Dr., Spring Valley, Calif. 92078
Filed Aug. 30, 1985, Ser. No. 771,022
Int. Cl.⁴ B63B 3/00; B63H 21/165
U.S. Cl. 114-346 6 Claims

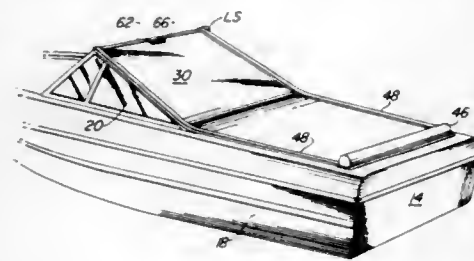


1. A speed maneuvering water craft for the water recreation enthusiast which comprises a generally circular platform expanding about its edge into a toroidal frame to form concave and generally symmetrical top and bottom surfaces; means for propelling said craft, comprising: two rotating shafts mounted in a directionally fixed and generally horizontal position at diametrically opposite locations under said frame; a reversible propeller mounted on each of said shafts; and means for rotating said shafts independently from each other; two hydraulic motors, each driving one of said shafts; two hydraulic pumps, each supplying fluid to one of said motors; an internal combustion engine driving said pumps; independent means, for controlling each of said hydraulic pumps, comprising: a handlebar having two twist grip control handles; two throttle control valves each one of said valves being linked and responsive to one of said handles; wherein each of said throttle control valves comprises: two supply poppet valves each receiving pressurized fluid from one of said hydraulic pumps and discharging to two interconnection points; two supply/discharge conduits for fluid connected between said interconnection points and two reversible supply and discharge ports of one of said hydraulic motors; two discharge poppet valves each receiving said hydraulic motor discharge fluid from said interconnection points and returning said fluid to the suction of said hydraulic pump; and a pilot actuation system means of actuating alternate pairs of said supply and discharge valves so that said pressurized fluid is supplied to one of said reversible supply and discharge ports and said hydraulic motor discharge fluid from said other reversible supply and discharge port is relieved to said suction of said hydraulic pump.

4,641,600
ROLLING BOAT COVER
Willmet P. Halvorsen, Box #104, Frontenac, Minn. 55026
Filed Apr. 18, 1986, Ser. No. 853,512
Int. Cl.⁴ B63B 17/00 7 Claims

1. For a boat having a cockpit delineated by opposite fore-and-aft sides, a rear transom and a transverse front windshield wherein the sides respectively have upper edges extending substantially forwardly from the transom and thence sloping upwardly to and meeting the top of the windshield: a cover construction for enclosing the cockpit, comprising a pair of elongated guides fashioned to extend respectively continuous

along the side edges from the transom to the top of the windshield and including means for affixation to the edges, a roller spanning the channels at the transom, a flexible cover sheet wrapped on the roller and having opposite fore-and-aft marginal portions received respectively in the guides, the sheet

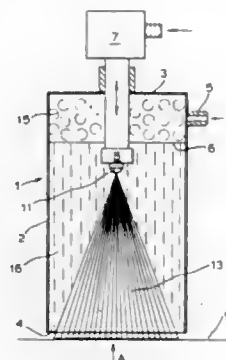


having a transverse front edge and being of such length that, when unrolled, it extends from the roller to dispose its front edge at the top of the windshield, means for rolling and unrolling the sheet, and means for attaching the front edge of the sheet to the top of the windshield.

4,641,601
UNDERWATER PAINTING
Edward Daley, Higherford Nr. Nelson, United Kingdom, assignor to Colebrand Limited, London, England
Filed Jul. 16, 1985, Ser. No. 755,614
Claims priority, application United Kingdom, Jul. 17, 1984, 8418155

Int. Cl.⁴ B05B 7/08, 13/00, 15/04
U.S. Cl. 118—305

9 Claims

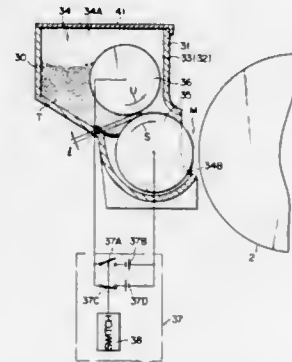


1. Apparatus for underwater painting, comprising:
 - (i) a tubular shield having a closed end and an open end;
 - (ii) means for admitting gas under pressure to the interior of the shield;
 - (iii) means internally of the shield for providing a uniform gas flow towards the open end; the means for providing a uniform gas flow comprising a baffle plate through which gas from the inlet passes in use and which extends across the tubular shield, the baffle plate having perforations disposed as a plurality of spaced concentric circular arrays of perforations; and
 - (iv) a paint supply device penetrating the baffle plate and having a paint outlet downstream thereof whereby the paint exits the open end for painting an object to be painted.

4,641,602
DEVELOPING APPARATUS
Toshihiro Kasai, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 646,159, Aug. 31, 1984, abandoned.
This application Aug. 28, 1985, Ser. No. 770,013
Claims priority, application Japan, Aug. 31, 1983, 58-161254
Int. Cl.⁴ G03G 15/08

U.S. Cl. 118—653

11 Claims



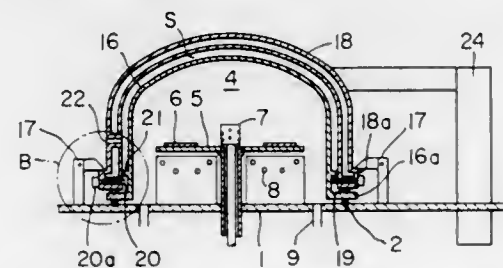
1. A developing apparatus for developing a latent image by applying a developer to the latent image formed on a surface of an image carrier at a developing position opposing said image carrier, comprising:

a developer carrier for carrying said developer to said developing position;
developer supplying means for supplying said developer to said developer carrier;
regulating means, provided to oppose said developer carrier, for regulating said developer to be fed by said developer carrier; and
means for charging said regulating means to a first polarity and said developer carrier to a second polarity during a time of developing to cause said developer to be attracted to said developer carrier, and for charging said regulating means to said second polarity and said developer carrier to said first polarity during a time of nondevelopment to cause said developer to be repelled from said developer carrier.

4,641,603
EPITAXIAL GROWING APPARATUS
Yoshihiko Miyazaki, Taizan Goto, both of Numazu; Yoshizo Komiyama, and Kotei Iwata, both of Gotenba, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 21, 1984, Ser. No. 554,824
Claims priority, application Japan, Nov. 1, 1983, 58-205194
Int. Cl.⁴ C23C 13/08

U.S. Cl. 118—724

10 Claims



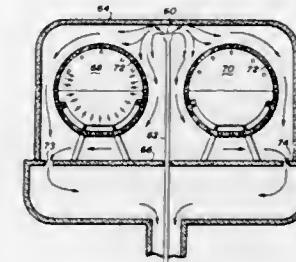
1. An epitaxial growing apparatus for the type in which an epitaxial thin film layer of a semiconductor substance is formed on a substrate mounted on a support member disposed in a sealed reaction chamber, comprising:

a base plate;
a quartz bell jar mounted on said base plate to define the reaction chamber therebetween;
a metal bell jar disposed outside said quartz bell jar so as to surround the same; and
an engaging member operatively connected to said metal bell jar for detachably engaging said metal bell jar with said quartz bell jar;
said quartz bell jar being provided with a flange portion of the lower end thereof, which is to be pressed downwardly towards said base plate by said metal bell jar through a resilient member interposed therebetween.

4,641,604
CHEMICAL VAPOR DEPOSITION WAFER BOAT
Arthur J. Learn, Cupertino, and Dale R. DuBois, Los Gatos, both of Calif., assignors to Anicon, Inc., San Jose, Calif.
Continuation of Ser. No. 607,065, May 4, 1984, Pat. No. 4,582,020. This application Dec. 5, 1985, Ser. No. 804,954
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ C23C 16/44; B05C 13/02
U.S. Cl. 118—728

10 Claims



1. A chemical vapor deposition wafer boat means for supporting a plurality of wafers in an evenly spaced, upright orientation substantially perpendicular to the axis of the boat during loading and chemical vapor deposition in a reaction chamber and for protecting the wafers from direct impingement of reaction gas streams entering the reaction chamber, the boat comprising a cylinder having closed ends and comprised of mutually engaging upper and lower hemicylinders, the upper hemicylinder having diffusion zones with gas flow passageways therein in the ends and in zones within from 10° to 60° from a horizontal plane through the cylinder axis and from 0° to 15° from a vertical plane through the cylinder axis, the remainder of the hemicylinder wall being baffle means without gas flow passageways for preventing direct impingement of gas streams on wafers in the boat, the ends and sidewall of the lower hemicylinder comprising gas diffusion zones, the gas flow passageways comprising from 0.5 to 40 percent of the surface area of the respective gas diffusion zones.

6. A chemical vapor deposition apparatus comprising a vapor deposition chamber having a gas inlet means positioned in the upper portion of the chamber for introducing gases into the chamber and a gas outlet means positioned in the lower portion of the chamber for removing gases from the chamber, a cylindrical wafer boat means positioned between the gas inlet means and the gas outlet means for supporting a plurality of wafers in an evenly spaced, upright orientation, the boat means comprising a cylinder having closed ends and comprised of mutually engaging upper and lower hemicylinders, the upper hemicylinder having diffusion zones with gas flow passageways therein in the ends and in zones within from 10° to 60° from a horizontal plane through the cylinder axis and from 0° to 15° from a vertical plane through the cylinder axis, the remainder of the hemicylinder wall being baffle means without gas flow passageways positioned between the gas inlet means and interior of the boat means for shielding wafers in the wafer boat from direct impingement of gases from the gas inlet means, the ends and sidewall of the lower hemicylinder com-

prising gas diffusion zones with gas flow passageways therein, the gas flow passageways comprising from 0.5 to 40 percent of the surface area of the respective gas diffusion zones.

4,641,605
ANIMAL LITTER AND METHOD OF PREPARATION
Charles Gordon, Vernon, Calif., assignor to Kal Kan Foods, Inc., Vernon, Calif.
Filed Nov. 29, 1985, Ser. No. 803,135
Int. Cl.⁴ A01K 1/015

U.S. Cl. 119—1

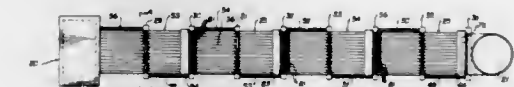
21 Claims

1. An animal litter, which comprises: granular litter material; and an effective amount of an oxidizing agent selected from the group consisting of alkali metal persulfate and ammonium persulfate.

4,641,606
CELL BOILER
Alfred L. Roberts, West Monroe, La., assignor to Delta Salvage Energy, Inc., Monroe, La.
Filed Feb. 26, 1986, Ser. No. 833,122
Int. Cl.⁴ F22B 25/00

U.S. Cl. 122—214

8 Claims



1. A cell boiler comprising a furnace, plural connected cell boiler units extending away from one side wall of the furnace, each cell boiler unit including therein a multiplicity of narrow cells and intervening narrow gas flow passages extending substantially from top-to-bottom of said units, the gas flow passages of said units being in communication lengthwise of said units to define a continuous gas flow passage away from the furnace and communicating with a fire box of the furnace, a water preheating means substantially on the bottom of the boiler including a circuitous conduit for water spanning the bottoms of said units of the boiler, a preheated water conduit connected in and extending away from the furnace cooling means, a preheated water holding tank having a sediment chamber connected in the preheated water conduit, a high pressure pump for preheated water connected in the preheated water conduit between said holding tank and inlet means connected with the interiors of said cells of the boiler units, means to deliver water at a comparatively low pressure through said preheating means, and means to deliver the preheated water at a comparatively high pressure through the interiors of said cells of the boiler units serially while simultaneously hot gases from the fire box of said furnace are traversing the continuous gas passage through said units defined by the narrow spaces between said cells generally in counterflow heat transfer relationship to the water being delivered through the cells of said units serially, and a steam collecting means communicating with the cells of at least the cell boiler unit nearest said furnace.

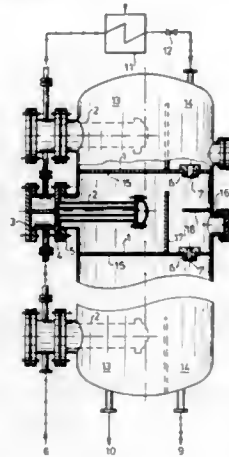
4,641,607
MULTISTAGE EVAPORATION BOILING EQUIPMENT
Janos Balazs, Adam Bocskor, Otto Cseh, and Rezso Iring, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary
Filed Jul. 31, 1985, Ser. No. 760,992
Int. Cl.⁴ F22B 37/22

U.S. Cl. 122—360

4 Claims

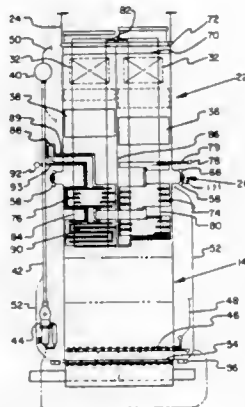
1. A multistage evaporation boiling equipment in the form of a single unit, each stage having a different pressure, comprising: two or more heat exchanger units, each having a bundle of tubes which provide a heat exchanging surface, each of

said units sealingly inserted parallel to one another at different points along a length of a central column through which a liquid may pass by condensing and vaporizing; one or more separating walls attached inside said column and separating at least one heat exchanger unit from another; an opening in said separating wall for permitting passage of a vapor of said liquid from one stage to another; a choke means within said opening for restricting the size of said opening and thereby controlling the amount of vapor passing therethrough;



at least half of said heat exchangers having a portion of the exchanger protruding outward from a wall of said column; a flange attached to said portion of said heat exchanger protruding from said column; an outer tube wall joining with said flange to form a seal; and a passageway connecting said outer tube wall to a cover providing a second seal, both of said seals being detachable to permit the removal of said heat exchanger with its bundle of tubes from said column.

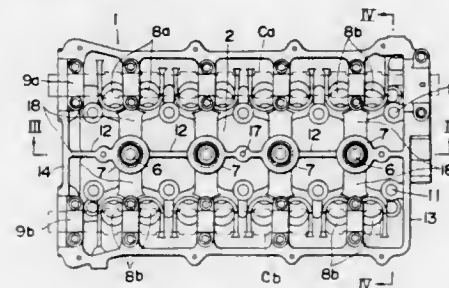
4,641,608
STEAM GENERATOR WITH EXPANSION JOINT
Richard E. Waryasz, Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Feb. 4, 1985, Ser. No. 697,812
Int. Cl.⁴ F22B 37/24
U.S. Cl. 122—510 4 Claims



1. A fluidized bed steam generator for generating high temperature steam comprising:
a bottom supported perforated plate for supporting fluidiza-

ble fuel which may be burned forming combustion gas products;
a bottom supported furnace wall structure comprised of gas tight enclosing sidewalls extending upwardly from said perforated plate for the conduction of combustion gas products therefrom;
said furnace wall structure enclosing a first plan area at the perforated plate elevation, and a reduced plan area at an upper elevation;
a top supported gas pass wall structure located above said furnace structure for receiving combustion gas products therefrom;
a gas tight expansion joint joining the periphery of the lower end of said gas pass wall structure to the periphery of said furnace wall structure for permitting relative vertical movement of the two structures while maintaining a gas tight seal;
convection heating surface supported within said furnace wall structure at an upper elevation below said expansion joint, whereby the combustion gas products must pass over said convection surface before reaching the elevation of said expansion joint.

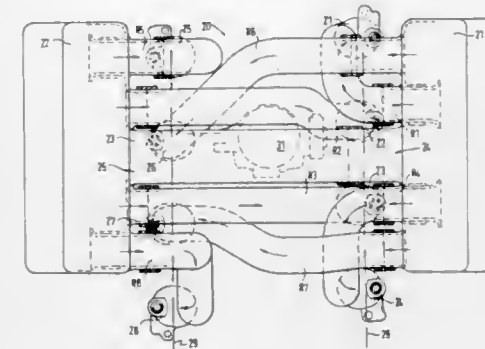
4,641,609
CYLINDER HEAD FOR DOHC ENGINE
Yoshimichi Tanaka, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Jan. 13, 1986, Ser. No. 818,361
Claims priority, application Japan, Jan. 19, 1985, 50-8097
Int. Cl.⁴ F02F 1/38
U.S. Cl. 123—41.82 R 16 Claims



1. A cylinder head of generally elongated configuration for a multicylinder DOHC internal combustion engine having a plurality of cylinders each with a spark plug, and also having a pair of camshafts for driving intake and exhaust valves, respectively, and mounted atop the cylinder head so as to extend in a direction longitudinally thereof in parallel and spaced relationship with each other, which cylinder head comprises:

an upper deck to provide a portion of outer wall for a space of engine coolant;
tubular columns equal in number to the spark plugs, said columns being integrally formed with the cylinder head and outwardly extending from said upper deck so as to surround the respective spark plugs; and
a connecting rib for connecting each neighboring columns together, said connecting rib extending in a direction parallel to the longitudinal sense of the cylinder head.

4,641,610
AIR INTAKE SYSTEM OF A MULTICYLINDER INTERNAL COMBUSTION ENGINE
Erwin Rutschmann, Bad Herrenalb, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 7, 1985, Ser. No. 709,432
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408899
Int. Cl.⁴ F02B 27/00
U.S. Cl. 123—52 MV 5 Claims



1. An air intake installation of a multi-cylinder internal combustion engine having an overall cylinder displacement and whose cylinders are combined into similar mutually oppositely disposed cylinder groups, comprising a substantially I-shaped manifold means arranged between said cylinder groups as common air intake means including two approximately equally large resonance chamber means and a connecting pipe means therebetween, one resonance chamber means being adjacent each cylinder group, suction pipes connecting a respective resonance chamber means at sides thereof disposed opposite connecting places of the connecting pipe means with individual cylinders of the corresponding cylinder group, the air intake means being constructed as tuned-intake, pressure-charging system in that overall volume of the resonance chamber means is approximately equal to overall displacement of all cylinders of the internal combustion engine, a suction connection terminating approximately perpendicularly in the connecting pipe means, the center of the suction connection having a first distance to the one resonance chamber means and a larger distance to the other resonance chamber means, and wherein between a volume of each of the two resonance chamber means and the distances, the following relation exists:

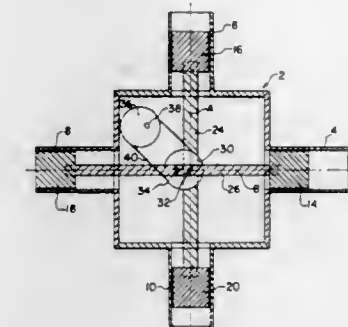
$$V_1/V_2 = S_2/S_1$$

wherein V_1 and V_2 are the volumes of the one and other resonance chamber means and S_2 is the distance from the center of the suction connection to the other resonance chamber means, while S_1 is the distance from the center of the suction connection to the one resonance chamber means.

4,641,611
OSCILLATORY MOTION APPARATUS
Alfred H. Stiller, and James E. Smith, both of Morgantown, W. Va., assignors to West Virginia University, Morgantown, W. Va.
Continuation-in-part of Ser. No. 628,248, Jul. 6, 1984, abandoned. This application Feb. 27, 1985, Ser. No. 706,153
Int. Cl.⁴ F02B 75/22
U.S. Cl. 123—55 A 15 Claims

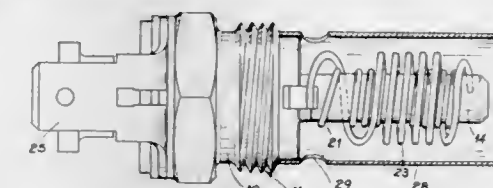
1. Oscillatory motion apparatus comprising
first rod means mounted for oscillating movement in a first direction,
second rod means mounted for oscillating movement in a second direction,

first trammel gear means pivotally secured to said first rod means by first pivot means,
said first trammel gear means pivotally secured to said second rod means by second pivot means, whereby coordinated oscillating movement of said first rod means and said second rod means will effect responsive rotational and translational movement of said trammel gear means, said first pivot means being relatively spaced from said second pivot means, p1 eccentrically mounted output gear



means having an axially fixed mounting, operatively associated with said trammel gear means for effecting rotational movement responsive to rotation and translation of said trammel gear means, and
said output gear means having an output gear and a rotatable output shaft positioned coaxially with the eccentric mounting of said output gear, whereby the rotational component of the movement of said trammel gear means will effect rotation of said output shaft.

4,641,612
ELECTRIC STARTING AID FOR AN INTERNAL COMBUSTION ENGINE
Brian J. Chalke, Feltham, England, assignor to Lucas Industries public limited company, Birmingham, England
Continuation of Ser. No. 545,634, Oct. 26, 1983, abandoned.
This application Jul. 3, 1985, Ser. No. 751,480
Claims priority, application United Kingdom, Nov. 9, 1982, 8231946
Int. Cl.⁴ F02N 17/04
U.S. Cl. 123—145 A 3 Claims



1. An electric starting aid for an internal combustion engine of the kind having a body defining a fuel inlet, a hollow electrically conductive stem extending from the body, a temperature responsive valve located in the stem, said valve when said stem has attained a sufficiently high temperature, opening to permit fuel flow to an outlet defined in the stem, an electric heating element which when energised heats the stem to actuate the valve and also raises the temperature of the stem to a value sufficient to cause vapourisation of the fuel leaving the opening and an electric ignition element acting in use to ignite the vapourised fuel in the region of the stem, securing means for electrically securing one end of said electric heating element to said stem for supporting said electric heating element at said one end and holding said electric heating element tightly about said stem, electrical connection means for electrically connecting another end of said electric heating element to said body, means for electrically securing one end of said electric ignition

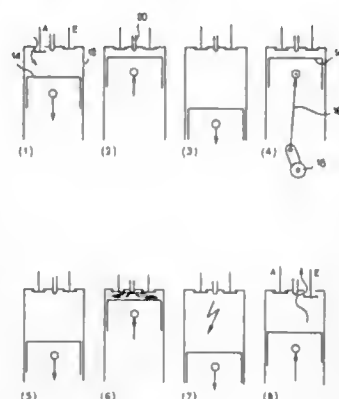
element to said stem, electric terminal means for electrically connecting another end of said electric ignition element to one terminal of a source of electric power, means connecting said body to another terminal of said source of electric power whereby said electric heating element and said electric ignition element are in series and each has one end thereof electrically secured to said stem, electrical insulating means interposed between said stem and said body, said electric heating element being tightly wound around said stem with said securing means maintaining the tight winding of said electric heating means.

4,641,613

PROCESS FOR THE STARTING AND LOW-LOAD RUNNING OF A DIESEL ENGINE AND A DIESEL ENGINE PUTTING THIS PROCESS INTO PRACTICE
Jacques Delesalle, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, France
Filed Feb. 22, 1985, Ser. No. 704,173
Claims priority, application France, Mar. 2, 1984, 84 03256
Int. Cl.⁴ F02N 17/02

U.S. Cl. 123—179 H

9 Claims



1. A process for the starting and low-load running of a diesel engine with electronic monitoring of the control of the injectors and of the valves thereof, the said process comprising adjusting the said controls to keep both the inlet and exhaust valves closed and to cut off fuel injection, in at least some of the cylinders of the engine, during several successive compression/expansion cycles, by means of which the air contained in the cylinder as a result of the preceding intake stroke of the piston is heated as a result of several successive compressions, until the ignition temperature is reached at the first fuel injection.

4,641,614

STARTER DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Gerhard Krebs, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed Aug. 19, 1985, Ser. No. 767,181
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430793
Int. Cl.⁴ F02N 1/00

U.S. Cl. 123—185 BA

7 Claims

1. A starter device for an internal combustion engine of an apparatus such as a portable handheld chain saw, the engine having a crankshaft and the apparatus including a component connected to the crankshaft so as to transmit a starting torque thereto in a predetermined rotational direction, the starter device comprising:

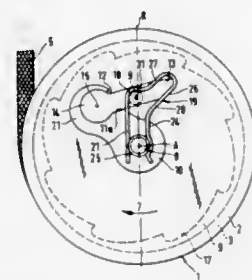
- a bearing pin defining a rotational axis and being mounted on said apparatus;
- a rope rotor having a starter rope wound thereon and being rotatably mounted on said bearing pin so as to be rotatable about said axis;

teeth means formed on said component;

a spring clip having two mutually adjacent legs conjointly defining an end portion for holding said clip to said bearing pin and said rope rotor on said bearing pin, said mutually adjacent legs also conjointly defining a guide portion extending outwardly from said end portion;

a pawl having an outer free end and being pivotally mounted on said rope rotor so as to pivot outwardly about a pivot axis parallel to said rotational axis for engaging said teeth means with said free end to impart a torque to said component when said rotor is actuated by pulling said starter rope from the rope rotor;

said pivot axis and said rotational axis conjointly defining a predetermined plane;



said pawl having a guide member formed thereon for engaging said guide portion for guiding said pawl in its pivotal movement between a stop position whereat said pawl is disengaged from said teeth means and said guide member lies in contact with one of said legs of said guide portion at a predetermined contact location on said one leg and an outward position whereat said pawl is engaged with said teeth means; and,

said one leg of said guide member being curved to place said contact location ahead of said predetermined plane when viewed in said rotational direction so as to cause the force exerted by said guide member to act upon said one leg in said rotational direction thereby rotating said spring clip in said direction and holding said guide member in said stop position after said engine is started and rotating.

4,641,615

MARINE PROPULSION DEVICE OIL COOLING ARRANGEMENT

Arthur R. Ferguson, Northbrook, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 23, 1985, Ser. No. 779,273

Int. Cl.⁴ F01M 1/00

U.S. Cl. 123—196 AB

16 Claims



1. A marine propulsion device comprising a propulsion unit adapted to be mounted on the transom of a boat for pivotal movement relative to the transom about a generally vertical

steering axis, and about a generally horizontal tilt axis, said propulsion unit including a rotatably mounted propeller, and an engine drivably connected to said propeller and including a cooling water jacket, and a fluid cooler including a portion located internally of said water jacket and having therein a fluid passage adapted to communicate with a source of fluid to be cooled in said fluid cooler.

4,641,616

INTERNAL COMBUSTION ENGINE

Robert D. Lampard, Welshpool, Australia, assignor to Barrack Technology and Baralaba Pty. Limited, both of, Australia
PCT No. PCT/AU84/00121, § 371 Date Mar. 1, 1985, § 102(e)
Date Mar. 1, 1985, PCT Pub. No. WO85/00410, PCT Pub. Date Jan. 31, 1985

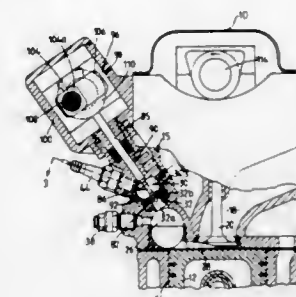
PCT Filed Jun. 29, 1984, Ser. No. 717,271

Claims priority, application Australia, Jul. 1, 1983, PG0090/83

Int. Cl.⁴ F02B 19/02

U.S. Cl. 123—256

6 Claims



1. An internal combustion engine comprising a main combustion chamber communicating with a subsidiary combustion chamber and flow control means for controlling fluid flow between these, the control means being effective to at least provide a substantial restriction to communication between the combustion chambers, prior to ignition of a subsidiary air fuel charge introduced into the subsidiary combustion chamber in use of the engine, and to subsequently effect relief of said restriction whereby ignited said subsidiary air fuel charge is caused to pass to said main combustion chamber via a passageway extending from the subsidiary combustion chamber to effect ignition of a main working fluid charge in the main combustion chamber, the igniting working fluid charge then expanding against a moveable part of the engine to effect operation thereof, wherein said control means comprises a cylindrical element moveable in a lengthwise direction of said passageway and arranged to execute lengthwise reciprocatory motion when the engine is operated, said element having a radially outwardly directed peripheral surface portion thereon which portion is caused to be moved into adjacent relationship with a complementary peripheral surface portion of the passageway, during said reciprocatory movement, whereby to effect said at least substantial restriction of communication between the combustion chambers and is caused to be moved away from said surface portion of the passageway during said reciprocation to present clearance between the surface portions for effecting said relief of said restriction, and further wherein said element is arranged to move through said passageway, during said reciprocation, whereby to be clear of the surface portion of the passageway respectively at respective opposite extremes of the reciprocatory movement, whereby the control means is in an open condition at such extremes and in a substantially closed condition at an intermediate position between said extremes.

4,641,617

DIRECT INJECTION TYPE INTERNAL COMBUSTION ENGINE

Taro Aoyama, and Yujiro Oshima, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

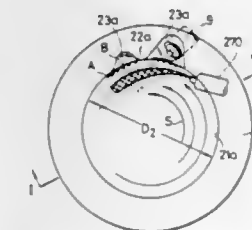
Filed Apr. 16, 1984, Ser. No. 600,717

Claims priority, application Japan, Apr. 16, 1983, 58-67582

Int. Cl.⁴ F02B 19/08

U.S. Cl. 123—262

16 Claims



1. A direct injection type reciprocating internal combustion engine comprising:

- a cylinder block having a cylinder bore;
- a cylinder head mounted on said cylinder block;
- a piston reciprocally fitted in the bore of said cylinder block and defining a combustion chamber together with said cylinder block and said cylinder head;
- intake means for feeding said combustion chamber with intake air and having swirl means for swirling the intake air being introduced into said combustion chamber, a main recess being formed in said combustion chamber for accelerating the swirled intake air which is prepared and introduced by said swirl means;

an auxiliary recess formed on a side wall of said main recess along which the swirled intake air flows for generating secondary swirl in said auxiliary recess in a direction opposite that of said swirled intake air and for generating turbulence between said swirled intake air and said secondary swirl, an acute angle being formed between an extended line which is tangential to a wall surface of the auxiliary recess which communicates with the main recess, said auxiliary recess upstream side wall surface being formed to project radially outwardly of the main recess and said extended tangential line, and

fuel feed means comprising a fuel injector, connected to a fuel supply source, comprising a fuel injector nozzle disposed to supply fuel directly into the main recess and located nearby an upstream portion of said auxiliary recess with respect to the flow direction of the swirled intake air in said main chamber, said fuel injector nozzle being tangentially directed to wall surface of said main recess nearby a downstream portion of said auxiliary recess in the flow direction of the swirled intake air therein, said fuel injection nozzle supplying the injected fuel along the flow direction of swirled intake air, such that the introduction of air into fuel droplets fed from said fuel injector is affectively accelerated by said swirled intake air and said secondary swirl,

whereby the combustion efficiency of said internal combustion engine is improved.

4,641,618

OVERSPEED/OVERHEAT CIRCUIT WITH A LATCH FOR CAPACITIVE IGNITION SYSTEMS

Peter Dogadko, Chicago, and David Enlow, Wadsworth, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 8, 1985, Ser. No. 796,088

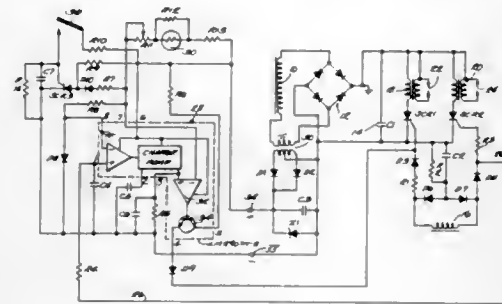
Int. Cl.⁴ F02P 11/00; F02D 31/00; F02B 77/08

U.S. Cl. 123—335

12 Claims

1. An engine ignition system including, engine speed respon-

sive means operative to produce a signal to disable said ignition system in response to an engine speed greater than a predetermined maximum to thereby limit engine speed to such maximum, temperature responsive means operative in response to a predetermined engine overheat temperature to change the



speed to which said speed responsive means responds to a speed lower than said maximum speed, and latch means operative to keep the speed to which said speed responsive means responds at said lower speed upon removal of said overheat temperature.

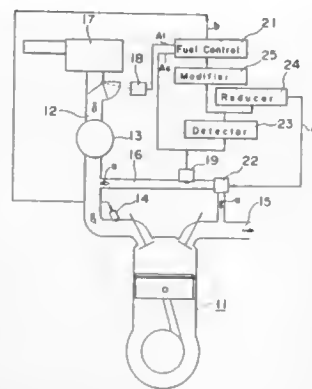
4,641,619 FUEL INJECTION CONTROL IN SUPERCHARGED ENGINE

Haruo Okimoto; Syuzi Mithui, and Hiroshi Ebino, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 27, 1985, Ser. No. 769,704
Claims priority, application Japan, Aug. 30, 1984, 59-181244
Int. Cl.⁴ F02B 3/00

U.S. Cl. 123—479

12 Claims



1. A fuel injection control system in a supercharged engine, which comprises, in combination:
an intake system for the supply of suction air to at least one combustion chamber of the engine and including an air cleaner;
an exhaust system for the discharge of exhaust gases from the combustion chamber;
a first air flow sensor means disposed in the intake system downstream of the air cleaner for detecting the flow of the suction air entering the intake system through the air cleaner;
a supercharger disposed in the intake system downstream of the first air flow sensor means for providing the combustion chamber with a supercharged air;
a secondary air supply passage extending from a portion of the intake system downstream of the supercharger to the exhaust system for supplying a portion of the supercharged air to the exhaust system;
a second air flow sensor means disposed in the secondary air

supply passage for detecting the flow of the air towards the exhaust system;
a fuel control means operable in response to respective outputs from the first and second sensor means to detect the total flow of the suction air and the flow of secondary air flowing through the supply passage and to control the quantity of fuel to be injected, which fuel quantity corresponds to the difference between the total flow of the suction air and the flow of the secondary air;
an abnormality signal detecting means for detecting the generation by the second sensor means of a signal of a value deviating from a predetermined range of values;
a reducing means for controlling the flow of the secondary air so as to decrease it in the event that the detecting means detects the occurrence of an abnormality; and
a control modifying means for, in the event of the abnormality, modifying the fuel control means so as to control the quantity of fuel to be injected solely in dependence on the output from the first sensor means.

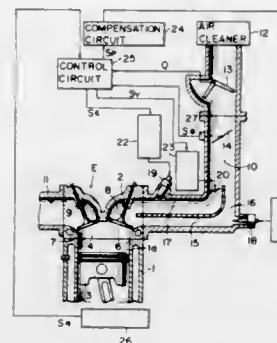
4,641,620 FUEL INJECTION CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Takeshi Yoshimura, Higashi-Hiroshima; Mutsuro Sameshima, Hiroshima; Toru Nakanishi, Kure, and Shigeo Kato, Higashi-Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 13, 1985, Ser. No. 765,242
Claims priority, application Japan, Aug. 14, 1984, 59-169676
Int. Cl.⁴ F02M 35/10

U.S. Cl. 123—432

9 Claims



4. An engine intake system including first intake passage means leading to combustion chamber means, second intake passage means substantially separated from said first intake passage means and leading to said combustion chamber means, shut-off valve means provided in said second intake passage means for closing said second intake passage means under a light load engine operation, first fuel injection valve means provided in said first intake passage means, second fuel injection valve means provided in said second intake passage means, fuel injection control means for operating said first fuel injection valve means under a first engine operating condition and for operating said first and second fuel injection valve means under a second engine operating condition, said control means including means for determining a basic fuel supply quantity in accordance with an engine operating condition and compensating means for determining a compensation factor, which changes in accordance with engine speed, for momentarily changing the fuel supply based on said basic fuel supply quantity in a transient period between the first and second operating conditions in accordance with the engine speed so that a stepwise change in engine output torque can be avoided.

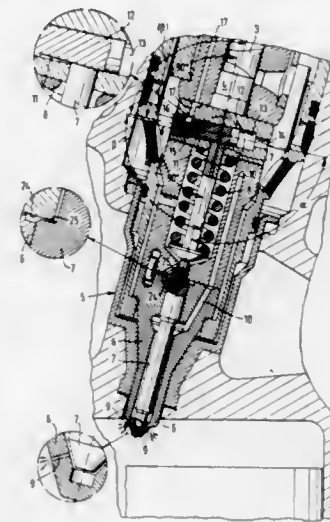
4,641,621 FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Günther Herdin, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Jun. 5, 1985, Ser. No. 741,609
Claims priority, application Austria, Jun. 6, 1984, 1857/84
Int. Cl.⁴ F02M 57/02

U.S. Cl. 123—446

4 Claims



2. A fuel injection nozzle adapted for use in an internal combustion engine, which nozzle comprises:
(a) a casing; (b) a nozzle needle operable between open and closed positions supported in said casing; (c) nozzle orifice means obturated by said needle when in closed position; (d) spring means biasing said needle into the closed position;
said nozzle needle being adapted for an axial stroke opening said nozzle orifice means against the bias of said spring means, and having a needle axis;
(e) conduit means connected with said casing and adapted for feeding fuel under pressure thereinto to act on said nozzle needle for carrying out said opening stroke;
(f) a cylinder having a cylinder axis intersecting said needle axis under a first angle slightly deviating from 90°;
(g) a piston lodged in said cylinder and having a piston axis; said piston including piston spring means for biasing said piston and a piston skirt having a continuous flat part formed on the external surface thereof, said flattened part extending in a plane forming with a plane normal to said piston axis a second angle being of the same size as said first angle but opening in a direction opposite that in which said first angle opens;
(h) abutment means comprising said flattened piston skirt part facing toward said nozzle needle and being adapted for limiting said opening stroke of said nozzle needle; and
(i) means for adjusting the position of said abutment means relative to said nozzle needle, said position adjustment means comprising
(1) a control unit adapted for detecting the working conditions of said engine prevailing at a given time and for generating signals in response thereto;
(2) a pressure-regulating valve adapted to be controlled by said control unit; and
(3) feeding line means adapted for feeding a pressure medium via said pressure-regulating valve into said cylinder to act therein on said piston against the bias of said piston spring means,
whereby said axial stroke of said nozzle needle is continuously adjustable over the working range of said engine.

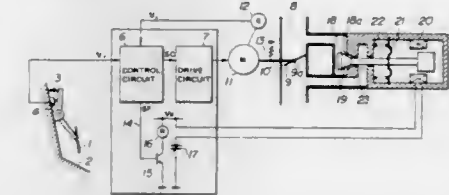
4,641,622 APPARATUS FOR THROTTLE VALVE CONTROL

Terukiyo Murakami, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 21, 1985, Ser. No. 747,177
Claims priority, application Japan, Jun. 22, 1984, 59-127351
Int. Cl.⁴ F02M 51/00

U.S. Cl. 123—479

6 Claims



1. An apparatus for use with an internal combustion engine having an accelerator pedal and a throttle valve situated within an induction passage for controlling movement of said throttle valve in response to a change in the position of said accelerator pedal, comprising:
said induction passage having an auxiliary passage bypassing said throttle valve;
a control valve movable within said auxiliary passage for controlling air flow through said auxiliary passage;
a signal source for generating an electrical signal indicative of the position of said accelerator pedal;
a control circuit operable to determine a value corresponding to a setting of the position of said throttle valve in response to said accelerator pedal position indicative signal;
a throttle actuator connected to said control circuit for moving said throttle valve to said determined setting; and
said control circuit including means for forcing said throttle actuator to close said throttle valve and moving said control valve to a predetermined open position to permit air flow through said auxiliary passage when a failure occurs in the operation of said control circuit.

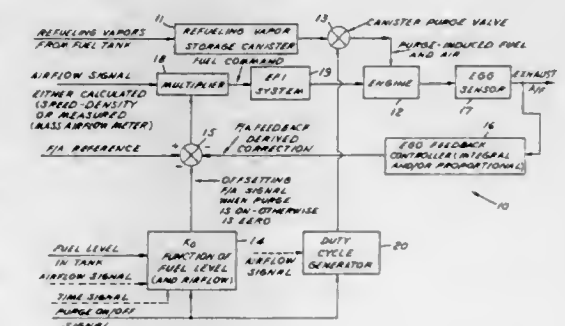
4,641,623 ADAPTIVE FEEDFORWARD AIR/FUEL RATIO CONTROL FOR VAPOR RECOVERY PURGE SYSTEM

Douglas R. Hamburg, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 29, 1985, Ser. No. 759,724
Int. Cl.⁴ F02B 33/00

U.S. Cl. 123—518

10 Claims



1. A method of controlling air/fuel ratio perturbation in response to purging of fuel vapors from a vapor canister storing fuel vapors from the fuel tank of an internal combustion engine including the steps of:
generating a base fuel command;
actuating purging of the fuel vapors; and

feeding forward an offsetting fuel command signal to modify the base fuel command signal whenever fuel vapor purging is occurring in order to compensate for the fuel and air that enter the engine via the purge line thereby reducing air/fuel ratio perturbations.

4,641,624
EXHAUST GAS RECIRCULATION CONTROL METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kazumichi Tsutsumi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

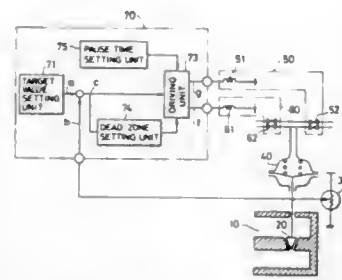
Filed Feb. 3, 1984, Ser. No. 576,648

Claims priority, application Japan, Feb. 3, 1983, 58-17137

Int. Cl.⁴ F02M 25/06

U.S. Cl. 123—571

7 Claims



1. An exhaust gas recirculation control method for operating an exhaust gas recirculation control device including a needle valve provided in an exhaust gas recirculation passage for setting an effective diameter of said passage, a position sensor for providing a signal representing a position of said needle valve, and a negative pressure motor for positioning said needle valve, comprising the steps of:

- setting a target value for said needle valve according to predetermined operating conditions of said internal combustion engine;
- measuring a positional deviation between said target value and an actual position of said needle valve as represented by said signal provided by said position sensor;
- driving said negative pressure motor with only a single drive pulse having a time width corresponding to said measured positional deviation; and
- prohibiting, after driving said negative pressure motor with one said drive pulse, for a predetermined period of time generation of a next subsequent drive pulse according to a newly measured positional deviation, said prohibiting being effective only after said negative pressure motor has been driven with a drive pulse.

4. An exhaust gas recirculation control apparatus for operating an exhaust gas recirculation control device including a needle valve provided in an exhaust gas recirculation passage for setting an effective diameter of said passage, a position sensor for providing a signal representing a position of said needle valve, and a negative pressure actuator for positioning said needle valve by a negative pressure, comprising:

- means for setting a target value for said needle valve according to predetermined operating conditions of said internal combustion engine;
- means for measuring a positional deviation between said target value and an actual position of said needle valve as represented by said signal provided by said position sensor;
- means for driving said negative pressure actuator with only a single drive pulse having a time width corresponding to said measured positional deviation;
- pulse time setting means for prohibiting, after said negative pressure actuator has been driven with a single drive pulse, generation of a next subsequent drive pulse for a predetermined period of time, said generation of said next

subsequent drive pulse corresponding to a subsequently measured positional deviation; and

dead zone setting means for prohibiting, when the positional deviation between the target value and the actual position is less than a predetermined set value, generation of the drive pulse from said driving means.

4,641,625
FUEL CONTROL SYSTEM

Peter R. Smith, Nottingham, England, assignor to Industrial Trade Exchange, Inc., Savage, Minn.

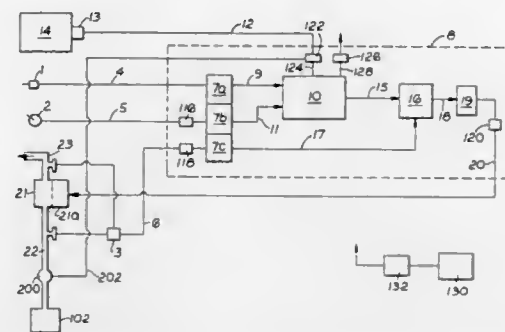
Filed Apr. 19, 1985, Ser. No. 725,299

Claims priority, application United Kingdom, Oct. 10, 1984, 8425577

Int. Cl.⁴ F02B 13/00

U.S. Cl. 123—575

18 Claims



1. A fuel control system for an internal combustion engine fueled by a gaseous and a liquid fuel, comprising gaseous fuel flow rate control means including flow rate determination means responsive to engine load variables including a signal generated by a transducer indicating such variables,

said control means including valve means actuable to vary the gaseous fuel flow rate, said valve means being actuated responsive to the signal generated by the gaseous fuel flow rate determination means,

liquid fuel control rate determination means including injection pump control means controlling the flow rate of liquid fuel pumped into the engine,

a transducer responsive to pressure difference across said valve means generating a signal indicating the pressure difference,

said flow rate determination means including information storage means relating the pressure difference across said valve means, the desired gaseous fuel flow rate and the magnitude of the signal required by the valve means to provide the desired gaseous fuel flow rate,

a control algorithm in connection with said gaseous flow rate determination means and liquid fuel flow rate determination means determining the desired liquid and gaseous fuel flow rate,

a second information storage means containing information relating to engine speed, desired fuel flow rate and the magnitude of the signal required by the injection pump to produce the required liquid fuel flow rate,

said control algorithm responsive to any given engine speed derives from said second storage means the signal indicative of the liquid fuel flow rate which it feeds to said injection pump actuation means,

a third storage means containing information relating position of a liquid fuel governor and a desired gaseous fuel flow rate,

said control algorithm determining the desired gaseous fuel flow rate given the position of the liquid fuel governor using the third storage means which is influenced by at least one engine variable of speed and

including switch means for use of liquid fuel only and in the alternate permitting use of liquid and gas fuel.

4,641,626
ELECTRONIC IGNITION DEVICE FOR INTERVAL COMBUSTION ENGINES

Seiji Morino, Okazaki; Eichi Uno, Toyota, and Yoshihiro Yoshitani, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

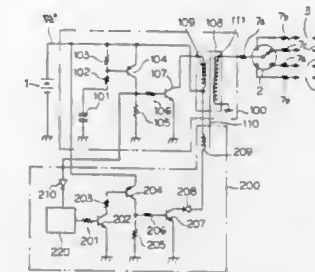
Filed Nov. 25, 1985, Ser. No. 801,227

Claims priority, application Japan, Nov. 26, 1984, 59-249895; Jun. 24, 1985, 60-137151

Int. Cl.⁴ F02P 3/02

U.S. Cl. 123—620

12 Claims



1. An electronic ignition device for an internal combustion engine comprising:

an ignition coil having a core and primary and secondary windings, both wound about said core;

first current interrupter means for alternately turning on and off current flow through said primary winding thereby inducing a high voltage across said secondary winding upon the interruption of the current flow through said primary winding;

an auxiliary winding, having less turns than said primary winding, wound about said core of said ignition coil and connected to said primary winding;

second primary interrupter means for completing a current flow path through said auxiliary winding for a certain period upon each interruption of current flowing through said primary winding, said current flow path causing magnetic flux to be generated through said core in a direction opposite to that of magnetic flux generated when said primary winding is energized; and

a diode, provided in said current flow path and connected in series with said second current interrupter means to prevent a reverse flow of current flowing through said auxiliary winding.

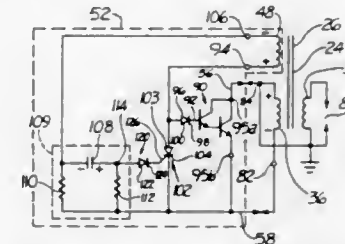
4,641,627
IGNITION MODULE
Donald R. Nash, Berkey, Ohio, assignor to Allied Corporation, Morris County, N.J.

Filed May 3, 1985, Ser. No. 730,226

Int. Cl.⁴ F02P 1/08, 3/12, 1/02

U.S. Cl. 123—651

8 Claims



1. A retrofit ignition module for replacing mechanical breaker points of an ignition system comprising the mechanical

breaker points, a generally U-shaped stator including a crossbar and two substantially parallel legs extending therefrom, an ignition coil wound about said crossbar including a primary winding and a secondary winding and a magnet for producing a variable flux field in said core, the module comprising a single drive winding adapted to be circumferentially received about one of said legs for generating an induced voltage signal in response to engine rotation, said module further comprising means for supporting said drive winding and a control circuit housed within said supporting means and positioned between a core leg and said ignition coil wherein said control circuit is responsive to said induced voltage signal and connected in circuit with said drive winding and said primary winding and operable to control the flow of current through said primary winding;

a first semiconductor switch including an input and an output connected in parallel across said primary circuit for providing, when conductive, a path in which primary current flows,

a second semiconductor switch, having an input, and an output connected to said input of said first switch for controlling the conductivity of said first switch, such that when said second switch is off said first switch is conductive or on, said second switch connected in circuit with one terminal of said drive winding,

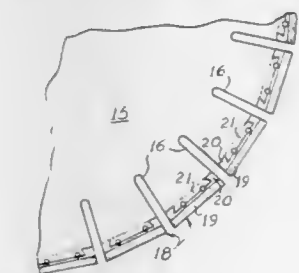
the other terminal of said drive winding connected to said input of said second switch through a capacitor and diode, such that during intervals when said induced voltage at said one terminal is positive said second switch is rendered conductive thereby turning off said first switch to terminate current flow through said primary winding;

wherein a plurality of resistors are connected across said capacitor forming in combination with said capacitor a peak detector circuit.

4,641,628
REMOVABLE MOUNT FOR CUTTING MEANS
Peter T. deKok, P.O. Box 33569, Decatur, Ga. 30033
Continuation-in-part of Ser. No. 455,214, Jan. 3, 1983, Pat. No. 4,517,954. This application May 16, 1985, Ser. No. 734,791
Int. Cl.⁴ B28D 1/04

U.S. Cl. 125—15

5 Claims



1. In combination, a cutting machine having a movable periphery movable in at least one direction, and a plurality of cutting elements fixed to said movable periphery, said plurality of cutting elements constituting a cutting edge for said cutting machine, the width of said cutting elements determining the width of the kerf cut by said cutting machine, said cutting edge being movable with said movable periphery, each cutting element of said plurality of cutting elements including a base member fixed to said movable periphery, a cap member selectively receivable on said base member and having a width equal to the width of said base member, and a cutting segment fixed to said cap member and having a width equal to the width of said cap member, said base member having flat sides and diverging end surfaces, said diverging end surfaces diverging in the direction of motion of said cutting edge so that said base member has a dovetail configuration, said cap member includ-

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ing hook members at each end thereof selectively engageable with said diverging end surfaces of said base member, said hook members including converging surfaces so that said cap member defines a dovetail opening therein for receiving said base member, the arrangement being such that said dovetail opening in said cap member can receive said dovetail configuration of said base member only with lateral motion of said cap member with respect to said direction of motion of said cutting edge, and securing means receivable between said cap member and said base member for engaging both said cap member and said base member for selectively preventing said lateral motion and retaining said cap member on said base member.

4,641,629

APPARATUS FOR COOKING AND/OR FOR HEATING OF AIR

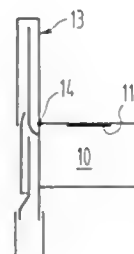
Fernand Muller, Ingeldorf; Nils A. Wannborg, Echternach, both of Luxembourg, and Kurt Billen, Roth, Fed. Rep. of Germany, assignors to Electrolux S.a.r.l., Vianden, Luxembourg
Filed Mar. 11, 1986, Ser. No. 838,736

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1985, 8507365[U]

Int. Cl.⁴ F24C 1/14

U.S. Cl. 126—6

2 Claims



2. Apparatus for cooking and/or heating of air, comprising a hearth having at least one hearth plate means, a cover, said cover including a chamber, said chamber being defined by an upper wall and a lower wall of said cover, a partition being provided between said upper wall and said lower wall for dividing said chamber into a first section and a second section, a passageway interconnecting said first section of said chamber with said second section of said chamber, an inlet in communication with said first section of said chamber and an outlet in communication with said second section of said chamber, said cover being hingedly mounted on said hearth in a manner to be juxtaposed in heat-conducting overlapping relationship to said hearth plate in juxta relationship whereby air conducted through said cover is heated as it flows through said second section of said chamber of said cover and the upper side of said cover is cooled by air flowing through said first section of said chamber of said cover.

4,641,630

APPARATUS FOR THE STEAM TREATMENT OF FOODS
Siegfried Meister, Siemensstrasse 2, 8910 Landsberg a. Lech, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 760,879

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1984, 8422834[U]

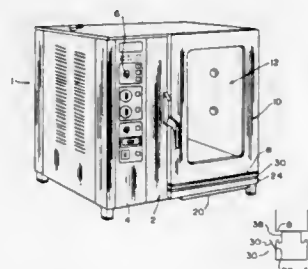
Int. Cl.⁴ A21B 1/08

U.S. Cl. 126—20

6 Claims

1. An apparatus for the steam treatment of foods, which includes a cooking area, a steam supply line that issues into said cooking area, said apparatus defining an open front and having a hinged cooking area access door associated therewith, and a collecting trough for steam condensate disposed below the cooking area access door, characterized in that a door condensate channel (30) is carried on the lower ledge (8) of the door (10) and extends along the door width and which is adjacent the lower door hinge (32) and is provided with a drain opening

(40) above the collecting trough (24) so that the channel pivots with the door about the hinge so as to collect condensate



dripping off the door and thereby prevent condensate from falling on a floor where the apparatus sits.

4,641,631

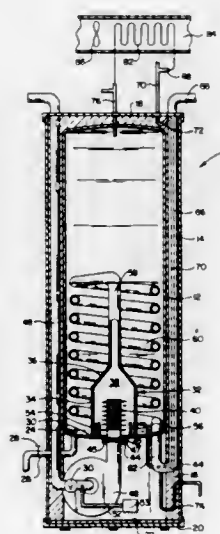
APPARATUS AND METHOD FOR BURNING A COMBUSTIBLE GAS, AND A HEAT EXCHANGER FOR USE IN THIS APPARATUS

Subhash C. Jatana, Upper Arlington, Ohio, assignor to Columbia Gas System Service Corporation, Columbus, Ohio
Continuation-in-part of Ser. No. 515,642, Jul. 20, 1983, Pat. No. 4,541,410. This application Sep. 9, 1985, Ser. No. 774,138

Int. Cl.⁴ F24D 9/00

U.S. Cl. 126—101

19 Claims



7. Apparatus for burning a combustible gas comprising; a housing having walls defining a liquid chamber capable of holding liquid; a combustion chamber member disposed within said liquid chamber and having liquid-impervious walls defining the combustion chamber; an exhaust conduit having an inlet connected to said combustion chamber and an outlet through which combustion products can leave said apparatus; a gas burner mounted within said combustion chamber, said burner having walls defining an internal chamber and apertures passing through said walls, thereby establishing fluid communication between said internal chamber of said gas burner and said combustion chamber outside said gas burner; an impeller for passing a combustible mixture of said combustible gas and an oxygen-containing gas under pressure into said internal chamber of said gas burner, said apertures in said gas burner being sized such that com-

bustion of said combustible mixture within said combustible chamber outside said gas burner will not cause ignition of said combustible mixture within said internal chamber of said gas burner;
a duct having an air inlet and an air outlet;
means for moving air through said duct from said air inlet to said air outlet;
a first heat exchanger disposed within said duct for effecting heat exchange between hot water passing through said heat exchanger and air passing through said duct around said heat exchanger, said heat exchanger having a water inlet and a water outlet;
a water supply conduit having an inlet disposed within said liquid chamber and an outlet connected to said water inlet of said heat exchanger;
a water return conduit having an inlet connected to said water outlet of said heat exchanger and an outlet disposed within said liquid chamber, said water return conduit having a section mounted in parallel to a section of said exhaust conduit and configured to cause the combustion products passing along said exhaust conduit and the water flowing along said water return conduit to flow counter-current to one another and to cause heat to flow from said combustion products to said water; and
an outer housing surrounds said housing, at least part of said exhaust conduit is disposed between said housing and said outer housing, and part of said liquid return conduit is disposed within said exhaust conduit.

4,641,633

ELECTRONIC SYSTEM FOR THE ACTIVATION, INHIBITION AND/OR MODIFICATION OF THE DEVELOPMENT AND FUNCTIONING OF CELLS, ORGANS AND ORGANISMS OF LIVING BEINGS

José M. R. Delgado, Caleruega 21, Madrid, Spain

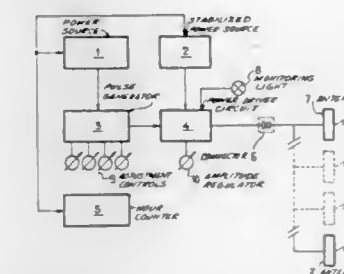
Filed Apr. 25, 1985, Ser. No. 726,922

Claims priority, application Spain, Mar. 16, 1982, 510489

Int. Cl.⁴ A61N 1/42

U.S. Cl. 128—1.3

21 Claims



1. An electromagnetic system for non-invasive modification of living cells and organisms, comprising:
electronic generator means for generating very stable, unidirectional, symmetrical square waves, and including means for adjusting the timing of said square waves to provide very sharp square waves having rise times and fall times each of less than 0.1 microsecond; and
at least one antenna means for receiving said square waves and producing magnetic fields which can be applied to the living cells and organisms to modify their morphological and functional characteristics without disturbance of the cellular membrane protecting the cell and organism.

4,641,632

HEATING IRON USING LIQUEFIED GAS

Masahiko Nakajima, Tokyo, Japan, assignor to Nakajima Dokosho Company Limited, Tokyo, Japan

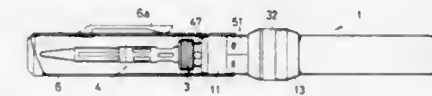
Filed Jul. 25, 1985, Ser. No. 758,803

Claims priority, application Japan, Jul. 30, 1984, 59-159851

Int. Cl.⁴ B23K 3/02

U.S. Cl. 126—413

5 Claims



1. An iron for heating a workpiece comprising:
a nozzle for jetting out a combustible gas from a liquefied gas reservoir;
a gas mixture generating means at the exit of said nozzle for drawing air to mix with said combustible gas to form a mixture;
a catalyst combustion chamber downstream of said generating means having a gas flow channel extending therethrough with a catalyst layer deposited on the channel wall and a portion of the channel wall forming a pre-heating zone;
means for directly and flamelessly heating the outer side of said chamber to heat said pre-heating zone to ignite said mixture; and
a tip member at least partially surrounding the catalyst chamber for conducting the heat from said chamber to a workpiece.

4,641,634

ONE-HAND HYSTEROSCOPE

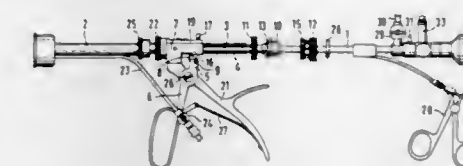
Karl Storz, AVF Dem Schildrain 39, 7200 Tuttlingen, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,649

Int. Cl.⁴ A61B 1/00

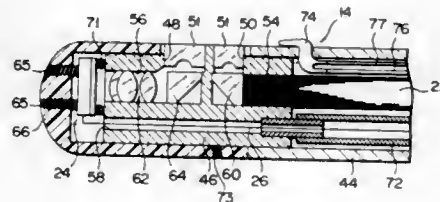
U.S. Cl. 128—4

4 Claims



1. A one-hand hysteroscope comprising: a sleeve bearing; an operating sleeve having an axis, and being axially movable in said sleeve bearing; a rigid forceps half rigidly mounted to said sleeve bearing; a pivoted forceps half pivotally mounted to said sleeve bearing; a plurality of notches arranged in axial sequence along the exterior of said operating sleeve; a pawl mounted to said rotatable forceps half, adapted to engage one of said notches and advance the operative sleeve in a forward direction when the forceps halves are moved toward one another, and to retract from the notches when they are moved apart from one another; and latch means mounted to said sleeve bearing and releasably engageable with said notches to restrain the operating sleeve from movement in the reverse direction unless released.

4,641,635
ENDOSCOPE APPARATUS
 Hisao Yabe, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
 Filed Aug. 9, 1985, Ser. No. 763,978
 Claims priority, application Japan, Aug. 15, 1984, 59-170170; Aug. 15, 1984, 59-170173
 Int. Cl.⁴ A61B 1/04, 1/06
 U.S. Cl. 128—6 11 Claims

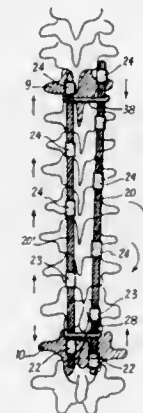


1. An endoscope apparatus comprising:
 a control unit having a light source; and
 an endoscope, said endoscope including an operation section,
 an elongated insertion section extending from the operation section and having an observation window and an illumination window provided at the distal end thereof, said observation window being positioned nearer the distal end than the illumination window,
 a universal cord extending from the operation section and detachably connected to the control unit,
 a light guide extending from the illumination window through the insertion section, operation section and universal cord for guiding light emitted from the light source and externally emitting the light from the illumination window,
 an objective lens system arranged in the insertion section and optically connected to the observation window for forming an optical image of light incident thereon through the observation window, and
 a solid-state image sensor arranged in the insertion section, positioned nearer the distal end of the insertion section than the end of the light guide at the illumination window side, and optically connected to the objective lens system for converting the optical image formed by the objective lens system to an electrical signal and transmitting the electrical signal to the control unit.

4,641,636
DEVICE FOR SUPPORTING THE RACHIS
 Yves P. C. A. Cotrel, Villa Kerosen - Taden, 22100 Dinan, France
 Filed Apr. 12, 1984, Ser. No. 599,558
 Claims priority, application France, May 4, 1983, 83 07450
 Int. Cl.⁴ A61B 17/56
 U.S. Cl. 128—69 12 Claims

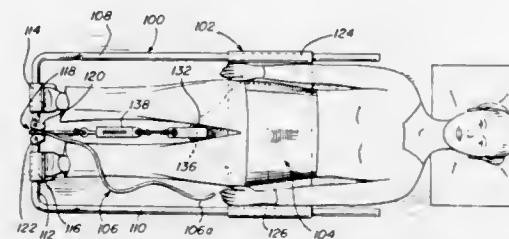
1. A device for strengthening the rachis comprising two pins which each extend over a plurality of vertebrae of said rachis, said pins being placed on opposite sides of said rachis, a plurality of hooked anchoring members mounted on each pin and positioned to rest on vertebrae of said rachis to support and derotate said vertebrae, and means to selectively fix said anchoring members in selected positions on said pins, said pins being of constant cross-section throughout their length and having roughened surfaces, each of said anchoring members being mounted for free, continuous motion along said pins except when fixed by said means to selectively fix, said means to selectively fix comprising a pressure screw perpendicular to

said pins engageable with said roughened surface to fix said anchoring members in position on said pins, and said pins being



joined together by tractional cross-pieces fitted between said pins.

4,641,637
TRACTION DEVICE
 Gerald M. Rosen, 2205 W. Woodbury La., Milwaukee, Wis. 53209
 Continuation-in-part of Ser. No. 564,483, Dec. 21, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 746,872
 Int. Cl.⁴ A61H 1/02
 U.S. Cl. 128—75 6 Claims

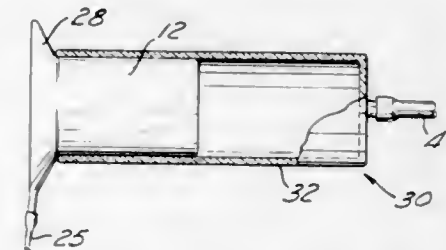


1. Spinal traction-applying apparatus for use on a support surface comprising a frame with parallel elongate side rails and a crossbar connecting the side rails, a seat-forming carriage for back and forth adjustment along the side rails toward and away from the crossbar, a cord grip on the crossbar, a lower body encompassing belt for a user, and a cord for extending from the belt through the cord grip so that a free end thereof may be grasped by the user wearing the belt and seated on the carriage with the user's feet on the crossbar, the cord grip having releasable gripping means for releasing the cord when the user pulls on the free end of the cord with the knees flexed to allow the user to apply minimum tension to the cord and for gripping the cord when the user lies back on the carriage and straightens the knees thereby increasing the tension in the cord and applying spinal traction to the user.

4,641,638
SEXUAL ERECTION PROTHESIS AND METHOD OF USE
 Robert D. Perry, 16065 Perry Heights Dr., Riverside, Calif. 92504
 Filed Oct. 10, 1985, Ser. No. 786,226
 Int. Cl.⁴ A61F 5/41
 U.S. Cl. 128—79 3 Claims

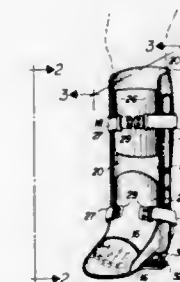
1. A method of artificially enhancing the physiological condition of a male erection comprising the steps of:
 positioning a tubular member over the penis of a user, said

tubular member having an expansible portion disposed within its interior; and
 selectively admitting a pressurized fluid to said expansible portion to enlarge said expansible portion to contact the penis of a user in constrictive engagement sufficient to maintain the penis in an erect state; said pressurized fluid admitting step comprising manually pumping a quantity of pressurized fluid into a cavity formed within said tubular member, and said positioning step comprising the steps of



elongating the penis of the user to reduce the diameter of the penis; and reciprocating said tubular member along the length of the penis to abut the base of the penis; said elongating step comprising the steps of:
 attaching a cup member to the end of the penis;
 applying a vacuum to said cup member through an elongate conduit; and
 manually pulling said conduit to moderately stretch the penis of the user.

4,641,639
AMBULATORY BRACE ASSEMBLY
 Rigoberto Padilla, 801 West 48 St., Hialeah, Fla. 33012
 Filed Dec. 9, 1985, Ser. No. 806,867
 Int. Cl.⁴ A61F 5/04
 U.S. Cl. 128—83.5 18 Claims



1. An ambulatory brace assembly of the type primarily designed to immobilize the foot of a patient and direct forces to which the brace assembly is subjected away from the heel during walking and like activities of the patient, said assembly comprising:

- (a) a cast structure having an open front face and an at least partially hollow interior configured to receive and at least partially enclose a lower leg and foot of the patient,
- (b) said cast comprising a substantially L-shaped configuration including a first portion thereof having a longitudinal dimension sufficient to extend from a calf portion of the leg to a location beneath a heel portion of the foot,
- (c) said L-shaped configuration comprising a second portion extending outwardly from said first portion along at least a majority of the length of the received foot,
- (d) said hollow interior further including an interior surface extending along the length of said first and said second portions and configured in substantial conformance to a correspondingly positioned exterior surface of the lower leg and foot received within said cast,
- (e) a support assembly comprising a support platform dis-

posed outwardly from an undersurface of said second portion, and two support legs each including correspondingly positioned distal ends fixedly secured to said support platform, said support legs extending outwardly from said support platform in spaced, substantially parallel relation to one another and each being fixedly secured to an opposite side of said cast, said support legs disposed and structured in cooperative relation to said support platform to bear the majority of the axial load of said cast when supporting the patient during walking or standing,
 (f) said support platform mounted a first predetermined distance from one end and adjacent heel of said second portion and extending outwardly from said undersurface a second predetermined distance and into engagement with a supporting surface on which the patient is walking,
 (g) said first predetermined distance being of sufficient dimension from the heel and one end of said second portion to position said support platform beneath the metatarsal region of the foot and direct forces away from the heel portion of the foot,
 (h) said second predetermined distance being of sufficient dimension to maintain said one end of said second portion out of contact with the supporting surface during travel of said cast when the patient is walking,
 (i) said undersurface of said second portion including an apertured construction disposed directly beneath the heel of the foot received within said cast and being of sufficient dimension to prevent forced engagement between the heel of the foot and any cast portion located in the vicinity immediately below the heel of the foot, and
 (j) retaining means secured to said cast and extending across said open front face for maintaining the lower leg and foot of the patient within said hollow interior.

4,641,640
COMPRESSION SCREW ASSEMBLY
 Calvin Griggs, 1455 Shady Birch, Memphis, Tenn. 38116
 Division of Ser. No. 340,093, Jan. 18, 1982, Pat. No. 4,530,355.
 This application Nov. 28, 1984, Ser. No. 675,934
 Int. Cl.⁴ A61F 5/04
 U.S. Cl. 128—92 YV 4 Claims



1. A lag screw for a compression screw assembly comprising:
 an engaging means formed thereon for coacting with a second complementary engaging means formed on the interior surface of a hollow barrel member of a compression plate so that said lag screw is adapted to be received into the hollow barrel member in at least one fixed orientation, said engaging means and said second complementary engaging means being proportioned to accept therebetween a third complementary engaging means of a means for being optionally insertable into the barrel member in order to selectively prevent axial rotation of said lag screw with respect to the barrel member; and
 a means for coacting with a wrench assembly so that said lag screw can be releasably engaged by the wrench assembly in axial alignment therewith.

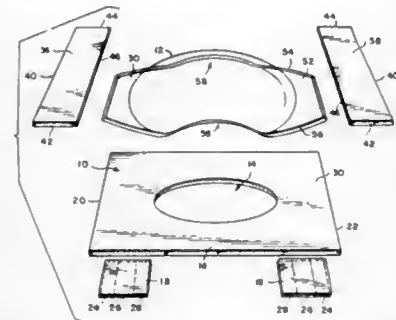
4,641,641
PROTECTIVE APPLIANCE FOR THE HIP JOINT AREA
 Alvin E. Strock, 647 Commonwealth Ave., Newton Centre, Mass. 02159

Filed Sep. 13, 1985, Ser. No. 775,819

Int. Cl.⁴ A61F 13/00

U.S. Cl. 128—132 R

15 Claims



1. A protective appliance for the hip joint area comprising: a pad made of a relatively resilient material adapted to be secured over the hip joint area of a wearer, and having inner and outer surfaces, means for securing said pad so that its inner surface overlies the hip joint area of the wearer, and a relatively rigid generally dome-shaped shield releasably secured to the outer surface of said pad so as to have portions spaced from the outer surface of said pad, said shield being adapted to disperse forces applied thereto, transferring such forces to portions of the shield contacting pad and surrounding the hip joint area.

4,641,642
PATIENT-ACTIVATED BODY IMMOBILIZER AND METHOD OF USE
 Glenn A. Williams, Jr., 795 Carmel Ave. #3, Sunnyvale, Calif. 94086

Filed Jul. 19, 1984, Ser. No. 632,713

Int. Cl.⁴ A61F 5/37

U.S. Cl. 128—134

6 Claims

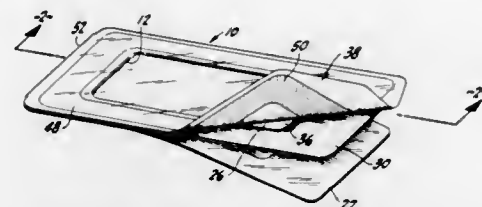


1. A method for a person to temporarily immobilize a selected region of that person's own upper body such as the chest and sternum against percussive expansion, comprising providing an inelastic circumferential normally open body strap having a closed length approximating the circumference of the nonexpanded selected region but shorter than the expanded body region and having a pair of closely spaced handles; suspending the body strap from the shoulders with the handles positioned at the front of the chest and the open strap loosely encircling the major portion of the circumference of the selected region; at the onset of coughing or sneezing, forcibly engaging the handles to move the handles together to tighten the strap about the selected region to prevent percussive expansion of the chest during the coughing or sneezing; and after the coughing or sneezing, releasing the gripping members.

4,641,643
RESEALING SKIN BANDAGE
 Leland H. Greer, 530 E. 12th St., Oakland, Calif. 94606
 Filed Apr. 28, 1986, Ser. No. 856,312
 Int. Cl.⁴ A61L 15/00

U.S. Cl. 128—156

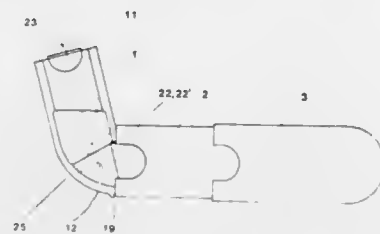
9 Claims



1. A resealing skin bandage comprising:
 a. a flexible body having a first surface and a second opposite surface said flexible body including an opening therethrough from said first surface to said second surface;
 b. means for removably fastening said flexible body first surface to the skin;
 c. a flexible layer of water repellent material said flexible layer having an opening therethrough;
 d. means for bonding said flexible layer to said second surface of said flexibility body, said opening through said flexible layer aligning with at least a portion of said opening through said flexible body;
 e. A cover intended to overlay said at least partially aligned openings through said flexible body and said flexible layer; and
 f. means for removably holding said cover to said flexible layer of water repellent material.

4,641,644
AEROSOL INHALATION DEVICE
 Jan A. R. Andersson, S Sandby; Nils F. E. Morén, Malmö; Kjell I. L. Wetterlin, S Sandby, all of Sweden; Kaija A. Snellman Wasenius, Söderkulla, and Risto Virtanen, Nurmijärvi, both of Finland, assignors to Aktiebolaget Draco, Sweden
 Continuation of Ser. No. 417,381, Sep. 13, 1982, abandoned. This application Sep. 5, 1985, Ser. No. 773,515
 Claims priority, application Sweden, Sep. 15, 1981, 8105487
 Int. Cl.⁴ F11M 11/04
 U.S. Cl. 128—200.23

9 Claims



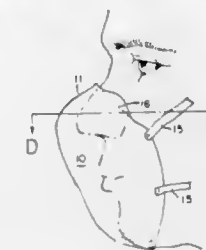
1. An aerosol inhalation device for administering a finely divided drug by inhalation, comprising
 a socket having a substantially rectangular cross-section comprising two side walls, a top wall and a bottom wall, said walls defining a duct having a first open end adapted to receive an aerosol container of the drug and a second open end through which aerosol discharged from the container can exit and means adapted to receive a discharge valve of the aerosol container and direct the aerosol discharged thereby through said second open end;
 an elongated deceleration chamber having a substantially rectangular cross-section and defining a duct, said chamber comprising an inner chamber portion and an outer chamber portion, each chamber portion including two side walls, a top wall, a bottom wall and opposite first and second open ends, said outer chamber portion having its

first open end telescopically displaceable over the second open end of said inner chamber portion between an extended position for dispensing aerosol doses, wherein the first open end of said outer chamber portion overlies the second open end of said inner chamber portion, and a collapsed position for storage of said device, wherein the first open end of said outer chamber portion overlies the first open end of said inner chamber portion, said deceleration chamber having a mouth piece at said second end of said outer chamber portion; and

means for operatively connecting the second open end of said socket and the first end of said inner chamber portion so that said chamber receives the aerosol discharged from the aerosol container, said operative connection means comprising;

a sectional arch defined by the portion of said socket adjacent said second open end, said arch formed by the side walls and the top wall adjacent said second open end extending beyond the plane perpendicular to the end of the bottom wall adjacent said second open end and curving toward the plane containing the bottom wall, and wherein the second open end of said socket is defined between the opening formed by the end of the top wall, the end of the bottom wall and the ends of the two side walls, said sectional arch being inserted into the first open end of said inner chamber portion with said top, side and bottom walls of said socket adjacent the respective ones of the inner chamber portion, said arch pivots about a pivot axis located substantially within the plane of the bottom wall of the socket and substantially within the plane of the bottom wall of the inner chamber portion to guide said socket through an angle to said deceleration chamber as said socket is moved to an extended position, wherein said socket extends out of said inner chamber portion, from a collapsed position, wherein said socket is contained within said inner chamber portion and back again; and locking means on said socket and on said inner chamber portion for maintaining said socket and inner chamber portion at said angle when said socket is in its extended position.

4,641,645
FACE MASK
 Amad Tayebi, Westford, Mass., assignor to New England Thermoplastics, Inc., Lawrence, Mass.
 Filed Jul. 15, 1985, Ser. No. 754,955
 Int. Cl.⁴ A62B 7/00
 U.S. Cl. 128—206.19



1. A flexible face mask fabricated from a single sheet of fibrous material that offers relatively low resistance to the flow of air being filtered therethrough to conform the mask to the face of a wearer, and said mask has one or more elastic straps attached to the periphery of the mask to facilitate holding the mask against the face and prevent the passage of air between the mask and the face of the wearer particularly in the area of the nose, wherein said mask comprises:
 a cup shaped shell having a portion covering the nose of a wearer and a portion covering the mouth of the wearer, said nose covering portion having rearward extending projections adjacent its upper edge so that one projection is on either side of the lower portion of the nose of the wearer, said projections being formed when fabricating

said mask by shaping said sheet material into an arcuate shape having substantially uniform material thickness with the fibers of said projections being more densely compacted than the rest of said nose covering portion to provide structural strength giving shape retention, said projections extend rearward from said face mask and protrude exterior from the interior of said mask beyond a plane in which the peripheral edge of said mask normally lies when said mask is not worn, and said projections lie against the face on either side of the nose when the mask is worn to thereby conform the shape of the nose portion of said mask to the contour of the face of the wearer about the nose and on either side of the lower portion of the wearer's nose so that when said mask is worn said projections do not pinch the sides of the lower portion of the wearer's nose so as to interfere with breathing, yet the straps holding the mask to the face accomplish an air seal around the periphery of the mask without having to substantially deform the mask or the face of the wearer in order to accomplish the seal.

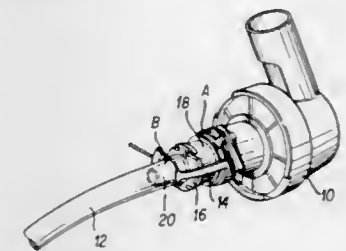
4,641,646
ENDOTRACHEAL TUBE/RESPIRATOR TUBING CONNECTING LOCK MECHANISM AND METHOD OF USING SAME
 Kenneth E. Schultz, Dauphin, Pa., and William R. Evans, Mooresville, N.C., assignors to Kenneth E. Schultz, Camp Hill, Pa.

Filed Apr. 5, 1985, Ser. No. 720,310

Int. Cl.⁴ A61M 16/00; F16L 35/00

U.S. Cl. 128—207.14

19 Claims



1. A connecting lock mechanism for locking an endotracheal tube to a respirator connector, comprising:
 belt means having opposite ends and adapted to surround one of an endotracheal tube and a respirator connector and including latch means for attaching said opposite ends together in a quickly releasable manner and thereby secure said belt means around said one of an endotracheal tube and a respirator connector in a tightenable manner; adjustable collar means for surrounding the other of the endotracheal tube and the respirator connector in a tightenable manner;
 interconnection means substantially lateral to and interconnecting the belt means and the collar means;
 wherein said latch means comprises notches on one end of the belt means and a notch engaging and holding lever on the other end of the belt means.

4,641,647
DEVICE FOR SECURING RESPIRATORY APPLIANCE DURING RESPIRATORY THERAPY
 Diane E. Behan, Greenbelt, Md., assignor to Sheryl L. Taylor, Seabrook, Md., a part interest
 Filed Feb. 8, 1985, Ser. No. 699,927
 Int. Cl.⁴ A61M 15/08
 U.S. Cl. 128—207.18

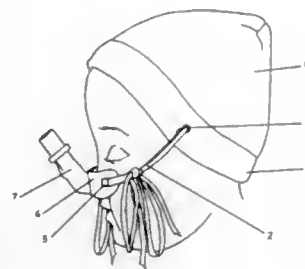
6 Claims

1. A device for securing a nasally inserted respiratory appliance within the nares of a patient during respiratory therapy,

the respiratory appliance defining securement openings, said device comprising

a head covering formed substantially of resilient material and adapted to expand and contract to conform to different sized and shaped heads of various patients, retain that shape for the duration of the therapy and cover the entire head of the patient from the forehead to the base of the neck; and

means for connecting said head covering to the respiratory appliance, said connecting means comprising at least two elongated members adapted for connecting the respiratory appliance to said head covering, one of the free-ends of each of said elongated members being adapted for insertion through one of the openings of the respiratory

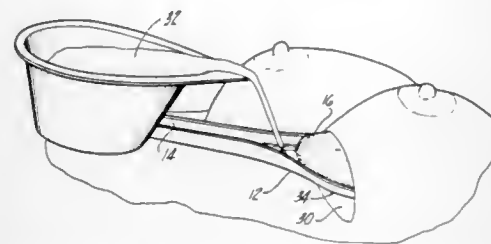


appliance, respectively, and adapted to be connected to its other free-end, said elongated members being attached to said head covering at opposite points thereon, respectively, which are adapted to approximately correspond to the temporal areas of the patient's head,

said elongated members having means for adjusting the distance between the respiratory appliance and said head covering means so that the respiratory appliance is securely positioned within the nares of the patient, whereby when said head covering and said elongated members are positioned on the head of the patient and secured to the respiratory appliance the stress from the secured respiratory appliance is evenly distributed over the entire area of the patient's head.

4,641,648
SURGICAL INSTRUMENT
Marshall Shapiro, 7180 Pebblecreek, West Bloomfield, Mich. 48033

Filed Sep. 27, 1985, Ser. No. 781,028
Int. Cl.⁴ A61F 1/24; A61B 17/00
U.S. Cl. 128—303 R 1 Claim



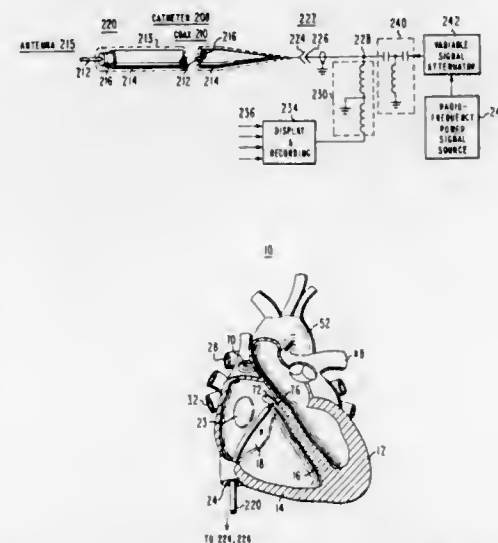
1. A method of inserting a prosthetic breast implant into a body cavity, which comprises:

(A) guiding the prosthetic implant into the body cavity with a substantially spoon-shaped surgical instrument having an elongate, trough-shaped handle opening into a wider, concave implant-holding spoon portion wherein the implant is placed in said spoon portion;

(B) applying normal saline solution through the handle of the surgical instrument to reduce the frictional forces between the implant, the surgical instrument and human tissue;

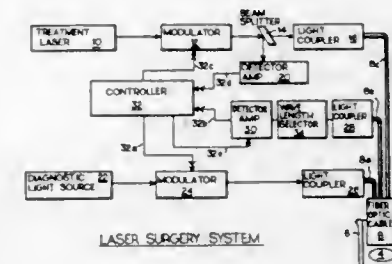
(C) replacement and positioning of the implant within the body cavity using the surgical instrument; and
(D) withdrawing the surgical instrument from the body cavity while leaving the prosthetic implant within the body cavity.

4,641,649
METHOD AND APPARATUS FOR HIGH FREQUENCY CATHETER ABLATION
Paul Walinsky, Philadelphia, Pa.; Arye Rosen, Cherry Hill, N.J., and Arnold J. Greenspon, Jenkintown, Pa., assignors to RCA Corporation, Princeton, N.J.
Filed Oct. 30, 1985, Ser. No. 792,895
Int. Cl.⁴ A61N 1/32
U.S. Cl. 128—303.1 6 Claims



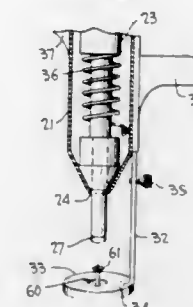
1. A method for medical treatment, comprising the steps of: introducing into a chamber of the heart one end of a coaxial transmission line which includes a center conductor coaxial with an outer conductor, said one end of said coaxial transmission line including an antenna coupled to said center conductor, said antenna including an uninsulated protruding tip; adjusting the position of said one end of said protruding tip of said antenna contacts a wall of said coaxial transmission line in such a fashion that said chamber for coupling to said antenna action potentials related to the operation of the heart; coupling to the other end of said coaxial transmission line a means for displaying said action potentials; displaying said action potentials; further adjusting the position of said one end of said coaxial transmission line so as to be contiguous with that point on said wall with a desired action potential; continuously applying high frequency electromagnetic energy to said other end of said coaxial transmission line during a period of time; observing action potentials related to operation of said heart at least during said period of time; monotonically increasing the power of said electromagnetic energy during said period of time; and ceasing said increasing and terminating said period of time when said action potentials are reduced.

4,641,650
PROBE-AND-FIRE LASERS
Walter Y. W. Mok, Palo Alto, Calif., assignor to MCM Laboratories, Inc., Mountain View, Calif.
Filed Mar. 11, 1985, Ser. No. 710,431
Int. Cl.⁴ A61B 17/35
U.S. Cl. 128—303.1 8 Claims



1. A surgical laser system for operating on a treatment site comprising:
a fiber optical means having a proximal end and a distal end positionable in operative proximity to the treatment site;
a treatment laser source optically connected to the proximal end of said fiber optical means;
a diagnostic radiation source connected to the proximal end of said fiber optical means for irradiating the treatment site;
a responding radiation detector means connected to the proximal end of said fiber optical means for generating a control signal when detecting a particular radiation in response to being irradiated by said diagnostic radiation source from the treatment site; and
means for controlling said treatment laser source to operate only when said radiation detector means emits said control signal.

4,641,651
CARTILAGE PUNCH AND MODIFIED PROSTHESIS IN TYMPANOPLASTY
George W. Card, P.O. Box 808, Goodlettsville, Tenn. 37072
Filed Sep. 22, 1983, Ser. No. 534,719
Int. Cl.⁴ A61B 17/32
U.S. Cl. 128—305 12 Claims



1. A cartilage punch for excising a cartilage plug of uniform thickness from a cartilage mass in vivo in combination with a prosthetic device, comprising:
a housing member having an elongated passage therein and a cutting opening at one end thereof, said elongated passage terminating at said cutting opening;
a prosthetic device having a surface adapted to have a cartilage plug secured thereto;
a cutting plunger secured in said housing member for longitudinally reciprocating movement in said elongated passage, said cutting plunger having an annular cutting end disposed to be selectively projected out through said

cutting opening end including a hollow interior communicating with said cutting end;
an anvil means fixed to said housing member and including a stage surface oriented generally perpendicularly to a direction corresponding to said longitudinal reciprocating movement of said cutting plunger, said anvil means further comprising an extension means for selectively adjustably translating said stage surface in a direction generally parallel to said direction to selectively increase and decrease spacing between said stage surface and said cutting opening to thereby permit insertion and removal of said cartilage mass in said spacing;
a means for selectively forcefully translating said cutting plunger toward said cutting opening to force said annular cutting end through said cutting opening and toward said stage surface through the cartilage mass disposed on said space;
whereby a plug of cartilage is cut by said cutting end and substantially completely forced into said hollow interior portion of said cutting plunger by the forceful translation of said cutting plunger toward said stage surface wherein a thickness dimension of the plug conforms to an interior dimension of said hollow interior portion taken in a direction generally transverse to said longitudinally reciprocating movement;
said stage surface being recessed in a predetermined configuration to stably receive said prosthetic device with said surface of said prosthetic device facing said cutting opening, whereby said plunger can be selectively extended from said elongated passage to bring said surface of said prosthetic device into contact with the cartilage plug disposed in the hollow interior of said cutting plunger; said prosthetic device including an attachment means disposed at said surface of said prosthetic device for mechanically engaging the cartilage plug.

4,641,652
APPLICATOR FOR TYING SEWING THREADS
Frieder Hutterer, Cologne; Gerd Buess, Pulheim, and Manfred Boebel, Oetisheim, all of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany
Filed Apr. 10, 1985, Ser. No. 721,669
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413744
Int. Cl.⁴ A61B 17/04; D05B 1/00; 87/00; D03J 3/00
U.S. Cl. 128—334 R 14 Claims



1. An applicator for tying threads for stitching wounds with single stitches comprising:
a shaft with proximal and distal ends having a longitudinal duct therethrough for a thread, said shaft having a radial opening adjacent the distal end to provide access to said duct;
means at the proximal end of said shaft for securing a thread passing through said duct;
a hollow open-ended helical tube extending from the distal end of said shaft with an inside of said tube communicating with a distal portion of said duct to enable said thread to pass through said helical tube, and
an auxiliary device in the form of a rod insertable through said duct in said shaft, said rod having a flexible loop at one end thereof for attachment to a thread to enable said thread to be drawn through said duct from said radial opening to said securing means at the proximal end of said shaft.

4,641,653

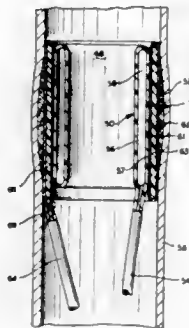
MEDICAL SLEEVE

Arthur G. Rockey, 3438 Sharon Rd., Charlotte, N.C. 28211
Continuation-in-part of Ser. No. 216,989, Dec. 16, 1980, Pat. No. 4,501,264, which is a continuation of Ser. No. 912,010, Jun. 2, 1978, abandoned. This application Feb. 19, 1985, Ser. No. 702,828

Int. Cl.⁴ A61M 29/02

U.S. Cl. 128—344

2 Claims



1. A method of treating an area of a body vessel, comprising the steps of:
introducing a catheter with a collapsed inflatable annular balloon and a collapsed sleeve encircling the balloon on its end into the vessel at a point remote from the area to be treated;
manipulating the catheter axially along the vessel to cause the balloon and sleeve to enter the area to be treated;
inflating the balloon by introducing fluid under pressure into the balloon through a tube of the catheter in a manner wherein the sleeve surrounding the balloon is radially expanded towards the wall of the vessel;
providing in the sleeve a material which increases in rigidity after expansion of said balloon;
maintaining said balloon in an expanded condition in the vessel while said sleeve increases in rigidity and body fluid is allowed to pass through the central aperture of the balloon; and
thereafter removing the balloon and catheter from the vessel and allowing the sleeve to remain in place in the area to be treated.

4,641,654

STEERABLE BALLOON DILATATION CATHETER ASSEMBLY HAVING DYE INJECTION AND PRESSURE MEASUREMENT CAPABILITIES

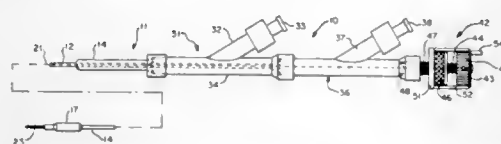
Wilfred J. Samson, Saratoga, and Jeffrey S. Frisbie, San Jose, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Jul. 30, 1985, Ser. No. 760,722

Int. Cl.⁴ A61M 29/02

U.S. Cl. 128—344

15 Claims



1. In a steerable balloon dilatation catheter assembly having dye injection and pressure measurement capabilities, an elongate flexible tubular member having first and second lumens extending longitudinally thereof a balloon carried by the distal portion of the tubular member and having its interior in communication with the second lumen, the first lumen extending through the balloon and being open at its distal extremity a guide wire extending through the first lumen and having a coil

carried by the distal portion thereof and extending beyond the distal extremity of the tubular member, means coupled to the guide wire facilitating at least limited rotation of the distal extremity of the guide wire, means coupled to the guide wire limiting inward and outward movement of the guide wire in a direction longitudinal of the axis of rotation of the guide wire, a first fitting coupled to the second lumen and adapted to receive a liquid for inflating and deflating the balloon and a second fitting in communication with the first lumen, said first lumen and said guide wire being sized so that dye injections and/or pressure measurements can be made through the second fitting.

4,641,655

THERAPEUTIC COOLING WRAP

Nancy G. Abt, 9397 Midnight Pass Rd., Apt. 404S, Sarasota, Fla. 34242

Filed Aug. 2, 1985, Ser. No. 761,882

Int. Cl.⁴ A61F 7/02

U.S. Cl. 128—380

10 Claims



1. A cooling wrap comprising:
an elongated strip of water pervious fabric forming a central pouch section with tying straps at both ends;
said pouch section being formed by a single fold of the sides of said strip of fabric and said tying straps being formed by stitching said single folds together;
an elongated bag formed of water pervious fabric secured in said pouch section;
said bag having an open-pored foam liner along at least one side; and
closure means for said bag, whereby said cooling wrap may be tied around a portion of the body and a frozen water medium placed in said bag will have body heat transferred thereto resulting in a controlled dispensing of water through said foam liner and fabric to said body portion.

4,641,656

CARDIOVERSION AND DEFIBRILLATION LEAD METHOD

Karel F. A. Smits, Oirsbeek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 20, 1985, Ser. No. 746,694

Int. Cl.⁴ A61N 1/36

U.S. Cl. 128—419 D

19 Claims

1. A method of applying electrical energy to a human heart, comprising:
applying at least first, second and third electrodes to said human heart, said first, second and third electrodes,

4,641,658

CARDIAC FLOW MONITOR

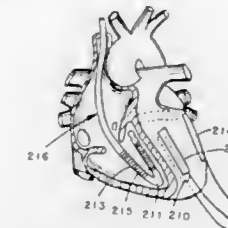
James M. Lepper, Riverside, Calif., assignor to American Hospital Supply Corp., Evanston, Ill.

Filed Oct. 1, 1984, Ser. No. 656,515

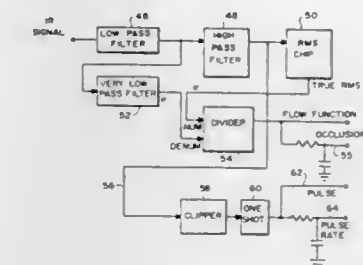
Int. Cl.⁴ A61B 5/02

U.S. Cl. 128—633

15 Claims



1. spaced from one another, mounted around said human heart at the level of the ventricles of said human heart, such that said first electrode is adjacent said second electrode and said second electrode is adjacent said third electrode;
applying a first electrical pulse to said at least first, second and third electrodes such that said first and second elec-



- trodes are at a first polarity during said electrical pulse, while said third electrode is at a second polarity during said electrical pulse; and
subsequently applying a second electrical pulse to at least said first, second and third electrodes such that said second and third electrodes are at said first polarity during said second electrical pulse and said first electrode is at said second polarity during said second electrical pulse.

1. The method of deriving blood flow information from a single color signal produced by a fiberoptic cardiac catheter, comprising the steps of:
(a) filtering said signal to obtain its AC and DC components;
(b) determining the RMS value of said AC component; and
(c) dividing said RMS value by the value of said DC component.

4,641,657

PROBE SWIVEL MECHANISM

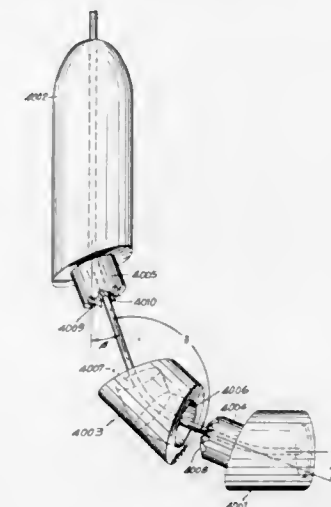
Donald G. Ellis, Boulder, Colo., assignor to University Patents, Inc., Westport, Conn.

Filed Feb. 8, 1985, Ser. No. 699,677

Int. Cl.⁴ A61B 5/00

U.S. Cl. 128—630

6 Claims



6. In a probe including an elongated body adapted to receive a transducer at one end having a central bore for leading conductor means from said transducer through the other end thereof, the improvement wherein said body comprises first and second end members and a central member, said end members having bevel gears directed toward and engaging one another, with the axis of at least one bevel gear being non-parallel to the axis of the respective end member, said central member being rotatably mounted to each of said end members surrounding said gears for inhibiting relative separation of said gears, and adjusting the relative angle of said end members.

4,641,659

MEDICAL DIAGNOSTIC MICROWAVE SCANNING APPARATUS

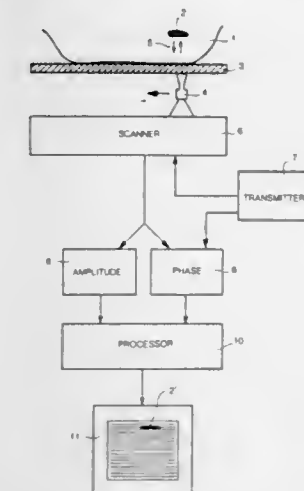
Raimo E. Sepponen, Pitkäsillanranta 7-9 C 111, 00530 Helsinki 53, Finland

Continuation-in-part of Ser. No. 154,593, May 29, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,804
Claims priority, application Finland, Jun. 1, 1979, 791771

Int. Cl.⁴ A61B 5/05

U.S. Cl. 128—653

5 Claims



4. Apparatus for diagnosing pathological disorder of a patient and having a microwave transmitting means (7) and a microwave antenna means (4) for directing a microwave signal to the patient under examination, receiver means for detecting signals from the patient under examination, the improvement comprising a scanning mechanism (6) connected to move said antenna means (4) and thereby scan the patient under examina-

tion, and a matching plate (3) adapted to be interposed between the antenna means and the patient, said plate (3) being a solid plate having a dielectric constant substantially the same as that of patient tissue, said antenna means (4) being disposed on one side of said matching plate (3) to sweep over the surface thereof at least substantially in continuous contact and the patient (1) under examination being pressable against the other side of said plate (3).

4,641,660

ECHOGRAPHY PROBE AND APPARATUS INCORPORATING SUCH A PROBE

Robert Bele, Chessy, France, assignor to CGR Ultrasonic, Meaux, France

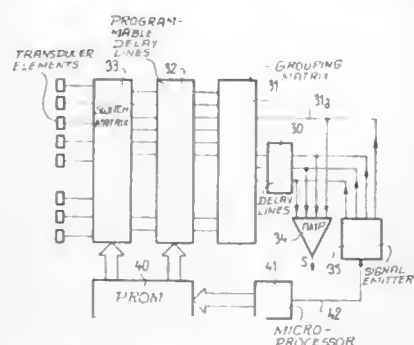
Filed Oct. 15, 1984, Ser. No. 660,997

Claims priority, application France, Oct. 18, 1983, 83 16550

Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—660

13 Claims



1. An ultrasonic echography apparatus comprising: a fixed transducer probe, the probe including: transducer means for defining a convex coupling surface, said transducer means including a mosaic of transducer elements, switching means for selectively grouping a first set of transducer elements in said mosaic of transducer elements to form a configuration approximately defining concentric rings, the switching means further selectively grouping different sets of transducer elements in the mosaic, thereby effecting the moving of the configuration in an alternating sweep manner; and first means for applying a first delay law to each ring of the concentric rings for compensating the different propagation times for energies emitted from each ring of the concentric rings.

4,641,661

ELECTRONIC ALGESIMETER

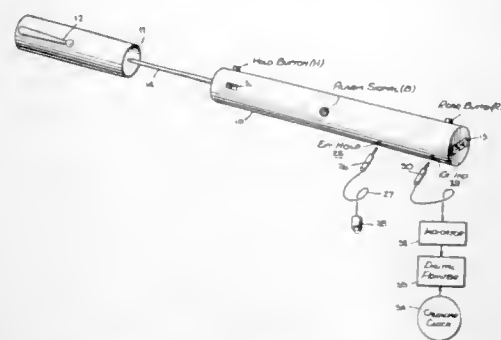
Mathew S. Kalarickal, Kalarickal-Kottayam, Kerala, India 686018

Filed Aug. 2, 1985, Ser. No. 761,790

Int. Cl.⁴ A61B 19/00

U.S. Cl. 128—744

17 Claims



1. An algesimeter for determining by cutaneous sensation the pain threshold of a patient being tested, said meter comprising:

- A. a hand-held pressure transducer provided with a sensor constituted by a pointed probe whereby when the point of the probe is pressed against the skin of a patient at a selected site and is shifted from an initial position to a position displaced therefrom that depends on applied pressure, the transducer then yields a signal whose magnitude is a function of the applied pressure, and bias means to maintain said probe at said initial position in the absence of the applied pressure;
- B. means including a resettable electronic pressure indicator responsive to said signal and provided with a display whose reading indicates the magnitude of the signal and hence the degree of applied pressure, said means including an actuable circuit to hold said reading and a switching device to reset said indicator; and
- C. a manually-operated electrical switch connected to said hold circuit which when actuated renders the circuit effective to hold the reading then being given so that by actuating the switch at the instant the patient who is subjected to the pressure senses pain, the pain threshold value thereof is retained so that it can be read when the probe is withdrawn from the skin, after which the switching device may be operated to reset the indicator.

4,641,662

ENDOCERVICAL CURETTE SYSTEM

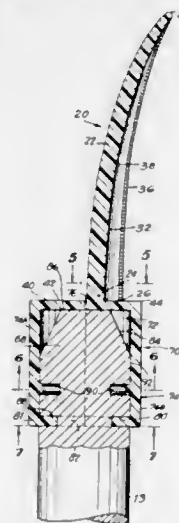
John R. Jaicks, 945 Morris Park Ave., Bronx, N.Y. 10462

Filed Sep. 28, 1984, Ser. No. 655,378

Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—757

12 Claims



1. A curette system for scraping a patient in an endocervical curettage (EEC) procedure, comprising, in combination, an elongated handle member having a gripping end and an opposed mounting end, and curette means removably connected to said mounting end of said handle member, said curette means being for scraping and holding tissue and mucous from the surface of said endocervix up to the area of the internal os and not the area beyond the internal os, said curette means including a disposable curette member with an elongated wall having a curved base end like wall of about 140° arc, a tip portion, and a pair of mating inwardly tapered edges extending between said curved base and tip portion, said elongated wall having an inner surface defining a hollow between said tapered edges, serration means at said tapered edges of said curette member being for moving smoothly over the surface of the endocervix when the curette member is moved into the cervix, for holding mucous and tissue when said curette member is firmly scraped outwardly along the endocervix, and for retaining tissue and mucous when the curette member is

removed from the endocervix, said serration means being spaced slightly inwardly toward said hollow and away from said tapered edges and comprising a plurality of serrations, said plurality of serrations having a first flat surface transverse to said inner surfaces of said elongated wall said first flat surface having an inner edge coextensive with said elongated wall and an opposed outer edge, said inner and outer edges being generally transverse to said tapered edges, each of said plurality of serrations further including a second flat surface angled both toward said elongated wall and said tip portion, and a second flat surface having a top edge coextensive with said inner edge of said first flat surface and a lower edge coextensive with said outer edge of said first flat surface, and locking means for holding said curette means to said mounting end of said handle member, whereby said serration means is capable of gathering and retaining tissue and mucous scraped and pulled from over a wide area defined by said tapered curette member from the surface of the endocervix and the internal os as said curette member is removed from the endocervix by a drawing motion while firmly scraping outwardly along the endocervix in a non-rotatable movement, so as to in about a minimum of three passes using like, but separate and disposable curette members with an overlap on either side of a previous curettage cover the entire circumferential area of said endocervix, and whereby each disposable curette member being for analysis without any further handling.



ing of electrical insulation and an electrode head electrically connected to a distal end of the electrical conductor for supplying stimulation pulses to the heart; and emplacement means secured to the conductor assembly in the vicinity of the distal end for fixing the conductor assembly to a cardiac wall, said emplacement means having at least one filamentary element of soft flexible material at least partially surrounding said conduc-

tor assembly spaced from said insulation end extending from the conductor assembly in a plane perpendicular to the elevated axis of the conductor assembly for fixing the conductor assembly to a cardiac wall, said filamentary element having a length so as to be safely deflectable by a wall of a blood vessel to a position closely adjacent the insulation of the conductor assembly during passage through a vein.

4,641,663

APPARATUS FOR COLLECTING SPECIMENS

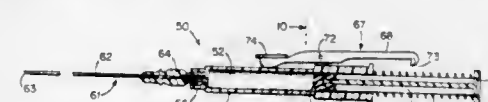
Steven K. Juhn, 2624 Rice Creek Ter., New Brighton, Minn. 55112

Filed May 17, 1985, Ser. No. 735,098

Int. Cl.⁴ A61M 5/20

U.S. Cl. 128—765

13 Claims



1. An apparatus for collecting fluid comprising: a tubular body having a chamber for holding fluid, elongated tube means connected to the body, said tube means having an open end and a passage from the open end to the chamber, piston means located in said chamber, a plunger connected to the piston means for moving the piston means in the chamber, biasing means located in engagement with the plunger and body for biasing the plunger and piston means to a first position, releasable latch means mounted on the body engageable with the plunger to hold the plunger and piston means in second position, said latch means being movable to disengage the plunger whereby the biasing means moves the plunger and piston means from the second position to the first position drawing fluid adjacent the open end of the tube means through the tube means into the chamber.

4,641,664

ENDOCARDIAL ELECTRODE ARRANGEMENT

Lars Botvidsson, Jaerfaella, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,081

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3414072

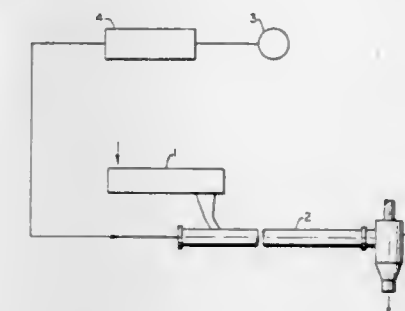
Int. Cl.⁴ A61N 1/04

U.S. Cl. 128—785

14 Claims

1. An endocardial electrode arrangement for intracardiac stimulation of the heart comprising a conductor assembly having an axially elongated electrical conductor and a cover-

1. A tobacco expansion process, which comprises: treating the tobacco with an expansion agent which comprises a two component mixture, said agent comprising as a first component a first organic compound which is volatile, non-polar and substantially water insoluble, and as a second component a second organic compound which is volatile, water soluble, oxygen containing and of a polarity in excess of that of said first compound; and subjecting the treated tobacco to heating and/or a reduction in pressure; whereby the filling power increase is greater than the increase expected on a linearly proportional basis from the increases for each of the components of said agent.



4,641,666

SMOKE FILTERING MATERIAL

Harold O'Connell, Sr., 596 Newtown St., South Hadley, Mass. 01075

Filed Jan. 13, 1986, Ser. No. 818,006
Int. Cl.⁴ A24D 3/08

U.S. Cl. 131—341

29 Claims

12. A smoke filtering composition comprised of the flower portion of a red-fruited sumac tree which has been processed in accordance with the steps comprising:

- separating the sumac fruit from the sumac cluster;
- boiling the fruit in a liquid;
- separating the boiled fruit from the liquid;
- drying the fruit;
- heating the fruit whereby it becomes a charcoal-like substance; and
- combining said charcoal-like sumac fruit with fibrous filter material.

21. A smoke filtering composition comprised of the flower portion of a red-fruited sumac tree which has been processed in accordance with the steps comprising:

- separating the sumac fruit from the sumac cluster;
- boiling the fruit in a liquid;
- separating the boiled fruit from the liquid;
- saturating fibrous filter material with the boiled liquid; and
- drying the saturated filter.

4,641,667

PROCESS OF PREPARING NICOTINE N'-OXIDE AND SMOKING PRODUCTS CONTAINING IT

Gerald Schmekel, Elmshorn, and Gert Rudolph, Hamburg, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,573

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344554

Int. Cl.⁴ A24B 15/38; C07D 401/04

U.S. Cl. 131—352

27 Claims

1. A smoking product comprising tobacco and a quantity of up to 5% by weight relative to the dry weight of the smoking product of nicotine N'-oxide, said nicotine N'-oxide consisting of at least 90% of the trans-isomer and at most 10% of the cis-isomer of nicotine N'-oxide.

4,641,668

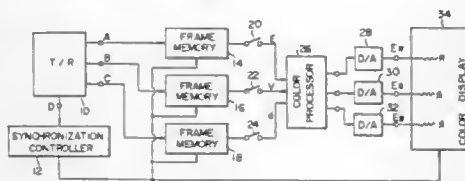
ULTRASONIC BLOOD FLOW IMAGING METHOD AND APPARATUS

Koroku Namekawa, Mitaka, Japan, assignor to Aloka Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 516,792, Jul. 25, 1983, abandoned. This application Aug. 19, 1985, Ser. No. 767,148
Claims priority, application Japan, Jul. 28, 1982, 57-130503Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—663

3 Claims



3. An ultrasonic imaging apparatus for imaging blood flow and tomographic images comprising an ultrasonic transmitter/receiver means for outputting a tomographic image signal produced by sending an ultrasonic beam into a specific region of a body under examination and electrically detecting the reflected echo from said region, and including pulse doppler means for selectively detecting a signal representative of a first function of the spatial velocity distribution of blood flow and a second signal representative of a second function of spatial velocity distribution of blood flow and of a deviation from said

first function, said signals corresponding to the velocity of movement of blood flow within said region; a plurality of frame memory means coupled to said transmitter/receiver for storing each of said signals; a color processor means coupled to said frame memory means for producing a color video signal from said signals stored in said frame memory means; and a color display means responsive to said color video signal from said color processor means for displaying a tomographic image of said region in white, for displaying the direction of said first function within said region in one color when positive and in another different color when negative, and for displaying the magnitude of said first function by varying the brightness of the color displayed, and further for displaying said tomographic image and said first and second functions superposed one on the other, said color processor means further comprising means for mixing at least one further color with the color displayed depending on the magnitude of said second function.

4,641,669

METHOD FOR REINFORCING AND HARDENING HUMAN NAILS

Lorraine Kimble, P.O. Box 32, 8962 E. Hampden Ave., Denver, Colo. 80231

Filed Apr. 19, 1985, Ser. No. 724,930

Int. Cl.⁴ A45D 29/00

U.S. Cl. 132—73

11 Claims

1. Method for reinforcing human nails comprising the steps of:

- a. cutting from a thin mat of natural cellulose fibers a patch of said mat that generally conforms to the shape of the nail and placing said patch on the surface of the nail;
- b. applying a coat of a bonding composition to said patch sufficient to permeate the patch and bond intersecting fibers to one another and to the nail surface;
- c. allowing said bonding composition to dry;
- d. repeating steps a. and b. for a plurality of times; and
- e. shaping and smoothing the resulting bonded fiber coat.

4,641,670

VEHICLE WHEEL FOR A PNEUMATIC TIRE

Dionysius J. Poque, and Norbert Zinnen, both of Aachen, Fed. Rep. of Germany, assignors to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany

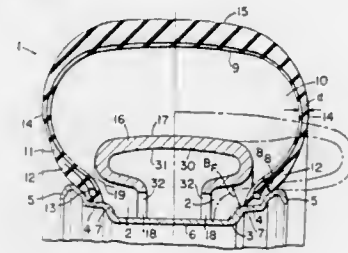
Filed Nov. 15, 1984, Ser. No. 671,571

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1983, 3341969

Int. Cl.⁴ B60C 17/04, 17/10; B60B 21/10

U.S. Cl. 152—158

4 Claims



1. In a vehicle wheel having a one-piece rim on which can be mounted a pneumatic tire which has a tread strip, two sidewalls, a carcass, and two tire beads which are laterally spaced from one another and contain substantially inextensible bead cores; said wheel rim having a radially recessed rim base, and including a rim drop well as well as respective axially outwardly extending rim shoulders, each of which ends in a respective rim flange; an emergency operation support member being disposed in said rim base and having a supporting surface which faces radially outwardly, being located radially outwardly of said rim flanges, and having a width which corresponds approximately to the width of said rim base;

the improvement in combination therewith which comprises: means for preventing the tire bead from being released from the one piece rim along with means for accommodating the tire bead during emergency operation, without adversely affecting, rather fully maintaining, the mounting of the tire by means of a rim drop well and the advantageous support of the tire during emergency running operation including a respective radially inner annular lateral guide surface to permit tire mounting with said rim drop well provided with said emergency operation support member including a very wide annular emergency-running support surface and across from at least one of said rim shoulders, said respective radially inner annular lateral guide surface facing said rim shoulder being spaced therefrom by a narrow constricted distance which corresponds at least to the thickness of one of said tire beads and serves as said means for preventing the tire bead from being released from the one-piece rim; respective annular chambers being provided axially inwardly of said radially inner annular lateral guide surfaces, and extending to said rim base, said chambers serving as said means for accommodating the tire bead during emergency running operation, without adversely affecting, rather fully maintaining the mounting of the tire via rim drop well and the advantageous very wide annular emergency-running support surface for the tire during emergency running operation; said radially inner surface being provided at a selectively predetermined position on the radially inner contour of said emergency operation support member, said position being a point on a curve which initially extends essentially parallel to an imaginary line extending between the axially inner edge of one of said rim shoulders and the associated rim flange, and which radially outwardly thereof extends approximately parallel to an imaginary line which conforms to the outer contour of a mounted tire; a respective radially inner support member surface and annular chamber in the vicinity of each of said rim shoulders; said distance between said radially inner surface and said rim shoulder being in a range of from 1.1 to 3 times said thickness of said tire bead; the depth of said annular chamber being in a range of 0.3 to 1.0 times the height of the drop well of a standard rim, measured from a line which is parallel to the central axis of said wheel and defines said rim shoulder; said recessed rim base and said emergency operation support member being symmetrically arranged as well as the width of said supporting surface of said emergency operation support member being in a range of 0.75 to 1.5 times width of said rim base.

4,641,671

AUTOMATIC DISHWASHER

Munehiro Nogi; Ryutaro Ohashi; Koichiro Miyazaki, all of Sakai; Takashi Tanaka, Osaka; Koichiro Tamakoshi, Sakai; Yoshiziro Tamano, Kusatsu; Syotaro Wakita, Wakayama, and Toshimitsu Suzuki, Kishiwada, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Feb. 19, 1985, Ser. No. 702,795

Claims priority, application Japan, Feb. 20, 1984, 59-31088; Feb. 20, 1984, 59-23697[U]; May 17, 1984, 59-72822[U]; Dec. 28, 1984, 59-201276[U]

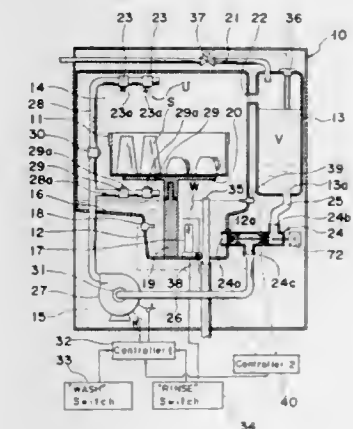
Int. Cl.⁴ B08B 3/02

U.S. Cl. 134—57 D

8 Claims

1. A dishwasher comprising:
an enclosure for accommodating articles to be washed;
a washing solution tank arranged below the enclosure;
a hot water storage tank for containing a predetermined amount of hot water;
a plurality of nozzle means for spraying a liquid medium towards articles accommodated in the enclosure;
a circulating pump having both a suction and discharge port;
an electric motor for driving said circulating pump;

a first piping means connecting said discharge port of the circulating pump with said plurality of nozzle means;
a second piping means operatively connecting both said washing solution and hot water storage tanks with said suction port of the circulating pump;
a control valve means disposed on the second piping means and operable for closing a first passage between the suction port and the hot water storage tank and opening a second passage between the suction port and the washing solution tank during a washing operation in which articles are washed and for opening and closing said first and second passages, respectively, during a rinsing operation in which articles are rinsed;
a water supply pipe operatively connected with said hot water storage tank;
a shut-off valve disposed on said water supply pipe;
a first level detector operatively connected to said hot water storage tank for detecting the level of water within said hot water storage tank and for generating a signal for closing said shut-off valve when the water within the hot water storage tank attains a predetermined level;
a second level detector operatively connected to said wash-



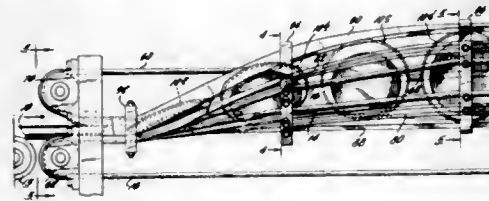
ing solution tank for detecting the level of liquid medium within the washing solution tank;
a water supply control circuit including a water supply start switch, for initiating a hot water supply, and a first operating circuit;
an actuating means operatively associated with said first level detector for selectively opening and closing said shut-off valve in response to said signal;
a hot water supply means for establishing fluid communication between the hot water supply tank and said washing solution tank by controlling said control valve means and said circulating pump for effecting the supply of hot water into said washing solution tank; and
a hot water supply interrupting means operable in response to a signal from said second level detector, indicative of the arrival of water within the washing solution tank to a predetermined level, for interrupting the operation of either said actuating means or said hot water supply means;
said first operating circuit being operable to actuate said actuating means, said hot water supply means and said hot water supply interrupting means when the water supply start switch is turned on.

4,641,672
APPARATUS FOR CLEANING DISH-LIKE OBJECTS
 Harry M. Lewbart, Atco, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Mar. 4, 1985, Ser. No. 707,831
 Int. Cl.⁴ B08B 3/02

U.S. Cl. 134—62

1 Claim



1. Apparatus for cleaning dish-like objects having opposed major faces, comprising:

conveyor means having a first section for receiving dish-like objects placed thereon in horizontal positions to form a moving train of said objects, a second comprising means for receiving said train of objects from said first section and for turning them about axes parallel to the direction of motion from said horizontal positions to more upright positions and thereafter back again to horizontal positions as they move along a predetermined path in said second section, and a third section comprising means for receiving said objects from said second section while they are in said horizontal positions;

liquid-propulsion means for projecting cleansing liquid against both major faces of said objects as they pass through said second conveyor section in their more upright positions; and

dryer means for directing a flow of air over both major faces of said objects as they move along in their more upright positions in said second section, downstream of said liquid-propulsion means;

said conveyor means comprising a plurality of stationary guide rails extending on both sides of said major faces of said objects and defining between them said path through said second section, a plurality of longitudinally-tensioned moving belts extending along both sides of said path for frictionally engaging said major faces of said objects to slide them along said path between said rails, and a plurality of stationary belt-positioning guide blocks spaced apart along said path and bearing against said belts to hold them in position against said objects, said belts being unsupported between said guide blocks and bearing against said major faces of said objects at positions between said blocks in response to lateral pressure exerted by said belt in response to the longitudinal tensioning of said belts; and

(a) wherein said guide rails provide a track for said object which twists progressively from a horizontal position to a more upright position and then back to a horizontal position;

(b) wherein said belts engage both sides of said objects and comprise first and second belts which run horizontally beneath said objects in said first and third sections of said conveyor means and rise upwardly in the initial portion of said second section, travelling horizontally in the center portion of said second section, and returning downwardly in the downstream portion of said second section so as to maintain frictional contact with the underside of said object as it is tilted upwardly and downwardly;

(c) said belts comprising an upper belt running along the path of said conveyor means and bearing frictionally against the top major surfaces of said objects as they travel along said track in their upwardly-tilted positions;

(d) said upper belt passing across the centers of said objects; and

(e) said belts covering only a minor portion of the sides of said objects to expose a major portion of said top sides to impact by said cleansing liquid.

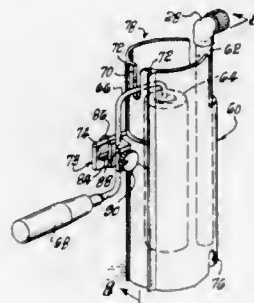
4,641,673
CLEANING DEVICE FOR PAINT ROLLERS AND BRUSHES
 John M. Conley, 911 Crescent Dr., Monrovia, Calif. 91016, and Paul D. Bowen, P.O. Box 5201, Bend, Oreg. 97708

Continuation-in-part of Ser. No. 519,050, Aug. 1, 1983, abandoned. This application Jan. 16, 1985, Ser. No. 692,372

Int. Cl.⁴ B08B 3/02

U.S. Cl. 134—138

7 Claims



1. An apparatus for cleaning water soluble paint from a paint roller or a paint brush comprising:

first water conducting manifold means having a first elongate longitudinal axis disposed parallel to the elongate interior axis of a tubular housing means containing the water conducting manifold means, the manifold means having a plurality of orifices producing a series of water jets disposed generally in a plane which is parallel to the elongate interior axis of the housing means;

water supply means in fluid communication with the manifold means;

the tubular housing means at least partially enclosing the manifold means and the paint roller or paint brush, the manifold means being held onto the interior of the housing means by extrusions which serve to clamp the manifold to the housing means, wherein the exterior of the housing means includes manually operable and adjustable clamping means to secure a holder rod of the paint roller such that the rotating axis of the roller is disposed in an effective position relative to the water jets such that spin may be produced by the action of the water jets upon the roller should a paint roller be cleaned by the apparatus;

removable brush holder means adapted to fit into one end of the housing means for retaining the brush within the interior of the housing means under the influence of the cleaning action of the water jets, should a brush be chosen to be cleaned within the apparatus;

said brush holder comprising a first cap element removably received within the upper end of the housing and an externally fluted cylindrical element having a hollow interior with an open lower end rotatably mounted in and extending below the cap into the housing means, the fluted element including clamping means to securely retain the handle of the brush within the hollow interior of the fluted element such that the series of water jets from the first water conducting manifold means will impact the flutes in a tangential manner and impart a spin to the fluted element and the clamped brush; and

a second water conducting manifold means in fluid communication with the distal end of the first water conducting manifold means and connected thereto at a right angle having a second series of water jets emanating therefrom and directed generally upwardly parallel to the bristles of the paint brush and impacting therein.

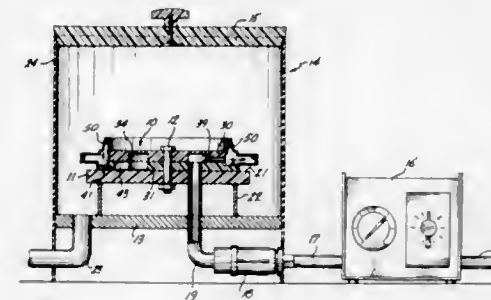
4,641,674
WASHER FOR DISPOSABLE CUVETTE ROTORS
 John D. Batjer, Lindsay R. Eades, both of Bellevue; Raymond J. Liedtke, and Arthur M. Zebelman, both of Seattle, all of Wash., assignors to LabAdapt, Inc., Seattle, Wash.

Filed Jan. 30, 1984, Ser. No. 574,988

Int. Cl.⁴ B08B 9/02

U.S. Cl. 134—138

12 Claims



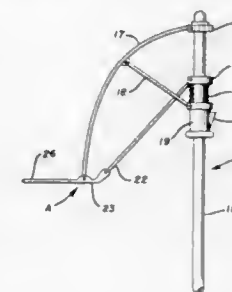
3. A washer for cleaning a plurality of cuvettes, each of said cuvettes having horizontal and vertical cavities, said cuvettes being interconnected to form a ring wherein said horizontal cavities are oriented radially and said vertical cavities are oriented axially, said washer comprising:

a generally cylindrical stator upon which said ring is positioned for rotation, said stator having a plurality of jets disposed about the circular periphery thereof, each of said jets being oriented to direct a flow of fluid at a predetermined angle into the horizontal cavities of said cuvettes so as to rotate said ring and clean said horizontal cavities; an annular ledge encircling the lower periphery of said stator, said ledge including a jet, said jet being oriented to direct a flow of fluid at a predetermined angle into the vertical cavities of said cuvettes so as to clean said vertical cavities; and

supply means for delivering fluid to said jets.

4,641,675
SPORT'S CAP UMBRELLA
 Bing T. Wu, 12137 Front St., Norwalk, Calif. 90650
 Filed Jun. 24, 1985, Ser. No. 747,800
 Int. Cl.⁴ A45B 11/00, 3/00, 19/00
 U.S. Cl. 135—20 A

3 Claims

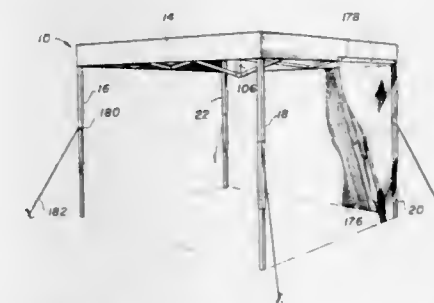


1. An improvement for an umbrella, the umbrella having a support shaft, a handle on the shaft a canopy defined by a plurality of canopy support ribs and a rib deployment mechanism which includes a sleeve slidably mounted on the support shaft with the canopy support ribs being attached to the sleeve, a water repellent material secured to and over said canopy support ribs, the improvement comprising a brim canopy extended around a portion of the perimeter of the canopy, the brim canopy comprising a number of brim ribs, separate material covering said brim canopy brim ribs and which is attached to the perimeter portion of the canopy, said brim canopy further including a rib connector fitting attached at one end

thereof to one end of each brim rib and at a midportion thereof to one end of a canopy support rib and having a second end bent inwardly and upwardly to form a crank, said brim canopy further including a ring slidably mounted on said support shaft above said sleeve between said sleeve and said canopy, and a plurality of brim canopy support arms each attached at one end thereof to a rib connector second end and at another end thereof to said ring, some of said brim ribs having a length less than other of said brim ribs said sleeve moving on said shaft to operate said canopy and results in the extension of said brim canopy.

4,641,676
COLLAPSIBLE CANOPY STRUCTURE
 James P. Lynch, 6901 W. 87th Way, #304, Arvada, Colo. 80003
 Filed Jan. 23, 1984, Ser. No. 573,070
 Int. Cl.⁴ A45F 1/16; E04H 15/50
 U.S. Cl. 135—110

5 Claims



3. A collapsible canopy shelter adapted to be positioned on the ground, comprising:

a plurality of upright corner support members each having a top and bottom and oriented to define vertical edges of a selected geometric configuration;

a slide bracket slideably mounted on each of said corner support members and moveable therealong;

an edge scissor assembly interconnecting adjacent ones of said corner support members, each respective edge scissor assembly oriented in a generally vertical plane and having one portion pivotally secured to the top of its associated corner support members and another portion pivotally secured to the slide bracket of its associated corner support members, said edge scissor assemblies operative to expand and contract whereby its associated corner support members are caused to move away from and toward one another to vary the dimensions of said geometric configuration, said canopy shelter being in an expanded position when said corner support members are moved away from one another and in a collapsed position when said corner support members are moved toward one another;

an internal scissor assembly extending across said geometric configuration and connected between at least two of said edge assemblies and operative to expand and contract in response to expansion and contraction of said edge scissor assemblies;

first releasable latch means on each said corner support members for releasably retaining its respective slide bracket adjacent the top of its respective corner support member to retain said canopy shelter in the expanded position;

a flexible covering extending across the tops of said corner support members and sized to cover the upper surface of said geometric configuration when said canopy shelter is in the expanded position, said covering including a top panel extending across said upper surface and side panels connected to said top panel and extending downwardly alongside surfaces of said geometric configuration; means along the lower edge of said side panels for release-

ably securing said side panels to said corner support members; and
an upright interior post secured to the internal scissor assembly and operative to positively support a central portion of said flexible covering when said canopy shelter is in the expanded position.

4,641,677
COAXIAL OPERATING ROD AND PACKING SEAL FOR TOP-OPERATED, BOTTOM OUTLET VALVE IN RAILWAY TANK CAR AND METHOD OF ALIGNING SAME

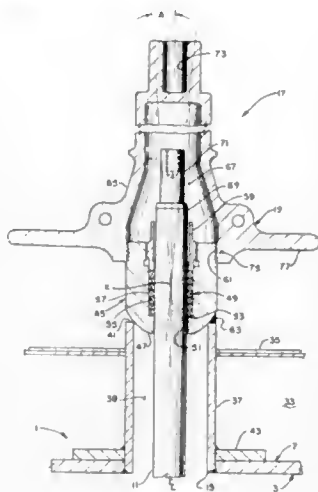
Robert F. Needham, St. Charles County, Mo., assignor to ACF Industries, Incorporated, Earth City, Mo.

Filed Feb. 25, 1986, Ser. No. 832,728

Int. Cl.⁴ F16K 43/00, 51/00

U.S. Cl. 137—15

8 Claims



1. The method of installing an outside unloading device for a railway tank car, the latter comprising a tank, a valve in the tank, said valve being selectively movable between an opened and a closed position which when opened permits unloading of the tank car, an operating rod operatively connected to said valve and extending within said tank, said tank having an opening therethrough, and a seat surrounding said opening, wherein the method comprises the steps of:

attaching said operating rod to said valve member in the tank, said rod generally within the tank and out through said tank opening;

installing a packing body having a central bore therethrough and a part-spherical surface on the end of said operating rod extending through said opening out beyond said tank, with the packing body bore and the operating rod being substantially centered relative to one another;

mating said part-spherical surface of said packing body with said seat in such manner as to permit universal angular swiveling movement of said packing body with respect to said seat such that with said operating rod received within said packing body bore, said packing body bore and said operating rod are substantially coaxial with respect to one another; and

sealably securing said packing body with respect to said seat after said packing body has been so coaxial aligned with said operating rod, and after said packing body has been mated to said seat.

3. In a bottom outlet tank, such as a railway tank car, having a valve in the bottom of the tank selectively movable between an opened and a closed position, a valve rod operatively connected to said valve extending through at least a portion of the interior of the tank and projecting out beyond the tank, and means for sealing said operating rod relative to the tank proximate the location on the tank at which said operating rod

passes through said tank, wherein the improvement comprises: said tank having an opening therethrough through which said operating rod extends, a seat surrounding said opening, a packing body having a lower part-spherical surface and a central packing bore for receiving a portion of said operating rod, said packing bore receiving packing means constituting said means for sealing said operating rod relative to said packing body, said packing body part-spherical surface mating with said seat for permitting universal angular swiveling movement of said packing body relative to said seat within a limited range with respect to said seat such that said packing bore is substantially coaxial with respect to said operating rod, and means for securing said packing body with respect to said seat after said packing body has been coaxially aligned with said operating rod.

4,641,678
CONTROLLABLE DIFFUSER FOR AN AIR INTAKE OF AN AIRCRAFT

Jan T. Haas, Hamburg, and Robin-Leslie Hadwin, Buxtehude, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

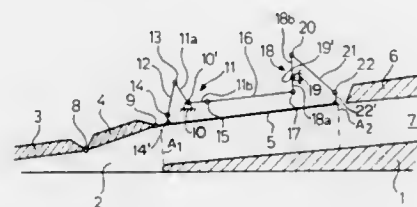
Filed Dec. 9, 1985, Ser. No. 807,162

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444822

Int. Cl.⁴ B64D 33/02

U.S. Cl. 137—15.1

7 Claims



1. A controllable diffuser for an air intake of an aircraft, comprising an air flow channel including an air inlet port, first means (11) for varying an inlet cross-sectional flow area (A1) of said air inlet port, an air outlet port, and second means (21, 22) for varying an outlet cross-sectional flow area (A2) of said air outlet port, said second means (21, 22) forming a backwardly facing step (23) in said outlet cross-sectional flow area (A2) for stabilizing a controlled boundary layer separation at said outlet cross-sectional flow area (A2).

4,641,679
FEED DEVICE FOR A TWO-PHASE FLUID PUMP AND A HYDROCARBON PRODUCING INSTALLATION WITH SUCH FEED DEVICE

Marcel Arnaudeau, and Philippe Rousset, both of Paris, France, assignors to Institut Français du Pétrole, Rueil Malmaison, France

PCT No. PCT/FR84/00304, § 371 Date Aug. 30, 1985, § 102(e) Date Aug. 30, 1985

PCT Filed Dec. 31, 1984, Ser. No. 774,602

Claims priority, application France, Dec. 30, 1983, 83 21089

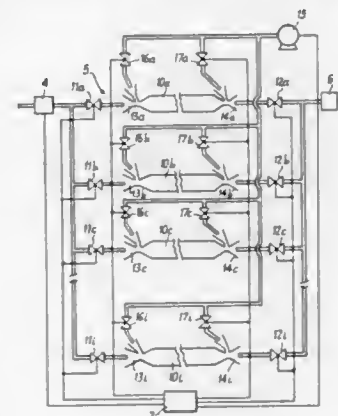
Int. Cl.⁴ F04D 31/00

U.S. Cl. 137—88

10 Claims

1. A feed device for a two-phase liquid pump for supplying to the inlet of the pump a two-phase fluid having a volumetric ratio of gaseous phase to liquid phase compatible with the operating characteristics of the pump, said device comprising, a main pipe having an inlet adapted to be connected to a source of two-phase fluid and an outlet adapted to be connected to the inlet of the pump, a plurality of auxiliary pipes connected in parallel to said main pipe, each of said auxiliary pipes having an inlet adapted to be connected to the source of two phase fluid and an outlet adapted to be connected to the inlet of the

pump, each of said pipes having an isolating and flow regulating gate between the outlet thereof and the inlet of the pump,



and means for introducing a carrier liquid into each of said pipes.

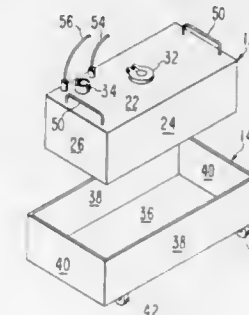
4,641,680
WASTE SOLVENT RECEPTACLE
Thomas S. Been, Saratoga, Calif., assignor to Process and Cryogenic Services, Inc., San Jose, Calif.

Filed Aug. 23, 1985, Ser. No. 768,896

Int. Cl.⁴ E03B 3/40; F16K 31/02

U.S. Cl. 137—312

7 Claims



1. A waste solvent receptacle comprising:

a closed waste tank having a top provided with a solvent inlet port, said waste tank adapted to receive solvent through the port; and

a mobile container having an open top, a fluid impervious bottom, and wall structure secured to and extending upwardly from said bottom, said waste tank being removably received in said container through said open top and being supported on said bottom, said waste tank top includes a top wall and means on the topwall thereof for defining a pair of handles on said waste tank to facilitate removal of said waste tank from said container, said container having a volume greater than the volume of the waste tank so that a space is formed in surrounding relationship to the waste tank and substantially surrounding a major portion of said waste tank when the waste tank is centrally located in the container, whereby the container can receive leakage and overflow solvent from the waste tank, said top wall having a solvent outlet port thereon and spaced from the inlet port thereof for pumping said solvent out of said waste tank and electrical level sensor means for controlling the solvent level within said waste tank.

4,641,681
CLAMP FOR USE WITH TOP ENTRY BALL VALVE
Morio Ikematsu, Takaishi, and Hiromichi Hiranuma, Sakai, both of Japan, assignors to Nippon Ball Valve Co., Ltd., Osaka, Japan

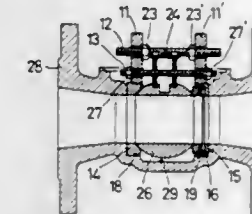
Filed May 2, 1986, Ser. No. 858,796

Claims priority, application Japan, May 16, 1985, 60-74099[U]

Int. Cl.⁴ F16K 43/00, 51/00

U.S. Cl. 137—315

4 Claims



1. A clamp for use with a top entry ball valve comprising a valve casing, a valve body mounted in the valve casing, said valve casing having an opposed pair of seat receiving surfaces formed therein, a seat ring disposed between said valve body and one of said receiving surfaces at the low-pressure side, a seat ring assembly comprising another seat ring, a Belleville spring and a seat ring holder and disposed between said valve body and the other of said seat receiving surfaces at the high-pressure side, said clamp comprising:

an opposed pair of clamping plates;
a clamping bolt screwed through said clamping plates;
a fulcrum bolt screwed through said clamping plates and disposed below said clamping bolt;

said clamping plates being formed at lower end thereof with a concave portion of a shape complementary to the shape of the top of said first named seat ring and said seat ring holder, respectively, and being formed in said concave portion with an engagement portion for engagement with and holding said first named seat ring and said seat ring holder for removal and insertion of said first named seat ring, said seat ring assembly and said valve body from and into said valve casing as a single unit;

a pair of clamping members threadably mounted on said clamping bolt for pressing said clamping plates away from each other; and

means provided for said fulcrum bolt for keeping constant the distance between said clamping plates against the force applied by said clamping members during the assembly as a single unit into and out of said valve casing.

4,641,682
VALVE WITH ROTARY VALVE HEAD
Gary L. Harris, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Apr. 29, 1985, Ser. No. 728,611

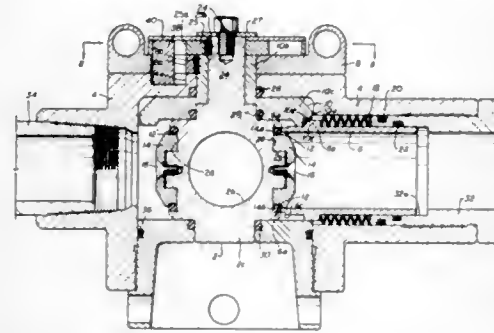
Int. Cl.⁴ F16K 43/00, 25/00, 5/20

U.S. Cl. 137—329.04

1 Claim

1. A combination flow control and check valve apparatus for use in a fluid flow conduit comprising: a valve housing having a bore communicable with the conduit; a valve head having a post portion journaled in said valve housing for rotation of the valve head through 90° about an axis transverse to the axis of the housing bore between open and closed positions; a pair of annular seals secured to the valve head in diametrically opposed relation; a cylindrical element movable relative to the valve head and engagable with a selected one of the annular seals to isolate portions of the conduit on opposite sides of the valve head when the valve head is in the closed position; resilient means urging said cylindrical element into sealing engagement with said selected annular seal, the cylindrical element being exposed to pressure on both sides of the

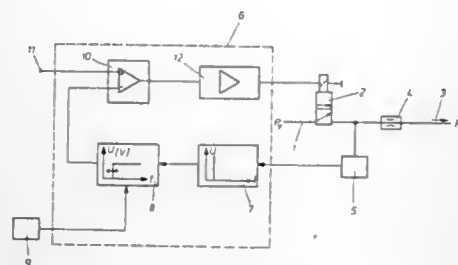
valve head, the cylindrical element being shiftable into engagement with the annular seal when force due to the pressure differential in a first direction exceeds a prescribed level and shiftable out of engagement with the annular seal when the force due to the pressure differential in an opposite second direction exceeds the force exerted by said resilient means; a cam housing having a tubular portion rotatably mounting said valve head post and journaled in said housing; an operating handle secured to said tubular portion for rotating said cam housing; cam means on said cam housing engagable with said



cylindrical element to shift said cylindrical element axially out of engagement with said annular seal; a plate element keyed to said post and disposed adjacent to said operating handle; and pin and slot means operatively connecting said handle and said plate element to rotate said valve head 90° from said closed position to said open position only after said cylindrical element is shifted out of engagement with said annular seal; said pin being removable to permit rotation of said valve head through 180° to position the other annular seal for engagement by said cylindrical element.

4,641,683
VALVE ARRANGEMENT FOR CONTROLLING THE FLOW OF MEDIUMS
Ulf Mürner, Crailsheim, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co. KG, Fed. Rep. of Germany
Filed Jul. 12, 1985, Ser. No. 754,848
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427204

Int. Cl.⁴ G05D 16/00
U.S. Cl. 137—487.5



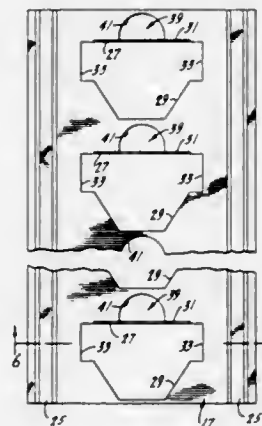
1. A valve arrangement for controlling the flow of a medium in a line, comprising:
an on-off valve arranged in said line in communication with said medium flow and actuable only between open and closed positions for respectively allowing and blocking said medium flow in said line through said valve,
a throttle position in said line adjacent to but downstream of said on-off valve,
a pressure sensor arranged in said line between said on-off valve and said throttle and within such close proximity to said on-off valve and throttle that the activation of said on-off valve to its opened and closed position is sensed by

said pressure sensor as a corresponding rise and drop in the pressure of said medium flow in said line between said valve and throttle, said pressure sensor being adapted to convert said sensed pressure rise or drop to a corresponding electrical output signal, and
an actuator connected between said on-off valve and said pressure sensor and being operable upon receiving said corresponding output signals to cause actuation of said on-off valve to its closed position upon a pressure rise in said medium flow in said line due to a preceding opening of said on-off valve being sensed by said pressure sensor and to cause actuation of said on-off valve to its opened position upon a pressure drop in said medium flow in said line due to a preceding closing of said on-off valve being sensed by said pressure sensor, such that said on-off valve is so actuated repetitively to achieve the desired control of said medium flow through said valve and in said line in dependence upon each preceding actuation thereof.

4,641,684
RAIL FOR AN AIR TURNING VANE ASSEMBLY
Ernest P. DeLord, 200 Pine St., Prospect Heights, Ill. 60070
Division of Ser. No. 610,630, May 15, 1984, Pat. No. 4,586,540.
This application Jan. 27, 1986, Ser. No. 823,012
Int. Cl.⁴ B21D 39/00

U.S. Cl. 137—561 A

3 Claims



11 Claims

1. A rail for an air turning vane assembly, said rail being formed of an elongated generally planar sheet of sheet metal, and
a plurality of upstanding tabs located along the length of the rail with each tab formed by a partially cutout portion of the rail, each partially cutout portion being defined by a cut in the rail in the general shape of the tab with one side remaining uncut, each tab being bent along a fold line defined by said uncut side so that the tab extends generally at right angles to the plane of the rail,
said rail defining a cutout portion defining an enlargement at each side of each tab cutout so that the combined width of the tab cutout and the cutout portions on each side of the tab cutout is greater than the width of the tab.

4,641,685
AXIALLY SYMMETRIC VALVE ASSEMBLY
John Rudelick, Milwaukee, Wis., assignor to Universal-Rundle Corporation, New Castle, Pa.
Continuation of Ser. No. 638,310, Aug. 7, 1984, abandoned. This application Dec. 19, 1985, Ser. No. 810,830
Int. Cl.⁴ F16K 11/072, 25/00

U.S. Cl. 137—625.31

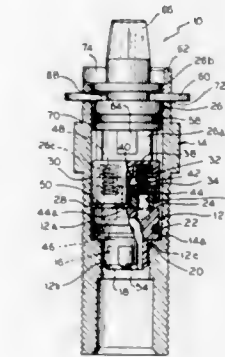
12 Claims

1. An axially symmetric valve assembly for insertion into a valve body, comprising:
an axially symmetric valve insert adapted to be positioned

axially within said valve body, said valve insert having a pair of symmetrically disposed longitudinally extending fluid passageways including an inlet opening at one end in communication with a source of fluid under pressure and said fluid passageways and a pair of symmetrically disposed outlet openings at the other end remote from said fluid source and including seal means disposed between said valve insert and said valve body to only permit flow of said fluid through said symmetrically disposed fluid passageways, said valve insert including a sealing surface extending about said symmetrically disposed outlet openings;

an axially symmetric valve stem adapted to be in axially positioned alignment with said valve insert, said valve stem having a stem surface adapted to be positioned in generally parallel closely spaced relation to said sealing surface of said valve insert, said valve stem being spaced inwardly of said valve body about at least a portion of its circumferential extent to define a symmetrical fluid passageway between said valve stem and said valve body and having a pair of symmetrically disposed longitudinally extending seal-receiving bores in said stem surface, said valve stem being rotatable for selective alignment of said symmetrically disposed bores with said symmetrically disposed outlet openings;

said symmetrically disposed outlet openings in said valve insert extending longitudinally in spaced parallel relation to the axis of said axially symmetric valve insert and said



symmetrically disposed seal-receiving bores in said axially symmetric valve stem also extending longitudinally in spaced parallel relation to the axis of said axially symmetric valve stem;

said axially symmetric valve stem being generally cylindrical in shape and having symmetrical upper and lower body portions and a symmetrical intermediate body portion, said symmetrical intermediate body portion being of lesser diameter than the maximum lateral dimension of said symmetrical lower body portion to define a symmetrical expanded fluid chamber and being disposed such that said symmetrical expanded fluid chamber is adjacent an outlet in said valve body, said symmetrically disposed seal-receiving bores being disposed in said symmetrical lower body portion of said axially symmetric valve stem; said valve body being generally cylindrical in shape and having a greater inner diameter than the maximum lateral dimension of said symmetrical lower body portion, said valve body being spaced outwardly from said symmetrical lower body portion substantially about its entire periphery, said fluid being adapted to flow between said symmetrical lower body portion and said valve body and into said symmetrical expanded fluid chamber defined by said symmetrical intermediate body portion and through said outlet in said valve body;

symmetrically disposed resilient seal means extending from said symmetrically disposed seal-receiving bores for com-

pressed sealing engagement with said sealing surface of said axially symmetric valve insert;

means for preventing rotation of said valve insert within said valve body during rotation of said valve stem, said rotation preventing means permitting relative rotation between said valve stem and said valve insert, said relative rotation permitting selective alignment of said seal-receiving bores and resilient seal means with said outlet openings;

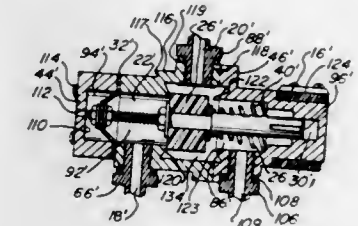
whereby said axially symmetric valve assembly is closed when said symmetrically disposed seal-receiving bores and symmetrically disposed resilient seal means are aligned with said symmetrically disposed outlet openings and said axially symmetric valve assembly is open when said symmetrically disposed seal-receiving bores and symmetrically disposed resilient seal means are not aligned with said symmetrically disposed outlet openings.

4,641,686
SOLENOID OPERATED VALVE PRESSURE BALANCED IN A CLOSED POSITION BY A SINGLE DIAPHRAGM
Phillip D. Thompson, P.O. Box 453 Blue Stone La., York, Me. 03909

Filed Dec. 18, 1984, Ser. No. 683,063
Int. Cl.⁴ F16K 11/044, 31/06

U.S. Cl. 137—625.65

4 Claims



1. A solenoid operated balanced valve for controlling the flow of air under pressure between an air supply and an air destination, comprising in combination:

a body having an inlet chamber and an outlet chamber formed interiorly thereof, said inlet chamber in air communication with said air supply and said outlet chamber in communication with said air destination, a valve seal mounted on a valve stem slideable within said body, said valve seal movable between two valve seats positioned either side thereof and formed within said body, a closed position of said valve defined when said valve seal is mated against said valve seat adjacent said inlet chamber and an open position defined within said valve seal is mated against said valve seat in said outlet chamber, said outlet chamber further having an exhaust formed through said valve body communicating with atmospheric pressure, said valve stem being connected at another end to a diaphragm separating said inlet chamber from an expansion chamber, said diaphragm being of equal area to the area of the valve seal circumscribed by the one valve seat, said expansion chamber in communication with atmosphere through a port formed through said valve body, said expansion chamber in communication with said exhaust and said outlet chamber when the valve is in the closed position, and biasing means for urging said valve seal against said first valve seat when said valve is in a closed position, forces acting to open said valve from said closed position being equal by reason of equal areas of diaphragm and valve seal circumscribed by the first valve seat.

4,641,687

CASING ARTICLE

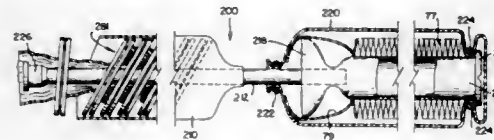
Vytautas Kupcikevicius, Chicago, Ill., assignor to Viskase Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 429,395, Sep. 30, 1982, Pat. No. 4,466,463. This application Aug. 20, 1984, Ser. No. 642,242

Int. Cl.⁴ F16L 11/00; A22C 11/02

U.S. Cl. 138—118.1

17 Claims



1. A shirred casing article comprising:

- (a) an elongated tubular member having an internal bore of a size sufficient to permit the tubular member to fit over, or to serve as a stuffing horn and means at an aft end of the tubular member for connecting said tubular member to a stuffing machine;
- (b) a first component carried on said tubular member towards the fore end thereof, said first component comprising an array including a plurality of flattening disks arranged in pairs and disposed on said tubular member, said disks each having an opening to accommodate passage of said tubular member and said disks each being slidable along said tubular member;
- (c) a second component carried on said tubular member towards the aft end thereof, said second component including a cellulosic casing in the form of a shirred stick which shirred stick is separated and longitudinally spaced from said first component, said cellulosic casing, in use, being deshirrable forward from said shirred stick over and about the disks, and said casing containing an agent which has a detrimental effect on the disks when said disks are exposed to said agent over time; and
- (d) means providing a barrier to said agent, said means being removably disposed about at least one of said components and about a portion of said tubular member for isolating said cellulosic casing and said array of said disks from each other, and for preventing the exposure of said disks to said agent over time and prior to use of said article.

4,641,688

WEFT THREAD BRAKING MECHANISM HAVING A STEPWISE CONTROLLABLE BRAKING EFFECT

Fritz Gehring, Lindau, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

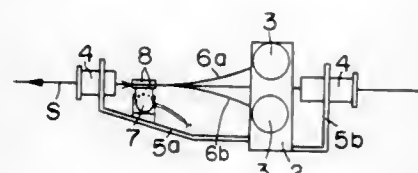
Filed Dec. 9, 1985, Ser. No. 807,165

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1984, 3446567

Int. Cl.⁴ D03D 47/34

U.S. Cl. 139—450

8 Claims



1. A weft thread brake for applying a stepwise controllable braking effect to a weft thread, comprising two leaf springs resting against each other and forming a funnel type passage for the respective weft thread, said two leaf springs having a normal biasing force for applying a first step in the braking effect individually to said weft thread, mounting means (1, 2, 3)

for mounting said two leaf springs so that the position of at least one of said two leaf springs is changeable relative to the position of the other leaf spring, and individually controllable force application means operatively arranged for directly applying to said leaf springs a stepwise increase or decrease of a force directed substantially perpendicularly to said leaf springs, whereby said normal biasing force of said leaf springs is changed and the respective braking effect is individually controlled in a stepwise manner for said weft thread.

4,641,689

METHOD AND EQUIPMENT FOR MAKING WIRE STRANDS

Philip Christian, Norton, near Doncaster, and Alan I. Tawse, Hatfield, near Doncaster, both of England, assignors to Bridon plc, Doncaster, England

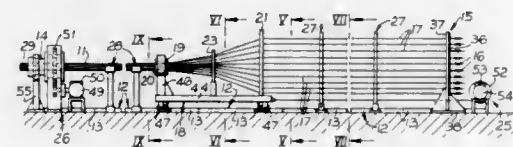
Filed Aug. 13, 1984, Ser. No. 640,686

Claims priority, application United Kingdom, Aug. 19, 1983, 8322441

Int. Cl.⁴ B21F 7/00

U.S. Cl. 140—149

8 Claims



1. A method of making a large wire strand comprising: assembling a multiplicity of wires side-by-side; securing all the wires permanently together in a predetermined closed array at one, leading end; securing all the wires separately at the other, trailing end, spaced apart and freely rotatable; applying tension to each of the wires; progressively guiding the wires intermediate the ends into the closed array through guiding means; moving the aforesaid guiding means progressively from the leading end to the trailing end; rotating the leading end progressively as the aforesaid guiding means moved progressively and with a predetermined relationship; permanently securing all the wires together at the trailing end of the closed array; and releasing the trailing ends of the wires and the tension applied thereto.

4,641,690

METHOD AND APPARATUS FOR PREVENTING STRATIFICATION OF LIQUEFIED GASES IN A STORAGE TANK

Takeo Ishiwatari, Chiba; Yasuichiyo Sasaki, Narita; Rokuro Misawa, and Shingo Takao, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

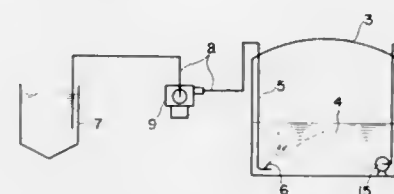
Continuation of Ser. No. 329,326, Dec. 10, 1981, abandoned.

This application May 13, 1985, Ser. No. 733,408

Int. Cl.³ B65B 3/04

U.S. Cl. 141—4

8 Claims



1. A method for mixing miscible liquefied gases wherein a second liquefied gas different in density from a first liquefied gas contained within a storage tank is injected into said storage tank from the bottom portion thereof, said method comprising:

providing an upwardly directed nozzle at the bottom portion of a storage tank near the inner wall thereof; orienting said nozzle to provide a focused jet stream of said second liquefied gas to issue upwardly into said storage tank toward the center of the tank and into said first liquefied gas; and causing said jet stream to reach the free surface of said first liquefied gas in said storage tank, whereby said liquefied gases are mixed together.

4,641,691

BULK MEAT FEED MACHINE

Narciso L. Corominas, Besalu, Spain, assignor to Metalquimia, S.A., Girona, Spain

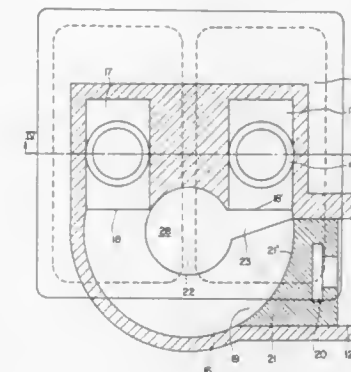
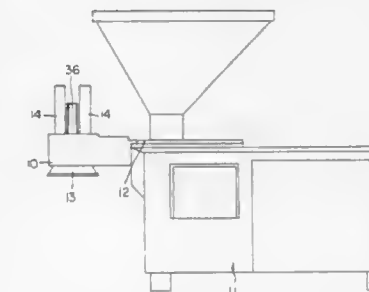
Filed May 23, 1984, Ser. No. 613,390

Claims priority, application Spain, May 27, 1983, 523,080

Int. Cl.⁴ B65B 1/22, 3/12

U.S. Cl. 141—73

4 Claims



1. A bulk feeding machine having a support frame and a feeding means on the support frame for feeding bulk material to a feeding station for dispensing the material into containers, comprising:

- feeding channel having an outlet through which material is fed to the feeding station;
- a feeding head supported on the support frame adjacent said outlet of said feeding channel;
- a cylindrical cavity in said feeding head having a cross-sectional configuration in the form of a circular segment portion which has an arc which is slightly greater than a semi-circle and which has a generally flat side portion, said circular segment portion communicating with said outlet of said feeding channel;
- a first piston-type plunger reciprocally operable in said feeding channel to push material therethrough toward said outlet of said feeding channel;
- two spaced openings in said flat side portion;
- two passageways in said feeding head, each communicating with one of said two spaced openings and each of two said spaced passageways having an outlet;
- said circular portion of said cavity having a central axis;
- a blade member rotatably mounted in said cavity about a blade member axis that is coaxial with said central axis of said circular portion of said cavity, said blade member

having such dimensions and such a shape as to, at each end position of its travel, at least substantially close one of said two spaced openings;

- a means to rotate said blade member alternately in opposite directions within said cavity about said blade member axis so that material fed through said feeding channel outlet into said cavity is pushed, by said blade member when operated alternately, toward and through said openings;
- a second and a third piston-type plunger slidably disposed reciprocation in respective ones of said two passageways;
- a means to reciprocate said second and third plungers alternately in said two passageways to push material entering therein through said two spaced openings toward said respective said outlets of said two passageways;
- a bell-shaped cover member mounted on said feeding head; two outlet conduits extending through said cover member and aligned with respective ones of said two passageways to conduct material fed through said two passageways to the containers;
- a seal means on said cover member adapted to be cooperatively engageable with the containers for sealing the inside of the containers, said two passageways, and said cavity;
- a means for producing a vacuum inside of said cover member, said two passageways, and said cavity;
- a concave curved inner end disposed on said first piston-type plunger, said concave curved inner end conforming to the inner end surface of said circular portion of said cavity; and
- said blade member extending radially in said cavity, and having an outer edge closely spaced to the inner surface of said circular portion.

4,641,692

BEVERAGE DISPENSER WITH AUTOMATIC CUP-FILLING CONTROL

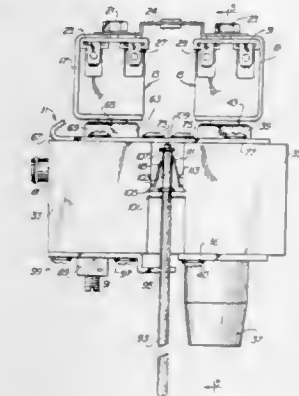
Clay Bennett, Glendale, Ariz., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jun. 11, 1985, Ser. No. 743,568

Int. Cl.⁴ B65B 3/04

U.S. Cl. 141—95

15 Claims

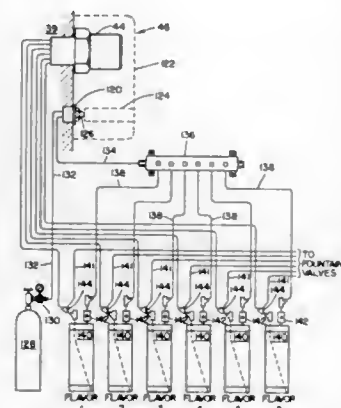


1. A beverage dispenser having an arrangement for automatically controlling the filling of a cup comprising:

- at least one source of beverage;
- at least one valve means for controlling discharge of beverage from said source into the cup to be filled;
- actuating means to cause said valve means to be energized to initiate dispensing of the beverage into the cup to be filled;
- an electrically conductive member associated with the beverage dispenser and disposed to be positioned adjacent to and outside of the cup that is being filled;
- circuit means electrically interconnecting said electrically conductive member and said valve means to thereby electrically interconnect said conductive member with beverage flowing through said valve means; and

control means for operating said valve means in response to a change in impedance between said electrically conductive member and the beverage, when the cup has been filled to a pre-determined level, to discontinue beverage flow to the cup.

4,641,693
BULK SYRUP DELIVERY SYSTEM WITH A VENT AND PRESSURE SUPPLY VALVE
 John J. Rakuciewicz, Northport, N.Y., assignor to Pepsi Co, Inc., Purchase, N.Y.
 Filed Mar. 21, 1985, Ser. No. 714,679
 Int. Cl.⁴ B65B 3/04
 U.S. Cl. 141—98 4 Claims



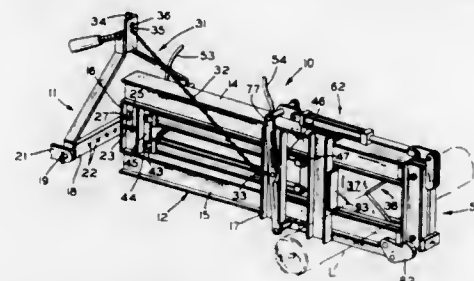
1. A bulk syrup system for the bulk delivery to an account of a plurality of different flavored syrups, in which a compartmentized tank delivery truck has a plurality of separate compartments for the storage and delivery of a plurality of different flavored syrups, and a multichannel delivery hose is coupled to the plurality of separate compartments and has at least one channel for each different flavored syrup, with a multichannel delivery coupling at the delivery end of the multichannel delivery hose, a bulk syrup receiving and delivery arrangement at an account, comprising:

- a plurality of separate tanks at an account, one for each different flavored syrup, with the account including a receiving terminal in which a corresponding matching multichannel receiving coupling is provided for connection to the delivery coupling;
- means pressurizing each of the separate tanks at an account allow the tanks to pump syrup during a syrup dispensing operation, including a source of pressurized gas, and at least one pressure supply line leading from said source of pressurized gas to said plurality of separate tanks; and
- a three way valve positioned in said pressure supply line, said three way valve having a first position, assumed during normal syrup dispensing operations, in which pressurized gas is supplied through said three way valve to said plurality of separate tanks and a second position, assumed during a bulk syrup delivery operation, in which the source of pressurized gas is disconnected from the plurality of separate tanks, and the plurality of separate tanks are vented to vent any pressurized gas therein.

4,641,694
TREE FELLING, LOG CUTTING AND SPLITTING MACHINE
 Kenneth A. Rohde, 3950 C.R. 195, Clyde, Ohio 43410
 Filed Jan. 17, 1986, Ser. No. 819,588
 Int. Cl.⁴ B27L 7/00
 U.S. Cl. 144—3 K 17 Claims

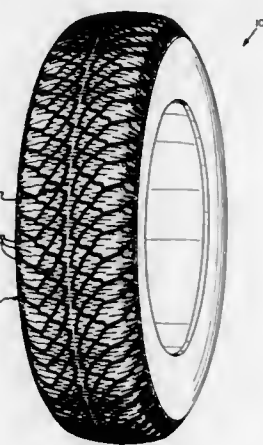
1. A tree felling and log cutting and splitting apparatus for attachment to the rear hitch of a tractor, comprising a gener-

ally rectangular framework, connecting means attaching said framework at its forward end to said hitch for pivotable movement between horizontal and vertical positions, adjustable-length tie means extending between said rear hitch and said framework for carrying said framework at selected angular



attitudes and heights, a shear blade mounted for reciprocating longitudinal movement within said framework, means for advancing and retracting said blade within said framework, and an anvil at the rear end of said framework against which said shear blade urges trees and logs for cutting therethrough upon its advancing stroke.

4,641,695
TREAD FOR A PNEUMATIC TIRE
 Daniel J. Lindner, Canal Fulton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
 Continuation-in-part of Ser. No. 632,089, Jul. 18, 1984, abandoned. This application Sep. 16, 1985, Ser. No. 776,548
 Int. Cl.⁴ B60C 11/06
 U.S. Cl. 152—209 A 16 Claims



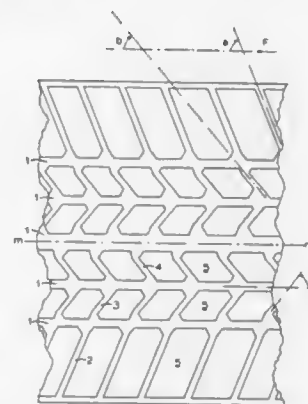
1. A pneumatic tire comprising a tread portion having independent projections defined by:

- first and second primary grooves, each circumferentially spaced apart primary grooves, each primary groove comprising two sections oriented at angular relationships with respect to each other, said sections having widths such that the primary grooves remain open in a footprint of the tire, each groove of said first set of primary grooves extending generally axially inwardly from a first axial edge of the tread but not intersecting a mid-circumferential plane of the tire, each groove of said second set of primary grooves extending generally axially inwardly from a second axial edge of the tread but not intersecting the mid-circumferential plane of the tire, each primary groove having an axially inner end that is located an axial distance of not more than 15% of the tread width away from the mid-circumferential plane of the tire, an axially outermost section of each of the grooves of said first set of primary grooves extending axially inwardly from the first axial

edge of the tread in one generally circumferential direction and the second section of each of the grooves of said first set of primary grooves extending from an axially inner end of said axially outermost section to an axially inner end of the groove in an opposite generally circumferential direction, an axially outermost section of each of the grooves of said second set of primary grooves extending axially inwardly from the second axial edge of the tread in a generally circumferential direction such that if the axially outermost sections of the grooves of said first and second sets of primary grooves are projected axially inwardly they will intersect and form a series of V's which all point in one circumferential direction of the tire, and the second section of each of the grooves of said second set of primary grooves extending from an axially inner end of said axially outermost section to the axially inner end of the groove in the same generally circumferential direction as said axially outermost section of the same groove such that if the second sections of the grooves of said first and second sets of primary grooves are projected axially inwardly they will not intersect to form V's; and

- first and second sets of circumferentially spaced apart secondary grooves, said secondary grooves having widths such that the secondary grooves remain open in a footprint of the tire, a secondary groove extending generally axially outwardly from the axially inner end of each of the primary grooves and intersecting a plurality of primary grooves, but no secondary grooves intersect the axial edges of the tread.

4,641,696
DIRECTIONAL TIRES FOR AUTOMOBILES
 Fikret Semir, Romano Guermandi, and Gian C. Cucco, all of Milan, Italy, assignors to Societa' Pneumatici Pirelli S.p.A., Italy
 Filed Feb. 4, 1985, Ser. No. 697,933
 Claims priority, application Italy, Feb. 10, 1984, 19557 A/84
 Int. Cl.⁴ B60C 11/11
 U.S. Cl. 152—209 R 17 Claims



- A tire for vehicle wheels, comprising: a substantially toroidal carcass having a midcircumferential equatorial plane perpendicular to the axis of rotation and a tread band disposed in the crown of said carcass and positioned for coming into ground contact during tire running, said tread band having a plurality of grooves which define a raised pattern means for improving the driving characteristics and the road holding behavior of said tire under varied driving conditions, said grooves comprising a plurality of circumferential and transversal grooves dividing said tread band symmetrically with respect to the equatorial plane into a plurality of blocks disposed in at least six circumferentially extending adjacent rows such that there are at least three rows on each side of the midcircumferential equatorial plane; the transversal grooves which delimit from one another the blocks

of the two axially central rows on opposite sides of said equatorial plane, being inclined in the same circumferential direction and inclined in the contrary sense with respect to the circumferential direction of the tire with respect to the sense of the transversal grooves that delimit the remaining axially outer rows.

4,641,697
PNEUMATIC TIRE TREAD FOR HEAVY DUTY TRUCKS
 Ken Takahashi, Atsugi, and Osamu Takahashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
 Filed Aug. 30, 1985, Ser. No. 770,933
 Claims priority, application Japan, Aug. 31, 1984, 59-180749
 Int. Cl.⁴ B60C 11/04
 U.S. Cl. 152—209 R 3 Claims



- A pneumatic tire for heavy duty trucks, provided in the tread thereof with lug grooves opening into tread shoulders and auxiliary grooves having smaller depth and smaller width than said lug grooves and having one-side ends thereof opening into lateral walls of said lug grooves and the other ends thereof opening into the lateral walls of main circumferential grooves, which pneumatic tire is characterized by disposing on said lateral walls of said lug grooves containing said openings of said auxiliary grooves a shelf part at a level flush with the bottom surface of said auxiliary grooves, wherein the shelf part extends into the lug grooves.

4,641,698
AUTOMATED VEHICLE TIRE PRESSURIZATION SYSTEM
 Frank E. Bitonti, Detroit, Mich., assignor to AM General Corporation, Livonia, Mich.
 Filed Nov. 8, 1984, Ser. No. 669,588
 Int. Cl.⁴ B60C 23/14
 U.S. Cl. 152—416 29 Claims

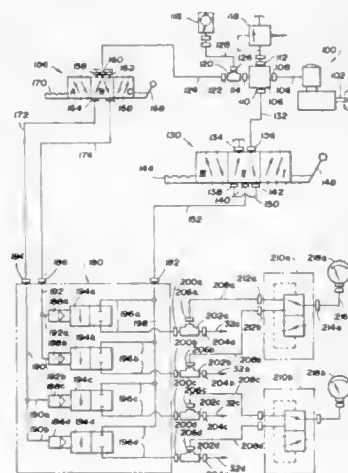
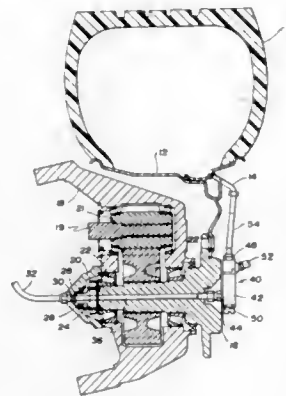
- A system for automated pressurization of pneumatic tires for a vehicle comprising: pump means, operatively connected to and energized by the vehicle, for providing a continuous output of pressurized air; mode selector means, having a first, second and third selectable operating modes corresponding to charging, pressure maintenance and venting of the tires, respectively, for permitting operator selection of the system operating mode; pneumatic control circuit means, interconnected among the pump means, the mode selector means and the vehicle tires and responsive to the selected operating mode of the mode selector means, for enabling tire charging in the first mode, and tire ventilation in the third mode; and wherein said mode selector means comprises means for diverting said continuous output to bypass said pneumatic control circuit means and closing said pneumatic control

circuit means in said second mode, whereby the vehicle tires and the pneumatic control circuit means are pneumatically isolated from said continuous output of said pump in said second mode.

10. A system for automated pressurization of pneumatic tires for a vehicle comprising:

pump means, operatively connected to and energized by the vehicle, for providing a continuous output of pressurized air;

mechanically actuated, pneumatic mode selector means, having first, second and third selectable operating modes



corresponding to charging, pressure maintenance and venting of the tires, respectively, for permitting operator selection of the system operating mode;

wholly pneumatic control circuit means, interconnected among the pump means, the mode selector means and the vehicle tires and responsive to the selected operating mode of the mode selector means, for enabling tire charging in the first mode, and tire ventilation in the third mode; and

conduit means for coupling said mode selector means in fluid communication with said control circuit means through a single passageway.

4,641,699

TIRE BEAD BREAKING DEVICE

Dale J. Giles, 1323 Ave. F North, and Garry C. Mercer, 1232 Ave. D North, both of Saskatoon, Saskatchewan, Canada (S7L 1P1)

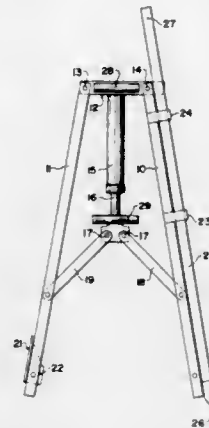
Continuation of Ser. No. 602,042, Apr. 19, 1984, abandoned.

This application Mar. 4, 1986, Ser. No. 836,076

Int. Cl.⁴ B60C 25/06

U.S. Cl. 157—1.17

8 Claims



1. A breaker for a bead of a tire relative to a rim of a wheel, the breaker comprising a pair of elongate generally parallel levers, one of said levers carrying a tool head at one end thereof, the other of said levers carrying a reaction member on one end thereof on a face thereof remote from said one lever, pivot pin means coupling the levers at a position spaced from said one ends, hydraulic cylinder and piston means adapted to apply force between said levers such that said tool head can be moved in a direction of working movement transverse to the length of the levers from a retracted position, in which said tool head and reaction member lie closely adjacent so that they can be inserted into a space between the tire and an adjacent body, to an expanded position for said working movement of said tool head with a reaction force from said working movement being transmitted to said adjacent body through said reaction member, said tool head having a substantially sharpened front edge and side walls converging toward said edge for engaging between the bead and the rim, said tool head projecting from said one end of said one of said levers, said sharpened edge lying at right angles to the length of said one of said levers and transverse to said direction of working movement, and means mounting said tool head on said one end of said one lever for movement of said tool head relative thereto longitudinally thereof, said mounting means being adapted to prevent in said working direction movement of said sharpened front edge relative to said one end whereby with said levers extending substantially radially of said wheel, said tool head can be forced in a direction along the length of said one lever into engagement between the bead and the rim and whereby said working movement causes the tool head in said engagement to force the bead from the rim.

4,641,700

CURTAIN OF WINDABLE OSCILLATING BLADES

Salvador M. Zveibil, 65 Uranium Street, Sao Paulo, Brazil (04637)

Filed Feb. 17, 1984, Ser. No. 581,330

Claims priority, application Brazil, Apr. 15, 1983, P18302030

Int. Cl.⁴ E06B 9/08

U.S. Cl. 160—133

3 Claims

1. Curtain of windable, rotatable blades comprising: driving means for receiving rotational motion; winding cylinder means rotatable about a longitudinal axis thereof;

reducing means coupled to said winding cylinder means and said driving means for reducing said rotational motion and applying a reduced rotational motion to said winding cylinder, comprising first and second differential, screws, located coaxially, coacting with first and second free nuts, respectively, said first screw being coupled to said driving means so as to transfer its rotation thereto, and said second screw being coupled to said winding means, said screws



having helical thread channels of different pitch conforming with respective threads of said nuts, said nuts being interconnected at a distance by a nut carrier mounted for linear motion coaxial with said screws and in such a manner that when said first screw turns said second screw comes into rotation, said thread channel pitches of said screws being selected so that fast rotations of said first screw are reduced when said second screw is rotated.

4,641,701

DIES FOR FORMING A CHAIN

Ken Yamamoto, 18-19 5 Chome Kamiuma Setegaya ku, Tokyo, Japan

Filed Jul. 22, 1982, Ser. No. 400,942

Claims priority, application Japan, Jul. 22, 1981, 56-109561[U]

Int. Cl.⁴ B22D 19/12

U.S. Cl. 164—90

7 Claims



4. A method of forming a chain comprising: forming first and second chain element forming die means having their inner surface shaped to form a plurality of interlinked chain elements when said first and second chain element forming die means are closed against one another; inserting die insert means between chain element for forming sections for forming axial posts or one end of each chain element and holes in extrusions formed on each other end of each chain element with the posts fitting the holes; positioning said die insert when said first and second chain element forming dies are closed against one another; inserting angular pins in angular holes formed in one of said chain element forming die means are said die insert means whereby said die inserts are automatically positioned when said first and second chain element forming die means are brought together injecting chain forming material into the closed dies thereby forming a plurality of linked chain elements.

171-152 O.G.-87-5

4,641,702

METHOD AND MOLD FOR MOLDING INVESTMENT CASTING PATTERNS OF IRREGULAR SHAPE

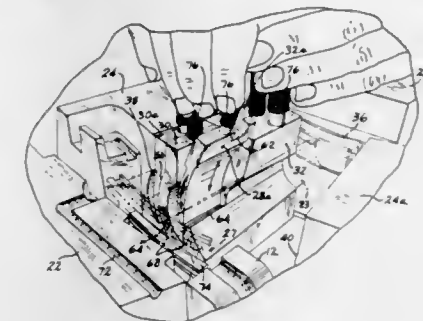
John R. Petrenchik, Pepper Pike, Ohio, assignor to Mercury Machine Company, Warrensville Heights, Ohio

Filed Mar. 28, 1985, Ser. No. 716,961

Int. Cl.⁴ B22C 7/02

U.S. Cl. 164—137

14 Claims



1. In a method for molding investment casting patterns of irregular shapes comprising providing a die mold defining a die mold cavity for the casting pattern with the die mold being comprised of a plurality of separable mold portions, including intermediate sectional mold cavity insert portions defining arcuate surface sections of the mold cavity, with the defining curvatures of said cavity extending arcuately in generally non-parallel relation, and including the step of removing said die mold insert portions from the pattern after the molding thereof, by moving each of the die mold insert portions through a respective generally arcuate path in a predetermined direction, and with respect to the formed pattern, to accomplish removal of said die mold insert portions without interference with the arcuate surfaces of the formed pattern and thus provide for subsequent removal of the latter from the die mold, said mold cavity insert portions including a first insert portion which includes a concave mold cavity defining section and another insert portion which extends alongside of said first insert portion, with said other insert portion and said first insert portion including complementary arcuate mating surfaces extending generally in said predetermined direction, and including as part of said removal step the step of sequentially moving said first insert portion with respect to said other insert portion through an arcuate path defined in general by said mating surfaces, to accomplish removal of said first insert portion from said die mold and then subsequently moving said other insert portion with respect to the pattern through its said arcuate path away from the die mold and the formed pattern, to accomplish sequential removal of said first and said other insert portions from said die mold and the formed pattern.

4,641,703

COUNTERGRAVITY CASTING MOLD AND CORE ASSEMBLY

Karl D. Voss, Standish; Mark A. Datte, Auburn, and Gary F. Ruff, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1985, Ser. No. 802,423

Int. Cl.⁴ B22D 18/06

U.S. Cl. 164—255

4 Claims

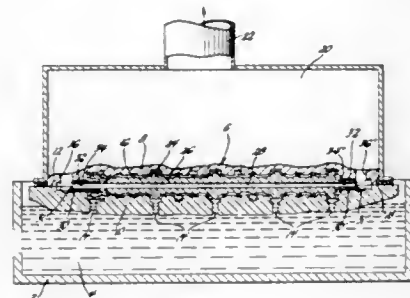
1. Apparatus for the countergravity casting of molten metal comprising:

a mold comprising a porous, gas-permeable upper shell defining a molding cavity and a lower portion secured to said upper shell, said lower portion having at least one gate on the underside thereof for admitting said molten metal to said molding cavity from an underlying pot thereof;

a vacuum chamber overlying said upper shell and sealingly engaging said mold for withdrawing gases from said

molding cavity substantially uniformly through said shell and such as to suck said metal up into said cavity via said gate;

- a discrete, hollow, expendable core disposed within said molding cavity to shape said metal thereabout, said core being destined for engulfment and temporary retention by said metal and comprising a porous, gas-permeable, thermally degradable shell defining an evacuation cavity for withdrawing gases from said molding cavity which are formed upon degradation of said core while engulfed by said metal during casting;



- an extension on said core, said extension projecting from at least one end thereof and sealingly engaging said mold; and
- an unobstructed gas flow passage through said extension connecting said evacuation cavity and said vacuum chamber for establishing a pressure in said evacuation cavity casting which is substantially equal to the pressure in said chamber; whereby gases generated by the thermal degradation of said core are withdrawn from said molding cavity into said chamber via said evacuation cavity and passage and occlusion thereof in the metal casting thereby prevented.

4,641,704 CONTINUOUS CASTING METHOD AND INGOT PRODUCED THEREBY

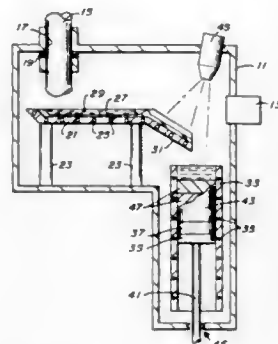
James H. C. Lowe, Moraga, Calif., assignor to Degussa Electronics Inc., Morgan Hill, Calif.

Filed Jan. 25, 1985, Ser. No. 695,173

Int. Cl.⁴ B22D 11/22

U.S. Cl. 164—474

4 Claims



1. A method of continuously casting an ingot of a metal alloy of the type having a substantial liquidus-solidus temperature range to produce an ingot with a surface substantially free of hot-tears, comprising:

pouring into a continuous casting mold at a pressure of less than about 10^{-3} Torr, a succession of substantially equal-volume quantities of the molten alloy, each quantity being sufficient to cover the entire cross-section of said mold by flow under the influence of gravity, each quantity being allowed to cool for a period of at least 30 seconds between

pours by extracting heat from the last formed increment adjacent the mold substantially only via the mold walls to permit the ingot being formed to be lowered in the mold without tearing the ingot side-wall,

maintaining by substantially continuous electron beam irradiation the entire upper surface of each last poured increment at a temperature at which metallurgical bonding with the next poured increment can occur, and before each successive pouring and after the cooling period, lowering the partially formed ingot in the mold a distance substantially equal to the increment thickness.

4,641,705 MODIFICATION FOR HEAT EXCHANGERS INCORPORATING A HELICALLY SHAPED BLADE AND PIN SHAPED SUPPORT MEMBER

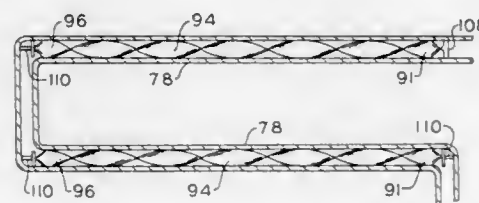
Jeremy W. Gorman, 5 Cedar Hill Rd., West Simsbury, Conn. 06092

Division of Ser. No. 522,033, Aug. 9, 1983, Pat. No. 4,564,066, Continuation-in-part of Ser. No. 287,491, Jul. 29, 1981, abandoned. This application Jun. 24, 1985, Ser. No. 747,965

Int. Cl.⁴ F28F 13/02

U.S. Cl. 165—85

1 Claim



1. In a heat exchanger, the combination comprising:
- a shell having two ends, an inlet and an outlet for passage of a heat exchange fluid therethrough;
- a tube mounted within said shell for external contact by the heat exchange fluid, and adapted for passage of a heat exchange liquid therethrough in physical isolation from the heat exchange fluid, said tube having a bend proximate to one end of said shell;
- a generally helical blade disposed within said tube for free rotation and free axial movement, said blade having a laterally centered pointed portion on at least said one end thereof, and being of a diameter, relative to that of said tube, such as to cause said blade to pass in closely spaced relation to the inside surface of said tube during rotation; and
- a bearing member adjacent at least one end portion of said blade which comprises an elongated pin shaped member fixed to the corresponding bend of said tube and extending in generally coaxial relation to said tube, said bearing member having a planar head mounted on said elongated pin shaped member, said head being disposed in substantially normal relation to said pin shaped member and engaging and supporting said blade.

4,641,706 VERTICAL SHELL AND TUBE HEAT EXCHANGER WITH SPACER OR CLIP TO FORM UNIFORM THICKNESS FALLING FILMS ON EXTERIOR SURFACES OF TUBES

Timothy J. Haynie, Lockport, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 5, 1984, Ser. No. 668,409

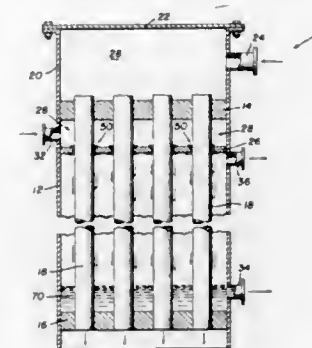
Int. Cl.⁴ F28D 3/00

U.S. Cl. 165—118

9 Claims

1. An external falling film heat exchanger comprising:
- a shell connected to vertically spaced apart horizontally arranged upper and lower tube sheets;

- a plurality of vertically positioned parallel tubes, with each tube extending through and sealingly connected to a hole in each tube sheet;
- a distribution plate spaced below the upper tube sheet and sealingly connected to the shell thereby forming a liquid distribution space between the distribution plate and the upper tube sheet, with said parallel tubes extending through oversized walled holes in the distribution plate; at least three vertically positioned, horizontally spaced apart



- elongated spacers in each oversized hole, with each spacer substantially in contact with and independent of both the adjacent tube and the hole wall thereby maintaining the tube in fixed position relative to the hole wall;
- means to feed a liquid to the distribution space and means to withdraw the liquid as liquid or vapor from the shell side of the heat exchanger; and
- a liquid distribution box positioned above the upper tube sheet and means to deliver a liquid to the liquid distribution box.

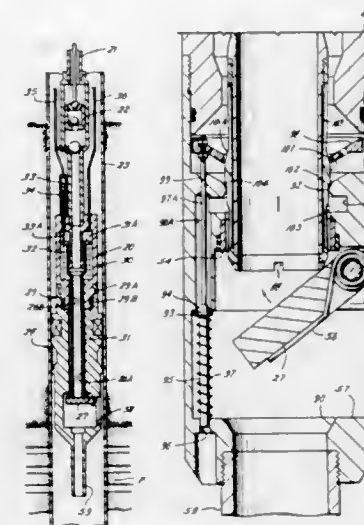
4,641,707 WELL APPARATUS Neil H. Akkerman, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Filed Oct. 22, 1984, Ser. No. 663,713

Int. Cl.⁴ E21B 33/12, 34/10

U.S. Cl. 166—116

21 Claims



1. Well apparatus, comprising a lower tubular body having a bore therethrough and adapted to be lowered into a well bore, packer means and anchor means carried about the lower tubular body and adapted to be expanded into sealed and anchored positions, respectively, with the well bore, when the lower body is disposed in a desired position therein, a flapper

mounted on the lower body for pivoting between positions opening and closing the bore therethrough, means yieldably urging the flapper toward closed position, and an upper tubular body having a bore therethrough and adapted to be lowered into the well bore and supported on the lower body with its bore forming a continuation of the bore through the lower body and a lower continuation of the lower end of well tubing suspended within the well bore, means for releasably connecting the upper body to the lower body when so supported, a flow tube extending longitudinally within the bores of the upper and lower bodies and through the packer and anchor means, when lower bodies are so connected, for reciprocation between an upper position in which its lower end is above the flapper to permit it to close and a lower position in which its lower end moves the flapper to open position, means on the upper body for moving the flow tube between its upper and lower positions, including spring means yieldably urging the flow tube toward its upper position, piston means responsive to the supply thereto of hydraulic control fluid from a remote source for moving the flow tube toward its lower position whereby said flapper closes automatically in response to the exhaustion of control fluid, and means in the lower body automatically responsive to movement of said flow tube toward its lower position for connecting the bore of the lower body above and below the flapper before the flapper is opened.

9. A subsurface safety valve, comprising tubular body means having a bore therethrough adapted to form a continuation of a well string, a seat about the bore, a passageway connecting the bore above and below the seat, a first closure element mounted on the body means for movement between positions opening and closing the bore through the seat, first spring means urging the first closure element to closed position, a second closure element mounted on the body means for movement between positions opening and closing the passageway, second spring means urging the second closure element to closed position, actuator means mounted on the body means and responsive to the supply thereto of hydraulic control fluid from a remote source to move the second closure element from closed to open position, and thereby equalize pressure across the first closure element, and then move the first closure element from closed to open position, and to the exhaust of control fluid therefrom to permit said first closure element to be moved by said first spring means from open to closed position, said second closure element being releasable from said actuator means so that said second closure element may be returned to its closed position by said second spring means, as the first closure element is moved to open position, and said second spring means retaining said second closure element in said closed position, during movement of said first closure member from its open to its closed position upon exhaustion of control fluid from said actuator means.

4,641,708 CASING HANGER LOCKING DEVICE William D. Wightman, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 6, 1985, Ser. No. 773,397

Int. Cl.⁴ E21B 43/10

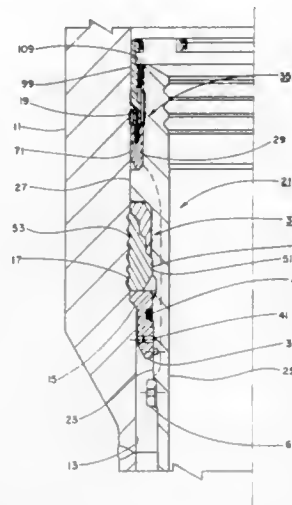
U.S. Cl. 166—208

4 Claims

1. In a well assembly having a wellhead with a bore containing an internal landing shoulder formed therein and a plurality of internal grooves located above the shoulder, a casing hanger having a body adapted to be mounted to the top of a string of casing, an improved locking and supporting means for securing the casing hanger in the wellhead, comprising in combination:

a collar slidably mounted to the exterior of the body, the collar protruding from the body for contacting the landing shoulder as the casing hanger is lowered into the wellhead, the collar being movable relative to the body from a lower storage position to an upper set position which occurs when the collar contacts the landing shoulder and the hanger body continues downward movement; wedge means located between the collar and the body for

allowing downward movement of the hanger body when the collar contacts the landing shoulder, but resisting upward movement of the hanger body relative to the collar;
a split ring slidably carried by the hanger body with its lower edge in contact with the collar, having grooves on



its exterior adapted to mate with the grooves in the wellhead; and
cam means for pushing the split ring outwardly into engagement with wellhead grooves to lock the hanger in the wellhead when the collar contacts the landing shoulder and the hanger body continues downward movement, to move the collar from the storage to the set position.

4,641,709

CONTROLLING STEAM DISTRIBUTION

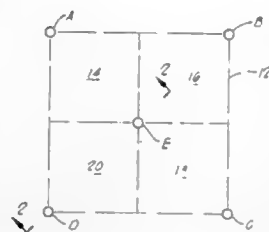
Maston L. Powers; Christopher J. Dodson, both of Oklahoma City; John S. Moore, Ponca City, all of Okla., and Farhad Ghassemi, Lafayette, La., assignors to Conoco Inc., Ponca City, Okla.

Filed May 17, 1985, Ser. No. 735,795

Int. Cl.⁴ E21B 47/00, 43/26

U.S. Cl. 166—252

17 Claims



1. In an enhanced oil recovery method comprising steps of:
 - (a) providing a pattern of wells, including at least one injection well intersecting an underground oil bearing formation for injecting an injection fluid into an area of said formation surrounding said injection well, and including a plurality of producing wells intersecting said area of said formation for producing oil and other fluids for a plurality of sectors of said areas, each of said sectors being associated with one of said producing wells and defining a portion of said area to be drained by its associated producing well;
 - (b) injecting injection fluid into said formation through said injection well;
- the improvement comprising:
- (c) determining an estimated volume of oil in place in each of

said sectors, and thus determining a relative oil portion of a total area oil volume which is in place in each of said sectors;

- (d) determining a relative injection fluid portion of the total amount of injection fluid being injected into said area which is flowing toward each of said producing wells;
- (e) then modifying a production capability of at least one of the group of wells comprising and producing wells and said at least one injection well and thus changing the relative injection fluid portion which stimulates production at least two of said producing wells to more closely approximate stimulation of production at the other production wells responsive to the relative oil portions of the sectors associated with said at least two producing wells; and
- (f) thereby increasing a total volume of oil recovered as compared to the total volume of oil which would have been recovered in the absence of step (e).

4,641,710

ENHANCED RECOVERY OF SUBTERRANEAN DEPOSITS BY THERMAL STIMULATION

Barney Klinger, Santa Barbara, Calif., assignor to Applied Energy, Inc., Vancouver, Canada

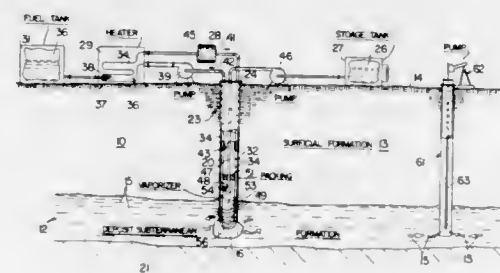
Continuation-in-part of Ser. No. 657,683, Oct. 4, 1984,

abandoned. This application Feb. 13, 1986, Ser. No. 829,694

Int. Cl.⁴ E21B 36/00, 43/24

U.S. Cl. 166—303

35 Claims



1. A method of removing deposits releasable a substance in a vapor phase from a subterranean formation below a surficial formation, comprising in combination the steps of:
 - providing a hole through said surficial formation to said subterranean formation;
 - storing said substance at said surficial formation in the form of a liquid convertible at said subterranean formation to said vapor phase;
 - providing a heating fluid heatable at a surface of said surficial formation remote from said subterranean formation to a temperature sufficient for a conversion of said liquid to said vapor phase at said subterranean formation by a transfer of heat from said heating fluid to said liquid;
 - heating said heating fluid at said surface of said surficial formation remote from said subterranean formation to a heated state providing said sufficient temperature and circulating said heating fluid in said hole in a closed circuit extending for said heating fluid at said heated state to said subterranean formation and then back to said surface for repeated reheating at said surface to said heated state providing said sufficient temperature and for recirculation of said heating fluid at said heated state to said subterranean formation;
 - advancing said convertible liquid to said subterranean formation at said hole;
 - applying heat from the recirculating heating fluid in said hole to said liquid;
 - converting said liquid into a vapor by said application of heat from said recirculating heating fluid in said hole, but preserving said heating fluid against combustion and

chemical reaction during said heating, circulation, reheating and recirculation thereof and during said application of heat to, and conversion to said vapor phase of, said liquid, and preserving said heating fluid against escape into said subterranean formation;
driving said vapor into said subterranean formation for releasing said deposits with said vapor; and
removing said released deposits from said subterranean formation.

23. In apparatus for enhanced recovery of deposits releasable by a substance in a vapor phase from a subterranean formation below a surficial formation via a hole through said surficial formation to said subterranean formation, the improvement comprising in combination:

- means at said surficial formation for storing said substance in the form of a liquid convertible at said subterranean formation to said vapor phase;
- means for heating a heating fluid at a surface of said surficial formation remote from said subterranean formation to a heated state providing a temperature sufficient for a conversion of said liquid to said vapor phase at said subterranean formation by a transfer of heat from said heating fluid to said liquid;
- means connected to said heating means for circulating said heating fluid in said hole in a closed circuit extending for said heating fluid at said heated state to said subterranean formation and then back to said surface for repeated reheating at said surface by said heating means to said heated state providing said sufficient temperature and for recirculation of said heating fluid at said heated state to said subterranean formation;
- means connected to said storing means for advancing said convertible liquid to said subterranean formation at said hole;
- means for applying heat from the recirculating heating fluid in said hole to said liquid and for converting said liquid into a vapor by said application of heat from said recirculating heating fluid in said hole;
- means for driving said vapor into said subterranean formation for releasing said deposits with said vapor for a removal of said released deposits from said subterranean formation; and
- said heating means, circulating means and said means for applying heat from the recirculating heating fluid to said liquid including means for preserving said heating fluid against combustion and chemical reaction during said heating, circulation, reheating and recirculation thereof and during said application of heat to, and conversion to said vapor phase of, said liquid, and for preserving said heating fluid against escape into said subterranean formation.

4,641,711

TERMINATING PERSISTENT UNDERGROUND COAL FIRES

Ruel C. Terry, 3090 S. High St., Denver, Colo. 80210

Filed Jun. 4, 1985, Ser. No. 740,980

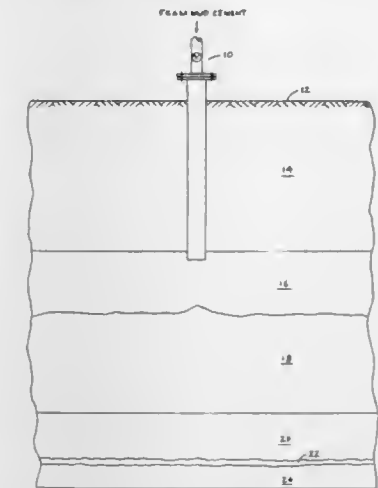
Int. Cl.⁴ A62C 1/12, 3/02

U.S. Cl. 169—44

12 Claims

1. A method of terminating a persistent underground coal fire using foaming mud cement, comprising the steps of:
 - establishing a communication passage between the surface of the earth and the underground cavity associated with the coal,
 - injecting a first quantity of foaming mud cement through the communication passage and onto the burning coal, wherein the first quantity of foaming mud cement forms a blanket over the burning coal, the foaming mud cement, upon contacting the burning coal generating gases which form vents through the injected foaming mud cement,
 - terminating injection of the first quantity of foaming mud cement until the generation of gases wanes at the interface between the hot coal and the injected foaming mud ce-

ment, with resultant collapse of vents through the foaming mud cement, then



resuming injection with a second quantity of foaming mud cement into the underground cavity.

4,641,712

WEED CUTTER AND EXTRACTOR

Samuel A. Cravotta, 2341 N. Edgewood St., Arlington, Va. 22201

Filed Jan. 11, 1985, Ser. No. 690,585

Int. Cl.⁴ A01B 1/16

U.S. Cl. 172—25

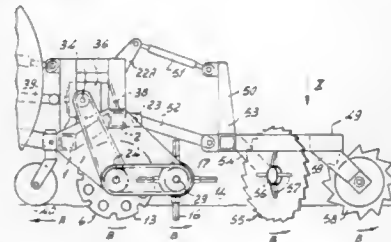
2 Claims



1. A weed extractor comprising an elongated main shaft having oppositely disposed ends, one of said ends having a weed extracting member rigidly attached thereto, said member comprising an enlarged cylindrical member secured to said shaft and being split longitudinally and bent to form a plurality of ground engaging tines diverging away from the longitudinal axis of said shaft forming V-shaped slots between each pair of adjacent tines, upper and lower lever arms integral with said shaft, said lever arms extending at right angles to said longitudinal axis of said main shaft, said upper lever arm having an upper extension arm extending vertically therefrom and at a right angle thereto, said upper extension arm being in parallel relationship to said elongated main shaft and supporting a rotatable hand rest and a rotatable hand grip thereon, said lower lever arm formed at a right angle to said elongated main shaft to form a foot rest portion, and having a depending right angled lower extension arm extending therefrom, said depending lower extension arm being coaxial with the upper extension arm and in parallel relationship with said elongated main shaft

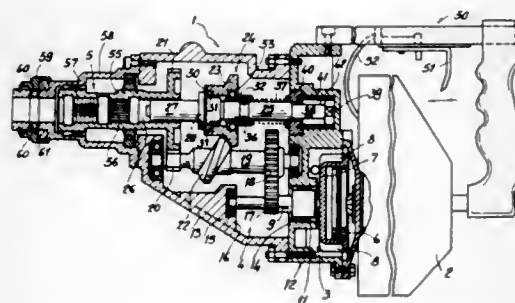
and having said rigidly attached weed extracting member at its lower end.

4,641,713
SOIL CULTIVATING MACHINES
 Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
 Filed Jan. 12, 1984, Ser. No. 570,925
 Claims priority, application Netherlands, Jan. 17, 1983, 8300154
 Int. Cl.⁴ A01B 49/02, 33/04
 U.S. Cl. 172-49 11 Claims



1. A cultivating machine for seedbed preparation of dirty soil in the sense of including vegetable matter such as weeds and stubble which comprises forward soil cutting discs and following roller means with projections extending outwardly therefrom, said forward disc and said roller means having parallel horizontal axes of rotation extending normal to their usual direction of travel, power means interconnected to said roller means and said forward discs for rotating such components about their respective axes through the soil, said forward discs comprising coplanar discs in front of said roller means for slicing the soil into parallel strips, said roller means comprising a roller with said projections extending therefrom between said forward discs for mixing said vegetable matter intimately with the soil in each said strip up to the depth said projections extend from said roller, said roller packing said soil to create soil structure suitable for sowing, and soil displacing means comprising a plurality of further discs having axes of rotation extending obliquely with respect to said usual direction of travel for laterally displacing the soil.

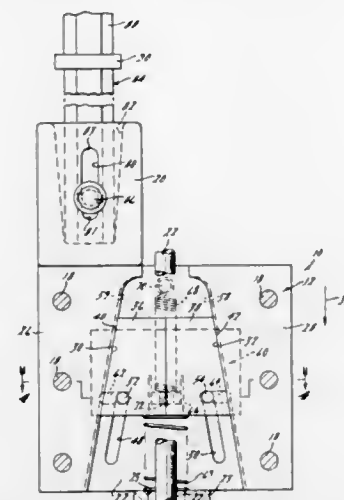
4,641,714
MULTIUSE PORTABLE EQUIPMENT FOR DRIVING ROTATING TOOLS, ROTATING PERCUSSION TOOLS AND PERCUSSION TOOLS
 Filippo Ferioli, Via Vallara, 30, 21055 - Gorla Minore (VA), Italy
 Filed Apr. 26, 1985, Ser. No. 727,805
 Int. Cl.⁴ B25D 11/00
 U.S. Cl. 173-109 3 Claims



1. A multiuse portable equipment for driving rotating tools, rotating-percussion tools and percussion tools, comprising a combustion engine, a reduction gear assembly coupled to said combustion engine by a centrifugal clutch system, and a tool post mechanically connected to said reduction gear assembly, said clutch system including a rotatable finned bell rotatably

supported at two positions and mounted on a spiral chamber provided with inlet and outlet holes for cooling air, and a percussion assembly effective to act on a tool carried by said tool post, said percussion assembly including a percussion shaft having at one end a percussion member and slidably carrying at the other end a rotatable cap urged by a spring mounted on said percussion shaft, said cap being able of engaging, to be slidably displaced on said percussion shaft, with an annular cam supported on a rotatable intermediate shaft, said intermediate shaft further supporting a gear of said reduction gear assembly said gear engaging a further gear of said reduction gear assembly, supported on a further driving shaft effective to rotatively drive said intermediate shaft, said intermediate shaft driving said tool post through a coupling gear assembly, said percussion shaft being idly mounted within an axial cavity of said tool post and having, in correspondence to said cap, a bulge forming, on the side opposite to said percussion member and facing one end of said cap, and together with said cap, a seat effective to receive a plurality of balls for rotatably supporting said cap, said reduction gear assembly ratio being so designed that said percussion member is effective to act on a said tool supported by said tool post with intermittent percussions at a rate of between 3.6 and 4.2 per turn of said tool post.

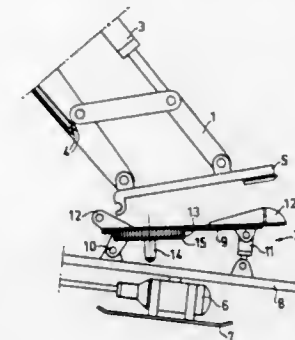
4,641,715
APPARATUS FOR DRIVING AND RETRACTING GROUND RODS OR THE LIKE
 Donald B. Stinson, and Arthur A. Orofino, both of Farmington, Mich., assignors to New Product, Inc., Farmington, Mich.
 Filed Sep. 23, 1983, Ser. No. 535,042
 Int. Cl.⁴ B25D 17/06
 U.S. Cl. 173-129 15 Claims



1. An apparatus for forcibly driving or retracting an elongated rod-like member into or out of the ground or the like, said apparatus comprising:
 a body including top and bottom force receiving portions for receiving force exerted directly on said body from longitudinally above or below said body; said body including a pair of spaced interconnected abutment members, each of said abutment members having flat internal abutment surfaces angled upwardly so as to converge towards each other from said bottom portion and curving towards each other below said top portion;
 a pair of jaw members slidably retained between said abutment surfaces and directly below said top force receiving surface, both of said jaws having a rod engaging surface facing the other of said jaw members and an outer bearing surface angled upwardly from said bottom portion and converging toward each other, the bearing surfaces being

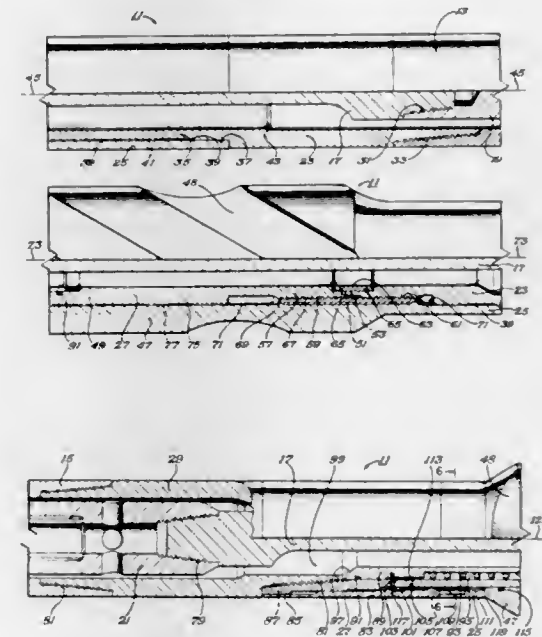
in sliding engagement with said abutment surfaces whereby force applied to said top portion of said body urges said abutment surfaces over said bearing surfaces of said jaws to force said rod engaging surface against a rod and directly transfer the force thereto;
 guide means connected to said body and said jaws for separating said jaw members as said body is forcibly urged upwardly; said guide means including a guide member having a pair of guide slots upwardly angling toward each other, each of said jaws including a projection extending into a respective one of said guide slots to cooperate upon upward movement of said body to separate said rod engaging surfaces of said jaw members;
 a slide plate slidably movable relative to said body in said upward and downward longitudinal directions and having at least one generally laterally elongated alignment slot therein, each of said guide members being slidably received in one of said alignment slots for generally lateral movement therein but generally restrained from longitudinal movement relative thereto, said slide plate thereby maintaining said jaw members in said mutual longitudinal alignment;
 first resilient biasing means connected to said body and to said slide plate for biasing said jaw members generally in said upward longitudinal direction relative to said body and generally laterally toward one another; and
 second resilient biasing means connected to said body and connected with said jaw members for resiliently biasing said jaw members generally in said upward longitudinal direction relative to said body and generally laterally toward one another.

4,641,716
METHOD AND EQUIPMENT FOR ROCK DRILLING
 Bo A. Sjalander, Matfors, Sweden, assignor to JCC Johnson Construction Company AB, Sundsvall, Sweden
 Filed Jul. 3, 1984, Ser. No. 627,464
 Claims priority, application Sweden, Jul. 6, 1983, 8303851
 Int. Cl.⁴ E21C 11/00; E21D 10/00
 U.S. Cl. 175-62 16 Claims



11. Drilling equipment for horizontally drilling rocks with a low bench height, said equipment being attachable to a boom of a dredging machine, said equipment comprising:
 brackets attachable to said boom;
 a first plate attached to said brackets;
 a second plate rotatably attached to said first plate, said second plate being rotatable about a first axis which is perpendicular to said first plate;
 a plate member rotatably attached to said second plate at a pivot connection;
 drilling motor attached to said member;
 a drill bit connection extending outward from said drilling motor;
 means for positioning the member perpendicular to said first plate; and
 means for rotating the member around said first axis.

4,641,717
CONNECTOR HOUSING
 Jay M. Eppink, Spring, Tex., assignor to Hughes Tool Company, Houston, Tex.
 Filed Dec. 27, 1985, Ser. No. 813,804
 Int. Cl.⁴ F21B 7/08
 U.S. Cl. 175-74 8 Claims

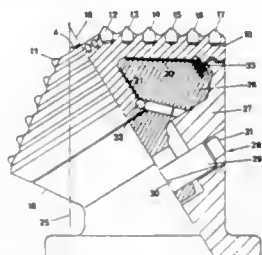


1. A connector housing for use in directional drilling, the connector housing comprising:
 a top housing, having an angle in the longitudinal axis of the top housing;
 a bottom housing, having an angle in the longitudinal axis of the bottom housing, aligned in the same direction as the angle in the longitudinal axis of the top housing;
 means for preventing rotation of the top housing and the bottom housing relative to one another;
 a center housing, having an angle in the longitudinal axis of the center housing, the angle in the longitudinal axis of the center housing being aligned in a direction other than the opposite direction from the angles in the longitudinal axes of the top and bottom housings for drilling a slanted hole; and
 means for rotating the top and bottom housings relative to the center housing to align the angles in the longitudinal axes of the top and bottom housings in the opposite direction from the angle in the longitudinal axis of the center housing for drilling a straight hole.

4,641,718
ROTARY DRILL BIT
 Ulf A. Bengtsson, Motala, Sweden, assignor to Santrade Limited, Lucerne, Switzerland
 Filed May 20, 1985, Ser. No. 735,997
 Claims priority, application Sweden, Jun. 18, 1984, 8403242
 Int. Cl.⁴ E21B 10/16
 U.S. Cl. 175-331 9 Claims

1. Rotary cutter bit having a generally conical envelope surface carrying a plurality of circumferentially extending rows of cutting elements for cutting circular grooves in a working surface of a formation being cut, said cutter bit adapted to be rotatably carried by a bit body, said envelope surface defining a cone extension measured along a circle formed by one said row of cutting elements when said envelope surface is unrolled in the working surface, said cone extension covering only a portion of said circle, said cone

angle exceeding 90° by such an amount that the remaining portion of said circle has a circumferential length whose value is no less than four and no greater than twelve times the pitch of said cutting elements of said one row and being other than



an integer multiple of said pitch, said pitch defined as the distance between centers of adjacently disposed cutting elements in said one row, whereby said cutting elements avoid entering already-formed grooves.

4,641,719

STRAIN GAUGE ASSEMBLIES

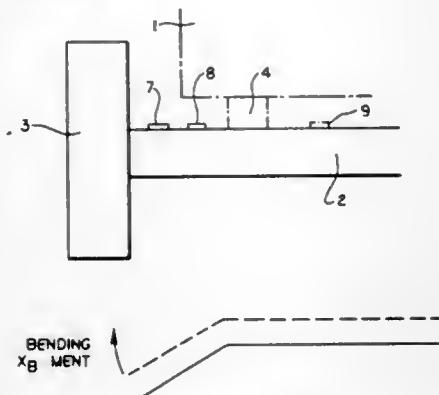
John Harbour, Chippenham, Great Britain, assignor to TRW Probe Electronics Co. Ltd., Gloucestershire, Great Britain
Filed Dec. 13, 1984, Ser. No. 681,232

Claims priority, application United Kingdom, Dec. 17, 1983, 8333679

Int. Cl.⁴ G01G 19/08, 3/14

U.S. Cl. 177—136

3 Claims



1. A strain gauge assembly applied to a mechanical system having a stator and a rotor co-axially carried thereby, the rotor and stator being subject to loads in opposite directions transverse to the axis but offset from one another along the axis, and there being variable torsional loads about said axis between the stator and the rotor, wherein two strain gauge sensors, each providing a balanced bridge circuit are fitted to the stator between the rectilinear load vectors, one being bisected by the plane containing the common axis and said vectors and being oriented to respond to shear strain produced by torque only, and the other being offset to one side of said plane, parallel therewith, and oriented to respond to the shear strain produced by a combination of torque and loading parallel to said two directions.

4,641,720

MOTORIZED WHEEL CHAIR

Alva L. Young, 112 Greenleaf Blvd., Morgan City, La. 70380
Filed Mar. 8, 1985, Ser. No. 709,766

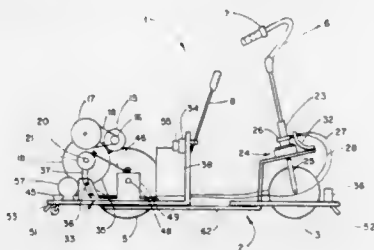
Int. Cl.⁴ B62D 11/08

U.S. Cl. 180—6.24

1 Claim

1. A motorized wheel chair for small children, comprising:
(a) a chassis;
(b) a front wheel, rotatably mounted on said chassis;
(c) a right rear wheel, rotatably mounted on said chassis;
(d) a left rear wheel, rotatably mounted on said chassis;
(e) a steering means, mounted on said chassis and connected to said front wheel, for turning said front wheel;

(f) a gear reduction means, for limiting the speed of said wheel chair, mounted on said chassis;
(g) a drive shaft, rotatably connected to said gear reduction means, said drive shaft having a left friction drive roller and a right friction drive roller fixedly attached thereto such that said left and right friction drive rollers are engageable with said left and right rear wheels, respectively;
(h) an electric motor, driveably connected to said gear reduction means such that for every revolution of said drive shaft, said motor will turn a greater number of revolutions;
(i) a throttle means, for controlling the speed of said motor, connected to said motor;
(j) a shift means, for controlling the direction of said motor, connected to said motor;
(k) a power source, mounted on said chassis and connected to said motor;
(l) a seat, mounted on said chassis; and
(m) a clutch means, for selectively operating only said left rear wheel during a right turn and only said right rear wheel during a left turn, said clutch means being connectable between said steering means and said drive shaft said clutch means further comprising:



i. a right steering cable, connected at one end to said steering means, and at the other end to a right clutch lever;
ii. a right clutch lever pivotally attached to said chassis, attached to said right steering cable and attached to said drive shaft such that, during a right turn, said right friction drive roller is urged away from said right rear wheel;
iii. a left steering cable, connected at one end to said steering means, and at the other end to a left clutch lever; and
iv. a left clutch lever pivotally attached to said chassis, attached to said left steering cable and attached to said drive shaft such that, during a left turn, said left friction drive roller is urged away from said left rear wheel; and wherein said gear reduction means is flexibly mounted to said chassis such that, upon an application of force, said gear reduction means may twist slightly on an axis generally perpendicular to said chassis and then return to its original position upon the release of said force.

4,641,721

MOTORCYCLE

Ken Yamaguchi, Hidakamachi, Japan, assignor to Honda Giken Kogyo Kaishiki Kaisha, Japan

Filed Sep. 26, 1985, Ser. No. 780,579

Claims priority, application Japan, Oct. 5, 1984, 59-151062[U]

Int. Cl.⁴ B60K 11/04

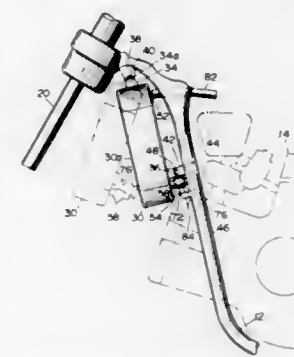
U.S. Cl. 180—229

3 Claims

1. A motorcycle comprising:
a frame having a front portion;
a front fork connected to said frame for supporting a front wheel and disposed in opposed relation to said front portion of said frame;
an engine mounted on said frame;
a radiator for connection to a fluid circulating system operatively associated with said engine for cooling a circulating fluid flowing through said circulating system, said radiator

tor including a generally vertically-disposed body pivotally connected at an upper portion thereof to said front portion of said frame for angular movement between an operative position where said radiator body is disposed adjacent to said front portion of said frame and an inoperative position where said radiator body is away from said front portion, said radiator having an inlet for introducing said circulating fluid thereinto and an outlet for discharging said circulating fluid therefrom;

retaining means formed on said front portion of said frame



and disposed at a level lower than said upper portion of said radiator body, said retaining means being engageable with said radiator body when said radiator body is in its operative position to releasably hold said radiator body against angular movement; and
a valve operatively connected to said outlet and operable to be closed to prevent said fluid from flowing therethrough.

4,641,722

CONTROL CIRCUIT TO INHIBIT HARMFUL TRANSMISSION SHIFTING

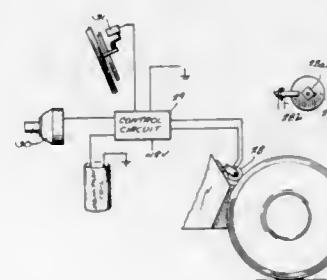
Dale C. Bluvstein, North 104, West 20670 Willow Creek Rd., Colgate, Wis. 53017

Filed Sep. 12, 1985, Ser. No. 775,499

Int. Cl.⁴ B60K 20/02

U.S. Cl. 180—271

21 Claims



1. A control circuit for regulating the ignition power of a vehicle to inhibit direction changing shifting of the vehicle transmission while the vehicle is in motion, comprising motion sensing circuit means for generating a vehicle motion signal when the vehicle is in motion, transmission sensing circuit means for generating a transmission neutral signal when the vehicle transmission is in neutral, and ignition circuit control means connected to said motion sensing circuit means and said transmission sensing circuit means for receiving said vehicle motion signal and said transmission neutral signal, and operable for interrupting the vehicle engine ignition power when an operator shifts the transmission into neutral while the vehicle is in motion.

4,641,723

HANDLE SWITCH ASSEMBLY FOR A MOTOR VEHICLE

Masami Takanashi, Yokohama, and Akihiro Komatsu, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kaishiki Kaisha, Tokyo, Japan

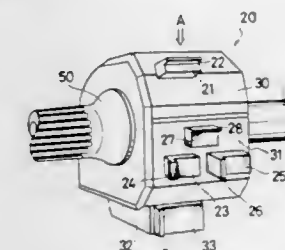
Filed Jun. 21, 1983, Ser. No. 506,357

Claims priority, application Japan, Jun. 23, 1982, 57-93892[U]; Jun. 23, 1982, 57-93894[U]; Jun. 23, 1982, 57-93895[U]

Int. Cl.⁴ B60K 26/00

U.S. Cl. 180—315

3 Claims



1. A handle switch assembly for a motor vehicle having a bar-like member with handle grips, comprising:
a switch housing mounted on said handle member adjacent to said handle grip;
at least two push button switch elements housed in said switch housing;
push buttons connected to each of said push button switch elements, wherein said push buttons are disposed in a manner that distances between an end of each of said push buttons on the side of said handle grip and said handle grip differ from one another, and said push buttons are respectively provided with a protrusion on a head portion thereof, said protrusion being formed on an end of said head portion, said end of head portion being located away from a central portion of a body of said push button switch element; and
one of said push buttons which is located in an upper part of said switch housing is provided with said elongated protrusion in an upper peripheral portion of said head portion, and another one of said push buttons which is located in a lower part of said switch housing is provided with said elongated protrusions on a side of peripheral portion of said head portion thereof close to said handle grip.

4,641,724

FRACTURE DETECTION USING CIRCUMFERENTIAL OFFSET ACOUSTIC PATHS

Edward Y. Chow, Danbury, and Robert L. Kleinberg, Ridgefield, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,415

Claims priority, application United Kingdom, Jul. 30, 1982, 8222033

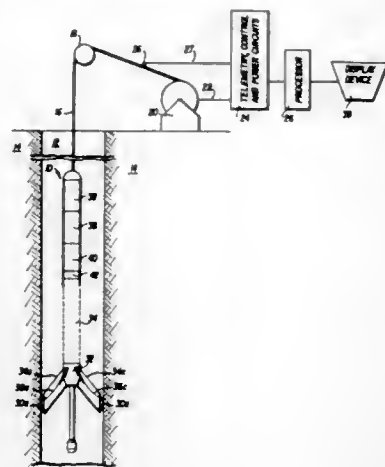
Int. Cl.⁴ G01V 1/40, 1/00; E21B 49/00

U.S. Cl. 181:104

11 Claims

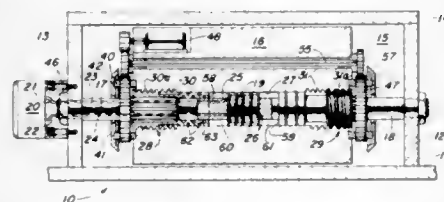
1. An apparatus for investigating an earth formation traversed by a borehole with circumferentially traveling acoustic energy, comprising:
a sonde body;
a first transducer pair including a first acoustic source for applying acoustic energy to the formation and a first acoustic receiver spaced from said first source by a distance, for detecting acoustic energy traveling circumferentially along a first path between said first source and said first receiver;
a second transducer pair including a second acoustic source for applying acoustic energy to the formation and a second acoustic receiver spaced from said second source by a distance essentially equal to the distance between said

first source and said first receiver, for detecting acoustic energy traveling circumferentially along a second path between said second source and said second receiver and of essentially the same length as said first path; means for maintaining said first and second transducer pairs substantially in a plane transverse to the axis of said sonde



body, and the first transducer pair at a predetermined circumferential offset relative to the second transducer pair, whereby said first path overlaps said second path for a substantial portion thereof; and means for comparing respective waveforms produced by said first and second receivers.

4,641,725
WIDE DYNAMIC RANGE HYDRAULIC VIBRATOR
Jack H. Cole, and Delbert W. Fair, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.
Filed Aug. 27, 1984, Ser. No. 644,487
Int. Cl.⁴ G01V 1/04; H04R 1/02, 11/00; F01B 31/14
U.S. Cl. 181-119 6 Claims



1. Apparatus for incremental cylinder length control in a hydraulic vibrator having a reaction mass with a cylinder bore disposed therein, said cylinder bore having first and second ends, first and second end sleeve means disposed in sealed movable position in each of said first and second ends of said cylinder bore, respectively, piston rod means sealed and slidably disposed through said first and second end sleeve means and including a piston disposed in said cylinder bore attached to said piston rod means, said incremental cylinder length control comprising:
first and second thread means formed in each of said first and second ends of said cylinder bore and extending toward said piston;
mating thread means formed in said first and second end sleeve means for moving said end sleeve means toward or away from said piston means upon relative rotation between said thread means and said mating thread means; and
drive means for providing relative rotation of said first and second thread means and said mating thread means, relative rotation of said first and second threaded means and

said mating threaded means in one direction moving said end sleeve means toward said piston and opposite direction rotation moving said end sleeve means away from said piston;
said drive means including motor means having an output for generating a rotative force to move said end sleeves in response to change in a vibration frequency of the reaction mass with respect to said piston.

4,641,726
COMPOSITE STRUCTURE AND METHOD OF MANUFACTURING IT
William W. Fearon, Worthington, and Arnel M. Macy, Columbus, both of Ohio, assignors to Peabody Noise Control, Inc., Dublin, Ohio
Continuation of Ser. No. 486,944, Apr. 20, 1983, Pat. No. 4,522,284. This application Feb. 6, 1985, Ser. No. 698,803
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.⁴ E04B 1/82
U.S. Cl. 181-292 13 Claims

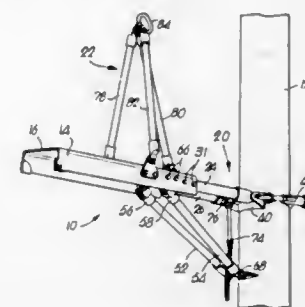


1. A composite panel structure having acoustical absorbing properties comprising:
a honeycomb core having structure means forming cells having a polygonal cross-section and being open to at least one side of the core; and
an acoustically semi-transparent facing of fibrous material formed to provide a relatively hard outer surface of partially bonded fibers with interstices therebetween, the facing being non-homogeneous and bonded to the structure means at said open face of the core, the facing having portions extending into the adjacent open cells of the core to a depth sufficient to provide a mechanical interlock between the facing and the core, said portions of the facing partially filling the adjacent open cells of the core being relatively soft to enhance absorption of acoustic energy directed upon the facing.

4,641,727
ELECTRICALLY INSULATED TEMPORARY AERIAL PLATFORM
Marvin D. McKelvy, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed May 12, 1986, Ser. No. 861,835
Int. Cl.⁴ A45F 3/26; E04G 5/08
U.S. Cl. 182-46 6 Claims

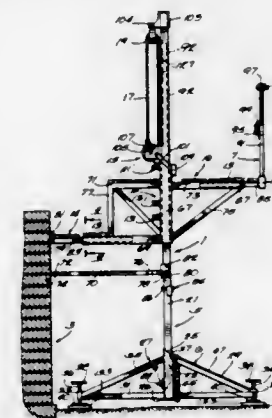
1. A work platform assembly for temporary use by a lineman on or around utility poles, said platform assembly comprising:
a work platform presenting an elongated surface where said lineman may stand, sit or kneel; and
means for temporarily attaching said platform to a utility pole or the like, including
an elongated electrically insulative member secured to and extending from said platform; and
connection structure secured to the end of said insulative member remote from said platform for securing the member and platform to said pole or the like,
said insulative member being of a length, and being formed of an insulative material presenting a smooth outer surface, for resisting accumulation of dirt thereon and maintaining said platform electrically insulated from said connection structure during normal working conditions,

said insulative member further presenting a downwardly sloping upper surface in order to dissuade said lineman



from directly contacting and supporting himself on the member.

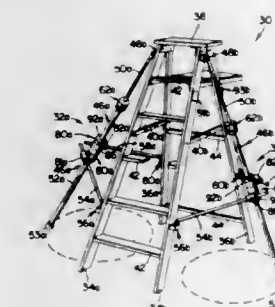
4,641,728
SCAFFOLD SYSTEM
Raymond T. McCabe, R.F.D. 2, Inlet Oaks, Delavan, Wis. 53115
Filed Mar. 22, 1985, Ser. No. 714,911
Int. Cl.⁴ E04G 1/20
U.S. Cl. 182-146 8 Claims



1. A scaffold system comprising:
a. a plurality of towers, each tower comprising:
i. an upstanding mast defining a plurality of equal, vertically spaced openings therein; and
ii. a base for vertically receiving the mast, the base having a fixed leg and two legs adapted to swing between an operative mode wherein the two swingable legs cooperate with the fixed leg to support the tower and a collapsed mode wherein the two swingable legs are parallel and adjacent to the fixed leg;
b. a bracket adapted to be guided and supported for vertical movement on each tower, the bracket having a main member defining at least one opening therethrough for communicating with the spaced openings in the mast; and
c. safety latch means mounted to each bracket main member for engaging the mast openings to prevent the platform from uncontrolled movement along the tower, and wherein the safety latch means comprises:
d. at least one first tube joined to the bracket main member at right angles thereto over the opening defined in the bracket main member, the tube defining a pair of diametrically opposed longitudinal slots;
e. a plunger having a leading edge disposed in the tube for reciprocation therein and a cam surface facing upwardly to assist in upward adjustment of said scaffold;
f. spring means retained in the tube for biasing the plunger

leading edge through the main member opening and against the mast; and
g. a handle extending transversely through the plunger and tube slots,
so that when the bracket is positioned on the mast with the safety latch plunger aligned with a mast opening the plunger enters the mast opening to prevent movement of the bracket on the mast and
wherein said latch includes:
h. a second tube vertically spaced from the first tube at a distance less than the spacing of said plurality of said vertically spaced openings, and joined to the bracket main member at right angles thereto over a second opening therethrough, the second tube defining a pair of diametrically opposed longitudinal slots, each slot having a diametrically opposed circumferential notch;
i. a plunger having a leading edge disposed in the tube for reciprocation therein;
j. spring means retained in the tube for biasing the plunger leading edge through the main member opening and against the mast; and
k. a handle extending transversely through the plunger and tube slots, the handle being located at a location aligned with the tube notches when the plunger leading edge is withdrawn from the opening in the bracket main member, so that the plunger may be locked in an inoperative position by engaging the handle in the tube notches to prevent reciprocation of the plunger and thereby prevent the plunger from entering an opening in the mast.

4,641,729
METHOD AND APPARATUS FOR STABILIZING A LADDER
Andrew C. Beck, and Shirley E. Beck, both of 2204 Tall Oaks Trail, Edmond, Okla. 73034
Filed Oct. 31, 1985, Ser. No. 793,661
Int. Cl.⁴ E06C 1/22, 5/36
U.S. Cl. 182-172 16 Claims



1. A ladder stabilizer for a ladder having first and second uprights suitable for resting on a ground surface, comprising:
(a) a stabilizer member having a top portion and a bottom portion, wherein the bottom portion is suitable for engaging the ground surface;
(b) means for pivotally connecting the top portion of the stabilizer member to the ladder;
(c) first adjusting means for operatively connecting the stabilizer member to the first upright; and
(d) second adjusting means for operatively connecting the stabilizer member to the second upright, wherein the stabilizer member can be laterally adjusted to vary the distance between the bottom portion of the stabilizer member and the ladder, wherein:
(i) the first adjusting means comprises a first adjusting element pivotally connected to the first upright and means for slidably connecting the first adjusting element to the stabilizer member;
(ii) the second adjusting means comprises a second adjusting element pivotally connected to the second upright

- and means for slidably connecting the second adjusting element to the stabilizer member;
- (iii) the stabilizer member comprises a central portion between its top and bottom portions, and wherein the first and second adjusting elements are slidably connected to the stabilizer member's central portion;
- (iv) the means for slidably connecting the adjusting elements to the stabilizer member each comprise an adjusting element lock assembly operatively connected to the stabilizer member and the respective adjusting element, wherein when the adjusting element lock assemblies are released the stabilizer member can be laterally adjusted, and when the adjusting element lock assemblies are activated the stabilizer member is laterally fixed; and
- (v) each adjusting element lock assembly comprises:
- a lock housing operatively connected to the stabilizer member;
 - stationary means for gripping the associated adjusting element;
 - movable means for gripping the associated adjusting element, wherein the gripping elements are operatively connected to the associated lock housing and are configured to receive the associated adjusting element; and
 - means for urging the movable gripping means toward the stationary gripping means, wherein when the urging means are activated the gripping means engage their respective adjusting elements, thereby laterally fixing the stabilizer member, and wherein when the urging means are released the adjusting elements can freely slide through their associated lock housings and the stabilizer member can be laterally adjusted.

4,641,730

ASSEMBLY COMPONENT FOR A DISC BRAKE

Michel Lombardi, Villepinte, and Jean-Louis Gerard, Paris, both of France, assignors to Societe Anonyme D.B.A., Paris, France

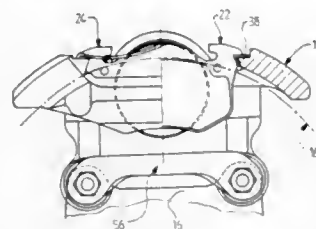
Filed May 15, 1985, Ser. No. 734,631

Claims priority, application France, May 23, 1984, 84 08053

Int. Cl.⁴ F16D 65/02

U.S. Cl. 188—73.45

10 Claims



1. An assembly component for a disc brake of the type including a caliper sliding on a fixed support by means of two axial pillars each including a cylindrical sleeve and a removable portion, one pillar end of each pillar including a thread for fixing the pillar to the fixed support and the other pillar end rotatable by a suitable mounting tool, characterized in that the assembly component comprises a channel with parallel component sides, one component side including locking portions cooperating with the sleeves and fixing firmly the assembly component to the sleeves and the other component side carrying tapped components cooperating with the removable portion, and a central component portion straddling the fixed support.

4,641,731

DISC BRAKE FOR MOTORCYCLES

Takeshi Kawaguchi, Saitama; Tsuguya Suzuki, Tokyo, and Katsuhiko Shibata, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 441,911, Nov. 15, 1982, abandoned.

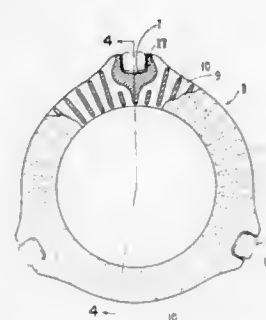
This application Apr. 21, 1986, Ser. No. 857,389

Claims priority, application Japan, Nov. 13, 1981, 56-181096

Int. Cl.⁴ F16D 65/12

U.S. Cl. 188—218 XL

6 Claims



1. A motorcycle including a front wheel with a brake comprising
- a hub in the wheel having equally spaced bosses projecting from the side of said hub, each of said bosses having two sides parallel to a radial line of said wheel;
 - a brake disc mounted on said hub including spaced parallel plates, and
 - a plurality of radial ribs connecting said plates, said plates defining radially extending cooling passages therebetween;
- pairs of aligned projections at the outer periphery of said spaced plates forming a recess therebetween, said recess having two sides parallel to a radial line of said disc;
- a solid member positioned between said plates at each pair of projections, said solid member formed as a rib having an enlarged rib end portion forming a wall continuously about said recess, said solid member including portions on each side of said recess wider than any said radial rib; and
- a cover at the end of each boss to support said disc in an axial position against said hub, said cover offering no resistance to radial movement of said disc, said disc mounted on said hub with each of said recesses engaging a boss, said sides of said recess slidably engaging said sides of said boss for radial heat expansion movement of said disc.

4,641,732

DAMPING STRUCTURE

Gordon J. Andry, Windsor, Canada, assignor to Fabricated Steel Products, division of Indal Limited, Windsor, Canada

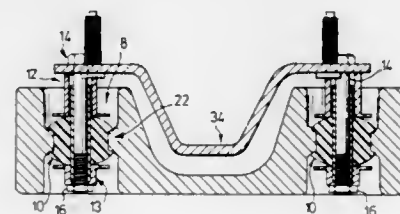
Filed Apr. 25, 1985, Ser. No. 726,986

Claims priority, application Canada, May 1, 1984, 453264

Int. Cl.⁴ F16F 7/10

U.S. Cl. 188—379

3 Claims



1. A vibration damper suitable for dampening the amplitude of omnidirectional vibration in an automotive drive line having

means for adjusting the frequency of vibration for which the vibration damper is effective is provided, comprising an inertial weight of a mass suitable to be effective as a tuned energy absorber having at least one suitably placed bore therethrough to receive a frictionally interfacing disc of readily compressible elastomeric material secured at its circumference only to the walls of the bore and secured to means for securing the vibration damper to only one vibrating mass, said disc of readily compressible elastomeric material provided with an aperture therethrough, said aperture having an axis substantially concentric to that of the bore in the inertial weight; the disc of readily compressible elastomeric material bracketed by two cups spaced at opposite ends of the at least one bore through the inertial weight, each cup substantially comprising an annular wall carrying a concentric flange at one end thereof proximate the disc of readily compressible elastomeric material and having an aperture therethrough, a threaded bolt communicating through the aligned apertures in the cups and the disc of readily compressible elastomeric material and threaded into a prevailing torque nut adjustably securing the cups together to permit the cups to be adjustably moved towards one another compressing the disc of readily compressible elastomeric material and adjustably moved away from one another decompressing the disc of readily compressible elastomeric material, the mass of the inertial weight being considerably greater than the disc of readily compressible elastomeric material; and, suitable fastening means for mounting the damper to only one vibrating mass whereby the said fastening means for mounting the damper to only one vibrating mass communicates between the only one vibrating mass and the disc of readily compressible elastomeric material.

4,641,733

DISABLING DEVICE FOR A BRAKE CONTROL DEVICE

Alistair G. Taig, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

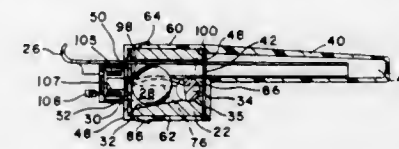
Filed Feb. 27, 1985, Ser. No. 706,210

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.⁴ B60K 41/24

U.S. Cl. 192—13 A

10 Claims



5. An improved brake control device wherein a vehicle includes a brake pedal and a clutch pedal, the brake control device comprising a housing fixedly disposed to the vehicle and defining an opening therein, a connecting member carried within the opening and operatively coupled to the brake pedal, a linkage assembly extending into the opening and operatively coupled to the clutch pedal, and locking means carried within the opening to automatically lock the connecting member to the housing when the clutch pedal is depressed and the vehicle disposed on an incline, characterized in that said improved brake control device includes means for preventing said locking means from operating so that said locking means does not automatically lock when the clutch pedal is depressed and the vehicle disposed on an incline, the locking prevention means comprising electromagnetic means for exerting an electromagnetic force upon said locking means in order to prevent said automatic locking.

4,641,734

SYNCHRONIZING MECHANISM FOR CLUTCHES

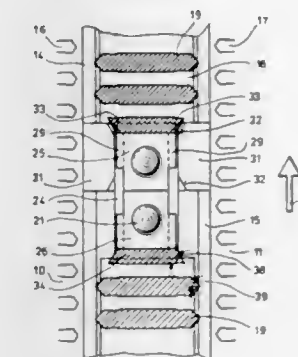
Erich Müller, Kornwestheim; Rühle Günter, Bietig, and Wilhelm Stocker, Oberstenfeld, all of Fed. Rep. of Germany, assignors to Getrag Getriebe-und Zahnradfabrik GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed May 15, 1984, Ser. No. 610,344

Int. Cl.⁴ F16D 23/06

U.S. Cl. 192—53 F

13 Claims



1. A synchronizing mechanism for a clutch which is particularly useful for a transmission of a motor vehicle, comprising a rotary axial shaft, at least one gear rotatable coaxially relative to said shaft, a guide sleeve connected to said shaft so as to be rotatable therewith, said guide sleeve having external toothing thereon, a gear shift sleeve having internal toothing meshing with the external toothing on said guide sleeve and providing for axial sliding movement of said gear shift sleeve along said guide sleeve while said gear shift sleeve is rotatable with said guide sleeve, said gear including a clutch body having external clutch toothing for selective meshing with said internal toothing on said gear shift sleeve, a synchronizing ring coaxial with said shaft and having form-locking engagement with said gear shift sleeve for rotation therewith while providing for limited angular movement relative thereto, said synchronizing ring being frictionally engageable with said clutch body, first spring detent means and a first pressure body disposed between said gear shift sleeve and said synchronizing ring for initially pressing said synchronizing ring axially into frictional engagement with the clutch body upon initial axial movement of said gear shift sleeve from its initial neutral position toward said gear, the frictional engagement causing the synchronizing ring and the gear shift sleeve to be brought to a rotary speed substantially synchronous with the rotary speed of the gear, means on the gear shift sleeve and the synchronizing ring forming sloping check faces which come into contact as the gear shift sleeve is being brought into synchronism with the gear, the check faces then being slidable axially and circumferentially to escape from each other so as to provide for synchronous meshing of the internal toothing on said gear shift sleeve with the external clutch toothing of the clutch body on the gear, a second pressure body having form-locking engagement with the gear shift sleeve whereby the pressure body is rotatable therewith, and second spring detent means disposed between the gear shift sleeve and the second pressure body for causing axial movement of the second pressure body with the gear shift sleeve until the second pressure body comes into engagement.

ment with the synchronizing ring and exerts pressure against the synchronizing ring to maintain the frictional engagement between the synchronizing ring and the clutch body, the second pressure body having an initial axial spacing from the synchronizing ring when the gear shift sleeve is in its initial position, such initial axial spacing being substantially equal to the axial distance which must be traveled by the gear shift sleeve to produce the axial movement between the check faces whereby the check faces escape from each other, so that the second pressure body engages the synchronizing ring and exerts axial pressure thereon to maintain the synchronizing ring in frictional engagement with the clutch body when the check faces escape from each other, so as to prevent loss of synchronism when the internal toothing on the gear shift lever is moving into mesh with the external clutch toothing of the clutch body on the gear.

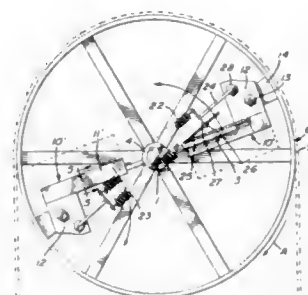
4,641,735

OVERLOAD CLUTCH WITH AUTOMATIC RESET
Gérard Couture, P.O. Box 8, Greenlay, Quebec, Canada
Filed May 30, 1985, Ser. No. 739,103

Int. Cl.⁴ F16D 43/20

U.S. Cl. 192—56 L

3 Claims



1. A clutch comprising a driven shaft, a first bar fixed to said shaft, extending radially thereof and having a radially outer end, a driving wheel coaxially mounted relative to said driven shaft for rotation in a given rotational direction, an L-shaped first pawl having an elongated, straight, main inner end portion, and a transverse outer end portion, said first pawl pivotally carried by said driving wheel at its outer end portion for pivotal movement of said first pawl about a pawl pivotal axis in a plane generally parallel to said driving wheel between a bar-engaging position and a bar-releasing position, said main portion, when in said bar-engaging position, extending from said outer end portion generally radially inwardly towards said shaft and abutting against said first bar, said first pawl pivoting radially outwardly to clear the radially outer end of said first bar during passage from said bar-engaging position to said bar-releasing position, bias means biasing said first pawl to said bar-engaging position, and wherein in said bar-engaging position, said outer end portion extends from said elongated main portion in a direction opposite said given rotational direction, a radial line passing through said shaft axis and pawl pivotal axis defining on each side thereof in the rotational plane of said wheel, a leading area and a trailing area relative to said given rotational direction, the center of gravity of said pawl being located in said leading area when in bar-engaging position and being located in said trailing area in said bar-releasing position, whereby centrifugal force exerted on said pawl assists said biasing means to keep said pawl in bar-engaging position and an overload exerted by said driven shaft causes pivotal movement of said pawl to bar-releasing position and said pawl is maintained by centrifugal force in said bar-releasing position against bias of said biasing means, said biasing means returning said pawl to bar-engaging position upon sufficient decrease of the rotational speed of said driving wheel.

4,641,736

FRICTION CLUTCH

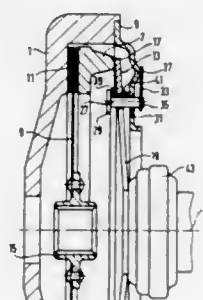
Andreas Förster, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Mar. 18, 1986, Ser. No. 840,887

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1985, 3510053

Int. Cl.⁴ F16D 13/44

U.S. Cl. 192—89 B

16 Claims



1. A friction clutch, comprising
 - (a) a flywheel rotatable about a rotation axis,
 - (b) a clutch cover secured to the fly-wheel,
 - (c) a presser plate guided non-rotatably but axially movably in relation to the fly-wheel,
 - (d) a clutch disc arranged axially between the fly-wheel and the presser plate,
 - (e) a diaphragm spring substantially of annular disc form clamped in between the clutch cover and the presser plate, which spring abuts in the region of its external circumference on the presser plate,
 - (f) an annular, axially acting plate spring coaxially surrounding the rotation axis and being arranged on the side of the clutch cover axially remote from the diaphragm spring,
 - (g) several retaining bolts arranged radially within the external circumference of the diaphragm spring on a circle concentric with the rotation axis with spacing from one another and movable in relation to the diaphragm spring and the clutch cover substantially in the direction of the rotation axis, each of said retaining bolts being supported with a first end on the side of the diaphragm spring facing axially towards the presser plate and with a second end through said plate spring on the side of the clutch cover axially remote from the diaphragm spring, all of the retaining bolts being secured in common to the plate spring.

4,641,737

BI-DIRECTIONAL OVERTRAVEL STOP

Gary D. Gillingham, Cherry Valley, and Jeffrey D. Metcalf, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 4, 1985, Ser. No. 804,387

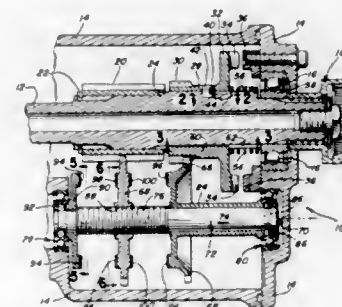
Int. Cl.⁴ F16D 11/04

U.S. Cl. 192—141

29 Claims

1. An overtravel stop for a rotary shaft, comprising:
 - a fixed stop;
 - a following member about the shaft and adapted to rotate with the shaft within its selected travel limit, said following member being associated with a stop member;
 - a cam structure between the shaft and the stop member, said cam structure being adapted to axially move the stop member into engagement with the fixed stop;

means for engaging the cam structure when the following member rotationally shifts with respect to the shaft; and



means for rotationally shifting the following member with respect to the shaft when the shaft reaches its travel limit.

4,641,738

MOMENTUM ARRESTING DEVICE FOR AN INTEGRATED CIRCUIT TESTER

Nicholas J. Cedrone, Wellesley Hills, and Kenneth R. Lee, Lincoln, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.

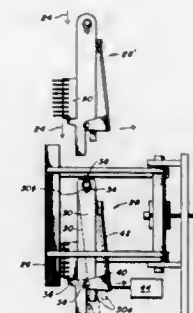
Continuation of Ser. No. 497,208, May 23, 1983, abandoned.

This application Nov. 20, 1985, Ser. No. 800,097

Int. Cl.⁴ B65G 11/20

U.S. Cl. 193—40

4 Claims



1. A momentum arresting device for use in an apparatus for testing integrated circuits that are successively dropped along a generally vertical free fall path to a test site, comprising
 - a plurality of blade members each extending in a generally vertical direction and located adjacent said free fall path with the adjacent faces of said blade members in a mutually spaced relationship along a first horizontal axis perpendicular to said free fall path,
 - stop members carried on said blade members that each project along a second horizontal axis orthogonal to said free fall path and said first horizontal axis when said blade members are in a first position, said stop members having upper surfaces that are generally horizontally aligned to form a stop surface that precisely locates said free falling integrated circuits at said test site which they impact and come to rest on said stop,
 - means for repeatedly moving said blades between said first position and a second position where said stop members are clear of said free fall path, and
 - an elastomeric member that supports said blade members for absorbing the energy of said integrated circuits free falling along said path as they strike said stop members,
 - wherein said blade moving means comprises a mounting pin extending generally in the direction of said first horizontal axis that pivotally engages each of said blade members near its upper end and means for reciprocating the lower ends of said blade members in a rotating movement about said mounting pin to move said blade members and said

4,641,739

DEVICE FOR LOCKING AND RELEASING OBJECTS INTENDED FOR PUBLIC USE, SUCH AS LUGGAGE CARTS

Jean-Pierre E. Marie, Boulogne-Billancourt, France, assignor to Mors, France

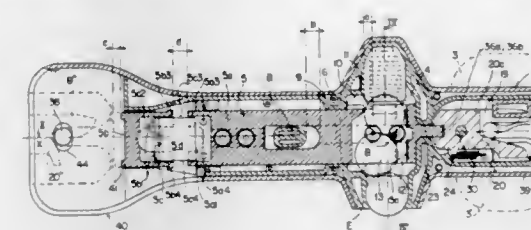
Filed Oct. 4, 1984, Ser. No. 657,528

Claims priority, application France, Sep. 7, 1984, 84 13803

Int. Cl.⁴ G07F 17/10

U.S. Cl. 194—253

5 Claims



1. A device for locking and releasing objects intended for public use, such as luggage carts, including a locking apparatus allowing each object to be automatically locked to an adjacent object or to a fixed point in stowage position and into which a coin can be inserted to allow unlocking of the locking apparatus and releasing of the object by exerting a pull thereon, said unlocking being ensured by said pull, said locking apparatus including
 - a casing,
 - a slide displaceable by said pull,
 - an internal blocking member for fixing said slide and which is movable to a non-blocking position by coming into contact with an edge of the coin, and
 - a connecting lock for locking the object to the adjacent object or to the fixed point, said slide serving to lock or unlock said connecting lock connecting the object to the adjacent object or to the fixed point,
 - wherein said slide is constituted by two portions, a first portion for said locking and unlocking of said connecting lock, a second portion separate from said first portion and located near an endmost portion of said casing of the locking apparatus,
 - and additionally comprising
 - an intermediate element housed between said first and second portions forming a housing therefor so as to maintain between said first and second portions of said slide a separating distance substantially equal to slide travel necessary for unlocking said connecting lock, and
 - means for allowing said first portion of said slide to be displaced by said pull with respect to said second portion over said separating distance, said intermediate element being partially displaceable out of said housing between said first and second portions by said means, thus unlocking the object from the adjacent object.

4,641,740

BOBBIN TUBE MAGAZINE

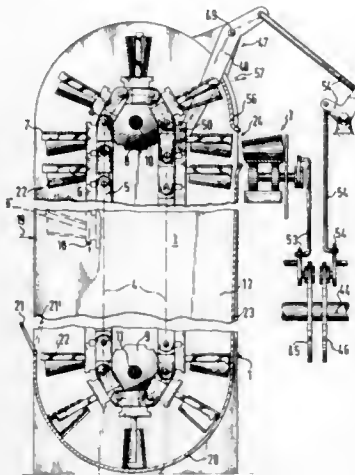
Hans Grecksch, Hans-Werner Schwalm, and Johannes Thomalla, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,576

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241032

Int. Cl.⁴ B65G 47/90, 17/06
U.S. Cl. 198—487.1

15 Claims



1. Bobbin tube magazine assembly, comprising:
 - a bobbin tube feeding device;
 - a bobbin tube conveyor connected to said bobbin tube feeding device, said bobbin tube conveyor being controlled by said bobbin tube feeding device for discharging bobbin tubes from said bobbin tube conveyor to said bobbin tube feeding device and said bobbin tube conveyor being independently actuatable for circulating bobbin tubes;
 - said bobbin tube conveyor including:
 - at least one endless pulling device formed of a plurality of inner and outer transport chains having links, chain wheels for said transport chains, straps each being disposed at an end of a respective one of said chain links, at least one common joint pin passing through a hole formed in said straps of a plurality of said chain links, said joint pin having a support location with an increased diameter for engaging said chain wheels at said outer transport chain, stops formed on said chain links for limiting backward flexing of said transport chain when elongated, slip-on arbors carried by said chain links and protruding from said pulling device, each of said arbors having an end distant from said pulling device for receiving bobbin tubes, said arbors passing through a deflection location during circulation in which said arbors point below the horizontal, as seen in direction toward said ends of said arbors, sliding guides disposed adjacent said ends of said arbors at said deflection location for preventing bobbin tubes from slipping off said arbors, a vane extending over the entire width of said sliding guides, means permitting said vane to move between a first position in which said vane facilitates entry of bobbin tubes at said deflection location and a second position in which said vane pushes bobbin tubes entirely onto said arbors, freely accessible bobbin tube filling location, a bobbin tube discharge location being spaced from said filling location by a distance equal to at least half of the length of said pulling device, in travel direction of said bobbin tube conveyor and a wall disposed between said sliding guides and said discharge location for preventing bobbin tubes from slipping off said arbors;
 - and a discharge device disposed at said discharge location

for discharging bobbin tubes from said bobbin tube conveyor to said bobbin tube feeding device.

4,641,741

PARTS SUPPLYING APPARATUS FOR BUTTON ASSEMBLING AND SETTING MACHINES

Hiroshi Oura, Kurobe, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

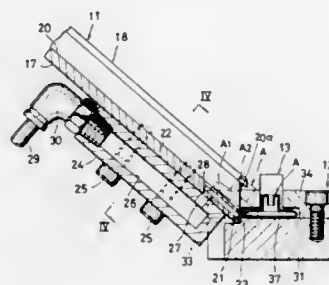
Filed Oct. 4, 1984, Ser. No. 657,497

Claims priority, application Japan, Oct. 4, 1983, 58-154056[U]

Int. Cl.⁴ B65G 47/22

U.S. Cl. 198—493

2 Claims



1. An apparatus for supplying parts one at a time to working station in a button assembling and setting machine, said apparatus comprising:
 - (a) a base having a substantially horizontal guide groove for the passage of the parts, said guide groove having an open end disposed adjacent to the working station;
 - (b) an inclined chute including an elongated chute body of a generally U-shaped cross section, said chute body having a longitudinal guide track joined transversely with said guide groove for delivering the parts one at a time into said groove, and a bottom wall defining part of said guide track, said guide track having a discharge end communicating with said guide groove, said bottom wall having a discharge end wall disposed on said base and facing toward said guide groove;
 - (c) means for feeding a part which has fallen into said guide groove, along the latter through said open end to the working station; and
 - (d) an exhaust nozzle disposed in said bottom wall, extending along said guide track and opening at said discharge end wall in a direction substantially the same as the direction of movement of the part along said guide track for ejecting compressed air therefrom against the underside of the part to lift it up when the part moves across a junction between said guide track in said inclined chute and said substantially horizontal guide groove in said base, thereby letting the part move past said junction into said groove.

4,641,742

ARTICLE TRANSFER APPARATUS

Makoto Igarashi, Tokyo; Kiichiro Okano, Chiba, and Naoki Kumagami, Sagami, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,927

Claims priority, application Japan, Apr. 13, 1983, 58-65029

Int. Cl.⁴ B65G 15/20

U.S. Cl. 198—627

8 Claims

1. An article transfer apparatus comprising:
 - (a) first and second conveyor means having driving shafts, each conveyor means having at least a driving sprocket, a free sprocket, an endless chain extending partially around and between the driving sprocket and the free sprocket, and a plurality of stops arranged at regular intervals on the endless chain for engaging articles, the stops on one chain being used for engaging the front ends, and the stops on

- the other chain being used to engage the rear ends, of the articles;
- (b) first clutch means connecting the driving sprockets of the first and second conveyor means such that the conveyors are drivingly interconnected when the clutch is engaged and relative movement between the conveyor means is permitted when the clutch is disengaged;
- (c) a main motor drive means drivingly connected to the drive sprocket of the first conveyor means;
- (d) a servomotor;
- (e) second clutch means connecting the servomotor to the free sprocket wheel of the second conveyor means; and

said cylinder oriented to shift material in a direction opposite said first direction responsive to rotation of said cylinder in said first sense, and at least one radial flow passage formed through said cylinder in registry with said helix portion.

4,641,744

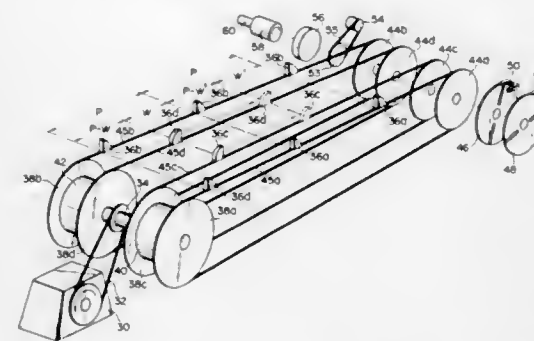
CONVEYOR CHAIN ADJUSTMENT MEANS

Anthony F. Spisak, Redford, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 12, 1985, Ser. No. 746,683

Int. Cl.⁴ B65G 23/44
U.S. Cl. 198—813

2 Claims



- (f) adjusting means to disengage the first clutch means, engage the second clutch means and actuate the servomotor to move the second conveyor means relative to the first conveyor means thereby adjusting the distance between the stops on the first and second conveyor means;
- (g) said adjusting means including: photo-couplers adapted to deliver one pulse with every half-revolution of the free sprockets of the first and second conveyor means; and, a rotary encoder for detecting the amount of rotation of the free sprockets which measures the distance between the front and rear engaging stops in accordance with the output of the rotary encoder during the time interval between the deliveries of the outputs of the photo-couplers.

1. A chain adjustment arrangement comprising a fixed drive shaft, an adjustable mounting bracket, a pair of shafts rotatably mounted on said bracket, a drive gear mounted on said fixed drive shaft, a pair of meshing chain drive gears mounted on said respective shafts, a chain drive sprocket mounted on each of said pair of shafts, a conveyor chain mounted around each of said drive sprockets, a toothed member mounted on one of said pair of shafts, an idler shaft, an idler gear mounted on said idler shaft and in engagement with said drive gear and toothed member, a first link connected at its opposite ends to said drive shaft and said idler shaft, and a second link connected at its opposite ends to said idler shaft and said one of said pair of shafts, said links retaining said idler gear in engagement between said drive gear and toothed member upon movement of said mounting bracket to take up stretch in said conveyor chains.

4,641,743

JUNCTION DEVICE FOR AUGER CONVEYORS

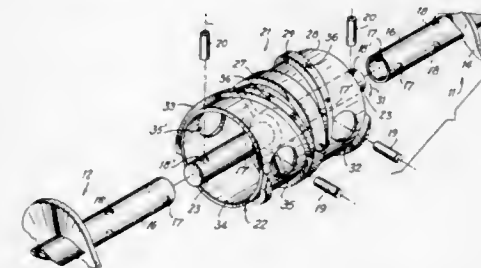
Dennis E. Kemp, Jr., P.O. Box 167, South Orange, N.J. 07079

Filed Jan. 21, 1986, Ser. No. 820,108

Int. Cl.⁴ B65G 33/32

U.S. Cl. 198—666

13 Claims



1. A hangerless anti-wear junction member for connecting adjacent auger conveyor sections within a trough, comprising a cylinder, shaft means mounted coaxially within said cylinder and extending in opposite directions for connecting the respective adjacent ends of said conveyor sections, internal auger segments interposed between the inner surface of said cylinder and said shaft means, said auger segments being oriented to advance material in said trough in a first direction responsive to rotation of said cylinder in a first sense, an external helix portion of wear resistant material formed on the periphery of

4,641,745

ADJUSTABLE SKIRT HOLDER FOR CONVEYOR

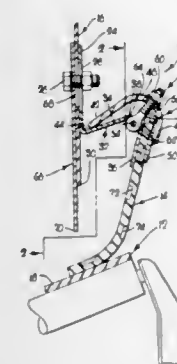
Raymond E. Skates, Mission Hills, Kans., assignor to Kansas City Rubber and Belting Company, Kansas City, Mo.

Filed Jun. 24, 1985, Ser. No. 748,038

Int. Cl.⁴ B65G 21/20

U.S. Cl. 198—836

12 Claims



1. A holder adapted for suspension from a support for maintaining an elongated, flexible skirt in sealing engagement with

a conveyor belt, said holder comprising, in combination with said skirt:

- an elongated plate;
- releasable means for mounting the plate on said support;
- a lower, transversely, U-shaped hump coextensive in length with the plate, having an upper arm integral with the plate and extending outwardly therefrom, a downturned arm spaced outwardly of said plate and an intermediate, transversely arcuate, upper bend integrally joining the arms;
- a series of upper, transversely U-shaped jaws looped over and spaced along said hump,
- each jaw having an upper leg engaging the top of the upper arm, a downturned leg spaced outwardly of the downturned arm and an intermediate, transversely, arcuate, upper bight integrally joining the legs and spaced upwardly of the bend;
- an elongated bar coextensive in length with the hump, interconnecting the downturned legs and spaced outwardly of the downturned arm; and
- a releasable fastener having a portion thereof common to the jaws and connecting the latter with the hump at the bend and at the bights for clamping the upper marginal edges of the skirt between the bar and the downturned arm with the skirt depending from said bar and downturned arm.

4,641,746

TRAY-TYPE SHIPPING AND DISPLAY CONTAINER
Arthur H. Dornbusch, and Roger E. Schanzle, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 630,312, Jul. 12, 1984, abandoned. This application Jun. 14, 1985, Ser. No. 745,541
Int. Cl.⁴ B65D 5/26, 5/48, 5/54

U.S. Cl. 206—44 R

29 Claims



1. A combination shipping and display container for packaged products, said container comprising a substantially open tray having a high back panel, a low front panel providing a substantially open front wall, substantially open side panels connecting said low front panel and said high back panel, a pair of integral divider flaps extending between said back panel and said front panel and having a height substantially equal to that of said back panel, and a top panel extending forwardly from the upper edge of said back panel to the front of said container, said top panel having a top panel extension which folds downwardly to form an upper front flap portion which does not substantially close said substantially open front wall of said container and which includes means for establishing locking engagement with said divider flaps adjacent the upper front portion of such divider flaps.

4,641,747
LATCHING STORAGE CASE FOR A HOLDER CONTAINING AN INFORMATION CARRIER
Gilbert E. Mestdagh, and Ghislain M. A. M. Aldenboven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

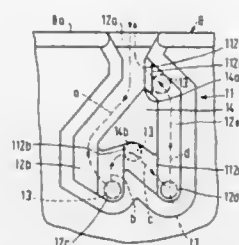
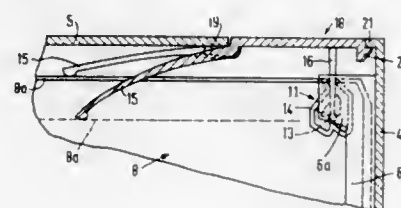
Filed May 3, 1985, Ser. No. 730,223

Claims priority, application Netherlands, May 14, 1984, 8401546

Int. Cl.⁴ A47B 88/04; B65D 85/672

U.S. Cl. 206—309

8 Claims



1. A storage case and holder combination, said holder containing at least one information carrier, said case comprising a housing forming at least one receptacle into which said holder can be inserted in an insertion direction from the front of the case, spring means for urging a partly inserted holder in an ejection direction opposite said insertion direction, and latching means for retaining a fully inserted holder in a latched position; and for unlatching the holder responsive to pushing said holder inward a given distance from said latched position, so that the holder is ejected in the ejection direction by said spring means; said latching means comprising a latching arm element and a latching groove element, a first of said elements being connected to and forming part of said case, and a second of said elements being connected to and forming part of said holder; said latching arm element having a groove-engaging member which engages said groove upon insertion of the holder to said latched position; and at least one of said elements being resiliently deflectable with respect to said housing, from an initial relative position, in a direction perpendicular to said insertion direction, said elements being resiliently deflectable relative to each other in first and second orthogonal directions perpendicular to each other and perpendicular to said insertion direction, characterized in that said groove element comprises an inlet-outlet portion, an insertion guiding portion, a latching transition portion, a latched position portion, an unlatching transition portion, and an ejection guiding portion; and said elements are arranged relative to each other and the housing and insertion direction such that during insertion of a holder to said latched position

(a) initially each element is in a respective initial position in which said groove-engaging member and inlet-outlet portion are aligned with each other in the direction of insertion,

(b) next said groove-engaging member and said inlet-outlet portion engage and undergo relative movement until said member engages the first insertion guiding portion,

(c) next said member engages said insertion guiding portion and said elements undergo relative movement, one of said elements being resiliently deflected in said first orthogonal direction,

(d) next said member engages said latching transition portion and said elements undergo further relative movement with further inward movement of the holder in said insertion direction until said member engages said latched position portion, during this relative movement said one of said elements resiliently moving in a direction opposite said first orthogonal direction to a relative position in which said one element is unstressed in said first orthogonal direction; during the engagement of the member with at least one of the insertion guiding and latching transition portions, one of said elements being resiliently deflected in said second orthogonal direction such that, when said holder is in the latched position, the member engages the latched position portion under resilient stress in said second orthogonal direction, and the engagement between the member and groove prevents movement of the holder in the ejection direction;

and upon movement of the holder, from said latched position, further in said insertion direction and then release of said holder:

(e) said member engages said unlatching transition portion, said elements undergoing further relative movement in said direction opposite said first orthogonal direction and in a direction opposite said second orthogonal direction,

(f) said member then engages said ejection guiding portion, and said spring means then urges said holder in the ejection direction so that the holder moves partly out of said case, and

(g) said member engages said ejection guiding portion, and said elements undergo further relative movement in the ejection direction free from further restraint by the latching means.

7. A storage case and holder combination, said holder containing at least one information carrier,

said case comprising a housing forming at least one receptacle into which said holder can be inserted in an insertion direction from the front of the case,

spring means for urging a partly inserted holder in an ejection direction opposite said insertion direction, and

latching means for retaining a fully inserted holder in a latched position; and for unlatching the holder responsive to pushing said holder inward a given distance from said latched position, so that the holder is ejected in the ejection direction by said spring means; said latching means comprising a resilient latching arm element connected to and forming part of said case, and a latching groove element connected to and forming part of said holder, at least a portion of said groove having a groove bottom surface;

said latching arm element having a groove-engaging member which engages said groove upon insertion of the holder into the case, said groove having a latched position portion which said member engages when the holder is in said latched position, said member and groove being arranged such that the member prevents movement of the holder in the ejection direction from the latched position;

said arm being resiliently deflectable relative to said case in first and second orthogonal directions perpendicular to each other and perpendicular to said insertion direction,

characterized in that said elements are arranged relative to each other and the housing and insertion direction such that, said holder being in said latched position, said member is in a latching position engaging said groove bottom surface, engagement with said surface preventing movement of the member in a direction opposite said second orthogonal direction;

upon movement of the holder, from said latched position, further in said insertion direction and then release of said holder, said member is moved from the latching position in a direction opposite said first orthogonal direction and

then in a direction opposite said second orthogonal direction, and

said case comprises a stop portion arranged to abut said member while the member is in the latching position, to prevent movement of said member in the first orthogonal direction.

4,641,748

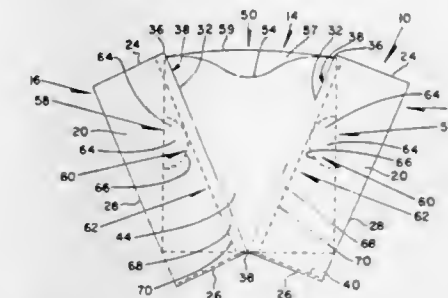
PACKAGE FOR CIGARETTES AND THE LIKE
Robert T. Lewis, and Thomas T. Tudor, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 21, 1985, Ser. No. 789,527

Int. Cl.⁴ B65D 5/32, 85/10

U.S. Cl. 206—263

11 Claims



1. A package for articles such as cigarettes comprising: an article container box having two spaced apart, parallel end walls, a front wall, a rear wall spaced apart from and parallel to the front wall, a floor, and an open top defined by the top edges of the end walls, front wall and rear wall; a first side box having a front wall, a rear wall spaced apart from and parallel to the front wall, a top wall, a floor, a side wall and an open side opposite the side wall defined by the side edges of the front wall, rear wall, top wall and floor;

a second side box having a front wall, a rear wall spaced apart from and parallel to the front wall, a top wall, a floor, a side wall and an open side opposite the side wall defined by the side edges of the front wall, rear wall, top wall and floor;

the container box being symmetrically received within the first and second side boxes with one container box end wall being received through the open side of the first side box and the other container end wall being received through the open side of the second side box;

a strip of flexible, nonresilient material fastened to the floor of each of the side boxes functioning as a hinge about which the side boxes can be freely pivoted selectively either simultaneously or individually in an arcuate path between a closed position cooperating to completely enclose the container box whereat the first and second side boxes are located in side-by-side disposition with the open sides in registered facing relationship with the side edges of the front wall, rear wall, top wall and floor of the first box in aligned abutment with the side edges of the front wall, rear wall, top wall and floor of the second side box, respectively, and the side box top walls symmetrically cooperate to cover the open top of the container box, and an open position whereat the open sides of the first and second side boxes are spaced apart from each other, and the top walls of the first and second side boxes are spaced apart from each other to uncover at least a portion of the open top of the container box;

the container box and side boxes being positioned relative to each other such that either the rear wall of the container box is in constant contact with the rear walls of the side boxes, or the front wall of the container box is in constant

contact with the front walls of the side boxes, or both, such as to create a friction force sufficient to hold the side boxes on any position between full open and closed absent the application of a manual force to the side boxes sufficient to overcome the frictional forces;

first stop means associated with the container box and with the first side box to prevent movement of the first side box beyond the full open position; and,

second stop means associated with the container box and with the second side box to prevent movement of the second side box beyond the full open position.

4,641,749

HOLDING STAND FOR SURGICAL INSTRUMENTS

Helmut D. Link, Hamburg, and Arnold Keller, Kayhude, both of Fed. Rep. of Germany, assignors to Waldemar Link GmbH & Co., Fed. Rep. of Germany

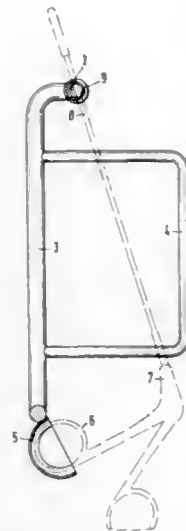
Filed Jan. 6, 1986, Ser. No. 816,588

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1985, 3501837

Int. Cl.⁴ B65D 85/24

U.S. Cl. 206—370

11 Claims



1. A medical instrument holder comprising:

a base having first and second ends;

a first end bar, mounted at the first end of the base, including a plurality of instrument handle receptacles;

a second end bar, mounted at the second end of the base, comprising a notched comb bar and a locking bar, the comb and locking bars mounted to one another for relative movement between locking and open positions, the comb bar having first notches sized to receive the shafts of the medical instruments, the locking bar having second notches, the first and second notches having respective first and second open ends aligned when the locking and comb bars are in the open position, the first and second open ends being offset when the locking and comb bars are in the locking position to retain the shafts in the first notches; and

a handle, including a gripping surface, attached to the base, the gripping surface spaced apart from the base at a chosen position so the gripping surface may be easily grasped without contacting a medical instrument supported by one of the instrument handle receptacles and the second end bar.

4,641,750

TWO-PLY CASSETTE ALBUM AND METHOD OF MAKING SAME

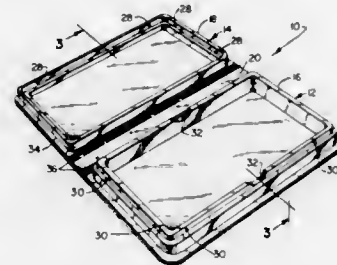
Breck J. Johnson, Prior Lake, and George D. Canfield, Chaska, both of Minn., assignors to Blackbourn, Inc., Eden Prairie, Minn.

Filed Oct. 15, 1985, Ser. No. 787,527

Int. Cl.⁴ B65D 85/672; B31B 1/64; B32B 31/20

U.S. Cl. 206—387

12 Claims



1. A two-ply, book-style album for holding video cassettes and the like, comprising:

a one-piece, integral inside sheet of semi-rigid thermoplastic having front and back sides, said inside sheet defining a pair of raised integral interfitting tray portions and an integral spine portion connecting the tray portions;

a one-piece, integral outside sheet of semi-rigid thermoplastic having front and back sides, said outside sheet defining a pair of integral cover portions and an integral spine portion connecting the cover portions; a peripheral seal securing said inside and outside sheets together; and

a pair of laterally spaced-apart, longitudinal seals securing adjacent spine portions of said inside and outside sheets, each longitudinal seal including a groove formed by contact with a thermally-heated rule to a substantial depth into the front side of the spine portion of the inside sheet so as to define living hinges in the inside sheet and a smooth surface on the backside of the outside sheet to facilitate opening and closing the album.

4,641,751

COSMETIC CARRIER WITH REMOVABLE RESILIENT RETAINING MEANS

Mildred W. Walker, 2188 Johnson Dr., Ventura, Calif. 93003

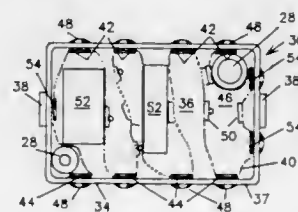
Continuation-in-part of Ser. No. 707,752, Mar. 4, 1985,

abandoned. This application Jan. 2, 1986, Ser. No. 815,721

Int. Cl.⁴ A45D 34/00; B65D 81/08

U.S. Cl. 206—478

8 Claims



1. A cosmetic carrier adapted for use alone or for placement in the bottom of a larger container to contain a plurality of cosmetic containers from bumping and tipping in transit comprising:

- (a) an open topped resiliently rigid container having side walls and a bottom;
- (b) a vertically disposed ribbon of elastic material horizontally crisscrossing said container between a plurality of first points on one area of said sidewalls and a plurality of second points disposed between said first points on a

second area of said sidewalls opposite said first area to create a plurality of generally triangular areas within said container, each of said areas being bounded on two sides by said elastic material and on a third side by a portion of said sidewalls;

- (c) a plurality of first fastening means for fastening said elastic material to said sidewalls at said first and second points; and,
- (d) a plurality of releasable second fastening means attached to said elastic material at a plurality of opposed points along said material between said first and second points whereby said triangular areas can be releasably subdivided to contain smaller articles by fastening opposed ones of said fastening means.

4,641,752

HOLDER FOR HAMBURGERS AND THE LIKE

Janos Palffy, Asköviksvägen 4, 725 92 Västerås, Sweden

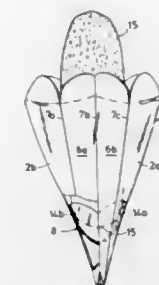
Filed May 24, 1985, Ser. No. 737,471

Claims priority, application Sweden, May 25, 1984, 8402838

Int. Cl.⁴ B65D 81/02; A21D 10/02

U.S. Cl. 206—583

10 Claims



1. A holder for a food article and the like, comprising:

opposing front and rear walls, each of said front and rear walls having two side edges, a top edge and a bottom edge, said front and rear walls joined along said bottom edges and diverging upwardly therefrom;

first and second opposing side walls, each of said first and second side walls individually extending between said side edges on said front wall and said side edges on said rear wall, said side walls being folded into a bellows shape to enable said front and rear walls to diverge upward from said joined bottom edges, said side walls and said front and rear walls made from an elastically deformable sheet material and forming a container having an open end partially described by the top edges of said front and rear walls; and

support means slidably positioned within said container for supporting the food article and for moving slidably upward within said container in response to inward pressure along said front and rear walls, said support means being concave in the direction of said open end and having two upwardly diverging resilient flanges connected along the base of support means, each of said flanges being bent outward, so that said support means is expandable when moving upward along said diverging front and rear walls toward said open end.

4,641,753

MAIL SORTING APPARATUS

Masuo Tamada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1984, Ser. No. 686,402

Claims priority, application Japan, Dec. 26, 1983, 58-244084

Int. Cl.⁴ B07C 1/00, 3/20

U.S. Cl. 209—546

3 Claims

1. An apparatus for sorting mail, comprising:

readout means for reading out destination data on mail;

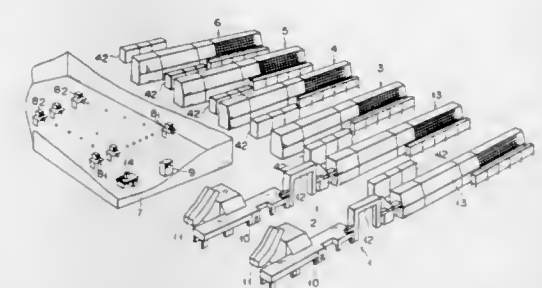
discriminating means for discriminating the destination data

based on the result of the readout operation of the readout means such that an upper order address data and a lower order address data contained in the destination data are discriminated separately;

first control means receiving the output signals of the discriminating means and the readout means so as to generate a first sorting data corresponding to the destination data when both upper and lower order address data have been discriminated and to produce the upper order address data and the readout result when the upper order address data only has been discriminated;

a plurality of video coding desks each including display means and a keyboard, and assigned to predetermined regions or cities;

distributing means for distributing the destination data from the readout means to the corresponding video coding desk



according to the discriminated upper order address data so as to display the destination data on the display means of the video coding desk and to enable the keyboard of the video coding desk to input correct lower order address data based on the display;

second control means for generating a second sorting data corresponding to the upper order address data distributed to the corresponding video coding desk, and the lower order address data inputted from the keyboard of said video coding desk;

sorting data assigning means for assigning to the mail the first or second sorting data generated from the first or second control means; and

sorting/collecting means for sorting and collecting said mail into predetermined sorting sections according to the sorting data applied by said sorting data assigning means.

4,641,754

QUICK CONNECT FRAME

Gregory F. Hebel, Chicago, and Gregg A. Temkin, Evanston, both of Ill., assignors to Homaco, Inc., Chicago, Ill.

Filed Jan. 16, 1986, Ser. No. 819,422

Int. Cl.⁴ A47F 7/00

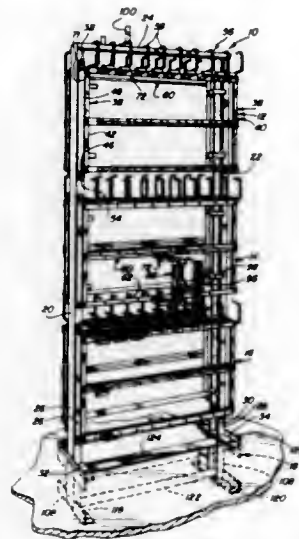
U.S. Cl. 211—26

15 Claims

1. In a quick connect frame for use in interconnecting a plurality of wires which wires are part of a communication system, said frame having a pair of uprights, means connecting the uprights, a foot connected to the bottom of each upright to hold each upright in a vertical attitude, a mounting bracket secured to the uprights to support a block module, the improvement comprising:

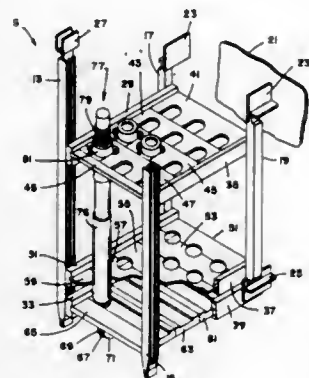
a mounting strip connected to the mounting bracket, a plurality of spacers secured to the mounting strip, each of said spacers having an elongated base secured to the mounting strip, a post connected to each of a pair of opposite ends of the base, each post having one end connected to the base, a mounting bar connected to the other end of the posts interconnecting the posts, said mounting bar being

spaced away from the base by said posts, and a block bracket mounted on each of the spacers, each of said block brackets



being adapted to receive a quick connect block for receiving a second plurality of wires of the communication system.

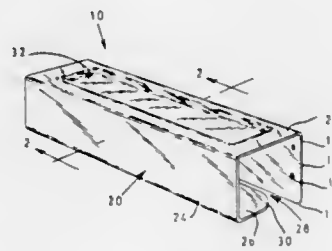
4,641,755
PROJECTILE STOWAGE RACK
Jim Oliver, Port Orchard, and Pat Watson, Bremerton, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 10, 1985, Ser. No. 743,227
Int. Cl.⁴ A47F 7/00
U.S. Cl. 211—60.1 3 Claims



1. A stowage rack comprising:
 - (a) two pairs of vertical support members;
 - (b) a plurality of side channels connected to respective pairs of said vertical support members, said plurality of side channels including a pair of upper side channels, a pair of middle side channels, and a pair of lower side channels;
 - (c) a plurality of upper clamps and lower clamps engaging said side channels, said upper clamps and said lower clamps including openings for receiving vertically extending objects such as projectiles;
 - (d) a plurality of base plates engaging said side channels, said base plates supporting the lower end of said vertically extending objects and including slots for receiving the lower end of said vertically extending objects;
 - (e) each of said pairs of side channels having a slot for receiving the ends of said upper clamps, said lower clamps and said base plates; and
 - (f) an adjustable collar engaging the upper end of each

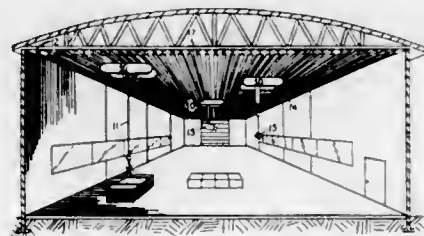
vertically extending object and said upper clamps to retain said vertically extending object in fixed position, said adjustable collar including a bottom collar and a top collar wherein said bottom collar engages said upper clamp and said top collar engages said object.

4,641,756
UNITARY PANTS HOLDER
Robert L. Brown, 322 Davis Dr., Kingston, Tenn. 37763
Filed Jul. 26, 1985, Ser. No. 759,648
Int. Cl.⁴ A47F 5/08
U.S. Cl. 211—89 12 Claims



1. A unitary holder for pants and like garments, such holder adapted for mounting upon a substantially vertical surface, which comprises:
 - a substantially rectangular back panel having a top edge and a bottom edge, said back panel being provided with apertures therethrough for passage of fastening means for mounting such holder upon such surface; and
 - a hollow body member having open ends, said body member being substantially co-extensive with said back panel and substantially C-shaped in cross-section having a top edge and a bottom lip, said top edge of said body member joined to said back panel, said bottom lip of said body member terminating in an edge at a selected distance from said back panel to define a continuous slot between said edge of said lip and said back panel to slidably accept such garments from either end of said body, said body member having sufficient flexibility whereby said slot will accept garments of different thicknesses, and said lip will frictionally hold such garments against said back panel.

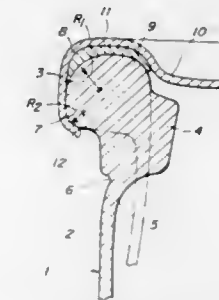
4,641,757
CIRCULATING LATCH TRANSPORT MECHANISM FOR OVERHEAD CRANES
John V. Rosendale, Hampton, Va., assignor to Robotic Systems, Inc., Hampton, Va.
Filed May 6, 1983, Ser. No. 492,268
Int. Cl.⁴ B66C 19/00
U.S. Cl. 212—205 24 Claims



1. A circulating latch transport system comprising at least one circulating latch transport mechanism for supporting apparatus from a plurality of parallel beams, said system comprising means capable of moving said mechanism in a longitudinal direction, in a transverse direction and in a combination of both

of said directions about said parallel beams, said transport mechanism including a plurality of trucks for moving said mechanism along said beams, said trucks being rotatable about the perimeter of each said circulating latch transport mechanism, said trucks together forming an endless, substantially flexible track system, said transport mechanism further comprising at least one drive motor, each of said trucks comprising one pair of opposed jaws attached to said truck and means for selectively moving said jaws towards and away from each other as said trucks move transversely across said beams in order to thereby selectively engage and disengage said parallel beams.

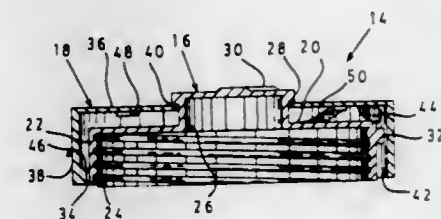
4,641,758
BLOW-MOLDED BOTTLE-SHAPED CONTAINER OF BIAXIALLY ORIENTED THERMOPLASTIC SYNTHETIC RESIN WITH WIDE PORT AND METHOD OF MOLDING THE SAME
Hiroaki Sugiura, Tokyo, Japan, assignor to Yoshino Kogyosha Co., Ltd., Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 672,670
Claims priority, application Japan, Nov. 22, 1983, 58-220241; Nov. 22, 1983, 58-180526[U]; Nov. 22, 1983, 58-180527[U]; Dec. 15, 1983, 58-236890; Dec. 15, 1983, 58-193131[U]; Dec. 28, 1983, 58-249915; Feb. 6, 1984, 59-19694
Int. Cl.⁴ B65D 23/00
U.S. Cl. 215—1 C 2 Claims



1. A blow-molded bottle-shaped container of biaxially oriented thermoplastic synthetic resin with a wide port comprising:
 - a neck edge portion defining the edge of said wide port, said neck edge portion including an upper curved surface having a radius of curvature, a lower outer peripheral curved surface having a radius of curvature which is less than said radius of curvature of said upper curved surface, and an inner peripheral surface, wherein the centers of curvature of said upper curved surface and said lower outer peripheral curved surface lie within said neck edge portion;
 - a thin, bottomed cylindrical body formed by biaxial orientation blow molding;
 - a short thick cylindrical neck portion formed between said neck edge portion and said thin, bottomed cylindrical body, said short thick cylindrical neck portion having a radial thickness which is greater than the radial thickness of said thin bottomed cylindrical portion; said short thick cylindrical neck portion extending obliquely and radially inwardly from said inner peripheral surface of said cylindrical neck edge portion to define a cylindrical neck edge portion inner peripheral surface having a radius which is smaller than the radius of said inner peripheral surface of said neck edge portion, and said short thick cylindrical neck portion extending obliquely downwardly from said lower outer peripheral curved surface of said neck edge portion to define a cylindrical neck portion outer peripheral surface located radially inward of said lower outer peripheral surface of said neck edge portion;
 - wherein said cylindrical body is formed integrally with said short thick cylindrical neck portion and said cylindrical

body abruptly bends and swells outwardly from a lower central portion of said short thick cylindrical neck portion; wherein said upper curved surface of said neck edge portion is dimensioned so as to obtain strong sealing between a cap and the bottle, and said lower outer peripheral curved surface is dimensioned so as to enhance openability of the cap; and wherein said cylindrical neck portion prevents the transmission of stresses from the thin, bottomed cylindrical body to the neck edge portion, thereby preventing deformation of the neck edge portion during blow molding of the thin, bottomed cylindrical body.

4,641,759
SAFETY BOTTLE CLOSURE HAVING A TIME INDICATOR
John Kelley, Rte. 4, Box 146-B, Lexington, Tenn. 38351
Continuation-in-part of Ser. No. 784,542, Oct. 4, 1985. This application Mar. 21, 1986, Ser. No. 845,951
Int. Cl.⁴ B65D 55/02
U.S. Cl. 215—220 20 Claims



1. A closure for bottles of the type having twist-type closure provision, such closure having child-proof opening characteristics, which comprises:
 - an inner member for sealing such bottle, said inner member having
 - a disk portion,
 - a peripheral lip extending at substantially right angles from said disk portion, said lip being provided on the interior thereof with a surface to cooperate with such closure provision of such bottle, and
 - a central neck portion extending from said disk portion in a direction opposite said lip, said neck portion terminating in a closed flange substantially parallel to said disk portion,
 - an outer member for effecting rotation of said inner member having
 - a disk portion substantially parallel with said disk portion of said inner member, said disk portion of said outer member being provided with a central opening having a diameter sufficient to closely receive said neck portion and said flange whereby said flange can be passed through said opening to assemble such closure,
 - a peripheral lip extending at substantially right angles from said disk portion and substantially equally spaced from said lip of said inner member, and
 - means cooperating between said inner member and said outer member to lock together said members yet permitting relative rotation thereof,
 - biasing means interposed between said disk portions of said outer member and said inner member for normally maintaining said disk portions separated a selected distance but permitting said disk portions to be moved toward each other upon application of pressure to said disk portion of said outer member in a direction toward said inner member disk portion;
 - cooperating opening tab means each carried by said inner member and said outer member whereby said opening tab means are engaged when said outer member and said inner member are properly rotationally oriented and said pres-

sure is applied to said outer member thereby effecting counter-clockwise rotation of said inner member when said outer member is rotated in a counter-clockwise direction to effect removal of such closure from such bottle; cooperating closing tab means each carried by said inner member and said outer member whereby said inner member is rotated in a clockwise direction when said outer member is rotated in a clockwise direction to effect tightening of such closure upon such bottle; and visible alignment indicia carried by said disk portion of said outer member, adjacent said opening, and by said flange of said inner member whereby when said indicia are aligned, said opening tab means are aligned for said engagement upon application of said pressure to said outer member.

4,641,760

INFLATABLE BAGS

Seiji Takeuchi, Burlington, and Byron H. Anger, Hamilton, both of Canada, assignors to Don Fell Limited and Donfab Investments, Inc., both of Hamilton, Canada

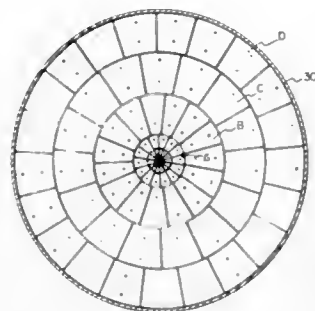
Filed Nov. 18, 1985, Ser. No. 799,324

Claims priority, application Canada, Oct. 8, 1985, 492494

Int. Cl.⁴ B65D 30/28

U.S. Cl. 220—1 B

6 Claims



1. In combination with a storage tank having a vertically extending cylindrical wall defining a central vertical axis, an array of inflated bags of tough, flexible, liquid tight material arranged to form a false bottom in such tank;

- (a) said array comprising an inner series of said bags surrounded by at least one annular series of said bags;
- (b) each bag of the inner series having a shape defined by
 - (i) a pair of similar top and bottom panels each having the shape of an isosceles triangle with tapering side edges, an end edge and a pointed tip,
 - (ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,
 - (iii) a rectangular outer panel interconnecting respective ones of said end edges with each other and with outer end edges of the side panels, and
 - (iv) means interconnecting inner end edges of the side panels with each other and with the tips of the top and bottom panels;
- (c) said bags of the inner series being arranged with their tips at the central vertical axis of the tank in a closed circular arrangement;
- (d) each bag of each annular series having a shape defined by
 - (i) a pair of similar top and bottom panels each having the shape of a truncated isosceles triangle with tapering side edges and longer and shorter end edges,
 - (ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,
 - (iii) a rectangular outer panel interconnecting respective ones of said longer end edges of the top and bottom panels with each other and with outer end edges of the side panels, and
 - (iv) a rectangular inner panel interconnecting respective ones of said shorter end edges of the top and bottom

panels with each other and with inner end edges of the side panels,

- (e) said bags of each annular series being arranged with their inner panels adjacent the outer panels of the bags of the inner series or of an inner one of said annular series in a closed annular arrangement coaxial with the inner series; and
 - (f) the outer panels of the bags of the outermost annular series being adjacent said cylindrical tank wall.
3. A kit of inflatable bags of tough, flexible, liquid tight material for placing in a storage tank having a vertically extending cylindrical wall, to form a false bottom in such tank; said kit comprising
- (a) a number of said bags of a first shape each of which has
 - (i) a pair of similar top and bottom panels each having the shape of an isosceles triangle with tapering side edges, an end edge and a pointed tip,
 - (ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,
 - (iii) a rectangular outer panel interconnecting respective ones of said end edges with each other and with outer end edges of the side panels, and
 - (iv) means interconnecting inner end edges of the side panels with each other and with the tips of the top and bottom panels; and
 - (b) a number of said bags of a second shape each of which has
 - (i) a pair of similar top and bottom panels each having the shape of a truncated isosceles triangle with tapering side edges and longer and shorter end edges,
 - (ii) a pair of rectangular side panels similar to each other interconnecting respective ones of said side edges,
 - (iii) a rectangular outer panel interconnecting respective ones of said longer end edges of the top and bottom panels with each other and with outer end edges of the side panels, and
 - (iv) a rectangular inner panel interconnecting respective ones of said shorter end edges of the top and bottom panels with each other and with inner end edges of the side panels,
 - (c) the number of bags of the first shape being sufficient to form a closed circular series of bags when inflated, and
 - (d) the number of bags of the second shape being sufficient to form a closed annular series of bags when inflated closely surrounding the circular series of bags of the first shape.

4,641,761

INCREASED STRENGTH FOR METAL BEVERAGE CLOSURE THROUGH REFORMING

Eugene F. Smith, Morrison, and Tuan A. Nguyen, Northglenn, both of Colo., assignors to Ball Corporation, Muncie, Ind.

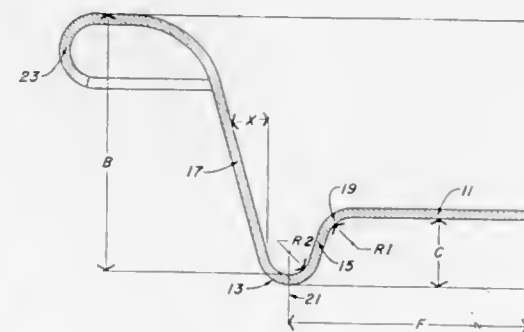
Continuation of Ser. No. 545,556, Oct. 26, 1983, Pat. No.

4,559,801. This application Sep. 5, 1985, Ser. No. 772,837

Int. Cl.⁴ B65D 8/08

U.S. Cl. 220—66

8 Claims



1. A sheet metal closure of increased strength, comprising a substantially planar center panel, a countersink portion around

said center panel bounded on the inside by an integral inner panel wall and on the outside by an integral chuckwall, said inner panel wall being straight and having a substantially perpendicular orientation relative to the center panel, a first curved portion having a first radius integrally joining said inner panel wall to said center panel, a second curved portion having a second radius at the bottom of said countersink portion to define a countersink radius, and a peripheral flange extending radially outward from said chuckwall, the distance from the upper surface of said flange to the bottom of said countersink radius defining a countersink depth, the distance from the lower surface of said central panel to the bottom surface of said second curved portion defining a panel height, said closure being formed from a shell by the process of initially forming said shell with an increased countersink depth relative to a final, predetermined countersink depth, a reduced panel height relative to the final, predetermined panel height, and a countersink radius of about 0.02 inches and, thereafter, reforming said shell to decrease said countersink depth to said predetermined countersink depth and increase said panel height to said predetermined panel height while maintaining said countersink radius of about 0.02 inches.

4,641,762

POWER DEVICE HOUSING WITH LUBRICANT ANTI-WICKING FACILITY

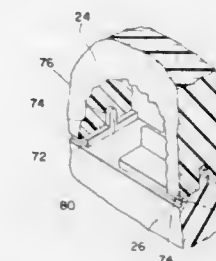
Colin Overy, Brockville, Canada, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 25, 1985, Ser. No. 705,326

Int. Cl.⁴ B65D 25/54

U.S. Cl. 220—81 R

4 Claims



1. A housing of a power tool, which comprises:

- a first housing section formed with an opening to one side thereof and with walls internally thereof to form at least two compartments opening to one side thereof;
- the first housing section formed with a peripheral edge about the opening thereof and a groove formed at least in the portions of the edge which extend between the two compartments;
- a second housing section formed with an opening to one side thereof and with walls internally thereof to form at least two compartments opening to the one side thereof;
- the second housing section formed with a peripheral edge about the opening thereof and a rib formed at least in the portions of the edge of the second housing section which extend between the two compartments thereof;
- the peripheral edges of the first and second housing sections being in interfacing engagement with the rib nested in the groove to form an interlock for interlocking the first and second housing sections in an assembled relationship to form the housing;
- the two compartments of the first housing section mating with the two compartments of the second housing section when the peripheral edges are in interfacing engagement to form two cases of the housing; and
- means formed in the rib for precluding the movement of a flowable substance from one of the two cases, through the interlock to the area of the other of the two cases, wherein the precluding means includes at least one gap formed transversely in a portion of the rib between the two cases to interrupt the continuity of the interlock and

thereby preclude movement of the flowable substance from one of the two cases to the other.

4,641,763

ICE AND BEVERAGE DISPENSING APPARATUS AND METHOD WITH DUAL PURPOSE LINER

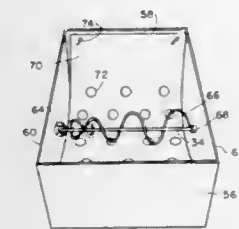
Jerry L. Landers, and Gregory E. Fischer, both of Sellersburg, Ind., assignors to Servend International, Jeffersonville, Ind.

Filed May 18, 1984, Ser. No. 611,879

Int. Cl.⁴ B67D 5/56

U.S. Cl. 222—129.1

30 Claims



26. Ice storing and dispensing apparatus comprising a bin for storing ice, a cold plate at a bottom of the bin, passages in the cold plate for flowing beverages through the cold plate, a liner within the bin spaced above the bottom for supporting a portion of the stored ice above the liner spaced from the bottom of the bin, openings in the liner for permitting a portion of the stored ice to move through the openings and to fall to the bottom of the bin for contacting the ice with the cold plate at the bottom of the bin, an auger being centered above the cold plate between side edges thereof and the auger cooperating with openings in the liner means to distribute ice generally over an entire upper surface of the cold plate, a dispenser connected to the bin above the liner for dispensing ice stored from above the liner.

4,641,764

VISCOUS THERMOPLASTIC MELTING AND DISPENSING UNIT

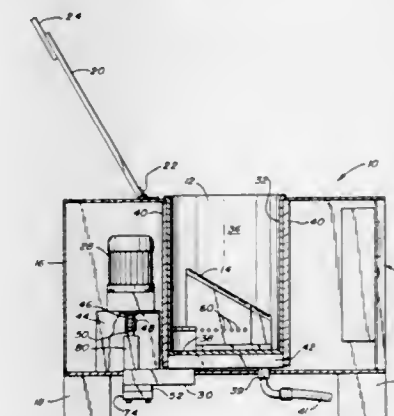
W. Harrison Faulkner, III, Pacific Grove, Calif., assignor to Slatteback Corporation, Monterey, Calif.

Filed May 9, 1985, Ser. No. 732,425

Int. Cl.⁴ E67D 5/62

U.S. Cl. 222—146.2

12 Claims



1. A hot-melt supply unit comprising, a heated tank means for melting solid hot melt, the tank having a lower region holding fluid melt with a material outflow port and an upper region with a solid material intake port, the tank having an upright sidewall and a bottom wall which is impermeate except for the outflow

port which extends through the bottom wall at a location near the sidewall, and
 a melt grid means disposed in said tank for providing material flow equalization to said outflow port, the grid means having a plurality of structures providing impedance to the flow of hot melt material over short paths to the material outflow port, said structures including a plurality of upright, parallel fins, said fins having top edges which slope downwardly from a higher end to a lower end, said higher end being located adjacent to said material outflow port, said lower end being located above the imperforate portion of the bottom wall and distal to said material outflow port.

4,641,765

EXPANDABLE PRESSURIZED BARRIER CONTAINER

George B. Diamond, Anthony & Woodglen Rds., Glen Gardner, N.J. 08826

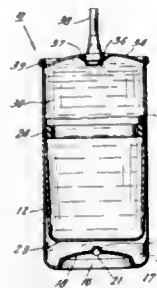
Continuation-in-part of Ser. No. 658,274, Oct. 5, 1985, Pat. No. 4,562,942, which is a continuation-in-part of Ser. No. 627,431, Jul. 3, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 771,491

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ B67D 1/04

U.S. Cl. 222—386.5

16 Claims



1. A pressurizable container for containing a fluent product under pressure and for dispensing the product through a discharge opening, said container comprising:

a can wall surrounding and defining a can chamber and having an upper end with the discharge opening defined therein and an opposite lower end; the can wall being resilient and expanding slightly when the can chamber is pressurized and returning to an unexpanded condition as the pressure in the can chamber is reduced to zero; the can wall having a dimension across the can chamber which increases by at least approximately one one-thousandth (1/1000) of its value in the unexpanded condition as the pressure in the can chamber goes from the unexpanded condition to a pressure of 100 psi;

a flexible barrier having an edge mounted to the can wall in the can chamber, the barrier dividing the can chamber into a product chamber comprising a part of the can chamber between the barrier and the upper end of the can wall for containing a fluent product to be stored and dispensed and a propellant chamber comprising a part of the can chamber between the barrier and the upper end of the can wall for containing a propellant adapted to provide pressure upon the barrier to urge the barrier into the product chamber for expelling the product through the discharge opening; the barrier comprising material that is impervious both to the product and propellant; and

means for mounting the edge of the flexible barrier to the can wall in a manner that seals the barrier to the can wall for preventing the product and propellant from leaking past the edge of the barrier as the can wall expands and returns to the unexpanded condition;

the flexible barrier being extendible toward the lower end when the product chamber is initially filled with fluent product and being gradually extensible toward the upper

end through pressure generated by propellant in the propellant chamber to expel the fluent product out of the can chamber through the discharge opening.

4,641,766

METERING DISPENSER FOR HIGH VISCOSITY COMPOSITIONS

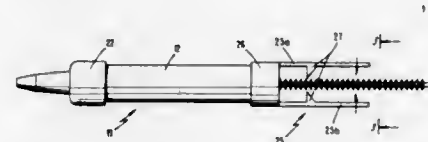
Richard J. Vlasich, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 2, 1984, Ser. No. 667,624

Int. Cl.⁴ B67D 5/42

U.S. Cl. 222—391

11 Claims



1. A device for dispensing predetermined doses of high viscosity compositions, comprising:

(a) an elongate hollow body having a discharge opening at a front end thereof and an interior region for containing said composition;

(b) plunger means received within said hollow body through a rear end thereof for dispensing said composition through the front end in response to longitudinal advancement of said plunger means through the body; and

(c) actuating means fixed to said hollow body for engaging with and to longitudinally advance said plunger means a predetermined incremental distance within the body, causing a precisely metered amount of composition to be dispensed through the discharge opening, said actuating means including a pair of actuating arms each having one end secured to said hollow body and an opposite free end projecting rearwardly from said hollow body and the front end thereof, said arms including, intermediate said one ends and free ends thereof, means for engaging said plunger means to longitudinally advance same through the body upon depressing of said free ends together.

4,641,767

CASTING TIP ASSEMBLY WITH REPLACEABLE UPSTREAM AND DOWNSTREAM UNITS

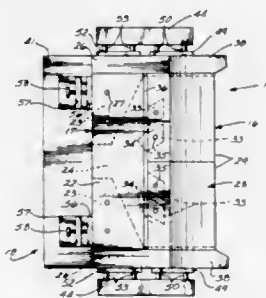
Dennis M. Smith, Crestline, Calif., assignor to Hunter Engineering Co., Inc., Riverside, Calif.

Filed Jan. 28, 1985, Ser. No. 695,679

Int. Cl.⁴ B22D 11/06

U.S. Cl. 222—591

4 Claims



1. A molten metal feed tip assembly mountable in a tip holder of a continuous casting machine comprising:

an upstream unit comprising:

a pair of upstream plates;

at least one spacer between the upstream plates for spac-

ing the upstream plates apart and for forming at least one upstream channel between the upstream plates for the downstream flow of molten metal through the upstream unit; and
 a pair of upstream end dams for enclosing the ends of the upstream plates;
 a preassembled downstream unit mountable in leak-proof abutment with the upstream unit comprising:
 a pair of downstream plates, each comprising two or more segments;
 means for maintaining the segments of each downstream plate in edge-to-edge abutment;
 at least one spacer between the downstream plates for spacing the downstream plates apart and for forming at least one downstream channel for the downstream flow of molten metal from the upstream unit through the downstream unit; and
 a pair of downstream end dams for enclosing the ends of the downstream plates.

4,641,768

TEEMING APPARATUS AND METHOD

Paul L. Hill, Chesterfield, United Kingdom, assignor to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

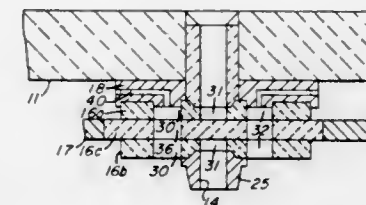
Filed Apr. 2, 1985, Ser. No. 719,089

Claims priority, application United Kingdom, May 11, 1984, 8412101

Int. Cl.⁴ B22D 41/08

U.S. Cl. 222—590

10 Claims



1. A sliding gate valve for controlling the flow of molten metal from the pour opening of a teeming vessel comprising:
 a mounting plate attached to said teeming vessel about the pour opening thereof;

a stationary plate secured to said mounting plate and having a teeming orifice in registry with said teeming vessel pour opening;

a second orifice in said stationary plate longitudinally spaced from the teeming orifice therein;

a movable gate having a teeming orifice in sliding contact with said stationary plate, said gate being selectively movable to place its teeming orifice into registry with either of the orifice in said stationary plate; and

gas feed means communicating with said stationary plate second orifice including means for directing gas fed to said second orifice away from said teeming vessel and through said gate orifice when it is placed in registry with said stationary plate second orifice.

10. A method of teeming molten metal from a vessel employing a teeming valve having a stationary plate containing a teeming orifice and a second orifice longitudinally spaced from the teeming orifice, a movable gate having a teeming orifice therein, and gas supply means communicating with said stationary plate second orifice, said method comprising the steps of:

(a) placing said gate teeming orifice in registry with said stationary plate teeming orifice for the discharge of molten metal from said vessel;

(b) moving said gate teeming orifice from registry with said stationary plate teeming orifice into registry with said stationary plate second orifice; and

(c) supplying inert gas to said stationary plate second orifice when leaking of molten metal is detected through the

interface between said stationary plate and said gate to freeze and thereby block the leakage.

4,641,769

FOLDING ROOF RACK FOR CARS

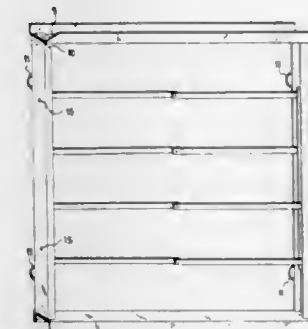
Salvador Ten Angel, Juan Bravo 16, 40001-Segovia, Spain
 Continuation of Ser. No. 625,536, Jul. 19, 1984, abandoned. This application Apr. 1, 1986, Ser. No. 847,132

Claims priority, application Spain, Jul. 27, 1983, 273778

Int. Cl.⁴ B60R 9/04

U.S. Cl. 224—314

5 Claims



1. A folding car roof rack comprising:

(a) first and second rigid side members of channel shape, each having first and second ends;

(b) first and second rigid end members, each of which has at least one elongate flat surface and first and second ends;

(c) a first articulated joint connecting the first ends of said first side and first end members in such a way that first end member can swing by 270 degrees about said first end of said first side member from a first position in which said flat surface of said first end member is parallel and close to the outer bottom surface of said first channel shaped side member to a second position in which said first end member forms a right angle with said first side member;

(d) a second articulated joint connecting the first ends of said second side and second end members in such a way that said second end member can swing by 270 degrees about said first end of said second side member from a first position in which said flat surface of said second end member is parallel and close to the outer bottom surface of said second channel shaped side member to a second position in which said second end member forms a right angle with said second side member;

(e) first separable fastening means for securing the second ends of said first side and second end members together while said roof rack is in use and said second end member is in said first position thereof relative to said first side member;

(f) second separable fastening means for securing the second ends of said second side and first end members together while said roof rack is in use and said first end member is in said second position thereof relative to said second side member; and

(g) a plurality of cargo support members, each cargo support member being articulated approximately midway between its ends and having ends which are respectively articulated to said first and second side members in such a manner that the open sides of said channel shaped side members face each other and each cargo support member can fold up, without interference with any other cargo support member, within a box-like split tube formed by said facing side members brought close to each other, when said separable fastening means are separated for placing said end members in their respective first positions.

4,641,776

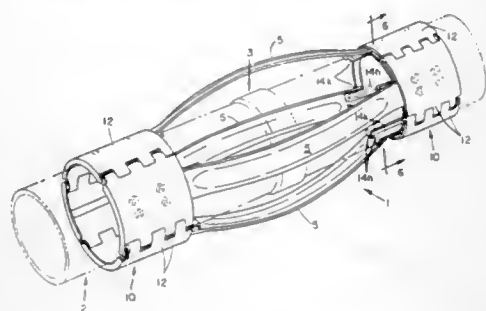
SEGMENTED CONCENTRIC CENTRALIZER

David J. Vasek, Universal City, and Harry W. Riddle, San Antonio, both of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Division of Ser. No. 546,881, Oct. 31, 1983, abandoned. This application Aug. 15, 1985, Ser. No. 765,798
Int. Cl.⁴ B23K 31/02; B21D 41/02

U.S. Cl. 228—155

1 Claim



1. The method of manufacture of a well conduit centralizer comprising first and second axially spaced collars extending around the well conduit and a plurality of axially extending bowed springs respectively attached at each axial end to the first and second collars, comprising the steps of:

- (1) stamping a plurality of segments from a rectangular sheet to form an arcuate double walled configuration having hinge loops on each end of each segment pivotally interconnectable to form a continuous ring having an internal cylindrical surface of a diameter less than the external diameter of the well conduit;
- (2) inserting the ends of each bowed spring between the walls of said double walled segment and welding each inserted end to both walls of the respective double walled segment;
- (3) pivotally interconnecting all segments at each end of the bowed springs by inserting pins through said hinge loops to form said first and second axially spaced collars; and
- (4) inserting an expandable mandrel within said collars and expanding the entire peripheral length of each collar to an internal diameter greater than the well conduit external diameter to provide a concentric, slidable fit of said collars upon the well conduit.

4,641,777

PRISMATIC CONTAINER OBTAINED FROM A FLAT CARDBOARD BLANK WITH A DIAPHRAGM END CLOSURE DEVICE FORMED BY STAMPING A PART OF THE FLAT BLANK

Domenico Fronduti, Città di Castello, Italy, assignor to Cartotecnica Tifernate S.p.A., Città di Castello, Italy

Filed Jul. 11, 1984, Ser. No. 629,882

Claims priority, application Italy, Jul. 11, 1983, 35952/83[U]; Jul. 11, 1983, 35953/83[U]

Int. Cl.⁴ B65D 5/32

U.S. Cl. 229—110

7 Claims

1. At least one flat blank for forming a polygonal container, comprising:

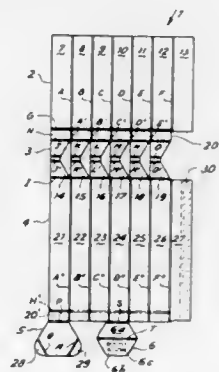
- a first rectangular part sub-divided into equal rectangular panels by longitudinal parallel score lines, the first part including at one side a lateral flap of dimensions substantially equal to those of one of the panels and having an opposite face which can be joined by gluing to the panel situated at a side opposite from the lateral flap;
- a second central part delimited from the first part by a transverse score line, and partially sub-divided into shaped panels each constituting a prolongation of a respective one of the panels of the first part, the shapes of the said shaped panels being defined by empty spaces in the form of isosceles trapezoids of equal dimensions, the longer bases of

which are aligned with the parallel longitudinal score lines of the first part and the smaller bases of which have a minimum length, the second central part likewise having, in a portion thereof adjacent the first part, a further transverse score line and longitudinal score lines between the transverse score lines aligned with the corresponding longitudinal score lines of the first part, the shaped panels being transversely traversed in their median part by pairs of closely spaced parallel lines which intersect the ends of the smaller bases of the isosceles trapezoids;

a third part of generally rectangular shape and subdivided for the whole of its length by parallel longitudinal score lines aligned with the corresponding longitudinal score lines of the first part, into identical panels and into a second lateral flap of dimensions substantially equal to those of any of the said identical panels, the second flap being located at one side of the third part and adapted to be glued to a rear face of the identical panel situated at an opposite side from the second flap,

and projections foldable along transverse score lines which form sides for connection with suitable panels of the third part of the blank, the projections being adapted to form a transverse wall of the container when the first and third parts are erected with their flaps adhered to their respective panels to form a hollow polygonal cross-sectional container,

wherein a first one of the projections is connected to the



panel situated at the side opposite from the second flap, the first projection having a substantially trapezoidal form with the smaller angles rounded and including two inclined and symmetrical score lines such as to delimit a remaining part of the projection in such a way as to confer on the remaining part of polygonal form having sides of a length equal to the width of the individual longitudinal panels of the third part and equal in number thereto so that the remaining part is in the final configuration of an adjacent end of the container, and to define two lower lateral guide flaps which bend automatically along their respective score lines when the container is erected, for subsequently facilitating sliding movement of the remaining part within the container and insuring proper closure of the adjacent end of the container,

and wherein a second one of the projections is connected by means of a transverse score line to an edge of the panel which is opposite, during assembly of the blank to form the container, to the identical panel intended to be glued to the second flap, the second projection having a polygonal form having sides of a length equal to the width of the individual longitudinal panels and equal in number thereto so that the second projection also is in the final configuration of the adjacent end of the container, and the second projection being sub-divided into two halves by a transverse score line parallel to the edge of the third part of the flat blank, for folding the second projection in half, there

being provided on the half of the second projection not connected to the third part a region for the application of adhesive for gluing to the first projection.

4,641,778

ELECTRONIC WATER HEATER THERMOSTAT SYSTEM

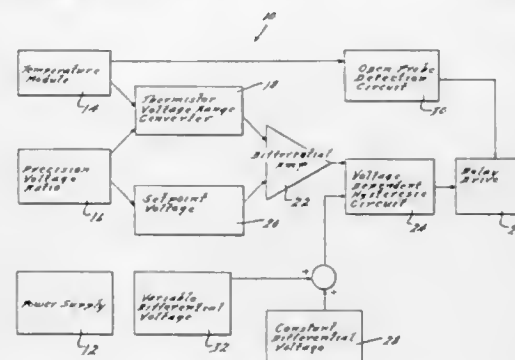
David M. Dodson, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 8, 1985, Ser. No. 720,856

Int. Cl.⁴ G05D 15/00

U.S. Cl. 236—20 R

25 Claims



1. An electronic water heater thermostat system for controlling the heating of water in a water heater having electrically operable fuel control means, said system comprising, in combination, temperature sensing means effective to detect the temperature of water in the water heater and generate a corresponding electrical signal indicative of the water temperature, temperature set point means having an output producing a voltage proportional to the desired set point temperature, differential amplifier means electrically connected to said temperature sensing means and to said temperature set point means and having an output providing a voltage representing the difference between the voltage of the temperature sensing signal and the output voltage of said set point means, differential voltage means, voltage dependent hysteresis means including comparator means having inputs connected to the output of said differential amplifier means and to said differential voltage means, said comparator means also having an output, an electrically operable switch means controlling the energization of said fuel control means, said switch means being electrically connected to the output of said comparator means.

4,641,779

CONCRETE GRADE CROSSING SYSTEM

Terrence X. O'Brien, 10513 Lake Stellacom Dr., and Dale E. McKennie, 10635 Lake Stellacom Dr. South West, both of Tacoma, Wash. 98449

Filed May 10, 1984, Ser. No. 609,488

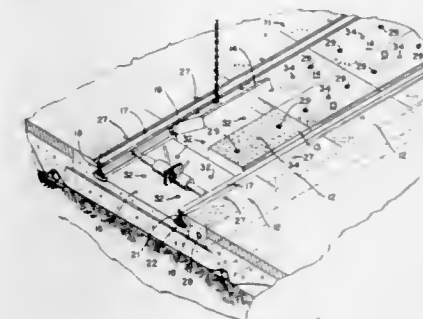
Int. Cl.⁴ E01B 25/28

U.S. Cl. 238—7

1 Claim

1. A method for making a railway crossing comprising positioning a plurality of base members end to end on a prepared rail bed, each of said base members being formed with a central recess extending between the transverse edges thereof and defining parallel walls of said central recess each being formed to conform generally to the shape of the outer surface of a rail; providing a pair of rails, each having its base and web portions encased in a boot of elastomeric material; positioning the boot-encased rails in the central recesses of the plurality of base members respectively abutting the walls of the central recesses; positioning pairs of generally planar central rail-locking panels in abutting relation with the central recesses of the base members between the rails, one pair after another such that each pair is aligned with a base member, and

forcing the boot-encased rails apart thereby compressing the elastomeric boots to enable the rail-locking panels to sit on the bottoms of said central recesses such that the boot-encased rails are forced into engagement with the



respectively associated walls of the central recesses and the central panels; and fastening the center panels to the base members such that the boot-encased rails are wedged into their proper positions.

4,641,780

SPRAYING APPARATUS

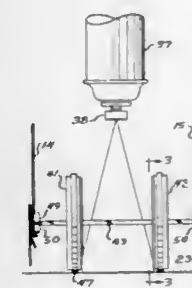
Thomas J. Smrt, 172 S. Northwest Hwy., Cary, Ill. 60013

Filed Jun. 29, 1981, Ser. No. 278,164

Int. Cl.⁴ B05B 1/28

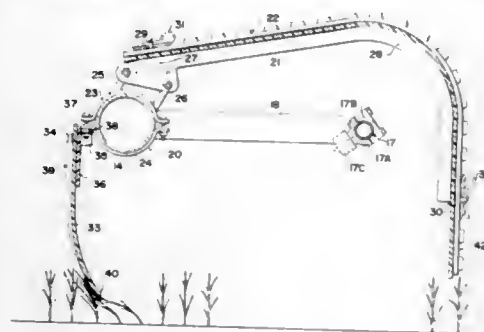
U.S. Cl. 239—150

8 Claims



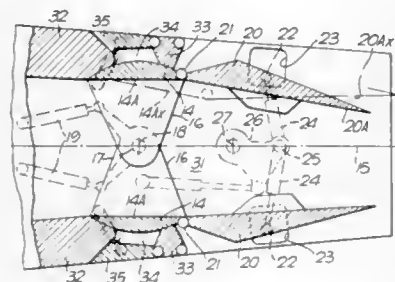
1. In a spraying apparatus having means for spraying material onto a surface to be sprayed, a pair of spaced-apart discs rotatably mounted on the spraying apparatus, the discs being engageable with the surface to be sprayed whereby the discs rotate over the surface as the spraying apparatus is moved over the surface, each of the discs including a circular wall and an axially extending flange which extends from the circular wall toward the other disc, each of the flanges having an axially extending outer edge and terminating in a radially inwardly extending retaining lip whereby the flange and the lip provide a well for material which is sprayed onto the flange, each of the discs including a radially outwardly extending rim which projects radially beyond said outer edge of the flange and which engages the surface to be sprayed whereby the outer edge of the flange is spaced from the surface by the rim, and a plurality of generally radially extending ribs on the circular wall for trapping material which is sprayed onto the disc.

4,641,781
COVERED FIELD SPRAYERS
 David G. McCrea, and Thomas E. McCrea, both of Box 993,
 Roblin, Manitoba, Canada (ROL 1P0)
 Filed Jan. 17, 1985, Ser. No. 692,228
 Claims priority, application Canada, Aug. 24, 1984, 461798
 Int. Cl.⁴ B05B 1/20
 U.S. Cl. 239—159 16 Claims



15. A cover attachment for a field sprayer of the type having an elongate support frame, means supporting the support frame for transport in a forward direction transversely to its length, a liquid supply boom supported longitudinally of the support frame and a plurality of nozzles along the length of the boom for spraying the field, the cover attachment comprising frame means providing a plurality of arm members extending transversely to the length of the support frame and flexible sheet means for extending over said frame means to cover said nozzles, said flexible sheet means being formed from plastics material in sheet portions separated longitudinally of the support frame, the portions being arranged to overlap at and being connected to the arm members, and being supported solely at said arm members so as to be effectively self-supporting therebetween, wherein each sheet portion includes a plurality of ribs longitudinally thereof leaving at least one plane edge for overlapping the next adjacent sheet portion.

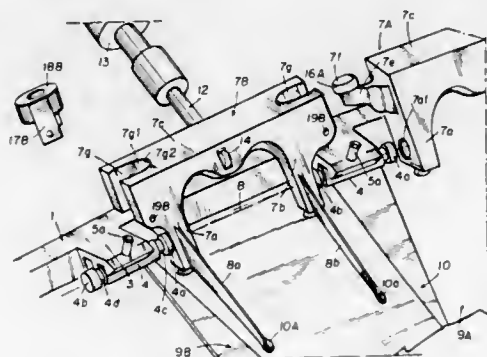
4,641,782
JET PROPULSION NOZZLE
 Clifford S. Woodward, Bristol, England, assignor to Rolls-Royce plc, London, England
 Filed Feb. 18, 1982, Ser. No. 356,908
 Claims priority, application United Kingdom, Feb. 24, 1981, 8105843
 Int. Cl.⁴ F02K 1/11, 1/12
 U.S. Cl. 239—265.29 5 Claims



1. A jet propulsion nozzle comprising a pair of mutually confronting walls, a pair of mutually confronting first panels extending transversely between the walls, each first panel being supported on the walls for pivotal movement about a common first axis positioned between said pair of first panels and extending transversely between the walls, a pair of mutually confronting second panels extending transversely between the walls, each second panel being situated adjacent a respec-

tive one of said first pair of panels and being supported thereon for pivotal motion about a second axis parallel to said first common axis, said walls and panels defining between them a flow duct, first means for pivoting each of said first panels about the common first axis and second means for pivoting each of said second panels about the second axis, independently of any pivotal position of the first panels, thereby permitting the panels to be moved into positions wherein said duct becomes respectively convergent and a convergent-divergent, such that when said first panels are in a first position, the panels obturate thrust reverser openings and comprise the flow duct, and when said first panels are in a second position, the panels obturate said flow duct and comprise a thrust reverser.

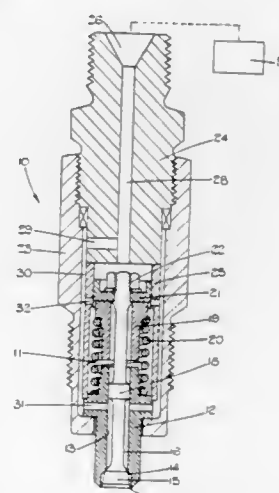
4,641,783
EXHAUST NOZZLE ASSEMBLY FOR A TURBOJET ENGINE
 André A. M. L. Camboulives, Paris, France, assignor to Societe Nationale d'Etude et de Construction de Moteur d'Aviation (SNECMA), France
 Filed Dec. 19, 1984, Ser. No. 683,365
 Claims priority, application France, Dec. 21, 1983, 83 20437
 Int. Cl.⁴ B64C 9/38
 U.S. Cl. 239—265.39 19 Claims



1. In a turbojet engine having an annular exhaust gas outlet duct with a central longitudinal axis, the improved exhaust nozzle assembly comprising:
 (a) a plurality of hook members attached to the outlet duct and distributed evenly about the circumference of the outlet duct each hook member defining a generally "U" shaped slot extending across the width of the hook member, each generally "U" shaped slot having a first surface extending generally perpendicular to the central longitudinal axis and an adjacent second surface extending generally perpendicular to the first surface;
 (b) a plurality of first nozzle flaps distributed about the circumference of the outlet duct;
 (c) a journal shaft having two adjacent perpendicular surfaces, the length of the journal shaft exceeding the width of the hook members;
 (d) attachment means to attach a journal shaft to each hook member such that the perpendicular surfaces on the shaft contact the first and second surfaces of the hook member slot;
 (e) cylindrical bearing means on each end of the journal shaft;
 (f) a plurality of control lever members operatively connected to selected nozzle flaps and pivotally attached to the cylindrical bearing means such that each control lever member pivots about an axis extending generally perpendicular to the central longitudinal axis;
 (g) ball joint means interconnecting adjacent control lever members so as to synchronize the movement of the control lever members and to permit variation in the distance

between adjacent control lever members as they pivot about their axes; and,
 (h) a plurality of control cylinder means each having a stationary portion attached to the outlet duct and a movable portion attached to a control lever member such that the angle of the nozzle flaps with respect to the central longitudinal axis may be adjusted.

4,641,784
FUEL INJECTION NOZZLES
 Peter Howes, Gerrards Cross, England, assignor to Lucas Industries Public Limited Company, Birmingham, England
 Filed Apr. 25, 1984, Ser. No. 603,909
 Claims priority, application United Kingdom, Jun. 8, 1983, 8315717
 Int. Cl.⁴ F02M 61/00
 U.S. Cl. 239—453 5 Claims

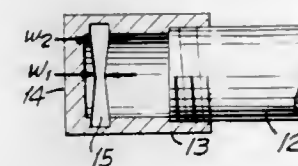


1. A fuel injection nozzle through which fuel can be supplied to a combustion chamber of an internal combustion engine, the nozzle being of the so-called outwardly opening type and comprising a valve member slidable in a bore, the valve member having a head shaped to co-operate with a seating, resilient means biasing the valve member to a closed position in which the head is in sealing engagement with the seating and in which the flow of fuel from an inlet to an outlet is prevented, a hollow skirt member defining a cylinder, means defining a piston slidable within said cylinder between a first position and a second position, a port in said skirt member through which fuel can flow into and out of a chamber defined by said cylinder and said means defining said piston, said port in use being progressively covered by said piston as the valve head lifts away from the seating to be closed when said piston is in said second position to close said chamber and trap fuel in said closed chamber, the fuel in said closed chamber forming a liquid spring acting to assist the action of said resilient means.

4,641,785
FLAT JET NOZZLE FOR COOLANT SPRAYING ON A CONTINUOUSLY CONVEYED BILLET
 Horst Grothe, Kaarst, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag AG, Fed. Rep. of Germany
 Filed Jul. 8, 1985, Ser. No. 752,939
 Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425092
 Int. Cl.⁴ B22D 11/124
 U.S. Cl. 239—597 5 Claims

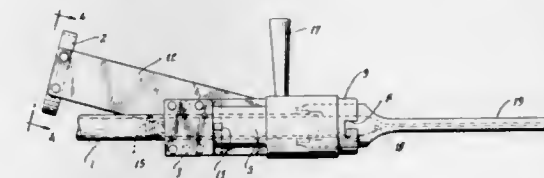
1. In a flat jet nozzle for coolant spraying of a continuously conveyed billet, particularly in slab form, with a wide angle spray along a width of said billet, said flat jet nozzle being formed with a cylindrical wall having means defining in said cylindrical wall a discharge slot extending in the circumferen-

tial direction of said cylindrical wall, said slot having a middle and outer sides, the improvement comprising that said dis-



charge slot is formed with a width which increases from said middle of said slot to said outer sides thereof.

4,641,786
NOZZLE FOR CRYOGENIC CLEANING APPARATUS
 David E. Moore, Cincinnati, Ohio, assignor to Cryoblast, Inc., West Haven, Conn.
 Filed Dec. 14, 1984, Ser. No. 682,262
 Int. Cl.⁴ B05B 7/14; B24C 5/04
 U.S. Cl. 239—590 3 Claims

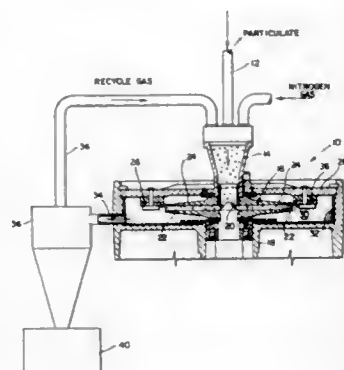


1. A nozzle for directing pellets at a body to be cleaned, said pellets formed of a solid state material which sublimates to a vapor state after impact with the body, comprising:
 (a) an elongated, demountable, nozzle body having a pellet entrance constriction thereof;
 (b) a support means for demountably receiving and supporting said nozzle body;
 (c) means for conveying pellets to said support means for acceleration toward said constriction;
 (d) said constriction having a limiting passage which is smaller in cross-sectional area than pellets conveyed to said nozzle body whereby said pellets are fractured upon impact with said constriction and are accelerated to a sonic velocity.

4,641,787
METHOD OF COMMUNUTING RARE EARTH POWDER FOR PRODUCING RARE EARTH MAGNET
 Christian C. Petersen, Westwood, and Ernst C. Wettstein, Acton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
 Filed Sep. 26, 1983, Ser. No. 535,867
 Int. Cl.⁴ B02C 19/12
 U.S. Cl. 241—5 13 Claims

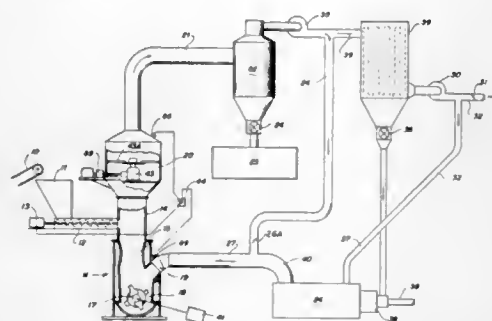
1. A method of comminuting rare earth metallic particulate comprising the steps of:
 impacting the particulate against at least one impacting surface in a treatment zone by projecting the particulate under centrifugal force against said surface at a velocity sufficient to cause comminution of at least a portion of the particulate;
 maintaining at least the treatment zone and the impact surface in a temperature range which inhibits oxidation of the particulate while promoting fracture of the particulate; and,
 employing an inert gaseous medium in the treatment zone to

prohibit combustion of the impacted particulate and having significantly low concentrations of oxygen and water



vapor so as to substantially eliminate oxidation of the particulate.

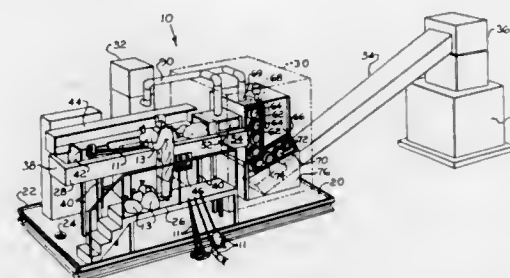
4,641,788
METHOD OF SIMULTANEOUSLY GRINDING COAL AND DOLOMITE
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.
Division of Ser. No. 449,438, Dec. 13, 1982, abandoned. This application Nov. 16, 1984, Ser. No. 672,067
Int. Cl.⁴ B02C 19/12
U.S. Cl. 241-14 9 Claims



1. A method of reducing coal and dolomite, each having its own hardness characteristic, the coal and dolomite being simultaneously reduced in a common impact mill to prepare a common charge of a mix thereof having a particle size as a fuel for combustion, said method comprising the steps of:

- (a) mixing the coal and dolomite initially in a predetermined volumetric ratio in the impact mill, thereby forming a common charge of coal and dolomite;
- (b) impacting the common charge of coal and dolomite, thereby reducing the size of the coal and dolomite;
- (c) retaining a portion of the common charge of coal and dolomite during the impacting step in the mill to absorb a portion of the impact energy applied to the coal and dolomite, thereby minimizing the formation of extreme fines; and
- (d) collecting the common charge of coal and dolomite after the impacting step.

4,641,789
COMPACTOR ENHANCEMENT SYSTEM
Robert L. Moscardini, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 27, 1983, Ser. No. 565,601
Int. Cl.⁴ B02L 23/02, 23/04
U.S. Cl. 241-31 16 Claims



1. Apparatus for treating contaminated articles, at least some of the articles to be treated having a low-level of radioactivity, said apparatus preparing the contaminated articles for compaction and comprising:

- an inner housing;
- shredder means disposed within said inner housing for reducing contaminated articles fed into said inner housing into fragments;
- feeder means for delivering articles into said inner housing for fragmentation by said shredder means, said feeder means defining a first extension of said inner housing, said feeder means including:
- an article receiving;
- cover means for said trough, said cover means opening said trough to the ambient atmosphere when in an open loading condition and hermetically sealing said trough from the ambient atmosphere when in the closed feeding condition; and
- ram means, said ram means cooperating with said trough to force feed articles disposed therein into said inner housing for fragmentation by said shredder means when said cover means is in the closed condition;
- conveyor means, said conveyor means defining a second extension of said inner housing, said conveyor means receiving and transporting said fragments away from said inner housing;
- means for maintaining a pressure within said inner housing and said first and second extensions thereof which is less than the ambient atmospheric pressure when the apparatus is in use; and
- air lock means for discharging said fragments from said conveyor means for subsequent compaction.

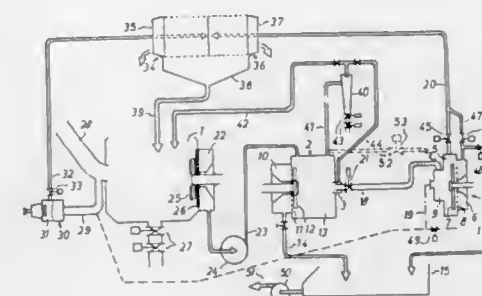
4,641,790
SYSTEM FOR WASTEPAPER PROCESSING USING A WASH FILTER
Walter Musselmann, Heidenheim, and Helmut Konecsny, Gien-gen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany
Filed Dec. 12, 1984, Ser. No. 680,740
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345548
Int. Cl.⁴ D21B 1/32; D21C 5/02
U.S. Cl. 241-46.17 2 Claims

1. A system for wastepaper processing with a primary pulper containing fiber suspension comprising:

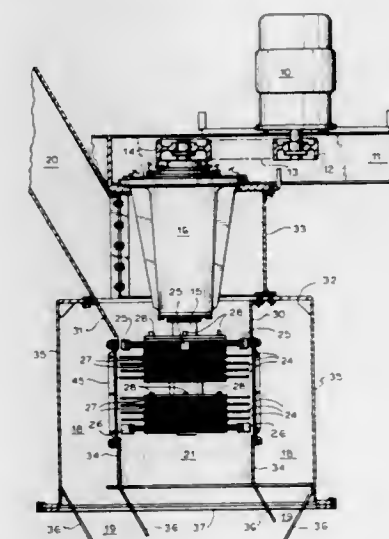
- a wash filter, said wash filter including a generally round agitating space and an accepted stock space, said accepted stock space being separated from said agitating space by an essentially flat screen, an agitating wheel positioned within said agitating space upstream of said flat screen,

said wash filter further including a generally round entrance space; a plurality of connector lines, one of said connector lines being tangentially connected to the entrance space, said one connector line placing said primary pulper in communication with the entrance space whereby fiber suspension is tangentially received into the entrance space, another of said connector lines having a diameter and being axially connected to the center of an end side of said entrance space, the diameter of the end side being greater than the diameter of said other connector, said other connector

being firmly fixed to the casing and having longitudinal races located on the rotor side, circumferentially closed cooling races on the external side of the casing and on the radially outer side of the bushing, and on the inside of the casing in a second bushing firmly fixed to the back cover there is provided a common concentric rectangular coolant receiving race connected to the atmosphere by a plurality of spaced output radial races disposed in the back cover, the common coolant receiving race being connected to the inner space of the casing by a plurality of evenly spaced outgoing radial races located in the bushing.

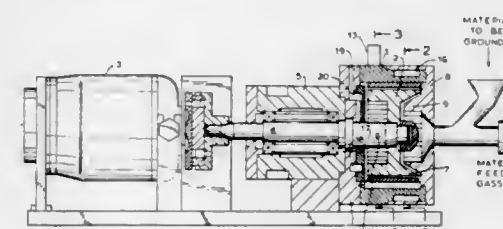


4,641,792
FIBER DEPITHER
Eduardo J. Villavicencio, San Angel, Mexico, and Jorge E. Arana, Bethesda, Md., assignors to Process Evaluation and Development Corporation, Dallas, Tex.
Filed Oct. 22, 1984, Ser. No. 663,590
Int. Cl.⁴ B02C 13/28
U.S. Cl. 241-74 7 Claims



placing the entrance space in communication with a source of wash water whereby the wash water is axially received into the entrance space; the diameter of said entrance space is between about 40 percent and about 70 percent smaller than the diameter of said agitating space, and the ratio of the width to the diameter of the agitating space being between about 0.15 and about 0.35; and said entrance space being connected through a hydrocyclone to the primary pulper, and a tailing removal line communicating with and extending from said agitating space of said wash filter.

4,641,791
APPARATUS FOR MATERIAL GRINDING
Atanas S. Cermanov; Ljubomir R. Kazarov; Marco S. Valev; Jelyazco C. Jelyazov, and Rusy C. Kolev, all of Stara Zagora, Bulgaria, assignors to N P S P "Desintegrator", Stara Zagora, Bulgaria
Filed May 13, 1985, Ser. No. 733,623
Claims priority, application Bulgaria, May 11, 1984, 65474
Int. Cl.⁴ B02C 13/10
U.S. Cl. 241-66 3 Claims



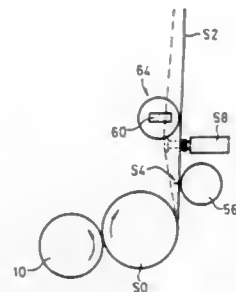
1. An apparatus for grinding materials comprising a cylindrical casing in which, along its axis, a rotor in the shape of a disc is mounted, the disc being driven by a prime mover and having pins evenly distributed along its circumference on both of its sides, the casing having a plurality of holes in it, one of the holes in the casing being closed by a fixed front cover having a receiving neck disposed along its axis, counter-pins located on the inside of the casing and evenly distributed along its circumference, another casing hole, on the prime mover side of the casing, being closed by a fixed back cover, and an outgoing hole in the casing disposed between the disc and the back cover, a first bushing enveloping the rotor, the first bushing

1. An improved depithing device comprising an inlet to permit the flow of fiber into a circular chamber having a perforated wall structure, an outlet from said circular chamber, a rotor carrying an upper plurality of blades and a lower plurality of blades centered for rotation within said circular chamber, means to rotate said rotor, and a chamber surrounding said circular chamber and adapted to receive material passing through the perforated wall of said circular chamber; the improvement comprising said rotor having a separated upper and a lower plurality of blades; the uppermost blades of said upper plurality of blades being feeder blades having an end surface area at least 2 times the end surface area of the remaining blades; and the lowermost blades of said lower plurality of blades being fan blades wherein the outer end of said blades have a ratio of height to width of at least 5.

4,641,793
THREAD WINDING MACHINE AND METHOD OF PERFORMING AUTOMATIC CHANGEOVER OF WINDING OF A THREAD
Adolf Flüeli; Heinz Oswald, and Kurt Schefer, all of Winterthur, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland
Filed Apr. 16, 1985, Ser. No. 723,981
Int. Cl.⁴ B65H 54/02, 67/04
U.S. Cl. 242-18 PW 4 Claims

1. A thread winding machine, comprising: at least one chuck rotatable about a longitudinal chuck axis

and capable of receiving at least one bobbin tube at a predetermined location thereon for rotation therewith; a thread catching device in said at least one chuck adjacent said predetermined location; guide means operable to engage a thread with said at least one chuck near said catching device; means for moving said guide means axially of said at least one chuck in order to move the thread into said thread



catching device and from said thread catching device onto said predetermined location; said moving means being arranged relative to said at least one chuck and containing structure for moving said guide means at a first speed when moving the thread from said catching device onto said predetermined location and for moving said guide means at a second speed when moving the thread into said thread catching device; and said first speed being higher than said second speed.

4,641,794

WIRE ACCUMULATOR

Takashi Yamazaki, and Katsuji Sakamoto, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

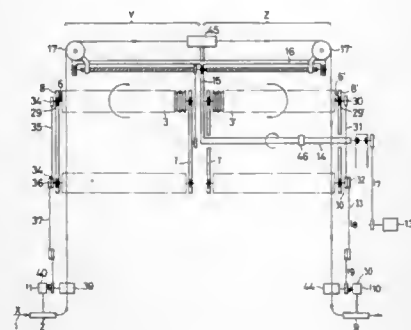
Filed Nov. 7, 1984, Ser. No. 669,153

Claims priority, application Japan, Nov. 8, 1983, 58-210572

Int. Cl.⁴ B65H 51/22

U.S. Cl. 242—47.01

4 Claims



1. A wire accumulator, comprising: first and second coaxially disposed assemblies of accumulating guide rollers having equally pitched grooves; first and second drive means for respectively rotatably driving said accumulating guide rollers; a shaft extending through one of said assemblies; guide bar means rotatable with said shaft so as to orbit about said assemblies; a first variable speed motor for rotating said shaft; distributing guide rollers movably mounted on said guide bar means and orbited about said assemblies by said first variable speed motor, for winding a traveling wire on said assemblies or unwinding said wire therefrom; a first take-up device driven by said first drive means for receiving said wire from a source thereof;

a second take-up device driven by said second drive means for delivering said wire; means for rotationally interconnecting said first assembly, said first drive means and said first take-up device so that a wire take-up speed of said first take-up device is equal to a peripheral speed of said accumulating guide rollers of said first assembly; means for rotationally interconnecting said second assembly, said second drive means and said second take-up device so that a wire take-up speed of said second take-up device is equal to a peripheral speed of said accumulating guide rollers of said second assembly; a tension and speed control device provided between said distributing guide rollers for transmitting a tension and speed control signal; and means, responsive to said signal, for controlling the orbital speed of said distributing guide rollers around said assemblies or the speed of rotation of said second set of accumulating guide rollers in accordance therewith.

4,641,795

PRINTED PRODUCT COIL

Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

PCT No. PCT/CH84/00147, § 371 Date May 10, 1985, § 102(e) Date May 10, 1985, PCT Pub. No. WO85/01279, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 19, 1984, Ser. No. 732,585

Claims priority, application Switzerland, Sep. 19, 1983, 5068/83; May 9, 1984, 2267/84

Int. Cl.⁴ B65H 75/02, 16/02; B21C 47/24; B65G 65/00

U.S. Cl. 242—59

10 Claims



1. A printed product coil, comprising: a cylindrical winding core; printed products wound-up upon said cylindrical winding core; said printed products having at least one open edge; a winding band maintained under tension and wound in between the winding layers; and said cylindrical winding core having a lesser width than said printed products to be wound up and being recessed at both ends thereof in relation to end faces of the printed product coil.

4,641,796

AIRFOIL

Winfried M. Feifel, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,843

Int. Cl.⁴ B64C 3/14

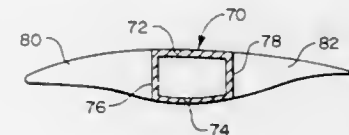
U.S. Cl. 244—35 R

38 Claims

1. An airfoil having a leading edge, a trailing edge, an upper surface, a lower surface, a chord-wise axis and a spanwise axis,

said airfoil comprising at a chord-wise location on said spanwise axis:

- a substantially uninterrupted upper skin member defining said upper surface and being aerodynamically contoured to form a flow pattern over the upper surface to produce an upward lift;
- a substantially uninterrupted lower skin member defining said lower surface, said lower skin member comprising:
 - a first forward lower surface portion extending rearwardly from said leading edge to a first inflection point;
 - a second transitional lower surface portion extending rearwardly from said first surface portion at said first inflection point to curve concavely downwardly to a second inflection point, said second inflection point being located rearwardly from said leading edge at a distance between one-quarter to four-tenths of a chord length of said airfoil at said chord-wise location;
 - a third belly lower surface portion extending rearwardly from said second lower surface portion at said



- a second inflection point to curve convexly to form a downwardly expanded belly section of said airfoil;
- a fourth trailing edge lower surface portion extending from said third lower surface portion to said trailing edge;
- said lower surface portions being contoured to form a flow pattern where flow along said first and second lower surface portions is at an average lower velocity, and flow along said third lower surface portion is at a relatively higher average velocity, in a manner that relatively greater lifting force is exerted at the first and second lower surface portions, and relatively less lifting force is exerted at the third lower surface portion;
- a primary load bearing structure located primarily in the belly section of the airfoil;

whereby said airfoil is aerodynamically contoured to function effectively aerodynamically, and yet provide relatively greater airfoil thickness at said belly section to enable said primary load carrying structure to have a relatively large height dimension.

4,641,797

HOT AIR BALLOON KITE

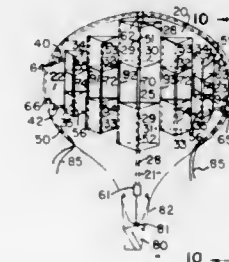
Richard D. Stolk, 259 Braeshire Dr., Manchester, Mo. 63011

Filed May 3, 1984, Ser. No. 606,866

Int. Cl.⁴ B64C 31/06

U.S. Cl. 244—153 R

10 Claims



1. A kite comprising:

- a flat balloon silhouette-shaped cover having a vent,
- a plurality of vertical cover longerons,
- a plurality of horizontal cover spars,

- a semi-rigid member around the leading perimeter edge of the cover,
- a plurality of leading triangular cells, of diminishing size proceeding from vertical center line horizontally toward the edge, positioned symmetrically about the vertical center line of the cover, each cell having its rear surface on the cover, and its apex edge parallel to the cover,
- a plurality of trailing triangular cells, of diminishing size proceeding from the vertical center line horizontally toward the edge, positioned symmetrically about the vertical center line of the cover, each cell having its rear surface on the cover, and its apex edge parallel to the cover, and
- a plurality of cell longerons attached to the apex edges of any leading and trailing triangular cells which are in the same planes.

4,641,798

SYSTEM FOR RETAINING OR RELEASING SPACECRAFT SOLAR PANELS

Frans W. De Haan, De Hoef, Jan Wynia, Espel, and Rob Zwanenburg, Alphen A.D. Rijn, all of Netherlands, assignors to Fokker B.V., Netherlands

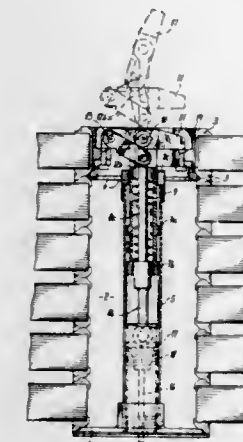
Filed Feb. 6, 1985, Ser. No. 698,620

Claims priority, application Netherlands, Feb. 6, 1984, 8400362

Int. Cl.⁴ B64G 1/44

U.S. Cl. 244—173

9 Claims



1. A system for retaining or releasing a number of relatively flat panels piled onto a supporting structure such as solar panels or a spacecraft which are mutually pivotably zigzag wise connected and can be deployed from the piled condition to an unfolded condition and can be refolded from the unfolded condition into the piled condition, which panels each comprise a number of passages at a distance of the side edges of each panel defining a number of channels through the piled panels, the system comprising one or more retainers each attached to the supporting structure and extending through one of said channels, each retainer comprising operating elements coupled to control means attached to the supporting structure and coupled to one or more seizing elements which under control of said control means and through said operating elements can be moved telescopically in the direction of said channels away from the panels over a predetermined distance and can thereafter be brought from a retaining condition, in which they seize the outer panel of the pile, to a releasing condition in which they do not obstruct the deploying movement of the panels in relation to the supporting structure, which seizing elements after refolding the panels into a pile adjacent to the supporting structure and through proper functioning of the control means and through said operating elements can be brought from the releasing condition into the

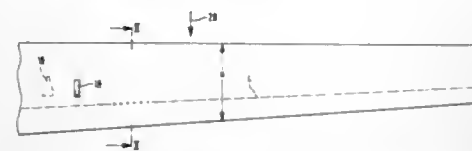
retaining condition and thereafter can be moved telescopically in the channel direction over said predetermined distance towards said panels.

4,641,799 ARRANGEMENT FOR CONTROLLING THE AIR FLOW OVER AERODYNAMIC PROFILES

Armin W. Quast, and Karl H. Horstmann, both of Brunswick, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany
Continuation of Ser. No. 582,142, Feb. 24, 1984, abandoned, which is a continuation of Ser. No. 318,697, Nov. 6, 1981, abandoned. This application Aug. 21, 1985, Ser. No. 768,166
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043567

Int. Cl.⁴ B64C 21/02
U.S. Cl. 244—207

7 Claims



1. In a wing or blade having an aerodynamic profile and designed for use under laminar air flow conditions at a Reynolds number lower than 3×10^6 , the wing or blade having a profile surface which at a limited region between the leading and trailing edges of the wing or blade normally gives rise to a separation bubble disrupting the laminar air flow over that profile surface;

an arrangement for preventing the formation of the separation bubble, comprising:

at least one row of fluid discharge orifices arranged only in said limited region of the profile surface, the orifices in said at least one row being spaced from one another substantially along the longitudinal direction of the wing or blade;

said discharge orifices having a diameter of less than 1 mm and a discharge coefficient $C_D = v/(FV)$ of less than 10^{-4} where v is the volume flow of air or like fluid through the discharge orifices, F is the area of the surface of the wing or blade, and V is the velocity of the air flow over the wing or blade; and

means in said wing or blade for directing air or like fluid to said discharge orifices from the interior of the wing or blade under a pressure sufficient to cause an outflow of the air or fluid through said discharge orifices at a velocity and volume flow rate sufficient to cause increased turbulence in the air flow over the wing or blade in said limited region of the profile surface for avoiding the formation of the separation bubble.

4,641,800 TANDEM OR MULTI-WINGED HIGH PERFORMANCE AIRCRAFT

Elbert L. Rutan, Hangar 73, Mojave Airport, Mojave, Calif. 93501

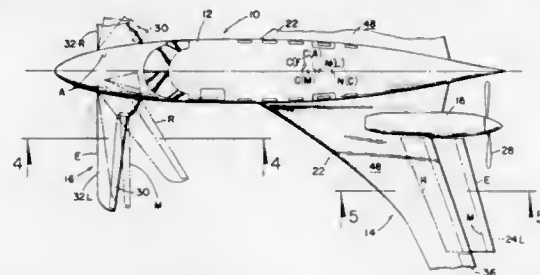
Filed Aug. 18, 1983, Ser. No. 524,332
Int. Cl.⁴ B64C 3/54, 3/40

U.S. Cl. 244—218

23 Claims

1. A tandem or multi-winged aircraft comprising: a fuselage; primary and secondary wing systems attached to said fuselage for supplying positive lift thereto; propulsion means for generating a forward thrust, said fuselage, wing systems and propulsion means cooperating to define a center of gravity and a neutral point having a spaced relationship to one another effective to maintain stable flight, said secondary wing system having an average positive lift per unit area greater than the average positive lift per unit area of said primary wing system,

said secondary wing system being mounted forwardly of said primary wing system, said secondary wing system including a pair of wing elements pivotally movable fore and aft relative to said fuselage between a retracted position swept aft to define a sweep angle bearing an acute angular relationship to the latter and an extended forwardly swept position in which said sweep angle is substantially increased, said primary wing system including at least one pair of fixed primary wing elements, said secondary wing elements and said one pair of primary wing elements both having a positive net lift; area-increasing means



operatively associated with said one pair of primary wing elements located aft of said center of gravity, said area-increasing means being effective upon independent actuation to vary said spaced relationship between said center of gravity and neutral point; and control means operatively interconnecting said area-increasing means in all operative positions of the latter so as to simultaneously vary the sweep angle of said secondary wing elements and coordinate movement thereof with that of said area-increasing means to the extent required to at least substantially maintain said predetermined spaced relationship.

4,641,801 TERMINALLY GUIDED WEAPON DELIVERY SYSTEM

David D. Lynch, Jr., 18651 Gledhill St., Northridge, Calif. 91324, and William H. Bell, c/o Federal Corrections Institution, Springfield, Mo. 65802

Continuation of Ser. No. 755,533, Jul. 15, 1985, abandoned, which is a continuation of Ser. No. 371,636, Apr. 21, 1982, abandoned. This application Jan. 22, 1986, Ser. No. 821,865

Int. Cl.⁴ F41G 7/30

U.S. Cl. 244—3.14

1 Claim



1. A weapon system for providing terminal guidance to a projectile which rotates about its longitudinal axis during flight and which responds to a command signal so as to modify the flight path in such a manner as to decrease the magnitude of the miss vector between the projectile and a target, said weapon system comprising:

means for tracking the target and providing tracking signals indicative of the location of the target;
means for launching said projectile;
means for computing the location of said projectile after launch and for providing trajectory signals indicative of the trajectory of said projectile;
a canted linearly polarized antenna and a transmitter beacon both carried by said projectile such that transmitter beacon energy is transmitted from said antenna, whereby said energy is polarization modulated as a function of the angular orientation of said projectile;
means, responsive to the polarization modulated transmitter

beacon energy, for measuring the relative angular orientation of said projectile about said axis; and
means responsive to said tracking signals, said trajectory signals and to the measured angular orientation of said projectile for computing an uncorrected miss vector and for providing a command signal, during the terminal phase of flight of said projectile, so as to cause a decrease in the magnitude of the miss vector.

4,641,802 PROJECTILE STABILIZATION SYSTEM

Seev W. Zalmon, Haifa; Shlomo Engel, Rishon Le Zion, and Joseph Eyal, Ramat-Hasharon, all of Israel, assignors to The State of Israel, Ministry of Defence, Israel Military Industries, Israel

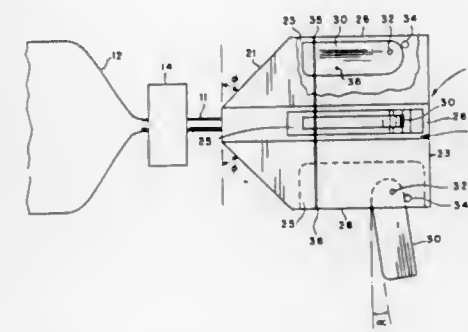
Filed Aug. 8, 1984, Ser. No. 638,769

Claims priority, application Israel, Jun. 4, 1984, 72000

Int. Cl.⁴ F42B 13/32, 15/053

U.S. Cl. 244—3.28

5 Claims



1. A system for stabilizing a projectile which is propellable by gas pressure out of a bore of a firing device toward a target, the system comprising:

a plurality of fixed fins arranged aft of the projectile and extending outwardly from a core, each fixed fin defining a pocket which extends inwardly from a top side of the fixed fin; and
a plurality of folding fins each pivotally accommodatable in the pocket of a fixed fin, with each folding fin being totally within a pocket when in the folded state and being pivotable to assume an unfolded state where a substantial portion of the folding fin is out of said pocket when said projectile and system exit the device's bore, each of said folding fins being adapted to unfold in a sense opposed to the flight direction of said projectile, wherein each of the folding fin is adapted to unfold as a function of a moment applied to the folding fin, the moment M' being definable as $M' = \Delta p \cdot A \cdot l$ wherein $\Delta p = \frac{1}{2} \rho_g (V_g - V_p)^2$, ρ_g is the average density of the propellant gas, V_g is the gas velocity after exiting the bore, V_p is the projectile velocity after exiting the bore, A is the area of the top surface of the folding fin and l is the distance between a pivot pin about which the folding fin pivots and the fin's center of gravity.

4,641,803 TRACK CIRCUIT

Christopher R. Brown, and Humphrey Roachsmith, both of Wiltshire, England, assignors to Westinghouse Brake and Signal Company Limited, Great Britain

Filed Jan. 23, 1985, Ser. No. 693,914
Claims priority, application United Kingdom, Jan. 30, 1984, 8402359

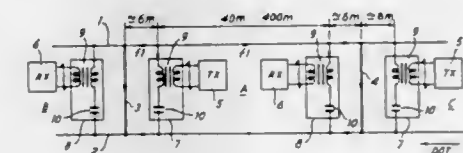
Int. Cl.⁴ B61L 21/00

U.S. Cl. 246—34 CT

5 Claims

1. A railway track circuit arrangement of the kind used for railway vehicle detection in which an electrical A.C. signal of predetermined frequency is carried by the track rails to estab-

lish one or more track circuits in said track rails, said track rails being electrically continuous with each of said track circuits being electrically isolated from said other track circuits in adjacent track sections by an A.C. electrical signal separation zone, said zones at opposite ends of each of said track sections and spatially separated along said track by a first distance equal to the length of the intervening track circuit section, each of said signal separation zones being defined by, in combination, electrical shorting means connected between said track rails, a capacitor and an inductor in series also connected between said



rails at points on opposite sides of said shorting means and spaced therefrom by a second distance, said second distance being substantially shorter than said first distance and selected to provide that an electrical signal loop formed at one end of said track section by the respective shorting means, capacitor, inductor and intermediate lengths of said track rails is resonant at a predetermined signal frequency of said section, and wherein said shorting means consists of a pair of low impedance conductors connected between said track rails at points spaced from each other by a third distance.

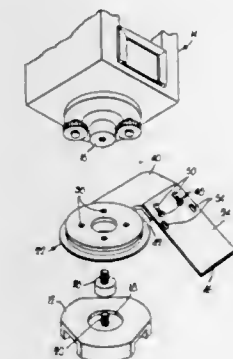
4,641,804 ARTICLE SUPPORTING BRACKET FOR SURVEY TRIPOD

Robert H. Martin, Overland Park, Kans.; Bradley J. Rozelle, and Thomas J. Breier, both of Kansas City, Mo., assignors to The Lietz Company, Shawnee Mission, Kans.

Filed Apr. 8, 1985, Ser. No. 720,801
Int. Cl.⁴ A47F 5/02

U.S. Cl. 248—205.1

1 Claim



1. In combination:
a support tripod having an instrument-supporting head adjacent the upper end thereof and including an uppermost instrument-supporting face, said head presenting in said uppermost face a circular recess and a central, upstanding, threaded stud member within said recess;
a surveying instrument having an underside presenting a depending boss adapted to fit within said recess, said boss having a central, threaded opening adapted to threaded opening adapted to threadably receive said stud;
a bracket assembly interposed between and interconnecting said tripod head and instrument, said bracket assembly including—
a flat annular baseplate having a depending central flange received within said recess;

a top ring clamped to said baseplate, there being a central upright opening cooperatively defined by the top ring and baseplate and an unobstructed outboard annular space between said top ring and baseplate;

a connector element within said annular space for clamping said instrument underside to said top ring, said connector element having a lower threaded boss receiving said stud and an upper threaded element received within said boss;

an annular collar located within said annular space and freely rotatable at all times relative to said baseplate and top ring;

a plate extending outwardly from said collar and rotatable therewith; and an elongate shelf coupled by coupling means with the outer end of said plate and oriented at a downward angle relative to said collar for supporting an article and allowing the user to freely rotate the article as desired about a full 360° around said instrument, said coupling means including structure for axial adjustment of said shelf.

4,641,805

AWNING SUPPORT SYSTEM

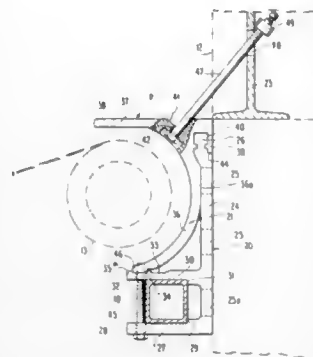
Olof Martensson, IV, Annapolis, Md., assignor to Awnings Unlimited, Inc., Annapolis, Md.

Filed Oct. 23, 1985, Ser. No. 790,438

Int. Cl.⁴ E04F 10/02

U.S. Cl. 248—273

11 Claims



1. A support system for a lateral arm awning having an elongated horizontal main support tube, said support system comprising first and second interengaged separable extruded mounting bracket components, the first mounting bracket component comprising a vertical wall having a connector head at its upper end and a pair of vertically spaced horizontal plate extensions on the vertical wall near the lower end of the first mounting bracket component, said plate extensions receiving said main support tube between them, said second mounting bracket component comprising a forwardly concave arcuate wall disposed immediately forwardly of said vertical wall and having a lower end pad engaging a top surface portion of the uppermost one of said plate extensions, said pad having a vertical threaded opening formed therethrough, said plate extensions being apertured and the apertures receiving a vertical screw immediately forwardly of the main support tube and having threaded engagement in said threaded aperture of said pad, a downwardly open yoke carried by said second mounting bracket component at its top and rear side and substantially at the top of said arcuate wall, said yoke having a connector passage receiving and having interlocking engagement with the connector head of the first mounting bracket component, a substantially horizontal top wall on the second mounting bracket component projecting forwardly of said arcuate wall and main support tube, and an inclined axis suspension bolt for the support system received through an inclined axis aperture of the second mounting bracket component near the top of said arcuate wall and forwardly of said yoke.

4,641,806

SCREW SLIDE SYSTEM HAVING A MANUAL OR ELECTRIC CONTROL OR THE LIKE

Yves Pipon, and Georges Droulon, both of Flers, France, assignors to A. M. Cousin & Cie, Flers, France

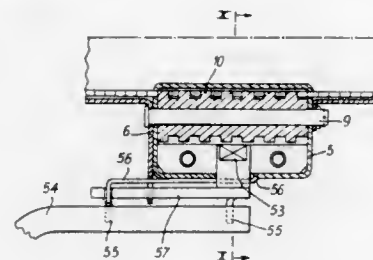
Filed Jun. 10, 1985, Ser. No. 743,072

Claims priority, application France, Jun. 15, 1984, 84 09419

Int. Cl.⁴ F16M 13/00; F16H 57/10

U.S. Cl. 248—430

6 Claims



1. A controlled screw slide system comprising two fixed lower members (1) and two upper members (4), a gear-down mechanism (25, 40) rigidly connected to one of the upper members (4), each fixed lower member (1) having an inner face provided with a tothing forming a rack (2) and being separated from an upper member (4) by elements (3) facilitating a respective sliding of the two sections, said system wherein:

- (i) reversible endless screws (10) are mounted on a shaft able to rotate freely with respect to the rack (2), said endless screws 10 being connected by a train of gears (17, 18 and 18a) to a power transfer box (24, 39) rigidly connected to the gear-down mechanism (25, 40) by angle transmissions (19, 20), to a balancing shaft (21 or 41) for balancing rotation of said endless screws (10) in order to allow the two members to work in conjunction in order to displace a seat attached on said upper members;
- (ii) said endless screws (10) are blocked in the position chosen for the seat by shoes (50, 51) with inclined upper sections (50a, 51a) normally pressed against each other by springs (58) and unlocked by flat portions (53) of a bar (52) having a controlled rotation, the seat being manually displaced.

4,641,807

THREE-DimensionALLY ADJUSTABLE PICTURE HANGER

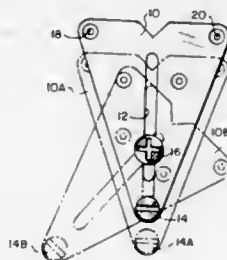
Orville Phillips, 524 E. 20th St., #5D, New York, N.Y. 10009

Filed Aug. 23, 1985, Ser. No. 768,796

Int. Cl.⁴ A47G 1/24

U.S. Cl. 248—480

10 Claims



1. An adjustable suspension support position picture hanger which is adjustable in three dimensions to thereby adjust the suspension position up and down, side to side and inwardly and outwardly with respect to a mounting point comprising: (1) a body plate having a front surface and a rear surface, having an

elongated slotted opening to receive a mounting screw at a mounting point upon a wall, and having a stud protruding from said front surface to provide the suspension support for hanging a picture; and (2) a wall mounting screw, adapted to pass through said slotted opening in said body plate and to attach said body plate to a wall at said mounting point; said body plate being rotatable about said mounting screw and translatable through movement with respect to said mounting screw along said slotted opening to thereby adjust the position of said stud at different suspension support positions.

4,641,808

DYNAMIC VIBRATION ATTENUATOR UTILIZING INERTIAL FLUID

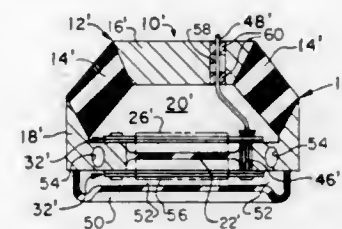
Wallace C. Flower, 8654 Maplecrest Dr., McKean, Pa. 16426

Filed Feb. 22, 1985, Ser. No. 704,448

Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—550

15 Claims



1. A dynamic vibration attenuating device suitable for use as an engine mount or the like, comprising:

- a housing formed in part of spring-like elastomeric material, said housing having a variable volume working chamber containing hydraulic fluid, said chamber having a wall including resilient fluid oscillator means for during excitation of said device imparting oscillatory movement to a slug of said hydraulic fluid, said oscillatory movement of said fluid slug generating inertial forces effecting a reduction of the dynamic stiffness of said device at high frequency excitation thereof, tuning means disposed within said chamber in non-engaging spaced relationship to said oscillator means and cooperable therewith for causing said stiffness reduction of said mount to occur at a selected excitation frequency of said device, said tuning means including a tuning assembly having at least one opening through which said fluid slug projects, and adjustable means for adjustably varying the size of said opening.

4,641,809

MOTOR VEHICLE ENGINE MOUNTING ARRANGEMENT

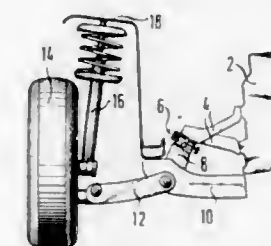
Wilhelm Beer, Russelsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1985, Ser. No. 792,191

Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—559

3 Claims



1. A mounting arrangement for mounting an engine on a chassis of a motor vehicle comprising two rigid outer parts connected respectively to the engine and chassis, two parts of

elastomeric material connected respectively to the rigid outer parts, a core of rigid material disposed between the elastomeric parts having a moment of inertia so as to vibrate at substantially the frequency of the engine but in a direction substantially counter to the engine vibration, and said core being shaped relative to the rigid outer parts so that in one of the directions of vibration thereof said core moves in a direction out from between said rigid outer parts to effect a decrease in the distance thereof from the rigid outer parts thereby effecting an increase in the spring rate of the mounting arrangement.

4,641,810

ADJUSTABLE VIBRATION DAMPENING MOTOR MOUNT FOR MOTORCYCLES

Vernon D. Ott, Plaza Lanes, 1340 Mt. Vernon Ave., Marion, Ohio 43302

Filed Nov. 20, 1984, Ser. No. 673,426

Int. Cl.⁴ F16M 13/02

U.S. Cl. 248—635

6 Claims



1. An adjustable vibration dampening motor mount for use on a motorcycle including two ends, means on one end attached to a peg fixed to a motorcycle motor and means on the other end attached to a second peg fixed to a motorcycle frame, means intermediate the ends for adjusting the length of the mount and the angular orientation of the ends,

one of said ends having an externally threaded extension and the other having an internally threaded extension, the adjusting means including a socket being internally threaded at one end, the externally threaded extension on said one end being in threaded engagement with said internally threaded end of the socket,

means for locking the socket and the externally threaded extension against relative rotation with a particular angular relationship,

the end of the socket remote from said threaded engagement including means forming a cavity having an inner end, means forming a first elastomeric abutment in engagement with said inner end, said elastomeric abutment being free to move both longitudinally and rotationally with respect to said socket,

a piston mounted in said cavity adjacent said abutment wherein said abutment is free to move rotationally with respect to said piston, said piston having a periphery conforming in shape to the shape of the cavity to allow lineal reciprocation of said piston within said cavity and with respect to said elastomeric abutment,

a piston rod attached to said piston and extending from said cavity into threaded engagement with the internally threaded extension,

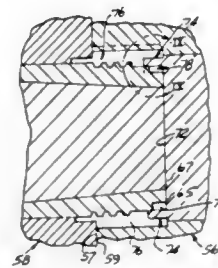
means for locking the rod and extension against relative rotation with a particular angular relationship,

means for retaining the piston within the cavity, a second elastomeric abutment within said cavity, said second elastomeric abutment being on the opposite side of the piston from said first elastomeric abutment, said second elastomeric abutment being free to move both longitudinally and rotationally with respect to the socket and this piston,

means for preventing relative rotation while allowing relative longitudinal movement between said piston and said socket.

4,641,811
ELECTRICAL CONNECTOR HAVING A MOLDED ANTI-DECOUPLING MECHANISM
 David O. Gallusser, Oneonta, and David L. Frear, Bainbridge, both of N.Y., assignors to Allied Corp., Morristown, N.J.
 Division of Ser. No. 637,184, Aug. 2, 1984, Pat. No. 4,548,458.
 This application May 23, 1986, Ser. No. 866,858
 Int. Cl.⁴ B29C 39/34
 U.S. Cl. 249—122

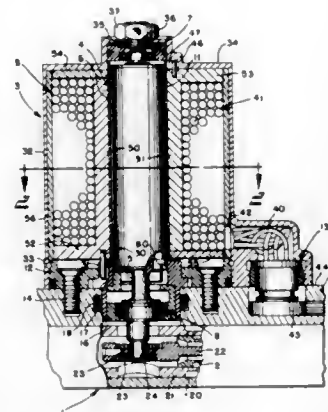
3 Claims



1. An apparatus for molding an electrical connector coupling nut of the type comprising a radially deflectable finger integrally molded thereto, the apparatus comprising:
 a pair of cylindrical mold cores, each said core having a central axis and a respective front face thereof adapted to be brought into abutting relation, one said mold core comprising a cylindrical body having a relief groove adjacent to its front face, and the other said mold core including an arcuate blade that extends longitudinally from its front face to circumscribe the relief groove whereby to define a first annular cavity, and means including a pair of mold plates for receiving said pair of mold cores, said receiving means comprising each said mold plate including a stepped cylindrical passage, the inner and outer diameter of each passage step being, respectively, substantially equal to and greater than the outer diameter of the one said mold core and the other said mold core whereby to clearance fit the mold cores therewithin and define a second annular cavity, the first annular cavity forming the spring finger and the second annular cavity forming the coupling nut.

4,641,812
DIRECT DRIVE VALVE AND FORCE MOTOR ASSEMBLY INCLUDING INTERCHANGEABLE STATOR ASSEMBLY AND ALIGNMENT SYSTEM OR METHOD
 Robert D. Vanderlaan, and Stanley D. Heeres, both of Kalamazoo, Mich., assignors to Pneumo Corporation, Boston, Mass.
 Filed May 23, 1985, Ser. No. 737,251
 Int. Cl.⁴ F16K 31/08; H01F 7/08; H02K 33/00
 U.S. Cl. 251—65

20 Claims

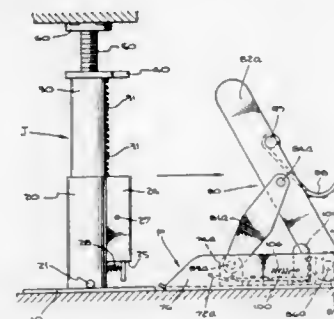


1. A limited angle torque motor comprising a rotor casing, a

rotor assembly mounted for rotation within said rotor casing, means for clamping said rotor casing to a support surface while permitting limited rotational adjustment of said rotor casing relative to said support surface, and an interchangeable motor stator assembly adapted to be slidably received over one end of said rotor casing and clamped thereto, said motor stator assembly and rotor casing including a pin-slot connection therebetween for aligning said motor stator assembly to said rotor casing, an outer housing surrounding said motor stator assembly, electrical connector means for said stator assembly on the exterior of said outer housing, means for providing limited rotation of said outer housing relative to said motor stator assembly to permit said electrical connector means to be rotated into alignment with a receptacle in such support surface for plugging into said receptacle, and means for removably clamping said outer housing and motor stator assembly to said rotor assembly.

4,641,813
DUAL AUTOMOBILE JACK FOR CONSUMER USE
 Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Irvine, Calif.
 Division of Ser. No. 711,380, Mar. 13, 1985, Pat. No. 4,589,630.
 This application Apr. 3, 1986, Ser. No. 847,507
 Int. Cl.⁴ B66F 5/04
 U.S. Cl. 254—8 B

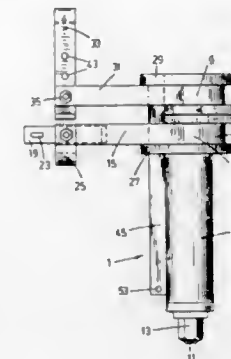
3 Claims



1. An easily transportable power unit adapted to be used in conjunction with an extendible jack stand having top and bottom plates supported on upper and lower telescoping vertical frames, for selective attachment to the jack stand and when thus attached to selectively raise or lower the jack stand, said power unit comprising, in combination:
 a flat bottom plate;
 a scissors assembly having the lower arms of one end thereof pivotally secured to said bottom plate and the lower arms of the other end slidable on said bottom plate;
 drive screw means co-acting between said bottom plate and said slidable arms of said scissors assembly for raising the upper arms of said one end thereof;
 said bottom plate being bifurcated at said one end of said scissors assembly so that both said lower and said upper arms of said scissors assembly may straddle the telescoping frames of the extendible jack stand;
 means for releasably securing said power unit in aligned engagement with the extendible jack stand;
 trip means supported from said bottom plate and selectively operable for actuating a ratchet release on the jack stand; and
 means for manually controlling both said drive screw means and said trip means.

4,641,814
ON-VEHICLE SPRING COMPRESSOR TOOL
 Sharookh Lala, Centerville, Ohio; Patrick Lehnerer, Wheaton, Ill.; Russell Hanson, Cary, Ill., and Michael Stevens, Lisle, Ill., assignors to Maremont Corporation, Carol Stream, Ill.
 Filed Sep. 12, 1984, Ser. No. 650,762
 Int. Cl.⁴ B60P 1/00
 U.S. Cl. 254—10.5

2 Claims



1. In a spring compressor tool for compressing a motor vehicle spring while said spring is operatively mounted on said vehicle in combination with a lower spring seat and a strut, said spring having a plurality of coils having a spring coil distance between adjacent spring coils when said spring is in its operatively mounted state, said tool having an upper spring coil engagement means and a lower spring engagement means, said lower spring engagement means being attached to a fixed vertical cylinder, said upper spring coil engagement means being attached to a movable vertical cylinder, said movable cylinder being in a vertical, telescoping relationship with said fixed cylinder such that application of a vertical force to said movable cylinder vertically moves said upper spring coil engagement means relative to said lower spring engagement means thereby compressing or relaxing said spring, said upper spring coil engagement means including a pair of laterally extending arms, each of said arms having vertically extending hook means attached thereto for engaging at least one spring coil, said lower spring engagement means including a pair of laterally extending arms, the improvement comprising in combination therewith

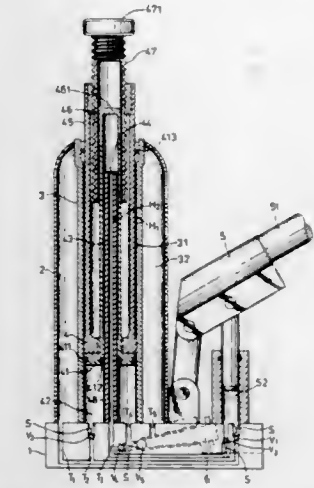
at least one of said hook means being elongated such that said elongated hook means is capable of vertically extending from said laterally extending arm to which said elongated hook means is attached by at least three spring coil distances and said lower spring engagement means additionally comprising a horseshoe bracket pivotally mounted on said laterally extending arms for engaging the undersurface of said lower spring seat.

4,641,815
HYDRAULIC JACK
 Li K. Yu, Sanchung City, Taiwan, assignor to Fu-Chi Metallic Engineering Co. Ltd., Taipei Hsien, Taiwan
 Filed Jun. 12, 1986, Ser. No. 873,345
 Int. Cl.⁴ B66F 3/24
 U.S. Cl. 254—93 H

2 Claims

1. A hydraulic jack comprising a base; a housing fixed on said base; a low pressure cylinder mounted upright securely in said housing defining a first working chamber; a ram cylinder slidably mounted in said first working chamber, said ram cylinder having a piston at a lower end thereof to define a low pressure working chamber with said first working chamber, and an axial central bore defining a second high pressure working chamber; an upright tube fixed on said base and extending into said bore, said tube being communicated with said high pressure working chamber; and improvements wherein said ram cylinder includes an outer hollow cylinder and an inner

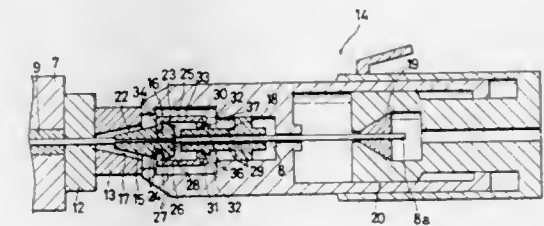
hollow cylinder fixed coaxially in said outer hollow cylinder, said inner hollow cylinder defining said second high pressure working chamber and receiving said tube, said inner cylinder being greater slightly in diameter than said tube, and having a top flat closed end, said second high pressure chamber being



shut off sealingly by said piston and said upright tube from said low pressure chamber, and said base having a passage means communicating said tube and said low pressure chamber, and a one-way valve in said passage, whereby said low pressure chamber and said high pressure chamber are interconnected through said passage when a load is encountered.

4,641,816
APPARATUS FOR STRETCHING, LOOSENING, AND FIXING A WIRE MEMBER
 Hiroo Kishida, and Hirofumi Takenaka, both of Osaka, Japan, assignors to Harumoto Iron Works Co., Ltd., Osaka, Japan
 Filed Jun. 12, 1985, Ser. No. 743,962
 Claims priority, application Japan, Oct. 6, 1984, 59-210152
 Int. Cl.⁴ B21F 9/02; F16G 11/04
 U.S. Cl. 254—228

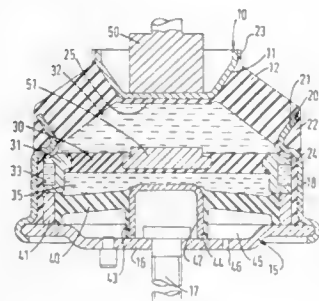
3 Claims



1. An apparatus for imparting tension to, loosening the tension in and fixing the position of an anchored wire member, said apparatus comprising:
 a fixing member having therein a recess defining a conical wedge receiving face and through which an anchored wire member is to extend;
 a wedge member having an outer wedge face tapering toward said wedge receiving face, said wedge member being divided circumferentially into a plurality of parts, said wedge member surrounding and gripping the wire member and fitting into said recess with said wedge face abutting said wedge receiving face, thereby fixing the position of the wire member;
 a main body to be abutted with said fixing member with the wire member extending into said main body;
 means, mounted within said main body, for grasping a free end of the wire member;
 means for displacing said grasping means with respect to

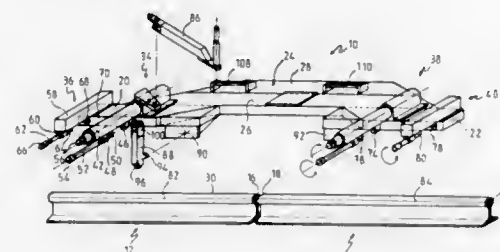
said main body in a direction away from said fixing member, and thereby for tensioning the wire member grasped by said grasping means and thus for causing the wire member gripped by said wedge member to withdraw said wedge member from said recess in said fixing member; means for holding said wedge member in the thus withdrawn position thereof, said holding means comprising at least one holding member having first and second portions and pivotally mounted on said main body for pivoting movement about a pivot between a first position, whereat said first portion engages said wedge member to maintain said wedge member in said withdrawn position thereof, and a second position, whereat said first portion is out of engagement with said wedge member; and pushing means, mounted on said main body for movement relative thereto, for abutting said second portion of said holding member to pivot said holding member from said first position thereof to said second position thereof, thus releasing said wedge member, and then for abutting and pushing the thus released said wedge member with respect to the wire member toward said fixing member until said wedge member enters said recess with said wedge face abutting said wedge receiving face and with said wedge member again gripping the wire member, thereby fixing the position of the tensioned wire member.

4,641,817
VIBRATION ABSORBING MOUNTINGS
Michael Clark, Coventry, and Kenneth J. Taylor, Nuneaton, both of England, assignors to Dunlop Limited, England
Filed Mar. 19, 1984, Ser. No. 590,953
Claims priority, application United Kingdom, Apr. 5, 1983, 8309124; Jul. 2, 1983, 8318040
Int. Cl.⁴ F16M 5/00
U.S. Cl. 267—140.1



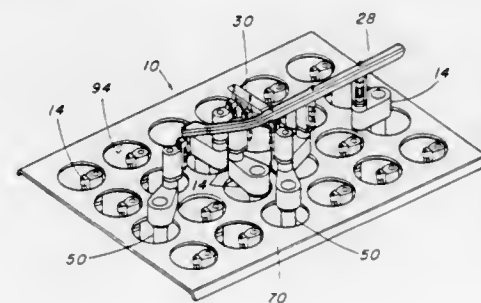
1. A vibration absorbing mounting comprising a first end member and a second end member, a rubber spring member bonded respectively to each of the end members, a rubber intermediate diaphragm secured to the second end member and defining with the rubber spring member a first liquid-filled chamber, and an annular rubber second diaphragm member secured at its periphery to the second end member and to a central support provided on the second end member and defining a second liquid-filled chamber between the second diaphragm and the intermediate diaphragm, the intermediate diaphragm being bonded to a support ring fitted within the second end member, the outer periphery of said support ring being shaped so as to define an annular space between the ring and the inner surface of the second end member, said annular space communicating respectively with said first and second chambers in circumferentially spaced positions so as to provide a long restricted passageway through which fluid may flow from one chamber to the other to provide a damping action.

4,641,818
APPARATUS FOR ADJUSTING TWO BUTT-ENDS OF RAILS TO BE CONNECTED BY WELDING
Patrick T. Bommart, Rueil-Malmaison, France, assignor to C. Delachaux, Gennevilliers, France
Filed Jul. 20, 1981, Ser. No. 285,349
Claims priority, application France, Jul. 30, 1980, 80 16805
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.⁴ B25B 1/20
U.S. Cl. 269—43



1. Apparatus for adjusting two butt-ends of rails to be connected by welding, comprising a concave rigid structure including two support plates which are aligned and connected to each other and a connecting element which connects the support plates together, the concave rigid structure being able to be arranged horizontally so that the two support plates can be placed one on a vertical side of the head of one of the rails and the other on the corresponding vertical side of the head of the other rails, whereby the concave rigid structure defines an area for access around the ends, the apparatus further comprising two spaced supports for each support plate, a first retaining press for each support plate provided with a movable jaw capable of bearing on the opposite vertical side of the heads of the rail than the respective plates, and a second retaining press for each support plate whereby the two retaining presses of each support plate are respectively associated with the two supports which respectively constitute the fixed jaws of the first and second retaining presses.

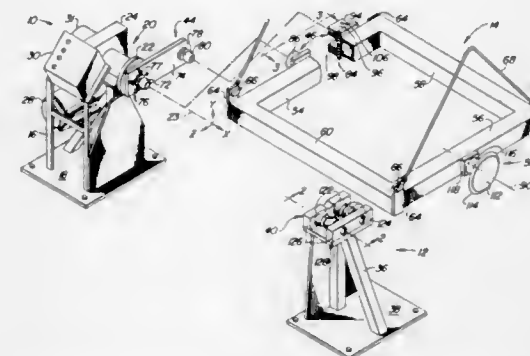
4,641,819
FLEXIBLE ASSEMBLY JIG
David A. Poland, Hawthorne, Calif., assignor to Northrop Corporation, Hawthorne, Calif.
Filed Mar. 12, 1984, Ser. No. 588,839
Int. Cl.⁴ B23P 17/00
U.S. Cl. 269—45



1. A flexible assembly jig for positioning a workpiece multi-dimensionally, the jig comprising a plurality of positioner units; locator means on each said unit for engaging a workpiece for multidimensional location; each locator means being actuatable in three-dimensions into unrestricted operative positions, including positions in horizontal fields overlapping the horizontal fields of oper-

ative position of locator means of adjacent positioner units; each said positioner unit including locator means gross adjustment means, and locator means fine adjustment means, the gross adjustment means including a rotationally and vertically adjustable eccentric means supporting an arm for movement about an axis defined by positioning of the eccentric means, and the fine adjustment means including a rotationally and vertically adjustable locator carrier means arranged proximate an end of said arm remote from the axis positioned by said eccentric means and positionable to support said locator means in an operating field beyond the maximum elevation field to which the gross and fine adjustment means are vertically adjustable said locator carrier means further supporting a second locator means fine adjustment means for final elevation of said locator means.

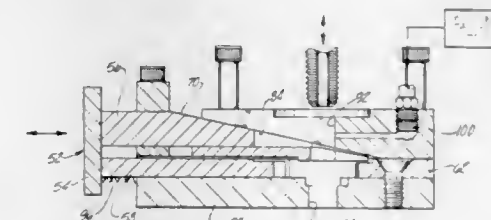
4,641,820
WELD FIXTURE MOUNTING
Raymond D. Gold, Waukegan, and Leo W. Riegel, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jun. 7, 1985, Ser. No. 742,243
Int. Cl.⁴ B23Q 3/18
U.S. Cl. 269—58



1. For a positioning device including a headstock positioner rotatable about an axis, a tailstock positioner, and a fixture for supporting a workpiece, the fixture having a headstock end and a tailstock end, a fixture mounting arrangement comprising:

a slidably engageable connector portion; means for connecting the connector portion to the headstock end of the fixture;
a first locating device; means for connecting the first locating device to the headstock positioner for rotation about the rotational axis;
a tapered roller; means for connecting the tapered roller to the tailstock end of the fixture;
a support including a roller-receiving groove; means for attaching the support to the tailstock positioner and;
wherein said connector portion is slidably engageable with the first locating device to center the headstock end with respect to the headstock positioner and said roller is positionable within the groove to center the tailstock end of fixture, and wherein said groove extends perpendicular to the axis of the roller to thereby also position the fixture in a direction generally along the axis of the roller.

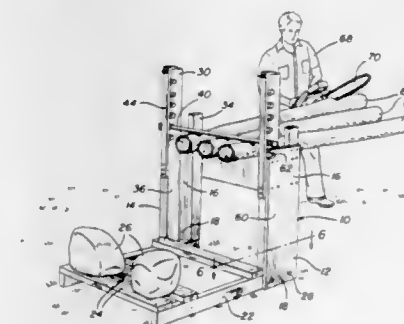
4,641,821
WORKPIECE HOLDER
Henry J. Jaworski, 6374 Mettetal, Detroit, Mich. 48228
Filed Mar. 27, 1985, Ser. No. 716,490
Int. Cl.⁴ B25B 1/08
U.S. Cl. 269—234



1. A workpiece holder for fixedly retaining a workpiece comprising:

a base having a groove defining a workpiece pathway, a portion of said groove defining a workpiece station, said workpiece station having a bottom surface and at least one side surface;
a locking plate movably mounted to said base, said locking plate disposed above said workpiece station;
means for mounting said locking plate to said base biasing said locking plate in a direction away from said base;
an upper plate mounted to said base, said upper plate having a portion positioned a predetermined space apart distance above said locking plate;
a pushbar slidably mounted to said base, said pushbar mounted to slide between a predetermined retracted position and a predetermined locked position; said pushbar having a wedge portion integral with and spaced apart from a locking arm said locking arm having an end portion positioned to direct said workpiece into abutment with said side surface of said workpiece station to hold said workpiece at the workpiece station when said pushbar is in the locked position, said wedge portion interposed said upper plate and said locking plate, said wedge portion directing said locking plate against said workpiece to hold said workpiece between said bottom surface of said workpiece station and said locking plate when said pushbar is in the locked position; whereby the workpiece is held in both a vertical direction and a horizontal direction by a single movement of the push bar into said locked position.

4,641,822
WOOD HOLDER
Stanley W. Fenerty, 19 Polly Ann Ct., Dover, N.H. 03820
Filed Apr. 19, 1985, Ser. No. 725,298
Int. Cl.⁴ B23Q 3/00
U.S. Cl. 269—296



1. A wood holder for cantilever support of one or more

elongated logs or lumber pieces in elevated horizontal position while having successive end sections cut therefrom through utilization of handheld power saw, said holder including a pair of opposite side uprights, a first horizontally elongated fulcrum rest extending between and mounted from upper portions of said uprights against downward displacement relative thereto, a horizontally elongated abutment member extending between and mounted from said upper portions of said uprights at an elevation spaced above said fulcrum rest, against upward displacement relative to said uprights and with said abutment member disposed in a first vertical plane laterally spaced from a second vertical plane containing said fulcrum rest, elongated horizontal base means interconnecting the lower end portions of said uprights, said base means projecting lengthwise considerably horizontally laterally outwardly of the first said plane in a direction away from said second plane and including an outer end portion, means anchored relative to said outer end portion for strongly resisting upward displacement of the outer end portion of said base means relative to a surface upon which said base means rests, said uprights and abutment member including means for mounting said abutment member from said uprights for vertical adjustment therealong, said abutment and fulcrum rest including downward and upward facing abutment surface portions, respectively, for abutting the upper and lower surface portions of first short end portions of elongated lumber pieces having second longer end portions thereof projecting outwardly of said second plane away from said first plane, said base means being free of portions thereof projecting appreciably outwardly of said second plane away from said first plane, said means for mounting said abutment member for vertical adjustment along said uprights including horizontally registered pairs of notches formed in said upright and opening horizontally outwardly thereof away from the side of said first plane remote from said second plane and in which the opposite ends of said abutment member are removably receivable, and elongated heavy duty tensioned elastic members secured along the sides of said uprights through which said notches open and removably closing the open ends of said notches.

4,641,823

CRADLE DRIVE AND RELEASE MECHANISM FOR USE WITH A MAGNETIC RESONANCE SCANNER

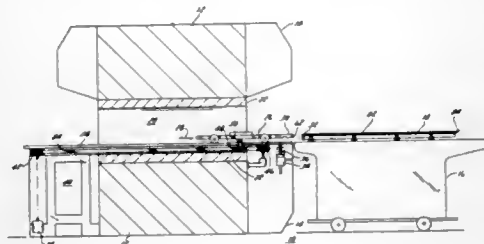
Charles T. Bergman, Watertown, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 18, 1984, Ser. No. 683,081

Int. Cl.⁴ A61G 13/00

U.S. Cl. 269—322

13 Claims



1. A cradle drive apparatus for releasably engaging and for retrievably positioning a patient cradle in an advanced position on a bridge within the bore of an MR scanner and for returning the patient cradle to a home position on a patient transport table, said cradle drive apparatus comprising:

- a cradle drive dolly disposed on said bridge for longitudinal movement thereon;
- a clutch disc mounted on said drive dolly;
- a clutch pad and bias means for enabling said clutch pad to frictionally engage said clutch disc, said clutch disc fixedly secured to a drive sprocket means;
- drive belt means for engaging said drive sprocket means; and
- bidirectional motor operably coupled to said drive sprocket means to drive said cradle dolly on said bridge in a first

direction when said clutch pad frictionally engages said clutch disc and when said motor means is energized to rotate in one direction, and to drive said cradle dolly in a second direction, opposite to said first direction, when said motor means is energized to rotate in the opposite direction.

4,641,824

CLOTH SPREADING APPARATUS WITH CUTTER

Matti Wallgren, Kangasvuokontie 7 A 8, 57220 Savonlinna 22, and Pertti Tynkkynen, Peltorinne 7, 57230 Savonlinna 23, both of Finland

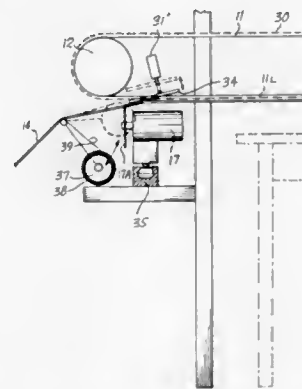
Continuation-in-part of Ser. No. 659,242, Oct. 10, 1984, abandoned. This application Nov. 25, 1985, Ser. No. 801,676

Claims priority, application Finland, Oct. 18, 1983, 833790; Sep. 28, 1984, 843817

Int. Cl.⁴ B65H 29/46

U.S. Cl. 270—31

20 Claims



1. Apparatus for spreading, cutting, and stacking cloth, said apparatus comprising a table; an endless belt-type conveyor positioned above the table on each side thereof and having a lower run arranged to always proceed in the same longitudinal direction from an infeed end of the table to an outfeed end thereof; cutting means for severing the cloth along a laterally extending line adjacent to said infeed end; a plurality of longitudinally spaced cloth engaging devices carried by each such conveyor for engaging the corresponding longitudinal edge of the cloth; attaching means for automatically attaching the cloth to said engaging devices to cause the cloth to be conveyed along the table by said lower run, said attaching means being positioned before the cutting means along said longitudinal direction to ensure continued automatic conveying of the cloth along said direction following severing of the cloth; and release means for automatically releasing a length of cloth from the engaging devices following severing of the cloth to allow said length of cloth to drop onto the table.

4,641,825

COLLATOR WITH MOVEABLE STITCHER OVER SADDLE CONVEYOR SYSTEM

Harry E. Mowry, Plattsburg, and Richard B. Hawkes, Peru, both of N.Y., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed May 22, 1985, Ser. No. 736,850

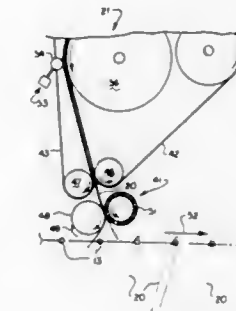
Int. Cl.⁴ B42B 1/02

U.S. Cl. 270—53

20 Claims

1. A collator comprising a closed loop endless conveyor including a plurality of signature supporting means extending perpendicular to the conveying direction, a plurality of signature feed means adjacent said conveyor operable to progressively locate folded signatures in position supported by said signature supporting means to produce assemblies of signatures in which the folds thereof extend perpendicular to the convey-

ing direction, stitching means adjacent to said conveyor operable to stitch together assembled signatures delivered thereto by said signature supporting means, and delivery means operable to remove stitched assemblies from said conveyor, said signature feed means including a sensor operable to detect when a misfeed occurs resulting in an incomplete assembly, said sensor



operating to disable downstream signature feed means as well as stitching means and delivery means as said incomplete assembly passes thereby, said conveyor operating to return said incomplete assembly to a feed means feeding the missing signature for subsequent completion, stitching, and removal from said conveyor.

4,641,826

MACHINE DESIGNED TO LIFT A FLEXIBLE, FLAT WORKPIECE OFF A SUPPORT SURFACE

Egbert J. van der Weide, GW Olst, Netherlands, assignor to Beisler GmbH, Fed. Rep. of Germany

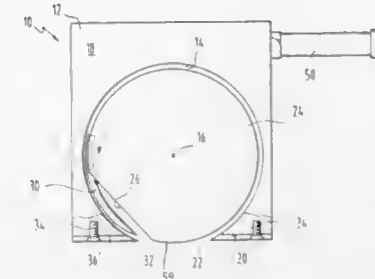
Filed Jun. 14, 1985, Ser. No. 745,296

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422337

Int. Cl.⁴ B65H 3/22

U.S. Cl. 271—18.3

12 Claims



1. In a machine for lifting a flexible, flat workpiece, said machine including a housing with a slit therein and a needle for passing through the slit and piercing the workpiece, wherein the improvement comprises:

- needle holder means for holding said needle, said holder being generally disc shaped having an axis and an outer circumference, the outer circumference including a circular portion and a sector cut out from the circular circumference portion of the holder, said needle being circular having one end mounted to the holder on the circumference thereof such that the needle bridges the main part of the sector with the point of the needle being spaced by a gap of a preselected distance from a leading edge portion of the circular circumference portion of the holder;
- means for mounting the needle holder to the housing such that the leading edge of the holder protrudes through the slit when the holder is in a rest position so as to push down on the workpiece to prevent folds from occurring in the slit when the machine is first placed thereon; and
- means for rotating said holder to cause the leading edge thereof to rotate out of contact with the workpiece and to

cause the point of the needle to follow an arcuate path through the slit of sufficient length to pierce the workpiece whereby the machine can be raised to lift the workpiece and carry it to another location.

4,641,827

FABRIC PICKUP AND THE LIKE

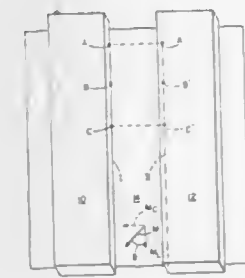
Richard R. Walton, Ten West Hill Pl., Boston, Mass. 02114, and George E. Munchbach, Roslindale, Mass., assignors to Richard R. Walton, Boston, Mass.

Filed Jun. 2, 1983, Ser. No. 500,261

Int. Cl.⁴ B65H 3/22

U.S. Cl. 271—18.3

17 Claims



1. A fabric component pickup apparatus or the like comprising, first and second fabric gripping elements defining first and second opposed gripping lines in the plane of the face of the fabric component, and means for producing relative movement of said fabric gripping elements when in contact with the face of a said fabric component with motion to displace one of said gripping lines laterally in the plane of the fabric in the manner to produce tension in the fabric and with motion effective to close said fabric gripping elements together after said tension has been applied to said fabric to grip the fabric therebetween.

4,641,828

METHOD FOR FEEDING MATERIAL SHEET TO A PRESS

Toshio Yajima, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

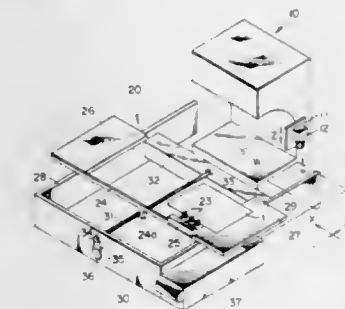
Continuation of Ser. No. 535,677, Sep. 26, 1983, abandoned. This application Dec. 27, 1985, Ser. No. 815,652

Claims priority, application Japan, Sep. 28, 1982, 57-170612; Nov. 22, 1982, 57-204957; Feb. 21, 1983, 58-27417

Int. Cl.⁴ B65H 7/14, 9/10, 9/20

U.S. Cl. 271—227

25 Claims



1. A method for feeding material sheet to a press comprising the steps of: transferring for predetermined travel distances a material sheet on which pairs, each consisting of a print part and a

positioning mark located near said print part, are printed so that at each of said predetermined travel distances the positioning mark of a respective one of said pairs enters the field of view of a view means, said view means being situated at a certain fixed position related to the punching position of said press;

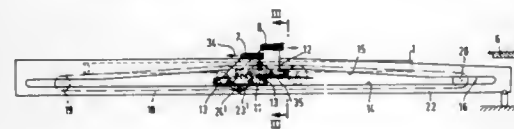
detecting and storing, at each of said predetermined travel distances for the respective one of said pairs, a digital deviation value representative of the deviation of the center of said positioning mark from a reference position of said field of view in X axis and Y axis directions of said view means, so that when said material sheet has been transferred for all of said travel distances there will be stored a set of digital deviation values; and

sequentially positioning each of said print parts to said punching position of the press using the set of detected and stored deviation values as respective positioning correction values.

4,641,829
SCREEN PRINTING MACHINE HAVING A STATIONARY PRINTING TABLE
 Karl Köblin, Emmendingen, Fed. Rep. of Germany, assignor to Werner Thieme GmbH & Co. KG, Fed. Rep. of Germany
 Filed Apr. 29, 1985, Ser. No. 727,726
 Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 3415715

Int. Cl.⁴ B65H 5/10
 U.S. Cl. 271-268

25 Claims



1. A screen printing apparatus having transfer means for repeatedly transferring sheet material from a supply means to a printing table during a printing operation, said transfer means comprising:

- first and second mobile gripper means for gripping said sheet material;
- guideway means for guiding said first and second gripper means over said printing table;
- said first gripper means being guided in a direction opposite to said second gripper means, and said first gripper means being guided over said second gripper means at a center region of said guideway means; and
- driving means for moving said gripper means, said driving means being capable of moving said first gripper means in a direction opposite said second gripper means, said driving means comprising endless conveyor means, said first and second gripper means being connected to said conveyor means at a separation equal to one-half the length of said conveyor means.

4,641,830
PRINTER PAPER FEEDING APPARATUS
 Kazuhiro Okuda, Makoto Tanaka, and Wataru Kuramitsu, all of Chofu, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
 Filed Nov. 14, 1985, Ser. No. 797,948
 Claims priority, application Japan, Nov. 15, 1984, 59-173602[U]

Int. Cl.⁴ B65H 5/06
 U.S. Cl. 271-274

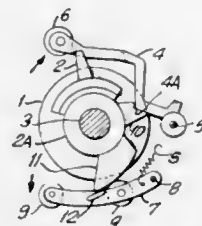
2 Claims

1. A paper feeding apparatus for a printer comprising:

- (a) a machine frame;
- (b) a platen rotatably supported by said machine frame;
- (c) a lever rotatably supported by said machine frame;
- (d) a paper bail roller adapted to contact said platen;
- (e) a paper bail arm, one end of said paper bail arm rotatably

supported by said machine frame and the other end rotatably supporting said paper bail roller;

- (f) a presser roller adapted to contact said platen;
- (g) a presser arm, one end of said presser arm rotatably supported by said machine frame and the other end rotatably supporting said presser roller;

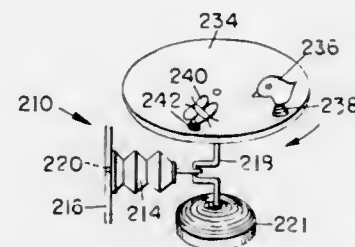


- (h) a first cam fixedly attached to the center portion of said lever and adapted to release said paper bail roller from contact with said platen on manipulation of said lever; and
- (i) a second cam fixedly attached to the center portion of said lever and adapted to release said presser roller from contact with said platen on manipulation of said lever.

4,641,831
ROTATING AMUSEMENT DEVICE HAVING MOTION GOVERNOR
 David C. Hughes, South Hadley, Mass., assignor to Milton Bradley Company, East Longmeadow, Mass.
 Continuation-in-part of Ser. No. 525,140, Aug. 22, 1983, abandoned. This application Sep. 13, 1985, Ser. No. 775,631
 Int. Cl.⁴ A63H 13/20

U.S. Cl. 272-31 R

2 Claims



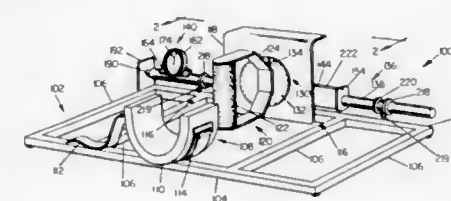
1. Apparatus for controlling intermittent rotary motion comprising:

- a support, a bellows having one end fixed to the support and an opposite free end, the bellows having a longitudinal center line,
- a restricted vent opening communicating with the bellows, a stallable type motor,
- a crank operatively connected at one end to the free end of the bellows and at its opposite end to the motor,
- a turntable operatively connected to the crank, the crank being driven by the motor and describing with the free end of the bellows a circular path about a center on a line perpendicular to the center line of the bellows,
- actuation of the crank by the motor effecting slow movement of the crank through certain segments of the circular path and concomitant slow rotative movement of the turntable as air slowly enters into and exits from the bellows through the restricted vent opening as the length of the bellows is alternately lengthened and shortened,
- further actuation of the crank by the motor effecting rapid movement of the crank through certain other segments of the circular path and concomitant rapid rotative movement of the turntable as the length of the bellows remains substantially constant.

4,641,832
WRIST/ANKLE EXERCISING APPARATUS
 Ernest M. Mattox, Belmont, Mich., assignor to Portable Isokinetics, Inc., Grand Rapids, Mich.
 Filed Apr. 24, 1984, Ser. No. 603,409
 Int. Cl.⁴ A63B 5/00

U.S. Cl. 272-67

13 Claims



1. A wrist/ankle exercise apparatus comprising:

- a portable structural frame providing a fixed base support while the exercise apparatus is in use;
- a stationary elongated member connected to said frame;
- an elongated tube axially movable with respect to said elongated member, wherein said elongated member is at least partially received within said tube;
- a slide member slidably mounted on said elongated tube;
- means for providing frictional resistance to movement of said slide member along said elongated tube by a user during exercise;
- a slide-actuating member rotatably mounted to said frame and coupled to said slide member to translate rotational movement of said slide-actuating member to linear motion of said slide member on said elongated tube;
- force measuring means mounted to said elongated tube for visually indicating to said user the relative magnitude of force applied between said slide member and said elongated tube;
- whereby said user may move said slide member along said elongated tube by rotation of said slide-actuating member; and
- said force-measuring means comprises means for coupling said elongated member to said elongated tube so that the displacement of said tube relative to said stationary member is proportional to the relative magnitude of force applied between said slide member and said tube.

4,641,833
EXERCISE MACHINE
 Reginald Trethewey, Deepwater, Australia, assignor to Comdax No. Pty. Ltd., Deepwater, Australia
 PCT No. PCT/AU83/00094, § 371 Date Mar. 15, 1984, § 102(e) Date Mar. 15, 1984, PCT Pub. No. WO84/00496, PCT Pub. Date Feb. 16, 1984
 PCT Filed Jul. 20, 1983, Ser. No. 594,521
 Claims priority, application Australia, Jul. 21, 1982, PF4968; Mar. 14, 1983, PF8416; May 17, 1983, PF9390
 Int. Cl.⁴ A63B 69/06, 21/00, 21/22

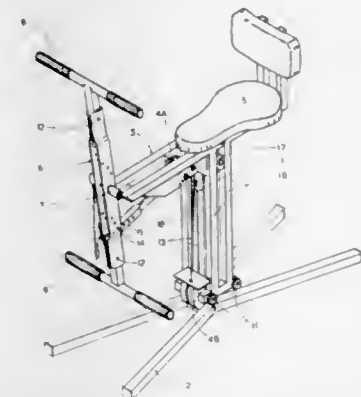
U.S. Cl. 272-72

12 Claims

1. An exercise machine comprising:

- a base supporting a movable frame having a seat thereon;
- an exercise bar with handles and pedals supported on said frame;
- a linkage system connecting said bar to said frame such that rotation of said bar causes elevation of said frame;
- a column mounted on said base, runners operatively associated with said column and connected with said frame, said runners being movable towards and away from said base;
- a pair of spaced pulleys rotatably coupled to said runners; and

a cable having one end operatively anchored to said column and another end pivotally operatively anchored to said

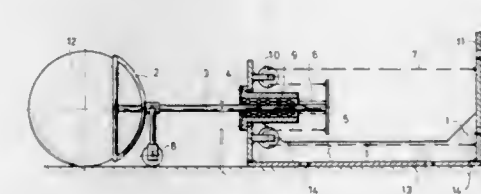


exercise bar and running on said pulleys for moving said runners to raise said seat.

4,641,834
TRAINING APPARATUS FOR KICKING A FOOTBALL
 László Hegedüs, Tátra tere, acs/ r A/2, 1025 Budapest, and Zoltán Horváth, Váci ut 79, 1056 Budapest, both of Hungary
 Filed Apr. 9, 1985, Ser. No. 721,520
 Claims priority, application Hungary, Apr. 27, 1984, 1649/84
 Int. Cl.⁴ A63B 69/00, 67/00

U.S. Cl. 272-76

5 Claims



1. Apparatus for the development of leg muscles and intensification of the kicking force, comprising a basket for holding a ball therein, an axially movable horizontal bar attached at one end to said basket and to a horizontally movable support adjacent to said basket, a carrier plate attached to the other end of said horizontal bar, a ball sleeve in a bearing box, the horizontal bar being movably positioned through said bearing box, support means for fixing said bearing box, and at least two prestressed elastic elements each having two ends, said elements being attached to said carrier plate at one end of each element, and the other end of each element being attached to a first fixed support, a pulley associated with each element, a second fixed support for each pulley, each pulley being attached to said second fixed support, whereby, when a kicking force is applied to a ball in said basket, said basket and attached horizontal bar are displaced horizontally causing said prestressed elastic elements to stretch then return to their original position moving the basket and horizontal bar to their respective original positions.

4,641,835

CUSHION FOR A SWING OR THE LIKE AND METHOD FOR MAKING SAME

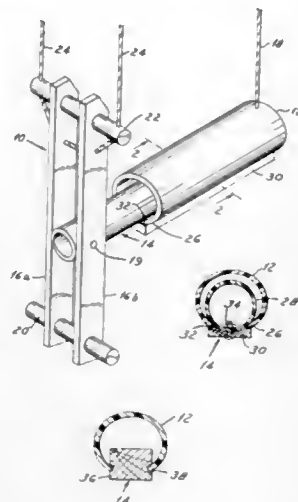
Robert J. Christenson, Flushing, Mich., assignor to GMI Engineering & Management Institute, Flint, Mich.

Filed Mar. 1, 1985, Ser. No. 707,722

Int. Cl.⁴ A63G 9/12

U.S. Cl. 272—87

16 Claims

**I. An elastic cushion comprising:**

a cylindrical resilient cushion tube having a peripheral wall, with an axial slit extending the length thereof, creating a pair of slit edges in said wall; and

groove means for supporting said cushion tube, said groove means being spaced apart axial grooves for receiving said edges of said slit and holding said edges of said slit a spaced distance apart with the orientation of said grooves corresponding to the natural angle of the tube wall forming the slit and edge so as to elastically expand said tube cross section into a "C" shape;

wherein, said cushion tube is loaded on a portion of the peripheral wall oppositely disposed from said slit, the cushion tube wall being elastically deformable to provide a resilient cushion.

4,641,836

WEIGHT LIFTING APPARATUS FOR EXERCISING THE TRICEPS

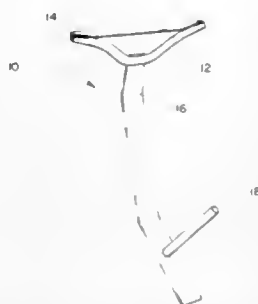
Orville J. Clifton, Box 463, Inola, Okla. 74036

Filed Jun. 28, 1985, Ser. No. 749,650

Int. Cl.⁴ A63B 11/00

U.S. Cl. 272—122

6 Claims

**1. A free weight, tricep exercise apparatus comprising:**

(a) a handle means adapted, during use of said tricep exercise apparatus, to be manually held overhead and behind the

user's back while the user performs a tricep curl movement;

(b) a rigid, arched support means operatively attached at one end to said handle means and adapted, during use of said tricep exercise apparatus, to extend generally downward behind the user's back; and

(c) a post means operatively attached near the other end of said rigid, arched support means, essentially perpendicular to said rigid, arched support means and directed substantially towards the center of the radius of curvature of said rigid, arched support means, said post means including a free end for receiving and retaining weights and an attached end being spaced from the other end of said rigid, arched support means so as to allow a weight to rest adjacent said rigid, arched support means.

4,641,837

WEIGHT LIFTING BENCH WITH ADJUSTABLE BENCH SECTIONS

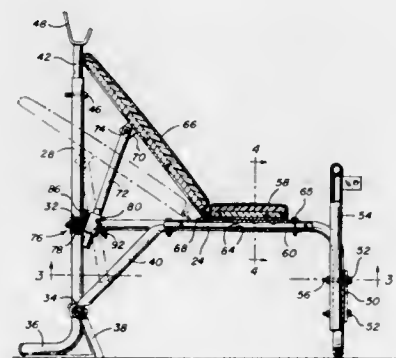
Bruce M. Ruth, R.D. 6, Box 230, Reading, Pa. 19608

Filed Jun. 7, 1985, Ser. No. 742,694

Int. Cl.⁴ A63B 13/00

U.S. Cl. 272—123

5 Claims



1. A weight lifting bench including an elongated horizontal frame having front and rear ends, an elongated backrest portion including base and free ends, a seat portion mounted from said frame for guided adjustable shifting along the front end thereof and including front and rear marginal portions, means operative to releasably lock said seat portion in adjusted shifted positions along said frame, means pivotally mounting said base end from said rear marginal portion for angular displacement of said backrest portion relative to said frame about a first horizontal transverse axis with the free end of said backrest portion swingable between a raised position spaced appreciably above said rear end of said frame and a lowered position closely overlying the rear end of said frame, anchor structure, means pivotally mounting said anchor structure from said rear end of said frame for rotation about a second horizontal transverse axis and including a portion thereof defining an elongated upstanding guide passage extending therethrough and spaced at least slightly longitudinally of said frame relative to the last mentioned axis, an upstanding prop, the upper end of said prop being pivotally mounted from said free end of said backrest portion for angular displacement relative thereto about a third horizontal transverse axis, the lower end of said prop being guidably received through said passage, said anchor structure portion including manually releasable cam lock means operative to releasably frictionally grip said prop with a one-way movement preventing engagement therewith to prevent downward movement of said prop relative to said anchor structure portion and allow reasonably free upward movement of said prop relative thereto, the rear end of said frame including a pair of upstanding and upwardly projecting opposite side standards supported therefrom whose upper ends include means defining upwardly opening cradles to seatingly receive

the opposite end of a weight bar extending transversely of said frame therein, the pivotal connection of said backrest portion with said seat portion, the adjustability of said seat portion longitudinally of the front end of said frame and the adjustability of said prop enabling a predetermined portion of said backrest portion, spaced therealong from said first axis and disposed in a vertical plane containing the shoulders of a user of said bench having his upper torso resting upon said backrest portion, to be disposed in substantially the same vertical plane as said cradles to thereby properly position the user's shoulders directly beneath a weight bar supported from said cradles.

4,641,838

TENNIS RACKET WITH RACKET HAVING ADJUSTABLE LENGTH HANDLE

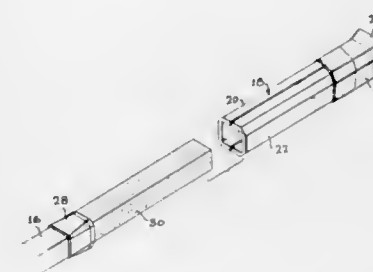
Pericles Gabriellidis, 14141 Riverside Dr., #1, Sherman Oaks, Calif. 91423

Filed Nov. 26, 1984, Ser. No. 674,660

Int. Cl.⁴ A63B 49/08

U.S. Cl. 273—73 J

26 Claims

**23. A racket comprising:**

an open frame for carrying strings thereacross, a shank secured to said open frame, said shank having an outer end away from said open frame, said outer end of said shank being straight and of uniform cross-section;

a handle mounted on said shank, said handle having a plurality of sections, said sections defining an opening therebetween sized and configured to receive said outer end of said shank so that said handle can be placed on said shank at any one of a plurality of selected positions on said shank to select the position of said handle with respect to said open frame;

connecting means connected to said handle sections for permitting said handle sections to be opened while said connecting means is connected to said handle sections so as to permit positioning of said handle on said shank and permit closing of said handle sections on said shank to clamp said handle sections on said shank at the selected position; and

a flexible grip grip wrapped around said handle to urge said sections toward said shank so that said handle grasps said shank to resist axial motion of said handle with respect to said shank so that the effective length of the racket can be selected and adjusted and retained.

4,641,839

ROLLER-BALL STRUCTURE

Arthur A. Turner, 8110 SW. 72nd Ave., B-5, Miami, Fla. 33143

Filed Aug. 9, 1985, Ser. No. 763,864

Int. Cl.⁴ A63B 71/00, 43/02

U.S. Cl. 273—128 A

12 Claims

1. A roller-ball structure of the type designed to travel over a supporting surface, said structure comprising:

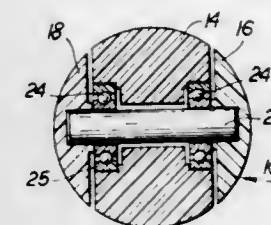
(a) a roller element rotatably mounted on a centrally disposed shaft having a longitudinal axis which defines an axis of rotation of said roller element,

(b) two ball segments each fixedly secured to said shaft on

opposite sides of said roller element, said roller element movable relative to said two ball segments,

(c) said roller element and each of said ball segments respectively comprising an external surface having a semispherical configuration,

(d) said external surface of said roller element being rotatably movable relative to said external surfaces of said ball segments and said external surfaces of said roller element and ball segments collectively defining a substantially



continuous spherical configuration of said roller ball structure,

(e) a support engaging, rolling surface defined by said semispherical external surfaces of said roller element and said ball segments, and

(f) said external surfaces of said ball segments being spaced from said external surface of said roller element but closely adjacent thereto to allow concurrent engagement of said external surface of said roller element and said external surface of either of said ball segments.

4,641,840

ELECTRONIC PLAYING DIE

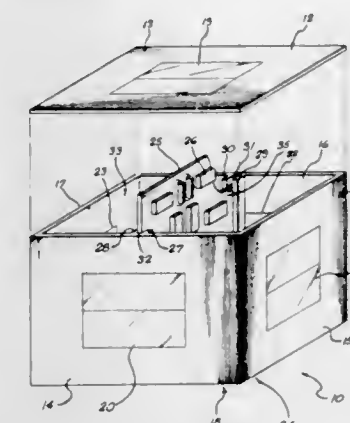
Kim A. Larson, P.O. Box 5051, Fullerton, Calif. 92635

Filed Sep. 16, 1985, Ser. No. 776,487

Int. Cl.⁴ A63F 9/04

U.S. Cl. 273—138 A

11 Claims

**6. An electronic playing die comprising:**

an insulative multi-faceted housing having a number display on each facet thereof; and

circuit means for causing rapid blinking of said numeric displays during playing die motion and for causing a single number selected by chance which is independent of playing die position to be simultaneously displayed on all the number displays at each cessation of playing die motion.

4,641,841

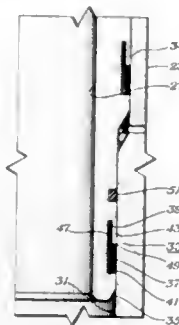
METAL SEAL FOR A TUBULAR CONNECTION
Albert M. Regan, Huntington Beach, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Aug. 26, 1985, Ser. No. 769,051

Int. Cl.⁴ E21B 33/03; F16J 15/00, 15/32

U.S. Cl. 277—30

2 Claims



1. In a subsea well installation having first and second tubes, the first tube having a male end adapted to seat into a bore of the second tube, to establish fluid communication, an improved seal means on the male end of the first tube, comprising in combination:

- an annular recess formed in the sidewall of the first tube, defining a support shoulder;
 - a cylindrical metal lip depending from the support shoulder, having an inner sidewall spaced from the sidewall of the first tube, the lip having a free end with an outer diameter that is slightly less than the inner diameter of the bore of the second tube; and
 - an annular band formed on the exterior of the free end of the lip, the band having an outer diameter that is greater than the inner diameter of the bore so as to form an interference fit with the bore, causing the lip to deflect elastically inward when inserted within the bore;
- the recess being adapted to be exposed to pressure from fluid located in the bore so as to act against the inner sidewall of the lip to urge it outwardly to enhance sealing of the band against the bore; and
- a second shoulder located on the first tube between the male end and the lip, defining one end of the recess, facing toward the support shoulder and spaced axially from the lip, the shoulder being substantially the same diameter as the lip and slightly less than the diameter of the bore.

4,641,842

SHAFT SEALING DEVICE WITH FLOATING SEAL MEMBER

Tadashi Kataoka, Kanagawa, Japan, assignor to Ebara Research Ltd. and Ebara Corporation, both of Japan

Filed Mar. 26, 1986, Ser. No. 844,145

Claims priority, application Japan, Mar. 29, 1985, 60-47665[U]

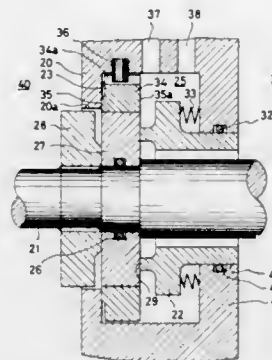
Int. Cl.⁴ F16J 15/26

U.S. Cl. 277—83

10 Claims

1. A shaft sealing device, comprising
- an outer casing having an inner surface,
 - a rotatable shaft situated within said casing and passing therethrough,
 - rotation ring means, having opposed sides and an outer circumferentially-extending surface, mounted on said shaft for rotation therewith,
 - a mechanical seal member situated within said casing and co-operating with one of said sides of said rotation ring means,
 - a floating seal member situated within said casing and fixed against rotation with said shaft, said floating seal member being mounted on said outer circumferential surface of

said rotation ring means and forming a fluid-tight seal therewith, a side of said floating seal member contacting said inner surface of said casing,



wherein a sealing chamber for lubricant is formed within said casing by said rotation ring means, mechanical seal member, and floating seal member.

4,641,843

SYSTEM AND METHOD FOR LEVELING A CONVERTED MOTOR HOME

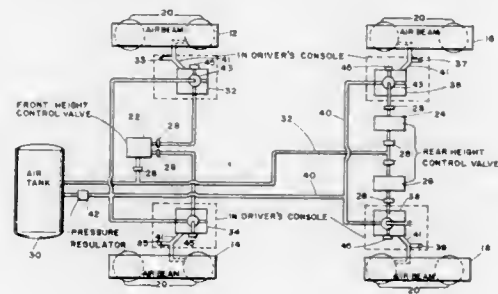
John J. Morrisroe, Jr., 20 Dowling Dr., Ridgefield, Conn. 06877

Filed Mar. 21, 1985, Ser. No. 714,279

Int. Cl.⁴ B60G 11/26

U.S. Cl. 280—6 R

5 Claims



1. In a vehicle having an air suspension system comprising four air beams supporting the corners of the vehicle body over the vehicle axles by bellows supplied by air from an air tank under the control of three height control valves, one height control valve controlling both air beams at one end of the vehicle, the improvement of leveling apparatus which comprises:

- a manually operable five-way leveling valve coupled between said air tank and each of said air beams; and
- means for connecting each of said five-way leveling valves between one of said height control valves and one of said air beams whereby each of said four air beams is under the unique control of its associated five-way leveling valve.

4,641,844

BABYLER FOLDING BABY STROLLER FOR MULTIPLE USES

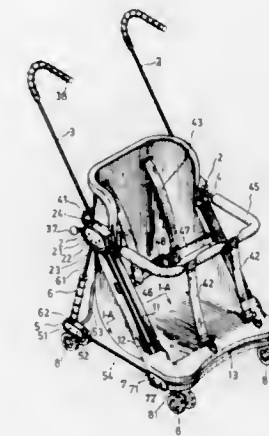
Shih-Lin Mar, 3rd Fl., No. 10, Lane 134, Tzu-Li Str., Hsintien, Taipei Hsien, and Long-Cho Kuo, No. 20, Chung-Hsiao Rd., Ma-Dou Jenn, Tainan Hsien, both of Taiwan

Continuation of Ser. No. 558,054, Dec. 5, 1983, abandoned. This application Mar. 3, 1986, Ser. No. 835,427

Int. Cl.⁴ B62B 7/12

U.S. Cl. 280—30

1 Claim



1. A folding baby stroller for multiple uses comprising:
- a carrying chair which includes two flanged side members,
 - a front bottom edge formed into an arc-shaped member to adapt to back carrying,
 - a movable base support at the bottom of said chair,
 - a back net,
 - a safety belt attached to the back of said chair,
 - an upper pair of fixed connecting assemblies attached to sides of said chair,
 - a lower pair of fixed connecting assemblies attached to forward sides of said chair,
 - a pair of movable connecting pivot assemblies,
 - a rear bar and a front bar, each being connected to said upper pair of fixed connecting assemblies, each member of which pair includes a pushing bar extension hole,
 - said front bar being of U-shape, and being made of metal, and being mounted on the front of said chair, and having its surface covered with a sponge layer,
 - a safety belt attached to said chair,
 - a pair of rear rods interconnecting said upper pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies,
 - a pair of bottom rods interconnecting said lower pair of fixed connecting assemblies, and said pair of movable connecting assemblies,
 - a pair of pushing bar means interconnected with said upper pair of fixed connecting assemblies,
 - control and connecting means integral with said upper pair of fixed connecting assemblies for locking the position of said pushing bar means,
 - said control and connecting means having a clamp, and an adjustable control arm, and a push-bar-means-engaging eccentric cam,
 - rear rod means interconnecting said upper pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies, and being formed of pivotably interconnected foldable sections,
 - a sleeve means for slidably carrying said rear rod means,
 - a spring within said sleeve means for urging said rear rod means in one direction,
 - a pair of bottom rods connected between said lower pair of fixed connecting assemblies, and said pair of movable connecting pivot assemblies, and

a rear connecting rod interconnecting members of said pair of movable connecting pivot assemblies.

4,641,845

WHEELED PALLET

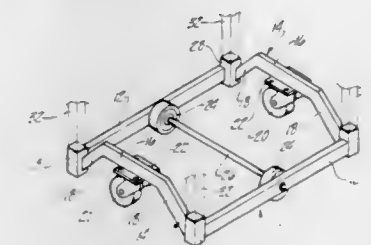
Timothy W. Hewitt, 18 Kensington, Pleasant Ridge, Mich. 48069

Filed Jan. 24, 1985, Ser. No. 694,604

Int. Cl.⁴ B62B 3/04

U.S. Cl. 280—79.1 A

7 Claims



1. A load handling cart comprising:
- a parallel pair of end members each comprising a horizontal portion having a pair of first ends, and a pair of downwardly depending angled portions extending one each from said ends, the horizontal portion and each depending angled portion of said end member lying in a common substantially vertical plane;
 - a parallel pair of elongated side members each having a pair of second ends and being perpendicularly attached at said second ends to said angled portions of said end members, so as to form a substantially rectangular shape having four corners at the junctures of said side and end members;
 - at least one pair of first wheels coaxially secured one each to said side members, at a midpoint of said side members and between said side members;
 - at least one second wheel secured to a midpoint of said horizontal portion of one of said end members; and
 - a vertical tubular member affixed to each of said four corners joining said side members and said end members, dimensioned to receive therein a cargo support placed atop said cart;
- wherein said tubular members are positioned sufficiently close to the ground by said angled portions so as to come into contact with the ground prior to tipping of said cart, when said cart is subjected to a tipping force, thereby reducing the likelihood of spillage from said cart due to such force;
- whereby said tubular members simultaneously received said support therein, and reduce tippage of said cart.

4,641,846

INTERLOCK SYSTEM FOR A TRAILER AND BOGIE
Leonard M. Ehrhart, Charleston, Ill., assignor to Trailmobile Inc., Chicago, Ill.

Filed Aug. 8, 1985, Ser. No. 763,945

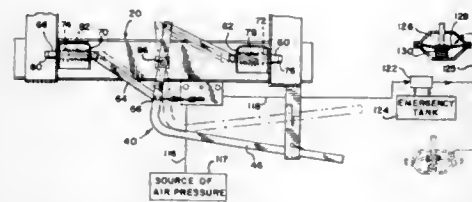
Int. Cl.⁴ B60G 5/06

U.S. Cl. 280—80 B

12 Claims

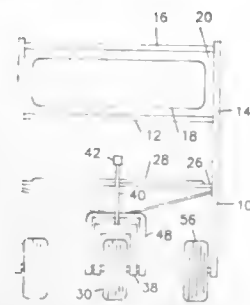
5. In combination with a tractor driven trailer having a pair of tracks with spaced apertures, a structure having a plurality of wheels for supporting said trailer and having a pair of rails for slidable mounting to the tracks of said trailer, said structure including parking brake means to inhibit rotation of the wheels on such structure and parking brake chambers for receiving air pressure from a source of air pressure to selectively overcome the braking of said parking brake means;
- an interlock system for securing said structure to said trailer, said interlock system comprising:

- (a) a pair of opposed housing means secured to said structure and each housing means having opposed openings;
 (b) a pin disposed in each housing means and adapted to move within the openings of said housing means;
 (c) means for moving said pins, within the openings of said housing means, out of engagement with one set of the spaced apertures in the tracks to a selective set of apertures to secure said structure to said trailer;
 (d) a control valve and means for connecting air pressure from said source to said control valve;
 (e) means connecting said control valve to said brake chambers;
 (f) a handle for actuating said pin moving means;



- (g) a linkage coupling said pin moving means with said control valve; and means in each housing means for biasing said respective pin in a direction for securing said structure to said trailer, whereby, movement of said handle to a structure engaging position actuates said control valve to apply pressurized air to said brake means and simultaneously forces said pins into selected apertures in the tracks, and movement of said handle to a structure disengaging position causes withdrawal of said pins from the apertures in the tracks and simultaneously actuates the control valve to void the pressurized air from said source of air pressure.

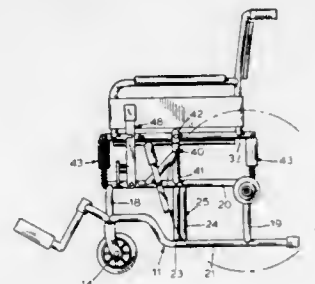
4,641,847
SINGLE LEVER CONTROL WHEEL CHAIR
 Ronald E. Busse, 1902 Peach St., Erie, Pa. 16502
 Filed Dec. 16, 1985, Ser. No. 809,028
 Int. Cl.⁴ B60K 3/00
 U.S. Cl. 280—242 WC



1. A folding chair comprising a frame, rear ground support means on said frame, said frame having a downwardly and forwardly extending member, a front wheel support, a front wheel on said front wheel support, manual control means attached to said front wheel support for steering said front wheel to right or left and for driving said front wheel selectively forward and in reverse, said manual control means comprising rotatable means rotatably attaching said front wheel support to said downwardly extending member, a front wheel propulsion means including ratchet means connecting said front wheel to said front wheel support and to said manual control means, said manual control means being swingable to right or left to

incline said front wheel support on said downwardly extending frame member to steer said folding chair right or left, drive means comprising said manual control means being rotatable about its axis and having means to cause said ratchet to engage said wheel selectively either for forward or for rearward motion of said wheel depending on the direction said manual control means is rotated, whereby said manual control means rotates said wheel forward or rearward through said ratchet, said manual control means being swingable forward and rearward moving said ratchet forward and rearward driving said front wheel forward or rearward in a direction determined by the direction in which said manual control means has been rotated.

4,641,848
WHEELCHAIR WITH ROCKING SEAT ASSEMBLY
 Robert C. Ayers, 3011 45th St., Des Moines, Iowa 50310
 Filed Apr. 15, 1985, Ser. No. 723,370
 Int. Cl.⁴ B62B 11/00
 U.S. Cl. 280—242 WC

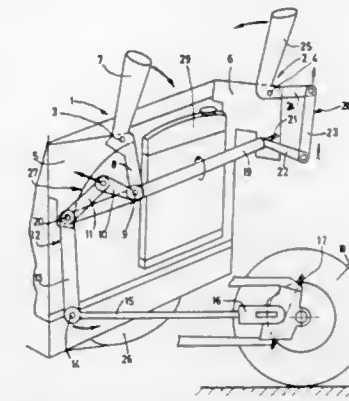


1. An improved wheelchair that permits a user to rock while seated in the chair, said wheelchair comprising:
 (a) a frame formed of spaced apart rigid side members connected together by cross braces, each of said side members including upper and lower tubular members;
 (b) a pair of main wheels connected with said frame and at least one of which serves as a driving wheel for the chair;
 (c) at least one caster wheel pivotally connected with said frame;
 (d) a seat portion having opposite tubular support members that are pivotally connected to said upper tubular members of said frame side members;
 (e) bias means to normally maintain said seat portion in a desired alignment when the chair is unoccupied and to permit the seat to yieldably rock about its pivotable connection with said frame.

4,641,849
MANUAL ACTUATING DEVICE, ESPECIALLY FOR STEERING A MOTORCYCLE
 André De Cortanze, St. Cloud, France, assignor to Elf France, Paris, France
 Filed Jun. 7, 1985, Ser. No. 742,578
 Claims priority, application France, Jun. 14, 1984, 84 09321
 Int. Cl.⁴ B62K 11/14
 U.S. Cl. 280—270

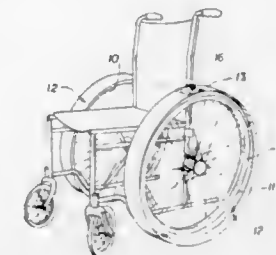
1. A manual actuating device of a steering rod which controls at least a guiding wheel of a vehicle through two handles that are movable in rotation in a substantially vertical plane, each connected to one bar of a three bar set, a first bar of each of the three bar sets forming with each of the respective handles a lever hinged to the vehicle, a third bar of each set being integral with a connecting bar rotatable about its longitudinal axis, the longitudinal axis of the connecting bar being transverse to the longitudinal axis of the vehicle, the connecting bar

being integral in rotation with a return arm which is pivotally connected to the steering rod wherein a second bar of one three bar set forms a first angle with the first bar and a second angle with the third bar, wherein one of the first and second



angles is greater than 180° and wherein a second bar from a second three bar set forms a third angle with the first bar and a fourth angle with the third bar, wherein both the third and fourth angles are less than 180°.

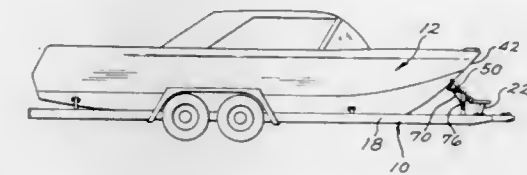
4,641,850
WHEELCHAIR ADAPTER WHEEL
 James S. Rice, 2316 Jackson Ave., and William L. Kohn, 1100 3rd St., South, both of Naples, Fla. 33940
 Filed Aug. 26, 1985, Ser. No. 769,347
 Int. Cl.⁴ B62J 11/00; B62M 1/14
 U.S. Cl. 280—289 WC



1. A wheelchair adapter wheel comprising an encircling band which is thin in gage and having a width that is wide in comparison to the width of a wheelchair propelling wheel and having separated first and second ends forming a space therebetween and being adapted to be placed around the circumference of a wheelchair propelling wheel, means on the interior of said band engageable with a wheelchair propelling wheel to center said band relative to said propelling wheel, and an elastic connector means across the space between said separated first and second ends of the band including a stretchable web on the exterior surface of the band having substantially the same width as the band, a first connector plate having a width substantially the width of said band and extending laterally across said band and secured to one end of the stretchable web, means anchoring the first connector plate and said one end of the stretchable web to the exterior of the band near and somewhat circumferentially spaced from said first end of the band, a second connector plate having a width substantially the width of said band and extending laterally across said band and secured to the other end of the stretchable web and being adapted to extend across the space between said separated first and second ends, said second connector plate having a leading end overlying the exterior surface of said band adjacent the second end with radially inwardly extending claws, and the band being provided near its second end with at least one set of

apertures formed therethrough to releasably receive said claws when said web is being stretched circumferentially of the adapted wheel and is under tension, whereby said web and second connector plate are in overlaying contact with substantially the entire width of the exterior surface of and in substantially the same circumferential plane of the band when said claws are received in said apertures and said stretchable web is under tension.

4,641,851
AUTOMATIC LATCH BETWEEN TRAILER AND BOAT
 Rudy D. Knies, 6609 State Rd. 31 E., Sellersburg, Ind. 47172
 Continuation-in-part of Ser. No. 698,658, Feb. 6, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 824,954
 Int. Cl.⁴ B60P 3/10
 U.S. Cl. 280—414.1

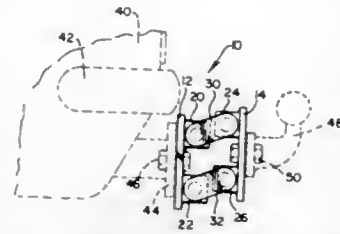


1. An automatic boat latching device adapted to be mounted to a fixed upright framework on the front of a self-loading boat trailer, where the upright framework includes a bow-receiving cradle, said latching device comprising:
 a. a latch member adapted to be pivotally mounted in a vertical plane to the upright framework, the rear end of the latch member having an upwardly and forwardly inclined hook while the front end of the latch member having a counterweight normally urging the hook to a raised position;
 b. whereby the forward loading movement of the boat onto the trailer causes a boat eye mounted on the bow of the boat to deflect the inclined hook downwardly into a lowered position until the boat eye passes thereover forwardly of the inclined hook and then the counterweight returns the hook to a raised position where the hook interlocks with the boat eye for locking the boat to the trailer; and
 c. an adjustable handle mounted to the framework, and a tension spring means joined at one end to the hook portion of the pivoted latch member and at its other end to the adjustable handle;
 d. where the handle may be locked in one position to relax the tension of the spring means during a boat-loading operation onto the trailer, and may be locked in an alternate position to increase the tension of the spring means during a boat-unloading operation from the trailer.

4,641,852
RESILIENT COUPLING
 Gerrit Kerst, and Hendrik Kerst, both of Johannesburg, South Africa, assignors to Brelko (Proprietary) Limited, Johannesburg, South Africa
 Filed Nov. 4, 1985, Ser. No. 794,446
 Claims priority, application South Africa, Nov. 16, 1984, 84/8966
 Int. Cl.⁴ B60D 1/00
 U.S. Cl. 280—489

1. A trailer coupling comprising a plurality of torque elements having outer members, at least one torque element being resiliently yieldable under torque, arranged to permit relative movement between the drafting vehicle and the trailer in the direction of the traction force, and adapted to resist such relative movement to thereby damp the relative movement, and two spaced attachment plates, one for attaching the coupling

to a drafting vehicle and the other for attaching it to a trailer, each attachment plate being integral in one piece from the



same sheet material with the outer members of a pair of torque elements.

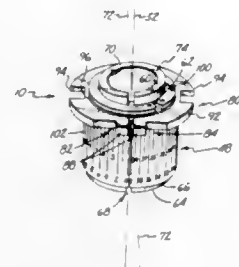
4,641,853 METHOD AND STRUCTURE FOR CASTER AND CAMBER ADJUSTMENT

John Specktor, Golden Valley, and Gerald A. Specktor, St. Paul, both of Minn., assignors to Shim-A-Line, Inc., Minneapolis, Minn.

Filed Jul. 12, 1985, Ser. No. 744,018
Int. Cl.⁴ B62D 17/00

U.S. Cl. 280—661

20 Claims



1. A ball joint bushing assembly for adjusting camber and caster, mounted on a vehicle steering structure of the type having an axle, a yoke extending from the axle and having an opening for receiving the bushing assembly, and ball joint means having a stud cooperating with the bushing assembly to pivotally secure a wheel spindle assembly on the yoke, the ball joint bushing assembly comprising:

circumferentially expandable sleeve means having a substantially cylindrical outer surface with substantially the same diameter as that of the opening in the yoke, said sleeve means having a cylindrical first end to receive collar means, and having an inner bore extending therethrough along an axis eccentrically disposed with respect to the axis of the cylindrical outer surface;

scale means disposed around the outer surface of the sleeve means, having a plurality of selectively positioned indicia, each indicium representing a camber and caster setting; circumferentially expandable collar means carrying an index mounted on and surrounding the first end of the sleeve means, said collar means having a substantially circular opening therethrough of substantially the same diameter as the first end so as to be circumferentially movable therearound to enable alignment of the index with a preselected indicium, the index further denoting the proper orientation of the bushing assembly when mounted on the yoke; and

means for expanding said expandable sleeve means into locking engagement with the yoke to maintain the sleeve means in the desired angular position corresponding to the desired camber and caster setting.

4,641,854 WHEEL SUSPENSION FOR A VEHICLE

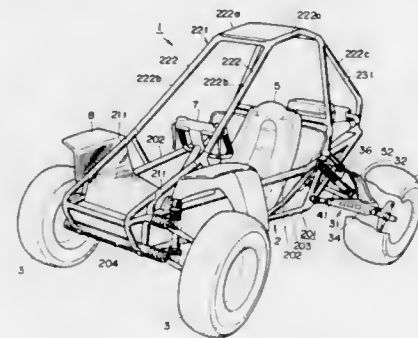
Tatsuo Masuda, Akito Enokimoto, and Kazutoshi Ohtsuka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,675
Claims priority, application Japan, Jul. 25, 1984, 59-154243; Jul. 25, 1984, 59-112637[U]

Int. Cl.⁴ B60G 3/00

U.S. Cl. 280—701

4 Claims



1. A wheel suspension in a vehicle having a frame structure and drive shaft mounted on said frame structure for driving a wheel to rotate about a wheel shaft thereof, said wheel suspension comprising:

a trailing arm having a front end pivotally connected to said frame structure and a rear end supporting said wheel shaft of the wheel;

a propeller shaft having a first end coupled to said drive shaft through a first universal joint and an opposite end coupled to said wheel shaft through a second universal joint, said propeller shaft extending substantially transversely of said frame structure;

a link rod having a first end pivotally connected to said frame structure and an opposite end pivotally connected to said rear end of said trailing arm, said link rod being spaced substantially vertically from said propeller shaft and extending substantially transversely of said frame structure; and

damper means supporting said trailing arm on said frame structure for dampening movement of said trailing arm with respect to said frame structure;

said propeller shaft, said link rod, and said trailing arm jointly constitute a link mechanism for controlling movement of said wheel shaft to translate the wheel shaft when said trailing arm is vertically swung; and

said damper means comprises a cushioning unit composed of a shock absorber and a coil spring disposed therearound, said shock absorber having a first end pivotally connected to said frame structure and an opposite end pivotally connected to said trailing arm.

4,641,855 MOUNTING STRUCTURE WITH ASYMMETRICAL CUSHIONING PERFORMANCE AND VEHICLE SUSPENSION INCORPORATING THE SAME

Toshio Izumi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 14, 1984, Ser. No. 681,680
Claims priority, application Japan, Jul. 27, 1984, 59-156694

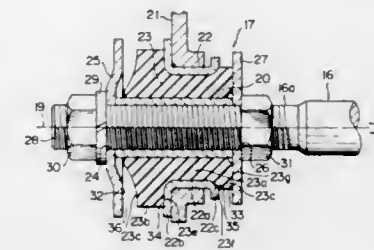
Int. Cl.⁴ B60G 11/22

U.S. Cl. 280—716

6 Claims

1. A mounting structure comprising a spool-like retainer element having a cylindrical portion and a pair of flange portions connected to opposite axial ends of said cylindrical portion, an annular cushioning member made of a rubber-like elastic material and mounted around said cylindrical portion of said spool-like retainer element, an annular retainer element

positioned around said cushioning member on said cylindrical portion and between said pair of flange portions of said spool-like retainer element, said annular cushioning member having a first annular cushioning layer means for dampening a force in a first axial direction, said first layer being positioned between one of said flange portions of said spool-like retainer element and one side of said annular retainer element and a second annular cushioning layer means for dampening a force in a second axial direction opposite said first axial direction, said



second layer being positioned between the other of said flange portions of said spool-like retainer element and an opposite side of said annular retainer element, only one of said first and second annular cushioning layer means being formed with an annular gap extending over a substantial radial depth thereof at an axial position located between an axial end of said one annular cushioning layer means adjacent the corresponding flange portion of said spool-like retainer element and an axially intermediate portion thereof.

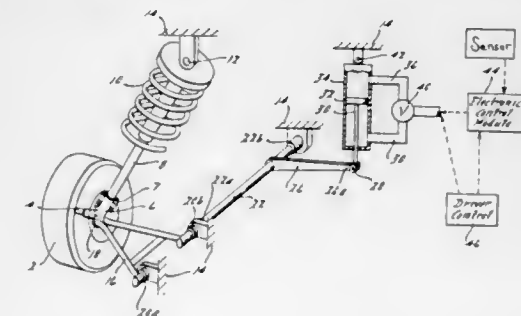
4,641,856 MOTOR VEHICLE ANTI-ROLL STABILIZER SYSTEM

Thomas G. Reichenbach, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 24, 1985, Ser. No. 758,613
Int. Cl.⁴ B62D 9/02

U.S. Cl. 280—772

19 Claims



1. A suspension system for independently controlling a vehicle wheel comprising:

a chassis;

a suspension component subject to rotational movement relative to the chassis during jounce and rebound movement of said suspension system with said rotational movement occurring about a fixed axis of rotation;

a torsion bar attached at its first end to said suspension component and pivotally attached at its second end to said chassis, with the longitudinal axis of said torsion bar being generally coincident with said axis of rotation of said suspension component; and

means for selectively restraining the rotation of said second end of said torsion bar relative to said chassis so as to restrain jounce and rebound motion of said wheel independently of any other wheel of said vehicle.

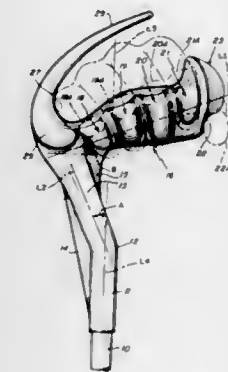
4,641,857 SKI POLE HAND GRIP

Ernest A. Gailunas, 10 Main St., Cotuit, Mass. 02635
Filed Jun. 28, 1985, Ser. No. 749,671

Int. Cl.⁴ A63C 11/22

U.S. Cl. 280—821

15 Claims



1. A ski pole hand support member attached to a ski pole shaft and comprising:

a support base adapted to be attached to the top of the ski pole shaft,

said support base comprising a first section for connection to the ski pole and an integral second section,

and a hand grip integrally supported from the support base second section and having a force center and means for receiving the skier's hand,

said support base second section being disposed at an angle A to the ski pole shaft axis,

said angle A being in a medial-lateral plane of the skier, the angular displacement of the support base second section disposing the top thereof in a position displaced on one side of the ski pole shaft axis,

said hand grip being supported from the support base second section from one end of the hand grip with the other end of the hand grip free and terminating on the other side of the ski pole shaft axis,

said hand grip being disposed at an angle B to the normal to the ski pole shaft axis,

said angle B being in a medial-lateral plane of the skier, the angular displacement of the support base second section and hand grip disposing the force center of the hand grip in line with the ski pole shaft axis.

4,641,858 GASKET INCORPORATING IMPLANTS FOR INTERFITTING PIPES

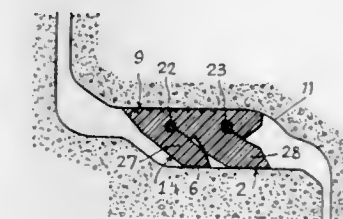
Marius Roux, Caluire, France, assignor to Societe Anonyme: SABLA, Dardilly, France

Filed Jun. 20, 1984, Ser. No. 622,641
Claims priority, application France, Jun. 22, 1983, 83 10614

Int. Cl.⁴ F16L 21/00

U.S. Cl. 285—94

14 Claims



1. For use with interfitting pipes having a gap therebetween, a gasket comprising:

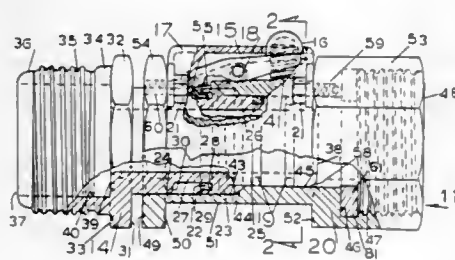
an outer peripheral face having a succession of annular ribs each having a cross section in the form of an asymmetrical tooth;
 an inner peripheral face having a plurality of mouldings of prismatic cross section;
 a first and a second transverse edge joining said outer and inner peripheral faces; and
 a plurality of rigid annular implants, wherein said prismatic cross section is inclined toward said first transverse edge, and
 said gasket being made of elastically deformable material and shaped in a cross section having an overall thickness greater than the gap between the ends of the interfitting pipes to be joined, and having a plurality of annular housing openings in its cross section thickness and having access slots from said inner peripheral face to each said annular housing openings, each said annular opening being adapted to receive said rigid annular implants to exert a stress thereon, wherein
 the annular housing openings have a diameter less than that of the implants prior to the applications of said implants.

4,641,859
COUPLING HAVING SPRING BIASED LOCKING MEANS

Tom Walters, 2102 Mason Blvd., Point Pleasant, W. Va. 25550
 Filed Mar. 13, 1986, Ser. No. 839,224
 Int. Cl.⁴ F16L 37/12

U.S. Cl. 285—27

34 Claims



1. In combination with a pair of axially overlapping conduit members with O-ring seal elements groove seated on the inner member at the seal area in an interference fit between the members wherein said conduit members are adapted to be rotatable relative to each other about a common axis, a coupling assembly notably with conduit attachment ends, wherein the outer member with an outwardly axially directed centrally hinged rocker arm member with desirable low compact design comprising a raised button with an inner socket that partially receives and guides a compression spring member inwardly positioned between said button and over a guide boss on an outer surface of said outer member and a hook configuration on the opposite end of said rocker arm member, wherein said hook configuration normally protrudes radially inward through an aperture in said outer member to subsequently engage a radially outward annular hook and groove within an inward annular recess formation of the inner member upon the couple action, wherein said rocker arm member is capped by a closure bonnet member with an access aperture for said button radial swing passage wherein with the above noted attachments to the outer member represents said outer member assembly as a unit, whereupon during the couple action as said inner member appropriate end is axially inserted in any manner into the relatively lengthy guide and seal element receiving chambers of said outer member the hook configuration of said rocker arm member is initially moved radially outward as annular radial configuration end of the inner member wedgingly contacts a bevel on said hook configuration as annular bevel at seal chamber in said outer member and annular bevel at said hook and groove formation of said inner member radially center said inner member into an axial alignment with the outer member, then said hook configuration moves further

radially outward against the bias of said spring member as a radially outward bevel on said annular hook and groove formation on said inner member wedgingly contacts said bevel on said hook configuration of the rocker arm member until said hook of said inner member passes under and past said hook configuration, whereupon the radially outward reacting force of said spring member at button end of the rocker arm member positions said hook configuration radially inward into said annular recess of said hook and groove formation of the inner member to an appropriate abutment and positioned for the interlock engagement of the hook of the hook configuration with said hook and groove formation representing the mechanical couple action and positioning of couple parts of the coupling assembly in a mechanically coupled state, whereupon as pressurized fluid is subsequently introduced within the coupled assembly the related column end force tends to axially separate the coupled members one from the other to cause said hook configuration of said rocker arm member hinged to the outer member to move in the desirable direction into a positive interlocked engagement with said annular groove and be radially retained therein by said hook of said hook and groove formation of the inner member representing the coupled parts in the automatic pressure lock positions when the coupled assembly is in the pressure locked coupled state, whereupon uncoupling the conduit members is accomplished when pressurized fluid is absent within the coupled assembly and the inner member is further inserted into the outer member to where appropriate surfaces abut at which time the hook configuration of said rocker arm member is free of the interlocking engagement the button of said rocker arm member is manually pushed radially inward against the bias of said spring member which action due to said rocker arm member hinged arrangement at hinge pin member in hinge boss of the outer member causes said hook configuration to swing radially outward into said closure bonnet member inner chamber and out of the interlocking engagement area to permit the withdrawal of the inner member at uncoupling the assembly, whereupon the manual release of said button the reaction force of said spring member returns said button radially outward and said hook configuration of rocker arm member radially inward and automatically positioned in the automatic cocked position for future couple actions.

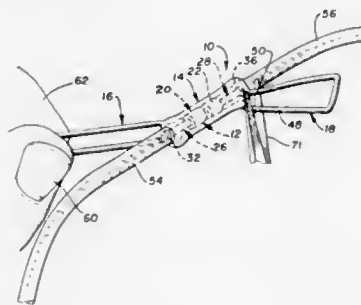
4,641,860
Coupling for Flexible Tubing

Robert L. McMickle; James T. Rumbaugh, and Robert L. Netsch, all of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jun. 25, 1984, Ser. No. 624,412
 Int. Cl.⁴ F16L 35/00

U.S. Cl. 285—38

29 Claims

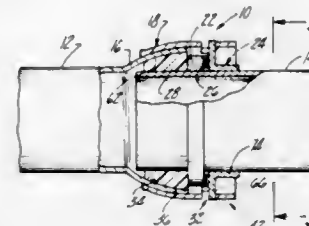


1. A coupling for fluid connection with flexible tubing, the coupling comprising:
 a rigid connector with a fluid passage therethrough, the connector including a cylindrical main portion having a diameter substantially equal to the outside diameter of the flexible tubing and having a surface with at least one

annular groove therein, and at least a first cylindrical male end portion having a diameter substantially equal to the inside diameter of the flexible tubing and having an enlarged diameter rigid distal end portion; and
 an elastic sleeve member having a main portion gripping section for elastically circumferentially gripping the main portion of the connector and including an interior gripping member insertable in the annular groove of the main section; and at least a first tubing gripping section positioned in a position overlapping the main portion gripping section and movable to an elastically engaged position over the tubing and the male end portion after the male end portion of the rigid connector is inserted into the tubing.

4,641,861
FLEXIBLE JOINT FOR PIPES
 Raymond Scoboria, Dearborn, Mich., assignor to O.E.M. Technical Sales, Inc., Southfield, Mich.
 Filed Jun. 1, 1984, Ser. No. 616,308
 Int. Cl.⁴ F16L 21/02, 27/04, 37/24
 U.S. Cl. 285—39

6 Claims



1. A flexible joint for pipes, said joint comprising:
 a first pipe having a flared end with a curvature forming a sealing socket,
 a locking ring disposed over said flared end and having a socket portion angularly movable on the outside of said flared end, said locking ring having a first bayonet coupling member thereon,
 a second pipe having a free end,
 a locking flange rotatably and slideably disposed on the outside of said second pipe and having a second bayonet coupling member thereon,
 retaining means on said second pipe between the free end thereof and said locking flange for preventing said locking flange from moving beyond a predetermined position on said second pipe toward the free end of said second pipe,
 a sealing ring disposed on said second pipe between the free end thereof and said locking flange, said sealing ring having a surface seated in and corresponding in shape to said sealing socket,
 and a compressible resilient member disposed within the confines of said locking ring between said locking flange and said retaining means,
 said bayonet coupling members being complementary to and engageable with each other whereby said joint may be assembled and disassembled by aligning said coupling members, pressing said locking ring and said locking flange together against the resistance of said resilient member and rotating them relative to each other.

4,641,862
ROTATIONALLY MOLDED NOZZLE LINER AND METHOD FOR ITS INSTALLATION
 Randy A. Gardiner, 8255 Fruitvale Ave., Moorpark, Calif. 93021
 Filed Mar. 25, 1985, Ser. No. 715,888
 Int. Cl.⁴ F16L 58/10

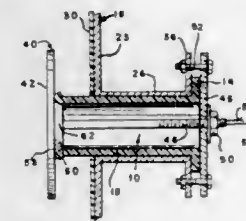
U.S. Cl. 285—39

15 Claims

1. The combination of a nozzle liner free of internal stresses and seams and a vessel having an internal corrosion liner and a nozzle extending externally of the vessel with a distal ring

flange, with said nozzle liner received in said nozzle and having:

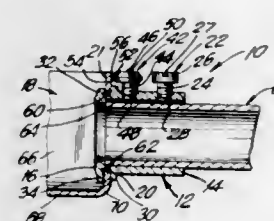
(a) a sleeve body having an outer diameter substantially equal to the inside diameter of said nozzle and a length greater than the length of said nozzle to provide an inward end which projects inwardly beyond the inside wall of



said vessel and which is bonded to said corrosion liner of said vessel; and
 (b) an integral end flange on the outer end of said liner and abutted against the ring flange of said nozzle;
 said nozzle liner being formed by rotational molding a powdered thermoplastic resin to form said nozzle liner with said integral ring flange free of internal stresses and seams.

4,641,863
CONNECTOR FOR COUPLING A CONDUIT TO A JUNCTION BOX
 Sami Shemtov, 18 Tryon Ave., Staten Island, N.Y. 10312
 Filed Nov. 12, 1985, Ser. No. 797,043
 Int. Cl.⁴ F16L 3/04
 U.S. Cl. 285—158

11 Claims



1. A connector for coupling a conduit to a junction box, said connector comprising:
 an elongated tubular body portion having a proximal end for insertion into a circular aperture in one wall of the junction box, and a distal end to receive the conduit;
 a pair of radially projecting first and second flange means longitudinally spaced apart at said proximal end of said body portion for straddling an edge wall of the circular aperture in the junction box;
 said second flange means being positioned inside the junction box and said first flange means being positioned outside the junction box;
 said first flange means including an annular rim having a peripheral diameter greater than a diameter of the circular aperture in the junction box so that said annular rim is prevented from passing through the circular aperture;
 said second flange means including first and second arcuately extending radially projecting tabs for engaging wall portions around the circular aperture in the junction box, said second tab being coplanar with and diametrically opposed to said first tab;
 an outer edge of said second tab extending radially further from an axis of said body portion than an outer edge of said annular rim;
 body end means for permitting said proximal end of said body portion to swing through the circular aperture after said second tab has been inserted through the circular

aperture so that said first tab can pass through the circular aperture;

said body end means including an outer edge of said first tab extending radially less from said axis of said body portion than said outer edge of said annular rim so that a radially projecting length of said first tab is shorter than a radially projecting length of said second tab, and a diameter of a circular part of said tubular portion disposed between said pair of first and second flange means being less than the diameter of the circular aperture in the junction box, and also a distance measured from said outer edge of said first tab to a section of said circular part of said tubular body portion disposed between said second tab and said annular rim being less than the diameter of the circular aperture in the junction box so that said first tab can pass through the circular aperture after said second tab has been inserted through the circular aperture; and

eccentric cam means supported on said body portion for rotation into an interference engagement with an outer surface of the apertured one wall of the junction box to clamp said connector in place relative to the junction box;

said eccentric cam means including a post radially projecting from said body portion, said post supporting an offset head portion for rotation about an arcuate path into a clamping engagement with the outer surface of the junction box at a point along said arcuate path, said offset head portion being releasable from said clamping engagement by an opposing rotation;

said arcuate path of said offset head portion extending into the space between said pair of first and second flange means;

a double beveled periphery being provided about said offset head to define a peripheral knife edge for biting into the outer surface of the junction box.

4,641,864

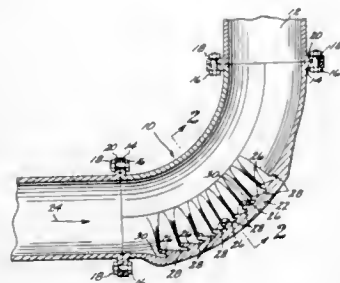
WEAR RESISTANT PIPE BEND FOR SLURRY TRANSPORT

Otto R. Heine, Poway, and Peter M. Riede, La Jolla, both of Calif., assignors to R & H Technologies, Inc., Minneapolis, Minn.

Filed Feb. 16, 1984, Ser. No. 580,873
Int. Cl.⁴ F16L 43/00; B65G 53/54

U.S. Cl. 285—179

4 Claims



1. A pipe bend adapted to be joined to two sections of a slurry transporting pipe so as to form an elbow between said two pipe sections, the pipe bend comprising a curved conduit including:

a plurality of spaced protrusions formed in the interior wall of the conduit in the area most exposed to impingement by solid particulate material moving as a slurry in the conduit, a plurality of pockets being formed between the spaced protrusions, the wall having the spaced protrusions being substantially thicker than the rest of the wall of the conduit, the spaced protrusions including a leading edge having maximum exposure to solid particulates moving in the slurry and having an outer cladding of a wear resistant material different from the material of the rest of the conduit, the pockets being adapted for capturing solid particles from flow of the slurry in the conduit, whereby

particles captured in the pockets form a protective zone on the wall of the conduit to reduce wear and abrasion thereon.

4,641,865

CLOSURE CONTROL MECHANISM

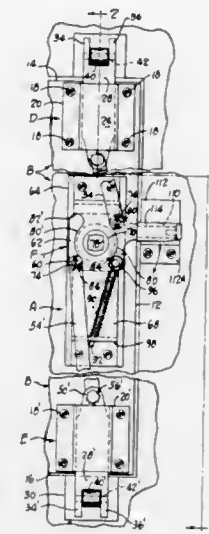
John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Continuation of Ser. No. 431,713, Sep. 2, 1982, abandoned. This application Aug. 1, 1985, Ser. No. 762,018

Int. Cl.⁴ E05C 9/04

U.S. Cl. 292—5

6 Claims



1. In a closure control mechanism attached adjacent to a free edge of a door swingable into and out of an opening in a wall, a dead bolt lock assembly including a frame immovably mounted on the door and a pair of dead bolts, each having an end, the dead bolts movable within the frame for extension and retraction of the ends of the dead bolts into and out of engagement with a pair of keeper surfaces located on the wall and extending in the direction of extension and retraction; a first surface on one end of each dead bolt transverse to the direction of movement, angularly oriented for substantially the full thickness of the bolt, facing in the direction of extension, facing in the direction of the door swings when the door is swung out of the opening in the wall, facing the keeper surface when the door is in the opening and when the dead bolt lock assembly is in an extended position and facing the door when the dead bolt lock assembly is in a retracted position; a rotatable member in said one end of each dead bolt engageable with the keeper surface to facilitate both extension and retraction of the bolt relative to the keeper; a second surface at said one end of each dead bolt extending in the direction of bolt movement, facing the keeper surface when the dead bolt lock assembly is in an extended position and facing the door when the dead bolt lock assembly is in a retracted position, said rotatable member extending beyond said second surface in rolling engagement with the door or the keeper surface during extension or retraction of the dead bolts; a manual bolt-operating member rotatably supported in the frame; and a pair of rod members operatively connected to the dead bolts and to the bolt-operating member eccentrically of the axis of rotation thereof to extend and retract the dead bolts concurrently.

4,641,866

LEVER HANDLE DOOR TRIM

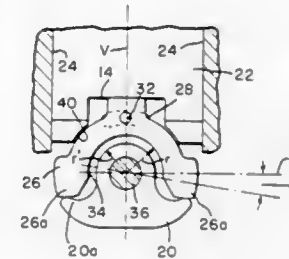
Paul J. Haeck, and Gary R. Jacobs, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Nov. 12, 1985, Ser. No. 797,114

Int. Cl.⁴ E05B 3/00

U.S. Cl. 292—336.3

6 Claims



1. Lever handle door trim, comprising:

a slider, movable along a vertical axis for operating an exit device latching mechanism for a latchbolt, to cause retraction of said latchbolt;

a cam, for effecting movement of said slider;

said cam having a body portion with an opening formed therein in which to receive a lever handle shaft;

said opening having a radial center defining a rotary axis for such a lever handle shaft;

said cam further having a pair of lobes extending outwardly from opposite sides of said body portion along a horizontal plane; and

means interposed between, and engaging both, said slider and said cam, and adjustable for causing said cam to be selectively displaced through an acute angle, relative to said rotary axis, to dispose said cam at a tilt relative to said horizontal plane.

4,641,867

DOOR CLOSURE ASSEMBLY

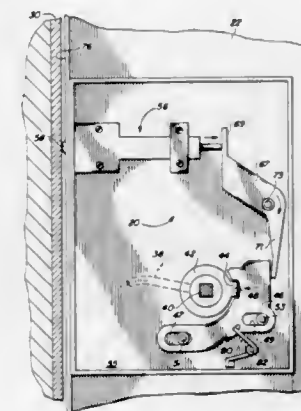
Arthur V. Geringer, 4611 Deseret, Woodland Hills, Calif. 91364; Richard G. Geringer, 28834 Barragan St., and David A. Geringer, 5382 Cheseboro Rd., both of Agoura, Calif. 90301

Filed Jul. 22, 1985, Ser. No. 757,438

Int. Cl.⁴ E05C 1/16

U.S. Cl. 292—336.3

4 Claims



1. An improved entry closure assembly, said assembly comprising, in combination:

(a) a door frame including a door jamb disposed in an entry way;

(b) a door secured to said frame for movement between open and closed entry way positions;

(c) primary door opening and closing means disposed in said door and said door jamb;

(d) a door handle hub rotatably secured to said door and

operatively connected to said door opening and closing means; and,

(e) door handle hub locking means comprising

(i) a locking plate secured around said door handle hub in said door, said plate having a protrusion extending from the outer periphery thereof,

(ii) a moveable slide bolt member having a recess therein adapted to receive said protrusion,

(iii) support means in said door connected to said slide bolt member for holding said slide bolt member and permitting movement of said slide bolt between a first unlocked hub position and a second handle hub-locking position and,

(iii) biasing means in said door connected to said slide bolt for biasing said slide bolt member into said locked and said unlocked positions,

(f) actuator means for causing movement of said slide bolt member,

(g) lost-motion means disposed between said actuator means and said slide bolt member, and

(h) means to reverse the direction of force applied by said actuator means to said slide bolt member to enable movement of said slide bolt member in a direction opposite to the movement of the actuator means.

4,641,868

RECENTERING FOR SHAFTS OF LOCKS AND OTHER MECHANISMS

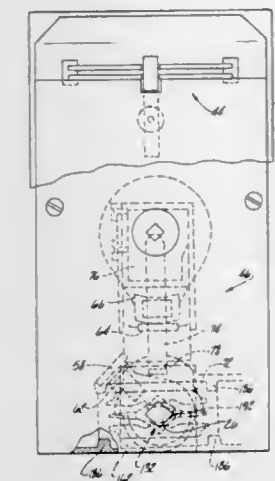
William L. Miron, Northville, Mich., assignor to Computerized Security Systems, Inc., Troy, Mich.

Filed Aug. 22, 1984, Ser. No. 643,055

Int. Cl.⁴ E05C 13/00

U.S. Cl. 292—336.3

14 Claims



1. In a lock mechanism of the type comprising a bolt, an operating shaft, means for coupling the shaft to the bolt for actuating the bolt in response to rotation of said shaft from a center position, a return spring operatively coupled with said shaft for applying a return torque thereto toward the center position, said return torque varying directly with angular displacement of the shaft from the center position over a predetermined range of displacement of said shaft, the improvement comprising:

a recentring spring means operatively coupled with said shaft for applying a restoring torque thereto toward the center position, said restoring torque varying inversely with angular displacement of the shaft from the center position over said predetermined range of displacement.

4,641,869

DOOR BRACE

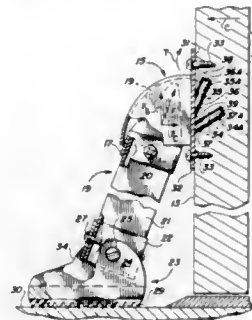
Lawrence Johnson, P.O. Box 1472, Clovis, N. Mex. 88101

Filed May 23, 1986, Ser. No. 866,276

Int. Cl.⁴ E05C 17/44

U.S. Cl. 292—339

1 Claim



1. A door assembly, including
 - (a) a frame;
 - (b) a door having
 - (i) a vertically oriented face, and
 - (ii) an upwardly canted channel formed in said door, said door being mounted on said frame for movement between two operative positions, a portion of said door being positioned intermediate said upwardly canted channel and said face;
 - (c) a support member including
 - (i) a downwardly opening recess,
 - (ii) a back surface contacting said face of said door, and
 - (iii) an anchor member attached to said back surface and extending upwardly into said channel; and,
 - (d) an elongate brace arm having
 - (i) an upper end positioned in said recess, and
 - (ii) a lower end spaced away from said door and adapted to frictionally fixedly engage said floor when a displacement force is applied to said door in a direction generally parallel to said floor and toward said lower end, said anchor member being forced against said intermediate portion of said door to generally prevent movement of said upper end and support member away from said door when said displacement force is applied to said door.

4,641,870

BUMPER GUARD

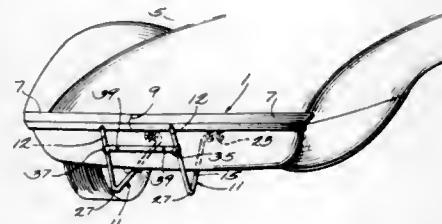
Neal R. Heyman, 11313 W. Country View Dr., Mequon, Wis. 53092

Filed Nov. 8, 1985, Ser. No. 796,251

Int. Cl.⁴ B60R 19/02

U.S. Cl. 293—102

10 Claims



1. A bumper guard for protecting a selected portion of an automobile body comprising guard means for covering the selected portion of the automobile body and shaped complementary to the automobile body; and bracket means attached to the automobile frame for holding the guard means in position on the selected portion of the automobile body, and

wherein the guard means comprises a V-shaped angle iron adapted to fit over the selected portion of the automobile body and wherein the guard means further comprises a padding secured to the angle iron for interposition between the angle iron and automobile body to thereby protectively separate the angle iron from the automobile body.

4,641,871

SAFETY BUMPER AND AIR BRAKE ACTUATOR

Lanny Vaughn, 4334 Heights St., Pittsburg, Calif. 94565

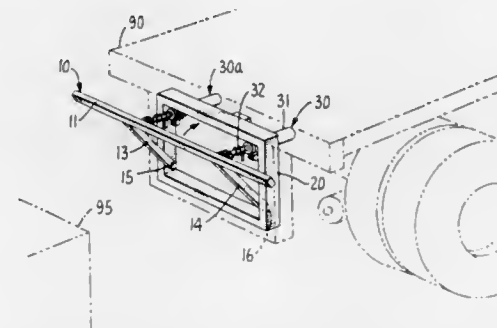
Continuation-in-part of Ser. No. 394,257, Jul. 1, 1982,

abandoned. This application Mar. 29, 1985, Ser. No. 717,567

Int. Cl.⁴ B60R 19/00

U.S. Cl. 293—118

4 Claims



1. A safety bumper and air brake actuator for use in conjunction with the air brake system of the tractor-trailer, wherein the existing air brake system of said trailer includes a emergency air supply tank and a triple valve adjacent the rear wheels of the trailer, comprising:

retractable bumper means carried at the rear of said trailer comprising a horizontal bar which extends the width of said trailer and a pair of parallel arms connected to said bar, extending downwardly therefrom and being hingedly connected to the frame of said trailer, such that as said tractor-trailer is travelling forward at highway speed, said retractable bumper means is fully retracted so that said horizontal bar lies against the frame of said trailer in its retracted position,

bumper extension means which operates in response to the position of the tractor transmission indicator to extend said bumper means when the tractor transmission is placed in reverse and to fully retract said bumper means when the tractor transmission is taken out of reverse,

cylinder means, having a piston slidably mounted in a sleeve, connected to said bumper means such that as said bumper means engages an obstruction at the rear of said trailer, said piston is driven into said sleeve,

switch means responsive to the position of said piston, solenoid means positioned adjacent the rear wheels of said trailer and pneumatically connected between the trailer's existing emergency air supply tank and existing triple valve of said trailer, and

control means connected to said switch means and said solenoid means such that when said piston is driven to a predetermined position within said sleeve, said switch means and control means cooperate to actuate and open said solenoid means whereby high pressure air from said trailer emergency air tank passes through said solenoid means and said triple valve and immediately actuates and locks the brakes of said trailer without affecting the brakes of the tractor.

4,641,872

COLLISION DAMPER HAVING A DAMPING PISTON AND A DEFORMABLE TUBE CONNECTED THERETO

Karl-Heinz Lohr, Eitorf; Ewald Kohberg, Eitorf-Irlenborn; Werner Kuchheuser, Windeck-Stromberg, and Wolfgang Dohmann, Eitorf-Irlenborn, all of Fed. Rep. of Germany, assignors to Boge GmbH, Eitorf, Fed. Rep. of Germany

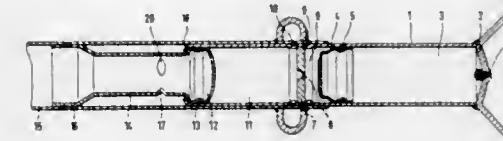
Filed May 22, 1985, Ser. No. 736,803

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419165

Int. Cl.⁴ A47C 7/14

U.S. Cl. 293—133

19 Claims



1. An impact damper for a motor vehicle having outer tubular means and inner work piston means, said work piston means being disposed within a portion of said outer tubular means and being firmly attached at one end thereof at an extremity portion of said outer tubular means;

means for interacting with a relative movement of said work piston means for transferring forces produced during impact with said outer tubular means to said work piston means;

fluid means disposed for transferring at least a portion of said forces upon said work piston means to said fluid means during impact for slowing down said motor vehicle during a collision;

said work piston means having an interface portion at an end opposite said end attached to said extremity portion of said outer tubular means for interfacing with said fluid means;

said fluid means comprising an internal tube means defining a hydraulic liquid containing chamber, said liquid therein making contact with said interfacing portion;

said liquid containing chamber having throttle means therein for throttling liquid flow within said chamber;

means for retaining said work piston means in a predetermined position relative to said fluid means and said outer tubular means at times when said forces of impact are not present;

said means for retaining said work piston means being disposed such that said work piston means is movable along a substantial portion of said work piston's length with respect to said retaining means; and

said work piston means including a deformable tube having means for mechanically deforming and shortening when forces transferring from said means for interacting exceed a predetermined range.

4,641,873

SANITARY FECES COLLECTION DEVICE

George H. Nurnberger, 11250 Playa St., Space 85, Culver City, Calif. 90203

Continuation of Ser. No. 716,454, Mar. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 590,038, Mar. 15, 1984, abandoned. This application Mar. 7, 1986, Ser. No. 838,410

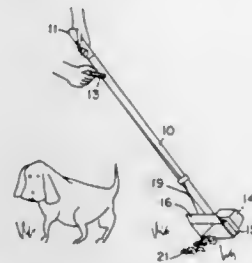
Int. Cl.⁴ A47F 13/06

U.S. Cl. 294—1.4

8 Claims

1. A scoop or the like structure comprising an elongated handle member, having a first hand gripping end and a second end operatively connected to a frame member comprising a first rectangular support member transverse to the axis of said handle member and a second intermediate C-shaped support member, lying in about the same lane as said handle member, said first rectangular support member being connected to said second intermediate C-shaped support member and defining

therebetween an open sided support cage adapted to receive a disposable member which extends outwardly from and beyond said open sided support cage and into which items are to be scooped and retained; a flap member secured to the front portion of said first rectangular support member and operatively associated therewith for pivotal movement with a con-



gruently shaped enclosure element of said disposable member into an open and a closed position said flap member being adapted for releasable attachment to said congruently shaped enclosure element of said disposable member; and means operatively associated with said elongated handle member to actuate said flap member into either said open or closed positions.

4,641,874

PORTAGING DEVICE

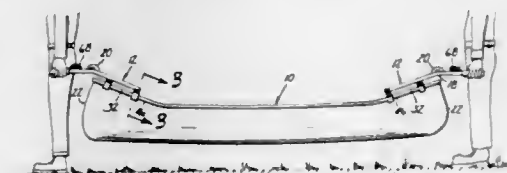
Leslie J. Grenzer, 7450 Indian Trail, Rockford, Minn. 55373

Filed Mar. 29, 1984, Ser. No. 594,763

Int. Cl.⁴ A45F 3/15; B65G 7/12

U.S. Cl. 294—15

1 Claim



1. A canoe portaging device comprising: at least one handle adapted to be removably secured to the bow or stern of a canoe, said handle being removably secured to the canoe by securing at least two transverse members removably, transversely secured to said handle and clamping means adjustably secured to each end of said transverse members and adapted to selectively engage the gunwale of the canoe, said handle being further adapted to remain approximately horizontal and independent of the angle of the bow or stern of the canoe by providing said handle with an obtuse angle and a reinforcement means for strengthening said angle; and a weight transfer means comprised of a belt adapted to be worn by the canoeist and a mating member secured to said handle and adapted to releasably mate with said belt.

4,641,875

DEVICE FOR THE CONNECTION OF COMPONENTS AND TENSIONING AND/OR CONTROL DEVICES WITH BELTS

Herrn H. Speich, Hüttlingen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,164

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344485

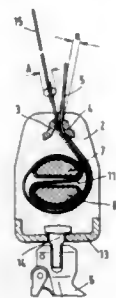
Int. Cl.⁴ A44B 11/00; B66C 1/10

U.S. Cl. 294—82.11

14 Claims

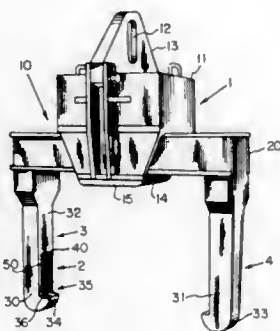
1. A device for the connection of components such as hooks, eyes, shackles, or chain links with belts (5) which device comprises two cross-members (7,8) disposed one behind the other

between two side walls (1,2), one (7) of which cross-members (7,8) supports with part of its circumference a single belt layer formed by a closed loop and the other (8) of which supports with part of its circumference a double belt layer formed by an open loop, and of which cross-members (7,8) at least that one (7) which supports the single belt layer is mounted detachably



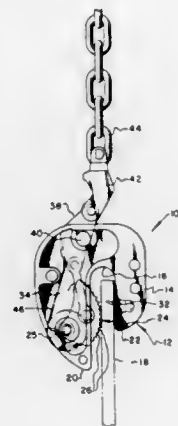
in holes (12) arranged mutually aligned in the side walls (1,2), wherein both cross-members (7,8) are of circular segment-shaped cross-section and provided with mutually facing straight surfaces (9,10) which delimit a belt guide slot (11) the width (w) of which is substantially equal to twice the thickness (s) of a belt (5) to be connected.

4,641,876
COIL EDGE PROTECTING COIL LIFTER AND INSERT
David G. Kiser, Franklin; Donald M. Spaulding, Cochran, both of Pa., and Peter J. Wassmer, Bay Village, Ohio, assignors to Zurex Corporation, Cochran, Pa.
Filed Jul. 29, 1985, Ser. No. 759,686
Int. Cl.⁴ B66C 1/42
U.S. Cl. 294—86.4 13 Claims



1. A coil lifter adapted to lift a coil having a coil core, said lifter comprising:
an upper housing adapted to be suspended over a coil of material;
a pair of spaced lifter arms connected to and extending downwardly from said housing, each of said lifter arms having a front wall opposed to each other and a lifting surface at a lower end of each arm adapted to fit within a coil core;
means for effecting movement of said arms relative to each other to open and close said arms about a coil; and means at said front wall of each arm for contacting the edges of a coil located between the front walls of said lifter arms, each of said contact means being movable along with the edges of a coil relative to the lifter arm on which the contact means is mounted,
whereby forces exerted on the edges of a coil as said front walls of said lifter arms are moved along said coil edges are minimized to minimize damage to the coil edges.

4,641,877
LIFTING CLAMP CAM WEAR INDICATOR AND METHOD
George O. Merrill, Forest Hills, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Sep. 18, 1985, Ser. No. 777,392
Int. Cl.⁴ B66C 1/48; G01D 21/00
U.S. Cl. 294—101 8 Claims

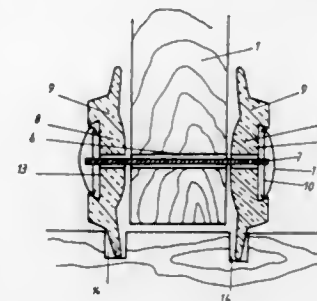


1. In a lifting clamp for lifting metal plate or the like, a clamp housing including means forming a "u" shaped recess for receiving a portion of the metal plate or the like, a plate gripping cam pivotally mounted on said clamp housing for movement into gripping engagement with the metal plate or the like for securing the metal plate or the like to said clamp housing between said plate gripping cam and one side of said "u" shaped recess, said plate gripping cam including a plurality of spaced apart plate gripping teeth arranged along an arcuate rim with respect to an axis of rotation of said plate gripping cam, said spaced apart plate gripping teeth including a crested edge extending generally in a plane parallel to said axis of rotation of said plate gripping cam and at least one of said crested spaced apart plate gripping teeth having a slot in said crested edge which may be viewed from the exterior of the lifting clamp when a plate member is not disposed in said "u" shaped recess, said slot providing a means for indicating wear, whereby when said tooth having a crested edge in a slot is used to a degree such that said crested edge is worn away, the depth of said slot in said crested edge tooth will be reduced or will disappear thereby indicating to the observer the degree of wear on said crested edge tooth.

4,641,878
TOY RAILWAY VEHICLE SET WITH CONSTRICTED OPENING RECESS IN HUB
Nils A. I. Petersson, Killeberg, Sweden, assignor to 501 Brio AB, Osby, Sweden
Filed Sep. 18, 1985, Ser. No. 777,254
Claims priority, application Sweden, Sep. 27, 1984, 8404834
Int. Cl.⁴ B60B 7/04, 3/14, 27/06, 37/10
U.S. Cl. 295—49 1 Claim

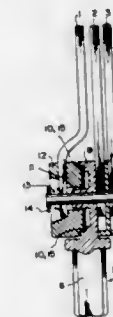
1. A wheel set for toy rail vehicles having downwardly directed wheel support members having a bore therethrough, a pair of support wheels, a hub on said wheel and rim means extending radially from said hubs and being engageable with a guide track for the wheel, each hub having a bore therethrough, an axle for said support wheels and being of a diameter less than the bore in said support members, a spring disc anchor means for each wheel having a struck out central star portion the diameter of which is less than the diameter of said axle to form a lock with said axle to prohibit axial withdrawal of the support wheels from said axle once the spring disc anchor means has been set on each wheel on opposite sides of said wheel support means, in each said hub an undercut wall

larger at its inner end and tapered to a smaller opening at its outer end defining a constricted opening recess for housing and retaining said spring disc anchor means and a cover locked



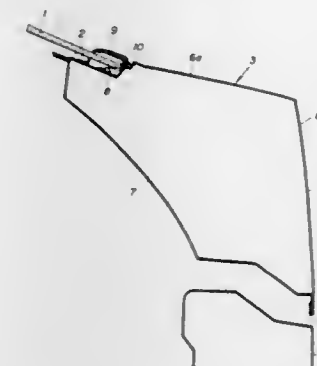
within the wheel hub to retain the wheel axially secured to the axle and the cover all of which are substantially secured against axial displacement from within said constricted opening recess.

4,641,879
BABY CARRIAGE HOOD
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Dec. 2, 1985, Ser. No. 803,498
Claims priority, application Japan, Dec. 12, 1984, 59-261970
Int. Cl.⁴ B60J 9/00
U.S. Cl. 296—78 A 6 Claims



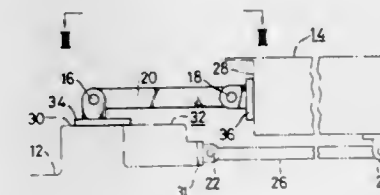
1. A baby carriage hood comprising:
a support member for mounting said hood on a baby carriage body,
a shaft member extending through said support member, at least two ribs whose ends are hunched in the manner of the pivot of a fan by said shaft member extending there-through,
a bracket assembled to said support member so that it is movable axially and turnable circumferentially relative to said shaft member, and
a spring member for resiliently urging said bracket toward said support member,
the respective opposed surfaces of said bracket and support member being formed at their assembled region with uneven-surfaced portions adapted for removable engagement with each other,
one of said ribs being fixed to said bracket.

4,641,880
REAR DOOR STRUCTURE FOR MOTOR VEHICLES
Tsuyoshi Ohkubo, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1986, Ser. No. 830,643
Claims priority, application Japan, Feb. 18, 1985, 60-21630
Int. Cl.⁴ B60J 5/10
U.S. Cl. 296—154 6 Claims



1. A rear door structure in a motor vehicle having a vehicle body, comprising:
a pane of glass having a pair of side edges curved downwardly; and
a frame supporting said pane of glass in surrounding relation to an outer peripheral edge thereof, said frame including a front frame member pivotally mounted on said vehicle body, a rear frame member supporting a rear edge of said pane of glass and having a first channel for receiving water flowing from an outer surface of the rear frame member when the rear door structure is opened, and a pair of side frame members supporting side edges of said pane of glass and each having a second channel communicating with said first channel.

4,641,881
SIDE DOOR HINGE MECHANISM IN MOTOR VEHICLE
Kazuhiro Nomura, Anjo, and Masayuki Nomura, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Oct. 3, 1984, Ser. No. 657,892
Claims priority, application Japan, Oct. 4, 1983, 58-153917[U]
Int. Cl.⁴ B60J 5/04; B62D 25/04; E05D 15/28
U.S. Cl. 296—202 2 Claims



1. A hinge mechanism for a vehicle door comprising:
a vehicle body including means extending vertically along said vehicle body for mounting the door to said vehicle body, the door having an end surface extending between an exterior and an interior of the door proximate said mounting means, said end surface having a lower vertical section measuring a predetermined length and an upper inclined section, said mounting means having a first mounting surface aligned with said vertical section and a second mounting surface, said mounting means including

a pillar member extending vertically along said vehicle body, said first mounting surface being positioned along an outer side of said pillar member and said second mounting surface being located on said pillar member rearward of said first mounting surface;

support means extending between said vertical section and said first mounting surface for providing primary support for the door, said support means including a support arm and first pivot means for pivotally connecting said support arm to said first mounting surface and to said end surface, wherein said first pivot means includes first shaft means for pivotally mounting said support arm on said first mounting surface and second shaft means for pivotally mounting the door along said end surface to a portion of said support arm opposite said first shaft means; and control means extending between the door and said second mounting surface for guiding the door when the door is opened and closed, said control means including a control arm and second pivot means for pivotally connecting said control arm to said second mounting surface and to the door to enable said control arm to pivot with said support arm, when said door is opened and closed, the vertical dimension of said control arm being small relative to said support arm.

4,641,882

ORTHOPEDIC APPLIANCE

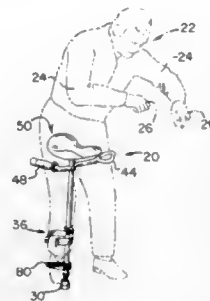
John Young, 216 Crystal Lake Rd., Algonquin, McHenry County, Ill. 60102

Filed May 6, 1981, Ser. No. 260,905

Int. Cl.⁴ A47C 4/52

U.S. Cl. 297—183

11 Claims



1. An orthopedic appliance assembly adapted to support the body of an injured or handicapped person without the use of his arms and hands and adapted to be readily movable with the person, said assembly comprising, in combination, a principal frame assembly having a lower portion adapted to engage and rest upon a travelled surface in position of use, a seat assembly disposed at the other end of said frame and forming body support means for said person, at least one handle extending radially outwardly from said frame and spaced downwardly apart from said seat assembly, said handle having a gripping portion being positioned relative to said frame so as to be able to be grasped by said person so as to exert a lifting force on said appliance while said person is supported by said seat, said handle including means preventing movement of said gripping portion thereof above the level of said seat.

4,641,883

FOLDABLE SUPPORT

Teruyuki Kato, Funabashi, Japan, assignor to K.K. Iwai, Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,076

Int. Cl.⁴ A47C 7/66, 16/00

U.S. Cl. 297—184

1. A foldable support comprising:

7 Claims

a first frame member having an upper and a lower end and a pair of inwardly projecting portions between such ends; a second frame member having an upper and a lower end and a pair of outwardly projecting stepped portions between such ends, the first and second frame members being attached to each other so that each of the inwardly projecting stepped portions of the first frame member cooperates with one of the outwardly projecting stepped portions of the second frame member, the first and second frame members being rotatable relative to each other about an axis passing through the inwardly and outwardly projecting stepped portions;



a belt extending between the upper ends of the first and second frame members; a supporting lever having two ends and rotatably mounted at one end to one of the frame members; a third frame member fixed to the other end of the lever, the third frame member having a belt extending between said ends of said third frame member, whereby upon unfolding and erecting said support, said third frame member lies above said first and said second frame members; and a T-shaped joint member connecting the other end of the lever and the third frame member and having means to swivel the third frame about perpendicular horizontal axes.

4,641,884

SEAT FOR VEHICLES

Norio Miyashita, Tokyo, and Akira Nemoto, Akishima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Tachikawa Spring Co. Ltd., both of Tokyo, Japan

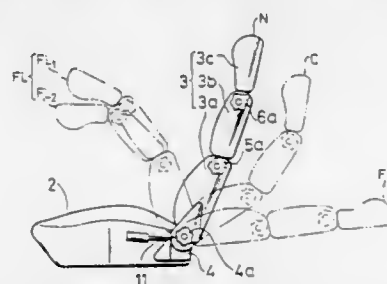
Filed Feb. 20, 1986, Ser. No. 831,272

Claims priority, application Japan, Feb. 21, 1985, 60-33326

Int. Cl.⁴ A47C 3/00

U.S. Cl. 297—284

20 Claims



1. A seat for vehicles in which a seat back is separated into a plurality of portions in the vertical direction and a reclining angle of each of said plurality of separated portions can be varied, comprising:

(a) reclining means provided in connection with the lowest

portion of said separated portions and a cushion of said seat for adjusting a reclining angle of said lowest portion relative to said cushion of said seat;

(b) a plurality of angle adjusting means each provided in connection with adjacent ones of said separated portions for adjusting an angle of an upper portion of said adjacent ones relative to a lower portion thereof;

(c) fine adjusting means provided in connection with each of said plurality of angle adjusting means for finely adjusting the angle of said upper portion; and

(d) means for coupling each of said plurality of angle adjusting means to said reclining means to thereby operate said plurality of angle adjusting means in response to each operation of said reclining means, whereby said separated portions can be varied to various reclining postures and said reclined postures of said separated portions can be adjusted finely.

4,641,885

WORK CHAIR HAVING A VERTICALLY ADJUSTABLE CHAIR SUPPORT

Egon Bräuning, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

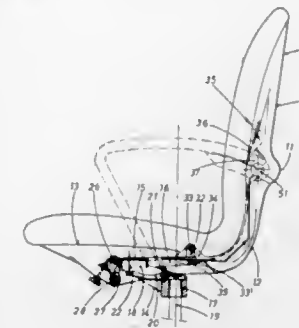
Filed Jun. 27, 1984, Ser. No. 624,979

Claims priority, application Switzerland, Jul. 20, 1983, 3973/83

Int. Cl.⁴ A47C 3/00

U.S. Cl. 297—300

9 Claims



1. A work chair having a vertically adjustable chair support (19) rigidly joined to a chair support base bearer (14) on which an integrally formed chair shell (8) is suspended for longitudinal movement by means of a front and rear spring-loaded pair of lever members (27, 32) of an adjustable mechanism, the chair shell (8) being comprised of a seat shell portion (13), a lumbar portion and buttocks supporting portion (12) being rigidly joined with said seat shell portion (13), and a backrest portion (10) being joined with said lumbar portion and buttocks supporting portion (12) by means of a hinge joint (11), the backrest portion (10) of the chair shell (8) further being joined with a tension member arrangement (35-39) which, by the user of the chair pressing back with their shoulders, applies an adjusting force to the backrest portion (10) for the purpose of providing a change in inclination, thereby effecting a synonymous change in the inclination of the seat shell portion (13), the hinge joint further being characterized by an integrally formed flexible hinge portion (11) between the lumbar and buttocks supporting portion (12) and the backrest portion (10), the tension member arrangement (35-39) comprised of a flexible band (36) which moves upwardly when the backrest portion (10) is moved back thereby causing the band (36) to pull the base bearer (14) backwards further producing a flexible connection between the bottom end of the backrest portion (10) and the base bearer (14), which is slidably guided toward the base bearer (14) by means of a movement deflecting device (37) in the region of the hinge portion (11), and via a channel (38) in the lumbar portion and buttocks supporting (12), said movement deflecting device (37) having a curved bearing surface

for said flexible band (36) passing into a u-shaped groove which is formed in the channel member (38), the channel member (38) and deflecting device (37) being attached to chair shell (8) in the portion (12) supporting the buttocks and lumbar regions.

4,641,886

GAS SPRING ARRANGEMENT, ESPECIALLY FOR A BACKREST SUPPORT FOR OFFICE CHAIRS

Elke Dauphin, Nuremberg, Fed. Rep. of Germany, assignor to Burositz Mobelfabrik Friedrich-W. Dauphin GmbH & Co., Offenhausen bei Nürnberg, Fed. Rep. of Germany

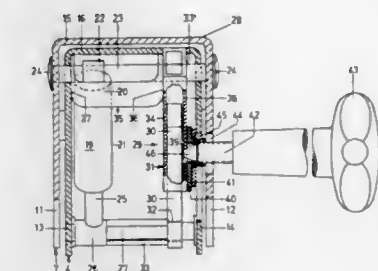
Filed Sep. 9, 1985, Ser. No. 773,930

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1984, 3438843; Mar. 14, 1985, 3509049

Int. Cl.⁴ A47C 1/027

U.S. Cl. 297—300

5 Claims



1. A gas spring arrangement comprising a gas spring, disposed between two elements pivotable in relation to one another around a pivot axis, which damps the pivot movement, and a mechanical arrangement with an activating lever for the releasable adjustment of the pivot movement, especially for the inclination adjustment of the backrest of office chairs, characterized in that the gas spring is fastened between two transverse struts, which are each disposed on an element parallel to the pivot axis, and in that the mechanical adjustment means comprises a sheath part and a piston part longitudinally movable in the sheath part, in that the sheath part and the piston part are each connected with axial free play to one of the transverse struts and are disposed generally parallel to the gas spring, and in that the sheath part has a lateral threaded bore, into which a threaded bolt disposed at the front end of the activating lever can be screwed in such a way that the piston part can be braced against the sheath part, and a spring is disposed on the transverse strut supporting the sheath part, said spring acting on said sheath part parallel to the pivot axis.

4,641,887

PLANETARY SEAT BACK ADJUSTER

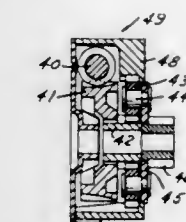
Bernd A. Klutzing, Jung-Stilling-Weg, Fed. Rep. of Germany, assignor to Keiper Recaro Incorporated, Battle Creek, Mich.

Filed Sep. 16, 1985, Ser. No. 776,659

Int. Cl.⁴ A47C 1/025

U.S. Cl. 297—362

4 Claims



1. Seat back adjuster comprising pivotally connected seat and seat back hinge members, planetary gear means for adjust-

ing the relative position of said hinge members, said means including a simple planetary speed reduction gear output set comprising sun input, planetary gear carrier output, and fixed ring gear elements, and speed reduction motor driven worm and worm wheel input means drivingly connected with the sun of said output set to provide a multiplied compound overall reduction ratio.

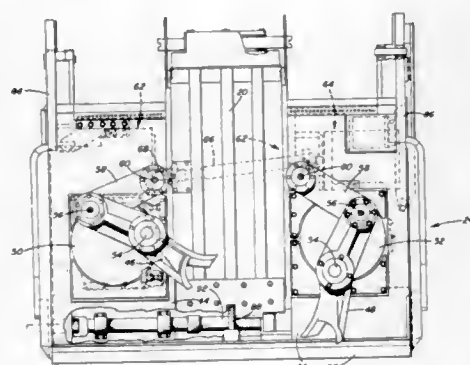
4,641,888
MATERIAL GATHERING DEVICE FOR A MINING MACHINE

Maurice K. LeBegue, Argillite, and Henry E. Wilson, Ashland, both of Ky., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Apr. 12, 1985, Ser. No. 722,700
Int. Cl.⁴ E21C 35/20

U.S. Cl. 299—64

4 Claims



1. An improved material gathering device for a mining machine of the type which includes a mobile body supporting a mining head at the forward end thereof for dislodging material from a mine face, a gathering platform on said mobile body adjacent to and below said mining head, said gathering platform arranged to receive material dislodged by said mining head thereon, and endless conveyor extending longitudinally along said mobile body to convey said dislodged material away from said forward end to a rearward end of said mobile body, and a pair of oscillating arms on opposite sides of said gathering platform to feed said dislodged material onto said endless conveyor, said improvement comprising,

- a drive motor for driving said pair of oscillating arms and for driving said endless conveyor,
- a first transverse shaft drivingly connected to said pair of oscillating arms, a first gear drivingly connected to said first transverse shaft, said drive motor drivingly connected to said first gear,
- said endless conveyor having a forward end extending onto said gathering platform and terminating near a forward edge thereof, and
- a transversely extending conveyor drive shaft positioned parallel with said first shaft and forwardly thereof, said conveyor drive shaft drivingly connected to said first gear.

4,641,889
CUTTING MACHINE
Erich Brandl, Knittelfeld, Austria, assignor to Voest-Alpine Aktiengesellschaft, Muldenstrasse, Austria
Filed Sep. 6, 1985, Ser. No. 773,364
Claims priority, application Austria, Sep. 20, 1984, 2997/84
Int. Cl.⁴ F21C 27/24

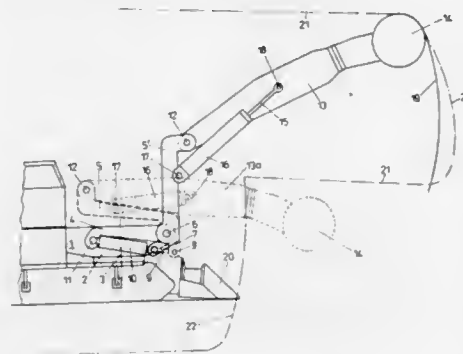
U.S. Cl. 299—75

6 Claims

- 1. A cutting machine comprising:
 - a frame;
 - a cutting tool;
 - a cutting arm being swivellable around a first horizontal swivelling axis and a vertical axis and carrying the cutting

tool on a free end, said first horizontal swivelling axis being displaceable relative to the frame;

- a rocker arm connected at one end to the frame and connected at an opposite end at the first horizontal swivelling axis of the cutting arm;
- said rocker arm being turnable around the vertical axis and being swivellable around a second horizontal swivelling axis through said one end of the rocker arm;



wherein said rocker arm in a lowered position is so arranged that the second horizontal swivelling axis is located relative to the frame in front of the first horizontal swivelling axis;

said rocker arm further being swivellable around the second horizontal swivelling axis from a backwardly directed and approximately horizontal position into an upwardly directed and approximately vertical position; and drive means, supported on the rocker arm, for swivelling the cutting arm around the first horizontal swivelling axis.

4,641,890
WHEEL COVER FOR A VEHICLE
Takao Ookubo, Yokohama; Yuko Baba, Tokyo, and Kiyoshi Kamihama, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd. and Hashimoto Forming Kogyo Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 605,992, May 2, 1984, abandoned, which is a continuation of Ser. No. 402,567, Jul. 25, 1982, abandoned, which is a continuation of Ser. No. 155,927, Jun. 3, 1980, abandoned. This application Feb. 22, 1985, Ser. No. 703,469

Claims priority, application Japan, Jun. 4, 1979, 54-68844
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.⁴ B60B 7/00

U.S. Cl. 301—37 SS

21 Claims



3. A wheel cover for a vehicle wheel, comprising:

a one-piece member integrally molded in a mold having a parting surface, said member comprising an annular radially outer portion, a radially inner portion having a circular outer counter and a plurality of spoke portions each having a solid cross-section and extending between and connected to said radially outer and radially inner portions, each spoke portion crossing with another spoke portion at a cross point between said radially outer and radially inner portions and each two crossing spoke portions being staggered at said cross point in the axial direction of said wheel cover, each spoke portion having a front section on an outer surface side and a rear section on an inner surface side, with the front section of the spoke portion lying in front at said cross point being thicker than the front section of the spoke portion lying behind at said cross point, boundary lines between said front and rear sections of each two crossing spoke portions being defined by the parting surface of the mold in which said member is molded and lying substantially in a common plane; and means for attaching said wheel cover to a vehicle wheel.

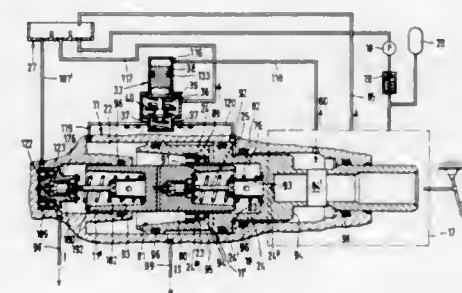
4,641,891
HYDRAULIC SERVO VEHICLE BRAKE
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 20, 1985, Ser. No. 747,021

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423030

Int. Cl.⁴ B60T 8/02, 11/16, 13/12

U.S. Cl. 303—10

7 Claims



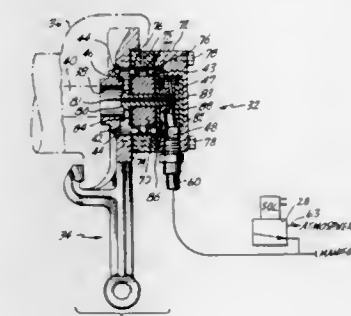
1. A hydraulic servo vehicle brake with a pedal-actuated tandem master cylinder having two master pistons, with wheel cylinders linked to it through at least one brake circuit, and with a brake application valve which is arranged between the pedal and a first master piston and which, on actuation by the brake pedal, applies pressure medium supplied by a hydraulic pump connected with a fluid reservoir in a controlled manner to the first master piston and directly to said brake circuit to furnish a controlled pressure, wherein said first master piston (24) is provided with a cylindrical axial bore (78) toward the piston pressure chamber (76) within which axial bore (78) a second master piston (80) extending to a bottom (79) of the master cylinder is tightly slidably arranged, a non-return valve (23) arranged as a sealing cup is provided between the second master piston (80) and the annular portion (24') of a piston (24) wherein an annular chamber (22) existing between that portion of said second master piston (80) which projects from the said axial bore (78) and said master cylinder (11) is lined with a three-position two-way valve (33) having an inlet (37) and an outlet (36) and being controlled by the controlled pressure by way of a control inlet (116), and which with no application of controlled pressure links said annular chamber (22) to said fluid reservoir (27) and which interrupts that link in the presence of a slight first controlled pressure on the order of approximately 1 bar, and wherein the interrupted condition is maintained until application of brake shoes of said vehicle brake takes place as long as the controlled pressure is still relatively low in the amount of up to approximately 7 bar, and which again opens in response to increased second controlled

pressure when the increased pressure exceeds approximately 7 bar.

4,641,892
RAILWAY EMERGENCY BRAKE SYSTEM
Hartmut Schmid, North Vancouver, Canada, assignor to DSL Dynamic Sciences Limited, St. Laurent, Canada
Filed Dec. 12, 1984, Ser. No. 680,769
Int. Cl.⁴ B60T 15/42, 15/46

U.S. Cl. 303—47

17 Claims



1. An emergency brake control valve for a railway vehicle, said valve comprising:

- a glad-hand body having an exterior face and an interior face that are opposed to one another, said exterior face being configured for mating connection with a glad-hand connection to the brake pipe of a railway vehicle, said glad-hand body including a passageway that extends between said faces, said passageway communicating with said brake pipe when said glad-hand body is connected to said glad-hand connection, said glad-hand body having a primary valve seat on the interior face thereof adjacent said passageway, said glad-hand body having an exhaust port that extends between said faces; and

- a quick-exhaust valve mounted on the interior face of said glad-hand body, said quick-exhaust valve having a movable valve member having a primary side and a secondary side that are opposed to one another, in a closed position said primary side being seated against said primary valve seat to close the passageway of said glad-hand body and thereby prevent communication between said passageway and atmosphere, in an open position said primary side being unseated from said primary valve seat to establish a fluid path to atmosphere from said passageway through said exhaust port, said valve member normally occupying the closed position and being movable to the open position in response to a difference between a pressure acting on said primary side and a pressure acting on said secondary side.

4,641,893
HYDRAULIC BRAKING PRESSURE CONTROL APPARATUS FOR VEHICLES
Makoto Sato, Kamifukuoka, and Shohei Matsuda, Utsunomiya, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 10, 1985, Ser. No. 753,484

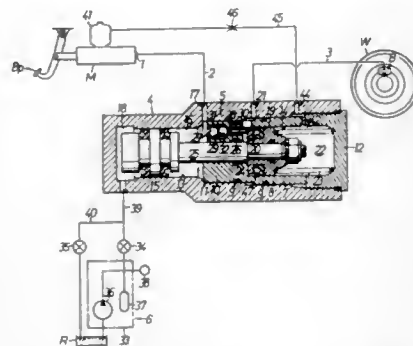
Claims priority, application Japan, Jul. 17, 1984, 59-148234
Int. Cl.⁴ B60T 8/02

U.S. Cl. 303—113

2 Claims

- 1. A hydraulic braking pressure control apparatus for vehicles, having an input hydraulic chamber communicating with an output port of a master cylinder, and an output hydraulic chamber communicating with a wheel brake, said output hydraulic chamber being adapted to generate a hydraulic braking pressure in accordance with a hydraulic pressure induced into said input hydraulic chamber, said output hydraulic chamber

being constructed to be enlarged in volume, when a wheel is about to be locked, in accordance with a hydraulic control pressure supplied from an anti-lock control means to a control chamber, said apparatus comprising a casing in which first and second cylinder portions are provided concentrically with a partition interposed therebetween; a first piston fitted slidably in said first cylinder portion to define said input hydraulic chamber on one side of the piston near said partition and said control chamber on an opposite side thereof far away from said partition; a second piston fitted slidably in said second cylinder portion to define said output hydraulic chamber on one side of said second piston near said partition and a spring chamber on an opposite side thereof far away from said partition; a piston



rod penetrating through said partition in an oil-tightly slidable manner and having said first and second pistons mounted fixedly on both end portions thereof; a valve mechanism provided in said partition and adapted to be closed in accordance with a displacement of said second piston away from said partition; wherein said spring chamber is in communication with a reservoir provided in said master cylinder and houses therein a spring for urging said second piston toward said partition and wherein a sealing structure is provided for sealing between said output hydraulic chamber and said spring chamber but allowing flow of a working oil from said spring chamber to said output hydraulic chamber through said sealing structure.

4,641,894

BRAKE SYSTEM

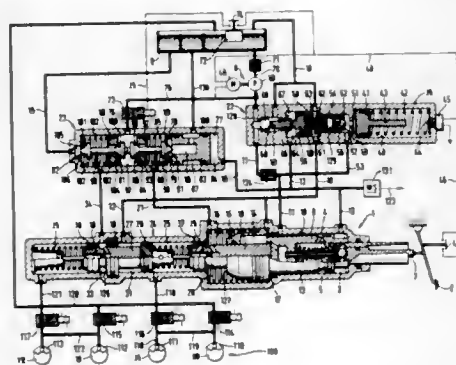
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 19, 1985, Ser. No. 756,740

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1984, 3427070

Int. Cl.⁴ B60T 8/44; F15B 7/00

U.S. Cl. 303-114

9 Claims



1. A brake system for automotive vehicles, which is provided with a master brake cylinder and with a working piston confining a working chamber and communicating with at least one pressure chamber of a wheel brake and which is provided

with a power booster connected upstream of the master brake cylinder and connected to an auxiliary energy source for the purpose of pressure supply, wherein valve means (22, 23) are connected at a booster chamber (3) which are controllable by the pressure of the booster chamber (3) and by means of which a pressure medium connection is established from the auxiliary energy source (8) to at least one working chamber (25) of the master brake cylinder (24), at the same time an annular surface (127) of the working piston (19) is pressurized in the brake's release direction, wherein the valve means comprise a first valve arrangement and a second valve arrangement (22 and 23), the first valve arrangement (22) comprising an arrangement controlling the pressure of the auxiliary energy source (8) and the second valve arrangement (23) comprising a valve (80) opening in the dependence on the pressure of the auxiliary energy source (8), and, wherein the first valve arrangement (22) has a control chamber (64) communicating with a pre-pressure chamber (13) and confined by a control piston (59) on the one side and by a valve piston (65) on the other side, the control piston (59) being caused by a spring (62) acting in the direction of the valve piston (65) to rest at the valve piston (65) and the valve piston (65) blocking the connection from the auxiliary energy source (8) to a compensation reservoir (9) by way of a valve member (69) and releasing the same, when the force required for closing the valve member (69) and acting on the valve piston (65) is smaller than the force required for opening the valve member (69).

4,641,895

BRAKE SYSTEM WITH SLIP CONTROL FOR AUTOMOTIVE VEHICLES

Juan Belart, Walldorf; Jochen Burgdorf, Offenbach-Rumpenheim; Hans W. Bleckmann, Obermoeren; Lutz Weise, Mainz, and Wolfram Seibert, Darmstadt, all of Fed. Rep. of Germany, assignors to ITT Industries Inc., New York, N.Y.

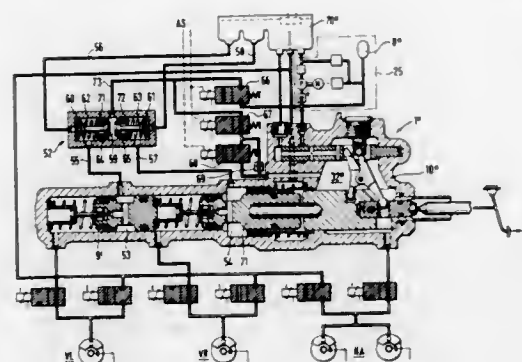
Filed Oct. 15, 1984, Ser. No. 660,913

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338826; Oct. 27, 1983, 3347752

Int. Cl.⁴ B60T 8/02

U.S. Cl. 303-119

1 Claim



1. A brake system with slip control for an automotive vehicle having a plurality of wheel brake cylinders associated with the driven wheels of the vehicle, said system comprising, in combination:

- a pedal-actuated braking pressure generator including a master cylinder;
- a plurality of pressure fluid lines respectively connecting each of said wheel brake cylinders with said master cylinder;
- an auxiliary energy source connected to said master cylinder by way of at least one multiple-way valve;
- a plurality of wheel sensors respectively coupled to each of said driven wheels for providing electrical signals indicative of wheel rotational behavior;

means coupled to said sensors for providing an output signal indicative of a predetermined wheel rotational behavior; means responsive to said output signal for controlling said multiple-way valve, wherein braking pressure is made available at said wheel brake cylinder associated with said driven wheels independently of the actuation of said pedal-actuated braking pressure generator; and, wherein said master cylinder is a two-chamber tandem master cylinder which is connected to a pressure supply reservoir (70") by way of a double valve assembly (52) and said double valve assembly (52) being further connected to said auxiliary energy source through said multiple-way valve wherein said auxiliary energy source communicates with the chambers of said two-chamber tandem master cylinder in response to said output signal said double valve assembly (52) being connected to said two-chamber tandem master cylinder by way of first and second pressure fluid lines which are separated from one another, said double valve assembly (52) having first and second valve pistons respectively disposed in said first and second pressure fluid lines each piston being resiliently urged against a valve seat in a control chamber (59) of said double valve assembly (52), said control chamber (59) being connected to said multiple way valve whereby introduction of pressure into said control chamber (59) translates said pistons away from said valve seats thereby connecting said auxiliary energy source to said two-chamber tandem master cylinder

4,641,897

PORTABLE HANGING FILE AND DESK TOP DISPLAY FOR FLOPPY DISKS

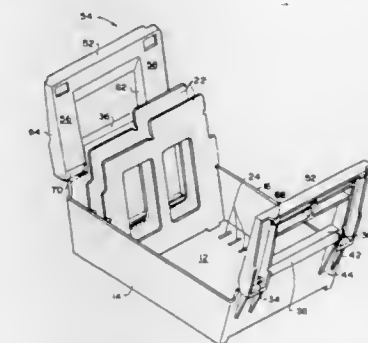
Jerry M. Long, Pleasanton, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Filed May 18, 1984, Ser. No. 611,903

Int. Cl.⁴ A47B 63/00; B42F 17/00

U.S. Cl. 312-183

5 Claims



1. A storage and display device for substantially flat, rectangular elements such as floppy disks and the like, comprising: tray means for supporting said elements on an edge thereof and including a bottom, a pair of oppositely disposed end walls which incline outwardly and extend upwardly a predetermined distance from the bottom of said tray, and a pair of sidewalls extending upwardly from said bottom a second predetermined distance which is less than said first predetermined distance; separator means for separating quantities of said elements stored in said tray; alignment means formed in said bottom for positioning said separator means; means for suspending said tray beneath a pair of parallel extending supports and including a pair of hanger means each having one end adapted for attachment to one of said supports and another end pivotally attached to an upper portion of one of said end walls, said hanger means being configured such that they are rotatable between a first position lying substantially parallel to and coextensive with said end walls, and a second position wherein said one ends are located substantially higher than the upper extremities of said end walls, said hanger means includes: a first portion having an inclined surface extending a full width of said first portion; a pair of finger member extending parallel to each other and away from said inclined surface, each said finger member having a terminal end and a flat face portion extending over most of its length, and inner and outer side walls that intersect said inclined surface; an aperture formed in each said inner side wall for accommodating pivotal attachment with said pintels; and a pair of tabs formed along an edge of said inclined surface and spaced from the edges of said inner and outer side walls to form a channel with said hanger may be mounted to a rod or similar support.

4,641,896

RETRACTABLE DOOR STRUCTURE

Kyosuke Iimura, 1-2-13 Higashi Tabata, Kita-ku, Tokyo, and Kiyoshi Maruyama, 716 Kamitsuchidana, Ayase-shi, Kanagawa, both of Japan

Continuation of Ser. No. 675,821, Nov. 28, 1984, abandoned.

This application May 28, 1986, Ser. No. 869,460

Claims priority, application Japan, Dec. 26, 1983, 58-198613[U]

Int. Cl.⁴ E06B 00/00

U.S. Cl. 312-110

4 Claims



1. A retractable door structure for storage cases with a door which comes out of the storage case and rotates to open and close, the structure comprising:

- a pair of opposing guide grooves provided inwardly from the front of the case;
- a pair of elongated sliding blocks with one of said sliding blocks provided in each of the sliding grooves, each of said elongated sliding blocks having a scraped portion, said scraped portions oppositely facing each other;
- a storing space provided in each of said elongated sliding blocks in a side of said sliding blocks opposing a bottom of each of said grooves;
- a pinion mounted in said storing space in each of the sliding blocks;
- a single rack provided on one side wall of each of the grooves, each of said racks engaging with one of said pinions;
- a connecting rod provided between the sliding block and

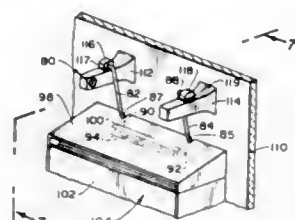
4,641,898
SUPPORTING BRACKET FOR A FEMININE HYGIENE CABINET

Michael D. Horowitz, and Robin M. Horowitz, both of 996 Calle Ruiz, Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 597,499, Apr. 6, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 842,811
 Int. Cl.⁴ A47B 67/02, 81/00

U.S. Cl. 312—209

7 Claims



1. In combination with a toilet paper wall dispenser comprising a wall mounted bifurcated bracket having a pair of laterally extending spaced-apart wall members, a toilet paper roll supporting rod mounted on and extending between said wall members, each said wall member including hiatus means for facilitating connection with and support of an end of said rod, said rod being readily removable from said leg members, the improvement comprising:

- a feminine hygiene cabinet separated into compartments adapted to contain numerous conventionally available different feminine hygiene products, said cabinet having side walls which connect a front wall and a back wall and also connect a top and a bottom, access into said compartments being through said front wall, said top including connection means; and
- a mounting bracket, said mounting bracket including a pair of upstanding legs, each said leg including engaging means, each said engaging means pivotally connecting with a support member with therebeing a separate said support member for each said leg, said engaging means being spaced from said hiatus means, one said support member being fixedly mounted on one said wall member and the other said support member being fixedly mounted on the other said wall member, said mounting bracket including a main member connecting together said upstanding legs, said main member connected to said connection means providing the sole support for said cabinet on said mounting bracket.

4,641,899
MULTI-PART ELECTRICAL CONNECTOR ASSEMBLY
 David O. Gallusser, Oneonta, and Stephen Punako, Bainbridge, both of N.Y., assignors to Allied Corp., Morristown, N.J.

Filed Jul. 18, 1985, Ser. No. 757,826
 Int. Cl.⁴ H01R 11/00

U.S. Cl. 339—59 M

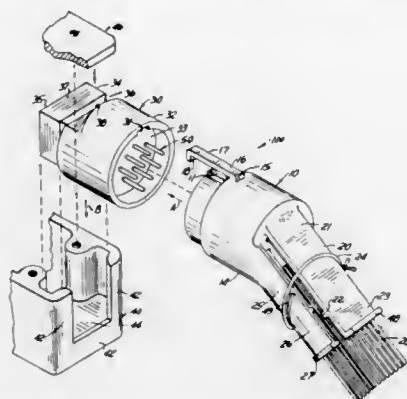
6 Claims

1. A connector assembly comprising a first and a second connector member each having a forward end portion configured for mating with one another along a first axial direction and a rearward end portion, orienting means for orienting said forward end portions, and latching means for releasably latching the mated forward end portions together, the rearward end portion of said first connector member receiving a plurality of insulated electrical cables each terminated to a respective electrical terminal disposed therein and including support means for supporting the cables, characterized by

the rearward end portion of the second connector member being configured for interlocking mating within an opening of a connector receptacle only at selected angular positions of the second connector member relative to the opening and along a second axial direction defined by a

plane substantially perpendicular to the first axial direction,

said support means including a cable tie, a relatively rigid, inflexible semi-cylindrical support beam and a relatively flexible planar cover beam, and means for positioning the cable tie about the beams, each beam having, respectively,



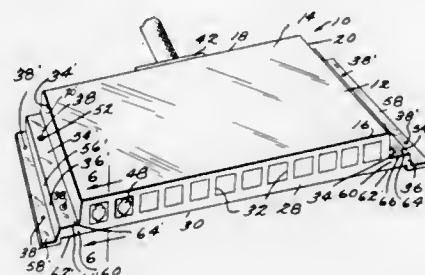
a first end integrally secured to said first connector member, a second end, and a rib for gripping the cables, the support beam extending at an acute angle to the first axial direction and the second end of the cover beam being adapted to deflect downwardly about the second end of the support beam to form a closure about the cables about which the cable tie is tied whereby to captivate the cables.

4,641,900
TELEPHONE DISTRIBUTION APPARATUS
 Leonard A. Japngie, Howell, N.J., assignor to Telnetix, Inc., Silver Spring, Md.

Filed Feb. 20, 1986, Ser. No. 831,178
 Int. Cl.⁴ H01R 9/09, 25/00

U.S. Cl. 339—17 LC

8 Claims



- 1. A telephone distribution apparatus comprising: a housing defining a flat rectangular, top member having front, rear and side edges; a rear wall member projecting downwardly from said rear edge and defining a lower edge parallel to said rear edge and an inverted channel-shaped opening in communication with said lower edge; a front wall member projecting downwardly from said front edge and defining a lower edge parallel to said front edge and a plurality of jack-receiving openings; first and second side wall members projecting downwardly from respective of said side edges and connecting together said front and rear wall members; and first and second step-shaped elements projecting outwardly from respective of said side wall members, each of said step-shaped elements defining a plurality of fastener-receiving openings;
- a printed circuit board defining a plurality of electrically conductive elements in predetermined configurations, said board attached to said step-shaped elements and substantially parallel to said top member;

a multi-position electrical plug attached to said board and in electrical circuit relationship with said conductive elements, said plug positioned within said inverted channel-shaped opening; and

a plurality of jacks attached to said board and in electrical circuit relationship with said conductive elements, said jacks respectively positioned within said jack-receiving openings.

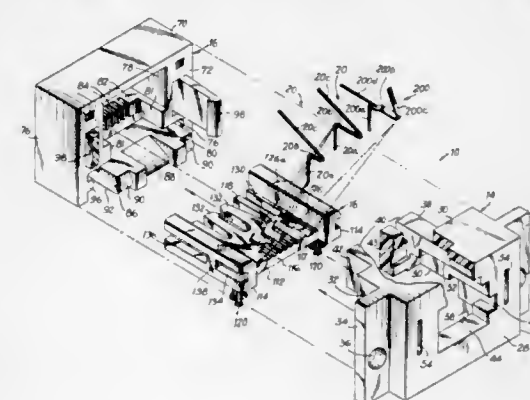
4,641,901
PRINTED CIRCUIT BOARD JACK FOR MODULAR PLUG CONNECTOR TERMINATED CORD

Robert J. Brennan, Ossining; Terrence Meighen, Stormville, and Walter M. Phillipson, Woodside, all of N.Y., assignors to Stewart Stamping Corp., Yonkers, N.Y.

Continuation-in-part of Ser. No. 570,806, Jan. 16, 1984, Pat. No. 4,537,459. This application May 21, 1984, Ser. No. 612,722
 The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
 Int. Cl.⁴ H01R 13/658

U.S. Cl. 339—14 R

17 Claims



17. A jack for a modular plug connector which terminates a cord constituted by a plurality of insulated conductors surrounded by a sheath of conductive material constituting a shield for suppressing radiation of electromagnetic and radio frequency interference-causing signals from and to the conductors, the modular plug connector including a dielectric housing having a cord-receiving aperture communicating with an internal cord-receiving cavity having a conductor-receiving portion in which the cord conductors are situated, a plurality of flat contact terminals having conductor engaging portions and contact edges, each flat contact terminal being situated in a respective slot in the housing aligned with a respective conductor with its engaging portion contacting said respective conductors to electrically engage the same and wherein the contact edges of the flat contact terminals are exposed at a common side wall of the housing, and shield terminating contact means electrically engaging said shield, the shield terminating contact means including an externally exposed portion situated at the exterior surface of at least one of the walls of the connector housing, the jack comprising:

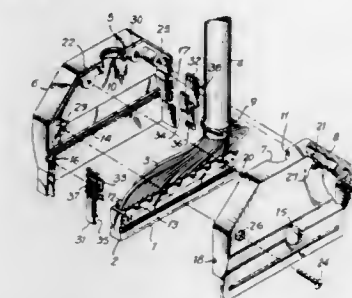
- a jack housing having a receptacle for the modular plug connector, an array of contacts mounted in said jack housing having portions situated within said connector receptacle adapted to be electrically engaged by contact edges of respective flat contact terminals upon insertion of the modular plug connector into said connector receptacle, at least a portion of said jack housing is formed of a material which attenuates electromagnetic and radio frequency interference-causing signals passing therethrough so that the jack housing constitutes an EMI/RFI shield for the modular plug connector, and wherein said jack housing portion is adapted to be electrically engaged by said externally exposed portion of said shield terminating

contact means upon insertion of the modular plug connector into said connector receptacle.

4,641,902
SHIELDED CONNECTOR WITH LATCHES
 David F. Fusselman, Elizabethtown, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Filed Nov. 13, 1985, Ser. No. 797,475
 Int. Cl.⁴ H01R 13/629

U.S. Cl. 339—91 R

20 Claims



- 1. A shielded connector for electrical circuits comprising: a non-conductive housing containing electrically conductive terminals, said terminals being connectable to an electrically conductive cable,
- an electrically conductive housing surrounding and shielding said non-conductive housing, said electrically conductive housing comprising at least two elements, each of said elements being capable of mating with the other of said elements to form said electrically conductive housing and surround said non-electrically conductive housing;
- an opening formed in said electrically conductive housing adapted for insertion of the electrically conductive cable; at least one pocket formed in a sidewall of said electrically conductive housing, at least a portion of said pocket being formed in each element so that when said elements are mated to form the electrically conductive housing, said pocket will be completely enclosed, except for an aperture, within said sidewall between its inner and exterior surfaces, said aperture being located in the exterior surface of said sidewall,
- at least one latch having a projection adapted to be inserted into the portion of the pocket formed by each element prior to mating so that after the elements are mated to form the electrically conductive housing, said projection will be located within the pocket and will act to retain the latch adjacent the external surface of the conductive housing sidewall, the latch also being adapted to mate said shielded connector with a second connector.

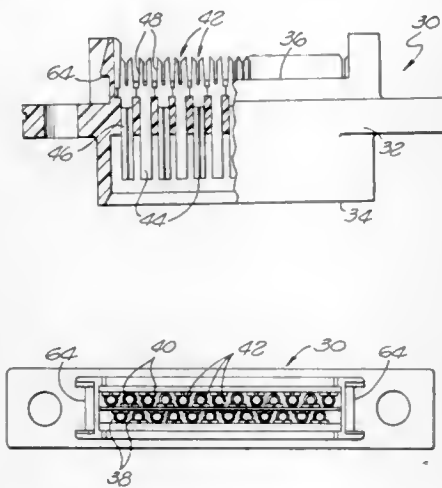
4,641,903
INSULATION DISPLACEMENT CONNECTOR
 John W. Anhalt, Orange, and Michael K. Cabourne, Hacienda Heights, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
 Filed Dec. 27, 1983, Ser. No. 565,561
 Int. Cl.⁴ H01R 4/24

U.S. Cl. 339—99 R

5 Claims

- 1. An electrical connector for a plurality of generally parallel conductors comprising: an insulator having a front and a rearwardly facing surface; a row of contact cavities in said insulator extending from said front to said rearwardly facing surface, the center axes of said cavities lying in a common plane;
- a contact mounted in each said cavity;
- each said contact having a forward mating portion adjacent to said front of said insulator, a mounting portion located in the corresponding cavity, and a rear termination por-

tion extending outwardly from said rearwardly facing surface;
said termination portion of each said contact being bifurcated providing a pair of arms having opposed edges for engaging one of said conductors generally perpendicularly to said rows; and



adjacent contacts in said row of cavities having their termination portions disposed on opposite sides of said plane whereby said termination portions are staggered relative to each other for facilitating feeding of conductors laterally between said termination portions of said contacts.

4,641,904

FLAT CABLE CONNECTING SYSTEM

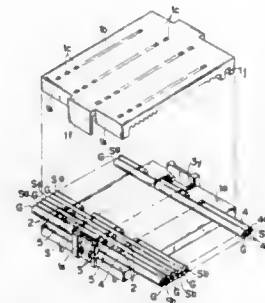
Motoki Kosugi, and Hidetaka Nakano, both of Tokyo, Japan, assignors to Yamalchi Electric Mfg. Co., Ltd., Tokyo, Japan
Filed Jun. 12, 1984, Ser. No. 620,075

Claims priority, application Japan, Nov. 9, 1983, 58-210579; Jun. 18, 1984, 58-109699

Int. Cl.⁴ H01R 11/20

U.S. Cl. 339-99 R

14 Claims



1. A flat cable connecting system comprising:
a multiple conductor flat cable having a plurality of side by side conductors spaced laterally of the cable and embedded in insulation, said cable having a plurality of openings in an area extending transversely across the cable intermediate the ends of the cable, each opening extending through the cable and completely severing at least one conductor for dividing said severed conductors into conductor segments extending in opposite directions along the cable from the opening; and
a connector cover on one face of said flat cable and a connector substrate opposed to said connector cover on the opposite face of said flat cable and connected to said cover and having contacts piercing the insulation of said cable and gripping and electrically connecting to the ends of

said conductor segments on the opposite ends, relative to the length of said cable, of said openings, whereby the conductor segments can be connected in desired electrical lines across said openings.

4,641,905

CORDSET CLAMP SYSTEM

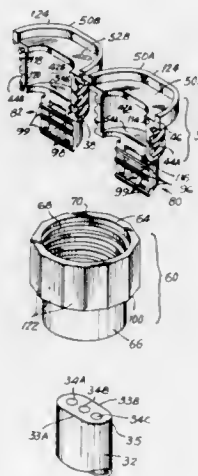
John M. Poliak, East Meadow, and Herbert Anker, Little Neck, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Oct. 3, 1985, Ser. No. 782,381

Int. Cl.⁴ H01R 13/59

U.S. Cl. 339-103 B

8 Claims



1. A clamping system for holding an electrical cord to the wall plate of an electrical appliance, comprising, in combination,

said wall plate forming a generally circular aperture, a cylindrical body forming external threads and having an axis and a body diameter slightly smaller than the diameter of said aperture and forming an axial passage adapted to pass said cord, said body having opposed body inner and outer ends, said body being positioned in said aperture, flange means connected to and extending radially outwardly from said body inner end, arm means flexibly attached to said body outer end, said arm means being for gripping said cord, and nut means having opposed inner and outer portions and forming a chamber adapted to contain said body and said arm means and further forming internal threads at said internal portion adapted to mate with said external threads of said body,

said nut means being mounted to said body so as to grip said wall plate between said nut means at said inner portion and said body at said flange means and being for pressing said arm means into gripping relationship with said cord at said outer portion.

4,641,906

SHIELDED ELECTRICAL CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 666,517, Oct. 30, 1984, abandoned.

This application Feb. 18, 1986, Ser. No. 830,904

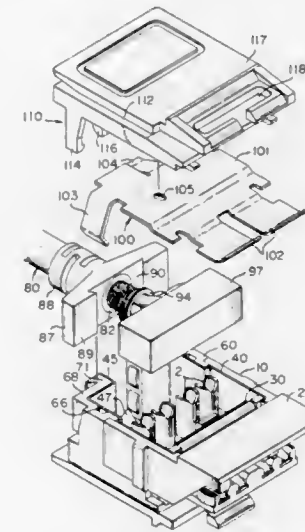
Int. Cl.⁴ H01R 4/66, 13/58

U.S. Cl. 339-143 R

19 Claims

6. A shielded electrical connector, comprising:
a terminal housing having a front mating face, a terminal support floor, sidewalls and a rearwall upstanding from said support floor, and a cable receiving portion in one of

said walls defined by a vertically extending opening therein and opposed flanges flanking the opening thereof;
a shield member disposed within said terminal housing, said shield member having side wall portions and a rear wall portion adjacent to the respective side walls and rear wall of said terminal housing, the shield member further comprising a pair of parallel flanges profiled to be received in said cable receiving opening adjacent to the opposed flanges, the shield flanges profiled to receive a shielding braid of a shielded cable therein;
a metal ferrule slidably receivable beneath the shielding braid of the cable, the ferrule profiled such that the shield-



ing braid is received between the flanges of the shield member to create a compressive force between the flanges of the lower shield member and the shielding braid; and an inserter member having means to receive the shielded cable therethrough, said receiving means opening into a profiled slot on a mating face of said inserter member, said profiled slot being receivable over the profiled flanges which flank the opposed flanges of said cable receiving opening and profiled to resist the outward deflection of said opposed flanges when the shielding braid and ferrule are forced between said shield flanges thereby maintaining the electrical contact force between the shielding braid and the shield flanges.

4,641,907

PLATED FILTERED CONNECTOR

Rickie M. Althouse, Harrisburg; Robert E. Beamenderfer, Palmyra; Roger Durbin, Lancaster; Robert D. Hollyday, Elizabethtown, and John P. Kling, Mt. Joy, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 562,633, Dec. 19, 1983, abandoned.

This application Jun. 24, 1985, Ser. No. 747,699

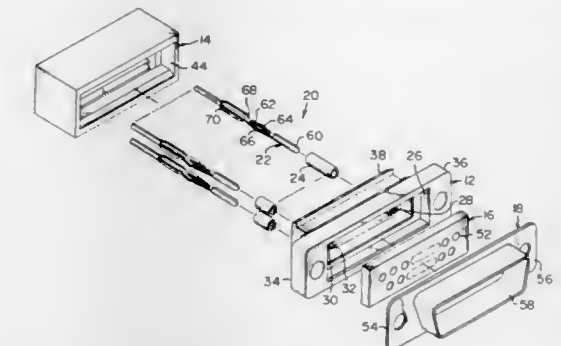
Int. Cl.⁴ H01R 13/658, 13/66

U.S. Cl. 339-147 R

16 Claims

1. A solderless, filtered electrical connector comprising:
a first housing of insulative material defining a forwardly directed cavity and a plurality of passages opening into said cavity in a patterned array, each passage having at least two times directed into said cavity forming an extension of the passage, conductive material plating the entire first housing;
a second housing of rigid insulative material defining a cavity, at least a portion of said first housing being received in said cavity of said second housing;
a plurality of filtered terminals each comprising a tubular filter element having conductive outer and inner surfaces and an elongated terminal pin having a mating first end, a compliant filter receiving portion, filter locating

shoulders, and a second oppositely directed second mating end, said filter element being mounted on said receiving portion with one end abutting said shoulders, said receiving portion engaging said inner conductive surface,



each said filtered terminal being mounted in a respective passage with said tines engaging said outer conductive surface.

4,641,908

RIGHT-ANGLED PLUG-TYPE CONNECTOR

Karl Steffinger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

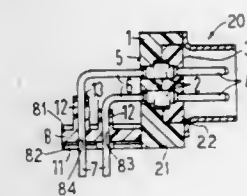
Filed Jan. 15, 1985, Ser. No. 691,623

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402902

Int. Cl.⁴ H01R 13/502

U.S. Cl. 339-206 R

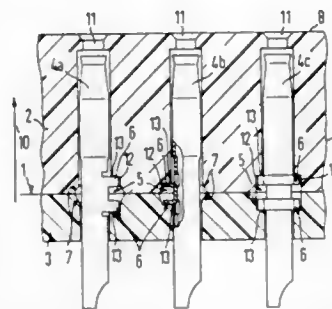
4 Claims



1. A right-angled plug-type connector having a plurality of contact elements which are fixed parallel to one another in a desired pattern, said connector comprising a plate-shaped retaining member being composed of insulating material and having a pair of spaced-apart projections extending from one side thereof, said projections having facing grooves, said retaining member having a plurality of through bores being arranged in a desired pattern; a plurality of contact elements being fixed in said pattern of through bores of the retaining member, each of said contact elements having a right-angled terminal portion extending from said one side of the retaining member; and a fixing plate of elastically yieldable material having a plurality of bores extending from a first side to a second side in the desired pattern, said fixing plate having a tubular extension for each of the bores of the fixing plate, each extension being integral with the fixing plate and extending from the first side thereof, said fixing plate being received between said projections the first side adjacent said one side and with the ends of the fixing plate in said grooves by flexing said plate in order to be inserted between said projections with a snap fit with the tubular extensions and bores of the fixing plate being arranged to extend perpendicular to the through bores of the retaining member and with the terminal portions of the contact elements being inserted through the tubular extensions and their associated bores in the fixing plate to form

prongs projecting from the second side of the fixing plate and at right angles to the through bores of the retaining member.

4,641,909
PLUG CONNECTOR
Karl Steffinger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 511,302, Jul. 6, 1983, abandoned. This application Aug. 28, 1985, Ser. No. 771,139
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 8220801[U]
Int. Cl.⁴ H01R 13/514
U.S. Cl. 339—210 M 2 Claims

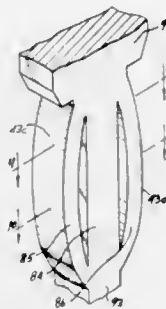


1. In a plug-socket assembly having an insulated housing with a plurality of parallel bores therethrough, the housing being formed of two parts abutting one another along a parting line substantially normal to an axis of the bores with a plurality of cylindrically-shaped conductive members received in the insulated housing, one to a bore, the conductive members forming electrical contact plug-socket members with each of the conductive members having a diameter increasing projection received in a diameter increasing bore section effective to lock the conductive members axially in the bores, the improvement being the projections comprising at least two projections spaced axially along the conductive members separated by an air gap, the air gap having a dimension between the projections at least as great as the effective length of the projections in a direction normal to the bore axis and wherein the diameter increasing portion of the bore is configured with respect to the projections to provide wall surfaces for engagement by the projections preventing both axial and rotational movement of the conductive members and wherein the at least two projections of each of the conductive members being each formed by two tabs projecting therefrom, the tabs converging towards one another at free ends of the tabs, the tabs projecting from the conductive members tangentially from a curved periphery of said conductive members at right angles relative to the axis of the bores and extending in a plane parallel to the axis of the bores, the tabs being manufactured of flat stock in a stamping-rolling technique along with the formation of the conductive member, the conductive member being formed from flat stock in a stamping-rolling technique.

4,641,910
ELECTRICAL CONTACTS
John J. Rozmus, 1030 Derwydd La., Berwyn, Pa. 19312
Continuation-in-part of Ser. No. 553,161, Nov. 18, 1983, abandoned, which is a continuation of Ser. No. 295,748, Aug. 24, 1981, abandoned. This application Aug. 17, 1984, Ser. No. 641,674
Int. Cl.⁴ H01R 13/428
U.S. Cl. 339—221 R 3 Claims
1. An electrical contact including a retention section extending along the axis of the contact, the retention section to be press-fitted into an aperture in contact support means to mount

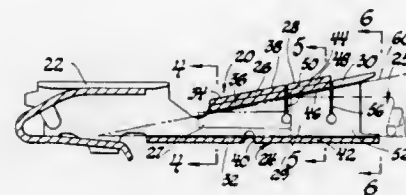
the contact on the support means, the retention section comprising:

three spaced apart, axially extending arms, there being an inboard arm and a pair of outboard arms respectively disposed on opposite sides of the inboard arm and each outboard arm being bowed outwardly;
each said outboard arm having an exterior convex operating surface to engage the wall of the aperture when the retention section is inserted therein;
said outboard arms being flexible whereby to flex toward said axis upon insertion of the retention section in said aperture and flex toward and away from said axis upon contraction and expansion of said aperture due to change in temperature of said contact support means, the flexing of the arms developing forces to retain the retention section in the aperture;



the relative positions of said outboard arms and said inboard arm and the magnitude of said flexing toward said axis of each outboard arm being such that each outboard arm engage said inboard arm so that it does not touch the other outboard arm and to prevent the metal of each outboard arm from being strained beyond the yield point thereof; and
said exterior convex operating surfaces being characterized by that in any radial plane normal to said axis and through the surfaces, the locus of each operating surface lies substantially in the circumference of a circle whose center lies in said axis and said inboard arm being configured so as to be spaced from the wall of said aperture when the retention section is inserted therein.

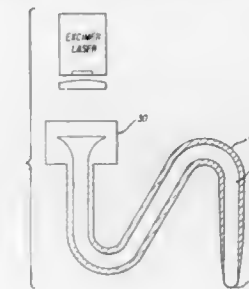
4,641,911
ELECTRICAL CONNECTOR HAVING A FUNNEL WRAP WIRE CRIMP BARREL
John J. Pavlak, Youngstown, and Charles R. Nestor, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 9, 1984, Ser. No. 659,079
Int. Cl.⁴ H01R 4/18
U.S. Cl. 339—276 T 5 Claims



1. An electrical connector having attachment means for attaching the electrical connector to a conductor wire which comprise a wire crimp barrel and an insulation crimp barrel characterized in that:
the wire crimp barrel is funnel-shaped in the axial direction

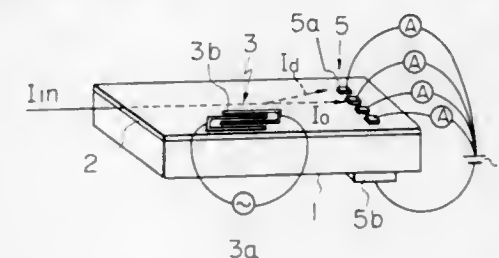
to facilitate insertion of a conductor wire and accommodate a range of conductor wire diameters, and partially overlapped in the circumferential direction so that the funnel-shaped wire crimp barrel has an inner axial lip engaging an inner surface of an outer axial lip of the funnel-shaped wire crimp barrel to improve containment of the inserted conductor wire inwardly of the wire crimp barrel and
the attachment means further comprise a guide means which includes the insulation crimp barrel being spaced from the overlapped portion of the wire crimp barrel by a narrow slit and being shaped so that the wire conductor does not hang up on the inner axial lip of the wire crimp barrel during insertion.

4,641,912
EXCIMER LASER DELIVERY SYSTEM, ANGIOSCOPE AND ANGIOPLASTY SYSTEM INCORPORATING THE DELIVERY SYSTEM AND ANGIOSCOPE
Tsvi Goldenberg, 2436 Washington St., Allentown, Pa. 18104
Filed Dec. 7, 1984, Ser. No. 679,538
Int. Cl.⁴ A61N 5/06; G02B 23/26
U.S. Cl. 350—96.10 16 Claims



1. A system for the delivery of pulsed laser light having high peak energy utilizing an optical waveguide, wherein said waveguide comprises an optical fiber having an energy conducting core of substantially pure silica and further including an energy coupler between one end of said fiber and a laser source for enabling energy pulses having a predetermined energy level to be coupled into said fiber and the energy level of said pulses to be maintained without damage to said fiber.

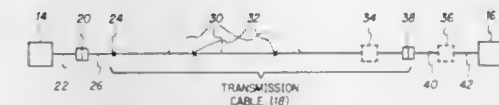
4,641,913
OPTICAL INTEGRATED CIRCUIT UTILIZING THE PIEZOELECTRIC AND PHOTOCONDUCTIVE PROPERTIES OF A SUBSTRATE
Yoshikazu Nishiwaki, and Yozo Nishiura, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 408,891, Aug. 17, 1982, abandoned.
This application Jan. 18, 1985, Ser. No. 692,872
Claims priority, application Japan, Aug. 17, 1981, 56-127689; Jan. 20, 1982, 57-7207; Jan. 20, 1982, 57-7208
Int. Cl.⁴ G02B 6/12
U.S. Cl. 350—96.11 12 Claims



10. An optical integrated circuit according to claim 1 further

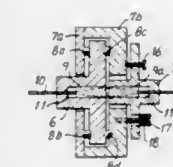
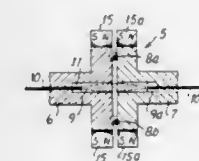
comprising an external circuit for measuring current from said electrode means.

4,641,914
SINGLE MODE OPERATION WITH NON-SINGLE MODE OPTICAL FIBER TRANSMISSION CABLE
Sang K. Sheem, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 5, 1984, Ser. No. 668,129
Int. Cl.⁴ G02B 6/26, 6/42
U.S. Cl. 350—96.15 5 Claims



1. An optical fiber transmission path for interconnecting a transmitter and receiver for single mode operation at a predetermined wavelength, comprising the following elements, each forming a portions of said path:
a transmission cable comprising at least two optical fibers in said path, said two fibers being single mode at a wavelength longer than said predetermined wavelength and non single mode at the predetermined wavelength;
splice means for interconnecting said two optical fibers with substantially minimized splice loss as measured for only the fundamental mode at said predetermined wavelength;
another optical fiber, in said path between said transmitter and said cable, said another fiber being selected to be single mode at said predetermined wavelength; and
mode stripper means in said path near the end of the transmission cable which is nearest said receiver, for transmitting only the fundamental mode at said predetermined wavelength.

4,641,915
ROTARY JOINT FOR OPTICAL FIBERS
Kenichi Asakawa, Hachioji; Yuichi Shirasaki, Tokyo, and Yoshinao Iwamoto, Fujimi, all of Japan, assignors to Kokusai Densetsu Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 328,516, Dec. 8, 1981, abandoned. This application Nov. 16, 1984, Ser. No. 672,168
Claims priority, application Japan, Dec. 16, 1980, 55-176568; Dec. 16, 1980, 55-176569
Int. Cl.⁴ G02B 6/32
U.S. Cl. 350—96.18 4 Claims



1. A rotary joint for two optical fibers, each optical fiber having a tip and center axis, rod lenses fixed to the tips of the fibers, said rod lenses each having an optical axis and a refractive index which varies in the radial direction, normal to a central axis of the lens, with a variation proportional to the

square of the radius and proportional to a constant "a" wherein the length of the lens is equal to $\pi/(2\sqrt{a})$; two rotary members respectively having connected thereto said two rod lenses, a mechanism for imparting pressure to said rotary members to maintain said optical axes of said two rod lenses in alignment, and a mechanism for finely setting the angle between said two rod lenses, said mechanism being provided on at least one of said rotary members in order to cause parallel rays to be transmitted from one rod lens to the other rod lens such that one said rays coincides with the rotary axis of the respective rotary member and maintains angular settings of end faces of said lenses relative to said parallel rays during relative rotation between said two rotary members, thereby decreasing sensitivity of optical transmission to any displacement of the lenses from said axis.

4,641,916 OPTICAL TRANSMISSION ELEMENT

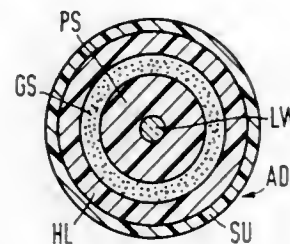
Ulrich Oestreich, Munich, and Ernst Mayr, Starnberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Dec. 20, 1984, Ser. No. 684,290

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400605

Int. Cl.⁴ G02B 6/44

U.S. Cl. 350—96.23

12 Claims



1. An optical transmission element (AD) comprising:
 - a fibrous light waveguide (LW);
 - a cushion layer (PS) engaging and surrounding said waveguide;
 - a hard sheath (HL) surrounding and protecting said waveguide and cushion layer;
 - a glide layer (GS) disposed between and engaging each of said sheath (HL) and said cushion layer (PS) for accommodating movement between said sheath (HL) and cushion layer (PS), wherein the physical properties of said sheath include an elastic modulus (E) greater than 2000 N/mm² and a coefficient of thermal expansion less than $0.8 \times 10^{-4}/K$.

4,641,917 SINGLE MODE OPTICAL FIBER

Paul F. Glodis, Atlanta, and Terrence A. Lenhan, Chamblee, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 8, 1985, Ser. No. 699,641
Int. Cl.⁴ G02B 6/22

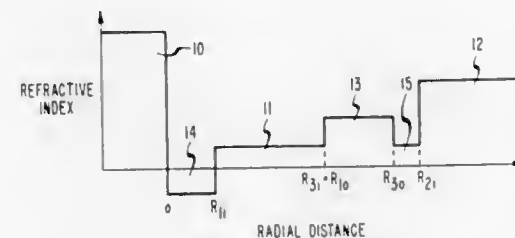
U.S. Cl. 350—96.33

20 Claims

1. Optical fiber adapted for guiding electromagnetic radiation, guided radiation comprising a LP₀₁ mode and, possibly, a LP₁₁ mode, the fiber being a single mode fiber for electromagnetic radiation of an operating wavelength, the optical fiber to be referred to as the first fiber, the first fiber comprising:
 - (a) a core region having an equivalent radius a and an equivalent maximum refractive index n_c ;
 - (b) a first cladding region surrounding the core and having an equivalent outer radius R_{10} , an equivalent inner radius R_{1i} , and an equivalent refractive index n_1 , with $n_1 < n_c$; and
 - (c) a second cladding region surrounding the first cladding

region and having an equivalent inner radius R_{2i} and an equivalent refractive index n_2 , with $n_2 \geq n_1$; characterized in that the first fiber further comprises a third cladding region having an equivalent inner radius R_{3i} , an equivalent outer radius R_{30} , and an equivalent refractive index n_3 , with $R_{30} \leq R_{2i}$, $R_{10} \leq R_{3i}$, and $n_3 > n_1$; wherein n_3 , R_{3i} and R_{30} are chosen such that

(d) at R_{3i} the square of the amplitude of the LP₀₁ mode is at most 10^{-5} of the square of the amplitude of the LP₀₁ mode at the center of the core, for radiation of the operating wavelength of the optical fiber;



- (e) at R_{2i} in the first fiber, the square of the amplitude of the LP₁₁ mode is at least 50% larger than the square of the amplitude of the LP₁₁ mode in a second fiber at a radius equal to R_{2i} , the second fiber being identical to the first fiber except that in the second fiber $R_{3i} = R_{30}$, the third cladding region thus being absent in the second fiber, the second fiber having a cut-off wavelength, the squares of the amplitudes being compared at the cut-off wavelength of the second fiber; and
- (f) at R_{2i} and at the operating wavelength, the square of the amplitude of the LP₀₁ mode in the first fiber is at most 50% larger than the square of the amplitude of the LP₀₁ mode in the second fiber, at the same wavelength and the same radius.

4,641,918

PORTABLE PANORAMIC THEATRE

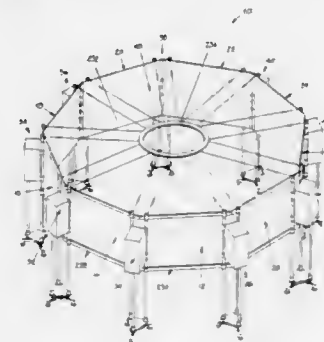
Michael Moffatt, James LePage, and Gerald Englar, all of Toronto, Canada, assignors to EML Environmental Simulations Inc., Toronto, Canada

Filed Dec. 31, 1985, Ser. No. 814,980

Claims priority, application Canada, Dec. 27, 1984, 471082
Int. Cl.⁴ G03B 21/56

U.S. Cl. 350—125

30 Claims



1. A collapsible panoramic theatre for use with a multiplicity of projectors, comprising:
 - a multiplicity of generally vertical viewing screens arranged in a polygonal arrangement which defines an internal viewing region, each pair of adjacent viewing screens in the polygonal arrangement defining a vertical corner, each vertical corner being oppositely disposed across the internal viewing region to one of the viewing screens;

a multiplicity of towers external to the polygonal arrangement of viewing screens, one of the towers being located at and associated with each of the corners of the polygonal arrangement;

each of the towers including

- (a) a free-standing base,
- (b) a support structure extending upwardly from the base,
- (c) screen support means, mounted on the support structure, for releasably supporting the pair of adjacent viewing screens at the vertical corner associated with the tower, and
- (d) projector support means, mounted on the support structure for, releasably supporting one of the projectors;

means defining a projection passage at each vertical corner positioned to permit projection of light from the projector of the tower associated with the vertical corner across the internal viewing region onto the associated oppositely disposed one of the viewing screens.

4,641,920

OPTICAL ELEMENT HAVING THE FUNCTION OF CHANGING THE CROSS-SECTIONAL INTENSITY DISTRIBUTION OF A LIGHT BEAM

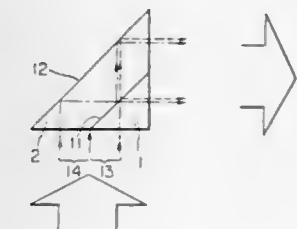
Kazuhiko Matsuoka; Masayuki Usui; Kazuo Minoura; Takeshi Baba, all of Yokohama, and Atsushi Someya, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 586,971

Claims priority, application Japan, Mar. 11, 1983, 58-39143
Int. Cl.⁴ G02B 27/14

U.S. Cl. 350—173

9 Claims



1. An optical apparatus comprising:
 - a light source unit for generating a light beam which has a generally symmetrical cross-sectional intensity about a central ray thereof;
 - an optical element for receiving on an incidence plane thereof a light beam from said light source unit and substantially equalizing a cross-sectional intensity distribution of the light beam, said light source unit being positioned so that the incident position of the central ray of the incident light beam generally coincides with a central line of the light beam incidence plane;

said optical element including:

- a plurality of prisms each having at least two end surfaces, and at least one having an externally facing surface;
- at least one joined surface formed by joining one said prism to another said prism, said joined surface having the function of amplitude-dividing the light beam and causing it to have a substantially uniform characteristic over the total area thereof;
- a first group comprising one end surface of each of an even number of said prisms being arranged to form said light beam incidence plane which thus includes an even number of said end surfaces of said prisms, said even number of said end surfaces of said first group being disposed symmetrically with respect to a central line between two of said end surfaces of said first group, said central line thereby symmetrically dividing said light beam incidence plane and forming at least one set of paired symmetrical end surfaces of said first group;
- a light beam exit plane formed by arranging a second group of end surfaces of said prisms; and
- at least one reflection surface formed by said externally facing surface of at least one of said prisms;

the relationship of said reflection surface and said joined surface relative to said light beam incidence plane and to said light beam exit plane, the amplitude dividing rate of said joined surface, and the reflection factor of said reflection surface being such as to cause incident light beam portions incident on each set of said paired symmetrical end surfaces of said light beam incidence plane to emerge from each end surface of said light beam exit plane such that the cross-sectional intensity distribution of one of said incident light beam portions incident on said light beam incidence plane on one side of said central line and the cross-sectional intensity distribution of another of said incident light beam portions incident on said light beam incidence plane on the other side of said central line are superposed and that equal parts of the quantity of light of said one and said other light beam portions are combined so that the light beam emergent from said light beam exit plane has a substantially uniform intensity distribution.

4,641,919 STEREOSCOPIC VIEWER FOR AERIAL PHOTOGRAPHS

Herve R. Gresse, Boulogne, and Annick R. Carn, Versailles, both of France, assignors to Compagnie de Materiel de Micrographie "C.M.M.", St. Maur, France

Continuation-in-part of Ser. No. 394,841, Jul. 2, 1982, Pat. No. 4,498,735. This application Dec. 8, 1983, Ser. No. 559,289

Claims priority, application France, Jul. 8, 1981, 81 13384

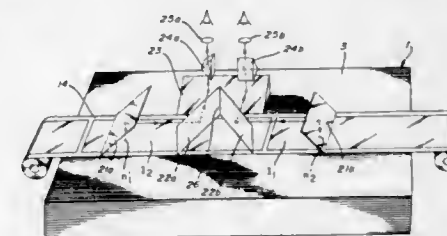
The portion of the term of this patent subsequent to Feb. 12,

2002, has been disclaimed.

Int. Cl.⁴ G02B 27/24

U.S. Cl. 350—138

23 Claims



1. A stereoscopic viewer for aerial photographs adapted to be placed over a film of panoramic exposures to be examined, said film being arranged flatly and being suitably illuminated, said viewer comprising: optical means for examining simultaneously, through two eyepieces having substantially parallel axes, corresponding points in two successive panoramic photographs in the film to be examined, said optical means defining an optical path between each of the two photographs and one of the observer's eyes; adjusting means for displacing one of the two images perceived by the observer in relation to the other; said optical means comprising, for each optical path, a set of plane-mirrors and, a rotating system for rotating the images substantially about the corresponding viewing axis and assuring an even number of reflections; said adjusting means comprising elements permitting at least one of the rotating systems to pivot about a fixed axis.

4,641,921

OPTICAL ADJUSTING PROCESS

Heinz Beneking, Aachen, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

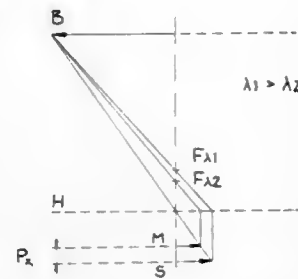
Filed Mar. 22, 1985, Ser. No. 715,022

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413374

Int. Cl.⁴ G02B 27/00

U.S. Cl. 350—320

4 Claims



1. An optical adjusting process for positioning a mask structure relative to a semiconductor substrate for performance of proximity printing, the mask structure being disposed in a first plane and the substrate being disposed in a second plane spaced from the first plane by a small distance having the value required by proximity printing, said process comprising: positioning an objective lens which is optically corrected for two selected light wavelengths for forming, in a common image plane, a high-definition image of the first plane by light having one of the selected wavelengths and a high-definition image of the second plane by light having the other one of the selected wavelengths; and applying light having the first one of the selected wavelengths to at least the mask structure and light having the second one of the selected wavelengths to at least the substrate.

4,641,922

LIQUID CRYSTAL PANEL SHADE

Keith D. Jacob, Ann Arbor, Mich., assignor to C-D Marketing, Ltd., Ann Arbor, Mich.

Filed Aug. 26, 1983, Ser. No. 527,435

Int. Cl.⁴ G02F 1/13, 1/135

U.S. Cl. 350—331 R

11 Claims



1. In combination with a vehicle having a window through which sunlight shines into an interior occupant space of the vehicle, an electrically controllable sun shade comprising a liquid crystal medium disposed as a layer having an area of expanse overlying a certain area of the window of a vehicle to provide for sun shading of an occupant, said liquid crystal medium having an electro-optical characteristic wherein the degree of opaqueness is correlated with the voltage gradient existing at any point in the medium, a pair of electrodes bounding the area of expanse of liquid crystal medium on opposite sides, means for creating a selectable voltage across said electrodes, and hence across the area of expanse of said liquid

crystal medium layer, and means for creating from said selectable voltage desired sun shading patterns within the interior space on the occupant by creating different voltage gradients at different locations over the area of expanse of the liquid crystal medium layer wherein the different voltage gradients result from the liquid crystal medium layer having different thicknesses at different locations over its area of expanse corresponding to the desired sun shading patterns to be achieved within the interior space.

4,641,923

FIELD SENSITIVE OPTICAL DISPLAYS WITH ELECTRODES WITH HIGH AND LOW IMPEDANCE PORTIONS

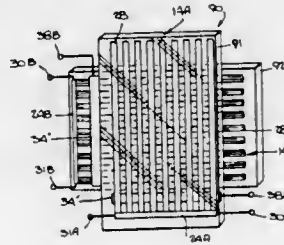
William Bohmer, Jackson Heights, N.Y.; Walter J. Betancourt, Oak Ridge, and Louis S. Hoffman, Morristown, both of N.J., assignors to Control Interface Company Limited, Randolph, N.J.

Division of Ser. No. 479,349, Apr. 1, 1983, Pat. No. 4,493,531, which is a continuation of Ser. No. 165,753, Jul. 3, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 624,119

Int. Cl.⁴ G02F 1/133, 1/137

U.S. Cl. 350—335

7 Claims



1. Display apparatus comprising first and second liquid crystal cells, each comprising spaced apart opposed first and second transparent plates and a twisted nematic liquid crystal material disposed between the plates, means for aligning the molecules of the liquid crystal material in the absence of a field to rotate the plane of polarization of plane polarized light passing through the material through a predetermined angle, first and second electrodes disposed adjacent to the first and second plates respectively of each of the first and second liquid crystal cells and in contact with the liquid crystal material, the first electrode of the first and second cells comprising a linearly-extending resistive portion disposed adjacent one side of the first plate, the resistance of the resistive portion being such that when a given voltage is applied across the resistive portion, a voltage gradient exists, and a plurality of substantially low impedance, conductive portions of uniform width electrically connected to and transversely extending from different locations of the resistive portion, the low impedance portions being separated by substantially uniform intervals, the second electrode of the first and second cells having substantially low impedance portions and extending adjacent to the surface of the second plate substantially coextensive with and opposite to the low impedance portions of the first electrode, and terminal means for applying voltages to the first and second electrodes, the conductivity of the low impedance portions of the first and second electrodes having a low impedance with respect to said high impedance portion, the first liquid crystal cell having the low impedance portions of its first electrode extending in one direction and the second liquid crystal cell having the low impedance portions of its first electrode extending in a direction different than the one direction of the low impedance portions of the first electrode of the first liquid crystal cell; and first and second light plane polarizer means for respectively transmitting plane polarized light in one plane and blocking plane polarized light in another plane intersecting the plane of the one plane, the liquid crystal cells being disposed between the polarizer means.

4,641,924

LIQUID CRYSTAL DEVICE

Yoshiharu Nagae; Shunichi Nomata; Noriyuki Kinjo, and Katuyuki Funahata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

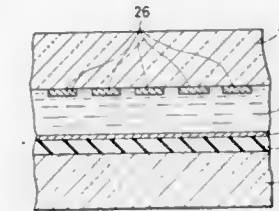
Filed Jan. 31, 1985, Ser. No. 696,908

Claims priority, application Japan, Feb. 3, 1984, 59-17052

Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—339 R

15 Claims



8. A liquid crystal device comprising a thermal writing type liquid crystal, a heat electrode for generating heat necessary for said thermal writing, and a support for supporting said crystal and said heat electrode, said device further comprising an insulating layer having a coefficient of thermal expansion lying between the coefficient of thermal expansion of said heat electrode and that of said support, arranged between the heat electrode and support, the coefficient of thermal expansion of said insulating layer, relative to that of the support and heat electrode, being such that heat electrode failure or peeling from the support due to thermal stress resulting from the difference between the coefficient of thermal expansion of the heat electrode and the support is avoided.

4,641,925

LIQUID CRYSTAL DISPLAY ASSEMBLY WITH PHOSPHORESCENT BACKLIGHTING

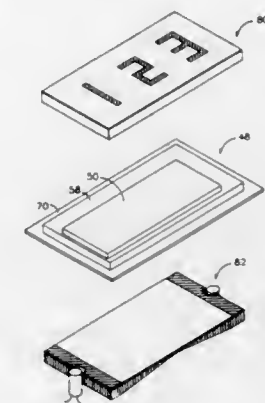
Bernard V. Gasparaitis, Tamarac, and C. Patrick Richardson, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1986, Ser. No. 841,988

Int. Cl.⁴ G02F 1/13; F21V 9/16; G01J 1/58; G01T 1/10

U.S. Cl. 350—345

18 Claims



1. A display assembly, for use with a supplemental light source, said display assembly comprising in combination: a display; and thin phosphorescent layer having front and rear surfaces, said front surface positioned adjacent said display, whereby light is emitted into said display from said front surface when said rear surface is illuminated by said light source.

4,641,926

POLARIZING ELEMENT

Masataka Shirasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

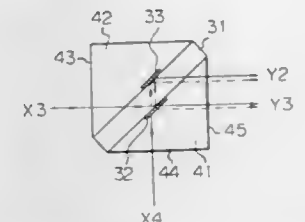
Continuation of Ser. No. 513,613, Jul. 14, 1983, abandoned. This application Dec. 26, 1985, Ser. No. 815,279

Claims priority, application Japan, Jul. 14, 1982, 57-122641; Aug. 31, 1982, 57-151529; Aug. 31, 1982, 57-151530; Mar. 21, 1983, 58-053593; Apr. 30, 1983, 58-076573

Int. Cl.⁴ G02B 27/14, 27/28

U.S. Cl. 350—394

4 Claims



1. A polarizing element comprising a first right angle prism, a second right angle prism, and a transparent flat plate having at least two parallel surfaces, a polarization separating layer provided on a portion of a first one of said two parallel surfaces of the transparent flat plate, and an optical reflecting layer provided on a portion of the second parallel surface of the transparent flat plate, said transparent flat plate being interposed between the first right angle prism and the second right angle prism, wherein each of said first and second right angle prisms has two right-angle-forming surfaces which intersect to form the respective right angle and a diagonal surface, wherein a light beam incident on a respective one of said surfaces of each of said first and second right angle prisms is separated into two respectively polarized light beams by said polarization separating layer, one of said polarized light beams is reflected by said optical reflecting layer, and two respective output light beams are output through a predetermined other one of said surfaces of a predetermined one of said first and second right-angle prisms.

4,641,927

CHROMATIC ABERRATION CORRECTED GRADIENT INDEX LENS SYSTEM

Rochelle Prescott, Arlington, and Dennis C. Leiner, North Andover, both of Mass., assignors to Dyonics, Inc., Andover, Mass.

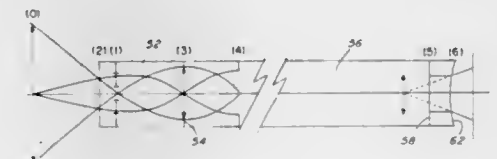
Filed Mar. 24, 1982, Ser. No. 361,266

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.⁴ G02B 6/18

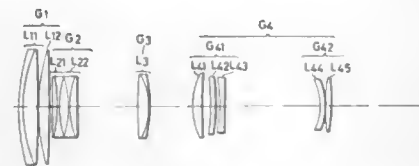
U.S. Cl. 350—413

15 Claims



1. An optical system comprised of at least one gradient index lens and an image forming homogeneous lens affixed to an end surface of said gradient index lens, said gradient index lens being of such a length that an image is not formed at its exit surface, said system constructed and arranged to substantially correct both axial and lateral chromatic aberration of an image transmitted through said system.

4,641,928
FOUR-GROUP TELEPHOTO ZOOM LENS
 Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kokaku K. K., Tokyo, Japan
 Filed Mar. 27, 1984, Ser. No. 593,924
 Claims priority, application Japan, Mar. 30, 1983, 58-54913
 Int. Cl.⁴ G02B 15/167
 U.S. Cl. 350—427 17 Claims



1. A four-group telephoto zoom lens consisting of, in succession from the object side, first group having a positive refracting power and movable on the optical axis of the lens for focusing, second group having a negative refracting power and movable on the optical axis for changing a composite focal distance of an entire system, a third group having a positive refracting power and movable on the optical axis for maintaining image plane at a fixed position and a fourth group as relay lens system having a positive refracting power, the improvement wherein said second group consists of a first cemented negative lens component having in the order from the object side a positive lens and a negative lens cemented together and a second cemented negative lens component having a negative lens and a positive lens cemented together and the improvement satisfying the conditions:

$$0.5 < f_{21}/f_{22} < 1.0$$

$$1.5 < f_{21}/f_2 < 2.1$$

$$2.0 < f_{22}/f_2 < 2.8$$

$$-0.09 < n_4 - n_5 < 0.09$$

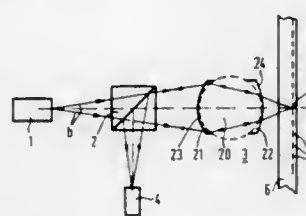
$$0.09 < n_7 - n_6 < 0.2$$

wherein f_{21} and f_{22} represent focal distance of said first and second cemented negative lens components, respectively, in said second group; f_2 represents a composite focal distance of said second group; n_4 and n_5 represent refractive indexes of the positive lens and the negative lens, respectively, in said first negative lens component; and n_6 and n_7 represent refractive indexes of the negative lens and the positive lens, respectively, in said second lens component.

4,641,929
BIASPHERICAL LENS
 Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Jan. 7, 1985, Ser. No. 689,672
 Claims priority, application Netherlands, Oct. 22, 1984, 8403198
 Int. Cl.⁴ G02B 3/02, 13/18
 U.S. Cl. 350—432 6 Claims

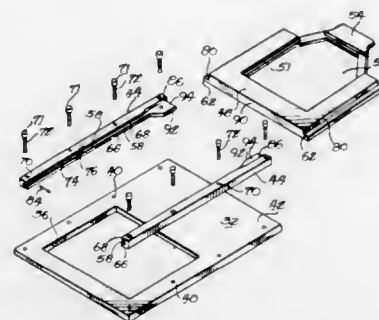
1. A lens having two aspheric refractive surfaces, said lens comprising:
 a lens substrate, said lens substrate being a sphere; and
 first and second layers of transparent plastic on the substrate,

said first layer being arranged on a first side of the substrate, said second layer being arranged on a second side



of the substrate opposite to the first side, each layer having an aspheric outer surface.

4,641,930
APPARATUS FOR POSITIONING FLAT OBJECTS FOR MICROSCOPIC EXAMINATION
 T. Charles Podvin, Poway, and Gene A. Porter, Escondido, both of Calif., assignors to Micromanipulator Microscope Co., Inc., Escondido, Calif.
 Filed Dec. 15, 1983, Ser. No. 561,643
 Int. Cl.⁴ G02B 21/26
 U.S. Cl. 350—529 10 Claims

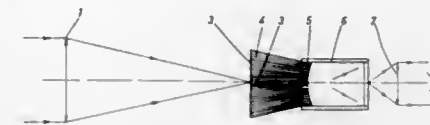


1. In combination a microscopic examination stage having a flat top plate, paddle means for carrying a generally flat object in horizontal and vertical alignment, edge portions of said paddle means having parallel keybars, a pair of guide rail means along opposite sides of said top plate, each having an inwardly extending upper flange defining an elongated keyway therebelow for slidably receiving one of said keybars, said guide rails having an entrance region, said upper flanges having parallel sections and, at said entrance region, being recessed outward relative to said parallel sections to a distance greater than the width of said paddle means, whereby one end of said paddle means may be lowered into said entrance region.

4,641,931
DUAL MAGNIFICATION TELESCOPE
 Fernand R. Loy, Sceaux, France, assignor to U.S. Philips Corporation, New York, N.Y.
 Continuation of Ser. No. 716,883, Mar. 27, 1985, abandoned.
 This application Jun. 16, 1986, Ser. No. 874,878
 Claims priority, application France, Apr. 17, 1984, 84 06058
 Int. Cl.⁴ G02B 23/12, 6/00
 U.S. Cl. 350—538 8 Claims

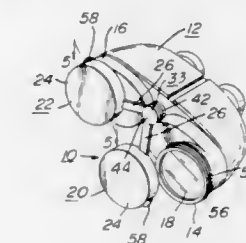
1. A dual magnification telescope comprising:
 an objective for forming an image of a field of view; and
 an eyepiece for receiving the image of the field of view; characterized in that the telescope further comprises an optical fiber array arranged between the objective and the eyepiece for passing the image of the field of view through

the fiber array to the eyepiece, said fiber array comprising a first bundle of optical fibers having a first magnification and a second bundle of optical fibers having a second magnification different from the first magnification, said



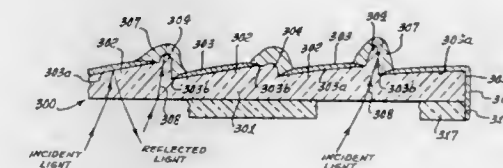
first bundle passing a first portion of the image to the eyepiece, said second bundle passing a second portion of the image, different from the first portion of the image, to the eyepiece.

4,641,932
PROTECTIVE LENS COVER FOR OPTICAL MEANS
 Wolfgang Harms, 209 Harvest Rd., Cherry Hill, N.J. 08002
 Filed Jun. 13, 1985, Ser. No. 744,279
 Int. Cl.⁴ G02B 23/18; G03B 11/04; B65D 55/16
 U.S. Cl. 350—587 8 Claims



1. A protective cover for an optical means having an exposed lens portion comprising a cover body having a lens cap portion for being removably secured over the lens portion of an optical means and a connecting portion extending from the cap portion, and attachment means for securing the connecting portion of the body with the optical means and allowing movement of the cap portion between a first position proximate to the lens portion and a second position away from the lens portion, the attachment means urging the body toward its second position upon being displaced therefrom, the lens cap portion is cup shaped for being received over the rim of the lens portion of the optical means and the connecting portion is flat and elongated having a first end portion secured with the cap portion and extending second end portion, and the attachment means is provided by an elongated opening in the second end portion of the connecting portion and a screw means attached to the optical means and having a portion with an elongated cross-section received through the elongated opening of the connecting portion, the elongated cross-section of the screw means being in alignment with the elongated opening of the connecting portion of the body when the body is in its second position and the body being urged toward its second position when displaced therefrom.

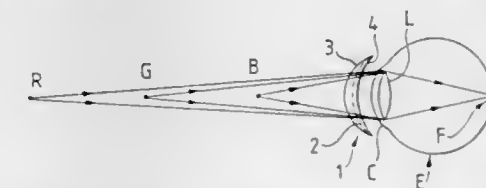
4,641,933
ELIMINATION OF INTERNAL REFLECTIONS AND DIFFRACTIONS FROM JUNCTURES IN, AND AT THE PERIPHERY OF, A SEGMENTED MIRROR
 C. James Blom, Bakersfield, Calif., assignor to Roxor Corporation, Bakersfield, Calif.
 Division of Ser. No. 642,179, Aug. 20, 1984, which is a continuation-in-part of Ser. No. 385,544, Jun. 7, 1982, Pat. No. 4,470,665, which is a division of Ser. No. 233,106, Feb. 10, 1981, Pat. No. 4,368,951. This application Nov. 15, 1985, Ser. No. 798,438
 Int. Cl.⁴ G02B 5/08, 1/10; B05D 5/06; C23C 16/06
 U.S. Cl. 350—613 19 Claims



5. In a transparent molded segmented mirror having individual sectors on a transparent molding and comprising a myriad of reflecting adjacent surfaces at the back side of the mirror away from the viewer, said surfaces oriented to produce, in the eyes of the viewer, one virtual image, or separate virtual images from separate portions of such molded mirror, there being a network of zones separating the individual reflecting surfaces, the improvement comprising

- a material coating said zones and which includes a light absorber,
- and including metallizing material on the molding and defining said reflecting surfaces and characterized in that the thickness of the metallizing material is substantially reduced to define feather edges at and about peripheries of the sectors,
- whereby undesirable reflections from said zones are substantially reduced.

4,641,934
OPHTHALMIC LENS WITH DIFFRACTIVE POWER
 Michael H. Freeman, Clwyd, United Kingdom, assignor to Pilkington P.E. Limited, United Kingdom
 Continuation-in-part of Ser. No. 368,362, Apr. 14, 1982. This application Sep. 20, 1983, Ser. No. 533,993
 Claims priority, application United Kingdom, Sep. 29, 1982, 8227818
 Int. Cl.⁴ G02C 7/02, 7/04; G02B 5/32; A61F 2/16
 U.S. Cl. 351—159 18 Claims



1. An ophthalmic lens comprising diffracting means providing negative diffractive power which introduces positive longitudinal chromatic aberration that adds to the natural longitudinal chromatic aberration of the eye and hence increases the range of the chromatic effect.

4,641,935
CAMERA

Takao Umezumi, Minoru Ishiguro, and Tetsuo Nishizawa, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

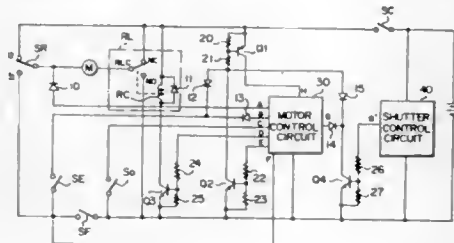
Filed Sep. 25, 1985, Ser. No. 780,005

Claims priority, application Japan, Sep. 28, 1984, 59-293084

Int. Cl.⁴ G03B 1/12

U.S. Cl. 354—173.11

5 Claims



1. A camera comprising:
film detecting means, provided in a film running path in said camera, for detecting the presence of a film;
film winding detecting means for detecting that said film is wound up by a predetermined length;
driving means for driving a film winding mechanism; and
control means for taking in detection outputs from said film detecting means and said film winding detecting means to control the operation of said driving means in response to said detection outputs; wherein, when the absence of the film in the film running path is detected by said film detecting means, said control means controls said driving means to operate until said film winding detecting means detects that at least a predetermined length of said film is wound up.

4,641,936

FILM LEADER POSITIONING APPARATUS

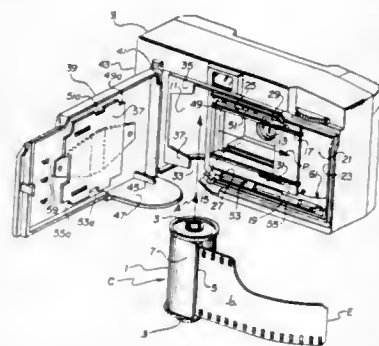
Frederick W. Harvey, Webster, and Glenn W. Johnson, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1986, Ser. No. 818,164

Int. Cl.⁴ G03B 1/04

U.S. Cl. 354—212

5 Claims



1. An improved photographic camera of the type wherein (a) a loading chamber receives a film cartridge in an axial direction substantially at the same time a film leader projecting from the cartridge is transversely received in a feed path, (b) a cartridge positioning member is disposed on a back door to depress the film cartridge in the axial direction in said loading chamber, to properly position the cartridge in the chamber, in response to closure of the door, and (c) cooperating means are disposed adjacent said feed path and on said back door, respectively, for transversely positioning the film leader in the event it is skewed, to straighten the leader along the path, in response

to closure of the door, and wherein the improvement comprises:

means mounting said back door for closure to enable said cartridge positioning member to axially position the film cartridge in the loading chamber before said leader positioning means can transversely position the film leader in said feed path.

4,641,937

SELF-TIMER DEVICE FOR A CAMERA

Nobuyuki Suzuki, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

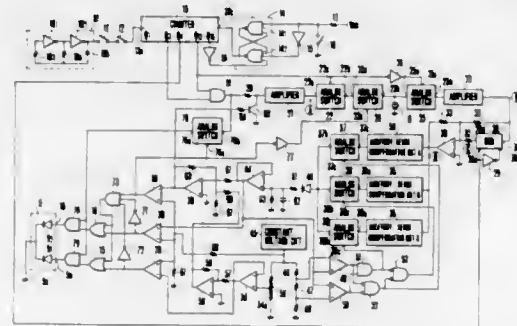
Continuation of Ser. No. 622,536, Jun. 20, 1984, abandoned, which is a continuation of Ser. No. 407,052, Aug. 11, 1982, abandoned. This application Mar. 14, 1985, Ser. No. 712,335

Claims priority, application Japan, Aug. 18, 1981, 56-129173; Dec. 17, 1981, 56-204954; Dec. 17, 1981, 56-204955; Dec. 17, 1981, 56-204957; Dec. 17, 1981, 56-204958; Dec. 17, 1981, 56-204959

Int. Cl.⁴ G03B 17/18; H03G 3/24

U.S. Cl. 354—238.1

15 Claims



1. For a camera having a self-timer, a device which displays the operation of the self-timer comprising:

- (a) sound generating means for producing sound while the self-timer is in operation;
- (b) light emitting means for emitting the light for displaying the operation of the self-timer;
- (c) detecting means for detecting the level of the environmental noise;
- (d) set means for setting predetermined noise level; and
- (e) control means for driving the light emitting means for displaying the operation of the self-timer when the level of the environmental noise detected by the detecting means is larger than the predetermined noise level set by the set means.

4,641,938

PHOTOGRAPHIC SHUTTER OF THE FOCAL-PLANE TYPE

Jean P. Lazzati, Franconville, France, assignor to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 767,533, Mar. 4, 1985, which is a continuation of Ser. No. 507,405, Jun. 24, 1983. This application Sep. 16, 1985, Ser. No. 776,092

Claims priority, application France, Jul. 9, 1982, 82 12138

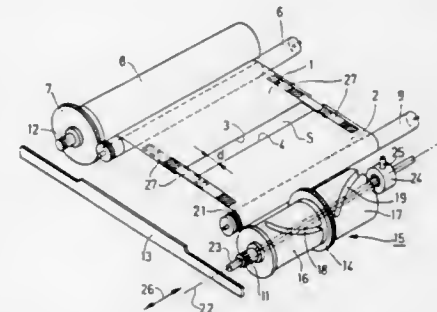
Int. Cl.⁴ G03B 9/34

U.S. Cl. 354—243

13 Claims

1. A photographic shutter of the focal-plane type, comprising a first and a second blind which extend in parallel planes close to each other and which are partly wound on respective drive rollers which are situated on one side and on an other side of an exposure window, respectively, and which are mounted for rotation on a chassis, each of the first and the second blinds having an edge which is movable across the exposure window so that a shutter slit is formed between said

edges, the drive roller of the first blind being drivable directly by a first pinion which is rotatably coupled to a drive mechanism mounted on said chassis, characterized by further comprising a second pinion which is mounted for rotation on said chassis, the second pinion being arranged opposite the first pinion on the other side of the exposure window, the second pinion being rotatably coupled to said first pinion by means of a mechanical connection arranged such that, at any instant, a relative position of the blinds can be obtained which defines a



shutter slit of a predetermined width, a third pinion which is coaxial with the second pinion and which is drivable by said second pinion via an angular-positioning device which is coaxial with the second and the third pinions, the angular positioning device being constructed and arranged for movement which is independent of simultaneous rotary movements of the second and the third pinions, so that the third pinion can drive said drive roller of said second blind with a speed of rotation equal to that of the drive roller of the first blind, and tension means for maintaining each blind in its respective plane.

4,641,939

AUTOMATIC FILM THREADING APPARATUS FOR ROLL-FILM PROCESSORS

William M. Kitner, Inglewood, Calif., assignor to Vari-X, Irvine, Calif.

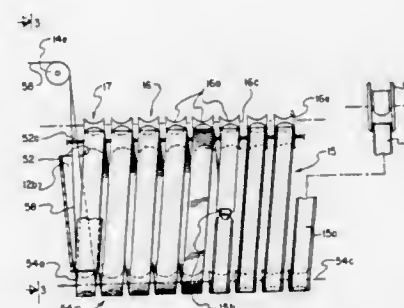
PCT No. PCT/US83/00746, § 371 Date Feb. 11, 1985, § 102(e) Date Feb. 11, 1985, PCT Pub. No. WO84/04603. PCT Pub. Date Nov. 22, 1984

PCT Filed May 11, 1983, Ser. No. 702,983

Int. Cl.⁴ G03D 3/13

U.S. Cl. 354—313

18 Claims



1. An automatic film threading apparatus for roll-film processors comprising:

- (a) a roll-film processor comprising in part:
 - (1) a film developing compartment comprising a plurality of film developing and processing chambers with each chamber having an upper port and a lower port,
 - (2) a film loading compartment having means to accept and retain exposed film and also having a film input port located near the entrance to the upper port of the first developing and processing chamber,
 - (3) a powered film spool assembly consisting of a plurality of powered film spools rigidly attached to a powered film spool axle where each spool is centrally located above and

between the upper ports of a film developing and processing chamber pair,

- (4) a bottom film roller assembly consisting of a plurality of film rollers rotatably attached to a fixed bottom film roller axle where said bottom film roller assembly is centrally located below and between the lower ports of a film developing and processing chamber pair,
- (b) a threading leader assembly consisting of a flexible strip having on one end the means for attaching to the end of the exposed film and on the other end a threading tip that is initially inserted through the film input port on said film loading compartment,
- (c) a pinch-roller assembly comprising a plurality of pinch rollers rotatably attached to a fixed pinch roller axle where a pinch roller is located and attached directly above each powered film spool at a distance that allows the combination of the pinch roller and film spool to firmly grip and pass said threading leader assembly,
- (d) means for accurately guiding said threading leader assembly and the attached exposed film out the upper port of one film developing and processing chamber, between a pinch roller and powered film spool, and into the upper port of the following film developing and processing chamber, and
- (e) means for accurately guiding said threading leader assembly and the attached exposed film out the lower port of one film developing and processing chamber, below the bottom film roller and into the lower port of the following film developing and processing chamber.

4,641,940

SHEET FILM PROCESSING APPARATUS FOR EXPOSED SHEET FILM

Jürgen Müller, Alfons Kastl, and Heinrich Färber, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

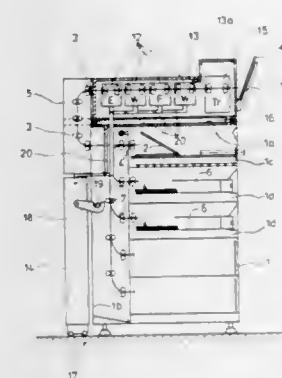
Filed Aug. 14, 1985, Ser. No. 765,873

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432077

Int. Cl.⁴ G03D 3/08

U.S. Cl. 354—322

22 Claims



1. Sheet film processing apparatus for sheet film, comprising: means for processing the sheet film, and having an upper side and a back side;

- means for developing the sheet film including a plurality of developing tanks holding fluid, located above said processing means;
- means for transporting the sheet film from said processing means to said developing means;
- a fluid collector basin located between said developing tanks and said upper side of said processing means, said collector basin being provided so as to catch any fluid which may fall from said developing means;
- a waste water tank provided at said back side of said processing means; and

means for connecting said developing tanks and said collector basin with said waste water tank so as to lead said fluid to said waste water tank.

4,641,941
TREATMENT TANK IN PHOTSENSITIVE MATERIAL PROCESSING SYSTEM INCLUDING A PLURALITY OF OVERFLOW DEVICES

Yasuhito Yoshimi, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

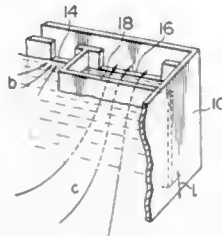
Filed Jul. 29, 1985, Ser. No. 760,327

Claims priority, application Japan, Aug. 2, 1984, 59-118414[U]

Int. Cl.⁴ G03D 3/02

U.S. Cl. 354—324

5 Claims



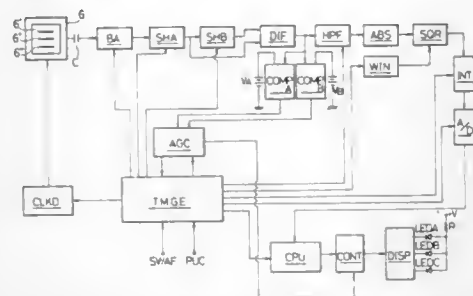
1. A treatment tank for use in a photosensitive material processing system of the type in which treatment liquid is fed into said treatment tank through a liquid feeding device, and the liquid level of said tank is kept constant by way of overflow, comprising, in said treatment tank, a plurality of overflow devices, and a partition member for separating the part of the surface of the treatment liquid which extends to at least one of said overflow devices from the part of the surface of the treatment liquid which extends to the remaining overflow devices, said partition member allowing treatment liquid to flow from one side thereof to the other side thereof below the liquid surface.

4,641,942
FOCUS DETECTING SYSTEM
Shinji Sakai; Nobuhiko Shinoda, both of Tokyo; Kazuya Hosoe, Kunitachi, and Takao Kinoshita, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 627,488, Jul. 5, 1984, which is a continuation of Ser. No. 572,972, Jan. 23, 1984, abandoned, which is a continuation of Ser. No. 310,483, Oct. 9, 1981, abandoned. This application Aug. 21, 1985, Ser. No. 767,668
Claims priority, application Japan, Oct. 16, 1980, 55-144781; Oct. 23, 1980, 55-149079; Jan. 14, 1981, 56-4357

Int. Cl.⁴ G03B 3/00

U.S. Cl. 354—406

31 Claims



1. A system for repeatedly detecting a state of focusing of an imaging optical system and repeatedly generating an output representing the focus state, comprising:

(A) image sensing means for repeatedly sensing an image of the object formed by the imaging optical system and

generating a signal representing the image of the object in each repetition of the sensing operation of said image sensing means, wherein said image sensing means has signal integrating effects and generates a signal corresponding to the image;

(B) focus detecting means for receiving the signal from said image sensing means and detecting a focusing state of the imaging optical system on the object, said focus detecting means generating an output representing the focusing state in each repetition of the sensing operation of said image sensing means;

(C) means for stabilizing abrupt changes between the outputs sequentially provided in two consecutive repetitions of the sensing operation of said image sensing means from said focus detecting means; and

means for controlling a signal integrating time of said image sensing means, said stabilizing means being responsive to said integrating time controlling means to stabilize the output of said focus detecting means against changes in the signal integrating time of said image sensing means.

4,641,943
PHOTOGRAPHIC CAMERA WITH ELECTRONIC FLASH HAVING PERIODICALLY DISABLED CHARGING APPARATUS

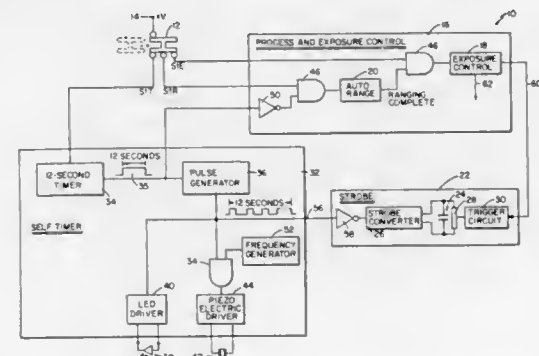
Judith L. Neely, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 30, 1985, Ser. No. 792,869

Int. Cl.⁴ G03B 15/05, 17/40

U.S. Cl. 354—413

10 Claims



6. Apparatus for inhibiting the charging of an electronic flash in a photographic camera having a self-timer, whenever an indicator indicative of self-timer operation is activated, comprising:

a manually actuatable self-timer for generating a film exposure sequence initiating electrical signal a predetermined time after the timing cycle of said self-timer has been initiated;

an electronic flash including a flashtube and a charging system for storing an electrical charge for subsequent discharge across the light emitting element of said flashtube during an exposure interval;

means responsive to the operation of said self-timer for generating a visual and/or audible signal indicative of self-timer operation; and

control means for enabling the electronic flash to operate in a charge mode during said self-timer timing cycle and for inhibiting the operation of said charging system during said timing cycle whenever a self-timer operation indicator is activated.

4,641,944
IMAGE EXPOSING APPARATUS
Haruhisa Honda; Hiroaki Tsuchiya, both of Yokohama; Michitaka Setani, Kawasaki, and Mitsuhiro Tokuhara, Amagasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

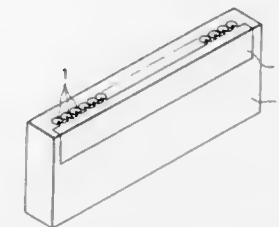
Filed Jun. 17, 1985, Ser. No. 745,211

Claims priority, application Japan, Jun. 21, 1984, 59-128363; Nov. 9, 1984, 59-235216; Nov. 9, 1984, 59-235217

Int. Cl.⁴ G03B 27/00

U.S. Cl. 355—1

7 Claims



1. An image exposing apparatus comprising: a focusing optical system for focusing an image onto a photosensitive member, said focusing optical system being constructed by one-line array of a plurality of converging light transmission media; and light intensity distribution correction means arranged in a light path for forming said image for eliminating a non-uniformity of light intensity on said photosensitive material due to said focusing optical system, said light intensity distribution correction means having a shape to block light fluxes each passing through a center area of each of said converging light transmission media and having a repetitive pattern arranged at a pitch corresponding to a pitch of said converging light transmission media.

4,641,945
DEVELOPER SUPPLY DEVICE FOR DRY PROCESS ELECTROPHOTOGRAPHIC COPIER
Masumi Ikesue, Tokyo, and Takashi Ikeda, Sagami, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

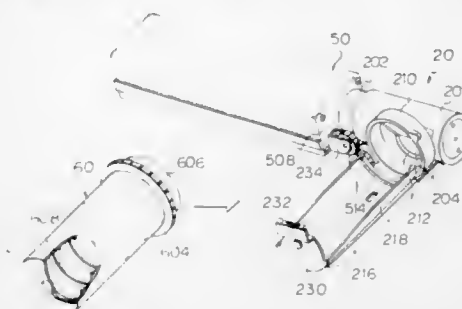
Filed Apr. 2, 1984, Ser. No. 596,198

Claims priority, application Japan, Apr. 9, 1983, 58-63438

Int. Cl.⁴ G03G 15/08

U.S. Cl. 355—3 DD

3 Claims



1. A developer supply device for an electrophotographic copier which includes a dry process developing unit for developing an electrostatic latent image on a photoconductive element by means of a dry process developer, comprising:

a rotatable cylindrical developer cartridge having a spiral developer guide member on an inner peripheral wall thereof and a mouth for developer supply at one end thereof;

developer cartridge holder means for holding said developer cartridge such that said mouth of the developer cartridge communicates with a developer inlet opening of the de-

veloping unit, said cartridge holder means being movable angularly about an axis of the developer inlet opening to selectively fix the cartridge held by the cartridge holder means in at least a vertical position and a horizontal position inside the copier; and fixing means for fixing the cartridge in a horizontal position inside the copier; the fixing means comprising a magnetic member mounted in a portion of the holder means and a locking member which is located in a portion of a housing of the copier to magnetically couple with said magnetic member.

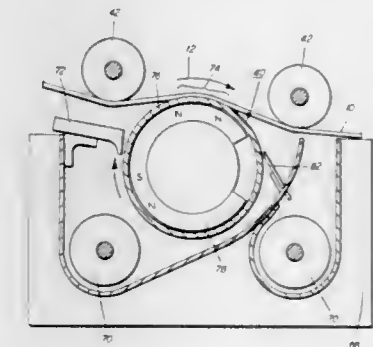
4,641,946
DEVELOPMENT SYSTEM
Richard L. Forbes, II, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 29, 1985, Ser. No. 759,992

Int. Cl.⁴ G03G 15/09

U.S. Cl. 355—3 DD

10 Claims



1. An apparatus for developing a latent image recorded on a flexible member, including:

magnetic means, positioned closely adjacent the flexible member to define a development zone therebetween, for transporting a developer material comprising at least magnetic carrier granules having toner particles adhering thereto into contact with the flexible member in the development zone, said magnetic member generating at least a radial magnetic field in the development zone of a magnitude to optimize the attraction of the toner particles from the carrier granules to the latent image and at least a tangential magnetic field at the exit of the development zone of a magnitude to optimize the adherence of carrier granules thereto so as to prevent carrier granules from adhering to the flexible member with the magnitude of the tangential magnetic field at the exit of the development zone being greater than the magnitude of the radial magnetic field in the center of the development zone; and means for maintaining the flexible member at a preselected tension of sufficient magnitude so that the developer material being transported into contact therewith deflects the flexible member about said magnetic means to form an extended development zone.

4,641,947
HOUSING APPARATUS
Takao Ishida, Kawasaki, and Mamoru Shimono, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 521,827, Aug. 10, 1983, abandoned.

This application Feb. 11, 1986, Ser. No. 829,455

Claims priority, application Japan, Aug. 20, 1982, 57-144473

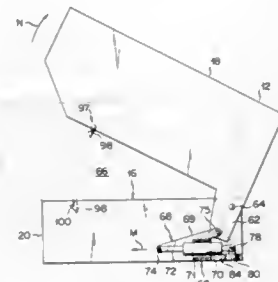
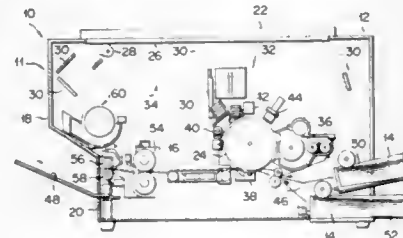
Int. Cl.⁴ G03G 15/00, 21/00

U.S. Cl. 355—3 R

20 Claims

1. A copying apparatus comprising: a sheet conveyance path having a feed end and a discharge end;

means for conveying a sheet along said path from the feed to the discharge end;
 means for forming an image on said sheet as said sheet is conveyed along said path;
 a first housing;
 a second housing mating with said first housing at the level of said conveyance path, said conveyance path, conveyance means and forming means being disposed within said first and second housings;
 an arm section extending from the first housing toward and onto the second housing and having a proximal portion and a free end portion;
 coupling means, provided within the second housing and



mounted at one of said feed and discharge ends of said conveyance path, for rotatably coupling the proximal portion of the arm section to the second housing to support the first housing and for supporting the proximal portion of the arm section; and
 urging means, provided on the second housing and coupled to the free end portion of the arm section, said urging means for applying a predetermined urging force to the free end portion of the arm section to maintain the first housing in a predetermined position in which a space for exposing the conveyance path is formed between the first and second housings, when the first housing is rotated about the coupled means by a predetermined angle with respect to the second housing.

4,641,948

METHOD OF AND DEVICE FOR PREVENTING DISTURBANCE OF UNFIXED VISIBLE IMAGE

Kimio Nakahata, Kawasaki; Tsutomu Toyono, Tokyo; Atsushi Takagi, Fujisawa, and Yoshinori Aguro, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 784,816, Apr. 5, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,952

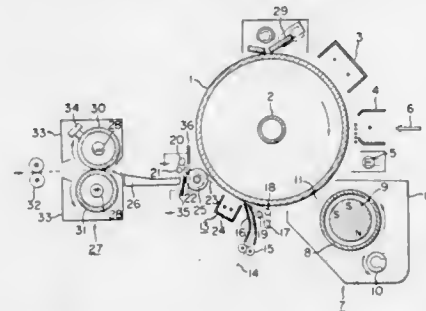
Claims priority, application Japan, Apr. 13, 1976, 51-41661
 Int. Cl.⁴ G03G 21/00

U.S. Cl. 355—3 SH

19 Claims

5. A device for preventing disturbance of an unfixed visible image in an image formation apparatus wherein an electrostatic image on an electrostatic image bearing member is developed into a visible image with a developer, thereafter the developed visible image is electrostatically transferred to a transfer medium in contact therewith at a transfer station and then the transfer medium is mechanically separated from and conveyed away from the image bearing member, said device comprising: charge removing means having a plurality of distinct dis-

charging portions which portions are disposed adjacent to but spaced from the transfer medium as the transfer medium is conveyed away from the image bearing member and past the charge removing means; and



means for maintaining said plurality of distinct discharging portions at a potential such as to create an electric field across the space between the transfer medium and said plurality of distinct discharging portions to electrically discharge the transfer medium and thereby prevent disturbance of the unfixed image on the transfer medium.

4,641,949

CONDUCTIVE BRUSH PAPER POSITION SENSOR

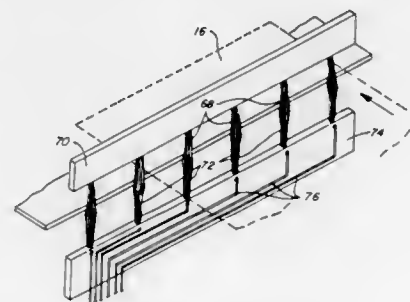
Stanley J. Wallace, Victor; Josef E. Jedlicka, and Wilbur M. Peck, Jr., both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1985, Ser. No. 769,515

Int. Cl.⁴ G03G 15/00

U.S. Cl. 355—3 SH

4 Claims



1. A machine for reproducing an original document onto a sheet including:

a sheet supporting tray,
 sheet feed means to forward a sheet from the tray through the reproducing machine for having a copy of the original created thereon,
 optical means for projecting, along an optical path, a light pattern of a document to be reproduced,
 support means for moving the document past one end of said optical path,
 sensing means adjacent said document support means to sense the size of the document to be reproduced,
 said sensing means including a first array of spaced discrete conductive fiber brushes and a second array of spaced discrete conductive fiber brushes oppositely disposed from the first array forming sensor pairs, each of the discrete conductive fiber brushes comprising polyacrylonitrile fibers in the range of 10 to 100 ohms resistance per bundle, the oppositely disposed conductive fiber sensor pairs normally being in electrical contact, the electrical contact of each pair being interrupted by the presence of a portion of a document between the sensor pair, and

circuit means for providing a signal indicative of the presence or lack of presence of a portion of a document between a selected sensor pair.

4,641,950

EXPOSURE SYSTEM

Josephus W. Rongen, Venlo, and Robertus van Cooten, Grubbenvorst, both of Netherlands, assignors to Océ-Nederland B. V., Venlo, Netherlands

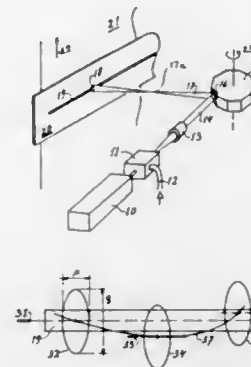
Filed Oct. 1, 1984, Ser. No. 655,747

Claims priority, application Netherlands, Oct. 10, 1983, 8303470

Int. Cl.⁴ G03G 15/04

U.S. Cl. 355—3 R

9 Claims



1. In an exposure system for imagewise exposing a movable light-sensitive layer to at least one beam of light dot by dot along a line on said layer, including at least one light source, each for generating a beam of light, and means for modulating each said beam with electronic information, and wherein at least one said beam so modulated is subject to substantial deviation of its location perpendicularly relative to said line of exposure, the combination which comprises means disposed across the path of said modulated beam for blocking passage to said light-sensitive layer of portions of said modulated beam deviated perpendicularly away from said line of exposure and within said blocking means a narrow light transmitting slit extending parallel to said line of exposure, the width of said slit being less than 150 μ m and so much less than the dimension at the slit of said modulated beam in the direction of the slit width that said slit passes to said layer only limited portions of said modulated beam which are substantially centered on said line.

4,641,951

METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHICALLY REPRODUCING A DESIRED PORTION OF AN ORIGINAL ON COPYING PAPER

Tsuneo Takagi; Kenjiro Tanabe; Masao Fukushima; Hiroki Kyushima; Kiyoshi Takenaka; Akira Okada, and Yoshinori Isogaki, all of Shiga, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 18, 1985, Ser. No. 745,913

Claims priority, application Japan, Jun. 25, 1984, 59-131786

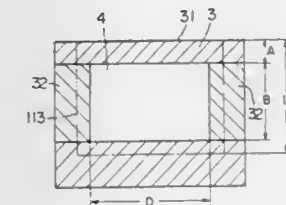
Int. Cl.⁴ G03G 15/00

U.S. Cl. 355—7

15 Claims

1. A method for reproducing a desired portion of a pattern in an original onto a copying paper, comprising the steps of: manually inputting information about the desired portion to means for computing reproduction information of the desired portion;
 electrifying and deelectrifying a photo-conductive surface of a rotary drum in response to the computed reproduction information so that electrification only results on a surface

area of the photo-conductive surface corresponding to the desired portion of the pattern in the original;
 exposing the original so as to produce latent images on said photo-conductive surface corresponding to the desired portion;



4,641,952

SELECTIVE DEVELOPMENT CONTROL FOR ELECTROSTATIC REPRODUCTION MACHINES

James M. Donohue, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

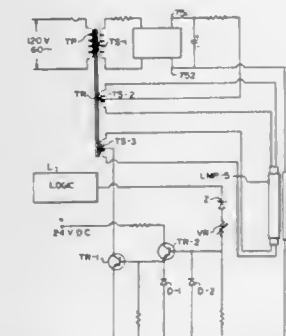
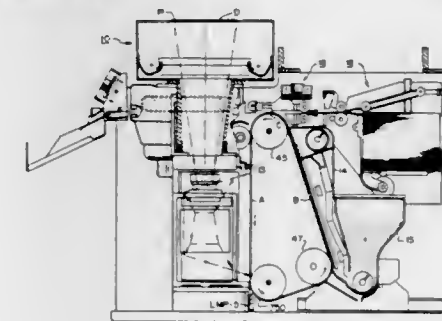
Continuation of Ser. No. 731,967, May 24, 1968, abandoned.

This application May 19, 1971, Ser. No. 145,013

Int. Cl.⁴ G03G 15/02

U.S. Cl. 355—14 R

3 Claims



1. In an electrostatic reproduction machine having a moving photoconductive plate adapted to be uniformly charged, document illumination means for producing an electrostatic latent image thereon, means for activating and deactivating the illumination means periodically for producing a plurality of latent images during a reproduction run and developing means positioned at a development zone to develop the moving electrostatic image on the plate, the combination with
 a discharge device adapted when activated to discharge a charged area on the plate when the area reaches a predeter-

mined position in the travel, said device being positioned to discharge the charged area on the plate before the same enters the development zone.

a control circuit associated with said discharge device, said control circuit being arranged for activating the discharge device immediately after the illumination means has been deactivated for discharging portions of the charged areas and thereby inhibit development of these areas.

4,641,953

IMAGE FORMING APPARATUS

Hideshi Oushiden, Kawasaki, and Naoshi Obara, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

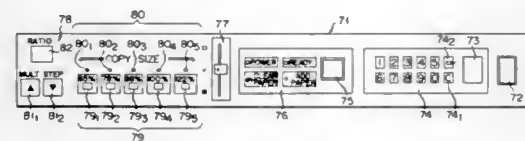
Filed May 30, 1984, Ser. No. 615,278

Claims priority, application Japan, May 31, 1983, 58-96124

Int. Cl.⁴ G03G 15/00; G03B 27/52

U.S. Cl. 355—14 R

3 Claims



1. An image forming apparatus comprising:

an optical means for optically scanning a document and transmitting light beams from said document so as to form an optical image of said document;

magnification ratio setting means for setting a magnification ratio in size of said optical image with respect to said document; and

control means for controlling said optical means in such a manner that said optical image with said magnification ratio set by said magnification ratio setting means is projected on a photosensitive means;

wherein said magnification ratio setting means comprises a first magnification ratio setting means which includes at least one magnification ratio setting key for setting a specified magnification ratio, and a second magnification ratio setting means which includes a magnification ratio increasing key and a magnification ratio decreasing key;

when said magnification ratio increasing key or said magnification ratio decreasing key is operated continuously within a first period of time, said magnification ratio is increased or decreased by a first predetermined value of the magnification ratio, and when said magnification ratio increasing or decreasing key is operated continuously over said first period of time, said magnification ratio is increased or decreased by a second predetermined value of magnification ratio each unit time exceeding said first period of time; and

said control means controls said optical means in such a manner that an optical image having a magnification ratio set by using said first magnification ratio setting means, by using said second magnification ratio setting means or by using said first and second magnification ratio setting means, is projected on said photosensitive medium.

4,641,954 APPARATUS FOR FORMING AN IMAGE ON ONE SIDE OF A RECORD MEDIUM AND IN ANOTHER MODE TO FORM IMAGES ON BOTH SIDES THEREOF

Masanori Miyata, Mitaka; Yutaka Komiya; Shinichi Nakamura, both of Tokyo; Masayuki Hirose, Yokohama; Hideki Adachi, and Masahiro Tomosada, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

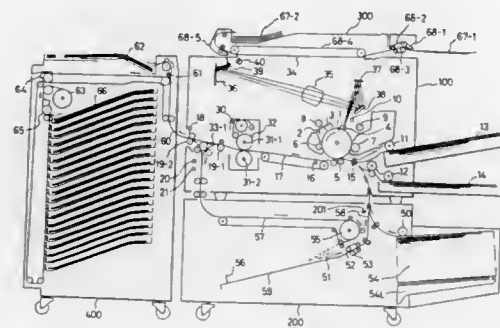
Filed Aug. 13, 1984, Ser. No. 640,333

Claims priority, application Japan, Aug. 16, 1983, 58-148711

Int. Cl.⁴ G03G 15/00

U.S. Cl. 355—14 R

10 Claims



1. An image forming apparatus comprising:

image forming means operable in a first mode for forming an image on one side of a record medium and a second mode for forming the images on both sides of the record medium;

command means for commanding an interrupting image formation in said second mode during the image formation in said second mode;

storage means capable of storing in a plurality of modes the record medium transported from said image forming means, which record medium has been subjected to the image formation; and

control means for controlling said storage means to store in a predetermined mode of said plurality of modes the record medium transported from said image forming means during the interrupting image formation, which record medium has been subjected to the image formation.

4,641,955

ION PROJECTION RECORDING APPARATUS

Kazuhiro Yuasa, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

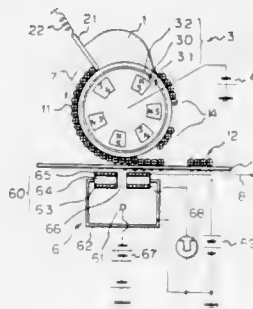
Filed Nov. 5, 1985, Ser. No. 795,099

Claims priority, application Japan, Nov. 5, 1984, 59-231241; Dec. 20, 1984, 59-267375

Int. Cl.⁴ G03G 15/08

U.S. Cl. 355—14 TR

15 Claims



1. A recording apparatus for recording an image by controlling streams of ions pixel by pixel, comprising:

toner charging and transporting means for charging toner to a first polarity, regulating the charged toner to form a toner layer having a predetermined thickness, and transporting the charged toner layer;

ion generating means for generating ions having a predetermined polarity positioned at a side opposite to the charged toner layer with respect to a transfer member which is fed such that a surface of the transfer member is located close to or in contact with the charged toner layer; and ion stream control means for controlling streams of the ions generated by said ion generating means pixel by pixel responsive to image data which are to be recorded, whereby the charged toner is selectively deposited on the transfer member due to coulomb force acting between the ions having the predetermined polarity and the charged toner.

4,641,956

EXTENDED NIP CLEANING SYSTEM

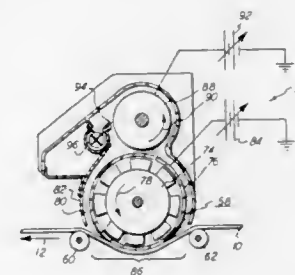
Donald A. Seanor, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1980, Ser. No. 180,791

Int. Cl.⁴ G03G 21/00

U.S. Cl. 355—15

20 Claims



1. An apparatus for removing particles from a belt, including:

a tubular member;

means for attracting a cleaning material to said tubular member;

means for rotating said tubular member to transport the cleaning material into contact with the particles adhering to said belt; and

means for maintaining the belt at a pre-selected tension of sufficient magnitude so that the belt deflects about said tubular member to form an extended cleaning zone between said tubular member and the belt, said maintaining means tensioning said belt to a magnitude preferably of about 0.1 kilograms per linear centimeter.

4,641,957

OPTICAL MEMBER DRIVE SYSTEM FOR COPYING MACHINE

Katsubiko Takeda, and Masamichi Sugiura, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 737,821, May 23, 1985, abandoned.

This application Apr. 4, 1986, Ser. No. 848,683

Claims priority, application Japan, May 25, 1984, 59-107223

Int. Cl.⁴ G03B 27/36, 27/38

U.S. Cl. 355—58

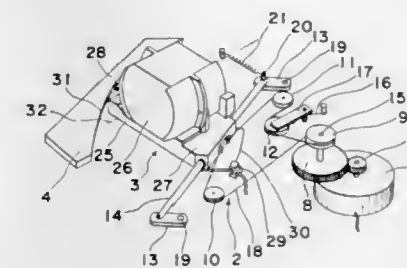
20 Claims

1. An optical member drive system for a copying machine or the like including a projector lens assembly movable along a predetermined path, which system comprises:

a drive unit for moving the lens assembly;

means for, when the lens assembly is moved along the predetermined path which is divided into a predetermined number of zones, setting a speed at any one of the zones to

a value appropriate to the magnitude of a load acting on the drive unit; and



means for speed-controlling the drive unit in accordance with the speed set by said setting means.

4,641,958

SYSTEM AND METHOD FOR PROJECTING MULTIPLE IMAGES DIRECTLY ONTO PRINTING PLATES

Joseph H. Wally, 12302 W. 82nd Ter., Lenexa, Kans. 66215, and Samuel E. Wilson, 15412 W. 90th St., Lenexa, Kans. 66219

Filed Sep. 10, 1983, Ser. No. 531,203

Int. Cl.⁴ G03B 27/72

U.S. Cl. 355—71

20 Claims



1. A method of transferring an image along an optical path to be printed directly onto a rigid printing plate having a photosensitive coating, said method comprising the steps of:

generating from a substantially point source a uniformly diverging beam of highly intense light having wavelengths restricted to a relatively narrow wavelength band; limiting heat build-up in said optical path;

providing an objective lens; passing said diverging beam of light through a condenser lens to obtain a converging beam which converges in the objective lens;

locating copy containing the image adjacent the condenser lens and in the path of the beam to project the film image; focusing the converging beam on the objective lens; and projecting the beam from the objective lens onto a preselected portion of the printing plate for sufficient time to expose the photosensitive coating, thereby providing the image on said preselected portion of the printing plate.

4,641,959

METHOD FOR DETERMINING EXPOSURE AMOUNT IN PHOTOGRAPHIC PRINTING

Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 11, 1986, Ser. No. 828,374

Claims priority, application Japan, Feb. 27, 1985, 60-38526; Mar. 28, 1985, 60-62027; Apr. 8, 1985, 60-73795

Int. Cl.⁴ G03B 27/32, 27/80

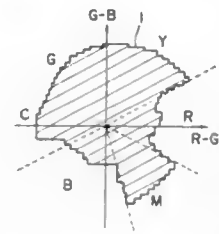
U.S. Cl. 355—77

19 Claims

1. A method for determining exposure amount in photographic printing which comprises the steps of:

photometrically measuring either the whole or a part of a frame picture of an original film in divided fine segments; obtaining a color coordinate from said photometric data; determining whether said color coordinate exists in or outside of a region on a predetermined color coordinate;

obtaining a first color region data of said color coordinate inside said region and a second color region data of said color coordinate outside said region; and



determining the exposure amount based upon a value obtained by respectively multiplying said first and second color region data with coefficients and sequentially adding the resulted products.

4,641,960

METHOD FOR THE STEREPHOTOGRAMMETRIC SURVEY OF LARGE-DIMENSION OBJECTS ON SEA AND LAND

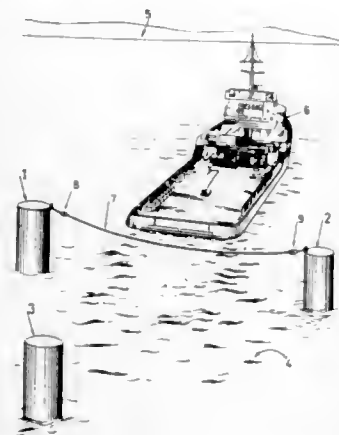
Giovanni Bozzoloto, Segrate, Italy, assignor to AGIP, S.p.A., Rome, Italy

Filed May 31, 1984, Ser. No. 615,839

Claims priority, application Italy, Jun. 3, 1983, 21437 A/83
Int. Cl.⁴ G01C 11/12, 3/14

U.S. Cl. 356—2

8 Claims



1. A method for the stereophotogrammetric survey of large dimension objects situated on the sea comprising:

- (i) providing two synchronized metric photographic cameras mounted apart from one another at a known distance of about 6 meters in parallel orientation at a distance of about 30 meters from the object to be surveyed;
- (ii) providing an inextensible chain in full view of said cameras within the area to be surveyed, said chain having two reference markers mounted thereon at a known distance from each other, said markers being of sufficient size to be reliably visible on photograms taken from a distance of about 30 to 40 meters, the links of said chain also being of sufficient size to be visible on photograms taken from a distance of about 30 to 40 meters;
- (iii) simultaneously photographing the object to be surveyed and said inextensible chain with said synchronized metric photographic cameras to provide two simultaneous photographs of the object and said chain;
- (iv) obtaining a stereoscopic optical model of the object to be measured from said two simultaneous photographs by means of a stereoplotter;
- (v) measuring on said stereoscopic optical model eight sets

of points grouped in the eight conventional perimetral locations of photogrammetric orientation, one half of said points being situated at the crest level and the other half of said points being situated at the trough level of waves of the sea;

- (vi) statistically processing said crest and trough measurements to determine the mean horizontal plane;
- (vii) orientating said stereoscopic optical model on said mean horizontal plane by suitable rotation of said stereoscopic optical model;
- (viii) measuring on said stereoscopic optical model in the photographic scale the length of the catenary arc between said two reference markers by summing the lengths of the small arc portions corresponding to each link of said chain;
- (ix) determining the scale of said stereoscopic optical model by comparing said measured length of said catenary arc to the known distance between said reference markers on said inextensible chain; and
- (x) calculating actual dimensions of the object by measuring linear distances on said stereoscopic optical model and converting said measured linear distances into actual object dimensions using said stereoscopic optical model scale.

4,641,961

APPARATUS FOR MEASURING THE OPTICAL CHARACTERISTICS OF AN OPTICAL SYSTEM TO BE EXAMINED

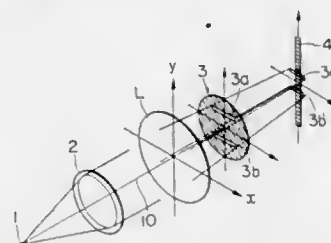
Kenji Yamada, Narashino, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,538

Claims priority, application Japan, Aug. 6, 1982, 57-136369
Int. Cl.⁴ G01B 9/00

U.S. Cl. 356—124

28 Claims



1. An apparatus for measuring the optical characteristics of an optical system to be examined, comprising:

- (a) beam supply means for determining a reference optical axis and generating a light beam passed through said optical system to be examined along said reference optical axis;
- (b) mask means for partly transmitting said light beam there-through, said mask means having a pattern comprising at least one straight line disposed off said reference optical axis in said light beam, the straight line of said pattern extending in a predetermined direction in a plane substantially orthogonal to said reference optical axis;
- (c) photosensitive detector means for receiving the light beam passed through said optical system to be examined and said mask means, said detector means being fixedly disposed relative to said mask means and having a substantial length in a direction substantially orthogonal to said pattern, said detector means producing an electrical signal indicative of the position of the pattern of said mask means projected onto said detector means in the direction of the length of said detector means;
- (d) rotating means for providing relative rotation about said reference optical axis between said light beam passed

through said optical system to be examined and said mask means;

- (e) means for processing said electrical signal and finding the refractive characteristic of said optical system to be examined; and
- (f) optical means provided between said mask means and said detector means for making said mask means and said detector means conjugate in a plane parallel to the direction of the straight line of said pattern and said reference optical axis.

4,641,962

ABERRATION MEASURING METHOD

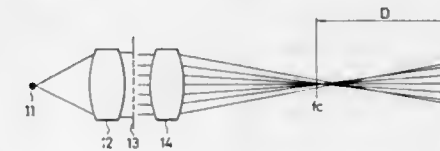
Tetsuo Sueda, Chofu, and Minoru Yoshii, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,208

Claims priority, application Japan, May 25, 1982, 57-88429
Int. Cl.⁴ G01B 9/00

U.S. Cl. 356—124

11 Claims



1. An aberration measuring method comprising the steps of: providing a light source at a regular projection image plane position of a lens to be examined and causing a light beam from the light source to enter the lens to be examined; separating the light beam passed through the lens to be examined into a plurality of light rays which lie in at least one plane parallel to a principal ray or parallel to the optical axis of the lens to be examined, said separating step being performed at a position in the vicinity of the lens to be examined so as to pass the light rays at predetermined heights from the optical axis;
- detecting the position of each light ray at a position which is spaced apart from a position optically conjugate with the image plane position with respect to the lens to be examined and at which the plurality of light rays can be separated from one another; and
- measuring the aberration of the lens to be examined on the basis of the detected positions of the plurality of light rays.

4,641,963

BACK-ILLUMINATED CCD IMAGER ADAPTED FOR CONTRAST TRANSFER FUNCTION MEASUREMENTS THEREON

Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 2, 1985, Ser. No. 729,651

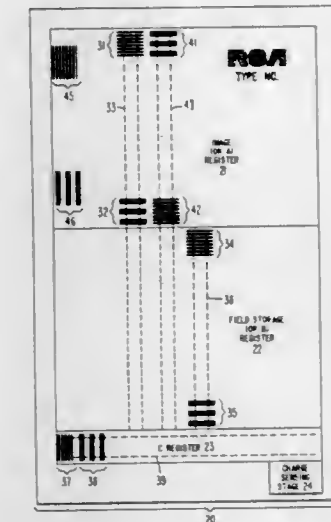
Int. Cl.⁴ G01M 11/00; H01L 29/78, 27/14, 31/00

U.S. Cl. 356—124.5

7 Claims

1. A solid state imager of back-illuminated type, including a charge coupled device with gate electrodes disposed on a first surface of said imager opposite to a second surface thereof through which said imager receives back-illumination under normal circumstances and having a selectively opaque optical pattern disposed over the first surface of said imager, said pattern comprising at least one stripe pattern of specific spatial frequency overlying a charge transfer channel of said charge coupled device, said stripes cross the width of said charge transfer channel, and being arranged in combination with: means providing illumination to said first surface of said solid state imager for causing a shadow of said selectively opaque optical pattern to form on said charge transfer channel; means for applying clocking voltages to the said charge coupled device; and means for utilizing the output signal from said imager, said

output signal being responsive to the illumination of the first surface as selectively transmitted by said selectively



opaque optical pattern, for calculating the contrast transfer function of said charge transfer channel.

4,641,964

APPARATUS FOR MEASURING OPTICAL CHARACTERISTICS OF OPTICAL SYSTEMS

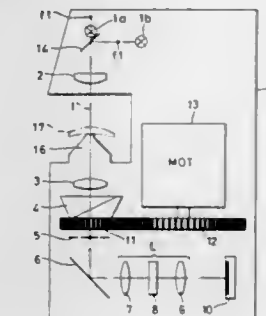
Kiyoharu Mitani, Kawasaki; Kazuo Morobashi, Tokyo; Kenji Yamada, Narashino; Tsunemi Gonda, Yamato, and Hideo Mizutani, Yokohama, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 20, 1984, Ser. No. 632,866

Claims priority, application Japan, Jul. 27, 1983, 58-137376
Int. Cl.⁴ G01B 9/00

U.S. Cl. 356—124

5 Claims



1. An apparatus for measuring an optical characteristic of an optical system to be inspected, comprising:

- (a) a converting optical system having a determined focal point and capable of converting a light beam diverging from said focal point into a parallel beam;
- (b) light source means for selectively generating light from either one of two positions on the optical axis of said converting optical system;
- (c) mask means positioned opposite to said light source means with respect to said converting optical system, wherein said mask means comprises a pattern composed of translucent and opaque areas, in which said pattern is symmetrical with respect to the optical axis of said converting optical system;
- (d) means for placing said inspected optical system on the optical axis of said converting optical system in such a manner as to guide the light of said light source means from said converting optical system to said mask means;

of copper-based spinodal alloys of about 38 Rockwell C hardness and having a tensile ductility of at least four percent, the other of said bearing surfaces being formed of a material harder than said spinodal alloys.

4,641,977

BEARING SYSTEM

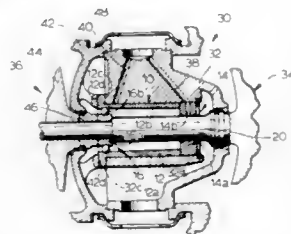
William E. Woolenweber, 3905 Cove Rd., Columbus, Ind. 47203
PCT No. PCT/US84/00439, § 371 Date Dec. 11, 1984, § 102(e)
Date Dec. 11, 1984, PCT Pub. No. WO84/04141, PCT Pub.
Date Oct. 25, 1984

PCT Filed Mar. 21, 1984, Ser. No. 711,245

Int. Cl.⁴ F16C 21/00, 33/58

U.S. Cl. 384—99

26 Claims



1. A bearing system for a rotating shaft, characterized in that said bearing system includes:

- a full-floating sleeve bearing (14) having a bearing surface adapted to rotatably carry the rotating shaft (20) at one end of the bearing system,
- an inner race (16a) adapted to be fastened to the rotating shaft at the other end of the bearing system, and
- an outer race (12) extending axially of the rotating shaft being adapted at said other end of the bearing system to cooperate with the inner race and a plurality of interposed rolling elements (16b) and to form an anti-friction bearing at said other end of the bearing system, the inner surface (12b) of the outer race (12) expanding from said one end to the other end and the outer surface (12a) of the outer race (12) forming an elongated cylindrical bearing surface and radially extending thrust-bearing surfaces (12c, 12d), said sleeve bearing (14) including a passageway (14b) permitting lubricating fluid to be introduced into the bearing system at the bearing surfaces of the sleeve bearing, said lubricating fluid introduced to the sleeve bearing and escaping therefrom being urged by rotation of the outer race to lubricate the rolling elements of the anti-friction rolling bearing.

4,641,978

BEARING SYSTEM

Davorin D. Kapich, Carlsbad, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 23, 1984, Ser. No. 663,857

Int. Cl.⁴ F16C 17/20, 32/04

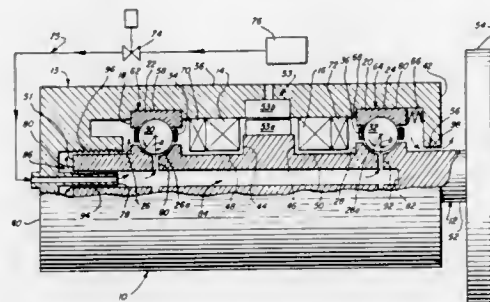
U.S. Cl. 384—102

11 Claims

1. A bearing system for supporting a rotating shaft on a housing, the bearing system comprising:
- a pair of primary bearings and a pair of backup bearings, each said backup bearing comprising an outer race supported on said housing, an inner race on said shaft, a plurality of rolling elements disposed between said races, and a retainer ring for constraining said rolling elements;
 - said primary bearings being operative to support said shaft during normal operation in a first predetermined position such that in each of said backup bearings said rolling elements contact only one of said races;
 - said backup bearings being configured so that upon axial displacement of said shaft in a predetermined direction from said first predetermined position to a second predetermined position said rolling elements in each bearing

contact both races and said shaft is supported by said backup bearings; and

shaft displacement means for selectively applying axial force to said shaft to displaced said shaft from said first predetermined position to said second predetermined position while said shaft rotates relative to said housing, said shaft displacement means including a chamber defined by surfaces on said housing and said shaft and means for introducing high pressure fluid into said chamber.



4,641,979
BEARING SYSTEM FOR FRACTIONAL HORSEPOWER
ELECTRIC MOTORS

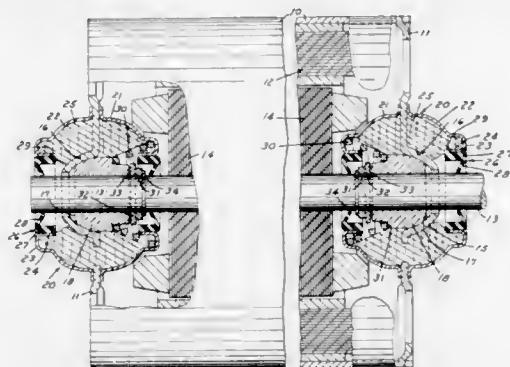
Thomas W. Stone, Owosso, Mich., assignor to Universal Electric Company, Owosso, Mich.

Filed Aug. 15, 1984, Ser. No. 640,980

Int. Cl.⁴ F16C 25/04

U.S. Cl. 384—146

13 Claims



1. A bearing system for fractional horsepower electric motors which comprises a shell supporting a stator, end members closing the ends of the shell, a shaft supporting a rotor within the stator and a bearing system on the end members rotatably supporting the shaft, said bearing system comprising
- a bearing member on said shaft and having an outer end and an inner end,
 - said end member having a seat for engagement by the outer end of said bearing member,
 - spring means yieldingly urging the bearing member against the seat,
 - oil slinger means on said shaft adjacent the inner end of said bearing member,
 - oil retention means associated with said end member and at least one inner seal adjacent one end of said rotor axially inwardly of said oil slinger means and having a radially inwardly extending deflectable lip for engaging the shaft and isolating the oil slinger means, oil retaining means and bearing with respect to the remainder of the shaft.

4,641,980

PRINTER WITH PIVOTABLE PRINT HEAD ATTACHED
TO MEDIUM CARRIER MOVEABLE THROUGH A
CASING OPENING

Norio Matsumoto; Shinya Okuda; Osamu Ohkuma, all of Kawasaki, and Mituyoshi Seino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

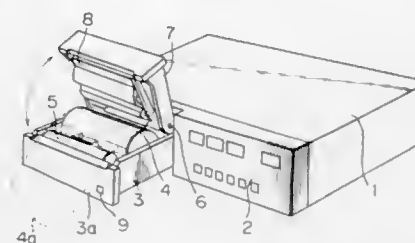
Filed Oct. 2, 1985, Ser. No. 782,922

Claims priority, application Japan, Oct. 2, 1984, 59-206734; Oct. 2, 1984, 59-206735; Oct. 2, 1984, 59-206736; Nov. 30, 1984, 59-253754; Nov. 30, 1984, 59-253755

Int. Cl.⁴ B41J 3/02

U.S. Cl. 400—120

9 Claims



1. A printer, comprising:
- a casing having a substantially cuboidal shape with an operation panel formed on a front face thereof;
 - a printing unit including
 - a printing medium-attaching portion, and
 - a printing head portion pivotably attached to the printing medium-attaching portion so that the printing head portion pivots between open and closed positions;
 - moving means for supporting said printing unit so that the printing unit can be drawn out from the front face of the casing, and for automatically positioning the printing head portion in the open position when the printing unit is drawn out from the casing; and
 - a control circuit for controlling the printing operation of the printing head portion.

4,641,981

DOT MATRIX PRINT HEAD

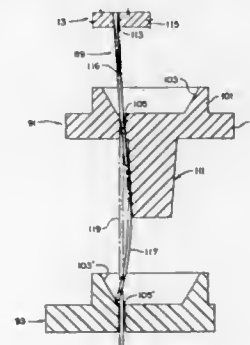
James E. Blomquist, and Robert H. Wilczewski, both of 203 E. Main, Riverton, Wyo. 82501

Division of Ser. No. 616,792, Jun. 1, 1984, which is a division of Ser. No. 499,208, May 31, 1983, abandoned, which is a division of Ser. No. 425,255, Sep. 28, 1982, Pat. No. 4,401,392, which is a continuation of Ser. No. 256,032, Apr. 21, 1981, abandoned, which is a division of Ser. No. 38,724, May 14, 1979, Pat. No. 4,279,518. This application Feb. 26, 1986, Ser. No. 833,836

Int. Cl.⁴ B41J 3/12; B23P 19/04

U.S. Cl. 400—124

3 Claims



1. A wire guide member for a dot matrix head, said wire guide member comprising:
- a main body portion having a planar surface and a rim por-

tion attached to and extending upwardly from said planar surface, said rim portion having a cam surface extending upwardly from said planar surface and outwardly of a first axis perpendicular to said planar surface, said cam surface intersecting said planar surface at a plurality of points forming a closed path, said wire guide member further including a plurality of holes through said main body portion, each of said holes extending along an axis substantially parallel to said first axis and being defined by at least a first surface, said first surface extending downwardly from said planar surface and inwardly of the axis of the respective hole to form a truncated conical shape, said first surface being positioned adjacent said cam surface and intersecting said closed path whereby print wires being advanced toward said wire guide member can first contact said cam surface of said rim portion and then move slideably therealong into one of said holes.

4,641,982

HOUSING COVER FOR PRINTERS

Rudolf Rekowitz, Waldstrasse 2a, D8190 Wolfratshausen, Fed. Rep. of Germany

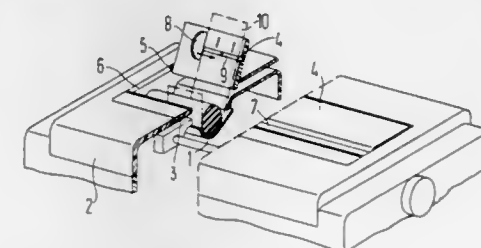
Continuation of Ser. No. 472,754, Mar. 7, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 701,665

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211757

Int. Cl.⁴ B41J 29/08

U.S. Cl. 400—690.1

13 Claims



1. A printer housing and cover for a printer having a platen area with a platen therein and a print head movable along the platen to imprint paper passing around the platen, said cover comprising a planar cover top surface overlying a top of said printer and having an opening above said platen area, a rearward opening between the printer housing and cover for entry of continuous paper, a paper exit slot in the cover above and towards the front of the platen area for exit of continuous paper and a cover top portion overlying the platen area, said cover top portion being connected to said cover by hinges, said cover and said hinges being disposed in a plane including said top surface, said hinges formed by lateral pins extending from said cover top portion and received in grooves in the sides of said openings so as to be forwardly and rearwardly translatable therein, said cover portion having a front edge defining a rear edge of the slot and being movable from a first position in said plane including said top surface substantially covering the platen area with the front edge of the cover top portion being spaced from portions of the cover to define the paper exit slot, the slot extending along the platen area and open to the top of the cover to a second position substantially uncovering the platen area for insertion of single sheets to the rear of the platen, the cover top portion in the second position having a portion projecting upwardly and rearwardly from the platen area and defining a paper guidance and support surface at the rear of the platen area for proper insertion of single sheet paper.

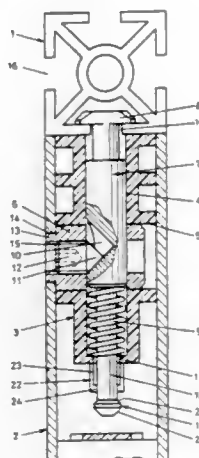
4,641,983

CLAMPING DEVICE FOR THE SEPARABLE CONNECTION OF TWO PROFILE SECTION PARTS
 Marcel Strässle, Kirchberg, Switzerland, assignor to Syma Intercontinental AG, Kirchberg, Switzerland
 PCT No. PCT/CH83/00120, § 371 Date Jun. 1, 1984, § 102(e)
 Date Jun. 1, 1984, PCT Pub. No. WO84/01801, PCT Pub. Date May 10, 1984

PCT Filed Oct. 28, 1983, Ser. No. 619,466
 Claims priority, application Switzerland, Nov. 1, 1982, 6346/82

Int. Cl.⁴ F16B 7/08, 9/00
 U.S. Cl. 403—12

4 Claims



1. In a clamping device for the separable connection of two profile section parts, an insertion core having a transverse bore and a rear part, said insertion core being located in one of the profile section parts, said other profile section part having a longitudinal groove, an axially movable, spring-loaded retaining pin having a front end and a rear end and being supported within said insertion core for axial movement therein, said retaining pin including a T-shaped head at said front end engaged in said longitudinal groove in the other profile section part, a threaded bush mounted in said insertion core transverse bore, a lateral conical recess within said retaining pin, and a conically pointed screw, guided in said threaded bush, being in eccentrically displaced engagement in said lateral conical recess of the retaining pin in order to displace the latter axially, the improvement comprising retention means forming a disconnectable engagement of said rear end of said retaining pin (7) and said rear part of said insertion core (3), and wherein said retention means comprises the rear end of the retaining pin having a rod (18) with a widened end part (21), and wherein the rear part of the insertion core being provided with spreading fingers (23) extending longitudinally along opposing sides of said retaining pin and terminating in inward protruding followers (24) engaged with the rod behind the widened end part thereof.

4,641,984

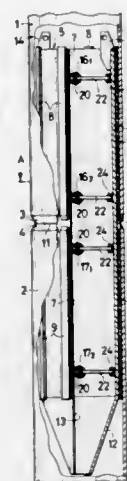
TUBE COUPLER, PARTICULARLY SUITABLE FOR PLATFORM FOUNDATION PILES
 Giuseppe Cianci, Milan, and Carlo Traverso, Rodano, both of Italy, assignors to 501 Saipem S.p.A., Milan, Italy
 Filed Sep. 30, 1985, Ser. No. 782,069
 Claims priority, application Italy, Oct. 11, 1984, 23113 A/84
 Int. Cl.⁴ B25G 3/00; F16B 7/00

U.S. Cl. 403—14
 1. A coupler for aligning tube sections to be welded together, comprising:

(a) a tube piece having upper and lower sections with an outside diameter less than the inside diameter of the tube sections to be welded and a first longitudinal slot coexten-

sive with the length of said tube piece having a width of about 1 decimeter;

(b) two pair of double-acting hydraulic cylinder piston units, each of said units being hinged at one end to the inner wall of said tube piece at a position opposite said longitudinal slot, the other end of said units being hinged to ends of two coplanar connecting rods, the other ends of said connecting rods being hinged to the inner wall of said tube piece on either side of said longitudinal slot;



(c) upper and lower sets of spacers positioned about the outer wall of said tube piece so as to provide a space between said tube piece and the tube sections to be welded; and

(d) a frusto-conical end piece attached to the lower section of said tube piece having a second longitudinal slot coextensive with the length of said end piece.

4,641,985

TEMPORARY EDGE TO EDGE SECUREMENT IN SPACE OF TWO PARTS

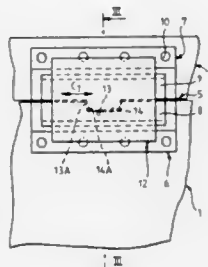
Max Bard, Cannes; Gérard Sibilo, Le Plan de Grasse; Georges Marelli, Mandelieu; Daniel Viale, Fayence, and Michel Louis, Nice, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed May 31, 1985, Ser. No. 739,858

Claims priority, application France, Jun. 5, 1984, 84 08783
 Int. Cl.⁴ F16B 1/04

U.S. Cl. 403—16

10 Claims



1. A device for temporary edge to edge securement in space of two parts along a contacting surface comprising: a plurality of retaining members distributed in pairs on either side of such contacting surface on each of said respective parts and a plurality of temporary connection members adapted to maintain said retaining members coupled to one another in each pair, with the retaining members in each pair being provided with complementary raised members for retainment thereof one relative to the other

according to a longitudinal direction parallel to said contacting surface on each of said respective parts in at least one direction, said retaining members in each pair forming conjointly a bulging tenon oriented longitudinally engaging a narrowing groove formed in a rider constituting a temporary connection member of such pair of retaining members, and an automatic release mechanism comprising a coordination element connected to the plurality of temporary connection members and adapted to disengage the latter through relative longitudinal movement between said connection members and said plurality of retaining members under the action of an opening mechanism.

4,641,986

MULTI-POSITION EYEBOLT

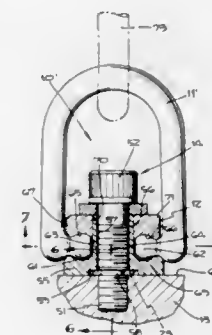
Gary Tsui, Rosemead, and Thomas Heimbigner, Bellflower, both of Calif., assignors to CBC Industries, Inc., Los Angeles, Calif.

Filed Aug. 30, 1985, Ser. No. 771,351

Int. Cl.⁴ F16G 15/08

U.S. Cl. 403—164

7 Claims



7. A multi-position fixture for fixed attachment to a base, said fixture comprising a base-engaging anchor assembly, respective outer and inner interlock members having potential axial movement relative to each other to interlock positions, at least one of said interlock members having an operative swivel engagement with the anchor assembly and adapted to rotate throughout substantially a full circle, a ring member comprising a loop and a transversely disposed pivot pin structure having opposite elements respectively joined to said loop in a spaced relatively axial relationship with respect to each other, each said element having a captive relatively smaller end at a junction with the loop and a free relatively larger end, said interlock members including complementary retention means on respective diametrically opposite sides of the fixture, each said complementary retention means having opposite pin retention portions movable relative to each other to interlock engagement with the pivot pin structure whereby in operation the pivot pin structure is adapted to occupy a locked-in location between said interlock members during movement of said ring member throughout an arc of substantially a half circle for all full circle positions of rotation of said outer interlock member.

4,641,987

CLIP FOR SUSPENDED CEILING GRIDWORK
 Gary R. Schlegel, 1449 Plymouth Ave., Irwin, Pa. 15642
 Filed Jun. 28, 1985, Ser. No. 749,771

Int. Cl.⁴ F16B 9/00

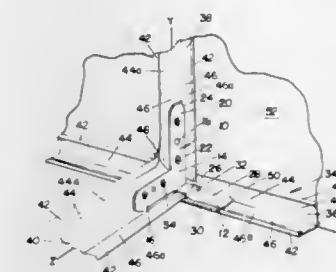
U.S. Cl. 403—169

3 Claims

1. A clip assembly for connecting at least a first and a second L-shape member together in an angular disposition where at least said first L-shape member has an opened channel, comprising:

at least a first and a second prong disposed in an angular

disposition relative to each other, corresponding to said angular disposition of said L-shape members, said first prong having a stepped construction with a first and a second level where said first level has a widened surface area with a lip receivable in said opened channel of said first L-shape member whereby said widened surface area of said first prong is securable by a wedging action to



said first L-shape member in a supporting relationship thereof, and said second level of said first prong has an indented surface area with a width less in dimension than said first level of said first prong with surfaces overlying said second L-shape member, said second prong integrally connected to said first prong and securable to said second L-shape member in a supporting relationship thereof.

4,641,988

FITTING FOR RELEASABLY JOINING TWO STRUCTURAL COMPONENTS

Erwin Ganner, Weissenbachstrasse 21, A-6410 Telfs, Austria
 PCT No. PCT/AT82/00022, § 371 Date Nov. 18, 1983, § 102(e)
 Date Nov. 18, 1983, PCT Pub. No. WO83/03287, PCT Pub. Date Sep. 29, 1983

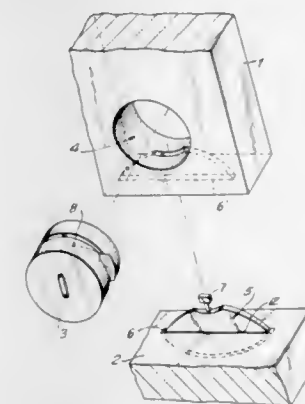
PCT Filed Jul. 19, 1982, Ser. No. 563,383

Claims priority, application Austria, Mar. 18, 1982, 1076/82; May 18, 1982, 1961/82

Int. Cl.⁴ B25G 3/00; F16B 9/00

U.S. Cl. 403—245

12 Claims



1. Fitting assembly for releasably joining furniture parts comprising a first and a second plate-shaped structural furniture component with said components extending at right angles to one another, said first and second components each having a pair of opposite surfaces and an edge surface extending transversely of the opposite surface, said first structure component having a bore therein extending at least from one opposite surface toward the other opposite surface and spaced from the edge surface of said first structural component, an axially extending cylindrical locking element fitted into the bore in said first structural component and being rotatable in said bore about the axis of said locking element, said second

structural component having a slot formed in only one of the pair of opposite surfaces and edge surface, a holding piece fixedly secured in the slot formed in the surface of said second structural component and said holding piece projecting perpendicularly outwardly from the surface containing the slot, said holding piece having a holding projection thereon on the part of said holding piece projecting outwardly from said second structural component, the edge surface of said first structural component has a slot formed therein and extending inwardly from the edge surface thereof and being open to the bore in said first structural component, said locking element has at least one gripping surface thereon, said holding piece being insertable into the slot in the edge surface of said first structural component with said holding projection extending into the cross-section of said bore in said first structural component, said locking element being rotatable within said bore so that said at least one gripping surface thereon engages said holding projection and pulls said holding piece into the slot in said first structural component toward the locking element, and said holding piece is a disc-like member having a pair of opposite flat sides and an edge surface defining the boundary of said flat sides and with said holding projection extending outwardly from said edge surface thereof in the direction extending perpendicularly to the surface in which the disc-like member is secured in said second structural component, said slots in said first and second structural components having flat side surface, and said flat sides of said holding piece being disposed in generally parallel relation with the sides of said slots.

4,641,989

PIPE HANGER EXTENSION CLIP

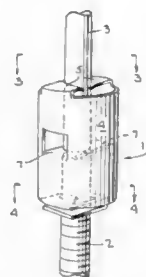
Frank J. Maddi, Somerset, N.J., assignor to Joule' Inc., Orange, N.J.

Filed Feb. 13, 1986, Ser. No. 828,907

Int. Cl.⁴ F16D 1/00

U.S. Cl. 403—302

10 Claims



1. An improved extension clip for connecting a smooth rod to a threaded rod comprising:

- a hollow body with rod engaging clinch ears positioned at one end of said body,
- thread forming means at an opposite end of said body; and
- stop means positioned within the body intermediate said clinch ears and said thread forming means for positioning said smooth rod and said threaded rod;
- said body having a pair of said clinch ears; and
- each clinch ear having an angled end portion including a V-notch.

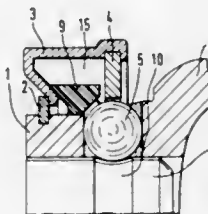
4,641,990
DRIVELINE COUPLING WITH SAFETY INTERLOCK MECHANISM LATCHABLE IN THE OPEN POSITION
 Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
 Filed Mar. 21, 1986, Ser. No. 842,544

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3511577

Int. Cl.⁴ F16B 7/00

U.S. Cl. 403—317

4 Claims



1. A coupling assembly including a lock latchable in the unlocked position particularly for connecting a universal shaft for driving an agricultural implement with a power takeoff shaft of a tractor comprising:

- a coupling sleeve having an axial bore defined therein adapted to receive in torque transmitting engagement a power takeoff shaft having an annular groove formed therein;
- radial apertures defined in said coupling sleeve;
- locking members received in said radial apertures for engaging in an annular groove formed in a power takeoff shaft received in said axial bore for effecting locked engagement between said power takeoff shaft and said coupling sleeve;
- said coupling sleeve being adapted to be brought into locked engagement with a power takeoff shaft by movement relative thereto in a slip-on direction and to be brought into an unlocked position by movement in an opposite direction;
- a lock ring engaging about said locking members to hold said coupling assembly in locked engagement;
- a gripping sleeve connected with said lock ring;
- a resilient spring washer having an axial slit formed therein enabling said spring washer to expand and contract radially;
- a first conical face formed on the side of said spring washer mating with a first complementary conical face formed on said gripping sleeve;
- a second conical face on said spring washer on the side thereof opposite said first conical face mating with a second complementary conical face formed on said coupling sleeve;
- a cylindrical seating face formed on said coupling sleeve adjacent said second complementary conical face; and
- a cylindrical inner bore formed on said spring washer adapted to seat on said cylindrical seating face when said washer is radially expanded by being urged by said gripping sleeve against said second complementary conical face to place said coupling assembly in an arrested unlocked position.

4,641,991

CONNECTOR FOR REINFORCING RODS

Yūbei Yaolta, No. 75, Oaza Hataya, Nishikawa-machi, Nishi-Kanbara-gun, Niigata-ken, Japan

Filed Jun. 28, 1985, Ser. No. 750,702

Claims priority, application Japan, Jun. 29, 1984, 59-98777[U]

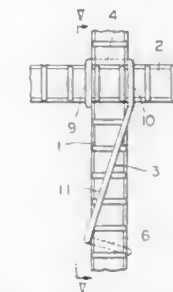
Int. Cl.⁴ B25G 3/36; E04G 7/00

U.S. Cl. 403—397

3 Claims

1. A wire connector for mutually perpendicular reinforcing rods, comprising: an elongated resilient wire member having a

laterally extending upper portion which is substantially U-shaped in plan view and defines a first space that is open along the front lateral side thereof whereby a first reinforcing rod can extend upwardly through said first space so that its rear side bears against the bight of said U-shaped upper portion, a pair of substantially parallel feet portions extending downwardly from the free ends of the legs of said U-shaped upper portion, said feet portions being curved in a rearward direction as they extend downwardly to define a second space that opens rearwardly whereby a second reinforcing rod positioned in front of and extending at a right angle to said first reinforcing rod can be engaged by said feet portions and pressed against the front side of said first reinforcing rod, said wire member having a middle portion that extends downwardly from the lower end of one of said feet portions on one side of said first



space and also extends obliquely toward the opposite side of said first space as it extends downwardly whereby said middle portion is adapted to extend in front of and across said second reinforcing rod below said feet portions of said wire member, said wire member having a lower portion extending laterally from the lower end of said middle portion, said lower portion being substantially U-shaped in plan view and defining a third space that is longitudinally aligned with said first space and also is open along the front lateral side thereof, said middle portion of said wire member being resiliently deformable whereby said lower portion can be moved to contact the rear side of said first reinforcing rod so that said first reinforcing rod extends upwardly through said third space and said lower portion urges said first reinforcing rod so that it extends perpendicularly to said second reinforcing rod.

4,641,992

ROD JOINT

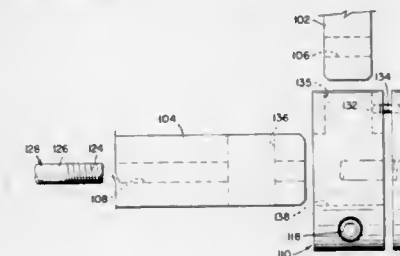
Anthony F. Patroni, Margate, N.J., assignor to Boardwalk Regency Corporation, Atlantic City, N.J., a part interest

Filed Apr. 1, 1986, Ser. No. 846,855

Int. Cl.⁴ B25G 3/08

U.S. Cl. 403—382

2 Claims



1. In a joint for connecting an arm to a shaft wherein the shaft has a longitudinal bore and a transverse passage therethrough intersecting the longitudinal bore and an end portion of the arm engaging in the transverse passage in the shaft and a hole therethrough registering with the longitudinal bore of the shaft and an assembly bolt disposed in the longitudinal bore of the shaft and extending through the hole in the arm, the improvement which comprises:

- a split collar having an axial bore therethrough engaging

over the shaft and a radial bore registering with the transverse passage through the shaft and accommodating the arm, means for drawing the collar tightly against the arm, and means for clamping the collar around the shaft.

4,641,993

HIGHWAY BARRIER WITH LEVEL INTERNAL DUCTS AND CONSTRUCTION METHOD

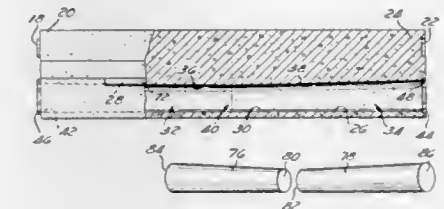
Walter B. Hahne, Corona Del Mar, Calif., assignor to Associated Concrete Products, Santa Ana, Calif.

Continuation-in-part of Ser. No. 607,429, May 7, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,083

Int. Cl.⁴ E01C 11/22; E01F 13/00

U.S. Cl. 404—4

3 Claims



1. A method for forming a roadway barrier section having a duct therein comprising the steps of:

- placing a first frusto-conically shaped mold plug in a concrete form;
- placing a second frusto-conically shaped mold plug in the concrete form;
- positioning the first and second mold plugs end to end with the smaller end of each plug abutting each other;
- aligning one frusto-conical side of the first plug with one frusto-conical side of the second plug to form a continuous mold for the duct, said aligned sides defining a substantially straight line the entire length of the duct, for forming a duct which has one side, which when the barrier is in use is disposed as the bottom of the duct, defining a substantially straight line, the top side of the duct defining a center portion which is smaller than the end portions of the duct;
- pouring concrete into said form;
- allowing the concrete to cure; and
- removing the first and second mold plugs from the concrete.

4,641,994

PARKING GUIDE

Paul M. Hankison, 106 Oakwood Rd., McMurray, Pa. 15137

Filed Jan. 24, 1985, Ser. No. 694,586

Int. Cl.⁴ E01F 13/00

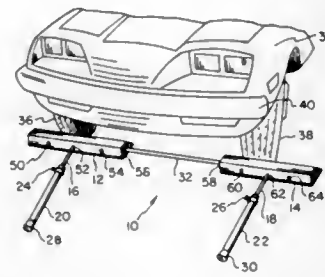
U.S. Cl. 404—6

9 Claims

1. A parking guide for positioning a vehicle having at least two wheels thereon a predetermined distance from a boundary, comprising:

- first and second incline means each having a first surface abutting a spacing means, a second surface abutting one of two extension means, and an inclined surface thereon, said first surface having an inset therein and said second surface having a plurality of insets therein;
- wherein said spacing means connects said first and second incline means at a predetermined distance in a line; and
- wherein said two extension means is a first and second extension means attached to said first and second incline means and extending generally horizontally and generally perpendicularly from said line formed by said incline means

and said spacing means, said extension means being adapted to abut against a solid boundary whereby said



incline means are positioned a predetermined distance from said boundary.

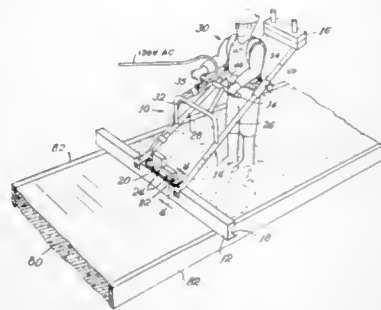
4,641,995

USER-MOUNTED CONCRETE SCREED

Joe M. Owens, 842 Lake Holiday Dr., Sandwich, Ill. 60548
Continuation-in-part of Ser. No. 690,733, Jan. 11, 1985, Pat. No. 4,591,271. This application Aug. 30, 1985, Ser. No. 771,494
The portion of the term of this patent subsequent to May 27, 2003, has been disclaimed.
Int. Cl.⁴ F01C 19/22

U.S. Cl. 404—118

16 Claims



1. A portable screed for working concrete as the screed is moved across the concrete, the screed being configured to be mounted on and piloted by a human being, comprising
 - a. a screed plate for working concrete,
 - b. means to impart vibrations to the screed plate for tamping and leveling the concrete,
 - c. an elongated frame,
 - d. means pivotally connecting one end of said frame to said screed plate,
 - e. a body harness connected to said frame intermediate the ends thereof, and
 - f. balancing means connected to said frame for positioning the center of gravity of said screed at the vicinity of the connection of said harness to said frame, said balancing means including a weight attached to said frame adjacent the end thereof opposite to said screed plate such that said weight counterbalances said screed to thereby so position said center of gravity.

4,641,996

SIDE LOADING BOAT LIFTS

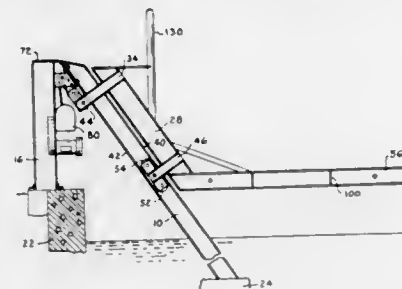
Morton Seal, Rte. 1, Box 483-C, Fort Myers, Fla. 33905
Filed Sep. 20, 1984, Ser. No. 652,265
Int. Cl.⁴ B63C 3/04, 3/08

U.S. Cl. 405—2

9 Claims

1. A side loading boat lift comprising a plurality of fixed longitudinally spaced masts, a cooperating rail fixed to each of the masts and extending at an angle into the water, a boat carrier slidably mounted on each of the rails, a horizontal boat

supporting extension secured to each of the boat carriers to underlie and engage the keel of the boat to be lifted, a cable winch housing having a winch secured to each of the masts, a housing having a pulley interposed between each of the masts and its associated rail to rigidify the construction and to position the rails at a predetermined angular relation to the masts,



a yoke having a pulley secured to the boat carriers and extending to the space between the masts and the rails, a cable fixed to the housing and extending over the pulleys journaled in the boat carrier yoke and the housing and extending to the winch to elevate and lower the boat carriers relative to the rails to elevate the boat out of the water or to lower it into the water.

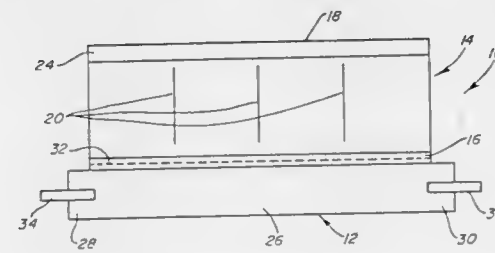
4,641,997

SYNTHETIC SEAWEED KIT AND SYNTHETIC SEAWEED MATRIX FORMED THEREBY

John F. Lauer, 627 Lincoln Dr., Twin Lakes, Wis. 53181; Ronald Greenberg, 4135 Hudson Dr., Hoffman Estates, Ill. 60195, and Raymond A. Van De Walle, 10365 Deerlove Rd., Glenview, Ill. 60025
Continuation-in-part of Ser. No. 448,375, Dec. 27, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,501
Int. Cl.⁴ E02B 3/04

U.S. Cl. 405—24

8 Claims



1. A synthetic seaweed kit comprising:

- a. A plurality of synthetic seaweed units, wherein each seaweed unit is constructed of flexible, woven, high density polyethylene material slit into ribbons, woven to form a base material and coated with a low density polyethylene material with the various layers bonded together through melting, which is stitched in such a way as to create a cylindrical tube at its base having a first and second end, one of which is stitched closed, the remainder of the flexible material extends outwardly from said cylindrical tube and terminates at a free-end portion which includes closed pockets containing buoyant material;
- b. At least one opening spaced from said free-end portions; and
- c. A plurality of means for interconnecting each said synthetic seaweed unit to at least two other synthetic seaweed units to form a grid.

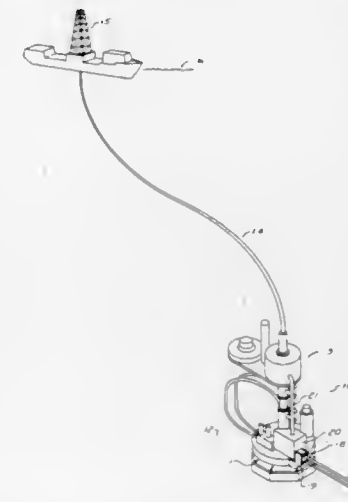
4,641,998

UNDERWATER CONNECTION APPARATUS

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079
Filed Aug. 1, 1985, Ser. No. 761,617
Int. Cl.⁴ E21B 43/01

U.S. Cl. 405—169

10 Claims



1. In a subsea system for the production of oil or gas from subsurface formations or the injection of liquids or gases into subsurface formations, a subsea system for landing and securing ocean floor flowlines to said system, comprising

- a flowline receiving structure having two side plates which are spaced apart, a first circular hole in each side plate on a first centerline, and a circular projection on each side plate about said first centerline;
- a flowline end connection suitable for attaching directly to the flowlines before the flowlines are lowered into the water including a first spring loaded pin on each side of the flowline end connection on a second centerline with said second centerline being at right angles to the centerline of said flowlines, a funnel shaped means with a cylindrical stop surface at the bottom of said funnel shaped area on each side of said flowline end connection with said cylindrical stop surface about said second centerline, and circular fixed pin members on each side of said flowline end connection for attachment of pulling tool means also about said second centerline;
- a pulling tool means with a guidance nose means including attachment means for engaging said circular fixed pin members and a connection to a wire rope or the such like, a receptacle means for receiving and positioning said guidance nose means, and a wire rope means which can be tensioned to pull said guidance nose means toward and into said receptacle means;
- said attachment means including cylinder assemblies about a third centerline with a piston means with a rod portion with a recess, a spring to urge said piston means to an extended position, and a piston area to retract said piston to a retracted position when pressured; said recess fitting over said circular fixed pin members in said extended position and retracted away from said circular fixed pin members in said retracted position such that when said guidance nose means is attached to said flowline end connection said third centerline is concurrent with said second centerline;
- said pulling tool means provides alignment means for said guidance nose means as said guidance nose means is pulled into said receptacle means including a key member and a guidance diameter on said guidance nose and a helical cam and a roller guidance diameter formed by rollers on said receptacle means such that when said guidance nose means is drawn into said receptacle means by said wire rope said key member works with said helical cam and

said guidance diameter works with said roller guidance diameter such that said third centerline and therefore said second centerline is brought into a concurrent position with said first centerline as said funnel shaped means and said cylindrical stop surface engages said circular projection allowing said first spring loaded pins to engage said first circular holes in said side plates thereby providing a fixed connection between said flowline receiving structure and said flowline end connection which can be made at varying angles of said flowlines and still allows a vertical angular degree of freedom for said flowlines; said side plates each also having a second circular hole about a fourth centerline parallel but spaced apart a fixed distance from said first centerline and said flowline end connection having a second spring loaded pin members on each side of the flowline end connection on a fifth centerline parallel but spaced apart said fixed distance from said second centerline such that when said flowline end connection is brought to the horizontal elevation, said second spring loaded pin members will engage said second circular holes and lock said flowline end connection and therefore said flowlines from vertical movement.

4,641,999

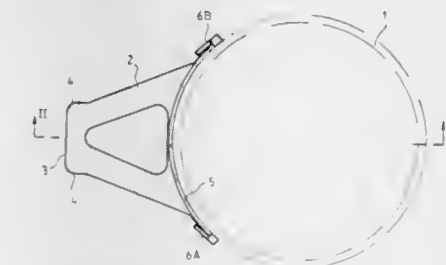
MEANS FOR PROTECTING SUPPORT STRUCTURES OR SIMILAR FROM SHOCKS

Gergely Korbuly, Chatou, France, assignor to Hutchinson SA, Paris, France

Filed Oct. 26, 1984, Ser. No. 664,962
Claims priority, application France, Oct. 28, 1983, 83 17321
Int. Cl.⁴ E02B 3/22

U.S. Cl. 405—215

7 Claims

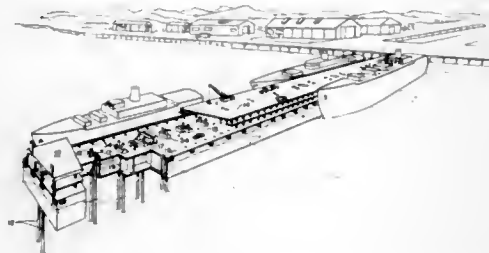


1. An alongside fender for protecting a curved support structure against shocks applied thereto, comprising:
 - a frame which is curved and has a conforming radius substantially equal to the radius of said curved support structure;
 - a shock absorbing rubber member firmly secured to said frame; and
 - detachable fixing means positioned on opposite sides of said frame for securing said frame to said support structure, said fixing means comprising:
 - a first and second member which are fixed to said support structure and to said frame, respectively, and interconnecting means allowing these members to cooperate as a fixing means, namely locking said frame in position on said support structure.

4,642,000
ANCHORING SYSTEM FOR CONCRETE FLOATING
PIER

Tung Y. Lin, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1985, Ser. No. 757,402
Int. Cl.⁴ E02B 3/20, 17/00; B63B 21/00
U.S. Cl. 405—221 9 Claims



1. An anchoring system for a floating pier, the combination comprising:

- a section of floating pier including deck areas and a plurality of enclosed buoyancy compartments for providing floatation thereof;
 - a plurality of rectangular wet cell compartments located along the centerline of said pier section with the longitudinal dimension of said compartment perpendicular to the pier centerline; said wet cell compartments being fully open to the sea at the bottom thereof;
 - the top of each of said wet cell compartments including opening means located in said pier deck areas for the installation and operation of pier anchoring means;
 - pier anchoring means installed in each of said wet cell compartments for anchoring said section of floating pier to the seafloor against horizontal forces while allowing said section of floating pier to rise and lower with the tide and also to remain level during lateral displacement thereof; said pier anchoring means comprising a pair of spaced apart vertical piles which glide vertically within pile guide means mounted in each of said wet cell compartments; the pile spacing of said pair of vertical piles being at least three pile diameters apart to avoid pile group effect; said pile guide means include a plurality of impact force absorption pads with glide plates on their outer surface which slide along said vertical piles; metal rubbing plates being mounted vertically along the outside of said vertical piles against which respective glide plates on said absorption pads slide;
 - said wet cell compartments allowing space for bending motions of said pier anchoring means when said floating pier section moves against horizontal forces;
- wherein, said floating pier anchoring system provides effective anchoring for withstanding lateral displacements caused by seismic loads and maximum static loads due to high winds and currents.

4,642,001
SPADE DRILL WITH REPLACEABLE CUTTING-INSERT
CARRIER

Geoffrey Y. Gill, Rte. #3, Box #140, Hart, Mich. 49420; Paul H. Hunter, 2356 Norcrest, Muskegon, Mich. 49441, and Gerard W. Venlet, 2140 Lakeridge Dr., Holland, Mich. 49423

Filed Oct. 31, 1983, Ser. No. 547,469
Int. Cl.⁴ B23B 27/10
U.S. Cl. 408—59 1 Claim

- A drilling tool comprising:
a cantilever holder having axial chip grooves formed by surfaces extending along opposite sides thereof, said holder having a diametral recess across the end thereof,

said holder also having a mounting portion establishing an axis of rotation;
a blade body receivable in said recess, and having abutments engageable with surfaces on said holder transverse to said groove surfaces to position said body laterally with respect to said holder, said body having receptacles for receiving cutting inserts, said receptacles being disposed to position said cutting inserts at locations on opposite sides of said axis of rotation and eccentric with respect to each other about said axis, one of said receptacles being disposed to position a cutting insert to cut to the said axis of rotation, and said receptacles establish cutting insert positions wherein the cutting edges of said inserts are

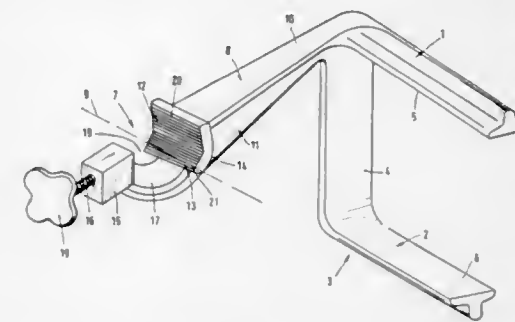


parallel to each other and inclined to said axis of rotation; and
cross-pin means interengageable with said blade body and holder to maintain the assembled relationship thereof, said holder having a central axial bore providing a coolant passage extending to said recess, and said blade body having a transverse hole receiving said cross-pin means, a first passage terminating at said hole and communicating with said coolant passage of said holder and extension passages terminating at said transverse hole and disposed to deliver coolant to positions adjacent said receptacles, said cross-pin means intersecting said transverse hole with clearance providing for coolant flow around said cross-pin means.

4,642,002
HOLDER FOR MOTOR DRIVEN TOOLS
Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to REMS-WERK Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany
Filed Dec. 9, 1983, Ser. No. 559,914
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245894
Int. Cl.⁴ B23G 1/24
U.S. Cl. 408—105 26 Claims

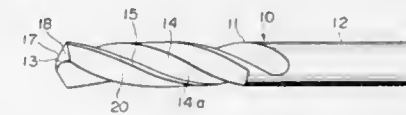
- A holder for a motor-driven tool, especially a motor-driven thread-cutting diestock, comprising:
support means for supporting said tool against reaction torque which occurs during operation of said tool;
a clamping device which is rigidly provided on said holder and is adapted to be fastened onto a workpiece which is to be handled; said clamping device having an axis which determines the position of said workpiece while allowing movement of the tool along said axis relative to the support means; said clamping device being open transverse to said axis as an aid during insertion of said workpiece therewith; said support means being connected to said

clamping device, said clamping device and support means being rigidly connected with respect to each other; and



a spindle fixed to and movable relative to said clamping device for effecting fastening of the latter onto said workpiece.

4,642,003
ROTARY CUTTING TOOL OF CEMENTED CARBIDE
Hironori Yoshimura, Tokyo, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Japan
Filed Aug. 22, 1984, Ser. No. 643,278
Claims priority, application Japan, Aug. 24, 1983, 58-130600
Int. Cl.⁴ B23C 51/16; B23P 15/34
U.S. Cl. 408—144 6 Claims

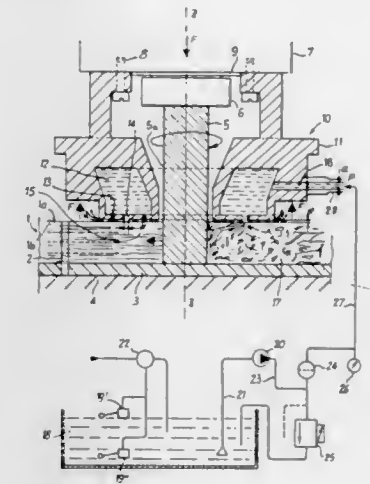


- A rotary cutting tool, which comprises:
an elongated solid body, the solid body being composed of cemented carbide and containing cobalt, the elongated body including an interior portion containing cobalt and an exterior surface, the exterior surface including a relatively cobalt-rich unground surface portion and relatively cobalt-poor ground surface portions, the cobalt-rich unground surface portion having a cobalt content that is greater than the cobalt content of the cobalt-poor ground surface portions and the cobalt content of the interior portion;
the elongated body having opposite first and second ends and including a shank portion formed at the first end, a cutting portion formed at the second end and including a relief surface and a cutting edge formed on the relief surface, and an intermediate portion interposed between the first and second ends and having at least one flute formed therein and at least one land adjacent the flute, the cobalt-poor ground surface portions of the elongated body being situated at the shank portion, land and relief surface of the elongated body, the cobalt-rich unground surface portion of the elongated body being situated at the flute of the elongated body.

4,642,004
MACHINING DEVICE PROVIDED WITH A
BLANK-PRESS CONNECTED TO THE TOOL AND
BLANK-PRESS FOR SUCH A DEVICE
René Matifas, Albert, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Sep. 6, 1985, Ser. No. 773,293
Claims priority, application France, Sep. 12, 1984, 84 13995
Int. Cl.⁴ B23C 5/28, 3/12
U.S. Cl. 409—136 5 Claims

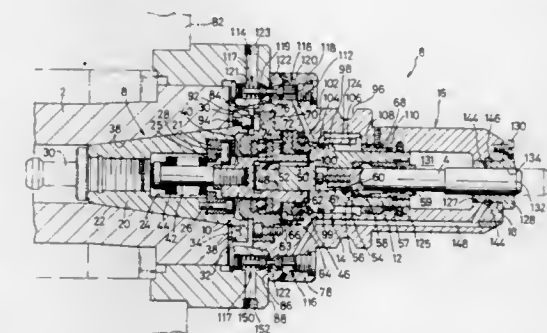
- In a device for machining a workpiece by means of a rotating tool mounted in a tool-holder and attacking said work-

piece with a lateral machining surface, said device comprising means for imparting a movement of relative displacement between said workpiece and said tool-holder, as well as a blank-press connected to said tool-holder and exerting a local pressure on a flat face of said workpiece in the vicinity of that part thereof being machined, said blank-press being provided with an annular chamber surrounding said tool and obturated opposite said workpiece by a flat face traversed by a plurality of orifices of predetermined diameter; said annular chamber



comprising means for connection to a source of fluid under pressure, said means for connecting the chamber to the source of fluid causing a resistance in the fluid passing therethrough; and said fluid emerging from the annular chamber through said orifices creating in the interface space between the flat face of the workpiece and the flat face of the annular chamber a fluid film for lift, said orifices causing a resistance to said fluid passing through said orifices, and said fluid film for lift encountering a resistance as said fluid film escapes laterally from the interface space.

4,642,005
HOLDER FOR ROTARY CUTTING TOOLS
Kunio Kondo, Katutoshi Haga, Minoru Haga, Yasuo Kato, and Shinobu Kaneko, all of Toyota, Japan, assignors to Fuji Seiko Limited and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan
Filed Sep. 6, 1984, Ser. No. 647,889
Claims priority, application Japan, Sep. 14, 1983, 58-170456
Int. Cl.⁴ B23C 5/26
U.S. Cl. 409—232 16 Claims



- A tool holder for holding a rotary cutting tool, attachable to a spindle of a machine tool for rotary cutting movement of the cutting tool, said spindle having a longitudinal axis about

which it is rotatable, and said machine tool having a substantially stationary body, the holder comprising:

- a holder body fixed to the spindle for rotation therewith about the axis of the spindle;
- a rotatable shaft disposed concentrically with said holder body and having a tool-mounting portion at one end thereof to hold said cutting tool, said rotatable shaft being coupled at the other end portion thereof to said holder body for receiving torque from said holder body, said rotatable shaft being axially and radially displaceable and inclinable relative to said holder body;
- a positioning member fixedly disposed on the machine tool body radially outwardly of said spindle;
- a casing disposed radially outwardly of and rotatably engaged with said rotatable shaft such that said casing and said shaft are rotatable relative to each other, said casing being engageable with said positioning member for accurate positioning thereof by the positioning member, thereby flexibly connecting said rotatable shaft to said holder body while simultaneously accurately positioning said rotatable shaft with respect to said machine tool body when said holder body is fixed to said spindle; and
- a guide bushing fixedly supported at one axial end portion of said casing remote from said holder body, said guide bushing having a bore engageable with an outer circumferential surface of a guide portion of said cutting tool held by said tool-mounting portion of said rotatable shaft, for rotatably guiding the cutting tool.

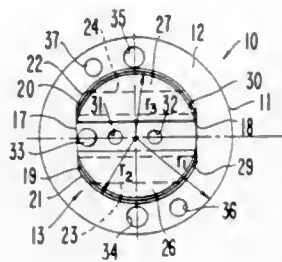
4,642,006

TOOL MOUNTING

Sven A. O. Wirfelt, N.-Liebersbach, Fed. Rep. of Germany, assignor to Santrade Limited, Lucerne, Switzerland
Filed May 20, 1985, Ser. No. 735,763

Claims priority, application Sweden, May 25, 1984, 8402831
Int. Cl.⁴ B23C 7/00; B23B 43/00
U.S. Cl. 409—233

21 Claims



1. A tool assembly comprising

(1) a tool element for carrying a cutter and including

- (1A) an annular tap projecting longitudinally outwardly from an end of said tool element, said tap defining a first longitudinal axis and including a pair of radially spaced projections defining therebetween a through-hole having an axis extending radially with respect to said longitudinal axis, said hole being open in a longitudinally outward direction by means of a slot formed between longitudinally outer ends of said projections, said hole including first cam surface means oriented to produce radially outward separation of said projections when acted upon in a longitudinally outward direction, said projections carrying circumferentially aligned radially outwardly facing centering surface means extending coaxially about said first longitudinal axis, and
- (1B) first positioning surface means,

(2) a housing,

(3) a tightening mechanism mounted in said housing for tightly securing said tool element, said tightening mechanism comprising:

- (3A) a rotary spindle mounted in said housing for rotation about a second longitudinal axis, said rotary spindle including wall means forming an annular socket which

is coaxial with said second axis and open at one longitudinal end thereof, said socket sized to longitudinally receive said tap, said wall means including annular guiding surface means facing radially inwardly and arranged coaxially with respect to said second longitudinal axis at a radial spacing corresponding to that of said centering surface means,

- (3B) a drawbar mounted within said socket for longitudinal reciprocable movement relative to said wall means and constrained against rotational movement relative to said wall means, said drawbar including a head at an end thereof facing said open end of said socket, said head configured to be radially received in said hole of said tap, said drawbar being movable longitudinally to a tool exchange position in which said head positions said tap completely longitudinally outside of said housing such that no portion of said housing overlies said tap in any radial direction, said drawbar carrying:

(3Bi) second positioning surface means engageable with said first positioning surface means when said first and second longitudinal axes are mutually aligned, to resist further radial movement between said tap and said head, and

(3Bii) second cam surface means engageable with said first cam surface means to spread said projections radially apart, and

- (3C) means for reciprocating said drawbar and tool element between:

(3Ci) a tool securing position within said socket such that said second cam surface means acts against said first cam surface means to pull said tap longitudinally within said socket while urging said projections radially outwardly to press said centering surface means firmly against said guiding surface means for mutually aligning said first and second longitudinal axes, and

(3cii) said tool exchange position wherein said head and tap are situated longitudinally completely outside of said housing for radial exchange, and

- (4) a gripping element movable in a radial direction toward and away from said head when said head is in said tool exchange position, said gripping element including means for gripping said tap for selectively moving said tap radially onto and from said head.

14. A tool securing apparatus for securing a tool element of the type comprising a longitudinally extending, radially expandable annular tap having a radially extending hole therein, said tightening apparatus comprising:

(1) a housing,

- (2) a rotary spindle mounted within said housing for rotation about a longitudinal axis, said spindle including an annular socket open at a longitudinal end thereof for receiving said tap of said tool element, said socket defined by an annular wall which includes a pair of longitudinally spaced, annular guiding surfaces oriented coaxially relative to said longitudinal axis, one of said guiding surfaces disposed closer to said open end of said socket and having a larger radius than the other guiding surface,

- (3) a drawbar mounted in said socket for longitudinal reciprocable movement therein relative to said wall, said drawbar constrained against rotation relative to said wall, said drawbar including a head disposed at a front end thereof, said head sized for entry within said hole of said tap in a direction which is radial relative to said axis, said head including:

(3A) cam means for engaging and expanding said tap radially outwardly in response to movement of said drawbar in a longitudinally inward direction tending to pull said tap into said socket, and

(3B) positioning means engageable with positioning means on said tap for defining therewith yieldable positioning means for yieldably positioning said tap in alignment with said longitudinal axis, and

- (4) means for reciprocating said drawbar between

(4A) a tool securing position within said socket such that said cam means pulls said tap longitudinally within said socket while expanding said tap radially outwardly into firm engagement with said guiding surface means, and

(4B) a tool exchange position wherein said head and tap are disposed completely longitudinally outside of said housing to permit radial exchange of said tool element.

18. Tool element of the type which is to be secured within a rotary spindle by means of a drawbar which pulls the tool element into a socket of the spindle after the tool element has been mounted on the drawbar by a gripping member, said tool element comprising an annular tap projecting longitudinally outwardly from an end of said tool element, said tap defining a longitudinal axis and including a pair of radially spaced projections defining therebetween a through-hole having an axis extending radially with respect to said longitudinal axis, said hole being open in a longitudinally outward direction by means of a slot formed between longitudinally outer ends of said projections, said hole including cam surface means oriented to produce radially outward separation of said projections when acted upon in a longitudinally outward direction by said drawbar, said projections carrying first and second centering surfaces, said centering surfaces facing radially outwardly and each comprising circumferentially aligned surface portions on said projections, said first and second centering surfaces being longitudinally spaced along said tap and having first and second radii, respectively, the one of said centering surfaces disposed closer to a longitudinally outer end of said tap having a smaller radius than the other centering surface, said tap including a radially outwardly facing groove by which said tap may be engaged by a gripping member to be inserted onto or removed from said drawbar, said tap including positioning means engageable with corresponding positioning means on said drawbar when said tap reaches a predetermined position thereon for resisting further radial movement of said tap.

4,642,007

PALLETIZED CYLINDER DISTRIBUTION SYSTEM

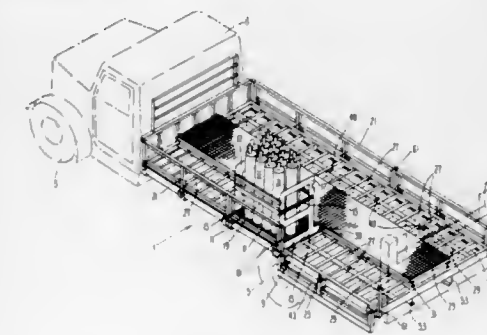
Michael S. Marshall, Sboemakersville, and Vernon R. Ingham, Phoenixville, both of Pa., assignors to MG Industries, Valley Forge, Pa.

Filed Mar. 29, 1985, Ser. No. 717,852

Int. Cl.⁴ B62D 23/00

U.S. Cl. 410—78

5 Claims



4. Apparatus for transportation and distribution of a plurality of gas cylinders, comprising:

- (a) at least two pallets, each of the pallets having a base, each of the pallets being capable of holding at least two gas cylinders on a surface defined by the base, and
- (b) a network of cross members, the network comprising support means for the pallets, the network being affixed to a vehicle,
- (c) the network defining a path which is raised relative to the remainder of the network, the network being capable of holding pallets on both sides of the path, the path being distinct from any of the pallets,

(d) the pallets being open on one side, the open side being adjacent the path,

(e) the base of the pallets being of sufficient height that the surface of the pallets, on which the cylinders rest, is substantially level with the path.

4,642,008

EXPANSION DOWEL

Armin Herb, Peissenberg, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft

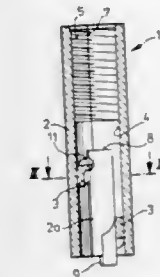
Filed Jul. 8, 1985, Ser. No. 752,917

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1984, 3425237

Int. Cl.⁴ F16B 13/04

U.S. Cl. 411—16

7 Claims



1. Expansion dowel comprising an axially elongated sleeve-shaped dowel body having a leading end for insertion first into a borehole and a trailing end, said dowel body forming a bore extending between the leading and trailing ends thereof, said dowel body having axially extending slits therein extending from the leading end toward the trailing end, an expansion element located in the bore in said dowel body in the axially extending region of said slits, said dowel body being radially expandable by displacing said expansion elements in the axial direction of said body toward the leading end thereof, said expansion element is a spirally shaped member with the spiral axis thereof extending in the axial direction of said dowel body and said spirally shaped member having a pitch whereby the pitch of said spirally shaped member decreases when said spirally shaped member is axially displaced toward the leading end and results in an increase in the radially outer diameter thereof for radially expanding said dowel body, said spirally shaped member comprises two spirally shaped parts each having a wound section extending for approximately one-half of the circumference of the dowel body bore with the pitch of said wound sections oriented oppositely to one another.

6. Expansion dowel comprising an axially elongated sleeve-shaped dowel body having a leading end for insertion first into a borehole and a trailing end, said dowel body forming a bore extending between the leading and trailing ends thereof, said dowel body having axially extending slits therein extending from the leading end toward the trailing end, an expansion element located in the bore in said dowel body in the axially extending region of said slits, said dowel body being radially expandable by displacing said expansion element in the axial direction of said body toward the leading end thereof, said expansion element is a spirally shaped member with the spiral axis thereof extending in the axial direction of said dowel body and said spirally shaped member having a pitch whereby the pitch of said spirally shaped member decreases when said spirally shaped member is axially displaced toward the leading end and results in an increase in the radially outer diameter thereof for radially expanding said dowel body, said spirally shaped body comprises a web section connecting the leading end of said dowel body to said spirally shaped body, and a wound section extending from said web within the dowel body bore toward the trailing end of said dowel body for an axial length less than the full length of said body.

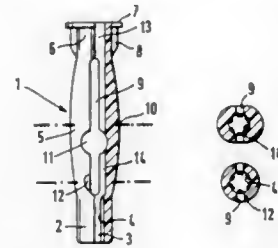
4,642,009
WALL PLUG

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany
Filed Jul. 10, 1985, Ser. No. 753,675
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426994

Int. Cl.⁴ A16B 13/04

U.S. Cl. 411—38

9 Claims



1. A wall plug for fastening articles to building materials, comprising: a first end part having a longitudinal bore, said longitudinal bore of said first end part being provided with internal threading means which receives in assembly a fastening screw; a second end part having a longitudinal bore and provided with means for preventing rotation of the plug during fastening; two non-flat limbs each having a smooth outer surface and extending at one end from said first end part and connected at another end to said second end part, said limbs having two facing surfaces separated by a slot, and a central region having an elliptical cross-sectional profile which has a major and a minor diameter and which gradually becomes circular towards said first end part and said second end part, said slot having a width substantially corresponding to the difference between said major and minor diameters of said elliptical cross-sectional profile, said facing surfaces of said limbs being provided with longitudinal ribs; and means forming a weakened cross-section in said central region of said limbs, whereby the wall plug can be used for fastening articles to hollow building materials such as panels and hollow walls wherein, upon screwing of said fastening bolt into the plug, said limbs are forced to buckle radially outwards and fold axially of the plug and for fastening articles in solid building materials wherein upon screwing of said fastening bolt into the plug, said two limbs are compressed together causing said facing surface to touch in said central region.

4,642,010

THREADED FASTENER AND METHOD OF INSTALLING SAME

William D. Bradley, Welwyn Garden City; Zia R. Ivi, Hatfield, and Raymond D. Lacey, Essendon, all of England, assignors to Avdel Limited, Welwyn Garden City, England
Filed May 24, 1984, Ser. No. 613,731

Claims priority, application United Kingdom, Jun. 1, 1983, 8315077

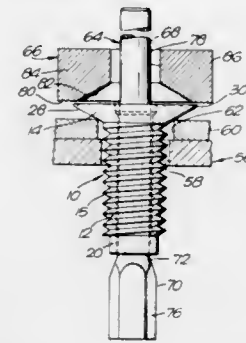
Int. Cl.⁴ F16B 13/06, 35/00

U.S. Cl. 411—69

8 Claims

1. A threaded fastener formed of ductile material, and comprising an elongate, circumferentially entire, tubular shank, and a radially enlarged head at one end of the shank, and having a bore throughout the shank and the head, said bore having a substantially constant diameter throughout the shank and being enlarged within the head by a counterbore, the shank being capable of undergoing radial ductile expansion throughout its length and thus of being deformed to a stable configuration having a diameter greater than that of the shank before expansion, the shank having a cylindrical tail portion remote from the head, and a threaded part between the tail-

portion and the head, the threaded part being formed with an external screw-thread having a sharp crest, and said cylindrical



tail portion being unthreaded and having an external diameter less than the major diameter of the threaded part.

4,642,011

COMPOSITION FOR RUST PREVENTION OF METALS AND THREADED METAL ELEMENTS WITH A RUSTPROOF FILM

Yoshihito Uramoto, Tokai; Takasi Kaneko, Toyoake, and Toshio Hirose, Nagoya, all of Japan, assignors to Toacosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Nov. 18, 1983, Ser. No. 553,331

Claims priority, application Japan, Nov. 22, 1982, 57-203758; Dec. 28, 1982, 57-227789

Int. Cl.⁴ F16B 39/22

U.S. Cl. 411—258

19 Claims

1. A threaded metal element having coated thereon a film of reaction product between (a) an organic silicon compound having at least one aminoalkyl group and at least one alkoxy group and (b) a compound having at least one oxirane ring.

4,642,012

FASTENING ASSEMBLY FOR ROOFS OF SOFT MATERIAL

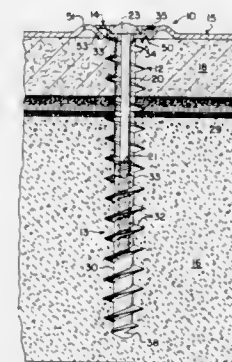
William J. Blucher, Addison; Richard J. Ernst, Palatine, and Francis C. Peterson, St. Charles, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 11, 1984, Ser. No. 609,160

Int. Cl.⁴ F16B 35/04

U.S. Cl. 411—371

3 Claims



1. An anchoring element comprising a generally cylindrical body having a thread thereon defining a crest diameter and a root diameter, said crest diameter being generally twice as large as said root diameter, and a bore in one end of said body adapted to receive a screw therein, said body including an integrally molded flange at one end thereof, said bore including three sections of differing diameters, a first of said three

sections adapted to receive a screw head, a second section of lesser diameter than said first section, and a third section of lesser diameter than said second section.

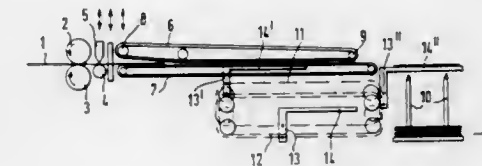
4,642,013

APPARATUS FOR STACKING FLAT ARTICLES
Friedhelm Mundus, and Fritz Achelpohl, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 371,498, Apr. 23, 1982, abandoned. This application Nov. 25, 1985, Ser. No. 800,913
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116400; May 13, 1981, 3119004

Int. Cl.⁴ B65G 57/04

U.S. Cl. 414—73

16 Claims



16. An apparatus for stacking flat articles, said apparatus comprising:

a first conveying means for transporting flat articles towards one end,
a second conveying means for receiving a stacked plurality of flat articles and moving said stacked plurality of flat articles,
a carrying arm for transferring said flat articles from said one end and depositing said flat articles on said second conveying means in a stacked condition,
a retaining arm lowerable from a position above the carrying arm to a position compressing the stacked plurality of flat articles on said second conveying means,
means for moving said retaining arm along the conveying path of said second conveying means while compressing the stack of flat articles and returning said retaining arm to said position above the carrying arm,
a recess defined in a rear area of said retaining arm,
a supporting arm,
means for moving said supporting arm over the stacked plurality of flat articles compressed by the retaining arm to engage said recess defined by said retaining arm, and means defined by said supporting arm for holding an article transferred by said carrying arm to the plurality of stacked articles compressed by the retaining arm to subsequently deposit said article on the second conveying means after the retaining arm and the stack of flat articles have been moved by the second conveying means.

4,642,014

FRAMING SYSTEM

Kari Saarinen, Säkylä, Finland, assignor to Lännen Tehtaat Oy, Iso-Vimma, Finland

Filed Mar. 26, 1985, Ser. No. 716,168

Claims priority, application Finland, Mar. 27, 1984, 841212

Int. Cl.⁴ A01G 9/02; B65G 57/30

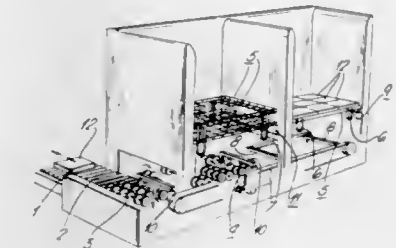
U.S. Cl. 414—96

18 Claims

1. A method of filling pallets with plant pot cassettes comprising the steps of:

conveying a predetermined number of plant pot cassettes horizontally along a roll conveyor to a first location;
before said conveying step, feeding pallets individually into position at said first location such that upper portions of rolls of said roll conveyor protrude through holes in said bottom portion of the pallet;
loading the conveyed cassettes onto the positioned pallet by

lowering the roll conveyor relative to the positioned pallet;
stacking the loaded pallet by shifting said loaded pallet into a stack such that it becomes a lowermost member of the stack; and



during said stacking step, providing spaces between bottom portions of the stacked pallets with spacer members provided along edges of each pallet, whereby plants in the cassettes of the stacked pallets may grow within the space provided between said stacked pallets.

4,642,015

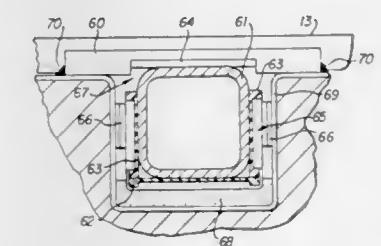
BEARING SUPPORT FOR DISCHARGER MECHANISM
Anthony W. Hooper, Montreal, Canada; Alexander D. Cormack, Marietta, Ga., and Pierre Marchand, Rock Forrest, Canada, assignors to Uniworld Inc., Sherbrooke, Canada

Filed Jun. 15, 1984, Ser. No. 621,259

Int. Cl.⁴ B65G 25/04

U.S. Cl. 414—325

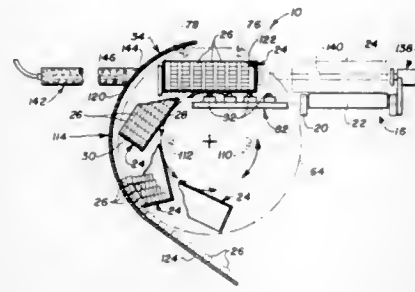
3 Claims



1. A discharger mechanism for discharging solid material from the underside of a pile disposed on the floor of a hopper, said discharger mechanism comprising,
a stoker rod having a rectangular cross section disposed in a trough in the floor of the hopper,
a plurality of stoker cross bars rigidly attached at the centers thereof to said stoker rod and being substantially equispaced along the length of the rod,
reciprocating means for longitudinally reciprocating said stoker rod,
at least one generally U-shaped bearing retainer disposed in said trough extending beneath said stoker rod and along the sides of said stoker rod,
bearing means comprising a plurality of sheets of plastic polymeric material removably disposed on each of said U-shaped bearing retainers, said plurality of sheets comprising separate plastic sheets being in contact with the bottom surface and each of the side faces of said stoker rod respectively,
at least one hold down bearing means each including a separate sheet of plastic polymeric material disposed on top of the upper surface of the stoker rod to prevent said stoker rod from lifting and
grout disposed between said bearing retainer and the trough in the floor of the hopper across the bottom and portions of the side walls of said bearing retainer to retain said

bearing retainer in a fixed position in said trough and to maintain said stoker cross bars in spaced relation to the floor of the hopper.

4,642,016
APPARATUS FOR UNLOADING NUCLEAR FUEL PELLETS FROM A SINTERING BOAT
 George D. Bucher, McCondes, Pa., and Theodore E. Raymond, Sandy Run, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Aug. 3, 1984, Ser. No. 637,371
 Int. Cl.⁴ B65G 65/34
 U.S. Cl. 414—421 10 Claims



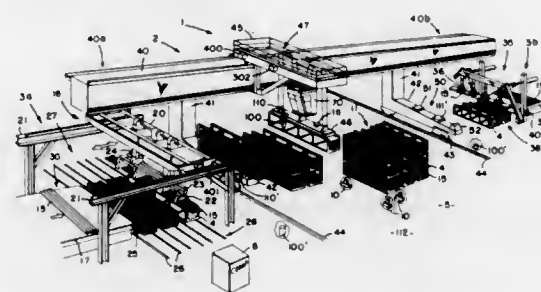
4. Apparatus for unloading nuclear fuel pellets from a loaded sintering boat having an open top, comprising:
- means for receiving said boat in an upright position with said pellets contained therein, said boat receiving means including a platform for supporting said loaded boat in said upright position, said boat supporting platform having first and second portions;
 - means for clamping said boat including a pair of plates disposed at lateral sides of said boat and being movable in a first direction relative to one another for applying clamping forces to said boat on said platform and in a second direction relative to one another for releasing said clamping forces from said boat, said pair of plates having inner surfaces facing toward one another, said first and second platform portions of said boat supporting platform being mounted to said plates on said respective facing surfaces thereof and disposed in a common plane, one of said plates and the one of said platform portions mounted thereto being disposed in a stationary position and the other of said plates and the other of said platform portions mounted thereto being movable relative thereto in said first and second directions for applying and releasing clamping forces to and from said boat while said boat is supported in said upright position by said platform portions;
 - means for transferring said clamped boat from said upright position to an inverted position and then back to said upright position; and
 - means for receiving said pellets from said clamped boat as said boat is being transferred from said upright position to said inverted position.

4,642,017
AUTOMATED IN-PROCESS PIPE STORAGE AND RETRIEVAL SYSTEM
 Ronald L. Fenn, Hudson, Ohio, assignor to AMCA International Corporation, Hanover, N.H.
 Filed Sep. 30, 1982, Ser. No. 430,746
 Int. Cl.⁴ B65G 1/10

- U.S. Cl. 414—348 13 Claims
1. An automated material storage and retrieval system comprising:
 - a material loading means adapted to load material into a container at a first location to facilitate such storage at a secondary location; a storage/retrieval means for moving the container from the said first location to the said second

location; and computer means for coordinating movement of the material loading means and said storage/retrieval means; said material loading means comprising transport means for transporting elongate members between said material loading means and respective containers, and guide means for aligning one end of such elongate members to facilitate transfer to the transport means, said computer means including means for storing in said memory information of the center of gravity of such elongate members, and means for controlling positioning of said containers for the transferring of elongate members with respect to said material loading means with at least approximate alignment of the centers of gravity of respective containers and elongate members.

9. An automated material storage and retrieval system, comprising a computer means adapted to control the system, said means including a memory; a storage/retrieval crane operable

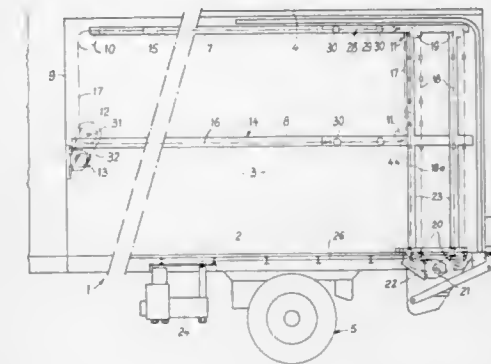


in a storage yard for storing material; the system further including a plurality of containers, each being capable of containing material for storage in the storage yard; and material loading means for at least one of loading and/or unloading the material with respect to said containers; said computer means including means for coordinating said storage/retrieval crane and said loading means; said storage retrieval crane comprising a gantry type crane including a trolley, a girder support means for supporting said trolley and along at least a substantial length of which said trolley may move, grab means supported by said trolley for holding a container, and mounting means for mounting said girder support means above said storage yard; said mounting means comprising leg means for supporting said girder support means above said storage yard, at least one leg means having elongate foot means for distributing the weight supported by said at least one leg means, and container support means for supporting at least one container on said elongate foot means.

4,642,018
AUTOMATIC DEVICE FOR LOADING THE TOTAL VOLUME OF A TRANSPORT VEHICLE
 Alain Leroux, Les Mureaux; Jean P. Fourtet, Sartrouville; Jean Hennard, Montlignon, and Andre Trouillet, Vanves, all of France, assignors to Compagnie des Transmissions Mecaniques Sedis; Generale de Transport et d'Industrie and Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet, all of France
 Continuation of Ser. No. 503,477, Jun. 13, 1983, abandoned.
 This application Jul. 30, 1985, Ser. No. 761,311
 Claims priority, application France, Jun. 11, 1982, 82 10229; Jul. 13, 1982, 82 12267
 Int. Cl.⁴ B60P 1/36, 1/44

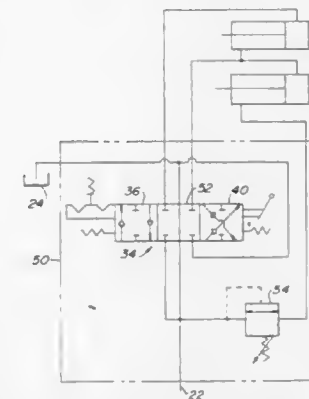
- U.S. Cl. 414—502 19 Claims
1. A device for automatically and fully loading a freight transporting vehicle which has a ceiling, a floor, opposed side walls (3), a front end and a rear loading opening end defining a useful volume, said device comprising: a plurality of movable floor elements (28) for forming at least one intermediate movable floor extending lengthwise of the vehicle, intermediate support means (8) adapted to support said at least one interme-

mediate movable floor, said intermediate support means comprising at least one pair of horizontal opposed rails fixed to the opposed side walls of the vehicle in at least one intermediate position relative to the height of the walls, storing means (7) for storing said floor elements in a position where they do not support freight, said storing means comprising at least one pair



of horizontal opposed rails fixed to the opposed side walls of the vehicle above the intermediate support means (8) and in a position immediately adjacent the vehicle ceiling, lifting means (18) for lifting and lowering said intermediate floor elements, and means (14) for shifting and transferring said intermediate floor elements in either direction between said storing means, said intermediate support means and said lifting means.

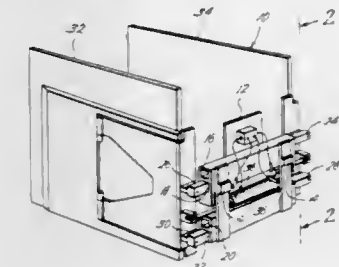
4,642,019
HYDRAULIC CONTROL SYSTEM AND VALVE THEREFOR
 Gary Sutton, Augusta, Ga., assignor to General Signal Corporation, Stamford, Conn. and Dempster Systems, Inc., Knoxville, Tenn.
 Filed Dec. 19, 1984, Ser. No. 683,823
 Int. Cl.⁴ B65F 3/00
 U.S. Cl. 414—525 R 13 Claims



1. A hydraulic control system comprising:
 - a supply of high pressure hydraulic fluid;
 - a fluid reservoir for storing fluid at a pressure substantially below said supply fluid pressure;
 - first and second bi-directional fluid actuated motors adapted to travel a predetermined amount in each direction;
 - a directional control valve in fluid communication with said supply and said reservoir, having a first operating position for directing said supply of fluid to said motors in a first direction of flow and an opposite second operating position for directing said supply of fluid to said motors in a direction of flow opposite to said first direction of flow; and
 - a combination sequence and regeneration valve in continu-

ous fluid communication with said supply and one side of said second motor and selectively placed into and out of fluid communication with said first motor and the other side of said second motor by said directional control valve for preventing the operation of said second motor until said first motor has reached its limit of travel and for regenerating fluid from said one side of said second motor to the other side when said first motor has reached its limit of travel and said control valve is in its second operating position.

4,642,020
TUBULAR SLIDE LIFT TRUCK ATTACHMENT
 Stuart W. Sinclair, Lake Jackson, Tex., assignor to Long Reach Manufacturing Co., Houston, Tex.
 Filed Jan. 31, 1985, Ser. No. 696,975
 Int. Cl.⁴ B66F 9/18
 U.S. Cl. 414—621 8 Claims

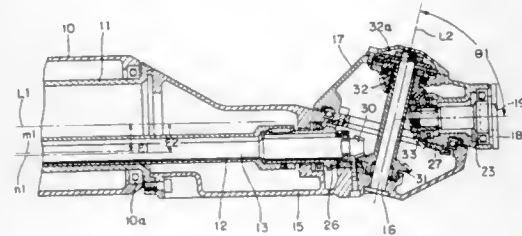


1. In a load carrying clamp attachment for use on a lift truck having a body adapted to be mounted on a lift truck, said body have a plurality of elongate spaced parallel guides, each guide supporting a longitudinally movable slide, first and second load clamps connected to said slides for movement toward and away from each other for supporting and releasing a load, and piston and cylinder means connected to said load clamps for moving said clamps relative to each other, the improvement in the slides comprising,
 - said slides being metal tubular members,
 - a solid metal heel supporting member for distributing the forces from a heel plate to a tubular member coaxially positioned in one end of each of said tubular members, said heel supporting member generally filling the cross-sectional area of the tubular member, said supporting members having a length less than the length of the tubular members, and
 - a heel plate means connected to and supporting each load clamp, said heel plate means shaped to conform to the shape of the tubular member and bolted through a tubular member to the heel supporting member whereby the tubular members, heel supporting members and heel plate means are readily detachable from each other.

4,642,021
MANIPULATION ARM MECHANISM FOR AN INDUSTRIAL ROBOT
 Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Koki Kaisha, Kariya, Japan
 Filed Jun. 5, 1984, Ser. No. 617,541
 Claims priority, application Japan, Jun. 27, 1983, 58-115494; Jun. 27, 1983, 58-115495
 Int. Cl.⁴ B25J 17/02

- U.S. Cl. 414—735 16 Claims
1. A manipulation arm mechanism for an industrial robot, said mechanism comprising:
 - (a) an arm (10) of said industrial robot;
 - (b) first to third drive means (50, 51, 52);
 - (c) a first shaft (11) rotatably carried within said arm (10) and

- connected to said first drive means (50) to be driven thereby around an axis (L1);
- (d) a rear casing (15) fixedly mounted on a front end of said first shaft (11);
- (e) a front casing (17) carried on said rear casing (15) for rotation about an oblique axis (L2) slanted relative to the axis (L1) of said first shaft (11);
- (f) a head mounting shaft (18) rotatably carried by said front casing (17) for rotation about an axis (L3), said head mounting shaft being capable of having a working head mounted thereon;
- (g) a second shaft (12) rotatably carried within said rear casing (15), with a front end thereof being offset from the axis (L1) of said first shaft (11) on a first side of the axis (L1) of said first shaft (11), said second shaft being connected to said second drive means (51) to be rotated thereby around an axis (m1);



- (h) a third shaft (13) rotatably carried within said rear casing (15), with a front end thereof being offset from the axis (L1) of said first shaft (11) on the first side by the axis (L1) of said first shaft (11), said third shaft being connected to said third drive means (52) to be rotated thereby around an axis (n1);
- (i) first motion transmission means (26, 27) provided between the front end of said second shaft (12) and said front casing (17) for transmitting rotation from said second shaft (12) to said front casing (17); and
- (j) second motion transmission means (30, 31, 16, 32, 33) provided between the front end of said third shaft (13) and said head mounting shaft (18) for transmitting rotation from said third shaft (13) to said head mounting shaft (18), whereby said front casing (17) can be provided back closer to said rear casing (15) on the side of the axis (L1) of said first shaft (11) opposite to said first side thereof than if the front ends of said second and third shafts (12, 13) were not offset from the axis (L1) of said first shaft (11).

4,642,022
CHAIN TURBINE SYSTEM
Leon Rydz, 115 Webster Ave., Yonkers, N.Y. 10701
Filed Aug. 28, 1985, Ser. No. 770,139
Int. Cl.⁴ F03B 9/00

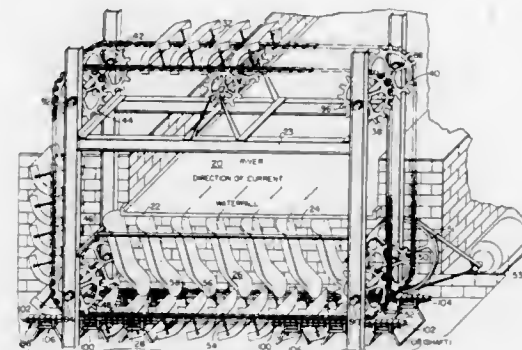
U.S. Cl. 415—5

5 Claims

1. A chain turbine system of the type supported across a waterfall comprising:

- A. a first frame mounted at one side of the waterfall and supporting a first shaft aligned with the waterfall, said first shaft supporting a chain sprocket at either end;
- B. a second frame mounted at the other side of said waterfall and supporting a second shaft, said second shaft supporting a chain sprocket at either end;
- C. a pair of chains rotatably suspended in parallel and across said waterfall, each said chain engaging a pair of parallel chain sprockets, such that a driving portion of the chain travels through the waterfall, as a return portion of the chain is suspended apart from the waterfall;
- D. a plurality of paddle-like deflection buckets pivoted at each side to each of said chains, each bucket further including a pair of pivoting struts interconnecting a free end side of the bucket with said chains;
- E. individual roller wheels mounted at the free end of each

- bucket, so as to extend downwardly of the free end of the bucket during the driving portion and to extend above the bucket during the return portion;
- F. a transverse track extending across the waterfall bed adjacent the driving portion of said chains, so as to be engaged by said roller wheels, and
- G. a chain support assembly extending across said waterfall



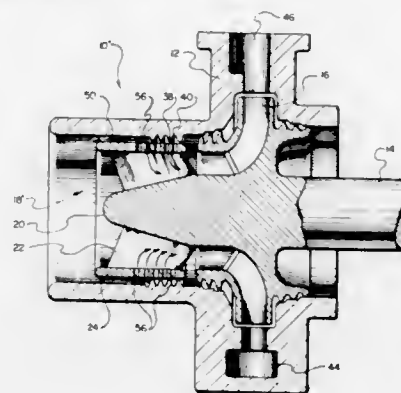
and beneath each said chain during the driving portion and further including:

- i. a roller frame supported upon brackets and positioned beneath each said chain;
- ii. a plurality of rollers mounted upon shafts extending through said roller frame and axially aligned with the waterfall, such that said roller engage each said chain during the lower driving portion.

4,642,023
VENTED SHROUDED INDUCER
Charlton Dunn, Calabasas, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 29, 1985, Ser. No. 759,983
Int. Cl.⁴ F04D 29/66

U.S. Cl. 415—53 R

5 Claims



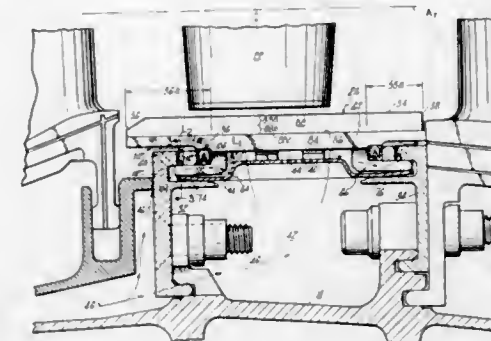
1. In a pump having a shrouded inducer rotatably mounted within a housing wherein an outer periphery of the shroud and an adjacent inner surface of the housing defines an annular space which conveys a recirculation flow of fluid during operation of the pump, an improvement for alleviating damage associated with said recirculation flow, the improvement comprising:

- a plurality of vent holes located about the outer periphery of the inducer shroud and extending therethrough for conveying said recirculation flow from said annular space back into said shrouded inducer.

4,642,024
COOLABLE STATOR ASSEMBLY FOR A ROTARY MACHINE
Robert H. Weidner, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 5, 1984, Ser. No. 678,518
Int. Cl.⁴ F04D 25/28

U.S. Cl. 415—116

13 Claims



1. In a gas turbine engine of the type having an annular flow path for working medium gases, an engine case extending circumferentially about the working medium flow path, a coolable stator assembly which includes an outer air seal spaced radially inwardly from the engine case leaving a cavity for cooling air therebetween and a means for supporting the outer air seal from the case about the working medium flow path, the improvement which comprises:

- a coolable stator assembly which includes
- an outer air seal formed of an array of arcuate segments, at least one of said segments having a passage for cooling air which extends through the segment and which is in flow communication with said cavity; and
- a means for supporting the outer air seal which includes a support extending inwardly of the engine to engage the outer air seal, the support having at least one passage in flow communication with said passage in the outer air seal for metering the flow of cooling air which is radially oriented for directing cooling air radially inward through the support toward the arcuate seal segment to radially impinge the cooling air on the arcuate seal segment.

4,642,025
VALVE FOR STEAM SUPPLY ON DOUBLE CASING TURBINES
Peter Heiniger, Turgi; Jaroslav Masek, Wettingen, both of Switzerland, and Herbert Senn, Waldshut-Tiengen, Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed May 22, 1984, Ser. No. 613,036
Claims priority, application Switzerland, Jun. 9, 1983, 3164/83

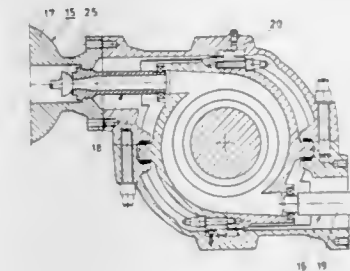
Int. Cl.⁴ F01D 17/14

U.S. Cl. 415—139

5 Claims

1. In a horizontal steam supply for double casing turbines, of the type having a valve housing communicating with exhaust steam pressure and an inner housing communicable with fresh steam pressure, the valve housing accepting a diffuser, a valve seat, a cooperating valve closing body and a flange junction for direct fastening on an outer housing of a double casing turbine and also having an actuator motor and elements for transmitting the actuator motor movement to the valve closing body, the improvement comprising an outer casing of the double casing turbine and an inner casing of the double casing turbine; said inner casing enclosed by said outer casing; said diffuser positioned in the valve housing, the outer casing and the inner casing and concentric with at least a portion of

the valve housing, the outer casing and the inner casing; a plain flange sealing surface provided on the valve housing for connection with the outer casing, the connection between the valve housing and the outer housing defining a junction arrangement; the position of the diffuser extending sufficiently beyond the flange sealing surface of the valve housing that a movable seal is provided between the inner casing and the diffuser at a position axially spaced from the plain flange sealing surface in a direction toward the turbine; a fastening device

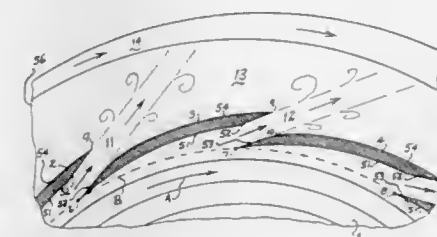


provided in the valve housing at a position axially spaced from the plain flange sealing surface in a direction away from the turbine, the fastening device being directly accessible and protruding through the valve housing to adjustably secure the diffuser and permit adjustment of the position of the diffuser so as to compensate for heat; said junction arrangement permitting the valve housing to be moved in a direction perpendicular with respect to the plain flange sealing surface of the outer casing.

4,642,026
CENTRIFUGAL COMPRESSOR WITH ADJUSTABLE DIFFUSER
John D. Ruff, 206 Birch St., Alexandria, Va. 22305
Continuation-in-part of Ser. No. 517,421, Jul. 26, 1983, abandoned. This application Mar. 20, 1984, Ser. No. 591,577
Int. Cl.⁴ F04D 29/46

U.S. Cl. 415—150

18 Claims



1. A centrifugal gas compressor including impeller means rotatable in a predetermined direction about a first axis for receiving and centrifugally impelling a gaseous medium, and annular diffuser means for receiving and diffusing the centrifugally impelled gaseous medium, said diffuser means comprising:

- front and back walls extending substantially radially outward from said first axis in mutually spaced relation to define a passage for said centrifugally impelled gaseous medium;
- a plurality of control vanes bridging said passage and disposed at angularly sequential locations about said first axis in said passage, each control vane having a radially inward-facing surface, a radially outward-facing surface, a leading edge, and a trailing edge, and oriented such that said leading edge faces opposite said predetermined direction and into the flow of gaseous medium which is centrifugally impelled by said impeller means, wherein said

leading edge is a substantially linear intersection of said radially outward-facing surface and said radially inward-facing surface; and
control means for pivoting said plurality of control vanes about a respective plurality of control axes between open and fully closed positions, each control axis being coaxial with the leading edge of a respective control vane, said control means including means responsive to application of rotational forces thereto for transmitting the applied rotational forces to said control vanes to effect rotation of said control vanes about said control axes wherein in said fully closed position the radially inward-facing surface of each control vane overlies and contacts the radially, outward-facing surface of an adjacent control vane in flush abutting relation.

4,642,027

METHOD AND STRUCTURE FOR PREVENTING THE IGNITION OF TITANIUM FIRES

Joachim Popp, Dachau, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

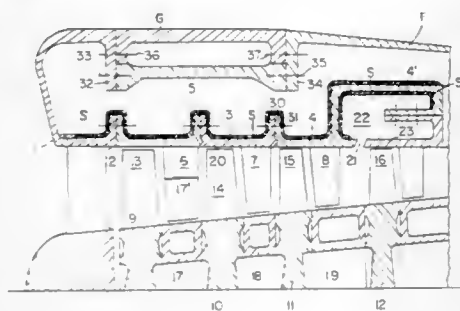
Filed Feb. 22, 1985, Ser. No. 704,524

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407945

Int. Cl.⁴ F01D 5/08

U.S. Cl. 415-177

13 Claims



1. A structure for preventing the ignition of a titanium fire in a machine assembly, such as a turbine engine, comprising a structural stationary component (1, 2, 3, 4, 5) made of titanium or titanium alloy, and a rotatable component (9 to 19) having a rotational axis and arranged for cooperation with said stationary component, said stationary component (1, 2, 3, 4) comprising radially inner first surfaces facing said rotatable component relative to said rotational axis and having second surfaces (S) located radially outwardly relative to said rotational axis, said second surfaces being accessible for treatment at least prior to assembling said components, said stationary component further comprising a protective coating layer (S) of a highly heat-conducting material intimately bonded directly to said second surfaces (S) for rapidly dissipating heat to prevent reaching temperatures that would otherwise cause said titanium fires.

4,642,028

CUFFED AIRCRAFT PROPELLER

William C. Buckman, Huber Heights, and Michael R. Tapp, Dayton, both of Ohio, assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Apr. 2, 1984, Ser. No. 595,753

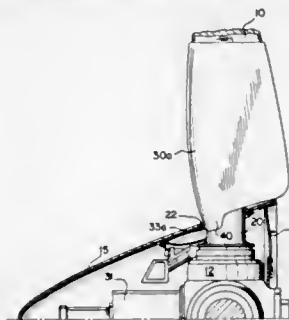
Int. Cl.⁴ B64C 11/20; B64D 15/00

U.S. Cl. 416-95

3 Claims

1. In an aircraft blade and spinner combination in which a variable pitch blade, mounted on an aircraft hub, extends through a spinner opening, and in which the blade is provided with a generally cylindrical inner shank portion inwardly of the spinner, the improvement in blade cuff design comprising: a blade cuff on said blade with the major portion of said cuff

positioned at spanwise stations radially outwardly of said spinner for increasing the airflow efficiency of said blade at the cuffed region, said cuff being flared radially inwardly through said spinner



opening and terminating at least in partially surrounding relation to said blade shank, forming a smooth rearwardly sloping nose portion at the interface between said cuff and said spinner opening, for minimum ice adhering tendencies.

4,642,029

BRAKE FOR COUNTER ROTATING BLADED MEMBERS

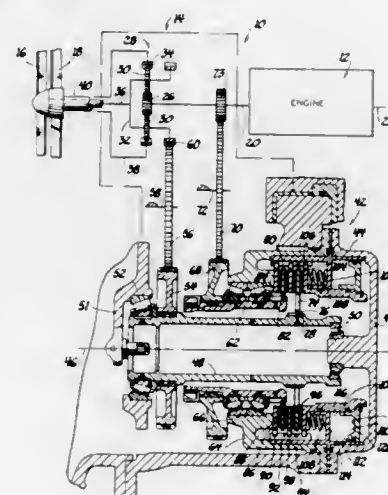
Robert W. Cedoz, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1985, Ser. No. 745,439

Int. Cl.⁴ B64C 11/48

U.S. Cl. 416-129

4 Claims



1. In a propulsion system including a gas turbine engine having an output shaft and a gear drive having a planetary gear set with a first element connected to said engine output shaft and a second element connected to a first bladed member and a third element connected to a second bladed member whereby said first and second bladed members are rotated in opposite directions by said output shaft, a brake comprising, a first transfer shaft supported on a stationary housing for rotation about an axis of the latter, a second transfer shaft supported on said stationary housing for rotation about said axis, gear means between one of said counter rotating bladed members and said first transfer shaft, gear means between the other of said counter rotating bladed members and said second transfer shaft, a selectively operable brake actuator on said housing movable between an extended position and a retracted position, and friction means between said brake actuator and each of first and said second transfer shafts operative in said ex-

tended position of said brake actuator to simultaneously frictionally retard rotation of each of said first and said second transfer shafts whereby each of said counter rotating bladed members is simultaneously braked.

4,642,030

ARRANGEMENT FOR FEEDING FUEL FROM SUPPLY TANK

Karl-Heinz Friebe, Schwieberdingen; Karl-Otto Heinz, Waiblingen, and Werner Scholten, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

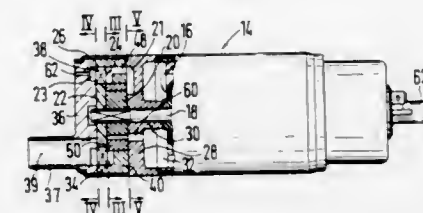
Filed Nov. 25, 1985, Ser. No. 801,613

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1985, 3500139

Int. Cl.⁴ F04C 2/10

U.S. Cl. 417-203

12 Claims



1. An arrangement for feeding a fuel from a supply tank to an internal combustion engine, the arrangement comprising a motor; a multistage feed pump unit driven by said motor and including a flow pump having a rotor and a gerotor pump having an inner runner arranged so that said rotor and said inner runner have aligning axes of rotation and said flow pump is arranged upstream of said gerotor pump as considered in the flow direction of a fuel, said rotor of said flow pump and said inner runner of said gerotor pump being located near one another as considered in an axial direction, said gerotor pump also having an outer runner which surrounds a feed chamber, and said rotor of said flow pump having a wall which axially limits said feed chamber surrounded by said outer runner of said gerotor pump.

4,642,031

ALTERNATOR-COMPRESSOR CONSTRUCTION

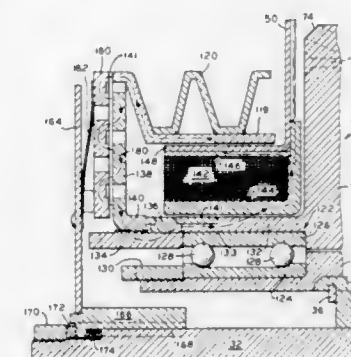
James B. Farr, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed May 20, 1985, Ser. No. 736,389

Int. Cl.⁴ F04B 21/00; F16D 27/10

U.S. Cl. 417-223

14 Claims



1. An alternator-compressor assembly comprising: a compressor including a crankshaft; an alternator mounted on said compressor and including a stationary base and a rotor, said rotor including a hub

member and an alternator member coaxially arranged therewith;

a bearing including inner and outer races, said inner race mounted on said base, said hub member being mounted directly on said outer race;

a drive pulley and clutch plate assembly concentrically arranged with said bearing;

stationary clutch coil means arranged between said drive pulley and said rotor for establishing a clutch magnetic flux field;

locking means connected with said clutch plate for locking said outer bearing race in position; and

drive pin means for drivingly securing said hub member to said drive pulley and clutch plate assembly, said drive pulley and clutch plate assembly and said hub member including aligned apertures for receiving said pin means, said locking means retaining said pin means in said apertures.

4,642,032

AXIAL PISTON PUMP INCLUDING BALL PISTON

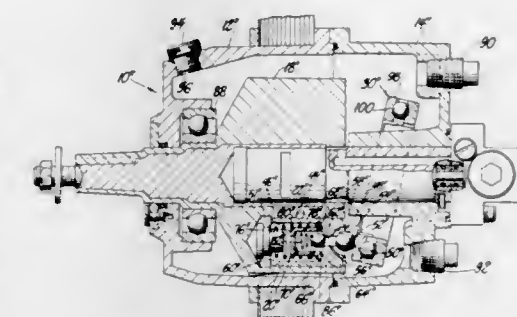
James McBeth, North Vancouver, Canada, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Aug. 7, 1985, Ser. No. 763,300

Int. Cl.⁴ F04B 1/12, 21/04

U.S. Cl. 417-269

7 Claims



1. A piston pump assembly (10,10') comprising: housing means; a cylinder barrel (18,18') having an axis of rotation and being rotatably supported in said housing means about said axis of rotation, said cylinder barrel (18,18') including a plurality of piston cavities (20,20'); cam means (30,30'); and piston means (22,22') reciprocally supported in each of said piston cavities (20,20') for reciprocating movement and reacting with said cam means (30,30') and causing said reciprocating movement of said piston means (22,22'), said piston means (22,22') including a body portion (44,44') having a longitudinally extending central bore (46,46'), one end of said bore (46,46') defining a fluid inlet (48,48') into said bore (46,46') and the other end of said bore (46,46') defining a fluid outlet (51,51'), said assembly (10,10') characterized by said fluid inlet (48,48') including a ball seat (50,50') and a ball member (52,52') seated therein and substantially over said fluid inlet (48,48'), said ball member (52,52') engaging said cam means (30,30'), said seating surface (50,50') including at least one groove (54,54') extending from said fluid inlet (48,48') to the remainder of said bore (46,46') for facilitating fluid flow about said ball member (52,52'), said bore (46,46') including an enlarged main portion (60,60') extending along substantially the length of said piston means (22,22') and a secondary portion (62,62') in fluid communication between said main bore (60,60') and said fluid inlet (48,48') and having a smaller diameter than said main bore (60,60'), said main bore (60,60') including a terminal wall (64,64') having an opening (66,66') therethrough defining said secondary bore (62,62'), a check ball (74,74') disposed adjacent to said secondary bore (62,62') and biasing means for biasing said check ball (74,74') against said secondary bore (62,62') for allowing one way fluid flow through said secondary bore (62,62') to said main bore (60,60'), said biasing means including a support member

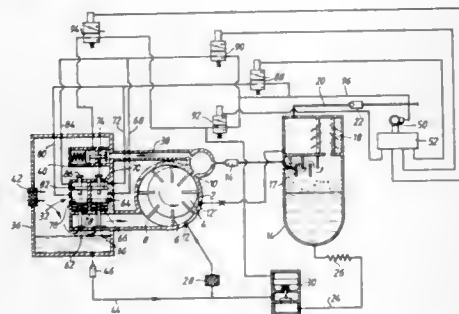
(70,70') having a hub portion (76,76') and a rim portion (78,78'), an external spring member (80,80') disposed within said main bore (60,60') and engaging said rim portion (78,78') for biasing said support member (70,70') against said terminal wall (64,64') and an internal spring (82,82') disposed between said hub portion (76,76') and said check ball (74,74') for urging said check ball (74,74') into sealing engagement with said secondary bore (62,62').

4,642,033

POSITIVE DISPLACEMENT AIR COMPRESSORS
Edward Boller, West Midlands, England, assignor to The Hydrovane Compress or Company Limited, Redditch, England
Filed Nov. 18, 1985, Ser. No. 798,917
Claims priority, application United Kingdom, Nov. 19, 1984, 8429144

Int. Cl.⁴ F04B 49/02, 49/08, 49/10
U.S. Cl. 417—295

4 Claims



1. A rotary positive displacement air compressor including:
a stator;
said stator containing a rotor and having an inlet and an outlet;
said inlet including at least two independently actuatable inlet valves in parallel each operated by a fluid pressurized by said compressor;
detecting means for detecting, in use, the pressure of the compressed air and arranged to produce a signal when said pressure exceeds or is less than predetermined values thereby indicating whether the rate at which air is being compressed exceeds or is less than the compressed air demand to which the compressor is subjected;
actuating means controlled by said detecting means and arranged to open and close each said inlet valve independently to vary the rate of air flow through said inlet;
control means connected to said detecting means;
a respective control valve connected to each said inlet valve and to said control means, said control means being arranged to increase or decrease the open area of said inlet by one step when said pressure exceeds or is less than said predetermined values, respectively;
each said inlet valve including a main piston whose movement is controlled by the associated said control valve and an auxiliary piston which is movable under the control of said control means into a position in which it limits the movement of the associated said main piston,
said control means being so arranged that when one said inlet valve is closed and at least one other inlet valve is opened the said auxiliary piston of the at least one other inlet valve is positioned to limit the movement of the associated said main piston but when all said inlet valves are open said auxiliary pistons are positioned not to limit the movement of said main pistons.

4,642,034 SCROLL TYPE COMPRESSOR WITH DISPLACEMENT ADJUSTING MECHANISM

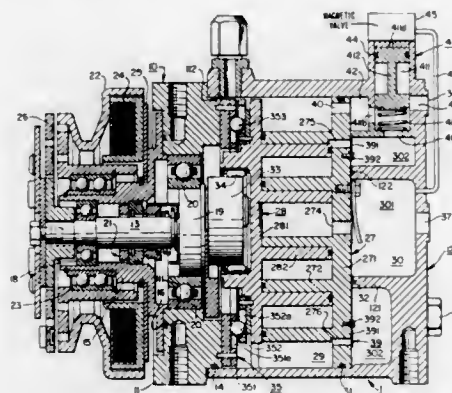
Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Nov. 8, 1984, Ser. No. 669,389

Claims priority, application Japan, Nov. 8, 1983, 58-208356[U]

Int. Cl.⁴ F04B 49/02; F04C 18/02, 29/10
U.S. Cl. 417—295

5 Claims



1. In a scroll type fluid compressor including a housing having a fluid inlet port and a fluid outlet port, a fixed scroll fixedly disposed within said housing and having a circular end plate from which a first end wrap extends into the interior of said housing, an orbiting scroll having a circular end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets, a driving mechanism operatively connected to said orbiting scroll to effect the orbital motion of said orbiting scroll, rotation preventing means for preventing the rotation of said orbiting scroll during orbital motion to thereby change the volume of the fluid pockets and a discharge chamber associated with said fluid outlet port and located adjacent one of said circular end plates on a side opposite its respective wrap to receive compressed fluid from a central fluid pocket formed by said scrolls during orbital motion, the improvement comprising:

at least one pair of holes formed through said circular end plate of one of said scrolls to form a fluid channel between the pair of sealed off fluid pockets and an intermediate pressure chamber located on the opposite side of said circular end plate of said one scroll from its respective wrap and separated from said discharge chamber, said pair of holes being located at symmetrical locations along said respective wrap so the wrap of the other of said scrolls simultaneously crosses over both of said pair of holes during orbital motion of said orbiting scroll, a communication channel formed through said circular end plate of said one scroll and opening onto a suction passageway which forms a fluid channel between said intermediate pressure chamber and a suction chamber located on the same side of said circular end plate of said one scroll as its respective wrap, said suction passageway also formed between said inlet port and said suction chamber, first control means for selectively controlling the opening and closing of said communication channel between said intermediate pressure chamber and said suction chamber, and second control means operating in conjunction with the operation of said first control means for increasing the resistance of said scroll type fluid compressor to suction during the initial opening of said communication channel by said first control means to thereby adjust the compression ratio of said scroll type fluid compressor.

4,642,035 CROSS LOOP ATTENUATOR FOR HYDRAULIC SYSTEMS

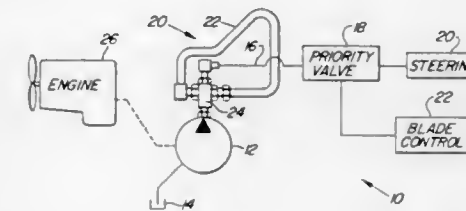
Gary A. Nyquist, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jan. 23, 1984, Ser. No. 572,793

Int. Cl.⁴ F04B 11/00

U.S. Cl. 417—312

5 Claims



1. In combination with a vehicle hydraulic system including an engine driven pump having a plurality of individual expandable and contractable pumping chambers coupled for delivering fluid to a system pressure conveying line, a reactive attenuator, comprising: a conduit formed into a loop and having its opposite ends coupled directly to opposite sides of said line and being in free fluid communication with the line and each other.

4,642,036

MAGNET BALL PUMP

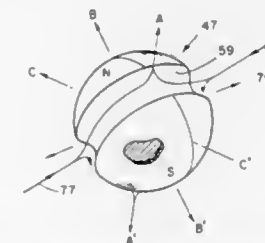
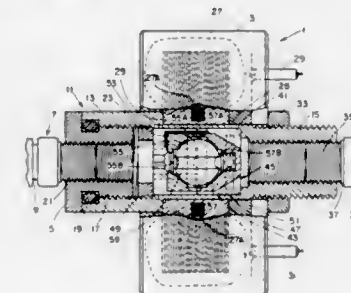
Niels O. Young, 339 Magnolia, Piedmont, Calif. 94610

Filed Sep. 17, 1984, Ser. No. 651,492

Int. Cl.⁴ F04D 5/00, 29/22

U.S. Cl. 417—353

15 Claims



1. A centrifugal flow fluid pump comprising:

- (a) a housing section comprising a fluid inlet and a fluid outlet;
- (b) an inlet socket disposed within the housing section and provided with a first recess therein;
- (c) an outlet socket provided with a second recess therein, the inlet and outlet sockets being disposed to form a socket assembly and configured to provide for fluid communication between the fluid inlet and fluid outlet and wherein the first and second recesses collectively define a cham-

ber, the chamber having a substantially spherical interrupted wall;

- (d) a generally spherical impeller comprised of magnetic material having a magnetic polarization axis and disposed within the chamber and sized to be freely disposed within the chamber for rotation on any axis therein whereby the rotation of the impeller creates a radial outflow of a fluid between the fluid inlet and the fluid outlet and the impeller rotates substantially with no contact between the impeller surface and the chamber wall; and
- (e) an electromagnetic means for rotating the impeller.

4,642,037

REED VALVE FOR REFRIGERATION COMPRESSOR

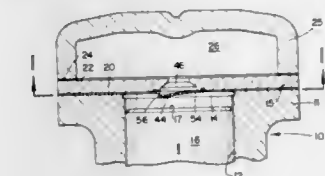
Jack F. Fritchman, Cullman, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 587,380, Mar. 8, 1984, abandoned. This application Feb. 11, 1985, Ser. No. 698,762

Int. Cl.⁴ F04B 39/10; F16K 15/16

U.S. Cl. 417—571

19 Claims



1. A reed valve for a refrigeration compressor having a cylinder having an open end, a valve plate extending over said open end, a piston reciprocable in said cylinder, a valve port opening in said valve plate, said valve plate having a valve seat around said valve port, a valve reed having a base fixedly secured with respect to said valve plate and having a head portion spaced from said base, an axis extending from said base to said head portion, said head portion including a sealing portion operable to make sealing engagement with said valve seat when biased by fluid pressure, said sealing portion when said valve reed is unstressed being resiliently biased out of sealing engagement with said valve seat, with said sealing portion lying in a plane inclined to the plane of said valve seat and in contact with the valve seat at a point thereon on one side of said axis.

4,642,038

CONTINUOUS IN SITU FIBERIZATION SUBSTRATE MATERIAL MECHANISM

Nathan R. Kramer, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 25, 1985, Ser. No. 801,438

Int. Cl.⁴ B29C 63/22

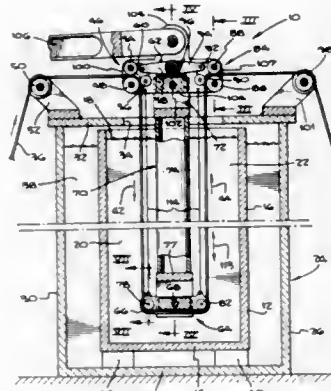
U.S. Cl. 425—93

17 Claims

1. An apparatus for fiberizing a belt shaped substrate with fibrous material from a fiber forming polymer solution comprising:

- (a) a container having a bottom, sides and a top which define a fiber forming zone for holding fiber forming polymer solution wherein the container top includes a surface defining an access opening to provide access to the fiber forming zone;
- (b) a belt having a top, a bottom and two sides;
- (c) first pulley means for directing the belt vertically down into the fiber forming zone through the access opening;
- (d) second pulley means located within the fiber forming

- zone for receiving the belt from the first pulley means and directing the belt vertically upward and out of the fiber forming zone through the access opening;
- (e) means for mounting the second pulley means within the fiber forming zone;
 - (f) third pulley means for receiving the belt from the second pulley means;
 - (g) a horizontal pivot bar located above the second pulley means, the pivot bar having a first end, a second end and a middle pivot point;
 - (h) means for mounting the first pulley means to the first end of the pivot bar;
 - (i) means for mounting the third pulley means to the second end of the pivot bar;



- (j) means for introducing the belt into the fiber forming zone at a constant rate and for removing the belt from the fiber forming zone at the same constant rate; and
- (k) pivot means for pivoting the pivot bar about the middle pivot point to vertically move the first and third pulley means in a pivoting movement in opposite directions over a pivot distance and at a pivot frequency to provide oscillation of the belt as the belt passes through the polymer solution, the pivot distance and pivot frequency being sufficient to produce a sufficient oscillation of the belt within the polymer solution to provide fiberization of said belt with the fibrous material as the belt passes through the fiber forming zone.

4,642,039

APPARATUS FOR PRODUCING PROFILES OR WEBS SUCH AS TREAD STRIPS FOR VEHICLE TIRES
Dietmar Anders, Sandton, South Africa, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 12, 1985, Ser. No. 743,906
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1984, 3424257

Int. Cl.⁴ B29C 47/92

U.S. Cl. 425—140

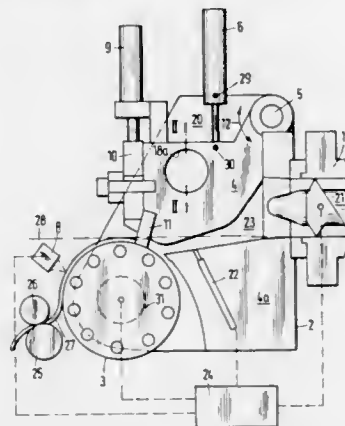
3 Claims

1. Apparatus for producing profiles or webs such as tread strips for vehicle tires, comprising:

- (a) an extruder including a barrel having an internal surface defining a chamber having a longitudinal horizontally extending axis, screw means rotatable in said chamber and drive means for said screw means, and drive means operatively connected to said roller, said barrel defining a discharge end for discharging extruded material from said chamber;
- (b) extruder head means communicating with the discharge end of said chamber for receiving extruded material, said extruder head means comprising:
 - (1) first and second opposed lateral side walls, said side walls being formed with wedge-shaped openings;
 - (2) a first head portion, and means for pivotally mounting the same on said opposed side walls for movement

between a first, closed position and a second open and elevated position;

- (3) means for locking said first head portion in a closed position comprising fluidically actuated wedge-shaped locking members engageable in said openings in said opposed side walls, and piston-cylinder means mounted on said opposed side walls and operatively connected to said locking members for actuating the same;
- (4) a second head portion located below said first head portion and defining therewith a channel for the passage of extruded material therethrough; and
- (5) profiled bar means mounted on said first head portion and projecting into said channel for shaping the extruded material; and



- (c) roller means mounted between said opposed side walls, and means for mounting and rotating said roller means on a horizontal axis of rotation, said roller means including an external surface over which the extruded material passes, said external surface being disposed totally below, and downstream and spaced from the internal surface of said barrel, and drive means operatively connected to said roller, said external surface of said roller also being spaced from said first and second head portions;

whereby said first head portion can be rotated upwardly upon release of said locking member so as to expose said barrel and screw means for cleaning, or replacement.

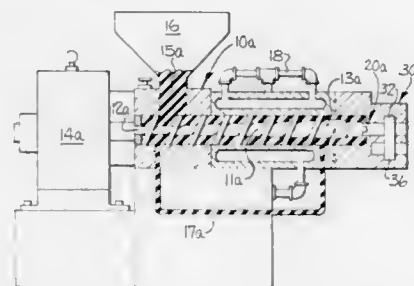
4,642,040

EXTRUDER DRIVINGLY CONNECTED TO GEAR PUMP
Steve A. Fox, Hickory, N.C., assignor to Normag Corporation, Hickory, N.C.

Filed Aug. 23, 1985, Ser. No. 768,574
Int. Cl.⁴ B29B 47/00

U.S. Cl. 425—204

16 Claims



1. An apparatus for accurately metering a viscous material, comprising an extruder with a positive displacement pump in tandem relation thereto for receiving extrudant from the extruder, said pump comprising two cooperatively counterrotating rotors, drive means for said extruder, and means drivingly

connecting said extruder to said positive displacement pump for driving the positive displacement pump.

4,642,041

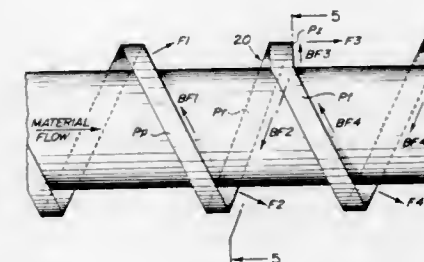
EXTRUDER SCREW FOR MINIMIZING THE OPPOSING PRESSURE FLOW

Richard W. Murphy, 330 Tamarack Dr., Allentown, Pa. 18104
Filed Jan. 31, 1986, Ser. No. 824,678

Int. Cl.⁴ B29B 7/14

U.S. Cl. 425—208

7 Claims



1. In extrusion apparatus, where the apparatus is subject to the opposing forces of drag flow and pressure flow, comprising a housing and an extruder screw extending substantially the length of said housing, where said extruder screw in sequence from one end thereof contains a feed section, a transition section, and a metering section, the improvement comprising in combination therewith the provision on said screw of a first back flow seal prior to said transition section, and a second back flow seal near the end of said extruder screw to minimize said pressure flow, wherein each said back flow seal comprises a first length of flighting having a reduced slope over that preceding said first length of flighting, and a second length of flighting having zero slope measure from a line perpendicular to a rotation axis of the screw.

4,642,042

APPARATUS FOR MAKING COMPOSITE SHEETS

J. Harold Smith, Amherst, Mass., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jul. 5, 1985, Ser. No. 752,691

Int. Cl.⁴ B28B 5/00

U.S. Cl. 425—364 R

10 Claims



1. A fuel cell manufacturing apparatus for making composite sheets comprising a movable belt means and a metering member that is separated from the belt means by a distance at least equal to a predetermined final thickness of the composite sheet, said metering member particularly adapted to vibration in a direction transverse to the belt means, the metering member comprising:

- (a) a curved plate section that is at its closest point to the belt less than 120% of the thickness of the predetermined final thickness;
- (b) an inclined plate section, contiguous to said curved plate section at said closest point, wherein the inclined plate section slopes towards the belt from the curved plate section to a second point which is separated from the belt means by a distance substantially equal to the predetermined final thickness of the composite sheet;
- (c) a flat plate section contiguous to said inclined plate section at said second point, wherein said flat plate section is

both parallel to the belt means and separated from the belt means by a distance substantially equal to the predetermined final thickness of the composite sheet;

- (d) said metering member sections capable of oscillating in opposite directions transverse to the belt means; and
- (e) means for oscillating said metering member sections.

4,642,043

DEVICE FOR THE ELECTRIC HEATING AND FLUID COOLING OF AN INJECTION-MOLDING MACHINE NOZZLE

Eugen Schwarzkopf, Lüdenscheld, Fed. Rep. of Germany, assignor to Hotset Heizpatronen und Zubehör GmbH, Lüdenscheld, Fed. Rep. of Germany

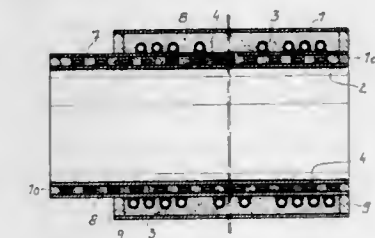
Filed Jul. 5, 1984, Ser. No. 627,802

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324901

Int. Cl.⁴ B29C 45/78

U.S. Cl. 425—547

9 Claims



1. A heating and cooling jacket for synthetic resin distributor for an injection molding machine, comprising:

- a cylindrical circumferentially closed one-piece prefabricated outer metal sleeve;
- a cylindrical, circumferentially closed prefabricated intermediate metal sleeve coaxial with and disposed within said outer metal sleeve and radially spaced therefrom to define an outer annular compartment between said inner and outer metal sleeves;
- a cylindrical, circumferentially closed prefabricated inner metal sleeve coaxial with and disposed within said intermediate metal sleeve and radially spaced therefrom to define an inner annular compartment between said inner metal sleeve and said intermediate metal sleeve;
- means for closing said inner and outer annular compartments at opposite axial ends thereof;
- a cooling coil having a multiplicity of cooling-tube turns of flattened cross-section lying against said intermediate metal sleeve and against said inner metal sleeve within said inner annular compartment, at least some of said inner turns being separate from one another by interturn spaces;
- an electric heater having a plurality of helical turns in spaced apart relationship in said outer annular compartment and in contact with said intermediate metal sleeve;
- a first means of densely packed heat-conductive metal particles filling said outer annular compartment and spaces between the turns of said heater between said outer metal sleeve and a second mass of high conductivity densely-packed metal particles filling said inner annular compartment between said inner metal sleeve and said intermediate metal sleeve and the spaces between the cooling-tube turns of said cooling coil.

4,642,044
LOCK

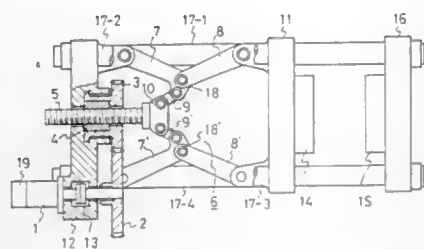
Yasushi Ishikawa, and Takeshi Fukuroi, both of Yamanashi, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan
PCT No. PCT/JP84/00555, § 371 Date Jul. 23, 1985, § 102(e)
Date Jul. 23, 1985, PCT Pub. No. WO85/02363, PCT Pub.
Date Jun. 6, 1985

PCT Filed Nov. 20, 1984, Ser. No. 761,560

Int. Cl.⁴ B29C 45/66

U.S. Cl. 425—593

3 Claims



1. A lock in an injection molding apparatus, having a fixed back pressure plate connected to one end of a plurality of tie bars extending in parallel with each other, a movable base slidably supported by said tie bars and adapted to receive a first mold, and a double toggle type toggle mechanism having at least one pair of link means each of which is pivotally connected between said fixed back pressure plate and said movable base for moving between extended and retracted positions, said lock being arranged to move said movable base with respect to a fixed base to which a second mold is fixed, until said link means becomes straight, so that the first and second molds are clamped by an elastic restoration force generated by extension of said tie bars, the improvement comprising:

- (a) a servo motor; and
- (b) a transmission mechanism having a nut mechanism rotatably supported by said fixed back pressure plate and a screw threadedly engaged with said nut mechanism and extending substantially in parallel with said tie bars, wherein said nut mechanism is adapted to be rotatively driven by said servo motor for rotatively driving said screw, said screw is adapted to be rotatively driven for reciprocal movement substantially in parallel with said tie bars to extend and retract said link means, and said servo motor operates to hold said link means straight when said link means is straightened.

4,642,045
POST-COMBUSTION GAS-BURNER OF A HYDROGEN
PEROXIDE EMULSION

Charles Provost, 3 Place de la Monnaie, 44000 Nantes, France
PCT No. PCT/FR83/00189, § 371 Date Apr. 22, 1985, § 102(e)
Date Apr. 22, 1985, PCT Pub. No. WO85/01568, PCT Pub.
Date Apr. 11, 1985

PCT Filed Sep. 26, 1983, Ser. No. 726,003

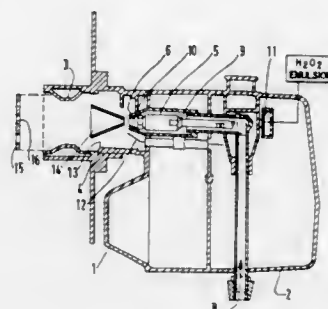
Claims priority, application France, Apr. 14, 1982, 82 06627
Int. Cl.⁴ F23J 7/00

U.S. Cl. 431—4

7 Claims

1. A method for increasing the flame temperature of com-

bustion gases, comprising the steps of combusting said combustion gases while injecting an atomized emulsion of hydrogen



peroxide, water and soluble oil into said combustion gases, whereby heat power of said combustion gases is increased.

4,642,046
PULSE COMBUSTOR

Kazuo Saito, Fujinomiya; Takashi Matsuzaka, Fuji; Mitsuyoshi Chiba, Fuji; Shigeto Sumitani, Fuji; Masami Yodo, Fuji, and Hiroyuki Araya, Fujinomiya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

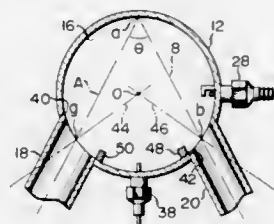
Filed Aug. 23, 1984, Ser. No. 643,384

Claims priority, application Japan, Oct. 28, 1983, 58-202325

Int. Cl.⁴ F23D 14/62; F23C 11/04

U.S. Cl. 431—354

20 Claims



1. A pulse combustor comprising:

- a main body including;
 - an interior cylindrical mixing chamber having a first closed end and a second open end,
 - and a combustion chamber communicating with said second end of said mixing chamber, said mixing chamber having an inner peripheral surface, an air inlet port and a fuel inlet port, both said air inlet and fuel inlet ports being provided on the same circumference of said inner peripheral surface of said mixing chamber, and located at a predetermined distance from one-another;
 - an air supply pipe connected to said air inlet port in such a position as to introduce air into said mixing chamber to cause the air to flow within said mixing chamber in a rotational direction along said inner peripheral surface of said mixing chamber;
 - a fuel supply pipe connected to said fuel inlet port in such a position as to introduce fuel into said mixing chamber in a direction opposite the direction in which said air rotates; and
 - an igniting member mounted on said main body to extend into the interior of said mixing chamber and intended to ignite a mixture of said air and fuel introduced into said mixing chamber.

4,642,047
METHOD AND APPARATUS FOR FLAME
GENERATION AND UTILIZATION OF THE
COMBUSTION PRODUCTS FOR HEATING, MELTING
AND REFINING

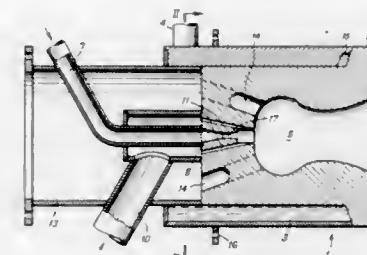
Grigory M. Gitman, Duluth, Ga., assignor to American Combustion, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 642,141, Aug. 17, 1984. This application Jul. 15, 1985, Ser. No. 755,831

Int. Cl.⁴ F27B 14/00, 9/40; B05B 7/06; F23D 11/44

U.S. Cl. 432—13

49 Claims



1. An economizing method of hydrocarbon fluid fuel combustion in an ongoing hydrocarbon flame formed in a combustion chamber within liquid cooled combustion block having an outlet nozzle directed into a hot furnace interior, to reduce the consumption of fuel and pure oxygen in heating processes, comprising the steps of:

- separately supplying hydrocarbon fluid fuel and two different oxygen based oxidizing gases to the combustion chamber;
- directing said first oxidizing gas having a given oxygen concentration through at least one opening in the combustion chamber wall toward said combustion chamber outlet nozzle;
- directing said hydrocarbon fuel into said combustion chamber in a stream directed through at least one opening in the combustion chamber wall above and toward said first oxidizing gas so that said hydrocarbon fuel is caused to be mixed with said first oxidizing gas to stabilize combustion within the combustion chamber thereby creating a highly luminous hot flame core extending throughout said combustion chamber;
- directing said second oxidizing gas having different oxygen concentrations from said first oxidizing gas through at least one opening in the combustion chamber wall into said combustion chamber in a stream directed about and toward said hydrocarbon fuel in the flame core so that said second oxidizing gas initially insulates said core from cooling by contact with the liquid cooled block prior to being mixed with said hydrocarbon fuel for final combustion;
- discharging the products of combustion from the combustion chamber through a liquid cooled nozzle opening toward the furnace interior; and
- controlling the flow of said hydrocarbon fuel, said two oxidizing gases and cooling liquid.

4,642,048
APPARATUS FOR CONTINUOUSLY PREHEATING AND
CHARGING RAW MATERIALS FOR ELECTRIC
FURNACE

Youn S. Kim, 6-506 Jugong Apartment Gaza-Dong, Buk-Ku, Incheon, Rep. of Korea (160)

PCT No. PCT/KR85/00014, § 371 Date Feb. 27, 1986, § 102(e)

Date Feb. 27, 1986, PCT Pub. No. WO86/00394, PCT Pub.
Date Jan. 16, 1986

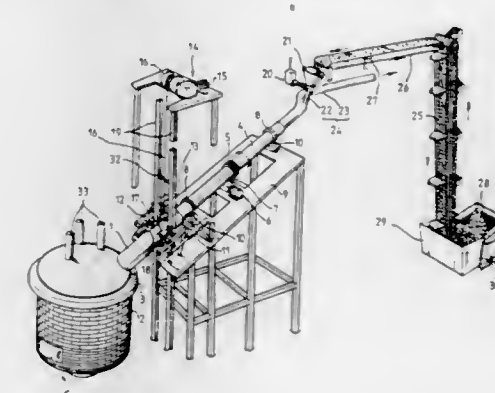
PCT Filed Jun. 24, 1985, Ser. No. 841,519

Claims priority, application Rep. of Korea, Jun. 30, 1984,
84-3820

Int. Cl.⁴ F27B 7/00; F23K 3/00

U.S. Cl. 432—103

1 Claim



1. Apparatus for preheating and charging raw materials for an electric furnace, comprising: a waste gas guiding duct disposed on one side of a roof of an electric furnace; a rotating duct spaced apart from said guiding duct, and inserting duct insertable into said guiding duct; a guide rail; a storage means; a connecting duct arranged to be lifted to an upper limit position and guided by said guide rail; a stationary duct fixed at a lower end portion of said rotating duct; a branch tube arranged at an upper end portion of said rotating duct, said branch tube being bifurcated as a waste gas exhaust duct and a feed chute provided with a control damper and a hopper; a belt conveyor provided with a weighing means and a bucket conveyor merged into said storage means having a screen at a lower end portion thereof.

4,642,049
PROCESS FOR PREHEATING A COMBUSTIVE GAS BY
MEANS OF COMBUSTION GASES AND PREHEATING
DEVICE ASSOCIATED WITH A BURNER FOR
CARRYING OUT THE SAID PROCESS

Raymond Louis, Montmagny, France, assignor to Gaz de France, France

Filed Jan. 16, 1986, Ser. No. 819,277

Claims priority, application France, Jan. 22, 1985, 85 00861

Int. Cl.⁴ F28F 1/10

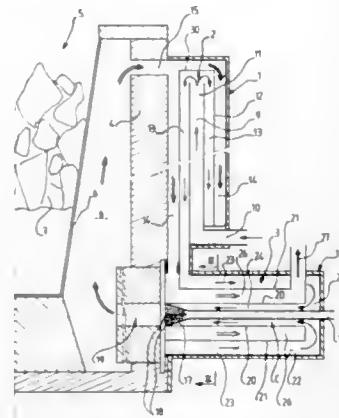
U.S. Cl. 432—223

3 Claims

1. A device for preheating a combustive gas by combustion gases escaping from a thermal space, said device comprising in combination:

- a box member (1) comprising an inlet (15) for the combustion gases and an inlet (10) for the combustive gas;
- a first exchanger (2) contained in said box member and comprising: duct means (19) connected to the inlet (10) for the combustive gas; a first jacket (12) surrounding said duct means and defining therewith a first space (13) for the circulation of the combustive gas; and a second jacket surrounding said first jacket to define therewith a second

space (14) connected to said inlet (15) for the combustion gases;
 a burner (C) comprising a combustible gas supply duct (16) and above which said first exchanger (2) is substantially vertically arranged;
 a second exchanger (3) incorporated in said burner and comprising three pipes: inner, intermediate and outer substantially concentric pipes (20, 21, 22) surrounding said supply duct and defining, an outer space (23) and an inner space (24) which contains said supply duct, said outer and inner spaces communicating with one another and with said first space (13) of said first exchanger, an intermediate space (26) communicating with said second space (14) of said first exchanger;
 means (28, 29) for providing rotation of the combustive



gases and the combustion gas when they respectively pass from said first space (13) to said outer and inner spaces (23, 24) and from said second space (14) to said intermediate space (26) said means for providing rotation of the gases comprising a first duct (28) for providing communication between said first space (13) and said outer and inner spaces (23, 24), said first duct being tangentially connected to said outer concentric pipe (22), and a second duct (29) for providing communication between said second space (14) and said intermediate space (26), said second duct being tangentially connected to said intermediate concentric pipe (21) and wherein
 said combustible gas supply duct (16) has a substantially conical end (17) with orifices (18) communicating with said inner space (24) of said second exchanger (3), defined by said inner concentric pipe (20) and said supply duct.

4,642,050

ALIGNMENT CAP FOR MOUNTING ARTIFICIAL TEETH ON WORKING MODELS

Lucien J. Heinix, Antwerp, Belgium, assignor to Alphadent, Belgium

Filed Apr. 5, 1985, Ser. No. 720,178

Claims priority, application Belgium, Apr. 20, 1984, 2/60396
Int. Cl.⁴ A61C 11/00

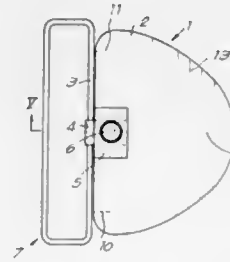
U.S. Cl. 433—56

5 Claims

1. An alignment cap for mounting artificial teeth on a submaxillary working model comprising:

- a cap body in the configuration of the retromandibular triangle of the working model and having a proper arch and including a backside;
- the cap body being formed of transparent material for permitting viewing therethrough of teeth mounted on the working model;
- anchoring means directly attachable to the lateral and back sides of the working model for defining an axis of rotation lying against the retromandibular triangle of the working model; and

(d) means for connecting the backside of the cap body to the anchoring means for permitting the cap body to pivot



about the axis of rotation, but not be displaceable in its axial direction, with respect to the working model.

4,642,051

DENTAL HANDPIECE

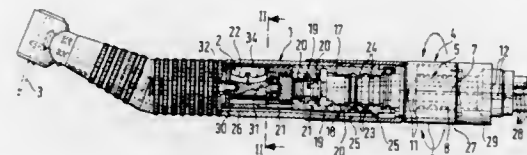
Gerd Löhn, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany
Filed Jul. 22, 1985, Ser. No. 757,609

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433876

Int. Cl.⁴ A61C 1/02

U.S. Cl. 433—100

4 Claims



1. A dental handpiece, a gripping sleeve part having a built-in air motor for the drive of a treating implement which is supported in the gripping sleeve part; a detachable connecting member being associated with the gripping sleeve part; a control device possessing a handgrip for changing the direction of rotation of the air motor being associated with said air motor; said control device including a rotary slide valve and said handgrip being an external turn ring including a follower projecting through a radial guide slot in said connecting member for connection with the rotary slide valve; said connecting member including two passageways connectable with the air motor through outlet orifices for, respectively, the infeed of driving air and for the discharge of exhaust air; said radial guide slot including stops at the ends thereof wherein the positions of said stops corresponds to the two rotational end positions of the rotary slide valve, the passageways towards the gripping sleeve part being arranged in a trunnion-shaped extension of the connecting member which is detachably insertable into the axial receiving opening of the gripping sleeve part, the extension including annular channels; sealing rings for sealing said channels through contacting the inner wall of the receiving opening of the gripping sleeve part, the outlet orifices of the partial passageways towards the gripping sleeve part communicating with said channels whereby said annular channels connect through connecting passageways in the gripping sleeve part with the work chamber of said air motor; said control device being arranged centrally and coaxially in the core of the connecting member, said passageways being interrupted over the axial length of the rotary slide valve, with the formation of partial passageways remote from the gripping sleeve, and partial passageways towards the gripping sleeve part which possess the outlet orifices; the rotary slide valve including two paired connecting passageways of which, in the one rotational end position of the rotary slide valve, the one pair of the partial passageway remote from the gripping sleeve part driving air connecting with the one partial passageway

towards the gripping sleeve part, as well as connecting the partial passageway remote from the gripping sleeve part which conducts the exhaust air with the other partial passageway towards the gripping sleeve part; and for reversing the direction of rotation of the air motor in the other rotational end position of the rotary slide valve, the other pair of the partial passageway remote from the gripping sleeve part connecting with the other partial passageway towards the gripping sleeve part, as well as connecting the partial passageway remote from the gripping sleeve part with the partial passageway towards the gripping sleeve part.

4,642,052

DENTURE WITH CHEWING INSERTS

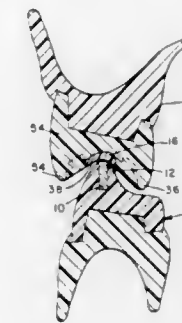
Robert D. Carlson, 306 Walnut Ave., #39, San Diego, Calif. 92103

Filed Oct. 2, 1985, Ser. No. 782,876

Int. Cl.⁴ A61C 13/00

U.S. Cl. 433—189

15 Claims



1. A denture comprising:

- an upper and a lower row of artificial teeth having opposed occlusal faces, the opposed occlusal faces of at least a portion of the teeth being shaped to have buccal cusps in the lower row and cooperating indented surfaces in the upper row for cooperation with said buccal cusps on articulation of the denture;
 - a continuous insert bar of material harder than that of the artificial teeth embedded in the buccal cusps along at least part of the lower row of teeth so as to form the apex of each buccal cusp through which it extends; and
 - a plurality of insert members of material harder than that of the artificial teeth embedded in the occlusal faces of the upper teeth in the row opposing the insert bar, each insert member forming at least part of the indented surface of the tooth in which it is embedded so as to interact with the insert bar on articulation of the denture;
- the insert members comprising curved members arranged in opposed pairs, at least one pair of insert members being embedded in each tooth opposing the insert bar so that they form an arch following the indented surface on the occlusal face of that tooth, the limbs of each insert member being inclined inwardly towards the opposed member of that pair and downwardly relative to the horizontal plane of occlusion.

4,642,053

PILLAR CUSP

Robert D. Westerman, 7 Oak Alley, Baton Rouge, La. 70806
Continuation of Ser. No. 524,578, Aug. 19, 1983, abandoned.

This application Apr. 16, 1985, Ser. No. 723,737

Int. Cl.⁴ A61C 5/04

U.S. Cl. 433—225

10 Claims

1. An apparatus for use in connection with tooth restoration, specifically the restoration of one or more cusps of a tooth, comprising a frustum with a bore through its base, said bore being at least partially threaded, the threaded portion thereof beginning at said base of said frustum, and a dental anchoring pin, one end of which is for inserting in a channel drilled into

the dentin portion of said tooth being restored, the other end of said pin threadedly engaging the threaded portion of said bore, wherein the diameter of said base of said frustum ranges between



tween approximately 1.9 mm and 2.5 mm, the height of said frustum ranges between approximately 2.5 mm and 5.0 mm, and the angle of the side taper of said frustum ranges between approximately 3° and 4°.

4,642,054

PICTURE BOOK HAVING A TELEPHONE DIAL THEREIN

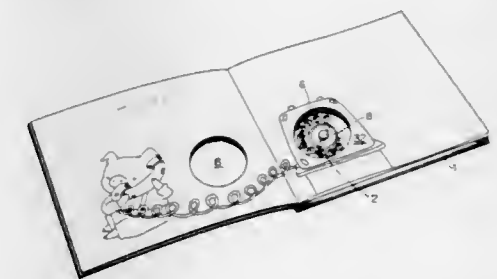
Yoshiomi Wada, 3-53-10, Higoshi Oizumi-machi Nerima-ku, Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 713,251

Int. Cl.⁴ G09B 19/00

U.S. Cl. 434—178

7 Claims



1. A picture book comprising front and back covers, and further a plurality of printed paper sheets therebetween, characterized in that a telephone dial structure is attached on the inside surface of said back cover, and that said dial structure comprises a dial plate attached on said back cover, said dial plate bearing numerical symbols and provided with a hole, said dial plate including an abutment surface, a finger plate formed of a plurality of holes in spaced circumferential positions each aligned to said numerical symbol, a shaft received within holes of said dial and finger plates to permit rotation of said finger plate, a stopper rigidly connected to said finger plate and engageable with said abutment surface formed in said dial plate, and a spring arranged between said finger plate and dial plate for urging said stopper toward said abutment surface.

4,642,055

HEMODYNAMIC MONITORING TRAINER

Steven S. Saliterman, 1920 S. First, #1008, Minneapolis, Minn. 55454

Filed Jun. 24, 1985, Ser. No. 747,767

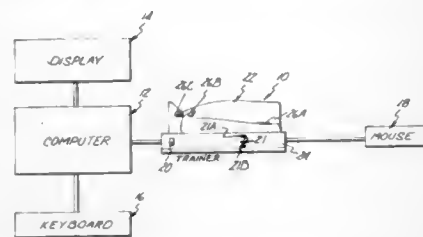
Int. Cl.⁴ G09B 23/32

U.S. Cl. 434—268

33 Claims

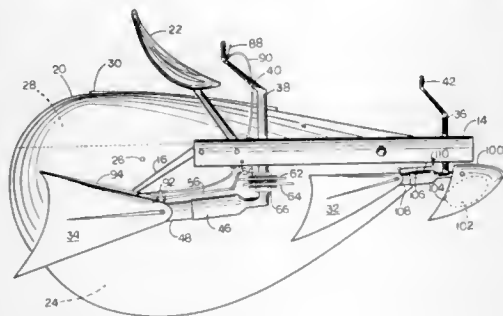
1. A training system comprising:
 a manikin having an insertion site at which a catheter may be inserted into the manikin;
 means positioned at the insertion site for receiving a catheter as it is inserted into the manikin at the insertion site;
 means for guiding the catheter along a path from the insertion site;

position sensing means for providing signals from which a location of a tip of the catheter can be determined; and



means for providing an output as a function of the signals from the position sensing means.

4,642,056
RECREATIONAL WATER CRAFT
Massoud Keivanjah, 1380 Lakewood Dr., Lexington, Ky. 40502
Filed May 28, 1985, Ser. No. 738,398
Int. Cl.⁴ B63H 16/04
U.S. Cl. 440—15 16 Claims



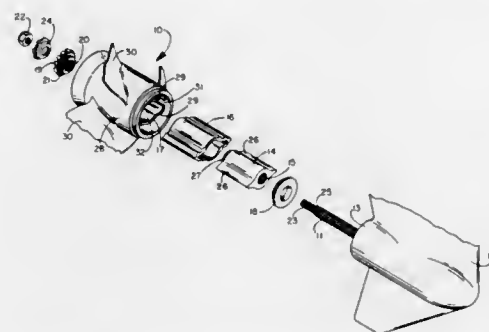
1. A water craft, comprising:
frame means;
flotation and balance means mounted to said frame means;
paddle means including a fore fin primarily for steering the craft and an aft fin primarily for propelling the craft, each fin being mounted to said frame means for lateral oscillation about a substantially vertical axis; and
means for varying the length of said paddle means during operation so as to increase the driving force of said paddle means to said craft.

4,642,057
SHOCK ABSORBING PROPELLER
Michael E. Frazzell, Neenah, and Richard H. Snyder, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.
Continuation of Ser. No. 562,764, Dec. 19, 1983, abandoned.
This application Aug. 27, 1985, Ser. No. 770,006
Int. Cl.⁴ B63H 21/30

U.S. Cl. 440—52 17 Claims
17. A propeller mounting arrangement for a marine outboard propulsion unit having an exhaust gas passage to discharge engine exhaust through a propeller hub, said propeller mounting arrangement comprising:

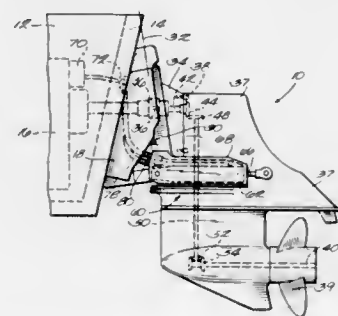
- (A) a sleeve member having a plurality of radially outwardly extending projections positioned axially along said sleeve member and having an inner bore for drivingly engaging a propeller shaft;
- (B) a single unitary propeller having an outer hub, propeller blades attached to said outer hub, an inner hub, and a plurality of vanes connecting said inner hub with said outer hub to form an exhaust gas passageway between said inner and outer hubs, said inner hub having a central bore therethrough and a plurality of channels in the wall of said central bore extending radially outward between said vanes and having walls defined by said vanes, said projec-

tions on said sleeve member extending radially outward beyond said central bore into said channels to loosely register with said channels whereby relative rotation between said sleeve member and said propeller is limited; and



(C) a single unitary cushion member encircling said sleeve member, said cushion member fitting in telescoping relationship between said sleeve member and said propeller inner hub, said cushion member engaging the walls of said channels and projections.

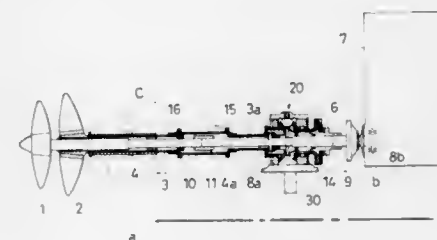
4,642,058
HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICES
Donald K. Sullivan, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 6, 1985, Ser. No. 731,159
Int. Cl.⁴ B63H 5/12
U.S. Cl. 440—61 11 Claims



1. A marine propulsion device comprising a mounting bracket adapted to be fixedly attached to the transom of a boat and having therein an opening, a propulsion unit pivotally connected to said mounting bracket for pivotal movement relative to said mounting bracket, a hydraulic cylinder/piston assembly located wholly aft of the transom and connected between said mounting bracket and said propulsion unit for effecting pivotal movement of said propulsion unit relative to said mounting bracket, a manifold fixedly attached to said mounting bracket in closing relation to said opening, said manifold being adapted to be connected to a source of hydraulic fluid inside the boat, and fluid line means communicating between said manifold and said hydraulic cylinder/piston assembly for supplying hydraulic fluid to said cylinder/piston assembly.

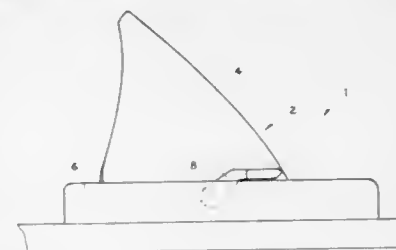
4,642,059
MARINE CONTRA-ROTATING PROPELLER APPARATUS
Hiroshi Nohara, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Jul. 16, 1984, Ser. No. 630,959
Claims priority, application Japan, Jul. 18, 1983, 58-110128[U]

Int. Cl.⁴ B63H 23/00 8 Claims
U.S. Cl. 440—75



1. A marine contra-rotating propeller apparatus for propelling a ship by contra-rotating propellers comprising an inner shaft having one end which is directly coupled to an output shaft of a main diesel engine and the other end to which an outside propeller is mounted, and an outer shaft having one end which is coupled to said inner shaft through a reversing transmission mechanism and an elastic coupling and the other end to which an inside propeller is mounted, said reversing transmission mechanism comprising an input bevel gear coupled to said inner shaft through said elastic coupling, a reversing bevel gear meshing with said input bevel gear, an output bevel gear meshing with said reversing bevel gear, and a fit gear mounted fixedly on said outer shaft and having outer teeth meshing with the inner teeth of said output bevel gear slidably in the axial direction.

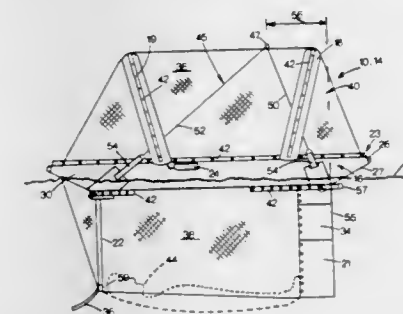
4,642,060
CAM LOCKED SLIDEABLE FOOT BINDER
Robert S. Scheurer, P.O. Box 539, and Kendal Hancock, both of Wichita Falls, Tex. 76307, assignors to Robert S. Scheurer, Wichita Falls, Tex.
Filed May 1, 1985, Ser. No. 729,126
Int. Cl.⁴ A63C 15/06 9 Claims
U.S. Cl. 441—70



8. Adjustable water ski foot binder apparatus comprising a slideable assembly having flexible means for overlying a foot portion and mounting means for holding the flexible means and further comprising relatively fixed slideway means for at least partially overlying the mounting means, first locking means connected to the slideway means for extending toward and away from the mounting means to lock the mounting means and slideable assembly in position on the ski, wherein the locking means comprising an eccentric cam means connected to the slideway and lever means connected to the cam means for moving the cam means

toward and away from the mounting means, and further comprising an upwardly facing detent means on the mounting means and wherein the cam means is movable downward into the detent means and upward away from the detent means.

4,642,061
PERSONNEL RESCUE APPARATUS FOR USE ON WATER
Donald B. Arney, S.E.I., Unit 406, 5940 No. 6 Road, Richmond, British Columbia, Canada V6V 1Z1
Filed Jan. 7, 1985, Ser. No. 689,167
Int. Cl.⁴ B63C 9/00 11 Claims
U.S. Cl. 441—83

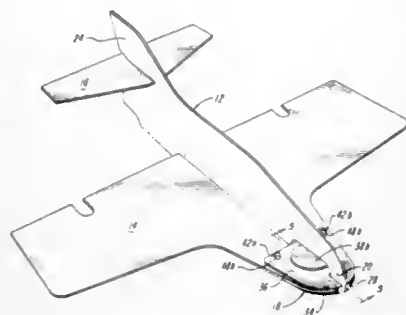


1. A rescue apparatus for rescuing a person on the surface of a body of water, the apparatus having:
(a) a body having laterally spaced, parallel, first and second elongated inflatable pontoons, and upper and lower connecting means interconnecting the pontoons, the pontoons having forward portions with upwardly and forwardly extending prow portions, the upper and lower connecting means being bowed upwardly and downwardly respectively to provide an opening between the pontoons to receive the person, the lower connecting means having a leading portion positioned aft of the forward portions of the pontoons to permit the forward portions of the pontoons to be supported on a receiving surface to facilitate unloading of the apparatus, the body also having flotation means cooperating with the upper connecting means to assist in self-righting should the apparatus tip,
(b) first and second thrusters cooperating with the lower connecting means so as to be sufficiently below the first and second pontoons respectively to provide a relatively low centre of gravity for the body to resist tipping and to assist in self-righting should the apparatus tip, the thrusters being adapted to be below the surface and to receive power and control signals to control movement of the apparatus on the surface,
(c) a net enclosure enclosing the pontoons and the connecting means, the net enclosure having an opening adjacent the forward portions of the pontoons to receive the person.

4,642,062
NOSE WEIGHT FOR TOY AIRCRAFT
Michael K. Dorffler, Canon City, Colo., assignor to Damon Corporation, Needham, Mass.
Filed Jul. 3, 1985, Ser. No. 751,437
Int. Cl.⁴ A63H 27/00 12 Claims
U.S. Cl. 446—68

1. In a toy aircraft having a fuselage panel normally oriented vertically and having means for mating to a wing panel, and at least a first wing panel normally oriented horizontally, said wing panel removably and replaceably matable with said fuselage panel,

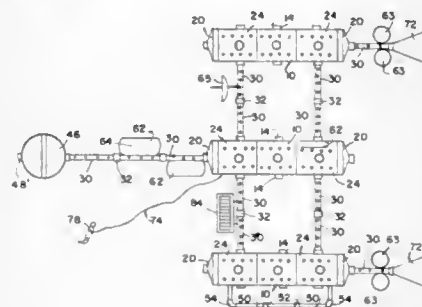
the improvement comprising weight holding means with opposed and conjoined first and second clamping jaw members, said jaw members being joined by hinge means, said weight holding means being removably and replaceably mounted upon one said panel, and



at least one of said jaw members having a weight seating chamber for removably and replaceably receiving a weighted object and fixedly securing it to said aircraft at a selected location thereon.

4,642,063
SPACE TOY CONSTRUCTION KIT
Douglas Gillette, 6321 N. Washtenaw St., #3, Chicago, Ill. 60659

Filed Aug. 22, 1983, Ser. No. 524,997
Int. Cl.⁴ A63H 17/00
U.S. Cl. 446-94 7 Claims

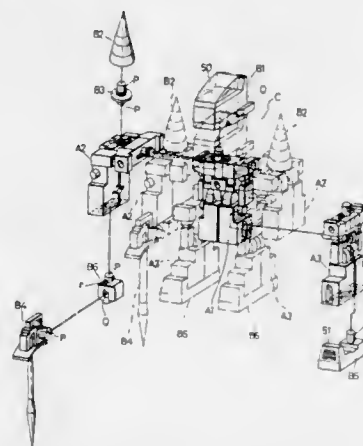


1. A knockdown toy that is capable of being assembled into a variety of shapes and configurations resembling a space ship or space station comprising, in combination:
a plurality of similarly-shaped and similarly-sized engineering modules, each said engineering module having a diameter and a substantially three-dimensional configuration and comprising a first end and a second end, each of said first and second ends comprising means for attaching said respective end to an adjacent end of another one of said engineering modules; said plurality of engineering modules being capable of being combined in a series such that they are aligned end to end where each said engineering module is directly connected to another engineering module through respective adjacent ends thereof; each of said engineering modules further comprising at least one hole formed along at least a portion of the circumference thereof in which may be received a rod or the like; and at least one hollow projecting sleeve portion extending outwardly from a portion of the outer-circumferential portion of each of said engineering modules, said at least one hollow projecting sleeve portion simulating an air lock of a space station, and being connectable to another toy component, and having an interior end portion spaced from said portion of the outer circumference;
at least one storage tank component designed to simulate a

fuel storage tank or oxygen storage tank, said at least one storage tank component comprising a main body having at least one hole formed at a portion of the outer circumference of said main body portion; and further comprising a plurality of insertion pins for connecting said at least one tank into said at least one hole formed along at least a portion of the circumference of each of said engineering modules.

4,642,064
ASSEMBLAGE TOY
Hideaki Yoke, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 715,117
Claims priority, application Japan, Mar. 23, 1984, 59-56935
Int. Cl.⁴ A63H 17/00
U.S. Cl. 446-94 12 Claims



1. An assembly toy comprising:
a robotic assemblage having a robotic humanoid form including a body, a head mounted to the top of the body, a pair of arms pivotally mounted at the right and the left upper sides of the body, a pair of legs pivotally mounted to the right and the left lower portions of the body and a pair of stand members at both upper sides of the body, the interval between the stand members is substantially equal to that between the outer side ends of the legs;
an optional assemblage element; and
interconnecting means for providing a connection to the optional assemblage element, are provided on each of the body, head, arms and legs of the robotic assemblage and include either a projection or a recess, the optional assemblage element includes a complementarily interconnecting means to enable attachment to the robotic assemblage.

4,642,065
EXTENSIBLE GAME CALLER WITH REMOVABLE MOUTHPIECE
Parker Whedon, 11322 Carmel Chase Dr., Charlotte, N.C. 28226, and Larry J. Hearn, Rte. 2, Box 217, Medon, Tenn. 38356

Filed Sep. 3, 1985, Ser. No. 771,619
Int. Cl.⁴ A63H 5/00; G10D 7/00
U.S. Cl. 446-209 10 Claims

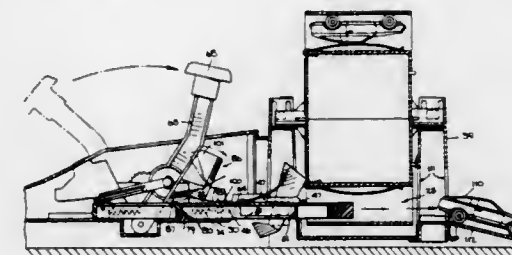
10. A turkey caller enabling a user to imitate the sound of a specific turkey being hunted, said turkey caller including a mouthpiece at one end, an intermediate throat and a trumpet at the other end and having an air passage therethrough of progressively smaller diameter as it extends from the trumpet to the mouthpiece, means mounting said trumpet for movement relative to the throat to change the overall length of the air passage through the turkey caller, and means for changing the

air volume of the mouthpiece, whereby each mouthpiece will produce a basic selected sound and the selected length of the



air passage through the turkey caller will modify the basic sound produced by the mouthpiece.

4,642,066
TOY VEHICLE LAUNCHER AND SOUND GENERATOR
Melvin R. Kennedy, 22 Lynn Ct., Hampton Bays, N.Y. 11946; Dietmar Nagel, 147 South Rd., Chester, N.J. 07930, and Avi Arad, Minuteman Hill, Westport, Conn. 06880
Filed May 30, 1985, Ser. No. 739,154
Int. Cl.⁴ A63H 5/00
U.S. Cl. 446-420 17 Claims

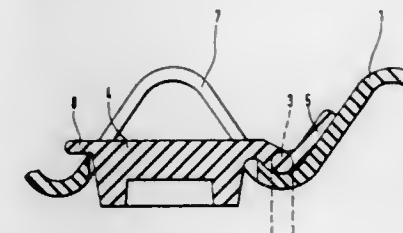


1. An apparatus for launching objects, comprising:
a frame;
a magazine, removably disposed on said frame, having a plurality of chambers therein, each of said chambers having a first opening therein communicating with a second opening therein;
a first ram, disposed on said frame, movable between a first and a second position, said first ram being clear of said magazine in said first position;
a second ram, disposed on said frame, movable between a third and a fourth position, said second ram being clear of said magazine in said third position,
said magazine being positionable on said frame to simultaneously align a first and a second of said chambers with, respectively, said first and second rams so that said first ram in moving from said first to said second position passes into said first chamber through said first opening thereof, and said second ram in moving from said third to said fourth position passes into said second chamber through said first opening thereof;
an arm, pivotally disposed on said frame, movable between a fifth and a sixth position;
means, coupled to said arm, for transmitting motion of said arm to said first and second rams so that movement of said arm from said sixth to said fifth position engenders movement of said first ram from said second to said first position, and movement of said second ram from said fourth to said third position, and so that movement of said arm from

said fifth position to said sixth position does not engender movement of said first and second rams;
means, affixed to said frame and said first ram, for urging said first ram from said first position to said second position;
means, affixed to said frame and said second ram, for urging said second ram from said third position to said fourth position;
means, disposed on said frame, for selectively fixing and releasing said first ram in said first position;
means, disposed on said frame, for selectively fixing and releasing said second ram in said third position; and,
means, disposed on said frame and on said first and second rams, for fixing said first and second rams in, respectively, said first and third positions, and for releasing said first and second rams in, respectively, said first and third positions upon movement of said arm to a predetermined position.

4,642,067
PROTECTIVE BELLOWS ASSEMBLY WITH PLUGGED LUBRICATING APERTURE

Hubert Geisthoff, and Theo Buthe, both of Lohmar, Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Filed Mar. 21, 1986, Ser. No. 842,543
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1985, 3511578
Int. Cl.⁴ F16C 1/26; F16D 3/84
U.S. Cl. 464-175 4 Claims



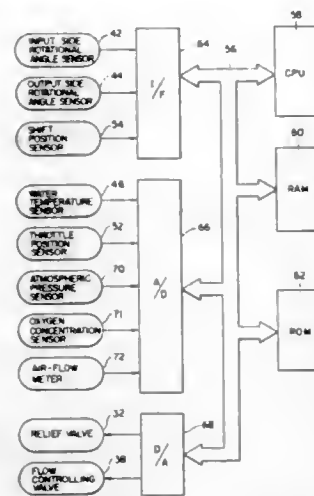
1. A protective bellows assembly for a joint particularly useful with a drive shaft for driving an agricultural implement from a power takeoff shaft of a tractor comprising:
a resilient bellows member having formed therein a series of folds and an aperture through which a joint upon which said bellows member is mounted may be lubricated;
a removable plug for sealing said aperture;
a resilient ring extending around said bellows in one of said folds having said plug connected thereto;
at least one lug member on said plug for facilitating manual movement of said plug; and
retention means provided on said plug engaging within one of said folds tending to retain said plug within said aperture.

4,642,068
APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION
Akinori Osanai, and Takao Niwa, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Sep. 25, 1984, Ser. No. 654,025
Claims priority, application Japan, Sep. 28, 1983, 58-177892; Oct. 17, 1983, 58-192582
Int. Cl.⁴ F16H 11/06
U.S. Cl. 474-11 4 Claims

1. An apparatus for controlling a continuously variable transmission for a vehicle, which vehicle has an engine having a throttle valve and a torque control system for controlling the

amount of fuel to be supplied to the engine, in accordance with the engine speed and a parameter of engine load, said transmission comprising:

- a hydraulic pressure operated variable width first pulley assembly connected to the engine;
- a hydraulic pressure operated variable width second pulley assembly connected to the vehicle;
- a belt looped between the first and the second pulleys for transmitting engine power to the vehicle;
- a hydraulic pressure source;
- first hydraulic line connecting said source with the first pulley assembly for generating a hydraulic pressure for engaging the first pulley with the belt;
- second hydraulic line connecting the source with the second pulley assembly for engaging the second pulley with the belt;
- first detecting means for detecting the position of the throttle valve;



first calculating means for calculating a value of control pressure so as to obtain a speed ratio which is a ratio of the vehicle speed to the engine speed and is determined by the detected position of the throttle valve;

first control valve means arranged in one of the first and the second hydraulic lines for controlling a pressure therein to said control pressure;

second detecting means for detecting the engine speed;

third detecting means for detecting atmospheric pressure;

means for calculating an actual torque as a function of the engine speed, position of throttle valve and atmospheric pressure;

second calculating means for calculating a value of line pressure so as to obtain the minimum pressure for engaging the belt with the pulley, which pressure is determined in accordance with the calculated engine torque, and;

second control valve means arranged in the other of the first and the second pressure line for controlling a pressure therein to said calculated line pressure.

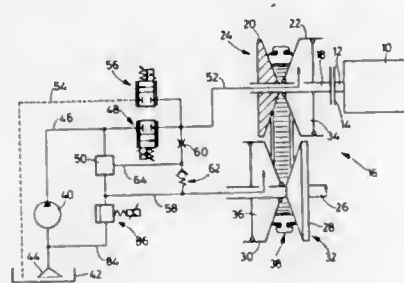
4,642,069
HYDRAULIC CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION
 Daisaku Sawada, Gotenba; Masami Sugaya, Susono; Ryuji Imai, Toyota, and Yoshinobu Soga, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
 Filed Oct. 2, 1985, Ser. No. 782,903
 Claims priority, application Japan, Oct. 4, 1984, 59-208963
 Int. Cl.⁴ F16H 11/04

U.S. Cl. 474—28

6 Claims

1. A hydraulic control system for a continuously variable transmission having a first and a second variable-diameter pulley provided on a first and a second shaft, a transmission belt connecting the first and second pulleys to transmit power

from one of the first and second pulleys to the other, and a pair of hydraulic cylinders for changing an effective diameter of the pulleys engaging the belt, the hydraulic control system including a hydraulic source delivering a pressurized fluid, and a flow control device for controlling a flow of the pressurized fluid from said hydraulic source into one of said hydraulic cylinders, and a flow of the fluid from said one hydraulic



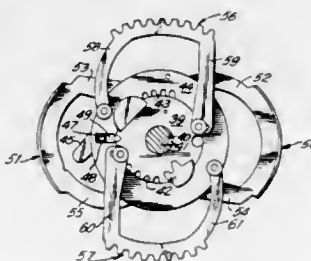
cylinder, thereby changing the effective diameters of the pulleys to vary a speed ratio of the transmission, said hydraulic control system comprising:

- a pressure regulating device for regulating said pressurized fluid which is delivered from said hydraulic source and applied to said flow control device so that a pressure of said pressurized fluid is higher than a pressure in said one hydraulic cylinder by a predetermined value.

4,642,070
AUTOMATIC VARIABLE SPEED TRANSMISSION
 Harold L. Walker, Dunedin, Fla., assignor to Albert C. Nolte, Jr., Jericho, N.Y., a part interest
 Continuation of Ser. No. 314,606, Oct. 26, 1981, abandoned.
 This application Sep. 19, 1985, Ser. No. 777,908
 Int. Cl.⁴ B62M 9/08

U.S. Cl. 474—57

14 Claims



1. An automatic variable speed transmission comprising:
 - a drive shaft;
 - a first disc fixed to said drive shaft for rotation therewith;
 - a second disc mounted for rotation about said drive shaft;
 - a pair of circumferentially spaced diametrically disposed drive segments, each of said drive segment being mounted to both said first disc and said second disc for radial movement relative to said drive shaft in unison, in the same direction and to the same degree to a radially outermost position, a radially innermost position and to intermediate positions therebetween, upon relative rotational movement of said first disc and said second disc, each said drive segment comprising peripheral means for driving engagement with a driven element within the same sector of revolution in all positions of said drive segments;
 - a spiral spring positioned around said shaft, means mounting one end of said spring radially inwardly of the periphery of said discs for rotation with said shaft and said first disc, means mounting the other end of said spring to said second disc, said spring biasing said second disc against rotational movement in one direction and to rotate in the other direction to move said drive segments radially outwardly

towards their respective outermost positions, radially inward pressure on said drive segments causing said second disc to rotate against the bias of said spring in said one direction and movement of said drive segments radially inwardly to their respective innermost positions; and

interacting locking means having respective operable interlocking elements located on said first disc and on said second disc and being relatively moveable from and to a normally locked position to and from an activated released position for releasably locking said first disc and said second disc against relative rotational movement, said respective operable interlocking elements on said discs being disposed radially inwardly of the outermost positions of said peripheral means of said drive segments when in the locked position, said interacting locking means including a member extending axially from one of said respective elements, said member comprising means for contacting a controller externally of said transmission while rotating and during each cycle of rotation thereof for moving said one of said elements out of engagement with the other during relative rotation of the shaft and disc, said member being located to comprise means for releasing said first and second discs for relative rotational movement during each cycle of rotation thereof when said member is contacting the external controller and when one of said drive segments is in driving engagement with the driven element and the other said drive segment is out of engagement with the driven element;

said drive shaft comprises a pedal crank rotatable by bicycle pedals;

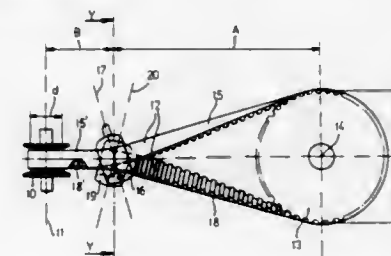
said peripheral means of said drive segments comprise chain sprockets and said transmission further comprises, as the driven element, a sprocket chain on said drive segment chain sprockets, means are provided for maintaining said sprocket chain under tension, the tension of said chain and the torque resulting from pedalling with drive shaft counteracts the biasing force of said spring and moves said segments inwardly, rotating said second disc in said one direction, when said locking elements are out of engagement; and

each of said drive segments is bifurcated and comprises one leg integral with one end of said segment and extending radially inwardly and pivotally mounted at its inner end to said first disc and another leg integral with the other end of said segment and extending radially inwardly and pivotally mounted at its inner end to said second disc.

4,642,071
TOOTHED BELT DRIVE BETWEEN OBLIQUE SHAFTS
 Guilio Botton, Via Giambellino 44, 20146 Milano, Italy
 Filed Jun. 20, 1985, Ser. No. 747,105
 Int. Cl.⁴ F16H 7/00

U.S. Cl. 474—63

4 Claims



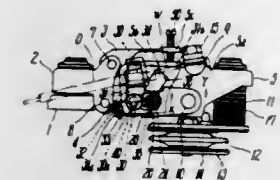
1. A toothed belt drive for acting between a pair of oblique shafts, said drive comprising:
 - reaction and guide rollers located between gears of the two shafts and acting on the back of branches of the belt,
 - a projection of an axis of each roller on a plane perpendicular to a line joining the centers of the two shafts has a direction substantially intermediate, for each branch of the

belt, to that of the immediately preceding roller or shaft and the one of the immediately following roller or shaft, the roller closest to a smaller gear of said gears, in each branch of the belt, has a distance from the joining line which is less than to the radius of said smaller gear, a projection of the center of said closest roller on the joining line has a distance from an axis of the smaller gear which is inferior or substantially equal to the value of the expression $Ld/(d+D)$, "L" being the distance between the axis of the two gears, "d" and "D" being diameters of the smaller and a larger gear of said gears respectively, the axis of inclination of each roller from said plane perpendicular to the joining line is so chosen that the roller axis is lined up with the belt teeth passing at the center of the roller contact area.

4,642,072
DERAILLEUR FOR A BICYCLE
 Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
 Filed Dec. 20, 1983, Ser. No. 563,578
 Claims priority, application Japan, Dec. 27, 1982, 57-229404;
 Dec. 28, 1982, 57-234456
 Int. Cl.⁴ F16H 9/00

U.S. Cl. 474—82

10 Claims



1. A derailleur for a bicycle for switching a driving chain from one sprocket to another at a multistage sprocket assembly at the bicycle, comprising: a derailleur body comprising a base member, a movable member having a chain guide, and a support means which supports said movable member movably axially of said multistage sprocket assembly; an operating means which movably operates said movable member at said derailleur body; and an adjusting means which adjusts an amount of movement of said movable member in an axial direction of said multistage sprocket assembly with respect to a constant amount of operation of said operating means.

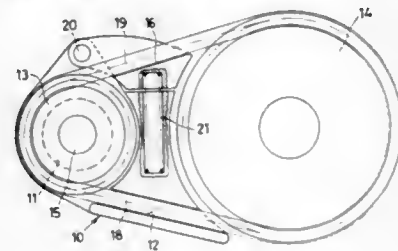
4,642,073
GUIDE FOR FLEXIBLE ENDLESS DRIVE MEMBER
 Amedeo Ancarani Restelli, Cernusco Lombardone, Italy, assignor to Societa' Italiana Catene Calibrate Regina S.p.A., Milan, Italy
 Continuation of Ser. No. 345,794, Feb. 4, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 648,615
 Claims priority, application Italy, Feb. 6, 1981, 19578 A/81
 Int. Cl.⁴ F16H 7/08

U.S. Cl. 474—111

3 Claims

3. In a drive system which includes a flexible endless drive member looped over a rotatable member mounted on a shaft and at least one other rotatable member and having during operation a taut lap and a slack lap adjacent the rotatable member, each lap having an inner surface and an outer surface the improvement comprising a rocking guide pad which includes first and second parts, said first part including a hub portion having a bore therethrough mounted for free rotation on said shaft and having a non-rotatable rigid guide channel

extending from said hub portion, said channel having sides facing each other in a direction transverse to the axis of said bore, said channel being so located as to receive and engage between its sides the inner and outer surfaces of the taut lap of the endless drive member, said second part of said guide pad being pivotally connected to said first part for swinging motion



about an axis which is parallel to the axis of said bore and which is located adjacent said bore, said second part having a planar guideway so located as to be engageable with the inner surface of the slack lap of the endless drive member, and bias means connected between said first and second parts and resiliently urging said second part toward the slack lap.

4,642,074

CHAIN-SPROCKET DRIVE

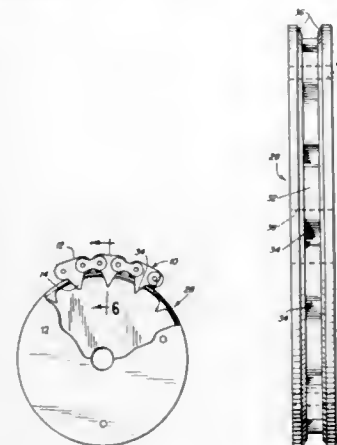
Charles F. Phillips, Newfield, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 3, 1985, Ser. No. 771,723

Int. Cl.⁴ F16H 7/06

U.S. Cl. 474—156

9 Claims



1. A power transmission drive chain and sprocket combination comprising:

a series of individual links each having a single depending toe or tooth defined by generally straight converging flanks and a pair of spaced apertures;

alternate pairs of toothless or toothless links joining said series of links, one on each side of said links of said series and each having an aperture aligned with an aperture of a link of said series of links;

pivot means in each set of aligned apertures and joining said links to form a chain; and

a sprocket having a pair of circular members spaced apart by a central generally circular spacer having a diameter less than that of said members and a thickness slightly in excess of the thickness of said toed links, said central spacer having a plurality of spaced cavities substantially equal to the dimensions of said toes of said toed links and each cavity being adapted to be substantially fully engaged by said toed links in sequence.

4,642,075

MULTIPLE SPROCKET WHEEL

Satoshi Nagashima, Souka, Japan, assignor to Sakae Ringyo Co., Ltd., Japan

Filed Jun. 4, 1985, Ser. No. 741,184

Claims priority, application Japan, Dec. 29, 1984, 59-198720[U]

Int. Cl.⁴ F16H 55/12

U.S. Cl. 474—160

4 Claims



1. A multiple sprocket wheel assembly, comprising a chain guard of one diameter and a plurality of sprockets having diameters successively less than the chain guard diameter and spaced from the chain guard and each other at predetermined intervals in generally parallel relationship in the order of decreasing diameter, each sprocket having a plurality of teeth equispaced from each other around the entire periphery of the sprocket, and a plurality of connecting segments connecting said sprockets together and to the chain guard, each segment being provided between selected adjacent teeth of an associated sprocket without interrupting the equispaced relationship of said teeth on their sprocket, and adjacent ones of said connecting segments being circumferentially spaced from each other by at least two teeth, said chain guard, sprockets and connecting segments being formed from a common plate.

4,642,076

BELT CONSTRUCTION CLIP FOR A TRANSVERSE BELT ELEMENT THEREFOR AND METHOD OF MAKING THE SAME

Anderson W. Howerton, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 575,434, Jan. 30, 1984, Pat. No. 4,552,550.

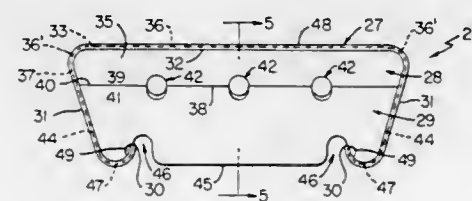
This application Aug. 22, 1985, Ser. No. 768,371

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

Int. Cl.⁴ F16G 1/22

U.S. Cl. 474—201

18 Claims



10. In a method of making a clip for a transverse belt element for an endless power transmission belt construction having an endless flexible carrier means that has a longitudinal axis and a plurality of said transverse belt elements assembled thereon with each said belt element comprising a plurality of parts secured together to define opening means passing transversely therethrough for receiving said carrier means therein, the improvement comprising the step of forming said clip to com-

prise one of said parts of said belt element and to comprise a generally C-shaped clip that in a direction substantially transverse to said longitudinal axis of said carrier means is adapted to snap over and hold the remaining parts of said belt element in their assembled relation.

4,642,077

V-BELT TRANSMISSION APPARATUS

Torao Hattori, Wako; Minoru Nishimura, Sagami-hara, and Masaki Goto, Fujinomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Fukui Sinta Kabushiki Kaisha, both of Tokyo, Japan

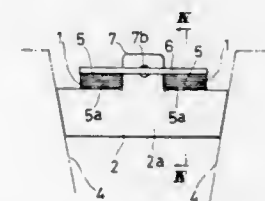
Filed Apr. 24, 1986, Ser. No. 855,295

Claims priority, application Japan, Apr. 25, 1985, 60-87471

Int. Cl.⁴ F16G 1/00

U.S. Cl. 474—201

4 Claims



1. A V-belt transmission apparatus comprising endless metallic belt means and a plurality of V-shaped metallic members disposed in series in a stacked condition along on said endless metallic belt means, said apparatus being arrangeable around a driving pulley and a driven pulley so as to enable power transmission between the two pulleys; said metallic belt means comprising at least two metallic belts disposed laterally in parallel one with another, each V-shaped metallic member being provided with laterally open, channel-shaped grooves made on both sides thereof, said metallic belt on each side being inserted in the channel-shaped groove on the corresponding side; each V-shaped metallic member comprising a main body having a projection portion, and a stopper member prepared separately from and attached to the main body of the V-shaped metallic member forming upper wall portions defining the channel-shaped grooves on both sides and facing outer surfaces of the metallic belts on both sides, the main body of the V-shaped metallic member being open upwardly on both sides of said projection portion thereof which is closed with the stopper member defining the channel-shaped grooves therebelow on both sides.

4,642,078

TRANSMISSION CHAIN

Guy Dupoyet, St. Laurent, France, assignor to Compagnie des Transmissions Mecaniques Sedis, Levallois-Perret, France

Filed Aug. 2, 1985, Ser. No. 761,706

Claims priority, application France, Aug. 3, 1984, 84 12358

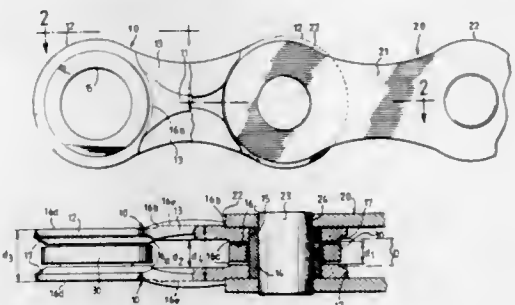
Int. Cl.⁴ F16H 13/02

U.S. Cl. 474—206

11 Claims

1. A transmission sprocket chain of the type comprising inner links consisting of two inner plates disposed parallel, outer links articulated on the inner links and likewise consisting of two outer plates disposed parallel to each other and parallel to said inner plates, the inner plates and the outer plates each defining a central zone and two end zones, the inner plates having inner and outer faces, being deformed in their end zones on both their faces so as to define projecting portions directed towards the interior of the chain, the outer plates of each outer link being connected by two pivot pins extending between the end zones of the inner plates, wherein said inner faces of the

inner plates are separated by a distance less than the minimum distance between the central zones of the inner plates and less



than the thickness of the roots of the teeth of the sprockets with which the chain has to cooperate.

4,642,079

TRANSMISSION CHAIN

Alexandre Horowitz; Martinus H. Cuypers, both of Eindhoven, and Jacobus H. M. van Rooji, Nuenen, all of Netherlands, assignors to Volvo Car B.V., Netherlands

Filed Mar. 10, 1982, Ser. No. 356,750

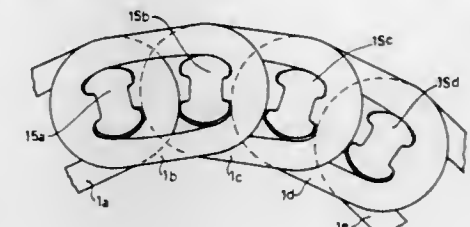
Claims priority, application Netherlands, Mar. 10, 1981, 81 01166; Jun. 15, 1981, 81 02868; Nov. 9, 1981, 81 05056

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.⁴ F16G 13/02

U.S. Cl. 474—219

20 Claims



1. A transmission chain comprising: a plurality of link units each having first and second opposite end portions for intercoupling to adjacent link units, the end portions of each link unit being spaced apart in a link longitudinal direction, each link unit end portion having a respective surface facing toward and spaced apart from the respective surface of the other end portion of that link unit, each end portion surface including first and second opposite spaced apart end sections and a respective contact surface section between the first and second end sections, the contact surface section being offset from the end sections in the link longitudinal direction; and a plurality of pins, each pin having first and second opposite side surfaces extending in a pin longitudinal direction transverse to the link longitudinal direction, each pin side surface including first and second opposite spaced apart end sections and a central side section between the first and second end sections, the central side section being offset from the end sections in the link longitudinal direction; the central side section of the first side surface of each pin being shaped for rolling engagement against the respective contact surface section of the first end portion of a corresponding first one of the link units, the central side section of the second side surface of that pin being shaped for rolling engagement against the respective contact surface section of the second end portion of an adjacent corresponding second one of the link units;

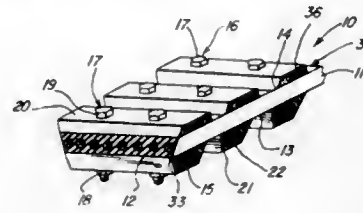
at the rolling engagement between one of the central side sections of one of the pins and the respective contact surface section of the corresponding one of the link unit end portions, the central side section and the respective contact surface section each being offset in the link longitudinal direction for fitting one into the other and each having a radius of curvature which differs from the radius of curvature of the other.

4,642,080
POWER TRANSMISSION BELT
Hiroshi Takano; Shinichi Takagi, and Kiyokazu Wada, all of Hyogo, Japan, assignors to Mitsubishi Belting Ltd., Kobe, Japan

Filed Feb. 1, 1985, Ser. No. 697,445
Int. Cl.⁴ F16G 1/21

U.S. Cl. 474—244

39 Claims

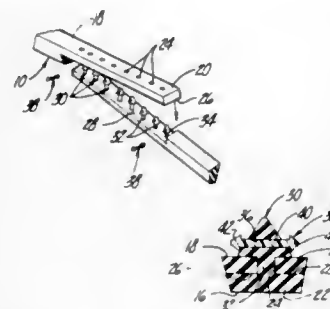


1. A power transmission belt for transmitting high loads, said belt comprising:
an elastomeric flat belt portion defining an outer surface and an inner surface;
a tensile cord extending longitudinally in said flat belt portion;
a plurality of pairs of aligned longitudinally, equally spaced first and second blocks adjacent said outer and inner surfaces respectively of the flat belt portion, each block comprising a core and fabric wrapped around said core; and
securing means extending through said flat belt portion and the cores of the aligned blocks for removably securing said aligned blocks to said outer and inner surfaces, said blocks of the aligned pairs mutually defining anchor plates for each other.

4,642,081
ADJUSTABLE DRIVE BELT
Robert J. Balomenos, 5726 Appoline, Dearborn, Mich. 48126
Filed Jun. 7, 1985, Ser. No. 742,407
Int. Cl.⁴ F16G 7/06

U.S. Cl. 474—253

14 Claims



1. An adjustable drive belt comprising:
a main belt having spaced apart elongated inner and outer surfaces, said main belt having a first end and a second end, said first end having an intermediate lower surface spaced a first predetermined distance from said outer surface and at least one aperture extending from said outer

surface to said intermediate lower surface, said at least one aperture having a predetermined diameter, said second end having an intermediate upper surface spaced a second predetermined distance from said inner surface; and
means for fastening said first end of said belt to said second end of said belt to form an endless drive belt, said means for fastening comprising:

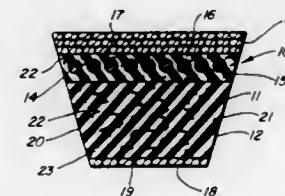
at least one projection extending outwardly from said intermediate upper surface of said second end in a direction away from said inner surface, said at least one projection having a cylindrical base extending from said intermediate upper surface and a head portion formed at an end of said cylindrical base and adapted to be received in said at least one aperture of said first end, said head portion having a predetermined maximum diameter greater than said predetermined diameter of said at least one aperture such that said head portion extends through said at least one aperture to securely connect said first end to said second end to form said endless drive belt.

4,642,082
POWER TRANSMISSION BELT
Satoshi Mashimo, Akashi; Hajime Kakiuchi, Itami, and Masayoshi Nakajima, Ashiya, all of Japan, assignors to Mitsubishi Belting Ltd., Nagata, Japan

Filed Jul. 26, 1985, Ser. No. 759,466
Claims priority, application Japan, Jul. 26, 1984, 59-156591
Int. Cl.⁴ F16G 5/06

U.S. Cl. 474—260

15 Claims



1. In a power transmission belt having a raw-edged inner compression section, an outer tension section, and a plurality of longitudinally extending tensile cords intermediate said compression and tension sections, the improvements comprising:
said compression section comprising a rubber composition having dispersed therein ceramic powder present in the amount of approximately 2 to 100 parts of ceramic powder to 100 parts of rubber by weight, said ceramic powder being formed of at least one of the group consisting of silicon carbide, titanium carbide, boron carbide, tungsten carbide, silicon nitride, aluminum nitride, boron nitride, titanium nitride, alumina, zirconia, and Beryllia.

4,642,083
METHOD AND APPARATUS FOR MAKING AND MANIPULATING INNER TUBES FOR USE IN DRY CELLS OR THE LIKE
Alfred Hinzmann, Weams, Va., assignor to Hauni-Richmond, Inc., Richmond, Va.

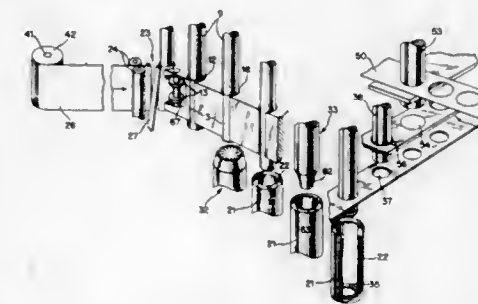
Filed Jul. 12, 1985, Ser. No. 754,622
Int. Cl.⁴ B31C 3/02

U.S. Cl. 493—93

39 Claims

1. A method of introducing inner tubes into outer tubes, comprising the steps of converting a series of discrete sheets of flexible material into inner tubes including feeding successive sheets of the series into an annular clearance which is disposed between the internal surface of an outer tool and the peripheral surface of an inner tool, and rotating one of the tools about the axis of the clearance to wind the sheet around the inner tool; advancing each of the thus obtained inner tubes axially into a

discrete outer tube, including moving the inner tool with the inner tube into the respective outer tube; rotating the inner tool relative to the inserted inner tube in a direction to promote

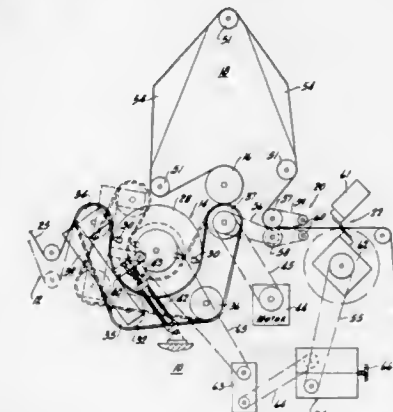


radial expansion of the inner tube and separation of the thus expanded inner tube from the inner tool; and thereupon extracting the inner tool from the inner tube.

4,642,084
PLASTIC BAG MAKING MACHINE
Peter J. Gietman, Jr., Combined Locks, Wis., assignor to Custom Machinery Design, Inc., Appleton, Wis.
Division of Ser. No. 641,768, Aug. 17, 1984, Pat. No. 4,567,984.
This application Nov. 1, 1985, Ser. No. 793,851
Int. Cl.⁴ B31B 23/16

U.S. Cl. 493—190

13 Claims

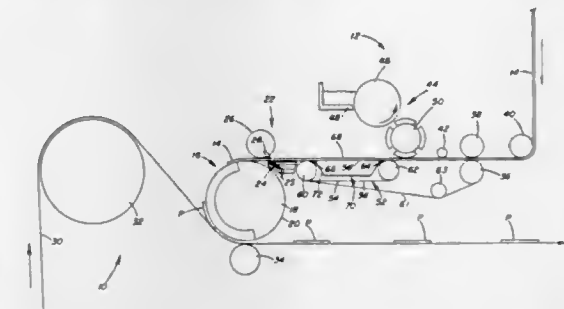


1. A machine for making plastic bags from plastic film moving along a longitudinal path comprising:
drum-shaped rotatable sealing means along said path for sealing said film transversely, having at least one sealing bar thereon and means for driving said sealing means operatively associated therewith,
blanket means surrounding a portion of said sealing means, said blanket means comprising a continuous belt, means for driving said blanket means operatively associated therewith,
means along said path for both cutting and perforating said film transversely to form easily separable interconnected bags, and
folding means located along said path intermediate said sealing means and said cutting and perforating means comprising one or more boards, for folding the film along lines parallel to the direction the film is moving, and wherein the diameter of said sealing means is infinitely variable between a first size in which said sealing means has a first diameter and a second size in which said sealing means has a second and larger diameter.

4,642,085
APPARATUS FOR MAKING WINDOW PATCHES
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smith Machine Company, Inc., Duncansville, Pa.
Continuation-in-part of Ser. No. 383,117, May 28, 1982, abandoned. This application Apr. 9, 1985, Ser. No. 721,201
Int. Cl.⁴ B31B 1/82

U.S. Cl. 493—222

18 Claims



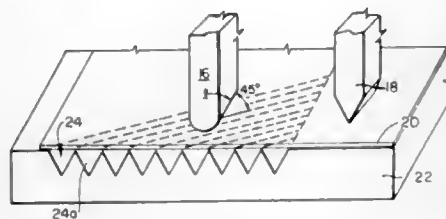
1. Apparatus for severing window patches from a web of patch material:
having a first surface and a second surface;
said apparatus defining a linear feed path having an upstream end and a downstream end;
web feeding means at said upstream end of said linear feed path;
adhesive applying means located along said linear feed path beyond said web feeding means for applying adhesive to selected portions of said first surface of said web of patch material;
a vacuum roll located along said linear feed path beyond said adhesive applying means and having a peripheral surface for engaging said second surface of successive window patches with said adhesive on said first surface thereof;
severing means positioned along said linear feed path between said adhesive applying means and said vacuum roll for severing said successive window patches of a preselected length from a leading end of said web while a portion of said leading end of said web is engaged with said surface of said vacuum roll;
a vacuum conveyor positioned along said linear feed path between said adhesive applying means and said severing means, said vacuum conveyor being operable to advance said web with said adhesive on said first surface of said web along said linear feed path from said adhesive applying means toward said severing means; said vacuum conveyor having a receiving end positioned adjacent said adhesive applying means for receiving said web after said adhesive is applied to said first surface thereof, said vacuum conveyor having a discharging end spaced upstream from said severing means in said linear feed path;
said severing means being positioned in said linear feed path between said discharging end of said vacuum conveyor and said vacuum roll;
said severing means being spaced from said discharging end of said vacuum conveyor with said vacuum roll being spaced from said severing means to provide an extended linear distance between said discharging end and said vacuum roll for pushing said web by a conveying action of said vacuum conveyor from said discharging end to said severing means, and
said vacuum conveyor being constructed and arranged for pushing said web along said linear feed path from said discharging end a preselected distance through said severing means and therefrom to the point where said portion of said leading end of said web is engaged with said peripheral surface of said vacuum roll prior to said severing means severing each window patch from said leading end of said web.

4,642,086
APPARATUS FOR FORMING FLEXIBLE FOLD LINES
IN A THERMOPLASTIC SHEET

Robert A. Howarth, Jr., Ringwood, N.J., assignor to Transparent Packaging Corp., Wood Ridge, N.J.
 Filed Jul. 29, 1985, Ser. No. 759,879
 Int. Cl.⁴ B05B 1/14

U.S. Cl. 493—341

8 Claims



1. Apparatus for forming foldable box blanks from a thermoplastic sheet by forming flexible fold lines in the thermoplastic sheet which has an upper and lower surface, comprising: scoring means including a plurality of scoring tools each having a longitudinal axis; a flat plate disposed opposite to said scoring tools for supporting said thermoplastic sheet, said flat plate having a plurality of sets of grooves formed therein at locations corresponding to and opposite to said scoring tools; the longitudinal axes of said grooves being offset relative to the longitudinal axes of said scoring tools; means for heating said scoring tools to less than the melting temperature of said thermoplastic sheet; and means for moving said heated scoring tools into engagement with said thermoplastic sheet to soften said thermoplastic sheet so that it is deformed on its upper surface by said scoring tools and so that it is deformed on its lower surface by the grooves in said plate, said deformed areas forming said flexible fold lines in said thermoplastic sheet.

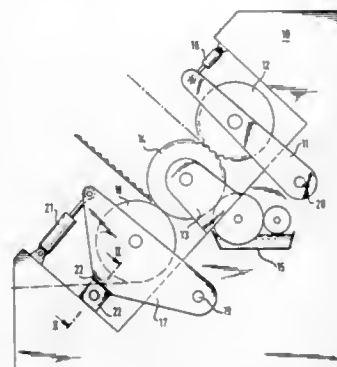
4,642,087
ONE-SIDED CORRUGATED CARDBOARD MACHINE
 Martin Hoffmann, Tangstedt, Fed. Rep. of Germany, assignor to Werner H. K. Peters Maschinen Fabrik GmbH, Hamburg, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 660,870
 Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 8331822[U]

U.S. Cl. 493—463

Int. Cl.⁴ B31F 1/20

5 Claims



1. A one-sided corrugated cardboard machine comprising a machine stand, an upper and a lower fluted roller, a pressure roller cooperating with the lower fluted roller, said pressure roller being pivotally supported by lever arms at the machine stand for pivotal movement toward and away from said lower fluted roller, adjustable abutment surfaces at the machine stand

associated with the lever arms, an adjusting means supported at the machine stand and cooperating with the lever arms, characterized in that said adjusting means provides for adjustment of the pressure roller nip, said abutment surfaces being arranged to face the pressure roller nip and limit the pivotal movement of the lever arms only in the direction away from the lower fluted roller and permitting movement of said lever arms and said pressure roller toward said lower fluted roller.

4,642,088
APPARATUS FOR RECEIVING AND REINFUSING
BLOOD

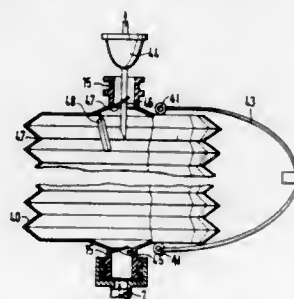
Mary Günter, Gauting, Fed. Rep. of Germany, assignor to Solco Basel AG, Birsfelden, Switzerland
 Division of Ser. No. 494,094, May 12, 1983, Pat. No. 4,573,992.
 This application Sep. 24, 1985, Ser. No. 779,581

Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218561

U.S. Cl. 604—4

Int. Cl.⁴ A61M 1/02

3 Claims



1. An apparatus for receiving and reinfusing a patient's own blood, comprising: a container having a side wall extending in an axial direction, first and second end walls, first connection means on said container at said first end wall for connection to a suction line for sucking blood from the patient into the container, second connection means on the container at said second end wall, for reinfusion of blood in the container into a patient; stiffening means for substantially preventing radial deformation of said side wall while permitting folding of said container in axial direction, resilient means for displacing said container from a compressed condition into an expanded condition, a first check valve associated with said first connection means and operable to open flow into the container, and a second check valve associated with said second connection means and operable to open flow out of said container, when blood is being sucked into the container, the second end wall being above said first end wall, whereas when blood in the container is reinfused into the patient said first end wall being above said second end wall by turning the container.

4,642,089
UNITARY VENOUS RETURN RESERVOIR WITH
CARDIOTOMY FILTER

Paul F. Zupkas, Costa Mesa; Francis M. Servas, San Juan Capistrano; Todor Pavlov, Laguna Niguel, and Steven G. Kelly, Garden Grove, all of Calif., assignors to Shiley, Inc., Irvine, Calif.

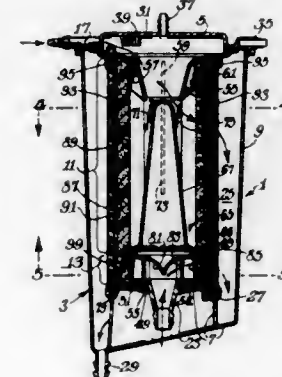
Filed Jan. 29, 1985, Ser. No. 696,147
 Int. Cl.⁴ A61M 37/00

U.S. Cl. 604—4

7 Claims

1. A device for the treatment and collection of blood from two different sources during a surgical procedure comprising a first vertically-extending annular blood treatment element comprising in series an annular layer of porous defoaming material and an annular layer of non-woven depth filter material, said first annular blood treatment element defining an inner space within itself; a second vertically-extending annular blood treatment ele-

ment, located directly below said first element, comprising an annular layer of porous defoaming material, with said second blood treatment element being free of any depth filter material, said second annular blood treatment element defining an inner space within itself; a hollow housing made of a rigid material and having a top wall, a bottom wall and a generally cylindrical side wall spaced radially outwardly from said first and second blood treatment elements; a reservoir for collecting treated blood, at least a portion of which is defined by the outer peripheries of the first and second blood treatment elements and the adjacent side housing wall; a gas vent in the top wall of the housing in communication with said reservoir; a treated blood outlet in the bottom wall of the housing at the bottom of said reservoir; a first blood inlet in said housing communication with the inner space within the first blood treatment element;



a second blood inlet in the bottom wall of said housing in communication with the inner space within the second blood treatment element, said second blood inlet being substantially vertically-extending and having a top end and a bottom end, and said top end of said second blood inlet being at substantially the same level as the adjacent bottom wall of said housing; and means within said housing for providing first and second blood flow paths in the device, said first blood flow path being through the first inlet, the first blood treatment element, the treated blood reservoir and the treated blood outlet, and said second blood flow path being through the second inlet, the second blood treatment element, the treated blood reservoir and the treated blood outlet, said means including an internal wall within the housing preventing liquid flow between the inner spaces within the first and second blood treatment elements and extending radially outwardly between said elements at least until the outer periphery of the layer of depth filter material in the first element.

4,642,090
DISPOSABLE COMBINATION SCALPEL BLADE AND
INCISION IRRIGATOR FOR OPHTHALMOLOGICAL
USE

Peter J. Utrata, 2680 Sandover Rd., Columbus, Ohio 43220
 Filed Mar. 4, 1985, Ser. No. 708,137

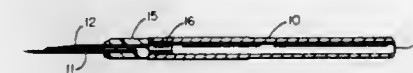
Int. Cl.⁴ A61B 17/20

U.S. Cl. 604—22

7 Claims

1. A disposable combination scalpel handle blade and an incision irrigator for ophthalmological use comprising: a hollow scalpel handle closed at one end and open at the other end, said open end being adapted to receive and frictionally hold a flexible tube, said closed end having a scalpel blade provided with a cut-

ting edge thereon and fixedly secured in the closed end of said scalpel handle and extending outwardly from said closed end and approximately coaxial therewith, said closed end of said scalpel handle also having a cannula, fixedly secured therein and extending from said closed end of said handle and disposed parallel to said scalpel blade at said closed end at an angle so that fluid flowing through



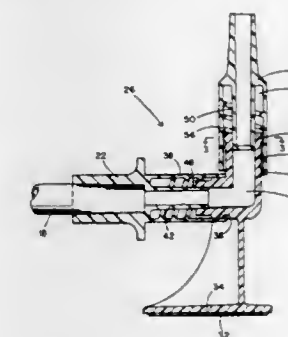
said cannula will impinge only upon the cutting edge of said scalpel blade, and said cannula being fluidwise connected to the interior of said hollow scalpel handle, whereby blood and debris from the incision being made by the cutting edge of said scalpel blade is washed away and the fluid does not obscure the surgeon's view so that the surgeon will have a clear view of the area in which he wishes to extend his incision.

4,642,091
STERILANT ADDITIVE HOLDER FOR CAPD SETS
 Douglass S. Richmond, Mission Viejo, Calif., assignor to Kendall McGaw Laboratories, Inc., Irvine, Calif.
 Filed Mar. 8, 1985, Ser. No. 709,903

U.S. Cl. 604—29

Int. Cl.⁴ A61M 1/28

6 Claims



1. A sterilant-additive holder for CAPD exchange sets, comprising: (a) a body adhesively securable to a work surface, said body having a passage extending therethrough; (b) connector retaining means on said body for releasably retaining a CAPD set connector in aseptic communication with said passage; and (c) cap retaining means on said body for releasably retaining a CAPD catheter connector cap in aseptic communication with said passage; (d) said passage extending from said connector retaining means to said cap retaining means; and (e) said cap having a portion closing off said passage when said cap is retained on said holder, the fit between said portion and said passage being sufficiently loose to allow sterilant introduced into said passage under pressure to penetrate into the interior of said cap.

4,642,092
GASTROINTESTINAL ASPIRATING DEVICE WITH
SUCTION BREAKERS

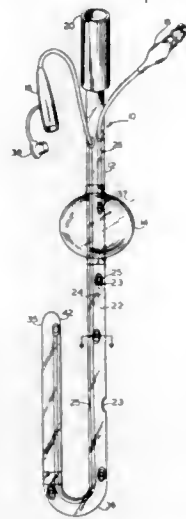
Gerald Moss, R.D. #1, West Sand Lake, N.Y. 12196
 Filed Dec. 10, 1984, Ser. No. 679,688

U.S. Cl. 604—43

11 Claims

1. A feeding and aspirating device for insertion into a patient's body, comprising:

a single walled tube, having an aspirating lumen and a feeding lumen therein, said aspirating lumen having an external end portion to be disposed outside the body, said feeding lumen also having an external end portion to be disposed of outside the body, and having an internal end portion to be disposed in the proximal segment of the small bowel, said internal end portion having an orifice therein for the discharge of food; and

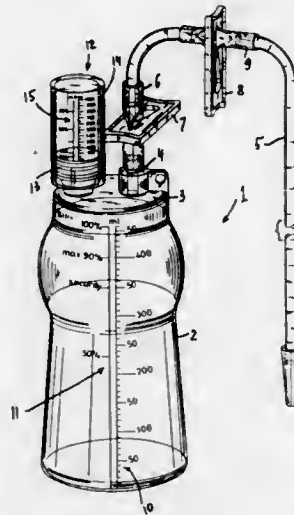


a set of primary aspirating orifices through said single walled tube for constant communication between the aspirating lumen and the exterior of the tube; and
a set of secondary orifices through said single walled tube for constant communication between the aspirating lumen and the exterior of the tube, said secondary orifices having openings which are positionally fixed with relation to and smaller than the primary aspirating orifices.

4,642,093
ASPIRATOR FOR WITHDRAWAL OF SECRETIONS FROM WOUNDS
Anton Härle, Drechslerweg 40, D-4400 Münster-Roxel, Fed. Rep. of Germany
Filed Feb. 7, 1985, Ser. No. 698,987
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404382

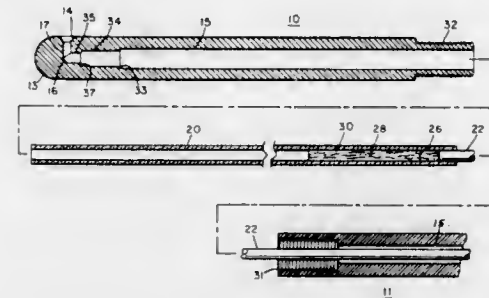
Int. Cl.⁴ A61M 31/00
U.S. Cl. 604—54 29 Claims
1. An aspirator for withdrawal of secretions from wounds, comprising an evacuated vessel having a normally sealed inlet for admission of secretions into its interior; and means for

indicating the maximum quantity of secretions which can enter the vessel by suction when the subatmospheric pressure in the



interior of the vessel prior to admission of secretions thereinto matches a predetermined value.

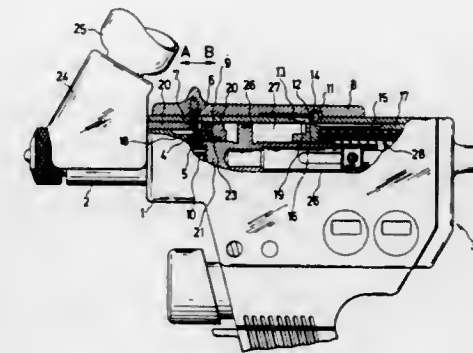
4,642,094
NON-SURGICAL EMBRYO TRANSFER DEVICE
Walter L. North, Jr., and Barry M. England, both of R.D. 1, Box 454, New Enterprise, Pa. 16664
Filed May 29, 1984, Ser. No. 615,072
Int. Cl.⁴ A61M 1/00
U.S. Cl. 604—55 10 Claims



1. A non-surgical embryo transfer device comprising in combination:
a longitudinal tip element, having a longitudinal bore partially therethrough, said longitudinal bore in communication with:
A. a medium bore of lesser diameter than said longitudinal bore adjacent to and in communication with said longitudinal bore;
B. a small bore of lesser diameter than said medium bore adjacent to and in communication with said medium bore;
C. an exit chamber positioned within the end portion of said longitudinal tip in communication with said small bore;
D. an exit passage connected with said exit chamber and leading to the surface of said longitudinal tip;
a hollow straw adapted to be inserted in said longitudinal bore, having a diameter slightly larger than said medium bore and adapted to be forced within said medium bore to form a tight fluid resistance fit with said medium bore; said

hollow straw contains a fluid vehicle therein and is comprised of, in combination:
an embryo within said fluid vehicle; and
a wadding positioned within said hollow straw adjacent to said fluid vehicle on the end portion of said straw opposite to said exit chamber;
a plunger device connected to the end portion of said longitudinal tip element, said plunger device comprising, in combination:
a plunger rod positioned within said plunger device, the end portion of said rod inserted within the end portion of said straw and adjacent to said wadding;
a thumb plate attached to the end portion of said plunger rod;
an enlarged finger grip positioned on the end portion of said plunger device, said finger grip having flat side portions thereon; said finger grip comprising of, in combination:
a circular fixed head, said circular fixed head having a circumferential groove on the lateral edge portion thereof;
a rotatable circular ring circumferentially positioned on said circular fixed head;
a threaded thumbscrew extending through said fixed head and thread engageable therewith, the end portion of said thumbscrew extending within said circumferential groove;
whereby said fixed head may be rotated about said circular fixed head and clamped thereto by said thumbscrew.

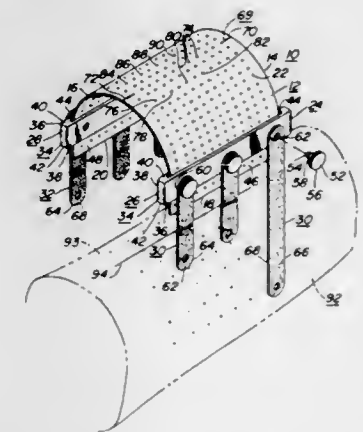
4,642,095
LOCKING MECHANISM FOR THE REMOVABLE VACCINE PUMP OF A NEEDLELESS INJECTION INSTRUMENT
Hans-Jürgen Dettbarn, Marburg, and Josef Zimmermann, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jul. 22, 1985, Ser. No. 757,746
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427189
Int. Cl.⁴ A61M 5/30
U.S. Cl. 604—72 2 Claims



1. A locking mechanism for locking a removable vaccine pump in a needleless injection instrument with a spring-driven drive motor, said needleless injection instrument of the type including a motor housing having a cylindrical bore, a working piston having a groove and being disposed in said cylindrical bore and arranged to be displaceable between a tensioned and an untensioned position, a receiving bushing for receiving said removable vaccine pump, said bushing being disposed in said cylindrical bore, and a piston shaft attached to said working piston and displaceable in said bushing, said vaccine pump of the type including a pump housing and being releasably attached to said bushing, and a pump ram releasably attached to said piston shaft, said locking mechanism comprising:

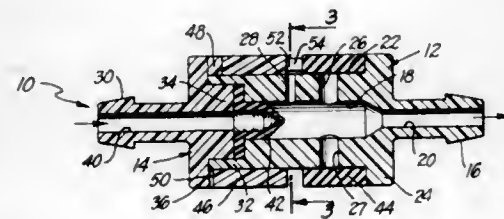
an operating element having a recess and being displaceably connected to said motor housing;
first and second aligned openings formed in said motor housing and said bushing, respectively;
a recess formed in said pump housing and aligned with said first and second openings;
a bolt fixedly attached to said operating element and disposed in said first and second openings, said bolt being engageable with said pump housing recess for locking said pump housing to said motor housing;
spring means for biasing said bolt toward engaging said pump housing recess;
a locking device engageable with said operating element recess for locking said bolt in engagement with said pump housing recess when said working piston is in said tensioned position; and
a leaf spring fixing said locking device to said motor housing and biasing said locking device into said groove in said working piston when said working piston is in said untensioned position.

4,642,096
POSITION LOCATING DEVICE AND METHOD FOR INTERSTITIAL RADIOTHERAPY
Harry R. Katz, 10121 Darmuld Green Dr., Potomac, Md. 20854
Filed Jun. 29, 1984, Ser. No. 626,333
Int. Cl.⁴ A61M 5/00
U.S. Cl. 604—116 5 Claims



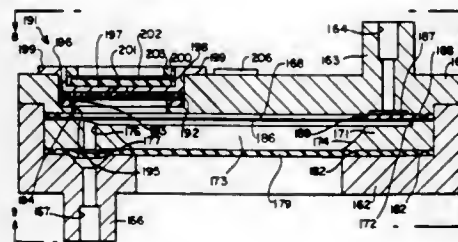
1. A position locating device for interstitial radiotherapy of a body portion comprising a flexible sheet member for being received about and conformed with a body portion which is to receive radiotherapy, the sheet member having a plurality of spaced position locating means and first and second opposite ends, and attachment means for releasably securing the sheet member about the body portion comprising joining means securing a plurality of bands with the sheet member, the joining means providing first and second clamping units each detachably secured with the sheet member proximate to a respective one of its ends for being replaced and repositioned therewith, the plurality of bands comprise first and second sets having first ends pivotably secured with a respective one of the first and second clamping units for allowing their angular adjustment with the second ends of the first set of bands being detachably securable with the second ends of the second set of bands for releasably securing the sheet member about the body portion, and each of the clamping units comprises a flat bar having a slot for receiving therethrough an end of the sheet member and a plurality of screw elements threadably engaging a respective one of the bars for clamping and securing the sheet member therewith, and the first ends of the bands have an opening for receiving a respective screw element therethrough for securing same with the bar unit and allowing pivotal movement thereabout.

4,642,097
LEFT VENTRICAL VACUUM CONTROL AND PRESSURE RELIEF VALVE
 George G. Siposs, 2855 Velasco La., Costa Mesa, Calif. 92626
 Filed Mar. 25, 1985, Ser. No. 715,928
 Int. Cl.⁴ F16K 17/164
 U.S. Cl. 604—119 19 Claims



1. A valve for the control of vacuum in the left ventricle drain line, said valve comprising:
 - a valve body connectible in the left ventricle drain line between a patient and a suction pump, said body having a flow passage therethrough having an inlet end and an outlet end, a vacuum control passage in said body extending from said passage through said body to the atmosphere;
 - a rotatable sleeve positioned on the exterior of said body valve to rotate on said valve body with respect to said vacuum control passage to variably cover said vacuum control passage so as to control inflow through said vacuum control passage from the atmosphere into said flow passage through said body whereby vacuum can be controlled within said flow passage;
 - walls defining a relief passage in said body extending from said flow passage to the exterior of said body; and
 - a tubular elastomeric member on said body covering said relief passage so that when pressure in said flow passage is below external pressure said relief passage is closed and when pressure in said flow passage is above external pressure, fluid in said flow passage discharges out of said relief passage out from under said tubular elastomeric member, said rotatable sleeve being in resilient contact with said elastomeric member to provide rotational friction for said rotatable sleeve so that it stays in place where set.

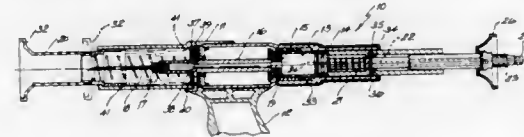
4,642,098
IV SYSTEM AND CONTROLLER AND COMBINATION IV FILTER AND PUMP ASSEMBLY FOR USE THEREIN AND METHOD
 Ingemar Lundquist, Oakland, Calif., assignor to Valleylab, Inc., Boulder, Colo.
 Continuation-in-part of Ser. No. 278,635, Jun. 29, 1981. This application Apr. 22, 1985, Ser. No. 725,657
 Int. Cl.⁴ A61M 5/00
 U.S. Cl. 604—123 17 Claims



1. In an IV filter and pump assembly, first and second parts, means for securing said first and second parts into a unitary assembly, said first and second parts forming a chamber, one of said parts having an opening therein in communication with

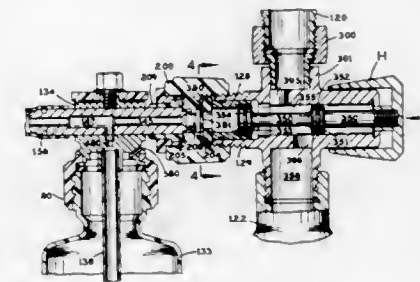
said chamber, one of said parts having an inlet port therein, the other of said parts having an outlet port therein, said inlet and outlet ports being in communication with said chamber, inlet valve means controlling the flow of liquid through the inlet port, outlet valve means for controlling the flow of liquid through the outlet port, a hydrophilic member disposed in said chamber and dividing said chamber into first and second regions and in which the inlet port is in communication with said first region and the outlet port is in communication with said second region, hydrophobic filter means carried by said unitary assembly and in communication with said first region, said hydrophobic filter means being disposed in the upper portion of said chamber for venting to ambient small quantities of air in said chamber and means for supplying a pumping action for liquid in said chamber so that it causes liquid to be moved out of the chamber through the outlet valve means and to be moved from the inlet valve means into the chamber.

4,642,099
INJECTOR
 Ian R. Phillips, Killara; Robert H. Lodge, and Glen W. Bunyan, both of Dee Why, all of Australia, assignors to N.J. Phillips Pty. Limited, New South Wales, Australia
 Filed Jul. 30, 1985, Ser. No. 760,394
 Claims priority, application Australia, Jul. 31, 1984, PG6304
 Int. Cl.⁴ A61M 5/20
 U.S. Cl. 604—136 9 Claims



1. An injector to deliver a required dose into an animal, said injector comprising a hollow body, a movable assembly including an interacting piston and cylinder cooperating to define a variable volume working space, said assembly being longitudinally movable of said body between a cocked position and a rest position, said piston and said cylinder being movable relative to each other between a cocked position defining a maximum volume for said space and a rest position defining a minimum volume for said space, a dose delivery means including a needle fixed to the said assembly and communicating with said space so that upon a reduction in volume thereof a dose is delivered through said delivery means, first spring means biasing said assembly to its rest position, second spring means to cause relative movement between said piston and cylinder to the rest position thereof, first retaining means to selectively retain said assembly in its cocked position and operable to release said assembly to cause insertion of said needle, second retaining means mounted on said assembly to selectively retain said piston and cylinder, in the cocked position thereof and operable to release said piston and cylinder, first release means actuable to operate said first retaining means to release said assembly, second release means mounted on and fixed to said body to operate said second retaining means to release said piston and cylinder, and wherein said second release means is positioned to engage said second retaining means only after said needle has been injected into said animal at a predetermined distance.

4,642,100
SHOWER-MOUNTED DOUCHE APPARATUS
 Charles B. Kabbaby, 4290 S.W. 109th Ave., Davie, Fla. 33328
 Continuation-in-part of Ser. No. 707,733, Mar. 4, 1985. This application Sep. 5, 1985, Ser. No. 772,766
 Int. Cl.⁴ A61M 37/00
 U.S. Cl. 604—150 2 Claims



1. For use with a shower apparatus having:
 - a water supply pipe with an outlet end, and
 - a shower head detachably connected to said outlet end of the water supply pipe,
 an improved douche apparatus, comprising:
 - a valve having a valve body with an upper end and a lower end, means on the upper end of said valve body for attaching it to said outlet end of the water supply pipe, means on the lower end of said valve body for attaching it to the shower head, a valve member in said valve body selectively adjustable between a first position in which it establishes a first water flow path from said water supply pipe to said shower head and a second position in which it blocks said first water flow path, said valve body on one side thereof having a laterally extending neck which provides a branch passage extending from said valve member to receive water from said water supply pipe in said second position of the valve member;
 - a container assembly for holding a liquid douche medication;
 - a fitting connecting said container assembly to said laterally extending neck of said valve body for passing water from said branch passage of said valve body;
 - said fitting further comprising an internal water passage and a flow restricting orifice;
 - means in said container assembly for mixing said liquid medication with the water from said fitting; and
 - an applicator operatively connected to said container assembly for discharging the mixture of water and said liquid medication;
 said container assembly comprising:
 - a mixing head coupled to said fitting;
 - a container vessel having an air vent below said mixing head;
 - said laterally extending neck on the valve body, said fitting and said mixing head being dimensioned to position said container vessel completely to one side of the shower head; and
 - a siphon tube extending down into said container vessel having a constricted neck near the entrance to said mixing head functioning to provide venturi action to pull said medication from said container assembly into said mixing head, thereby thoroughly mixing said medication with the water prior to discharge of the mixture from the applicator.

4,642,101
NON-TRAUMATIC BULBOUS CATHETER
 F. John Krolkowski, 10 Sheehan Cir., Wellesley Hills, Mass. 02181, and Albert Shahnarian, 144 Worcester Rd., Princeton, Mass. 01541
 Filed May 16, 1985, Ser. No. 734,509
 Int. Cl.⁴ A61M 5/00, 25/02
 U.S. Cl. 604—164 4 Claims

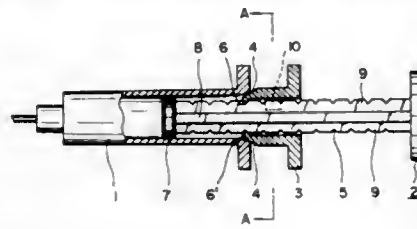


1. An improved intravenous catheter which is resistant to breaking, lacerating and infiltration and which causes secure convenient suturing attachment, wherein the intravenous catheter comprises:
 - an elongated cylindrical cannula having a smooth external annular surface and a hollow interior to admit a needle and fluids therethrough, which cannula, at a distal end, comprises a bulbous smooth-surfaced tip flaring externally from the smooth annular surface into a uniformly enlarged external diameter and curving smoothly to form an annular rim which curves smoothly into the hollow interior and a central opening equal in diameter to the hollow cannula interior, and which cannula, at a proximal end, comprises a broad base of greater diameter than the cannula, and extending beyond the broad base and rigidly secured to the broad base and cannula a hollow cylindrical hub wherein said hub comprises a series of break away tabs on each of two opposing sides of the hub, wherein each tab is provided with a central opening through the tab, which opening admits sutures for securing the intravenous catheter to the skin of the patient;
 - an elongated cylindrical needle sufficiently narrow in external diameter to fit within the cannula and, at a distal end, the needle comprises a sharp angled point for piercing skin and blood vessels of the patient;
 - which needle is inserted through the cannula tip for piercing through into the blood vessel, wherein the needle is removed after insertion into the blood vessel to permit fluid to flow through the cannula between an external vessel and the interior of the blood vessel.

4,642,102
INJECTOR
 Hirofumi Ohmori, Yokohama, Japan, assignor to Mitsubishi Pencil Co., Ltd., Japan
 Filed Jul. 19, 1985, Ser. No. 756,852
 Claims priority, application Japan, Jul. 26, 1984, 59-114118
 Int. Cl.⁴ A61M 5/00
 U.S. Cl. 604—210 2 Claims

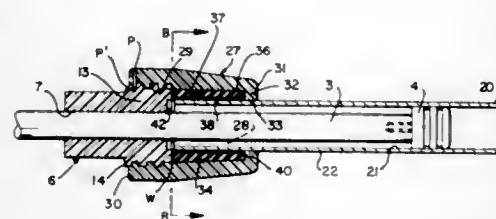
1. An injector comprising:
 - a barrel;
 - a plunger advanceable in said barrel and having a shaft portion and a sealing portion; and
 - stopper means mounted on an outer peripheral portion of said shaft portion of said plunger so as to be movable in a longitudinal direction of said plunger, for abutting against

a rear end surface of said barrel upon said plunger being advanced a predetermined distance in said barrel;
 a front end portion of said stopper means being provided with inwardly extending projections formed thereon, and an outer peripheral surface of said plunger shaft portion being provided with recesses formed therein at intervals of a certain distance therealong in the longitudinal direction thereof, said projections and recesses being engageable with each other;
 respective engaging portions being formed in said rear end surface of said barrel and on said front end of said stopper means for abutting engagement therebetween, at least one of said respective engaging portions of said barrel and stopper means being shaped into an oblique surface with respect to the longitudinal direction of said plunger; and



at least one slit being provided in said front end portion of said stopper means, said at least one slit extending longitudinally towards a flange of said stopper means;
 whereby, in a condition of abutting engagement between said respective engaging portions of said barrel and said stopper means under application of an advancing force upon said plunger acting in the advancing longitudinal direction thereof relative said barrel, said advancing force is received by said at least one oblique surface and translated thereby into an engaging force directed perpendicularly to said longitudinal direction of said plunger by which engaging force said projections on the stopper means are brought into a more firm engagement with said recesses in said plunger shaft portion such that said engaging force therebetween increases as said advancing force upon said plunger increases.

4,642,103
INJECTOR ASSEMBLY
 William A. Gettig, Linnwood, Box 417, Millhelm, Pa. 16854
 Filed Jan. 7, 1986, Ser. No. 816,830
 Int. Cl.⁴ A61M 5/245
 U.S. Cl. 604—234
 12 Claims



1. An injector assembly including, first and second sub-assemblies adapted to be removably affixed to each other, said first sub-assembly provided with first and second connector elements having mating fastener means, a plunger rod slidably surrounded by said connector elements, said second sub-assembly including a barrel having a rear end and an opposite nose supporting a cannula, said barrel rear end initially slidably insertable within said second connector element, a resilient sleeve disposed intermediate said barrel and second connector element, and means on said connector elements longitudinally fore-shortening said sleeve as said connector element fastener means are engaged whereby, as said connector elements are

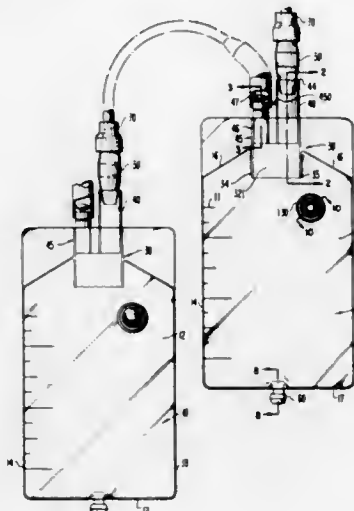
axially displaced toward one another, said sleeve is inwardly directed to tightly interlock said two sub-assemblies.

4,642,104
URETHRAL CATHETER CAPABLE OF PREVENTING URINARY TRACT INFECTION AND PROCESS FOR PRODUCING THE SAME
 Izumi Sakamoto, and Kunihiko Takagi, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan
 Division of Ser. No. 382,743, May 27, 1982, Pat. No. 4,539,234.
 This application Jan. 14, 1985, Ser. No. 734,726
 Claims priority, application Japan, May 27, 1981, 56-182729; Nov. 13, 1981, 56-81474
 Int. Cl.⁴ A61M 5/325, 25/005
 U.S. Cl. 604—264
 5 Claims

1. A urethral catheter capable of preventing urinary tract infection, comprising: a urethral catheter comprised of a material selected from the group consisting of an olefin polymer, a diene polymer or a silicone polymer as the base material; and an antimicrobial substance being ionically bonded with carboxyl groups in a film provided on the inside and/or outside walls of said urethral catheter, wherein:

- said film is a hydrolysis product of the reaction product obtained by reacting (A) a copolymer of maleic acid anhydride and a copolymerizable compound with (B) a polyfunctional compound having hydroxyl groups under a condition of an excess amount of said polymer (A), and
- The copolymer of maleic acid anhydride and a copolymerizable compound is a mixture of (I) about 0.5 to about 99.5 parts by weight of a copolymer of maleic acid anhydride and a copolymerizable vinyl monomer or olefin monomer and (II) about 0.5 to about 99.5 parts by weight of a copolymer of maleic acid anhydride and a copolymerizable aliphatic vinyl ester or aliphatic vinyl ether.

4,642,105
GASTRIC DRAINAGE SYSTEM
 Kimberly A. M. Toter, 830 Tanner Dr., Wayne, Pa. 19087
 Continuation-in-part of Ser. No. 581,665, Feb. 21, 1984, abandoned. This application Jul. 22, 1985, Ser. No. 757,607
 Int. Cl.⁴ A61M 1/00
 U.S. Cl. 604—323
 9 Claims

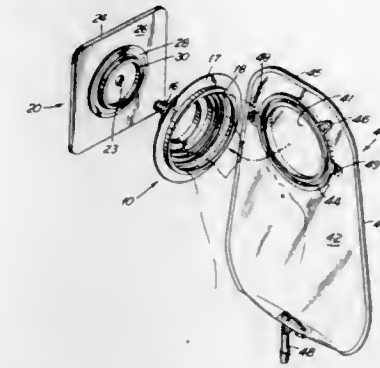


1. A medical drainage valve system for the collection of gastric fluids comprising:

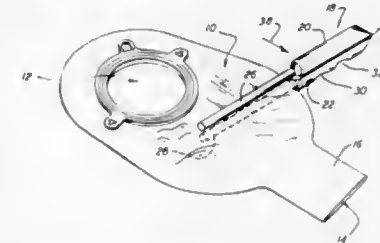
- first anti-reflux means having wall means for receiving incoming matter including fluid and gaseous matter, for permitting said matter to pass therethrough whereafter said matter becomes outgoing matter, and flexible wall

means for automatic collapsing and closing said first anti-reflux means in response to gas or fluid pressure resulting from said outgoing matter to prevent said matter from passing in or out of said first anti-reflux means; and second anti-reflux means including a passageway in fluid communication with said first anti-reflux means, said second anti-reflux means having an inlet between the confines defined by said wall means of said first anti-reflux means and including within the first anti-reflux means for direct fluid communication with the atmosphere self-actuating valve means in fluid communication with said passageway for sensing fluid or gaseous pressure and in response thereto permitting said outgoing matter to pass there-through.

4,642,107
ADAPTER FOR USE WITH TWO PIECE OSTOMY SYSTEM
 Ronald Arnone, Naperville, Ill., and Keith Ferguson, Scotch Plains, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
 Filed Oct. 14, 1983, Ser. No. 541,859
 Int. Cl.⁴ A61F 5/44
 U.S. Cl. 604—342
 2 Claims



4,642,106
IMPLEMENT FOR EVACUATING THE CONTENTS OF DRAINABLE OSTOMY POUCHES
 William Downey, P.O. Box 135, Clinton, N.Y. 13323
 Filed Feb. 2, 1984, Ser. No. 576,442
 Int. Cl.⁴ A61F 5/44
 U.S. Cl. 604—332
 4 Claims



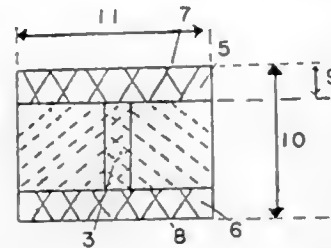
- A combination providing an ostomy pouch wearer with an improved emptying system, said combination comprising:
 - an essentially flat ostomy pouch having superposed, flexible walls of predetermined width and a drain opening at one end; and
 - a one-piece, molded plastic implement for manual manipulation in cooperative relationship with said pouch; said implement including:
 - a pair of manually engageable, elongated handle pieces extending along substantially linear axes;
 - a pair of elongated engagement members respectively extending integrally from one end of said handle pieces along said linear axes; and
 - integral hinge means connecting said handle pieces at the end of each opposite said one end to permit movement of said handle pieces, and thereby said engagement members, about a pivot axis substantially perpendicular to said linear axes, moving substantially in a single plane transverse to said pivot axis, between a first position, wherein said engagement members are spaced from one another to permit positioning thereof on opposite sides of said pouch walls, and a second position, wherein said engagement members are in closely spaced relation with portions of said pouch walls engaged therebetween, whereby said implement may be moved toward said drain opening with said engagement members in sliding contact with said pouch walls to force the contents of said pouch out through said drain opening.

1. An adapter that connects a two piece ostomy system which consists of a body side portion having an adhesive dressing to which a rib shaped coupling member is directly, permanently affixed and a collection pouch portion having a stomal aperture in one pouch side wall surrounded by a channel shaped coupling member permanently secured to said pouch side wall, said adapter having a longitudinal axis and proximal and distal ends extending longitudinally and consisting of a continuous, relatively thin, flexible polymeric annular wall having one or more accordion folds, a flange means extending perpendicularly to said longitudinal axis at the distal end of said polymeric adapter wall to provide support for a rib shaped coupling member, said flange including an upwardly projecting rib shaped adapter coupling member having an inwardly extending thin resilient deflect seal strip shaped to fit within the channel shaped coupling member of said pouch portion, and an adapter channel shaped coupling member secured to the other end of said polymeric wall, said adapter channel shaped coupling member sized to snap over the coupling rib affixed to said body side portion, and wherein the aperture encircled by said adapter channel shaped coupling member is smaller than the aperture encircled by said adapter rib shaped coupling member whereby when said accordion folds are in their relaxed state said adapter will have a low profile and in use will be near the surface of said body side piece.

4,642,108
TAMPON FOR FEMININE HYGIENE AND A PROCESS FOR ITS PRODUCTION
 Scarlet Sustmann, Viersen, Fed. Rep. of Germany, assignor to Vereinigte Papierwerke, Schickedanz & Co., Nuremberg, Fed. Rep. of Germany
 Continuation of Ser. No. 536,175, Sep. 27, 1983, abandoned. This application Nov. 19, 1985, Ser. No. 799,279
 Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236540
 Int. Cl.⁴ A61F 13/16
 U.S. Cl. 604—379
 12 Claims

1. In a process for the production of a tampon for female hygiene comprising the steps of
 (1) wrapping a continuous strip of cottonwool or rayon staple or a combination thereof in a moisture-pervious, fluff-free or fuzz-free covering material, said covering material having overlapping edge portions forming an overlap line,

- (2) cutting said continuous length of wrapped strip into the desired individual length, perpendicularly to the overlap line,
 (3) attaching a recovery thread to said individual length of wrapped strip, and
 (4) compressing said individual length of said wrapped strip cylindrically,
 the improvement consisting essentially of, before compress-



ing, the exposed cut edges running perpendicularly to said overlap line are folded onto the surface of said individual length of said wrapped strip of cottonwool or rayon staple or a combination thereof to cover up to about one sixth of the length of said individual length of said wrapped strip after folding, and folding said individual length of said wrapped strip of cottonwool or rayon staple or a combination thereof, whereby, after said compressing cylindrically, the inwardly folded cut edges are inside the tampon.

4,642,109

METHOD OF MAKING ELASTIC DIAPERS AND PRODUCT

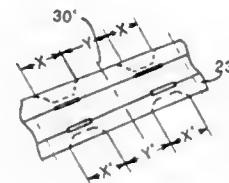
John J. Bradley, Green Bay, and Debra K. Hansen, Maribel, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Division of Ser. No. 565,227, Dec. 27, 1983, Pat. No. 4,543,141. This application May 17, 1985, Ser. No. 735,056

Int. Cl.⁴ A41B 13/02

U.S. Cl. 604—385 Z

2 Claims



1. A novel disposable diaper comprising an outermost moisture impervious web, a stretched elastic ribbon selectively adhered to said web, an interior absorbent batt layer and an innermost web of moisture pervious material both connected to said outermost web, said ribbon being secured only centrally of its length to said moisture impervious web and adjacent each ribbon end being V-folded on itself, thus preventing attachment to said web, said ribbon having adhesive applied thereto along the length thereof and on the side thereof facing said outermost web, said V-fold extending along the length of said ribbon and bringing together portions of said adhesive supplied side.

4,642,110

DISPOSABLE DIAPER

Evelin Dudek, 3318 Sagebrook, Las Vegas, Nev. 89121

Filed Jul. 3, 1985, Ser. No. 751,483

Int. Cl.⁴ A61F 13/16

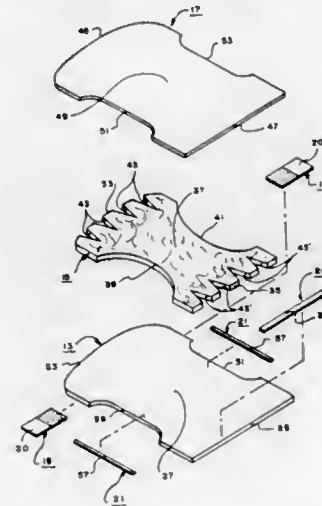
U.S. Cl. 604—385.1

2 Claims

1. A disposable diaper for covering the posterior and ante-

rior of the lower torso of a body for retention of waste therein, said diaper comprising:

- (a) a bottom sheet being liquid impermeable and defining the exterior surface of said diaper;
 (b) an absorbent pad for absorbing liquid; said absorbent pad having a first end, a second end, an intermediate portion, a first side and a second side; said first end of said absorbent pad including V-shaped notches cut into and evenly spaced along said first end of said absorbent pad, said notches having a width extending a short distance across



the edge of said first end and having a length extending inwardly toward said intermediate portion of said absorbent pad for allowing said first end of said absorbent pad to conform to the posterior of said body;
 (c) a top sheet being liquid permeable defining the interior of said diaper;
 (d) fastening means for securing said bottom sheet, absorbent pad, and top sheet around the waist of said body; and
 (e) restraint means for applying sealing pressure to the waist and legs of said body.

4,642,111

INJECTOR FILLED WITH AN ANTI-CANCER COMPOSITION

Izumi Sakamoto, and Kunihiro Takagi, both of Kyoto, Japan, assignors to Uetika Ltd., Hyogo, Japan

Continuation of Ser. No. 466,190, Feb. 14, 1983, Pat. No. 4,536,387. This application Mar. 13, 1985, Ser. No. 711,129

Claims priority, application Japan, Feb. 12, 1982, 57-21924; Nov. 8, 1982, 57-19747

Int. Cl.⁴ A61K 9/22

U.S. Cl. 604—890

54 Claims

1. An injector filled with a composition comprising:
 (a) a polymer, wherein said polymer has fixed thereto;
 (b) an anti-cancer drug; and
 (c) a blood coagulation factor, wherein said anti-cancer drug and said blood coagulation factor are fixed to said polymer so as to be capable of sustained release from the polymer at the site of injection and wherein said composition is useful for transcatheter arterial embolization and needle therapy.

4,642,112

ARTIFICIAL EYE LENSES

Michael H. Freeman, Denbigh, Wales, assignor to Pilkington P.E. Limited, United Kingdom

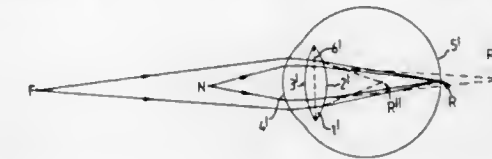
Filed Apr. 14, 1982, Ser. No. 368,362

Claims priority, application United Kingdom, Apr. 29, 1981, 8113149; Jun. 10, 1981, 8117709; Dec. 23, 1981, 8138854

Int. Cl.⁴ A61F 2/16; G02C 7/04, 7/10

U.S. Cl. 623—6

24 Claims



1. An artificial eye lens having basic refractive power providing one focus, and having diffractive power which deviates some light from the basic refractive power focus to another focus.

4,642,113

INTRAOCULAR LENSES

Seymour Dubroff, 4000 Massachusetts Ave., Apt. 1422, Washington, D.C. 20016

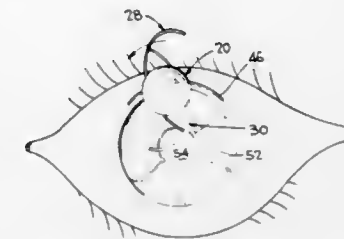
Continuation of Ser. No. 496,529, May 23, 1983, abandoned, which is a continuation of Ser. No. 230,279, Jan. 30, 1981, abandoned. This application Jul. 8, 1985, Ser. No. 752,012

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.⁴ A61F 2/16

U.S. Cl. 623—6

3 Claims



3. An intraocular lens for implant in an eye comprising: a lens body having a peripheral edge; and

a plurality of positioning members disposed on said lens body, each of said positioning members including a flexible, resilient, fixation filament extending from said peripheral edge of said lens body and having a continuous curving configuration throughout the length thereof with a proximal segment adjacent said lens body having a maximum radius of curvature and a distal segment terminating at a free, unattached end having a minimum radius of curvature, said proximal segment extending from said peripheral edge of said lens body at an angle to the tangent thereat less than 90 degrees such that said fixation filament in combination with said lens body produces a smooth curved surface and each of said positioning members further including a resilient proximal filament having a first end joined with said fixation filament at a position spaced from said peripheral edge of said lens body and spaced from the center of said lens body by a distance in the range of from 5 mm to 5.5 mm and a second end secured at said peripheral edge of said lens body.

4,642,114

POSTERIOR CHAMBER INTRAOCULAR LENS

Daniele S. A. Rosa, 28 Avenue Raphael, 75016 Paris, France

Continuation-in-part of Ser. No. 540,796, Oct. 11, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 726,268

Claims priority, application France, May 16, 1983, 83 08037

Int. Cl.⁴ A61F 2/16

U.S. Cl. 623—6

1 Claim



1. A posterior chamber lens implant for a human eye for use after extracapsular surgery in which a posterior capsule is left substantially intact, said lens comprises a substantially circular rigid optic having a front surface, a rear surface and a substantially circular and continuous outer rear edge, said front surface being a continuous convex surface and said rear surface being a continuous convex surface extending between said outer rear edge, said rear convex surface being provided only at its periphery with discontinuous spacing means to space the posterior capsule from the convex rear face and wherein the curvature radius of said rear face is about 3.5 times the curvature radius of the front face and wherein the external diameter of the lens is between 6.3 and 7 millimeters and wherein said implant has at least two retaining loops fitted thereto to engage the ciliary sulcus of the lens bag, said retaining loops being forwardly inclined at an angle of about 10° from the mid plane of the lens and wherein the spacing means comprise four prongs of frustoconical shape fitted in four holes arranged in a square pattern extending through the optic between said front and rear convex surfaces, said prongs being pierced to form conduits giving permeability between said convex surfaces and the anterior and posterior chambers when said lens implant is implanted within an eye.

4,642,115

ARTIFICIAL EYE LENS

Nikolai M. Sergienko, Kiev, U.S.S.R., assignor to Kievsky Nauchno-Issledovatel'sky Institut Klinicheskoi I Eksperimentalnoi Khirurgii, Kiev, U.S.S.R.

PCT No. PCT/SU84/00047, § 371 Date Apr. 4, 1986, § 102(e) Date Apr. 4, 1986, PCT Pub. No. WO86/01096, PCT Pub. Date Feb. 27, 1986

PCT Filed Aug. 6, 1984, Ser. No. 848,722

Int. Cl.⁴ A61F 2/16

U.S. Cl. 623—6

2 Claims

1. An artificial eye lens, comprising a lens proper and three supporting elements, one of which is shaped as a loop (3), while the two other elements are arranged on the same side of the lens (2) diametrically opposite to the loop-shaped element, characterized in that each of the elements located on the same side of the lens (2) is made as V-shaped legs (4) made fast on the anterior surface of the lens (2), with the end of their one side (5), and in that said sides (5) of the V-shaped legs diverge along

the lateral surface of the lens (2) and are inclined towards the posterior lens surface so that the other sides (7) of said legs are



situated in the lens principal plane and face each other with the vacant ends of the legs.

4,642,116
BUOYANT POSTERIOR CHAMBER INTRAOCULAR LENS IMPLANT
Henry Clayman, Suite 709, 12555 Biscayne Blvd., Miami, Fla. 38181, and James R. Longacre, 3621 Littledale Rd., Kensington, Md. 20895
Filed Mar. 19, 1985, Ser. No. 713,539
Int. Cl.⁴ A61F 2/16

U.S. Cl. 623—6

12 Claims



11. A posterior chamber intraocular lens implant comprising:
a central optic of material denser than the aqueous humor of the eye and having a gas bubble incorporated therein in an annular ridge extending posteriorly from the rear surface of said central optic to space the rear surface from the posterior capsule and
at least first and second haptic loops extending outwardly from said central optic for positioning said optic in the posterior chamber.

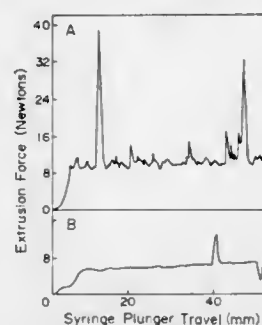
4,642,117
MECHANICALLY SHEARED COLLAGEN IMPLANT MATERIAL AND METHOD
Hoc M. Nguyen, and George H. Chu, both of Sunnyvale, Calif., assignors to Collagen Corporation, Palo Alto, Calif.
Filed Mar. 22, 1985, Ser. No. 715,098
Int. Cl.⁴ A61F 2/10, 2/28; A61K 37/12

U.S. Cl. 623—11

10 Claims

1. An injectable collagen material composed of reconstituted, mechanically sheared atelopeptide collagen fibers and characterized, with respect to unsheared, but otherwise identical, collagen material measured under the same conditions, by: about a 30%–70% decrease in the force required to inject

the material, at a concentration of between about 35–65 mg/ml, through a 27–30 gauge needle, and

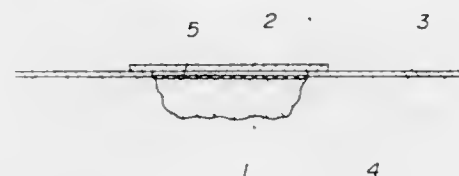


b. a substantial decrease in the number and magnitude of transient increases in force required for injecting the material, at such concentration, through such needle.

4,642,118
MAN-MADE SKIN COMPOSED OF TWO LAYERS: COLLAGEN AND A POLY-ALPHA-AMINO ACID
Yoshimitsu Kuroyanagi, Hachiogi; Teruo Miyata, and Manabu Seno, both of Tokyo, all of Japan, assignors to Koken Co., Ltd., Tokyo, Japan
Filed Jun. 6, 1985, Ser. No. 741,835
Claims priority, application Japan, Nov. 6, 1984, 59-118276
Int. Cl.⁴ A61F 2/10

U.S. Cl. 623—15

9 Claims



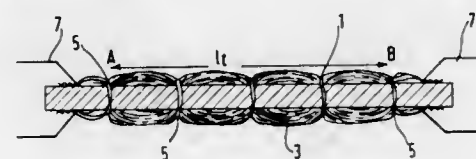
1. A man-made skin composed of two layers: collagen and a poly- α -amino acid, which is characterized by comprising sticking on a membrane of collagen sponge a membrane of a poly- α -amino acid which has a good affinity with tissue cells and an appropriate permeability for moisture.

4,642,119
CONNECTIVE TISSUE PROSTHESIS
Jitendera S. Shah, Bristol, England, assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Jul. 15, 1985, Ser. No. 755,237
Claims priority, application United Kingdom, Jul. 16, 1984, 8418018

U.S. Cl. 623—13

Int. Cl.⁴ A61F 2/08

16 Claims



1. A bio-compatible connective tissue prosthesis, capable of non linear deformation comprising a first load bearing element, and a bundle of fine filaments which are arranged to allow ingrowth of connective tissue, said filaments having a collective elastic modulus which is greater than the effective elastic modulus of the first element, and being directly attached to the

first element at spaced points along their length, the length of filament between said spaced points being greater than the unstressed length of the first element between said spaced points, such that the filaments are substantially unstressed unless the load on the prosthesis exceeds a predetermined value.

4,642,120
REPAIR OF CARTILAGE AND BONES
Zvi Nevo, Herzlia, and Samuel Itay, Kfar Saba, both of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel
Filed Mar. 21, 1984, Ser. No. 591,822
Claims priority, application Israel, Mar. 23, 1983, 68218
Int. Cl.⁴ A61F 2/28, 2/02

U.S. Cl. 623—16

8 Claims

1. A composition of the repair of defects of articular cartilage and bones by implantation, comprising:
cells selected from the group consisting of embryonal chondrocytes, and mesenchyme cells of the species to which the composition is to be implanted capable of being converted by chondrogenic inducing factors to cartilage cells, and
a biological glue consisting of fibrinogen, thrombin and a protease inhibitor.

4,642,121
JOINT ENDOPROTHESIS AND INSTRUMENT FOR KNOCKING IT IN OR OUT
Arnold Keller, Kayhude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co, Hamburg, Fed. Rep. of Germany
Filed Aug. 20, 1985, Ser. No. 767,556
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433859

Int. Cl.⁴ A61B 17/00, 17/18

U.S. Cl. 623—18

6 Claims



1. In combination, a joint endoprosthesis and instrument for knocking it in or out, the instrument comprising a shaft (10) and a fork (11) having a bore (19) therein, means for securing one end of the shaft in said bore, the longitudinal axis of the shaft being transverse to the plane of the fork, the prosthesis having a neck (3), a groove and a first rib means on one of the neck and fork and second rib means on the other of the neck and fork for collaboration with the groove and first rib means, the one end of the shaft further comprising a locking pin (20) protruding beyond said bore when said shaft is secured in said bore and the prosthesis having a locking recess (9) for receiving the locking pin.

4,642,122
TOE IMPLANT
Arthur D. Steffee, Gates Mills, Ohio, assignor to Laure Prosthetics, Inc., Portage, Mich.
Filed Apr. 2, 1986, Ser. No. 847,362
Int. Cl.⁴ A61F 2/42

U.S. Cl. 623—21

3 Claims



1. In a prosthetic toe joint adapted for replacing a human toe joint, including a one-piece tack member for implanting into the distal end of a metatarsal, and a one-piece socket member for implanting into the proximal end of a phalanx, the improvement comprising:

said tack member having an enlarged head part provided with a smooth, part-spherical, convex bearing surface thereon, and a stem part fixed to said head part and projecting in a direction away from said convex bearing surface,

said convex bearing surface being generated about a radius having a center point located on a longitudinal axis which functions as the central longitudinal axis of the head part, said convex bearing surface extending upwardly above said axis and symmetrically sidewardly on opposite sides of said axis through first angles less than 90°, and said convex bearing surface projecting downwardly from said axis through a second angle greater than 90°,

said head part having a substantially planar rear surface which extends transversely with respect to said axis and intersects said axis at a location disposed forwardly of said center point, said rear surface extending vertically from the uppermost edge of said head part to a location disposed downwardly below said axis,

said head part having a lower portion which is disposed downwardly a substantial distance below said axis and which extends rearwardly from said rear surface to a point located rearwardly of a plane which perpendicularly intersects said axis at said center point, said lower portion defining thereon a lower and rearward extension of said convex bearing surface,

said stem part comprising a pinlike member which is integrally fixed to said head part and projects rearwardly from said rear surface, said pinlike member projecting axially rearwardly a substantial distance beyond said lower portion of said head part, said pinlike member having a central longitudinally extending axis which is generally parallel to but spaced downwardly below the longitudinal axis of said head part;

said socket member being constructed of a plastics material and having a head part at one end thereof, said head part on the free end thereof defining a smooth, part-spherical, concave bearing surface, and a stem part fixed to said head part and projecting axially outwardly away from the other end thereof,

said head part having an outer annular surface which is generally elliptical in cross section, said elliptical cross section being elongated horizontally so that the minor or small dimension of the ellipse extends generally vertically, said concave bearing surface being defined by an edge surface where the concave bearing surface intersects said peripheral surface, said edge surface being of a generally horizontally elongated elliptical profile,

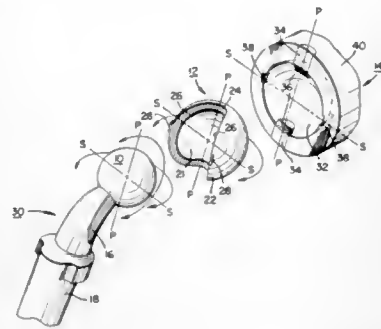
said head part having a longitudinal centerline which passes through the center of the elliptical cross section

and is substantially aligned with the longitudinal axis of the head part of said tack member, said concave bearing surface being generated about a second radius having a center located on said longitudinal centerline, said second radius being substantially equal to said first radius, said concave bearing surface extending symmetrically horizontally sidewardly in opposite directions through third angles which are less than 90° and which are slightly less than said first angles, and said concave bearing surface extending vertically in opposite directions from said longitudinal centerline through fourth angles which are significantly less than said first angles, said stem part including a pinlike element which projects outwardly from the other end of said head part and is provided with a plurality of annular flexible ribs disposed thereon in axially spaced relation, said pinlike element and said ribs being of a generally horizontally elongated elliptical configuration.

4,642,123
BALL AND SOCKET BEARING FOR ARTIFICIAL JOINT
Douglas G. Noiles, New Canaan, Conn., assignor to Joint Medical Products Corporation, Stamford, Conn.
Filed Mar. 8, 1983, Ser. No. 473,431
Int. Cl. A61F 2/34

U.S. Cl. 623—22

5 Claims



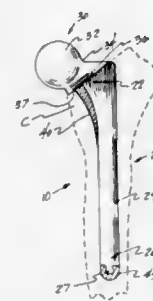
1. A ball and socket joint for implanting in the body comprising:
a ball;
first means for affixing the ball to bone including a stem portion for implantation in bone and a neck portion connecting the stem portion to the ball;
a bearing member having an opening defined by a rim, said bearing member surrounding a portion of the ball, the ball being free to move within the bearing member in a plurality of directions;
a cup to be affixed to bone, said cup including a cavity which surrounds a portion of the bearing member, said cavity having an opening which defines a plane through which the bearing member enters the cavity; and
second means associated with the cup for retaining the bearing member within the cavity, the bearing member being free to rotate within the cavity in response to contact

between the neck portion of the first means and the rim of bearing member's opening, the second means constraining said rotation about an axis which is substantially parallel to the plane defined by the opening of the cavity.

4,642,124
HIP PROSTHESIS
Francis W. Cooke, Clemson, S.C., assignor to Clemson University, Clemson, S.C.
Filed Jun. 11, 1984, Ser. No. 619,496
Int. Cl. A61F 2/32

U.S. Cl. 623—23

7 Claims



1. An improved hip prosthesis for implantation for improved axial compressive loading of the calcar while avoiding wedging and axial load transfer from the distal tip of the prosthesis stem to the femur comprising:

- a medullary stem which includes a buttress section, a middle section and a distal tip section, all being of unitary construction, having smooth outer surfaces and being devoid of any irregularities therealong; and
- a head secured to said stem, said head including a ball for articulation within an acetabulum, a neck section distal to said ball and a collar section located between said neck section and said buttress section of same stem and defining a shoulder on an under side of same, said head being angularly offset from said stem according to anatomical criteria for proper contact between said shoulder of said collar section and an osteotomized calcar bone surface, said buttress section having a relieved inferior surface from a point adjacent to said collar downwards to said middle section with compressible material located therein extending along said inferior surface and being adequate in thickness to ensure persistent contact between the collar and the calcar bone and reduce wedging of the prosthesis within the femur, and said stem having a uniform cross section from said middle section distally to a tip of said distal tip section, whereby when implanted with a luting agent around at least a portion of said stem, said collar will maintain contact with the calcar bone for transmittal of axial compressive stresses thereto while said smooth stem surface precludes transmission of any significant shear forces on said luting agent adjacent thereto.

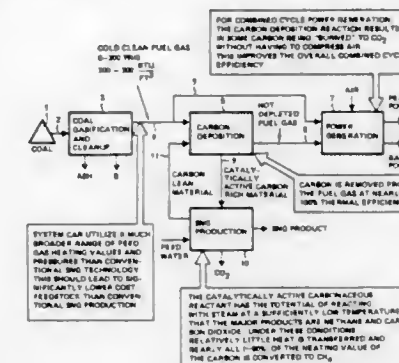
CHEMICAL

4,642,125
CARBONACEOUS MATERIAL AND METHODS FOR MAKING HYDROGEN AND LIGHT HYDROCARBONS FROM SUCH MATERIALS

Maksymilian Burk, and Jack L. Blumenthal, both of Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Continuation of Ser. No. 248,597, Mar. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 99,789, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 917,240, Jun. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,647, Jul. 21, 1977, abandoned. This application Nov. 30, 1983, Ser. No. 557,405
Int. Cl. C10J 3/00

U.S. Cl. 48—197 R

30 Claims



1. A continuous steam gasification process for producing a high heating value gas stream containing methane and hydrogen from a low heating value fuel gas containing carbon monoxide and hydrogen comprising the steps of:

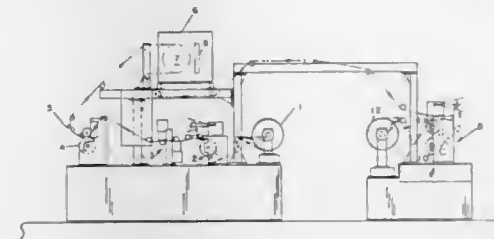
- reacting in a steam gasification zone a fibrous carbon-enriched carbonaceous material with steam at a temperature of from about 500° C. to about 750° C. and a pressure of from about 1 to about 100 atmospheres to gasify at least about 40% of the carbon in the fibrous carbon-enriched carbonaceous material to produce (i) a high heating value gas stream containing methane and hydrogen and (ii) a fibrous carbon-lean carbonaceous material, the fibrous carbon-enriched carbonaceous material comprising from about 55% to about 98% by weight carbon, from about 1% to about 44% by weight ferrous group metal component, and from about 0.1% to about 1% by weight hydrogen, the ferrous group metal component containing at least 70% by weight nickel, cobalt, and combinations thereof and not more than 30% by weight iron, the fibrous carbon-enriched carbonaceous material including a major phase and a minor phase, the major phase comprising from about 95% to about 99.9% by weight carbon, from about 0.1% to about 1% by weight hydrogen, and the balance, if any, being the ferrous group metal component, the minor component being nodules which are dispersed throughout the major phase and are intimately associated with and at least partly bonded to the carbon in the major phase, the minor phase comprising carbon and at least 50% by weight ferrous group metal component;
- withdrawing from the steam gasification zone (i) the high heating value gas stream and (ii) a solid phase consisting essentially of the fibrous carbon-lean carbonaceous material;
- reacting in a carbon deposition zone the withdrawn fibrous carbon-lean carbonaceous material with the low heating value fuel gas at a temperature of from about 300° to about 700° C. to deposit carbon on the fibrous carbon-lean carbonaceous material to form (i) the fibrous carbon-enriched carbonaceous material and (ii) depleted low heating value fuel gas;
- withdrawing from the carbon deposition zone a solid

phase consisting essentially of the fibrous carbon-enriched carbonaceous material;
(e) recycling carbon-enriched carbonaceous material withdrawn from the carbon deposition zone to the steam gasification zone; and
(f) lowering the temperature of the withdrawn high heating value gas stream and contacting it with the fibrous carbon-enriched carbonaceous material at a temperature of 300° to 500° C. for increasing the heating value of the high heating value gas stream.

4,642,126
COATED ABRASIVES WITH RAPIDLY CURABLE ADHESIVES AND CONTROLLABLE CURVATURE
Eugene Zador, Ballston Lake; Wesley R. Kaczmarek, Burnt Hills, and Sitaramaiah Ravipati, Latham, all of N.Y., assignors to Norton Company, Worcester, Mass.
Filed Feb. 11, 1985, Ser. No. 700,372
Int. Cl. B24D 11/02

U.S. Cl. 51—295

20 Claims



1. A coated abrasive having at least one layer of adhesive comprising the cured product of liquids containing chemical unsaturation and capable of rapid, spontaneous polymerization initiated by actinic radiation, said cured adhesive being sufficiently deformable at a first temperature of not more than 130° C. to be shaped, along with the backing on which it is coated, into a predetermined curvature by the application of tensile forces less than those required to break the coated abrasive, said cured adhesive further being sufficiently rigid at a second temperature not less than 25° C. so as to cause said coated abrasive to retain at said second temperature, in the absence of mechanical forces other than those induced by natural gravity, the curvature imparted to said coated abrasive at said first temperature and maintained during cooling from said first temperature to said second temperature.

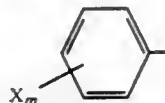
4,642,127
METHOD FOR COOLING BLAST FURNACE GAS IN AN HEAT RECOVERY SYSTEM
Takehiro Ando, Ibaraki; Hideo Kimura, Nara; Noriyuki Oda, Sennan; Takeji Asai, Hyogo; Ken Mochizuki, Kita-kyushu; Toshihisa Fujihara, Kita-kyushu, and Katsuji Maeda, Kita-kyushu, all of Japan, assignors to Sumitomo Metal Industries, Ltd. and Hitachi Shipbuilding & Engineering Company Limited, both of Osaka, Japan
Continuation of Ser. No. 488,161, Apr. 25, 1983, which is a continuation-in-part of Ser. No. 288,308, Jul. 30, 1981, abandoned. This application May 20, 1985, Ser. No. 736,402
Claims priority, application Japan, Aug. 28, 1980, 55-119131
Int. Cl. B01D 50/00, 51/00

U.S. Cl. 55—20

2 Claims

1. A method of cooling blast furnace gas in a blast furnace gas treating system in which gas discharged from a blast furnace is conducted to a dry-type coarse particle removing unit arranged downstream from the furnace and comprising an inlet tube having a downwardly directed lower end, a dust collecting box surrounding the inlet tube and having an outlet above the lower end of the inlet tube, said removing unit being

4 carbon atoms which is unsubstituted or substituted by C₁-C₄-alkyl, Z is oxygen, n is 0 or 1, X is halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₄-haloalkyl, C₁-C₄-alkylthio, C₁-C₄-alkylsulfonyl, C₃-C₆-cycloalkyl, phenyl or unsubstituted or halogen-substituted aryloxy and m is 0, 1, 2, 3 or 4, and where the radical



can be replaced by naphthyl which is unsubstituted or substituted by halogen, C₁-C₄-alkyl or C₁-C₄-alkoxy, with the proviso that R¹ and R² are not both hydrogen.

4,642,133 PROCESS FOR CHLORINATING VOLATILIZATION OF METALS WHICH ARE PRESENT IN OXIDIC IRON ORES OR CONCENTRATES

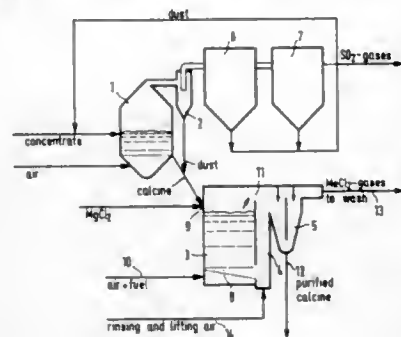
Juho K. Mäkinen, Vanha-Ulvila; Mauri J. Peuralinna, Harjavalta, and Olavi A. Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Continuation of Ser. No. 286,021, Jul. 22, 1981, abandoned. This application Aug. 26, 1983, Ser. No. 527,194

Claims priority, application Finland, Aug. 20, 1980, 802626

Int. Cl.⁴ C22B 1/08

U.S. Cl. 75—2



1. A process for the chlorinating volatilization in a fluidized bed reactor of impurity metals detrimental to the production of iron from a raw material which contains the oxides of the impurity metals and iron or which forms them in an oxidizing atmosphere, comprising feeding preheated raw material at a high temperature of at least 900° C. and anhydrous magnesium chloride into an upper section of the fluidized bed reactor to chlorinate the impurity metals and maintaining the temperature above 900° C. throughout the following steps: feeding hot air into the fluidized bed through an inclined grate which is in a lower section of the fluidized bed reactor in order to volatilize the chlorides of the impurity metals, and discharging purified raw material from the lower section of the fluidized bed into a separate chamber, and rinsing the raw material in said separate chamber with an air flow the rate of which is substantially higher than that of the air flow fed into the fluidized bed.

4,642,134 PRECIOUS METAL RECOVERY USING UV OZONE

William P. Van Antwerp, Pacific Palisades, and Phillip A. Lincoln, Casitas Springs, both of Calif., assignors to GSP Metals & Chemicals Corporation, Los Angeles, Calif.

Filed Oct. 8, 1985, Ser. No. 785,582

Int. Cl.⁴ C22B 3/00

U.S. Cl. 75—101 R

30 Claims

1. A process for recovering precious metal from ore comprising the steps of:

(a) treating an acidic slurry of ore with activated oxygen; and subsequently

(b) leaching precious metal out with leaching chemicals wherein the activated oxygen is obtained as the product of an ultraviolet light ozone generator and wherein the activated oxygen is composed of at least ozone and hydroxyl.

4,642,135 PROCESS FOR TREATING CAST IRON MELTS WITH SILICON CARBIDE

Theodor Benecke, Munich, Fed. Rep. of Germany; Benno Lux, Vienna, Austria; Wolf-Dieter Schubert, Vienna, Austria; An Tuan Ta, Vienna, Austria, and Gerhard Kahr, Vienna, Austria, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,635

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431263

Int. Cl.⁴ C21C 7/02

U.S. Cl. 420—33

8 Claims

1. A process for treating a cast iron melt with silicon carbide which comprises: introducing into the cast iron melt, silicon carbide particles which have been subjected to oxidizing conditions to partially coat the silicon carbide particles with a covering containing silica.

4,642,136 PTC CERAMIC COMPOSITION

Noburu Fukushima, Tokyo; Hisashi Yoshino, and Shunji Nomura, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

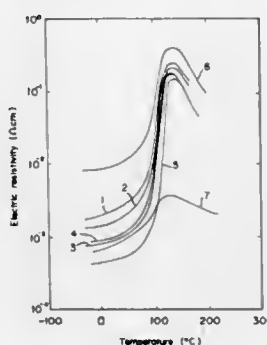
Filed Feb. 7, 1985, Ser. No. 699,302

Claims priority, application Japan, Jun. 11, 1984, 59-118207

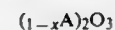
Int. Cl.⁴ C22C 29/12

U.S. Cl. 75—234

7 Claims



1. A PTC ceramic composition which comprises (i) a fundamental component represented by the formula:



wherein x denotes an atomic proportion and has a value within the range of $0.001 \leq x \leq 0.02$, and A is at least one of Cr and Al, and (ii) tin in an amount of 1 to 25 % by weight, based on the total weight of the composition.

4,642,137 MINERAL BINDER AND COMPOSITIONS EMPLOYING THE SAME

Richard F. Heitzmann, Pearland; Mark Fitzgerald, Houston, and James L. Sawyer, Friendswood, all of Tex., assignors to Lone Star Industries, Inc., Greenwich, Conn.

Filed Mar. 6, 1985, Ser. No. 708,689

Int. Cl.⁴ C04B 7/00

U.S. Cl. 106—85

12 Claims

1. A binder composition for Portland cement comprising 100 parts, by weight, metakaolin and, based upon said metakaolin: 20 to 70 parts by weight slag

85 to 130 parts by weight of at least one material selected from the class consisting of fly ash, calcined shale, and calcined clay

70 to 215 parts amorphous silica

55 to 145 parts of a material selected from the class consisting of potassium silicate and potassium hydroxide, at least 55 parts being potassium silicate.

4,642,138 METHOD OF PREVENTING DEPOSITION OF SLUDGE IN LIQUID TANK AND OF REMOVING DEPOSITED SLUDGE

Hiroyasu Koyase; Kinsaku Funaki, and Atsuo Morita, all of Ibaraki, Japan, assignors to Kashima Engineering Co., Ltd., Ibaraki and Taiho Industrial Co., Ltd., Tokyo, both of Japan

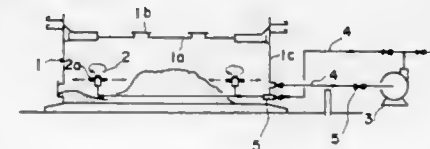
Filed Mar. 1, 1985, Ser. No. 706,980

Claims priority, application Japan, Mar. 24, 1984, 59-56884

Int. Cl.⁴ B08B 3/02

U.S. Cl. 134—22.18

7 Claims



1. A method of preventing deposition of sludge and removing deposited sludge within a liquid tank having a side wall surface and a bottom, said method comprising the step of spraying a liquid through a plurality of rotatable spray devices arranged at predetermined positions in said tank, wherein said sprayed liquid is of the same type as in said tank; said spray devices have spray nozzles with a downwardly inclined spraying direction; said nozzles are 0.5 to 3.0 meters above said bottom of said tank, and liquid sprayed from said spray devices has a minimum flow speed of at least 0.3 meters per second at any position inside said tank and impinges against said side wall surface at a flow speed from 0.3 to 2.4 meters per second.

4,642,139 RAPIDLY SOLIDIFIED NICKEL ALUMINIDE OF IMPROVED STOICHIOMETRY AND DUCTILIZATION AND METHOD

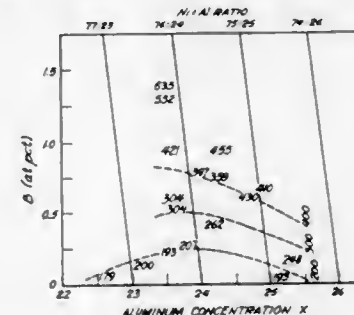
Alan I. Taub, Schenectady; Shyh-Chin Huang, Latham, and Keh-Minn Chang, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,877

Int. Cl.⁴ C22F 1/10

U.S. Cl. 148—3

11 Claims



9. The method of forming a nickel aluminide of high strength which comprises preparing a melt having a composition of the formula



wherein x is between 0.235 and 0.245, and 100-y is between 0.5 and 1.5 rapidly solidifying the melt to form a L₁₂ crystal structure, and annealing the rapidly solidified melt to form a strong product.

4,642,140 PROCESS FOR PRODUCING CHALCOGENIDE SEMICONDUCTORS

Rommel Noufi, Westminster, Colo., and Yih-Wen Chen, Omaha, Nebr., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1985, Ser. No. 728,977

Int. Cl.⁴ C23C 22/48, 22/52

U.S. Cl. 148—6.24

18 Claims

1. A process for producing a chalcogenide semiconductor material for use in photovoltaic semiconductor devices, said process comprising:

- forming a solution containing ions from at least one chalcogen and providing said solution with a pH in a range of 1-2 so as to provide said semiconductor material with suitable performance characteristics when used as said photovoltaic semiconductor device;
- forming a metal base layer containing a sufficient number of metal elements to form at least a ternary chalcogenide semiconductor material upon being chalcogenized with said solution; and
- contacting said metal base layer with said solution at about ambient temperature so as to chalcogenize said metal base layer and form said at least ternary chalcogenide semiconductor material.

4,642,141 METHOD FOR PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS

Yoshiaki Iida, and Katsuo Iwamoto, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

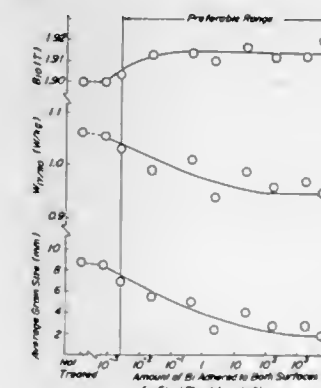
Filed May 24, 1985, Ser. No. 738,019

Claims priority, application Japan, May 24, 1984, 59-103696; Jun. 5, 1984, 59-113790; Mar. 8, 1985, 60-44940

Int. Cl.⁴ H01F 1/04

U.S. Cl. 148—113

12 Claims



1. In a method for producing grain-oriented silicon steel sheets, wherein a hot rolled silicon steel sheet containing at least one of S, Se and Te as an inhibitor for the growth of primary recrystallization grains is subjected to at least one stage cold rolling, the finally cold rolled steel sheet is subjected to a decarburization annealing, and the decarburized steel sheet is applied with an annealing separator consisting mainly of MgO and then subjected to a final annealing, the improvement comprising adhering uniformly at least one member selected from the group consisting of elements of Ge, Sn, Pb, As, Bi and Zn and compounds containing these elements to the surfaces of

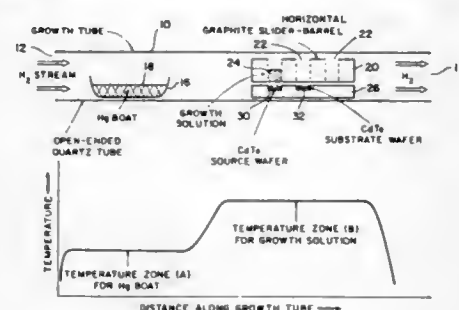
the finally cold rolled steel sheet at the stage between the final cold rolling and the decarburization annealing.

4,642,142 PROCESS FOR MAKING MERCURY CADMIUM TELLURIDE

Theodore C. Harman, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 379,530, May 19, 1982, abandoned. This application Aug. 28, 1985, Ser. No. 770,821
Int. Cl.⁴ H01L 21/368

U.S. Cl. 148—171

9 Claims



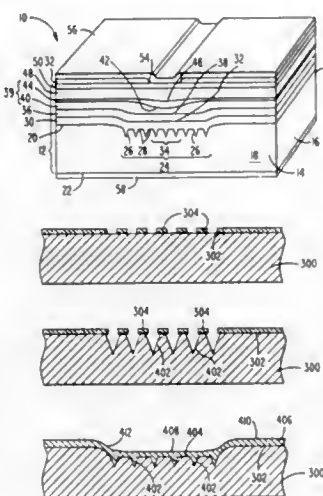
1. The process for forming mercury cadmium telluride which comprises forming an atmosphere of mercury vapor from liquid mercury having a desired temperature between about 25° C. and 350° C. while maintaining the liquid mercury temperature within about 1° C. of the desired temperature and contacting the mercury vapor with a growth solution consisting of mercury, cadmium, and tellurium having a desired temperature between about 425° C. and 550° C. and maintaining the growth solution temperature within about 1° C. of the desired temperature.

4,642,143 METHOD OF MAKING A DOUBLE HETEROSTRUCTURE LASER

John C. Connolly, Cranbury, and Dan Botez, Mt. Holly, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Division of Ser. No. 505,485, Jun. 17, 1983, Pat. No. 4,569,054.
This application Aug. 30, 1985, Ser. No. 771,357
Int. Cl.⁴ H01L 21/208

U.S. Cl. 148—171

18 Claims



1. A method of fabricating a laser which includes a body of semiconductor material including end facets and a substrate, and having a guide layer and an active layer which taper in

thickness in the lateral direction, which method comprises the steps of:

forming a plurality of corrugations comprising adjacent vee-shaped channels in a major surface of the substrate and which extend between the end facets;
forming a first solution, comprising the elements to be deposited and an element which is also a solvent for the substrate material, having a super-saturated growth condition for planar and concave surfaces and an under-saturated growth condition for convex surfaces;
contacting the surface of the substrate having the corrugations therein to the first solution thereby causing a melting of the convex portions of the corrugations to form a plurality of mesas between the concave portions of the corrugations, wherein the surfaces of the mesas are below the surface of the substrate, thereby forming a trough in the surface of the substrate and causing deposition of a first layer to occur over the concave portions of the corrugations and the mesas and the surrounding substrate; and sequentially contacting the substrate with the first layer thereon to different solutions to deposit the remaining layers of the laser over the surface of the first layer.

10. A method of locally delaying the deposition of a layer on a surface of a body comprising the steps of:

forming a plurality of corrugations on the surface comprising adjacent vee-shaped channels;
forming a first solution, comprising the elements to be deposited and an element which is a solvent for the material of the body, having a super-saturated growth condition for planar and concave portions of the surface and an under-saturated growth condition for convex portions of the surface of the substrate;
contacting the surface having the corrugations therein to the first solution thereby causing a melting of the convex portions of the corrugations to form a plurality of mesas between the concave portions, wherein the surfaces of the mesas are below the surface of the substrate, thereby forming a trough in the surface of the substrate and causing deposition of the layer to occur over the concave portions of the corrugations and the mesas and the surrounding substrate; whereby the initial rate of deposition of the layer over the corrugated portion of the surface is less than the rate of deposition over the uncorrugated portion of the substrate.

4,642,144 PROXIMITY DOPING OF AMORPHOUS SEMICONDUCTORS

Thomas J. Tiedje, Lebanon, and Benjamin Abeles, Princeton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 6, 1983, Ser. No. 539,480
Int. Cl.⁴ H01L 21/203, 29/06

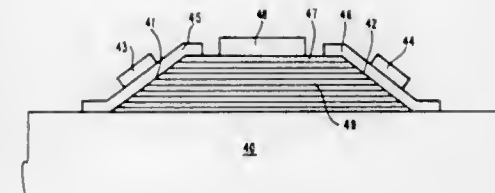
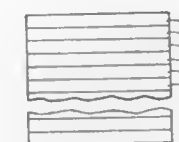
U.S. Cl. 148—175

14 Claims

1. A method of doping amorphous semiconductor material having a first bandgap comprising:

- forming said first bandgap amorphous material in a first plurality of spaced apart layers; and
- forming a second plurality of amorphous semiconductor or insulator layers having a second bandgap wider than said first bandgap interleaved with and contiguous with said first plurality such that the conduction and valence band steps at the interfaces between said first plurality and said second plurality is of sufficient magnitude to confine

carriers, such that the Fermi levels in the two layers are different so that carriers in the gap states transfer from



said second plurality of layers to said first plurality causing the conductivity of said material to increase.

4,642,145 NICKEL ALLOY

Tsuyoshi Masumoto; Akihisa Inoue, both of Mlyagi, and Hiroyuki Tomloka, Kyoto, all of Japan, assignors to Tsuyoshi Masumoto, Mlyagi and Unitika Ltd., Hyogo, both of, Japan
Filed Mar. 8, 1983, Ser. No. 473,301

Claims priority, application Japan, Mar. 8, 1982, 57-36226; Aug. 30, 1982, 57-150361

Int. Cl.⁴ C22C 38/08, 19/00

U.S. Cl. 148—336

12 Claims

3. A Ni-based alloy consisting essentially of:

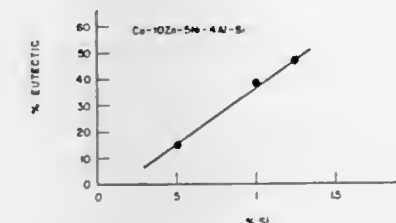
- 8 to 34 atom% Al;
 - 15 to 70 atom% total of at least one element selected from the group consisting of Fe and Co, wherein if Fe is present it is present in an amount of at least 15 atom%;
 - and if Co is present it is present in an amount of at least 25 atom%;
- and the balance of the alloy to make up 100 atom% substantially pure Ni wherein the alloy contains a B-2 type intermetallic compound, and the compound has crystals which have a minute particle diameter of not more than about 10 microns.

4,642,146
ALPHA COPPER BASE ALLOY ADAPTED TO BE
FORMED AS A SEMI-SOLID METAL SLURRY
Sankaranarayanan Asbok, Bethany, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 599,107, Apr. 11, 1984, Pat. No. 4,569,702. This application Oct. 11, 1985, Ser. No. 786,564
Int. Cl.⁴ C22C 9/01

U.S. Cl. 148—414

13 Claims



1. A copper base alloy adapted to have a structure comprising a plurality of discrete particles in a surrounding metal matrix, said particles and said matrix being comprised such that when said alloy is heated to a desired temperature said alloy forms a semi-solid slurry wherein the matrix is in a molten condition comprising from about 5% to about 40% liquid and said particles are within said liquid matrix, said alloy consisting essentially of from about 3% to about 6% nickel, from about 2% to about 4.25% aluminum, from about 0.25% to about 1.2% silicon, from about 5% to about 15% zinc, up to about 5% iron and the balance essentially copper.

4,642,147
HIGH ENERGY COMPOSITION
Jubo Hyppää, Rauma, Finland, assignor to Raikka Oy, Helsinki, Finland

Filed Jun. 3, 1985, Ser. No. 740,830
Claims priority, application Finland, Jun. 19, 1984, 842470
Int. Cl.⁴ C06B 45/10

U.S. Cl. 149—19.9

5 Claims

1. A propellant composition intended to react only with its own components and not with atmospheric oxygen during its propulsive reaction, comprising:

finely divided aluminum metal as a fuel, and lithium perchlorate or a mixture of lithium perchlorate and ammonium perchlorate as an oxidizer, said aluminum being present by weight percentage between about 25% and about 50%, and the oxidizer and any other oxygen containing substance in the composition being present in stoichiometric proportion to provide too little oxygen to oxidize all of the aluminum to aluminum oxide, but sufficient to oxidize all of it at least to aluminum suboxide at a temperatures in excess of 2,200 degrees C.

4,642,148
METHOD FOR PRODUCING A MULTILAYER CERAMIC
CIRCUIT BOARD

Kazuaki Kurihara, Atsugi; Nobuo Kamehara, Isehara; Hiromitsu Yokoyama, Sagami; Hiromi Ogawa, Yokohama; Kishio Yokouchi, Zama; Yoshitaka Imanaka, Atsugi, and Koichi Niwa, Tama, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed May 28, 1985, Ser. No. 738,658
Claims priority, application Japan, May 31, 1984, 59-109490
Int. Cl.⁴ B32B 31/06

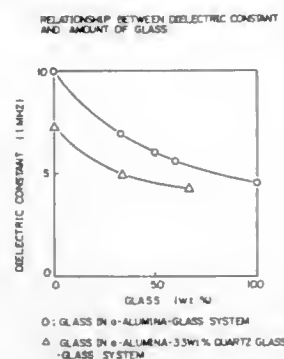
U.S. Cl. 156—89

7 Claims

1. A method for producing a multilayer ceramic circuit board for use with copper conductors comprising the steps of: forming a multilayer structure comprising patterns of copper-based paste and glass-ceramic layers laminated alter-

nately, at least the glass-ceramic layers located between the patterns of copper-based paste consisting essentially of a mixture of 10 percent to 75 percent by weight of α -alumina, 20 percent to 60 percent by weight of crystallizable or noncrystallizable glass which is sinterable at a temperature lower than the melting point of copper and not coalescent at temperatures up to 900° C., and 5 percent to 70 percent by weight of quartz glass, based on the total weight of the glass-ceramic, blended with a binder comprising a thermally depolymerizable resin;

prefiring the multilayer structure in an inert atmosphere containing water vapor, the partial pressure of which is 0.005 to 0.3 atmosphere, in a first prefiring step at a temperature in the range of 350° C. to 450° C. and for a time



sufficient to depolymerize substantially all of the resin and in second prefiring step at a temperature in the range of 650° C. to 900° C. and for a time sufficient to assure completion of depolymerization of the resin and to reduce any residual carbon to a desired minimal level, while producing no substantial change in the state of the glass components and the copper; and

firing the multilayer structure in an inert atmosphere containing no water vapor at a temperature in the range of from above 900° C. to below the melting point of copper so as to coalesce the crystallizable or noncrystallizable glass and thereby sinter the glass-ceramic without affecting the metallic state of the copper or coalescing the α -alumina and quartz glass components.

4,642,149

HEAT EXCHANGER WITH RADIAL BAFFLES

Jay Harper, 1633 W. 132nd St., Gardena, Calif. 90249

Continuation of Ser. No. 370,085, Apr. 20, 1982, abandoned.

This application Oct. 10, 1985, Ser. No. 786,045

Int. Cl.⁴ F28D 7/00; F28F 9/22; G05D 15/00

U.S. Cl. 165—160

8 Claims

1. A shell and tube type of heat exchanger in which ambient air is used as the cooling medium, comprising:

a housing including a cylindrical peripheral wall having spaced parallel end walls forming a cylindrical core cavity,

a fluid inlet and outlet means mounted on said housing for flow of fluid into and out of said cavity,

a planar baffle mounted in said cavity and contacting said peripheral wall to divide said cavity into two chambers, said inlet means communicating with one chamber and said outlet means communicating with the other of said chambers,

said end walls including a plurality of spaced apertures and having a face exposed to ambient air,

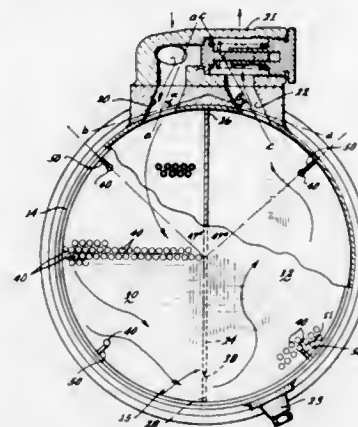
a plurality of heat exchanger tubes mounted in said end walls and extending into said cavity and disposed in parallel relation between said end walls,

said tubes being open at each end for passage through said

tubes of ambient air to effect cooling of the fluid flowing through said cavity,

said baffle having an aperture therein located to form a passageway from one to the other of said chambers in a region remote from said inlet and outlet means,

each chamber including at least two spaced flanges extending radially inwardly of said cavity from said peripheral wall,



at least the flanges closest to said inlet and outlet means being positioned between 40 and 55 degrees on either side of said baffle as measured from the center line of said cavity, and

said inlet and outlet means each defining a conduit having an axis which is at an angle of about 30 degrees relative to a line tangent to said peripheral wall at the intersection of said axis with said peripheral wall.

4,642,150

METHOD AND APPARATUS FOR SECURING ELASTIC TAPES TO A MATERIAL WEB

Kurt Stemmler, Neuwied, Fed. Rep. of Germany, assignor to Winkler+Duennbier Maschinenfabrik+Eisengiesserei GmbH & Co. KG., Neuwied, Fed. Rep. of Germany

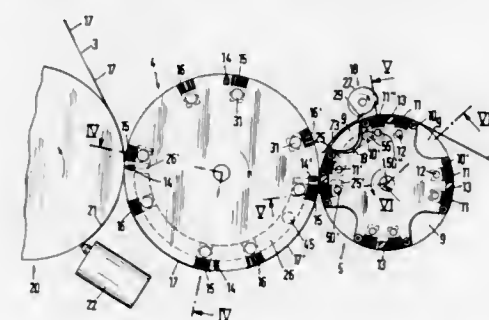
Filed Nov. 22, 1985, Ser. No. 801,138

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444331

Int. Cl.⁴ B32B 31/08

U.S. Cl. 156—164

15 Claims



4. An apparatus for securing a determined length of an elastic tape to a material web, comprising:

(a) means for continuously advancing said material web,

(b) first tape supply roller means (5) for discontinuously advancing said elastic tape (6), said first roller means having a surface with curved depressions (9) in said surface for intermittently gathering sections of said elastic tape into said depressions (9) to substantially free said sections from any stretching force to assure a uniform length for each section,

(c) second continuously rotating stretching roller means (4) arranged for cooperation with said first roller means for sequentially stretching said gathered tape sections,

(d) cutting means arranged for cutting off a stretched tape section, and

(e) means for sequentially transferring and bonding cut-off tape sections to said advancing material web at substantially uniform spacings between neighboring tape sections bonded to said material web.

4,642,151

APPARATUS AND METHOD FOR APPLYING TRANSVERSE ELASTIC SEGMENTS

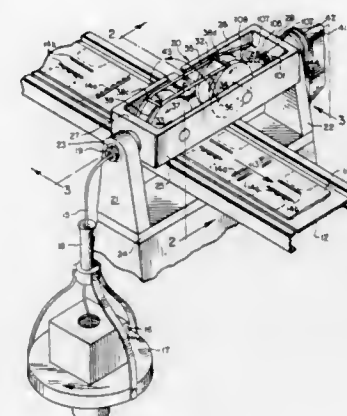
Joseph D. Coenen, Outagamie County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 29, 1985, Ser. No. 760,190

Int. Cl.⁴ B32B 31/08

U.S. Cl. 156—164

15 Claims



1. An apparatus for applying linear segments of an elastic strip to a base material moving in a production line which comprises:

a first pair of pulleys with a first belt mounted thereon, and operating generally in a first plane;

a second pair of pulleys with a second belt mounted thereon, said second pair of pulleys having a combined diameter less than the combined diameter of said first pair, and said second belt having a length less than that of said first belt, said second pair of pulleys and said second belt operating generally in a second plane which is substantially parallel to said first plane;

at least three gripping members with a first portion attached to said first belt and spaced equally along said first belt, and a second portion extending from said first belt in a direction substantially perpendicular to said first plane;

means for driving said first pair of pulleys;

means for driving said second pair of pulleys at a combined angular velocity such that said second belt travels at a linear velocity equal to the linear velocity of said first belt;

said first pair of pulleys and said second pair of pulleys being arranged such that upon rotation of said first pair of pulleys said second portions of said gripping members are brought into and out of contact with said second belt, and such that at least one of said second portions is in contact with said second belt at all points of said rotation;

a source of a continuous elastic strip;

means for guiding said elastic strip from said source to a point in contact with said second belt;

means for cutting the elastic strip material into linear segments.

13. A method for applying linear elastic segments to a substrate, said method comprising the steps of:

(a) providing an elastic gripping unit comprising a first pair of pulleys with a first belt mounted thereon; a second pair of pulleys with a second belt mounted thereon, said second pair of pulleys having a combined diameter less than

that of said first pair, said second belt having a length less than that of said first belt; at least three gripping members attached to said first belt and extending therefrom; said first and second pair of pulleys spatially arranged so that upon rotation of said first pair of pulleys, the gripping members are brought into and out of contact with said second belt;

(b) providing a continuous elastic strip;

(c) providing a cutting means whereby said continuous elastic strip is cut into segments;

(d) rotating said first and second pairs of pulleys at respective angular velocities such that said first and second belts travel at the same linear velocity;

(e) guiding the continuous elastic strip to a point in contact with said second belt;

(f) gripping a portion of the continuous elastic strip between one of said gripping members and the second belt;

(g) pulling the gripped portion of the continuous elastic material in a direction transverse to the direction of the production line by continued rotation of said first and second pairs of pulleys;

(h) bringing the pulled portion of the continuous elastic material into contact with said substrate;

(i) cutting said continuous elastic strip into a segment of desired length;

(j) releasing the segment from between said one of said gripping members and said second belt by continued rotation of said first and second pairs of pulleys.

4,642,152

DRIP IRRIGATION SYSTEM EMPLOYING FLOW REGULATION

Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601

Division of Ser. No. 364,213, Apr. 1, 1982, Pat. No. 4,473,191.

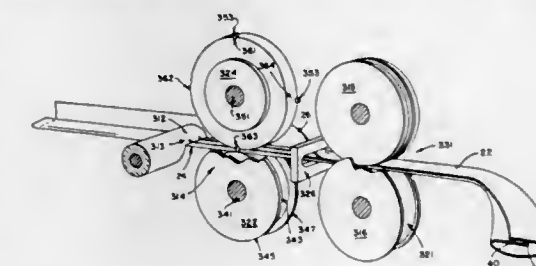
This application Jul. 25, 1984, Ser. No. 634,475

The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.

Int. Cl.⁴ B29C 53/00

U.S. Cl. 156—203

20 Claims



17. Apparatus for manufacturing an elongated fluid distributing hose made from an elongated plastic film and an elongated flat plastic ribbon;

means for moving the film in a desired direction that is essentially parallel to the longitudinal axis of the film;

means for orienting the film to expose one of the two surfaces of the film along one of the longitudinal margins of the film;

extrusion nozzle means for extruding said flat plastic ribbon, said nozzle means oriented relative to said one surface of the film so that said ribbon is deposited on and attached to said one surface essentially parallel to the longitudinal axis of the said film;

molding means to form permanent depressions in said plastic ribbon into a predetermined pattern of inlet and outlet stations with passageways therebetween;

folding means for folding the film about its longitudinal axis so that one of the surfaces of the film along the other of

the longitudinal margins of the film comes into contact with said plastic ribbon; and means for securing said other margin to said plastic ribbon; said inlets and outlets together with said passageways forming fluid passage from the interior of the hose to the exterior of said hose.

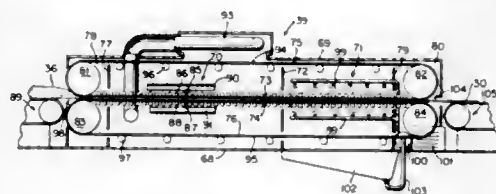
19. A method for manufacturing an elongated fluid distributing hose made from an elongated plastic film and an elongated flat plastic ribbon; moving the film in a desired direction that is essentially parallel to the longitudinal axis of the film; orienting the film to expose one of the two surfaces of the film along one of the longitudinal margins of the film; extruding said flat plastic ribbon from a nozzle means, said nozzle means oriented relative to said one surface of the film so that said ribbon is deposited on and attached to said one surface essentially parallel to the longitudinal axis of the said film; forming permanent depressions in said plastic ribbon into a predetermined pattern of inlet and outlet stations with passageways therebetween; folding the film about its longitudinal axis so that one of the surfaces of the film along the other of the longitudinal margins of the film comes into contact with said plastic ribbon; and securing said other margin to said plastic ribbon; said inlets and outlets together with said passageways forming fluid passages from the interior of the hose to the exterior of said hose.

4,642,153 METHOD AND APPARATUS FOR MAKING A SHEET OF MATERIAL

Thomas E. Lohr, Mount Clemens, Mich., assignor to Allen Industries, Inc., Troy, Mich.
Continuation of Ser. No. 499,604, May 31, 1983, abandoned.
This application Dec. 3, 1984, Ser. No. 677,433
Int. Cl.⁴ B30B 5/06

U.S. Cl. 156—296

18 Claims



1. In a method for making a sheet of material from a fiber textile-like mat means of fiber means mixed with fibers of thermoplastic material and being subject to heat and pressure by press means to melt said thermoplastic fibers and densify said mat means so that upon subsequent cooling of said thermoplastic material in said densified mat means said cooled thermoplastic material sets and thus causes said cooled densified mat means to be a substantially rigid sheet of material, said method comprising the steps of forming said press means to comprise a pair of movable endless belts having adjacent runs adapted to receive said mat means therebetween and having outer returning runs, compressing said mat means between said adjacent runs of said belts with compressing means of said press means to densify said mat means, heating said mat means between said adjacent runs of said belts with heating means of said press means, and cooling said mat means between said adjacent runs of said belts with cooling means of said press means after said mat means has been heated and densified by said heating means and said compressing means, the improvement comprising the steps of also preheating said outer runs of said belts with said heating means that heats said mat means before said mat means is received between said adjacent runs of said belts, disposing a chamber defining means to substantially surround said outer runs and said adjacent runs of said belts, forming said chamber

defining means to have two adjacent sections substantially separate from each other and through which said outer runs and said adjacent runs of said belts serially move, forming one of said sections to have said heating means therein, and forming the other of said sections to have said cooling means therein.

10. In an apparatus for making a sheet of material from a fiber textile-like mat means of fiber means mixed with fibers of thermoplastic material and being subject to heat and pressure by press means to melt said thermoplastic fibers and densify said mat means so that upon subsequent cooling of said thermoplastic material in said densified mat means said cooled thermoplastic material sets and thus causes said cooled densified mat means to be a substantially rigid sheet of material, said press means comprising a pair of movable endless belts having adjacent runs adapted to receive said mat means therebetween and having outer returning runs, said press means having compressing means for compressing said mat means between said adjacent runs of said belts to densify said mat means, said press means having heating means for heating said mat means between said adjacent runs of said belts, said press means having cooling means for cooling said mat means between said adjacent runs of said belts after said mat means has been heated and densified by said heating means and said compressing means, the improvement wherein said heating means that heats said mat means also preheats said outer runs of said belts before said mat means is received between said adjacent runs of said belts, said apparatus having a chamber defining means substantially surrounding said outer runs and said adjacent runs of said belts, said chamber defining means having two adjacent sections substantially separated from each other and through which said outer runs and said adjacent runs of said belts serially move, one of said sections having said heating means therein and the other of said sections having said cooling means therein.

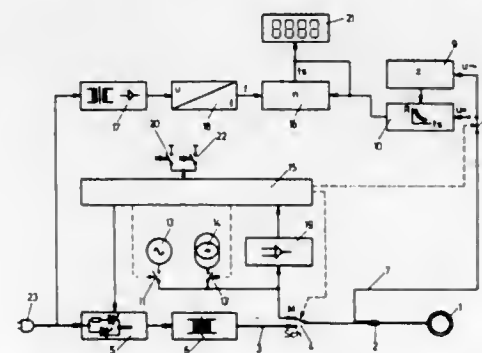
4,642,154 METHOD AND APPARATUS FOR WELDING CONDUITS

Alfred Thalmann, Uhwiesen; Ernesto Lehmann, Schaffhausen; Emil Roth, Gmülden, and Walter Gerber, Rüfenacht, all of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed Dec. 15, 1982, Ser. No. 450,038
Claims priority, application Switzerland, Dec. 23, 1981, 8239/81

Int. Cl.⁴ B32B 1/08

U.S. Cl. 156—272.2

18 Claims



1. A method of welding together plastic conduit elements using shaped elements containing windings of electrically conductive heating wire and supplying electrical energy to the wire by a control apparatus connected to a source of electrical energy such that an appropriate heating current is passed through the wire to heat and weld the components including the steps of manually producing a start signal,

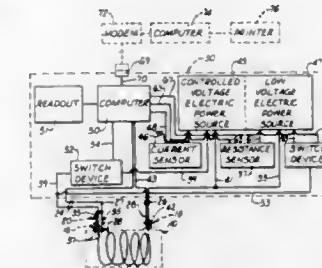
passing a direct current through the windings, of heating wire and measuring the ohmic resistance of the windings, allotting a time interval for the welding process by automatically selecting a number of counts as a function of the measured ohmic resistance corresponding to a selected one of stored a plurality of predetermined relationships based on conduit element type and shaped element type, storing the number of counts in a counting device, initiating the flow of heating current, supplying impulses to the counting device to reduce the count to zero, and terminating the flow of heating current when the count reaches zero.

4,642,155 THERMOPLASTIC FITTING ELECTRIC HEAT WELDING METHOD AND APPARATUS

Russel G. Ramsey, Holdenville, Okla., assignor to Central Plastics Company, Shawnee, Okla.
Continuation-in-part of Ser. No. 734,836, May 16, 1985, Pat. No. 4,602,148. This application Jan. 29, 1986, Ser. No. 823,682
Int. Cl.⁴ B32B 31/26

U.S. Cl. 156—359

15 Claims



1. A method of electrically heat welding a thermoplastic fitting having an electric resistance heating element disposed therein whereby a predetermined regulated quantity of electric power is supplied to the heating element during the welding process and the making of a high quality weld is insured comprising the steps of:

- connecting said heating element of said fitting to an electric power source;
- supplying electric power to said heating element at a minimum voltage level for measuring the resistance of said element without significantly heating said element;
- measuring the resistance of said heating element and thereby determining the initial temperature of said element;
- supplying electric power to said heating element at a controlled voltage whereby said element is heated;
- sensing the initial magnitude of the current flowing through said heating element and comparing such magnitude and said initial temperature of said element with predetermined current levels for heating elements of various sizes of fittings at various temperatures to thereby determine the size of said fitting being welded and the total time the controlled voltage electric power should be supplied to said heating element of said fitting to insure the making of a high quality weld;
- continuing to sense the magnitude of the current flowing through said heating element over the time said controlled voltage electric power is supplied thereto and comparing such magnitude at predetermined time intervals with predetermined current levels for the size of fitting determined in step (e) to thereby determine if the welding process is proceeding abnormally at such time intervals; and
- terminating the supply of electric power to said heating element of said fitting when it is determined that said welding process is proceeding abnormally in step (f) or otherwise at the end of the total time required for the

making of a high quality weld as determined in accordance with step (e).

11. Apparatus for electrically heat welding a thermoplastic fitting having an electric resistance heating element disposed therein connected to a pair of electric contacts attached to said fitting whereby a regulated quantity of electric power is supplied to the heating element during the welding process and the making of a high quality weld is insured comprising:

- first electric power generating means for producing controlled voltage electric power to heat said heating element of said fitting;
- second electric power generating means for producing low voltage electric power for measuring the resistance of said element without significantly heating said element;
- current sensor means for sensing the magnitude of the current flow from said first electric power generating means electrically connected thereto;
- resistance sensor means for sensing the magnitude of the resistance of said heating element electrically connected to said second electric power generating means;
- electric cable means connected to said first and second electric power generating means and adapted for removable connection to said electric contacts of said fitting for conducting electric power to said electric resistance heating element of said fitting;
- switch means electrically connected between said first and second electric power generating means and said cable means; and
- computer means operably connected to said current sensor means, said resistance sensor means and said switch means for receiving the resistance of said heating element and determining the initial and final temperatures of said element therefrom, for receiving and comparing the initial temperature of said heating element and the initial magnitude of the current flowing from said first electric power generating means through said heating element with predetermined temperatures and current levels for various sizes of fittings and thereby determining the size of fitting being welded and the total time the constant voltage power from said first power generating means should be supplied to said heating element for the making of a high quality weld, for comparing the magnitude of the current flowing through said heating element from said first power generating means at predetermined time intervals with predetermined current levels for the size of fitting being welded to thereby determine if the welding process is proceeding abnormally at such time intervals, for operating said switch means to start and terminate the supply of electric power to said heating element from said first and second electric power generating means, and for operating said switch means to terminate the supply of electric power to said heating element from said first electric power generating means when said welding process is proceeding abnormally or otherwise at the end of the total time determined to be required for the making of a high quality weld.

4,642,156 APPARATUS FOR FORMING A REINFORCING BAND ON A SECTIONAL SEALING LINER

Ralph Jost, Füllinsdorf, Switzerland, assignor to Hobas Engineering & Durotec AG, Switzerland
Filed Mar. 8, 1985, Ser. No. 709,502
Claims priority, application Switzerland, Mar. 9, 1984, 1176/84

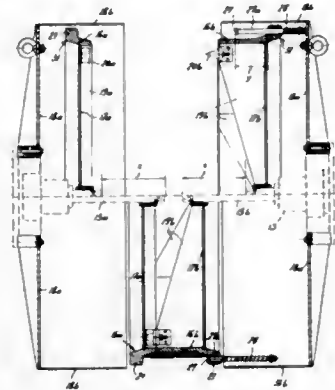
Int. Cl.⁴ B65H 81/00

U.S. Cl. 156—425

9 Claims

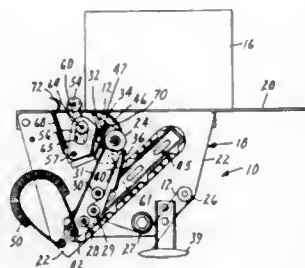
1. An apparatus for forming a sealing sleeve for tubes, comprising first and second opposed mold parts, first and second coaxial shafts secured to said respective mold parts, first and second brackets for carrying said respective shafts, first and second linear drive means connected to said respective shafts

and mounted on said respective brackets for moving said shafts axially toward each other to close said mold parts and axially away from each other to open said mold parts, one of said mold parts having a side circumferential wall which is axially longer than the other of said mold parts, coupling means having at least one coupling part connected to each of said mold parts for automatically rotationally engaging said first and second mold parts upon closing said mold parts to bring said coupling parts of said coupling means together, said coupling parts of said coupling means being automatically disconnected from each other with opening of said mold parts, rotary drive means



mounted on only one of said brackets and connected only to one of said shafts mounted on said one bracket to rotate said first and second molding parts when said molding parts are closed, a plurality of pushers movably mounted with respect to and associated with said axial longer mold part, pusher drive means associated with said bracket which carries said shaft of said longer mold part for automatically moving said pushers when said mold parts are opened, and a programmable common controller connected to said rotary drive means and said linear drive means for opening and closing said mold parts and for rotating said mold parts according to a program.

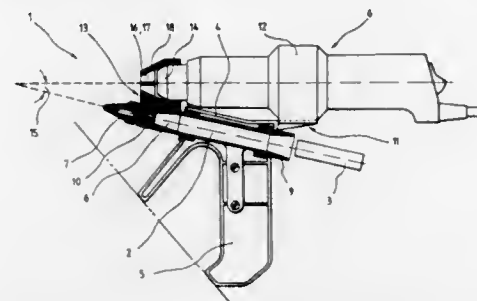
4,642,157
TAPE APPLYING DEVICE
Michael J. Cavanagh, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Oct. 25, 1985, Ser. No. 791,407
Int. Cl.⁴ B31C 1/00
U.S. Cl. 156—468 5 Claims



1. A device adapted for applying lengths of pressure sensitive adhesive coated tape from a supply length of tape serially on the peripheries of rectangular objects moved along a predetermined path in a first direction past the device, said device comprising:
a frame;
an application member having an arcuate periphery;
means adapted for defining a tape route for a said supply length of tape to the arcuate periphery of said application

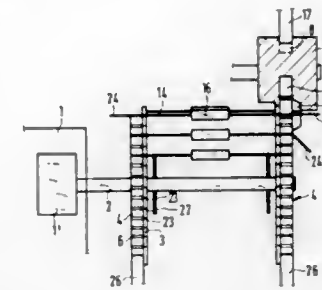
member with the adhesive coating disposed away from said application member;
means for mounting said application member on said frame to afford movement thereof from a contact position with said application member in said path to afford contact between a said length of tape disposed along said application member and the leading surface of a said object driven along said path in said first direction to adhere the tape to the leading surface object, to a second position while pressing tape against the leading surface of the object, to a third position with said application member spaced from said path and back to said contact position; cam means adapted to engage an object for moving said application member to said third position after movement of the leading surface of a said object past said application member at said second position so that the application member will guide the tape to be applied to the article along a path between the front surface of the article and the application member that forms a decreasing acute angle with the side surface of the article after the article moves past the application member; and
means mounted on said frame including a knife blade having a cutting edge, and adapted to be activated by movement of a said object along the path past the application member for moving the cutting edge of the knife blade generally in synchronism with tape moving along said path portion while causing the cutting edge to intersect the tape along said path portion to sever it.

4,642,158
HOT GLUE PISTOL
Heinrich W. Steinell, Herzbrock, and Hans Siwon, Obing, both of Fed. Rep. of Germany, assignors to Steinell GmbH & Co., K.G., Fed. Rep. of Germany
Filed Feb. 21, 1985, Ser. No. 703,930
Claims priority, application European Pat. Off., Feb. 29, 1984, 84102136.3
Int. Cl.⁴ B67D 5/62
U.S. Cl. 156—497 15 Claims



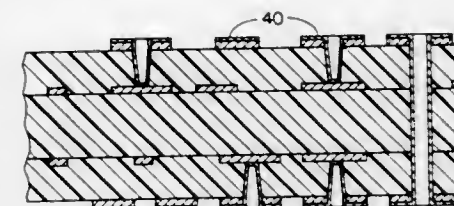
1. A hot glue pistol for melting and dispensing a hot melt glue, said pistol being of the type including a guide channel for the glue to be melted, a dispenser nozzle at one end of said guide channel, heating means in the form of a hot air blower for melting said glue, the hot air blower having a hot air tube with an outlet defining a discharge end of said hot air blower located adjacent said dispenser nozzle, and heat transfer means connected to at least one of said guide channel and said dispenser nozzle and projecting into the hot air flow produced by said hot air blower, the improvement comprising said heat transfer means being disposed substantially entirely outside said hot air blower and being positioned downstream of the discharge end thereof in a position in which it is fully exposed to the hot air flow therefrom.

4,642,159
APPARATUS FOR LINING UP ELECTRICAL COMPONENTS TO FORM A BELT
Thomas Weresch, Greschbachstrasse 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany
Filed Oct. 30, 1984, Ser. No. 666,308
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346997
Int. Cl.⁴ B32B 31/10, 31/18
U.S. Cl. 156—510 8 Claims



1. An apparatus for aligning electrical components with two aligned connecting wires to form a belt, wherein first and second adhesive tapes, drawn from a separate delivery spool are secured to the aligned connecting wires, the apparatus including two rotary drivable conveying gear wheels arranged on a shaft and adapted to receive the connecting wires in tooth means formed therein, two rollers are arranged on the shaft, each of said rollers being adapted to guide one of the adhesive tapes, pressing means for pressing the second adhesive tape in a congruent manner on the first adhesive tape while incorporating the connecting wires, and a compact working means associated with each of said rollers, said compact working means including guidance and alignment means for the second adhesive tape, the pressing means and a cutting means for cutting off the connecting wires of the electrical components.

4,642,160
MULTILAYER CIRCUIT BOARD MANUFACTURING
Larry W. Burgess, Tigard, Oreg., assignor to Interconnect Technology Inc., Beaverton, Oreg.
Filed Aug. 12, 1985, Ser. No. 764,497
Int. Cl.⁴ C23F 1/02; B44C 1/22; C03C 15/00; B29C 17/08
U.S. Cl. 156—630 4 Claims



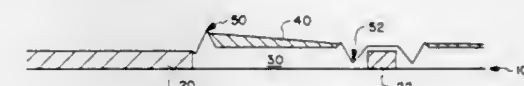
1. A method of manufacturing a circuit board, comprising forming a conductor run layer on one face of a core layer, depositing a layer of dielectric material over the conductor run layer, depositing an outer layer of conductive material over the layer of dielectric material, locally removing material of the outer layer so as to expose the dielectric material, removing the exposed dielectric material so as to form an opening through which the conductor run layer is exposed, and depositing conductive material into said opening so as to establish electrical connection between the conductor run layer and the outer layer of conductive material.

4,642,161
METHOD OF BONDING COPPER AND RESIN
Haruo Akahoshi, Hitachi; Kanji Murakami, Mito; Motoyo Wajima, Hitachi; Kiyonori Kogawa; Ritsuji Toba, both of Hadano, and Takeshi Shimazaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 27, 1986, Ser. No. 823,003
Claims priority, application Japan, Jan. 31, 1985, 60-16881
Int. Cl.⁴ C23F 1/02; B44C 1/22; B31B 31/26
U.S. Cl. 156—630 11 Claims



1. A method of bonding copper and a resin together comprising the steps of forming a copper oxide layer on the surface of copper by oxidation of copper, reducing said copper oxide layer to metallic copper with a reducing solution, and bonding the surface of said metallic copper formed by said reduction and a resin together.

4,642,162
PLANARIZATION OF DIELECTRIC LAYERS IN INTEGRATED CIRCUITS
David J. Brownell, Maple Grove; Daniel C. Christensen, Plymouth; David G. Erie, Cottage Grove, and Daniel Youngner, Maple Grove, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 2, 1986, Ser. No. 815,603
Int. Cl.⁴ B44C 1/22; C03B 15/00
U.S. Cl. 156—643 24 Claims



1. A method for the planarization of a semiconductor device comprising:
(a) defining on the device a first conductive layer having a preselected interconnect pattern;
(b) applying a first dielectric layer over the first conductive layer, the first layer having an irregular profile corresponding to the first conductive layer;
(c) applying a planarization layer over the first dielectric layer, the planarization layer having a smooth profile relative to that of the first dielectric layer;
(d) etching the planarization layer to substantially remove the planarization layer and expose raised portions of the first dielectric layer, some portion of the planarization layer remaining;
(e) etching the first dielectric layer to substantially remove the first dielectric layer over the first conductive layer;
(f) removing the remaining planarization layer; and
(g) applying a second dielectric layer by bias sputter deposition.

4,642,163

METHOD OF MAKING ADHESIVE METAL LAYERS ON SUBSTRATES OF SYNTHETIC MATERIAL AND DEVICE PRODUCED THEREBY

Johann Greschner, Pliezhausen; Friedrich W. Schwerdt, Herrenberg, and Hans J. Trumpp, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

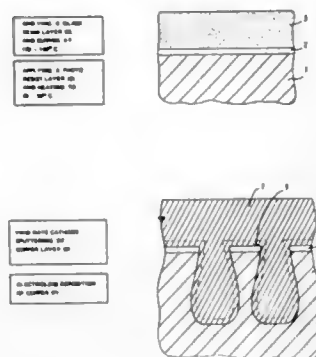
Filed Oct. 31, 1983, Ser. No. 547,553

Claims priority, application European Pat. Off., Feb. 23, 1983, 83101752.0

Int. Cl.⁴ B44C 1/22; B05D 3/00

U.S. Cl. 156—643

8 Claims



1. A method for improving the metal adhesion characteristic of the surface of a non-conductor substrate, said method comprising the steps of:

- applying a glass resin onto said surface of said substrate;
- applying a photoresist on top of said glass resin layer;
- roughening said photoresist to create a roughened contour thereon;
- transferring said roughened contour from said photoresist to said glass resin by etching in a first gas atmosphere to form a perforation structure;
- creating shallow recesses in said substrate by etching in a second gas atmosphere, wherein said recesses are made by substantially anisotropic etching followed by substantially isotropic etching, said recesses having a first width at said surface of said substrate and a second width greater than said first width in a region of said substrate below said surface.

4,642,164

METHOD AND ARRANGEMENT FOR WEB HANDLING

Hannu Hanhikoski; Lauri Kalliola, both of Järvenpää, Finland, and Hannu Mälikä, Appleton, Wis., assignors to Oy Wärtsilä Ab, Helsinki, Finland

Filed Feb. 4, 1985, Ser. No. 698,075

Claims priority, application Finland, Feb. 8, 1984, 840515

Int. Cl.⁴ D21G 1/00, 7/00

U.S. Cl. 162—207

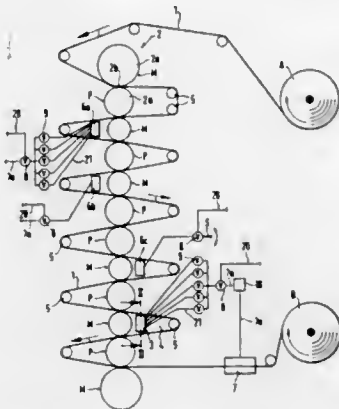
15 Claims

1. A method of moistening a running web that bounds at least partially a moistening pocket defined by first and second rolls that are in parallel, spaced apart relationship, the web contacting the first roll at two substantially diametrically opposed positions and being wrapped around the second roll, the method comprising

- delivering moistening substance in its vapor phase into the moistening pocket at a plurality of moistening locations that are spaced apart in the transverse direction of the web, whereby the vapor condenses on the web and moistens it,
- measuring the value of a property of the web at a plurality of measuring locations that are downstream of the moistening pocket with respect to the direction of travel of the web and are spaced apart in the transverse direction of the web, the value of the property depending upon the moistness of the web, and

separately controlling the rate at which moistening substance is delivered to each moistening location in dependence upon the measured value of said property.

7. Apparatus for moistening a running web, comprising first and second rolls in parallel, spaced apart relationship, about which the web can be trained so that the web contacts the first roll at two substantially diametrically opposed positions and is wrapped around the second roll and bounds at least partially a



moistening pocket, and the apparatus also comprising means for delivering moistening substance in its vapor phase into the moistening pocket at a plurality of moistening locations that are spaced apart in the transverse direction of the web, means for measuring the value of a property of the web at a plurality of locations that are downstream of the moistening pocket with respect to the direction of travel of the web and are spaced apart in the transverse direction of the web, the value of which property depends on the moistness of the web, and means for separately controlling the rate at which moistening substance is delivered to each moistening location in dependence upon the measured values of said property.

4,642,165

METHOD OF VAPORIZING MULTICOMPONENT LIQUIDS

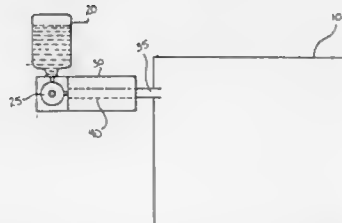
Mark E. Bier, Pittsburgh, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Dec. 21, 1984, Ser. No. 684,461

Int. Cl.⁴ B01D 3/42

U.S. Cl. 203—12

5 Claims



1. A method of vaporizing a multicompont liquid comprising: metering successive predetermined increments of said multicompont liquid at a predetermined rate onto a heated surface of a vaporization chamber; substantially instantaneously vaporizing each said liquid increment on said heated surface before the succeeding said liquid increment is metered onto said heated surface so that each liquid increment vaporization produces a

multicompont vapor increment having substantially the same weight percent composition as said multicompont liquid increment; and passing each said vapor increment into a vacuum chamber.

4,642,166

DEHYDRATION OF FORMIC ACID BY EXTRACTIVE DISTILLATION

Lloyd Berg, and An-I Yeh, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Feb. 10, 1986, Ser. No. 827,891

Int. Cl.⁴ B01D 3/40; C07C 53/02

U.S. Cl. 203—15

11 Claims

1. A method for recovering formic acid from a mixture of formic acid and water which comprises distilling a mixture of formic acid and water in a rectification column in the presence of about one part of extractive agent per part of formic acid-water mixture, recovering water as overhead product and obtaining the formic acid and extractive agent from the stillpot, the extractive agent comprises at least a sulfone.

4,642,167

SEPARATION OF ISOBUTYL ACETATE FROM ISOBUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Mar. 7, 1985, Ser. No. 709,415

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.⁴ B01D 3/40

U.S. Cl. 203—60

2 Claims

1. A method for recovering isobutyl acetate from a mixture of isobutyl acetate, isobutanol and water which comprises distilling a mixture of isobutyl acetate, isobutanol and water in a rectification column in the presence of extractive agent, recovering isobutyl acetate and water as overhead product and obtaining the extractive agent and isobutanol from the bottoms of the rectification column, the extractive agent comprises N,N-dimethylacetamide.

2. A method for recovering isobutyl acetate from a mixture of isobutyl acetate, isobutanol and water which comprises distilling a mixture of isobutyl acetate, isobutanol and water in a rectification column in the presence of extractive agent, recovering isobutyl acetate and water as overhead product and obtaining the extractive agent and isobutanol from the bottoms of the rectification column, the extractive agent comprises acetamide.

4,642,168

METAL LAYER PATTERNING METHOD

Yuji Imai, Chiba, Japan, assignor to TDK Corporation, Japan Division of Ser. No. 511,403, Jul. 7, 1983. This application Aug. 20, 1984, Ser. No. 642,429

Claims priority, application Japan, Jul. 8, 1982, 57-118887; Nov. 30, 1982, 57-210466; Nov. 30, 1982, 57-210467; Nov. 30, 1982, 57-210468; Nov. 30, 1982, 57-210469; Nov. 30, 1982, 57-210470; Nov. 30, 1982, 57-210471; Nov. 30, 1982, 57-210472; Nov. 30, 1982, 57-210473; Dec. 20, 1982, 57-223551; Dec. 20, 1982, 57-223552; Dec. 20, 1982, 57-223553

Int. Cl.⁴ C25F 3/04

U.S. Cl. 204—129.65

36 Claims



1. A metal layer patterning method comprising the steps of:

forming a metal layer to be patterned on an insulating substrate; forming a mask layer of a desired pattern on the metal layer; and subjecting the metal layer to electrolytic etching by an electrolyte through the mask layer to form a patterned metal layer; wherein the metal layer to be patterned is formed of aluminum; wherein the electrolyte is a basic aqueous solution including a solute consisting principally of phosphoric acid; wherein a DC constant-current source is connected between the metal layer and an electrode corresponding thereto; wherein the temperature of the electrolyte is set to a constant value T_e (°C.) and the density of current flowing across the metal layer to the electrolyte is set to a constant value larger than a value J_e (mA/cm²) determined by the constant value T_e (°C.) of the electrolyte temperature; wherein, letting J_1 (mA/cm²) and J_2 (mA/cm²) represent values of the densities of current flowing across the metal layer to the electrolyte in the case of the amount of side etching of the patterned metal layer being substantially zero when the electrolytic etching is carried out with the electrolyte temperature held at T_1 (°C.) and T_2 (°C.), the value J_e of the current density is given by

$$T_e = a \times J_e + b$$

$$a = [(T_2 - T_1)/(J_2 - J_1)] \times (1 \pm 0.1)$$

$$b = [(T_1 J_2 - T_2 J_1)/(J_2 - J_1)] \times (1 \pm 0.1); \text{ and}$$

wherein the electrolytic etching is carried out until voltage between the metal layer and the electrode increases suddenly.

4,642,169

CONTINUOUS ROTATING ELECTROPHORESIS COLUMN AND PROCESS OF USING

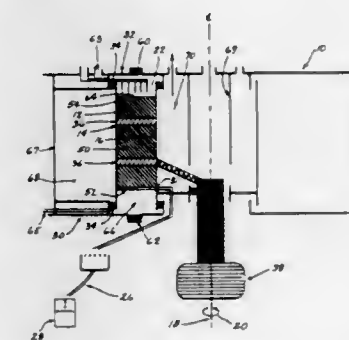
Randall A. Yoshisato; Ravindra Datta, and Gregory R. Carmichael, all of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation-in-part of Ser. No. 636,612, Aug. 1, 1984. This application Feb. 21, 1986, Ser. No. 833,654

Int. Cl.⁴ G01N 27/26

U.S. Cl. 204—180.1

16 Claims



16. A process for separating individual components from a feed stream of a multi-component chemical mixture in a separation apparatus including an annular chamber defined by side-walls of an outer cylinder and an inner cylinder, said annular chamber having a first axial end disposed to receive a feed stream of a multi-component chemical mixture and a second axial end disposed to discharge separated components therefrom, a first electrode disposed at the first axial end of said annular chamber and a second electrode disposed at the second axial end of said annular chamber, a feed nozzle disposed at the first axial end, and means for rotating the annular chamber

with respect to the feed nozzle, said process including the steps of:

- rotating said annular chamber with respect to said feed nozzle;
- continuously feeding said chemical mixture through said feed nozzle into the first axial end of said chamber;
- continuously applying an electrical potential between said first electrode and said second electrode thereby causing the separation of said chemical mixture into a number of individual separated components;
- continuously forcing said separated components toward the second axial end of said annular chamber wherein each separated component flows through said chamber in a distinct helical path which terminates at a distinct angular section of said second axial end; and
- continuously collecting each separated component at a predetermined distinct angular section of said second axial end.

4,642,170 ELECTROPHORETIC DEPOSITION OF SULFONE-CONTAINING POLYMERS

William M. Alvino, Penn Hills Township, Allegheny County, Pa.; Timothy J. Fuller, Berkeley Heights, N.J.; Louis A. Cargnel, Unity Township, Westmoreland County, and Luciano C. Scala, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1985, Ser. No. 765,464
Int. Cl.⁴ C25D 13/06

U.S. Cl. 204—181.4

13 Claims

1. A method of electrophoretically depositing a coating on a conductive substrate comprising:

- (A) forming, in an organic solvent, an amine-free solution of a polymer selected from the group consisting of polysulfones, polyethersulfones, and mixtures thereof;
- (B) forming an emulsion by combining said solution with an organic non-solvent for said polymer containing up to 0.6 pbw of an organic nitrogen-containing base per pbw of said polymer; and
- (C) applying a direct current between said conductive substrate and said emulsion, whereby a coating of said polymer is deposited on said conductive substrate.

4,642,171 PHOTOTREATING APPARATUS

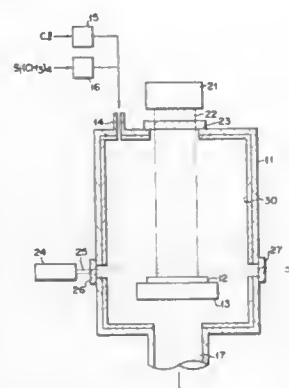
Makoto Sekine, Yokohama; Haruo Okano, and Yasuhiro Horiiike, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1985, Ser. No. 756,318

Claims priority, application Japan, Sep. 18, 1984, 59-195163
Int. Cl.⁴ C23C 15/00

U.S. Cl. 204—298

9 Claims



1. A phototreating apparatus having a vacuum container for storing a solid material, means for introducing a photoreactive

gas into said container, and a light source for supplying light having a predetermined wavelength to said container, causing a photoreaction of the photoreactive gas, said apparatus photoreacting the solid material in the container by utilizing the photoreaction of the photoreactive gas, wherein at least an inner surface of said vacuum container comprises a light-absorbing material capable of absorbing the light having the predetermined wavelength.

4,642,172 CONTROLLED-POTENTIAL BIAS CIRCUIT FOR ELECTROCHEMICAL CELLS

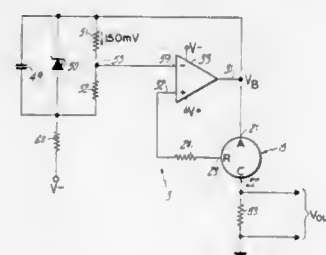
John M. Fruhwald, Pittsburgh, Pa., assignor to Bacharach, Inc., Pittsburgh, Pa.

Filed Feb. 19, 1985, Ser. No. 703,168

Int. Cl.⁴ C25B 15/00; G01N 27/46

U.S. Cl. 204—231

7 Claims



1. A bias circuit for an electrochemical cell including anode, cathode and reference terminals, said bias circuit comprising an amplifier having an output electrically connected to the anode of the cell, a positive input connected to the reference terminal, and a negative input; and voltage setting means connected to the negative input of the amplifier for establishing a predetermined voltage difference, said voltage setting means being effective for establishing a voltage drop defined by the voltage difference between said output and said negative input of said amplifier, whereby the predetermined voltage difference is independent of the current variation between the anode and cathode terminals of the electrochemical cell.

4,642,173 CELL HAVING COATED VALVE METAL ELECTRODE FOR ELECTROLYTIC GALVANIZING

Konrad Koziol, Röhrenbach a.d. Pegnitz, and Erich Wenk, Nürnberg, both of Fed. Rep. of Germany, assignors to Conradt GmbH & Co. Metallelektroden KG, Rothenbach a.d. Pegnitz, Fed. Rep. of Germany

Filed May 20, 1985, Ser. No. 735,627

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421480

Int. Cl.⁴ C25D 7/06; C25B 11/02

U.S. Cl. 204—242

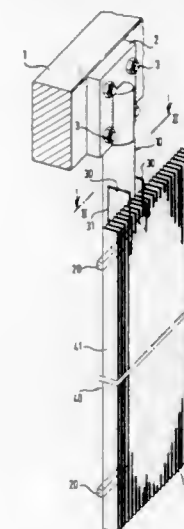
11 Claims

1. In an apparatus for electrolyte deposition of metal from aqueous solution of a metal salt onto an elongated strip of metal as the strip is drawn longitudinally past a positively charged anode submerged in a bath of electrolyte solution, an anode structure, comprising:

- at least one current feed,
- at least one current distributor electrically conductively connected to said feed;
- an active surface on said distributor which is directed towards the metal strip;
- the active surface being oriented in conformity with the predetermined path of the metal strip;
- the active surface being formed as lamellas of valve metal having an active surface coating;
- the entire coated surface of the lamellas F_A and the surface F_P assumed by the overall arrangement of the lamellas (length times breadth of the electrode surface) having a surface factor such that $20 \leq F_A/F_P \leq 4$;

the larger portions of the coated surfaces of the lamellas being directed perpendicularly to the surface of the strip to be coated;

the current feed consisting of a rod having a core of highly electrically conductive metal and cladding of a valve metal;



the current distributor being formed from a rod of a valve metal; and

the current distributor being mechanically and electrically conductively connected to the current feed via at least one sheet-like connection element of a valve metal in such manner that the connection element is welded both to the cladding of the current feed and to the current distributor.

4,642,174 APPARATUS FOR DETERMINING THE OXYGEN CONTENT IN GASES

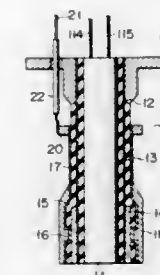
Masahiro Shibata, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 3, 1985, Ser. No. 751,729

Claims priority, application Japan, Jul. 6, 1984, 59-140016
Int. Cl.⁴ G01N 27/56

U.S. Cl. 204—408

10 Claims



1. An apparatus for determining the oxygen content in gases comprising:

- a bar-like ceramic heater having an outer surface;
- a porous first insulating layer which is formed on said outer surface of said ceramic heater by plasma flame spraying and permits the passage of oxygen molecules, said porous first insulating layer having an outer surface;
- a first electrode formed on said outer surface of said first insulating layer, said first electrode having an outer surface;
- a solid electrolyte film formed on said outer surface of said

first electrode, said solid electrolyte film having an outer surface;

a second electrode formed on said outer surface of said solid electrolyte film, said second electrode having an outer surface;

a second insulating layer formed between said first and second electrodes to insulate said first and second electrodes from each other;

an oxygen diffusion-resistant layer formed on said outer surface of said second electrode to permit oxygen molecules to migrate to said second electrode; and

measuring means for applying a prescribed voltage between said first and second electrodes, and for measuring a current flowing therebetween in accordance with the application of said prescribed voltage.

4,642,175 PROCESS FOR UPGRADING HEAVY PETROLEUM FEEDSTOCK

Leslie R. Rudnick, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 606,498, May 3, 1984, abandoned. This application Mar. 19, 1985, Ser. No. 713,376
Int. Cl.⁴ C10G 55/04

U.S. Cl. 208—88

8 Claims

1. A method of reducing the coking tendency of a heavy hydrocarbon feedstock in a non-hydrogenative catalytic cracking process which comprises contacting the feedstock prior to catalytic cracking with a free radical removing catalyst comprising a transition metal naphthenate at a temperature below 350° C. for a time sufficient to reduce the free radical concentration of the feedstock whereby the coking tendency of the feedstock to the catalytic cracking process is reduced.

4,642,176 CATALYTIC DEWAXING PROCESS

Priscilla L. Adams, Langhorne, Pa., and Malvina Farcasia, Flemington, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 690,083

Int. Cl.⁴ C10G 45/08, 47/20

U.S. Cl. 208—111

14 Claims

9. A process of producing a hydrodewaxed feedstock of acceptable pour point specifications and oxidative stability specifications, as measured by ASTM D-943, comprising contacting a feedstock, containing wax components in unacceptable amounts and thiophenic sulfur containing components and boiling above about 550° F., with a catalyst comprising ZSM-5 and at least one element selected from the group consisting of elements of Group VIII and elements of Group VI in the presence of hydrogen at pressure, temperature and LHSV conditions effective to maintain hydrogenation of at least about 10% of said thiophenic sulfur containing components, whereby the resulting hydrodewaxed feedstock exhibits acceptable oxidative stability as measured by ASTM D-943 and whereby the necessity of hydrotreating conditions, subsequent to said hydrodewaxing, to achieve said oxidative stability, is eliminated.

4,642,177 PROCESS FOR REDUCING SULFUR OXIDE EMISSIONS FROM CATALYTIC CRACKING UNITS

Zoltan C. Mester, Laguna Niguel, and Edward J. Aitken, Brea, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 30, 1985, Ser. No. 781,755

Int. Cl.⁴ C10G 11/00; C01B 17/60

U.S. Cl. 208—113

25 Claims

1. A catalytic cracking process which comprises circulating a bed of particulate cracking catalyst in combination with a sulfur sorbent through a cracking zone wherein said catalyst particles promote the conversion of a sulfur-containing hydro-

carbon feedstock to lower molecular weight products and then through a regeneration zone wherein coke deposited on the particles of said cracking catalyst is combusted off said particles at a temperature between about 1000° F. and about 1250° F., said sulfur sorbent comprising (1) a rare earth component or mixture of rare earth components, and (2) a cobalt component.

11. A catalytic cracking process which comprises circulating a bed of particulate cracking catalyst in combination with a sulfur sorbent through a cracking zone wherein said catalyst promotes the conversion of a sulfur-containing hydrocarbon feedstock to lower molecular weight products and then through a regeneration zone wherein coke deposited on the particles of said cracking catalyst is combusted off said particles, said sulfur sorbent comprising a mixture of rare earth components derived from bastnaesite by treating said bastnaesite to remove at least 50 weight percent fluorine, calculated as the element.

4,642,178

PROCESS FOR CONVERSION OF HYDROCARBONS
Jin S. Yoo, Flossmoor, and John A. Jaeger, Homewood, both of Ill., assignors to Katalistiks, Inc., Baltimore, Md.
Continuation of Ser. No. 494,604, May 16, 1983, Pat. No. 4,495,304, which is a continuation-in-part of Ser. No. 301,678, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,315, Jul. 29, 1980, abandoned. This application Jan. 16, 1985, Ser. No. 692,448

Int. Cl.⁴ C10G 11/05; B01J 8/00; C01B 17/00, 17/74
U.S. Cl. 208—113 33 Claims

18. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous material to be formed on said solid particles thereby forming deposit-containing particles; (2) contacting said deposit-containing particles with an oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit material in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing sulfur trioxide; and (3) repeating steps (1) and (2) periodically, the improvement which comprises, using, in intimate admixture with said solid particles, a minor amount of discrete entities having a composition different from said solid particles and comprising a major amount of at least one metal-containing spinel including a first metal and at least two different second metals having valences higher than the valence of said first metal, one of said second metals being aluminum and the other of said second metals being trivalent and selected from the group consisting of iron, chromium, vanadium, manganese, gallium, boron, cobalt and mixtures thereof, the atomic ratio of said first metal to said second metals in said spinel is at least about 0.17, said discrete entities being present in an amount sufficient to reduce the amount of sulfur oxides in said flue gas.

4,642,179

CATALYST FOR REMOVING SULFUR AND METAL CONTAMINANTS FROM HEAVY CRUDES AND RESIDUES

Alfredo L. Morales; Roberto Galiasso, both of San Antonio de Los Altos; Angel R. Carrasquel, and Jose A. Salazar, both of Los Teques, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela
Division of Ser. No. 724,969, Apr. 19, 1985, Pat. No. 4,588,709, Continuation-in-part of Ser. No. 563,197, Dec. 19, 1983, Pat. No. 4,520,128. This application Feb. 28, 1986, Ser. No. 834,587
Int. Cl.⁴ C10G 45/04, 45/00, 17/00

U.S. Cl. 208—217 2 Claims
1. A process for the hydrotreatment of a heavy hydrocarbon

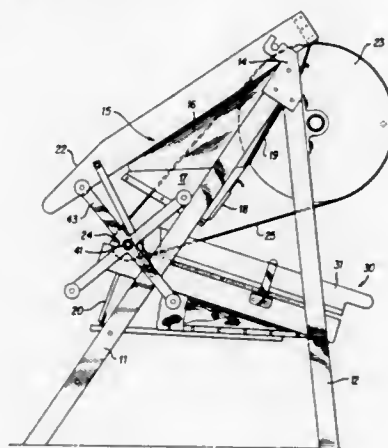
feedstock containing high levels of nickel and vanadium contaminants, sulfur and asphaltenes comprising the steps of: contacting said heavy hydrocarbon feedstock with a catalyst characterized by simultaneous demetallizing and desulfurizing activity wherein the ratio of percent of demetallizing to desulfurizing approaches unity over a useful life in excess of 80 days in a reactor at a temperature varying between 300° and 450° C., a pressure varying between 600 and 3500 psig, a linear hourly space velocity varying from 0.05 to 5 (hours)⁻¹, a H₂:feed ratio ranging from 300 to 20,000 SCF/bbl and a partial hydrogen pressure of from 500 to 3000 psig; said catalyst comprising an alumina support material impregnated with a first compound consisting essentially of a metallic compound whose metallic component is selected from Group VIB of the Periodic Table, disposed on said alumina support material so as to comprise from 5 to 30% of the catalyst by weight, calculated as an oxide and a second compound consisting essentially of a metallic compound whose metallic component is selected from Group VIII of the Periodic Table, disposed on said support material so as to comprise from 0.1 to 8% of the catalyst by weight, calculated as an oxide; a total pore volume ranging from between 0.50 to 1.20 ml/g; an average pore diameter of about between 200 to 300 Å and signal band strength ratios, as determined by x-ray photoelectron spectroscopy, as follows: I(Me VIB)/I(refractory metal) is between 5 and 8 and I(Me VIII)/I(refractory metal) is between 1 and 5.

4,642,180

PORTABLE APPARATUS FOR THE RECOVERY OF PLACER GOLD

Norman H. Kaufman, P.O. Box 12663, Las Vegas, Nev. 89112
Filed May 28, 1985, Ser. No. 738,234
Int. Cl.⁴ B07B 4/08, 9/00

U.S. Cl. 209—44 9 Claims



1. A portable separation apparatus to separate a heavy metal from a metal-containing ore, comprising:

- a support frame including two pair of support legs converging at an uppermost end portion and diverging at a lowermost end portion, each pair of said support legs connected together at the uppermost end portion by a connection element;
- a screen provided with a screen frame, a first end of the screen frame directly and detachably engaged with said connection elements, a second end of the screen frame supported on one of said each pair of support legs in a region intermediate said uppermost and lowermost end portions, said screen frame provided so as to receive and reject large particles of the ore and pass smaller ore particles through said screen;
- a waste discharge chute integral with said screen frame;
- a hopper means detachably connected to said screen frame for receiving said smaller ore particles therein;

- discharge operating means connected to said hopper means for releasing said smaller ore particles from said hopper means;
- a riffle board positioned below said hopper to receive said smaller ore particles from said hopper means, said riffle board provided with a plurality of riffles and a plurality of troughs defined between said riffles;
- a bellows for expelling air being positioned so as to deliver said air through said troughs so as to separate and carry off light-weight debris while permitting heavier particles to remain in the troughs of the riffle board; and
- means for operating said bellows independent of said discharge operating means.

4,642,181

INCREASED REDUCTION OF MAGNESIUM CONTENT BY USE OF INORGANIC PROMOTERS DURING BENEFICIATION OF PHOSPHATE ORES BY FLOTATION

Samuel M. Polinsky; Larry W. Bierman, and David A. Hempel, all of Pocatello, Id., assignors to J. R. Simplot Co., Pocatello, Id.

Continuation of Ser. No. 440,454, Nov. 10, 1982, abandoned.
This application Feb. 28, 1985, Ser. No. 707,168

Int. Cl.⁴ B03D 1/14

U.S. Cl. 209—167 2 Claims

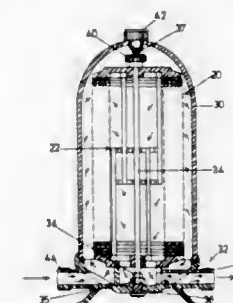
1. A process for beneficiating a water slurry of phosphate-containing ore having carbonate, magnesium, and silicate impurities therein, the ore having first been prepared by comminuting and sizing, comprising the steps of:
adding sodium carbonate and ammonium hydroxide to the slurry;
adding a fatty acid and fluosilicic acid to the slurry, after the sodium carbonate and ammonium hydroxide are added;
adding a frothing agent to the slurry;
separating the carbonates and magnesium in the froth of a flotation cell;
adding an amine to the carbonate-depleted slurry; and
separating the silica components in the froth of a flotation cell to produce a slurry concentrate, whereby the unfloated portion of the slurry concentrate contains an enhanced phosphate content and substantially reduced magnesium, carbonate, and silicate content.

4,642,182

MULTIPLE-DISC TYPE FILTER WITH EXTENSIBLE SUPPORT

Mordeki Drori, 89 Zahal Street, Kiron, Israel
Filed Mar. 7, 1985, Ser. No. 709,376
Int. Cl.⁴ B01D 29/46

U.S. Cl. 210—232 14 Claims



1. A multiple-disc type filter comprising:
a housing;
a stack of filter disks disposed in said housing; and
an extensible support for said stack of filter disks, including first, second, third and fourth base elements and a multiplicity of rod members joining the first and second base elements in sliding relationship, a first plurality of the rod

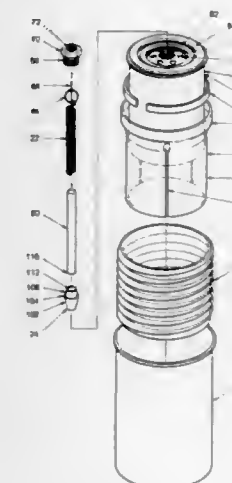
members being fixedly attached to the first base element and being arranged for slidable supporting engagement with the second base element and a second plurality of rod members being fixedly attached to the second base element and being arranged for slidable supporting engagement with the first base element,
said third base element being attached to said first plurality of rod members;
said fourth base element being attached to said second plurality of rod members;
said first and second base elements defining interior base elements and being located interiorly of said filter disks at an intermediate location along said stack;
said third and fourth base elements defining exterior base elements and being located exteriorly of said stack; and
said first and second pluralities of rod members being located interiorly of said stack of filter disks.

4,642,183

OIL FILTER

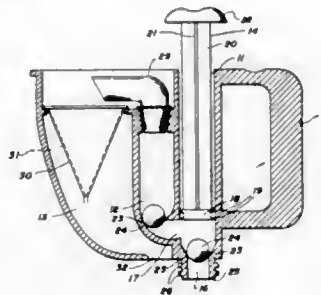
Alfred M. Hebert, P.O. Box 706, Pleasant Valley, N.Y. 12569
Filed Mar. 21, 1986, Ser. No. 841,038
Int. Cl.⁴ B01D 27/00

U.S. Cl. 210—232 3 Claims



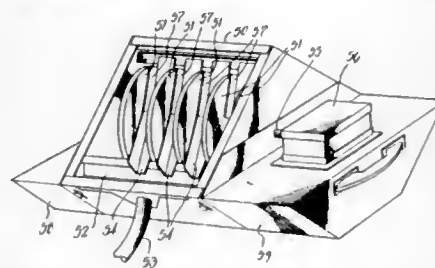
1. In an oil filter cartridge having a central internally threaded receptacle for connection to a corresponding externally threaded conduit on an engine for return of filtered oil circulated through said filter and an annular gasket defining a pathway for oil from said engine to said filter, the improvement wherein said central threaded receptacle has removeably threaded thereto an adaptor collar with external threads matched those of said receptacle and internal threads corresponding with the threads of said externally threaded conduit of the engine to which said cartridge is to be connected whereby varying the thickness of said collar allows said cartridge to be used in different engines and wherein a decorative outer cylindrical cover is removeably secured to the outer walls of said cartridge by means of a magnetized generally cylindrically shaped sleeve, dimensioned to resiliently slide over the outer cartridge walls, said sleeve having upper walls of a larger diameter to match those of the decorative cover, and resilient spacer means between the lower walls of said sleeve and the walls of said decorative cover.

4,642,184
FRYER FILTER AND PUMP
 Donald E. Lipse, Rte. #3, Mexico, Mo. 65265
 Filed Mar. 6, 1985, Ser. No. 708,705
 Int. Cl.⁴ B01D 35/26
 U.S. Cl. 210—240



1. A hand held device for removing particles formed in deep fat frying of foodstuffs from liquefied grease contained in a fryer comprises a three-chambered unit with a handle, the chambers being a receiving chamber, a transfer chamber and a filter chamber having a filter, an inlet port with a ball check valve communicating the liquefied grease in the fryer with the receiving chamber and an outlet port with a ball check valve communicating the receiving chamber with the transfer chamber, said ball check valves weighted and positioned such that they are normally closed in upright condition and normally open when the device is inverted, a piston pumping means in the receiving chamber for sucking liquefied grease from the fryer into the receiving chamber and forcing it into the transfer chamber, the transfer chamber including means for directing the flow of the liquefied grease and the particles suspended therein onto the filter, and an opening in the filter chamber for return of the liquefied grease filtrate to the fryer, said means for directing the flow of liquefied grease and the particles suspended therein onto the filter includes a removable tube whereby the flow of liquefied grease by-passes the filter.

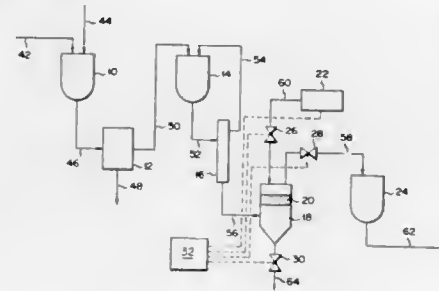
4,642,185
DEVICE FOR RECOVERING OIL FLOATING ON WATER
 John T. Turner, Stockport, and Marios Christodoulou, Manchester, both of England, assignors to The Victoria University of Manchester, Manchester, England
 Filed Mar. 21, 1985, Ser. No. 714,217
 Claims priority, application United Kingdom, Mar. 29, 1984, 8408164
 Int. Cl.⁴ B01D 33/22
 U.S. Cl. 210—242.3



1. A device for recovering oil floating on the surface of water comprising a framework, at least one disc rotatably mounted on the framework, means for rotating the discs, the framework being supported on floats so that when the device is placed on water it floats with the or each disc partially immersed in the water, the or each disc being associated with a scraper for removing liquid adhering to the disc during rotation thereof, the device being characterized in that said

4 Claims

4,642,186
CLARIFYING APPARATUS
 Yoshiaki Nakamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
 Filed Feb. 2, 1984, Ser. No. 576,430
 Int. Cl.⁴ C02F 9/00; G21F 9/04
 U.S. Cl. 210—257.1



1. A clarifying apparatus for removing insoluble radioactive particles from a solution containing the particles, said clarifying apparatus comprising:

- a centrifugal clarifier for centrifugally separating the radioactive particles from the solution;
- filter means having a filter with a secondary clarified liquid outlet side for removing particles each having a size of not more than a critical particle size of the radioactive particles which can be separated by said centrifugal clarifier;
- supplying means for supplying the solution to said centrifugal clarifier;
- a buffer tank which receives the primary clarified liquid from said centrifugal clarifier;
- a feed tank for receiving the primary clarified liquid from said buffer tank and feeding the primary clarified liquid to said filter means at a predetermined flow rate;
- means for feeding an overflow portion of the primary clarified liquid from said feed tank back to said buffer tank;
- a compressed air supplying means for supplying compressed air to the secondary clarifying liquid outlet side of said filter in a pulsated manner; and
- control means for supplying the compressed air to said filter in the pulsated manner when the primary clarified liquid is not being supplied to said filter means, thereby removing sludge from said filter.

6 Claims

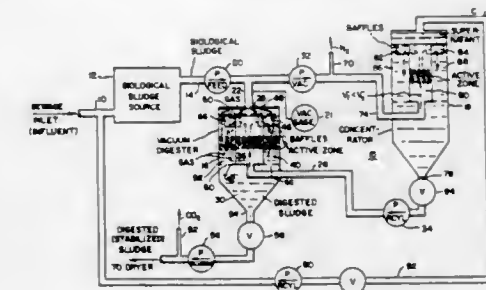
4,642,187
SYSTEMS FOR THE TREATMENT OF ORGANIC MATERIAL AND PARTICULARLY SEWAGE SLUDGE
 Keith A. Schimel, 220 Glen Echo Dr., Norfolk, Va. 23805
 Division of Ser. No. 199,896, Oct. 23, 1980, Pat. No. 4,375,412, which is a continuation-in-part of Ser. No. 3,167, Jan. 15, 1979, abandoned. This application Jan. 6, 1982, Ser. No. 337,545
 Int. Cl.⁴ C02F 11/04

U.S. Cl. 210—258

3 Claims

1. Apparatus for the anaerobic digestion of slurries of organic material such as sewage sludge comprising a vacuum digester tank, a concentrator tank, a feed line for feeding said sludge to one end of said digester tank and into a region between the ends of said concentrator tank, another feed line for feeding concentrated and partially digested sludge from one end of said concentrator tank to a region between the ends of said digester tank, means in both said tanks for maintaining submerged suspensions of said material therein, means for

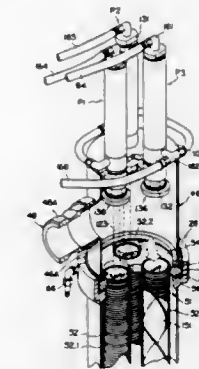
repetitively cycling the pressure in said digester tank between sub-atmospheric pressure and pressure at or above atmospheric pressure, and means for withdrawing a stable portion of said



sludge which is substantially mineralized to 80% or more together with ammonia gas from an end of said tank opposite to said one end thereof.

4,642,188
BACKWASH APPARATUS FOR MULTI ELEMENT FILTER UNIT
 Richard B. DeVisser, Schoolcraft, and Sydney Hagerty, Union, both of Mich., assignors to Dover Corporation, Portage, Mich.
 Filed May 29, 1985, Ser. No. 738,937
 Int. Cl.⁴ B01D 27/12, 29/38
 U.S. Cl. 210—333.1

10 Claims



1. A multielement filter unit including a backwash apparatus, comprising:

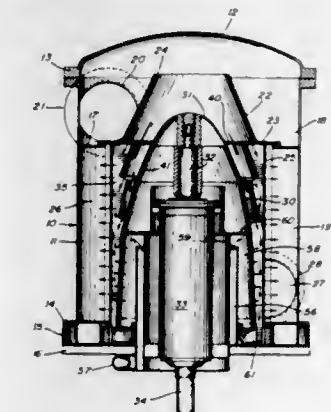
- a filter casing; means for flowing process liquid in one direction through the casing and alternately flowing backwash liquid in the opposite direction through said casing;
- a plurality of filter tubes close spaced within said filter casing and having one end open to expel filtered process liquid and alternately receive backwash liquid;
- flange means engaging said filter tubes adjacent their open ends and dividing said filter casing into first and second chambers with said open ends of said filter tubes opening through said flange means into said second chamber;
- means designed for minimizing installation and operating expense factors in a compact liquid filter in a compact liquid filter unit having plural filter tubes closely spaced within a single compact casing, for providing improved backwash cleaning and for substantially reducing the tendency toward solids buildup over multiple filtration-backwash cycles, including:

- a plurality of closure means each shiftable from a first location spaced during filtration from said open end of a corresponding said filter tube for allowing unimpeded filtration flow through said corresponding filter tube to a

second location closing said corresponding filter tube against flow therethrough;
 (b) means actuatable in the backwash mode of the apparatus for causing some of said closure means to close the opposed open ends of corresponding ones of said filter tubes while leaving the end of at least one of said filter tubes open by leaving the corresponding closure means spaced therefrom, said filter tubes being sequentially actuatable during backwashing such that each of the filter tubes has its one end open for at least a part of the backwashing time while the one ends of others of the filter tubes are closed by actuation of their corresponding closure means.

4,642,189
ROTARY SCREEN OF THE VERTICAL PRESSURE TYPE HAVING PULP STOCK FEED AT DIFFERENT AXIAL POSITIONS ON THE SCREEN
 Anthony W. Hooper, Quebec, Canada, assignor to Uniweld Inc., Sherbrooke, Canada
 Continuation of Ser. No. 560,248, Dec. 12, 1983, abandoned.
 This application Feb. 20, 1985, Ser. No. 703,451
 Int. Cl.⁴ B01D 29/42; B07B 1/20
 U.S. Cl. 210—405

17 Claims



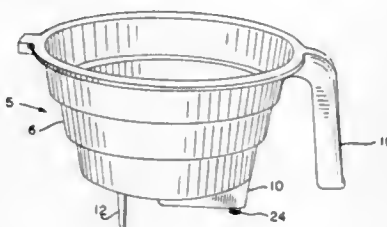
1. In a rotary pulp screening device of the vertical pressure type, including a cylindrical housing having means defining an upper inlet chamber and a lower screening chamber with a disc ring dividing the upper chamber from the lower chamber, vertical cylindrical screen within the lower chamber, rotary impeller mounted for rotation about a central vertical axis within the screen, the impeller having a body whose top is adjacent to the disc ring and bottom is adjacent the lower end of the cylindrical screen, the body having a shape with a circular axial cross section from the top to the bottom, whose diameter increases from the top to the bottom, thus leaving a larger annular space at the top, and means defining an annular inlet between the disc ring and the top of the body, means for rotating the impeller, impeller blades radiating from at least a portion of the body of the impeller and extending to within a short distance from the screen for the height of the screen, and means defining a pulp discharge outlet from the lower chamber outside the pulp screen, the improvement comprising: at least one substantially frusto-conical shaped baffle with the upper and lower edges of said baffle being disposed in parallel planes, said baffle being disposed in the annular space between the body of the impeller and the screen and extending down from the annular inlet, said baffle being joined to the impeller blades and having a shape to conform to the shape of the body of the impeller to define an annular axial cross sectional opening between the baffle and the body of the impeller with the opening having a substantially equal horizontal cross sectional area from the

top of the baffle to the bottom of the baffle, said baffle forming means dividing the flow of pulp stock entering the annular inlet so that a portion of the pulp stock entering the annular inlet passes across the exterior surface of the baffle and a portion of the pulp stock entering the annular inlet passes between the baffle and the body of the impeller and whereby the substantially equal horizontal cross sectional area from the top to the bottom of the baffle maintains a substantially constant axial velocity of the pulp stock passing between the baffle and the body of the impeller.

4,642,190
BREWING FUNNEL WITH SCREEN FILTER ASSEMBLY
John D. Zimmerman, Springfield, Ill., assignor to Buno-O-Matic Corporation, Springfield, Ill.
Filed Feb. 1, 1985, Ser. No. 697,455
Int. Cl.⁴ B01D 23/28

U.S. Cl. 210-464

4 Claims



1. In combination with a beverage brewing funnel having on its bottom a plurality of generally radially extending upstanding internal ribs serving to maintain the bottom of a paper filter seated within said funnel in spaced relation with the inner surface of said funnel bottom and said funnel bottom having a generally radially extending drainage sump with a drainage opening means therein through which brewed and filtered beverage drains from said funnel, a screen filter assembly comprising:

- a bushing having an intermediate portion seated in said drainage opening means, having a first externally threaded nipple portion projecting upwardly into said drainage sump and having a second externally threaded nipple portion protruding below said drainage sump;
- a first nut screwed onto said first nipple portion;
- a generally cylindrical screen filter having a closed upper end with its bottom end secured to said first nut; and
- a second nut screwed onto said second nipple portion and drawing said bushing into said seated relationship with said drainage opening means.

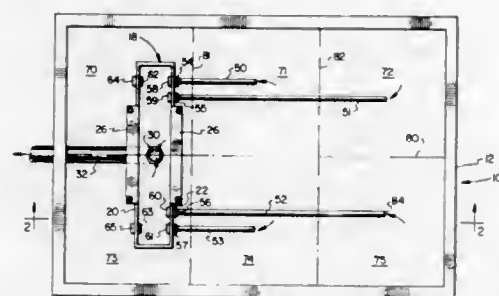
4,642,191
MULTI-ZONE FLOW CONTROL METHOD AND APPARATUS
Robert C. Hill, Santa Clara, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Continuation of Ser. No. 357,373, Mar. 12, 1982, abandoned.
This application Nov. 9, 1983, Ser. No. 550,051
Int. Cl.⁴ B01D 21/24

U.S. Cl. 210-532.1

7 Claims

1. Apparatus for controlling fluid flow comprising:
- (a) a fluid-filled vessel adapted to receive a continuous fluid supply;
 - (b) a plurality of open-ended cylindrical fluid conduits for collecting fluid from said vessel, the inlet ends of said conduits being submerged within the body of fluid in said vessel at a like plurality of spaced-apart locations, each defining a vertically-extending fluid zone of said vessel, within which all fluid will flow into a respective one of

said inlet ends, said fluid zones together constituting said fluid body;
(c) a separate fluid collection container supported within said vessel;



- (d) means for fixedly interconnecting the outlet ends of said conduits with said container through separate orifices, said orifices being maintained at a common elevation below the fluid level in said vessel; and
- (e) means for continuously draining said container.

4,642,192
METHOD OF TREATING FLUIDS
Don E. Heskett, P.O. Box 243, Constantine, Mich. 49042
Continuation of Ser. No. 605,652, Apr. 30, 1984. This application May 5, 1986, Ser. No. 859,610
Int. Cl.⁴ C02F 1/28, 1/44, 1/70, 1/72

U.S. Cl. 210-638

11 Claims

1. A method of reducing the concentration of undesirable inorganic chlorine which is present in drinkable water, said undesirable inorganic chlorine having a first redox potential, said method comprising passing said water containing said chlorine through a bed of metal particles, said metal particles comprising copper, said particles having a second redox potential such that relative to said first redox potential conditions are established for spontaneous inorganic oxidation and reduction reactions between said chlorine and said metal particles when said water is in contact with said metal particles.

4,642,193
METHOD FOR PURIFICATION OF THE COOLING WATER USED IN NUCLEAR REACTORS
Shigeo Miyata, Noriko Iizima, both of Takamatsu, and Tadashi Manabe, Kagawa, all of Japan, assignors to Kyowa Chemical Industry Co. Ltd., Tokyo, Japan
Filed Jan. 25, 1985, Ser. No. 694,749
Claims priority, application Japan, Jan. 30, 1984, 59-13389
Int. Cl.⁴ C02F 1/42

U.S. Cl. 210-682

9 Claims

1. A method of purifying cooling water used in nuclear reactors and containing at least one of cationic and anionic impurities, which comprises contacting said cooling water with a hydrotalcite compound of the following formula



wherein M^{2+} represents a divalent metal cation, M^{3+} represents a trivalent metal cation, A^{n-} represents an anion having a valence of n , and x and m satisfy the following expressions

$$0 < x < 0.5$$

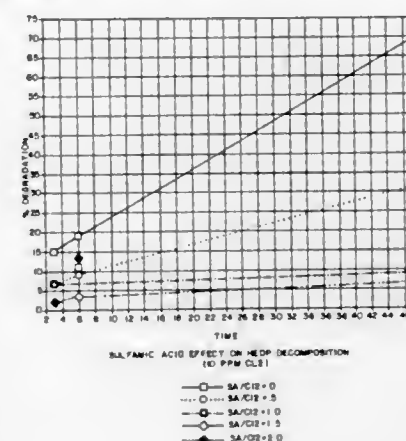
$$0 \leq m < 1$$

or a calcined product thereof obtained by calcination at a temperature of up to about 900° C.

4,642,194
METHOD FOR PREVENTION OF PHOSPHONATE DECOMPOSITION BY CHLORINE
Donald A. Johnson, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.
Filed Sep. 16, 1985, Ser. No. 776,551
Int. Cl.⁴ C02F 5/14

U.S. Cl. 210-699

4 Claims



1. A method of preventing the decomposition of phosphonates from the group consisting of:

- 1,1-hydroxyethylidene diphosphonic acid;
 - tris aminomethane phosphonic acid;
 - 1-phosphono glycolic acid;
 - ethylene diamine tetra(methylenephosphonic acid);
 - Hexamethylene diamine tetra(methylenephosphonic acid);
 - and,
 - diethylene triamine penta(methylenephosphonic acid);
- which are present in an effective amount to prevent scale in industrial cooling waters which contain an effective amount of chlorine for microbiological control which comprises treating said waters with at least 1 ppm of sulfamic acid for each ppm of Cl_2 present in these waters.

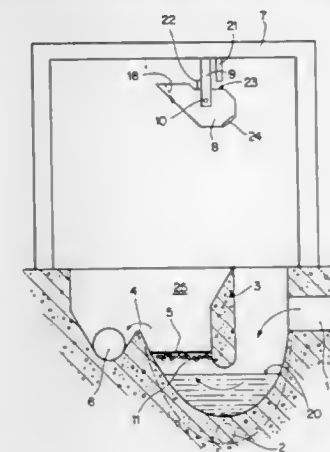
4,642,195
SCREENING SYSTEM INCLUDING A SCREEN CLEANING MEANS FOR AND A METHOD OF CLEANING A SCREEN IN A WASTE WATER PURIFICATION PLANT
Walter Nill, Rud. Diesel-Strasse 2, 8404 Winterthur, Switzerland
Continuation of Ser. No. 624,773, Jun. 26, 1984, abandoned, which is a continuation of Ser. No. 392,014, Jun. 25, 1982, abandoned. This application Jun. 16, 1986, Ser. No. 874,400
Claims priority, application Switzerland, Jul. 1, 1981, 4346/81
Int. Cl.⁴ B01D 23/02

U.S. Cl. 210-798

16 Claims

1. An apparatus for screening solid debris from the waste water of a waste water purification plant, comprising:
- (a) means defining a waste water flow path including a waste water inlet and a filtered water discharge outlet;
 - (b) screen means having an outlet side and arranged in said flow path between said waste water inlet and said filtered water discharge outlet for screening solid debris from the waste water flow;
 - (c) framing means extending around said screen means and located substantially at said outlet side of said screen means relative to the flow of the waste water in order to positively guide a surge of high impact velocity cleaning fluid against and through said screen means when said screen means has at least said outlet side thereof freely exposed and to build-up a static pressure head of said high impact velocity cleaning fluid directed against the screen means for cleaning said screen means of the solid debris;
 - (d) back-flush means for directing the high impact velocity

cleaning fluid in a free fall against the outlet side of said screen means to periodically remove debris therefrom, including:



container means supported at an elevation at a given distance above said screen means for receiving a given volume of said cleaning fluid, said container means being operable between fluid storing and fluid discharging positions.

4,642,196
METHOD FOR CONTROLLING DUST AND SPONTANEOUS COMBUSTION IN THE DRYING, HANDLING, TRANSPORTING AND STORING OF COAL
Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 594,581, Mar. 29, 1984, abandoned. This application Aug. 1, 1985, Ser. No. 761,446
Int. Cl.⁴ C09K 3/12

U.S. Cl. 252-88

12 Claims

1. A method of controlling dust formation and spontaneous combustion in drying, handling, transporting, and storing of low rank coal selected from the group consisting of lignite, peat, and subbituminous coal containing about 20-50% water comprising:

applying to said coal a dust inhibiting amount of an aqueous solution consisting essentially of gelatinized starch at a temperature of from about 60° C. to about 200° C. by spraying said solution over said coal.

4,642,197
PROCESS FOR THE PRODUCTION OF A WASHING ADDITIVE IN TABLET FORM
Hans Kruse, Korachenbroich; Klaus Koester, Langenfeld; Franz-Josef Carduck, Haan; Heinz-Manfred Wilsberg, Cologne, and Rolf Puchta, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany
Filed May 13, 1985, Ser. No. 733,669
Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417820

Int. Cl.⁴ C11D 17/00

U.S. Cl. 252-98

15 Claims

1. A process for the production of a washion additive in tablet form containing on a weight basis of said tablet (1) 2 to 30% of at least one activator for per compounds (2) 2 to 30% of at least one nonionic surface-active compound, (3) 0.5 to 20% of at least one surface-active nitrogen-containing compound selected from the group consisting of quaternary ammonium compounds, fatty amine compounds, aminopropionic acid compounds, and mixtures thereof, (4) 0 to 5% of at least one water-soluble salt of an alkane polyphosphonic acid, and

(5) 0 to 5% of at least one foam regulator, as wash-active ingredients, comprising the steps of:

- A. granulating component (1) while simultaneously mixing therewith components (2) and (3) as well as components (4) and (5) if present, together with tableting aids;
- B. powdering the resulting granulate with a powder-form adsorbent;
- C. spraying the powdered granulate with a liquid binder, said liquid binder being a solution of cane sugar or sorbitol;
- D. drying the granulate to a water content of not more than 6% by weight to form a free-flowing granulate;
- E. mixing the dried granulate with at least one tablet disintegrating agent; and
- F. compressing the granulate into tablets of more than 30 mm in diameter and having a depth of 0.75 to 1.1 times their diameter but said depth being at least 25 mm, a density of from 0.8 to 1.2 g/cm³, a weight of from 15 to 50g, and a breaking strength of from 6 to 12 kg, whereby the tablets contain sufficient detergency-boosting ingredients for one load of washing.

4,642,198

LIQUID BLEACHING COMPOSITIONS

Robert W. Humphreys, Pennsauken, N.J.; Adrian W. Walker, Irby, United Kingdom; Robin J. Green, Voorschoten, and Stephen W. Russell, Maassluis, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,494

Claims priority, application United Kingdom, May 1, 1984, 8411161; Dec. 18, 1984, 8431873

Int. Cl.⁴ C11D 3/395

U.S. Cl. 252—94

13 Claims

1. An aqueous liquid bleaching composition having a pH of from 1 to 6.5, comprising from 1 to 40% by weight of a solid, particulate, substantially water-insoluble organic peroxy acid stably suspended in a surfactant structured liquid comprising from 2 to 50% by weight of a surfactant, from 1.5 to 30% by weight of an electrolyte and the balance water, said bleaching composition having a viscosity of from 0.05 to 20 PaS measured at a shear rate of 21 sec.⁻¹ at 25° C.

4,642,199

NOVEL LIQUID CRYSTAL COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING SAME

Shigeru Sugimori, Fujisawashi, and Kazunori Nigorikawa, Yokohamashi, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 13, 1985, Ser. No. 744,417

Claims priority, application Japan, Jun. 13, 1984, 59-121570; Aug. 9, 1984, 59-166762

Int. Cl.⁴ C09K 19/34; G02F 1/13; C07D 213/65

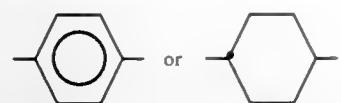
U.S. Cl. 252—299.61

6 Claims

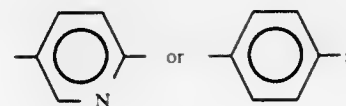
1. A pyridine derivative expressed by the formula



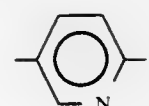
wherein R represents an alkyl group or an alkoxy group each of 1~10 carbon atoms; X represents



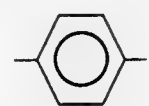
Y represents



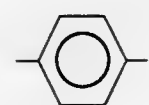
when Y is



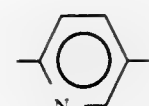
Z represents



and A represents F, Cl or a cyano group; and when Y is



Z represents



and A represents an alkyl group or an alkoxy group each of 1~10 carbon atoms.

4,642,200

STAIN-RESISTANT ANTIMONY ORGANIC SULFUR-CONTAINING COMPOUNDS AND VINYL HALIDE RESINS CONTAINING SAME

Ronald G. Hale, Wichita, Kans.; Thomas R. Woodley, Painesville, and Paul K. Tornstrom, Euclid, both of Ohio, assignors to Plastic Specialties and Technologies, Inc., Cleveland, Ohio

Filed Jun. 3, 1985, Ser. No. 740,513

Int. Cl.⁴ C09K 15/32

U.S. Cl. 252—400.54

23 Claims

1. A stain-resistant antimony organic sulfur-containing composition consisting essentially of; an antimony organic sulfur-containing compound having the formula:



here R of the formula is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, cycloalkyl, cycloalkenyl, mixed aryl-alkyl, and substituted groups thereof, where X of the formula is selected from the group consisting of sulfur, SR and SRCOOR', where R of the group SR is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where R of the group SRCOOR' is selected from alkylene, arylene, aralkylene, and substituted groups thereof, wherein R' of the group SRCOOR' is selected from alkyl, aryl, mixed aryl-alkyl, and substituted groups thereof, where n is an integer of 0 to 2, and as an anti-staining additive therefor in an effective amount a

1-hydroxy-4-[(4-methylphenyl)amino]-9,10-anthracenedione with said antimony compound.

22. A stain-resistant liquid antimony composition which is shelf-stable at room conditions for at least several weeks consisting essentially of

a normally liquid antimony organic sulfur-containing compound selected from the group consisting of antimony tris(isooctylthioglycolate), antimony tris(isooctylmercaptopropionate), dodecylmercaptantimony bis(isooctylthioglycolate), antimony tris(glycoldimercaptacetate), and mixtures thereof,

as an anti-staining additive therefor in an effective amount 1-hydroxy-4-[(4-methylphenyl)amino]-9,10-anthracenedione, and t-butyl catechol.

4,642,201

COMPOSITIONS FOR IMPROVING THE STABILITY OF INTERCALATED GRAPHITE STRUCTURAL MEMBERS

Ferdinand L. Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Filed Aug. 27, 1985, Ser. No. 770,158

Int. Cl.⁴ H01B 1/04

U.S. Cl. 252—503

14 Claims

1. A powder for forming an environmentally stable member, comprising:

a metal halide intercalated graphite; and a metal selected from the group consisting of copper, nickel, silver, molybdenum and tungsten; wherein said metal comprises from about 2 volume percent to about 30 volume percent of said environmentally stable powder.

4,642,202

CONDUCTIVE (HARD) RUBBER COMPOSITIONS

Henry E. Railsback, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 403,211, Jul. 29, 1982, Pat. No. 4,545,927.

This application Feb. 14, 1985, Ser. No. 702,093

Int. Cl.⁴ H01B 1/06

U.S. Cl. 252—511

22 Claims

1. A process for preparing a cured conductive rubber exhibiting an electrical resistivity of less than about 10⁶ Ohm cm, where comprises:

(A) blending (a) a dispersing component which is a thermoplastic polymer and a conducting amount of (b) at least one conductor selected from the group consisting of (b-1) conductive carbon blacks, (b-2) metal powders or particles, and (b-3) mixtures, thereby preparing a Masterbatch (A), wherein said Masterbatch (A) contains in the range of about 10 to 80 weight (b);

(B) blending said Masterbatch (A) with (c) at least one elastomer in a proportion effective to provide low resistivity to said elastomer, wherein said effective proportion is about 1:1 to 5:1 Masterbatch (A):(c), thereby preparing a conductive rubber compound;

(C) molding said conductive rubber compound, and

(D) curing said conductive rubber compound.

4,642,203

METHOD OF TREATING LOW-LEVEL RADIOACTIVE WASTE

Ichiro Matsunaga, Tokyo, and Hiroshi Sugai, Ibaragai, both of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,087

Claims priority, application Japan, Jun. 15, 1983, 58/107409

Int. Cl.⁴ G21F 9/04, 9/12; C02F 1/42, 1/70

U.S. Cl. 252—631

3 Claims

1. A method of reducing the radioactive concentration of low-level radioactive waste which comprises the steps of

(1) providing an iron hydroxide-cation exchange resin which has been obtained by treating a strongly acid cation ex-

change resin with ferric chloride and aqueous ammonia to form a product of hydrolysis of ferric ions in said resin,

(2) adding hydrazine to said low-level radioactive waste in an amount of at least 100 mg hydrazine per liter of low-level radioactive waste to form a mixture,

(3) adjusting the pH and the temperature of said mixture such that its pH is at least 7 and its temperature is between 50° C. and 60° C., and

(4) passing said mixture through said iron hydroxide-cation exchange resin provided in step (1).

4,642,204

METHOD OF CONTAINING RADIOACTIVE OR OTHER DANGEROUS WASTE MATERIAL AND A CONTAINER FOR SUCH WASTE MATERIAL

Martin Burström, Robertsfors, and Ragnar Tegman, Umeå, all of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

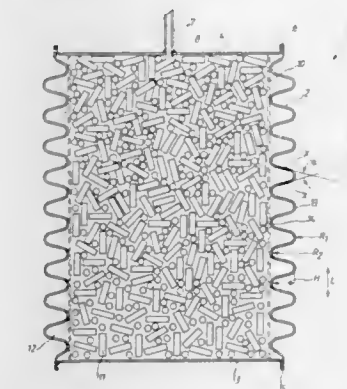
Filed Jan. 23, 1984, Ser. No. 573,160

Claims priority, application Sweden, Jan. 26, 1983, 8300387

Int. Cl.⁴ G21F 9/36, 9/16

U.S. Cl. 252—633

14 Claims



1. In a method of containing radioactive waste material in a gas-tight container and of converting the material contained within the container into a coherent dense body by isostatic compaction at a temperature necessary for bonding, which method comprises placing the radioactive waste material into a metal container, with a corrugated bellows-like cylindrical outer wall, evacuating the container, closing the container, and isostatically compressing the container,

the improvement whereby a barrier means, impermeable to the radioactive waste material, is located inside the outer wall of the container and the radioactive waste material is placed inside said barrier means, said barrier means and said outer wall defining an empty, material-free space, thereby allowing the corrugated bellows-like cylindrical outer wall to be folded without interference during axial collapse of the container during said isostatic compression, and said barrier means comprising at least one circumferential layer of wire netting with wires extending around said barrier means, and means preventing the radioactive waste material from passing through said layer of wire netting.

4,642,205
DIASTEREOMER SALTS OF PHENYLALANINE AND N-ACYL DERIVATIVES THEREOF AND PROCESS FOR THE SEPARATION OF OPTICALLY ACTIVE PHENYLALANINE AND N-ACYL DERIVATIVES THEREOF

Maria Acs; Ferenc Falgi, and Elemer Fogassy, all of Budapest, Hungary, assignors to Alkaloida Vegyészeti Gyár, Postafiók, Hungary

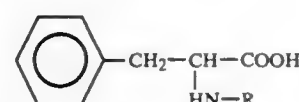
PCT No. PCT/HU85/00012, § 371 Date Nov. 18, 1985, § 102(e) Date Nov. 18, 1985, PCT Pub. No. WO85/03932, PCT Pub. Date Sep. 12, 1985

PCT Filed Mar. 1, 1985, Ser. No. 776,145
 Claims priority, application Hungary,

Int. Cl.⁴ C07C 83/00, 83/08; C07B 57/00
 U.S. Cl. 260—501.17

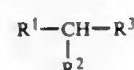
8 Claims

1. Process for the separation of the enantiomers of a racemic compound of the formula I



and/or the salts thereof, wherein

R is hydrogen or acyl, which comprises reacting a racemic compound of the formula I and/or the salt thereof with an optically active resolving agent of the formula



wherein

R¹ is carboxy, amino or benzylamino group,
 R² is hydroxymethyl benzoylamino, carbamoyl or benzoyloxy-carboxymethyl, the latter group being optionally substituted by an alkyl group on the benzene ring,
 R³ is alkyl, phenyl, phenylalkyl or benzoyloxy, the latter being optionally substituted by an alkyl group on the benzene ring,

in a polar solvent and/or a mixture of solvents comprising at least one apolar solvent and optionally an achiral acid or base, thereafter

(a) when using the D-isomer of the resolving agent of the formula II, separating the crystalline diastereomer salt formed with the L-isomer of the compound of the formula I, or

(b) when using the L-isomer of the resolving agent of the formula II, separating the crystalline diastereomer salt formed with the D-isomer of the compound of the formula I, and

liberating the enantiomers of the compound of the formula I from the diastereomer salt or the mother liquor by the aid of an achiral acid or base and separating the optically active product in crystalline form.

8. A compound selected from the group which consists of: L-phenylalanine-D-N-benzoyl-phenylalanine salt, D-phenylalanine-L-N-benzoyl-phenylalanine salt, D-phenylalanine-O,O-dibenzoyl-L-tartaric acid salt, D-phenylalanine-O,O-di-p-toluoyl-L-tartaric acid salt, L-N-formyl-phenylalanine-D-2-benzylamino butanol salt, and L-N-acetyl-phenylalanyl-D-phenylglycine amide salt.

4,642,206
PRODUCTION OF SPIN POLARIZED FUSION FUELS
 Arnold Honig, Manlius, N.Y., assignor to Syracuse University, Syracuse, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,087
 Int. Cl.⁴ G21C 3/04, 21/00

U.S. Cl. 264—0.5

13 Claims

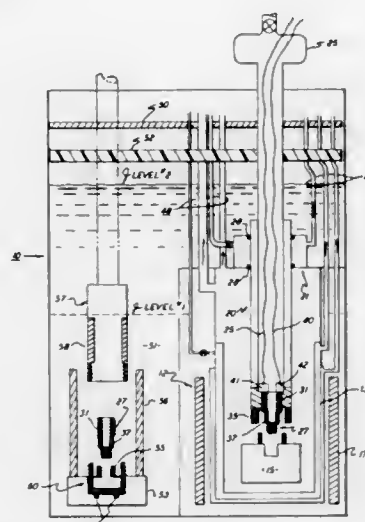
1. The method of producing polarized deuterons in solid HD that includes the steps of

providing a sample of HD containing a 10⁻⁴ to 10⁻³ concentration (mole fraction) of p-D₂,

irradiating the sample with radiation that produces defect centers in the sample for increasing the conversion rate of p-D₂ to o-D₂,

subjecting the sample simultaneously to a magnetic field greater than 10 Tesla and a temperature less than 10 m°K. such that the H₀/T ratio is in a range of between 1000 and 7500 T/°K. corresponding to a deuteron polarization range of 20% to 90%, and

allowing p-D₂ to convert to o-D₂ to increase the relaxation time of the polarized deuterons at ordinary liquid helium temperatures of 1°-4° K. and low magnetic fields of about 0.1 Tesla.



11. The method of producing polarized tritons in solid HT that includes the steps of

epitaxially depositing alternate layers of HT having a thickness of about 1 μm on thicker layers of solid HD at temperatures 0.3 to 4° K. wherein the protons in the HD are polarized and the deuterons are either polarized or unpolarized,

allowing the proton polarization in the HD layer to diffuse to polarize the protons in the HT layers through spin diffusion,

placing the layers in a radio frequency field, and radiating the layers with radio frequencies to induce partially forbidden transitions between the polarized proton and the unpolarized triton coupled energy levels to polarize said tritons directly.

4,642,207
PROCESS FOR PRODUCING ULTRAFINE PARTICLES OF CERAMICS

Masahiro Uda, Tokyo; Satoru Ohno, Kiyose, and Hideo Okuyama, Kawasaki, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 616,686
 Claims priority, application Japan, Jun. 4, 1983, 58-98786

Int. Cl.⁴ B29B 9/00

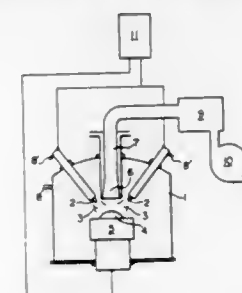
U.S. Cl. 264—10

4 Claims

1. A process for producing ultrafine ceramic particles which comprises

(1) contacting a metal mass with a gas activated by an arc plasma or a high frequency induction plasma at a pressure of about 50 to 760 torr to generate ultrafine particles of

ceramic containing said metal as an ingredient, wherein said gas is selected from the group consisting of nitrogen,



oxygen and a gaseous mixture of nitrogen and hydrogen, and

(2) cooling and collecting said particles.

4,642,208
METHOD AND APPARATUS FOR DISPOSING DUST PRODUCED DURING AMORPHOUS SILICON FILM-FORMING PROCESS

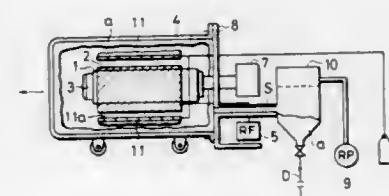
Yasui Masaru, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1985, Ser. No. 733,948
 Claims priority, application Japan, May 16, 1984, 59-96653

Int. Cl.⁴ B05D 3/06

U.S. Cl. 264—37

6 Claims



1. A method of disposing dust produced during a process for forming an amorphous silicon film by decomposing a starting material gas containing silane gas as its principal component, comprising the steps of:

capturing said dust without causing its scattering to the outside of a system for forming said amorphous silicon film;

mixing the captured dust with a heat-distillable non-flammable liquid having affinity to silicon to thereby render the dust to a slurry-form mixture;

heat-distilling the slurry-form dust mixture to substantially recover the liquid contained therein; and

collecting solidified mass or pellets of dust resulting from said heat-distilling so as to be used for recycling purpose.

4,642,209
TAXIDERMY MOLD WITH MEANS FOR HOLDING EYE WITHIN MOLD DURING FORMATION OF TAXIDERMY FORM, AND METHOD

Leon T. Powell, Salisbury, N.C., assignor to McKenzie Taxidermy Supply, Inc., Granite Quarry, N.C.

Filed Aug. 16, 1985, Ser. No. 766,439
 Int. Cl.⁴ B29C 67/22, 39/10, 33/14, 39/26

U.S. Cl. 264—46.4

7 Claims

1. A method of holding an artificial eye within a taxidermy mold during the molding process whereby the eye is molded into a taxidermy form, comprising the steps of:

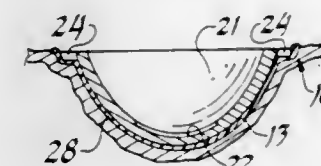
a. providing a pair of opposing, complementary mold parts adapted to fit together to form a cavity, with each mold part having interior walls defining an anatomically correct internal shape for forming an anatomically correct taxidermy form upon the introduction of a hardenable foaming liquid into the cavity; providing in the interior walls of each of the mold parts an eye socket recess, said recess having a shape defining a part of a sphere and adapted to receive the front, spherical portion of an artificial eye while leaving an exposed rear part extending into the mold cavity for being molded into the hardened foam of the taxidermy form;

b. applying an adhesive to the surface of the eye socket recess portion of the interior walls of each of the mold

parts, said adhesive having selective adhesion for holding an artificial eye in the eye socket recess during molding and sealing the eye socket recess against the introduction of the foaming liquid thereto during molding;

c. applying the artificial eye into the eye socket recess and releasably adhering the eye to the eye socket recess during molding; and

d. removing the taxidermy mold from the taxidermy form upon hardening of the foaming liquid to reveal a molded taxidermy form having an eye molded therein which is substantially free of adhesive.



4,642,210
ROTARY CORDIERITE HEAT REGENERATOR HIGHLY GAS-TIGHT AND METHOD OF PRODUCING THE SAME
 Yutaka Ogawa; Shunichi Yamada, both of Nagoya, and Toshiyuki Hamanaka, Suzuka, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 540,306, Oct. 11, 1983, Pat. No. 4,489,774. This application Sep. 18, 1984, Ser. No. 651,857

Claims priority, application Japan, Dec. 29, 1982, 57-230057
 Int. Cl.⁴ C04B 35/84, 41/87

U.S. Cl. 264—62

7 Claims



1. A method of producing a rotary cordierite heat regenerator having a high gastightness, comprising the steps of shaping and firing a cordierite honeycomb structural body, said honeycomb structural body having a plurality of porous partition walls defining channels in the honeycomb structural body, filling open pores in substantially all of said plurality of porous partition walls with a filler substance, said filler substance and said partition walls having a difference in thermal expansion of less than 0.1% at 800° C., after firing, and firing the honeycomb structural body with the filler substance applied thereto at a temperature within a range of 1,350°-1,430° C.

4,642,211

PREPARATION OF DRY POLYCAPROLACTAM GRANULES

Peter Elbs, Otterstadt; Wolfgang-Dieter Jeserich, Frankenthal, and Rudolf Wehr, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Oct. 19, 1984, Ser. No. 662,558

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338294

Int. Cl.⁴ B29C 47/88

U.S. Cl. 264—85

5 Claims

1. A process for the preparation of dry polycaprolactam granules containing from 8 to 13% by weight of caprolactam and its oligomers which comprises: extruding a polycaprolactam melt containing the stated amount of caprolactam and its oligomers, cooling the extrudates to 100°–150° C., maintaining the extrudates at this temperature until the polycaprolactam has substantially crystallized, and then immediately granulating the extrudates, and maintaining the granules in a stream of inert gas, in the absence of molecular oxygen, for from 1 to 4 hours at from 100° to 150° C., and cooling the granules.

4,642,212

METHOD FOR LOCATING A PRECISION ROBOTIC BASE COMPONENT

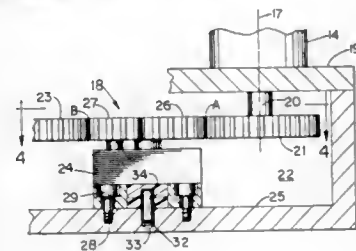
Edward J. Bailey, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 8, 1985, Ser. No. 720,777

Int. Cl.⁴ B32B 31/06

U.S. Cl. 264—262

2 Claims



1. A method for locating a precision robotic base component in a robotic base compartment, comprising the following steps:

- (a) securing a keying element in said base compartment of a relatively fixed robotic base;
- (b) forming a clearance opening for said keying element in said robotic base component;
- (c) locating said robotic base component in said base compartment with said keying element extending into said clearance opening;
- (d) providing said keying element with release means;
- (e) then filling at least a portion of said opening with a pourable, hardenable material, said material surrounding said keying element; and
- (f) then next allowing said material to harden onto said robotic base component and allowing said robotic base component to be removable from said keying element.

4,642,213

ANTICIPATORY CONTROL OF XENON IN A PRESSURIZED WATER REACTOR

Albert J. Implink, Jr., Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1984, Ser. No. 635,373

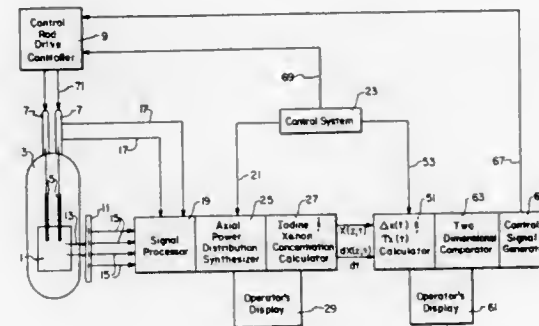
Int. Cl.⁴ G21C 7/36

U.S. Cl. 376—218

26 Claims

1. A method of automatically dampening xenon-135 spatial transients in the core of a pressurized water reactor having control rods which regulate reactor power level, comprising the steps of:

measuring the neutron flux in the reactor core at a plurality of axially spaced locations on a real-time, on-line basis; repetitively generating from said neutron flux measurements, on a point-by-point basis, signals representative of the current axial distribution of xenon-135, and signals representative of the current rate of change of the axial distribution of xenon-135;



generating from said xenon-135 distribution signals and said rate of change of xenon distribution signals, control signals for reducing the xenon transients; and positioning the control rods as a function of said control signals, to dampen said xenon-135 spatial transients.

4,642,214

NUCLEAR PEBBLE BED REACTOR WITH INHERENT PASSIVE STABILIZATION IN THE EVENT OF DAMAGE

Wang D. Zhong, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung, Julich, Fed. Rep. of Germany

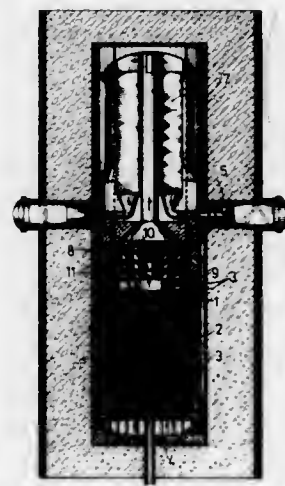
Filed Dec. 13, 1982, Ser. No. 449,194

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149794

Int. Cl.⁴ G21C 7/06

U.S. Cl. 376—221

3 Claims



1. In a high-temperature nuclear reactor having a ring-shaped arrangement of spherical fuel elements surrounding an axial graphite column; the improvement comprising said graphite column formed from a mass of graphite spheres, a discharge for introducing said graphite spheres into said reactor arranged at a variable distance from the mass of graphite spheres, and means for varying the discharge rate of said graphite spheres into said reactor, said variable distance of said discharge and said means being varied in a manner effective to provide variation in the graphite column diameter.

4,642,215

UNIVERSAL TOOL FOR ULTRASONIC TESTING OF NUCLEAR REACTOR VESSELS

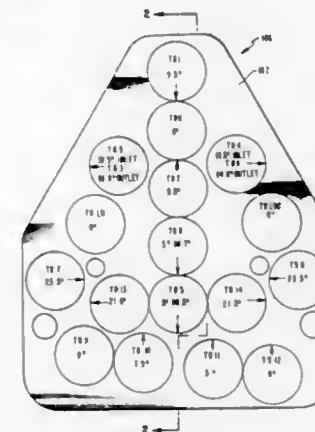
Daniel E. Klinvex, McKeesport; Suzanne B. Crusi, Hempfield Township, Westmoreland County; William E. Kepes, Penn Township, Westmoreland County, all of Pa., and Joseph A. Vano, New Providence, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 13, 1983, Ser. No. 541,597

Int. Cl.⁴ G21C 17/00; G01N 29/04

U.S. Cl. 376—249

21 Claims



1. A composite tool for inspecting portions of a plurality of objects for locating defects therein, each of said objects having a longitudinal axis and a different radius of curvature, said tool comprising a support plate, and a plurality of individual sensors mounted to said plate for emitting inspection beams therefrom, said sensors being arranged relative to said plate such that said inspection beams from each of said sensors penetrate a predetermined portion of said object lying substantially along an imaginary line on the surface of said object when said plate is positioned at a predetermined location relative to said line, said imaginary line lying in a plane containing said longitudinal axis of said body whereby the inspection of said predetermined portion of said object by said sensors is independent of the radius of curvature of said object being inspected.

4,642,216

CONTROL ROD CLUSTER ARRANGEMENT

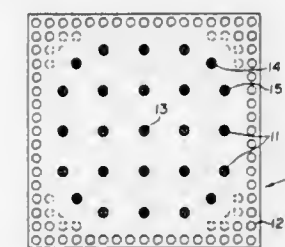
William L. Orr, Ligonier; Pratap K. Doshi, Murrysville; Claude M. Mildrum, Monroeville, and Thomas R. Freeman, Greensburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,596

Int. Cl.⁴ G21C 7/24

U.S. Cl. 376—327

2 Claims



1. In a nuclear reactor including a nuclear core which is cooled and moderated by light water, said nuclear core comprising a plurality of parallel arranged openings therethrough and interspersed among said fuel assemblies, a control rod cluster arrangement comprising a plurality of load follow control rod cluster assemblies with each load follow control

rod cluster assembly being adapted to slidingly fit within each of some of said fuel assemblies in said parallel arranged openings, said load follow control rod cluster assemblies each comprising a plurality of elongated parallel arranged rods attached to a single spider, and including a first group of rods and a second group of rods, said first group of rods and said second group of rods each consisting of a plurality of absorber rods, said first group of rods consisting of absorber rods taken from the group consisting of B₄C, hafnium, or silver-indium-cadmium and said second group of rods consisting of absorber rods each consisting of stainless steel, said first group of rods and said second group of rods each being integrally attached at all times to said single spider, the absorber rods of said second group of rods being dispersed throughout the control rod cluster assembly, said first group of rods having a first neutron capture cross section and said second group of rods having a second neutron capture cross section different from said first cross section.

4,642,217

FUEL ROD FOR A NUCLEAR REACTOR HAVING AN IMPROVED END PLUG ASSEMBLY

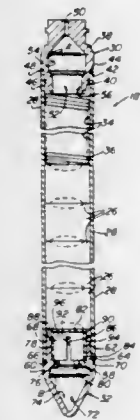
John F. Wilson, Murrysville Boro; Robert K. Gjertsen, Monroeville, and Samuel Cerni, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1984, Ser. No. 634,728

Int. Cl.⁴ G21C 3/10

U.S. Cl. 376—451

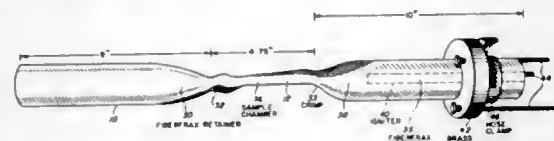
9 Claims



1. In a nuclear reactor fuel rod including a fuel tube and nuclear fuel and gas under pressure disposed within said tube, an improved end plug assembly which seals opposite ends of said tube so as to confine said fuel and pressurized gas within said tube, said assembly comprising:

- (a) a pair of end plugs attached in sealing relationship to said opposite ends of said tube;
- (b) at least one of said end plugs having an inner body portion fitted within said end of said tube and an outer body portion extending outwardly from said tube; and
- (c) said one end plug having a cavity defined therein which communicates with said fuel tube, said cavity including an outer region within said outer body portion and an inner region within said inner body portion, said outer cavity region being undercut relative to said inner cavity region.

4,642,218
HOT ROLLING OF CERAMICS BY THE USE OF SELF PROPAGATING SYNTHESIS
 Roy W. Rice, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy
 Filed Oct. 19, 1984, Ser. No. 662,933
 Int. Cl.⁴ C22C 32/00
 U.S. Cl. 419—11 24 Claims

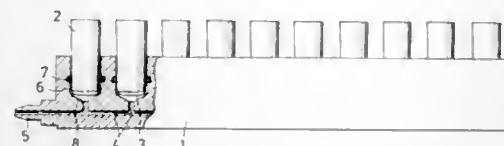


1. A method for producing high technology ceramics with minimal porosity comprising the steps of:
 filling a can with constituent powders of a ceramic;
 igniting the powders at a localized point so a reaction front is created in the powder that propagates from the point;
 and
 applying localized pressure to the can such that the propagation reaction front in the ignited powder is subjected to the pressure.

4,642,219
BEARING STEEL AND METHOD OF MANUFACTURING THE SAME
 Yatsuka Takata, Chita; Tadamasu Yamada, Nagoya, and Eiki Kikuchi, Tokai, all of Japan, assignors to Aichi Steel Works, Ltd., Tokai and Koyo Seiko Kabushiki Kaisha, Osaka, both of Japan
 Filed Mar. 4, 1985, Ser. No. 707,820
 Claims priority, application Japan, Mar. 14, 1984, 59-50073
 Int. Cl.⁴ C22C 38/18 23 Claims

1. A bearing steel of improved durability life, consisting essentially of, by weight:
 0.70–1.10% carbon, 0.15–1.60% Si, 0.15–1.15% Mn, 0.50–1.60% Cr, not more than 0.010% P, not more than 0.002% S, not more than 0.015% Al, not more than 0.0006% O, not more than 0.0050% N, and not more than 0.0015% Ti, the remainder being Fe together with impurities, said steel having a reduced amount of non-metallic inclusions of 0.010% by area or less with the average size of the inclusions being no more than 15 microns.

4,642,220
APPARATUS FOR CARRYING OUT ANALYSIS
 Rune Björkman, Bälänge, Sweden, assignor to Pharmacia AB, Uppsala, Sweden
 Continuation of Ser. No. 448,910, Dec. 3, 1982, abandoned. This application Apr. 16, 1985, Ser. No. 723,750
 Claims priority, application Sweden, Apr. 10, 1981, 8102316
 Int. Cl.⁴ B01L 11/00 3 Claims



1. Apparatus for carrying out analyses that comprise at least one incubation step and at least one step for separating a liquid hydrophilic phase from a phase which is insoluble in said liquid phase, said apparatus comprising
 (a) a plurality of reaction vessels which make it possible to

simultaneously carry out similar working sequences in said reaction vessels,
 (b) a support structure including a plurality of recesses and supporting said plurality of reaction vessels in a desired array in said recesses,
 (c) a porous bottom element in a lower portion of each of said reaction vessels, each porous bottom element being able to retain a reaction mixture thereabove during an incubation step and defining a chamber in each of said recesses beneath said bottom elements,
 (d) a pressure regulating system connected to said chambers so as to create a desired pressure differential between said chambers and a space above the porous bottom element of each of said reaction vessels, said pressure regulating system including:
 (1) means to elevate the pressure in said chambers above the pressure within the reaction vessels so as to insure against liquid leakage from said reaction vessels into said chambers,
 (2) means to decrease the pressure in said chambers below the pressure within the reaction vessels so as to facilitate liquid flow downwardly through the porous bottom elements in said reaction vessels, and
 (3) means to control said pressure elevating means and said pressure decreasing means, respectively, and
 (e) a hydrophilic filter in the lower portion of each of said reaction vessels, each of said filters being fixedly applied against the upper surface of one of said porous bottom elements and covering the pores thereof, each of said filters being constructed so as to be penetrated by and to retain hydrophilic liquid, thereby permitting the application of a high pressure differential between said chambers and the interior of said reaction vessels by said pressure elevating means without bubbling occurring through said porous bottom elements.

4,642,221
METHOD AND COMPOSITION FOR INHIBITING CORROSION IN AQUEOUS HEAT TRANSFER SYSTEMS
 Gerald D. Hansen, Holcom, and Joseph N. Biber, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.
 Filed Jul. 5, 1983, Ser. No. 510,502
 Int. Cl.⁴ C23F 11/04 9 Claims

1. In a method of inhibiting corrosion of copper or copper alloy metallic surfaces which are in contact with an aqueous liquid containing hypochlorite ions by adding to the aqueous liquid an aromatic triazole, the improvement comprising adding to the aqueous liquid an imino compound having the structural formula

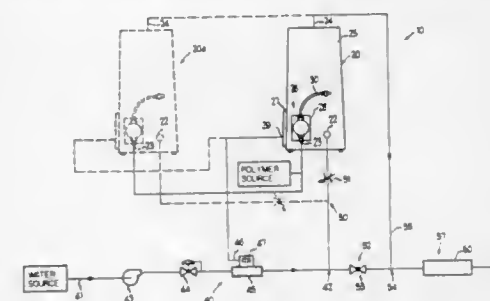
NHRR'

where R and R' are identical or different radicals selected from saturated aliphatic carboxylic acid radicals having 2 to 6 carbon atoms, saturated aliphatic carboxylic acid ester radicals having 2 to 6 acid moiety carbon atoms and 3 to 16 total carbon atoms, and water soluble alkali or alkaline earth metal salts of saturated aliphatic carboxylic acid radicals having 2 to 6 carbon atoms and mixtures of these.

4,642,222
POLYMER FEED SYSTEM
 Carl L. Brazelton, Austin, Tex., assignor to Stranco, Inc., Bradley, Ill.
 Filed Jul. 2, 1984, Ser. No. 627,046
 Int. Cl.⁴ G05D 11/13 13 Claims

1. A polymer feed system for activating and diluting a polymer with water comprising at least one mixing and activating apparatus including a vessel defining a mixing chamber, a water inlet to said chamber and a polymer inlet to said cham-

ber and an outlet to said chamber, said at least one mixing and activating apparatus being constructed and arranged to activate the polymer fully and to dilute same and to provide the diluted and fully activated polymer at said outlet, a first flowmeter coupled to said water inlet for measuring and indicating the rate of flow of water thereto, pump means having means to set the flow rate of the pump means and coupled to a source of polymer for delivering polymer to said polymer inlet, first conduit means coupled to a source of water, second conduit means coupled between said first conduit means and said first flowmeter for delivering water to said mixing and activating apparatus, said first and second conduit means being coupled at



a junction, third conduit means coupled to said outlet, fourth conduit means coupled between said third conduit means and the junction of said first and second conduit means, said third and fourth conduit means being coupled at a junction, and fifth conduit means coupled to the junction of said third and fourth conduit means to provide further diluted and fully activated polymer, said fourth conduit means including a throttling valve for further diluting the diluted and fully activated polymer by an amount depending on the setting of said valve, and a second flowmeter positioned and arranged so as to measure and indicate the rate of flow of water in said first conduit means or said second conduit means.

4,642,223
METHOD FOR REMOVING SPENT CATALYST FROM A REACTOR TOWER AND ASSEMBLY FOR FACILITATING SAME
 Abbas Al-Saigh, Fort McMurray, Canada, assignor to Alberta Energy Company Ltd.; Canadian Occidental Petroleum Ltd.; Esso Resources Canada Limited, all of Calgary; Gulf Canada Limited, Toronto; Her Majesty the Queen in right of the Province of Alberta Canada, as represented by the Minister of Energy and Natural Resources, Edmonton; HBOG-Oil Sands Limited Partnership, Calgary; PanCanadian Petroleum Limited, Calgary and Petro-Canada Inc., Calgary, all of, Canada
 Filed Apr. 2, 1985, Ser. No. 719,208
 Int. Cl.⁴ B01J 8/04 3 Claims

1. In combination:
 a catalytic reactor tower defining a chamber and having a plurality of interbed assemblies which extend generally horizontally across the tower chamber at vertically spaced apart levels and which sub-divide the chamber into a plurality of catalyst bed sections, one or more of which sections is to be emptied of spent catalyst at the end of a run by vacuuming said catalyst and delivering it upwardly out of the tower, said interbed assemblies each providing a grid for supporting a bed of particulate catalyst thereon, each such interbed assembly having at least one generally vertical drain tube extending therethrough to enable spent catalyst to be drained by gravity from one section to the next lower section, for removal from the base of the tower; and
 a plurality of removable catalyst baskets, at least one of said interbed assemblies having at least one drain tube having therein one of said plurality of catalyst baskets, each said basket having an apertured wall, said basket being opera-

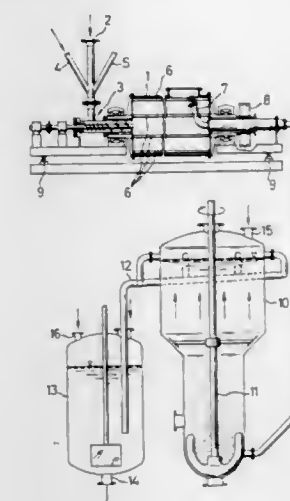
tive to retain the column of catalyst thereabove, to prevent it from draining downwardly into the next lower bed section while permitting fluid to flow freely therethrough,



whereby the bed sections to be vacuumed may be vacuumed at the same time as the bed sections to be drained by gravity are drained.

4,642,224
PROCESS FOR REDUCING IRON AND VANADIUM IN PHOSPHORIC ACID SOLUTION
 Herbert Ressel, Erfstadt; Hans Haas, Swisttal, and Johannes Krause, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
 Filed Oct. 1, 1985, Ser. No. 782,701
 Claims priority, application Fed. Rep. of Germany, Oct. 15, 1984, 3437684 6 Claims

Int. Cl.⁴ C01B 25/16
 U.S. Cl. 423—321 R



1. A process for reducing iron and vanadium in phosphoric acid solution with the aid of a reductant, which comprises reacting the phosphoric acid solution containing iron and vanadium with granular ferrophosphorus as the reductant.

4,642,225

METHOD OF BINDING SULFUR COMPOUNDS BY ADDING ADDITIVES

Klaus Leikert, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Dec. 13, 1984, Ser. No. 681,223
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345330

Int. Cl.⁴ C01B 17/00; B01J 8/00
U.S. Cl. 423—244 8 Claims

1. A method of binding sulfur oxide compounds which are produced as reaction products during the combustion of sulfur-containing fuels in a charging bed or fluidized bed furnace at temperatures above 1000° C. that have adverse effects on reaction temperature as well as upon operation of the furnace resulting in formation of slag on surfaces of the furnace, said method including the step of adding additives to the flue gases coming from said furnace; the method comprising the steps of: passing the hot flue gases as they exit directly from said charging bed or fluidized bed furnace so that the hot flue gases first go through a cooling zone wherein the hot flue gases themselves are cooled to lower the temperature of said flue gases to a value of temperature that is below 1000° C. and that is aimed at an optimum reaction temperature to effect the binding of sulfur oxide compounds in accordance with the additives to be employed, the cooling zone for the flue gas directly after leaving the furnace representing a feature arranged prior to actual flue-gas-waste-heat utilization;

only thereafter introducing said additives into said cooled-off flue gases via a carrier medium at a location at which conditions are maintained that avoid the adverse effects on reaction temperature as well as upon operation of the furnace resulting in formation of slag on surfaces of the furnace; and

using additives selected from the group consisting of oxides and hydroxides of metals selected from the group consisting of sodium, potassium, aluminum, barium, cadmium, calcium, copper, iron, lead, magnesium, manganese, and zinc.

4,642,226

PROCESS FOR THE PREPARATION OF ZEOLITE BETA USING DIBENZYLDMETHYLAMMONIUM IONS AND THE PRODUCT PRODUCED

Robert B. Calvert, Concord, Mass.; Clarence D. Chang, Princeton, N.J.; Mae K. Rubin, Bala Cynwyd, and Ernest W. Valyocsik, Yardley, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

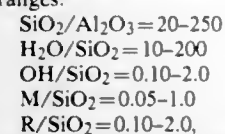
Continuation-in-part of Ser. No. 684,189, Dec. 20, 1984, abandoned, which is a continuation of Ser. No. 600,682, Apr. 16, 1984, abandoned, and a continuation of Ser. No. 684,202, Dec. 20, 1984, abandoned, which is a continuation of Ser. No. 608,847, May 10, 1984, abandoned. This application Mar. 29, 1985, Ser. No. 717,997

The portion of the term of this patent subsequent to Feb. 3, 2004, has been disclaimed.

Int. Cl.⁴ C01B 33/28

U.S. Cl. 423—328 14 Claims

1. A method for synthesizing a crystalline silicate consisting essentially of one having the structure of zeolite Beta which comprises (i) preparing a reaction mixture capable of forming said crystalline silicate, said mixture comprising sources of alkali metal ions (M), dibenzyltrimethylammonium ions (R), an oxide of silicon, water and an oxide of aluminum and having a composition, in terms of mole ratios, within the following ranges:



(ii) maintaining the reaction mixture at conditions sufficient to

crystallize said silicate, including a temperature of from about 80° C. to about 175° C., and (iii) recovering said crystalline silicate from step (ii), said recovered crystalline silicate containing dibenzyltrimethylammonium and alkali metal.

12. Dibenzyltrimethylammonium-containing zeolite Beta.

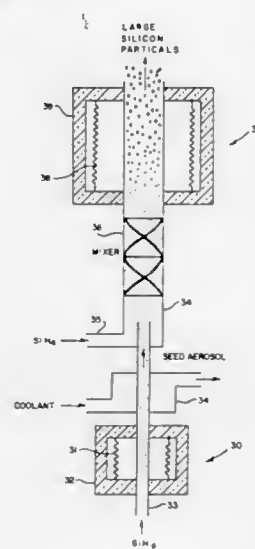
4,642,227

REACTOR FOR PRODUCING LARGE PARTICLES OF MATERIALS FROM GASES

Richard C. Flagan, Pasadena, Calif., and Mohammed K. Alam, Athens, Ohio, assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 409,941, Aug. 20, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,604
Int. Cl.⁴ C01B 33/02

U.S. Cl. 423—349 13 Claims



1. A method for producing particles of material from a gas, or gases, using a free-space flow reactor, said reactor having a mixing zone in series with a primary reaction zone, comprising the steps of

introducing into said mixing zone said gas, or mixture of said gases, for flow through said reactor, mixing a concentration of seed particles of said material with said gas, or gases, in said mixing zone, said concentration being limited such that the quantity of said gas or gases is sufficient to grow each of the particles in the reactor to the desired size larger than one micron within the reactor by vapor deposition alone, and

reacting said gas or gases in said primary reaction zone at a rate which is limited such that the products of gas phase reactions deposit on the seed particles entrained in the flow through said reactor, the rate of deposition being sufficient for the limited reacting rate to prevent homogeneous nucleation of new particles, the ultimate particles size being less than 100 microns and the reaction time in said primary reaction zone being of the order of 0.2-10 seconds.

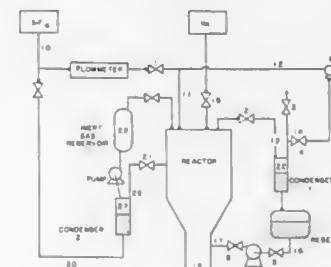
4,642,228

FLUXING SYSTEM FOR REACTORS FOR PRODUCTION OF SILICON

Angel Sanjurjo, 15010 Penitencia Creek Rd., San Jose, Calif. 95132, and Kenneth M. Sancier, 561 Berkeley Ave., Menlo Park, Calif. 94025

Filed Jul. 24, 1985, Ser. No. 758,597
Int. Cl.⁴ C01B 33/02

U.S. Cl. 423—350 10 Claims



1. A process for the production of substantially pure elemental silicon said process comprising the steps of:

- (a) passing a halogenated hydrocarbon gas containing one or more fluorine atoms that is condensable from -90° C. to +50° C. at atmospheric pressure into a reaction zone for use in the production of elemental silicon, through the reduction of the corresponding gaseous halide by means of an elemental alkali metal;
- (b) passing a silicon tetrahalide into said reaction zone to displace said condensable halogenated hydrocarbon gas;
- (c) passing an alkali metal into said reaction zone to obtain a mixture of silicon and an alkali metal halide; and
- (d) separating substantially pure silicon from said mixture.

4,642,229

BONE-SEEKING COMPLEXES OF TECHNETIUM-99M

Stephen A. Cumming, High Wycombe, and James D. Kelly, Amersham, both of England, assignors to Amersham International plc, Buckinghamshire, England

Filed Apr. 16, 1984, Ser. No. 600,408
Claims priority, application United Kingdom, Apr. 18, 1983, 8310438

Int. Cl.⁴ A61K 43/00, 49/00, 49/02
U.S. Cl. 424—1.1 6 Claims

6. A bone-seeking composition comprising an aqueous solution of a Technetium-99-m-tin-ethylene glycol-1,2-bisphosphonate complex.

4,642,230

RELEASE DEVICE

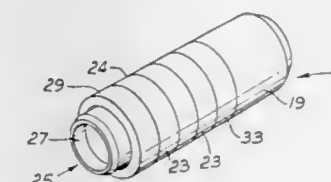
Derek J. Whitehead, Poynton, and Michael T. Shepherd, Cheddington, both of England, assignors to Castex Products Limited, Macclesfield and The Wellcome Foundation Limited, London, both of England

Filed May 21, 1985, Ser. No. 736,555
Claims priority, application United Kingdom, Jun. 2, 1984, 8414123; Aug. 31, 1984, 8422093; Mar. 2, 1985, 8505410

Int. Cl.⁴ A01N 25/34; A61K 9/22, 9/26
U.S. Cl. 424—15 20 Claims

1. A release device in the form of a bolus of generally elongate configuration having two ends, said bolus comprising a liquid impermeable casing and a core surrounded by said casing and exposed at least at one of said two ends of the bolus, said core comprising a biologically active material and being

degradable when the bolus is exposed to a liquid environment to release said material, and said casing comprising a plurality



of outer segments which are successively shed from the bolus as said core is progressively degraded.

4,642,231

MAGNESIUM TRISILICATE SUITABLE FOR PREPARATION OF MEDICAMENT ADSORBATES OF ANTIHISTAMINES

David Peters, Long Valley; John Denick, Jr., Newton, and Anil K. Talwar, Long Valley, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 516,002, Jul. 20, 1983, Pat. No. 4,581,232. This application Dec. 19, 1985, Ser. No. 811,053
Int. Cl.⁴ A61K 9/18, 33/12

U.S. Cl. 424—15 7 Claims



1. A medicament adsorbate which comprises magnesium trisilicate having a surface area of at least 400 m²/g and having a flake-like structure with multiple interstitial spaces, and containing adsorbed therein from about 1% to about 20% by weight of the adsorbate of a medicament drug wherein the medicament drug is selected from the group of antihistamine materials consisting of chlorpheniramine maleate, phenindamine tartrate, pyrilamine maleate, doxylamine succinate, phenyltoloxamine citrate, diphenhydramine hydrochloride, promethazine, triprolidine, and mixtures thereof.

4,642,232

FORMULATED ALLERGEN PREPARATION AND ITS USE

Rolf L. Yman, Upsala, Sweden, assignor to Pharmacia AB, Upsala, Sweden

PCT No. PCT/SE84/00227, § 371 Date Jan. 28, 1985, § 102(e) Date Jan. 28, 1985, PCT Pub. No. WO85/00015, PCT Pub. Date Jan. 3, 1985

PCT Filed Jun. 15, 1984, Ser. No. 709,033
Claims priority, application Sweden, Jun. 15, 1983, 8303401
Int. Cl.⁴ A61K 9/24, 39/00

U.S. Cl. 424—19 10 Claims

1. A formulated preparation for oral administration and ingestion containing an immunotherapeutically active amount of at least one allergen, which preparation

- (i) is resistant to gastric juice and contains in addition to said at least one allergen a therapeutically active amount of an anti-allergic substance that will inhibit an allergen induced IgE-mediated allergic and inflammatory reaction.
- (ii) being composed of at least one inner core containing the allergen and of an outer envelope which surrounds and

confines said at least one core and which contains said anti-allergic substance, and
(iii) being formulated so that upon being administered it gives a delayed release of both said active amount of antiallergic substance and said immunotherapeutic amount of allergen in a manner such that said two amounts are released in the said order under the action of intestinal juice, but not under the action of gastric juice, said allergen being allergenic in the sense that it is able to mount an immune response in a mammal resulting in antibody of the IgE-class and that it is able to trigger an allergic reaction when the mammal is later exposed to the allergen.

4,642,233

GASTROINTESTINAL DRUG DELIVERY SYSTEM COMPRISING A HYDROGEL RESERVOIR CONTAINING A PLURALITY OF TINY PILLS

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif. Continuation of Ser. No. 360,477, Mar. 22, 1982, Pat. No. 4,434,153. This application Jan. 16, 1984, Ser. No. 571,009. The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.
Int. Cl.⁴ A61K 9/22, 9/26

U.S. Cl. 424—19

3 Claims

1. An orally administrable device for the controlled delivery of a beneficial gastrointestinal administrable drug to the fluid environment of the gastrointestinal tract over a prolonged period of time, the device comprising:

- a reservoir shaped and sized for oral admittance into the gastrointestinal tract comprising a pharmaceutically acceptable non-toxic polysaccharide hydrogel that absorbs, imbibes fluid from the gastrointestinal tract and retains fluid within its polysaccharide structure, expands, swells and exhibits a 2 to 50 fold volume increase, said polysaccharide hydrogel a member selected from the group consisting of a noncross-linked polysaccharide hydrogel and a covalent cross-linked polysaccharide hydrogel said hydrogel additionally selected from the group consisting of a naturally occurring polysaccharide hydrogel and a synthetic polysaccharide hydrogel;
- a plurality of tiny pills dispersed throughout the reservoir comprising the polysaccharide, the tiny pills comprising:
 - a core of a beneficial gastrointestinal administrable drug; and
 - a wall comprising in at least a part a drug release rate controlling cellulosic polymer having an acetyl content of 21 to 44.8%, that surrounds the core of the beneficial drug and releases the drug when the device is in use into the gastrointestinal tract over time.

4,642,234

DISINFECTION OF CONTACT LENSES

David J. G. Davies, Brian J. Meakin, and John E. Rees, all of Bath, United Kingdom, assignors to University of Bath, Bath, United Kingdom

PCT No. PCT/GB84/00311, § 371 Date May 14, 1985, § 102(e) Date May 14, 1985, PCT Pub. No. WO85/01209, PCT Pub. Date Mar. 28, 1985

PCT Filed Sep. 12, 1984, Ser. No. 734,270

Claims priority, application United Kingdom, Sep. 15, 1983, 8324781

Int. Cl.⁴ A61K 31/55, 31/74, 33/42

U.S. Cl. 424—78

11 Claims

1. A solid composition for addition to tap water to provide a non-eye irritant aqueous disinfecting solution for hydrophilic soft contact lenses, said composition comprising:

- an antimicrobial effective amount of an ophthalmically acceptable chlorhexidine salt;
- an ophthalmically acceptable polyphosphate sequestering agent for calcium or magnesium cations in an amount effective to sequester said ions from tap water; and
- an ophthalmically acceptable metabisulphite, sulphite or thio-

sulphate dechlorinating agent in an amount effective to remove chlorine from a solution of the chlorhexidine salt in tap water.

4,642,235

CHEWING GUM WITH CENTER FILL COMPRISING THAUMATIN OR MONELLIN AND METHOD

Michael A. Reed, and Gordon N. McGrew, both of Evanston, Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill. Filed Oct. 26, 1984, Ser. No. 665,174

Int. Cl.⁴ A23G 3/30

U.S. Cl. 426—5

12 Claims

1. A center-filled chewing gum comprising a chewing gum base shell enclosing an internal void therein and a center fill in the void, the center fill comprising a sweetener selected from the group consisting of thaumatin and monellin in an amount greater than 5 ppm but less than 100 ppm by weight of the chewing gum.

4,642,236

PROCESS FOR REDUCING THE LEVEL OF OBJECTIONABLE FLAVORS IN VEGETABLE PROTEIN BY MICROORGANISM CONTACT

Beverly A. Friend, Collinsville, Ill.; Dennis L. Gierhart, High Ridge, and Judy K. O'Brien, St. Louis, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Apr. 4, 1985, Ser. No. 720,110

Int. Cl.⁴ A23J 3/00; A23L 1/015, 1/211

U.S. Cl. 426—44

26 Claims

1. A method of reducing undesirable flavor components in a vegetable protein material comprising:

- forming an aqueous slurry of a vegetable protein material; and
- contacting said slurry with viable mycelia of a mold selected from the group consisting of the genus *Rhizopus* and genus *Aspergillus* under conditions effective to reduce the level of flavor components in the material but ineffective to result in substantial replication of the mold mycelia.

4,642,237

STABLE OXIDANT ALPHA-AMYLASE CONCENTRATES FOR USE IN BAKING

Vincent A. De Stefanis, East Amherst; Robert W. Erickson, Buffalo, and Peter M. Ranum, Grand Island, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 24, 1985, Ser. No. 726,750

Int. Cl.⁴ A21D 2/22

U.S. Cl. 426—64

1 Claim

1. A highly concentrated additive composition for use in yeast leavened wheat flour bakery products, said additive composition being storage stable up to temperatures of about 120° F. for periods exceeding two weeks, said additive composition consisting of, by weight:

- 19.84% ascorbic acid
- 7.50% fungal α -amylase
- 11.30% potassium bromate
- 15.00% calcium carbonate
- 3.00% tricalcium phosphate
- 43.36% corn starch
- said fungal α -amylase concentrate containing about 70,000 SKB units/g thereof.

4,642,238

PROCESS FOR THE PRODUCTION OF A MINERAL FORTIFIED PROTEIN COMPOSITION

Santa H. C. Lin, and Myong J. Cho, both of Crestwood, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Feb. 3, 1986, Ser. No. 824,990

Int. Cl.⁴ A23J 3/00; A23L 1/304

U.S. Cl. 426—74

24 Claims

1. A method of producing a mineral enriched protein composition for use in the product of foodstuffs comprising:

- forming a hydrated gel of an alkaline earth metal salt used for mineral enrichment;
- adding said hydrated gel to an aqueous slurry of an isolated vegetable protein material to form a mineral enriched protein composition; and
- dewatering said composition.

4,642,239

PACKAGING OF FRESH MEAT

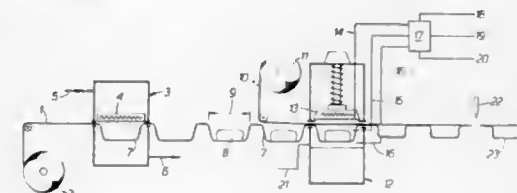
Andrew N. Ferrar, Bolton, and Arthur N. Jones, Beaconsfield, both of England, assignors to Transparent Paper PLC, Lancashire, England

Continuation-in-part of Ser. No. 569,477, Jan. 9, 1984, abandoned. This application Apr. 10, 1985, Ser. No. 721,776

Int. Cl.⁴ B65D 81/20; B65B 31/00

U.S. Cl. 426—396

13 Claims



1. A method of packaging fresh meat, comprising the steps of forming a first web of material into a receptacle to receive fresh meat, placing the fresh meat in said receptacle, subjecting said meat to a vacuum treatment to remove the permanent gases therefrom and to reduce the oxygen partial pressure in the vicinity of said meat to below 0.9 mm of mercury, effecting controlled partial release of said vacuum to an oxygen partial pressure in excess of about 11 mm of mercury, said release effected at a rate sufficiently rapid to prevent substantially any detriment to said meat, contacting the mouth of the receptacle with a second web of material, sealing said second web to said first under the latter pressure to form a closed package containing said fresh meat and heating the resulting package to shrink one of said webs into close contact with said fresh meat; at least one of said webs being transparent and at least one of said webs being heat-shrinkable and having a permeability to oxygen of at least 3000 ml/m²/24 hours/atmosphere differential for a thickness of 25 microns at N.T.P., and a permeability to carbon dioxide substantially greater than its permeability to oxygen.

4,642,240

FOODSTUFFS CONTAINING 3-AMINOBENZESULFONIC ACID AS A SWEETENER INHIBITOR

Ronald E. Barnett, and Ronald G. Yarger, both of Suffern, N.Y., assignors to General Foods Corporation, White Plains, N.Y. Continuation of Ser. No. 430,541, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 274,035, Jun. 15, 1981, abandoned. This application Mar. 25, 1985, Ser. No. 715,792

Int. Cl.⁴ A23L 1/226, 1/236

U.S. Cl. 426—538

6 Claims

1. A composition comprising a foodstuff containing a sweetener preparation and, as a sweetener inhibitor, within the range

of about 0.001 to about 2.0 weight percent based on the total composition, 3-aminobenzenesulfonic acid.

4,642,241

METHOD FOR THE PREPARATION OF TEXTURED SOYBEAN DRAFF

Akinori Noguchi, Sakura, Japan, assignor to Director of National Food Research Institute and Ministry of Agriculture, Forestry and Fisheries, both of Yatabe, Japan

Filed Feb. 21, 1985, Ser. No. 703,706

Claims priority, application Japan, Dec. 27, 1984, 59-273840
Int. Cl.⁴ A23L 1/20

U.S. Cl. 426—634

16 Claims

1. A process for the preparation of a textured okara useful as a food component comprising feeding okara to a twin-screw extruder having a melting zone and heating and applying pressure in said extruder to said okara and forcing said okara through a constricted exit port from said extruder into and through a cooling die at a temperature from room temperature to 0° C. wherein said okara is cooled and said cooled okara having a textured structure is forced out of the cooling die, said okara being heated in the melting zone of said extruder, said melting zone having a temperature of from 140° to 200° C. and the pressure in said extruder being between 20 and 200 kg/cm²G.

4,642,242

PERMANENTLY BONDED ANTITHROMBOGENIC POLYURETHANE SURFACE

Donald D. Solomon, Spring Valley; Charles W. McGary, Centerville, and Vincent J. Pascarella, Dayton, all of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 718,664, Apr. 1, 1985, Pat. No. 4,600,652. This application Mar. 19, 1986, Ser. No. 841,505

Int. Cl.⁴ A01N 1/02; B05D 3/04, 3/10

U.S. Cl. 427—2

7 Claims

1. A process for imparting antithrombogenic activity to polyurethane polymer materials, which comprises:

- treating the surface of a solid support with a solution of a protonated amine rich polyurethane-urea so that the polyurethane-urea is bonded to the support substrate;
- removing solvent from the treated substrate to form a layer of the polyurethane-urea upon the support substrate;
- activating the amine functionality on the polyurethane-urea with an alkaline buffer to form free amine groups; and
- reacting the free amine groups with an aldehyde containing antithrombogenic agent to covalently bond the antithrombogenic agent to the polyurethane-urea in the presence of a reducing agent.

4,642,243

METHOD AND APPARATUS FOR FORMING NON-SINGLE-CRYSTAL LAYER

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan

Division of Ser. No. 533,941, Sep. 20, 1983, Pat. No. 4,582,720. This application Feb. 13, 1986, Ser. No. 828,908

Claims priority, application Japan, Sep. 20, 1982, 57-163728; Sep. 20, 1982, 57-163729; Sep. 25, 1982, 57-167280; Sep. 25, 1982, 57-167281

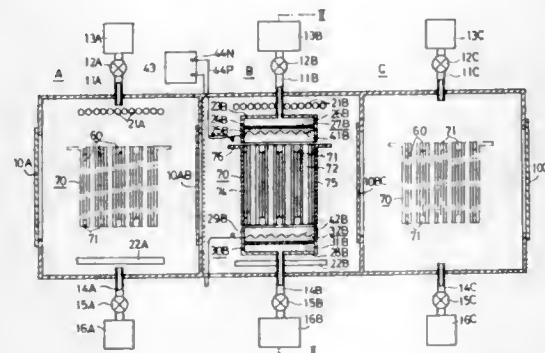
Int. Cl.⁴ C23C 16/50

U.S. Cl. 427—38

17 Claims

1. A non-single-crystal layer forming method in which a material gas for forming a non-single-crystal layer is introduced into a reaction chamber and is excited to form the non-single-crystal layer by deposition on a plurality of substrates placed in the reaction chamber where each substrate has an exterior surface upon which said material of the gas is deposited and an interior surface, wherein at least one pair of substrates are disposed with their interior surfaces facing one

another to prevent deposition of the material of the gas on the said interior surface, and wherein the material gas passes along



the exterior surfaces of the substrates to deposit said material thereon.

4,642,244 METHOD OF AND APPARATUS FOR ELECTRON BEAM CURING COATED, POROUS AND OTHER WEB STRUCTURES

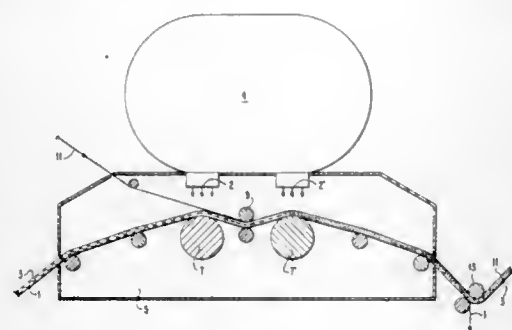
Edwin P. Tripp, III, Wilmington; Jason Weisman, Newton, both of Mass., and George Hissong, Kennebunk, Me., assignors to Energy Sciences Inc., Woburn, Mass.

Filed Mar. 3, 1986, Ser. No. 835,185

Int. Cl.⁴ B05D 3/06

U.S. Cl. 427—44

20 Claims



1. A method of providing a porous web with a surface-adhering coating with negligible penetration into the pores of the web, that comprises, moving a surface carrying an electron-curable liquid coating along a predetermined path; passing a porous web for laminating contact with said coating along said path; subjecting the coating to electron beam radiation through the web before such laminating while adjusting the radiation dose only partially to cure the coating before lamination, such that it is soft or tacky, with the laminating step effecting surface spreading and adhesion with the web substantially without penetration into the pores, and immediately subjecting the laminated web and partially cured coating to further electron beam radiation of greater dose and also directed through said web fully to cure the coating.

11. Apparatus for providing a porous web with a surface-adhering coating with negligible penetration into the pores of the web, having, in combination, means for moving a surface carrying an electron-curable liquid coating along a predetermined path within a shielded enclosure; means for passing a porous web into said shielded enclosure and for laminating contact with said coating along said path; electron beam generating means within the enclosure for subjecting the coating to electron beam radiation through the web before such laminating with the radiation dose adjusted only partially to cure the coating before lamination, such that it is soft or tacky, with the

laminating step effecting surface spreading and adhesion with the web substantially without penetration into the pores; the electron beam generating means having means for immediately a subjecting the laminated web and partially cured coating to further electron beam radiation of greater dose and also directed through said web fully to cure the coating.

4,642,245 IRON OXIDE MAGNETIC FILM AND PROCESS FOR FABRICATION THEREOF

Osamu Ishii; Fumikatsu Yoshimura, and Iwao Hatakeyama, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

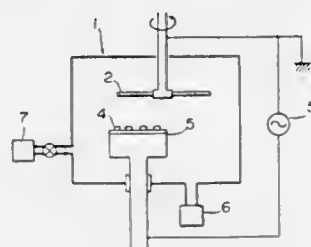
Division of Ser. No. 532,978, Sep. 16, 1983, Pat. No. 4,544,612. This application May 6, 1985, Ser. No. 730,549

Claims priority, application Japan, Sep. 22, 1982, 57-164134; Jul. 15, 1983, 58-127786

Int. Cl.⁴ C23C 15/00

U.S. Cl. 427—47

4 Claims



1. A process for the fabrication of a $\text{-Fe}_2\text{O}_3$ film containing a metal element therein, said process comprising: forming an $\text{-Fe}_2\text{O}_3$ film by reactive sputtering of an iron alloy target containing at least one element selected from the group consisting of Pd, Au, Pt, Rh, Ag, Ru, Ir, and Os under a 50% $\text{Ar} + 50\%$ O_2 gas mixture onto an Al-alloy disc coated with an Al_2O_3 layer, reducing said $\text{-Fe}_2\text{O}_3$ film in wet hydrogen gas by heating to form an Fe_3O_4 film containing said added metal, and oxidizing said Fe_3O_4 film in air by heating to form a $\text{-Fe}_2\text{O}_3$ film containing said added metal.

4,642,246 PROCESS FOR CHEMICALLY BONDING A LUBRICANT TO A MAGNETIC DISK

Robert A. Janssen, Alpharetta, Ga., and Gary D. Sorenson, Eden Prairie, Minn., assignors to Magnetic Peripherals, Inc., Minneapolis, Minn.

Filed Nov. 12, 1985, Ser. No. 796,811

Int. Cl.⁴ B05D 5/12

U.S. Cl. 427—127

7 Claims

1. A process for lubricating a magnetic disk characterized by contacting the disk with a functionalized lubricant, heating the lubricant for a time sufficient for the functional terminal group of a sufficient portion of the lubricant to covalently bond to the surface of the disk, and reacting the residual unbonded lubricant with either an aziridine or epoxide containing molecule.

4,642,247
RECORDING MEDIUM
Hidemasa Mouri; Michiaki Tobita, both of Yokohama; Naonobu Eto, Yamato; Shunzo Kouno, Yokosuka; Kosuke Ohkura, Hiratsuka; Shigeo Toganoh, Setagaya; Ryuichi Arai, Sagami-hara; Mamoru Sakaki, Atsugi; Kazuo Iwata, Yokohama, and Hiromi Shibasaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1985, Ser. No. 748,819

Claims priority, application Japan, Jun. 29, 1984, 59-133297; Jul. 27, 1984, 59-155443; Jul. 27, 1984, 59-155444; Jul. 27, 1984, 59-155445; Jul. 30, 1984, 59-157650; Jul. 30, 1984, 59-157651; Jul. 30, 1984, 59-157652; Dec. 28, 1984, 59-274837

Int. Cl.⁴ B41M 3/00, 5/00

U.S. Cl. 427—214

24 Claims



14. A recording process in which aqueous ink droplets are propelled onto a recording medium comprising a substrate having thereon a water-sorptive under layer covered by an upper layer of substantially water-resistant polymeric material which is sufficiently thin to provide immediate water and air permeability.

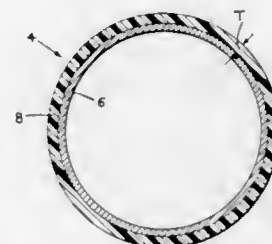
4,642,248
METHOD FOR COATING CYLINDRICAL MEMBERS
Howard Howland, 88 Clinton Pl., Hackensack, N.J. 07601

Filed Jun. 18, 1985, Ser. No. 745,888

Int. Cl.⁴ B05D 3/08, 3/12

U.S. Cl. 427—224

9 Claims



1. A method for providing on the outer surface of an inner cylindrical member an epoxy coating of substantially uniform final radial thickness, said method comprising the steps of applying an innermost layer of an uncured mixture of an epoxy resin and a hardener to the outer surface of said member to a depth which is less than said thickness while rotating said member about its axis, applying at least one additional layer of said uncured mixture to the outer surface of an already applied said layer while rotating said member about its axis, such that the total depth of said layers is at least as great as said thickness, heating the outermost said layer after each applying step to eliminate its porosity while rotating said member about its axis, utilizing a layer doctor blade parallel to the axis of depth of each said layer, and utilizing a leveling doctor blade parallel to the axis of said member and of adjustable distance therefrom to true up the outer surface of each said layer, and after the applying steps allowing said layers to cure.

4,642,249
CLEAR LACQUER BASED ON POLYVINYLIDENE FLUORIDE AND A PROCESS FOR THE COATING OF METALLIC SURFACES

Werner Goll, Garching, Fed. Rep. of Germany, assignor to Solvay & Cie, Societe Anonyme, Brussels, Belgium

Continuation of Ser. No. 526,549, Aug. 26, 1983, abandoned.

This application Apr. 3, 1986, Ser. No. 848,333

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234397

Int. Cl.⁴ B05D 3/02

U.S. Cl. 427—388.5

16 Claims

1. A clear polyvinylidene fluoride lacquer which comprises: (a) 30 to 45 wt. % of polyvinylidene fluoride with a K value of 40 to 55, (b) 4 to 15 wt. % of an acrylic resin selected from the group consisting of amides and esters of acrylic or methacrylic acid, (c) 33 to 50 wt. % of latent, high boiling solvent which dissolves polyvinylidene fluoride only at an elevated temperature, and (d) 3 to 15 wt. % of low boiling solvent having a boiling point up to the boiling point of ethyl glycol acetate.

11. A process for coating metallic surfaces, comprising the steps of applying the clear lacquer of claim 1 to a metal surface and thereafter heating the lacquer coated on the surface, to a temperature of from 250° to 350° C.

4,642,250
FABRICS AND GARMENTS FORMED THEREBY HAVING THERMALLY-SENSITIVE CHROMATIC PROPERTIES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jan. 13, 1986, Ser. No. 818,347

Int. Cl.⁴ C09K 3/34

U.S. Cl. 428—1

9 Claims



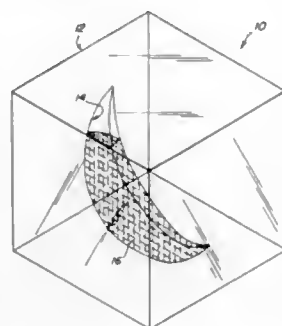
1. A garment fabric which when in contact with or in close proximity to the skin of a wearer exhibits a chromatic decorative pattern, said fabric having integrated therewith a dispersion of cholesteric liquid crystals having temperature-sensitive chromatic properties whereby the face of the fabric opposite the face next to the skin displays a color pattern that depends on the heat energy emanating from the skin and varies as a function of changes in this heat energy, said liquid crystals being macro-encapsulated by means constituted by a thin base coating of transparent polyester film bonded to the fibers of the fabric, a layer of unencapsulated liquid crystals dispersed on the base coating and a transparent polyester film forming an outer coating over the liquid crystal layer and bonded to the base coating.

4,642,251
HONEY-MOON
 Susanne M. Quinn, 401 E. 80th St., Apt. 27-J, New York, N.Y. 10021

Filed Feb. 5, 1986, Ser. No. 826,238
 Int. Cl.⁴ B44F 9/00

U.S. Cl. 428—7

3 Claims

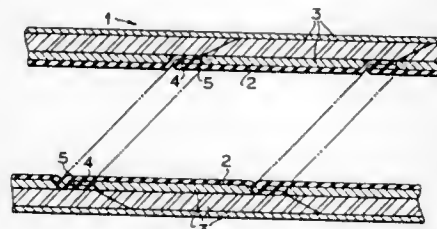


1. An ornamental device comprising:
 - (a) a clear plastic block having a sealed hollow chamber within being in the shape of a crescent moon; and
 - (b) honey liquid placed in said crescent moon shaped hollow chamber of said clear plastic block so as to be sealed therein, wherein said clear plastic block is formed in two halves, each of said halves having one longitudinal portion of said crescent moon shaped hollow chamber on its mating surface so that said honey liquid can be placed into one of said portions before said two halves are assembled together.

4,642,252
BODY FOR A PRESSURE-RESISTANT VESSEL
 Hitoshi Sasaki, and Shoji Igota, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
 Filed May 29, 1985, Ser. No. 739,049
 Claims priority, application Japan, May 29, 1984, 59-107473
 Int. Cl.⁴ B65D 25/14, 5/56

U.S. Cl. 428—35

13 Claims



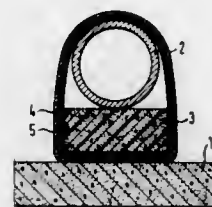
1. A pressure-resistant container having a body and metal ends which are high-frequency heat-sealed to the body, said body comprising a cylindrical body which serves as a content-protecting layer and an external shape-retention layer to keep the shape of the container, said content-protecting layer being constructed in such way that a laminate film including three layers comprising polyolefin/gas barrier/plastic is wound on a mandrel in such way that one side edge of the laminate film is folded back outward, with the polyolefin layer inside, and bonded in such way that air bubbles are not entrapped thereunder, and the other edge side of the laminate film is superimposed on and bonded to the folded part in such way that air bubbles are not entrapped between them, characterized in that said laminate film has a uniaxially stretched film of crystalline polymer on the outside of the plastic layer, and/or said shape-retention layer has a layer obtained by spirally winding a uniaxially stretched film of crystalline polymer, said metal ends

being coated with at least one polymeric material selected from the group consisting of modified polyolefin, a mixture of modified polyolefin and epoxy-phenol resin, and a mixture of modified polyolefin and epoxy-urea resin.

4,642,253
INSULATING MATERIAL FOR PIPES
 Rudolf Rüff-Schäfer, Stuttgart, Fed. Rep. of Germany, assignor to Missel GmbH & Co., Stuttgart, Fed. Rep. of Germany
 Filed Mar. 22, 1985, Ser. No. 714,989
 Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410838
 Int. Cl.⁴ F16L 59/14, 59/02

U.S. Cl. 428—36

19 Claims

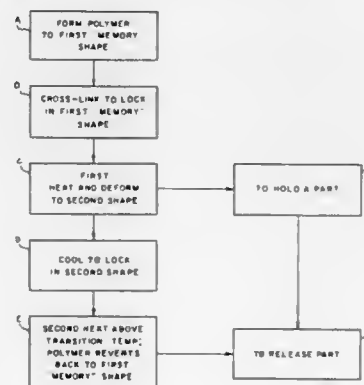


1. An insulation arrangement for a pipe which in operation carries a heated liquid, is laid on a rough cast concrete floor, and is subsequently buried beneath a layer of flooring plaster, comprising a pipe having a diameter, a floor side adjacent said floor, first and second side surfaces and a top side; insulation including an elongate layer of insulating material which is disposed beneath said floor side of said pipe and has a thickness at said bottom side, said layer forming a support for said pipe, and a sleeve of insulating material extending from said layer of insulating material substantially around said side surfaces of said pipe and over said top side, said sleeve having a thickness at said top side; and wherein said thickness of said sleeve at said top side is substantially less than said thickness of said layer of insulating material at said bottom side.

4,642,254
PROCESS AND DEVICE FOR TEMPORARILY HOLDING AND RELEASING OBJECTS
 George E. Walker, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.
 Division of Ser. No. 713,477, Mar. 19, 1985. This application
 Mar. 4, 1986, Ser. No. 835,890
 Int. Cl.⁴ B29C 61/00

U.S. Cl. 428—36

11 Claims



1. A process for one part to temporarily engage and release another part comprising the steps of:

forming a cross-linkable polymeric first part to a first memory shape;
 cross-linking said polymeric first part to lock in said first memory shape;
 heating said first memory shaped polymeric part to a temperature above its transition temperature;
 deforming said heated memory shaped polymeric first part to a second deformed shape;
 cooling said deformed second shaped first part to lock in said deformation;
 engaging said deformed second shaped polymeric first part to a second part wherein said second part holds and surrounds at least a portion of said first part; and
 heating said deformed second shaped first part above its transition temperature wherein said first part will revert from its deformed shape to its first memory shape and wherein the engaged and surrounded first part is released from the second part.

4,642,255
LAMINATED ARTICLE AND PROCESS FOR MAKING SAME

Frank C. Dlubak, 104 Sipes Rd., Freeport, Pa. 16229, assignor to Frank C. Dlubak, Freeport, Pa.
 Filed Dec. 20, 1984, Ser. No. 687,169
 Int. Cl.⁴ B32B 17/12, 31/20; B44F 1/06; C03C 27/12

U.S. Cl. 428—38

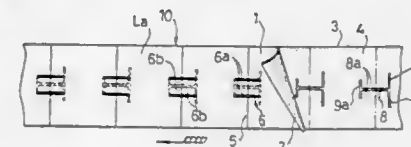
17 Claims

1. A decorative laminated article comprising two outer glass layers, a polyvinyl acetal layer disposed therebetween and a porous fibrous layer comprising fibrous material designed in a decorative pattern having interstices, said fibrous material disposed in a decorative pattern extending well within the peripheral edge of said laminated article, encapsulated in said polyvinyl acetal layer, said polyvinyl acetal layer extending through said interstices and constituting a single, continuous, unitary phase.

4,642,256
LABEL STRIP
 Yoshio Sato, Iwate, Japan, assignor to Kabushiki Kaisha Sato, Japan
 Filed Mar. 26, 1985, Ser. No. 715,776
 Claims priority, application Japan, Sep. 6, 1982, 57-153978
 Int. Cl.⁴ B32B 3/10, 7/06

U.S. Cl. 428—42

11 Claims



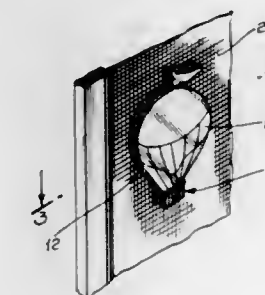
1. A strip of pressure-sensitive labels comprising an elongate web of support material with one surface for supporting labels thereon; label material including a series of labels, each label having an underside to which adhesive is applied and the individual labels being overlaid on the one surface of the support material and being peelable off the support material;
 a plurality of feeding cut groups defined in the layer of support material at intervals longitudinally along the support material; each of the feeding cut groups comprising one longitudinal cut extending longitudinally along the web of support material and further comprising an upstream transverse cut intersecting the longitudinal cut at the upstream end thereof with respect to the movement of the support material and a downstream stopper cut intersecting the longitudinal cut at the downstream end thereof wherein the upstream stopper cut extends transversely across the support material a greater distance than the downstream stopper cut; the said longitudinal cut and the transverse stopper cuts together defining two first feeding

tongues in the support material at the opposite sides of the longitudinal cut between the stopper cuts; the labels on the support material having second feeding cuts defined therein and the second feeding cuts in the labels being shaped to define second tongues in the labels; the second cuts in the labels being positioned so that the second in the labels overlies respective first feeding tongues in the support material, such that upraising of first feeding tongues in the support material raises up corresponding second feeding tongues in a label overlying the upraised first feeding tongues.

4,642,257
MAGNETIC OCCLUDING DEVICE
 Michael Chase, 6001 Amos Ave., Lakewood, Calif. 90712
 Filed Jun. 13, 1985, Ser. No. 744,258
 Int. Cl.⁴ A61N 1/42; B32B 35/00

U.S. Cl. 428—63

13 Claims



1. A decorative magnetic occluding device for decoratively and uniformly occluding opposing surface portions of a non-magnetic panel comprising a matched pair of sheet magnets; each being the mirror image configuration of the other; each magnet having a decorative surface, which is a mirror image configuration of the decorative surface of the other magnet, and an opposite magnetized surface, said magnetized surfaces having alternating North and South stripes of polarity, the stripes of polarity of one of said magnetized surfaces being offset by one stripe from the corresponding stripes of polarity of the other of said magnetized surfaces; and
 each magnet having visual orientation means for insuring that the corresponding stripes of polarity of said magnetized surfaces will be opposite in polarity when said magnets are mated on opposing surface portions of a non-magnetic panel with the decorative surfaces exposed.

4,642,258
TREATMENT OF FABRICS IN MACHINE DRYERS USING TREATING MEANS CONTAINING FABRIC TREATING COMPOSITION HAVING RESISTANCE TO CHANGE IN VISCOSITY AND RELEASE RATE WITH TEMPERATURE CHANGE

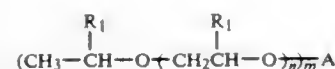
Donna M. Majewski, Lino Lakes, and Stephen A. Morganson, S. St. Paul, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Jul. 5, 1983, Ser. No. 510,943
 Int. Cl.⁴ B05D 1/28; B65D 85/70; F26B 3/00

U.S. Cl. 428—68

23 Claims

1. A fabric treating article of commerce comprising:
 - (a) a dispenser body enclosing or substantially surrounding,
 - (b) a fabric conditioning composition consisting essentially of:
 - (i) about 20 to 80 wt-% of an alkoxylated compound having the formula:

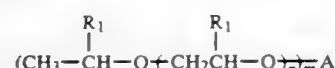


wherein R₁ is hydrogen or C₁₋₅ alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

- (ii) about 10 to 30 wt-% of a di C₁₋₄ alkyl-di C₅₋₂₄ alkyl ammonium compound;
- (iii) about 8 to 12 wt-% silicon dioxide; and
- (iv) about 0 to 5 wt-% of fragrance.

13. A fabric softening composition of matter which consists essentially of:

- (i) about 20 to 80 wt-% of an alkoxyated compound having the formula:



wherein R₁ is a hydrogen or C₁₋₅ alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

- (ii) about 10 to 30 wt-% of a di C₁₋₄ alkyl-di C₅₋₂₄ alkyl ammonium compound;
- (iii) about 8 to 12 wt-% of silicon dioxide; and
- (iv) about 0 to 5 wt-% of fragrance.

22. A method for forming a slow release fabric treating article of commerce which comprises:

- (a) obtaining at least one piece of a woven or nonwoven fabric permeable to solid fabric treating compositions;
- (b) attaching at least two edges of the fabric;
- (c) introducing an effective amount of a fabric softening anti-static composition which consists essentially of:
 - (i) about 20 to 80 wt-% of an alkoxyated compound having the formula:



wherein R₁ is a hydrogen or C₁₋₅ alkyl, A is an alkyl, a carboxyl, an aryl, a substituted aryl, or an alkylene glycol moiety having from about 1 to 30 carbon atoms, m is an integer of 1 to 4, and n is a number of about 100 to 1,000;

- (ii) about 10 to 30 wt-% of a di C₁₋₄ alkyl-di C₅₋₂₄ alkyl ammonium compound;
- (iii) about 8 to 12 wt-% of silicon dioxide; and
- (iv) about 0 to 5 wt-% of fragrance;

and sealing the fabric, enclosing or substantially surrounding the fabric softening anti-static composition.

4,642,259

SOURCE-SIDE SELF-ALIGNED GATE PROCESS

William A. Vetanen, Hillsboro; Kimberly R. Gleason, Portland, and Irene G. Beers, Tigard, all of Oreg., assignors to Triquint Semiconductors, Inc., Beaverton, Oreg.

Filed Apr. 26, 1985, Ser. No. 727,485

Int. Cl.⁴ B32B 3/10; G03C 5/00; H01L 21/00

U.S. Cl. 428-137

20 Claims

1. A source side self-aligned gate process for fabricating an integrated circuit device comprising:

- providing a substrate having a reference surface and an active device region in the material of the substrate;
- masking the substrate surface over the active device region with an ion-opaque, removable first mask layer;

forming a pair of spaced-apart openings in the mask within the active device region;

implanting ions through the pair of openings into the active device region to form a pair of self-aligned implant regions spaced apart from a gap having a first length defined by the spacing of the openings;

depositing a first dielectric layer through the mask openings onto the substrate surface so as to cover the self-aligned implant regions;

removing the first mask layer and any of the first dielectric layer deposited thereon while leaving first and second spaced-apart dielectric patches covering the self-aligned implant regions and aligned therewith;

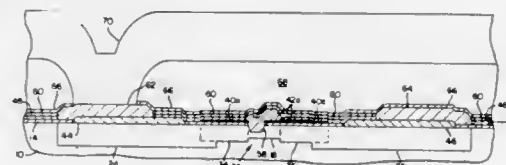
masking the substrate surface and the first and second dielectric patches with a second mask layer;

forming a single opening in the second mask layer in the active device region in a location and of a length encompassing a portion of said gap and an overlappingly intersecting an adjoining portion of the first patch;

depositing a second dielectric layer through said single mask opening onto the substrate;

removing the second mask layer and any of the second dielectric layer deposited thereon while leaving a third dielectric patch covering said portions of the gap and the first patch and spaced from the second patch to define a reduced gap therebetween;

depositing a gate conductor material in the gap to form a gate having a gate contact in contact with the substrate material in the reduced gap, the gate contact having a length defined by the spacing across the reduced gap between the second and third patches of dielectric material.



11. A gate process according to claim 1 including sizing the opening in the second mask layer so that the second length is greater than the first length.

15. A process according to claim 12 including:

depositing a fourth dielectric layer over said surface including over said first, second and third areas, the first and fourth dielectric layers each being formed of a dielectric material removable by a predetermined etchant and the second and third dielectric layers being formed of a different dielectric material resistant to said etchant;

masking the fourth dielectric layer with a mask layer and forming an opening in the mask layer approximately aligned with said first area; the mask layer being formed of a mask material resistant to said etchant and otherwise removable;

etching through the opening with said predetermined etchant to remove portions of the first and fourth dielectric layers exposed within the gap and thereby expose a portion of the reference surface of the substrate;

etching the exposed portion of the substrate surface so as to form, within the gap, a recess in the substrate having a predetermined depth from the reference surface;

depositing said conductive gate material through the opening into the gap and the recess; and

removing the mask material.

16. A source side self-aligned gate for making submicron gates in integrated circuits, comprising:

- providing a semi-insulating substrate having a reference surface;
- depositing a first dielectric layer over said surface;
- applying a first layer of photoresist over the first dielectric layer and forming a pair of closely spaced apart openings

4,642,261

PAPERMAKERS FABRIC HAVING A TIGHT BOTTOM WEFT GEOMETRY

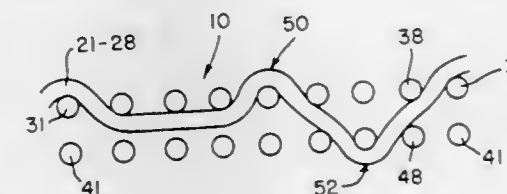
Ivan J. Fearnhead, Shreveport, La., assignor to Unaform Inc., Shreveport, La.

Filed Dec. 21, 1984, Ser. No. 685,129

Int. Cl.⁴ D03D 3/00

U.S. Cl. 428-225

14 Claims



1. A papermakers fabric comprising a duplex fabric having a plurality of machine direction yarns and cross-machine direction yarns interwoven in accordance with a desired weave pattern, a top layer defined by a first plurality of said cross-machine direction yarns and a bottom layer defined by a second plurality of said cross-machine direction yarns, said yarns of said second plurality having a higher heat shrinkage than said yarns of said first plurality and being contracted heat-shrinkable yarns after heat setting of the fabric.

4,642,262

METHOD OF MAKING FIBRIDS FROM THERMOPLASTICS

Bernhard Piotrowski, Lohmar; Robert Büning, Troisdorf; Bernhard Janser, Troisdorf, and Egon Lang, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

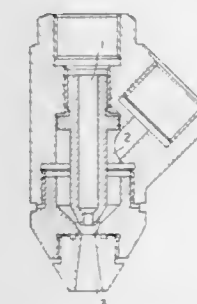
Filed Mar. 9, 1984, Ser. No. 588,058

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308626

Int. Cl.⁴ B29B 9/00; D04H 1/54

U.S. Cl. 428-296

9 Claims



1. A method of making fibrids from thermoplastic synthetic substances comprising expanding by vaporization, in the presence of a gaseous propellant, a polymer solution, under elevated pressure and elevated temperature, in a mixing nozzle having a Laval discharge portion under shear-inducing conditions, wherein the true or apparent solution of the polymer in a solvent is expanded by the use of superheated steam at an average energy density of at least 50 watt-seconds per cubic centimeter in the mixing nozzle

8. An article produced according to the method of claim 1.

4,642,260

SUBSTRATE FOR PLANOGRAPHIC PLATE

Kazuto Wakita; Kazuo Tsuchiya; Isao Nagayasu, and Ikuo Emoto, all of Sakai, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 14, 1985, Ser. No. 711,965

Claims priority, application Japan, Mar. 21, 1984, 59-52205

Int. Cl.⁴ B32B 7/02, 15/08

U.S. Cl. 428-215

18 Claims

1. A substrate for planographic plate, consisting essentially of metal foils with thicknesses of 5 to 100μ laminated onto both surfaces of a sheet which has a thickness of 30 to 400μ, said sheet being formed of a modified polyolefin composite material comprising 100 parts by weight of a modified polyolefin resin graft-modified partially or wholly with an organic silane compound and 5 to 150 parts by weight of mica.

elastomeric modified bituminous sheets selected from the group consisting of fiber board and wafer board, wherein said board is coated on its top surface with a coating consisting essentially of an inorganic water soluble silicate as the sole effective ingredient yielding flame resistance properties to said board, said coating being the sole coating on said roofing board, said coating serving to impregnate said roofing board and forming a firm bond with it, the strength of the bond between the silicate layer and the roofing board being substantially of the same order of magnitude as the strength of the bond maintaining the internal structure of the roofing board, said bond strength in shear being at least 100 kiloPascal, and said top surface of the roofing board, having the property to form on roofing with elastomeric modified bituminous sheets a bond strength of at least 100 kiloPascal.

4,642,269

CRYSTALLINE RANDOM PROPYLENE COPOLYMER COMPOSITION AND COMPOSITE LAMINATE COMPRISING SAID COMPOSITION

Masaki Kohyama, Ichihara; Takeshi Muranaka, Iwakuni; Kuni-suke Fukui, Hiroshima, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 29, 1985, Ser. No. 792,595

Claims priority, application Japan, Nov. 1, 1984, 59-228952; Nov. 1, 1984, 59-228953

Int. Cl.⁴ C08J 5/18; C08L 23/14, 23/16, 23/18

U.S. Cl. 428—516

22 Claims

1. A crystalline random propylene copolymer composition comprising (i) a crystalline random propylene copolymer comprising 99 to 85 mole % of propylene and 1 to 15 mole % of an alpha-olefin other than propylene and (ii) a random 1-butene copolymer comprising 1-butene and an alpha-olefin having at least 5 carbon atoms, the weight ratio of the copolymer (i) to the copolymer (ii) being in the range of from 5:95 to 90:10, said random 1-butene copolymer (ii) satisfying the following conditions:

- it comprises 50 to 99 mole % of the 1-butene component and 1 to 50 mole % of the alpha-olefin,
- it has an intrinsic viscosity $[\eta]$, measured in decalin at 135° C., of from 0.5 to 6 dl/g,
- it has a melting point T_m , measured by a differential scanning calorimeter, of from 30° to 120° C.,
- it has a crystallinity, measured by X-ray diffractometry, of from 5 to 60%,
- the amount $[W_1]$ in % by weight of that portion of it which is soluble in boiling methyl acetate is not more than 2%, and
- the amount $[W_2]$ in % by weight of that portion of it which is soluble in a 1:1 by volume mixture of acetone and n-decane at 10° C. is less than $5 \times [\eta] - 1.2$.

4,642,270

MAGNETIC RECORDING MEDIUM

Haruyuki Morita; Jiro Yoshinari, and Kazumasa Fukuda, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,302

Claims priority, application Japan, Nov. 29, 1983, 58-223069

Int. Cl.⁴ H01F 10/00

U.S. Cl. 428—621

5 Claims

1. In a magnetic recording medium comprising a non-magnetic substrate and a magnetic thin film formed on the surface thereof, wherein the improvement comprises a magnetic thin film which is comprised of two layers, a first, crystalline layer deposited on said substrate, the surface opposite said substrate being amorphitized to give an amorphous surface, and a second crystalline layer deposited on said amorphous surface.

4,642,271

BN COATING OF CERAMIC FIBERS FOR CERAMIC FIBER COMPOSITES

Roy W. Rice, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 700,246

Int. Cl.⁴ B32B 9/00

U.S. Cl. 428—698

9 Claims

1. In a ceramic fiber composite, a composition comprising: a plurality of ceramic fibers; a fiber coating of boron nitride disposed over each fiber to form a plurality of coated fibers; and a ceramic matrix encapsulating said plurality of coated fibers.

4,642,272

INTEGRATED FUEL CELL AND FUEL CONVERSION APPARATUS

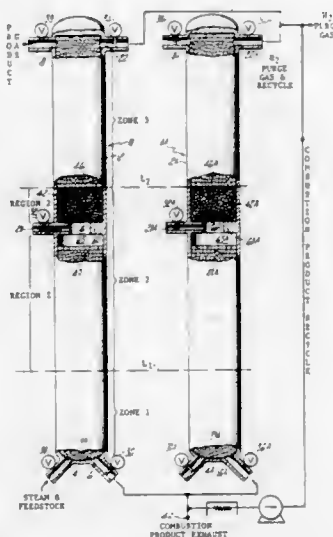
Richard A. Sederquist, Newington, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Dec. 23, 1985, Ser. No. 812,212

Int. Cl.⁴ H01M 8/06

U.S. Cl. 429—17

6 Claims



1. Reaction apparatus constructed to alternately:

- make a hydrogen containing gas by the cracking and catalytic steam reforming of a hydrocarbon feedstock; and
- be regenerated, comprising: at least one reaction vessel having an upstream end and downstream end, said vessel having disposed therein, in sequence from its upstream to downstream end, a first volume of inert packing material containing no reform catalyst, a second volume of material substantially adjacent said first volume and including a region of reform catalyst material and a third volume of material substantially adjacent said second volume; said vessel including first inlet means upstream of said second volume for introducing a hydrocarbon feedstock and steam into said first volume during the making of the hydrocarbon containing gas, and first outlet means at said downstream end of said vessel for exhausting the hydrogen containing gas produced in the vessel; said vessel including second inlet means at its downstream end for introducing a hydrogen purge gas into said third volume during the regeneration of the apparatus, and second outlet means at said upstream end for exhausting combustion product gases produced during regeneration; said second inlet means including third inlet means for introducing a portion of said combustion product exhaust gases produced during regeneration into said vessel; and

4,642,273

REFORMER REACTION CONTROL APPARATUS FOR A FUEL CELL

Akira Sasaki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 612,020, May 18, 1984,

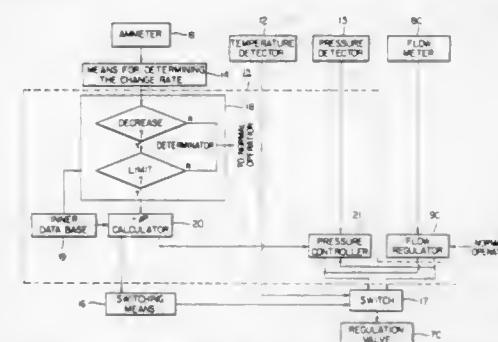
abandoned. This application Jun. 13, 1985, Ser. No. 744,294

Claims priority, application Japan, May 19, 1983, 58-89367

Int. Cl.⁴ H01M 8/04

U.S. Cl. 429—22

2 Claims



1. A control system for a reforming reaction comprising a fuel reforming means, said reforming being carried out by an endothermic reaction, a feed flow control system for controlling, depending upon an external load, the quantities of fuel gas and steam which are each introduced into said reforming means, a reformed gas flow control system for controlling, depending upon said external load, the quantity of reformed gases discharged from said fuel reforming means, a means for determining change rate of the load, a means for detecting a pressure in the fuel reforming means and a reaction pressure control means by computing a transitional pressure preset value in the fuel reforming means on the basis of signals from said means for determining load change ratio and from said means for detecting pressure, said reaction pressure control means having a reaction pressure control system by which the pressure in the fuel reforming means is controlled transitionally below a steady state pressure preset value when said change rate of the load is outside a predetermined range.

4,642,274

FUEL CELL SYSTEM

Masaru Tsutsumi, Hyogo; Hideo Hagino, Otsu; Osamu Fujiwara, Takasago, and Hitoshi Goto, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Nov. 12, 1985, Ser. No. 796,333

Claims priority, application Japan, Nov. 12, 1984, 59-238113

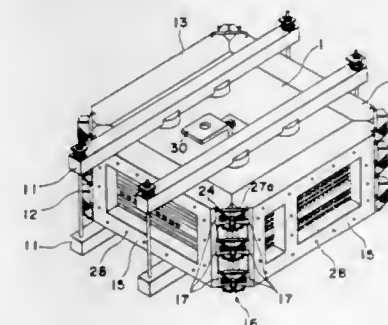
Int. Cl.⁴ H01M 8/04

U.S. Cl. 429—35

4 Claims

1. A fuel cell stack and manifolds sealing system comprising rigid frames provided at their peripheries with grooves extending in the stacked direction of the fuel cell components and fastening means for uniting said frames, each said fastening means comprising a pair of angle members each having a hook at its one end and being preassembled with elastic washers and

a clamping bolt extending through said pair of angle members and said washer and a nut on said bolt, said hooks of the angle reform catalyst for introducing an oxygen containing gas.



members of each pair engaging the grooves of the adjacent frames.

4,642,275

MOVING PISTON SEAL ACTIVATOR

David F. Smith, Boulder Creek, and J. Pierre Wilson, San Jose, both of Calif., assignors to Altus Corporation, San Mateo, Calif.

Filed Feb. 10, 1986, Ser. No. 827,508

Int. Cl.⁴ H01M 10/44

U.S. Cl. 429—52

12 Claims



1. A reserve battery cell comprising

- a battery cell housing,
- an anode and a cathode collector located within said housing,
- a quantity of electrolyte which, when applied to said anode and cathode collector, can cause the battery to generate an electric current through an external load,
- a reservoir housing for storing said electrolyte prior to its application to said anode and cathode,
- upstream and downstream burst discs located proximate the extremities of said reservoir housing, said upstream burst disc being capable of rupturing upon the application of efficient externally applied pressure and said downstream burst disc being capable of rupturing upon the application of sufficient hydraulic pressure exerted thereon by said electrolyte, and
- piston means located within said reservoir housing in establishing the upstream boundary of said electrolyte and which is further capable of traveling down said reservoir housing upon the application of said externally applied pressure and which is further characterized as substantially preventing electrolyte from leaking around the piston means and any substantial amount of gas from entering the electrolyte through the piston body.

4,642,276

METHOD OF ASSESSING THE ACTIVITY OF A PHOTOGRAPHIC DEVELOPER

Jean Burtin, Mol, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

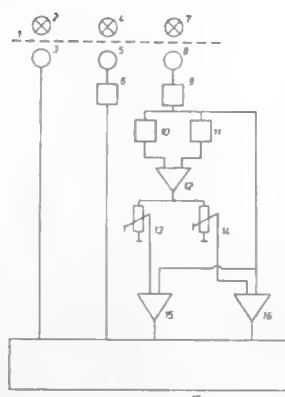
Filed Sep. 26, 1985, Ser. No. 780,586

Claims priority, application European Pat. Off., Oct. 4, 1984, 84201412.8

Int. Cl.⁴ G03C 5/02, 5/26

U.S. Cl. 430—30

9 Claims



1. A method of assessing the developing activity of a photographic developer relative to a norm, which method comprises the steps of using the developer to develop a latent photographic image of a sensitometric wedge, determining density curve data pertaining to the resulting wedge print (hereinafter and in subsequent claims called "control print") by means of a photoelectric transmission densitometer, and comparing such data with analogous data pertaining to at least one reference wedge print resulting from the development of an identical latent sensitometric wedge image in a developer of given activity taken as norm, characterized in that the densitometer is used to determine in respect of the control print: (i) a notional density range in terms of the difference between the dark current of the photodetector of the densitometer and the output current of such detector when it is irradiated by light through the transparent support of such control print at an area of zero image density, and (ii) to determine at least one position along the control print where its image density, as measured in terms of the output current of said detector, is in a predetermined ratio to said notional density range; the data thus established pertaining to the control print is compared with analogous data pertaining to the reference print, established by means of the same densitometer, in order to determine the relationship between the positions along the control and reference prints at which their notional densities are in the same ratio to their respective notional density ranges, and the said relationship is used as a measure of the developing activity of the developer being assessed.

4,642,277

PHOTOCONDUCTIVE MEMBER HAVING LIGHT RECEIVING LAYER OF A-GE/A-SI AND C

Keishi Saitoh; Yukihiko Ohnuki, and Shigeru Ohno, all of c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Oh-ta-ku, Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 663,965

Claims priority, application Japan, Oct. 25, 1983, 58-200563; Dec. 28, 1983, 58-252044; Dec. 28, 1983, 58-252045

Int. Cl.⁴ G03G 5/085

U.S. Cl. 430—57

73 Claims

1. A photoconductive member, having a substrate for photoconductive member and a light-receiving layer having photoconductivity with a layer constitution in which a first layer region (G) comprising an amorphous material containing germanium atoms and from 0.01 to 40 atomic percent of at least

one of hydrogen or halogen atoms and a second layer region (S) exhibiting photoconductivity comprising an amorphous material containing silicon atoms and from 1 to 40 atomic percent of at least one of hydrogen or halogen atoms are successively provided from the aforesaid substrate side, said light-receiving layer containing carbon atoms together with a substance (C) for controlling conductivity in a distribution state such that in said light-receiving layer, the maximum value $C(PN)_{max}$ of the distribution concentration of said substance (C) in the layer thickness direction exists within said second layer region (S) and, said substance (C) is in distributed in greater amount on the side of said substrate.

4,642,278

PHOTOSENSITIVE MEMBER WITH AN INSULATING LAYER OF AMORPHOUS SILICON

Yukio Tanigami, Amagasaki; Shuji Iino, Itami, and Mitsutoshi Nakamura, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,596

Claims priority, application Japan, Jul. 14, 1984, 59-146198

Int. Cl.⁴ G03G 5/14

U.S. Cl. 430—66

6 Claims

1. A photosensitive member which comprises: a conductive substrate; a photoconductive layer of amorphous silicon; and an insulating layer of amorphous silicon formed on said photoconductive layer and including at least carbon and an element in Group IIA of the Periodic table.

4,642,279

PHOTOSENSITIVE MEMBER WITH AN INSULATING LAYER OF AMORPHOUS SILICON

Yukio Tanigami, Amagasaki; Shuji Iino, Itami, and Mitsutoshi Nakamura, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1985, Ser. No. 753,588

Claims priority, application Japan, Jul. 14, 1984, 59-146199

Int. Cl.⁴ G03G 5/14

U.S. Cl. 430—66

9 Claims

1. A photosensitive member which comprises: a conductive substrate; a photoconductive layer including amorphous silicon and having a thickness of about 10 to 100 microns; and an insulating layer formed on said photoconductive layer and including amorphous silicon, carbon and an element in Group III A of the Periodic Table, said carbon being included in an amount of about 35 to 65 atomic % at the outermost surface of said insulation layer and the amount is minimum at the boundary with said photoconductive layer, and said Group III A element being included to control a majority carrier of said layer to be a polarity opposite to the polarity of charging.

4,642,280

ELECTROPHOTOGRAPHIC PHOTORECEPTORS CONTAINING HYDRAZONE COMPOUNDS AS CHARGE-TRANSFER AGENTS

Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1985, Ser. No. 738,999

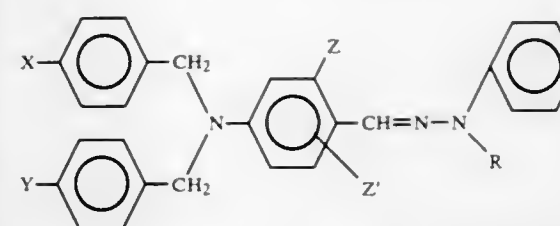
Claims priority, application Japan, May 31, 1984, 59-112568

Int. Cl.⁴ G03G 5/06

U.S. Cl. 430—73

7 Claims

1. An electrophotographic photoreceptor which includes a photosensitive layer that comprises a phthalocyanine photoconductive powder and a hydrazone compound represented by the general formula (I) in the photosensitive layer:



wherein X and Y independently represent a hydrogen atom or a lower alkyl, methoxy or ethoxy group, Z represents a lower alkyl, benzyl, hydroxyl, lower alkoxy, phenoxy or benzyloxy group, Z' represents a hydrogen atom or an alkyl or alkoxy group, and R represents a methyl, phenyl, benzyl or methoxy-phenyl group.

4,642,281

ENCAPSULATED ELECTROSTATOGRAPHIC TONER MATERIAL

Fujio Kakimi, and Takeshi Mikami, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1984, Ser. No. 592,911

Claims priority, application Japan, Mar. 23, 1983, 58-48418

Int. Cl.⁴ G03G 9/16

U.S. Cl. 430—138

2 Claims

1. An encapsulated electrostatographic toner material comprising a core and a shell enclosing the core, in which: said core comprises a polymer, a solvent having a boiling point of not lower than 180° C. selected from the group consisting of phthalic acid esters, phosphoric acid esters, diarylalkanes and alkylnaphthalenes, which is capable of dissolving the polymer or causing the polymer to swell, a colorant and a particulate magnetizable substance hydrophobically treated or coated on the surface; and said shell is prepared by an in-situ inner or outer polymerization process.

4,642,282

LIGHT-SENSITIVE POSITIVE COPYING MATERIAL WITH ALKALI SOLUBLE POLYCONDENSATION BINDER

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,446

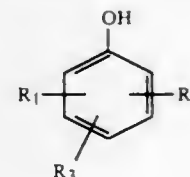
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323343

Int. Cl.⁴ G03C 1/60, 1/94; G03F 7/08

U.S. Cl. 430—165

19 Claims

1. Light-sensitive copying material comprising an aluminum support having a surface that is pretreated by being electrochemically roughened and anodically oxidized and a positive-acting, light-sensitive layer provided on said surface, which light-sensitive layer is comprised of (A) an amount of a positive-acting light-sensitive compound sufficient to impart light-sensitivity to said mixture and (B) a binder which is insoluble in water and soluble in aqueous-alkaline solutions, wherein said binder comprises a polycondensation product of (i) a phenol corresponding to the formula



wherein

R₁ is a hydrogen atom, an alkyl group or a hydroxy group, R₂ is a hydrogen atom, an alkyl group, a hydroxy group or an acetyl group, and

R₃ is a hydrogen atom or a halogen atom, an alkyl group, an alkoxy group, a carboxyl group or a carboxylic acid ester group,

and (ii) a compound corresponding to the formula



wherein

R is a hydrogen atom, a methyl group, an ethyl group or an acetyl group and

X is a phenylene group or a divalent aromatic group which comprises two phenylene groups linked by (a) a single bond, (b) an ether group, (c) a sulfide group, (d) a sulfone group, or (e) an alkylene group, and which may be unsubstituted or substituted.

4,642,283

PLATE MAKING PROCESSING FOR USING NEGATIVE WORKING LIGHT-SENSITIVE LITHOGRAPHIC PLATE REQUIRING NO DAMPENING SOLUTION

Hiroshi Takahashi; Yasuhisa Narutomi; Yoshimasa Aotani, and Keisuke Shiba, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1985, Ser. No. 711,861

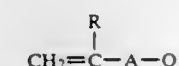
Claims priority, application Japan, Mar. 14, 1984, 59-48307

Int. Cl.⁴ G03F 7/08

U.S. Cl. 430—303

6 Claims

1. A plate making process which comprises the steps of: (i) imagewise exposing a negative working light-sensitive lithographic plate requiring no dampening solution to light so as to obtain an exposed part and a non-exposed part, wherein said plate comprises a support having in sequence thereon, (A) a light-sensitive layer containing, in admixture, (1) an o-quinonediazide compound; and (2) a coupling component which causes a diazo coupling reaction with said o-quinonediazide compound under a basic environment, wherein said coupling component is employed in an amount that the amount of coupling residue thereof is in a range of 0.05 to 10 equivalents per equivalent of the o-quinonediazide compound contained in the light-sensitive layer, wherein the o-quinonediazide is employed in an amount of from 30 to 95 wt% based on the total weight of the light-sensitive layer and wherein said coupling component comprises polymers having coupler residues in the side chains thereof, wherein said polymers are copolymers composed of (a) at least one monomer selected from acrylic acid esters, methacrylic acid esters and maleic acid esters and (b) a monomer represented by formula (I) below:



wherein R is a hydrogen atom or methyl group, A is —COO—, —O— or —CONH—, and Q is an azo coupling residue which forms an azo dye by causing a coupling reaction with an o-quinonediazide compound under a basic environment, and

(B) a silicone rubber layer, (ii) developing the resulting imagewise exposed plate with a developer so as to remove only the silicone rubber layer or both the silicone rubber layer and the light-sensitive layer of the exposed part and thus expose the surface of the light-sensitive layer, a primer layer or the support so as to obtain a lithographic plate requiring no dampening solution, and (iii) at any stage after imagewise exposure, treating said plate

with a sufficient amount of basic compound such that the o-quinonediazide compound in the non-exposed part causes a coupling reaction with the coupling component and as a result the non-exposed part does not change even if exposed to light after plate making.

4,642,284

METHOD AND SYSTEM FOR DETECTION OF COMPLEMENT PATHWAY ACTIVATION

Nell Cooper, San Diego, and James T. Mayes, La Jolla, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Jun. 13, 1983, Ser. No. 503,705

Int. Cl.⁴ G01N 53/00, 33/563

U.S. Cl. 435—7

56 Claims

1. An assay method for an activated complex of the complement system comprised of a first complement component of the complex and second complement component of the complex the assay method to be performed on a sample and comprising the steps of:

- binding a first specific binding agent to any first complement component forming part of the complex present in the sample;
- binding a second specific binding agent to any second complement component forming part of the complex, the second specific binding agent including a label, the first and second specific binding agents bound to the complex forming an aggregate; and
- determining the presence of label bound as part of the aggregate.

4,642,285

SANDWICH EIA FOR ANTIGEN

Seymour P. Haibert, Miami, and Milton Anken, N. Miami Beach, both of Fla., assignors to Diamedix Corporation, Miami, Fla.

Continuation of Ser. No. 617,743, Sep. 29, 1975, Pat. No. 4,474,878. This application May 2, 1984, Ser. No. 606,122. The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.⁴ G01N 33/53, 33/535, 33/545, 33/576

U.S. Cl. 435—7

18 Claims

1. A method for detecting an antigen in a test serum containing said antigen, comprising the steps of:

- providing a first quantity of an antibody associated with an antigen, said first quantity of said antibody being covalently bound to a water-insoluble, water insuspensible, solid carrier;
- contacting and incubating a test serum containing said antigen with said antibody covalently bound to said water-insoluble, water-insuspensible solid carrier of step (a) whereby said antigen reacts with said antibody covalently bound to said solid carrier to immobilize said antigen;
- providing a solution of a second quantity of said antibody, said second quantity of said antibody being covalently linked to an enzyme;
- contacting and incubating said immobilized antigen resulting from step (b) with said solution of enzyme-linked antibody of step (c) whereby said enzyme-linked antibody reacts with said immobilized antigen to immobilize said enzyme-linked antibody;
- separating the solid carrier from the solution of enzyme-linked antibody;
- contacting and incubating said immobilized enzyme-linked antibody with a substrate solution wherein said enzyme linked to said antibody catalyzes a reaction of said substrate and produces a detectable reaction product; and
- correlating said detectable reaction product to the presence of said antigen to be detected.

4,642,286

COMPOSITION AND METHOD FOR ETHANOL DETERMINATION

Mervin J. Moldovan, 480 Benton View Dr., Philomath, Ore. 97370

Filed May 7, 1984, Ser. No. 607,827

Int. Cl.⁴ C12Q 1/26, 1/28; C12N 9/96, 9/99

U.S. Cl. 435—25

8 Claims

1. A method for determining the level of ethanol in a fluid or air comprising exposing absorbent material to said fluid or air, the absorbent material being impregnated with a composition comprising:

- An indicator solution comprising orthotolidine, a yellow dye, ethanol and tris(hydroxymethyl)-aminomethane/sodium phosphate buffer solution and
- An enzyme solution comprising dextran, sodium chloride, peroxidase, alcohol oxidase, semicarbazide hydrochloride and a tris(hydroxymethyl)-aminomethane/sodium phosphate buffer solution said dextran and sodium chloride being present in amounts sufficient to stabilize the alcohol oxidase and the semicarbazide hydrochloride being present in an amount sufficient to inhibit said alcohol oxidase.

4,642,287

PROCESS FOR PRETREATING BIOMASSES IN ADVANCE OF THEIR ENZYMATIC TREATMENT

Takeshi Inoi, Yokohamashi; Toshikaki Akabane, Tokyo; Yasuhiro Kurokawa, and Shingo Matsuoka, both of Yokohamashi, all of Japan, assignors to Shonanryoyu Kaihat-sugijutsu Kenkyukumiai, Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 596,937

Claims priority, application Japan, Apr. 14, 1983, 58/65896; Apr. 14, 1983, 58/65897

Int. Cl.⁴ C12P 19/14, 19/02; B01J 3/00; C13K 1/02

U.S. Cl. 435—99

12 Claims

1. In the process of pretreating a biomass in advance of cellulose enzymatic treatment that includes contacting the biomass in finely divided form with an aqueous solution of an alkaline compound, the improvement comprising reducing the pretreatment time to one minute or less by introducing the biomass and the alkaline compound into a biaxial extruder and carrying out the pretreatment in said biaxial extruder.

4,642,288

PROCESS FOR PRODUCING THERMOSTABLE ALPHA-AMYLASES BY CULTURING MICRO-ORGANISMS AT ELEVATED TEMPERATURES

Maria-Fe Elia De Miguel, La Moraleja; Pedro Miró Roig, and Eulalia Pares Olivet, both of Madrid, all of Spain, assignors to Compania Espanola de Petroleos, S.A., Spain

Filed Jul. 16, 1984, Ser. No. 630,958

Claims priority, application Spain, Oct. 11, 1983, 526,406

Int. Cl.⁴ C12P 19/14; C12N 9/28; C12R 1/07

U.S. Cl. 435—99

8 Claims

1. A process for producing thermostable α -amylases by culturing micro-organisms at elevated temperatures comprising the aerobic submerged culturing of a strain selected from the micro-organisms *Bacillus* sp. NCIB 11887 or NCIB 11886, or any of the mutants thereof, in a suitable culture medium and recovering the thusly produced enzyme from the culture broth.

4,642,289

PROCESS FOR CELL DISRUPTION

Peter R. Betteridge, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 21, 1984, Ser. No. 642,915

Claims priority, application United Kingdom, Aug. 26, 1983, 8323058

Int. Cl.⁴ C12P 19/04; C12N 1/06, 1/20

U.S. Cl. 435—101

5 Claims

1. A process for disrupting cells of polysaccharide-produc-

ing microorganism *Pseudomonas* sp. NCIB 11592 which contain one or more RP4 or RP4::Mu₂ plasmids with an anionic surfactant which comprises contacting said cells with a surfactant for a time and under conditions sufficient to lyse said cells and recovering a substantially cell-free polysaccharide from said cell lysate.

4,642,292

METHOD FOR ISOLATION OF CONNECTIVE TISSUE BIOMATRIX

Lola C. M. Reid, Rye, N.Y., and Marcos Rojkind, Ciudad Satelite, Mexico, assignors to Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 307,311, Sep. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 89,167, Oct. 29, 1979, Pat. No. 4,352,887. This application Jun. 6, 1983, Ser. No. 499,675

Int. Cl.⁴ C12N 5/00

U.S. Cl. 435—240

12 Claims

1. A method for the preparation, isolation and use of connective tissue-derived fibers as a substrate in a cell culture of viable and functional differentiated cells comprising the steps of:

- dispersing tissue to form a suspension of connective tissue-derived fibrous solids;
- separating the connective tissue-derived fibrous solids out of the suspension of step a and adding said solids to a delipidation solution;
- separating the connective tissue-derived fibrous solids out of the solution of step b and adding said solids to a saline solution containing DNase and Ribonuclease;
- separating the connective tissue-derived fibrous solids out of the solution of step c;
- rinsing said connective tissue-derived fibrous solids, first with a saline solution and then with the solution to be used in the cell culture; and
- utilizing the connective tissue-derived fibrous solids of step e as a substrate in a cell culture of viable and functional differentiated cells.

4,642,293

NOVEL HYBRIDOMA CELL LINE PRODUCING MONOCLONAL ANTIBODIES AGAINST LAMININ AND A PROCESS FOR THE PRODUCTION THEREOF

Albert E. Chung, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Mar. 24, 1983, Ser. No. 478,293

Int. Cl.⁴ C12N 5/00; C07K 15/04

U.S. Cl. 435—240

3 Claims

1. The composition assigned ATCC Accession Number HB 8210 comprising a hybrid continuous cell line that produces a monoclonal antibody of the IgG type to the glycoprotein GP-2, a subunit of the basement membrane component laminin, said cell line comprising a spleen cell from a Lewis rat, immunized with a M-1536-B3 basement membrane component that contains the GP-2 antigen, fused with a mouse SP2/O-Ag14 myeloma cell.

4,642,294

PROCESS FOR EVALUATING THE STATE OF THE SURFACE OF KERATINOUS FIBRES AND A COMPOSITION FOR MAKING USE OF THIS PROCESS

Jean-Claude Arnaud, Paris, and Pierre Boré, Montfermeil, both of France, assignors to L'Oréal, Paris, France

Filed Jan. 10, 1986, Ser. No. 817,604

Claims priority, application France, Jan. 16, 1985, 85 00566

Int. Cl.⁴ G01N 31/00

U.S. Cl. 436—5

24 Claims

1. A process for evaluating the state of the surface of keratinous fibres, comprising the steps of:

- selecting a compound having an overall spatial size equal to the maximum dimension of the interstices present at the surface of the keratinous fibres, said compound being capable of dissolving in an aqueous medium, to form a colored solution or a solution capable of being colored by a development, said compound also being stable under the conditions of application of the process, and capable of being maintained at a pH such that no ionic charge appears;

4,642,290

PROCESS FOR PREPARING A COMPOUND FOR USE IN THE PRODUCTION OF L-CARNITINE

Charles J. Sih, 6322 Landfall Dr., Madison, Wis. 53705

Filed Dec. 6, 1982, Ser. No. 447,171

Int. Cl.⁴ C12P 13/00, 13/02, 7/52, 7/62

U.S. Cl. 435—128

16 Claims

1. A method for preparing optically active R-4-substituted -3-hydroxybutyric acid derivatives from a substrate consisting of corresponding 4-substituted acetoacetic acid esters or amides, wherein the ester or amide group comprises at least five carbon atoms, which comprises subjecting said 4-substituted acetoacetic acid esters or amides to the fermentative enzymatic action of a microorganism which elaborates oxido-reductase enzymes to cause the substrate to be converted to the desired R-4-substituted-3-hydroxybutyric acid derivative; and recovering the desired optically active R-4-substituted-3-hydroxybutyric acid derivatives.

4,642,291

CELL SURFACE ANTIGENS OF HUMAN ASTROCYTOMA

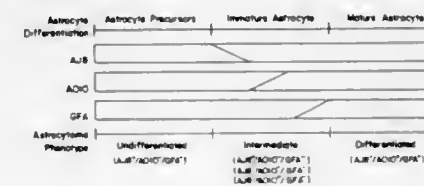
J. Gregory Cairncross, London, Canada; M. Jules Mattes, Jamaica Estates, N.Y.; H. Richard Beresford, Centre Island, N.Y.; Anthony P. Albino; Alan N. Houghton, both of New York, N.Y.; Kenneth O. Lloyd, Bronx, N.Y., and Lloyd J. Old, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,861

Int. Cl.⁴ C12N 5/00, 15/00; C12P 21/00; C12R 1/91

U.S. Cl. 435—240

8 Claims



1. Two or more monoclonal antibodies capable of restricted and non-restricted binding to two or more human astrocytoma cell antigens and capable of subsetting malignant human astrocytoma cells into successive differentiation states wherein said restricted monoclonal antibody is selected from the group consisting of AJ8, AJ225, A010, A050, A092 and A0122 and said non-restricted monoclonal antibody is selected from the group consisting of AJ2, AJ9, AJ10, AJ17, AJ60 and AJ425, and wherein said monoclonal antibody is capable of subsetting human astrocytomas into antibody binding classes selected from the group consisting of: AJ8 positive/A010 negative/GFA negative, AJ8 negative/A010 positive/GFA positive and AJ8 negative/A010 positive/GFA negative.

- (b) preparing an aqueous immersion solution containing said compound;
- (c) immersing a specimen of the keratinous fibres whose surface state is to be evaluated in said immersion solution to permit said fibres to "take up" an amount of said compound which amount is a function of the state of the surface of the latter;
- (d) withdrawing said specimen from said immersion solution and removing the excess of said immersion solution saturating the fibres by quick washing or dewatering;
- (e) extracting said compound from the said specimen by immersing said specimen in at least one aqueous bath whose pH is substantially identical to that of said immersion solution, to produce an extract solution which is correspondingly colored or capable of being colored by a development;
- (f) where necessary, developing the color of the extraction solution; and
- (g) deducing the state of the surface of said fibres from the quantity of said compound present in said extract solution.

4,642,295

METHODS OF DETERMINING FRUCTOSAMINE LEVELS IN BLOOD SAMPLES

John R. Baker, 25 Dell Avenue, Remuera, Auckland, New Zealand

Filed Dec. 15, 1982, Ser. No. 450,149

Claims priority, application New Zealand, Dec. 23, 1981, 199380

Int. Cl.⁴ G01N 33/66, 33/68

U.S. Cl. 436—87

17 Claims

1. A method of determining the level of fructosamine in a blood sample or sample derived from blood wherein the level of fructosamine reflects an average serum glucose level in the sample over a period of time, said method comprising the steps of maintaining the sample at a controlled temperature below 5° C., controlling the pH of the sample to a value between 10 and 11, adding a colouring agent to the sample and after a first delay in time taking a first colour measurement at a predetermined wavelength and after a second delay in time taking a second colour measurement at the predetermined wavelength and determining the fructosamine level in said sample by comparing any resultant change between said first and second colour measurements with those of standard solutions wherein the colouring agent, timing of the delays wavelength and pH conditions selected such that any change of colour in the colouring agent between said first and second colour measurements is caused predominantly by glucose in the sample that is reacted or associated with an amine group of protein and has undergone a molecular re-arrangement to form fructosamine and not materially by any non-specific reducing substances which may be present in the sample.

4,642,296

METHOD OF MEASURING THE MAGNITUDE OF AN ENVIRONMENTAL PARAMETER, ESPECIALLY THE CONCENTRATION OF AN EXPLOSION-GENERATING GAS IN A SUBTERRANEAN ATMOSPHERE

Hans J. Hubner, Katthagen 24, 4400 Münster, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,329

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3327154

Int. Cl.⁴ G01N 33/00

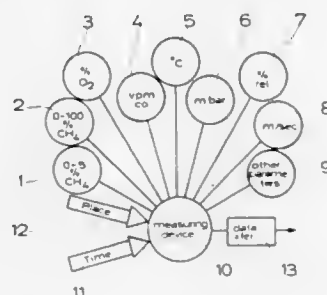
U.S. Cl. 436—138

3 Claims

1. A method of determining the concentration of methane in a mine-ventilation current or other closed-system atmosphere, the atmosphere comprising, apart from methane and some elements in negligible concentrations, only nitrogen and oxygen, a correlation between the concentration of methane added to said atmosphere and the concentration of oxygen in said atmosphere being known from a law equating oxygen concen-

tration with addition of methane to atmospheric air, which comprises the steps of:

- at concentrations of methane of up to a threshold value of about 5% of methane measuring the concentration of methane in said atmosphere directly; and
- at concentrations of methane above said threshold value, discontinuing the direct measurement of the concentration of methane,



measuring the concentration of oxygen in said atmosphere, mathematically determining from said correlation the concentration of methane as correlated to the measured concentration of oxygen, and

using the mathematically determined value of the concentration of methane instead of the directly measured value.

4,642,297

OPTICAL GLASS WITH REFRACTIVE INDEXES OF 1.60-1.69 AND ABBE NUMBERS OF AT LEAST 54 WITH PARTICULARLY LOW DENSITY AND PARTICULARLY GOOD CHEMICAL STABILITY

Karl Mennemann, Taunusstein, and Danuta Grabowski geb. Marszalek, Wiesbaden, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,506

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201943

Int. Cl.⁴ C03C 3/08, 3/30

U.S. Cl. 501—78

2 Claims

1. An optical quality crown glass having a refractive index of about 1.6410, an Abbe number of about 60.10, an acid resistance of class SR 53 and a density of about 2.97 g/cm³ and consisting essentially of the following composition, in percent by weight:

SiO ₂	8.60 percent
B ₂ O ₃	49.25 percent
SiO ₂ + B ₂ O ₃	57.85 percent
CaO	27.80 percent
La ₂ O ₃	13.10 percent
ZrO ₂	1.25 percent

4,642,298

COMPOSITE NITRIDE SINTERED BODY

Nobuyuki Kuramoto, Sagami-hara; Kazuya Takada, Tokyo, and Yoshihiko Numata, Fujisawa, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Mar. 13, 1985, Ser. No. 711,215

Claims priority, application Japan, Mar. 15, 1984, 59-48092

Int. Cl.⁴ C04B 35/58

U.S. Cl. 501—96

11 Claims

1. A composite nitride sintered body having good machinability and consisting essentially of aluminum nitride, hexagonal boron nitride and at least one metal compound selected from the group consisting of compounds of metals of calcium, strontium, barium, yttrium and lanthanides, said composite

nitride sintered body having a density at least 90% of its theoretical density, the amount of aluminum nitride being 60 to 95% by weight, and the amount of boron nitride being 40 to 5% by weight, both based on the total weight of aluminum nitride and boron nitride, and the amount of at least one of said metal compounds as the oxide of the metal of the highest atomic valence being 0.01 to 5% by weight based on the weight of the composite nitride sintered body.

4,642,299

SILICON NITRIDE HAVING LOW DIELECTRIC LOSS

Martin Y. Hsieh, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 721,118, Apr. 8, 1985. This application Jun. 27, 1985, Ser. No. 749,329

Int. Cl.⁴ C04B 35/58; H01Q 1/42

U.S. Cl. 501—97

2 Claims

1. A sintered silicon nitride based ceramic dielectric of at least about 99% theoretical density suitable for use in high temperature radome applications and which consists of a sintering aid, a low dielectric loss promoter and the balance silicon nitride, containing from about 4% by weight to about 16% by weight of a sintering aid used to achieve said theoretical density, said sintering aid being selected from the group consisting of lanthanum oxide, yttrium oxide, aluminum oxide, lanthanum aluminate, yttrium aluminate and mixtures thereof, said ceramic improved by the presence therein of a low dielectric loss promoter at a level of from about 0.1% to about 2% by weight, said low dielectric loss promoter being selected from the group consisting of an oxide of nickel, cobalt, titanium, zirconium, vanadium, tin and mixtures and compounds thereof, said low dielectric loss promoter being effective to provide a low dielectric constant and a low loss tangent that remains essentially unchanged through the temperature range of from about 25° C. to about 1100° C., the dielectric constant being below about 8.0 of about 9.375 gigahertz throughout said temperature range, the loss tangent being less than about 0.003 throughout said temperature range.

4,642,300

METHOD FOR AVOIDING OR REDUCING THE INTERACTIONS AND THEIR CONSEQUENCES FROM CONTACT OF HOT LIQUID METALLIC SODIUM WITH CONCRETE

Georg Schultheiss, Luneburg-Odeme; Charles von Minden, Hamburg, and Hans W. Fritzke, Geesthacht, all of Fed. Rep. of Germany, assignors to GKSS Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Continuation of Ser. No. 435,336, Oct. 19, 1982, abandoned.

This application Jul. 2, 1984, Ser. No. 626,477

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141726

Int. Cl.⁴ C04B 35/02, 35/04, 35/10, 35/48

U.S. Cl. 501—124

13 Claims

1. In a method employing liquid metallic sodium as a cooling medium and having concrete structure wherein the liquid sodium, as hot liquid, metallic sodium can come in contact with, and interact with the concrete of the concrete structure, the improvement comprising providing a protective layer in contact with the concrete structure, at least for the region of the concrete structure near the surfaces that may come in contact with the hot, liquid, sodium to avoid or reduce the interactions and their consequences from contact of the hot, liquid, metallic sodium with the concrete of the concrete structure, said protective layer being a protective concrete layer made of a concrete which consists essentially of only small quantities of silicon oxide and iron oxides, and in which aluminum oxide, magnesium oxide, zirconium oxide, or a mixture thereof is present in a proportion of 70% to 96.5% by weight, and wherein the concrete is made from a hydraulically hardened alumina cement and refractory concrete aggregate, said protective layer being suitable for use in the secondary regions of sodium cooled reactors in which there may be no liner

system and being suitable for augmenting the reliability of liner systems in the primary region of sodium cooled reactors.

7. In an apparatus containing a sodium cooling medium and a concrete structure, wherein the sodium cooling medium, as hot, liquid, metallic sodium, can contact and interact with the concrete of the concrete structure, the improvement comprising means for avoiding or reducing the interactions and their consequences from contact of the hot, liquid, metallic sodium with the concrete structure, the means comprising a protective layer in contact with the surface of the concrete structure, said protective layer being a protective concrete layer of a concrete consisting essentially of only small quantities of silicon oxide and iron oxides, and in which aluminum oxide, magnesium oxide, zirconium oxide, or a mixture thereof is present in a proportion of 70% to 96.5% by weight, and wherein the concrete is made from a hydraulically hardened alumina cement and refractory concrete aggregate, said protective layer being suitable for use in the secondary regions of sodium cooled reactors in which there may be no liner system and being suitable for augmenting the reliability of liner systems in the primary region of sodium cooled reactors.

4,642,301

HALIDED ALUMINA CATALYST

David L. Sikkenga, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Oct. 30, 1985, Ser. No. 792,902

Int. Cl.⁴ B01J 21/04

U.S. Cl. 502—231

7 Claims

1. A process for the manufacture of a high-activity chlorided alumina catalyst suitable for olefin polymerization comprising: calcining a catalyst base consisting essentially of gamma alumina at a temperature within the range from about 1300° F. to about 1800° F. for from about 6 to about 16 hours, followed by contacting the calcined catalyst base with a chloriding agent.

4,642,302

CATALYSTS HAVING ALKOXIDE-MODIFIED SUPPORTS AND METHOD OF INCREASING THE CATALYTIC ACTIVITY OF A CATALYTIC METAL

Clayton D. Wood, Framingham; Philip E. Garrou, Holliston; Iwao Kohatsu, Lexington, all of Mass., and Edward F. Gleason, Berkeley, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 655,991, Sep. 28, 1984, Pat. No. 4,559,364, which is a division of Ser. No. 567,112, Dec. 30, 1983, abandoned. This application Dec. 16, 1985, Ser. No. 809,543

Int. Cl.⁴ B01J 21/04, 21/06, 21/08, 23/64

U.S. Cl. 502—332

16 Claims

1. A catalyst composition comprising a catalytic metal and an alkoide-modified support, which support comprises a core support material having (a) a surface area of from about 20 to 200 m²/gram; and having (b) on the outer surface thereof a metal oxide produced from a precursor metal alkoide.

4,642,303

CATALYST COMPOSITION

Terry L. Renken, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 27, 1985, Ser. No. 813,884

Int. Cl.⁴ B01J 23/72, 23/86

U.S. Cl. 502—315

3 Claims

1. A catalyst composition consisting essentially of nickel, copper, chromia and iron, said composition containing nickel and copper in the weight ratio of about 2 to 3 parts of nickel per part of copper and also containing, based on the total weight of the composition, from about 1 to about 20 wt. % of iron and from about 1 to about 6 wt. % of chromia.

4,642,304

ACTIVATED CARBON AND PROCESS FOR ITS PRODUCTION

Alfons Karl, Gründau; Erwin Walter, Gelnhausen; Peter Kleinschmit, Hanau; Hermann Gottschlich, Brilon; Roland Kutz, Bielefeld, and Detley Koth, Mömbris, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 732,407, May 9, 1985, Pat. No. 4,603,119.

This application Mar. 28, 1986, Ser. No. 845,246

Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418150

Int. Cl.⁴ B01J 20/20; C01B 31/12

U.S. Cl. 502—427

9 Claims

1. Activated carbon produced from particulate lignite coke and having the following properties:

- (1) the product of the molasses number times the iodine number divided by 1000 is 350 to 1000,
- (2) the product of the molasses number times the methylene blue titer divided by 10 is 500 to 1200, or
- (3) the product of the molasses number times the iodine number divided by 1000 is 350 to 1000 and the product of molasses number times the methylene blue titer divided by 10 is 500 to 1200.

5. A product according to claim 1 wherein the lignite coke employed has a particle size of 0.5–4.0 mm.

6. An activated carbon having the properties of claim 1 prepared by a process comprising activating lignite coke with steam in a rotary tube and spraying into the rotary tube during the activation phase aqueous alkali carbonate solution, aqueous alkaline earth carbonate solution, aqueous alkali hydroxide solution, aqueous alkaline earth hydroxide or mixture thereof.

4,642,305

EYE DROPS COMPOSITION

Elof Johansson, and Lena Öhman, both of Upsala, Sweden, assignors to Pharmacia AB, Upsala, Sweden

PCT No. PCT/SE84/00354, § 371 Date May 14, 1985, § 102(e) Date May 14, 1985, PCT Pub. No. WO85/01875, PCT Pub. Date May 9, 1985

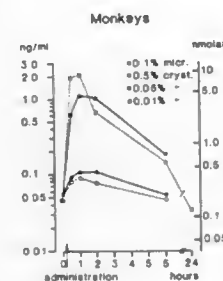
PCT Filed Oct. 24, 1984, Ser. No. 734,268

Claims priority, application Sweden, Oct. 25, 1983, 8305864

Int. Cl.⁴ A61K 31/56

U.S. Cl. 514—182

9 Claims



1. An eye drop composition for the treatment of chronic conjunctivitis simplex comprising estradiol-17beta in a concentration of from 0.001 to 0.01% by weight, dissolved in a solution of cyclodextrin or cyclodextrin derivative.

4,642,306

CYCLIC DITHIODIACETAMIDES AND COMPOSITIONS CONTAINING THEM

Jean Rosa; Jean-Paul Castaigne, both of Paris; Henri Demarne, Montpellier, and Pierre Tozzolino, Morlaas, all of France, assignors to Sanofi and Institut National de la Sante et de la Recherche Medicale, both of Paris, France

Filed May 17, 1984, Ser. No. 611,516

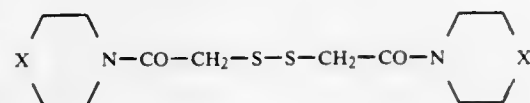
Claims priority, application France, May 17, 1983, 83 08155

Int. Cl.⁴ A61K 31/535, 31/54; C07D 265/30, 279/12

U.S. Cl. 514—222

7 Claims

1. Cyclic dithiodiacetamide of formula:



in which X represents a direct bond, an atom of oxygen or of sulfur, a methylene group, an ethylene group or an N—R group, where R is an atom of hydrogen or a lower alkyl group, lower (hydroxy)alkyl group, lower alkanoyl group or a phenyl group, and the pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition for inhibition of malformation or the destruction of the red blood corpuscles due to a genetic modification of haemoglobin or to parasites, which comprises, as active ingredient, an effective amount for inhibition of malformation of the destruction of the red blood corpuscles due to genetic modification of haemoglobin or to parasites of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,642,307

1-PHENOXY-3-(4-PHENYLPYRIDINO)-2-PROPAND HAVING BOTH ALPHA- AND BETA-ADRENERGIC ACTION

Yoshiaki Aoyagi; Takashi Okubo; Toshio Tomita; Hiroshi Nishida, and Hiroshi Enomoto, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

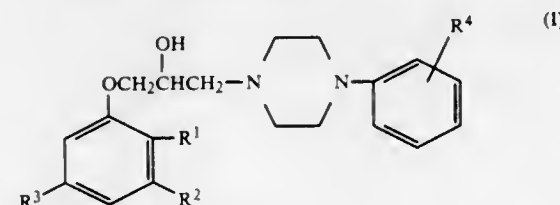
Filed Mar. 18, 1983, Ser. No. 476,857

Int. Cl.⁴ A61K 31/495; C07D 401/00

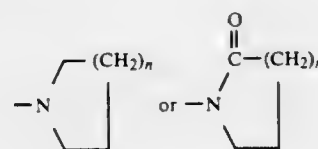
U.S. Cl. 514—252

15 Claims

1. A compound of the formula (I):



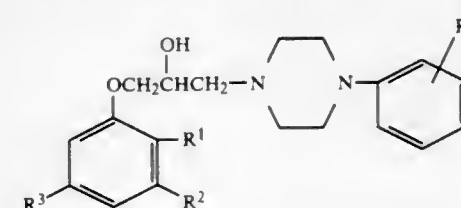
or a pharmaceutically acceptable salt thereof wherein R¹ is hydrogen, halo or lower alkyl; R² is



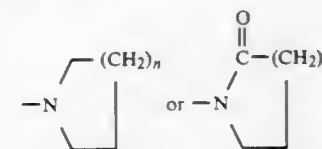
where n is 1, 2 or 3; R³ is hydrogen, lower alkyl or lower alkoxy; and R⁴ is hydrogen, lower alkyl unsubstituted or alpha-substituted by lower alkoxy, lower alkoxy, halo or lower alkanoyl.

11. A method of effecting both alpha-adrenergic blocking action and beta-adrenergic blocking action and treating hypertension in humans and animals which comprises administering

to a human or animal in need thereof a therapeutically effective amount of a compound of the formula (I):



or a pharmaceutically acceptable salt thereof wherein R¹ is hydrogen, halo or lower alkyl; R² is



where n is 1, 2 or 3; R³ is hydrogen, lower alkyl or lower alkoxy; and R⁴ is hydrogen, lower alkyl unsubstituted or alpha-substituted by lower alkoxy, lower alkoxy, halo or lower alkanoyl, in combination with a pharmaceutically acceptable carrier.

4,642,309

INDOLIN-2-ONE DERIVATIVES PREPARATION THEREOF AND INTERMEDIATES FOR THE PREPARATION THEREOF

Helmut Michel, Mannheim; Klaus Marzenell, Ladenburg; Wolfgang Kampe, Heddeshheim; Wolfgang Bartsch, Viernheim, and Wolfgang Schaumann, Heidelberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 592,616, Mar. 23, 1984, abandoned.

This application Sep. 26, 1985, Ser. No. 780,704

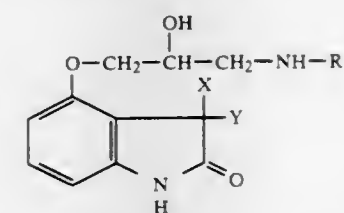
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310891

Int. Cl.⁴ C07D 209/34; A61K 31/40

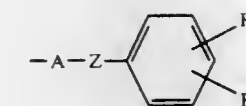
U.S. Cl. 514—269

21 Claims

1. An indolin-2-one compound of the formula I as follows:



wherein R₁ is a C₁–C₆ alkyl, or a group of the formula



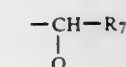
wherein A is a straight-chained or branched C₂–C₄ alkylene and z is oxygen,

R₂ is hydrogen, hydroxyl, C₁–C₆ alkoxy or C₂–C₄ alkenyloxy,

R₃ is hydrogen

X is hydrogen

Y is hydrogen, or a group of the general formula



wherein Q is hydrogen or Q and X together represent a bond, and R₇ is imidazole, triazole, pyrrole, pyrazole, pyridine, thiophene, indole, indazole, or uracil or R₇ is phenyl which is optionally substituted one or two times by hydroxyl, carboxyl, C₁–C₆ alkoxy, C₁–C₆ alkylthio, C₁–C₆ alkylsulphonyl, C₁–C₆ alkylsulphonylamido, methylenedioxy, nitro, or amino,

with the proviso that R₁ cannot be a C₁–C₆ alkyl radical when X and Y are both hydrogen atoms; or the pharmacologically acceptable salts thereof.

4,642,310

CIRCULATION-ACTIVE TETRAHYDROTHIENOPYRIDINES

Siegfried Goldmann, Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1985, Ser. No. 716,876

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1984, 3412947

Int. Cl.⁴ A61K 31/38; C07D 513/04, 417/02

U.S. Cl. 514—301

12 Claims

1. A tetrahydrothienopyridine of the formula

10. Method of treating a subject in whom an anxiolytic, hypnotic, anti-convulsant, anti-epileptic or muscle-relaxant effect is desired, which comprises administering to such subject an effective amount of a compound according to claim 1.

4,642,311

 **β -ADRENERGIC BLOCKING IMIDAZOLYLPHENOXY
PROPANOLAMINES**

John J. Baldwin, Gwynedd Valley, and Gerald S. Ponticello, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

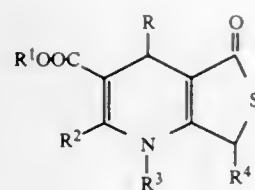
Continuation-in-part of Ser. No. 503,923, Jun. 13, 1983, Pat. No. 4,567,276, which is a division of Ser. No. 255,202, Apr. 20, 1981, Pat. No. 4,440,774, which is a continuation-in-part of Ser. No. 184,501, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 801,120, May 27, 1977, abandoned, which is a continuation of Ser. No. 641,420, Dec. 17, 1985, Pat. No. 4,134,983, which is a continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application May 7, 1984, Ser. No. 607,909. The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.⁴ A61K 31/44, 31/445; C07D 401/12, 401/14

U.S. Cl. 514—316

13 Claims

1. A compound of the formula:



in which

R represents a phenyl, naphthyl, thienyl, thionaphthyl, isothionaphthyl, thiochromonyl or thiochromenyl radical, it being possible for the radicals mentioned optionally to contain 1 to 3 identical or different substituents from the group comprising alkyl (1 to 20 carbon atoms), alkenyl (1 to 20 carbon atoms), alkynyl (1 to 20 carbon atoms), alkoxy (1 to 20 carbon atoms), fluorine, chlorine, bromine, iodine, trifluoromethyl, monofluoroalkoxy (1 to 10 C atoms), polyfluoroalkoxy (1 to 10 C atoms), hydroxyl, amino, monoalkylamino (1 to 10 C atoms), dialkylamino (1 to 10 C atoms), nitro, cyano, azido, carboxyl, carbalkoxy, carbamido, sulphonamido, SO_m-alkyl (m=0 to 2, 1 to 20 C atoms), phenyl-, benzyl-, benzyloxy and benzythio, it being possible for the last four substituents mentioned optionally to contain 1 to 3 radicals from the group comprising alkyl (1 to 5 C atoms), alkoxy (1 to 5 C atoms), alkylthio (1 to 5 C atoms), fluorine, chlorine, bromine, iodine, cyano, nitro, azido, hydroxyl, trifluoromethyl, amino, alkylamino (1 to 6 C atoms) or dialkylamino (in each case 1 to 6 C atoms),

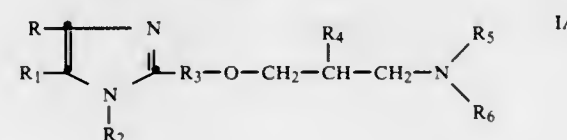
R¹ represents a straight-chain, branched or cyclic saturated or unsaturated hydrocarbon radical (1 to 20 C atoms), which can optionally be interrupted in the chain by 1 or 2 oxygen or sulphur atoms and which can optionally be substituted by one or more fluorine atoms, NO₂, trialkylsilyl (3 to 12 C atoms), —OH, —Cl, Br, I, —CN, amino, alkylamino (1 to 10 C atoms), dialkylamino (in each case 1 to 10 C atoms), benzylalkylamino (alkyl radical with 1 to 8 C atoms), phenyl, naphthyl or pyridyl, R² represents hydrogen, —NH₂, —CHO, —CN, —CH₂OH or a straight-chain or branched, saturated or unsaturated hydrocarbon radical (up to 8 C atoms),

R³ represents hydrogen or a straight-chain or branched alkyl radical (1 to 10 C atoms) which is optionally interrupted in the alkyl chain by one or two oxygen atoms and can optionally be substituted by fluorine, chlorine, bromine, iodine, —CN, —NH₂, —OH or morpholino, and

R⁴ represents hydrogen or a straight-chain or branched alkyl radical (1 to 10 C atoms),

or a pharmaceutically acceptable salt thereof.

10. A method of combating hypotension, diabetes or a salt imbalance in a patient in need thereof which comprises administering an amount effective thereof of a tetrahydrothienopyridine or salt according to claim 1.



wherein:

R and R₁ are independently

(a) hydrogen;

(b) C₁–C₁₀ linear or branched alkyl;

(c) substituted C₁–C₁₀ linear or branched alkyl having 1–3 substituents selected from the group consisting of halo (F, Br, Cl), hydroxy, C₁–C₄ alkoxy, piperidino, di(lower C₁–C₄alkyl)amino;

(d) heteroaryl group having 5–6 ring atoms one of which is a hetero atom selected from O, N and S, provided that one of R or R₁ is hydrogen;

(e) unsubstituted or substituted aryl of C₆ or C₁₀ and the substituents are 1–2 halo or C₁–C₆ alkoxy groups;

(f) pentafluorophenyl;

(g) C₃–C₁₀cycloalkyl;

(h) halo;

(i) cyano;

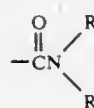
(j) C₁–C₆alkanoylamino;

(k) carboxy and carboxy derivatives;

(l)

wherein R_d is hydrogen or C₁–C₆ alkyl;

(m)



wherein R_d and R_e are independently hydrogen, C₁–C₈ linear or branched alkyl, C₆ or C₁₀ unsubstituted or substituted aryl having 1–2 substituents selected from C₁–C₄ alkyl, halo, alkoxy or hydroxy, or R_d and R_e, together with the N atom, can be joined to form a piperidino ring;

R₂ is

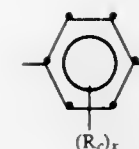
(a) hydrogen;

(b) C₁–C₁₀ linear or branched alkyl;(c) C₃–C₆ alkenyl;(d) hydroxy-C₁–C₁₀ linear or branched alkyl;R₃ is

(a) naphthyl;

(b) tetrahydronaphthyl;

(c) indanyl;
(d)



wherein

R_c is hydrogen; halo; C₁–C₄ linear or branched alkyl;C₁–C₄ alkoxy; hydroxy; cyano; phenyl;

x is 0–4;

R₄ is

(a) hydroxy;

(b)

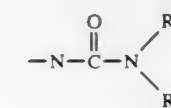
wherein R_b is C₁–C₆ linear or branched alkyl;R₅ and R₆ are independently

(a) hydrogen;

(c) substituted C₁–C₆ linear or branched alkyl and the substituent is hydroxy or C₁–C₈ alkoxy;

(d) monosubstituted C₁–C₆ linear or branched alkyl and the substituent is pyridyl, C₁–C₄alkylthio, C₁–C₄alkylsulfoxide, C₁–C₄alkylsulfone provided that one of R₅ or R₆ is hydrogen;

(e) alkylureido alkyl of C₂–C₈ wherein the ureido has the formula:



wherein:

R_f and R_g can be independently be hydrogen;

C₁–C₈alkyl optionally substituted with hydroxy or C₁–C₈alkoxy;

unsubstituted or substituted aryl of C₆ or C₁₀ having 1–2 substituents selected from halo, C₁–C₄ alkoxy, or C₁–C₄ alkyl;

unsubstituted or substituted aralkyl wherein the alkyl is C₁–C₈ linear or branched and the aryl is C₆ having 1–2 substituents selected from C₁–C₈ alkoxy, hydroxy, halo, or C₁–C₈ alkyl; or

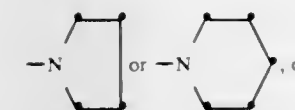
R_f and R_g together with the N atom can be joined to form a piperidino ring;

(f) unsubstituted or substituted aryl of C₆ or C₁₀ wherein the substituents are 1–2 C₁–C₄alkyl groups;

(h)



wherein Rh is C₁–C₄alkyl and n is 0, 1, or 2; or R₅ and R₆ when joined together with the N atom form



a pharmaceutically acceptable acid addition salt or a quaternary ammonium salt thereof provided that there is at least one substituent which is or has a heterocyclic group with one hetero atom and further provided that none of the substituents is or has a heterocyclic group with more than one hetero atom.

9. A method for treating hypertension, arrhythmia, and angina, or effecting β -adrenergic blockade, or providing cardioprotection comprising administering to a patient in need of such treatment a pharmaceutically effective amount of a compound of claim 1.

4,642,312

N-(3-CHLORO-1,2,4-OXADIAZOL-5-YL)-UREAS

Ulrich Heinemann, Leichlingen; Hans-Joachim Knops, Monheim; Karl Steinbeck, Burscheid; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,452

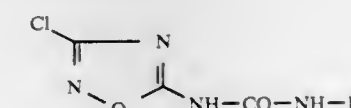
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1984, 3445205

Int. Cl.⁴ A01N 47/38; C07D 271/06

U.S. Cl. 514—364

11 Claims

1. An N-(3-chloro-1,2,4-oxadiazol-5-yl)-urea of the formula



in which R is alkyl or halogenoalkyl each of which has 1 to 12 carbon atoms and, where relevant, 1 to 15 halogen atoms, or is cycloalkyl or cycloalkylalkyl each of which has 3 to 7 carbon atoms in the cycloalkyl part and, where relevant, 1 to 6 carbon atoms in the alkyl part and each of which is optionally substituted in the cycloalkyl part by halogen and/or alkyl having 1 to 4 carbon atoms, or is aryl which has 6 to 10 carbon atoms and is optionally substituted by halogen, cyano, nitro, alkyl, alkoxy, halogenoalkyl with up to 9 halogen atoms, alkoxyalkyl, alkoxyalkyloxycarbonyl and/or alkoxy-carbonyl, the various alkyl and alkoxy moieties having up to 8 carbon atoms.

4,642,313

**FURYLOXAZOLYLACETIC ACID DERIVATIVES AND
PROCESSES FOR PREPARING SAME**

Kazuo Matsumoto, Ibaraki, and Kohki Takashima, Tokyo, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,544

Claims priority, application Japan, Feb. 26, 1982, 57-30921

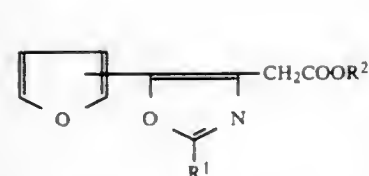
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.⁴ C07D 263/30; A61K 31/42

U.S. Cl. 514—374

17 Claims

1. A compound of the formula:



wherein R¹ is 4-chlorophenyl or 3,4-dichlorophenyl, and R² is hydrogen or ethyl, or a pharmaceutically acceptable salt thereof.

4,642,314 ANTIULCER COMPOUNDS

Yoshiyuki Tahara, Oi; Michiko Nagai, Wako; Katsura Kogure, Kawagoe; Shigeo Kawase, Tsurugashima, and Terahito Yamaguchi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Japan
Division of Ser. No. 121,284, Feb. 13, 1980, Pat. No. 4,483,871, which is a division of Ser. No. 889,568, Mar. 23, 1978, Pat. No. 4,221,810. This application Nov. 14, 1984, Ser. No. 671,237
Int. Cl.⁴ A61K 31/335, 31/22

U.S. Cl. 514-475 4 Claims

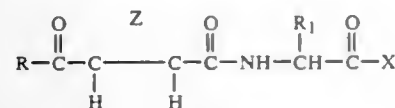
1. An antiulcer composition which comprises as active ingredient, an antiulcer effective amount of a compound selected from the group consisting of phetyl geranylacetate, phetyl citronellylacetate, phetyl elaidate, phetyl petroselinate, phetyl ricinoleate, phetyl 9,10-epoxystearate, phetyl phytolacetate, phetyl erucate, phetyl brassidate, and phetyl decaprenylacetate in a pharmaceutically acceptable carrier.

4,642,315 CARBOXY AND SUBSTITUTED CARBOXY ALKANOYL AND CYCLOALKANOYL PEPTIDES

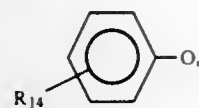
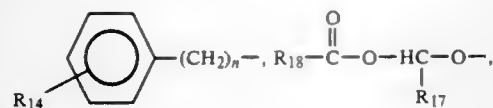
Eric M. Gordon, and Harold N. Weller, III, both of Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Division of Ser. No. 442,681, Nov. 18, 1982, Pat. No. 4,499,079.
This application Oct. 22, 1984, Ser. No. 663,723
Int. Cl.⁴ A61K 31/475, 31/47; C07D 217/16

U.S. Cl. 514-307 7 Claims

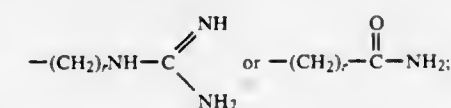
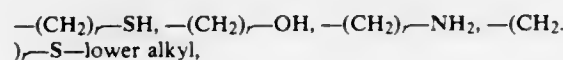
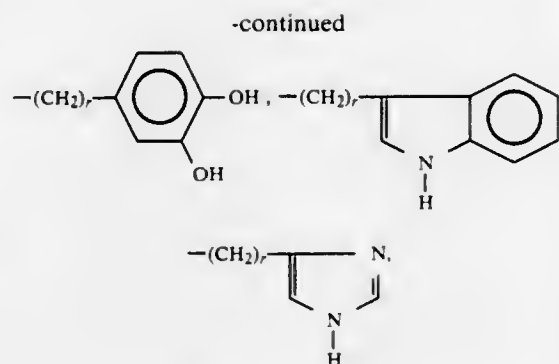
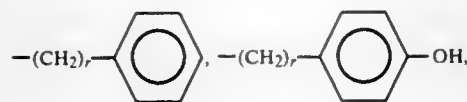
1. A compound of the formula



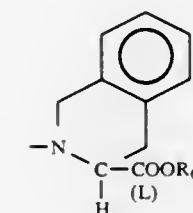
and a pharmaceutically acceptable salt thereof wherein:
R is hydroxy, lower alkoxy, lower alkyl,



amino, HO-NH-, lower alkoxy-HN-, or MO-;
R₁ is hydrogen, lower alkyl, halo substituted lower alkyl,



X is

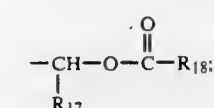


R₁₄ is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

n is zero, one, two, three, or four;

r is an integer from 1 to 4;

R₆ is hydrogen, lower alkyl, benzyl, benzhydryl, salt forming ion, or



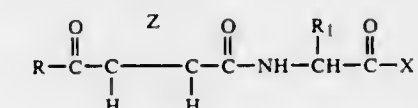
R₁₇ is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R₁₈ is hydrogen, lower alkyl, lower alkoxy or phenyl;

M is a salt forming ion; and

Z completes a cycloalkyl ring of 3 to 10 carbons, said cycloalkyl ring in which one of the carbon atoms is substituted by a lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy group, a cycloalkenyl ring of 5 to 7 carbons, or a cycloalkadienyl ring of 6 or 7 carbons.

7. The method of treating hypertension in a mammalian specie which comprises administering an effective amount of a composition comprising a pharmaceutically acceptable carrier and hypotensively active compound of the formula



wherein R, R₁, X and Z are as defined in claim 1.

4,642,316 PARENTERAL PHENYTOIN PREPARATIONS

Mahdi B. Fawzi, Flanders, and Anne K. Taylor, Morris Plains, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 20, 1985, Ser. No. 735,932
Int. Cl.⁴ A61K 31/415

U.S. Cl. 514-398 13 Claims

1. A solution suitable for parenteral use consisting essentially of a pharmaceutically effective amount of a complex of at least one drug selected from the group consisting of phenytoin and phenytoin sodium having the empirical formula C₁₅H₁₁N₂NaO₂ with a reagent selected from the group consisting of: triethanolamine, ethylene diamine, ethanolamine, choline, arginine, meglumine and mixtures thereof.

4,642,317 PROCESS FOR FEEDING RUMINANT ANIMALS AND COMPOSITION FOR USE THEREIN

Donald L. Palmquist, Wooster, and Thomas C. Jenkins, Apple Creek, both of Ohio, assignors to The Ohio Agricultural Research and Development Center, Wooster, Ohio
Continuation of Ser. No. 274,145, Jun. 16, 1981, abandoned.
This application Jan. 3, 1984, Ser. No. 567,617
Int. Cl.⁴ A61K 31/20

U.S. Cl. 514-558 15 Claims

1. A process for supplying a fatty acid containing at least 10 carbon atoms to ruminant animals which comprises feeding to said animals the calcium salt of said fatty acid in an amount equal to at least about 1% of the dry matter content of said animals' feed.

4,642,318 METHOD FOR DECREASING RADIATION LOAD IN PUVA THERAPY

Klaus Wolff, Patscherstrasse 7, A-6080 Igls, Austria
Continuation of Ser. No. 442,362, Nov. 17, 1982, abandoned, which is a continuation of Ser. No. 119,619, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 856,069, Nov. 30, 1977, abandoned. This application Jun. 21, 1985, Ser. No. 747,549
Int. Cl.⁴ A01N 37/08; A61N 5/12

U.S. Cl. 514-560 12 Claims

1. An improved method for treating a psoriatic subject undergoing treatment with a psoralen in conjunction with ultraviolet A radiation of from wavelength of 3200 to 4000 angstroms, which improved method comprises prior to initiation of said treatment, pretreating said subject for a period of from 4 to 10 days with an effective amount of an anti-psoriatic polyene compound, and thereafter initiating said treatment with a psoralen in conjunction with ultraviolet A radiation and continuing said treatment concurrently with the administration of said anti-psoriatic polyene compound.

4,642,319 MODIFIED TEREPHTHALIC ESTER POLYOLS AND RIGID FOAMS THEREFROM

Kenneth G. McDaniel, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

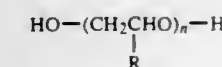
Filed Jan. 22, 1986, Ser. No. 821,319
Int. Cl.⁴ C08G 18/14, 18/32, 18/34, 18/42

U.S. Cl. 521-175 29 Claims

1. A terephthalic ester polyol produced by reacting recycled polyethylene terephthalate with about 5 wt % to 95 wt % of a functionality enhancing agent selected from the group consisting of aromatic amino polyols, sucrose polyols, alkoxylated aliphatic glucosides, alkoxylated glycerine and alkoxylated sorbitol.

10. A mixture of modified terephthalic ester polyols produced by:

a. reacting recycled polyethylene terephthalate with an oxyalkylene glycol of the formula:



wherein R is hydrogen or alkyl of 1 to 4 carbon atoms and n ranges from 2 to 10 to form a mixture of terephthalic ester polyols;

b. reacting the mixture of terephthalic ester polyols with about 5 wt % to 95 wt % of a functionality enhancing agent selected from the group consisting of aromatic amino polyols, sucrose polyols, alkoxylated aliphatic glucosides, alkoxylated glycerine and alkoxylated sorbitol.

20. A rigid polyisocyanate foam obtained by reacting in the presence of a blowing agent and a catalyst for polyisocyanate formation, an organic polyisocyanate and polyol components comprising the mixture of modified terephthalic ester polyols of claim 10.

4,642,320 REACTION INJECTION MOLDED POLYUREAS EMPLOYING HIGH MOLECULAR WEIGHT AMINE-TERMINATED POLYETHERS

Robert B. Turner, Richard D. Peffley, and James A. Vanderhider, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 548,179, Nov. 2, 1983, Pat. No. 4,530,941, which is a continuation-in-part of Ser. No. 461,046, Jan. 26, 1983, abandoned. This application Jun. 19, 1985, Ser. No. 747,071
Int. Cl.⁴ C08G 18/14, 18/32, 18/48, 18/65

U.S. Cl. 521-176 7 Claims

1. A process for preparing a molded polymer comprising reacting in a closed mold a reaction mixture comprising (a) an active hydrogen containing material comprising primary or secondary amine terminated polyether having at least about 25% of its active hydrogens in the form of amine hydrogens which active hydrogen containing material has an average equivalent weight of at least about 500, (b) at least one chain extender, and (c) an aliphatic polyisocyanate, polyisothiocyanate or mixture thereof wherein the NCX index is from about 0.6 to about 1.5 with the proviso that when the reaction mixture contains a trimerization catalyst, the NCX index is from about 0.6 to about 1.5.

4,642,321 HEAT ACTIVATABLE ADHESIVE FOR WIRE SCRIBED CIRCUITS

Andrew J. Schoenberg, Huntington, and Marju L. Friedrich, Babylon, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jul. 19, 1985, Ser. No. 757,026
Int. Cl.⁴ C08L 63/00

U.S. Cl. 523-400 11 Claims

1. A non-blocking, solid adhesive composition activated upon application of sufficient heat or ultrasonic energy which comprises:

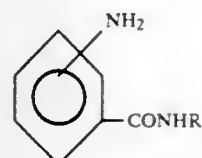
(a) a first component comprising a polymeric resin having epoxide, hydroxyl or unsaturated functional groups which provide a functionality greater than 2, said polymeric resin being selected from the group of resins consisting of a polyester resin, a polyurethane resin and an epoxy resin; (b) a second component comprising of at least one filler, or at least one polyfunctional compound containing a polyaromatic backbone and having an average molecular weight below about 7,000, or mixtures thereof the weight ratio of said first component to said second component being between about 1.5:1 and about 9:1;

(c) a curing agent which is capable of reacting or initiating a reaction with the functional groups of the polymeric resin to form crosslinks and cure the polymeric resin to a C-stage upon application of sufficient energy in the form of heat or radiant energy, said curing agent being non-reactive blocked at the conditions which will activate the adhesive composition, said curing agent being present in an amount sufficient to C-stage the polymeric resin; said composition being flexible, and in the C-stage capable of forming an infusible composition which does not melt, flow or decompose when exposed for 10 seconds to molten solder at 260° C. and does not soften when exposed to dichloromethane at 25° C. for one minute.

4,642,322
STABILIZATION OF CHLORINE-CONTAINING
THERMOPLASTICS WITH NITROGEN-CONTAINING
ORGANIC COMPOUNDS

Wolfgang Wehner, Zwingenberg, Fed. Rep. of Germany; Horst Müller, deceased, late of Fürth/Odw, Fed. Rep. of Germany (by Anneliese Müller, Silvia Müller, Werner J. Müller, heirs), and Rainer Schneider, Zwingenberg, all of Fed. Rep. of Germany, assignors of Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 746,927, Jun. 20, 1985, abandoned, which is a continuation of Ser. No. 592,677, Mar. 23, 1984, abandoned. This application Jan. 2, 1986, Ser. No. 815,771
Claims priority, application Switzerland, Mar. 30, 1983, 1760/83

Int. Cl.⁴ C08K 5/20, 5/25
U.S. Cl. 524—191 7 Claims
1. A stabilized composition which comprises
(a) a chlorine-containing thermoplastic derived from an ethylenically unsaturated monomer, and
(b) 0.01 to 10% by weight, based on component (a) of at least one compound of the formula



wherein

R is —OH, —NH₂ or C₂–C₃-alkyl substituted by hydroxy or said hydroxy-substituted alkyl further substituted by C₁–C₄-alkoxy or by phenoxy.

4,642,323
PROCESS FOR PREPARING LATEX POLYMERS FROM
GASEOUS MONOMERS

Ajay I. Ranka, Allison Park, and Surya K. Das, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 30, 1985, Ser. No. 814,459
Int. Cl.⁴ C08K 3/20

U.S. Cl. 524—458 5 Claims
1. A process for preparing a latex polymer which comprises subjecting a gaseous polymerizable alpha, beta-ethylenically unsaturated monomer component to free radical initiated, emulsion polymerization conditions in aqueous medium in the presence of a polymeric surfactant which is a salt of an acid group-containing polymer, comprising pre-emulsifying the monomer component with surface active agent in aqueous phase prior to polymerization and adding the pre-emulsified monomer component incrementally to a reactor for emulsion polymerization.

4,642,324
VINYL CHLORIDE RESIN COMPOSITION
Toshiaki Kobayashi; Hiromichi Arakawa, both of Yokohama, and Tatsuo Ohira, Tokyo, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1985, Ser. No. 701,499

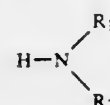
Claims priority, application Japan, Feb. 16, 1984, 59-27622; Feb. 17, 1984, 59-28319

Int. Cl.⁴ C08L 31/00 12 Claims
U.S. Cl. 524—559
1. A vinyl chloride resin composition comprising (A) a copolymer derived from 70 to 99.8% by weight of vinyl chloride, 0.2 to 30% by weight of a monoester of an alpha,beta-unsaturated dicarboxylic acid, 0 to 2% by weight of a compound having two or more active double bonds in the molecule and 0 to 20% by weight of another vinyl compound, (B) a mono- or divalent metal compound and- (C) a plasticizer.

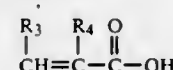
4,642,325
CATHODE-DEPOSITING ELECTRODEPOSITION
COATING COMPOSITION

Yutaka Otsuki; Hiroyoshi Omika; Akio Oshima, all of Yokohama; Yoshihiko Araki, Tokyo, and Yasuyuki Tsuchiya, Hirakata, all of Japan, assignors to Nippon Oil Company, Ltd., Osaka, Japan
Filed Apr. 5, 1985, Ser. No. 720,602
Claims priority, application Japan, Apr. 14, 1984, 59-73879; Dec. 10, 1984, 59-259312

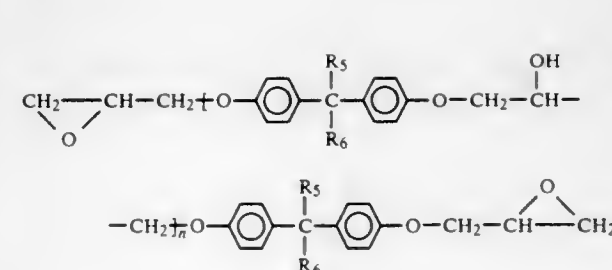
Int. Cl.⁴ C08L 63/10 5 Claims
U.S. Cl. 525—65
1. A cathode-depositing electrodeposition coating composition having excellent low-temperature curability comprising as essential ingredients
(A) 100 parts by weight of a reaction product of (1) a high molecular compound having a molecular weight of 500 to 5,000 based upon the number average molecular weight and containing carbon-carbon double bonds with an iodine number of 50 to 500 and 3 to 12% by weight of oxirane oxygen, (2) 30 to 300 millimoles, per 100 g of the high molecular compound (1), of an amine compound represented by the general formula



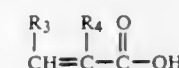
wherein each of R₁ and R₂ represents a hydrocarbon group having 1 to 20 carbon atoms a part of which may be substituted by a hydroxyl group, and R₁ and R₂ may assume a ring structure which may contain an unsaturated group,
and (3) 50 to 150 millimoles, per 100 g of the high molecular compound (1), of an alpha,beta-unsaturated carboxylic acid represented by the general formula



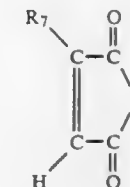
wherein R₃ and R₄ represent a hydrogen atom or a methyl group,
or an unsaturated fatty acid having a molecular weight of 100 to 350 based upon the number average molecular weight and containing at least 10% by weight of a carbon-carbon conjugated double bond or a mixture of both,
(B) 10 to 200 parts by weight of a reaction product of a diglycidyl compound represented by the general formula



wherein R₅ and R₆ represent a hydrogen atom or a methyl group, and n represents an integer of 0 to 20, with 1.9 to 2.1 moles, per molecule of the diglycidyl compound, of an alpha,beta-unsaturated carboxylic acid represented by the general formula



wherein R₃ and R₄ represent a hydrogen atom or a methyl group,
or an unsaturated fatty acid having a molecular weight of 100 to 350 based upon the number average molecular weight and containing at least 10% by weight of a carbon-carbon double bond, or a mixture of both,
(C) 0.5 to 10 parts by weight of a reaction product of 100 g of a high molecular compound having a molecular weight of 500 to 5,000 based upon the number average molecular weight and containing a carbon-carbon double bond with an iodine number of 50 to 500 and 40 to 400 millimoles of an alpha,beta-unsaturated dicarboxylic acid anhydride represented by the general formula



wherein R₇ represents a hydrogen or halogen atom or a methyl group,
or a derivative of the reaction product such as its partial ester or partial amide, or 0.1 to 10 parts by weight of an unsaturated monocarboxylic acid having 6 to 24 carbon atoms or its dimer, and
(D) 0.005 to 1.0 part by weight, as metal, of a water-soluble salt of an organic acid with a metal selected from manganese, cobalt, and copper.

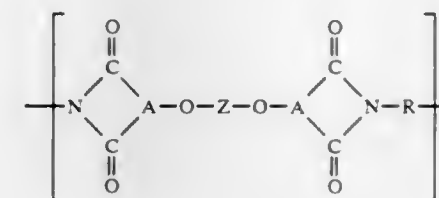
4,642,326
POLYVINYLIDENE FLUORIDE BASE BLEND
POLYMER

Takashi Yasumura, Fujimi; Toshio Koishi, Sakado, and Isao Tanaka, Kawagoe, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan
Filed Nov. 16, 1984, Ser. No. 671,943
Claims priority, application Japan, Nov. 18, 1983, 58-216340
Int. Cl.⁴ C08L 27/16

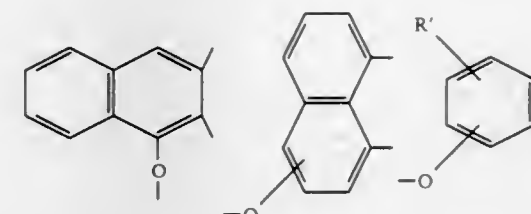
U.S. Cl. 525—153 2 Claims
1. A blend polymer composition comprising:
100 parts by weight of a polyvinylidene fluoride resin; and
1 to 100 parts by weight of a copolymer of vinylidene fluoride and hexafluoroacetone;
wherein the mole ratio of vinylidene fluoride to hexafluoroacetone in said copolymer is in the range from 96:4 to 50:50.

4,642,327
NOVEL POLYETHERIMIDES
Markus Matzner, Edison, N.J., and Donald M. Papuga, Danbury, Conn., assignors to Amoco Corporation, Chicago, Ill.
Filed Sep. 5, 1985, Ser. No. 772,882
Int. Cl.⁴ C08G 65/40

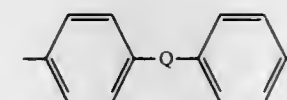
U.S. Cl. 525—434 15 Claims
1. A polyetherimide of the formula:



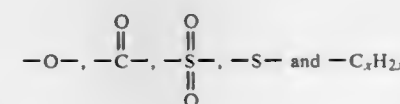
where a represents a whole number in excess of 1, the group —O—A— is selected from:



R' being hydrogen, lower alkyl or lower alkoxy, and the divalent bonds of the —O—Z—O— radical are in the 3,3';3,4';4,3' or the 4,4' position, Z is derived from a dihydroxy-terminated poly(phenylene oxides), a dihydroxy-terminated poly(aryl ether), or a dihydroxy-terminated poly(aryl ether ketone), wherein the molecular weight of Z is ≧ 1,500, and R is a divalent organic radical selected from the class consisting of (1) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (2) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, 2–8 carbon atoms containing alkylene terminated polydiorganosiloxane radicals, and (3) divalent radicals included by the formula



wherein Q is a member selected from the class consisting of



where x is a whole number from 1 to 5 inclusive.

4,642,328

COPOLYMERIZATION OF ETHYLENE AND AN ALPHA-OLEFIN HAVING 6 CARBON ATOMS IN A FLUIDIZED BED

Frédéric Morterol, Lavera, and Jean L. Vidal, Martigues, both of France, assignors to BP Chimie Societe Anonyme, Paris, France

Continuation of Ser. No. 525,545, Aug. 22, 1983, abandoned.

This application Jan. 3, 1985, Ser. No. 689,017

Claims priority, application France, Sep. 7, 1982, 82 15162

Int. Cl.⁴ C08F 4/10

U.S. Cl. 526—125

22 Claims

1. Process for the preparation of copolymers of ethylene and an alpha-olefin having 6 carbon atoms and having a density comprised between 0.910 and 0.940, characterised in that it comprises

providing a catalyst system comprising on the one hand a co-catalyst consisting of at least one organo-metallic compound of a metal of Groups II and III of the Periodic Table of Elements and on the other hand a catalyst comprising a support based essentially on magnesium chloride and optionally containing an aluminium chloride, consisting of particles of spheroidal shape having a mean diameter by mass comprised between 10 and 100 microns and showing a particle size distribution such that the ratio D_m/D_n of the mean diameter by mass, D_m , to the mean diameter by number, D_n , of the particles is less than or equal to 3, on to which support there has been precipitated a derivative of a transition metal of Groups IV, V and VI of the Periodic Table of Elements which is known for its catalytic properties in the polymerisation and copolymerisation of alpha-olefins,

wherein before the said co-polymerisation is carried out, subjecting the catalyst to a pre-polymerisation of the ethylene or a pre-co-polymerisation of the ethylene and an alpha-olefin in suspension in an inert liquid medium so as to obtain a prepolymer having from 0.1 to 500 g of polymer or co-polymer per milli-gramme-atom of transition metal,

recovering said prepolymer as a dry powder, copolymerising ethylene and said alpha-olefin having 6 carbon atoms in the gaseous state in admixture with said prepolymer powder, an inert gas such as nitrogen, methane or ethane and optionally with hydrogen, the gaseous mixture circulating from bottom to top through a fluidised bed of the copolymer being formed, the copolymerisation being effected at a temperature comprised between 50° and 90° C., in the presence of said catalyst, and the partial pressure (pp) of the various constituents of the gaseous mixture being such that:

pp alpha-olefin having 6 carbon atoms is in the range 0.05 MPa to 0.15 MPa,

pp alpha-olefin having 6 carbon atoms/pp ethylene is in the range 0.15 to 0.5,

pp hydrogen/pp ethylene is in the range 0.05 to 0.5,

pp inert gas/total pressure is in the range 0.2 to 0.9.

4,642,329

PREPOLYMER PROCESSING OF ARYLCYCLOBUTENE MONOMERIC COMPOSITIONS

Robert A. Kirchhoff, Alan Schrock, and Jo A. Gilpin, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 644,836, Aug. 27, 1984. This application Aug. 30, 1985, Ser. No. 770,913

Int. Cl.⁴ C08F 32/00

U.S. Cl. 526—284

48 Claims

1. A process for preparing reactive polymeric compositions from arylcyclobutene monomeric compositions, wherein an arylcyclobutene is an aryl moiety to which one or more cyclobutene rings are fused, said process comprising

(a) subjecting the monomeric composition to polymerization

conditions to provide a partially polymerized composition, and

(b) removing the partially polymerized composition from said conditions.

4,642,330

DISPERSANT SALTS

Robert E. Quinn, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 686,786, Dec. 27, 1984, abandoned.

This application Mar. 20, 1986, Ser. No. 841,923

Int. Cl.⁴ C08G 69/26

U.S. Cl. 528—335

13 Claims

1. An aqueous dispersion, comprising: water;

a dispersant salt composition comprising the reaction product of an acid (A) and a solubilizer (B), wherein;

(A) is a mineral acid or a sulfonic acid-free organic acid, and

(B) is a phosphorus-free carboxylic solubilizer made by reacting (B1) and (B2) wherein (B1) is a polycarboxylic acid acylating agent having a hydrocarbon-based substituent containing more than 30 carbon atoms and (B2) is a poly(alkyleneamine); and

an additional component selected from the group consisting of a surfactant and a hydrophilic organic solvent, the additional component being present in sufficient amount so as to impart stability to a continuous aqueous phase.

4,642,331

METHOD OF ENHANCING THE FLEXIBILITY OF POLYPYRROLE STRUCTURES

Ian M. Hodge, Penfield, N.Y., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 20, 1985, Ser. No. 736,057

Int. Cl.⁴ C08F 8/32; C08J 7/12

U.S. Cl. 528—492

4 Claims

1. A method for enhancing the flexibility of structures formed of a polypyrrole comprising the steps of: forming the polypyrrole structure; contacting the structure with an amine antioxidant for a period of time sufficient to render the structure less brittle; and desisting contact with the antioxidant.

4,642,332

EFFECTIVE HORMONAL PEPTIDES: D-3-PAL⁶-LHRH

Karl Folkers, Austin, Tex.; Xu Jie-Cheng, Shanghai, China, and Cyril Y. Bowers, New Orleans, La., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 26, 1985, Ser. No. 727,711

Int. Cl.⁴ C07K 7/20

U.S. Cl. 530—313

4 Claims

1. pyroGlu-His-Trp-Ser-Tyr-D-3-Pal-Leu-Arg-Pro-Gly-NH₂.

4,642,333

IMMUNOLOGICALLY REACTIVE

NON-GLYCOSYLATED AMINO ACID CHAINS OF GLYCOPROTEIN B OF HERPES VIRUS TYPES 1 AND 2

Stanley Person, 600 Locust La., State College, Pa. 16801

Continuation-in-part of Ser. No. 532,996, Sep. 16, 1983,

abandoned, which is a continuation-in-part of Ser. No. 506,986, Jun. 23, 1983, abandoned. This application Jun. 20, 1984, Ser. No. 622,496

Int. Cl.⁴ C07K 13/00

U.S. Cl. 530—350

2 Claims

1. A substantially pure non-glycosylated amino acid chain comprising a sequence corresponding to that occurring in glycoprotein B of HSV-1 or HSV-2 virus which is antigenic to HSV-1 of HSV-2, which contains no more than 750 amino acid residues, and which includes amino acid residues 135-649 inclusive referenced to Table 2.

4,642,334

HYBRID DNA PREPARED BINDING COMPOSITION

Kevin W. Moore, San Bruno, and Alejandro Zaffaroni, Atherton, both of Calif., assignors to DNAX Research Institute of Molecular and Cellular Biology, Inc., Palo Alto, Calif.

Continuation of Ser. No. 358,414, Mar. 15, 1982, abandoned.

This application Dec. 5, 1983, Ser. No. 558,551

Int. Cl.⁴ A61K 39/395

U.S. Cl. 530—388

6 Claims

1. A specific binding composition ("rFv") comprising two polypeptide chains having substantially the same amino acid sequence of at least a portion of the variable region, without constant region amino acids, of a mammalian immunoglobulin, said immunoglobulin having binding specificity to a predetermined ligand, wherein said polypeptide chains are prepared by expression of a DNA sequence coding for the variable region, said expression occurring in the absence of expression of a DNA sequence coding for natively associated constant region, and wherein said two polypeptide chains combine to form the rFv which has a high affinity and specificity for said predetermined ligand.

4,642,335

ANTHRACYCLINE COMPOUNDS BOUND TO HYDROPHILIC POLYPEPTIDES

Shigeyoshi Miyashiro, Yokohama; Takao Kida, Yokosuka; Tsuyoshi Shio, Kamakura, and Hiroshi Shiba, Chigasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 28, 1985, Ser. No. 738,352

Claims priority, application Japan, May 22, 1984, 59-101673

Int. Cl.⁴ C07K 17/02, 17/06

U.S. Cl. 530—409

17 Claims

1. An anti-tumor composition comprising effective amounts of each of an anthracycline compound and a hydrophilic peptide having a molecular weight in the range of from 10,000-15,000, and anthracycline compound and said peptide being bonded by hydrogen bonding or ionic bonding or a combination thereof, and wherein said anthracycline compound is selected from the group consisting of adriamycin, daunomycin, aclacinomycin, γ-rhodomyacin Y and cosmomycin A, and said hydrophilic peptide is selected from the group consisting of neocarzinostatin-apoprotein, macromycin-apoprotein, sporamycin-apoprotein, auromycin-apoprotein, AN-7A-apoprotein, AN-7B-apoprotein, AN-7D-apoprotein and AN-3-apoprotein.

4,642,336

AMMONIUM LIGNOSULFONATES

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 10, 1984, Ser. No. 679,901

The portion of the term of this patent subsequent to May 20, 2003, has been disclaimed.

Int. Cl.⁴ C07G 1/00

U.S. Cl. 530—500

8 Claims

1. A method of producing ammonium salts of lignosulfonates particularly suited for use as additives in dyestuff compositions and coal-water slurries comprising the steps of:

- ionizing a phenol component of a kraft lignin material in an alkaline liquid medium,
- methylolating the lignin material in the ortho position of the phenol component,
- lowering the pH of the liquid medium to an acid pH to precipitate the methylolated lignin material,
- washing the precipitated lignin material with water to remove inorganic salts and residual reactants therefrom, and
- sulfonating the washed, purified methylolated lignin material with an ammonium salt of a sulphur-oxygen containing compound in a liquid medium.

4,642,337

NOVEL URANIUM COMPOUNDS, THEIR PREPARATION PROCESS AND THEIR USE AS CATALYSTS FOR THE HYDROGENATION OF UNSATURATED ORGANIC COMPOUNDS

Lucile Arnaudet, Paris, and Gérard Folcher, Orsay, both of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Mar. 22, 1985, Ser. No. 715,176

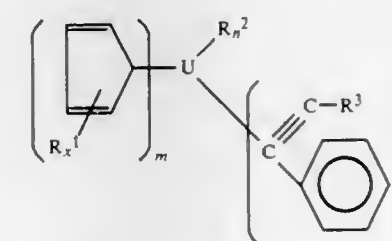
Claims priority, application France, Mar. 29, 1984, 84 04928

Int. Cl.⁴ C07F 5/00; B01J 31/00

U.S. Cl. 534—11

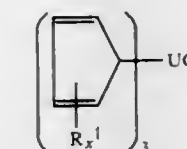
12 Claims

1. A uranium compound in accordance with formula:



in which R¹ represents a straight or branched alkyl group having 1 to 5 carbon atoms, R² is a straight or branched alkyl group having 1 to 5 carbon atoms, R³ is a straight or branched alkyl group having 1 to 5 carbon atoms or a phenyl, naphthyl, tolyl or xylol radical, x is equal to 0 or is an integer between 1 and 5, m is equal to 1, 2 or 3, n is equal to 0, 1 or 2, p is equal to 1 or 2, provided that m+n is equal to 3.

8. A catalyst for the hydrogenation of unsaturated organic compounds, wherein it is constituted by the product of the reaction of a compound of formula:



with LiR² and C₆H₅C≡CR³, in which R¹ and R² represent a straight or branched alkyl group having 1 to 5 carbon atoms, R³ represents a straight or branched alkyl group having 1 to 5 carbon atoms or a phenyl, naphthyl, tolyl or xylol radical and x is equal to 0 or is an integer between 1 and 5, in a solvent constituted by an organic compound having at least one ether-oxygen function.

4,642,338

FLUOROPHENOXYPHENOXYPROPIONATES AND DERIVATIVES THEREOF

Richard B. Rogers, Midland, Mich., and B. Clifford Gerwick, III, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

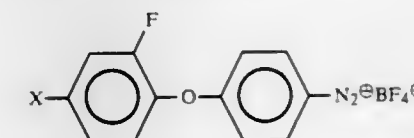
Continuation-in-part of Ser. No. 528,711, Sep. 1, 1983, Pat. No. 4,550,192. This application Mar. 7, 1985, Ser. No. 709,142

Int. Cl.⁴ C07C 101/72

U.S. Cl. 534—558

6 Claims

1. A compound of the formula



4,642,346

ANHYDROUS CRYSTALLINE

9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)GUANINE
 Tai W. Chan, Palo Alto, and Huong T. Nguyen, Saratoga, both
 of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
 Filed Jun. 24, 1985, Ser. No. 747,631
 Int. Cl.⁴ C07D 473/02; A61K 31/52

U.S. Cl. 544-276 13 Claims

1. Anhydrous crystalline 9-(1,3-dihydroxy-2-propoxymethyl)guanine.

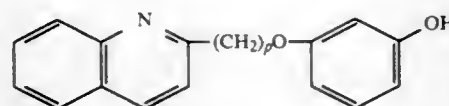
4,642,347

3(2-QUINOLINYLAALKOXY)PHENOLS

Anthony F. Kreft, III, Devon; Thomas W. Pattison, King of
 Prussia, and John H. Musser, Malvern, all of Pa., assignors to
 American Home Products Corporation, New York, N.Y.
 Filed May 21, 1985, Ser. No. 736,618
 Int. Cl.⁴ C07D 215/16

U.S. Cl. 546-181 2 Claims

1. A compound having the formula:



wherein p is 1-4, and the pharmaceutically acceptable salts thereof.

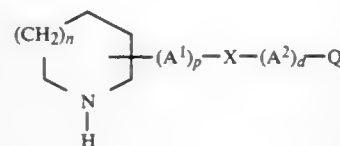
4,642,348

N-(AMINO)ALKYL-1-PYRROLIDINE, 1-PIPERIDINE
 AND 1-HOMOPIPERIDINECARBOXAMIDES (AND
 THIOMIDAZOLIDINONES) WITH SULFUR LINKED
 SUBSTITUTION IN THE 2, 3 OR 4-POSITIONS

James R. Shanklin, Jr., Richmond, Va., assignor to A. H. Robins
 Company, Incorporated, Richmond, Va.
 Continuation-in-part of Ser. No. 598,582, Apr. 10, 1984,
 abandoned. This application Jul. 1, 1985, Ser. No. 750,180
 Int. Cl.⁴ C07D 211/46

U.S. Cl. 546-216 40 Claims

1. A compound selected from the group having the formula:



wherein;

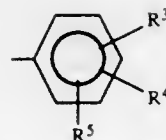
n is selected from zero, one or two;

A¹ and A² are selected from straight or branched-chain
 alkanes having 1 to 8 carbon atoms and p and d are
 selected from zero or one with the proviso that when the
 —(A¹)_p—X—(A²)_d—Q radical is in the 2-position, p is at
 least one;

X is selected from —S—, —S(O)— or —S(O)₂—;

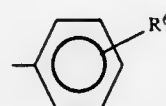
Q is selected from

- (1) 1 or 2-naphthyl,
- (2) 2,3-dihydro-1H-inden-4-yl or 2,3-dihydro-1H-inden-5-yl,
- (3) biphenyl,
- (4) phenyl,
- (5)



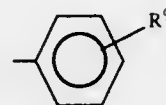
wherein R³ is selected from fluorine, chlorine, bromine,
 iodine, loweralkyl (1-8 carbons), loweralkoxy (1-8
 carbons), trifluoromethyl, hydroxy, cyano or nitro, R⁴
 is selected from hydrogen, fluorine, chlorine, bromine,
 iodine, methyl, ethyl, isopropyl, methoxy, ethoxy and
 nitro and R⁵ is selected from hydrogen, methyl, ethyl,
 methoxy, ethoxy, methylthio and phenylthio,

(6)



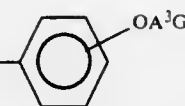
wherein R⁶ is selected from —NR⁷R⁸, —C(O)NR⁷R⁸,
 —(CH₂)_bNR⁷R⁸, —B—(CH₂)_bNR⁷R⁸ or —B—(CH₂)_bOR⁷
 wherein B is selected from —O—, —S—, —S—
 (O)— or —S(O)₂—, b is 2 or 3 and R⁷ and R⁸ are se-
 lected from hydrogen, loweralkyl (1-8 carbons) and
 may be the same or different,

(7)



wherein R⁹ is selected from —SR¹⁰, —S(O)R¹⁰ and
 —S(O)₂R¹⁰ wherein R¹⁰ is selected from loweralkyl
 (1-8 carbons) and phenyl with the proviso that X must
 be —S(O)₂—, or,

(8)



wherein A³ is selected from straight or branched-chain
 alkanes (2-8 carbons) and G is selected from loweralk-
 oxy (1-8 carbons) or —NR¹¹R¹² wherein R¹¹ and R¹²
 are selected from hydrogen, loweralkyl (1-8 carbons),
 phenyl and phenyl-loweralkyl, (7-14 carbons) and may
 be the same or different, and the acid addition salts and
 hydrates thereof.

4,642,349

PROCESS FOR MAKING AROMATIC ETHERS

James M. Renga, Midland, Mich., assignor to The Dow Chemi-
 cal Company, Midland, Mich.

Continuation-in-part of Ser. No. 187,688, Sep. 16, 1980,
 abandoned. This application May 24, 1982, Ser. No. 381,239

Int. Cl.⁴ C07D 213/61; C07C 41/16, 41/01
 U.S. Cl. 546-302 10 Claims

1. A process for making an aryl ether of the empirical for-
 mula Ar_nO_pR'_m which comprises contacting an aryl lower
 alkyl carbonate of the formula Ar(OCO₂R)_m with an organic
 halide of the formula R'_nX, wherein Ar is a carbocyclic or
 heterocyclic aromatic group having a valence of m, R is a
 lower alkyl or halogenated lower alkyl group, R' is an ali-
 phatic, cycloaliphatic, aromatic, or heterocyclic group having

a valence of n, m and n each represent an integer from one to
 three, p is an integer equal to the product of m and n, and X is
 Cl, Br, or I, in the presence of a catalytic amount of an initiator
 at about 50° C.-250° C. and separating said aryl ether from the
 resulting reaction mixture.

4,642,350

NOVEL PROCESS FOR PREPARATION OF
BENZOTRIAZOLES USING ARYLDIOLS AND
QUINONES

Alexander Davatz, Bubendorf, and Tibor Somlo, Birsfelden,
 both of Switzerland, assignors to Ciba-Geigy Corporation,
 Ardsley, N.Y.

Continuation of Ser. No. 616,322, May 31, 1984, abandoned.

This application Dec. 18, 1985, Ser. No. 810,544
 Claims priority, application Switzerland, Jun. 1, 1983,
 2986/83

Int. Cl.⁴ C07D 249/20

U.S. Cl. 548-260 8 Claims

1. A process for preparing a 2-(2-hydroxyphenyl)-2H-benzo-
 triazole from the corresponding 2-nitro-2'-hydroxyazoben-
 zene, which consists essentially of
 reducing said 2-nitro-2'-hydroxyazobenzene in the presence
 of a strongly basic medium and in the presence of an
 alcohol having more than one carbon atom and of a cata-
 lyst selected from the group consisting of the benzodiols,
 the naphthodiols, said benzodiols or said naphthodiols
 substituted by alkyl or by halogen, the benzoquinones,
 said benzoquinones substituted by alkyl or by halogen, the
 naphthoquinones and said naphthoquinones substituted by
 halogen, by hydroxyl, by alkyl, by dialkylamino, by piper-
 idino or by morpholino; at a temperature of 20° C. to 120°
 C.

4,642,351

PREPARATION OF N-SUBSTITUTED
IMIDAZOLIDINONES AND N-SUBSTITUTED
2-THIONIMIDAZOLIDINONES

Edmund P. Woo, and Diana R. Price, both of Midland, Mich.,
 assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1983, Ser. No. 459,432
 Int. Cl.⁴ C07D 233/36

U.S. Cl. 548-317 16 Claims

1. A process for the preparation of N-substituted
 imidazolidinones and N-substituted 2-thionimidazolidinones
 which comprises contacting an oxazolidinone with a com-
 pound containing a nitrogen directly bonded to a carbonyl or
 a thiocarbonyl group in the presence of a Lewis acid catalyst
 or the hydrate of a Lewis acid catalyst under conditions such
 that an N-substituted imidazolidinone or N-substituted 2-
 thionimidazolidinone is prepared, wherein the compound con-
 taining a nitrogen directly bonded to a carbonyl or a thiocarbo-
 nyl group is an isocyanate or isothiocyanate or a compound
 wherein the nitrogen is reactive and the carbonyl or thiocarbo-
 nyl group is further bonded to a substituent by a bond which is
 cleavable under the reaction conditions, and the Lewis acid
 catalyst corresponds to the formula



wherein

M is a group IB-VIII, IIIA or IVA element with the
 proviso that M is not C or Si;
 X is a halogen; and
 n is 2, 3 or 4.

4,642,352

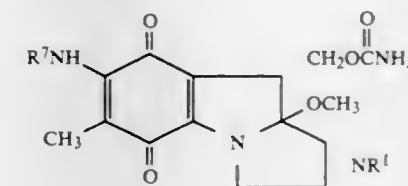
ACYLAMINO MITOSANES

Takushi Kaneko; Henry S. L. Wong, and Terrence W. Doyle, all
 of Fayetteville, N.Y., assignors to Bristol-Myers Company,
 New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,806
 Int. Cl.⁴ C07D 487/14; A61K 31/40

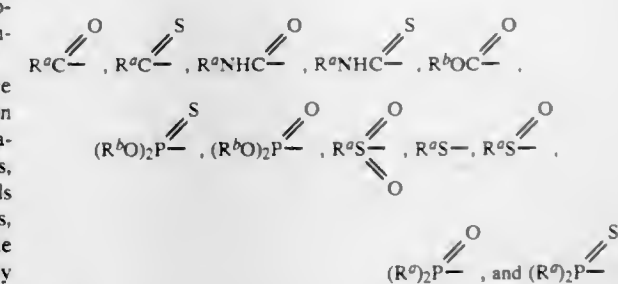
U.S. Cl. 548-422 23 Claims

1. A compound having the formula



wherein

R¹ is selected from H, C₁₋₆ alkyl, and R⁷,
 R⁷ is selected from



wherein

R² is selected from H, C₁₋₆ alkyl, A-substituted C₁₋₆ alkyl,
 C₆₋₁₀ aryl, A-substituted C₆₋₁₀ aryl, C₇₋₁₇ aralkyl, A-sub-
 stituted C₇₋₁₇ aralkyl, C₂₋₆ alkenyl, A-substituted C₂₋₆
 alkenyl, C₂₋₆ alkynyl, A-substituted C₂₋₆ alkynyl, C₃₋₈
 cycloalkyl, C₄₋₁₀ cycloalkylalkyl,
 R³ is selected from the group consisting of C₁₋₆ alkyl, A-sub-
 stituted C₁₋₆ alkyl, C₆₋₁₀ aryl, A-substituted C₆₋₁₀ aryl,
 C₇₋₁₇ aralkyl and A-substituted C₇₋₁₇ aralkyl,
 wherein said A substituent is selected from the group consist-
 ing of chlorine, bromine, fluorine, iodine, amino, tert.-boc-
 ylcarbonylamino, C₁₋₆ alkoxy, C₁₋₆ alkylamino, di(C₁₋₆)al-
 kylamino, C₃₋₈ cycloalkylamino, C₄₋₁₄ cycloalkylamino, thiol,
 C₁₋₆ alkylthio, C₁₋₆ alkylthio, C₆₋₁₀ arylthio, and C₇₋₁₇ aral-
 kylthio.

4,642,353

PHOTOCROSSLINKABLE POLYMERS HAVING
THIOETHERIMIDYL SIDE GROUPS

Joseph Berger, Basel, Switzerland, assignor to Ciba-Geigy Cor-
 poration, Ardsley, N.Y.

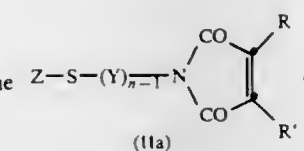
Continuation of Ser. No. 576,697, Feb. 3, 1984, abandoned,
 which is a division of Ser. No. 485,934, Apr. 18, 1983, Pat. No.

4,463,139. This application Feb. 20, 1986, Ser. No. 833,412

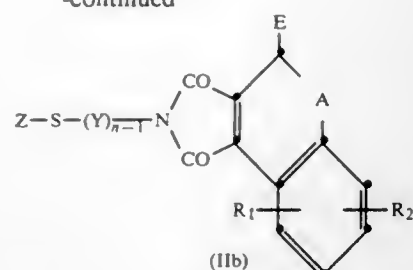
Claims priority, application Switzerland, Apr. 28, 1982,
 2596/82

Int. Cl.⁴ C07D 491/052, 209/48, 207/244, 207/40
 U.S. Cl. 548-431 5 Claims

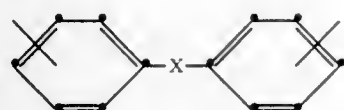
1. A compound of the formula IIa or IIb



-continued



in which R and R' independently of each other are C₁₋₄-alkyl or together are unsubstituted or methyl-substituted trimethylene or tetramethylene, R₁ and R₂ independently of each other are hydrogen, halogen, C₁₋₄-alkyl or methoxy, A is —CH₂—, —CH₂CH₂— or —OCH₂— where the oxygen is bonded to the aromatic ring and E is hydrogen or A is —O— and E is —CH₃, n is 1 or 2, Z is a halogen atom and Y is —C₂H₅— where a=1-12, C₃₋₈-cycloalkylene, C₆₋₁₀-arylene, C₇₋₈-aralkylene or -alkylarylene or



where X=a direct bond, —O—, —S— or —CH₂—, where said substituents Y can also be substituted by alkyl of 1 to 4 carbon atoms, by alkoxy of 1 to 4 carbon atoms, by nitro or by halogen.

4,642,354

PROCESS FOR PRODUCING PHTHALIMIDES OF ALKALI METALS

Alexandr A. Ovchinnikov; Vladimir P. Dudin; Vyacheslav V. Konov; Vyacheslav I. Khlybov; Jury M. Rapoport; Boris N. Gorbunov; Evgenia S. Makarova; Valentin V. Davitulliani; and Svetlana I. Zaitseva, all of Tambov, U.S.S.R., assignors to Nauchno-Issledovatel'skiy Institut Khimikatov Dlya Polimer-nikh Materialov, Tambov, U.S.S.R.

PCT No. PCT/SU84/00003, § 371 Date Aug. 26, 1985, § 102(e) Date Aug. 26, 1985, PCT Pub. No. WO85/03292, PCT Pub. Date Aug. 1, 1985

PCT Filed Jan. 23, 1984, Ser. No. 776,112
Int. Cl.⁴ C07D 209/48

U.S. Cl. 548—473

11 Claims

1. A process for producing alkali metal phthalimides which comprises:

reacting in a mixture, phthalimide and a solution of at least one member selected from the group consisting of alkali metal hydroxides and alkali metal alcoholates in an alcohol having 1 to 4 carbon atoms, at a temperature of from 50° to 100° C., at a pressure of from 0.07 to 0.005 MPa, wherein the alcohol is present at from about 10% to 60% by weight of the mixture.

4,642,355

PROLINE DERIVATIVES

Shizuo Nakamura, Naruto; Makoto Inoue, Tokushima, and Yoshiaki Tsuda, Anan, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

Filed Feb. 20, 1985, Ser. No. 703,365

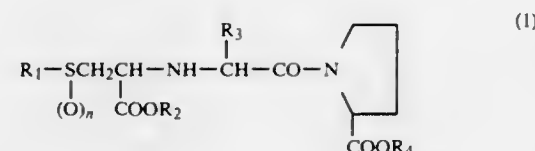
Claims priority, application Japan, Feb. 24, 1984, 59-34701; May 18, 1984, 59-101588; Jun. 22, 1984, 59-129893; Feb. 19, 1985, 60-30834

Int. Cl.⁴ C07D 207/00; A61K 37/64; C07K 5/06

U.S. Cl. 548—533

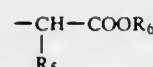
29 Claims

1. A proline derivative represented by the formula



wherein:

R₁ is C₅₋₁₄ alkyl, C₂₋₆ alkenyl, C₃₋₈ cycloalkyl-C₁₋₆ alkyl or a group



(wherein R₅ is hydrogen, C₁₋₁₄ alkyl or phenyl and R₆ is hydrogen or C₁₋₆ alkyl);

R₂ is hydrogen or C₁₋₆ alkyl;

R₃ is C₁₋₆ alkyl;

R₄ is hydrogen, C₁₋₆ alkyl or phenyl-C₁₋₆ alkyl; and

n is 0, 1 or 2,

and a pharmaceutically acceptable salt thereof.

4,642,356

FLUOROALKYLSILANES OR SILOXANES, THEIR SYNTHESIS AND USE

Jaroslav Langner, and Christian Weitemeyer, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,258

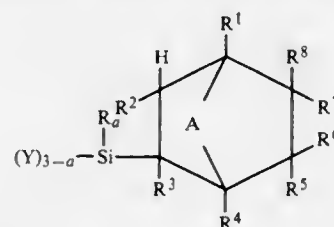
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423608

Int. Cl.⁴ C07D 307/00; C07F 7/08, 7/10, 7/18

U.S. Cl. 549—214

14 Claims

1. An organosilicon compound having the formula



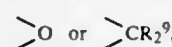
R represents a hydrocarbon radical with 1 to 6 carbon atoms, or a phenyl radical;

R¹, R², R³ and R⁴ are the same or different and represent hydrogen or methyl radicals;

R⁵, R⁶, R⁷ and R⁸ are the same or different and represent hydrogen, fluorine or hydrocarbon radicals with 1 to 8 carbon atoms, or fluorinated hydrocarbon radicals, in which at least one R⁵, R⁶, R⁷ or R⁸ radicals must be a fluorine or a fluorinated hydrocarbon radical;

Y is a hydrolyzable radical, hydroxyl radical or organosiloxanyl radical;

A represents



in which R⁹ may be the same or different and represents a hydrogen or a methyl radical; and

a has a value of 0, 1, 2, or 3.

4,642,357

CHROMOGENIC RECORDING MATERIALS

Masakichi Yahagi, Tokyo; Tetsuo Igaki, Kawagoe; Sinzi Yosinaka, Iwatsuki; Kousaku Morita, Saitama; Morikuni Saito, Tokyo, and Kimiaki Kinoshita, Kitamoto, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Japan

Division of Ser. No. 583,019, Feb. 23, 1984, Pat. No. 4,590,498.

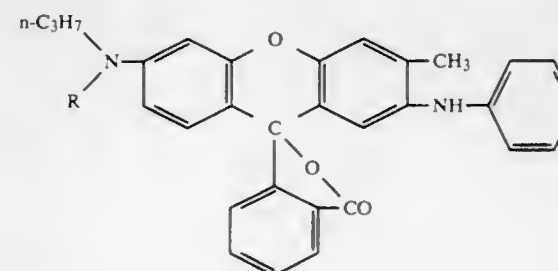
This application May 20, 1986, Ser. No. 865,361

Int. Cl.⁴ C07D 493/10

U.S. Cl. 549—226

1 Claim

1. A compound of the formula I



wherein R is methyl or ethyl.

4,642,358

ACYL MODIFIED POLYPHENYLENE ETHER COMPOSITION

David F. Aycock, Glenmont, and Sai-Pei Ting, Delmar, both of N.Y., assignors to General Electric Company, Selkirk, N.Y.

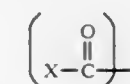
Continuation-in-part of Ser. No. 654,922, Sep. 27, 1984, Pat. No. 4,600,741. This application Oct. 23, 1984, Ser. No. 663,745

Int. Cl.⁴ C07C 93/06

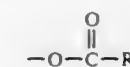
U.S. Cl. 549—245

9 Claims

1. A composition of matter comprising a combination of A, a polyphenylene ether molecule and B, compounds which contain in the molecule both (i) at least one group having the formula



where X is F, Cl, Br, I, OH,



where R is H or an alkyl or aryl radical and (ii) at least one carboxylic acid, acid anhydride, acid amide, imido, carboxylic acid ester, amino or hydroxyl group; wherein groups (i) and (ii) are covalently bonded through an alkyl or aryl linkage; and wherein the molecule containing groups (i) and (ii) is covalently bonded via said x group to said polyphenylene ether molecule.

4,642,359

PROCESS FOR PREPARING PYRYLIUM SALTS

Harivelo G. Rajoharison, and Christian M. Roussel, both of Marseilles, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 497,471, May 23, 1983, abandoned.

This application Dec. 10, 1984, Ser. No. 755,658

Claims priority, application France, Jun. 8, 1982, 82 09928

Int. Cl.⁴ C07D 309/32

U.S. Cl. 549—356

20 Claims

1. A process for the preparation of the most substituted isomer of a polysubstituted pyrylium salt that can be obtained from an isoelefin or isoelefin precursor having at least 5 carbon

atoms including a tertiary carbon atoms bearing at least 1 methyl substituent and 1 substituent which is substituted methylene, comprising diacylating said isoelefin or isoelefin precursor with a carboxylic acid anhydride in the presence of an acid having a Hammett acidity function, at about 22°–25° C. when pure, between —7.9 and —5.

4,642,360

METHOD FOR PRODUCING ETHYLENE OXIDE

Naohiro Nojiri, and Yukio Sakai, both of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 592,370, Mar. 22, 1984, abandoned.

This application Oct. 1, 1985, Ser. No. 782,178

Claims priority, application Japan, Apr. 12, 1984, 58-63909

Int. Cl.⁴ C07D 301/10

U.S. Cl. 549—534

4 Claims

1. A method for producing ethylene oxide, which comprises: passing a feedstock gas of ethylene and molecular oxygen through a reactor containing a packing material of silica-alumina containing 10–80 weight percent of silica which has been sintered at 1200°–1500° C. in order to preheat said feed stock gas, and then through a catalyst bed which catalyzes the reaction of ethylene with molecular oxygen to produce said ethylene oxide.

4,642,361

ALPHA-TOCOPHEROL INTERMEDIATES

August Rüttimann, Arlesheim, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 18, 1985, Ser. No. 777,125

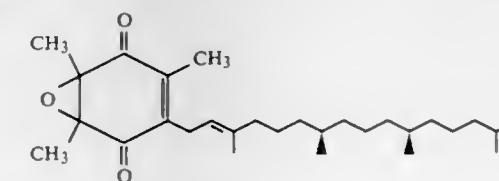
Claims priority, application Switzerland, Oct. 11, 1984, 4871/84

Int. Cl.⁴ C07D 303/32

U.S. Cl. 549—546

1 Claim

1. A compound of the formula



or $C(=O)NHR^3$; R^3 is hydrocarbyl; R^5 is alkylene or alkenylene; R^6 is alkyl or aryl; and k is 4-8.

4,642,363
METHOD OF PREPARING TRIALKYL
ORGANO-OXYSILANES

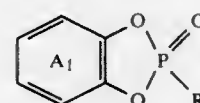
Reiner Groh, Steyerberg; Hans-Joachim Kötzsch; Hans-Günther Srebny, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany
Filed Aug. 27, 1985, Ser. No. 769,943
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431839

Int. Cl.⁴ C07F 7/18

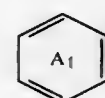
U.S. Cl. 556—471

5 Claims

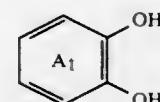
1. A process for the preparation of trialkylorganosilanes of the formula R_3SiOR' , wherein R is an alkyl radical of 1 to 4 carbon atoms, R' is an alkyl, acyl, aryl or aroyl radical and hal is chlorine or bromine comprising reacting a trialkylhalogensilane of the formula R_3SiHal with an organic hydroxy compound of the formula $R'OH$, and removing hydrogen chloride formed in the reaction, wherein the organic hydroxy compound is added directly to the trialkylhalogensilane, which is maintained at its boiling temperature and in such amounts, that the molar ratio of hydroxy compound to trialkylhalogensilane does not exceed 1, said organic hydroxy compound being added such that it does not come into contact with the hydrogen chloride formed in the gas phase, subsequently maintaining the reaction mixture under column distillation conditions; distilling off any additionally formed hydrogen chloride and any excess of trialkylhalogensilane; and isolating the trialkylorganosilane.



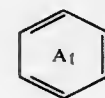
wherein



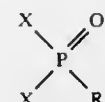
represents a benzene ring which may be substituted and R represents an aryl, alkoxy or aralkoxy group which may be substituted, which comprises reacting a catechol compound of the formula



wherein



is as defined above, with a compound of the formula



wherein X is a halogen atom and R is as defined above, at a temperature not higher than about 30° C. in the presence of a base.

4,642,364
UNSATURATED EICOSANOIC ACIDS

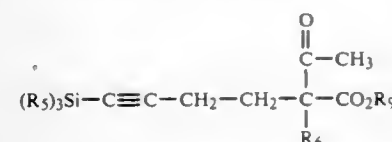
Ka-Kong Chan, Hopatcong; George W. Holland, and Perry Rosen, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 666,782, Oct. 31, 1984, Pat. No. 4,599,443, which is a division of Ser. No. 383,445, Jun. 1, 1982, Pat. No. 4,500,462, which is a division of Ser. No. 278,531, Jun. 29, 1981, Pat. No. 4,345,084. This application Mar. 17, 1986, Ser. No. 840,161

Int. Cl.⁴ C07F 7/08

U.S. Cl. 556—438

5 Claims

1. The compound of the formula:



wherein R_5 is lower alkyl; R_6 is hydrogen or fluorine and R_9 is lower alkyl.

4,642,365
METHOD FOR PRODUCTION OF
1,3,2-DIOXAPHOSPHOLES

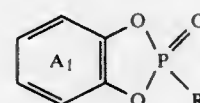
Kenzo Naito, Soraku; Masayasu Kato, Ashiya, and Kazuo Tsukamura, Kawabe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 631,801, Jul. 17, 1985, abandoned, which is a division of Ser. No. 415,318, Sep. 7, 1982, abandoned.
This application Nov. 7, 1985, Ser. No. 795,743
Claims priority, application Japan, Sep. 10, 1981, 56-143302; Jan. 18, 1982, 57-6668

Int. Cl.⁴ C07F 9/21

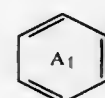
U.S. Cl. 558—83

10 Claims

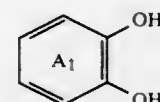
1. A method of producing a 1,3,2-dioxaphosphole of the formula



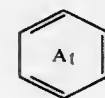
wherein



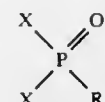
represents a benzene ring which may be substituted and R represents an aryl, alkoxy or aralkoxy group which may be substituted, which comprises reacting a catechol compound of the formula



wherein



is as defined above, with a compound of the formula



wherein X is a halogen atom and R is as defined above, at a temperature not higher than about 30° C. in the presence of a base.

4,642,366
PROCESS FOR PREPARING METHYL
PHOSPHONAMIDES

Milton L. Honig, Bronx, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.
Continuation of Ser. No. 586,158, Mar. 5, 1984, Pat. No. 4,587,362, which is a continuation of Ser. No. 157,713, Jun. 9, 1980, Pat. No. 4,456,566, which is a division of Ser. No. 72,966, Sep. 6, 1979, Pat. No. 4,276,234, which is a division of Ser. No. 973,282, Dec. 26, 1978, Pat. No. 4,207,271, which is a division of Ser. No. 615,321, Sep. 22, 1975, Pat. No. 4,152,373. This application Feb. 13, 1986, Ser. No. 829,046

The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.

Int. Cl.⁴ C07F 9/36

U.S. Cl. 558—138

5 Claims

1. A process for preparing methylphosphonamides which comprises heating a diaryl methylphosphonate with an amine in substantially equimolar amounts until phenol corresponding to the aryl groups of the diaryl methylphosphonate is released.

4,642,368
NOVEL ESTERS, THEIR PREPARATION, AND THEIR
USE FOR CONTROLLING PESTS

Peter Hofmeister, Ludwigshafen; Rainer Buerstinghaus, Weinheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,644

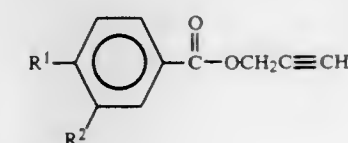
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410543

Int. Cl.⁴ C07C 69/76

U.S. Cl. 560—65

4 Claims

1. An ester of the formula I



where R^1 is OC_2H_4 ($n=1$ or 2), OCF_3 , OCF_2CHF_2 or F and R^2 is H , or R^1 and R^2 together form $-O(CH_2)_mO-$ ($m=1$ or 2).

4,642,367
PROCESS FOR THE PREPARATION OF
ALFA-L-ASPARTYL-L-PHENYL-ALANINE ALKYL
ESTERS

Martino Finotto, Treviglio, Italy, assignor to Farchemia S.p.A., Treviglio, Italy

Filed Jul. 15, 1985, Ser. No. 755,063

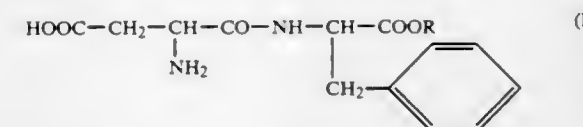
Claims priority, application Italy, Aug. 1, 1984, 22177 A/84; Dec. 4, 1984, 23876 A/84; Apr. 9, 1985, 47942 A/85

Int. Cl.⁴ C07C 101/32; C07K 1/06

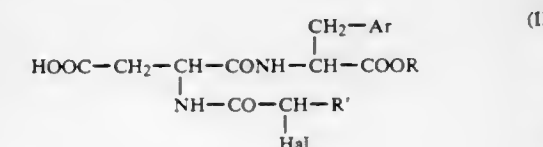
U.S. Cl. 560—40

8 Claims

1. Process for the preparation of alkyl esters of alfa-L-aspartyl-L-phenylalanine of the formula (I)



wherein R is a C_1 - C_5 alkyl group, characterized in that alfa-haloacyl-alfa-L-aspartyl-L-phenylalanine alkyl esters of the formula (II)



wherein:

R is as above defined;

Ar is the phenyl group;

R' represents hydrogen or a C_1 - C_4 , linear or branched alkyl group;

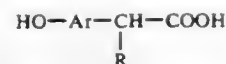
Hal represents chlorine, bromine or iodine,

are reacted with a compound selected from the group consisting of thiourea, cyanic acid salts, thiocyanic acid salts, dithiocarbamic acid salts, guanidine, 1,2-ethanedithiol, cysteamine, ethanolamine, ethylenediamine, 1,2-diaminobenzene, 1,2-dimercaptobenzene, pyrocatechol, o-aminophenol.

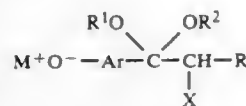
U.S. Cl. 560—77

8 Claims

1. A process for the production of dimethyl terephthalate from p-xylene and methanol by oxidation in a reactor, in the liquid phase with atmospheric oxygen in the presence of dissolved heavy metal compounds as a catalyst, of a mixture of p-xylene and a fraction containing predominantly methyl p-toluate, which fraction is recycled into the oxidation, to obtain an oxidation product containing primarily p-toluic acid and monomethyl terephthalate, at a temperature of 140°-170° C. and under a pressure of 4-8 bar; by esterification of the oxidation product with liquid and subsequently vaporized methanol brought to an elevated pressure, at a temperature of 220-280° C. and under a pressure of 20-25 bar in a reactor to obtain a raw ester containing primarily p-toluate and dimethyl terephthalate; by withdrawing the raw ester fraction and a methanol-containing vapor fraction from the esterification stage; and by distillatory separation of the raw ester into a p-toluate fraction which is recycled into the oxidation, a raw dimethyl terephthalate fraction which is subjected to further processing by recrystallization in methanol, and a residual fraction which is subjected to a thermal aftertreatment or a reactive treatment with methanol and is partially recycled into the process after a subsequent working-up step by distillation, characterized in that the esterification of the oxidation product is conducted with a methanol-containing vapor, brought by compression to elevated pressure and elevated temperature, which methanol-containing vapor has been obtained from the filtrate of the recrystallization of the raw dimethyl terephthalate fraction by vaporization or also by rectification of the methanol-containing vapor fraction and optionally additional methanol-containing process streams, under a pressure lying below the pressure utilized in the esterification reactor.



wherein Ar=phenyl or naphthyl, unsubstituted or substituted with C₁-C₃ alkyl; OH or C₁-C₃ alkoxy; halogen or phenyl and R=H, straight or branched C₁-C₆ alkyl, characterized in that the rearrangement is carried out in an aqueous medium or in an organic solvent, at temperatures of from 0° to 100° C., of ketals of formula



wherein Ar and R are as defined above; R₁ and R₂, equal or different, are a C₁-C₆ alkyl group, a C₃-C₆ alkenyl or alkynyl group, or bound together, form a saturated or unsaturated heterocyclic ring, comprising from 3 to 7 carbon atoms; X=Cl, Br, I; M=counter-ion of the phenolate, and that the product obtained is submitted to hydrolysis, without being separated from the reaction mixture.

4,642,377 PROCESS FOR PRODUCING TEREPHTHALIC ACID FROM P-XYLENE AND METHANOL BY WAY OF DIMETHYL TEREPHTHALATE

Rudolf Modic, Steyerberg; Jörg Porschen, Düren; Anton Schoengen, Witten, and Ralf Wirges, Niederkassel, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 4, 1985, Ser. No. 707,579

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407912

Int. Cl.⁴ C07C 51/09

U.S. Cl. 562—483 9 Claims

1. A process for the production of terephthalic acid from p-xylene and methanol by way of dimethyl terephthalate obtained by oxidation, in the liquid phase with atmospheric oxygen in the presence of dissolved heavy metal compounds as the catalyst, of a mixture of p-xylene and a fraction containing predominantly methyl p-toluate, which fraction is recycled into the oxidation, to obtain an oxidation product containing primarily p-toluic acid and monomethyl terephthalate at a temperature of 140–170° C. and under a pressure of 4–8 bar; by esterification of the oxidation product in a reactor with liquid and subsequently vaporized methanol brought to an elevated pressure, at a temperature of 220–280° C. and under a pressure of 20–25 bar to obtain a raw ester containing primarily methyl p-toluate and dimethyl terephthalate; by withdrawing the raw ester fraction and a methanol-containing vapor fraction from the esterification reactor; by distillatory separation of the raw ester into a methyl p-toluate fraction and a fraction rich in terephthalic aldehyde methyl ester, which fractions are recycled into the oxidation, a raw dimethyl terephthalate fraction, and a residual fraction; by hydrolysis of the raw dimethyl terephthalate fraction with water, obtaining the thus-formed terephthalic acid and separation of a methanol-water mixture, characterized in that the methanol-containing vapor fraction and the methanol-water mixture are separated by rectification under elevated pressure and elevated temperature into a methanol-rich head fraction and an aqueous sump phase, the methanol formed at the head of the rectification stage is withdrawn in vapor phase under elevated pressure, and esterification of the oxidation product is conducted with the methanol-containing vapor brought by compression to esterification pressure and esterification temperature.

4,642,378 ARYLALKYL AMINES USEFUL FOR LOWERING INTRAOCULAR PRESSURE

Robin D. Clark, Palo Alto, and L. David Waterbury, San Mateo, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 11, 1985, Ser. No. 722,046

Int. Cl.⁴ C07C 127/19

U.S. Cl. 564—51

1 Claim

1. The compound 3-[2-N-propyl-N-(3-ureidophenethyl)-aminoethyl]ureidobenzene.

4,642,379 INTERMEDIATES FOR ANTICONVULSANT AGENTS

Edward E. Beedle, Indianapolis, and David W. Robertson, Greenwood, both of Ind., assignors to Eli Lilly and Company, Ind.

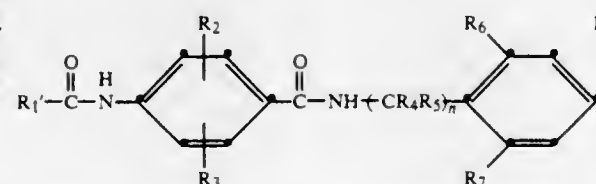
Filed Aug. 30, 1985, Ser. No. 771,455

Int. Cl.⁴ C07D 103/76

U.S. Cl. 564—155

5 Claims

1. A compound of the formula



wherein R₁' is bromo- or chloro-substituted C₁-C₆ alkyl; R₂, R₃, R₄, R₅, R₆, and R₇ are each independently hydrogen or methyl; and n is 0 or 1.

4,642,380 PURIFICATION OF METHACRYLAMIDOPROPYLTRIMETHYLAMMONIUM CHLORIDE

David R. Livingston, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 23, 1983, Ser. No. 535,016

Int. Cl.⁴ C07C 103/44

U.S. Cl. 564—206

8 Claims

1. A method for the purification of an impure methacrylamidopropyltrimethylammonium chloride which comprises contacting an aqueous solution of said impure chloride with hydrophobic/organophilic microporous crystalline silica for a period of time sufficient to significantly lower the impurities level, said microporous crystalline silica having a topological tetrahedral framework characterized by straight channels along a b-axis defined by ten membered oxygen rings with an elliptical cross-section of 5.7–5.8 Å by 5.1–5.2 Å interconnected by zigzag channels along an a-axis defined by ten membered oxygen rings with an approximately circular cross-section of about 5.4±2 Å.

4. A regenerative process for the purification of impure methacrylamidopropyltrimethylammonium chloride which comprises contacting the impure methacrylamidopropyltrimethylammonium chloride contaminated with allyl methacrylate and methacrylic acid with a hydrophobic/organophilic microporous crystalline silica under treating conditions to significantly lower the level of impurities in the said methacrylamidopropyltrimethylammonium chloride to a predetermined purity level and continuing such contact until the said hydrophobic/organophilic microporous crystalline silica is no longer effective for impurity removal to said predetermined impurity level and then:

- separating said thus spent hydrophobic/organophilic microporous crystalline silica from the methacrylamidopropyltrimethylammonium chloride,
- treating said spent hydrophobic/organophilic microporous

rous crystalline silica with an organic solvent effective for contaminant removal for a period of time sufficient to substantially remove the contaminants from the said spent silica.

- thereafter treating additional quantities of said impure methacrylamidopropyltrimethylammonium chloride with said thus regenerated microporous crystalline silica,
- said organic solvent being selected from the group consisting of C₁-C₄ aliphatic alcohols and C₅-C₈ alkenes, and
- said microporous crystalline silica having a topological tetrahedral framework characterized by straight channels along a b-axis defined by ten membered oxygen rings with an elliptical cross-section of 5.7–5.8 Å by 5.1–5.2 Å interconnected by zigzag channels along an a-axis defined by ten membered oxygen rings with an approximately circular cross-section of 5.4±0.2 Å.

4,642,381 CATALYST AND METHOD FOR PRODUCTION OF METHYLAMINES

Kamil Klier, Bethlehem; Richard G. Herman, Whitehall, and Gamini A. Vedage, Bethlehem, all of Pa., assignors to Lehigh University, Bethlehem, Pa.

Continuation of Ser. No. 500,037, Jun. 1, 1983, Pat. No. 4,480,131. This application Nov. 28, 1983, Ser. No. 555,579

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C 63/111

U.S. Cl. 564—480

10 Claims

1. An alkali-containing copper/zinc oxide catalyst useful for the production of methanol consisting essentially of a binary system comprising a mixture of copper metal and zinc oxide prepared by:

- dissolving soluble salts of copper and zinc in an aqueous solution;
- coprecipitating the metal hydroxycarbonates and/or metal hydroxynitrates thereof by addition of a sufficient concentration of an aqueous basic carbonate;
- separating the precipitate, drying, and calcining same to form the equivalent metal oxides;
- reducing the calcined metal oxides in a hydrogen atmosphere substantially to convert copper oxide to lower valence states of copper;
- treating the resulting mixture in an oxygen-free atmosphere with a dilute, aqueous solution of an alkali metal hydroxide or an alkali metal salt; and
- evaporating the moisture in an oxygen-free environment to recover a dried alkali/copper/zinc oxide catalytic material.

4,642,382 1H-POLYALKYL-PHOSPHORINANES

John D. Spivack; Stephen D. Pastor, both of Spring Valley, N.Y., and Paul Odorizio, Palisades Park, N.J., assignors to Ciba-Gelby Corporation, Ardsley, N.Y.

Division of Ser. No. 540,238, Oct. 11, 1983, Pat. No. 4,539,421.

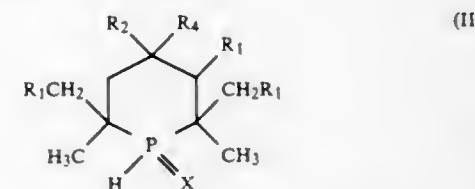
This application Jul. 18, 1985, Ser. No. 756,123

Int. Cl.⁴ C07F 9/50, 9/53

U.S. Cl. 568—12

6 Claims

1. The compound of formula II



wherein R₁ and R₂ independently are hydrogen or C₁-C₈ alkyl, X is —O—, —S— or a lone pair of electrons, R₄ is

hydroxy or a group —NHR₃, whereby R₃ is hydrogen or C₁-C₁₂ alkyl.

4,642,383 FAST COUPLING LEMON-YELLOW PHENOLIC COUPLERS

Robert C. Desjarlais, South Hadley, Mass., assignor to James River Graphics, Inc., South Hadley, Mass.

Filed Sep. 30, 1982, Ser. No. 428,457

Int. Cl.⁴ C07C 148/00

U.S. Cl. 568—48

2 Claims

1. 2,2'-dihydroxy-3,3',6,6'-tetramethyl diphenyl sulfide.

4,642,384 PROCESS FOR THE PREPARATION OF DERIVATIVES OF PYRROLIDINE AND PIPERIDINE

Charles M. Leir, New Richmond, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 269,070, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 158,992, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 21,331, Mar. 19, 1979, abandoned. This application Sep. 4, 1985, Ser. No. 772,470

Int. Cl.⁴ C07C 49/80

U.S. Cl. 568—337

3 Claims

1. 2,5-Bis(2,2,2-trifluoroethoxy)acetophenone.

4,642,385 PREPARATION OF MONOCHLOROPINACOLONE

Dennis E. Jackman, Prairie Village, Kans., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1985, Ser. No. 799,540

Int. Cl.⁴ C07C 45/63

U.S. Cl. 568—393

6 Claims

1. In the reaction of pinacolone with chlorine in a solvent to produce monochloropinacolone, the improvement which comprises employing as the solvent methanol which contains HCl at the outset of the reaction whereby the amount of by-product dichloropinacolone produced is reduced.

4,642,386 PROCESS FOR THE PREPARATION OF PURE HYDRATES OF FLUORAL AND OF HEXAFLUOROACETONE FROM HEMIACETALS

Bernard Cheminal, Lyons; Henri Mathais, Saint Didier au Mont d'Or, and Marc Thomarat, Pierre-Benite, all of France, assignors to Atochem, France

Filed Jul. 16, 1985, Ser. No. 755,702

Claims priority, application France, Jul. 18, 1984, 84 11384

Int. Cl.⁴ C07C 45/00

U.S. Cl. 568—405

8 Claims

1. A process for the production of pure hydrates of polyfluoro materials, which process comprises reacting a hemiacetal having the formula:



wherein R is hydrogen or trifluoromethyl, with water in a distillation zone to form, respectively, the corresponding fluoral hydrate or hexafluoroacetone hydrate and methanol or ethanol, removing the methanol or ethanol at the top of the distillation zone, and recovering the fluoral hydrate or hexafluoroacetone hydrate at the bottom of the distillation zone.

4,642,387

PROCESS FOR THE PRODUCTION OF 3-CYCLOHEXENE-1-CARBOXALDEHYDE

Guenter Prescher, Hanau; Andreas Grund, Darmstadt; Heinrich Petsch, Hanau, and Georg Boebme, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 27, 1985, Ser. No. 813,904

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501665

Int. Cl.⁴ C07C 45/69, 47/42

U.S. Cl. 568—446

11 Claims

1. A process for the production of 3-cyclohexene-1-carboxaldehyde by reaction of acrolein with butadiene at an elevated temperature and increased pressure, comprising carrying out the reaction between acrolein and butadiene continuously in a first stage circulation reactor to which acrolein and butadiene are fed continuously at temperatures between 80° C. and 160° C., to form a reaction mixture, whereby a part of the reaction mixture is guided in a circle, in which the weight ratio of the feed acrolein and butadiene starting substances per time unit to the reaction mixture circulated per time unit amounts to 1:5 to 1:60, and guiding the reaction mixture leaving the first stage circulation reactor, which mixture contains at least 50% by weight of 3-cyclohexene-1-carboxaldehyde, to a secondary reactor in which no circulation of the reaction mixture takes place and in which the reaction is completed at 100° to 240° C., and the reaction mixture obtained is subsequently separated by fractional distillation.

4,642,388

RHODIUM CATALYZED HYDROFORMYLATION OF ALPHA-SUBSTITUTED ALPHA-OLEFINS

David A. Young, Baton Rouge, La., assignor to Exxon Chemical Patents Inc., Linden, N.J.

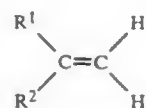
Filed Aug. 30, 1985, Ser. No. 771,429

Int. Cl.⁴ C07C 45/50

U.S. Cl. 568—454

22 Claims

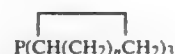
1. In a process for hydroformylation of an alpha-substituted alpha-olefin selected from the group consisting of compounds of the formula:



wherein R¹ and R² can be the same or different and comprise a member selected from the group alkyl, aryl, alkaryl, aralkyl, cycloalkyl,



—CHO and carboxylate, wherein X is alkyl of 1 to 20 carbon atoms in a hydroformylation reaction zone in the presence of a liquid rhodium triorgano phosphine catalyst system and in the presence of carbon monoxide and hydrogen to form the corresponding aldehydes, the improvement which comprises employing in the reaction zone a molar excess of at least one sterically hindered tricycloalkyl phosphine selected from the group consisting of compounds having the formula



wherein "n" is an integer of 1–12, inclusive; and maintaining in the reaction zone a reaction temperature of from about 80° to 200° C., and a total carbon monoxide and hydrogen pressure of

from about 3500 to 14,000 kPa, whereby improved hydroformylation reaction rates are achieved.

4,642,389

PROCESS FOR THE MANUFACTURE OF CHLOROACETALDEHYDE DIALKYL ACETALS

Dennis Neigel, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 30, 1986, Ser. No. 868,456

Int. Cl.⁴ C07C 41/48, 41/58, 41/50

U.S. Cl. 568—604

16 Claims

1. A semi-continuous process for the manufacture of chloroacetaldehyde dimethyl acetal comprising the steps of:

- providing a vertical packed column, having side by side inlets, means for collecting a low-boiling distillate and a water-cooled condenser connected at the upper end and a cooled bottoms receiver connected at the lower end,
- introducing chlorine and a mixture of vinyl acetate and an excess of methanol at a constant rate and stoichiometric amounts with respect to chlorine and vinyl acetate through the separate inlets into a reaction site of the vertical packed column, wherein an exothermic reaction provides and maintains a temperature at the site of about 56°–58° C.,
- collecting a low boiling distillate formed from the vapors having a boiling point less than about 70° C., and
- collecting the crude acetal liquid product flowing downward from the reaction site in a cooled bottoms receiver.

4,642,390

PROCESS FOR THE MANUFACTURE OF ACETALS OF CHLOROACETALDEHYDE

Dennis Neigel, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 30, 1986, Ser. No. 868,457

Int. Cl.⁴ C07C 41/48, 41/50, 41/58

U.S. Cl. 568—604

8 Claims

1. A semi-continuous process for the manufacture of chloroacetaldehyde acetals comprising the steps of:

- providing a cooled vertical packed column or Graham condenser fitted at its lower end with a cooled batch reactor charged with a lower alcohol,
- introducing chlorine and vinyl acetate at a constant rate and stoichiometric amounts with respect to chlorine and vinyl acetate at the upper end of the column or condenser,
- cooling the column or condenser to maintain the temperature of the intermediate formed from the chlorine and vinyl acetate at about 25° to 50° C., at the point of exit from the column or condenser,
- directing the flow of intermediate into the batch reactor containing an excess of a lower alcohol to provide the crude acetal product.

4,642,391

HIGH MOLECULAR WEIGHT PRODUCTS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 081,952, Oct. 4, 1979, abandoned. This application May 20, 1983, Ser. No. 495,914

Int. Cl.⁴ C07C 43/11, 43/10

U.S. Cl. 568—624

1 Claim

1. A poly(oxy)alkylene adduct of a geminal bis(hydroxymethyl)octadecanol selected from the group consisting of 9,9-bis(hydroxymethyl)octadecanol, 10,10-bis(hydroxymethyl)octadecanol and mixtures thereof.

4,642,392

CONJUGATED ALKADIENE TELOMERIZATION TO ORGANO-OXYALKADIENES

Ronnie M. Hanes, Milford, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,590

Int. Cl.⁴ C07C 41/06

U.S. Cl. 568—690

20 Claims

1. A method for the telomerization of a conjugated alkadiene comprising reacting a conjugated alkadiene with an organic hydroxy compound, said organic hydroxy compound being employed in an amount in excess of the stoichiometric amount required for the telomerization of said organic hydroxy compound with said conjugated alkadiene, said reaction occurring in the presence of a catalytically effective amount of a catalyst compound comprising



where R¹ is any anionic group displaced by methanol except a halide; R² is a straight chain, branched chain or cyclic radical having from 1 to about 10 carbon atoms; Y is phosphorus or antimony; y is the valence of Y, the ligand:Pd ratio is maintained at from about 10:1 to about 1:1 during the reaction, said reaction being conducted in the substantial absence of oxygen and in the presence of an inert high boiling organic solvent, the boiling point of said solvent being greater than the boiling point of said organo-oxyalkadiene; separating said organo-oxyalkadiene from said catalyst and recycling said catalyst for the further telomerization of said conjugated alkadiene with said organic hydroxy compound.

4,642,393

PROCESS FOR PREPARING 1,4-DIHYDROXY, 5,8-DIHYDRONAPHTHALENE AND RELATED COMPOUNDS

Yoshiyuki Okamoto, Fort Lee, N.J., and Richard Vicari, Astoria, N.Y., assignors to Koppers Company, Inc., Pittsburgh, Pa.

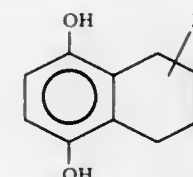
Filed Mar. 6, 1985, Ser. No. 708,655

Int. Cl.⁴ C07C 39/14

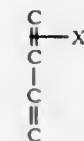
U.S. Cl. 568—734

7 Claims

1. A process for preparing compounds of the formula:



wherein X is selected from halogen, 2 to 4 carbon acyl, 1 to 3 carbon alkyl and hydrogen which comprises reacting benzoquinone with a 1,3-butadiene compound of the formula:



wherein X is as previously defined, in the presence of a catalytic amount of a ferric salt catalyst.

4,642,394

PRODUCTION OF PROPANEDIOLS

Tessie M. Che, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 16, 1985, Ser. No. 755,633

Int. Cl.⁴ C07C 29/132, 29/60, 31/20

U.S. Cl. 568—861

15 Claims

1. A process for the conversion of glycerol to lower oxygenated hydrocarbons which comprises reacting glycerol, carbon monoxide and hydrogen in a basic organic solvent medium in contact with a soluble catalyst composition containing tungsten and Group VIII metal components, to yield a product mixture comprising propanediols.

4,642,395

POISONING OF RESIN SUPPORTED CATALYST

Douglas L. Hunter, and Stanley E. Moore, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 18, 1985, Ser. No. 799,237

Int. Cl.⁴ C07C 29/16

U.S. Cl. 568—883

16 Claims

1. A method of enhancing performance of a combined hydroformylation/reduction reaction of an olefin liquid feed in the presence of a resin-supported transition metal complex catalyst, the method comprising the steps of:

- preparing a resin-supported transition metal complex catalyst for use in a combined hydroformylation/reduction reaction substantially free of halides and halide salts in said metal complex catalyst; and
- introducing an olefin liquid feed to the resin-supported catalyst for conducting a combined hydroformylation/reduction reaction, in the presence of CO and H₂, wherein the olefin feed has a specified maximum limit of halide concentration sufficiently low to enable continued indefinite operation of the combined hydroformylation/reduction reaction process without halide poisoning.

4,642,396

PROCESS FOR SEPARATING NITROAROMATIC COMPOUNDS FROM SPENT NITRIC ACID

Richard V. C. Carr; Bernard A. Toseland, both of Allentown, Pa., and David S. Ross, Palo Alto, Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 7, 1984, Ser. No. 638,436

Int. Cl.⁴ C07C 79/10; C07B 43/02

U.S. Cl. 568—934

8 Claims

1. In a process for extracting a dinitroaromatic compound selected from the group consisting of dinitrobenzene, dinitrotoluene and dinitroxylenes from a reaction mixture comprising said dinitroaromatic composition, water, and nitric acid, said reaction mixture formed by reacting said dinitroaromatic composition using nitric acid only as the nitrating medium, which comprises the steps of:

- forming an organic layer containing said dinitroaromatic composition and an aqueous layer containing water and nitric acid; and
- decanting said dinitroaromatic composition from said aqueous layer, the improvement for enhancing the extraction of said dinitroaromatic composition from said aqueous layer which comprises the step of: contacting the aqueous layer with a sufficient amount of nitric oxide under conditions for reacting with substantially all of said nitric acid for forming gaseous nitrogen dioxide and liquid water, said nitric oxide being present in an amount sufficient to react with a substantial amount of said nitric acid and thereby forcing said dinitroaromatic composition into said organic layer because of insolubility in said aqueous layer; and then, separating the organic layer from the aqueous layer.

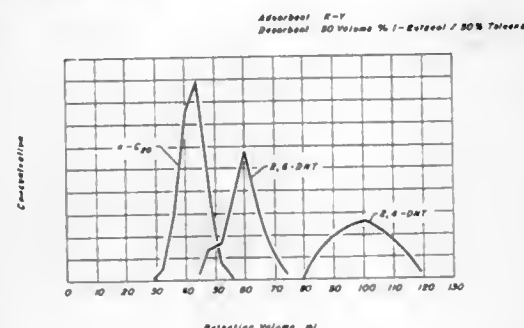
4,642,397

PROCESS FOR SEPARATING ISOMERS OF DINITROTOLUENE

Hermann A. Zinnen, Evanston, and Thad S. Franczyk, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.
Filed Oct. 1, 1985, Ser. No. 782,674
Int. Cl.⁴ C07C 79/10

U.S. Cl. 568—934

12 Claims



1. A process for separating 2,4-dinitrotoluene from a feed mixture comprising 2,4-dinitrotoluene and 2,6-dinitrotoluene, said process comprising contacting said mixture at a temperature within the range from about 20° C. to about 200° C. and at a pressure to maintain liquid phase with an adsorbent comprising an L type zeolite whose cations have been exchanged with K, an X type zeolite whose cations have been exchanged with a cation selected from the group consisting of Na, Ca, Ba and K, or a Y type zeolite whose cations have been exchanged with a cation selected from the group consisting of Ca, Ba, K, Na, Li and Mg thereby selectively adsorbing said 2,4-dinitrotoluene, removing the remainder of said mixture from said adsorbent, and then recovering said 2,4-dinitrotoluene by desorption at a temperature within the range from about 20° C. to about 200° C. and at a pressure to maintain liquid phase with a desorbent material comprising a C₃ to C₅ alcohol, a ketone, an ester, or nitrobenzene.

4,642,398

PREPARATION OF FLUORONITROBENZENE COMPOUNDS IN DISPERSION OF POTASSIUM FLUORIDE

Gary L. Cantrell, Belleville, Ill., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jan. 6, 1986, Ser. No. 816,481
Int. Cl.⁴ C07C 79/12

U.S. Cl. 568—937

6 Claims

1. In a process for preparing a fluoronitrobenzene compound by reaction of a corresponding chloronitrobenzene compound with potassium fluoride in an aprotic polar organic solvent under substantially anhydrous halide-exchange conditions in the presence of a catalyzing amount of a phase-transfer catalyst,

the improvement which comprises effecting the reaction in a substantially anhydrous dispersion of ultra-fine particulate potassium fluoride in an aprotic polar organic solvent, said dispersion prepared by a method comprising

- preparing a solution of potassium fluoride in methanol,
- preparing a mixture by adding to said solution (i) an aromatic compound selected from aromatic hydrocarbons, aromatic chlorohydrocarbons and aromatic fluorohydrocarbons, said aromatic compound being an azeotrope former with methanol, and (ii) an aprotic polar solvent having a boiling point at a selected pressure at least 30° C. higher than the boiling point at said pressure of said aromatic compound, and
- distilling said mixture at said pressure to prepare a distillation residue consisting essentially of said dispersion.

4,642,399

METHOD FOR PRODUCING FLUORONITROBENZENE COMPOUNDS

Carl R. White, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Nov. 29, 1984, Ser. No. 676,117
Int. Cl.⁴ C07C 79/12

U.S. Cl. 568—938

16 Claims

1. In a method for producing a fluoronitrobenzene compound by reacting a corresponding chloronitrobenzene compound with a fluoride salt in a reaction mixture comprising an aprotic, polar, organic solvent under halogen-exchange conditions in the presence of a catalyzing amount of a quaternary ammonium salt phase-transfer catalyst, the improvement comprising, in combination, (a) said fluoride salt consists essentially of an alkali metal fluoride salt and (b) said phase-transfer catalyst consists essentially of a tetramethylammonium salt in an amount effective for catalyzing the reaction of said chloronitrobenzene compound with said alkali metal fluoride salt to produce said fluoronitrobenzene compound.

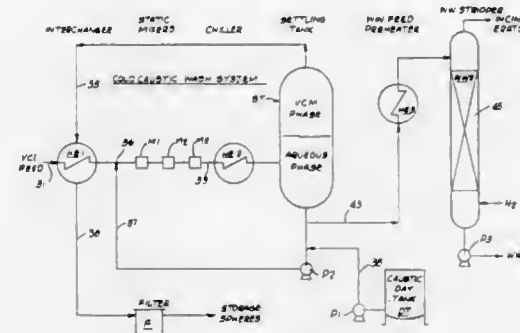
4,642,400

PROCESS FOR FINISHING VINYL CHLORIDE MONOMER

Joseph A. Cowfer, Medina, Ohio, and James E. Best, Paducah, Ky., assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Sep. 23, 1985, Ser. No. 779,337
Int. Cl.⁴ C07C 17/38

U.S. Cl. 570—238

6 Claims



1. In a process for purifying HCl- and water-containing vinyl chloride containing from 1 to 500 parts per million (ppm) HCl and 100 ppm to 300 ppm water dissolved therein, so as to produce essentially dry vinyl chloride monomer containing essentially no HCl, the improvement comprising,

- contacting said vinyl chloride in the liquid phase with a strongly alkaline aqueous solution of an alkali metal hydroxide containing from about 5 to about 35% by wt of said alkali metal hydroxide, so as to form an intimate mixture of organic and aqueous phases at a temperature in the range below about 25° F. but above the freezing point of said solution, the amount of said solution being sufficient to neutralize said HCl and decrease the water in said vinyl chloride monomer to a concentration no greater than 100 ppm, and,
- separating said organic phase from said aqueous phase, whereby said vinyl chloride monomer is dry and essentially free from HCl.

4,642,401

PROCESS FOR THE PRODUCTION OF LIQUID HYDROCARBONS

Hubert Coenen, and Rainer Hagen, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Fed. Rep. of Germany
Filed Jul. 16, 1984, Ser. No. 631,420

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326284

Int. Cl.⁴ C07C 4/04

U.S. Cl. 585—241

6 Claims

1. Process for the production of liquid hydrocarbons from pulverized wastes in the form of pulverized old tires, cable wastes, polyethylene wastes, polypropylene wastes, and mixtures thereof, consisting essentially of treating the pulverized old tires, cable wastes, polyethylene wastes, polypropylene wastes, and mixtures thereof, in a reactor at a temperature of 150° to 500° C. and a pressure of 20 to 300 bar with a solvent which is liquid at 1 bar and 20° C. to form a solvent phase charged with liquid hydrocarbons and a residue phase, the solvent being selected from benzene, naptha, toluene, xylene, ethylbenzene, water, and mixtures thereof, and the weight ratio of the wastes to the solvent being between 1:3 and 1:30; separating the solvent phase charged with the liquid hydrocarbons from the residue phase by gravity, resolving the separated solvent phase into components, by lowering the pressure or by lowering the pressure and temperature of the solvent phase to separate a gas fraction and several low boiling liquid hydrocarbons from the solvent phase, and by subjecting the solvent phase, from which the gas fraction and said several low boiling liquid hydrocarbons have been separated, to distillation to separate other hydrocarbons from the solvent phase; recovering solvent during the resolving of the separated solvent phase; and recycling the recovered solvent to the reactor.

4,642,403

PRODUCTION OF AROMATICS FROM ETHANE AND/OR ETHYLENE

Edward A. Hyde, Send Marsh, and Timothy K. McNiff, Weybridge, both of England, assignors to The British Petroleum Company p.l.c., London, England
Continuation-in-part of Ser. No. 788,338, Oct. 17, 1985. This application May 8, 1986, Ser. No. 861,071

Claims priority, application United Kingdom, Nov. 16, 1984, 8429007

Int. Cl.⁴ C07C 12/02

U.S. Cl. 585—415

10 Claims

1. A process for producing aromatic hydrocarbons, said process comprising bringing into contact in the vapour phase at a temperature from 500° to 750° C. a hydrocarbon feedstock containing at least 10% by weight of C₂ hydrocarbons with a catalyst composition comprising (i) an aluminosilicate loaded with gallium as a gallium compound and/or as gallium ions and having a silica to alumina molar ratio of at least 5:1, and (ii) a Group VIII metal selected from rhodium and platinum.

4,642,404

CONVERSION OF OLEFINS AND PARAFFINS TO HIGHER HYDROCARBONS

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 573,776, Jan. 23, 1984, Pat. No. 4,559,314, which is a continuation-in-part of Ser. No. 360,749, Mar. 22, 1982, abandoned. This application Oct. 25, 1985, Ser. No. 791,277

Int. Cl.⁴ C07C 12/02

U.S. Cl. 585—415

21 Claims

1. A process for converting a feedstock comprising C₂ + olefins, C₂-C₇ paraffins or a mixture thereof to conversion product comprising C₅ + hydrocarbon compounds which comprises contacting said feedstock at conversion conditions sufficient to convert said feedstock to said product with a catalyst composition prepared by a method which comprises forming a composite of a crystalline zeolite having a silica:alumina mole ratio of at least 100:1 and a Constraint Index from 1 to 12, a binder comprising alumina, and water, and contacting the composite with steam to enhance the activity of the catalyst.

4,642,402

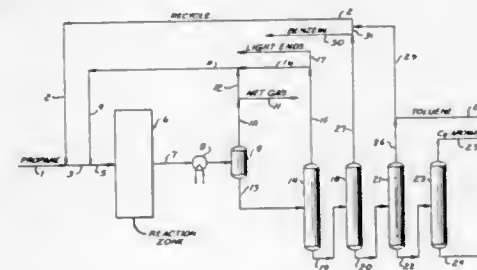
PROCESS FOR CONVERSION OF LIGHT ALIPHATIC HYDROCARBONS TO AROMATICS

Robert H. Jensen, Clarendon Hills, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 30, 1985, Ser. No. 814,830
Int. Cl.⁴ C07C 12/02

U.S. Cl. 585—411

19 Claims



1. In a hydrocarbon conversion process wherein a vapor phase feedstream comprising a C₂-C₅ aliphatic hydrocarbon is passed into a catalytic reaction zone containing a solid catalyst and converted into aromatic hydrocarbons comprising benzene, toluene and xylenes which are recovered from a reaction zone effluent stream; the improvement which comprises charging benzene and/or toluene into the reaction zone to increase the relative production of xylenes.

4,642,405

PROCESS FOR THE PRODUCTION OF METHALLYLBENZENE AND ISOBUTENYLBENZENE AND THEIR P-SUBSTITUTED ALKYL DERIVATIVES

Manfred Kaufhold, Marl, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany
Filed Feb. 18, 1986, Ser. No. 830,170

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1985, 3505156

Int. Cl.⁴ C07C 5/09, 1/253

U.S. Cl. 585—435

25 Claims

1. In a process for the production of a substantially pure mixture of methallyl-p-R-benzene (α-isomer), and the corresponding isobutenyl-p-R-benzene (β-isomer) by thermally cracking the corresponding p-R-neophyl chloride, wherein R is H or C₁-C₄-alkyl, the improvement comprising thermally cracking the neophyl chloride compound in the presence of an effective amount of an inhibitor of free radical polymerization of olefins and isomerizing the formed β-olefin by heating it thereby forming the corresponding α-olefin.

24. A process for isomerizing isobutenyl-p-R-benzene to methallyl-p-R-benzene comprising heating the former in the presence of a strong base, the temperature and base strength and amount being effective for said isomerization.

4,642,406

HIGH SEVERITY PROCESS FOR XYLENE PRODUCTION EMPLOYING A TRANSALKYLATION ZONE FOR XYLENE ISOMERIZATION

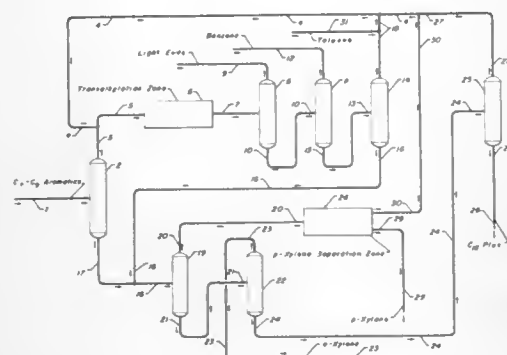
Robert J. Schmidt, Rolling Meadows, Ill., assignor to UOP Inc.,
Des Plaines, Ill.

Filed Sep. 13, 1985, Ser. No. 775,982

Int. Cl.⁴ C07C 5/22

U.S. Cl. 585—477

13 Claims



1. A process for the production of a desired xylene isomer which comprises the steps of:

- passing a hereinafter characterized first process stream, which comprises at least two xylene isomers, into an adsorptive xylene separation zone, withdrawing a product stream comprising the desired xylene isomer from the xylene separation zone and also withdrawing a raffinate stream comprising an undesired xylene isomer from the xylene separation zone;
- passing a first feed stream comprising toluene, a hereinafter characterized recycle stream and at least a portion of the undesired xylene isomer content of the raffinate stream into a catalytic transalkylation zone containing a nonmetal transalkylation catalyst and operated at high severity conditions including a hydrogen to hydrocarbon mole ratio above 2:1 and a temperature over 426 degrees Centigrade, and forming a transalkylation zone effluent stream which comprises benzene, toluene, xylenes and C₉ aromatics;
- separating the transalkylation zone effluent stream by fractional distillation to yield a benzene-rich process stream which is withdrawn from the process as a product stream, a toluene-rich process stream, a xylene-rich process stream comprising two xylene isomers, and a second process stream comprising C₉ aromatics;
- recycling at least a portion of the toluene-rich process stream into the transalkylation zone as said recycle stream; and
- passing at least a portion of the xylene-rich process stream into the xylene separation zone as said first process stream.

4,642,407

METHANOL CONVERSION USING REACTIVATED ZEOLITE

Ralph M. Dessau, Edison, and George T. Kerr, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,737, May 10, 1984, abandoned, which is a division of Ser. No. 458,398, Jan. 17, 1983, Pat. No. 4,461,845. This application Nov. 12, 1985, Ser. No. 796,679

Int. Cl.⁴ C07C 5/333

U.S. Cl. 585—640

23 Claims

1. A process for converting a feedstock comprising organic compounds selected from the group consisting of alcohol, carbonyl, ether and mixtures thereof to conversion product comprising hydrocarbon compounds which comprises con-

tacting said feedstock at conversion conditions with a catalyst composition comprising a crystalline zeolite material having a silicon/aluminum atomic ratio of at least about 2, said catalyst composition having been deactivated by contact with steam and reactivated by the steps of

contacting said steam-deactivated catalyst composition with an aluminum compound vapor at a temperature of from about 100° C. to about 850° C., and thereafter contacting said aluminum compound contacted catalyst composition with an aqueous acid solution of from about 0.001 molar to about 10 molar at a temperature of from about 20° C. to about 100° C.

4,642,408

METHOD FOR THE REMOVAL OF NICKEL, ALUMINUM AND CHLORINE FROM OLEFIN OLIGOMERS

Yves Chauvin, Le Pecq, and Dominique Commereuc, Meudon, both of France, assignors to Institut Francais du Pétrole, Rueil-Malmaison, France

Filed Apr. 22, 1985, Ser. No. 725,728

Claims priority, application France, Apr. 20, 1984, 84 06280

Int. Cl.⁴ C07C 7/00, 7/10

U.S. Cl. 585—836

10 Claims

1. In a method for the removal of aluminum, nickel and chlorine compounds from a liquid reaction product obtained by dimerization or codimerization of mono-olefins having two to four carbon atoms, in the presence of a catalyst obtained by the interaction of a nickel compound soluble in a hydrocarbon with an organo-aluminum chloride, comprising the steps of:

- treating the liquid reaction product with anhydrous ammonia,
- treating the resultant product of step (a) with an aqueous solution of alkali metal hydroxide to form an organic phase and an aqueous phase and
- separating the resultant aqueous phase, and recovering a resultant organic phase containing dimerized or codimerized mono-olefins from which aluminum, nickel and chlorine have been removed,

the improvement comprising treating said liquid reaction product with oxygen or a gas containing oxygen before or during step (a), said improvement further comprising treating the product of step (a) with oxygen or a gas containing oxygen before or during step (b), all of said treating steps with oxygen or oxygen-containing gas being conducted by bubbling said oxygen through the liquid reaction product so as to ensure substantially uniform gas-liquid contact.

4,642,409

METHOD FOR SELECTIVE DEALKYLATION OF A DIALKYL BENZENE AT THE PARAPOSITION THEREOF

Hiroshi Sato, Norio Ishii, and Kenichi Hirose, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1986, Ser. No. 827,698

Int. Cl.⁴ C07C 4/12

U.S. Cl. 585—486

7 Claims

1. A method for selectively dealkylating a 1,4-dialkylbenzene in a dialkylbenzene mixture in the presence of, as a catalyst, a crystalline zeolite having an SiO₂/Al₂O₃ molar ratio of at least 12/1 and a constrained index of 1 to 12, modified with a metal or metalloid oxide, wherein the crystalline zeolite is ion-exchanged with a treatment liquor containing a base ion selected from the group consisting of sodium ion, potassium ion, rubidium ion, and cesium ion and contains the base ion in an atomic ratio of 0.5/1 to 1.0/1 with respect to aluminum.

4,642,410

CATALYTIC POLY ALPHA-OLEFIN PROCESS Frederick C. Loveless, Cheshire, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn. Filed Mar. 14, 1985, Ser. No. 711,705 Int. Cl.⁴ C07C 2/02

U.S. Cl. 585—524

6 Claims

1. A process for oligomerizing an alpha-olefin which comprises contacting a transition metal halide and an organic halide with an alpha-olefin and thereafter an alkyl aluminum compound in a reaction zone, the mole ratio of the active halogen to aluminum being from 2.5 to 25, and oligomerizing said alpha-olefin to form oligomers having a molecular weight of from about 500 to 5000.

6. The process of claim 1 wherein the transition metal halide is titanium tetrachloride; the organic halogen compound is allyl chloride or t-butyl chloride; and the alkyl aluminum is triethyl aluminum or diethyl aluminum chloride, ethyl aluminum sesquibromide or ethyl aluminum sesquichloride.

4,642,411

TRYPTOPHAN OVERPRODUCER MUTANTS OF CEREAL CROPS

Kenneth A. Hibberd, Falcon Heights; Paul C. Anderson, Minneapolis, and Melanie Barker, Bloomington, all of Minn., assignors to Molecular Genetics Research and Development Limited Partnership, Minnetonka, Minn.

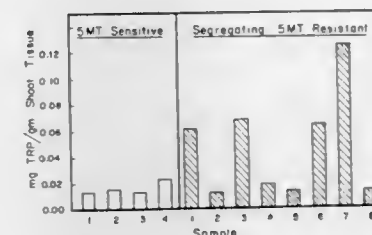
Continuation of Ser. No. 647,008, Sep. 4, 1984, Pat. No.

4,581,847. This application Feb. 21, 1985, Ser. No. 703,972

Int. Cl.⁴ A01H 1/06

U.S. Cl. 800—1

23 Claims



1. A monocotyledonous seed having an endogenous free tryptophan content of at least about one-tenth milligram per gram seed weight and capable of germinating into a plant capable of producing seed having an endogenous free tryptophan content of at least about one-tenth milligram per gram dry seed weight.

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ELECTRICAL

4,642,412 PHOTO-ELECTRONIC CONVERSION APPARATUS WITH LIGHT PATTERN DISCRIMINATOR

Shinichi Muramatsu, Higashiyamato; Toshikazu Shimada, Kokubunji; Sunao Matsubara, Tokorozawa; Haruo Itoh, Hino, and Nobuo Nakamura, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

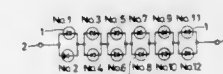
Filed Jul. 29, 1985, Ser. No. 759,961

Claims priority, application Japan, Jul. 27, 1984, 59-155256

Int. Cl.⁴ H01L 25/02, 27/14

U.S. Cl. 136—244

8 Claims



1. A photo-electric conversion apparatus comprising light pattern discriminating means including a plurality of photovoltaic devices which are so connected electrically that when all of said photovoltaic devices are exposed to uniform light, the electric output is smaller than when all of said photovoltaic devices are exposed to light forming a predetermined pattern wherein a portion of all of said photovoltaic devices is illuminated and at least one other portion of said photovoltaic devices is non-illuminated at the same time in accordance with the predetermined light pattern.

4,642,413 POWER GENERATING OPTICAL FILTER

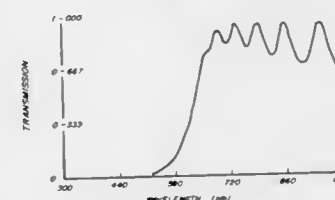
Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 11, 1985, Ser. No. 786,579

Int. Cl.⁴ H01L 31/06; G02B 5/20

U.S. Cl. 136—249

37 Claims



1. A power generating optical filter including a transparent substrate; a first substantially transparent electrode disposed

atop at least designated areas of the substrate; a body of photovoltaic material adapted to generate electron hole pairs in response to the absorption of incident radiation, said body disposed atop at least the first electrode; and a second substantially transparent electrode disposed atop at least designated areas of the body of photovoltaic material; the improvement comprising, in combination:

the first and second electrodes and the body of photovoltaic material each fabricated to preselected thicknesses and from materials characterized by preselected indices of refraction for cooperatively establishing optical interference effects, whereby said filter transmits at least a portion of selected wavelengths of radiation incident thereupon substantially differing from wavelengths transmitted by that body of photovoltaic material alone.

30. A filter as in claim 1, wherein said photovoltaic body includes at least one triad comprised of two layers of oppositely doped semiconductor material having a layer of substantially intrinsic semiconductor material interposed therebetween.

4,642,414 SOLAR CELL

Klaus-Dieter Rasch, Talheim, and Gerhard Strobl, Stuttgart, both of Fed. Rep. of Germany, assignors to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

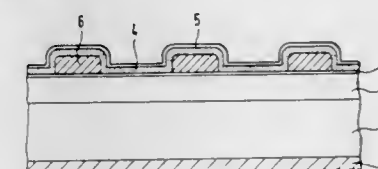
Filed May 16, 1985, Ser. No. 734,843

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1984, 3420887

Int. Cl.⁴ H01L 31/06

U.S. Cl. 136—256

16 Claims



1. Solar cell, comprising: a semiconductor body consisting of a monocrystalline or polycrystalline semiconductor material and containing a pn-junction formed between a thin front surface zone of said semiconductor body which is of one conduction type and the remainder of said semiconductor body which is of the other conduction type; a front surface metallization; a rear surface contact; a layer for reducing front surface reflection overlying said front surface metallization; and an amorphous or microcrystalline silicon layer arranged underneath said layer for reducing front surface reflection.

4,642,415 JOINT FOR INTERCONNECTING TWO ELECTRICAL CABLES OF DIFFERENT TYPES

Gianmario Lanfranchi, Trezzo D'Adda, and Bernardino Vercellio, Milan, both of Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

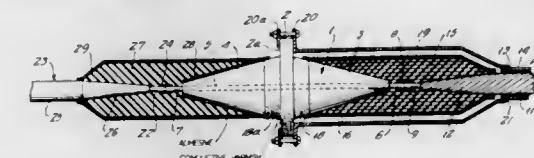
Filed Dec. 16, 1985, Ser. No. 809,156

Claims priority, application Italy, Dec. 17, 1984, 24089 A/84

Int. Cl.⁴ H02G 15/25

U.S. Cl. 174—22 R

10 Claims



1. Joint between two electrical cables of different types, each

of said cables having a conductor and the conductor of one of said cables being insulated with layers of solid insulation impregnated with a dielectric fluid and said one of said cables having a sheath around said insulation and the other of said cables having extruded solid insulation around the conductor thereof, said joint comprising:

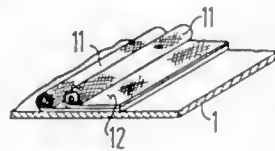
- a body of insulating material enclosing a metal rod except at end portions thereof, one end portion of said rod extending from one end of said body and the other end portion of said rod extending from the other end of said body;
- first connecting means mechanically and electrically connecting said one end portion of said rod to the end of the conductor of said one of said cables having said layers of solid insulation;
- further layers of solid insulation around said first connecting means, around a portion of the insulating material of said body adjacent said one end portion of said rod and around a portion of said layers of insulation of said one of said cables;
- a conductive metal enclosure around said further layers of solid insulation and said first connecting means and connected in fluid-tight relation at one end with said sheath and at the opposite end with said body to provide a fluid-tight enclosure around said solid insulation and said first connecting means;
- dielectric fluid of said one of said cables in said enclosure;
- second connecting means mechanically and electrically connecting said other end portion of said rod to the end of the conductor of said other of said cables having said extruded solid insulation and
- further solid insulation around said second connecting means, around a portion of the insulating material of said body adjacent to said other end portion of said rod and around a portion of the extruded solid insulation of said other of said cables adjacent to said second connecting means, said further solid insulation being without dielectric fluid and being bonded to said last mentioned portion of the insulation material of said body.

4,642,416
HIGH-FREQUENCY SEAL FOR CASING COVERINGS AND DOORS
Ludwig Rogner, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,357
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407657

Int. Cl.⁴ H05K 9/00
U.S. Cl. 174—35 GC

2 Claims



1. A radio-frequency seal of the type for enclosure coverings for electromagnetic interference suppression including doors for enclosures shielded from radio-frequencies, with an interference-suppressing sealing cord, the doors and the enclosures having surfaces, the seal including partially rolled up metallic mesh in the form of strips, which comes in contact with the surfaces to be sealed, the radio frequency seal comprising an interference-suppressor sealing cord having at least two partially rolled up metallic meshes in the form of strips, the unrolled portion of the metallic meshes lying one above the other while the rolled up portions of the metallic meshes lying next to one another, the interference-suppressing sealing cord is spot-welded on its unrolled portions to one of the surfaces to

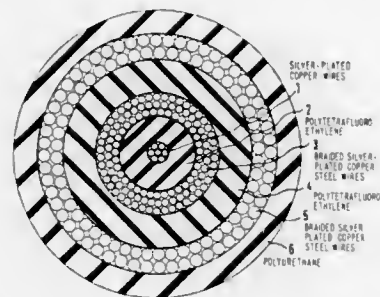
be sealed, and the metallic mesh lying above the other metallic mesh having the smaller width of the two metallic meshes.

4,642,417
CONCENTRIC THREE-CONDUCTOR CABLE
Klaus Ruthrof, Erlangen; Rudolf Körner, Leinburg, and Jürgen Dorner, Olching, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,043
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1984, 3428087

Int. Cl.⁴ H01B 7/34
U.S. Cl. 174—36

12 Claims



1. Concentric three-conductor cable, comprising an inner conductor and outer conductors formed of braided strands, and insulating material separating said outer conductors from each other and from said inner conductor, each of said outer conductors being formed of a plurality of layers and the d-c resistance of said outer conductors being several times less than the d-c resistance of said inner conductor.

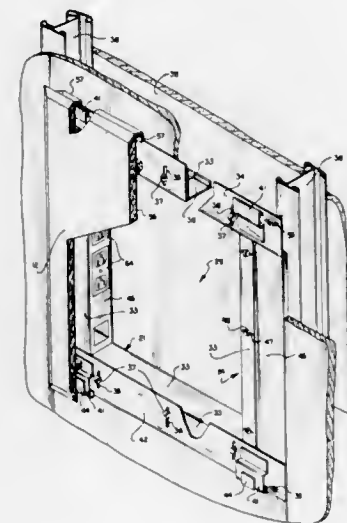
4,642,418
UTILITY MODULE FOR WALLS AND THE LIKE
Robert J. Menchetti, North Olmsted, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Continuation-in-part of Ser. No. 693,873, Jan. 23, 1985, Pat. No. 4,603,229. This application Jul. 29, 1985, Ser. No. 759,880

Int. Cl.⁴ H02G 3/22

U.S. Cl. 174—48

12 Claims



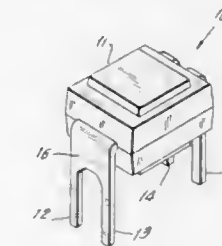
1. A service module for mounting in walls providing spaced and substantially parallel rows of wall panels, and in which one

row provides a panel opening, comprising an open rectangular frame providing two pairs of opposed side walls, said side walls having a width substantially equal to the spacing between said rows of wall panels plus the thickness of said one wall panel row, face flange means extending outwardly from each side wall substantially along a face plane, said flange means being structured to abut against panel edges along sides of said opening and overlap panels above and below said opening, and a cover structured for removably mounting on said frame to close said module and provide access thereto, said flange means associated with one pair of said side walls being adjustably mounted on said frame to adjust for variations in spacing between said adjacent panel edges.

4,642,419
FOUR-LEADED DUAL IN-LINE PACKAGE MODULE FOR SEMICONDUCTOR DEVICES
Dennis Meddles, Lawndale, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Apr. 6, 1981, Ser. No. 251,268
Int. Cl.⁴ H01L 23/28
U.S. Cl. 174—52 FP

12 Claims



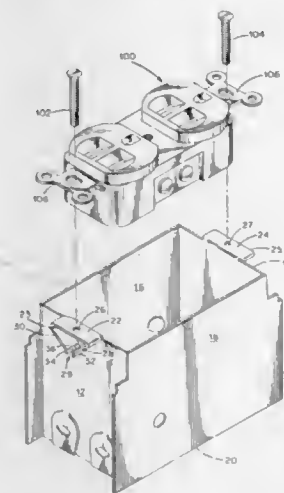
1. A four-leaded dual in-line housing assembly for a semiconductor device comprising:

- a rectangular molded insulation housing having a pair of generally flat, spaced, parallel sides and a pair of generally flat, spaced, parallel ends perpendicular to said sides, and generally flat, parallel top and bottom surfaces;
- a flat semiconductor chip disposed in the interior of said insulation housing;
- a first pair of first and second leads connected to said chip and extending from within said housing and out of the first of said pair of sides; said first pair of first and second leads having a fixed spacing at their outer ends and being separate and insulated from one another for their full length; the portions of said first pair of first and second leads within said housing lying in a plane parallel to the plane of at least one of said top and bottom surfaces and being symmetrically disposed along the width of said first of said pair of sides, the center of said first lead of said first pair of leads being located at $\frac{1}{4}$ the distance across the width of said first side and the center of said second lead of said first pair of leads being located at $\frac{3}{4}$ the distance across the width of said first side;
- a second pair of first and second leads connected to said chip and extending from within said housing and out of the second of said pair of sides; each of said second pair of leads being disposed in-line with respective ones of said first pair of leads; each of said first and second leads of said second pair of leads being joined together at least in the region interior of said housing at a common enlarged area lead frame; said enlarged area lead frame being disposed in a plane parallel to the plane of said first pair of leads.

4,642,420
FORMED METALLIC WIRING BOX
William Nattel, Montreal, Canada, assignor to Commander Electrical Materials, Inc., Quebec, Canada
Continuation-in-part of Ser. No. 494,832, May 16, 1983, Pat. No. 4,529,834. This application Jul. 9, 1985, Ser. No. 753,226
The portion of the term of this patent subsequent to Jul. 16, 2002, has been disclaimed.
Int. Cl.⁴ H02G 3/08

U.S. Cl. 174—53

3 Claims



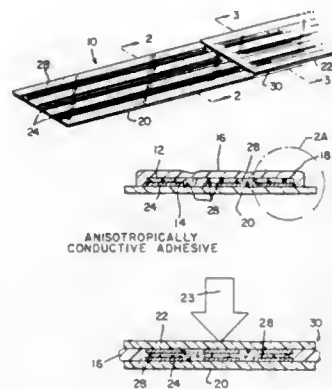
1. A resilient, sheet metal, electrical wiring box comprising: an integral metal wall structure having four side walls and a bottom wall, each side wall having side edges, and first and second end edges; the side walls joined together along their side edges, and the bottom wall joined to the side walls along the first end edges to form a chamber to receive a wiring device; two opposed side walls each having a wiring device attachment means integral therewith for receiving the threaded mounting member of a wiring device to be mounted in said box chamber; said wiring device attachment means comprising:

- a rectangular base plate fixed along one long side to the second edge of the side wall and extending at right angles to the side wall, said base plate having a first centrally located, mounting member receiving aperture slightly larger than the outside diameter of the mounting member of the wiring device but smaller than the head of the mounting member;
- first and second, generally rectangular, resiliently flexible, leg plates, the first leg plate joined at one narrow end to a first short side of the base plate, the second leg plate joined at one narrow end to the second short side of the base plate, the first and second leg plates extending down the outside of the sidewall to have their other narrow ends located adjacent each other and spaced below the first aperture in the base plate;
- the first and second leg plates terminating in first and second opposed foot portions, said foot portions forming a second aperture through which said wiring device mounting member can be inserted, said foot portions provided with thread engaging means for contacting said mounting member, said thread engaging means comprising at least three threads formed on each foot portion;
- said opposed leg plates adapted to flex apart to permit the facile insertion of the threaded mounting member between the opposed foot portions without turning, and adapted to urge the opposed foot portions toward one another to have the thread engaging means engage the mounting member, wherein the foot portions wedge themselves tightly against the mounting member when the mounting member is turned to have the leg plates contact the base plate.

4,642,421

ADHESIVE ELECTRICAL INTERCONNECTING MEANS
 Ronald A. Dery, and Warren C. Jones, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.
 Division of Ser. No. 657,717, Oct. 4, 1984. This application Aug. 27, 1985, Ser. No. 770,025

Int. Cl.⁴ H01B 7/08; H01R 3/00, 43/00; H02G 15/08
 U.S. Cl. 174—88 R 18 Claims



1. An electrical substrate comprising:
 an insulating member having at least one conductive path means on at least one surface thereof;
 a dielectric adhesive means covering said insulating member and said conductive path means, said dielectric adhesive means having conductive particles of random size randomly dispersed throughout in noncontiguous conductive units, said units being spaced apart so that no electrical connection takes place on the surface of the insulating member;
 an insulating layer secured onto the insulating member and said dielectric adhesive means, said insulating layer being selected from the group consisting of thermoplastic adhesives and pressure sensitive adhesives.
9. An adhesive electrical interconnecting means comprising:
 a first insulating member having at least one first conductive path means on one surface thereof;
 a first adhesive layer covering said at least one conductive path means and adjoining surface of said first insulating member, said first adhesive layer being an anisotropically conductive adhesive comprised of a nonhomogenous mixture of conductive particles in a nonconductive adhesive binder, the conductive particles, not requiring a specific shape, being dispersed randomly throughout the mixture in noncontiguous conductive units, each unit being comprised of one or more individual particles, the units being sufficiently spaced apart to preclude electrical conductivity between adjacent first conductive path means on the same substrate;
 an insulating adhesive layer secured onto said first adhesive layer;
 a second insulating member having at least one second conductive path means thereon;
 said at least one first conductive path means being positioned in conducting relationship to said at least one second conductive path means, such that the adhesive layers are disposed between said first and second insulating members, and said first and second conductive path means; and
 said conductive units on said at least one first conductive path means extending through said insulating adhesive layer and making electrical connection with said at least one first conductive path means and with said at least one second conductive path means.
17. An interconnecting means made in accordance with the method comprised of the steps of:
 selecting a first insulating member having at least one conductive path means on at least one surface thereof;
 applying a dielectric adhesive means covering said first

insulating member and said conductive path means, said dielectric adhesive means having conductive particles of random size randomly dispersed throughout, said particles being spaced apart so that no electrical connection takes place on the surface of said insulating member;
 applying an insulating thermoplastic adhesive layer secured onto said first insulating member covering said dielectric adhesive means;
 positioning said at least one conductive path means in a conducting relationship with at least one conductive means on a second insulating member such that said thermoplastic adhesive layer is disposed between said at least one conductive path means and said at least one conductive means;
 applying heat and pressure to the positioned at least one conductive path means and at least one conductive means causing said insulating thermoplastic adhesive layer to soften, flow and become thinner thus causing said large conductive particles on said at least one conductive path to extend through said insulating layer and make electrical connection with said at least one conductive means and with said at least one conductive path means.

4,642,422

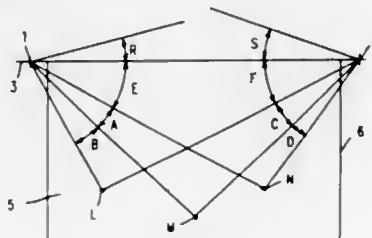
CALIBRATION OF A SCANNING LIGHT INTERRUPT TYPE OF DATA INPUT INTERFACE

Richard L. Garwin, Scarsdale, and James L. Levine, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,639
 Int. Cl.⁴ G08C 21/00

U.S. Cl. 178—18

9 Claims



1. The process of coordinating electrical signal timing and mechanical sweep movement in a device wherein the position of an object in an area is determined by the interruption of a scanning light comprising in combination the steps of:
 determining the magnitude of the index angular difference between the position of the mechanical sweep movement when the electrical signal indicating the beginning of a mechanical scanning sweep movement occurs and a base line through the scanning axis, and
 correcting by at least one of addition or subtraction said index angular difference from the indicated angle at each scanning light interruption event.

4,642,423

TOUCH CONTROL SYSTEM FOR USE WITH OR HAVING A THREE-DIMENSIONALLY CURVED TOUCH SURFACE

Robert Adler, Northfield, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

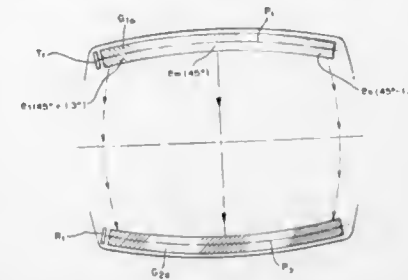
Filed Aug. 30, 1985, Ser. No. 771,324
 Int. Cl.⁴ G08C 21/00

U.S. Cl. 178—18

17 Claims

1. In a touch control system for a cathode ray tube, display panel or other touch-controlled device which is capable of recognizing touch positions along a predetermined coordinate axis on a three dimensionally curved touch surface, the apparatus comprising:

a substrate comprising a sector of a three dimensionally curved surface having a touch surface capable of propagating surface acoustic waves such that a touch on said surface causes a perturbation of a surface wave propagating through the region of the touch;
 input surface wave transducer means mechanically and acoustically coupled to said touch surface of said substrate and useful when excited for launching a burst of surface



acoustic waves on said touch surface along a first path which represents a great circle on said surface; and
 means including an array of surface wave reflective elements disposed in or on said touch surface of said substrate along said first path for directing wave components derived from said burst across said touch surface of said substrate in a progression of transverse paths intersecting said coordinate axis.

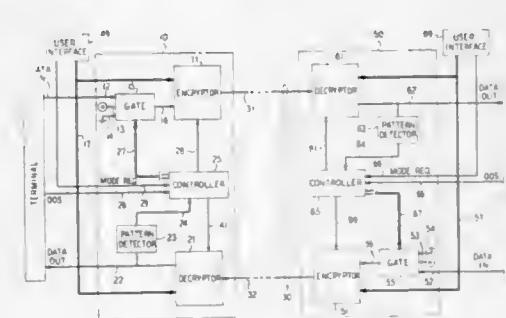
4,642,424

CRYPTOGRAPHIC TRANSMISSION SYSTEM
 Bruce E. McNair, Holmdel, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jan. 3, 1984, Ser. No. 567,815
 Int. Cl.⁴ H04L 9/00

U.S. Cl. 380—48

37 Claims



10. Apparatus for use in a cryptographic communication system, said system including
 first transmission means for encrypting data applied to its and for transmitting the resulting encrypted data to an associated first reception means, the latter including means for receiving the encrypted data transmitted by said first transmission means and for decrypting that received encrypted data, and
 second transmission means co-located with said first reception means for encrypting data applied to it and for transmitting the resulting encrypted data to an associated second reception means, the latter being co-located with said first transmission means and including means for receiving the encrypted data transmitted by said second transmission means and means for decrypting that received encrypted data,
 each of said transmission means being operable in a respective cryptographic non-self-synchronizing encryption mode and in a respective cryptographic self-synchronizing encryption mode and each of said reception means

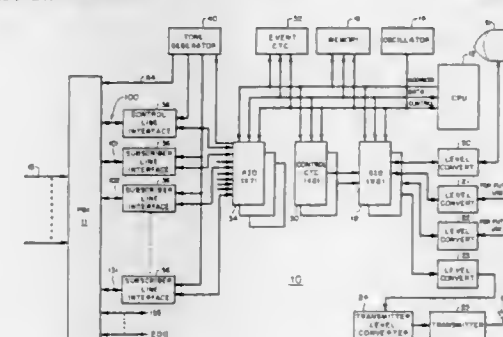
4,642,425

TELEPHONE PAGING SYSTEM AND METHOD
 William H. Guinn, Jr., Lilburn; Richard M. Corbett, Atlanta; Robert S. Bundy, Shellville; Jeffrey M. Seaman, Lilburn; Keith B. Duncan, and Charles M. Link, II, both of Lawrenceville, all of Ga., assignors to BBL Industries, Inc., Atlanta, Ga.
 Filed May 7, 1984, Ser. No. 608,048

Int. Cl.⁴ H01Q 7/00

U.S. Cl. 379—57

41 Claims



1. In a telephone system including branching means for switching signals on an incoming telephone line between a plurality of extension telephone lines and a plurality of means for receiving paging code signals, each receiving means being responsive to a particular paging code signal, the improvement comprising:
 means for selecting a plurality of extension telephone lines;
 means for detecting signals directed to selected extension lines representing a call;
 means for storing a plurality of signals representing different paging codes, wherein each paging code signal distinctively corresponds to one of the selected extension lines and a receiving means;
 means for identifying the paging code signal corresponding to the selected extension line for which the detecting means detected a call signal; and
 means for transmitting the identified paging code signal to a plurality of the receiving means.

4,642,426
APPARATUS FOR LOCATING FAULTS IN A CARRIER SUBSCRIBER COMMUNICATION SYSTEM
 Tom L. Blackburn, San Jose, Calif., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

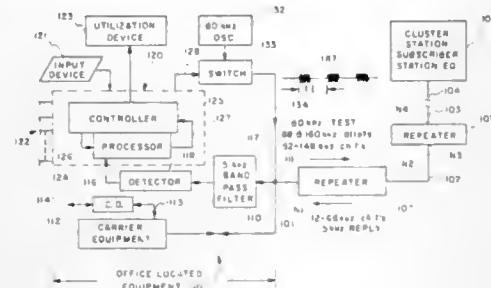
Filed Dec. 10, 1984, Ser. No. 680,205

The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.

Int. Cl.⁴ H04B 1/60, 3/46

U.S. Cl. 370—13.1

20 Claims



1. Apparatus for checking for faults in a carrier subscriber communication system having office equipment which is connected in series with pluralities of series connected cables and repeaters and subscriber station terminal equipment, each of which repeaters is connected to one adjacent one of said cables at a first node and to another adjacent one of said cables at a second node, comprising:

means collocated with said office equipment for transmitting a selected number of test pulses having a first frequency f_1 on a first cable to the first node at a first repeater that is closest to said office equipment, said first frequency being outside first and second bandwidths of frequencies that are passed by said repeaters between said office location and subscriber station equipment and vice versa;

means in said first repeater for determining a first number of test pulses that are received at said first node thereof;

first means in said first repeater for incrementing said first number of received test pulses by a first prescribed number to produce a second number of test pulses;

first means in said first repeater for coupling a first predetermined number of reply pulses having a second frequency f_2 to said first node of said first repeater for transmission on said first cable toward said office equipment if the second number of test pulses equals a second prescribed number for testing the integrity of said first cable between said first repeater and the office equipment location said second frequency f_2 being within said second bandwidth of frequencies that are passed by said repeaters between subscriber station equipment and office equipment;

means at the location of the said office equipment for receiving any reply pulses transmitted over said first cable to said office location for indicating the status of the first cable under test;

second means in said first repeater for incrementing the second number of test pulses by a third prescribed number to produce a third number of test pulses if the second number of test pulses is not equal to the second prescribed number;

means in said first repeater for performing a predetermined test in said first repeater if the third number of test pulses is equal to a fourth prescribed number, which number may be equal to said second prescribed number; and

second means in said first repeater for coupling a second predetermined number of reply pulses, which may be equal to said first predetermined number, to one of said first and second nodes of said first repeater for transmission over said first cable to said receiver means for indicating the results of said predetermined test;

said receiving means being operative for determining the

number of reply pulses which are received thereby over said first cable for indicating the location of a fault, if any, in said first repeater and/or first cable.

4,642,427

CONTACT ARRANGEMENT

Christer Kratz; Ake Engström, and Göran Karlsson, all of Nynäshamn, Sweden

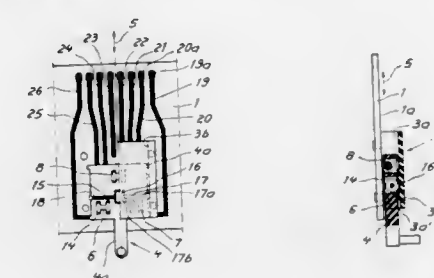
PCT No. PCT/SE84/00330, § 371 Date Jul. 16, 1985, § 102(e) Date Jul. 16, 1985, PCT Pub. No. WO85/02299, PCT Pub. Date May 23, 1985

PCT Filed Oct. 8, 1984, Ser. No. 757,838

Claims priority, application Sweden, Nov. 16, 1983, 8306311 Int. Cl.⁴ H01H 15/06, 1/16

U.S. Cl. 200—16 C

3 Claims



1. A switch for making electrical contacts between electrical circuit strips on a circuit board comprising:

electrically conductive strips arranged in a predetermined pattern on said circuit board, portions of said strips extending in pairs in parallel in a first direction within a switching area for providing fixed switching contacts of said switch;

an essentially U-shaped housing attached to said circuit board comprising wall portions and a cover portion extending above said switching area and offset a predetermined distance above said circuit board for defining a space essentially rectangular in cross-section and being opened in said first direction;

a slide member dimensioned to fit inside said housing between the housing and the circuit board for movement in said first direction;

said slide member containing a plurality of contact members, each of said contact members comprising a first and a second contact roller integrally interconnected by a shaft portion for forming said contact member;

each of said contact members being supported by said slide member via said shaft portion for being pivotable during the movement of the slide member in said first direction and each of said contact rollers being positioned immediately above and containing a corresponding circuit strip, each contact member forming an electric circuit from a first circuit strip to the first contact roller, thence through said shaft portion to the integrally connected second contact roller and finally to a second circuit strip;

said contact members being arranged in at least two rows offset in said first direction for supporting said slide member by the contact of said contact members and said circuit board;

said slide member including a biasing means for biasing said slide member towards said circuit board and each contact member into contact with the corresponding circuit strip, said biasing member being positioned between said rows of contact members;

said slide member being movable in said first direction for causing said contact members to pivot and roll over said circuit strips for opening and closing electric circuits in dependence of the pattern of said circuit strips;

each shaft portion being perpendicular to said first direction

and constituting first guiding means for guiding said slide member in said first direction during the movement of said slider and preventing deviations from said first direction; said wall portion of said housing forming second guiding means for preventing lateral deviations of the slide member from said first direction.

4,642,428

CIRCUIT INTERRUPTER

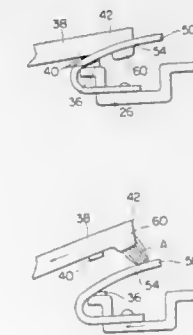
Hajimu Yoshiyasu; Mitsugu Takahashi, both of Itami; Fumiyuki Hisatsune, and Shiro Murata, both of Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,071

Claims priority, application Japan, Aug. 15, 1984, 59-169391; Aug. 15, 1984, 59-169392; Aug. 15, 1984, 59-169395; Aug. 15, 1984, 59-169398; Aug. 15, 1984, 59-169399; Aug. 15, 1984, 59-169403; Aug. 15, 1984, 59-169404; Aug. 15, 1984, 59-169405 Int. Cl.⁴ H01H 33/20

U.S. Cl. 200—144 R

21 Claims



1. A circuit interrupter comprising in a housing:

a stationary contact;

a stationary conductor carrying said stationary contact;

a movable contact;

a movable contact arm carrying said movable contact;

an operating mechanism for moving said movable contact arm between contact-closed and contact-open positions in response to an overcurrent flowing through said circuit interrupter, said stationary and movable contacts defining therein an arcing region in which an electric arc is established when said contacts are tripped open;

an arc extinguisher including a plurality of arc extinguisher plates disposed in a facing relationship with said arcing region for cooling and extinguishing the electric arc;

an arc horn on said movable contact arm and providing a surface to which one of the legs of the electric arc is transferred from said contact when said movable contact is moved toward the open position after being tripped open;

an arc runner mounted on said stationary conductor and providing a surface to which the other of the legs of the electric arc is transferred from said stationary contact when said movable contact is moved toward the open position after being tripped open;

said arc runner having formed therein an arc runner slot which opens to substantially surround said arcing region; said arc runner and said stationary contact being positioned such that at least one of said movable contact and said arc horn of said movable contact arm is located within said arc runner slot of said arc runner when said contacts are in a closed position.

4,642,429
SWITCH

Teijiro Mori, Nishinomiya; Yuichi Wada, Kawanishi; Yuji Sako, Kasugai; Hiroaki Tazawa, Nagoya, and Hiroyuki Okado, Owariasahi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP83/00397, § 371 Date Jul. 2, 1984, § 102(e) Date Jul. 2, 1984, PCT Pub. No. WO84/02033, PCT Pub. Date May 24, 1984

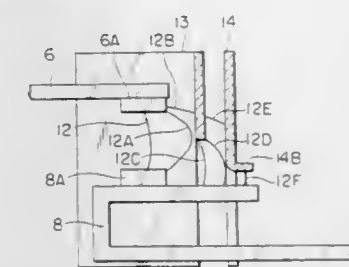
PCT Filed Nov. 4, 1983, Ser. No. 629,833

Claims priority, application Japan, Nov. 10, 1982, 57-197058; Nov. 10, 1982, 57-197061; Dec. 3, 1982, 57-212272; Dec. 3, 1982, 57-212275; Dec. 3, 1982, 57-212276; Dec. 3, 1982, 57-212277; Dec. 3, 1982, 57-212281; Dec. 3, 1982, 57-212282; Dec. 24, 1982, 57-229545

Int. Cl.⁴ H01H 33/08

U.S. Cl. 200—144 R

12 Claims



1. A switch comprising: a housing; a stationary contact stationarily disposed within the housing and having a distal end; a stationary contact element joined to the stationary contact at a location spaced from the distal end thereof; a movable contact mounted to undergo movement in the housing toward and away from the stationary contact; a movable contact element joined to the movable contact for movement therewith and being disposed in opposed facing relation to the stationary contact element; a first metallic arc extinguishing member disposed in the housing and having first and second spaced-apart sidewall portions disposed on opposite sides of the stationary and movable contacts in the region of the stationary and movable contact elements, and a third sidewall portion interconnecting the first and second sidewall portions at a location between the stationary contact element and the distal end of the stationary contact, the third sidewall portion having a gap therein through which extends the distal end portion of the stationary contact; a second metallic arc extinguishing member disposed in the housing and having a sidewall portion spaced from the third sidewall portion of the first metallic arc extinguishing member in the direction of the stationary contact distal end, the sidewall portion of the second metallic arc extinguishing member having a gap therein through which extends the distal end portion of the stationary contact; and wherein the gap spacing between the second metallic arc extinguishing member and the stationary contact is smaller than the gap spacing between the first metallic arc extinguishing member and the stationary contact.

4,642,430

MOLDED CASE CIRCUIT BREAKER WITH AN IMPROVED CONTOURED CRADLE

Robert J. Tedesco, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1985, Ser. No. 756,484

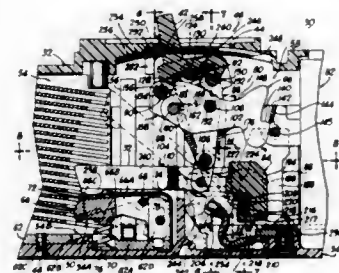
Int. Cl.⁴ H01H 3/46

U.S. Cl. 200—153 G

11 Claims

1. An electrical circuit breaker comprising: a first electrical contact, a second electrical contact, and operating means for moving said first and second electrical contacts into and out of engagement, said operating means

having an OPEN position, a CLOSED position and a TRIPPED position, said operating means including an over-center toggle mechanism and a manually engageable handle for moving said operating means from said TRIPPED position to and beyond said OPEN position and then to said CLOSED position after the circuit breaker has been tripped and thereby resetting the operating means, said over-center toggle mechanism comprising (a) a rigid, one-piece pivotable cradle having an elongated, arcuate



cam surface formed along a portion thereof, and (b) a cradle cam pin movable by said handle and disposed for physically engaging the arcuate cam surface of said cradle during a reset operation, the curvature of said cradle cam surface being physically configured to change the mechanical advantage of said handle during the reset operation in such a manner that a substantially constant reset force is applied to said cradle cam surface through said handle and said cradle cam pin to reset said operating means.

4,642,431
MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE ELECTRICAL CONTACT POSITIONED BY A CAMMING SPRING LOADED CLIP

Robert J. Tedesco, Coraopolis, and David L. Haggerty, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

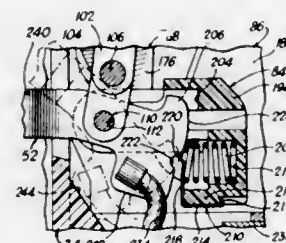
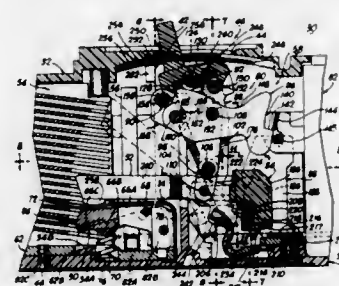
Filed Jul. 18, 1985, Ser. No. 756,487
Int. Cl.⁴ H01H 3/46

U.S. Cl. 200—153 G

16 Claims

1. An electrical circuit breaker comprising; a first electrical contact disposed on a movable elongated contact arm having an end portion with a cam surface, a second electrical contact, and operating means for moving said first electrical contact and contact arm into a CLOSED position and an OPEN position relative to said second electrical contact, said operating means comprising a rotatable cross-bar having a recess for receiving the end portion of said contact arm, said operating means further comprising spring means for releasably biasing the end portion of said contact arm into driving engagement with said cross-bar for enabling rotational movement of said first electrical contact and contact arm in unison with the rotational movement of said cross-bar during a normal trip operation of the circuit breaker and for enabling rotational movement of said first electrical contact and contact arm substantially independently of the rotational movement of said cross-bar upon the occurrence of a fault current condition, said spring means comprising a compression spring and a spring clip secured to said cross-bar with said spring clip disposed between said compression spring and the end portion of said contact arm, said spring clip having an

outwardly projecting cam surface for engaging the cam surface of said contact arm end portion and transferring



spring force from said compression spring to said contact arm end portion.

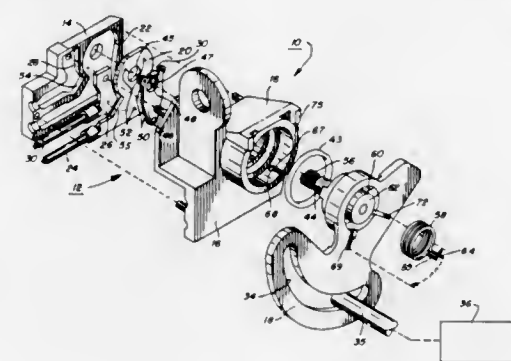
4,642,432
SWITCH MECHANISM WITH COMBINATION SPRING AND ASSEMBLY RETAINER

Thomas F. Ring, Shelby, N.C., assignor to Fasco Controls Corporation, Shelby, N.C.

Filed Dec. 19, 1985, Ser. No. 810,582
Int. Cl.⁴ H01H 21/38

U.S. Cl. 200—155 R

9 Claims



1. A switching mechanism for providing an electrical connection between two conductors associated therewith comprising

a body member having a first contact element mounted thereon and connected to one of the conductors, and a second contact element mounted thereon spaced from said first contact element and being connected to the other conductor,

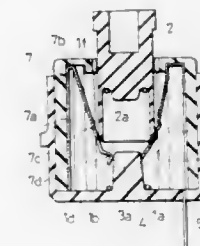
an actuator member rotatably mounted on said body member and having a switching element connected thereto and rotatably movable therewith, said actuator member being movable to a first position wherein said movable switching element is out of electrical contact with said contact elements and to a second position wherein said movable

switching element is in electrical contact with said contact elements, and a spring member associated with said actuator and arranged to resiliently bias the same to one of said positions, said body member and said actuator each having means for holding a portion of said spring member, respectively, for retaining said actuator on said body member.

4,642,433
PUSHBUTTON SWITCH WITH AURAL CONFIRMATION OF OPERATION
Taneo Murata, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jul. 11, 1985, Ser. No. 754,337
Claims priority, application Japan, Jul. 11, 1984, 59-104986[U]; Jul. 16, 1984, 59-107372[U]
Int. Cl.⁴ H01H 5/18, 9/16, 13/36
U.S. Cl. 200—308

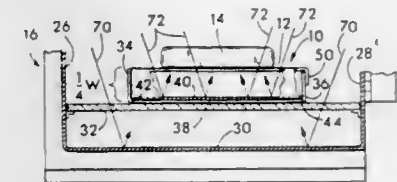
2 Claims



1. A pushbutton switch comprising: a casing having an opening in an upper wall and side walls; a pushbutton member having one part extending from said casing and a stem disposed through said opening into said casing, said member being depressable such that an end of said stem is moved downward in the casing from an initial position to an operative position; biasing means engaging said pushbutton member for biasing said pushbutton member and stem toward said initial position; a switch element disposed in the casing and having a contact member engaged with the end of said stem such that said switch element is in one state when said stem is in said initial position and another state when said stem is in said operative position; and a leaf spring disposed in the casing adjacent one side wall of said casing, said spring including a fixed portion which is fixedly mounted relative to said one side wall, an upright portion extending therefrom displaceable by a bending action of said spring away from said one side wall and releasable back toward said one side wall so as to strike against it and cause a clicking sound, a bent portion bent downward from said upright portion at an angle, a spring portion extending downward at said angle from said bent portion and provided with a protruding portion on its end, wherein as said stem is moved downward from said initial position, said end of said stem rides downwardly on said spring portion so as to bend said leaf spring and displace said upright portion thereof away from said one side wall, and as said stem reaches said operative position and said switch element is switched from one state to the other, said end of said stem engages said protruding portion, thereby providing an operator of said pushbutton switch a tactile feel of operation, and then rides over said protruding portion so as to release said end of said spring portion and cause said upright portion to move back and strike against said one side wall, thereby providing the operator a clicking sound for aural confirmation of operation.

4,642,434
MICROWAVE REFLECTIVE ENERGY CONCENTRATING SPACER
David H. Cox, Robbinsdale, David W. Andreas, Minneapolis, and James D. Watkins, Prior Lake, all of Minn., assignors to Golden Valley Microwave Foods Inc., Eden Prairie, Minn.
Filed Nov. 14, 1985, Ser. No. 797,926
Int. Cl.⁴ H05B 6/64
U.S. Cl. 219—10.55 E

4 Claims



1. A foldable and collapsible microwave reflective energy concentrating spacer that can be shipped in a food package for facilitating the heating of food in a microwave oven having a microwave transparent supporting shelf located an indeterminate distance above a microwave reflective oven floor comprising,

a spacer body defining an upper support surface for supporting a food article thereon and a lower microwave reflective surface spaced below the supporting surface by a distance of about $\frac{1}{4}$ wave length of the microwave energy supplied by the oven, whereby when said microwave energy has a wavelength of 12 cm said distance is about 2.5 to 3 cm,

said microwave reflective surface comprising microwave reflective sheet material extending the width and breadth of the spacer body and being substantially aligned with the support surface,

a portion of the spacer body between the support surface and the reflective surface being composed of microwave transparent material,

whereby microwave energy from the oven striking the reflective surface of the spacer body from above is reflected upwardly therefrom such that the reflective surface acts as an artificial oven floor forming a region of concentrated phase-reinforced microwave energy inside the food or at the surface of the food article resting upon said upper support surface to thereby enhance heating of the food by providing a uniformly high level of heating without regard to the distance between the supporting shelf of the oven and the oven floor,

and said spacer body is formed from a plurality of panels of microwave transparent sheet material connected by hinges at intersecting edges which are parallel to one another to define a spacer that is adapted to be folded flat for compact storage and shipment in said package by folding the spacer body at the parallel hinges to a flattened condition, one of the panels comprising a horizontal bottom wall panel including a metal foil defining said microwave reflective surface and movable members operationally associated with the panels to hold the spacer body in an upright condition during use to support the weight of the food resting on the upper support surface.

4,642,435
ROTATING SLOT ANTENNA ARRANGEMENT FOR MICROWAVE OVEN
Louis H. Fitzmayer, James E. Staats, and Matthew S. Miller, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Dec. 26, 1985, Ser. No. 813,638
Int. Cl.⁴ H05B 6/72
U.S. Cl. 219—10.55 F

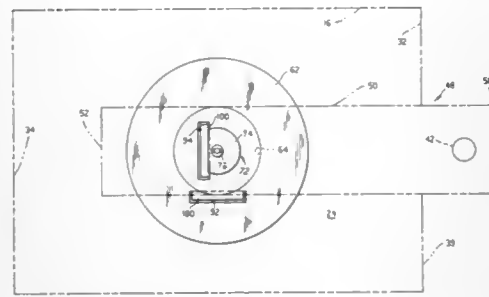
11 Claims

1. A microwave oven comprising: a cooking cavity defined by electrically conductive walls;

a rectangular feed waveguide extending along the outer surface of one of said cooking cavity walls, one wall of said waveguide being common with at least a portion of said one wall of said cooking cavity, said common wall having formed therein a circular opening laterally centrally positioned relative to said cavity;

a microwave energy generator coupled to said waveguide to establish a microwave energy propagating mode therein; said waveguide including a short circuit termination remote from said generator beyond the circular opening;

a circular metallic radiating disk antenna mounted in said cavity for rotation in a plane parallel to said common wall having an axis of rotation coaxially aligned with the circular opening, said disk antenna being configured to radiate energy peripherally from the outermost edge of said disk antenna;



means for rotating said disk antenna;

said disk having formed therein two elongated radiating slots, a first one of said slots being oriented substantially perpendicular to a first radial line extending from said axis of rotation of said disk antenna and a second one of said slots being oriented substantially perpendicular to a second radial line extending from said axis of rotation at an angle of 90° relative to said first radial line, said first slot being radially positioned outwardly of said second slot at a distance selected for relatively strong coupling to energy propagating in said waveguide and said second slot being positioned for relatively moderate coupling to the waveguide energy; each of said slots being louvered for improved coupling of microwave energy to the load being heated in said cavity.

4,642,436

AUTOMATIC METALLIC HONEYCOMB CORE MANUFACTURING MACHINE

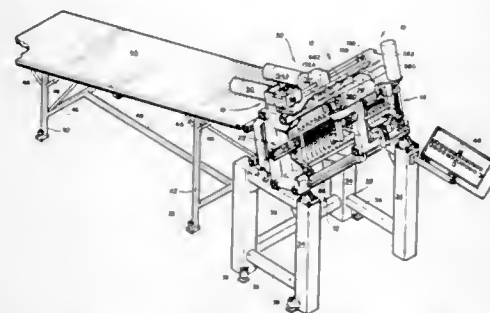
William F. Rethwish, Bonita, and Samuel Schneider, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 14, 1984, Ser. No. 650,627

Int. Cl.⁴ B23K 11/00, 37/02

U.S. Cl. 219—78.11

13 Claims



1. A machine for fabricating a continuous length of honey-

comb core of discrete height and width from a continuous strip of pre-formed foil comprising:

- a mainframe assembly;
- first weld electrodes positioned along said mainframe assembly;
- a transport assembly carried by said mainframe assembly and translatable relative to said mainframe assembly along said first weld electrode;
- second weld electrodes carried by said transport assembly said second weld electrodes always addressing a portion of said first weld electrodes; and
- a foil positioning means carried by said transport assembly for laying a layer of a pre-formed foil between said first weld electrodes prior to said second weld electrodes contacting any portion of said addressed first weld electrodes whereby when two layers of said preformed foil are positioned adjacent to said first weld electrodes said two layers are welded together at discrete locations by current passing between said first and second weld electrodes through said layers.

4,642,437

ELECTRODE ROLL FOR ELECTRIC RESISTANCE WELDING

Masatoshi Yamamoto, Yasushi Kawai, Katsuyoshi Shudo, Hiroyuki Kato, all of Sagami-hara, and Shunsuke Masuda, Kamakura, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

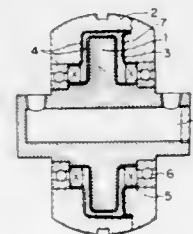
Filed Dec. 20, 1985, Ser. No. 811,755

Claims priority, application Japan, Dec. 26, 1984, 59-278822

Int. Cl.⁴ B23K 11/06

U.S. Cl. 219—84

3 Claims



1. An electrode roll for electric resistance welding comprising a stator member at least partly made of copper or a copper alloy, a rotor member at least partly made of copper or a copper alloy and rotatably mounted on said stator member, and a fusible alloy mainly composed of gallium and filling as a conductive medium an annular gap defined between said stator and rotor members, wherein portions of said stator and rotor members facing said annular gap and being made of copper or a copper alloy are covered by an alloy layer containing cobalt and tungsten in weight proportions of 90:10 to 30:70.

4,642,438

WORKPIECE MOUNTING AND CLAMPING SYSTEM HAVING SUBMICRON POSITIONING REPEATABILITY

Karl W. Beumer, Charles A. Gaston, Charles H. Locke, Alfred Mack, all of Poughkeepsie; Brian C. O'Neill, Millbrook, all of N.Y.; Warren J. Pinckney, New Fairfield, Conn., and Alan D. Wilson, Armonk, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,724

Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 L

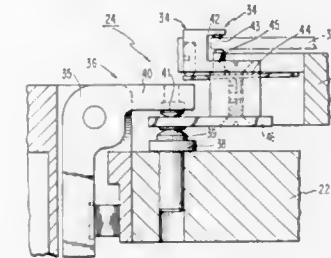
37 Claims

1. A workpiece positioning system for substantially avoiding mechanical hysteresis and providing accurate and precisely repeatable movement of a workpiece with respect to an associated apparatus which operates on the workpiece, comprising:

- a movable positioning table;
- a workpiece supporting superstructure;

coupling means for mounting said workpiece to said workpiece supporting superstructure; and

a combination of at least three passive elastic kinematic support means for joining said workpiece supporting superstructure to said movable positioning table, each of said support means being selectively in at least one direction which is desired to be fixed and compliant in all



uncontrolled directions; containing different degrees of freedom of movement of said superstructure such that all six degrees of freedom are fixed without redundantly fixing any degree of freedom, so that said superstructure is not over-constrained;

whereby mechanical hysteresis of said workpiece with respect to said associated apparatus which operates on said workpiece is substantially avoided.

4,642,439

METHOD AND APPARATUS FOR EDGE CONTOURING LENSES

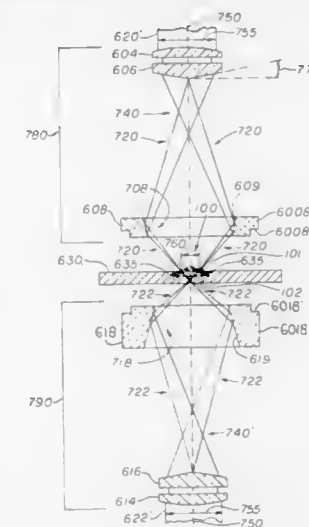
Richard T. Miller, Yefim P. Sukhman, both of Phoenix, and Lynn C. Welker, Scottsdale, all of Ariz., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 3, 1985, Ser. No. 688,491

Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 LN

16 Claims



1. A method of fully contouring the peripheral edge of a lens comprising the steps of:

- (A) positioning a workpiece having an anterior and a posterior surface between a first and a second beam focussing means situated opposite each other wherein each of said beam focussing means is capable of projecting a ring-shaped beam of electromagnetic radiation in the direction of said workpiece surfaces such that one ring-shaped beam from each of said beam focussing means impinges upon the surface of said workpiece at which the beam is directed in

such a position and at such an angle relative to each respective surface that a lens of a preselected diameter having a fully contoured peripheral edge can be obtained, said workpiece being a unitary body comprising a lens made of a synthetic polymeric material having a central optical region surrounded by an annular peripheral region, and thereafter

(B) passing a beam of electromagnetic radiation from at least one electromagnetic radiation source through each of said first and second beam focussing means for a sufficient period of time to allow said ring-shaped beams of electromagnetic radiation projected from said beam focussing means to impinge upon and fully edge contour and sever said lens from the workpiece, said beam having an appropriate wavelength for the material from which the lens is made and having a sufficient level of energy to accomplish said contouring and severing after passing through said beam focussing means.

4,642,440

SEMI-TRANSFERRED ARC IN A LIQUID STABILIZED PLASMA GENERATOR AND METHOD FOR UTILIZING THE SAME

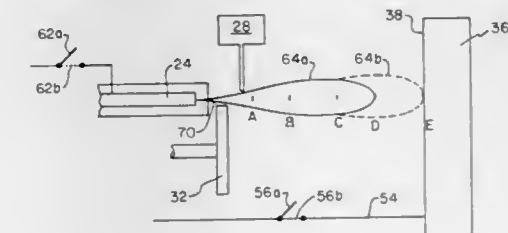
Jay F. Schnackel, 47156 Beechcrest Dr., Plymouth, Mich. 48170, and Karel Zverina, Biddle House Apt. 8D, 2502 Biddle Blvd., Wyandotte, Mich. 48192

Filed Nov. 13, 1984, Ser. No. 670,636

Int. Cl.⁴ B23K 9/00

U.S. Cl. 219—121 PP

7 Claims



1. A method of applying a coating to an electrically conductive substrate comprising:

- generating a plasma stream by forming an arc between a cathode and an anode and bringing a liquid into contact with the arc,
- directing the plasma stream toward the substrate,
- introducing a coating material into the plasma stream to melt and spray the coating material on the substrate,
- while the plasma stream is being generated and while coating material is being introduced into the plasma stream, selectively varying the length of the plasma stream in which ions and free electrons are present by selectively varying the voltage of the substrate relative to the voltage of the anode to thereby vary the application of the coating to the substrate.

4,642,441

PORTABLE FAN FOR WINTER AND SUMMER USE

Eric Kenyon, Ringwood, Australia, assignor to Allware Agencies Limited, London, England

Filed Aug. 16, 1982, Ser. No. 408,163

Claims priority, application Australia, Aug. 17, 1981, PF0274

Int. Cl.⁴ F24H 3/04, 9/20; F24F 13/08; F01D 7/00

U.S. Cl. 219—364

14 Claims

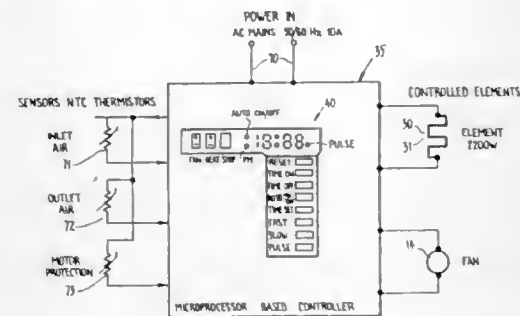
MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 40 Pages)

6. A multi-purpose fan comprising a portable housing containing the following components:

- an electrically driven fan blade assembly, at least one heating

coil positioned in the air current of said fan blade assembly,
 a heating-cooling mode selector,
 temperature sensing means to sense the temperature of air entering the fan,
 speed control means to vary the speed of the fan blade assembly;
 power control means to vary the power output of the heating coil, and
 a micro-processor circuit including a solid state timing device, selected temperature control means, and operating time selection means, said micro-processor circuit being operatively associated with said mode selector, said tem-



perature sensing means, said speed control means and said power control means and operating said speed control means and said power control means and causing the fan to operate either as a heater or as a cooling fan, in accordance with selected parameters, operating the fan at high speed in the cooling mode and in the heating mode operating the fan at a speed normally low relative to the high speed in the cooling mode, and
 the micro-processor circuit providing pulse means to cause the fan blade assembly to operate in the heating mode intermittently for brief periods at high speed relative to normal low speed in the heating mode to substantially increase the air circulation intermittently.

4,642,442 BATTERY INTERCELL CONNECTION BY INDUCTION HEATING

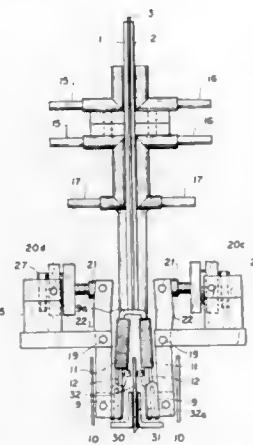
William E. Mullane, Warren, Ohio, and David Lund, S. Minneapolis, Minn., assignors to The Taylor-Winfield Corporation, Warren, Ohio

Filed Oct. 17, 1985, Ser. No. 788,642

Int. Cl.⁴ H05B 6/10

U.S. Cl. 219—10.41

19 Claims



1. In a storage battery having a plurality of pairs of terminals of readily fusible material, each pair of terminals having integral vertical riser portions having opposing flat surfaces, said

riser portions sandwiching an electrical insulating vertical partition having a horizontal hole therethrough, each terminal also having a horizontal strap portion extending away from said partition and integral vertical riser portions; the method of making an intercell connection between each pair of terminals through the horizontal hole of the corresponding vertical partition, comprising applying a vertical insulating sheet against the outside of each of said vertical riser portions and applying an electrical induction coil adjacent the outside each of said sheets substantially concentric with said horizontal hole, squeezing together said sheets, pair of terminals and partition, and applying high frequency electrical current to said coils sufficiently as to partially fuse said riser portions in the vicinity of said horizontal hole of said partition and to fill said horizontal hole with fused metal of said riser portions, using said sheets, partition and vertical riser portions as dams to contain the fused metal, and thereafter allowing said fused metal to cool and solidify so as to form a metallic connection between said pair of terminals.

4,642,443 APPARATUS FOR BREWING COFFEE IN MICROWAVE OVENS

Jorgen A. Jorgensen, Bloomington, and Donald W. Nygren, St. Louis Park, both of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

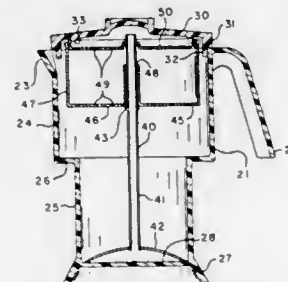
Continuation of Ser. No. 321,889, Nov. 16, 1981, abandoned.

This application May 10, 1984, Ser. No. 608,810

Int. Cl.⁴ H05B 6/80

U.S. Cl. 219—10.55 E

3 Claims



1. A percolation-type coffee maker for use in a microwave oven, comprising:

- a housing of microwave transparent material, said housing having an open upper end, a closed lower end and having first and second generally cylindrical portions of first and second radii, respectively and concentrically disposed one above the other and joined at a juncture zone defining a shoulder extending substantially parallel to said radii, with the first portion disposed above the second portion, and said first radius being larger than said second radius;
- a cover member for closing said open upper end of said housing;
- a percolator pump having a circular domed base of a diameter insertable into said second portion of said housing and adapted to rest upon said closed lower end, and a vertical tubular member projecting upwardly from said domed base, the lumen of said tubular member communicating with the volume between the underside of said domed base and the closed lower end; and
- a perforated metal basket for containing ground coffee detachably mounted on said tubular member, said basket being cylindrical and having a basket radius intermediate said first and second radii, said percolator pump supporting said basket in said first portion of said housing and beneath said cover, said metal basket substantially shielding said coffee grounds from exposure to microwave energy.

4,642,444 ELECTRICAL MACHINING FLUID AND METHOD UTILIZING THE SAME

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Nov. 1, 1982, Ser. No. 438,285

Claims priority, application Japan, Nov. 2, 1981, 56-176128

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.⁴ B23H 1/08; H01B 3/22, 3/46

U.S. Cl. 219—69 D

22 Claims

1. An electrical machining fluid consisting of 0.1 to 5% by weight at least one hydrocarbon oil, 0.1 to 5% by weight a silicone oil and the balance substantially water.

4,642,446 LASER WELDING OF GALVANIZED STEEL

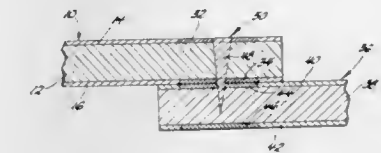
Edward J. Pennington, Pleasanton, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1985, Ser. No. 783,687

Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 LD

2 Claims



4,642,445 SHIELDING APPARATUS FOR METAL PROCESSING OPERATIONS

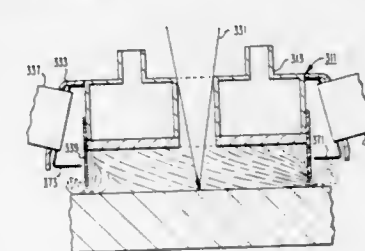
Israel Stol, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1985, Ser. No. 750,721

Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 FS

20 Claims



1. A shielding apparatus for metal processing operations comprising:

- a housing having an enclosed upper region with a central bore therethrough which bore defines a conduct for the application of metal processing thermal excitation onto a selected location of a workpiece;
- said housing defining at least a first chamber about said central bore, through which inert gas is introduced to flood an area defined by said first chamber surrounding the selected location of the workpiece for metal processing;
- a second exhaust chamber disposed about a perimeter defined by said first chamber and defining a negative pressure region for the removal of smoke or the like resulting from the metal processing operation;
- a skirt comprising a flexible material disposed about the perimeter defined by said first chamber, said skirt physically isolating said first chamber in which inert gas is introduced from the second exhaust chamber and depending from the perimeter defined by said first chamber so as to cooperate with the workpiece directly below said housing first chamber to substantially enclose the selected location for metal processing;
- a cooling means disposed in said first chamber about said central bore; and
- a plasma suppression nozzle disposed proximate said central bore to provide a high velocity off-axis jet of inert gas to forcibly blow away superheated vapors and gas from the selected location.

1. A method for welding a first steel sheet member having a corrosion protective metallic zinc coating on major faces thereof to a second steel member to form a joint therebetween, said first member comprising a faying surface region and a joint-external surface region opposite said faying surface, said method comprising

pretreating the first member to selectively remove the zinc coating from the faying surface region and the joint-external surface region thereof and applying a nickel-base coating onto said regions, assembling the members such that the nickel-base coated faying surface region lies adjacent a faying surface region of the second member, said second member faying surface region being substantially free of vaporizable zinc, and welding the assembly by scanning the nickel-base coated joint external surface region of the first member with a high energy density beam to fuse the members at the faying surface to produce a welded joint therebetween, whereby the nickel-base coating on the first member surface regions reduces weld porosity and enhances corrosion resistance of the joint.

4,642,447 PROCESS FOR THE RESETTING OF THE PATH OF A MEMBER AND APPARATUS FOR PERFORMING THIS PROCESS

Jean-Marie Détriché, Montesson, France, assignor to Commissariat à l'Energie Atomique, Paris, France

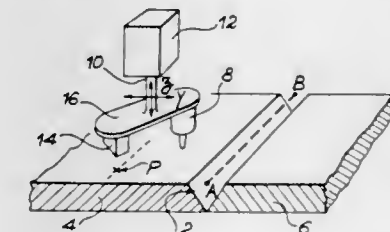
Filed May 8, 1985, Ser. No. 731,973

Claims priority, application France, May 11, 1984, 84 07329

Int. Cl.⁴ B23K 9/12

U.S. Cl. 219—124.34

4 Claims



1. A process for the resetting of the path of a member fixed to a carrier forced to automatically follow a stored line, the object of the process being to reset the member to a real line described with respect to an object and which can diverge

from the stored line, the position of the line to be followed on the object being indicated by a resetting position associated with the object, wherein the process comprises:

displacing the carrier relative to the object to bring it into a stored resetting position, the member being locked to the carrier in a reference position during this displacement, detecting by means of a position detector fixed to said member an offset between the stored resetting position from the resetting position associated with the object, unlocking the member to allow a movement of said member relative to the carrier,

translating said member with said detector relative to the carrier and the object in order to cancel out said offset, relocking the member relative to the carrier in the reset position, and

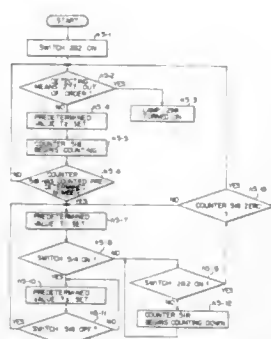
displacing the carrier relative to the object to bring it to the start of the stored path, the member thus being positioned on the line to be followed whereby the resetting of the member does not affect the stored line followed by the carrier.

4,642,448
ELECTROSTATIC COPYING APPARATUS

Yutaka Shigemura, Takarazuka; Hiroshi Kimura, Habikino; Masahiko Hisajima, Osaka; Isao Yada, Neyagawa; Shinobu Satonaka, Toyonaka, and Seiji Kaminaga, Hirakata, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 451,184, Dec. 20, 1982, Pat. No. 4,551,009.
This application Aug. 5, 1985, Ser. No. 762,738
Claims priority, application Japan, Dec. 21, 1981, 56-207562;
Dec. 28, 1981, 56-212707; Dec. 28, 1981, 56-198684[U]; Dec. 29,
1981, 56-210298; Dec. 29, 1981, 56-210299; Jan. 13, 1982,
57-4216; Jan. 18, 1982, 57-6657; Jan. 19, 1982, 57-7090

U.S. Cl. 219—216 11 Claims



1. A heat fixing device having an electrical heating means for heat-fixing a toner image on a sheet member, said heat fixing device comprising temperature detecting means; heating control means for controlling energization and deenergization of the heating means on a basis of temperature detected by said temperature detecting means; said heating control means, before lapse of a first predetermined period of time from application of an electric power, controlling the energization and deenergization of said heating means on a basis of whether the detected temperature is below a second predetermined value higher than a first predetermined value suitable for heat fixation and thus adjusting the detected temperature substantially to the second predetermined value, and after the lapse of said first predetermined period of time from the application of electric power, controlling the energization and deenergization of said heating means on the basis of whether the detected temperature is below said first predetermined value, and thus adjusting said detected temperature substantially to said first predetermined value; an electric power saving means having a manually operable power saving switch for producing a power saving signal according to the operation of the power saving switch, said heating control means controlling the energization

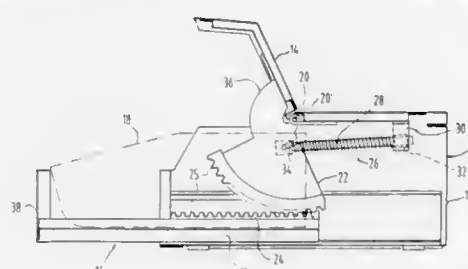
and deenergization of said heating means on the basis of whether said detected temperature is below a third predetermined value lower than the first predetermined value when the power saving signal is present, and thus adjusting the detected temperature substantially to said third predetermined value.

4,642,449
CASHBOX FOR A CASH REGISTER

Guenter Baitz, and Wilfried Dobring, both of Berlin, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,375
Claims priority, application Fed. Rep. of Germany, Mar. 29,
1984, 8409724[U]

U.S. Cl. 235—22



1. A cash register, cashbox assembly comprising:
a cash case having opposite parallel first and second side walls and a top, said top being divided between a rearward portion which is fixed to said side walls and a forward lid portion which is pivotally mounted to said rearward portion for rotation about a transverse axis between closed and opened positions;
a cash drawer having opposite parallel side walls, a bottom, a rear wall and an open top;
means for mounting said drawer within said case for fore-and-aft longitudinal displacement between a position wholly within said cash case and a position partly forwardly extended from said cash case;
first and second longitudinally extending racks mounted on opposite lateral side walls of the drawer;
first and second toothed segments of rigid material pivotally displaceably mounted on said first and second side walls, respectively, of the case and having the teeth thereof in engagement with respective racks whereby fore-and-aft displacement of the drawer is accomplished by rotation of said segments;
each said toothed segment having integrally formed therewith a rigid arm which is mechanically connected to said lid portion such that rotation of said segments opens and closes said lid portion relative to said cash case; and
bias spring means mechanically connected between said cash case and at least one of said toothed segments to bias said segments toward a position in which said lid portion is closed.

4,642,450
PUNCHING STYLUS FOR HANDICAPPED USERS

PUNCHING STYLES FOR HANDICAPPED USERS
John E. Ahmann, Napa, Calif., assignor to Election Supplies Limited, Napa, Calif.

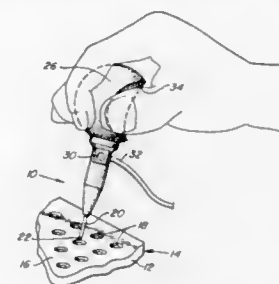
Filed May 9, 1986, Ser. No. 861,425
Int. Cl.⁴ G07C 13/00

U.S. Cl. 235—50 R 4 Claims

1. A punch-out stylus for use with a tabulating device having an upper plate with holes adapted to register with scored punch-out area on a tabulation sheet placed under the plate, said stylus comprising:

a generally elongated body section having inner and outer

ends and a transverse hole extended diametrically there-
through adapted for retaining one end of a flexible chain;
a rigid rod member axially aligned with and having one end
portion embedded within said inner end of said elongated
body section and another end portion extending beyond
said elongated body section, with a tip portion adapted for
insertion into any selected hole of said upper plate; and



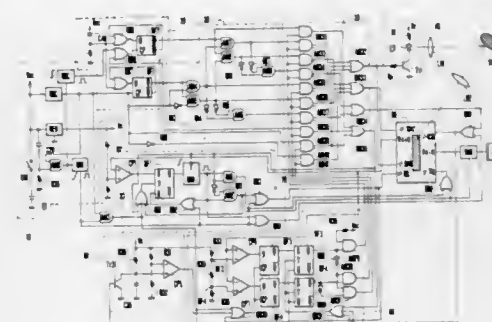
an enlarged body portion attached to said outer end of said elongated body section, said enlarged body section having an indentation along one side adapted to receive the thumb of said user as said enlarged body portion is gripped.

4,642,451
DISTANCE MEASURING DEVICE WITH VARIOUS
CONTROLS OF THE LIGHT EMITTING MEANS

Tokuichi Tsunekawa; Yuichi Sato; Takashi Kawabata, and Susumu Matsumura, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Mar. 30, 1984, Ser. No. 595,283
Claims priority, application Japan, Apr. 1, 1983, 58-57202;
Apr. 1, 1983, 58-57203; Apr. 1, 1983, 58-57205; Apr. 1, 1983,
58-57209

Int. Cl.⁴ G01J 1/20, 1/32
U.S. Cl. 250—201 11 Claims



1. A light projection quantity control device for a distance measuring device, comprising:

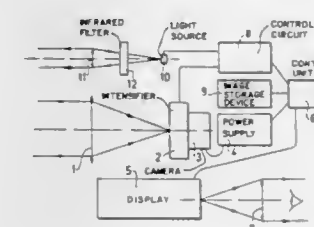
- (a) light emitting means to alternately perform a light projecting action on an object and a no light projecting action, repeatedly;
- (b) light receiving means for receiving a reflection from said object, said light receiving means having a photo-electric conversion part arranged to produce an electric charge whose amount varies with the quantity of light incident thereon, storing means for storing an amount of electric charge produced by an incident light received during light projection and storing means for storing an amount of electric charge produced by an incident light received between light projections;
- (c) detecting means for detecting the stored amount of electric charge of said light receiving means; and
- (d) light emission duty ratio converting means for changing

the light emission duty ratio of said light emitting means in response to a signal produced by said detecting means.

4,642,452
SEMIACTIVE NIGHT VIEWING SYSTEM
Fernand R. Loy, Sceaux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 30, 1985, Ser. No. 781,367
Claims priority, application France, Oct. 5, 1984, 84 15309

U.S. Cl. 250-213 VT 5 Claims



1. A semiactive night viewing system comprising:
 - means for receiving an image of a scene and for generating a signal corresponding to the image;
 - means for receiving the image signal and for displaying an image corresponding to the image signal;
 - means for illuminating the scene with a flash of light having a wavelength outside the visible spectrum, said flash having a very short duration and low power;
 - means for storing the image signal corresponding to the illuminated scene and for reading out the stored image signal and displaying it in the display device;
 - means for preventing further flashes during display of the stored image signal; and
 - means for removing the display of the stored image signal and for displaying a passive image of the scene.

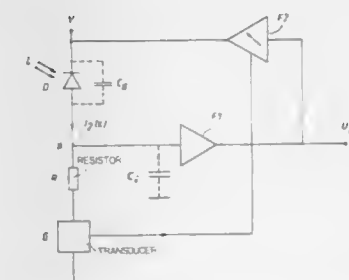
4,642,453
APPARATUS FOR INCREASING THE DYNAMIC RANGE
IN AN INTEGRATING OPTOELECTRIC RECEIVER

Glenn O. Nordqvist, Solna, and Lars-Göte Svenson, Stockholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE85/00133, § 371 Date Nov. 8, 1985, § 102(e)
Date Nov. 8, 1985, PCT Pub. No. WO85/04773, PCT Pub.
Date Oct. 24, 1985

PCT Filed Mar. 26, 1985, Ser. No. 810,333
Claims priority, application Sweden, Apr. 12, 1984, 8402056
Int. Cl.⁴ H01J 40/14

U.S. Cl. 250—214 A 4 Claims



1. In an integrating optoelectric receiver having a supply voltage source across which is connected a two-terminal optoelectric converter and an output amplifier having an input

connected to one of said terminals having associated therewith stray capacitance and an output which is the output of the receiver, the improvement comprising a controllably variable voltage regulating means connected between the output of said output amplifier and the other terminal of said optoelectric converter, said voltage regulating means having a control input for controlling the magnitude of the regulation, and a transducer means having an output for generating a control signal which is a function of the luminance sensed by said optoelectric converter, and means for connecting the output of said transducer means to the control input of said voltage regulating means.

4,642,454

INFRARED INTRUSION DETECTOR WITH FIELD OF VIEW LOCATOR

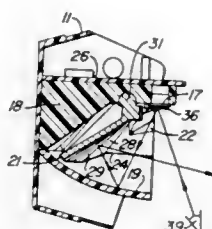
Paul S. Carlson, Santa Cruz, Calif., assignor to Raytek, Inc., Santa Cruz, Calif.

Filed Aug. 27, 1984, Ser. No. 644,768

Int. Cl.⁴ G01V 9/04

U.S. Cl. 250—221

7 Claims



1. In an infrared intrusion detector: a sensing element responsive to infrared energy, an optical system for focusing infrared energy from a plurality of fields of view onto the sensing element, means connected to the sensing element for providing an output signal in response to movement of an object in one of the fields of view, and an additional optical mirror positioned at about the focal point of said optical system and oriented such that a person looking at the additional optical mirror sees the fields of view detected by the sensing element through the optical system.

4,642,455

CIRCUIT ARRANGEMENT USING FOR A LIGHT BARRIER FOR DETECTING SHEET-FEEDING FAULTS IN A PRINTING PRESS

Anto Rodi, and Udo Blasius, both of Leimen, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

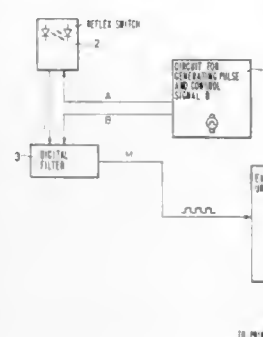
Filed Feb. 17, 1984, Ser. No. 581,281

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305606

Int. Cl.⁴ G01V 9/04

U.S. Cl. 250—221

5 Claims



1. Circuit arrangement including a light barrier for detecting

absence or presence of an opaque object at a given location, comprising means for transmitting a light signal in direction toward an anticipated position of the object, means for receiving said signal, means for evaluating said received signal after an anticipated time delay, and means for initiating a follow-up operation in response to the evaluation of said received signal, said transmitting and receiving means constituted by a reflex light barrier, a digital filter being connected between said transmitting and receiving means and said evaluating means and including first and second parallel-connected bistable flip-flop circuits, a delayed pulse train enabling the inputs of the respective flip-flops at the anticipated time for receipt of the leading and trailing edge of said received signal, the second one of said flip-flop circuits having an inverted clock input, for repeatedly setting said flip-flops in response to repeated timing confirming the proper position of the object.

4,642,456

DOUBLE SHEET DETECTION METHOD AND APPARATUS OF SHEET-FED ROTARY PRESS

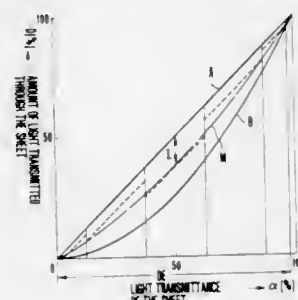
Hideo Watanabe, Abiko, Japan, assignor to Komori Printing, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,311

Int. Cl.⁴ G01N 9/04; G06M 7/00

U.S. Cl. 250—223 R

6 Claims



1. A double sheet detection method for a sheet-fed rotary press, comprising the steps of: setting a theoretical reference value as a difference between a first theoretical amount of light transmitted through one sheet and an intermediate value; said intermediate value lying between said first theoretical amount of light transmitted through one sheet and a second theoretical amount of light transmitted through two sheets; storing the theoretical reference value in correspondence with the amount of light transmitted through a sheet; calculating a difference between an amount of light transmitted through a first sheet and an amount of light transmitted through a second sheet when actual printing is performed; reading out the theoretical reference value which corresponds to the amount of light transmitted through the first sheet and which is defined as an actual reference value; comparing the difference obtained in the calculating step with the actual reference value; and performing double sheet detection in accordance with a comparison result.

4,642,457

DOUBLE SHEET DETECTION METHOD AND APPARATUS OF SHEET-FED ROTARY PRESS

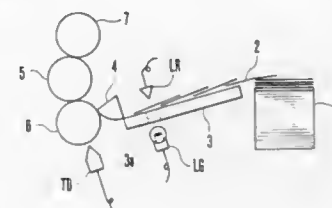
Hideo Watanabe, Chiba, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 574,879

Int. Cl.⁴ G01N 9/04

U.S. Cl. 250—223 R

8 Claims



1. A double sheet detection method used in a sheet-fed rotary press, comprising the steps of: setting a theoretical reference value as an intermediate value between a first theoretical amount of light transmitted through one sheet and a second theoretical amount of light transmitted through two sheets, respectively; subtracting the theoretical reference value from the first amount of light to obtain a theoretical subtracted value; subtracting the theoretical subtracted value from an actual amount of light transmitted through a reference sheet to obtain an actual reference value; and comparing an actual amount of light transmitted through a current sheet with the actual reference value to perform double sheet detection.

4,642,458

POLARIMETRIC FIBRE SENSOR

David A. Jackson, Canterbury, England; Michael Corke, Wheaton, Ill., and Alan D. Kersey, Washington, D.C., assignors to Kent Scientific and Industrial Projects Limited, Kent, England

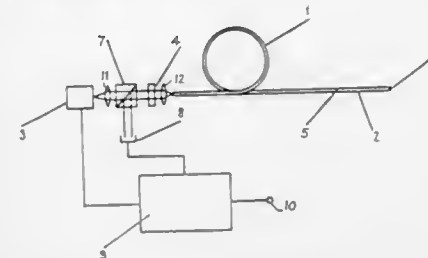
PCT No. PCT/GB85/00017, § 371 Date Sep. 5, 1985, § 102(e) Date Sep. 5, 1985, PCT Pub. No. WO85/03124, PCT Pub. Date Jul. 18, 1985

PCT Filed Jan. 18, 1985, Ser. No. 774,589

Int. Cl.⁴ G02F 1/01

U.S. Cl. 250—225

7 Claims



1. Optical fibre sensing apparatus characterised by: (a) an optical fibre lead (1) spliced to a shorter optical sensing fibre (2), (b) said lead and sensing fibres (1,2) comprising birefringent optical fibres having substantially orthogonal eigen modes (13,16 and 14,15) and being spliced together with their eigen modes mutually rotated by substantially 45°, (c) a reflective surface disposed at the distal end (6) of the sensing fibre, (d) light source means (3) for propagating linearly polarised incident light along one of the eigen modes (13) of the lead fibre (1), whereby light beams are propagated along both eigen modes of the sensing fibre (2) and are reflected from

the distal end (6) of the sensing fibre to propagate return light beams along both eigen modes (13,16) of the lead fibre.

(e) recovery means (7,8) for recovering one of the returning light beams from the lead fibre and producing an electrical signal corresponding to modal birefringence of the sensing fibre, and

(f) means (9) for processing the electrical signal and producing an output signal corresponding to the polarisation mode delay of the sensing fibre.

4,642,459

LIGHT PEN INPUT SYSTEM HAVING TWO-THRESHOLD LIGHT SENSING

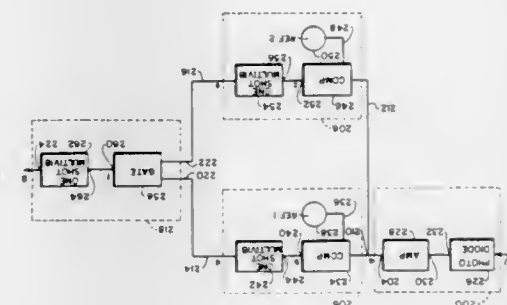
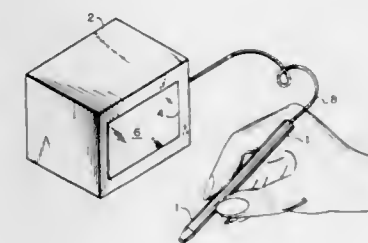
Nathan S. Caswell, Yorktown Heights, and Ifay F. Chang, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1985, Ser. No. 735,430

Int. Cl.⁴ G02B 6/00

U.S. Cl. 250—227

27 Claims



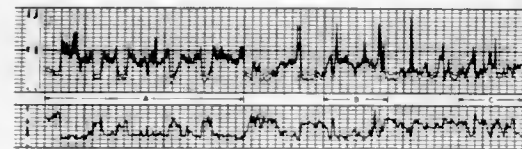
18. A light pen arrangement for use in an interactive display of a computer system comprising: a display having a screen phosphor, and an electron beam for scanning the phosphor; a light pen with an optical field of view larger than a single scan line; first threshold detection means for sensing when said scanning electron beam enters the field of view of said light pen; second threshold detection means for sensing when said electron beam has scanned across the center region of the field of view of said light pen; and means for determining a fixed time interval following each low threshold detection, the position of said light pen being determined by the position of said scanning electron beam at the end of said fixed time interval when a high threshold detection has also been made during said time interval.

4,642,460
TECHNIQUE FOR LOCATING INJECTED GAS IN OIL BEARING FORMATIONS BEHIND CASING
 James P. Wallace, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,807
 Int. Cl.⁴ G01V 5/10

U.S. Cl. 250—256

1 Claim



1. A method for determining the location of injected gas in an oil well comprising the steps of:
 obtaining data representing a near count rate from a compensated neutron logging tool;
 obtaining data representing a far count rate from a compensated neutron logging tool;
 scaling said near count rate and said far count rate;
 plotting said scaled near count rate and said scaled far count rate;
 comparing said scaled near count rate plot and said scaled far count rate plot;
 determining the location of injected gas whenever said plot of said scaled near count rate and said plot of said scaled far count rate differ by a predetermined factor;
 obtaining data representing a second near count rate from a compensated neutron logging tool at a second time;
 obtaining data representing a second far count rate from a compensated neutron logging tool at said second time;
 scaling said second near count rate and said second far count rate;
 plotting said scaled second near count rate and said scaled second far count rate;
 comparing said scaled second near count rate plot and said scaled second far count rate plot;
 determining a second location of injected gas whenever said plot of said scaled second near count rate and said plot of said scaled second far count rate differ by a predetermined factor; and
 determining the migration of said injected gas by comparing said location with said second location.

4,642,461
FIELD EMISSION TYPE ELECTRON MICROSCOPE USING A MULTI-STAGE ACCELERATION TUBE
 Junji Endo, Kokubunji; Akira Tonomura, Koganei; Susumu Ozasa, Kashiwa; Tsuyoshi Matsuda, Tokyo; Chikara Kimura, Katsuta, and Nobuyuki Osakabe, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

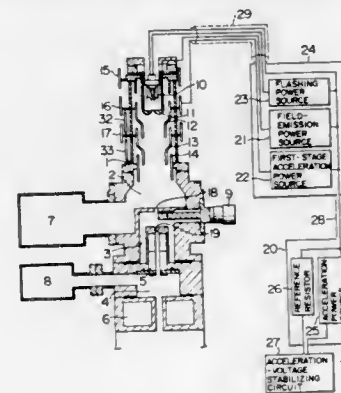
Filed Nov. 29, 1984, Ser. No. 676,313
 Claims priority, application Japan, Nov. 30, 1983, 58-224095
 Int. Cl.⁴ G01N 23/00

U.S. Cl. 250—311

6 Claims

1. A field emission type electron microscope using a multi-stage acceleration tube, comprising:
 a field emission cathode;
 a field emission electrode for causing field emission of electrons from said cathode, said field emission electrode having an aperture provided therein;
 acceleration electrode means including a first-stage acceleration electrode and at least one succeeding-stage acceleration electrode for accelerating an electron beam passing through said aperture of said field emission electrode; and
 application voltage interlocking means for changing, an acceleration voltage to be applied across said field emission cathode and at least one acceleration electrode of said acceleration electrode means inclusive of said first-stage acceleration electrode, in interlocked relationship with a

change in a field emission voltage to be applied across said field emission cathode and said field emission electrode, said application voltage interlocking means interlocking

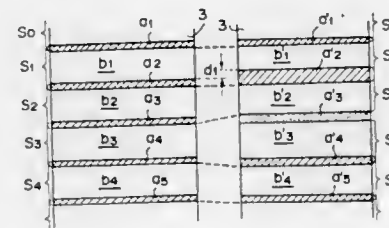


said acceleration voltage with said field emission voltage so as to provide a ratio of said acceleration voltage to said field emission voltage in a range of 6 to 15.

4,642,462
METHOD OF CORRECTING RADIATION IMAGE READ-OUT ERROR
 Toshitaka Aagano, and Yoshimi Takasaki, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jul. 18, 1984, Ser. No. 631,844
 Claims priority, application Japan, Jul. 19, 1983, 58-131566
 Int. Cl.⁴ G03G 5/16
 U.S. Cl. 250—327.2

5 Claims

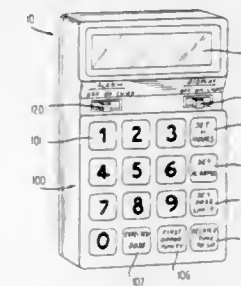


1. A method of correcting a radiation image readout error comprising steps of
 two-dimensionally scanning a stimulative phosphor sheet carrying a radiation transmission image stored therein with stimulating rays in a main scanning direction and a sub-scanning direction, the main scanning being effected by use of a multifaceted deflector having a plurality of deflecting surfaces,
 photoelectrically detecting light emitted by said stimulative phosphor sheet upon stimulation thereof by the stimulating rays to convert the light emitted by the stimulative phosphor sheet to an electric image signal, and
 correcting the electric image signal obtained from each main scan line by use of a correction coefficient which is predetermined for each main scan line according to the amount of shift of the main scan line from the predetermined position thereof in the sub-scanning direction.

4,642,463
INTELLIGENT RADIATION MONITOR
 William H. Thoms, 4401 Lee Hwy., Arlington, Va. 22207
 Filed Jan. 11, 1985, Ser. No. 690,547
 Int. Cl.⁴ G01T 1/17

U.S. Cl. 250—336.1

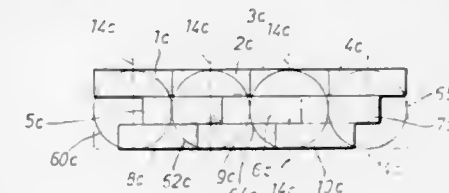
22 Claims



1. A personal radiation monitor comprising:
 a radiation detector producing rate information related to real time radiation exposure rate to which said radiation detector is exposed,
 a digital processor responsive to said radiation detector for integrating said rate information to maintain total dose information,
 output means responsive to information provided by said digital processor for providing a manifestation of at least said rate and total dose information,
 said digital processor including:
 first means for repeatedly comparing said total dose information to dose limit information to produce dose-to-go information related to the difference between said total dose information and the dose limit information,
 second means for, repeatedly, dividing said dose-to-go information by said rate information to produce and thereafter update time-to-go information related to time-to-go for the user to reach said dose limit, and
 third means for controlling said output means for providing a manifestation of said updated time-to-go information.

4,642,464
POSITRON EMISSION TOMOGRAPHY CAMERA
 Nizar A. Mullani, Houston, Tex., assignor to Clayton Foundation for Research, Houston, Tex.
 Continuation-in-part of Ser. No. 613,699, May 24, 1984, Pat. No. 4,563,582. This application Aug. 23, 1985, Ser. No. 768,906
 Int. Cl.⁴ G01T 1/164
 U.S. Cl. 250—363 S

7 Claims



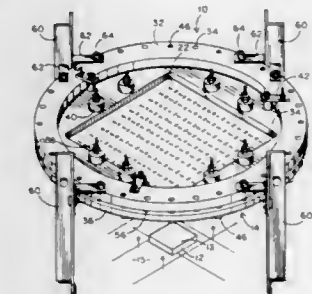
1. In a positron emission tomography camera having a plurality of detector planes positioned side-by-side around a patient area to detect radiation therefrom, each plane containing a plurality of scintillation detectors pointed to the patient area, each plane of detectors defining a plane slice through the patient area by the detectors in each plane, and each two adjacent detector planes defining an interplane slice through the patient area, the improvement in the detectors comprising, each detector plane including a plurality of photomultiplier tubes,
 at least three scintillation crystals positioned on each photomultiplier tube in each plane for detecting radiation from

the patient area which the tubes convert into electrical pulses,
 said crystals positioned on each photomultiplier tube such that whereby each photomultiplier tube is responsive to all of said crystals on the tube,
 said crystals on each photomultiplier tube being offset from the other crystals on each photomultiplier tube, and the area of each crystal on each photomultiplier tube being different than the area of the other crystals on each photomultiplier tube so as to allow detection of which crystal is actuated and to allow the detectors to detect more interplane slices.

4,642,465
AVALANCHE COUNTER AND ENCODER SYSTEM FOR COUNTING AND MAPPING RADIOACTIVE SPECIMENS
 Roy J. Britten, Costa Mesa, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 370,333, Apr. 21, 1982, Pat. No. 4,500,786. This application Oct. 15, 1984, Ser. No. 660,692
 Int. Cl.⁴ G01T 1/185
 U.S. Cl. 250—389

20 Claims



1. An apparatus for detecting radioactive sources on a test specimen, the apparatus comprising:
 a counter having a gas filled chamber, said chamber being formed by an electrically conductive planar window and a parallel semiconductive surface spaced from said window, and adapted for having an electric field imposed within said chamber by a voltage differential between said window and said semiconductive surface;
 an encoder surface spaced from said semiconductive surface and having geometrically arrayed elements thereon for receiving an electrical charge induced on said elements by an ion avalanche occurring within said chamber in response to entry of a radioactive particle into said chamber; and
 a dielectric layer between said semiconductive surface and said encoder surface, said semiconductive surface forming a coating on one side of said layer and said arrayed elements forming a coating on the opposite side of said layer.

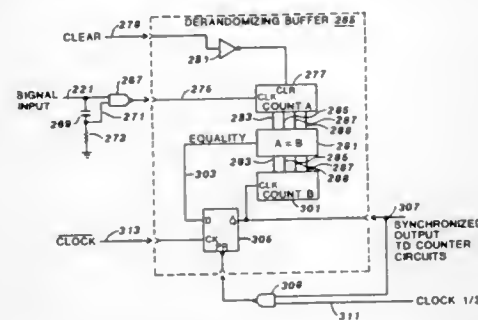
4,642,466
FAST COUNTING ELECTRONICS FOR NEUTRON COINCIDENCE COUNTING
 James E. Swansen, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1985, Ser. No. 708,477
 Int. Cl.⁴ G01T 3/00
 U.S. Cl. 250—392

13 Claims

1. A high speed circuit for accurate neutron coincidence counting comprising:
 neutron detecting means for providing an above-threshold signal upon neutron detection;
 amplifying means inputted by said neutron detecting means for providing a pulse output having a pulse width of about

0.5 microseconds upon the input of each above-threshold signal;
digital processing means inputted by said pulse output of said amplifying means for generating a pulse responsive to each input pulse from said amplifying means and having a pulse width of about 50 nanoseconds effective for processing an expected neutron event rate of about 1 Mpps;
pulse stretching means inputted by said digital processing means for producing a pulse having a pulse width of several milliseconds for each pulse received from said digital processing means;
visual indicating means inputted by said pulse stretching means for producing a visual output for each pulse received from said digital processing means;



derandomizing means effective to receive said 50 ns neutron event pulses from said digital processing means for storage at a rate up to said neutron event rate of 1 Mpps and having first counter means for storing said input neutron event pulses, clock means for generating internal pulses in a regular spaced apart fashion while said first counter is storing said input event pulses and at a rate at least equal to an average expected neutron event rate, synchronizing counter means and event counter means for counting said clock pulses, and comparison means for blocking said clock pulses to said synchronizing and event counters when said comparison means determines said first and synchronizing counter contents are equal, said event counter means having a continuous output indicative of a total number of said neutron events.

4,642,467

ELECTRON BEAM IRRADIATION APPARATUS

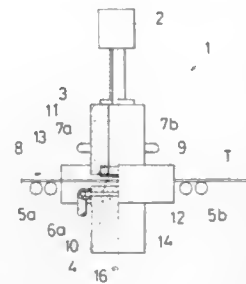
Masakatsu Yamawaki, Ikeda; Isamu Sakamoto, Kyoto; Kenichi Mizusawa, Ibaraki, and Eiji Iwamoto, Kyoto, all of Japan, assignors to Nissin-High Voltage Co., Ltd., Kyoto, Japan

Filed Dec. 13, 1984, Ser. No. 681,117

Claims priority, application Japan, Dec. 16, 1983, 58-238510
Int. Cl.⁴ G01K 1/08; H01J 3/00

U.S. Cl. 250-492.3

10 Claims



1. An electron beam irradiation apparatus for simultaneously (a) irradiating a target comprising a substrate and magnetic particles with an electron beam and (b) orienting the axis of easy magnetization of the magnetic particles in a direction perpendicular to the substrate, said apparatus comprising an

electron beam source which is capable of generating an electron beam and irradiating it in one direction, a first magnet member having a through hole and being disposed to allow the electron beam irradiated from said electron beam source to pass therethrough to the target, means for maintaining the through hole under vacuum, a second magnet member which is disposed opposite the first magnet member across a gap which allows the target to pass therethrough and which second magnet member has a polarity different from that of the first magnet member, the two magnet members coacting to produce a magnetic field in the gap, a target supporting/shifting means which allows the target to pass through said gap perpendicular to the flux of the magnetic field, and cooling means which cools both magnet members, the gap between the first and second magnet members being from 5 to 100 millimeters.

4,642,468

POSITION DETECTING METHOD FOR DETECTING THE RELATIVE POSITIONS OF THE FIRST AND SECOND MEMBERS

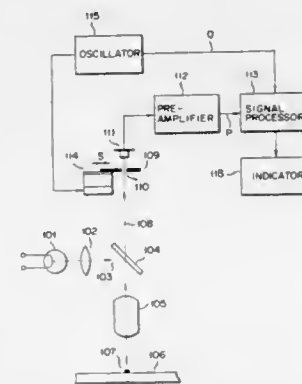
Mitsuo Tabata, and Nobuo Shibuya, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,491

Claims priority, application Japan, Dec. 19, 1983, 58-239392
Int. Cl.⁴ G01N 21/86

U.S. Cl. 250-548

20 Claims



1. A position detecting method for detecting relative positions of a first member and a second member, comprising the steps of:

radiating a first beam radiated from a beam radiating source onto a first member where a first mark portion is formed;
radiating a second beam obtained from said first mark portion due to the beam irradiation onto a second member where a second mark portion is formed;

detecting by a beam detector, of a beam obtained from said second member by radiating said second beam onto the second member, and relatively vibrating said second beam and said second member, and detecting a detection output from said beam detector synchronously with said vibration, thereby obtaining a fundamental wave component a_f and an n -th order harmonic component a_{nf} (n is an integer of 2 or more) of said detection output;

performing a function conversion with said fundamental wave component a_f and said n -th order harmonic component a_{nf} used as input signals such that output signals a_f^* , a_{nf}^* are free from change in level regardless of change in level of the input signals so as to normalize the input signals a_f , a_{nf} and thus, to obtain normalized signals a_f^* , a_{nf}^* ; and detecting the relative positions of said first and second members by use of the signals a_f^* and a_{nf}^* obtained by performing said function conversions.

4,642,469

THREE-DIMENSIONAL REFLECTORS FOR OBJECT ATTITUDE RECOGNITION

Francis Breteau, Fontenay-Aux-Roses, and Marc Sarazin, Paris, all of France, assignors to Office National d'Etudes et de Recherches Aérospatiales, France

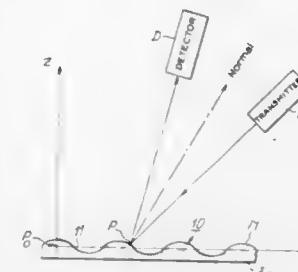
Filed Dec. 27, 1984, Ser. No. 686,684

Claims priority, application France, Dec. 27, 1983, 83 20862;
Dec. 27, 1983, 83 20863

Int. Cl.⁴ G01V 9/04

U.S. Cl. 250-561

12 Claims



1. A reflector intended to be illuminated by a radiating source and to produce, in response to this illumination, a discreet array of light points aligned along a locus on said reflector, characteristic of the reflector position with respect to the radiating source, and intended to be detected by a detector means, said reflector having a center of symmetry and comprising a corrugated surface formed with a plurality of adjacent undulations, parallel and spatially periodic, each carrying a crest and a trough, said undulations being arranged such that said locus runs through the center of symmetry of the reflector and the foot point of the perpendicular dropped a detector means onto said surface, said foot point being a determinate point of said locus.

4,642,470

METHOD AND AN APPARATUS FOR THE IDENTIFICATION OF METAL CANS

Tore Planke, Nyirke, Norway, assignor to A/S Tomra Systems, Oslo, Norway

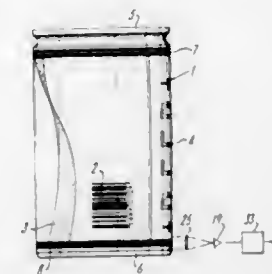
Filed Feb. 7, 1984, Ser. No. 577,863

Claims priority, application Norway, Feb. 7, 1983, 830400

Int. Cl.⁴ G06K 7/10

U.S. Cl. 250-566

14 Claims



1. A method for the identification of a beverage can comprising:
illuminating a plurality of contrasting alternately arranged stripes which are imprinted on the can, the stripes extending continuously around the entire circumference of the can such that the orientation of the circumferential surface of the can is not critical to the identification;
detecting the light reflected from said contrasting stripes with a detector, such that a pulsed signal is generated, the

pulsed signal shape being a function of the relative widths of the stripes; and
calculating an identification value for the can, said value being a function of the relative widths of the stripes.

4,642,471

SCATTERED RADIATION SMOKE DETECTOR

Hannes Güttinger, Stäfa, and Gustav Pfister, Uetikon, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

PCT No. PCT/CH83/00111, § 371 Date Apr. 16, 1984, § 102(e)
Date Apr. 16, 1984, PCT Pub. No. WO84/01650, PCT Pub. Date Apr. 26, 1984

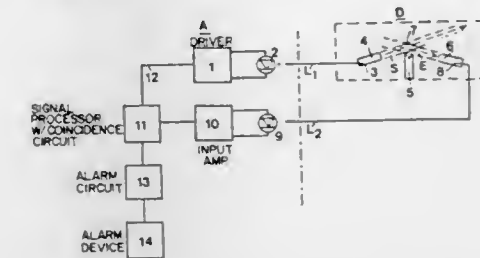
PCT Filed Oct. 5, 1983, Ser. No. 606,828

Claims priority, application Switzerland, Oct. 11, 1982, 5944/82

Int. Cl.⁴ G01N 21/53

U.S. Cl. 250-574

40 Claims



1. A scattered radiation smoke detector for generating an alarm signal in response to detection of smoke, comprising:
an evaluation circuit comprising means for generating an alarm signal in response to electromagnetic radiation scattered by smoke and comprising means for emitting electromagnetic radiation;

at least two radiation conducting elements for connecting the scattered radiation smoke detector to the evaluation circuit;

a measuring volume into which said electromagnetic radiation emitted by said evaluation circuit is radiated;

at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume;

at least one radiation conducting element by which electromagnetic radiation scattered from smoke particles in said measuring volume is received and transmitted back to said evaluation circuit;

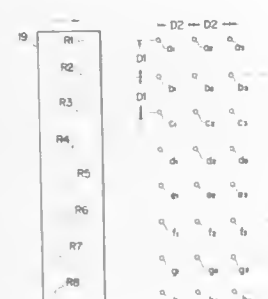
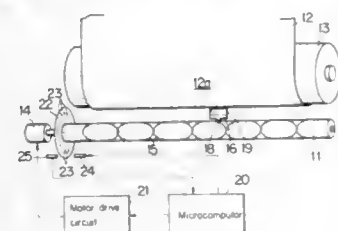
said at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume having a radiation exit and said at least one radiation conducting element for receiving said scattered electromagnetic radiation having a radiation entry;
at least two collimating devices provided each at an associated one of said radiation exit and said radiation entry for generating an associated one of an at least approximately non-divergent transmitting zone of small cross-section and an at least approximately non-divergent receiving zone of small cross-section;

said radiation conducting elements as well as said collimating devices being arranged and oriented such that said transmitting and receiving zones thereof intersect;
said at least one radiation conducting element through which said electromagnetic radiation is radiated into said measuring volume defining a forward direction in which said electromagnetic radiation is radiated into said measuring volume; and

said at least two collimating devices being structured and oriented such that said transmitting and receiving zones define at least approximately parallel beams which intersect at an acute angle such that one of said at least two

collimating device receives radiation scattered at an acute angle in said forward direction.

4,642,472
OPTICAL IMAGE READER FOR READING AN IMAGE ON A GIVEN MANUSCRIPT
 Yujiro Ishikawa, Toyoda, Japan, assignor to Brother Industries, Ltd., Nagoya, Japan
 Filed Aug. 28, 1984, Ser. No. 645,046
 Claims priority, application Japan, Aug. 31, 1983, 58-160112
 Int. Cl.⁴ H04N 1/028, 1/06
 U.S. Cl. 250—578



1. An optical reader for reading an image made up to a plurality of image points arranged at predetermined intervals in a first direction and formed on a manuscript comprising:
 a reading head with a plurality of reading elements arranged in a second direction different than said first direction, said head being moveable in a third direction perpendicular to said first direction with respect to said manuscript, to bring sequentially each of said ready elements in a coincident position with one of said points; and
 means for selectively activating the elements in said coincident position, to discern the image.

4,642,473
ELECTRICAL CIRCUIT ARRANGEMENT AND ELECTRICAL CIRCUIT UNIT FOR USE IN SUCH AN ELECTRICAL CIRCUIT ARRANGEMENT
 Stewart F. Bryant, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Mar. 20, 1985, Ser. No. 713,968
 Claims priority, application United Kingdom, Mar. 23, 1984, 8407620

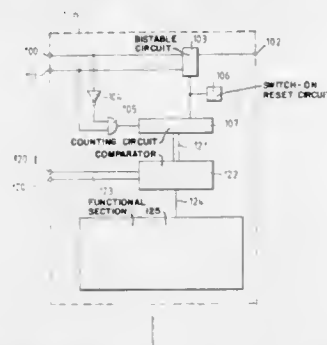
Int. Cl.⁴ H02J 1/00

U.S. Cl. 307—38

25 Claims

5. An electrical circuit arrangement comprising a plurality of circuit units connected to a common path, each of the circuit units having an input for receiving a control signal and including a control circuit having a first input for receiving a clock signal, a second input connected to the control signal input and an output connected to an input of an address generator, said address generator being provided for generating addresses in response to said clock signal applied thereto under control of said control signal, said circuit arrangement further comprising a control arrangement for generating successive control signals synchronously with the clock signal, said control arrangement

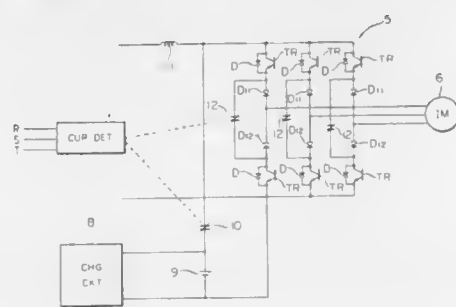
comprising a sub-arrangement in each circuit unit, a first input of each sub-arrangement being connected to the control signal input of its respective circuit unit, said clock signal being applied to a second input of each sub-arrangement and an output of each sub-arrangement being connected to a control signal output of its respective circuit unit, each sub-arrangement being provided for generating one of said successive



control signals subsequent to receipt of a control signal on its first input, the control signal output of each circuit unit being connected to the control signal input of at least one succeeding unit when present, at least one circuit unit comprising means for enabling the control signal input and the control signal output to be used for other circuit functions once the address generator has been generated the address.

4,642,474
ELEVATOR RESCUE APPARATUS DURING STOPPAGE OF POWER SUPPLY
 Eiki Watanabe, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 11, 1986, Ser. No. 838,586
 Claims priority, application Japan, Mar. 13, 1985, 60-49920
 Int. Cl.⁴ H02J 9/04; B66B 5/02
 U.S. Cl. 307—64

6 Claims



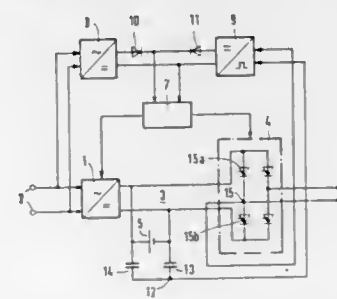
1. An elevator having a rescue apparatus during a stoppage of power supply, the apparatus operating the elevator with an emergency power source while the A.C. power source is abnormal; comprising:

- (a) a converter which converts alternating current of the A.C. power source into direct current,
- (b) an inverter which is connected to said converter and which inverts the direct current into alternating current, said inverter being constructed of a bridge circuit in which a plurality of arms are connected in parallel, said each arm being composed of a pair of transistors connected in series and a pair of diodes inserted between said pair of transistors and connected in series in the same polarity as that of the series transistor circuit, nodes of the pairs of diodes being respectively connected to a motor for driving a cage of the elevator, to feed the

motor with the alternating current of variable voltage and variable frequency,
 (c) the emergency D.C. power source which is connected across D.C. side input parts of said inverter,
 (d) first switching means inserted between said emergency D.C. power source and said inverter, said means being held in an open state while said A.C. power source is normal and being brought into a closed state to electrically connect said emergency D.C. power source to said inverter when said A.C. power source has become abnormal, and
 (e) second switching means connected in parallel with said pair of diodes of said each arm, said means being held in an open state to keep said pair of diodes effective while said A.C. power source is normal and being brought into a closed state to form a circuit bypassing said pair of diodes and to keep a voltage polarity of a D.C. side of said inverter unchanged when said A.C. power source has become abnormal.

4,642,475
UNINTERRUPTIBLE POWER SUPPLY
 Dietmar Fischer, and Christian Kublick, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany
 Filed May 20, 1985, Ser. No. 736,226
 Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419420
 Int. Cl.⁴ H02M 5/45; H02J 7/34
 U.S. Cl. 307—66

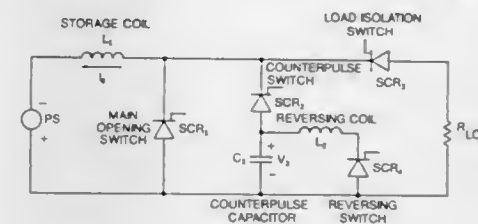
2 Claims



1. An uninterruptible power supply for connection to an a.c. power line having a first rectifier circuit, comprising:
 an intermediate circuit connected to the output of said first rectifier circuit;
 a battery as part of said intermediate circuit for storing electrical energy;
 a voltage divider as part of said intermediate circuit connected across said battery and having an electrical terminal which under open circuit conditions is the midpoint of the voltage across the battery;
 an inverter circuit having a bridge configuration of power components connected to said intermediate circuit on the input side of said bridge;
 an inverter control circuit, connected to the control terminals of said bridge configuration power components; and
 a second rectifier circuit, connected to one of the output terminals of said inverter bridge circuit, and to said midpoint of said voltage divider as the input to said second rectifier, providing d.c. power through a decoupling diode to said inverter control circuit during periods of a.c. power line outage.

4,642,476
REVERSING-COUNTERPULSE REPETITIVE-PULSE INDUCTIVE STORAGE CIRCUIT
 Emanuel M. Honig, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
 Filed Jun. 5, 1984, Ser. No. 617,653
 Int. Cl.⁴ H03K 3/00
 U.S. Cl. 307—108

8 Claims



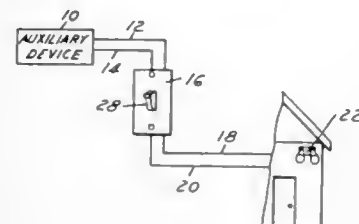
1. A reversing-counterpulse repetitive-pulse inductive storage circuit comprising:

- a. a dc voltage source having a positive and a negative output;
- b. a load having a first and a second end, said first end thereof connected to said positive output of said dc voltage source;
- c. a storage coil having a first and a second end, said first end thereof connected to said negative output of said dc voltage source;
- d. main opening unidirectional triggerable means connected between said second end of said storage coil and said positive output of said dc voltage source for initially being closed to permit the charging of the storage coil to fixed current level and for opening when current flowing through said main opening unidirectional triggerable means is reduced to zero;
- e. a counterpulse capacitor having a first and a second end, the first end thereof connected to the positive end of said dc voltage source, said counterpulse capacitor initially charged to a fixed voltage;
- f. counterpulse unidirectional triggerable means connected between said second end of said storage coil and said second end of said counterpulse capacitor for initiating a transfer cycle by closing thereby causing said counterpulse capacitor to discharge rapidly through said main opening unidirectional triggerable means so as to reduce current flow therethrough to zero and thereafter providing a current path for recharging said counterpulse capacitor by said storage coil and for opening when current flowing through said load reaches the level of current flowing through said storage coil;
- g. load isolation unidirectional triggerable means connected between said second end of said storage coil and said second end of said load for closing when said counterpulse capacitor has been recharged by said storage coil thereby initiating a current through said load which continues until terminated by reclosing said main opening unidirectional triggerable means;
- h. a reversing coil having a first and a second end, said first end thereof connected to said second end of said counterpulse capacitor; and
- i. reversing unidirectional triggerable means connected between said second end of said reversing coil and said positive end of said dc voltage source for closing after current has ceased flowing through said load and while said main opening unidirectional triggerable means is closed to reverse the charge on said counterpulse capacitor by a oscillation through said reversing coil and by opening when current therethrough goes through zero.

4,642,477
AUTOMATIC LIGHT SIGNALLING SYSTEM
 Edmund S. Grzanowski, Jr., 35311 Barton Dr., Westland, Mich. 48185, and Philip J. Glengary, 4542 Walden Dr., Birmingham, Mich. 48010

Filed Jun. 3, 1985, Ser. No. 740,564
 Int. Cl.⁴ H01H 47/00
 U.S. Cl. 307—113

9 Claims



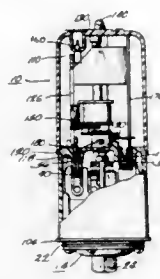
1. An electric light signalling system comprising a lighting circuit and a control circuit, the lighting circuit comprising at least one manually operable switch and normally closed relay in series therewith, a bypass circuit comprising a normally open relay in parallel with said switch and normally closed relay, said lighting parallel circuits connectable to a source of power and to lighting in series therewith, the control circuit comprising means to regulate an input voltage, a first relay solenoid in parallel with the input voltage regulation means, a second relay solenoid and means to momentarily interrupt the electric current through the second relay solenoid in series therewith, said second solenoid and interrupt means in parallel with the first relay solenoid, cyclic timing means connected to said interrupt means, said cyclic timing means actuable by the means to regulate an input voltage, said normally closed relay actuable by the first relay solenoid, and said normally open relay actuable by the second relay solenoid in response to cyclic actuation of the interrupt means.

4,642,478
MECHANICALLY OPERATED PRESSURE SWITCH HAVING SOLID STATE COMPONENTS
 Myron A. Noth, Asheville, N.C., assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 512,494, Jul. 11, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 816,675
 Int. Cl.⁴ H01H 35/34

U.S. Cl. 307—118

6 Claims



1. A motor control switch including a mechanically operated switch portion comprising a support having a periphery, a lever pivotally mounted on the support, a post having an end secured to the support and extending through an opening in the lever to a threaded end, a spring seat positioned on the threaded end,

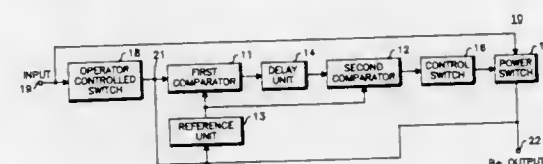
a compression spring surrounding the post and positioned between the spring seat and the lever, a pressure responsive mechanism positioned by the support to urge the lever in a direction to compress the spring, an insulating block positioned by the support, a plurality of stationary contact structures positioned by the block with each contact structure including a stationary contact and a terminal member, a plurality of movable contacts moved by the lever into and from engagement with the stationary contacts, a cover for the switch, said cover having an interior area and including a peripheral skirt positioned adjacent the periphery of the support and a dividing wall separating a front chamber from a rear chamber in the interior area of the cover, with the rear chamber enclosing the mechanically operated switch portion and the front chamber enclosing a plurality of electronic components, a plurality of separable connectors extending through openings in the dividing wall and arranged to connect components in the front chamber with selected stationary contact structures in the rear chamber, and means extending from a front end of the cover through the front chamber into a threaded engagement with the threaded end of the post for securing the cover to the support.

4,642,479
POWER DISTRIBUTION DEVICE
 Steven A. Lombardi, Lake Zurich, and David O. Potter, Lake Villa, both of, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1985, Ser. No. 720,124
 Int. Cl.⁴ H01H 7/00

U.S. Cl. 307—141

13 Claims

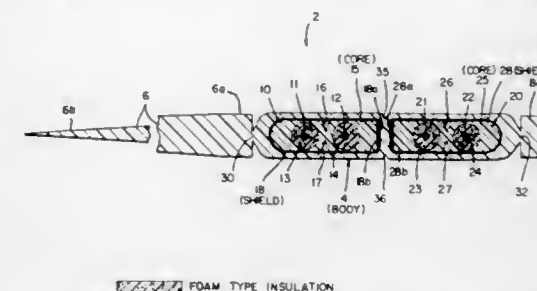


1. A power distribution device having:
 (a) a first input for operably connecting to a power source;
 (b) a second input for operable connection to a switch having selectively variable conductive states;
 (c) an output;
 (d) first means for sensing when said switch has a predetermined conductive state and for providing an output signal in response thereto;
 (e) second means responsive to said output signal of said first means for providing a control signal;
 (f) power switch means responsive to said control signal for selectively connecting and disconnecting said output to said first input;
 (g) delay means for delaying said second means response to a change in said output signal; and
 (h) reference means for providing a reference signal to said first means to facilitate the provision of said output signal, wherein said reference means includes a power input for connection to said power switch means such that said reference means can receive operating power therefrom and wherein said second means receives said reference signal as well to thereby facilitate provision of said control signal.

4,642,480
LOW PROFILE CABLE WITH HIGH PERFORMANCE CHARACTERISTICS
 Richard L. Hughes, Clemmons; Anthony W. Turney, Walnut Cove, both of N.C., and Raymond J. Look, Largo, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1985, Ser. No. 716,417
 Int. Cl.⁴ H01B 7/08; H02G 3/18
 U.S. Cl. 307—147

10 Claims



1. An electrical distribution system for installation under a carpet along a floor of a pre-existing building, for transmitting high frequency signals between system components arbitrarily distributed in the building; comprising:

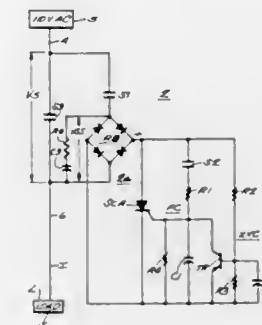
an undercarpet flat cable comprising a plurality of pairs of electrical signal wires located in a common plane and spaced from each other along their lengths, each pair being separately embedded intermediate the ends thereof within an insulating core, each core being surrounded by a shield; multiple shielded insulating cores being embedded within a common insulating body; the body, the shield and the core being progressively removed from the wires adjacent at least one end;
 first and second outlet receptacles mounted adjacent the floor and disposed at opposite ends of the cable, the portion of the cable having the body, the shield, and the core progressively removed being within the outlet receptacles; and
 an electrical connector interconnected at each end of the cable having the body, the shield and the core progressively removed to the signal wires and to each shield being mounted within the outlet receptacles for interconnection to a mating electrical connector.

4,642,481
SOLID STATE HYBRID SWITCH
 Ralph F. Bielinski, South Milwaukee; James R. Jaeschke, Waukesha; Slobodan Krstic, Milwaukee; Earl T. Piber, Oconomowoc, and Peter J. Theisen, West Bend, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 8, 1985, Ser. No. 763,843
 Int. Cl.⁴ H03K 17/72

U.S. Cl. 307—252 UA

10 Claims



1. A solid state hybrid switch for connecting an A.C. power

supply source to a load (load turn-on) and disconnecting said source from said load (load turn-off) so as to limit electromagnetic interference (EMI) to a low value comprising:

a solid state circuit comprising solid state A.C. power switching means and a zero voltage crossing circuit for limiting operation of said solid state A.C. power switching means to portions of the voltage wave of said A.C. source having an amplitude below a given small value to limit said EMI;
 bypass contacts for completing a connection from said source to said load independently of said solid state A.C. power switching means;
 series contacts operable when closed for connecting said solid state A.C. power switching means in circuit with said source and load and operable when open for isolating said solid state A.C. power switching means from said source;
 control switching means effective when placed in "on" state for rendering said solid state A.C. power switching means operable under the control of said zero voltage crossing circuit and effective when restored to "off" state for rendering said solid state A.C. power switching means inoperative at or near zero current;
 means responsive to closure of said series contacts for rendering said zero voltage crossing circuit operative to allow operation of said solid state A.C. power switching means when said source voltage goes below a given low value and said control switching means is in said "on" state and to prevent operation thereof whenever said source voltage is above said given value;
 and contact control means operable on said load turn-on for closing said series contacts first, placing said control switching means in its "on" state next and closing said bypass contacts last and said contact control means being operable on said load turn-off for opening said bypass contacts first, restoring said control switching means to said "off" state next and opening said series contacts last; said solid state A.C. power switching means being of a type that restores to stop conducting at the next zero current crossing of said A.C. source following said restoring of said control switching means to its "off" state.

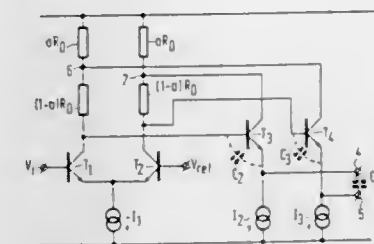
4,642,482
LEVEL-SHIFTING CIRCUIT
 Wolf Dietrich G. Kasperkowitz, and Johannes C. M. Meeuwis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1985, Ser. No. 743,252
 Claims priority, application Netherlands, Jun. 12, 1984, 8401847

Int. Cl.⁴ H03K 5/01

U.S. Cl. 307—264

6 Claims

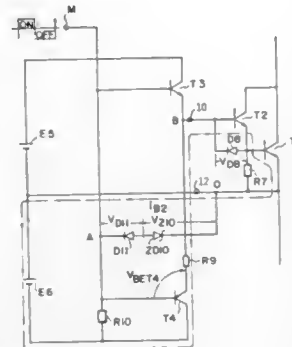


1. A level shifting circuit comprising:
 a differential amplifier comprising a first transistor and a second transistor, whose collectors are each coupled to a power-supply terminal via a load resistor,
 a first voltage-follower circuit comprising a third transistor connected as an emitter follower and having its base coupled to the collector of the first transistor, and

a second voltage-follower circuit comprising a fourth transistor connected as an emitter follower and having its base coupled to the collector of the second transistor, characterized in that the collector of the third transistor is coupled to a tapping on the load resistor of the second transistor, and the collector of the fourth transistor is coupled to a tapping on the load resistor of the first transistor.

4,642,483
REVERSE BIAS CURRENT SUPPLY SYSTEM FOR A SWITCHING DEVICE
Hiroo Tomita, Kawasaki, Japan, assignor to Fuji Electric Company Ltd., Kawasaki, Japan

Filed Oct. 12, 1984, Ser. No. 660,202
Int. Cl.⁴ H03K 19/08, 3/26
U.S. Cl. 307—300 15 Claims



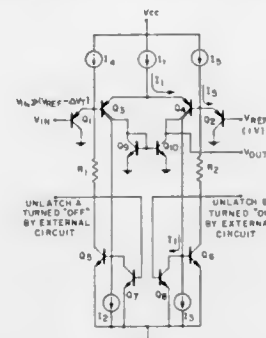
1. A system for supplying a base reverse bias current to a switching semiconductor device having a turn-off period, comprising:
first means receiving a switching signal and including a path for a control current for switching said switching semiconductor device, said first means supplying said control current to said switching semiconductor device through said path;
second means receiving said switching signal for controlling said switching semiconductor device, said second means supplying a base reverse bias current to said switching semiconductor device through a portion of said path of said first means when said switching signal is interrupted; and
third means having a circuit including a constant voltage device connected in series with said first means through which said base reverse bias current flows for clamping a voltage across said circuit to control said base reverse bias current substantially at a fixed level during the turn-off period of said switching semiconductor device.

4,642,484
LATCHING COMPARATOR WITH HYSTERESIS
Timothy J. Skovmand, San Jose, and Michael J. Mottola, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 19, 1985, Ser. No. 725,042
Int. Cl.⁴ H03K 5/153
U.S. Cl. 307—362 17 Claims

1. A latching comparator circuit with hysteresis comprising: differential amplifier means having first and second inputs and first, second, third, and fourth outputs, said first and second inputs for respectively receiving input and reference signals, said differential amplifier means responsive to said input and reference signals for respectively producing first, second, third, and fourth currents at said first, second, third and fourth outputs;
output circuit means coupled to said first and second outputs, said output circuit means having a fifth output and

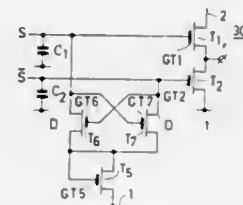
providing at said fifth output an output signal capable of assuming one or another of two states in response to said first and second currents;
first latch control means coupled to said first input and said third output, said first latch control means having a first control signal input for receiving a first control signal, said first latch control means for controlling said first, second, third, and fourth currents, said first latch control means responsive to said first latch control signal such that when said input signal has a first predetermined relationship with said reference signal said output signal changes from said one of said two states to said another of said two states and prevents said output signal from changing from said



another of said two states to said one of said two states; and
second latch control means coupled to said second input and said fourth output, said second latch control means having a second control signal input for receiving a second control signal, said second latch control means for controlling said first, second, third, and fourth currents, said second latch control means responsive to said second latch control signal such that when said input signal has a second predetermined relationship with said reference signal said output signal changes from said another of said two states to said one of said two states and prevents said output signal from changing from said one of said two states to said another of said two states.

4,642,485
DIGITAL SWITCHING CIRCUIT HAVING INSULATED GATE FIELD EFFECT TRANSISTORS FOR CLAMPING THE NONCONDUCTIVE OUTPUT TRANSISTOR OFF
Bernardus H. J. Cornelissen, and Henricus E. J. Wulms, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,235
Claims priority, application Netherlands, Nov. 8, 1983, 8303835
Int. Cl.⁴ H03K 19/003, 19/094
U.S. Cl. 307—443 6 Claims

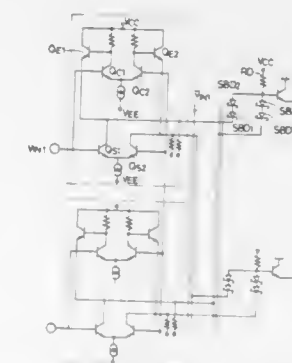
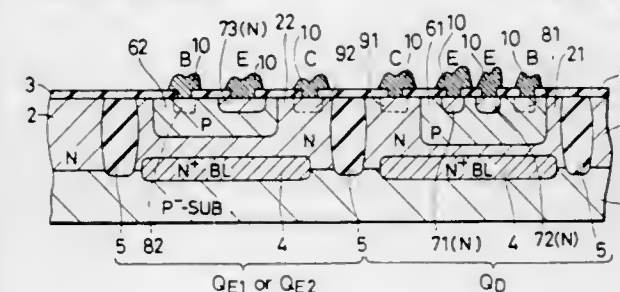


1. A digital switching circuit which comprises first and second insulated gate field effect transistors, conduction channels located between source and drain electrodes of the transistors.

tors being connected in series between a first and a second supply terminal, in operation the first transistor receiving at its gate electrode a first control signal and the second transistor receiving at its gate electrode a second control signal such that one of the transistors is rendered conducting and the other transistor is rendered non-conducting, the first control signal being an inverted version of the second control signal, and switchable clamping means, characterized in that the gate electrodes of the first and the second transistors are connected to said switchable clamping means for keeping the gate electrode of only the non-conducting transistor at a voltage level equal to or lower than the threshold voltage of the non-conducting transistor.

4,642,486
DECODER CIRCUIT USING TRANSISTORS OR DIODES OF DIFFERENT CHARACTERISTICS
Noriyuki Honma, Kokubunji; Hiroaki Nambu, Hachioji; Isao Yoshida, Nishitama; Hisayuki Higuchi, Kokubunji, and Kunihiko Yamaguchi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

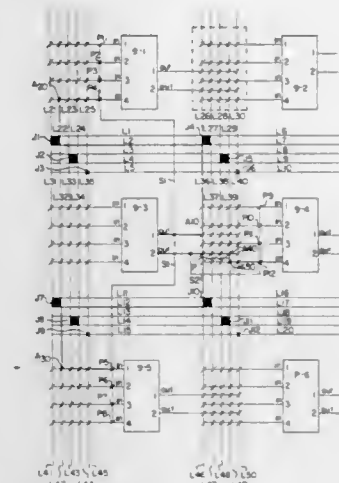
Filed Dec. 27, 1984, Ser. No. 686,660
Claims priority, application Japan, Dec. 28, 1983, 58-246935
Int. Cl.⁴ H03K 19/013, 19/082, 19/092; G11C 8/00
U.S. Cl. 307—463 8 Claims



1. A decoder circuit composed of at least one current switch means which provides current to either one of two output terminals in response to an input signal applied to an input terminal of said at least one current switch means, a charging circuit means including output emitter follower transistors for pulling up the signal level of said output terminals, and at least one multi-emitter transistor with its base and collector being commonly connected to form a junction, emitters of which are connected to the corresponding output terminals of said current switch means and said charging circuit means, wherein the improvement comprises:
the output emitter follower and multi-emitter transistors being structurally designed so that the voltage across the base and the emitter regions of said at least one multi-emitter transistor is larger than the voltage across the base and the emitter regions of each of said emitter follower transistors.

4,642,487
SPECIAL INTERCONNECT FOR CONFIGURABLE LOGIC ARRAY
William S. Carter, Santa Clara, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Sep. 26, 1984, Ser. No. 655,007
Int. Cl.⁴ H03K 17/693
U.S. Cl. 307—465 3 Claims



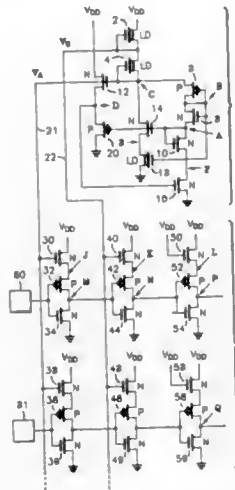
1. A configurable logic array comprising:
a plurality of configurable logic elements (CLEs), each CLE having at least one input lead and at least one output lead;
a general interconnect structure comprising a plurality of general interconnect leads and a plurality of programmable general interconnect junctions for interconnecting selected ones of said general interconnect leads;
one or more input access junctions for each input lead, each of said input access junctions being programmable for connecting a corresponding general interconnect lead to said input lead;
one or more output access junctions for each output lead, each of said output access junctions being programmable for connecting said output lead to a corresponding general interconnect lead;
means for programming said general interconnect junctions and said access junctions to provide an electrical path connecting one of said at least one output lead of one of said plurality of CLEs to one of said at least one input lead of one of said plurality of CLEs, said electrical path containing two access junctions and at least a portion of one of said general interconnect leads; and
at least one special interconnection circuit which permits a selected output lead of one of said CLEs to be connected to a selected input lead of another CLE, said special interconnection circuit not containing any portion of the general interconnect leads or any junction in the general interconnect structure.

4,642,488
CMOS INPUT BUFFER ACCEPTING TTL LEVEL INPUTS
Lanny L. Parker, Mesa, Ariz., assignor to Codex Corporation, Mansfield, Mass.

Filed Sep. 3, 1985, Ser. No. 772,223
Int. Cl.⁴ H03K 19/094
U.S. Cl. 307—475 13 Claims

1. A method of translating transistor-transistor logic (TTL) level input signals into complementary metal oxide semiconductor (CMOS) level output signals in an input buffer circuit, said method comprising:
providing an input terminal for accepting said TTL level input signals;

providing an output terminal for outputting said CMOS level output signals;
providing first and second supply voltages;
generating first and second reference voltages;
providing first and second CMOS inverter stages, said first CMOS inverter stage being coupled to said input terminal and generating high and low level output signals, said second CMOS inverter stage being responsive to said output signals of said first CMOS inverter stage and generating high and low level output signals to said output terminal;
coupling said first reference voltage to said first CMOS inverter stage, the magnitude of said first reference volt-



age being of a predetermined value relative to one of said TTL level input signals, such that when said one TTL level input signal is applied at said input terminal said first CMOS inverter stage generates said low level output signal without providing a DC path; and
coupling said second reference voltage to said second CMOS inverter stage, the magnitude of said second reference voltage being of a predetermined value relative to said first CMOS inverter stage high level output signal, such that when said first CMOS inverter stage high level output signal is applied to said second CMOS inverter stage said second CMOS inverter stage generates said low level output signal at said output terminal without providing a DC path.

4,642,489

SAMPLED DATA AMPLITUDE LINEAR PHASE DETECTOR

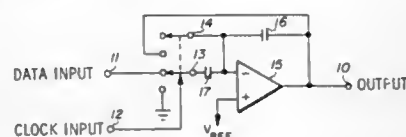
Milton E. Wilcox, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 3, 1984, Ser. No. 657,328

Int. Cl.⁴ H03K 5/26, 5/159, 5/00

U.S. Cl. 307—514

4 Claims



1. A sampled data phase detector circuit having a data input terminal connectible to a data signal, a clock input terminal connectible to a clock input signal, and an output terminal, said circuit comprising:

a differential amplifier having inverting and noninverting

inputs and an output that comprises said circuit output terminal;
means for coupling a reference potential to said differential amplifier noninverting input;
first capacitor means coupled between said differential amplifier output and inverting input;
first switch means coupled across said first capacitor means and operated from said clock input terminal whereby said first capacitor means is periodically discharged and said differential amplifier inverting input is forced to said reference potential;
second switch means having a single pole double throw operation with the pole thereof being actuated in response to the signal at said clock input terminal to switch between first and second positions, said first position being coupled to said circuit data input terminal and said second position being coupled to ground; and
second capacitor means coupled between said second switch means pole and said differential amplifier inverting input whereby said differential amplifier output terminal develops a d-c voltage that is proportional to the phase difference between said data signal and said clock signal.

4,642,490

AMPLITUDE VARIATION SUPPRESSION ARRANGEMENTS

Rodney J. Lawton, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Dec. 10, 1984, Ser. No. 679,873

Claims priority, application United Kingdom, Dec. 9, 1983, 8332897

Int. Cl.⁴ H03K 5/08; G06G 7/16

U.S. Cl. 307—540

2 Claims



1. An arrangement for suppressing amplitude variation in FM signals, the arrangement comprising:
frequency divider means for frequency dividing an incoming FM signal of varying amplitude when the amplitude of the FM incoming signal is above a threshold value to provide first and second frequency divided signals each having two discrete levels and being of substantially constant amplitude; and
frequency multiplier means coupled to the frequency divider means for receiving the first and second frequency divided signals and multiplying the first and second frequency divided signals to provide an output signal of substantially constant amplitude and having a frequency equal to that of the incoming signal.

4,642,491

SINGLE TRANSISTOR DRIVER CIRCUIT

Donald M. Kenney, Shelburne, and Jack A. Mandelman, Underhill, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,375

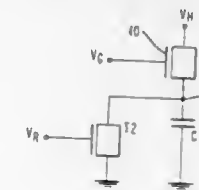
Int. Cl.⁴ H03K 17/687, 17/56; N01L 29/80

U.S. Cl. 307—571

14 Claims

1. A driver circuit comprising
a field effect transistor,
a capacitor serially connected with said transistor, and
means for operating said transistor in a sustaining mode, said operating means including means for applying a control voltage to a control gate of said transistor and means for applying a voltage differential in excess of a sustaining

voltage of said transistor across said transistor and said capacitor, said voltage differential being equal to or



greater than the snap back voltage of said transistor at said control voltage.

4,642,492

MULTIPLE PHASE CLOCK BUFFER MODULE WITH NON-SATURATED PULL-UP TRANSISTOR TO AVOID HOT ELECTRON EFFECTS

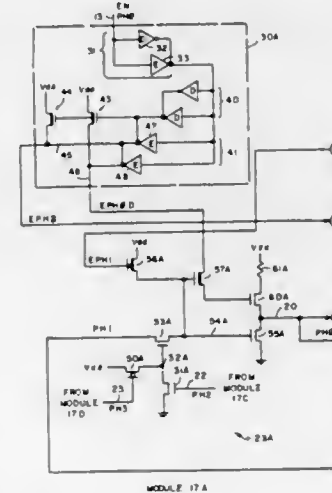
John C. Beck, Northborough, and Daniel W. Dobberpuhl, Shrewsbury, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 25, 1984, Ser. No. 664,858

Int. Cl.⁴ H03K 17/06, 17/693

U.S. Cl. 307—578

8 Claims



1. A clock buffer circuit for generating a clock signal in response to a timing signal and a first enabling signal, said clock buffer circuit comprising:

- input means for receiving said first enabling signal;
- means responsive to said timing signal for generating a second enabling signal, both enabling signals being initially in a high condition prior to the time the clock signal is to be asserted and said first enabling signal being in a low condition at the time said clock signal is to be asserted; and
- signal generating means comprising resistor means, pull-up transistor means and pull-down transistor means serially connected between high and low power supplies, said pull-up transistor means being connected to receive said second enabling signal through a switch means conditioned in response to the assertion of said first enabling signal to couple said second enabling signal to said pull-up transistor means and said pull-down transistor means being connected to receive said first enabling signal, said resistor means being selected to maintain both said transistor means in a non-saturated condition when conducting, the node between said pull-up transistor and said pull-down transistor comprising an output terminal for transmitting said clock signal, such that both said pull-up and pull-down transistor means are energized by said enabling

signals to conduct prior to the time the clock signal is to be high, said pull-down transistor being de-energized and said switch means being conditioned in response to the negation of said first enabling signal to isolate said pull-up transistor from said low power supply and said second enabling signal whereby the voltage level at said output terminal is increased due to the charge stored in the intrinsic capacitance in the pull-up transistor.

4,642,493

INTEGRALLY AIR COOLED LINEAR INDUCTION MOTOR

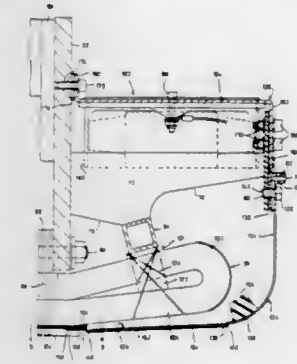
A. K. Wallace, Corvallis, Oreg., assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Apr. 25, 1985, Ser. No. 727,387

Int. Cl.⁴ H02K 41/02

U.S. Cl. 310—13

20 Claims



1. A primary member for a linear induction motor comprising an elongate core,
a motor winding having a plurality of turns spaced apart along said core and extending transversely thereto, said turns each having end windings projecting to opposite sides of said core and each including a knuckle portion to reverse the direction of said winding,
a pair of side cover assemblies extending along said core to either side thereof and encompassing said end winding,
a plurality of fans located on opposite sides of said core and outboard thereof to direct air from one side of a respective side cover assembly to the other side and outlet means provided on said other side to permit egress of air so as to cool said end winding, and baffle means located between said end windings and said side cover assemblies to direct air between the end windings of adjacent turns.

4,642,494

MEANS TO IMPROVE PERFORMANCE OF ELECTRIC MOTORS

Robert S. Lundin, Northfield, and Demetris Petritis, New Britain, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Oct. 2, 1985, Ser. No. 782,932

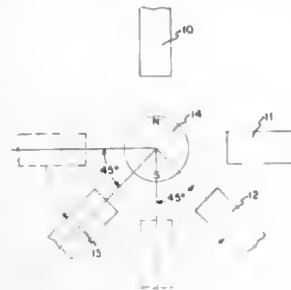
Int. Cl.⁴ H02K 19/12

U.S. Cl. 310—49 R

5 Claims

1. An electric motor, comprising:
(a) a rotor having a pair of N-S magnetic poles radially displaced symmetrically thereon; and
(b) first and second sets of stator poles radially disposed about the rotor, each set of stator poles being energized by the passage of electric current through coils wound upon the poles to provide flux linkage with the rotor poles, with successive energization and de-energization of the stator poles causing rotation of the rotor, with the stator poles of the first set disposed in the positions they would occupy if

all the stator poles were radially disposed symmetrically about the rotor, and with the stator poles of the second set disposed in positions displaced by a given mechanical angle of displacement, equal to 180° divided by the product of the number of a harmonic of the funda-



mental torque/angle curve times the number of rotor pole pairs, from the positions they would occupy if all the stator poles were radially disposed symmetrically about the rotor, whereby the displacement causes the harmonic to be attenuated.

4,642,495

ELECTRIC ROTARY MACHINE HAVING SUPERCONDUCTING ROTOR

Takanobu Mori; Yutaka Fukui; Tetsuo Kashimura, all of Hitachi, and Yoshimi Yanai, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 467,808, Feb. 18, 1983, abandoned.

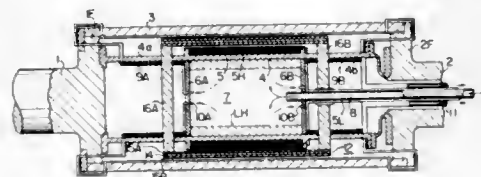
This application Apr. 23, 1985, Ser. No. 726,394

Claims priority, application Japan, Feb. 19, 1982, 57-24488

Int. Cl.⁴ H02K 9/00

U.S. Cl. 310—52

9 Claims



1. An electric rotary machine having a superconducting rotor, wherein said superconducting rotor comprises a driving shaft having at an end thereof a flange portion, a hollow shaft confronting said driving shaft with a gap therebetween and having a flange portion, a torque tube connected between said flange portions, a field winding provided on an outer peripheral surface of said torque tube, said torque tube having a coolant pool therein, coolant supply means for supplying a coolant to said coolant pool through said hollow shaft, an inner shielding member formed of a cylindrical non-magnetic body and provided so as to surround the field winding, a cylindrical outer shielding member disposed so as to surround the inner shielding member and connected between said flange portions, said outer shielding member being a cylindrical single-layer body, coolant discharge means for collecting said coolant from said coolant pool through said hollow shaft, and a power lead passing through said hollow shaft for supplying said field winding with electric power, and wherein said outer shielding member is made of a non-magnetic nickel alloy containing 0.05 to 0.25% carbon, 0.01 to 0.5% silicon, 0.01 to 0.5% manganese, 0.01 to 0.6% titanium, 2.5 to 6.0% aluminum, 9.2 to 15.0% copper, and the balance nickel by weight, said alloy having such a structure that a γ' -phase precipitation is formed by hard-aging in an austenitic matrix.

4,642,496 DEVICE FOR DETECTING THE ANGULAR POSITION OF THE ROTOR OF A ROTARY ELECTRIC MACHINE WITH ELECTRONIC SWITCHING

Alain Kerviel, and Remy Barbarin, both of Chatellerault, France, assignors to Societe Francaise d'Equipements pour la Navigation Aeriene (S.F.E.N.A.), France

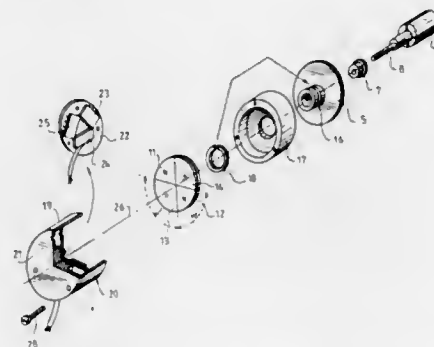
Filed May 22, 1985, Ser. No. 736,740

Claims priority, application France, May 22, 1984, 84 08300

Int. Cl.⁴ H02K 11/00

U.S. Cl. 310—68 B

5 Claims



1. A device for detecting the angular position of the rotor of a rotating electric machine comprising, inside a body, a rotor mounted for rotation about a first rotation axis in a stator, said rotor and said stator being equipped with two respective mutually facing magnetic circuits and comprising a plurality of magnetic poles of alternating polarity, said device further comprising:

an additional disk mounted coaxially on the shaft of the rotor and comprising a radial face;

first and second pluralities of permanent magnets in the form of circular sectors which produce a magnetic field independent on that of said rotor and said stator and which are arranged concentrically to a center point located on said first rotational axis and bonded to the radial face of the disk, the permanent magnets of said first plurality each having a first polarity and first and second radial edges which form a first angle, the permanent magnets of the second plurality each having a second polarity and third and fourth radial edges which form a second angle, and the permanent magnet of the first plurality alternating with the permanent magnets of the second plurality with each radial edge of the permanent magnets of the first plurality extending against one radial edge of one permanent magnet of the second plurality so as to cover said radial face;

Hall effect proximity cells each having sensible surfaces in a plane parallel to said radial plane and in the vicinity thereof, said cells being carried by a structure mounted for rotation about a second rotational axis coaxial to said first rotational axis, and

means for locking said structure against rotation on said body.

4,642,497

HERMETIC COMPRESSOR UNIT AND STATIONARY ASSEMBLY

John H. Boyd, Jr., Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 30, 1984, Ser. No. 605,225

Int. Cl.⁴ H02K 11/00

U.S. Cl. 310—68 R

17 Claims

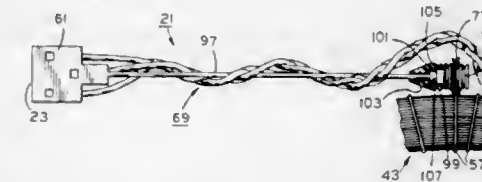
1. A hermetic compressor unit driven by a dynamoelectric machine therein adapted to be energized from a source of power, the unit comprising:

a housing having a hermetically sealed chamber therein; connection means mounted to said housing so as to extend in

part therethrough into said chamber and adapted for connection with the power source, said connection means including a set of electrical connectors;

a stationary assembly of said dynamoelectric machine disposed within said chamber and including a core having a pair of opposite end faces, a bore extending generally axially through said core and intersecting with said opposite end faces, and a plurality of winding means receiving slots intersecting with both said bore and said opposite end faces, respectively;

winding means associated with said core and adapted for excitation upon the energization of the dynamoelectric machine, said winding means including a plurality of coils formed of conductor material having a coating of dielectric material thereon and each coil having at least one conductor loop with opposite side loop portions thereof being disposed in said slots of said core and with opposite end loop portions thereof being arranged in generally annular groupings adjacent said opposite end faces of said core, respectively, some of said coils defining a main winding of said winding means and others of said coils defining an auxiliary winding of said winding means; a pair of main winding lead ends integral with said main winding and extending from one of said end loop groupings, a pair of auxiliary winding lead ends integral with said auxiliary winding and extending from said one end loop grouping of said winding means, one of said main winding lead ends and one of said auxiliary winding lead ends being twisted together to define a common lead end of said winding means; and a set of terminals on said common lead end, the other of said main winding lead ends, and the other of said auxiliary winding lead ends, respectively;



assembly means for associating said winding means in circuit relation with said electrical connectors of said connection means, said assembly means including: casing means removably mounted to said electrical connectors of said connection means for receiving said terminals and for connecting them in circuit relation with said electrical connectors of said connection means, respectively, an elongate member integral with said casing means and extending therefrom generally toward said one end loop grouping of said winding means, a free end portion on said elongate member, a first abutment on said free end portion, a retaining member disposed at least adjacent said one end loop grouping of said winding means, a pair of stepped passages in said retaining member, said free end portion of said elongate member extending through one of said stepped passages, and a second abutment on said retaining member between said stepped passages thereof; said first abutment on said free end portion of said elongate member being movable in the other of said stepped passages of said retaining means so as to engage with said second abutment thereby to establish a lost motion engagement between said elongate member and said retaining member;

a pair of means associated with said end loop groupings of said winding means for lacing them, respectively, and one of said lacing means associated with said one end loop grouping of said winding means being interconnected in engagement with said retaining member of said associating means thereby to at least generally maintain said retaining member against displacement from its disposition at least adjacent said one end loop grouping of said winding means in the event of the occurrence of the lost motion

engagement between said first and second abutments of said elongate member and said retaining member, respectively;

a set of generally elongate tubes of a dielectric material encasing said other main winding lead end, said other auxiliary winding lead end, and said common lead end, and extending generally between said casing means and said one end loop grouping of said winding means; said elongate tubes with said other main winding lead end, said other auxiliary winding lead end, and said common lead end encased therein being twisted together generally into a twisted bundle and also generally spirally wrapped about at least a part of said elongate member between said casing means and said retaining member, respectively;

a compressor within said chamber including means for mounting engagement with said dynamoelectric machine; a set of means for resiliently mounting both said compressor and said dynamoelectric machine to said housing, respectively;

a rotor disposed at least in part within said bore of said stator and associated in magnetic coupling relation with said winding means upon the excitation thereof; and

a shaft supporting said rotor and drivingly interconnected with said compressor.

4,642,498

INTERNAL COMMON NEUTRAL BUS IN LARGE THREE-PHASE GENERATOR

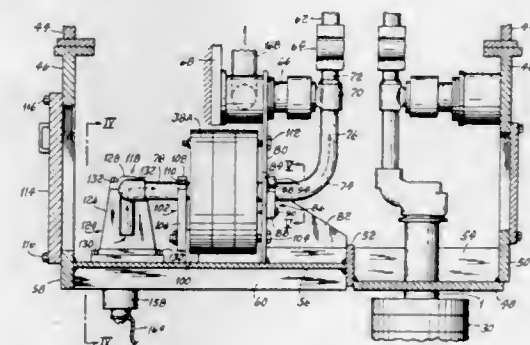
James B. Archibald, and Frederick J. Rink, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1985, Ser. No. 810,814

Int. Cl.⁴ H02K 11/00

U.S. Cl. 310—71

5 Claims



1. A three-phase generator including a stator rotatably disposed within said stator comprising:

a stator frame containing said stator;

a rotor rotatably disposed within said stator;

at least first, second and third windings in said stator; each of said first, second and third windings including a first and a second end;

a frame extension in said stator frame;

means for connecting said first ends of said first, second and third windings to first, second and third high-voltage terminals in said bottom panel;

at least first, second and third neutral current transformers each having an axis;

means for rigidly affixing said first, second and third neutral current transformers to said frame extension within said stator frame with said axes of said first, second and third neutral current transformers disposed in a horizontal direction;

means for passing current from said second ends of said first, second and third windings through said first, second and third current transformers, respectively;

a common neutral bus downstream of said first, second and third current transformers;
said common neutral bus including means for electrically interconnecting said first, second ends;
means in said common neutral bus for disconnecting said second ends of said first, second and third windings from each other;
a neutral terminal in said frame extension; and conductor means for electrically connecting said common neutral bus to said neutral terminal.

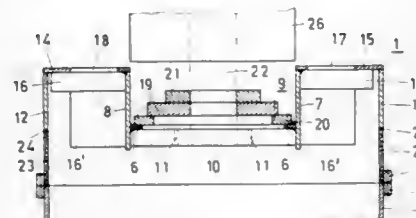
4,642,499

CASING MEANS FOR ELECTRICAL MACHINE
Ernst Brem, Schlieren, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Aug. 16, 1985, Ser. No. 766,344
Claims priority, application Switzerland, Sep. 14, 1984, 4397/84

Int. Cl.⁴ H02K 5/00

U.S. Cl. 310—89

7 Claims



1. An electrical machine comprising:

- (a) an outer casing, said outer casing being at least generally cylindrical in shape;
- (b) a rotor shaft disposed axially in said outer casing, a first end of said rotor shaft projecting outwardly from said outer casing;
- (c) a bearing block journaled the first end of said rotor shaft; and
- (d) an end casing fastened to said outer casing, said end casing comprising:
 - (i) a first flat plate disposed perpendicularly to said rotor shaft, said first flat plate extending vertically when said electrical machine is in use, said first flat plate having a central hole sized and shaped to permit a rotor mounted on said rotor shaft to be removed axially from said outer casing without dismantling said end casing from said outer casing, said first flat plate having a first straight edge, a second straight edge, a first arcuate edge, and a second arcuate edge, said first and second straight edges extending vertically when said electrical machine is in use and said first and second arcuate edges being between said first and second straight edges at the top and the bottom of said electrical machine, respectively;
 - (ii) a second flat plate and a third flat plate, both said second and third flat plates being disposed perpendicularly to said first flat plate, said second flat plate being joined to said first straight edge of said first flat plate and said third flat plate being joined to said second straight edge of said first flat plate, said second and third flat plates each having an axially inner edge and an axially outer edge;
 - (iii) a first flat, arc-shaped cover and a second flat, arc-shaped cover, both said first and said second flat, arc-shaped covers being disposed perpendicularly to said rotor shaft, said first flat, arc-shaped cover having an arcuate edge and a straight edge, the straight edge of said first flat, arc-shaped cover being joined to the axially outer edge of said second flat plate and said second flat, arc-shaped cover having an arcuate edge and a straight edge, the straight edge of said second flat,

arc-shaped cover being joined to the axially outer edge of said third flat plate;

- (iv) a first part-cylindrical plate and a second part-cylindrical plate, said first and second part-cylindrical plates each having an axially inner edge and an axially outer edge, said axially inner edges of said first and second part-cylindrical plates being joined to said outer casing, said axially outer edge of said first part-cylindrical plate being joined to the arcuate edge of said first flat, arc-shaped cover, and said axially outer edge of said second part-cylindrical plate being joined to the arcuate edge of said second flat, arc-shaped cover; and
- (v) an inspection opening located in at least one of said first and second flat, arc-shaped covers.

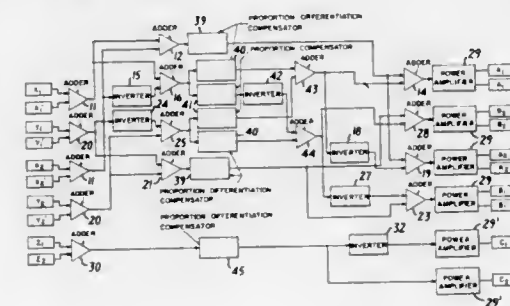
4,642,500

CONTROL ARRANGEMENT FOR MAGNETIC BEARING APPARATUS

Toshiro Higuchi, Yokohama; Takeshi Mizuno, and Noboru Aikawa, both of Tokyo, all of Japan, assignors to Seiko Seiki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 682,811, Dec. 18, 1984, abandoned, which is a continuation of Ser. No. 439,325, Nov. 4, 1982, abandoned. This application Jan. 2, 1986, Ser. No. 815,674
Claims priority, application Japan, Nov. 11, 1981, 56-180712
Int. Cl.⁴ F16C 39/06

U.S. Cl. 310—90.5

2 Claims



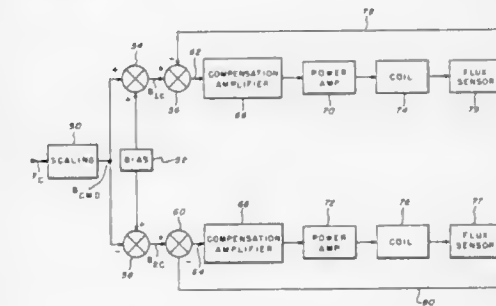
1. A magnetic bearing apparatus for rotatably supporting a rotatable body comprising: radial magnetic bearings each having at least two pairs of electromagnets surrounding the rotatable body, and arranged at suitable distances along the rotatable body; radial sensors surrounding the rotatable body and arranged at suitable distances along the rotating body to detect radial deviation of the rotatable body at each sensor; first optimum regulating means for one degree of freedom for extracting the radial deviation of the rotatable body from the output signal of said sensors and for generating a first control signal corresponding to the deviation; second optimum regulating means for two degrees of freedom including inverse symmetrical cross-linking feedback means for extracting the angular deviation of the rotatable body on the perpendicular radial axis from the output signal of said sensors and for generating a second control signal corresponding to gyro action caused by the compensating torque on the perpendicular radial axis for the angular deviation; and control means for controlling the input power applied to said electromagnets in response to said first and second control signals.

MAGNETIC SUSPENSION AND POINTING SYSTEM WITH FLUX FEEDBACK LINEARIZATION

Kevin D. Kral, Phoenix, and Douglas D. Havenhill, Peoria, both of Ariz., assignors to Sperry Corporation, New York, N.Y.
Filed Oct. 15, 1985, Ser. No. 786,979
Int. Cl.⁴ F16C 39/00

U.S. Cl. 310—90.5

9 Claims



1. Apparatus for magnetic suspension comprising:

- (a) an armature of ferromagnetic material moveable between predetermined limits along a first axis and freely moveable in translation along a cross-axis normal to said first axis;
- (b) magnetic actuator means for applying a force on said armature along said first axis, the magnitude of said force depending on the magnitude of the magnetic flux across a gap formed between said armature and a pole piece disposed on said actuator means, said actuator means comprising a pair of half-stations disposed on opposite sides of said armature along said first axis, each of said half-stations further comprising a magnetically permeable core having co-operable pole pieces, said core carrying an electro-magnetic coil adapted when energized for conducting magnetic lines of flux between said co-operable pole pieces and said armature, said pole pieces spaced apart from said armature by an airgap along said first axis, said core positioned to apply magnetic force along said first axis to provide a predetermined displacement of said armature from at least one of said pole pieces;
- (c) means for providing a force command signal representative of a desired armature force;
- (d) means responsive to said force command signal for deriving a flux command signal representative of a desired flux density, said flux command signal coupled to supply control currents to said electromagnetic coils;
- (e) means coupled to said core for sensing said lines of flux and deriving flux control signals representative of an actual flux density; and
- (f) means coupled to receive said flux control signals and said flux command signals for modifying said control currents of said electromagnetic coils, so as to produce a magnetic flux density linearly corresponding to said force command signal.

4,642,502

DYNAMOELECTRIC MACHINE WITH PERMANENT MAGNET AND MAGNET MOUNTING SURFACE ARRANGEMENT

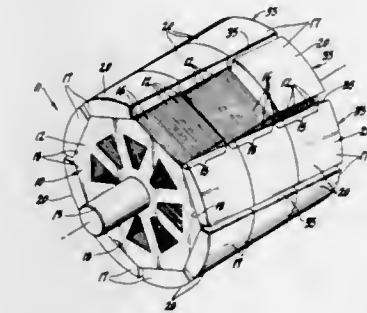
Keith H. Carpenter, Kettering; Jon E. Miller, Spring Valley, and John W. Murphy, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 24, 1986, Ser. No. 855,344
Int. Cl.⁴ H02K 1/18

U.S. Cl. 310—156

5 Claims

1. A dynamoelectric machine having a rotor and a stator, one of the rotor and stator comprising a plurality of wound electromagnetic poles, the other of the rotor and stator comprising, in combination:
 - a core comprising a plurality of substantially identical lamina of a magnetic material each having a polygonal circumfer-

ence, the lamina being axially stacked in groups with the lamina of each group forming flat, rectangular, magnet mounting surfaces, each group of lamina, proceeding from one axial end of the core, being rotationally offset about the common axis by a common angle of rotation from the previous group of lamina; and
a plurality of identically shaped permanent magnets mounted one on each of the magnet mounting surfaces, the magnets having flat surfaces adjacent the magnet



mounting surfaces and arcuate surfaces opposite the flat surfaces, the arcuate surfaces forming a generally cylindrical surface adjacent the wound electromagnetic poles, each of the magnets further having the shape, when viewed radially, of a parallelogram forming a skew angle with the axis corresponding with the rotational offset of the magnet mounting surfaces to define skewed slots between skewed magnetic poles extending the substantial axial length of the core.

4,642,503

ROTOR FOR A SUPERCONDUCTING ROTATING ELECTRIC MACHINE

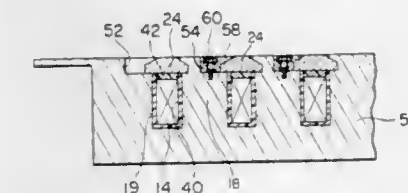
Akinori Ueda, and Kouichi Okamoto, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1985, Ser. No. 751,899

Claims priority, application Japan, Jul. 5, 1984, 59-140796; Jul. 5, 1984, 59-140799; Jul. 5, 1984, 59-140802; Jul. 5, 1984, 59-140803; Jul. 5, 1984, 59-140805; Jul. 5, 1984, 59-140807
Int. Cl.⁴ H02K 3/48

U.S. Cl. 310—214

23 Claims



1. A rotor for a superconducting rotating electric machine comprising:

- a cylindrical coil-carrying shaft having a plurality of parallel coil slots formed in the surface thereof, each of said coil slots having straight portions extending in the longitudinal direction of said shaft, arcuate portions extending in the circumferential direction of said shaft at the ends of said

straight portions, and corners which connect the straight portions and the arcuate portions of said slots, said shaft also having a plurality of rotor teeth formed therein whose sides are defined by the sides of said coil slots, each of said rotor teeth having wedge grooves formed therein for the insertion of wedges, each of said rotor teeth having a recess formed therein in at least the portion adjoining the corners of said coil slots;

a plurality of field coils, each of which is housed in one of said coil slots;

a plurality of wedges which fit into said wedge grooves in said rotor teeth and fit over said field coils so as to prevent the radial movement of said coils; and

detachable retaining means for preventing the movement of said wedges and said coils housed in the portions of said coil slots adjoining said recesses.

4,642,504

ELECTRIC FIELD MACHINE

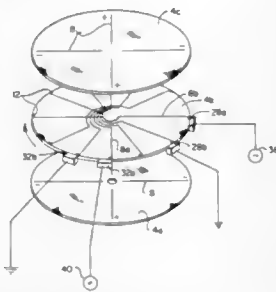
Stephen C. Jacobsen, Salt Lake City, Utah, assignor to Sarcos, Inc., Salt Lake City, Utah

Filed Apr. 8, 1983, Ser. No. 483,110

Int. Cl.⁴ H02N 1/00

U.S. Cl. 310—308

13 Claims



1. An electric field machine comprising first and second pluralities of elongate elements, wherein said elongate elements are capable of being charged with an electrical charge, and each of said elongate elements has a width of between about 200 and 5000 angstroms, the first plurality of elongate elements being disposed in a first array, the second plurality of elongate elements being disposed in a second array which is spaced in close proximity of between about 200 and 5000 angstroms to the first array, with said second array being movable with respect to said first array, either the first or second plurality of elements being electrically charged, with certain elements being charged negatively and the other elements, interspersed among the certain elements, being charged positively, and means for successively applying electrical charges to the other plurality of elements to produce electric force fields which cause the second plurality of elements to move with respect to the first plurality of elements, said electrical charge applying means including means for alternately applying negative charges and positive charges to selected ones of the elements of said other plurality and for alternately applying positive charges and negative charges to the other of such elements interspersed among the selected elements.

4,642,505
LASER TRIMMING MONOLITHIC CRYSTAL FILTERS TO FREQUENCY

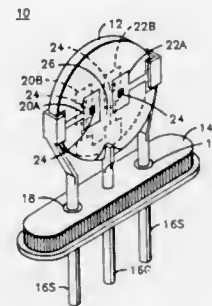
Aristotelis S. Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1984, Ser. No. 585,967

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—312

52 Claims



1. An improved method of adjusting the resonant frequency of a piezoelectric device having a plurality of electrodes positioned on opposing surfaces of a crystal wafer to form at least one piezoelectric resonator, including the steps of:

laser machining the electrode material from the respective resonator electrode to adjust the frequency of said resonator to a desired value, said laser machining being effected in the approximate geometric center of said electrode in a single contiguous area manner, whereby the Q of said piezoelectric device is minimally affected by said laser machining.

4,642,506

SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTORS IN INTER-ELECTRODE LOCATION
Meirion F. Lewis, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

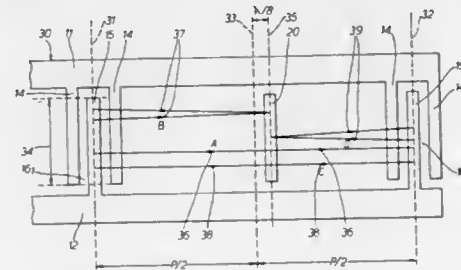
Filed Oct. 12, 1984, Ser. No. 660,234

Claims priority, application United Kingdom, Oct. 14, 1983, 8327551

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—313 D

23 Claims



1. An acoustic transducer comprising a single layer metal conductor pattern on a substantially planar piezoelectric substrate, the pattern being arranged to define firstly a ladder transducer electrode configuration having rungs comprising transverse interdigital electrode fingers, and secondly at least one transverse reflector strip in an inter-rung position offset from spatial periodicity with the electrode fingers as appropriate to provide acoustic wave enhancement and reduction in respective mutually opposite directions in a given frequency band.

4,642,507
SAW DEVICES WITH REFLECTION-SUPPRESSING FINGERS

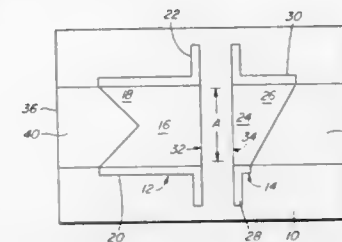
Mark S. Suthers, Lanark; Grantley O. Este, Stittsville; Richard W. Streater, and Blair K. MacLaurin, both of Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 1, 1985, Ser. No. 718,589

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—313 B

25 Claims



1. A SAW (surface acoustic wave) device comprising a substrate having an IDT (inter-digital transducer) on a surface thereof, the IDT comprising:

an active region of inter-digital fingers, for transducing a surface acoustic wave with a predetermined wavelength lambda for propagation on said surface via a front edge of the IDT with a predetermined aperture; and a reflection-suppressing region, having an aperture which is at least substantially as large as said predetermined aperture adjacent to the active region and comprising a plurality of electrically interconnected fingers spaced apart with a pitch of lambda/4 and defining a tapered back edge of the IDT across at least part of said aperture.

4,642,508

PIEZOELECTRIC RESONATING DEVICE

Hitosbi Suzuki, Yokohama, and Hiroaki Sato, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

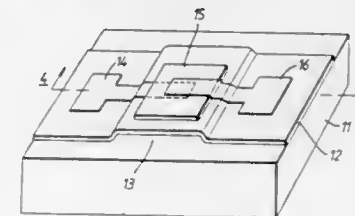
Filed Mar. 8, 1985, Ser. No. 709,600

Claims priority, application Japan, Mar. 9, 1984, 59-44122

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—321

17 Claims



1. A piezoelectric resonating device comprising: a substrate having a substantially flat surface; a non-piezoelectric film layer formed on said flat surface to create an air-gap between a portion of said non-piezoelectric film layer and said flat surface; a first electrode formed on said non-piezoelectric film and extending along said air-gap; a piezoelectric film layer formed on said non-piezoelectric film layer and said first electrode; and a second electrode formed on said piezoelectric film layer and extending along said air-gap.

4,642,509
ULTRASONIC MOTOR USING BENDING, LONGITUDINAL AND TORSIONAL VIBRATIONS

Akio Kumada, Kokubunji, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

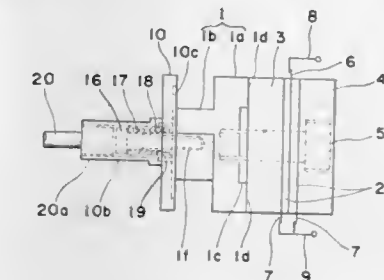
Filed Feb. 21, 1986, Ser. No. 831,578

Claims priority, application Japan, Apr. 19, 1985, 60-82668; Sep. 9, 1985, 60-197750; Sep. 9, 1985, 60-197751

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—323

10 Claims



1. An ultrasonic motor comprising a stator including a bending vibration plate, a longitudinal and torsional vibration coupling element having a beam extending slanted relative to the vibration axis of the bending vibration plate, a piezoelectric thickness vibration element connected with the longitudinal and torsional vibration coupling element through an elastic vibration element, a longitudinal vibration element combined with the longitudinal and torsional vibration coupling element, the elastic vibration element and the piezoelectric thickness vibration element, said beam of the stator generating elliptical vibration which is combination of longitudinal vibration generated in the piezoelectric thickness vibration elements and then boosted in the elastic vibration element and torsional vibration generated in the longitudinal and torsional vibration coupling element excited by the longitudinal vibration and therefore having the same frequency of the vertical vibration, and a rotor which is contacted with the leg of the stator to receive the elliptical vibration to be rotated, wherein the improvement comprises surface contacting means for contacting with the beam of the stator only in the outer peripheral portion of the surface of the beam away from the torsional vibration axis and depressing means for applying a force to depress the contact surface means to said beam.

4,642,510

MOUNT FOR QUARTZ CRYSTAL OSCILLATOR DEVICE
Yukio Yamashita, Shiga, Japan, assignor to Kyocera Corporation, Kyoto, Japan

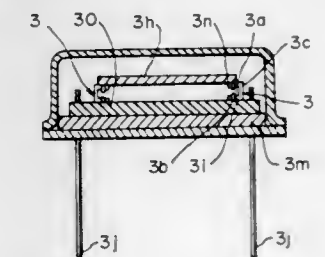
Continuation of Ser. No. 719,373, Apr. 3, 1985, abandoned. This application Jan. 31, 1986, Ser. No. 825,686

Claims priority, application Japan, Apr. 27, 1984, 59-63118[U]

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—348

12 Claims



1. A quartz crystal oscillator device including a quartz crystal

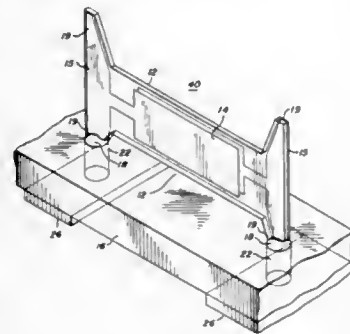
tal resonator supported on a base via a support member and hermetically sealed by a cap mounted on said base, said support member being characterized in that it comprises a pair of upper and lower planar connection sections, a vertical through section which is provided between a peripheral portion of one connection section and that of the other connection section for integrally connecting said connection sections, and plural pairs of bent legs vertically projected from peripheral portions of said connection sections other than said peripheral portion for the through section, with their distal ends left free.

4,642,511
EDGE-MOUNTING CONFIGURATION FOR AT-STRIP RESONATORS

Marc K. Chason, Schaumburg; Joseph P. Tomase, Libertyville, and Michael J. Onystok, Bloomington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 31, 1986, Ser. No. 646,175
Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—348

33 Claims



1. A piezoelectric resonator assembly comprising: a quartz crystal blank of substantially rectangular shape having two opposing major surfaces, two opposing longitudinal edges, and conductive material disposed on each of said two opposing major surfaces to form electrodes; base means for supporting said crystal blank, said base means having upper and lower surfaces; and means for mounting said crystal blank to said base means by at least two separated mounting points adjacent to only a first of said two longitudinal edges such that said crystal blank opposing major surfaces are oriented substantially perpendicular to said base means upper surface, said mounting means including cavity means located within said base means upper surface for positioning said crystal blank on said base means.

4,642,512
STAIN RESISTANT FLUORESCENT LAMP
Hiromitsu Matsuno, Hachioji; Seiichi Murayama, and Tetsuo Ono, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

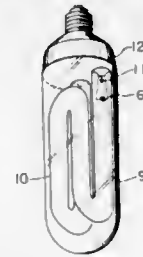
Filed Nov. 1, 1984, Ser. No. 667,135
Claims priority, application Japan, Nov. 2, 1983, 58-204833
Int. Cl.⁴ H01J 61/12, 61/34, 61/52

U.S. Cl. 313—25

8 Claims

1. A fluorescent lamp comprising glass tube means for forming a discharge path between a pair of electrodes and provided with a phosphor layer on the inner wall thereof, a layer consisting of one of a metal oxide and a phosphate being provided

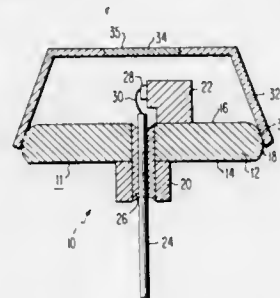
between said inner wall of said glass tube means and said phosphor layer, and means for keeping to 80° C. or above the



lowest temperature on the wall of said glass tube means along said discharge path to prevent stain from occurring.

4,642,513
ELECTROOPTIC ASSEMBLY HAVING AN ADJUSTABLE WINDOW
Paul Nyul, New Holland, Pa., and Rudolph H. Hedel, West Windsor, N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Feb. 8, 1985, Ser. No. 699,557
Int. Cl.⁴ H01J 5/02; H05B 33/02
U.S. Cl. 313—110

6 Claims



1. In an electrooptic assembly having an optical axis of symmetry comprising an electrooptic device mounted on a header and enclosed by a cover with a light transmissive window mounted therein, said header including a base plate having two major surfaces and a minor surface connecting the major surfaces; the improvement wherein the minor surface is curved and a segment of the cover contacts the minor surface, so as to allow adjustments to be made to the window relative to the optical axis of symmetry.

4,642,514
AUTOMOBILE HEADLIGHT WITH COMBINED HEAT AND LIGHT SHIELD
George J. English, Reading, and Kirti B. Chakrabarti, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

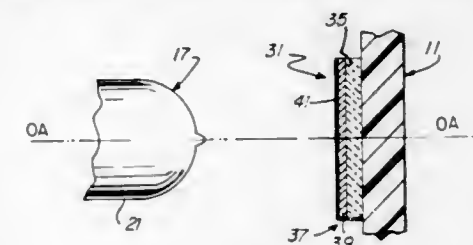
Filed Sep. 28, 1984, Ser. No. 655,616
Int. Cl.⁴ H01K 1/26

U.S. Cl. 313—111

12 Claims

1. In an automobile headlight including a reflector, a plastic lens secured to said reflector, and a light source in the form of a capsule disposed within and substantially surrounded by said reflector, the improvement comprising: means located on or forming part of a preselected portion of said plastic lens for preventing transmission of visible light through said preselected portion of said lens to reduce glare when said headlight is in operation in an automobile and for preventing heat buildup on said lens during said operation, said means located adjacent said capsule and preventing direct light from a portion of said capsule from passing through said lens, said means including a layer of heat insulating material located on an internal surface of

said lens relative to said capsule light source and means for absorbing visible light and reflecting heat upon receipt of

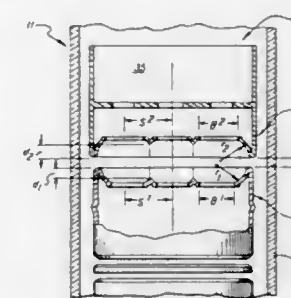


said visible light, said light absorbing and heat reflecting means located on said layer of heat insulating material.

4,642,515
COLOR CATHODE RAY TUBE IN-LINE ELECTRON GUN STRUCTURE INCORPORATING DEEP SADDLE ACCELERATING ELECTRODE
Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.
Filed Dec. 12, 1984, Ser. No. 680,713
The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.
Int. Cl.⁴ H01J 29/62

U.S. Cl. 313—414

4 Claims



1. In an in-line electron gun structure for a color cathode ray tube having an in-line plane, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first lensing structure in the forward portion of the focusing electrode, such structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having front beam exits and smaller dimensioned rear beam entrances, the front exits laying in a forward aperture plane and being generally circular and the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting a portion of an adjacent aperture to form an inwardly sloping arcuate wall along the region of intersection; and
a second lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having rear beam entrances and smaller dimensioned front beam exits, the rear entrances lying in a rearward aperture plane and being generally circular and the entrances and exits separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate wall along the region of intersection;
the axes of symmetry of said apertures in said first and sec-

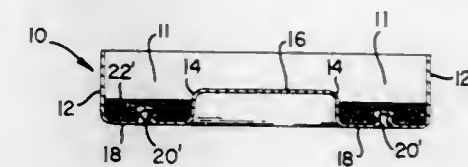
ond lensing structures lying substantially in the in-line plane; characterized in that the apertures of the second lensing structure are enlarged, whereby the lensing field asymmetry caused by such enlargement substantially balances the lensing field asymmetry of the first lensing structure.

4,642,516
GETTER ASSEMBLY PROVIDING INCREASED GETTER YIELD
Thomas H. Ward, Bay Village; Phillip A. Costanzo, Parma; Vincent Pietrasz, Cleveland, and Edmund J. Soeder, Parma Hts., all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 7, 1983, Ser. No. 539,795
Int. Cl.⁴ H01J 29/94

U.S. Cl. 313—481

2 Claims



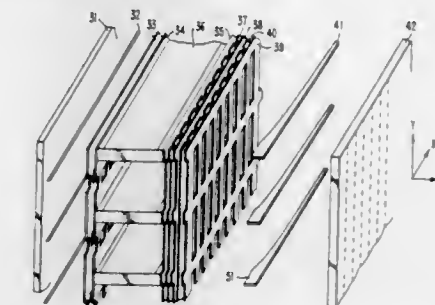
1. A getter assembly comprising an annular channel defined by outer and inner sidewalls, and a bottom wall connecting said outer and inner sidewalls, and getter material pressed in said channel, said bottom wall having an integrally formed annular groove extending upwardly into said channel, said annular groove having a generally bulb shaped cross section which narrows down adjacent said bottom wall, said annular groove being covered by said getter material and interlocking therewith.

4,642,517
IMAGE DISPLAY APPARATUS WITH DEFORMABLE ACCELERATING ELECTRODES
Takashi Kanehisa, Osaka, and Mitsunori Yokomakura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1984, Ser. No. 675,392
Claims priority, application Japan, Nov. 30, 1983, 58-225916
Int. Cl.⁴ H01J 31/20, 63/02

U.S. Cl. 313—495

5 Claims



1. An image display apparatus comprising: an elongated wire-like electron source; electron beam focusing and control electrodes positioned in front of said electron source for focusing and controlling electron beams emitted from said electron beam source; electron beam deflection electrodes positioned among said electron beam focusing and control electrodes for deflecting the electron beams; electron beam accelerating electrodes positioned in front of said electron beam focusing,

control, and deflection electrodes for accelerating said electron beams;

an electron beam light-emitting means having fluorescent material which emits red, green and blue light when struck by the electron beams; and
an evacuated enclosure enclosing said electron source and said electrodes and having a transparent screen adjacent said light-emitting means which is vertically divided into a plurality of sections and horizontally divided into a plurality of sections, said electrodes being operable to direct the electron beams to each section from said wire-like electron source and to vertically deflect an electron beam on each section to display a plurality of lines and to cause the fluorescent material to emit red, green and blue in each section in order, so that the quantity of irradiation of said electron beams on said fluorescent material is controlled; said electron beam accelerating electrodes being deformable and each having an elongated shape which has a side facing toward said electron beam deflection electrodes and a side facing away from said electron beam deflection electrodes for, when subjected to the Coulomb force due to voltages applied to said electrodes, being deformed to bring the side facing toward said electron beam deflection electrodes to a predetermined position of the beams in which the adverse effect on the image due to the deformation of said electron beam accelerating electrodes caused by the Coulomb force generated when each of said electrodes has a voltage applied thereto, is eliminated.

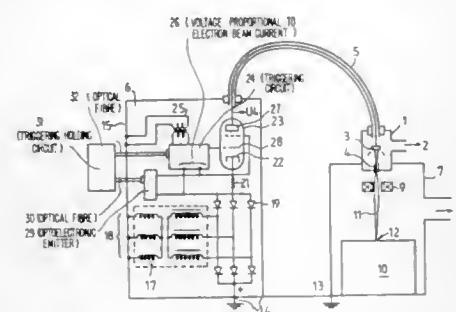
4,642,518 INSTALLATION OF ELECTRON BEAM METALWORKING

Philippe Dard, Boussy St Antoine, France, assignor to Sciaky S.A., Vitry sur Seine (Val de Marne), France
Filed Mar. 14, 1985, Ser. No. 711,911

Claims priority, application France, Mar. 23, 1984, 84 04559
Int. Cl.⁴ H01J 23/34

U.S. Cl. 315—1.0

6 Claims



1. Installation for working metal by electron beams comprising:

- an electron gun (1) having a cathode (3) that produces in a vacuum an electron beam (11) to be focused on a part (10) to be welded;
- a transformer and rectifier system including a transformer (17) and rectifier (19) for producing a rectified high voltage at terminals of the rectifier (19) connected to the secondary of the transformer (17), the rectifier (19) being connected to the cathode (3) of the electron gun by its negative terminal via a vacuum tube (28) and associated current-flow-sensitive means (21) and to the anode (4) of the electron gun by its earth, the reference potential, the vacuum tube (28) interrupting the passage of current to the electron gun when its intensity exceeds a determined value,

this installation being characterized in that;

- the current-flow-sensitive means are associated with the tube by means of a triggering circuit (24) having a threshold with a short time constant (47, 48, 49), the triggering

circuit being connected to a control grid (22) of the vacuum tube (23) so as to block the same when the electron gun current exceeds the determined value and by means of a triggering holding circuit (31) that operates in cascade with the triggering circuit (24) to extend the blocking of the tube (23) for a time adjustable by adjusting means.

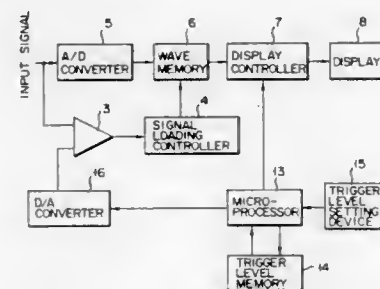
4,642,519 DIGITAL WAVE OBSERVATION APPARATUS Kenji Nakatsugawa, Kanagawa; Aiichi Katayama, Isehara; Hitoshi Sekiya, and Shoji Hiratsuka, both of Atsugi, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan Filed Oct. 9, 1985, Ser. No. 786,223

Claims priority, application Japan, Oct. 15, 1984, 59-155229[U]

Int. Cl.⁴ G01R 23/16; H01J 23/34

U.S. Cl. 315—1.0

1 Claim



1. A digital wave observation apparatus having an A/D converter for A/D converting an input signal, a trigger level setting device for setting a trigger level, a trigger signal generator for comparing the input signal with a set trigger level and generating a trigger signal, a wave memory for storing an A/D converted input signal in response to the trigger signal, and a display for displaying the input signal stored in said wave memory, comprising a trigger level display device for displaying a horizontal line corresponding to a trigger level on said display irrespective of generation of the trigger signal.

4,642,520 HIGH PRESSURE DISCHARGE LAMP Anton J. Bouman, and Eise B. Geertsema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,247

Int. Cl.⁴ H01J 7/44, 17/34, 19/78, 29/96

U.S. Cl. 315—73

1 Claim



1. A high-pressure discharge lamp which comprises: a sealed vacuum-tight light pervious lamp envelope, a sealed vacuum-

tight light-pervious discharge vessel disposed in said envelope, the space between said envelope and said vessel being evacuated or containing a non-oxidizing gas atmosphere, said lamp further including electrodes disposed in spaced relation from each other within said vessel, an ionizable fill disposed within said vessel, respective electrical current conductors extending through the wall of said envelope and through the wall of said discharge vessel to said electrodes and an oxidation-sensitive element connected electrically in series with said electrical current conductors and disposed in the space between said envelope and said vessel wherein the oxidation-sensitive element is a member substantially consisting of a material selected from the group consisting of zirconium-aluminum alloys, and sintered zirconium powder and sintered mixtures of zirconium powder and nickel powder.

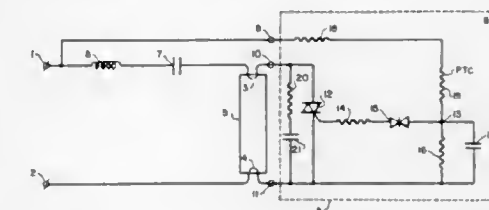
4,642,521 COMPACT IGNITER FOR DISCHARGE LAMPS Herman Smulders, Arlington Heights, Ill., assignor to Advance Transformer Company, Chicago, Ill.

Filed Dec. 21, 1984, Ser. No. 684,448

Int. Cl.⁴ H05B 39/04

U.S. Cl. 315—106

13 Claims



1. A ballast-igniter apparatus for an arc discharge lamp of the type having preheatable electrodes comprising:

- a pair of input terminals for supplying an AC voltage to the apparatus,
- a ballast impedance for connection in series with said discharge lamp across said input terminals,
- a controlled semiconductor switching device having a control electrode,

means for connecting said controlled semiconductor device to the lamp electrodes so that the semiconductor device is connected in series with the ballast impedance and at least one lamp electrode so as to provide a preheat current path for said lamp electrodes,

means connecting a positive temperature coefficient (PTC) resistor in series with a timing capacitor across said input terminals, and

means including a semiconductor voltage threshold device for coupling the control electrode of the controlled semiconductor device to the timing capacitor so that the capacitor voltage controls the triggering of the controlled semiconductor device,

said PTC resistor being operative, prior to ignition of the lamp, to charge the timing capacitor from the voltage at said input terminals so as to trigger the controlled semiconductor device into conduction during each half cycle of the AC supply voltage to provide a preheat current for the lamp electrodes,

said PTC resistor changing over to a high resistance state after it heats up whereby the voltage developed across the timing capacitor in each half cycle of the AC voltage is insufficient to trigger the controlled semiconductor device into conduction when the lamp is in its operating state.

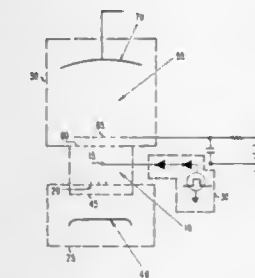
4,642,522 WIRE-ION-PLASMA ELECTRON GUN EMPLOYING AUXILIARY GRID Robin J. Harvey, Thousand Oaks; Hayden E. Gallagher, Malibu, and Robert W. Schumacher, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1984, Ser. No. 621,420

Int. Cl.⁴ H01J 7/24

U.S. Cl. 315—111.31

7 Claims



1. An electron-ion plasma source, comprising:
an ionization chamber containing a gas;
an anode disposed in said ionization chamber for ionizing said gas upon application of an ionization potential thereto;

a cathode separated from said ionization chamber by a gap; means for providing a high potential difference between said anode and said cathode such that ions are extracted from said chamber into said gap and accelerated through said potential difference to bombard said cathode, thereby producing electrons by secondary emission which are in turn accelerated through said potential difference to provide high energy electrons;

first grid means disposed between said ionization chamber and said gap;

second grid means disposed between said first grid means and said cathode in said gap; and

means for providing a potential to said second grid means, whereby upon interruption of said ionization potential to said anode, ions passing through said first grid means do not have sufficient kinetic energy to overcome the potential barrier of said second grid means and are thereby prevented from being accelerated through said potential difference.

4,642,523 PRECISION TUNABLE RESONANT MICROWAVE CAVITY

Shigeo Nakanishi, Berea; Frank S. Calco, Olmsted Falls, and August R. Scarpelli, Litchfield, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 11, 1985, Ser. No. 700,255

Int. Cl.⁴ H01J 27/00

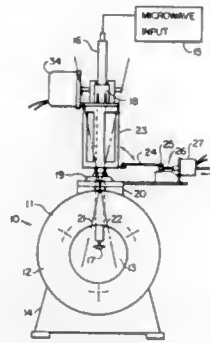
U.S. Cl. 315—111.81

8 Claims

1. Apparatus for ions impressing microwave energy on an ionizable gas to produce a plasma which serves as a source of ions, said apparatus comprising:

- a cylindrical metal chamber having first and second endwalls;
- a capsule of ionizable vapor disposed in said first endwall;
- a tuning wall slidably disposed in said chamber between said endwalls;
- a plurality of threaded rods attached to said tuning wall and extending through said second endwall in threaded engagement with respective rotatable bushings in said second wall;
- a plurality of gears with each gear carried on respective one

of each of said plurality of threaded rods and meshing with a common gear rotatably supported on said second endwall;
 common gear driving means for rotating said common gear and, consequently, said rotatable bushings to position said tuning wall;
 a spherical pivot joint disposed in the cylindrical wall of said cylindrical chamber;
 a tube having one end retained in said spherical joint and extending outwardly from said chamber;



a coaxial probe having a coupling tip position in said chamber between said first endwall and said tuning wall and slidably extending through said tube for connection to a source of microwave energy;
 means for slidably positioning said coaxial probe in said tube whereby said coupling tip is moveable toward and away from the center axis of said cylindrical metal chamber, said tube being pivotable in said spherical pivot joint within an imaginary cone, the apex of which is at the center of the spherical joint thereby allowing positioning of said coupling tip at a desired location.

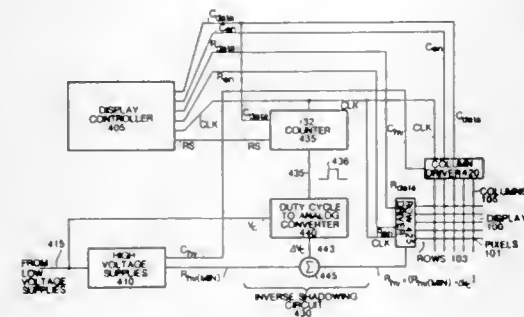
4,642,524 INVERSE SHADOWING IN ELECTROLUMINESCENT DISPLAYS

Bill Eaton, Albany, and Marvin L. Higgins, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 8, 1985, Ser. No. 689,621
 Int. Cl.⁴ G09G 3/10

U.S. Cl. 315-169.3

5 Claims



1. A circuit for driving an electroluminescent (EL) display having picture elements (pixels) which emit light at and above a threshold voltage, said pixels arranged as an x-y matrix of columns and rows, said circuit comprising:
 controller means for directing which pixels are to be lit;
 constant voltage supply means for supplying constant column and constant row drive voltages;
 a column driver circuit coupled between the constant voltage supply means and the columns of the EL display for

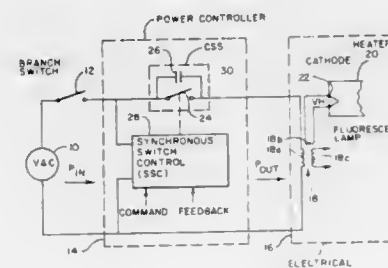
selecting which columns of the EL display are to have lit pixels;
 a row driver circuit coupled to the constant voltage supply means and the rows of the EL display for selecting which rows of the EL display are to have lit pixels; and
 variable supply means coupled to the controller means and the row driver circuit for essentially maintaining the same slope of pixel writing voltage at and above for threshold voltage for pixels to be lit in a first selected row as the slope of pixel writing voltage at and above the threshold voltage for pixels to be lit in a subsequent selected row, independently of the number of pixels lit in the first and subsequent selected row.

4,642,525 TRANSIENT CONTROL CIRCUIT FOR FLUORESCENT LAMP SYSTEMS

Don F. Widmayer, 4704 Locust Hill Rd., Bethesda, Md. 20814
 Filed Apr. 15, 1985, Ser. No. 723,184
 Int. Cl.⁴ H05B 37/02, 39/04, 41/36

U.S. Cl. 315-219

4 Claims



1. A system for controlling the A.C. power supplied from an A.C. source to an electrical load comprising at least one transformer ballast and at least one fluorescent lamp driven by said transformer ballast and including externally heated cathodes, said system including an electronic switch connected between the A.C. source and the load, a switching controller for controlling switching of said switch in timed relation to the A.C. source voltage wave so as to control the power supplied to the load by applying to the switch control pulses the duration of which control the time during a cycle of the A.C. source voltage wave which the switch is turned on, and a capacitor connected in shunt across said switch, said switching controller including control means for, when the system is turned on, initially limiting the pulse duration of the control pulses applied to said switch and for thereafter gradually increasing the pulse duration of said control pulses over a plurality of cycles of the A.C. source voltage wave to thereby reduce the effect of the starting transient produced when the system is turned on and to gradually increase the lamp arc current from an initial minimum value to a value which produces the desired illumination level.

4,642,526 FLUORESCENT OBJECT RECOGNITION SYSTEM HAVING SELF-MODULATED LIGHT SOURCE

F. Kenneth Hopkins, Erlanger, Ky., assignor to Angstrom Robotics & Technologies, Inc., Florence, Ky.

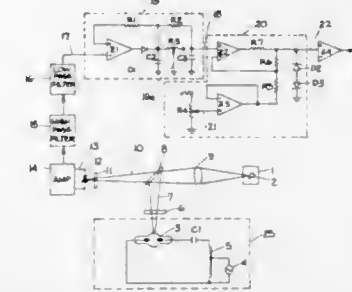
Filed Sep. 14, 1984, Ser. No. 650,809
 Int. Cl.⁴ H05B 37/00

U.S. Cl. 315-244

17 Claims

1. A circuit for producing self-modulation of the light intensity of a mercury vapor lamp comprising:
 a transformer having primary and secondary windings;
 a source of low frequency alternating voltage connected to said primary winding; and
 a self-resonant circuit comprising the series connection of a capacitor and a mercury vapor lamp connected to said

secondary winding, said resonant circuit having a resonant frequency higher than and a non-integral multiple of



the frequency of said voltage source, wherein the light intensity of said lamp is caused to oscillate at the resonant frequency of said resonant circuit.

4,642,527 IN-LINE COLOR PICTURE TUBE APPARATUS WITH DYNAMIC CONVERGENCE CORRECTION DEVICE

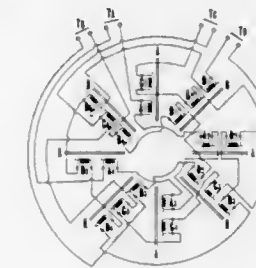
Koji Takahashi, and Machio Kawashima, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 372,328, Apr. 27, 1982. This application Jan. 16, 1986, Ser. No. 820,906

Claims priority, application Japan, Apr. 30, 1981, 56-63939
 Int. Cl.⁴ H01J 29/70, 29/76

U.S. Cl. 315-368

4 Claims



1. In an in-line color picture tube apparatus with an in-line color picture tube having a center beam between two side beams aligned in a plane, a self-convergence deflection yoke, a static convergence correction magnet assembly comprised of static convergence correction magnets and purity correction magnets, said yoke and said assembly being mounted on said tube, the improvement comprising dynamic convergence correction means disposed between said self-convergence deflection yoke and correction magnet assembly, said dynamic convergence correction means comprising a support member made of a non-magnetic substance, eight coil assemblies having cores fixedly disposed radially on said support member concentrically of the tube axis with mutually equal circumferential spacings, and coils wound on said cores, said coils being connected in such a manner as to generate a four-pole magnetic field having a horizontal axis which coincides with the in-line plane of the electron beams, a six-pole magnetic field having said horizontal axis, a four-pole magnetic field having an axis making an angle of 45° with respect to said horizontal axis, and a six-pole magnetic field having a vertical axis, each of the multi-pole magnetic fields producing displacement forces only on said side beams, said apparatus further comprising drive circuit means for feeding to said coils dynamic convergence correction signals of predetermined amplitude and direction at predetermined timings in accordance with the deflection synchronizing signals to achieve dynamic convergence correction over the scanned deflection field.

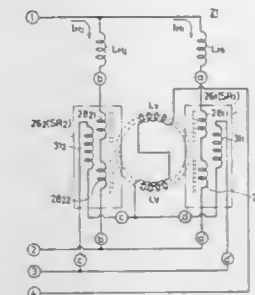
4,642,528 PICTURE CORRECTING APPARATUS FOR USE WITH IN-LINE TYPE COLOR PICTURE TUBE

Toshio Kobayashi, Noda, and Hideo Hishiki, Iwai, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 12, 1984, Ser. No. 680,680
 Claims priority, application Japan, Dec. 12, 1983, 58-234024
 Int. Cl.⁴ H01J 29/70, 29/76

U.S. Cl. 315-368

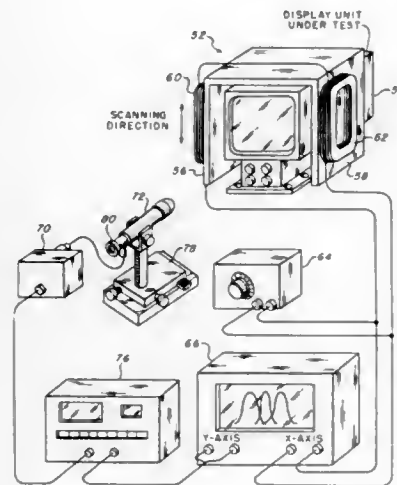
7 Claims



1. A picture correcting apparatus for use with an in-line type color picture tube of a self-convergence system, comprising:

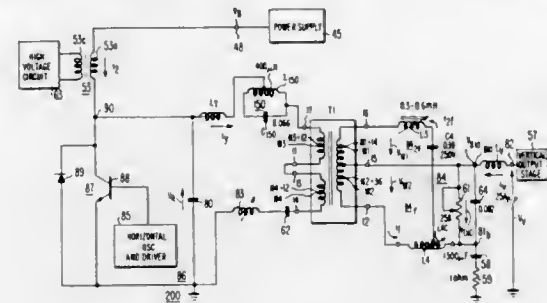
- first and second horizontal deflecting coils;
 - first and second vertical deflecting coils;
 - a first saturable reactor having a first coil, a first core provided for said first coil, and at least one permanent magnet for magnetizing said first core in a given direction, said first coil being connected in series to said first horizontal deflecting coil so as to form a first series circuit;
 - a second saturable reactor having a second coil, a second core provided for said second coil, and at least one permanent magnet for magnetizing said second core in a given direction, said second coil being connected in series to said second horizontal deflecting coil so as to form a second series circuit; said first and second series circuits being connected in parallel such that a parallel circuit of said first and second series circuits receives a horizontal deflection driving current;
- said first and second saturable reactors being positioned diametrically with respect to a neck portion of said picture tube so as to receive leakage flux from said first and second vertical deflecting coils;
- the winding directions of said first and second coils of said first and second saturable reactors and the polarity of said magnets of said first and second saturable reactors being selected such that the impedance of said first coil increases and decreases when the impedance of said second coil respectively decreases and increases in accordance with a degree of vertical deflection effected by said vertical deflecting coils; and
- (e) means for causing a ratio θ_e/θ_m to assume a value equal to or smaller than 0.5 so that an increasing rate of the amount of correction of the convergence of horizontal lines decreases as the degree of vertical deflection is increased where θ_m is a differential coefficient around the center of the picture where the degree of vertical deflection is very small and θ_e is a differential coefficient at top and bottom sides of the picture where the degree of vertical deflection is maximum, each of said differential coefficients corresponding to a changing rate of the inductance of said first and second coils of said saturable reactors.

4,642,529
APPARATUS AND METHOD FOR MEASURING LINEWIDTH AND CONVERGENCE IN A COLOR CATHODE RAY TUBE DISPLAY SYSTEM
 Cecil W. Penn, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.
 Filed Mar. 18, 1985, Ser. No. 713,127
 Int. Cl.⁴ H01J 29/70; H04N 17/02, 9/24
 U.S. Cl. 315—368 12 Claims



1. Apparatus for measuring convergence in a cathode ray tube display system of the type including a generally planar viewing surface, comprised of a plurality of closely spaced adjacent independent regions of phosphorescent material at predetermined horizontal and vertical displacements, said tube having a plurality of independently driven electron beams adapted to be controlled by beam deflection signals so as to converge on a first plurality of said regions along a first axis whereby said regions are sequentially illuminated, comprising: magnetic deflection means, positioned on said display system and coupled to said electron beams, independent of said beam deflection signals, for producing a magnetic field inductively cooperating with said electron beams so as to provide a deflection of said electron beams along a second axis coplanar with said viewing surface whereby said beams are caused to traverse said regions along said second axis; function generator means coupled to provide a cyclical control signal for energizing said magnetic deflection means; photo-responsive detector means for sensing luminescent radiation from said viewing surface and adapted for focusing on an essentially centrally disposed area of one of said regions along said first axis, traverse means for carrying said photo-responsive detector means and displacing said means by at least one of said predetermined horizontal and vertical displacements to focus on an area of a further one of said regions along at least one of said first and second axes and display means, coupled to respond to said cyclical function generator means and said photo-responsive detector means, for providing an output signal indicative of relative brightness of said one region and said further one of said regions as a function of beam deflection.

4,642,530
RASTER DISTORTION CORRECTION CIRCUIT
 Enrique Rodriguez-Cavazos, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
 Filed May 10, 1985, Ser. No. 732,693
 Int. Cl.⁴ H01J 29/56
 U.S. Cl. 315—371 13 Claims

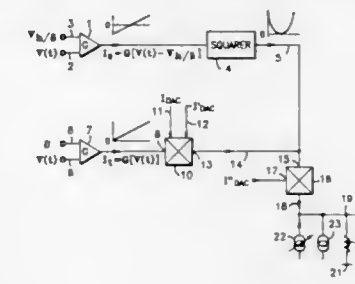


1. In a cathode ray tube scanning system including a deflection yoke having a respective horizontal and vertical deflection windings, a source of horizontal scanning current at a horizontal scanning frequency, a source of vertical scanning current at a vertical scanning frequency, and first means for coupling said yoke to said first and second sources in such manner that said horizontal scanning current is caused to traverse said horizontal deflection winding and said vertical scanning current is caused to traverse said vertical deflection winding, raster distortion correction apparatus comprising: a nonlinear reactor including a first winding responsive to a signal at a first frequency that is related to said horizontal scanning frequency for generating in a second winding of said reactor an output signal at a frequency that is related to said first frequency; means coupled to said second winding of said nonlinear reactor and responsive to said output signal for producing a first modulating current that is predominantly at a harmonic which is greater than said first frequency; means responsive to a signal operating at a frequency that is related to said vertical scanning frequency and coupled to said first modulating current producing means for varying the amplitude of said first modulating current in accordance therewith; and means coupled to said vertical deflection winding for modulating the vertical scanning current in accordance with said first modulating current.

4,642,531
TIMEBASE CIRCUIT
 David T. Jobling, Geneva, and Anthony D. Newton, Le Vaud, both of Switzerland, assignors to Motorola Inc., Schaumburg, Ill.
 Filed May 31, 1985, Ser. No. 739,949
 Claims priority, application United Kingdom, Jun. 5, 1984, 8414316
 Int. Cl.⁴ H01J 29/56 11 Claims

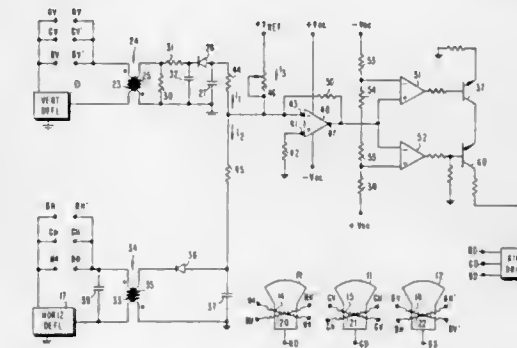
1. A timebase circuit for providing a horizontal drive correction waveform for a television type display, the circuit comprising: first means responsive to a vertical ramp signal for providing a current proportional thereto; second means for squaring said current to provide a parabolic current;

third means responsive to said vertical ramp signal for providing a linear current proportional thereto; and



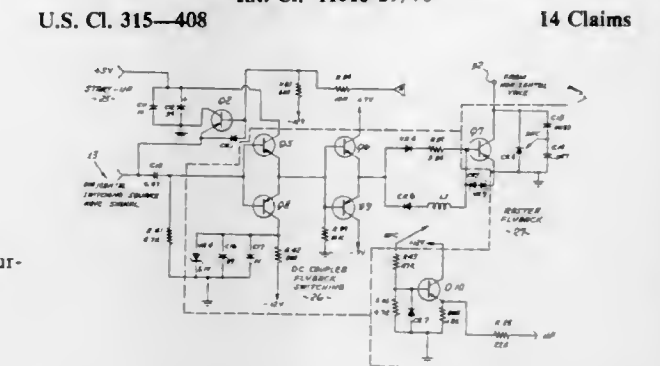
fourth means for combining said parabolic and linear currents to provide a tilted parabolic current.

4,642,532
PROJECTION TV DEFLECTION LOSS PROTECTION CIRCUIT
 Alan A. Hoover, New Palestine, Ind., assignor to RCA Corporation, Princeton, N.J.
 Filed May 10, 1984, Ser. No. 609,413
 Int. Cl.⁴ H01J 29/52
 U.S. Cl. 315—386 1 Claim



1. A protection circuit for a video display apparatus having a cathode ray tube with a deflection yoke mounted thereon, said protection circuit comprising: means coupled to said deflection yoke for providing a first current having an amplitude indicative of line rate deflection current through said deflection yoke; means coupled to said deflection yoke for providing a second current having an amplitude indicative of field rate deflection current through said deflection yoke; current summing means for combining said first and said second currents with a reference current to form a balanced current sum signal, said reference current selected such that the amplitude of said balanced current sum signal is substantially zero as an indication of normal line and field rate deflection current in said deflection yoke and nonzero as an indication of abnormal line or field rate deflection current in said deflection yoke; comparator means having an input terminal coupled to said balanced current sum signal providing means, said comparator responsive to said balanced current sum signal for providing a nonzero output signal as an indication of abnormal line or field rate deflection current; and means responsive to said nonzero comparator output signal for providing a disabling signal for said video display apparatus.

4,642,533
CONSTANT CURRENT POWER CIRCUIT FOR HORIZONTAL DEFLECTION OF CATHODE RAY TUBE
 John C. Carpenter, Reseda, Calif., assignor to Ocean Technology, Inc., Burbank, Calif.
 Filed Mar. 27, 1985, Ser. No. 716,814
 Int. Cl.⁴ H01J 29/70 14 Claims

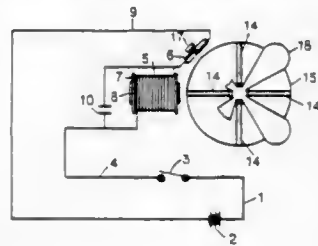


1. In a control circuit for the horizontal magnetic deflection yoke of a cathode ray tube, the combination of: first and second terminals for connection to said yoke; a first transistor having emitter, collector and base electrodes; a current sensing resistor connected in a series circuit with said first transistor emitter and collector electrodes at a first junction point, with one end of said series circuit connected to a DC power source and with the other end directly connected to said yoke first terminal; a S shaping capacitor connected between said yoke first terminal and circuit ground; an operational amplifier having first and second inputs and an output, with said output connected to said first transistor base electrode in controlling relation and with a reference voltage connected to said first input; first circuit means for connecting said first junction point to said operational amplifier second input; second circuit means for connecting a current control signal to said operational amplifier second input; a second transistor having emitter, collector and base electrodes, with said emitter and collector electrodes directly connected between said yoke second terminal and circuit ground; a flyback capacitor connected across said second transistor emitter and collector electrodes; a diode connected across said second transistor emitter and collector electrodes for providing a conduction path during the first half of the sweep sawtooth current waveform; a third transistor connected as an amplifier between said operational amplifier output and said first transistor base electrode; and third circuit means for connecting a horizontal switching signal to said second transistor base electrode in controlling relation.

4,642,534
MAGNETIC DRIVEN MOTOR
 Emile Mitchell, 3315 Dragonwick, Houston, Tex. 77030
 Filed Jul. 15, 1985, Ser. No. 754,974
 Int. Cl.⁴ H02P 6/02 7 Claims

1. A brushless DC motor comprising a source of electrical energy a first conductor leading therefrom to a coil, a rotor having magnets and cooperating with said coil, a glass enclosed switch adjacent said rotor, a second conductor connected to said coil and to said source of electrical energy through said glass enclosed switch creating a closed electrical circuit, said glass enclosed switch having magnetized contact points and gap, the poles of said magnetized contact points

adapted to be attracted or repelled by said rotor magnets to control the rotation of said rotor, an adjustable magnet



mounted adjacent said switch to alter the gap of said magnetized contact points to control the speed and direction of said rotor.

4,642,535 ELECTROMAGNETIC ENERGY STORAGE AND SUPPLY SYSTEM

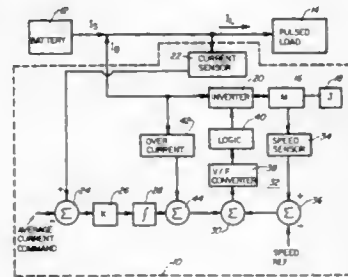
David J. Hucker, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 29, 1983, Ser. No. 566,518

Int. Cl.⁴ H02K 7/02

U.S. Cl. 318—161

4 Claims



1. In a system having a main power supply for providing D.C. current to a pulsed load with on and off periods, improved means for supplementing the main power supply comprising:

- means for sensing the load current;
- means for comparing the sensed load current to an average current command to provide a difference signal proportional to a desired supplemental current to be provided to the load;
- a motor;
- means for sensing the speed of the motor to provide a signal representative thereof;
- means for comparing the motor speed signal to a reference speed signal to provide an output signal representing the difference therebetween;
- an inertia device coupled to the motor for storing and discharging energy;
- means for combining the difference signal with the output signal from the comparing means representing the difference between the motor speed and the reference speed to provide a speed command signal; and
- an inverter coupled between said main power supply and said motor and controlled in response to said speed command signal to provide an A.C. voltage to the motor to drive the inertia device during the off period of the pulse load, the inertia device, when driven by the motor, being accelerated to store energy from the main power supply, said inertia device decelerating during the on period of the pulse load to discharge energy through said motor and inverter and provide a D.C. current to the load to supplement the main power supply.

4,642,536 CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR, METHOD OF CONTROLLING SUCH, METHOD OF CONTROLLING AN ELECTRONICALLY COMMUTATED MOTOR AND LAUNDRY APPARATUS

John H. Boyd, Jr., and Alexander Muller, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

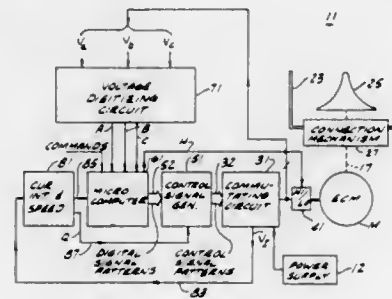
Division of Ser. No. 602,163, Apr. 19, 1984, Pat. No. 4,540,921.

This application Mar. 12, 1985, Ser. No. 710,900

Int. Cl.⁴ H02P 6/02

U.S. Cl. 318—254

101 Claims



1. A control system for an electronically commutated motor including a stationary assembly having a plurality of winding stages adapted to be selectively commutated, and rotatable means associated with the stationary assembly in selective magnetic coupling relation with the winding stages, and means for commutating the winding stages by selectively supplying power thereto in response to a pattern of control signals leaving at least one of the winding stages unpowered at any one time while the other winding stages are powered, the control system comprising:

- means coupled to the winding stages for simultaneously converting the voltages across the winding stages to digital form thereby to digitize the voltages;
- means for producing successive patterns of digital signals in at least one preselected sequence, for selecting the digitized voltage across the at least one unpowered winding stage depending on the digital signal pattern produced, and for producing a following pattern in sequence after at least one predetermined logic level of the selected digitized voltage has occurred; and
- means responsive to the successive patterns of the digital signals for generating the successive patterns of the control signals for the commutating means.

4,642,537 LAUNDRING APPARATUS

Glen C. Young, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 13, 1983, Ser. No. 561,047

Int. Cl.⁴ H02P 6/02

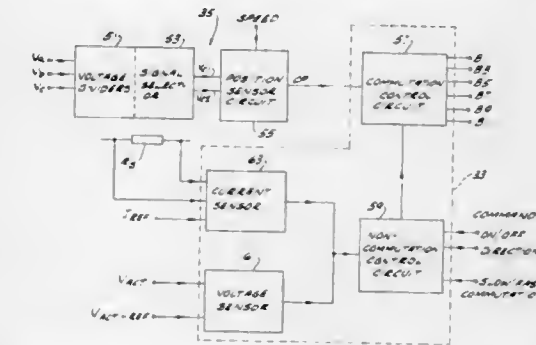
U.S. Cl. 318—254

89 Claims

1. A control system for an electronically commutated motor adapted to be energized from a DC power source and including a stationary assembly having a plurality of winding stages adapted to be electronically commutated in at least one preselected sequence, and a rotatable assembly associated in selective magnetic coupling relation with the winding stages, each winding stage having a terminal associated therewith, the control system comprising:

- first means operable for electronic and energization commutation of at least one at a time of the winding stages of the electronically commutated motor by applying thereto a DC voltage from the power source in the at least one preselected sequence to effect the energization of the electronically commutated motor and the rotation of the

rotatable assembly, at least one unenergized other of the winding stages during any one commutation exhibiting a terminal voltage including a back emf and a field collapse voltage ending prior to appearance of the back emf; and second means for receiving and integrating the terminal voltage in response to its first approach to zero at the ending of the field collapse voltage and effecting the operation of said electronic commutation means when a predetermined level is reached in the integrating.



42. A method of controlling the average voltage cyclically applied to a load, comprising the steps of: generating a direct function of the applied voltage; terminating application of voltage to the load when the function of the applied voltage reaches a first predetermined value selected to represent a desired average voltage; and terminating each voltage cycle when the function of the applied voltage reaches a second predetermined value.

4,642,538 ELECTRIC MOTOR SPEED CONTROLLER SUPPLY CIRCUIT FOR A MOTOR VEHICLE

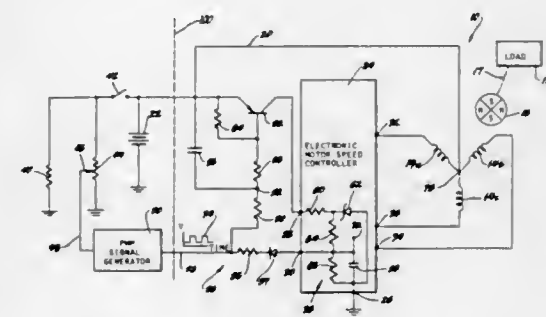
James O. Elliott, Beavercreek, and Dennis J. Ricker, Huber Heights, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1986, Ser. No. 825,608

Int. Cl.⁴ H02P 1/00

U.S. Cl. 318—139

2 Claims



1. In a motor vehicle electrical system having a storage battery, an electric motor for operating a vehicular load, a control device for providing a pulsed desired speed signal having a duty cycle which varies in relation to the desired motor speed, and an electronic controller adapted to receive battery current from the storage battery for controlling the motor in accordance with the desired speed signal, an electric supply system for connecting the storage battery and the electronic controller, comprising:

- electronic switch means having a load current carrying circuit connected directly between the storage battery and the electronic controller to define a path by which battery

current may be drawn by the controller, and a control terminal for electrically biasing the switch means to a first state wherein the controller is free to draw battery current through said load current carrying circuit without substantial restriction or a second state wherein substantially no battery current can be drawn through the load current carrying circuit; and

biasing means connected to the control terminal of the electronic switch means for biasing the switch means between said first and second states according to the desired speed signal such that the switch means is biased to the first state to permit the draw of battery current by the electronic controller when the motor speed command signal corresponds to a non-zero desired motor speed indication, and to the second state to prevent substantial draw of battery current by the electronic controller when the motor speed command signal corresponds to a zero desired motor speed indication, the biasing means further including energy storage means connected to the control terminal of the electronic switch means and activated when the duty cycle of the motor speed command signal corresponds to a non-zero desired motor speed for maintaining the electronic switch means biased to said first state, thereby to permit continuous draw of battery current by the electronic controller between the pulses of said motor speed signal.

4,642,539 TORQUE MOTOR WITH UNLIMITED ANGULAR EXCURSION

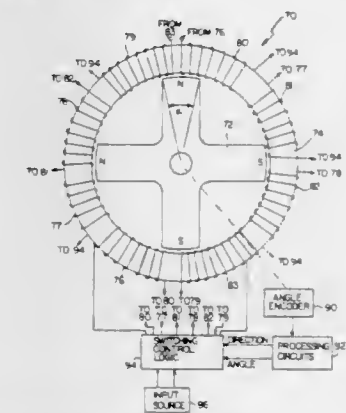
Walter E. Hinds, Beverly Hills, Calif., assignor to Northern Magnetics, Inc., Van Nuys, Calif.

Filed Jun. 10, 1985, Ser. No. 742,931

Int. Cl.⁴ H02K 29/10

U.S. Cl. 318—439

14 Claims



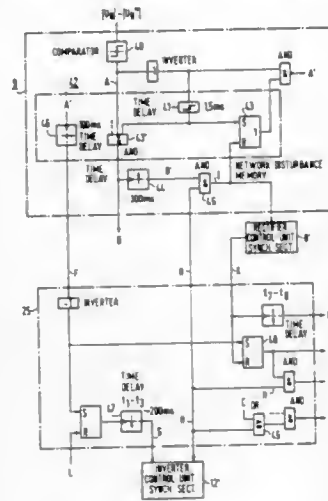
11. A brushless bidirectional DC torque motor drive having an essentially unlimited excursion range within which the motor can be angularly positioned and a high level of uniform torque for an applied driving current, comprising:

- a magnetic rotor including a shaft rotatable about a central axis, the rotor having at least two pole tips, oppositely and permanently magnetized, extending radially from the central axis and each covering a predetermined arc about the central axis;
- a magnetic ring core concentric with the central axis and disposed adjacent the rotor with a uniform gap from the pole tips;
- a set of helical windings wound about the ring core with lengths of winding adjacent the pole tips and transverse to the direction of movement of the pole tips in rotation of the rotor, each set of windings being disposed along an arc segment at least equal to the arc of the pole tips; and
- means coupled to the windings and providing a driving current of selectable amplitude and including switching means responsive to the angular position of the core to

1. A method for operating an asynchronous machine coupled to an a-c supply network via an intermediate link converter in the event of a disturbance of the supply network, the converter comprising rectifier means coupled to the supply network, inverter means coupled to the asynchronous machine, said converter fired in a normal commutation cycle

when there is no disturbance of the network, the inverter means and rectifier means being coupled by an intermediate d-c link, the method comprising the steps of:

- inhibiting the normal commutation cycle of said converter until the current in the intermediate d-c link has decayed by inhibiting normal firing of controlled rectifiers of the rectifier means and normal firing of controlled rectifiers of said inverter means;
- during the disturbance, resuming the commutation cycle of said inverter means, firing two series connected controlled rectifiers of the rectifier means coupled across the inter-

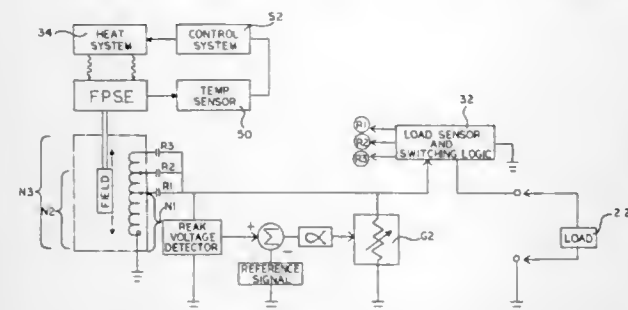


mediate d-c link so that the asynchronous machine current is again able to flow through the intermediate d-c link and said two series-connected controlled rectifiers of the rectifier means, the frequency of the commutation cycle being slaved to a measured value of the machine frequency such that the machine current assumes a value required for maintaining a desired flux in said asynchronous machine; and after the end of the disturbance coupling said rectifier means synchronously to the network and resuming the normal commutation cycle of the rectifier means.

4,642,547 ADAPTIVE REGULATION SYSTEM FOR A LINEAR ALTERNATOR DRIVEN BY A FREE-PISTON STIRLING ENGINE

Robert W. Redlich, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Aug. 19, 1985, Ser. No. 766,491
Int. Cl.⁴ H02P 9/04; H02K 35/00; F02B 71/00
U.S. Cl. 322-3 11 Claims



1. An adaptive load regulator for a linear alternator driven by a free piston Stirling engine, having a heat energy source, the alternator having an armature circuit and a useful load connected to the armature circuit, and further including a stepped armature system for controlling the stroke amplitude

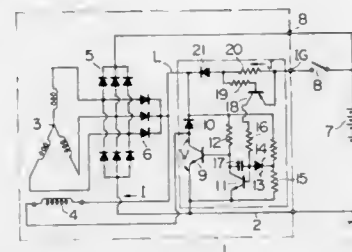
of the Stirling engine, the regulator and the stepped armature system comprising:

- (a) a controllably variable conductance shunted across the armature;
- (b) a negative feedback control circuit comprising:
 - (i) a summing circuit;
 - (ii) a voltage detector means connected to the armature circuit for detecting a signal which is proportional to the alternator output voltage and connected to apply the detected signal to an input of the summing circuit;
 - (iii) a reference signal source connected to apply its reference signal to another input of the summing circuit; and
 - (iv) an amplifier having its input connected to the output of the summing circuit and its output connected to the control input of the controllable, variable conductance for applying a signal which is proportional to the difference of the input signals at the summing circuit to a control input of the variable conductance for varying the conductance in proportion to detected voltage changes;
- (c) an armature coil divided into a plurality of coils serially connected by one or more taps;
- (d) circuit means having an input connected to the useful load for detecting the steady state output power demand of the useful load; and
- (e) logic switching means having a control input connected to the output of the power demand detecting means and having its switches connected to the taps of the armature and to the useful load for connecting a selected one of said taps as the armature output to the useful load to provide an effective total number of armature coil turns in inverse proportion to the square root of a selected, discrete total armature power output above the detected steady state power demand of the useful load; whereby the stroke is changed to discrete stroke amplitudes in approximate inverse proportion to the square root of the useful load power demand.

4,642,548 CONTROL APPARATUS FOR CHARGING GENERATOR

Keiichi Mashino, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,379
Claims priority, application Japan, Jul. 25, 1984, 59-153115
Int. Cl.⁴ H02P 9/00 3 Claims



1. A control apparatus for controlling a charging generator for an automobile, comprising:
armature windings across which an alternating current output voltage is generated in response to rotation of the armature;
rectifier circuit means connected to said armature windings for rectifying the alternating current output voltage;
battery means for supplying electric energy and being charged by the rectified output of said armature windings through said rectifier circuit means;
a field winding for providing a magnetic field for said armature windings;
semiconductor switching means connected in series to said field winding for intermittently interrupting an exciting current supplied to said field winding;

voltage regulation means for sensing the rectified output voltage of said armature windings charging said battery means and for controlling the exciting current supplied to said field winding through said semiconductor switching means;

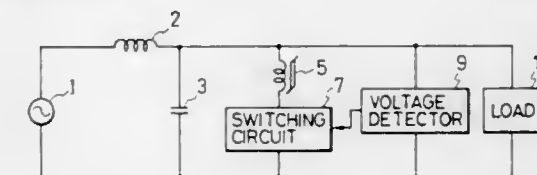
means for detecting the amplitude of the exciting current supplied from said battery means to said field winding at least until said generator enables a charging operation; means for comparing the detected amplitude of the exciting current with a predetermined level and for controlling an on-off operation of said semiconductor means so as to suppress the initial exciting current to a level no more than the predetermined level which predetermined level is sufficient to enable the charging operation by said generator.

4,642,549 FERRORESONANT CONSTANT AC VOLTAGE REGULATOR

Kosuke Harada, Fukuoka; Katsuaki Murata, Kumamoto, and Takaki Nakamizo, Fukuoka, all of Japan, assignors to Nishimu Electronics Industries Co., Ltd., Japan

Filed Aug. 12, 1985, Ser. No. 764,499
Claims priority, application Japan, Aug. 23, 1984, 59-176441
Int. Cl.⁴ H02J 3/18 15 Claims

U.S. Cl. 323-210



1. A ferroresonant constant AC voltage regular comprising:
a linear reactor and a capacitor connected in series to an AC power source,
a series connected circuit comprising a saturable reactor means and a switching circuit connected in parallel to said capacitor,
a voltage detector for detecting an output voltage appearing across said capacitor, and
means for controlling on-off state of said switching circuit in response to the output voltage detected by said voltage detector,
and said regulator being controlled in such that the higher said detected output voltage is, the longer the time during which said switching circuit is in its on-state, and the larger the average lagging current which flows through said saturable reactor means.

4,642,550 SELF-OSCILLATING SWITCHING REGULATOR HAVING REAL-TIME CURRENT ADJUSTMENT CONTROL

Vincent A. Illuzzi, Staten Island, N.Y.; Walter G. Kutzavitch, Freehold, and Allen J. Rooney, III, Madison, both of N.J., assignors to American Telephone and Telegraph Company and AT&T Information Systems, Inc., both of Morristown, N.J.

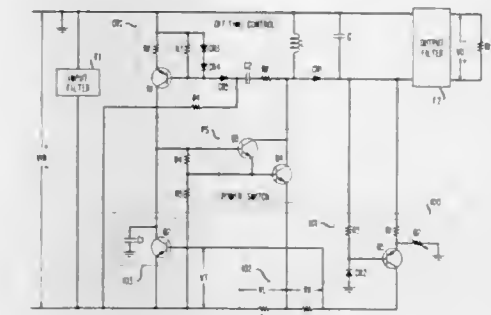
Filed Mar. 18, 1985, Ser. No. 712,637

Int. Cl.⁴ G05F 1/60 5 Claims

1. A self-oscillating switching voltage regulator comprising an input,
an output,
an inductor,
a control circuit for switching said inductor across said input when a control voltage does not exceed a predetermined threshold voltage and for switching said inductor across

said output when said control voltage exceeds said predetermined threshold voltage.

- a control voltage circuit for generating said control voltage by summing a predetermined percentage of an output voltage to a voltage dependent on the magnitude of inductor current when said inductor is connected across said input, said control voltage circuit including
- a resistor serially connected to a switching device which together are serially connected to said inductor, said resistor generating said inductor current dependent voltage,



a second resistor having one end connected to an output voltage amplifier and a second end connected in series with said resistor at the connection of said resistor to said switching device, said voltage amplifier generating said predetermined percentage of said output voltage across said series connection of said resistor and said second resistor, and wherein said control voltage is generated across said series connection of said resistor and said second resistor.

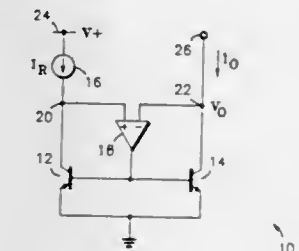
4,642,551 CURRENT TO VOLTAGE CONVERTER CIRCUIT

Ira Miller, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 22, 1985, Ser. No. 790,026

Int. Cl.⁴ G05F 3/20 8 Claims

U.S. Cl. 323-314



- puts and an output, said first input being coupled to said output of said current mirror means;
- (b) current supply means for sourcing currents to said first and second inputs of said differential amplifier means;
- (c) a first transistor having first, second and control electrodes, said first electrode being coupled to said input of said current mirror means, said second electrode being coupled to said output of said current mirror means and said control electrode being coupled to said output of said differential amplifier means; and
- (d) a second transistor having first, second and control electrodes, said first electrode being coupled to said output of said feedback amplifier means, said second electrode being coupled to said second input of said differential amplifier means and said control electrode being coupled to said output of said differential amplifier means.

4,642,552

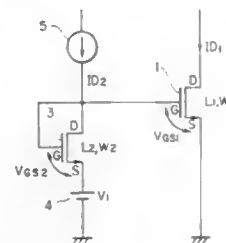
STABILIZED CURRENT SOURCE CIRCUIT

Toshiro Suzuki, Tama, and Osamu Matsubara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 10, 1986, Ser. No. 827,612

Claims priority, application Japan, Mar. 4, 1985, 60-41325
Int. Cl.⁴ G05F 3/26

U.S. Cl. 323-315

6 Claims



1. A stabilized current source circuit comprising:
- a first MOS transistor feeding a drain current to be used as a constant current output;
- a second MOS transistor having a gate electrode connected to a gate electrode of said first MOS transistor;
- a current source connected to the drain electrode of said second MOS transistor; and
- a stabilized voltage source connected to the source of said second MOS transistor so as to keep the gate-source voltage of said second MOS transistor at a value which is closer to a threshold voltage value than the gate-source voltage of said first MOS transistor.

4,642,553

COMMUTATOR CONTAINING A SEMICONDUCTOR WITH UNIDIRECTIONAL CURRENT AND BIDIRECTIONAL VOLTAGE, AND WITH CONTROLLED INTERRUPTION AND AUTOMATIC IGNITION

Henri Foch, Toulouse, and Jacques Duparc, Le Vaudoué, both of France, assignors to Jeumont-Schneider Corporation, France
Filed Apr. 19, 1985, Ser. No. 724,993

Claims priority, application France, Apr. 20, 1984, 84 06286
Int. Cl.⁴ H03K 17/72

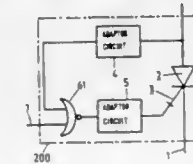
U.S. Cl. 323-322

8 Claims

1. A commutator operable with unidirectional current and bidirectional voltage and with controlled interruption and automatic ignition, comprising
- a unidirectional current semiconductor device of the controlled commutation type having terminals corresponding respectively to anode, cathode, and control,
- first adaptor circuit means having an input connected to the anode terminal of said semiconductor device and providing an output logic signal indicating when the anode-to-cathode voltage of said semiconductor device is less than a predetermined positive value close to zero,
- a logic gate having a first input connected to an output of

said first adaptor circuit means to receive said logic signal, a second input which is a control signal input, and an output connected to an input of second adaptor circuit means which has an output connected to said control terminal of said semiconductor device,

said logic gate outputting an interruption signal to said second adaptor circuit means when said first adaptor circuit means outputs said logic signal and an interruption in-



struction signal is received at said control signal input of said logic gate,

said second adaptor circuit means providing a control signal to said control terminal of said semiconductor device to trigger said semiconductor device absent an interruption signal output from said logic gate and providing a control signal to said control terminal of said semiconductor device to interrupt said semiconductor device in response to an interruption signal output from said gate.

4,642,554

FAIL-SAFE ELECTRICAL-GROUND INDICATOR

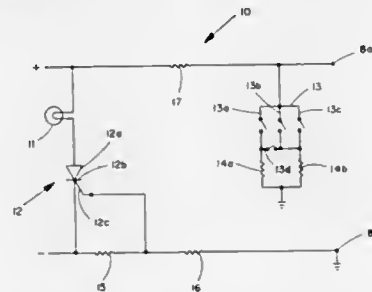
Daniel A. Aucoin, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1985, Ser. No. 694,876

Int. Cl.⁴ G01R 31/02

U.S. Cl. 324-51

12 Claims



1. A device for checking the integrity of an electrical ground indicator used to determine whether a vessel or other equipment has adequate electrical grounding, comprising: a plurality of electrically grounded parallel resistors, means for making electrical contact between the indicator and each one of the resistors separately without making electrical contact with other resistors, means for making electrical contact between the indicator and all resistors simultaneously, means for determining whether an electrical current passing through the instrument and each separate resistor exceeds a specified value, and means for determining whether an electrical current passing through the indicator and all resistors at the same time exceeds the specified value, thereby providing an indication of the integrity of the instrument.

4,642,555

DIFFERENTIAL CAPACITANCE DETECTOR

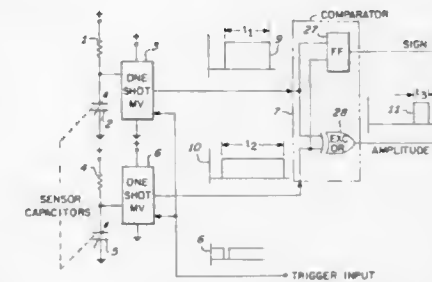
Harold L. Swartz, Glendale, and Jeffrey C. Heidel, Phoenix, both of Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 31, 1985, Ser. No. 696,626

Int. Cl.⁴ G01R 11/52, 27/26

U.S. Cl. 324-60 C

7 Claims



1. A differential capacitance detector comprising:
- first monostable pulse generator means for generating a first pulse having a substantially constant amplitude and having a width representative of a capacitance value of a first sensing capacitor;
- second monostable pulse generator means for generating a second pulse having a substantially constant amplitude and having a width representative of a capacitance value of a second sensing capacitor; and
- comparator means coupled to receive said first and second pulses and responsive to pulse durations thereof for providing a third signal representative of pulse width differences between said first and second pulses, thereby representative of capacitive difference between said first and second sensing capacitors.

4,642,556

TRACING ELECTRICAL CONDUCTORS BY HIGH-FREQUENCY CONSTANT-ENERGY-CONTENT PULSE LOADING

Joseph P. Pecukonis, Littleton, Colo., assignor to Pasar, Inc., Denver, Colo.

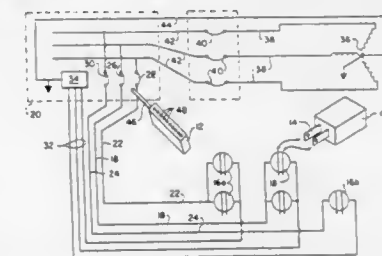
PCT No. PCT/US84/00555, § 371 Date Jul. 10, 1984, § 102(e)
Date Jul. 10, 1984, PCT Pub. No. WO85/04726, PCT Pub. Date Oct. 24, 1985

Continuation-in-part of Ser. No. 236,050, Feb. 19, 1981, Pat. No. 4,491,785. This PCT application Apr. 12, 1984, Ser. No. 631,544
The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.

Int. Cl.⁴ G01R 31/02, 19/145

U.S. Cl. 324-67

30 Claims



18. Apparatus for tracing and identifying an electrical current carrying conductor or similar means in an electrical network which is energized with a varying voltage and which is carrying current therethrough at a power frequency, comprising in combination:
- transmitter means for connection to said conductor and for conducting electrical signal current through said conductor in repetitious transmission cycles, each transmission

cycle being defined by a predetermined waveform having a predetermined time period during which a plurality of pulses of signal current are conducted through said conductor at a predetermined frequency, the signal current pulses being of sufficient magnitude to induce about said conductor a predetermined electromagnetic field signal having a frequency characteristic corresponding to the predetermined frequency at which signal current pulses are conducted during said predetermined time period, said transmitter means further including means for selectively conducting current in the conductor to establish a predetermined approximately constant energy content for each signal current pulse, the predetermined approximately constant energy content of each signal current pulse being established in response to the current conducted in the conductor due to the signal current pulse and the time width duration of the signal current pulse; and

receiver means, operative when placed in proximity of said conductor at a location remote from said transmitter means, for detecting the predetermined electromagnetic field signal and for distinguishing the predetermined electromagnetic field signal from other signals which may be present about said conductor.

4,642,557

METHOD OF AND APPARATUS FOR DETECTING EROSION

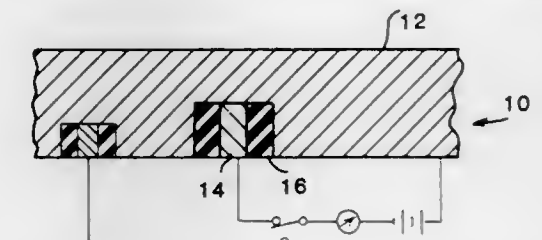
Bruce A. Ross, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 10, 1984, Ser. No. 639,474

Int. Cl.⁴ G01N 27/00

U.S. Cl. 324-71.2

3 Claims



1. A method for determining when a predetermined amount of material has been removed from the interior surface of an electrically conductive conduit which is subjected to erosive wear as a result of the passage of a solid material therethrough, the surface which is subjected to the wear being disposed oppositely with respect to an outer surface of the conduit, said method comprising the steps of:

forming at least a first blind hole in the conduit, the blind hole extending from the outer surface toward the inner surface which is subjected to wear and having a depth commensurate with the removal of a predetermined amount of material from the inner surface;

forming a coaxial probe having a length which is at least equal to the depth of the first blind hole, the probe comprising a conductor surrounded by an insulator;

inserting the probe in the first blind hole until the probe conductor contacts the conduit at the base of the hole;

performing a continuity check to insure that the probe conductor is in electrical contact with the conduit at the base of the first hole;

securing the probe in the first hole; and

periodically repeating the continuity check to determine when electrical contact between the probe conductor and conduit has been interrupted, a lack of continuity indicating that sufficient material has been removed from the inner surface so that the inserted end of the probe has been exposed.

4,642,558

MINIATURE ELECTROMAGNETIC FIELD MEASUREMENT PROBE

Theodore E. Batchman, and George E. Gimpelson, both of Charlottesville, Va., assignors to Univ. of Virginia Alumni Patents Found., Charlottesville, Va.

Filed Apr. 1, 1983, Ser. No. 481,389

Int. Cl.⁴ G01R 31/00

U.S. Cl. 324—72.5

10 Claims U.S. Cl. 324—73 PC



1. An electromagnetic field measurement probe for measuring electromagnetic fields in free space and in vivo (tissue), comprising:

- antenna means for detecting electromagnetic field and producing a corresponding electrical output;
- combined transmission and low pass filter means for filtering said electrical output and transmitting said filtered electrical output;
- said transmission and low pass filter means including a lead structure having a dielectric center with opposing faces on which a layer of high resistivity lead material is respectively deposited;
- said low pass filter and said transmission means being encapsulated on a dielectric substrate of relatively low permeability (ϵ_r less than 4) for enabling precise measurements in-vivo;
- said antenna means including two antenna elements respectively connected to a corresponding said layer of high resistivity lead material.

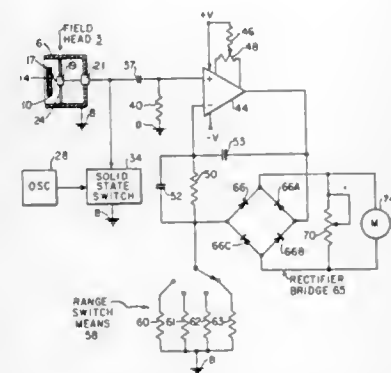
4,642,559
ELECTROSTATIC FIELD METER
Carlton M. Slough, Spring, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,675

Int. Cl.⁴ G01R 31/02

U.S. Cl. 324—72

8 Claims



1. A hand holdable electrostatic field meter comprising:
- head means for deriving an electrical charge representative of the direction and strength of an electrostatic field in the presence of the electrostatic field;
 - converting means for converting the electrical charge to an AC signal,
 - means for providing an indication of the strength of the electrostatic field in accordance with the AC signal from the converting means, and
 - a housing for housing all of the elements in a manner so that the meter may be hand held.

4,642,560

DEVICE FOR CONTROLLING CONTINUITY OF PRINTED CIRCUITS

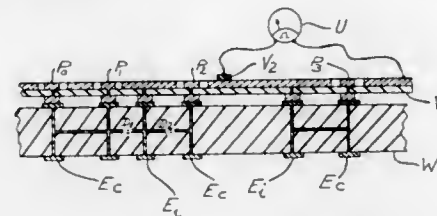
Robert Morille, Saint Marcel Les Valence, and Jacques Saroul, Valence, both of France, assignors to Crouzet, Paris, France

Filed May 22, 1984, Ser. No. 613,024

Claims priority, application France, Dec. 28, 1983, 83 21055

Int. Cl.⁴ G01R 15/12, 31/28

5 Claims



1. A device for continuity testing multiple equipotential branches formed in a conductor network of a multi-layer printed circuit, said circuit comprising an assembly E of conductor elements accessible on at least one of its outer faces, said device comprising:

interface connector means for said printed circuit adapted to connect, by superposition with said outer face, the conductor element of a first subassembly E_1 of said assembly E to a single first conducting area, and the conductor element of a second subassembly E_2 of said assembly E to a plurality of second conducting areas, the two subassemblies E_1 and E_2 being distinct and electrically predefined so that $E = E_1 + E_2$;

means comprising at least a mobile conducting area, in contact with one of said first and second conducting areas, for scanning said interface connector means; and

indicator means, electrically connected between said first conducting area and said mobile conducting area, for detecting defects in electrical continuity between said first conducting area and said second conducting areas.

4,642,561

CIRCUIT TESTER HAVING ON-FLY COMPARISON OF ACTUAL AND EXPECTED SIGNALS ON TEST PINS AND IMPROVED HOMING CAPABILITY

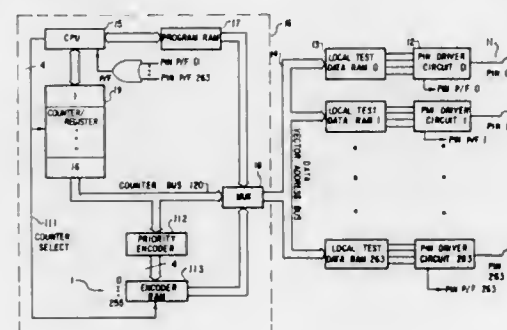
William A. Groves; Matthew L. Snook, and Rodney Browen, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 503,464, Jun. 13, 1983. This application Jan. 3, 1984, Ser. No. 567,824

Int. Cl.⁴ G01R 31/28

U.S. Cl. 324—73 R

1 Claim



1. An improved method of homing a circuit under test, of the type in which the state of a circuit is monitored by detecting on at least one node in the circuit the signal present on that node

and in which signals are applied to the circuit under test to alter the state of the circuit through a sequence of states until the circuit enters a desired reference state as indicated by signals generated by the circuit on a first subset of the nodes that are monitored, said reference state being referred to herein as a home state and said method comprising the steps of:

- for each node in the first subset, generating a home state signal indicating the signal expected on that node when the circuit is in a home state;
- comparing immediately each signal detected on a node in said first subset with the signal expected on that node when the circuit is in a home state; and
- when the detected signal on a node in the first subset is the same as the home state signal for that node, producing a signal indicating that the circuit is in a home state, whereby a sequence of test signals which are to be applied once the circuit is in a home state can be initiated.

4,642,562

PHASE DIFFERENCE DEMODULATOR

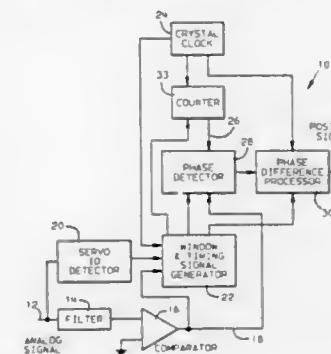
David W. Collins, Rochester, and Michael A. Weed, Spring Valley, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,305

Int. Cl.⁴ G01R 25/00

U.S. Cl. 324—83 D

14 Claims



1. A phase demodulation system comprising:
- a. means for measuring phase difference between two signals of the same frequency;
 - b. means for generating a digital output representative of said phase difference by approximating said phase difference with a digital means and means generating an error in approximation represented by an analog remainder, said error generating means including an exclusive "OR" gate for converting said approximated phase difference to pulse widths, and a current source means connected to an integration means, said current source means and said integration means connected to said two signals and said pulse widths differentially gating said current source means; and,
 - c. means for converting said analog remainder to a digital value which is added to said approximation of said phase difference of said digital means whereby the precision of the digital output signal representing said phase difference results in enhanced accuracy.

4,642,563

POWER LINE IMPULSE MEASUREMENT SYSTEM

Alexander McEachern, Oakland, and Steve Terry, San Carlos, both of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed May 28, 1985, Ser. No. 738,584

Int. Cl.⁴ G01R 1/00, 19/00, 29/02

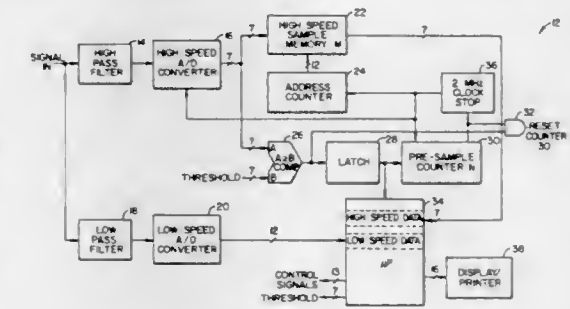
U.S. Cl. 324—111

15 Claims

1. An impulse measurement system for displaying impulses which occur in alternating current electromagnetic energy

waveform, said waveform having a plurality of periodic cycles which defines a waveform frequency, and each of said impulses occurring at an impulse frequency that is substantially greater than said waveform frequency, wherein the presence of said impulse defines an occurrence, and said impulse is a manifestation of an event, comprising

- high frequency filtering means for receiving and filtering said waveform, and passing filtered impulses;
- low frequency filtering means for receiving and filtering said waveform, and passing a filtered waveform;
- high speed sample memory means for recording said filtered impulses;
- memory means for recording said filtered waveform; and



comparator means for receiving both said filtered impulse and a predetermined amplitude threshold signal and generating a memory recording signal for controlling the recording of said filtered waveform by said memory means, said memory recording signal is generated when said filtered impulse exceeds said amplitude threshold signal;

display means for receiving said filtered impulses and said filtered waveform from said high speed memory means and said memory means, respectively, and displaying both said filtered impulses and said filtered waveform simultaneously, thereby permitting efficacious identification of the cause of said impulses.

4,642,564

MEASURING CIRCUIT AND METHOD FOR POWER DISTRIBUTION EQUIPMENT

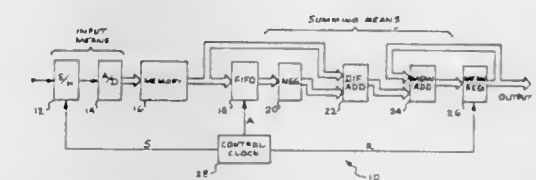
James R. Hurley, Brookfield, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 15, 1984, Ser. No. 620,881

Int. Cl.⁴ G01R 19/02

U.S. Cl. 324—132

5 Claims



1. A measuring circuit for obtaining a mean square value of a power distribution line parameter comprising:

a sampling circuit, which samples the power parameter at a sampling frequency (FS) which is an odd (Nth) harmonic of the fundamental frequency (FF) of the power parameter to provide sample values;

squaring means producing a squared sample value proportional to the squared value of a sample;

accumulator means storing the values of the most recent N values of the squared sample values;

summing means which provides a mean square value pro-

portional to the sum of the N most recent values of the squared sample values stored in the accumulator means; an analog to digital converter for digitizing the sample values and, wherein

said squaring means comprises a squared memory which stores digitized value substantially equal to one/Nth the values of the square of the sample values likely to be encountered, said memory being selectively addressed by the digitized sample value to produce a squared sample value which is very nearly equal to one/Nth the value of the square of the sample value;

said accumulator means comprises:

a first in first out storage register which stores N squared sample values accepting a newest squared sample value at its input and presenting the oldest squared sample value at its output; and

said summing means comprises,

a negator accepting the oldest squared sample value from said first in first out storage register and negating the value;

a differential adder which sums the values of the negator and of the squared memory to produce a differential squared value;

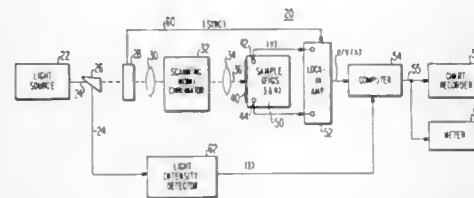
a mean square register which stores a mean square value of the sum of the most recent N values of the squared sample means; and

a mean square adder which sums the output of the mean square register and of the differential adder to produce an updated mean square value to be stored in said mean square value register.

4,642,565
METHOD TO DETERMINE THE CRYSTALLINE PROPERTIES OF AN INTERFACE OF TWO MATERIALS BY PHOTOVOLTAGE PHENOMENON
 Lubomir L. Jastrzebski, Plainsboro, N.J., and Jacek Lagowski, Woburn, Mass., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1984, Ser. No. 666,192
 Int. Cl.⁴ G01R 31/26
 U.S. Cl. 324—158 R

9 Claims



1. A method for determining the crystalline quality of a crystalline lattice of one material near an interface between said one material and a different material of different crystalline lattice, said one material (1) having a surface comprising an exposed surface portion opposed to said interface and an unexposed surface portion in coplanar relation with said exposed surface portion and opposed to said interface, (2) having negligible absorption in a given optical spectrum, and (3) having a known reflection coefficient at said exposed surface portion; said exposed surface portion having a semi-transparent electrode thereover and said unexposed surface portion having an ohmic contact thereto, comprising the steps of:

(a) exposing said exposed surface portion to a light beam having a selected wavelength;

(b) varying the intensity of said light beam to a value to be sufficient to saturate the trapping centers of said one material;

(c) exposing said exposed surface portion to said light beam at said intensity and scanned sequentially with wavelengths having values within said optical spectrum whereby light reflected between said interface and said exposed surface portion oscillates in intensity between

extrema as a result of interference reflections between said exposed surface portion and said interface manifesting a corresponding photovoltage signal oscillation;

(d) measuring the photovoltage signals appearing between said exposed surface portion and said unexposed surface portion at each respective wavelength to obtain a series of photovoltage signals corresponding to each wavelength;

(e) determining from said photovoltage signals the photovoltage extrema; and

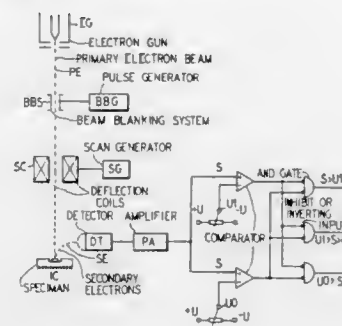
(f) determining from said photovoltage extrema the crystalline quality of said one material near said interface, the smaller the ratio of said photovoltage extrema the better the crystalline quality of said material near said interface.

4,642,566
METHOD FOR THE REGISTRATION AND REPRESENTATION OF SIGNALS IN THE INTERIOR OF INTEGRATED CIRCUITS BY CONSIDERING EDGE STEEPNESS AND APPARATUS FOR IMPLEMENTING THE METHOD

Peter Fazekas, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,473
 Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334534
 Int. Cl.⁴ G01R 31/28, 31/26
 U.S. Cl. 324—158 R

4 Claims



1. A method for registering signals at integrated circuits, the signals having logic levels, comprising the steps of:

defining upper and lower thresholds for the logic levels 1 and 0, respectively, and setting respective thresholds at respective input circuits for the logic level;

positioning a pulsed primary beam to a measuring location of the integrated circuit to generate secondary particles;

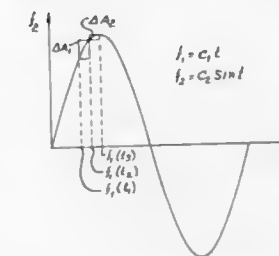
detecting the secondary particles and generating a corresponding signal to be registered;

applying the signal to be registered to the two input circuits to detect and provide position signals indicating the chronological positions of signal edges at the logic levels by comparing the signal to the thresholds and producing a logical 1 at times in which the signal is greater than the upper threshold and the logical 0 at times when the signal is smaller than the lower threshold, and determining the signal edges from the chronological spacing of successive signal regions having logical levels 0 and 1, whereby the chronological position of the signal edges is defined by the times at which the signal is equal to the thresholds.

4,642,567
METHODS FOR TWO DIMENSIONAL NUCLEAR MAGNETIC RESONANCE IMAGING
 Jerome I. Kaplan, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 4, 1984, Ser. No. 617,163
 Int. Cl.⁴ G01R 33/20
 U.S. Cl. 324—309

7 Claims



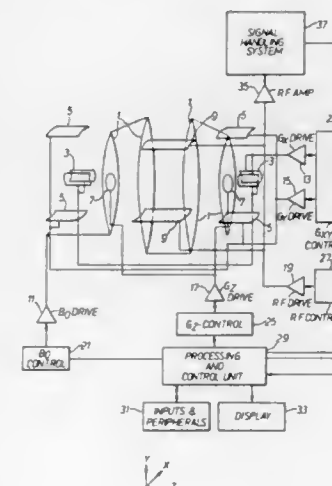
1. In a method for nuclear magnetic resonance imaging comprising sensitizing a region of an object in a static magnetic field wherein the magnetization of the spins are transverse to the static field, applying a time varying magnetic field gradient to the sensitized region of the object, detecting radiated electromagnetic energy from the sensitized region, and reconstructing spin information for each element within the region from the received radiated electromagnetic energy signals, the improvement comprising:

weighting the detected radiated electromagnetic energy signals to compensate for the use of time varying magnetic field gradients that do not sample equal areas of phase space in equal time intervals.

4,642,568
NUCLEAR MAGNETIC RESONANCE METHODS AND APPARATUS
 Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England
 Filed Nov. 19, 1984, Ser. No. 673,190
 Claims priority, application United Kingdom, Nov. 25, 1983, 8331501

Int. Cl.⁴ G01R 33/20
 U.S. Cl. 324—309

7 Claims



1. A method of investigating the spatial distribution of a quantity in a selected region of a body by the use of nuclear resonance techniques, said method comprising the steps of:

(a) exciting nuclear magnetic spins in said region, and

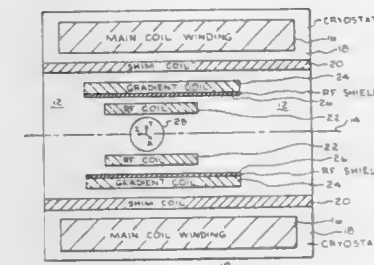
(b) subsequent to said exciting step, spatially encoding said nuclear spins in said selected region at least partially by

applying to said region a radio frequency magnetic field having a gradient across said region.

4,642,569
SHIELD FOR DECOUPLING RF AND GRADIENT COILS IN AN NMR APPARATUS
 Cecil E. Hayes, Wauwatosa, and Matthew G. Eash, Oconomowoc, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 16, 1983, Ser. No. 562,121
 Int. Cl.⁴ G01R 33/20
 U.S. Cl. 324—318

7 Claims



1. An NMR apparatus including means for producing a homogeneous magnetic field, a radio frequency (RF) coil for transmitting and receiving RF energy, a gradient coil for generating pulsed linear magnetic field gradients at audio frequencies and a decoupling shield disposed between said RF and gradient coils, said RF coil being disposed within the shield, said shield comprising:

a first array made up of a multiplicity of electrically conductive regions separated by a first set of relatively narrow, compared to the width of said conductive regions, non-conductive regions, said array being disposed on the inner shield surface;

a second array made up of a multiplicity of electrically conductive regions separated by a second set of relatively narrow, compared to the width of said conductive regions, non-conductive regions, said first and second arrays being disposed on opposite surfaces of a member formed of a high dielectric material, the conductive regions of one array being offset relative to the conductive regions of the other array such that the conductive regions of the one array bridge the non-conductive regions of the other array to form a plurality of capacitive elements which act essentially as electrical short-circuits at radio frequencies and which transmit substantially unaffected the homogeneous magnetic field and the audio frequencies associated with the pulsed magnetic field gradients.

4,642,570
METHOD AND APPARATUS FOR COMPLEX RESISTIVITY MEASUREMENTS WITH ELIMINATION OF ELECTROMAGNETIC COUPLING EFFECTS
 Ben K. Sternberg, Ponca City, Okla.; Donald E. Dunster, Jakarta, Indonesia, and Kenneth D. Honeycutt, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Mar. 25, 1983, Ser. No. 478,831
 Int. Cl.⁴ G01V 3/24, 3/38

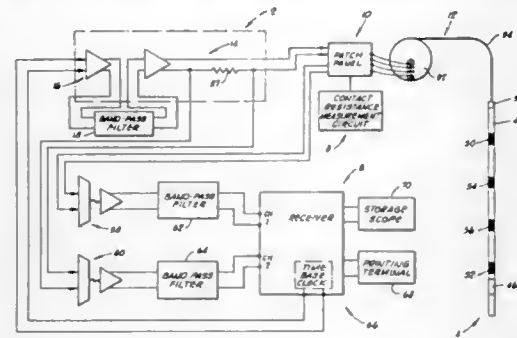
3 Claims

1. A method of determining the induced polarization response of a formation in which a borehole is disposed, comprising:

lowering a logging tool into said borehole, said logging tool having a first set of two electrodes and a second set of two electrodes;

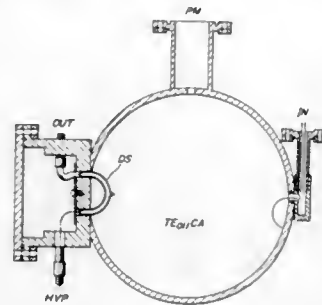
conducting a first current between said electrodes of said first set of electrodes and through said formation;

detecting with said second set of electrodes a first voltage produced in said formation by said first current;
determining a first phase response from said detected first voltage;
determining the resistivity of the formation from said conducted first current and said detected first voltage;
determining the contact resistances individually of each of the electrodes of said first set of two electrodes and said second set of two electrodes;
replacing said first set of two electrodes and said second set of two electrodes with a dummy load simulating the resist-



tivity of the formation and the contact resistances of each of the electrodes;
conducting a second current through said dummy load;
detecting a second voltage produced in said dummy load by said second current;
determining a second phase response from said second detected voltage, said second phase response indicating the electromagnetic coupling; and
subtracting said second phase response from said first phase response to obtain a corrected induced polarization response of the formation.

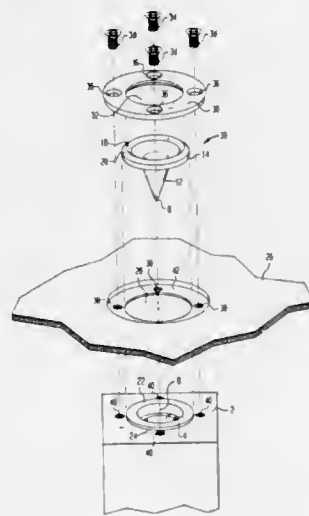
4,642,571
MICROWAVE PULSE SOURCE
Kazuo Minami, Yokohama, and Mitsuru Awano, Tokyo, both of Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan
Filed Jul. 10, 1985, Ser. No. 753,631
Claims priority, application Japan, Jul. 18, 1984, 59-148871
Int. Cl.⁴ H03K 3/55; H01P 7/06; H01J 17/64
U.S. Cl. 328-59 5 Claims



1. A microwave pulse source, comprising a superconducting cavity having an input port and an output port, an input coupler disposed at said input port, an output coupler disposed at said output port, said output coupler including a discharge tube which loops into said cavity in such a manner that the degree of coupling of said output coupler is suddenly maximized upon occurrence of a discharge plasma in said discharge tube and microwave energy flows from said cavity via said discharge plasma, the cavity having a time constant whose value when said output coupler has a minimum degree of coupling is sub-

stantially longer than that when said output coupler has a maximum degree of coupling, whereby input microwave energy with a certain power delivered at said input port is accumulated in said cavity when said output coupler has the minimum degree of coupling and an output microwave pulse with a much larger pulsed power than said power of the input microwave energy is extracted from the output port of said cavity when the degree of coupling of said output coupler is suddenly maximized by causing a discharge plasma at said discharge tube.

4,642,572
FILTER ADJUSTMENT SYSTEM FOR USE IN ELECTRONIC ACCELERATORS AND THE LIKE
George Menor, Martinez, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.
Filed Aug. 28, 1984, Ser. No. 644,842
Int. Cl.⁴ H01J 33/04, 3/14
U.S. Cl. 328-228 11 Claims

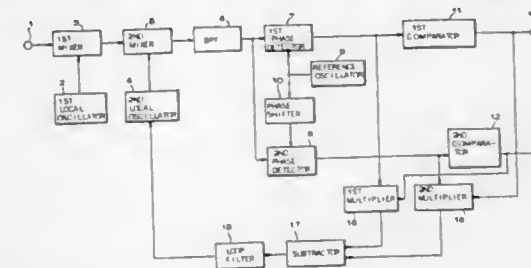


1. A filter adjustment system for use in electron accelerators and the like for adjusting a filter which has a supporting flange at one end, comprising:
a fixed body having a supporting surface upon which said flange can be placed; and
means for engaging the filter and sliding it on said supporting surface, said engaging means being tiltably plugged into an immobile element, engaging the filter, and sliding the filter on said supporting surface upon being tilted.

4,642,573
PHASE LOCKED LOOP CIRCUIT FOR DEMODULATING SUPPRESSED CARRIER SIGNALS
Tsumoto Noda; Keiro Shinkawa, and Nobutaka Amada, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 3, 1985, Ser. No. 783,521
Claims priority, application Japan, Oct. 5, 1984, 59-208188; Oct. 31, 1984, 59-227721; Oct. 31, 1984, 59-227724
Int. Cl.⁴ H03D 1/24, 3/02; H04L 27/22
U.S. Cl. 329-50 6 Claims

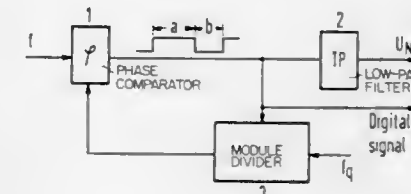
1. A phase locked loop circuit for receiving a suppressed carrier input signal for use in a heterodyne receiver, comprising a mixer, a local oscillator, a reference oscillator oscillating at a frequency corresponding to an intermediate frequency, a 90° phase shifter, a first and second phase detector, a first and a second comparator, a first and a second multiplier, a subtractor and a loop filter, the operation of said phase locked loop circuit being such that the suppressed carrier input and the output of said local oscillator are applied to said mixer, the output of said mixer is applied to said first and second phase

detectors, the output of said reference oscillator is applied directly to said first phase detector and applied through said 90° phase shifter to said second phase detector, the outputs of said first and second phase detectors are applied to said first and second comparators respectively, the output of said first phase detector and the output of said second comparator are



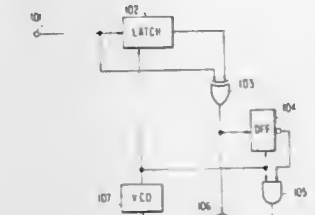
applied to said first multiplier, the output of said second phase detector and the output of said first comparator are applied to said second multiplier, the output of one of said first and second multipliers is subtracted in said subtractor from the output of the other, and the resultant output of said subtractor is applied to said local oscillator through said loop filter.

4,642,574
DIGITAL QUARTZ-STABILIZED FM DISCRIMINATOR
Ludwig Hofmann, Lohhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany
Filed Oct. 22, 1985, Ser. No. 790,211
Int. Cl.⁴ H03D 3/02, 13/00
U.S. Cl. 329-50 1 Claim



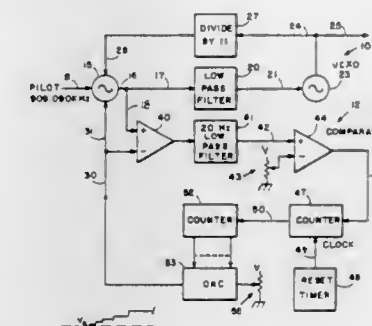
1. A digital crystal-stabilized FM-discriminator comprising a phase-locked loop (PLL) which contains a phase comparator and a switchable frequency divider, whereby an input signal of the discriminator and the output signal of the frequency divider are supplied to the phase comparator and a crystal-stabilized frequency f_0 and the output signal of the phase comparator are supplied to the frequency divider, characterized in that a low-pass filter is connected into the signal transmission path at the junction point of the output of the phase comparator and the input of the frequency divider, and the output signal of the phase comparator being supplied to said low-pass filter and a voltage U_{Nf} is supplied from the output of said low pass filter, and said frequency divider generates a signal which contains the corner frequencies f_0 and f_0 of the discriminator; and the frequency of said input signal is $f_{Ein} = a \cdot f_0 + b \cdot f_0$ where $a + b = 1$ and a and b indicate the pulse-duty factor of the output signal of the phase comparator.

4,642,575
PHASE-LOCKED LOOP WITH SUPPLEMENTAL PHASE SIGNAL
Botaro Hiroaki, and Takashi Kuriyama, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 6, 1985, Ser. No. 805,536
Claims priority, application Japan, Dec. 6, 1984, 59-257842
Int. Cl.⁴ H03L 7/06
U.S. Cl. 331-1 A 5 Claims



1. A phase locked loop to which a random two-level code sequence signal derived from clock pulses having a predetermined frequency is applied as an input signal, comprising:
voltage controlled oscillator means for generating local clock pulses;
discriminator means responsive to said local clock pulses for producing a discrimination signal;
means for producing a first phase difference signal between the input signal and the discrimination signal;
phase supplement signal generating means responsive to the first phase difference signal and the local clock pulses for producing a phase supplement signal; and
means responsive to the first phase difference signal and the phase supplement signal for producing a control signal to control the voltage controlled oscillator.

4,642,576
METHOD OF LOCKING A MASTER OSCILLATOR IN A NARROWBAND PHASE-LOCK LOOP TO A PILOT TONE
Raymond D. Fast, Coquitlam, and Brian A. Murray, Burnaby, both of Canada, assignors to Microtel Limited, Burnaby, Canada
Filed Feb. 7, 1985, Ser. No. 698,991
Int. Cl.⁴ H03L 7/00
U.S. Cl. 331-1 R 11 Claims



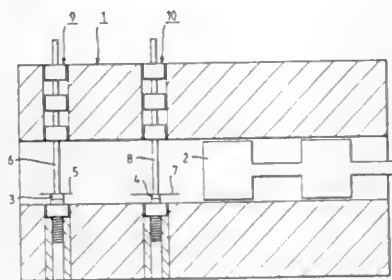
1. The method of frequency locking the output signal generated by a voltage controlled oscillator (VCO) in a phase-lock loop to the frequency of a pilot signal comprising the steps of:
producing a control voltage which is an error signal that is a measure of the difference between the phases of the VCO output signal and the pilot signal when the loop is locked and which is a beat frequency signal having a frequency proportional to the difference between the frequencies of the VCO output signal and the pilot signal when the loop is not locked;

coupling the error signal to the VCO for controlling the operation thereof;
blocking the beat frequency signal from the VCO; and
sweeping the VCO at a variable sweep rate for causing the VCO output signal frequency to vary over a frequency band which includes the pilot frequency.

4,642,577
INJECTION-LOCKED WAVEGUIDE OSCILLATOR
Robert N. Bates, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 10, 1986, Ser. No. 837,622
Claims priority, application United Kingdom, Mar. 22, 1985, 8507520

Int. Cl.⁴ H03B 7/14, 9/14
U.S. Cl. 331—47

6 Claims



1. A waveguide oscillator comprising waveguide cavity means, a first oscillator diode which is disposed in a first portion of the waveguide cavity means and which is operable to oscillate at a fundamental frequency above the cut-off frequency of the first portion of the waveguide cavity means, and a second oscillator diode which is disposed in a second portion of the waveguide cavity means and which is operable to oscillate at a fundamental frequency that is below the cut-off frequency of the second portion of the waveguide cavity means, said harmonic frequency being approximately equal to the free-running fundamental frequency at which the first diode oscillates if the second diode is not oscillating, wherein in operation the first diode receives electromagnetic energy at said harmonic frequency from the second diode whereby the fundamental frequency of the first diode is locked to said harmonic frequency.

4,642,578
PUSH-PULL RADIO FREQUENCY CIRCUIT WITH INTEGRAL TRANSITION TO WAVEGUIDE OUTPUT
Wilfred P. Bennett, 21 Catskill Ct., Belle Mead, N.J. 08502
Filed Feb. 26, 1986, Ser. No. 832,790
Int. Cl.⁴ H03B 5/18

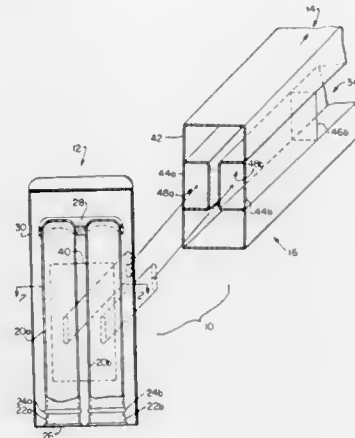
U.S. Cl. 331—100

5 Claims

1. A radio frequency, circuit comprising:
 - a resonant push-pull circuit which produces a radio frequency signal having a predetermined wavelength, said push-pull circuit including
 - (a) two cylindrical conductors mounted side by side and in parallel alignment having first and second ends,
 - (b) two power vacuum tubes, each said vacuum tube having a respective anode to which the first end of a respective said cylindrical conductor is connected,
 - (c) a ground plane to which said vacuum tubes are mounted, and
 - (d) a conductive yoke located at the second ends of said cylindrical conductors which provides short circuiting of said two cylindrical conductors;
 - a double ridged rectangular waveguide, having recesses along the length thereof and a proximal end located adja-

cent said resonant circuit, for transmitting the power produced by said resonant circuit; and
a coupling transition which joins said waveguide to said resonant circuit including

- (a) two relatively flat, elongate, rectangular conductors, a respective said flat conductor having one end attached to a respective said cylindrical conductor intermediate the ends of the respective said cylindrical conductor such that the longitudinal axes of said flat conductors are parallel, the longitudinal axis of a respective said flat conductor extends perpendicular to the longitudinal axis of a respective cylindrical conductor, and the major lateral axis of a respective said flat conductor is parallel to the longitudinal axis of a respective said cylindrical conductor,



- (b) two conductive side covers, respective ones of said side covers being attached along a respective external recess of said rectangular waveguide starting at the proximal end of said waveguide to form a pair of elongate pockets in the recesses,
- (c) two conductive end covers, respective ones of said end covers being attached to respective ends of said side covers distal from the proximal end of said waveguide and to the periphery of the respective recess to form respective closed ends in said pockets, and
- (d) a shielding enclosure surrounding said resonant circuit, said enclosure having an opening through which said flat conductors extend and about which the proximal end of said waveguide is attached such that respective said flat conductors are received in respective pockets in said waveguide and terminate in an open circuit.

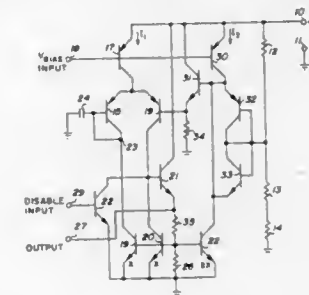
4,642,579
IC LOW-CAPACITANCE, LOW-FREQUENCY, LOW-CURRENT, NON-RADIATING OSCILLATOR
Stephen W. Hobrecht, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Sep. 27, 1985, Ser. No. 780,789
Int. Cl.⁴ H03K 3/26

U.S. Cl. 331—111

12 Claims

1. An IC oscillator circuit comprising:
 - a differential amplifier having inverting and noninverting inputs and a single ended output created by means of a current mirror load;
 - a capacitor;
 - means for coupling said differential amplifier output to said inverting input and to said capacitor whereby said capacitor is charged through said differential amplifier and discharged through said current mirror load; and
 - switch means having an input coupled to said current mirror

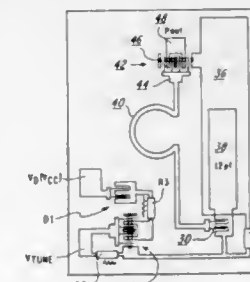
and an output coupled to said differential amplifier noninverting input whereby a positive feedback is established



for switching said noninverting input between two distinct control levels.

4,642,580
STABILIZED MICROWAVE VARACTOR
Bentley N. Scott, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation-in-part of Ser. No. 598,564, Apr. 9, 1984, which is a continuation of Ser. No. 293,040, Aug. 14, 1981, Pat. No. 4,481,487. This application Aug. 1, 1985, Ser. No. 761,463
Int. Cl.⁴ H01L 27/04; H03B 5/00
U.S. Cl. 331—117 D

30 Claims



1. A microwave varactor circuit comprising:
 - a varactor;
 - a microwave oscillating circuit connected to said varactor and having a minimum and a maximum microwave frequency of oscillation;
 - a varactor bias regulator, connected to said varactor to supply a bias voltage thereto;
 - said bias regulator having a response time corresponding to a frequency which is at least 10% of said minimum microwave frequency of oscillation;
 - said bias regulator being connected to said varactor with an intervening impedance which is less than 10 ohms at said minimum microwave frequency of oscillation.

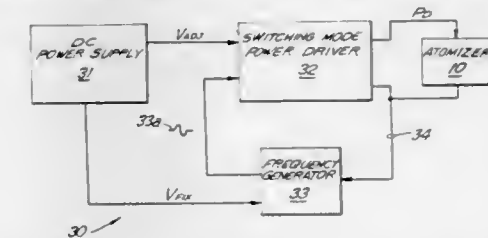
4,642,581
ULTRASONIC TRANSDUCER DRIVE CIRCUIT
John J. Erickson, Kingston, N.Y., assignor to Sono-Tek Corporation, Poughkeepsie, N.Y.
Filed Jun. 21, 1985, Ser. No. 747,349
Int. Cl.⁴ H03B 5/30

U.S. Cl. 331—154

11 Claims

1. An ultrasonic transducer drive circuit comprising:
 - (a) variable power driving means for supplying power to and driving the transducer;
 - (b) oscillating means for generating and supplying a drive signal, with a frequency proportional to the phase response of the transducer during operation, to the power driving means, said drive signal fixing the frequency of the

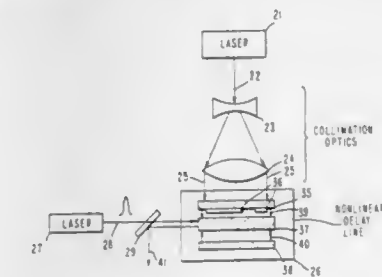
power supplied to the transducer substantially at the frequency of the transducer;
(c) phase detecting and locking means for detecting the phase response of the transducer during operation and inputting a signal proportional thereto to the oscillating means such that the frequency of the oscillating means is



shifted proportional to the phase response of the transducer; and
(d) low pass filter means, coupled between the oscillating means and the phase detecting and locking means, for controlling the rate of the frequency shift of the oscillating means in response to said inputted signal from the phase detecting and locking means.

4,642,582
NONLINEAR DELAY LINE ENCODING/DECODING ARRANGEMENTS
Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 278,536, Jun. 29, 1981, abandoned.
This application Feb. 26, 1986, Ser. No. 836,201
Int. Cl.⁴ H01S 3/30
U.S. Cl. 332—7.51

8 Claims



1. An encoding system for encoding and coherently modulating laser pulses, said system comprising:
 - a nonlinear medium having a predetermined length and cross-section and being capable of undergoing four-wave mixing;
 - first laser means for applying laser pulses to said nonlinear medium such that said pulses traverse the length thereof;
 - second laser means for applying light such that said light impinges upon said medium from two predetermined directions to provide pump beams for said four-wave mixing; and
 - means for phase-encoding said light from said second laser means such that it has a predetermined spatial modulation thus providing spatially modulated laser light;
- whereby said applied laser pulses traverse the length of said medium and interact with said spatially modulated laser light in a manner which produces said four-wave mixing in said medium, said four-wave mixing generating elongated encoded laser pulses which are temporally modulated in accordance with said predetermined spatial modulation.

4,642,583 NOISE REDUCTION IN COMPANDING ARRANGEMENTS

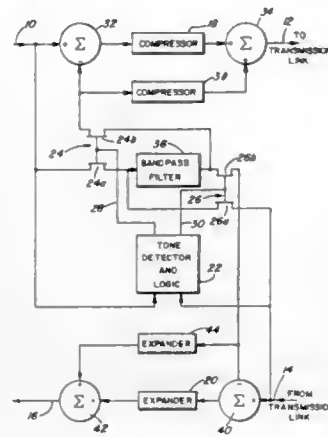
Dermot T. Fucito, Norcross; James E. Paul, and Milan Markovic, both of Stone Mountain, all of Ga., assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 19, 1984, Ser. No. 683,577

Int. Cl.⁴ H04B 1/64

U.S. Cl. 333—14

7 Claims



1. A companding arrangement comprising: first input means for inputting signals to the companding arrangement in a first direction; second input means for inputting signals to the companding arrangement in a second direction opposite the first direction; first and second compressors each for compressing signals for transmission in the first direction via a transmission link; first and second expanders each for expanding signals received in the second direction via said transmission link; filter means having a predetermined pass band; detection means connected to said first and second input means for detecting a frequency inside of the pass band in signals in each of the first and second directions; and switching means responsive to said detection means detecting such a frequency in the first direction for connecting an input of said filter means to said input means for inputting signals in the first direction whereby signals in the first direction outside the pass band bypass said filter means and are fed to said first compressor and whereby signals in the second direction outside the pass band bypass said filter means and are fed to said first expander; and whereby signals in said first direction inside the pass band are passed through said filter means and fed to said second compressor and whereby signals in said second direction inside the pass band are passed through said filter means and fed to said second expander.

4,642,584 SLOT-LINE SWITCHING AND LIMITING DEVICE FOR OPERATION AT MICROWAVE FREQUENCIES

Ronald Funck, Port Marly, and Jean Stévanec, Aulnay sous Bois, both of France, assignors to Thomson-CSF, Paris, France

Filed Jan. 31, 1985, Ser. No. 696,769

Claims priority, application France, Feb. 24, 1984, 84 02853

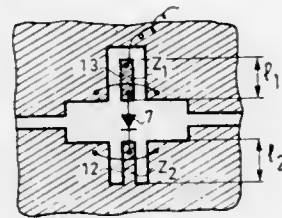
Int. Cl.⁴ H01P 1/15, 1/22

U.S. Cl. 333—17 L

7 Claims

1. A slot-line switching and limiting device for a slot-line operating at microwave frequencies, comprising: two metallized strips which are supported on a substrate and which define a slot therebetween, at least one diode which is mounted in parallel between the two strips and has an inductance produced by connections, a resistance and a junction capacitance,

and a compensating element for compensating for the impedance presented by the inductance at high frequency, said element being constituted by at least one metallic section which is coplanar with the slot-line, connected in series with



the diode and adjustable for length, said metallic section being inscribed within a zone formed in one of said strips from which said metallic section is separated by at least two non-metallized strips.

4,642,585 SUPERELLIPTICAL WAVEGUIDE CONNECTION

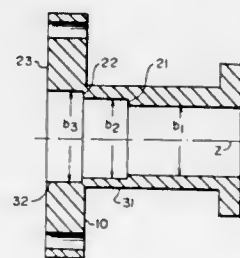
Saad M. Saad, Willowbrook, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Jan. 30, 1985, Ser. No. 696,439

Int. Cl.⁴ H01P 1/16, 5/08

U.S. Cl. 333—21 R

5 Claims



1. A waveguide connection comprising the combination of a rectangular waveguide, an elliptical waveguide having a cutoff frequency and impedance different from those of said rectangular waveguide, an inhomogeneous stepped transformer joining said rectangular waveguide to said elliptical waveguide, said transformer having multiple sections all of which have inside dimensions small enough to cut off the first excitable higher order mode in a preselected frequency band, each section of said transformer having a transverse cross-section defined by the following equation:

$$(2x/a)^p + (2y/b)^p = 1$$

where a is the dimension of the inside surface of said cross-section along the major transverse axis, b is the dimension of the inside surface of said cross-section along the minor transverse axis, and x and y define the location of each point on the inner surface of the cross-section with reference to the coordinate system established by the major and minor transverse axes of the cross-section, respectively, the value of said exponent p increasing progressively from the section adjacent to said elliptical waveguide to the section adjacent to said rectangular waveguide, the magnitudes of p, a and b changing progressively from step to step along the length of said transformer so that both the cutoff frequency and the impedance of said transformer change monotonically along the length of said transformer.

4,642,586 LOW SWR HIGH POWER MULTIPLE WAVEGUIDE JUNCTION

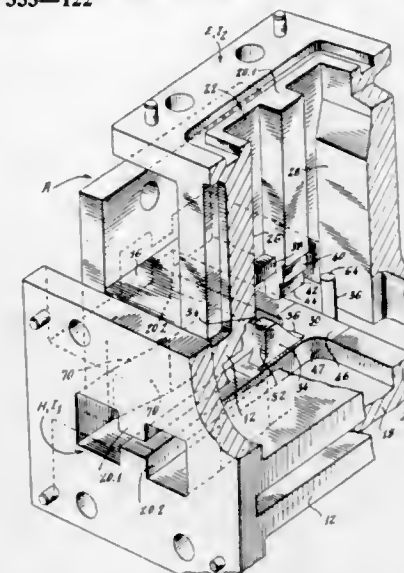
Wayne D. Fowler, Burlington, Mass., assignor to Adams-Russell, Waltham, Mass.

Filed Apr. 20, 1984, Ser. No. 602,347

Int. Cl.⁴ H01P 5/20

U.S. Cl. 333—122

24 Claims



1. A low SWR, wide bandwidth, high power handling Magic T multiple arm waveguide junction comprising: a Magic T multiple arm waveguide structure having a common junction region where at least first and second waveguide input arms may deliver power to a pair of waveguide output arms, said junction region having a first matching element located in alignment with the first waveguide input arm and being shaped to provide an impedance match to the first input arm while enabling the handling of high peak power without arcing, said junction region having a second matching element located generally in alignment with the first waveguide input arm and being shaped to provide an impedance match to the second waveguide input arm, said first and second input arms each having near the junction region a necked down waveguide portion whose cross-section is smaller in area than the input arms cross-sections that are away from the junction region, said necked down waveguide portions being so selected in area as to enhance impedance matching of the input arms to the waveguide structure over a desired bandwidth without low frequencies within said desired bandwidth being cut-off by the necked down waveguide portion, and wherein the magic T has rectangular waveguides formed of opposing normally parallel walls and wherein said necked down segment of said first input arm is obtained by a reduction in the width of the largest dimension of the first input waveguide arm with a displacement, towards each other, by both opposing shorter walls.

4,642,587 TAPERED FIVE-PORT WAVEGUIDE STAR JUNCTION

Majid Riazat, and George A. Zdzisiuk, both of Palo Alto, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 29, 1985, Ser. No. 738,712

Int. Cl.⁴ H01P 5/12

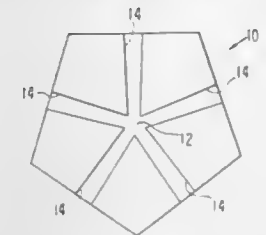
U.S. Cl. 333—125

2 Claims

1. A microwave junction assembly for matching five rectangular waveguides, over a frequency band having an upper frequency band edge and a lower frequency band edge, comprising:

five tapered waveguide lead sections lying in the H-plane in a five-fold rotational symmetry around an axis of rota-

tional symmetry perpendicular to said H-plane, said sections leading from a periphery at one end of said waveguide lead sections into a central junction region located on said axis and at an opposite end of said waveguide lead



sections, each tapered waveguide lead section being tapered in a direction, in both cross-sectional dimensions, from said periphery to said central junction, each cross-sectional dimension being reduced by a factor of about 6/7 over the direction of the taper.

4,642,588 METHOD FOR ADJUSTMENT OF VARIABLE DELAY LINE

Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Saitama, Japan

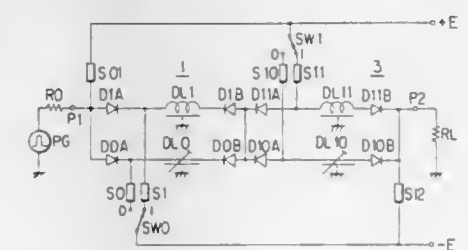
Filed May 22, 1984, Ser. No. 612,915

Claims priority, application Japan, May 26, 1983, 58-94347

Int. Cl.⁴ H01P 9/00; H03H 7/34

U.S. Cl. 333—139

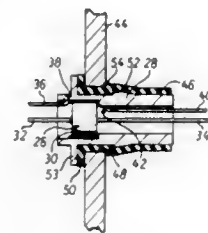
4 Claims



1. A method for the adjustment of a variable delay line, comprising: configuring a variable delay line with two delay line elements of dissimilar delay times, the element having the smaller delay time comprising a microstrip line with a conductor and the element having the larger delay time comprising an inductance element having a conductor wound in a plurality of turns in the shape of a solenoid and one or more capacitors interconnecting the conductor and the ground; selectively switching from one to the other of said two delay line elements to increase or decrease the delay time by a delay time difference produced by said selective switching between said two delay line elements; and varying the delay time of the delay line element which has the smaller delay time by selectively varying the effective physical length of the conductor to achieve a desired delay time.

4,642,589
FEED THROUGH FILTER HAVING AN INSULATED BUSH FOR MOUNTING FILTER IN A BULKHEAD
 Jeffrey Chambers, Ulverston, England, assignor to Oxley Developments Company Limited, England
 Filed Mar. 7, 1985, Ser. No. 709,223
 Claims priority, application United Kingdom, Mar. 8, 1984, 8406110

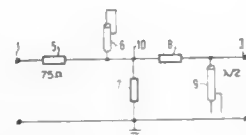
Int. Cl.⁴ H03H 7/01
 U.S. Cl. 333—182 10 Claims



1. A high frequency interference suppression device comprising:
 - (a) a tubular metal sleeve means;
 - (b) a feed-through line passing through said tubular metal sleeve and electrically isolated therefrom;
 - (c) a capacitor having two electrodes connected to respective terminations, the capacitor being mounted within said tubular metal sleeve, with one termination of the capacitor electrically connected to the metal sleeve and the other termination isolated from said sleeve and connected to said feed-through line; and
 - (d) insulating bush means surrounding said metal sleeve and adapted to mount the metal sleeve in an aperture of a metal bulkhead so that the metal sleeve and both electrodes of the capacitor are electrically isolated from said bulkhead.

4,642,590
FREQUENCY MULTIPLIER HAVING OPEN AND SHORT CIRCUITED LINES RESONATING A MULTIPLIED OUTPUT FREQUENCY
 Johannes H. Buijs, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed May 10, 1985, Ser. No. 733,273
 Claims priority, application Netherlands, May 18, 1984, 8401595

Int. Cl.⁴ H03B 19/00, 19/16
 U.S. Cl. 333—218 3 Claims



1. A frequency multiplier for generating a desired output frequency comprising:
 - a matching impedance having a first end for receiving an input signal;
 - a short-circuited transmission line having an input connected to a second end of said matching impedance for receiving said input signal, said short-circuited transmission line having a wavelength $\lambda/4$ for differentiating said input signal, where λ is the wavelength of said desired output frequency;
 - a first impedance having a first end connected to said input of said short-circuited transmission line and a second end

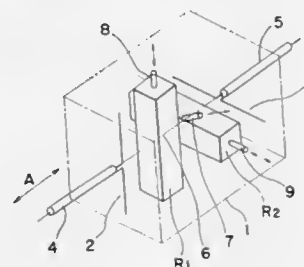
connected to a point of constant potential for effecting a path between said input of said short-circuited transmission line and said point of constant potential;

a second impedance having a first end connected to said input of said short-circuited transmission line and a second end forming an output of said multiplier, said second impedance having substantially higher resistance than said matching impedance; and

an open-ended transmission line having an input connected to said second end of said second impedance for receiving said differentiated input signal, said open-ended transmission line having a wavelength $\lambda/2$ for resonating said differentiated input signal to said desired output frequency.

4,642,591
TM-MODE DIELECTRIC RESONANCE APPARATUS
 Yoshio Kobayashi, Oomiya, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
 Filed Aug. 30, 1985, Ser. No. 770,965
 Claims priority, application Japan, Nov. 16, 1984, 59-243090
 Int. Cl.⁴ H01P 1/219, 7/10

U.S. Cl. 333—227 21 Claims



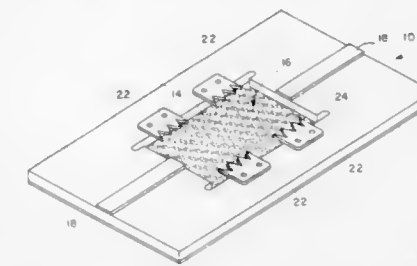
1. A TM mode dielectric resonance apparatus comprising:
 - a case;
 - at least two TM mode dielectric resonators within the case; one of said resonators being oriented in the case so as to resonate with a first mode having a magnetic field aligned in a first direction;
 - the other of said resonators being oriented in the case so as to resonate with a second mode having a magnetic field aligned in a second direction, such that the respective magnetic fields intersect each other; and
 - means for coupling said two magnetic fields with respect to each other.

4,642,592
GROUNDING AND SUPPORTING METAL MESH
 Carlos L. Beeck, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
 Filed Apr. 26, 1985, Ser. No. 727,947
 Int. Cl.⁴ H01P 1/00

U.S. Cl. 333—246 2 Claims

1. A metal mesh for electrically connecting the ground plane of a circuit board to the ground plane of a housing comprising a conductive material having an array of slits each defining a rectangular cross-section torsion bar affixed at the nodes such

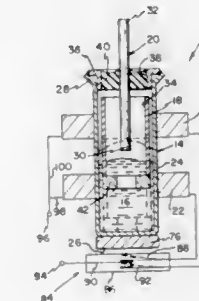
that when expanded each node forms a torsion spring, the material being a beryllium/copper alloy plated with a metal



compatible with the material of said ground plane which is selected from the group consisting of nickel, tin and gold.

4,642,593
IMPULSE MERCURY RELAY WITH MAGNETIC INTERLOCK SWITCH
 George H. Elenbaas, 25526 N. Shore Dr., Elkhart, Ind. 46514
 Filed Apr. 17, 1984, Ser. No. 601,301
 Int. Cl.⁴ H01H 29/16

U.S. Cl. 335—52 41 Claims

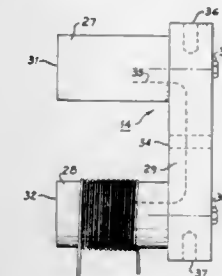


1. A liquid conductor relay, comprising:
 - a first electrode member having a top portion and a bottom portion,
 - a liquid conductor contained in said first electrode member,
 - a second electrode member received and secured in said first electrode member,
 - a displacement plunger in said first electrode member and movable between a first position wherein said liquid conductor and said second electrode member are in spaced-apart relation and a second position wherein said displacement plunger is displaced downwardly in said liquid conductor to displace said liquid conductor upwardly in contact with said second electrode member,
 - a coil means in proximity to said first electrode member for moving said displacement plunger from said first position to said second position when energized, said displacement plunger moving from said second position to said first position when said coil means is deenergized,
 - a magnet means movable with said displacement plunger between said first and said second positions, and
 - a magnetically-actuable switch means externally disposed of said first electrode member and in close proximity thereto, said magnetically-actuable switch means being actuated by said magnet means and said liquid conductor being in contact with said second electrode member when said coil means moves said displacement plunger and said magnet means from said first position to said second position.

4,642,594
U-SHAPED SOLID MAGNETIC CORE WITH AT LEAST ONE OPENING THROUGH THE MIDSECTION THEREOF

Ralf R. Volkmar, Berlin, Fed. Rep. of Germany, assignor to Siemens Energy & Automation, Inc., Atlanta, Ga.
 Filed Aug. 10, 1984, Ser. No. 639,952
 Int. Cl.⁴ H01F 7/08

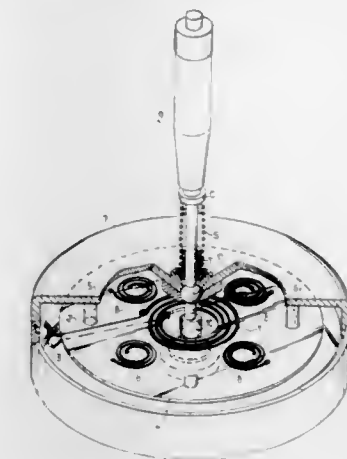
U.S. Cl. 335—227 7 Claims



1. A magnetic yoke formed of a plurality of elements of solid magnetic material, comprising:
 - a pair of leg members;
 - a bridge member having magnetic flux lines;
 - means for connecting the leg members and the bridge member in a general U-form;
 - said bridging member having at least one opening extending through the midsection thereof, generally transverse thereto and generally transverse to the magnetic flux lines.

4,642,595
CONTACTLESS ELECTRIC CONTROL-HANDLE
 Geurt J. Ruempol, AB Wilp, Netherlands, assignor to Inductive Control Systems B.V., Ede, Netherlands
 Filed Apr. 24, 1985, Ser. No. 726,690
 Claims priority, application Netherlands, May 2, 1984, 8401391

Int. Cl.⁴ H01F 21/06
 U.S. Cl. 336—135 9 Claims



1. A contactless electric control handle assembly comprising the combination of:
 - a housing having a control handle support portion;
 - a control handle having universal joint means cooperating with said support portion for presenting a universally movable control part projecting from one side of said support portion and an extension projecting from the other side of said support portion, said extension having a ferrite core portion, and means for normally positioning said universally movable control part, and consequently

said ferrite core portion, in a neutral position relative to said support portion;
base plate means carried by said housing for cooperation with said control handle;
said base plate means having an opening within which said ferrite core portion is received with clearance to allow universal movement of said ferrite core portion relative to said base plate means in response to universal manipulation of said movable control part;
a field coil on said base plate means and centered with respect to said ferrite core portion when it is in said neutral position thereof, said field coil comprising a conductor of generally flat, spiral-like form adapted to produce an alternating electromagnetic field; and
a set of inductive pick-up coils on said base plate means in outwardly spaced relation from said field coil and uniformly distributed therearound for equal inductive pick-up from said alternating electromagnetic field when said ferrite core portion is in its neutral position, each of said inductive pick-up coils comprising a conductor of generally flat, spiral-like form.

4,642,596

MINIATURIZED TRANSFORMER

Shigeru Nakadai, and Teruo Tamada, both of Saitama, Japan, assignors to Toko, Inc., Tokyo, Japan

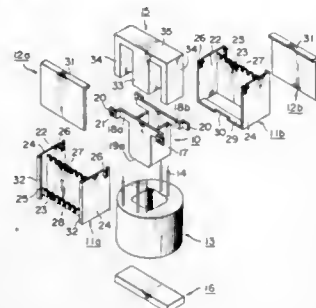
Filed Sep. 11, 1985, Ser. No. 774,738

Claims priority, application Japan, Sep. 11, 1984, 59-137760[U]; Jan. 19, 1985, 60-6158[U]

Int. Cl.⁴ H01F 15/10, 27/30

U.S. Cl. 336—98

9 Claims



1. A miniaturized transformer, comprising:
a bobbin provided with a drum portion on which a coil is wound; and
a pair of frames which are securely attached, from opposite sides, to said bobbin for accommodating said coil therein; said bobbin including a pair of arm-like portions, each of said arm-like portions having first engagement means provided at each end portion thereof, said first engagement means being adapted to be disposed in engagement with second engagement means of said frames;
each of said pair of frames comprising a first and a second side plate portion which are disposed in opposing relationship with each other, and a third side plate portion disposed substantially at right angles with respect to said first and second side plate portions and connecting said first and second side plate portions together, each of said first and second side plate portions being provided with said second engagement means adapted for engagement with said first engagement means provided at each end portion of said arm-like portions of said bobbin;
wherein lead wires of the coil which are upwardly led out of said coil, are made to downwardly extend along the outer surfaces of said third side plate portions so as to be used as terminals.

4,642,597

OVERCURRENT RELAY

Yuji Sako, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

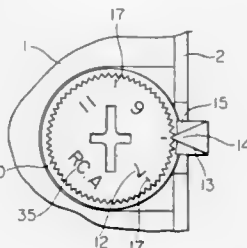
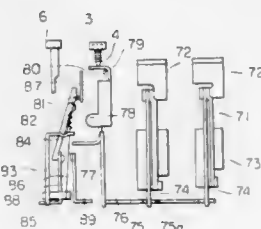
Filed Dec. 5, 1985, Ser. No. 804,739

Claims priority, application Japan, Dec. 6, 1984, 59-184310[U]

Int. Cl.⁴ H01H 71/16, 61/00, 75/08

U.S. Cl. 337—82

8 Claims



1. An overcurrent relay comprising:
a housing having an external portion;
an overcurrent responsive mechanism, disposed within the housing, for opening or closing a pair of contacts in response to an overcurrent;
adjusting screw means for adjusting the operating current of said overcurrent responsive mechanism, said adjusting screw means being rotatably supported by said housing and having serrations on the periphery thereof; and
an engaging member mounted on the exterior portion of said housing for engaging with a serration of said adjusting screw means for preventing an unintentional rotation of said adjusting screw means.

4,642,598

ADJUSTING DEVICE FOR THERMAL OVERLOAD RELAY

Haruo Ichikawa, Gyouda; Fumio Chida, Kitaadachi; Katsumi Akiike, Fukiage, and Kanichi Izumi, Kitasaitama, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 6, 1985, Ser. No. 805,878

Claims priority, application Japan, Dec. 28, 1984, 59-200408[U]; Dec. 28, 1984, 59-200409[U]; Jan. 21, 1985, 60-6679[U]; Jan. 24, 1985, 60-8146[U]

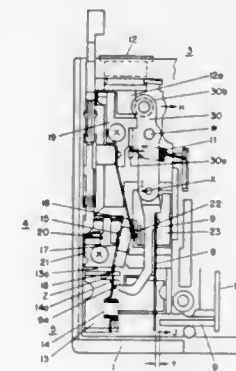
Int. Cl.⁴ H01H 61/00, 71/16

U.S. Cl. 337—82

5 Claims

1. In a thermal overload relay which includes a pair of contacts and a main bimetallic element whose bending as a result of thermal overload is transmitted through shifting means to a temperature compensating bimetallic element which controls a release lever whose triggering closes the contacts of the relay and which includes an adjusting means for controlling the setting of the release lever, the amount of bending the bimetallic element has to undergo to trigger the release lever to close the contacts, by the rotation of an adjusting dial which includes an eccentric stem portion, the improvement comprising supplemental means for setting the release

lever which comprises an adjusting pin which include an eccentric stem portion which abuts the eccentric stem portion of



the adjusting dial and means for rotating said eccentric stem portion of the adjusting pin.

4,642,599

CONTROL DEVICE

Roland Saur, Stuttgart, Fed. Rep. of Germany, assignor to Behr-Thomson Dehnstoffregler GmbH, Fed. Rep. of Germany

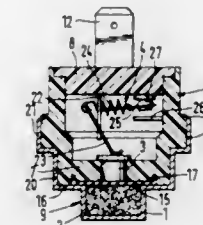
Filed Oct. 11, 1985, Ser. No. 786,492

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1984, 3437778

Int. Cl.⁴ H01H 37/76

U.S. Cl. 337—397

16 Claims



1. A control device having a thermostatic working element and a control element which is actuated thereby, comprising:
nonmetallic primary housing means, having walls which define an interior space, for enclosing the control element;
a movable working element, extending through one of the walls of said primary housing means, for actuating the control element;
metallic secondary housing means, secured to the primary housing means and having means for receiving a thermally expandable material and means for holding said material immediately adjacent to the working element; and
elastic means, disposed between the expandable material and the working element and between the primary housing means and an interior surface of the secondary housing means, for retaining the expandable material in said receiving means;
wherein an edge of the secondary housing means is plastically deformed around a shoulder of the primary housing means to secure the housings together.

4,642,600

DEVICE FOR INDICATING THE FULLY CHARGED STATE OF A BATTERY

Klaus Gummelt, Garbsen; Jurgen Schulz, Hunstetten; Klaus Salamon, Kelkheim, and Heinrich Rabenstein, Frankfurt, all of Fed. Rep. of Germany, assignors to Varta Batterie A.G., Hanover, Fed. Rep. of Germany

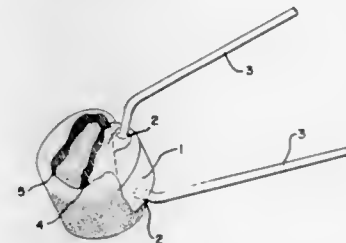
Filed Apr. 2, 1985, Ser. No. 718,808

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414664

Int. Cl.⁴ H01L 7/00; H02J 7/04

U.S. Cl. 338—34

7 Claims



1. A device for indicating the fully charged state of a storage battery, especially a lead-acid storage battery, by determining the temperature of a recombination catalyst, comprising a temperature-sensitive electronic component whose surface is provided at least partially with catalyst material, and is adapted for exposure to the battery gases, wherein the catalyst material is covered with an antimony-adsorbing layer.

4,642,601

HUMIDITY-SENSITIVE ELEMENT

Tooru Sugawara; Shigeki Tsuchitani; Noriyuki Kinjo, and Shuichi Ohara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP81/00166, § 371 Date Mar. 18, 1982, § 102(e) Date Mar. 18, 1982, PCT Pub. No. WO82/00362, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 20, 1981, Ser. No. 361,903

Claims priority, application Japan, Jul. 21, 1980, 55-98815; Dec. 8, 1980, 55-172054

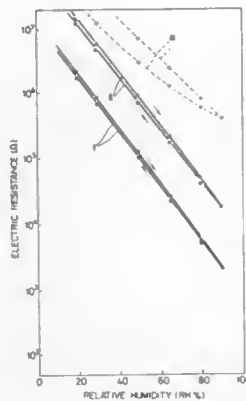
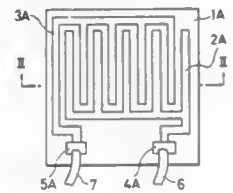
Int. Cl.⁴ H01L 7/00

U.S. Cl. 338—35

33 Claims

1. A humidity-sensitive element comprising an insulating substrate, a pair of electrodes formed thereon apart from each other by a definite distance, and a coating of humidity-sensitive organic material formed to cover said electrodes, said coating of humidity-sensitive organic material being a synthetic polymer having both a hydrophobic moiety and another moiety selected from the group consisting of an ionic moiety and a hydrophilic moiety, to give the material a property to change its electric resistance depending upon the moisture content in the atmosphere, characterized in that said coating is formed by applying a latex comprising the synthetic polymer to said electrodes, the particles forming said latex having the hydrophobic moiety forming a core of each latex particle and the

another moiety forming a surface layer on the core of each latex particle, the material being an aggregate of said particles,



with the particles adhering to each other to form a continuous film for the coating.

4,642,602

ELECTRIC POTENTIOMETER

Wolfgang Maisch, Schwieberdingen, and Jürgen Treiber, Bamberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

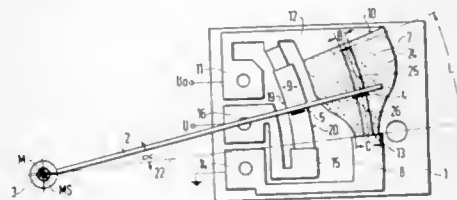
Filed Apr. 29, 1985, Ser. No. 728,434

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424399; Oct. 13, 1984, 3437609

Int. Cl.⁴ H01L 10/30, 10/32, 10/00, 1/012

U.S. Cl. 338—162

7 Claims



1. An electric potentiometer having a carrier plate, a wiper having a predetermined width and an electrically conductive layer having a region to be stroked by said wiper, comprising an electrically nonconductive layer partially applied to said electrically conductive layer a pickup zone on said electrically conductive layer said pickup zone having a width less than said wiper and said pickup zone further having side portions which are defined by said electrically nonconductive layer.

4,642,603

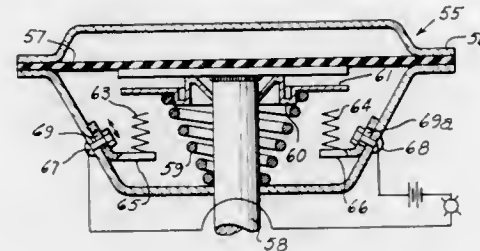
BRAKE ROD EXTENSION INDICATOR

Antonio Martinez, Jr., El Monte, Calif., assignor to Atel Corporation, South El Monte, Calif.

Continuation-in-part of Ser. No. 549,982, Nov. 8, 1983, abandoned. This application Jul. 11, 1984, Ser. No. 630,313 Int. Cl.⁴ B60Q 1/00

U.S. Cl. 340—52 B

6 Claims



1. A brake actuator provided with means for sensing brake rod overtravel, said actuator comprising:

a housing defining a cavity, a diaphragm dividing said cavity into a first chamber and a second chamber, said first chamber being adapted to receive air under pressure, and said second chamber being vented to atmosphere and having a rod aperture therethrough, said housing including a peripheral wall bounding said second chamber;

a plunger comprising a rigid plate and a rod joined to said plate, said rod extending along an axis of actuation, said plate having a substantial area in surface-to-surface contact with said diaphragm to support the central portion of the diaphragm and transmit force from said diaphragm developed by differential pressure between the two chambers, said rod passing through said rod aperture, said plate being normal to said rod;

spring bias means biasing said plunger in the direction of said first chamber;

conductive means facing axially into said second chamber, unitarily movable with said plate, and lying within the area defined by said plate;

first contact means disposed in the axial path of said conductive means, comprising a resilient, deflectable spring having a free end adapted to be contacted by said conductive means;

contact mount means mounted to said peripheral wall for axially selectable adjustable positioning thereon, including a free flange projecting laterally away from said peripheral wall, and supporting said first contact means in the path of said conductive means, said free flange being resilient, whereby said first contact means and contact mount means exert only resilient response to contact by said conductive means within the anticipated normal and abnormal range of axial movement of said plunger; and circuitry and circuit connections with said conductive means and contact means to indicate whether they are in contact with one another or not.

4,642,604

AUXILIARY LUBRICATION PUMP APPARATUS

Herbert C. Glesmann, Omaha, Nebr., and Ronald G. Thomas, Nashville, Tenn., assignors to Remco, Omaha, Nebr.

Filed Jan. 22, 1985, Ser. No. 693,659

Int. Cl.⁴ B60Q 1/00

U.S. Cl. 340—60

5 Claims

1. An auxiliary lubrication pump apparatus for use with a towing vehicle having an engine switch, a battery, and an interior compartment, and a towed vehicle having an automatic transmission which requires forced lubrication while being towed, the apparatus comprising:

(a) a lubrication pump;

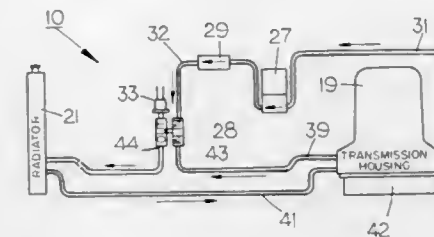
(b) a transmission to pump hose connected between said automatic transmission and said lubrication pump;

(c) a valve having at least one signal output and two inputs;

(d) a hose means for connecting an output of said lubrication pump to one of said inputs of said valve;

(e) a first outflow hose for connecting said automatic transmission to another input of said valve;

(f) a second output hose for connecting said output of said valve to said automatic transmission;



(g) pressure sensing means positioned to sense pressure as regards said second outflow hose; and

(h) control means responsive to said pressure sensing means and having switch means for providing electricity to said lubrication pump and to provide an alarm whenever said control means detects through said pressure sensing means that inadequate pressure exists.

4,642,605

POWER FAILURE RESPONSIVE WARNING DEVICE

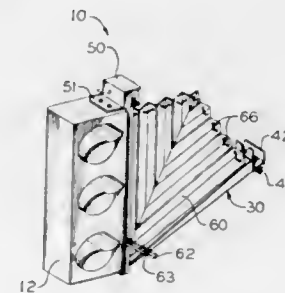
S. Joel Karp, 1828 Boulevard, West Hartford, Conn. 06107

Filed Mar. 3, 1986, Ser. No. 835,176

Int. Cl.⁴ G08B 5/24

U.S. Cl. 340—130

19 Claims



1. A warning device responsive to an electrical power interruption at a given location to activate a warning signal comprising:

elongated support means adapted to be mounted for disposition in a generally upright orientation;

elongated arm means pivotally mounted at a first end thereof to said support means, said arm means being pivotal between a first generally upright position wherein said support means and arm means are generally parallelly oriented and cooperate to form an enclosure and a second warning position wherein said arm means projects away from said support means to open the said enclosure;

flexible carrier means having first and second edge portions, said first edge portion being connected in fixed relationship to said support means and said second edge portion being connected in fixed relationship to said arm means, said carrier means being substantially entirely enclosed in said enclosure when said arm means is in the first position, said carrier means being extended to define a support for a visual display when said arm means is in said second position; and

latch means for holding said arm means in said first position

4,642,606

DATA DISPLAY UNIT FOR A BICYCLE

Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan

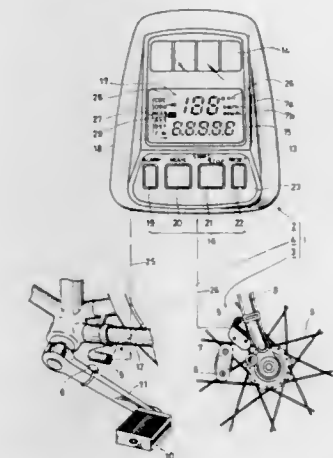
Filed Jan. 18, 1985, Ser. No. 692,930

Claims priority, application Japan, Jan. 20, 1984, 59-6736[U]

Int. Cl.⁴ G01P 3/48, 3/54; B62J 3/00, 6/00

U.S. Cl. 340—134

10 Claims



1. A running data display unit for a bicycle, comprising: wheel revolution detecting means located in association with a wheel of a bicycle in a manner in which no load is applied to said wheel, said wheel revolution detecting means providing pulse signal according to the number of revolutions of said wheel;

running data calculating means coupled to said revolution detecting means, by which running data including the running speed, the running distance, the average speed, and the maximum speed of a bicycle are calculated based on said pulse signal provided from said revolution detecting means;

running data calculation start and stop selecting means coupled to said running data calculating means for starting or stopping the calculation of running data by said running data calculating means;

liquid crystal display means coupled to said running data calculating means for selectively displaying the running data calculated by said running data calculating means, a speed unit in association with said running data being displayed in said display means;

speed unit display winking means coupled to said liquid crystal display means and said start and stop selecting means, by which winking of light in said speed unit display is started in response to the start of measurement selected by said start and stop selecting means and said winking of light in said speed unit display is stopped in response to the stop of measurement selected by said start and stop selecting means; and

power supply means for applying energy to said running data supply unit.

4,642,607 POWER LINE CARRIER COMMUNICATIONS SYSTEM TRANSFORMER BRIDGE

Stephen A. Strom, Kenneth W. Schueller, and William E. Potworz, all of Tempe, Ariz., assignors to National Semiconductor Corporation, Santa Clara, Calif.

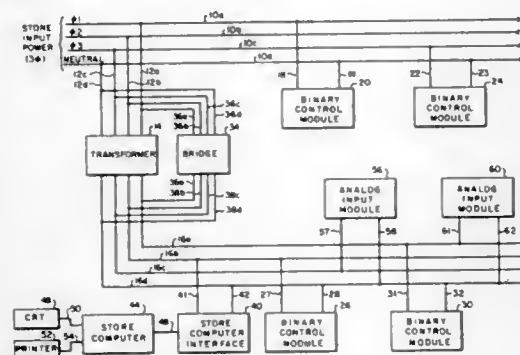
Filed Aug. 6, 1985, Ser. No. 762,881

Int. Cl.⁴ H04M 11/04

U.S. Cl. 340—310 A

4 Claims

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 42 Pages)



1. A powder line carrier communications system transformer bridge/repeater for receiving on a power line communications network a series of original message bit streams generated by a transmitting module and for relaying on said power line communications network corresponding relayed message bit streams to receiving modules, comprising:

transceiver means connected to means for converting said relayed message bit streams from serial binary bit streams to frequency-shift keyed bit streams and for converting original message bit streams from frequency-shift keyed bit streams to serial binary bit streams;

transformer means connected to said transceiver means for amplifying received original message bit streams provided to said transceiver means;

isolation means connected to said transformer means and adapted for connection to a power line having a plurality of differently phased lines, said isolation means coupling said original message bit stream to said transformer means from said power line and coupling said relayed message bit streams from said transformer means to said power line; and

processor means connected to said transceiver means and responsive to certain predetermined ones of said original message bit streams for generating corresponding relayed message bit streams.

4,642,608 DIGITAL-TO-ANALOGUE CONVERTER ARRANGEMENT

Jean-Pierre Tomasi, Les Molières, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,938

Claims priority, application France, Mar. 2, 1984, 84 03280

Int. Cl.⁴ H03K 13/00

U.S. Cl. 340—347 DA

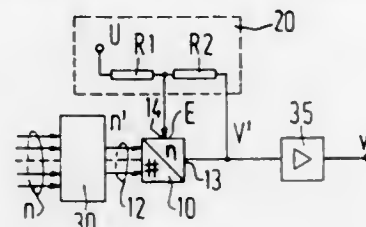
7 Claims

1. A digital-to-analogue converter arrangement comprising a digital-to-analogue converter circuit of a type producing at its output an output voltage $V(n')$ such that:

$$V(n') = k \cdot E \cdot \frac{n'}{M}$$

where k is a constant, E is a voltage applied to a reference voltage input of the digital-to-analogue converter circuit, n' is a binary number applied to a binary signal input of the digital-to-

analog converter circuit and M' is the maximum value n' can attain, a negative feedback network coupled between the output of the digital-to-analogue converter circuit and the reference voltage input thereof, and a transcoding means coupled to



said binary signal input and which, from a number " n " whose maximum value may reach M , adjust a number " n " such that there is a "pseudo-linear" relationship between the number " n " and the voltage V' :

$$V(n_p) = K \cdot \frac{n_p}{M}$$

where K is a constant and n_p are the specific values of n .

4,642,609 INTEGRATION TYPE ANALOG-TO-DIGITAL CONVERTER HAVING CONTINUOUSLY CHARGING AND DISCHARGING FUNCTIONS

Jyoji Murakami, and Kenzi Yamada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 380,699, May 21, 1982, abandoned.

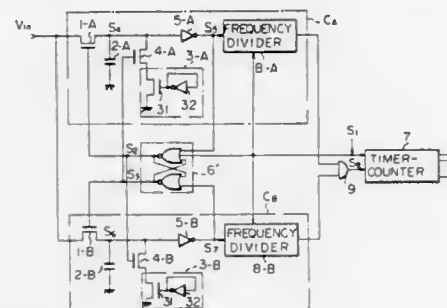
This application Dec. 24, 1984, Ser. No. 685,953

Claims priority, application Japan, May 28, 1981, 56-79991

Int. Cl.⁴ H03M 1/54

U.S. Cl. 340—347 AD

5 Claims



1. An analog-to-digital converter operatively connectable to receive a start signal, comprising:

at least two charging and discharging circuits, each charging and discharging circuit comprising:

a charging switch for inputting an analog voltage and having an on state;

a capacitor, operatively connected to said charging switch, charged during the on-state of said charging switch;

a constant current source, operatively connected to said capacitor, for discharging the charges stored in said capacitor;

a discharging switch, operatively connected between said capacitor and said constant current source, for activating said constant current source;

a detection circuit, operatively connected to said capacitor, for detecting whether the voltage of said capacitor reaches a predetermined value; and

counter means, operatively connected to said detection circuit, for counting the number of times said predetermined value is detected by said detection circuit and for generating an output signal when the number reaches a predetermined number;

a control circuit, operatively connected to said detection circuit, said charging switch, and said discharging switch of each said charging and discharging circuit, for controlling said charging switch and said discharging switch, the charging and discharging operations being performed alternately and continuously upon each charging and discharging circuit; and

a timer-counter, operatively connected to said counter means of each said charging and discharging circuit and operatively connectable to receive the start signal, initiated in response to the start signal and stopped in response to the output signal of said counter means from each said charging and discharging circuit.

4,642,610 COMMUNICATIONS APPARATUS FOR HANDICAPPED INDIVIDUALS

William N. Smith, III, P.O. Box 1061, Carrollton, Tex. 75006

Division of Ser. No. 385,016, Jun. 4, 1982, Pat. No. 4,517,423.

This application Jun. 26, 1984, Ser. No. 624,746

Int. Cl.⁴ G08B 7/06

U.S. Cl. 340—365 S

13 Claims

OFF	GO	11	?	1	??	ON
A	B	C	D	E	F	G
K	L	M	N	O	P	Q
U	V	W	X	Y	Z	/

1. An improved method for selecting an element of a group, comprising the steps of:

(a) serially scanning the elements of the group at a first rate faster than the response time of the user;

(b) stopping said serial scanning step upon receipt of a first input signal;

(c) reverse scanning the group elements at a second rate slower than the response time of the user; and

(d) stopping said reverse scanning step upon receipt of a second input signal, selecting said element of the group.

4,642,611 SOUND ENGINE

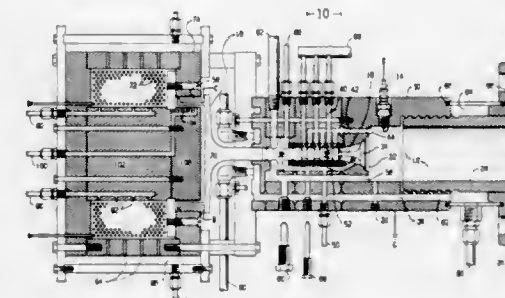
Andre F. Koerner, 11706 Nobility Cir., Stafford, Tex. 77477

Filed Oct. 14, 1983, Ser. No. 542,053

Int. Cl.⁴ G01V 1/04, 1/57; G08B 9/00

U.S. Cl. 340—385

9 Claims



1. A sound engine comprising:
a firing chamber having a sound outlet;

igniting means mounted to said firing chamber;
valve means mounted to said firing chamber, said valve means permitting the controlled introduction of a fuel and a gas to said firing chamber, said valve means comprising: an air valve fitted to an opening adjacent said firing chamber, said air valve movable relative to said opening; a fuel shuttle valve connected to said air valve such that movement of said air valve imparts a movement to said fuel shuttle valve; and
blowback control means attached to said firing chamber said blowback control means including a piston fastened to said fuel shuttle valve, said blowback control means for equalizing pressures acting on said air valve;
electromagnetic means connected to said valve means;
a source of electrical signal impulses connected to said electromagnetic means, said electromagnetic means for causing movement of said air valve and said fuel shuttle valve, in correspondence to said electrical signal impulses; and
output means connected to said sound outlet to provide a sound output from said firing chamber.

4,642,612 INTRUDER DETECTION AND DETERRENT SYSTEM

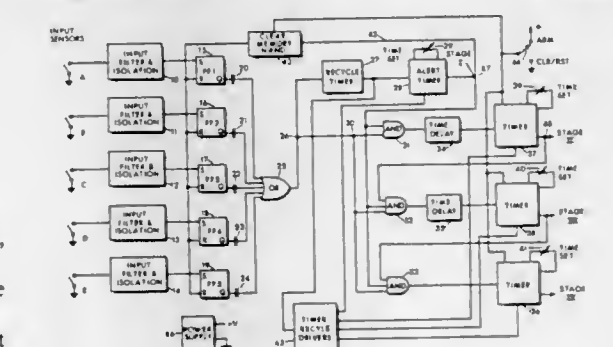
Herschel W. Crump, 117 Yuchi Trail North, Fort Worth, Tex. 76108

Filed Jun. 18, 1984, Ser. No. 621,704

Int. Cl.⁴ G08B 13/00

U.S. Cl. 340—541

9 Claims



1. An intruder deterrence system for protecting enclosed premises, said system comprising:

at least three sensors arranged to be placed incrementally along a path of probable ingress of a potential intruder into the protected premises;

said sensors adapted to emit an electrical signal upon passage thereby by any person;

latching means connected to the signal output of each said sensor and arranged to generate a signal and then latch-over upon receiving the first signal generated by said sensor, and further adapted to thereafter prevent additional signals from said sensor being passed through said latching means until said latching means is reset;

an OR gate means having inputs operably connected to the signal outputs of all of said latching means, and a signal output;

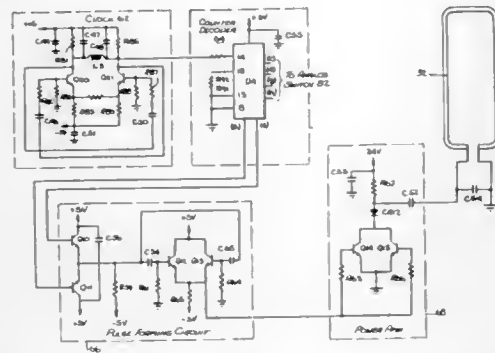
a first staged response circuit connected operably to the output of said OR gate means and having timing means therein including an adjustable timer with a signal input and a signal output, for generating after a predetermined period a first staged response signal in response to a signal received from said OR gate means;

a second staged response circuit comprising a dual AND gate function having signal inputs operably connected to said OR gate and said first staged response signal, and having timing means therein arranged to generate a time delayed signal output in response to a signal input generated by said second staged circuit AND gate means; and

at least one additional staged response circuit comprising an AND gate means having signal inputs numerically coinciding with and operably connected to the staged response signals of all preceding staged response circuits plus said OR gate means signal output, and said additional staged response circuits each having timing means arranged to generate a time-delayed output signal after receiving an input signal from said circuit's AND gate means;

wherein said second and successive staged response output signals are further adapted to initiate noticeable responses in and around the protected premises in response to the possible intrusion.

4,642,613
ELECTRONIC THEFT DETECTION APPARATUS WITH RESPONDER ELEMENTS ON PROTECTED ARTICLES
 Peter A. Pokalsky, East Meadow, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.
 Filed Mar. 16, 1984, Ser. No. 590,346
 Int. Cl.⁴ G08B 13/24
 U.S. Cl. 340—572 14 Claims



1. In an electronic theft detection apparatus for detecting the unauthorized movement of protected articles through a passageway, said apparatus comprising a transmitter for producing electromagnetic waves in said passageway, electronic responder circuits constructed and arranged to be mounted on protected articles and to produce a characteristic disturbance of said electromagnetic waves when one of said articles is present in said passageway and a receiver constructed and arranged to sense the occurrence of said characteristic disturbance of said electromagnetic waves when one of said articles is present in said passageway and to produce an alarm in response thereto, the combination of a transmitter antenna connected to said transmitter and a receiver antenna connected to said receiver, one of said antennas comprising a loop of an electrically conductive, non magnetic, self supporting material and the other antenna comprising an electrically conductive wire loop supported by said self supporting material.

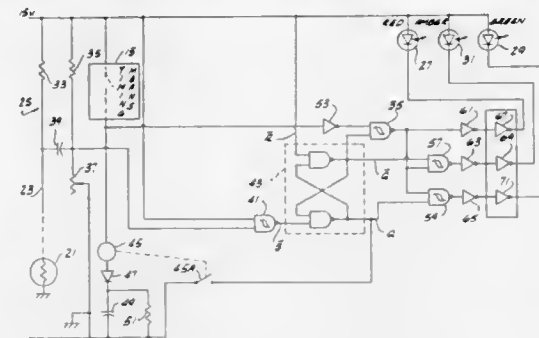
4,642,614
FLUID FLOW MONITORING SYSTEM
 John F. Cook, St. Louis County, Mo., assignor to McNeil Corporation, St. Louis, Mo.
 Continuation of Ser. No. 565,718, Dec. 27, 1983, abandoned.
 This application Apr. 11, 1986, Ser. No. 850,946
 Int. Cl.⁴ G08B 21/00 20 Claims

1. A system for monitoring flow of fluid in a passage in a fluid distribution system wherein, in normal operation, intermittent deliveries are made through the passage, with off periods of no-flow between said deliveries, said monitoring system being operable to monitor said distribution system to determine whether a delivery has occurred within a period within which a delivery should occur in normal operation, and comprising:

a thermistor in said passage connected in a circuit for being

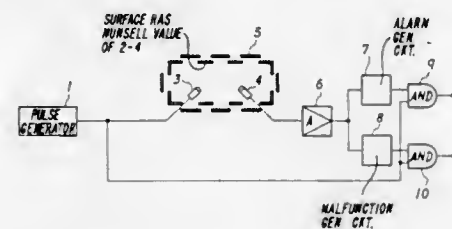
energized and thereby heated, said thermistor being in heat-exchange relation with fluid in said passage so that, on a delivery of fluid through the passage, the thermistor is cooled thereby for increasing its electrical resistance, means for establishing periods during each of which a normal delivery of fluid should occur through the passage, and

a monitoring circuit interconnected with the thermistor and said period establishing means having fault signal means therein and means operable in response to occurrence of any of said periods without an increase in the electrical



resistance of the thermistor due to cooling of the thermistor in response to a normal delivery of fluid during that period to actuate said fault signal means at the termination of said period, said circuit being conditioned in response to an increase in the electrical resistance of the thermistor due to cooling of the thermistor in each of said periods during which a normal delivery of fluid occurs to refrain from actuating said fault signal means at the termination of said period, said circuit being non-responsive to a decrease in the electrical resistance of the thermistor due to heating of the thermistor.

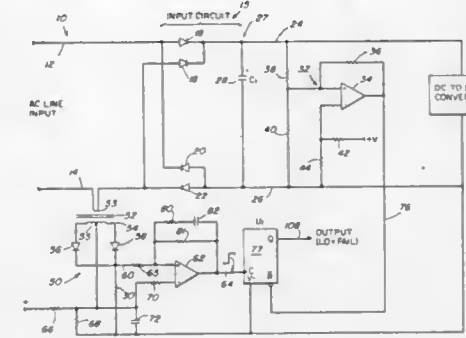
4,642,615
LIGHT-SCATTERING TYPE SMOKE DETECTOR
 Takashi Suzuki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan
 Filed Jul. 11, 1985, Ser. No. 754,025
 Claims priority, application Japan, Jul. 31, 1984, 59-159215; May 28, 1985, 60-113158
 Int. Cl.⁴ G08B 17/10 4 Claims



1. A light-scattering type smoke detector which comprises a dark chamber of a labyrinth structure, a light-emitting element and a light-receiving element provided in the dark chamber at positions where the light beam from the light-emitting element does not directly impinge on the light-receiving element; wherein the light-receiving element detects the existence of smoke by sensing the scattering of light caused by minute particles of smoke entering the dark chamber and generates an alarm, said detector including means for detecting malfunctions of said light-receiving element; wherein the Munsell

value of lightness of the inside surface of the dark chamber is in the range of 2-4.

4,642,616
METHOD AND APPARATUS FOR DETECTION OF AC POWER FAILURE CONDITIONS
 Peter A. Goodwin, Wayland, Mass., assignor to Prime Computer, Inc., Natick, Mass.
 Filed Feb. 14, 1985, Ser. No. 701,574
 Int. Cl.⁴ G08B 21/00 12 Claims



1. Apparatus for detecting an AC power failure condition comprising

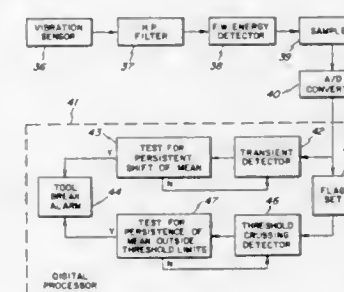
a fast attack, slow decay energy storage circuit means for receiving an AC input signal and for providing a slowly decaying output based upon at last received peak voltage value,

a voltage threshold means for providing a voltage failure condition signal when the decaying output of said storage circuit means crosses a predetermined threshold voltage value,

a current detection circuit for detecting a flow of current to said storage circuit means, said current detection circuit including means for generating a current detection condition signal in response to said detection of said flow of current, and

a pulse-prediction circuit for providing a current failure signal upon the absence of said detection of said flow of current.

4,642,617
ACOUSTIC TOOL BREAK DETECTION SYSTEM AND METHOD
 Charles E. Thomas, Scotia; Minyoung Lee, Schenectady; James F. Bedard, Schenectady, and Steven R. Hayasbi, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
 Filed Dec. 21, 1984, Ser. No. 685,005
 Int. Cl.⁴ G08B 21/00 10 Claims



1. An acoustic monitoring system to detect cutting tool

break events while machining a workpiece on a machine tool comprising:

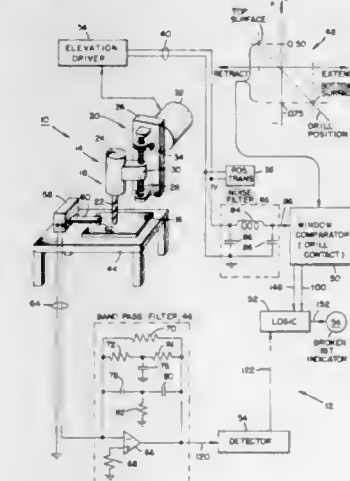
a broadband vibration sensor which generates an electrical signal representing vibrations at the tool-workpiece interface;

an analog preprocessor including means to discriminate against lower frequency machinery noise and to detect the signal energy in an acoustic frequency band below 100 KHz;

means for sampling the output signal of said analog preprocessor and converting each sample to a digital value;

digital pattern recognition circuitry to detect tool break events that produce gradually occurring, substantial changes in cutting conditions, comprising means for calculating the running mean signal level of N samples, means for determining when the cutting noise and mean signal level drops below a lower break detection threshold which is just above the continuous traverse noise level of said machine tool, and means for generating a tool break alarm after counting a preset number of low level cutting noise samples below the lower threshold.

4,642,618
TOOL FAILURE DETECTOR
 Eric A. Johnson, Vestal, and Lynn A. Price, II, Endicott, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.
 Filed Jul. 23, 1985, Ser. No. 757,897
 Int. Cl.⁴ G08B 21/00 14 Claims

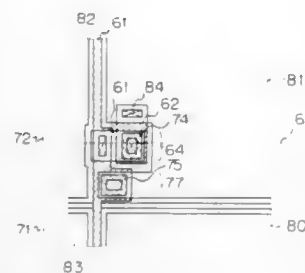


1. A tool failure detection system for use with machinery comprising a tool; means for supporting a workpiece in an operating region of said tool; and means for advancing said tool toward said workpiece for operating thereon and for providing a signal indicating position of the tool, an operation of said tool upon the workpiece inducing vibrations characteristic of said operation; said

means for sensing said vibrations; means coupled to said sensing means for analyzing said vibrations to determine proper operation of said tool, said analyzing means including means responsive to the position signal for designating when the tool is to be engaged with the workpiece; and means coupled to said analyzing means for indicating a failure in the operation of said tool.

A 4x4 grid of squares with alternating colors (R, G, B). The colors are arranged in a checkerboard pattern. The dimensions of the grid are indicated as a and b .

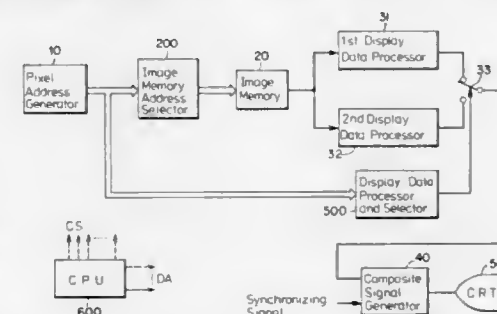
4,642,620
MATRIX DISPLAY DEVICE
Seigo Togashi, and Kanetaka Sekiguchi, both of Tokorozawa,
Japan, assignors to Citizen Watch Company Limited, Tokyo,
Japan
Filed Sep. 26, 1983, Ser. No. 536,105
Claims priority, application Japan, Sep. 27, 1982, 57-167944;
Sep. 27, 1982, 57-167945
Int. Cl.⁴ G09G 3/02
U.S. Cl. 340—713 22 Claims



semiconductor portion having a multi-layer configuration comprising at least a first semiconductor layer doped with a predetermined impurity concentration level and a second semiconductor layer having a substantially lower impurity concentration level than said first semiconductor layer and disposed overlapping said first semiconductor layer, said semiconductor layers of the thin film rectifier elements comprising amorphous silicon, with one rectifier element set of each of said pairs being connected in parallel with the other set of said pair, said sets in each pair being connected with mutually opposing polarities, and each of said display elements being connected in series with at least one of said non-linear resistance elements between one of said row and column electrodes;

the rectifier element sets of each of said pairs thereof being formed on said substrate with an electrically symmetrical configuration, such that electrical currents respectively generated in said pair of rectifier element sets due to the effects of light or heat will mutually cancel.

4,642,621
**IMAGE DISPLAY SYSTEM FOR COMPUTERIZED
 TOMOGRAPHS**
 Kayoko Nemoto, and Takeshi Ohya, both of Tokyo, Japan,
 assignors to Yokogawa Medical Systems, Limited, Tokyo,
 Japan
 Filed Mar. 27, 1984, Ser. No. 593,878
 Claims priority, application Japan, Nov. 29, 1983, 58-225184
 Int. Cl.⁴ G09G 1/00
 U.S. Cl. 340—721 1 Claim



and switching means for switching the output processed signals outputted from said first processor and said second processor;

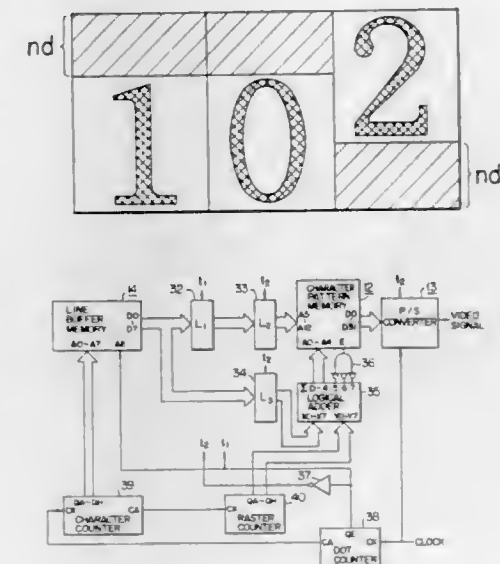
a composite signal generator, under control of said control means and connected through said switching means for obtaining output processed signals from either said first or said second processor, for generating composite video signals which are supplied to operate said display screen; and

display data processor selector, connected to said switching means and under control of said control means and receiving signals from said pixel generator, for determining pixel addresses representative of regions on said screen for selected display of images from signals outputted from a selected one of the first and second processors, and in response to such determination, for selectively operating said switching means to selectively apply output signals outputted respectively from either the first or the second processor to said composite signal generator;

wherein said image memory address selector comprises
a data bus connected to said address control means;
an ON-OFF register connected to said data bus for regis-
tering data indicative of condition for switching ON
and OFF said secondary image display on said screen;
a plurality of address registers connected to said data bus
and having designated therein one or more addresses in
said primary image memory block;
a discriminating means, connected to said pixel address
generator and to said primary address registers, for
discriminating addresses in said primary image memory
block by comparing the output of said plurality of ad-
dress registers and the output of said pixel address gen-
erator and generating thereby an output discriminating
signal;
one or more secondary address generators connected to
said data bus, each having designated therein addresses
in said one or more secondary image memory blocks;
and
address selecting means, connected to said pixel address
generator, said secondary address generators, and said
discriminating means, for selecting image memory ad-
dresses among the output of said pixel address generator
and the output of said one or more secondary address
generators, based on the output discriminating signal
from said discriminating means, and for supplying the
selected primary or secondary image addresses to said
image memory; and

wherein said display data processor selector comprises
data bus connected to said control means;
display data processing ON-OFF register for registering
data indicative of the condition for switching ON and
OFF said display data processing;
a plurality of primary address registers connected to said
data bus and having designated therein one or more
addresses in said primary image memory block; and
discriminating means, connected to said pixel address
generator and to said primary address registers, for
discriminating an address in said primary image mem-
ory block by comparing the output of said plurality of
primary address registers and the output of said pixel
address generator and for generating a switching signal,
said switching signal selectively operating said switch-
ing means to connect the output of either said first or
said second processor to said composite signal genera-
tor.

4,642,622
VIDEO SIGNAL GENERATING CIRCUIT
Syoichi Ito, Ibaraki, and Ken-ichi Akahori, Hitachi, both of
Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 4, 1983, Ser. No. 481,937
Claims priority, application Japan, Apr. 5, 1982, 57-55410
Int. Cl.⁴ G09G 1/06



1. A video signal generating circuit for generating a video signal representative of character pattern data to be produced on a page line, comprising:

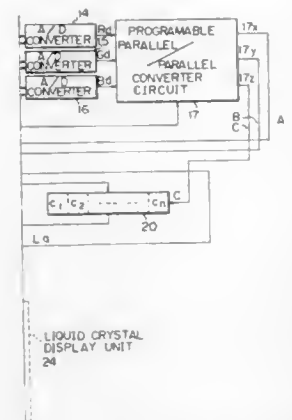
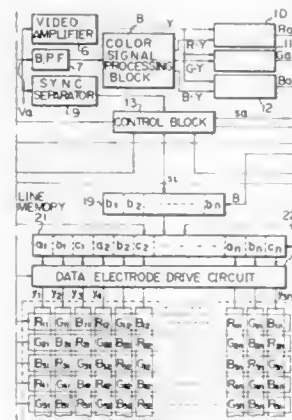
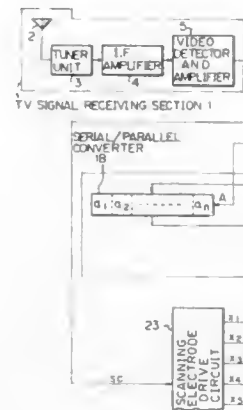
on a page line, comprising:

- a character pattern memory containing a plurality of different character pattern patterns stored therein, each of said character patterns being stored in bit data form in a predetermined number of scan lines, said character pattern memory having a first address input portion for selecting one of the stored character patterns and a second address input portion for selecting one of the scan lines for the selected character pattern;
- buffer memory means supplied with and storing character codes of characters to be produced in at least one page line, said buffer memory means having control data previously stored therein for controlling the respective vertical positions of the characters to be produced, which control data includes position data for the respective character patterns stored in said character pattern memory, each of said character codes read from said buffer memory means forming an address signal which is applied to said first address input portion of said character pattern memory to select one of the character patterns in said character pattern memory corresponding to the character to be produced and is also applied to said buffer memory means as an address signal to selectively read out one of the position data corresponding to the read character code; and
- a control circuit for controlling the sequential reading of the character codes from said buffer memory means, the sequential reading of the control data corresponding to the read character codes from said buffer memory means and the sequential reading of the character pattern data from said character pattern memory, said control circuit including logical operation means for performing a predetermined logical operation using the control data read from said buffer memory means to produce a first signal which is applied to said second address input portion of said character pattern memory for selecting one of the scan lines in the selected character pattern and a second signal which indicates whether or not the reading of the

- a color liquid crystal display unit having a matrix array of liquid crystal display elements with scanning electrodes and data electrodes, and a matrix array of red, green and blue color filters positioned in correspondence with said liquid crystal display elements, said red, green and blue color filters being arrayed along each row of said matrix such as to be arranged in respectively different sequences in mutually adjacent rows;
- a data electrode drive circuit for applying drive signals to said data electrodes and a scanning electrode drive circuit for sequentially selecting rows of said display element matrix by applying drive signals to said scanning electrodes;
- a line memory for storing display data for successive ones of said rows of display elements and for applying said data to said data electrode drive circuit;
- a control section for producing a plurality of control and

timing signals including signals for controlling sequential driving of said scanning electrodes whereby each of said liquid crystal display element rows is driven in accordance with said display data during a corresponding horizontal scanning interval of fixed duration during each of successive frame intervals;

a source of successively produced sets of parallel R (red), G (green) and B (blue) digital color signals each comprising



at least one bit and constituting said display data for a mutually adjacent set of liquid crystal display elements in a row of said matrix;

selection switch control means having a plurality of output terminals and having a plurality of input terminals coupled to receive said R, G and B digital color signals from said source thereof, and responsive to control signals produced by said control section for transferring respective ones of

said R, G and B digital color signals from said input terminals to specific ones of said output terminals in accordance with the status of display matrix row selection, and;

signal shifting circuit means coupled to receive said R, G and B digital color signals from said output terminals of said selection switch control means, and acting to arrange said R, G and B digital color signals, successively output in parallel from said output terminals during each of said horizontal scanning intervals, in a fixed array sequence during said each horizontal scanning interval;

said line memory being responsive to one of said timing signals from said control section for storing said sequentially arrayed contents of said signal shifting circuit means therein at the termination of said each horizontal scanning interval.

4,642,629 ENHANCED DISTANCE DATA TRANSMISSION SYSTEM

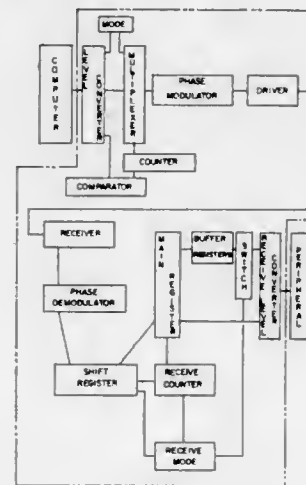
James H. Milligan, Shoreview, Minn., assignor to Megabit Communications, Inc., Little Canada, Minn.

Continuation-in-part of Ser. No. 486,427, Apr. 18, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 596,858

Int. Cl.⁴ H04Q 1/00

U.S. Cl. 340—825

20 Claims



1. A logic system for transferring digital data between parallel channel digital data external devices, said logic system having a first end equipped with an incoming parallel channel and an outgoing parallel channel interfaced with a first said parallel channel external device, and a second end equipped with an incoming parallel channel and an outgoing parallel channel interfaced with a second said parallel channel external device, each said end of said logic system being equipped with a serialization means for serializing into serial form bytes of parallel channel digital data signals incoming to said logic system, a transmission means for transmitting the serial form of incoming parallel digital data signals to the other end of said logic system, and a converting means for converting serial form digital data signals transmitted thereto from the other end of said logic system into parallel form, said logic system being further characterized by the fact that it consists of said first and second ends opposite each other and transmission media linking said ends together, and by the fact that features of said ends include:

mode setting means within the first end for effecting the formation of distinctive mode digital signals for each different digital data message handling mode of said logic system, there being more than one possible said message handling mode for said entire logic system, one being termed a first said message handling mode, and another being termed a second said message handling mode, said

first message handling mode being the normal message handling mode for said entire logic system, said mode setting means including a means for establishment at least said second message handling mode by combining signals from predetermined locations in a parallel byte of digital data signals incoming to said first end from said first external device,

means for including said mode digital signals in a transmission by said first end transmission means to said second end,

decoding means within said second end for processing said mode digital signals transmitted to said second end so as to effect the formation of signals for conforming said second end to the message handling mode set by said first end, buffer means within the second end, effectively placed in operation only under said second message handling mode, for temporarily storing a predetermined type of digital data signals transmitted to said second end from said first end,

monitoring means within the first end, effectively placed in operation only under said second message handling mode, for monitoring the availability of digital data signal storage space in said buffer means at said second end, and facilitating means within the first end, effectively placed in operation under said second message handling mode, for generating within said first end a return signal or signals from a portion of the parallel channel digital data signals incoming from the first external device and for returning said return signal or signals back to said first external device to facilitate further output of parallel channel digital data signals by said first external device during the times said monitoring means indicates said buffer means has storage space available.

4,642,630 METHOD AND APPARATUS FOR BUS CONTENTION RESOLUTION

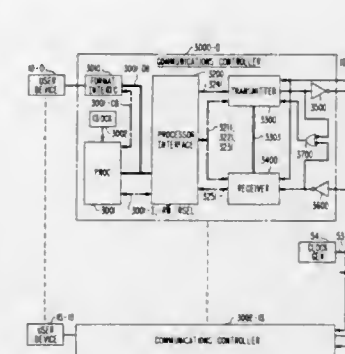
Mark W. Beckner, Warrenville, and Thomas J. J. Starr, Wheaton, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1982, Ser. No. 453,929

Int. Cl.⁴ H04Q 1/00

U.S. Cl. 340—825.5

16 Claims



1. A system for communicating among a plurality of user devices via a bus, said system comprising a plurality of communications controllers each comprising

transmitter means for selectively coupling at least one of said plurality of user devices to said bus to transmit information in frames, each frame including a priority field and receiver means comprising means for monitoring said bus

and means for storing priority fields conveyed on said bus and

wherein the transmitter means of a first communications controller further comprises means responsive to a request signal from a first user device and to a priority field of a first frame presently being conveyed on said bus, said priority field of said first frame being stored by the receiver means of said first communications controller, for coupling said first user device to said bus to preemptively transmit, before the completion of said first frame, a second frame having a higher priority than the priority indicated by said priority field stored by said receiver means of said first communications controller.

4,642,631 INTERACTIVE SECURITY SYSTEM

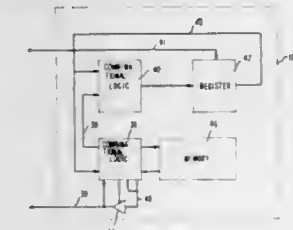
Stanley C. Rak, 72711 Belair Rd., Palm Desert, Calif. 92260

Continuation of Ser. No. 667,377, Nov. 1, 1984, abandoned. This application Feb. 12, 1986, Ser. No. 829,461

Int. Cl.⁴ H04Q 1/00

U.S. Cl. 340—825.31

30 Claims



1. An interactive security system for controlling access, comprising:

conditional state means for cycling through a sequence of logic states with a first logic state varying as a function of the present state of said conditional state means, said conditional state means having an input for receiving control signals, at least one output and monitoring means for evaluating the condition of said at least one output and a conductor connected thereto;

means for applying control signals to said input and for receiving signal information from said at least one output; said means for applying responsive to signal information of one condition from said output to apply a first logic level to said conductor connected to said at least one output and apply additional control signals to said input and responsive to signal information of another condition to apply additional control signals to said input, said monitor means acting in the presence of said first logic level to place said conditional state means in an initial condition to cause a sequence of logic states to be read in response to said control signals;

means for storing a predetermined state signal;

means for comparing;

means for establishing bi-directional communication between said conditional state means and said means for comparing, said conditional state means being removable from said bi-directional communication means,

said means for comparing receiving a state signal produced from said removable conditional state means, comparing said produced state signal to said stored predetermined state signal, and enabling access in response to the production of a proper sequence of logic states as indicated by said comparison of said produced state signal to said stored state signal.

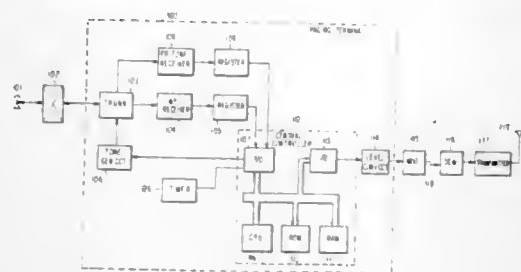
4,642,632 DIGITAL PAGING SYSTEM HAVING BIT RATE SWITCHING MEANS AND DIGITAL PAGING RECEIVER THEREFOR

Takashi Ohyagi, and Yoshio Ichikawa, both of Tokyo, Japan,
assignors to NEC Corporation, Tokyo, Japan
Filed Oct. 17, 1983, Ser. No. 542,820

Claims priority, application Japan, Oct. 15, 1982, 57-
155820[U]

Int. Cl.⁴ H04Q 7/00
U.S. Cl. 340—825.44

10 Claims



1. A paging receiver comprising:
receiving means for receiving a carrier wave which is modulated with a paging signal including first coded pulse sequences of a first transmission rate and second coded pulse sequences of a second transmission rate, said first and second transmission rates differing from each other, said first and second coded pulse sequences including first and second predetermined bits, respectively, said second pulse sequences bring comprised of a first codeword and n codewords following said first codeword, n being zero or a positive integer, said second pulse sequence further including third predetermined bits which follow said second predetermined bits and represent the number of said n codewords;
demodulating means for demodulating the received carrier wave;
low-pass filter means coupled to the output of said demodulating means for switching the first cut-off frequency thereof to the second one to pass said second coded pulse sequences when said first means receives a first control signal and switching said second cut-off frequency to said first one to pass said first coded pulse sequences when said filter means receives a second control signal; and
data processing section means coupled to the output of said low-pass filter means for generating said first control signal at the end of said first coded pulse sequences when said first coded pulse sequences coincide with a third coded pulse sequence unique to said paging receiver, generating said second control signal at the end of said second coded pulse sequences in response to the reception of said second predetermined bits and in accordance with the content of said third predetermined bits, and decoding the passed first and second coded pulse sequences.

4,642,633 INDIVIDUAL SIMULCAST STATION CONTROL SYSTEM

Stephen H. Dunkerton, Riverwoods, Ill.; Gary R. Reynolds, Twin Falls, Id.; Scott G. Chapman, Schaumburg, and Gary D. Erickson, Mt. Prospect, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1983, Ser. No. 520,790
Int. Cl.⁴ H04B 7/00; H04Q 7/00

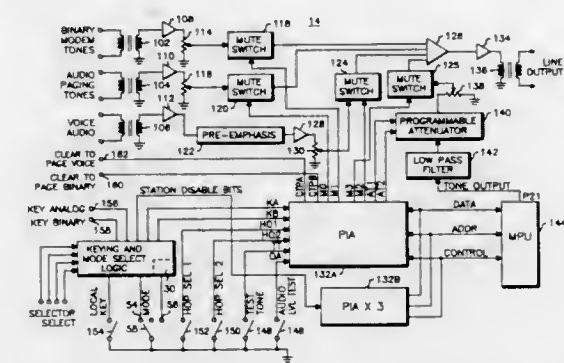
U.S. Cl. 340—825.76

7 Claims

1. A remote control system for selective control of particular transmitters in a simulcast transmission system, said system receiving signals from a paging terminal and combining paging

information with transmitter control information, said remote control system comprising:

- (a) encoding means for encoding transmitter control information and paging information in a predetermined sequence, wherein said transmitter control information comprises a series of transmitter inhibit tones;
- (b) linking means coupled to said encoding means for transferring said encoded information from said encoding means;
- (c) individual decoding means, located at each particular



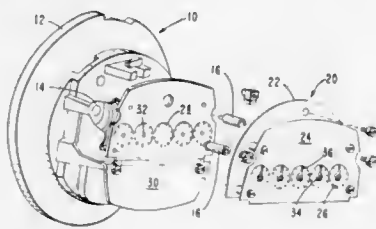
- transmitter, coupled to said linking means for decoding said encoded transmitter control information, said decoding means detecting the presence of said series of transmitter inhibit tones and generating a disabling transmitter control signal in response thereto; and
- (d) transmitter means coupled to said decoding means for transmitting said encoded paging information, wherein said transmitter is further responsive to said disabling transmitter control signal for inhibiting the transmission of said encoded paging information if said control signal is present.

4,642,634 OPTICAL ENCODER

Edward J. Gerri, Riverdale, N.J., and David P. Eisenhauer, Greer, S.C., assignors to NCR Corporation, Dayton, Ohio
Filed Sep. 18, 1984, Ser. No. 651,721

Int. Cl.⁴ G08C 19/16
U.S. Cl. 340—870.02

21 Claims



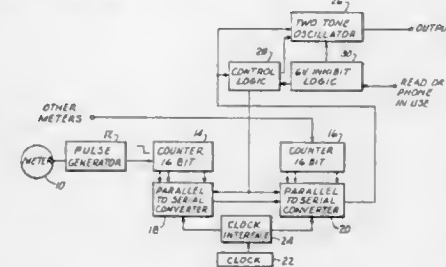
1. Encoding apparatus secured to and for use with a utility meter having at least one dial register carried on a shaft and arranged to be responsive to registering of energy consumption, said apparatus comprising
clock means,
at least one modular assembly having at least one dial register axially corresponding and operably coupled to the dial register of the utility meter and having a slotted wheel for movement with the dial register of the modular assembly, radiation source means and means for sensing the radiation source means,
means operably associated with the modular assembly for interrupting beams of radiation from said radiation source means,

means responsive to detection by the radiation sensing means of interruption of the beams of radiation for outputting signals, and
programmable means including a serial communications link enabling at least one of a plurality of metering functions to be performed at times set by said clock means for converting the output signals into code form for transmission thereof to a facility remote from the utility meter.

4,642,635 REMOTE METER READING SYSTEM Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107 Continuation-in-part of Ser. No. 326,020, Nov. 30, 1981, abandoned. This application Jun. 29, 1984, Ser. No. 626,207 Int. Cl.⁴ H04Q 9/00

U.S. Cl. 379—107

12 Claims



1. A remote meter reading system for reading meters over unconventional lines such as telephone lines or the like comprising:
digital pulse generating means for generating a digital pulse representing incremental movements of said meter;
connecting means connecting such digital pulse generating means to said meter;
counting means for counting the pulses from said digital pulse generating means;
storage means for storing the counts from said counting means;
scanning means for scanning said storage means and converting said counts stored in said storage means to digital information for transmission over said phone lines;
logic detection means for detecting the logic state of the output from said storage means;
tone generating means connected to said logic detecting means;
said tone generating means generating a plurality of tones in a predetermined frequency range representing logic zero or logic one;
whereby usage recorded by a utility meter may be remotely read.

4,642,636 METHOD AND APPARATUS FOR AUTO-CALIBRATION OF SIGNAL CONDITIONING ELECTRONICS

John R. Smith, Monroeville; Thomas J. Kenny, Pittsburgh; Kingsley F. Graham, Murrysville; James A. Neuner, Richland Township; Douglas A. Bauman, Monroeville; Timothy F. Thompson, Pittsburgh; William W. Wassel, Penn Township; Dhalipala M. Rao, Pittsburgh, and David G. Theriault, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

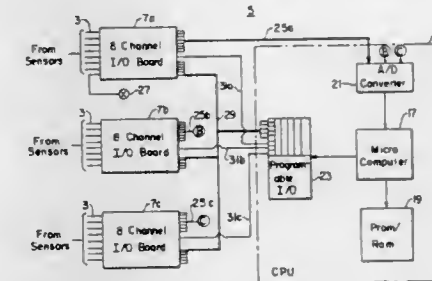
Continuation-in-part of Ser. No. 552,232, Nov. 16, 1983,
abandoned. This application Dec. 30, 1983, Ser. No. 567,456
Int. Cl.⁴ H04Q 9/00; G05B 23/02

U.S. Cl. 340—870.04

20 Claims

1. Apparatus for conditioning and calibrating a raw electrical signal comprising:
a printed circuit board having an input termination for said raw electric signal, a conditioning circuit connected to the input termination for conditioning the raw electrical signal to generate a conditioned electrical signal and an

output termination for outputting the conditioned electrical signal;
test means for selectively disconnecting the conditioning circuit from the input termination and for connecting test signals of known magnitude to the conditioning circuit; processing means connected to said output termination, for calibrating the conditioning circuit by controlling said test means to connect said test signals to said conditioning circuit to generate conditioned test signals, generating a calibration factor as a function of said test signals and said conditioned test signals, operating said test means to re-



- connect said raw electrical signal to said conditioning circuit so that said conditioned electrical signal again appears on said output termination and applying said calibration factor to said conditioned electrical signal to generate a calibrated conditioned electrical signal; and
monitoring means including temperature sensing means for sensing the temperature of said conditioning circuit, said processing means being responsive to the temperature sensed by said sensing means to perform said calibration when said temperature changes by a preselected amount since the last calibration.

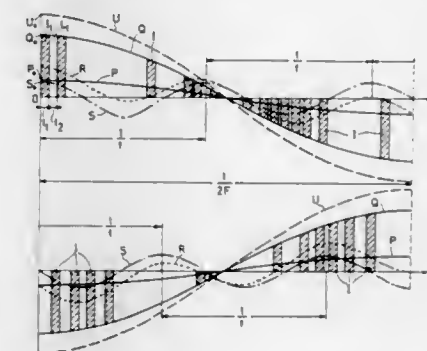
4,642,637 METHOD FOR TRANSMITTING DATA VIA A LINE OF AN ALTERNATING CURRENT DISTRIBUTION NETWORK, AND A TRANSMITTER FOR CARRYING OUT THE METHOD

Hanspeter Baer, Uster, Switzerland, assignor to Zellweger Uster, Ltd., Uster, Switzerland

Filed Aug. 20, 1985, Ser. No. 767,597
Claims priority, application Switzerland, Aug. 27, 1984,
4077/84; Apr. 3, 1985, 1445/85

Int. Cl.⁴ H04M 11/04
U.S. Cl. 340—870.19

27 Claims



1. A method for transmitting data via a line of an alternating current distribution network, in which a current signal carrying the data to be transmitted is generated and input into the network, comprising the steps of generating a current signal as a load signal by periodically connecting a load to a voltage source of the distribution network via a switch repeatedly for

short time intervals in order to transmit on the line of the distribution network a series of current pulses whose times of generation and/or duration are such that the resulting transmitted current signal corresponds at least approximately to a desired theoretical signal of predetermined frequency, and modulating said transmitted current signal with data to produce said current signal carrying the data to be transmitted.

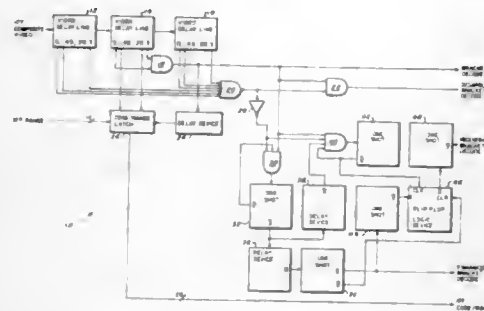
4,642,638
APPARATUS FOR GENERATING
ENHANCED/REGENERATIVE BRACKET DECODE
SIGNALS

Patrick O. Callahan, Jr., Lusby, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 27, 1983, Ser. No. 507,658
Int. Cl.⁴ G01S 13/75

U.S. Cl. 342-45

7 Claims



1. An apparatus for generating enhanced and regenerative bracket decode signals from IFF composite video, and for detecting the proper number of replies from the IFF composite video regardless of their spacings, comprising:

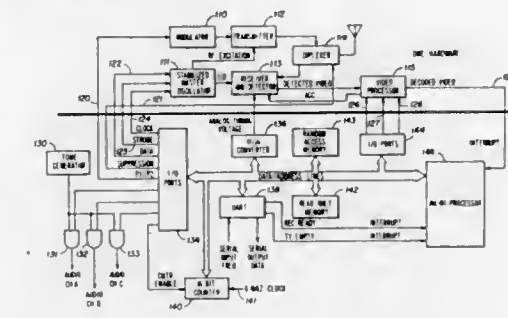
- a first video delay line for receiving and delaying the IFF composite video a predetermined amount;
- a second video delay line operatively connected at its input to said first video delay line for additionally delaying the delayed IFF composite video the same predetermined amount;
- a third video delay line operatively connected at its input to said second video delay line for still additionally delaying the twice delayed IFF composite video still the same predetermined amount;
- a bracket decode AND gate operatively connected at its input to two taps of said second video delay line, the two taps having predetermined delay spacings such that the output of said bracket decode AND gate is a bracket decode signal;
- a degarbled bracket decode NOR gate operatively connected at its input to predetermined taps of said first and third video delay lines for generating a "kill junction" signal at its output from the code information at its input;
- a degarbled bracket decode AND gate operatively connected at its input to the output of said bracket decode AND gate and said degarbled bracket decode NOR gate for ANDing the bracket decode signal and the "kill junction" signal at its input to produce a degarbled bracket decode signal;
- an inverter operatively connected to the output of said degarbled bracket decode NOR gate for inverting the "kill junction" signal thereat;
- enhanced bracket decode means operatively connected at its input to the output of said inverter and said bracket decode AND gate for generating an enhanced bracket decode signal from the inverted "kill junction" signal and the bracket decode signal; and
- regenerative bracket decode means operatively connected at its input to the output of said inverter, said bracket decode

AND gate and said enhanced bracket decode means for generating a regenerative bracket decode signal.

4,642,639
MULTICHANNEL DME RANGING SYSTEM
David A. Nelson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sep. 30, 1983, Ser. No. 537,879
Int. Cl.⁴ G01S 13/76

U.S. Cl. 342-47

7 Claims



1. An apparatus for identifying at least three distance-measuring equipment ground stations substantially simultaneously and for decoding distance information from each of said stations, in rapid cyclical sequence, comprising:

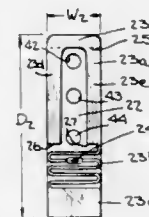
- a. means for detecting first, second, and third pulsed signals from said ground stations, respectively, in sequence and in a cyclical manner, wherein said pulsed signals contain coded identifying information individual to each ground station and have a first timing characteristic, and distance information having a second timing characteristic substantially shorter than said first timing characteristic; and
- b. means for operating said means for detecting, and coupled thereto, at a cyclical frequency approximately an order of magnitude faster than said first timing characteristic, and for maintaining each cyclical period at least long enough to obtain valid distance information, on the order of said second timing characteristic, at least once for each of said stations in each cyclical period.

4,642,640
SIGNAL RECEPTOR-RE-RADIATOR AND
SURVEILLANCE TAG USING THE SAME
Charles W. Woolsey, Deerfield Beach; Ezra D. Eskandry, Miami, and George G. Pinneo, Ft. Lauderdale, all of Fla., assignors to Sensomatic Electronics Corporation, Deerfield Beach, Fla.

Filed Apr. 25, 1983, Ser. No. 488,077
Int. Cl.⁴ G01S 13/80

U.S. Cl. 342-42

7 Claims



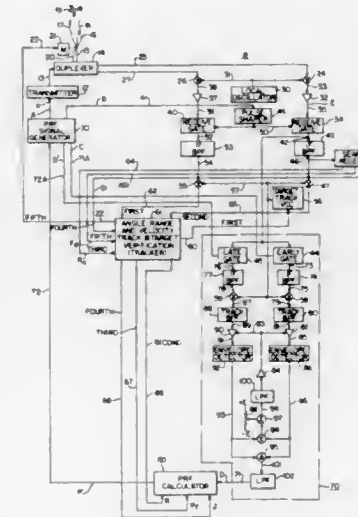
1. A signal receptor-radiator component for operation in a surveillance system, said component comprising in combination an antenna frame and a semiconductor small-signal diode, said antenna frame being formed of electrically conductive material providing from a first end to a second end a continuous conductive path except for a gap located at an intermediate

point across which is connected said diode, said path commencing at said first end having a first width that remains substantially constant for a first distance, whereupon said path narrows substantially to a second width substantially less than said first width and continues with substantially said second width past said gap and for a distance beyond said gap exceeding the distance covered by said second width preceding said gap, whereupon said path widens again and continues thus widened to said second end to provide an enlarged portion having a surface area different from the surface area of the path over said first distance and having no transverse dimension as small as said first width, said path being folded to be wholly contained within an outer boundary that encircles an area of no more than 2 square inches.

4,642,641
VARIABLE PRF TARGET TRACKING RADAR
Robert R. Campbell, Towson, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 29, 1976, Ser. No. 709,678
Int. Cl.⁴ G01S 13/12

U.S. Cl. 342-82

14 Claims



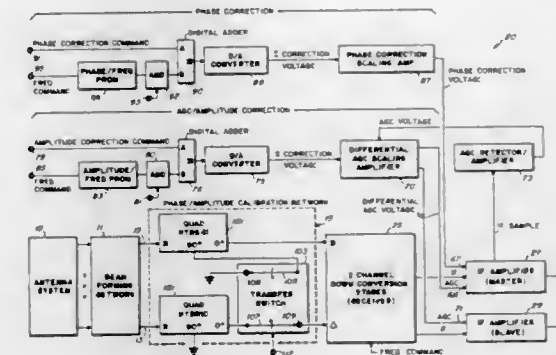
1. A method of tracking a moving target in a high PRF radar mode wherein initial target range and doppler frequency information is provided, comprising generating a high PRF signal, said signal being constituted by a series of time spaced pulses, transmitting said high PRF signal, repeatedly receiving at least a portion of one of said pulses of target reflected high PRF signal during a predetermined receive time interval between said time-spaced pulses of said high PRF signal being transmitted, reducing spurious signals in the target reflected high PRF signal below a predetermined level which are incidentally generated by modulation of the main beam clutter, said modulation results from receiving during said predetermined receive time intervals, tracking the doppler frequency of said target reflected signals to provide a signal indicative of target velocity, generating a target range signal indicative of the present target range utilizing said initial range, target velocity signal and the time lapsed from the time of the initial range measurement, repeatedly comparing the arrival of one of said pulses of a target reflected high PRF signal with said predetermined receive time interval to provide an early/late signal indicative of whether said pulse of a target reflected high PRF signal is centered with respect to said predetermined receive time interval, varying the PRF of said high PRF signal by calculating a

new PRF based upon said target range, target velocity and early/late signal to align said pulses of said target reflected signal towards the center of said predetermined receive time intervals.

4,642,642
ADAPTIVE MONOPULSE PHASE/AMPLITUDE
CALIBRATION CORRECTION SYSTEM
Stephen J. Uurtamo, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 29, 1984, Ser. No. 665,897
Int. Cl.⁴ G01S 7/40

U.S. Cl. 343-165

11 Claims



11. A method of phase/amplitude calibration correction in an adaptive monopulse system comprising the steps of: receiving a desired signal in an antenna system and beam forming network portion of the monopulse system, said portion of the monopulse system supplying a pair of output signals in response to the reception of the desired signal; connecting one of the pair of output signals, unchanged in phase, to one input of a receiver having dual channels and an input for each channel; shifting the phase of the one output signal, by approximately 90° and connecting it to the second input of the receiver; adjusting phase and amplitude of at least one of the dual channels until an output indicative of azimuth angle is at a null and an output indicative of the difference in amplitude between the dual channels is at a null; and disconnecting the phase shifted one output signal from the second input of the receiver and connecting the other of the pair of output signals to the second input.

4,642,643
NOISE JAMMER DISCRIMINATION BY NOISE
SPECTRAL BANDWIDTH
Carl D. Wise, Severna Pk., and Frank W. Hays, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

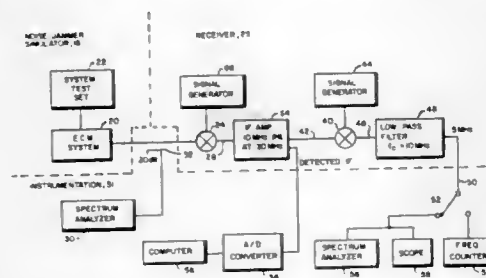
Filed Jun. 7, 1984, Ser. No. 618,288
Int. Cl.⁴ G01S 7/36

U.S. Cl. 342-14

3 Claims

1. A method of distinguishing between multiple noise jammer sources having different noise spectral bandwidths comprising the steps of: (a) detecting noise signals emitted by a selected noise jammer source by means of a receiver having a narrow bandwidth compared to the potential minimum spectral bandwidth of said noise signals; (b) forming noise pulses as said noise signals from said noise jammer source sweep through the bandwidth of said receiver; (c) determining the average duty cycle of said noise pulses; and

(d) characterizing the noise spectral bandwidth from said duty cycle and from the known bandwidth of said receiver to uniquely identify said selected noise jammer source.



ceiver to uniquely identify said selected noise jammer source.

4,642,644 NOISE JAMMER DISCRIMINATION BY NOISE MODULATION BANDWIDTH

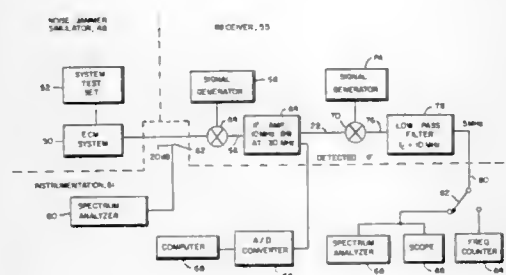
Carl D. Wise, Severna Park; Frank W. Hays, Ellicott City, and Thomas K. Lisle, Jr., Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 7, 1984, Ser. No. 618,287

Int. Cl.⁴ G01S 7/36

U.S. Cl. 342-14

3 Claims



1. A method of distinguishing between multiple noise jammer sources having different noise modulation bandwidths comprising the steps of:

- (a) detecting noise signals emitted by a selected noise jammer source by means of a receiver having a bandwidth substantially the same as the potential minimum spectral bandwidth of said noise signals;
- (b) forming noise pulses as said noise signals from said noise jammer source sweep through the bandwidth of said receiver;
- (c) determining the dwell time of said noise pulses; and
- (d) characterizing the noise modulation bandwidth from said dwell time and from the known bandwidth of said receiver to uniquely identify said selected noise jammer source.

4,642,645 REDUCING GRATING LOBES DUE TO SUBARRAY AMPLITUDE TAPERING

Randy L. Haupt, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 7, 1985, Ser. No. 731,646

Int. Cl.⁴ G01S 3/16; H01Q 3/22

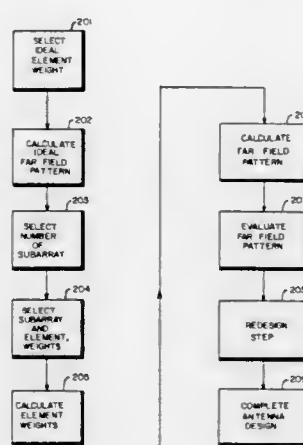
U.S. Cl. 342-379

11 Claims

1. In combination with a phased array antenna containing a plurality of antenna elements which may be divided up into groups called subarrays, with each subarray producing an output signal which receives a subarray amplitude tapering

before being summed into an array output signal, a process of reducing grating lobes in a far field antenna pattern of said phased array antenna, said grating lobes being caused by said subarray amplitude tapering, said process comprising the steps of:

- a first selecting step in which an ideal exact element amplitude taper for all the individual elements in the phased array antenna is selected, said ideal exact element amplitude taper being a distribution of amplitude weights which, if distributed over the plurality of antenna elements, would result in an ideal far field antenna pattern with low sidelobes;
- a first calculating step in which the ideal far field antenna pattern resulting from use of said ideal exact element amplitude taper is calculated;
- a second selecting step in which the number of subarrays m , each containing n elements, is selected such that the product of $(m) \times (n)$ equals N , and N equals the total number of antenna elements in the phased array antenna;
- a third selecting step in which a set of subarray amplitude weights (b_m) is selected for each of said m subarrays and a set of individual element weights (a_{mn}) is selected for



each of the N antenna elements in the phased array antenna such that the product of $(b_m) \times (a_{mn})$ approximately equals A_{mn} where A_{mn} equals the value of the ideal exact element amplitude taper for each of the individual antenna elements selected in the first selecting step;

a second calculating step, in which a calculation is made for a value, a set of actual element amplitude weights, such that each n th actual element amplitude weight is identical for corresponding elements in an identical subarray and is given by a set a'_{mn} where each n th element amplitude weight in the set a'_{mn} is obtained by averaging the value of each corresponding n th element amplitude of said set of individual element weights a_{mn} selected in said third selecting step; and

an antenna design completion step which adjusts said phased array antenna's design to include the set of subarray amplitude weights (b_m) and actual element amplitude weights a'_{mn} obtained in said second calculating step to produce a configuration that reduces the grating lobes in the far field antenna pattern caused by the subarray amplitude tapering while simplifying said phased array antenna's design by containing groups of identical subarrays.

4,642,646 AUTOMATIC SENSITIVITY ADJUSTMENT AND AUDIO MUTING FOR AIRCRAFT MARKER BEACON RECEIVER

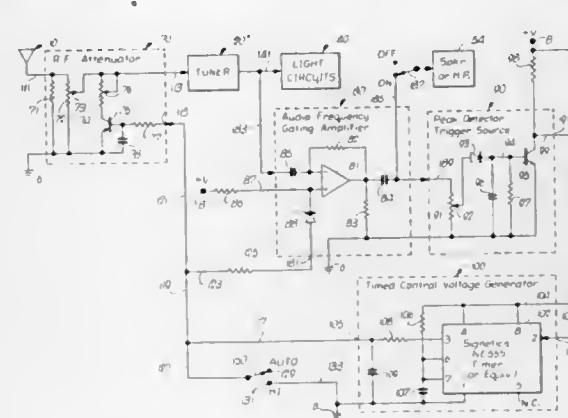
Noel A. Rogers, 9121 W. 70th St., Shawnee Mission, Kans. 66204

Filed Jun. 12, 1984, Ser. No. 619,808

Int. Cl.⁴ G01S 1/04

U.S. Cl. 342-407

7 Claims



1. In an aircraft marker beacon receiving and indicating system adapted to respond automatically to proximity of aircraft to beacon and having an antenna for picking up signals in the nature of a radio frequency carrier wave amplitude modulated at a distinctive audio frequency characteristic of the ground-based beacon from which said signals are being transmitted and of an amplitude varying with the disposition of said antenna relative to said beacon, a radio receiver provided with an input terminal adapted to be coupled with said antenna and including means for receiving, amplifying and demodulating said signals to provide an output of said audio frequency at an output terminal of said receiver, audio transducer means adapted to be coupled with said output terminal of said receiver for audibly reproducing said output, and optical indicating means adapted to be coupled with said output terminal of said receiver for visually displaying an aspect of said output, the improvement of which comprises:

radio frequency attenuator means having a radio frequency signal input terminal, a radio frequency signal output terminal and a control voltage input terminal, said attenuator means being operable to attenuate radio frequency signals passing from said signal input terminal thereof to said output terminal thereof by a predetermined amount when a control voltage is applied to said control input terminal thereof and to pass said radio frequency signals without substantial attenuation when said control voltage is not applied to said control terminal thereof;

audio frequency signal gating means having an audio frequency input terminal, an audio frequency output terminal and a control voltage input terminal, said gating means being operable to block passage of audio frequency signals from said signal input terminal thereof to said signal output terminal thereof when a control voltage is applied to said control input terminal thereof and to permit said signals to pass from said signal input terminal thereof to said signal output terminal thereof when said control voltage is not applied to said control input terminal thereof;

audio frequency signal amplitude responsive, trigger signal producing means having an audio frequency signal input terminal and a trigger signal output terminal, said producing means being operable to produce a trigger signal at said output terminal thereof only when the amplitude of audio frequency signals applied to said input terminal thereof is of at least a predetermined level;

trigger signal responsive, timed control voltage generating means having a trigger signal input terminal and a control voltage output terminal, said generating means being operable to generate at said output terminal thereof a control voltage for a predetermined period of time only in response to the application of a trigger signal to said trigger signal input terminal thereof;

means for coupling said antenna with said input terminal of said attenuator means;

means for coupling said output terminal of said attenuator means with said input terminal of said receiver;

means for coupling said output terminal of said receiver with said optical indicating means;

means for coupling said output terminal of said receiver with said signal input terminal of said gating means;

means for coupling said output terminal of said gating means with said audio transducer means;

means for coupling said output terminal of said gating means with said signal input terminal of said producing means;

means for coupling said output terminal of said producing means with said trigger signal input terminal of said generating means;

means for coupling said control voltage output terminal of said generating means with said control voltage input terminal of said attenuator means; and

means for coupling said control voltage output terminal of said generating means with said control voltage input terminal of said gating means.

4,642,647 SIGNAL GENERATOR FOR RADIO NAVIGATION SYSTEM

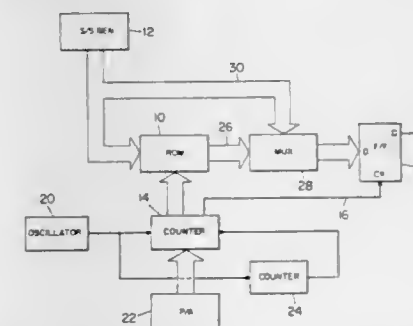
Mark A. Sturza, Woodland Hills; Wayne L. Knitter, Chatsworth, and Yi-Zen Wu, Woodland Hills, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 29, 1983, Ser. No. 527,124

Int. Cl.⁴ G01S 1/10; H04B 7/19; H04L 25/38

U.S. Cl. 342-415

5 Claims



1. A multiple code generator for use in a radio navigation system of the type wherein location is determined in accordance with multiple spatially-distributed radio frequency signal fixings, each of said signal fixings comprising a radio frequency signal of preselected coding, said code generator comprising, in combination:

- a read only memory for storing a plurality of bit sequences, each of said sequences comprising a predetermined code of said navigation system;
- means coupled to said read only memory for accessing preselected bit sequences;
- means for applying a predetermined bit rate and phase shift to said sequences, said means including a counter; and
- means for outputting said preselected bit sequences.

4,642,648

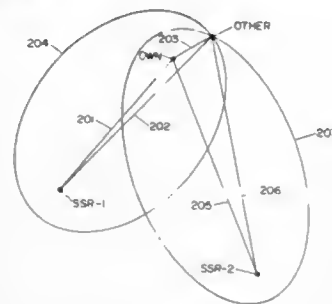
SIMPLE PASSIVE/ACTIVE PROXIMITY WARNING SYSTEM

Burton L. Hulland, Glenwood Landing, and George B. Litchford, Northport, both of N.Y., assignors to Litchstreet Co., Northport, N.Y.

Continuation-in-part of Ser. No. 351,275, Feb. 22, 1982, Pat. No. 4,486,755. This application Mar. 14, 1984, Ser. No. 589,524 Int. Cl.⁴ G01S 3/02

U.S. Cl. 342—455

38 Claims



1. A proximity warning system for an Own station, comprising:

- (a) means for selectively enabling the production and transmission of interrogation messages at Own station at least in part in response to the SSR environment sensed at Own station;
- (b) means for producing from received interrogation messages transmitted by SSRs within operational range of said Own station and received reply messages transmitted by transponder-equipped Other stations in response to said SSR interrogation messages during a predetermined period following reception of each said interrogation message at Own station, a differential time of arrival value for each of said Other stations with respect to each of said SSRs;
- (c) means for producing from received reply messages transmitted by said Other stations in response to said interrogation messages from Own station during a predetermined period following transmission of each said interrogation message from Own station, a direct time of arrival value for each of said Other stations with respect to Own station;
- (d) means for selecting from among the several most recent time of arrival values produced by means (b) if any and by means (c) if any, the largest time of arrival value associated with each of said Other stations that has been substantially duplicated a predetermined number of times; and
- (e) means for producing a threat alert output in response to any time of arrival value selected by means (d) that is below a predetermined value.

4,642,649

PASSIVE RANGING METHOD AND APPARATUS USING INTERFEROMETRIC SCANNING

Fred M. Lightfoot, Burton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1983, Ser. No. 537,498 Int. Cl.⁴ G01S 3/14

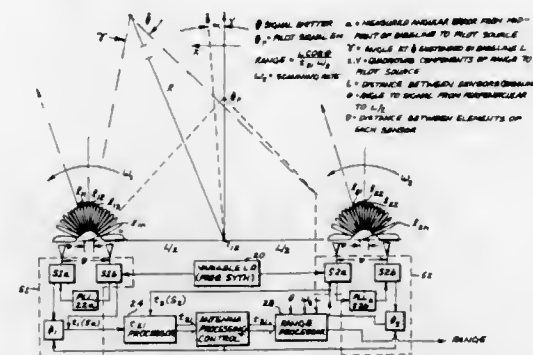
U.S. Cl. 342—458

16 Claims

14. In an apparatus for determining the range R of a distant source Φ of radio frequency emission from a monitoring platform that has first and second directional sensors mounted on the platform at space locations separated by baseline of length L, and has scanning means for synchronously scanning the first and second directional sensors at a scan rate ω_s across a field containing the source Φ to cause the sensors to produce reception signals responsive to source Φ that have a time differential t_{21} from which the range R is computed, the improvement is said apparatus wherein:

said first and second sensors comprise radio frequency inter-

ferometers formed by an array of multiple antenna elements in which each of the first and second thusly formed interferometer sensors exhibit a gain pattern of multiple, substantially equal strength, finger-like lobes extending generally radially outward from a center of the sensor; wherein said scanning means comprises electronic steering circuit means coupled to said multiple antenna element to cause said patterns of multiple lobes associated with each



of said first and second interferometer sensors to move in synchronism relative to said platform to scan across the field in which source Φ is located; and pilot signal source mounted on said platform at a fixed distance from said first and second interferometer sensors, and wherein said scanning means includes means for phase-lock synchronization of the signals developed by said first and second sensors to a pilot signal emitted by said pilot signal source.

4,642,650

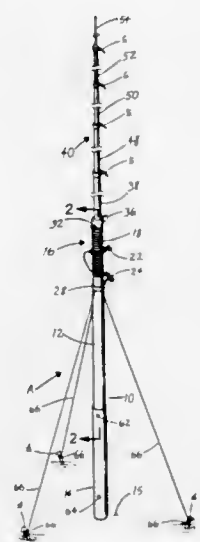
PORTABLE HF ANTENNA

Thomas M. Morton, 4926 Odell St., St. Louis, Mo. 63139 Filed Dec. 7, 1984, Ser. No. 679,373

Int. Cl.⁴ H01Q 1/10, 9/18

U.S. Cl. 343—745

11 Claims



1. A vertical-type asymmetrically loaded dipolar transmitting and receiving antenna of portable, easily deployed, telescopically collapsible character usable over a wide range of operating frequencies, comprising:

- a tubular base for forming one electrical end of the antenna;
- a mast telescopically received by the base for forming the

opposite electrical end of the antenna, the mast being formed of multiple tubular sections each of progressively smaller diameter in the direction away from the base for each being extended and secured in sequence for mast erection, each mast section being electrically conductive for operation over the entire range of operating frequencies;

the base presenting at its upper end a coil form carrying an inductive coil constituted by conductor turns wound serially about the coil form;

clamp means carried at the upper end of the coil form for receiving a portion of the length of a lowermost section of the mast and for clampingly engaging such mast section portion for maintaining the mast in erected condition, the claim means being electrically conductive and connected to an upper end of the coil for thereby connecting the upper end of the coil to the lowermost mast section, the clamp means permitting user adjustment of the length portion of the lowermost mast section received by the clamp means, at least part of said length portion being telescopically received by the upper end of the base for providing a capacitance of preselected value between the lowermost mast section and the upper end of the base;

feedpoint means carried at an upper end of the base including first terminal means electrically interconnected with the upper end of the base for providing a first feedpoint connection to the upper end of the base and second terminal means including a top connected to a selected turn of the coil along its length for providing a user-adjustable second feedpoint connection to the selected turn, and whereby the coil imposes an inductance of preselected value, determined by the selected turn, between the second terminal means and the lowermost mast section;

the coil form being constituted by a dielectric sleeve of tubular configuration having a lower portion telescopically received by the upper end of the base for providing dielectric isolation between said portion of the mast section length and the upper end of the base, the coil form having an upper portion extending above the upper end of the base for carrying the turns of the coil; and means for mounting the base in upstanding orientation; whereby the inductance and capacitance together provide a user-adjustable matching network for electrically matching the dipolar antenna to the feedline over said range of operating frequencies.

4,642,651

DUAL LENS ANTENNA WITH MECHANICAL AND ELECTRICAL BEAM SCANNING

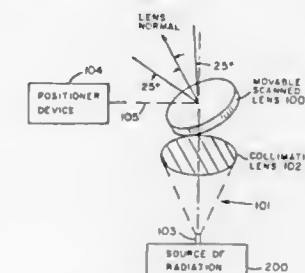
Donald H. Kuhn, North Syracuse, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 24, 1984, Ser. No. 653,645

Int. Cl.⁴ H01Q 3/02, 19/06

U.S. Cl. 343—754

1 Claim



1. A system comprising a movable electronic scanned lens; a source of electromagnetic energy located spatially from said lens; said source of electromagnetic energy spatially feeding said energy to said lens; a collimation lens located between said source of electromagnetic energy and said scanned lens so as to

collimate the electromagnetic energy to said scanned lens; said scanned lens reradiating said energy to a predetermined portion of space by a combination of electronic scanning and mechanical movement of said scanned lens; said movable scanned lens being made of an array of phase shifter modules with antenna elements on both ends of each module; said collimating lens illuminating the scanned lens with parallel electromagnetic energy rays; and a feedhorn directing said electromagnetic energy onto said collimating lens.

4,642,652

UNFOLDABLE ANTENNA REFLECTOR

Henning Herbig, Holzkirchen; Horst Heinze, Westerham; Franz Drachenberg, Baldham, all of Fed. Rep. of Germany, and Knud Pontoppidan, Copenhagen, Denmark, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

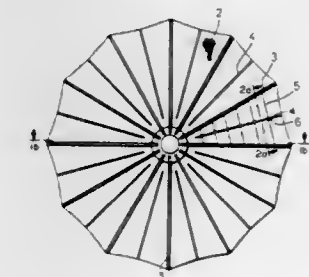
Filed Oct. 23, 1984, Ser. No. 664,043

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338937

Int. Cl.⁴ H01Q 15/20

U.S. Cl. 343—915

11 Claims



1. An unfoldable antenna reflector for a metallic antenna reflector net, comprising a central carrier body, a plurality of carrier ribs for carrying said reflector net, support means for pivotally securing one end of said carrier ribs to said carrier body so that said carrier ribs are movable between an open substantially radially extending position and a closed substantially axially extending position, a plurality of auxiliary ribs disconnected from said central carrier body and secured to said reflector net, said auxiliary ribs being located so that one or more auxiliary ribs are positioned between adjacent carrier ribs, flexible bracing wires for connecting said auxiliary ribs to said carrier ribs, securing means for operatively connecting one end of each bracing wire to an adjacent carrier rib, adjustable anchoring means operatively securing a respective auxiliary rib to the respective opposite end of a corresponding bracing wire, said bracing wires extending, in the unfolded state of said reflector net, in the direction of a resultant bracing tension force having two bracing tension force components one of which extends substantially perpendicularly to a plane defined by said reflector net in its unfolded state.

4,642,653

MULTI-TONE RECORDING METHOD FOR INK JET PRINTER

Tadashi Ito, Yokohama; Koichiro Jinnai, Kawasaki; Takahisa Koike, Tokyo; Toshiharu Murai, Yokohama; Takao Fukazawa, Tokyo, and Kazumi Ishima, Kashiwa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 669,831, Nov. 9, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 857,395

Claims priority, application Japan, Nov. 9, 1983, 58-210509

Int. Cl.⁴ G01D 15/18

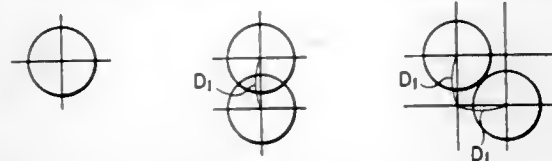
U.S. Cl. 346—1.1

3 Claims

1. A recording method for a charge control type ink jet

printer which renders halftone by recording data in multiple densities, comprising the steps of:

- charging ink drops issuing from an ink ejection nozzle in a plurality of steps by a plurality of charging voltages;
- deflecting the charged ink drops in a plurality of steps based on an amount of charge deposited on each of the charged ink drops; and
- said charging step comprising, storing in a memory plural sets of halftone data which respectively correspond to a different recording density for a common number of dots in a unit deflection width,



selecting one of said sets of halftone pattern data in correspondence with a desired recording density, and varying the charging voltage within a predetermined range which provides a shift in deflection by a pitch smaller than one dot pitch in a deflection direction in accordance with the selected halftone pattern data, thereby controlling the degree of overlapping or separation of adjacent dots to accomplish recording gradation at least in part based on the shift in deflection by said pitch smaller than one dot pitch.

4,642,654 RECORDING METHOD

Shigeo Toganoh, and Ryuichi Arai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 674,601, Nov. 26, 1984, abandoned.
This application Apr. 2, 1986, Ser. No. 848,832
Int. Cl.⁴ G01D 15/16; B32B 5/16

U.S. Cl. 346—1.1 8 Claims



1. A color recording method comprising the steps of forming liquid droplets of at least two colors of recording liquids and transferring the different color droplets to a receiving member, said receiving member having a support and a receiving layer overlying the support and containing filler particles, wherein the ratio d/D , where d represents the size of the filler particles and D represents the size of the liquid droplets, is in a range of about 0.03 to 0.3.

4,642,655 COLOR-INDEXED DYE FRAMES IN THERMAL PRINTERS

Steven J. Sparer, Rochester, and Stanley W. Stephenson, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

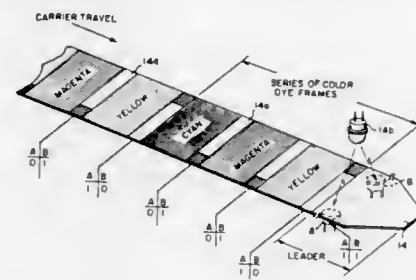
Filed Apr. 14, 1986, Ser. No. 851,748

Int. Cl.⁴ G01D 15/10; B41J 3/10

U.S. Cl. 346—76 PH 6 Claims

3. A carrier for use in a thermal printer includes a repeating series of spaced yellow, magenta and cyan dye frames having

clear interframe areas disposed between dye frames, the improvement comprising:



- a cyan code patch disposed in a portion of the clear interframe between a yellow frame of a series and the cyan frame of the preceding series, which permits the recognition of the yellow frame of this series.

4,642,656 THERMAL PRINTER

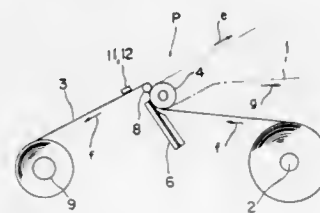
Kouji Shibuya, Machida, and Chiharu Imazeki, Yokohama, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1985, Ser. No. 813,766

Claims priority, application Japan, Dec. 27, 1984, 59-281542

Int. Cl.⁴ G01D 15/16

U.S. Cl. 346—76 PH 7 Claims



1. A thermal printer for forming an image by thermally transferring ink from an ink film to transfer paper at a printing station, comprising:

means for supplying said ink film past the printing station;
a takeup roller means for taking up said ink film from said supply means;
takeup roller drive means for exerting a torque to rotate said takeup roller means for taking up said ink film;
a platen roller located at said printing station;
a thermal head located adjacent said platen roller at said printing station;

paper feed means for feeding said transfer paper to said printing station between said thermal head and said platen roller and for maintaining said transfer paper in tight contact against said ink film;

means for moving said thermal head between a first position in which said thermal head is in pressing engagement against said platen roller and said transfer paper maintained in tight contact against said ink film and a second position in which said thermal head is out of pressing engagement with said platen roller and said transfer paper maintained in tight contact with said ink film;

control means connected to said drive means for controlling said torque exerted by said takeup roller drive means for rotating said takeup roller means in accordance with said first and second positions of said thermal head, said control means having means for causing a first torque to be exerted on said takeup roller means when said thermal head is in said first position and a second torque to be exerted on said takeup roller means when said thermal

head is in said second position, said first torque being of a smaller magnitude than said second torque.

4,642,657 RECORDER

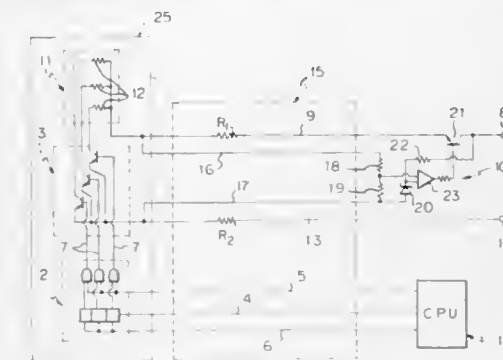
Osamu Asakura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1985, Ser. No. 716,385

Claims priority, application Japan, Apr. 4, 1984, 59-67043

Int. Cl.⁴ G01D 15/10

U.S. Cl. 346—76 PH 7 Claims



1. A recorder comprising:
recording means having a recording element for recording on a recording medium;
power source means for providing electrical energy;
drive means for enabling electrical energy from said power source to energize said recording element in accordance with a signal;
a carrier movable relative to said power source means and having said recording means and said drive means mounted thereon;
electrical connection means connected at a first end thereof to said power source means and at a second end thereof to said recording means for supplying electrical energy provided by said power source means to said recording element when said recording element is enabled by said drive means; and
regulation means for detecting the voltage proximate to said second end of said electrical connection means and for regulating the electrical energy supplied to said first end of said electrical connection means based on the detection.

4,642,658 IMAGE FORMING APPARATUS

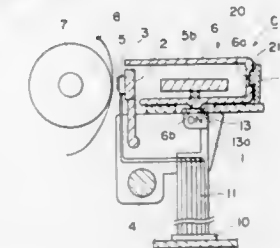
Junichi Arakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1985, Ser. No. 809,765

Claims priority, application Japan, Dec. 20, 1984, 59-269876

Int. Cl.⁴ G01D 15/10

U.S. Cl. 346—76 PH 7 Claims



1. An image recording apparatus for recording on a recording sheet an image corresponding to image information, said apparatus comprising:

a recording sheet mounting portion for mounting the recording sheet on which the image is to be recorded;

an ink sheet mounting portion for mounting an ink sheet having ink thereon;
detecting means for detecting whether the ink sheet is mounted on said ink sheet mounting portion;
image recording means operable for recording the image corresponding to the image information on the recording sheet mounted on said recording sheet mounting portion;
moving means for reciprocally moving said image recording means relative to the recording sheet; and
control means for operating said recording means only during movement thereof in one direction relative to the recording sheeting when said detecting means detects that the ink sheet is mounted and during movement thereof in two directions relative to the recording sheet when said detecting means does not detect that the ink sheet is mounted.

4,642,659

IMAGE BUILDING APPARATUS

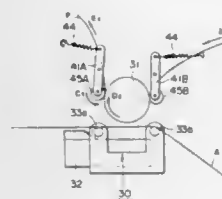
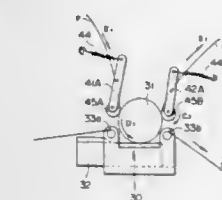
Masayoshi Nagashima, Chigasaki; Tomohiko Takahashi, Tokyo; Naoto Higure, Tokyo, and Kanehiro Fukuda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Feb. 27, 1985, Ser. No. 706,282

Claims priority, application Japan, Feb. 29, 1984, 59-37775

Int. Cl.⁴ G01D 15/10

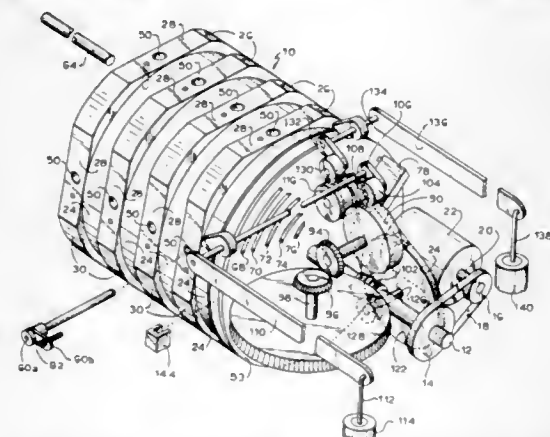
U.S. Cl. 346—76 PH 15 Claims



1. An image building apparatus for transferring an image onto a sheet-shaped recording medium, comprising:
image transferring means including a recording head having a contact portion, a rotatable platen roller, holding means for applying a transporting frictional force between the recording medium and said platen roller to convey the recording medium between said platen roller and said recording head, and means for rotating said platen roller in a forward rotational direction and a reverse rotational direction to reciprocally convey the recording medium between said platen roller and said recording head in a forward conveying direction and a reverse conveying direction corresponding, respectively, to said forward and reverse rotational directions of said platen roller, said recording head being movable relative to said platen roller to cause said contact portion of said recording head to come into and out of pressure contact with said platen roller so that an image is built on the recording medium as the recording medium is reciprocally conveyed between said platen roller and said recording head; and
braking means for retaining tension in the recording medium between said platen roller and said recording head by applying a braking frictional force to the recording medium upstream of said contact portion of said recording head with respect to both the forward and reverse conveying directions of the recording medium, said braking

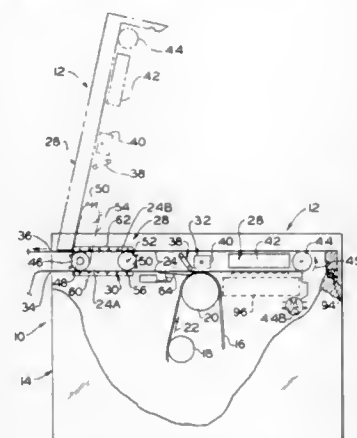
frictional force being less than said transporting frictional force.

4,642,660
ROTARY DRUM NON-IMPACT PRINTER
 Gerald S. Stevens, Jr., Forest Hill; Thomas P. Sapitowicz, Bel Air, both of Md., and Edward D. Davis, Stewartstown, Pa., assignors to General Instrument Corporation, New York, N.Y.
 Filed Dec. 26, 1985, Ser. No. 813,380
 Int. Cl.⁴ G01D 15/18
 U.S. Cl. 346—140 R 27 Claims



1. A print head comprising a generally cylindrical member, a plurality of electrically actuatable solid ink spark jet capsules mounted in said member, means for rotating said member, high voltage electrical source means, contact means operably connected to said source means, and means spaced from and movable with said member relative to said contact means, operably electrically connected to said capsules, selected ones of said capsules being operably connected to said source as said member is rotated.

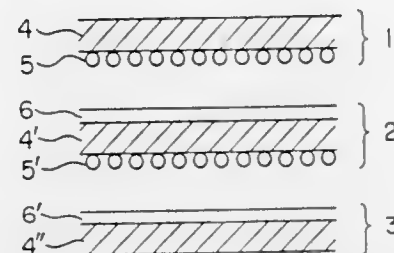
4,642,661
PRINTER WITH DRIVE ON SWINGING PLATFORM
 Walter C. Dean, II, Simsbury, Conn., assignor to KCR Technology, Inc., East Hartford, Conn.
 Filed Nov. 4, 1985, Ser. No. 794,620
 Int. Cl.⁴ G01D 15/28
 U.S. Cl. 346—153.1 16 Claims



1. For use in a printer for printing a continuous length of paper having a perforated marginal edge, a mechanism comprising a frame, a swinging platform mounted for pivoting movement on the frame, and a bidirectional tractor drive mounted on the platform and

engageable with the perforated marginal edge of the paper for driving the paper, the platform being pivotable between an operative printing position and an inoperative position, the platform in its operative printing position cooperating with the frame in defining a bidirectional paper feed path wherein the paper is fed along said path with first and second paper courses moving in generally opposite directions of travel, the first and second paper courses each being in engagement with the tractor drive, the platform in its inoperative position being in remote relation to the frame to facilitate paper loading and to provide ready access to the paper feed path, and the bidirectional tractor drive having a power operated drive shaft rotatably supported by the frame and defining a pivot axis for the swinging platform.

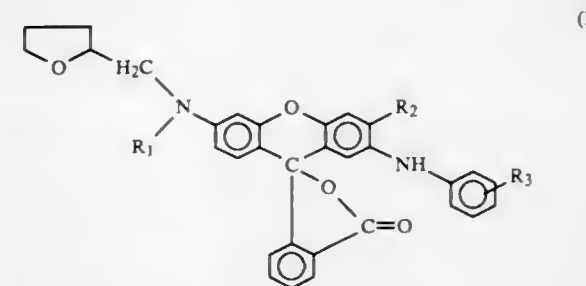
4,642,662
CARBONLESS PAPER FOR USE IN LETTER PRINTERS
 Takahiro Torii, Hyogo; Mamoru Ishiguro, and Hideaki Senoh, both of Takasago, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
 PCT No. PCT/JP84/00017, § 371 Date Sep. 25, 1984, § 102(e) Date Sep. 25, 1984, PCT Pub. No. WO84/02883, PCT Pub. Date Aug. 2, 1984
 PCT Filed Jan. 26, 1984, Ser. No. 662,416
 Claims priority, application Japan, Jan. 26, 1983, 58-9158[U]
 Int. Cl.⁴ B41M 5/22
 U.S. Cl. 346—215 2 Claims



1. A carbonless paper used as a pressuresensitive copying paper after having been subjected to printing by a letter printer, which comprises at least one of (a) an upper sheet coated at one side with synthetic high molecular wall membrane microcapsules containing a leuco dye solution, (b) a lower sheet coated with one side with an inorganic solid acid and (c) an intermediate sheet coated at one side with synthetic high molecular wall membrane microcapsules containing a leuco dye solution and at the other side with an inorganic solid acid, said inorganic solid and being semi-synthetic solid acid produced by acid-treating a clay mineral having a layer structure of regular tetrahedrons of silica so that the SiO₂ content becomes 82 to 96.5% on dry basis (drying condition: 105° C. for 3 hr), contacting the acid-treated clay mineral in an aqueous medium with a magnesium and/or aluminum compound which is at least partly soluble in the medium (if this soluble magnesium and/or aluminum compound is not a hydroxide, it is neutralized with an alkali or acid so that the compound is converted to a hydroxide) to introduce magnesium and/or aluminum into the acid-treated clay mineral, and, if necessary, drying the resulting clay mineral.

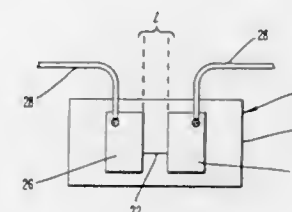
4,642,663
6-TETRAHYDROFURFURYLAMINOFLUORAN COMPOUND USEFUL AS A COLOR FORMER ON A HEAT SENSITIVE RECORDING SHEET
 Hideyuki Sensui, Tokyo; Susumu Suzuka, Yono; Michibiro Gonda, Kitamoto, and Katsumasa Kikkawa, Tokyo, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan
 Division of Ser. No. 693,116, Jan. 22, 1985, Pat. No. 4,597,795.
 This application Dec. 16, 1985, Ser. No. 809,171
 Claims priority, application Japan, Mar. 5, 1984, 59-40526; Apr. 3, 1984, 59-65097
 Int. Cl.⁴ B41L 1/20
 U.S. Cl. 346—221 11 Claims

1. A heat sensitive recording sheet comprising a substrate sheet and a heat sensitive recording layer formed on the substrate sheet and comprising a color former, a color developing agent and a resinous bonding agent, the color former comprising at least one 6-tetrahydrofurfurylamino compound of the formula (I):



wherein R₁ represents a member selected from the group consisting of a hydrogen atom, alkyl radicals having 1 to 8 carbon atoms, a tetrahydrofurfuryl radical, a phenyl radical, an alkylphenyl radical in which the alkyl group has 1 to 5 carbon atoms, and cyclic alkyl radicals having 3 to 8 carbon atoms; R₂ represents a member selected from the group consisting of a hydrogen atom, chlorine atom, fluorine atom, alkyl radicals having 1 to 5 carbon atoms, alkoxy radicals having 1 to 5 carbon atoms, alkoxyalkyl radicals having 2 to 10 carbon atoms, a phenyl radical, and a benzyl radical; and R₃ represents a hydrogen atom, chlorine atom, fluorine atom, alkyl radicals having 1 to 5 carbon atoms, and acyl radicals having 2 to 7 carbon atoms.

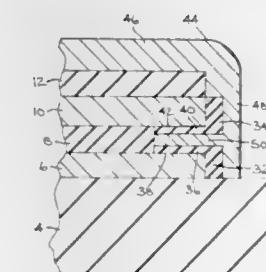
4,642,664
ELECTRICAL DEVICE MADE OF PARTIALLY PYROLYZED POLYMER
 Harris A. Goldberg, Colonia; Ilmar L. Kalnin, Millington; Clyde C. Williams, Roselle, all of N.J., and Ian L. Spain, Fort Collins, Colo., assignors to Celanese Corporation, New York, N.Y.
 Filed Apr. 21, 1983, Ser. No. 487,401
 Int. Cl.⁴ H01L 45/00
 U.S. Cl. 357—2 16 Claims



1. An electrical switch comprising: a filament of partially pyrolyzed polymeric material pyrolyzed at a temperature between 500° C. and 800° C. so that

it exhibits negative resistance in a portion of a voltage-current domain; and means for applying an electric signal to the filament of material to cause the material to exhibit negative resistance.

4,642,665
VERTICALLY LAYERED MOMOM TUNNEL DEVICE
 Robert W. Lade, Milwaukee; James A. Benjamin, Waukesha, and Herman P. Schuttner, Milwaukee, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio
 Filed Dec. 19, 1984, Ser. No. 683,729
 Int. Cl.⁴ H01L 49/02, 27/14
 U.S. Cl. 357—6 9 Claims



1. An MOMOM tunnel device comprising: an insulating substrate; a first metal layer on said substrate; a first insulating layer on said first metal layer; a second metal layer on said first insulating layer; a first oxidation layer on said first metal layer; a second oxidation layer on said second metal layer; and a third metal layer between said first and second oxidation layers; wherein said first and second metal layers comprise nonco-linearly aligned strips having portions vertically overlapped and separated by said first insulating layer therebetween; and comprising a second insulating layer on said second metal layer, and wherein: said first and second metal layers and said first and second insulating layers extend horizontally and have a generally vertical side exposing the edges thereof; said first and second oxidation layers are on said exposed edges of respective said first and second metal layers; and said third metal layer extends horizontally along the top of said second insulating layer and vertically along said side of said layers over and between said first and second oxidation layers.

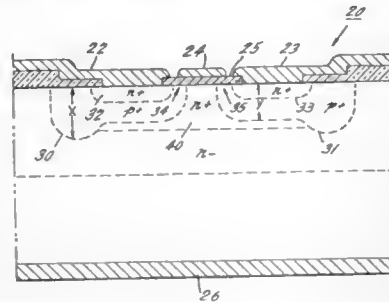
4,642,666
HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE
 Alexander Lidow, Manhattan, and Thomas Herman, Redondo, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.
 Division of Ser. No. 232,713, Feb. 9, 1981, which is a continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned. This application Mar. 3, 1983, Ser. No. 471,818
 Int. Cl.⁴ H01L 29/78
 U.S. Cl. 357—23.4 10 Claims

1. A three-terminal power metal oxide silicon field effect transistor device comprising: a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type; at least first and second spaced base regions of the opposite

conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a common conduction region of one conductivity type at a given first semiconductor surface location;

first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface locations and extending from said first and second first surface locations to a depth less than said depth of said base regions; said first and second source regions being laterally spaced along said first semiconductor surface from the facing respective edges of said common conduction region thereby to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively and said common conduction region;

source electrode means connected to said source regions and comprising a first terminal;



gate insulation layer means on said first surface, disposed at least on said first and second channel regions;

gate electrode means on said gate insulation layer means, overlying said first and second channel regions and comprising a second terminal;

a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;

a drain electrode coupled to said drain conductive region and comprising a third terminal;

each of said at least first and second spaced base regions of said opposite conductivity type having respective profiles which include relatively shallow depth regions extending from said common region and underlying their said respective first and second source regions, and respective relatively deep, relatively large radius regions extending from said shallow depth regions which are laterally spaced from beneath said respective source regions on the side of said source regions which is away from said common region.

4,642,667

INTEGRATED CIRCUITS

Tereose E. Magee, Fulbourn, England, assignor to Standard Telephones & Cables, London, England

Filed Oct. 17, 1984, Ser. No. 661,819

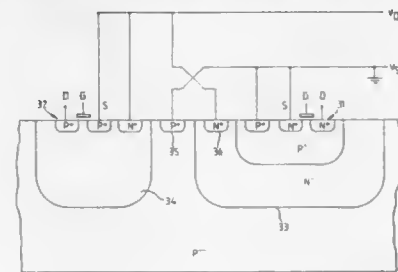
Claims priority, application United Kingdom, Oct. 18, 1983, 8327868

Int. Cl.⁴ H01L 29/72

U.S. Cl. 357—35

1. An MOS compatible bipolar transistor structure comprising an npn lateral high gain transistor and an npn vertical low gain transistor formed in a lightly doped n⁺-type well in a major surface of a very lightly doped p⁺-type substrate, the structure comprising a lightly doped p⁺-type well found in the n⁺-type well, a p⁺-region and p-type region formed in the p⁺-type well, a first n⁺-type region formed in said p-type region, and a second n⁺-type region formed at the surface

boundary between the p⁺-type well and the n⁺-type well, wherein said first n⁺-type region provides a common emitter of both said transistors, wherein said second n⁺-type region provides the collector of the lateral transistor and a collector contact of the vertical transistor, wherein said p⁺-type region provides a base contact of both said transistors, wherein said p-type region provides the base of the lateral transistor and,



together with the p⁺-type well, the base of the vertical transistor, and wherein a depletion region is disposed across the boundary between the p⁺-type and n⁺-type wells, the boundary being narrow adjacent the lateral transistor base so as to provide a high lateral gain and wide adjacent the vertical transistor base so as to provide a low vertical gain, whereby the structure, in use, acts predominantly in a lateral mode.

4,642,668

SEMICONDUCTOR DEVICE HAVING IMPROVED THERMAL CHARACTERISTICS

Henricus T. J. Tacke, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

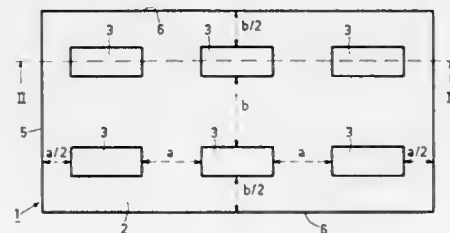
Continuation of Ser. No. 558,228, Dec. 5, 1983, abandoned. This application Dec. 5, 1985, Ser. No. 805,579

Claims priority, application Netherlands, Dec. 17, 1982, 8204878

Int. Cl.⁴ H01L 29/70, 29/72

U.S. Cl. 357—36

7 Claims



1. A semiconductor device comprising a semiconductor body having a major surface, a power transistor in said body and having an emitter of a first conductivity type adjoining said surface, a base of a second, opposite conductivity type, also adjoining said surface, and a collector of the first conductivity type adjoining the base, the emitter zone comprising a row of finger-shaped regions of the first conductivity type which extend in the base substantially parallel to each other in a direction at right angles to the longitudinal direction of the row, said row of finger-shaped regions comprising a plurality of sub-rows, each sub-row having a plurality of finger-shaped regions at substantially equal distances from each other, the distances between two adjacent sub-rows differing from the distance between the finger-shaped regions in a sub-row, said row being located between two parallel edges of the semiconductor body and along a line substantially perpendicular to said edges, and the distance between an edge and an adjacent sub-row being substantially equal to one-half the distance between two sub-rows.

4,642,669

SEMICONDUCTOR DEVICE HAVING A BLOCKING CAPABILITY IN ONLY ONE DIRECTION

Peter Roggwiler, Riedt-Neerach, and Roland Sittig, Umiken, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

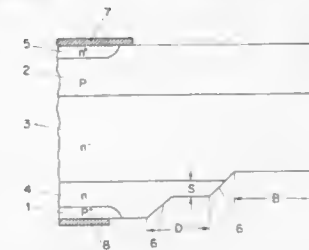
Filed Dec. 7, 1984, Ser. No. 679,359

Claims priority, application Switzerland, Dec. 7, 1983, 6544/83

Int. Cl.⁴ H01L 29/34

U.S. Cl. 357—52

5 Claims



1. A semiconductor device having a blocking capability in only one direction, comprising:

an anode;

a cathode;

a plurality of differently doped layers stacked along a main axis between said anode and said cathode, said doped layers including,

a first highly doped p⁺ layer provided aside said anode, a second highly doped n⁺ layer provided aside said cathode, a third layer with a low-level n⁻ doping provided between said first and second layers,

a fourth n-doped stopping layer with a doping concentration lying in between the doping concentrations of said second and third layers provided adjoining said third layer on one side,

wherein said stopping layer has a thickness S and a number of donor atoms selected so as to satisfy the equation:

$$\frac{e}{\epsilon} \int_0^S N_D(x) dx = k \cdot E_n$$

with

e=elementary charge

ε=dielectric constant of the semiconductor material of said device,

N_D=donor concentration in said stopping layer (in cm⁻³), x=path coordinate of an integration path parallel to said main axis of said device (in cm),

k=numerical constant with 0.8 ≤ K ≤ 1.0,

E_n=electrical field strength at the junction between said third and fourth layers at the breakdown voltage of said device; and

a recess provided at the edge of said stopping layer.

4,642,670

CHIP CARRIER PACKAGE

Kurt M. Striny, Emmaus, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1983, Ser. No. 557,596

Int. Cl.⁴ H01L 23/48, 23/30

U.S. Cl. 357—68

6 Claims

1. An integrated circuit package comprising an integrated circuit chip encapsulated within a unitary plastic body to form a chip carrier integrated circuit unitary package, a plurality of closely spaced leads arranged along at least one side of the chip carrier at least some of which comprise a wire member extending from the side of the chip carrier unitary package, an approximately right angle bend in the wire member thus providing a portion of the wire member extending approximately vertically downward with respect to the side of the chip carrier

unitary package and a U-shaped or V-shaped bend in said portion said bend extending toward the chip side of the chip carrier unitary package so as to provide a bearing point at the base of the U-shaped or V-shaped bend to prevent the approxi-



mately vertically extending portion from bearing against the chip carrier unitary package and causing permanent deformation if the wire member is deflected during socketing, handling or the like.

4,642,671

SEMI-CONDUCTOR ASSEMBLY

Ivor C. Rohsler, Harborne, and Anthony F. C. Clark, Stratford-upon-Avon, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

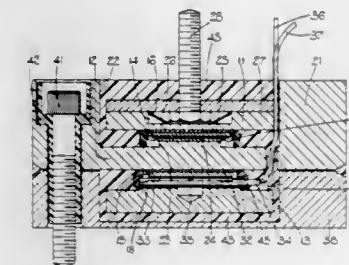
Filed Jul. 28, 1983, Ser. No. 518,106

Claims priority, application United Kingdom, Jul. 29, 1982, 8221973

Int. Cl.⁴ H01L 23/42

U.S. Cl. 357—79

6 Claims



1. A semi-conductor assembly, comprising:

(a) first, second and third electrically conductive members;

(b) a semi-conductor diode positioned between said first and second conductive members, wherein the anode region of the diode is electrically connected to one of said first and second conductive members and the cathode region is electrically connected to the other of said first and second conductive members;

(c) a semi-conductor thyristor positioned between said second and third conductive members,

wherein one of said semi-conductor thyristor anode and cathode terminal regions is connected to the second conductive member and the other of the anode and cathode terminal regions is connected to the third conductive member, and

wherein said third and first electrically conductive members are electrically interconnected, and the terminal region of the semi-conductor diode which is electrically connected to the second conductive member is of opposite polarity to the thyristor terminal region which is also electrically connected to the second conductive member,

(d) means for making an electrical connection to a gate terminal region of the thyristor; and

(e) heat sink means including said second conductive member for accepting heat from said diode and thyristor, wherein said heat sink means includes thermally conductive block means having first and second opposed recesses,

wherein said second conductive member forms a boundary wall separating said first and second recesses, said first recess houses said diode, said second recess houses said thyristor, and said first and third conductive members are resiliently biased towards one another so that said diode and said thyristor are loaded against said second conductive member,

wherein said block means is of two part construction and said second conductive member is integral with one of the two parts, and

wherein said first conductive member is housed in said first recess and said third conductive member is housed in said second recess.

4,642,672

SEMICONDUCTOR DEVICE HAVING REGISTRATION MARK FOR ELECTRON BEAM EXPOSURE

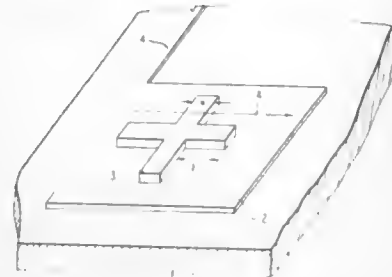
Makoto Kitakata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,569

Claims priority, application Japan, Sep. 14, 1982, 57-160060
Int. Cl.⁴ H01L 49/02, 21/66

U.S. Cl. 357—40

9 Claims



1. A semiconductor device comprising a semiconductor substrate having a rectangular shape in the plan view surrounded by four straight edge lines, a device region to form device elements therein positioned at a major space of said semiconductor substrate, a registration mark for electron beam exposure provided on a peripheral portion of said semiconductor substrate other than said device region, and a connecting portion connected electrically to said registration mark, extending on said semiconductor substrate from said registration mark toward a part of one of said straight edge lines without entering into any part of said device region and reaching said part of said one of said straight edge lines, said registration mark and said device region being free from any means for connecting electrically therebetween, and said registration mark including a lower metal film deposited on one major surface of said semiconductor substrate and an upper metal film on said lower metal film having a raised or indented pattern.

4,642,673

FLOATING GATE TYPE EEPROM WITH A SUBSTRATE REGION USED FOR THE CONTROL GATE

Junichi Miyamoto, Yokohama, and Tetsuya Iizuka, Funabashi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,604

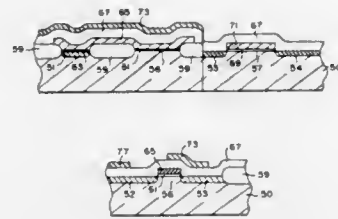
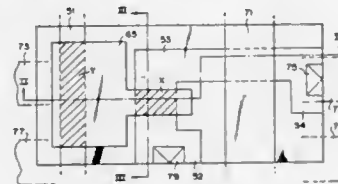
Claims priority, application Japan, Feb. 25, 1983, 58-30355
Int. Cl.⁴ H01L 29/78, 29/94, 29/46

U.S. Cl. 357—23.5

13 Claims

1. A floating gate transistor comprising:
a semiconductor substrate of a first conductivity type;
first and second regions of a second conductivity type respectively formed as source and drain regions in the surface area of said substrate;
a third region of the second conductivity type formed as a

first control gate electrode in the surface area of said substrate;
a first insulating layer formed on that portion of said substrate which lies between said first and second regions;
a second insulating layer formed on said third region;
a first conductive layer formed as a floating gate electrode on said first and second insulating layers;



a third insulating layer formed on said floating gate electrode; and
a second conductive layer formed as a second control gate electrode on said third insulating layer and electrically connected to said third region.

4,642,674

FIELD EFFECT SEMICONDUCTOR DEVICE HAVING IMPROVED VOLTAGE BREAKDOWN CHARACTERISTICS

Franciscus A. C. M. Schoofs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

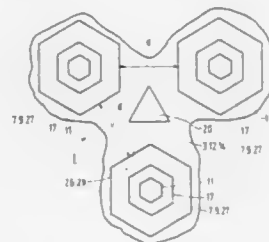
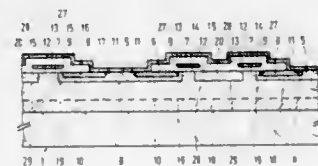
Continuation of Ser. No. 618,632, Jun. 8, 1984. This application Apr. 17, 1986, Ser. No. 854,064

Claims priority, application Netherlands, Jun. 13, 1983, 8302092

Int. Cl.⁴ H01L 29/78, 29/90, 27/02, 29/40

U.S. Cl. 357—23.8

11 Claims



1. A semiconductor device comprising a semiconductor body having a major surface, a comparatively weakly-doped semiconductor region of a first conductivity type adjoining said major surface, several first zones of a second conductivity type opposite to the first conductivity type also adjoining said major surface, said first zones being arranged at a regular

distance "d" from each other and extending from the major surface down to a smaller depth in the semiconductor body than the depth of the semiconductor region, a comparatively highly-doped second zone of the first conductivity type inside each first zone which is separated in the semiconductor body by the first zone from the semiconductor region, each first zone having a first outer edge and each second zone having a second outer edge, the second outer edge, viewed on the main surface, being located inside the first outer edge and the first and the second outer edges being substantially equidistant throughout their lengths, each second zone being connected to the adjoining first zone, a substantially symmetrical grid-shaped part of the semiconductor region which separates the first zones from each other at the major surface and surrounds each of the first zones, an insulating layer for covering the grid-shaped part at the major surface, said insulating layer extending beyond the first outer edge and at least as far as the second outer edge, a conductive layer on the insulating layer which serves as a gate electrode and covers at least part of the major surface occupied by the grid-shaped part, said conductive layer having openings whose sizes correspond to the lateral extent of the first zones located beneath these openings in the semiconductor body, and further surface zones of the second conductivity type provided at the major surface in the grid-shaped part at intermediate spaces thereof bounded by three or more first zones, said further zones being electrically isolated from said gate electrode and filling substantially all of said intermediate spaces which are located at a distance of at least half said regular distance "d" from said first zones, and the conductive layer being provided with further openings above the further surface zones whose sizes correspond to the lateral extent of the further surface zones.

4,642,675

SUPERHETERODYNE RECEIVER

Gerhard G. Gassmann, Esslingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

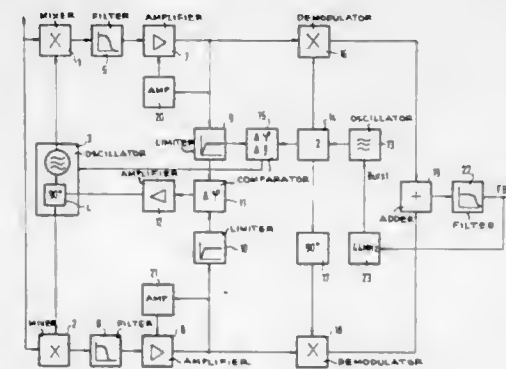
Filed Apr. 13, 1984, Ser. No. 599,760

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313867

Int. Cl.⁴ H04N 9/64

U.S. Cl. 358—21 R

12 Claims



conversion signal relative to the nonselected enhancement
conversion signal in proportion to said degree of priority.

(f) combining means responsive to output signals from said N sampling circuits for producing a single multi-color video signal.

4,642,677

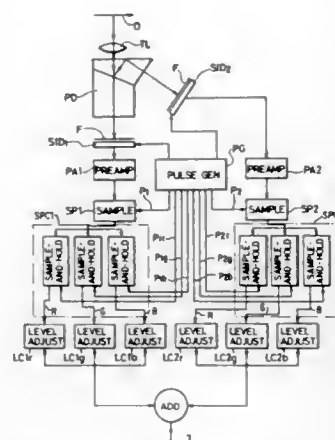
COLOR TV CAMERA WITH PLURAL SOLID STATE IMAGING DEVICES MUTUALLY HORIZONTALLY DISPLACED AND ASSOCIATED FILTERS OF VERTICALLY-ORIENTED COLOR STRIPES

tsuo Takamashi; Tadayoshi Miyoshi, both of Yokohama; Shintaro Nakagaki, Fujisawa, and Hiroshi Nishiyama, Kanagawa, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jul. 20, 1984, Ser. No. 632,873
 Claims priority, application Japan, Jul. 21, 1983, 58-133397;
 Jul. 25, 1983, 58-135428
 Int. Cl.⁴ H04N 9/09, 9/04, 9/097
 U.S. Cl. 358-43 15 Claims

U.S. Cl. 358—43

15 Claims



1. A color television camera comprising:

(a) an optical system for splitting an incident light ray from an object into N rays wherein N is a positive integer greater than 1, each of said N rays providing an identical image of said object or a mirror image thereof;

(b) N solid-state imaging devices having identical pixel configurations respectively responsive to said N rays from said optical system, each of said imaging devices having pixels arranged in horizontal and vertical directions so that vertically-extending rows of pixels are formed, said rows being disposed at a predetermined horizontal pitch, said imaging devices being disposed such that each succeeding one of said imaging devices is progressively displaced by a distance of $1/N$ of said horizontal pitch in said horizontal direction relative to an incident identical or mirror image with respect to a preceding one of said imaging devices;

(c) N color separation stripe filters each having an identical predetermined repetitive pattern of color stripes extending vertically or a pattern which is a mirror image of said repetitive pattern, said color stripes having a horizontal width substantially equal to said horizontal pitch, said N color separation stripe filters being respectively disposed in front of said N imaging devices so that said N rays are respectively subjected to filtration by said N color separation stripe filters before projecting into said N imaging devices;

(d) pulse generating means for producing N pulse trains of N phases for respectively driving said N imaging devices so that output signals having a predetermined phase difference therebetween are derived from said N imaging devices;

(e) N sampling circuits for sampling respectively said output signals from said N imaging devices such that each of said output signals from said N imaging devices is sampled at a predetermined interval so that information corresponding to each pixel of said imaging devices is derived, said N

4,642,678

**SIGNAL PROCESSING METHOD AND APPARATUS
FOR PRODUCING INTERPOLATED CHROMINANCE
VALUES IN A SAMPLED COLOR IMAGE SIGNAL**

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 648,999, Sep. 10, 1984, abandoned, and a continuation of Ser. No. 676,910, Nov. 30, 1984, abandoned, which is a continuation of Ser. No. 648,998, Sep. 10, 1984, abandoned. This application Feb. 3, 1986, Ser. No. 825,008

Int. Cl.⁴ H04N 9/077, 9/07

U.S. Cl. 358—44

7 Claims



1. A method of processing a sampled color image signal having luminance values representing a luminance component of a color image sampled at a high spatial frequency and chrominance values representing a chrominance component of the color image sampled at a relatively lower spatial frequency for producing an interpolated chrominance value representing the chrominance component of the color image at an interpolation location between two neighboring chrominance component sampling locations, comprising the steps of:

- (a) producing neighboring hue values representing a hue component of the image at the two neighboring chrominance component sampling locations as a function of a chrominance value and a luminance value at each of the two neighboring chrominance component sampling locations;
- (b) producing an interpolated hue value representing the hue component of the color image at the interpolation location by interpolating between the neighboring hue values; and
- (c) producing the interpolated chrominance value as a function of the interpolated hue value and a luminance value at the interpolation location.

4,642,679
COLOR IMAGE READING APPARATUS
 Fumikazu Nagano, Yamatokoriyama, Japan, assignor to Sharp
 Kabushiki Kaisha, Osaka, Japan

Filed Jun. 13, 1985, Ser. No. 744,474
Claims priority, application Japan, Jun. 15, 1984, 59-124202;
Jun. 15, 1984, 59-124203; Aug. 2, 1984, 59-163713; Aug. 22,
1984, 59-175353; Nov. 30, 1984, 59-254580

Int. Cl.⁴ H04N 1/46

U.S. Cl. 358—75 13 Claims

- first light source for generating a first light with an afterglow characteristics;
- second light source for generating a second light with no afterglow characteristics;
- third light source for generating a third light with no afterglow characteristics;

a control means for sequentially actuating said first, second and third lights in a predetermined time sequence;

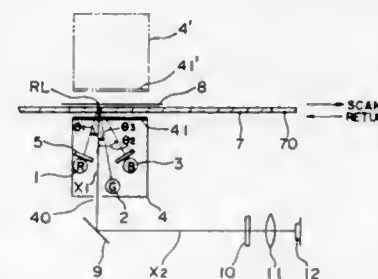


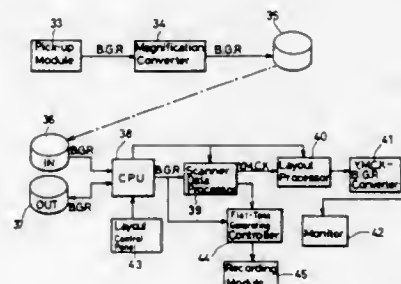
image detecting device for detecting image under said first light during the afterglow, under the second light, and under the third light.

4,642,680
METHOD AND SYSTEM FOR PROCESSING IMAGE
DATA STORED IN RGB FORM
Mitsubishi Yamada, Kyoto, Japan, assignor to Dainippon Screen
Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 2, 1983, Ser. No. 528,891
Claims priority, application Japan, Dec. 14, 1982, 57-219797
Int. Cl.⁴ H04N 1/46

U.S. Cl. 358-78

14 Claims



1. A method for processing image data in an image reproducing system operable for storing into a primary memory image data obtained by scanning plural original color pictures, performing a layout operation on image data read from the primary memory, storing the data on which the layout operation has been performed into a secondary memory, and recording color separation images Y, M, C and K with a recording scanner by using data read from the secondary memory comprising the steps of:

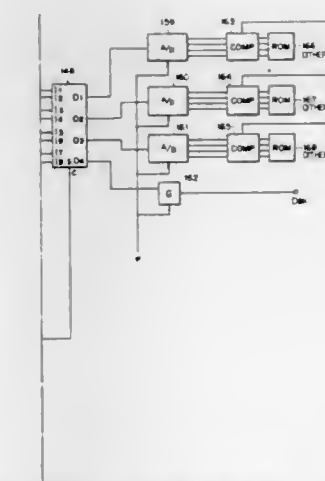
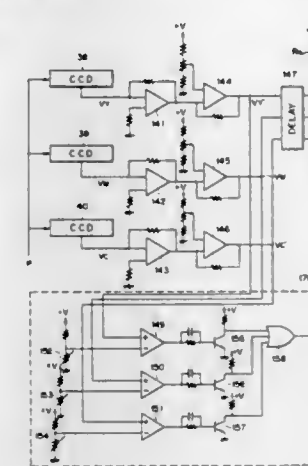
- (a) storing color component data B, G, and R in said memories; and
- (b) performing a flat tone generating operation on color separation data obtained by conversion of color component data obtained from at least one of said memories for recording said color separation images.

4,642,681
COLOR IMAGE PROCESSING APPARATUS FOR
GENERATING COLOR OUTPUT SIGNALS AND A
BLACK OUTPUT SIGNAL IN A MUTUALLY EXCLUSIVE
MANNER

Yoshinori Ikeda, Matsudo, Japan, assignor to Canon Kabushiki
Kaisha, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 538,916
Claims priority, application Japan, Oct. 8, 1982, 57-178115;
Oct. 9, 1982, 57-178075; Mar. 7, 1983, 58-36021
Int. Cl.⁴ G03F 3/08; H04N 1/46
U.S. Cl. 358—79 8 Claims

8 Claims



1. A color image processing apparatus, comprising:
 - signal generating means for generating color signals representative of three color components, each having a density level, for one pixel;
 - detecting means for detecting a specific color having a density level exceeding a predetermined density level by detecting said signals representative of said three color components and for generating a specific signal representative of said specific color;
 - first processing means, responsive to said color signals, for conducting half-tone reproduction processing of said color signals to output color output signals;
 - second processing means, responsive to said specific signal, for outputting a signal of a predetermined level; and
 - prohibiting means for prohibiting the output of said color output signals by said first processing means when said second processing means outputs said signal of the predetermined level.

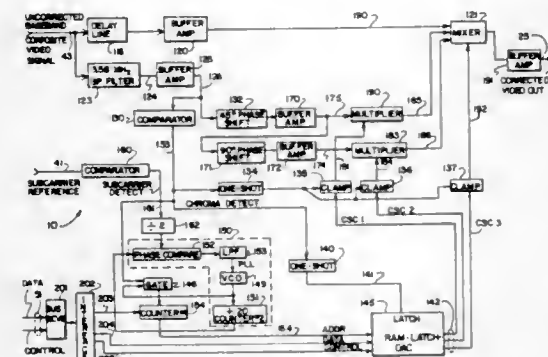
6. A color image processing apparatus, comprising: signal generating means for generating color signals representative of first, second, and third color components, each having a density level, for one pixel; and black signal generating means for generating a black signal upon detection of the condition that the color signal representative of said first color component has a higher density level than a first level, that the color signal representative of said second color component has a higher density level than a second level, and that the color signal representative of the third color component has a higher density level than a third level, said first, second and third levels being different from one another.

4,642,682
PHASE RESPONSIVE COMPOSITE VIDEO SIGNAL CONTROL SYSTEM

Michael L. Orsburn, Copper City; Robert L. Hemsky, Boca Raton, and James I. Bacon, Fort Lauderdale, all of Fla., assignors to VTA Technologies, Inc., Hollywood, Fla.
Filed Apr. 27, 1984, Ser. No. 604,845
Int. Cl.⁴ H04N 9/11

U.S. Cl. 358—80

59 Claims



1. A phase responsive video signal correction system for correcting a video parameter of an image represented by a composite video signal, comprising:
phase detecting means responsive to detect relative phase between a phase encoded component of an uncorrected composite video signal and a reference signal in each one of a plurality of ranges of phases representable by said composite video signal;
correction signal means responsive to said detected relative phase for generating a correction signal related to said detected relative phase; and
means responsive to said correction signal for correcting said uncorrected composite video signal to provide a corrected composite video signal.

8. A phase responsive video parameter control system for controlling a video parameter of a portion of a video image represented by a phase-encoded input video signal, said portion of said video image being at least partially defined by a predetermined hue, comprising:

memory means for storing a plurality of correction signals, each of said correction signals corresponding to a desired value of said video parameter for each one of a plurality of color intervals, each of said color intervals corresponding to one of a plurality of ranges of phase differences between said input video signal and a subcarrier reference signal;

phase detecting means responsive to said phase-encoded video signal for detecting said predetermined hue by detecting relative phase between said phase encoded video signal and said subcarrier reference signal and for providing a correction value selection signal related to the detected instantaneous hue of said video image;

correction value selecting means responsive to said correc-

tion value selection signal for selecting and retrieving a particular one of said plurality of correction signals associated with a particular one of said color intervals stored in said memory means and for providing said particular correction signal as an output, said particular correction signal being related to a particular desired value of said video parameter for said detected instantaneous hue; and means responsive to said particular correction signal for controlling said video parameter to said particular desired value.

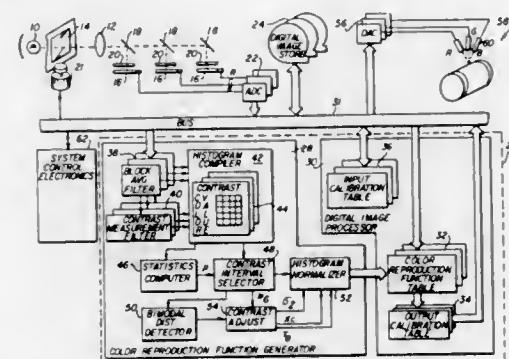
27. A hue responsive video signal correction system for correcting a video parameter of an image represented by an uncorrected input color video signal, comprising:

hue detecting means responsive to said input color video signal for detecting hue of said input color video signal in one of a plurality of ranges of hues representable by said input color video signal; and

means responsive to said hue detecting means and comprising a single channel circuit for correcting a parameter of said uncorrected input color video signal to provide a corrected color video output signal.

4,642,683
DIGITAL IMAGE PROCESSING METHOD FOR IMAGES WITH BIMODAL TONE VALUE DISTRIBUTION
James S. Alkofer, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1985, Ser. No. 730,624
Int. Cl.⁴ G03F 3/08; H04N 1/46, 1/40; G03B 27/80
U.S. Cl. 358—80 13 Claims



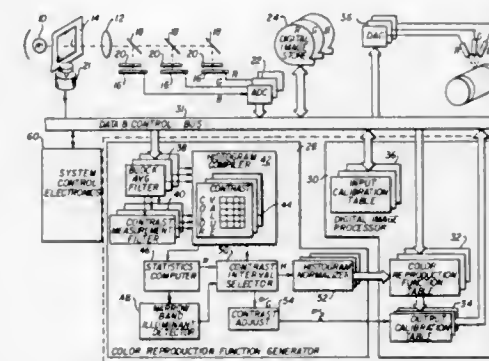
1. A digital image processing method for processing a digital image having shadow portions and highlight portions, said method employing a tone reproduction function generated by normalizing a sample of tone values from the digital image, said tone reproduction function being applied to tone values of said digital image to produce processed tone values, characterized by the steps of:

testing said sample of tone values for bimodal distribution; if the sample is bimodal, testing said sample of tone values to determine whether the image contains useful information in the shadow portions, and if useful information is contained in the shadow portions, adjusting the contrast of the image by increasing the contrast of the shadow portions of the image and decreasing the contrast of the highlight portions of the image.

4,642,684
METHOD AND APPARATUS FOR DETECTING AND PRINTING COLOR PHOTOGRAPHIC IMAGES OF SCENES EXPOSED WITH NARROW BAND ILLUMINANT

James S. Alkofer, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

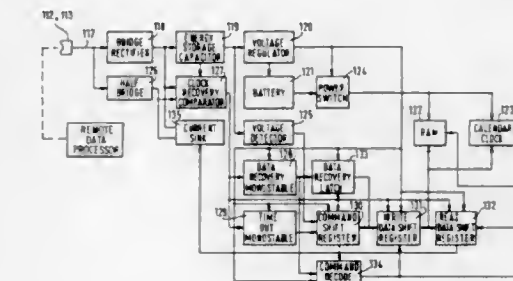
Filed May 6, 1985, Ser. No. 730,626
Int. Cl.⁴ G03F 3/08; H04N 1/46; G03B 27/80
U.S. Cl. 358—80 9 Claims



1. A method of printing a color photographic original to produce a color photograph, characterized by the steps of: detecting if the color photographic original was exposed with a narrow-band illuminant, and printing the color photographic original with no color correction if it is detected that said color photographic original was exposed with a narrow-band illuminant.

4,642,685
STORING DATA RELATING TO TELEVISION VIEWING
Lyn M. Roberts; Robert L. Shrier, both of London, and Raymond Laxton, Maidenhead, all of England, assignors to AGB Research, London, England
Filed May 24, 1984, Ser. No. 614,321
Claims priority, application United Kingdom, May 25, 1983, 8314468

Int. Cl.⁴ H04N 17/04; H04H 9/00
U.S. Cl. 358—84 9 Claims



3. An apparatus for transferring data obtained from a television viewing monitoring system to a data processor, said apparatus comprising:

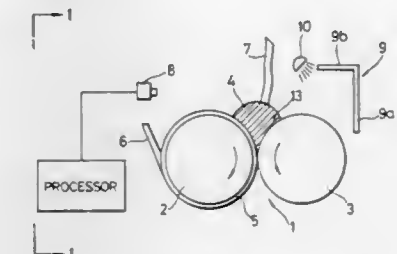
a transmitter having means for accepting data relating to the number of people watching a television set and the channel to which the television set is tuned and means for transmitting said data;

a semiconductor storage module for storing said data and comprising an updatable clock, semiconductor storage means and electrical coupling means connected to said clock and storage means for the passage of data between the coupling means and the clock and between the coupling means and the storage means; and

a receiver having means for receiving said data and means

for removably electrically coupling said receiving means to said coupling means of said storage module for the transfer of said received data to said storage module, whereby said storage module is able to be removed and its stored data read by and its clock updated by an external data processor, the storage module further comprising means for outputting to the external data processor time information derived from the updatable clock and relating to the time at which said data was received by the receiver.

4,642,686
SYSTEM FOR MEASURING AMOUNT OF RUBBER BANK BETWEEN ROLLS
Jun Nagano, and Shuichi Tanaka, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Apr. 10, 1985, Ser. No. 721,740
Claims priority, application Japan, Apr. 13, 1984, 59-74209
Int. Cl.⁴ H04N 7/18 11 Claims



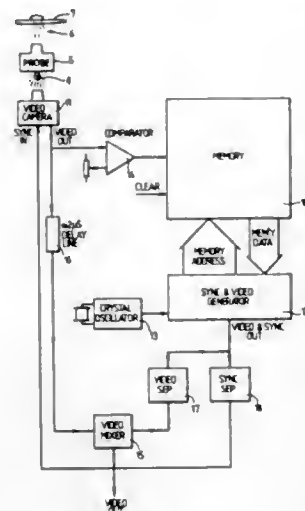
1. A system for measuring the amount of rubber contained between a pair of rolls comprising:
camera means arranged in front of a rubber bank constrained between said pair of rolls for obtaining a silhouette of said banked rubber;
a screen positioned in a straight line connecting said banked rubber and said camera means and located behind said banked rubber;
a light source directing light onto said screen for illuminating said banked rubber by backlighting, a portion of light from said screen not impinging onto said banked rubber but extending directly into said camera means and providing a bright portion on said rubber whereas light from said screen impinging on said rubber provides a dark portion so that said silhouette is detected by said camera means; and
processor means for determining the amount of banked rubber from an image produced by said camera means.

4,642,687
SUPERIMPOSITION OF NON-VISUAL SIGNALS UPON AN IMAGE SIGNAL IN A VIDEO DISPLAY SYSTEM
Francis A. Wedgwood, Nr Wallingford; Peter F. Peck, Wantage, and Michael P. Stevens, Drayton, all of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 6, 1984, Ser. No. 576,939
Claims priority, application United Kingdom, Feb. 10, 1983, 8303693

Int. Cl.⁴ H04N 5/30, 9/04
U.S. Cl. 358—110 5 Claims

1. An apparatus for generating a video display signal capable of driving a suitable imaging system to produce superimposed images from a video camera and one or more detector systems, which apparatus comprises a video camera, one or more detector systems, the one or at least one of the detector systems including a movable probe, a source on the probe, the position of which source is indicative of a position of investigation of the associated detector system, a detection response of the associated detector system energizing the source, which

source when energized produces light, or other radiation to which the camera responds, in excess of a predetermined intensity, the camera producing, when trained upon an area including said position of investigation, a video image signal of the area including said light or other radiation from the source on the probe, a threshold detector for detecting whenever said light or said other radiation received by the camera exceeds said predetermined intensity, a memory system scanned in

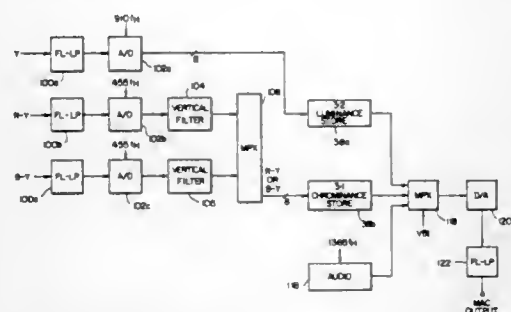


synchronism with the video image signal and arranged to store the video image signal at all image positions where said predetermined intensity is exceeded, and means for mixing a video signal produced by scanning said memory system with the video signal from the camera so that the mixed signal when fed to an imaging system is displayed as a visual image of the area upon which the camera is trained with superimposed bright points at said image positions where said predetermined intensity has been exceeded.

4,642,688
METHOD AND APPARATUS FOR CREATING ENCRYPTED AND DECRYPTED TELEVISION SIGNALS
John D. Lowry, Toronto, and Keith Lucas, Oak Ridges, both of Canada, assignors to Scientific Atlanta, Inc., Atlanta, Ga. Continuation-in-part of Ser. No. 507,565, Jun. 24, 1983. This application May 21, 1985, Ser. No. 736,301
Int. Cl.⁴ H04N 7/167, 11/06

U.S. Cl. 380-11

24 Claims



19. A method of simultaneously creating a MAC standard television signal by compressing luminance or color difference information and encrypting said MAC standard signal comprising the steps of:

storing a predetermined number of samples of a scan line of luminance information in one line store at a first predetermined sampling frequency; and commencing reading out said stored scan line of luminance

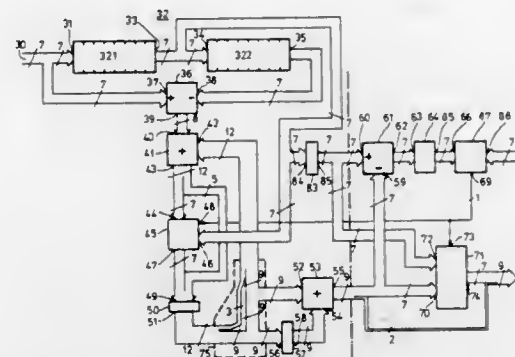
information from said one line store at a second predetermined sampling frequency after a time delay determined by an encryption key.

4,642,689
INCREASING THE RESOLUTION OF A DIGITIZED, TIME-DEPENDENT SIGNAL
Walter H. Demmer, Hamburg, Fed. Rep. of Germany, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Dec. 20, 1984, Ser. No. 684,201
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346570

U.S. Cl. 358-166

Int. Cl.⁴ H04N 5/14

15 Claims

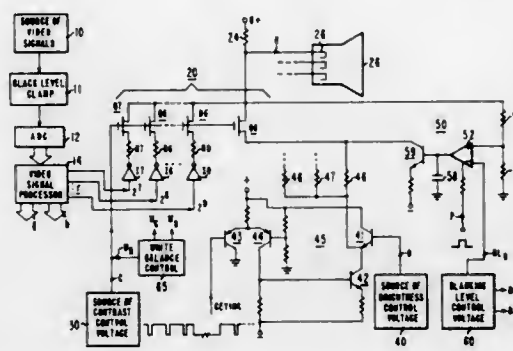


1. Method of increasing the resolution of a digitized time-dependant video signal, the video signal including a sequence of sampling values, the method comprising the steps of: obtaining a sampling value; forming by low-pass filtering an associated mean value with higher resolution from the sampling value and at least one adjacent sampling value; and replacing the sampling value by the associated mean value only when the sampling value and the associated mean value differ by no more than a predetermined amount.

4,642,690
DIGITAL VIDEO SIGNAL PROCESSOR WITH ANALOG LEVEL CONTROL
Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, Princeton, N.J.
Filed Aug. 27, 1984, Ser. No. 644,400
Int. Cl.⁴ H04N 5/16, 5/59

U.S. Cl. 358-169

9 Claims



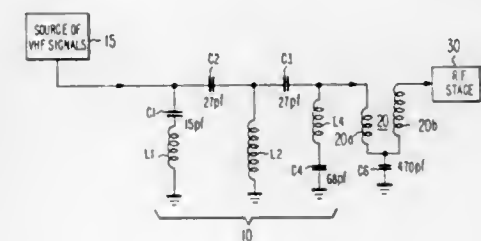
1. A digital video signal processing and display system comprising:
a source of digital video signals comprising plural binary information bits representative of image information to be displayed;

digital signal processor means for digitally processing said video signals;
digital-to-analog signal converter means for providing an output analog signal version of digital output signals from said digital processor;
image display means responsive to video signals applied to an intensity control electrode thereof;
an analog video signal path for coupling said output analog video signals from said converter means to said intensity control electrode of said display means;
means for providing viewer generated analog control signals for controlling the magnitude of said output analog video signals coupled to said display means; and
means for coupling said control signals to said display means in analog form via a signal path exclusive of a signal path including said digital video signal processor; wherein said digital-to-analog signal converter means corresponds to a video output driver stage for providing to said intensity control electrode of said display means said analog signal version of digital output signals with a magnitude for directly driving said intensity control electrode, said digital-to-analog converter means having a plurality of inputs for receiving respective bits of said digital video signal for combining said bits so as to directly produce at an output said analog signal with a magnitude for directly driving said intensity control electrode; and
said analog control signals are applied to said driver stage for controlling the magnitude of analog video signals coupled to said display means.

4,642,691
TELEVISION SIGNAL INPUT FILTER
Dursun Sakarya, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
Filed Feb. 28, 1985, Ser. No. 705,494
Int. Cl.⁴ H04N 5/21, 5/44

U.S. Cl. 358-188

8 Claims



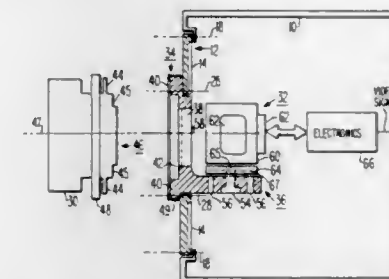
1. In a television signal processing system, apparatus comprising:
a source of television signals;
a radio frequency signal processing stage for processing a band of television signal frequencies to produce intermediate television signal frequencies including video and sound intermediate frequencies; and
a bandpass filter responsive to said television signals for providing filtered television signals to said radio frequency processing stage via a signal path, wherein to prevent locally generated IF signal frequencies and unwanted broadcast signal frequencies outside of said band of television signal frequencies from reaching and interfering with the operation of said radio frequency signal processing stage, said filter comprises
an input filter section comprising a series resonant circuit shunting said signal path;
an output filter section comprising a series resonant circuit shunting said signal path; and
an intermediate filter section with an input terminal for receiving signals from said input section and an output terminal for conveying signals to said output section, said intermediate section including series impedance means

between said input and output terminals and exhibiting a given transfer characteristic between said input terminals.

4,642,692
LENS-TO-PRISM MOUNTING STRUCTURE
Zygmunt M. Andrevski, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Jul. 1, 1985, Ser. No. 750,153
Int. Cl.⁴ H04N 5/30

U.S. Cl. 358-229

6 Claims



1. A television camera comprising:
a lens;
an image pickup arrangement;
a camera enclosure including a front plate portion including an opening dimensioned to pass an image supplied from one end of said lens;
a mounting support of single piece construction having a first portion including an opening therein about the periphery of which is formed means adapted to receive the image supplying end of said lens for precisely positioning the optical axis of said supplied image and a second portion protruding substantially orthogonally from said first portion and including a mounting surface formed on one side thereof to receive said image pickup arrangement for coaxially aligning an input optical axis of said image pickup arrangement with the optical axis of said supplied image; and
means for attaching said support to said camera enclosure front plate such that said openings therein are aligned.

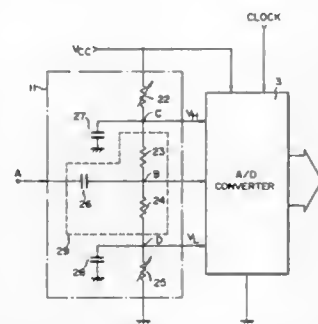
4,642,693
TELEVISION VIDEO SIGNAL A/D CONVERTER APPARATUS
Takahiro Fuse; Masao Kawamura; Koji Yamagishi, all of Tokyo; Kazuyuki Odachi, Tokorozawa; Haruo Ono, and Masaharu Kizaki, both of Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 13, 1985, Ser. No. 733,584
Claims priority, application Japan, May 22, 1984, 59-103035
Int. Cl.⁴ H04N 5/74

U.S. Cl. 358-236

8 Claims

1. A television video signal A/D converter apparatus in a liquid crystal television receiver, comprising:
A/D converting means for A/D converting a television video signal;
reference potential generating means connected to said A/D converting means and comprising means for supplying a predetermined upper reference potential (VH) and means for supplying a predetermined lower reference potential (VL); and
high-pass filter means for dividing the upper and lower reference potentials at a given ratio by a resistor so as to supply to said A/D converting means the input television

video signal having a potential level which is fixed at a constant value using the potential at the dividing point of



the upper and lower reference potentials as a bias potential.

4,642,694

TELEVISION VIDEO SIGNAL A/D CONVERTER

Koji Yamagishi; Takahiro Fuse; Masao Kawamura, and Shinichi Matsui, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

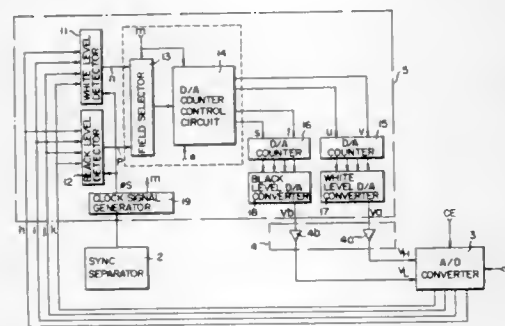
Filed May 13, 1985, Ser. No. 733,583

Claims priority, application Japan, May 22, 1984, 59-103034; Mar. 8, 1985, 60-46032; Mar. 8, 1985, 60-46033

Int. Cl.⁴ H04N 5/74

U.S. Cl. 358—236

13 Claims



1. A television video signal A/D converter comprising: A/D converting means for sampling a television video signal to A/D convert the signal in accordance with upper and lower reference potentials and for supplying the A/D converted television video signal to a liquid crystal display device;

detecting means, connected to said A/D converting means, for detecting from the A/D converted digital signal, digital values exceeding a predetermined value and below a predetermined value which respectively correspond to the upper and lower reference potentials supplied for A/D conversion;

counting means for respectively counting at least in one field the digital values exceeding the predetermined value and the digital values below the predetermined value which are detected by said detecting means; and reference potential producing means for determining the upper and lower reference potentials in accordance with counts of said counting means and supplying the upper and lower reference potentials to said A/D converting means.

4,642,695

PROJECTION CATHODE-RAY TUBE HAVING ENHANCED IMAGE BRIGHTNESS

Yasuo Iwasaki, c/o Mitsubishi Denki Kabushiki Kaisha Kyoto Seisakusho, 1 Babazusho, Nagaokakyo-shi, Kyoto-fu, Japan

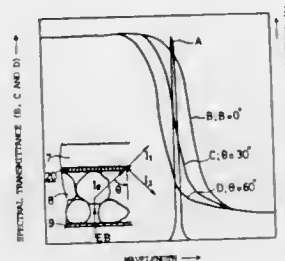
Filed Oct. 30, 1984, Ser. No. 666,422

Claims priority, application Japan, Nov. 4, 1983, 58-207750

Int. Cl.⁴ H04N 5/74, 9/31

U.S. Cl. 358—237

3 Claims



1. A projection cathode-ray tube comprising a vacuum vessel having a face plate, a phosphor layer on an inner surface of said face plate, an interference thin film between the inner surface of said face plate and an outer surface of said phosphor layer, a metal-back film on an inner surface of said phosphor layer and an electron gun within said vessel, wherein an image on said phosphor layer is enlarged and projected on a screen located at a given distance ahead through a projection lens in front of said face plate, such that more than 30% of all luminous flux emitted from an emission point in said phosphor layer is concentrated within a divergent angle of $\pm 30^\circ$ in a direction normal to said face plate.

4,642,696

KINESCOPE DRIVER WITH KINESCOPE CURRENT SENSING CIRCUIT

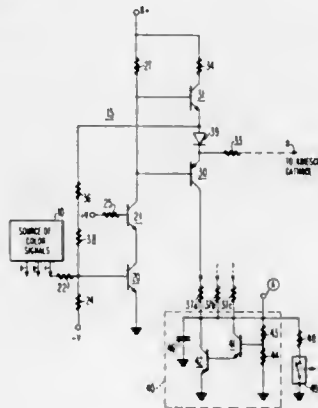
John B. George, Hamilton County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1985, Ser. No. 758,755

Int. Cl.⁴ H04N 5/53, 5/68, 9/16

U.S. Cl. 358—243

10 Claims



1. In a video signal processing system including an image reproducing device for displaying video information in response to a video signal applied thereto, apparatus comprising: a video output driver stage with a video signal input and a video signal output for providing an amplified video signal; means for conveying said amplified video signal to said image reproducing display device, said conveying means having a sensing output for providing thereat a sensed

signal representative of the current conducted by said image reproducing display device; utilization means responsive to said sensed signal; and clamping means for selectively clamping said sensing output during normal image intervals, and for unclamping said sensing output during intervals when said sensed signal representative of current conducted by said image reproducing display device is subject to processing by said utilization means; wherein

said clamping means comprises clamping transistor means with an output first electrode coupled to said sensing output, a second electrode coupled to an operating potential, and an input third electrode coupled to said sensing output, the conduction of said clamping transistor means being controlled in accordance with the magnitude of said sensed signal as received by said third electrode; and said clamping transistor means is self-keyed to exhibit clamping and non-clamping states in response to said sensed representative signal.

4,642,697

FACSIMILE RELAY DEVICE

Yoshinori Wada, Miura, Japan, assignor to Ricoh Company, Ltd., Japan

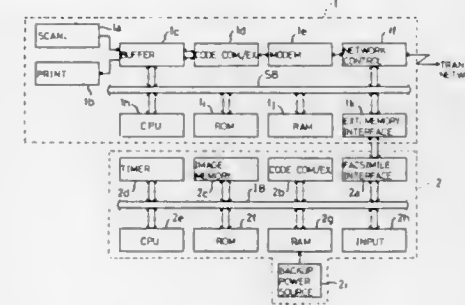
Filed Dec. 14, 1984, Ser. No. 681,508

Claims priority, application Japan, Dec. 14, 1983, 58-234297

Int. Cl.⁴ H06N 1/32

U.S. Cl. 358—257

4 Claims



1. In a facsimile relay device having a printer, an external interface, means for temporarily storing image information provided from a sending station, and means for relaying stored image information to a destination station appointed by a sending station, the improvement comprising:

an auxiliary memory device operatively connected to said external interface of said facsimile relay device, means for determining when a relay operation from a sending station has been completed, means for sending a relay certificate from a destination station to a sending station indicative of completion of a relay operation to the destination station, means cooperating with said relay certificate sending means for repeating the relay certificate sending operation a predetermined number of times if the relay certificate sending operation is unsuccessful, and control means for actuating said printer to print out a relay certificate at the destination station if said relay certificate sending operation is not successful after said predetermined number of times,

whereby a printed relay certificate record is provided at the destination station if the relay certificate sending operation to the sending station is unsuccessful, such that said record can be manually sent at a later time to the sending station.

4,642,698

METHOD AND SYSTEM FOR CONDENSING BINARY IMAGE DATA

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co. Ltd., Kyoto, Japan

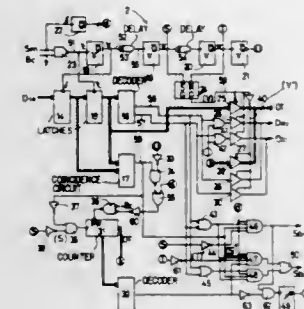
Filed Jan. 12, 1984, Ser. No. 570,261

Claims priority, application Japan, Mar. 28, 1983, 58-53401

Int. Cl.⁴ H04N 1/40, 1/417, 1/419

U.S. Cl. 358—260

16 Claims



1. A method for condensing binary image data and reproducing images comprising the steps of:

- obtaining data of a line-drawing pixel block composed of $m \times n$ pixels by an input scanning means or by a computation means,
- identifying a status of the data as:
 - vacant;
 - solid; or
 - hybrid;
- providing status data differentiating between pixel blocks which are vacant or solid and between blocks which are of a hybrid type,
- providing run-length data identifying a number of vacant or solid line-drawing pixel blocks which are in a sequence;
- providing $m \times n$ bit pattern data describing a line-drawing hybrid pixel block,
- generating a word including said status data and said run-length data for vacant or solid pixel blocks and including said status data and said bit pattern data for hybrid pixel blocks,

when said line-drawing pixel blocks are "hybrid" and in a sequence, using the generated word for expressing the status data and the $m \times n$ bit pattern data and using a next word for expressing the run-length data corresponding to the sequence number of the hybrid line-drawing pixel blocks.

4,642,699

METHOD OF SCANNING AND RECORDING IMAGES

Michio Ohi, Kusatsu, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jun. 7, 1985, Ser. No. 742,543

Claims priority, application Japan, Jun. 20, 1984, 59-126910

Int. Cl.⁴ H04N 1/40

U.S. Cl. 358—280

3 Claims

1. The method of reproducing a combined image scene which includes both line image and pictorial image portions which comprises forming a first image scene in which the line image portion to be combined is separate from the pictorial image portion with which it is to be combined in the combined image scene, deriving the coordinates of the pixels forming the boundaries of the line image portion and of the pictorial image portion in the combined image scene and storing said coordinates in a first memory, scanning the first image scene pixel by pixel for deriving a signal which is a measure of the intensity level of each pixel and comparing the coordinates of each pixel scanned with the coordinates stored in the first memory, supplying reproducing means with input signals for reproducing the combined image scene in synchronism with the scanning of

reproduced pilot signal providing means coupled to said reproducing heads for extracting pilot signals from the signals reproduced by said reproducing heads;

reference signal providing means capable of providing successively at least four kinds of reference signals having different frequencies in response to said head selection signal, the frequencies of said four kinds of reference signals being selected to be equal to the frequencies of said four kinds of pilot signals, respectively;

error signal providing means coupled to said reproduced pilot signal providing means and said reference signal providing means for providing an error signal for controlling the tracing positions of said reproducing heads with respect to said recording medium based on the outputs of said reproduced pilot signal providing means and said reference signal providing means;

detection period signal providing means for providing a detection period signal at the time of starting still reproduction;

head position control forbidding means coupled to said head displacing means and said detection period signal providing means for forbidding the control of said head displacing means in response to said detection period signal;

level detection signal providing means coupled to said error signal providing means and said detection period signal providing means for observing said error signal changing during the application of said detection period signal and for providing a level detection signal when said error signal attains the optimum prescribed level for tracing control; and

reference signal control means coupled to said level detection signal providing means and said reference signal providing means in response to said level detection signal so as to provide reference signals suited for the scanned tracks at the time of still reproduction.

4,642,705

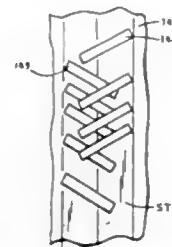
MAGNETIC RECORDING AND REPRODUCING APPARATUS, SYSTEM AND METHOD

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540
Continuation-in-part of Ser. No. 405,996, Aug. 6, 1982, Pat. No. 4,578,717. This application Jan. 3, 1986, Ser. No. 815,933

Int. Cl.⁴ G11B 5/00

U.S. Cl. 360—18

20 Claims



1. Magnetic recording apparatus comprising:
 - (a) a first support,
 - (b) first means supported by said first support for supporting a magnetic record member,
 - (c) second means supported by said first support including a recording magnetic transducer having aligned pole pieces and operable to magnetically transduce data with respect to said magnetic record member supported by said first support,
 - (d) means for effecting relative scanning movement between said first and second means to permit said transducer to transduce information with respect to a select record track of said magnetic record member, the improvement comprising:
 - (e) means for controllably moving said transducer in a manner to selectively change the attitude of its pole pieces to permit it to record data defining at least two discrete

magnetic recordings along the same length of the same record track of said magnetic record member, wherein a first of said magnetic recordings is defined by magnetic domains which extend in a first direction in the recording material of a select record track of said magnetic record member and another of said magnetic recordings is defined by magnetic domains which extend in a second direction in the magnetic recording material of the same record track of said record member but at an angle to the longitudinal axis of said track which is different from the angle defined by the first direction in which said domains of said first and said magnetic recordings extend.

4,642,706

VIDEO CASSETTE RECORDER WITH IMPROVED TAPE GUIDING AND TENSIONING

Norbert Vollmann, and Leopold Mader, both of Wiener Neudorf, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

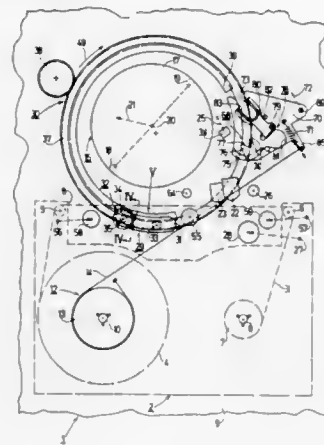
Filed Feb. 27, 1985, Ser. No. 706,209

Claims priority, application Austria, Apr. 25, 1984, 1372/84

Int. Cl.⁴ G11B 15/48

U.S. Cl. 360—74.3

7 Claims



1. A helical scan cassette recorder, for use with a cassette accommodating a magnetic tape and having an opening from which tape can be drawn for scanning by the recorder, comprising a panel,
 - a drum-shaped scanning device for the magnetic tape, mounted to said panel, and having an outer surface around which, during operation, magnetic tape drawn out of the cassette is wrapped over a given angular range,
 - means, comprising a tape guide device, for drawing the magnetic tape out of a cassette and wrapping the tape around the scanning device; said means comprising at least one tape guide, a displacement device for displacing said at least one tape guide between a rest position and an operating position, and a holder to which the tape guide is secured, arranged such that in the rest position the tape guide engages behind the magnetic tape accommodated in the cassette adjacent to the cassette opening, and in the operating position the magnetic tape which was carried along by the tape guide during displacement, is kept wrapped around the scanning device,
 - a positioning device for positioning the tape guide in its operating position, and a displaceable support on which the positioning device is arranged, and
 - a tape tension adjustment device for adjusting tape tension when the magnetic tape wrapped around the scanning device is driven, comprising a tape tension indicator, characterized in that the displacement device for the tape guide includes a ring for displacing said holder, mounted for pivotal rotation about said scanning device; a guide coaxial to said ring for guiding the holder during its dis-

placement; means for driving said ring pivotally about said scanning device; and a sliding rod pivotally connected to said holder and having a bent free end; and

the displacement device is arranged such that, when the tape guide is in the operating position, the displacement device is disengaged from the tape guide,

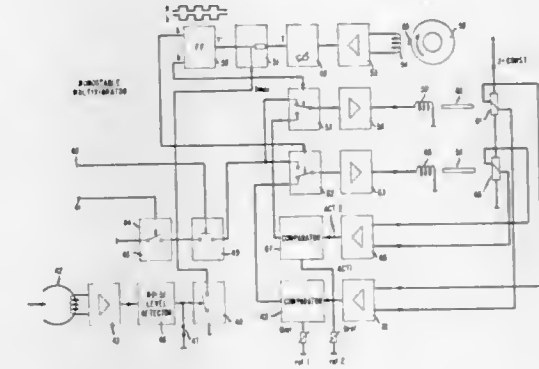
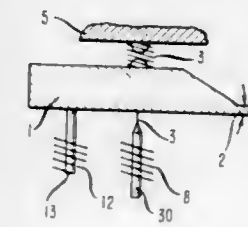
the recorder comprises a spring for biasing said displaceable support, and an urging device for urging the tape guide, when in the operating position, against the positioning device against the force of said spring; said urging device being provided on the support so as to be displaceable with respect to the support between a disengaged position and an urged position,

said ring has a slot communicating with said panel, said angular free end engaging said slot during rotation of the ring so as to displace the tape guide towards its operating position,

said panel has a slot aligned with said ring slot when the ring is in the operating position, such that said rod free end is slidably supported by the panel during rotation of the ring from the rest position, while when the ring is in the operating position said bent end is disengaged from the ring and enters the slot in the panel so as to be freely moveable within said slots; and upon rotation of the ring for displacing the tape guide from its operating position toward the rest position, said bent end is moved out of the slot of the panel, and engages an abutment on the ring for moving said holder away from said support, and

the support constitutes the tape tension indicator, and is arranged so as to be displaceable substantially parallel to a longitudinal plane of symmetry of a freely extending magnetic tape section immediately adjacent to the scanning device under the tension exerted by the magnetic tape on the tape guide while situated in its operating position and urged against the positioning device on the support.

for neighboring recording tracks and controlled by the switching means continuously for recording and depend-



ing on the sensed signal level for playback and depending on signal changes resulting from switching pulses.

4,642,708

MAGNETIC RECORDING AND REPRODUCING APPARATUS

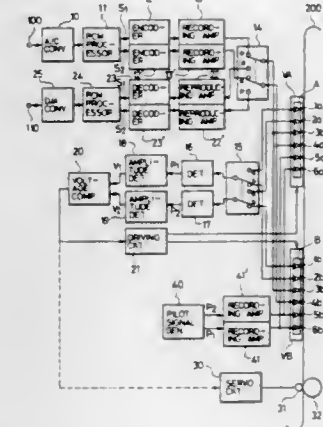
Takashi Furuhashi, Yokohama; Katsuo Mohri, Yokosuka, and Katsuo Konishi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1985, Ser. No. 759,963

Claims priority, application Japan, Jul. 27, 1984, 59-155298

Int. Cl.⁴ G11B 5/56

8 Claims



1. A magnetic recording and reproducing apparatus provided with a disc rotatable at a predetermined speed and a magnetic head mounted on the disc, for recording a signal on a magnetic tape, and the signal being recorded on the magnetic tape so as to form a plurality of recording tracks inclined at a predetermined angle to a traveling direction of the magnetic tape and parallel with each other, which comprises:

4,642,707

MAGNETIC TAPE VIDEO RECORDER WITH A ONE HEAD DRUM

Erich Geiger, Unterkirnach, and Jürgen Kaaden, Villingen-Schwenningen, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 582,075

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305618

Int. Cl.⁴ G11B 5/52, 5/56

U.S. Cl. 360—76

20 Claims

1. A magnetic tape recorder for video recording and playback comprising
 - a rotary single head drum to be wrapped by the recording tape;
 - a base plate;
 - a head support pivoted around two mutually vertical axes relative to the base plate;
 - a dynamic track follow control circuit for correcting the level position of the magnetic tape head;
 - a first drive means actuating the head support for effecting a level correction vertical to the direction of the recording track and connected to the level control circuit;
 - a drive motor for the head support plate;
 - a rotary pulse generator disposed at the drive motor;
 - switching means for shaping pulses generated by the rotary pulse generator;
 - a second driving means for pivoting the head support plate around said second axis and for effecting an azimuth offset

a main head mounted on said disc, for recording a signal to be recorded on the magnetic tape;
 an auxiliary recording head mounted on said disc at a position near the main head, for recording a pilot signal on the magnetic tape so as to form a recording track having a predetermined relative position with a recording track of the main head;
 an auxiliary reproducing head mounted on said disc at a position near the main head, for reproducing the pilot signal recorded in a preceding track, at the time of the main head recording a signal in the next track; and
 means for controlling the relative position of the main head with the magnetic tape at the time of recording in said next track in response to the pilot signal reproduced by the auxiliary reproducing head.

4,642,709

TWIN TRACK VERTICAL MAGNETIC RECORDING SERVO CONTROL METHOD

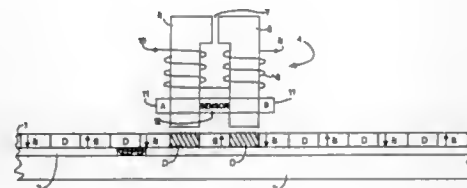
Albert W. Vinal, Cary, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,876

Int. Cl.⁴ G11B 5/56, 23/36

U.S. Cl. 360—77

9 Claims



2. A vertical magnetic servo track recording method comprising a step of:

writing two oppositely magnetically polarized servo tracks parallel to each data track on a vertically polarizable magnetic medium.

5. Vertically polarizable magnetic medium recording head position servo control apparatus, comprising:

a plurality of parallel, vertically polarized recorded servo tracks in said magnetic medium, the vertical magnetic polarity of which tracks alternates from track to track.

4,642,710

ANIMATED DISPLAY CONTROLLED BY AN AUDIO DEVICE

Eugene A. Murtha, Simsbury, Conn.; Mark B. Johnson-Williams, East Longmeadow, Mass.; Theodore N. Madison, Windsor, Conn., and Michael C. Cartabiano, Agawam, Mass., assignors to Milton Bradley International, Inc., Springfield, Mass.

Filed Mar. 15, 1985, Ser. No. 712,382

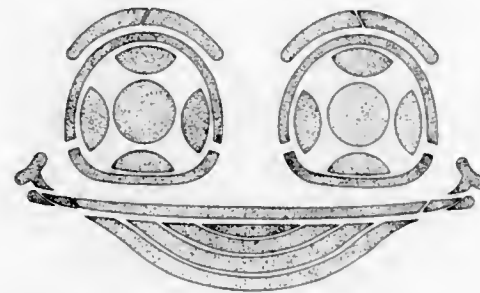
Int. Cl.⁴ G11B 31/00; G09F 27/00

U.S. Cl. 360—79

1 Claim

1. An animated display device comprising:
 an audio tape player of cassette type having a recorded audio signal track,
 an animated liquid crystal display and addressing circuitry including a plurality of electrically-conductive matrices arranged in the form of segments representing portions of the eyes and eyebrows and mouth of a human face in different positions suggesting different facial expressions

and a driver and driving circuitry having terminals electrically connected to the matrices,
 an amplitude detector for outputting signals according to the reading of the audio signals of the tape,
 an analog comparator connected to the amplitude detector for outputting digital signals according to the amplitude of the audio signals,
 a microprocessor having programmed means for reading the output of the analog comparator and delivering electronic signals to the driver,
 a power source for powering the tape player and microprocessor and amplitude detector,



a selector button shiftable between a ready operating mode and a fast forward non-playing mode and a stop mode and an eject mode,

and a housing for accommodating the tape player and liquid crystal display and microprocessor and amplitude detector and power source and selector button,

all adapted and arranged for the driving of the liquid crystal display by the driver in animating the facial expressions in seeming synchronization with the tape recorded audio on the cassette tape as transcribed by the player with the facial expressions being changeable responsively to the voltage selectively applied at portions of the liquid crystal composition where the eyes and eyebrows and mouth are represented.

4,642,711

VIDEO TAPE RECORDER INCLUDING VERTICAL RECORDING HEADS

Yutaka Yunoki; Kenji Kimura; Akira Kato, and Tatsuo Imamura, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

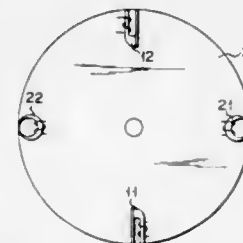
Filed Nov. 14, 1983, Ser. No. 551,323

Claims priority, application Japan, Nov. 29, 1982, 57-209074

Int. Cl.⁴ G11B 5/027, 5/127, 5/52, 21/04

U.S. Cl. 360—84

16 Claims



1. A rotary head type video tape recorder, which comprises:
 a rotary cylinder arranged for slidable contact, at a portion of the peripheral wall of said cylinder, with a video tape having a recording magnetic layer defining a magnetic plane; and
 at least one vertical magnetization recording head mounted

on said rotary cylinder in the vicinity of said peripheral wall;

wherein said vertical magnetization recording head includes a portion which comprises a main magnetic pole and an auxiliary magnetic pole each disposed to face the magnetic plane of said video tape, so that at least part of the recording magnetic flux passing between said main magnetic pole and said auxiliary magnetic pole passes through the recording magnetic layer of the video tape substantially perpendicularly;

wherein the peripheral wall of the rotary cylinder is provided with at least one playback head the location of which is displaced a given angle from the location of said vertical magnetization recording head with respect to the rotational center of said rotary cylinder; and

wherein the playback head includes a first magnetic circuit member having a first vertical end surface and a second magnetic circuit member a part of which is superposed on a part of said first magnetic circuit member and having a second vertical end surface parallel to and facing in the direction of said first end surface, wherein said end surfaces are offset from one another and the distance between the planes of said end surfaces defines a transducing gap at a position facing the magnetic plane of the video tape so that magnetic flux released from said tape is absorbed by one of said end surfaces to be conducted by both said magnetic circuit members and returned to the tape from the other one of said end surfaces, and a ring-shaped magnetic circuit formed in part by said first and said second magnetic circuit members;

means to convert between magnetism and electricity in winding coupling relation with said ring-shaped magnetic circuit; and

control means for activating said vertical magnetization head to record on said video tape the shorter wavelength component of a signal to be recorded, for activating said playback head to record on said video tape the longer wavelength component of said signal to be recorded, and for activating said playback head to play back from said video tape both said shorter and longer wavelength components of said signal.

11. A rotary head type video tape recorder, which comprises:

a rotary cylinder arranged for slidable contact, at a portion of the peripheral wall of said cylinder, with a video tape having a recording magnetic layer defining a magnetic plane; and

at least one vertical magnetization recording head mounted on said rotary cylinder in the vicinity of said peripheral wall;

wherein said vertical magnetization recording head includes a portion which comprises a main magnetic pole and an auxiliary magnetic pole each disposed to face the magnetic plane of said video tape, so that at least part of the recording magnetic flux passing between said main magnetic pole and said auxiliary magnetic pole passes through the recording magnetic layer of the video tape substantially perpendicularly;

wherein the peripheral wall of the rotary cylinder is provided with at least one playback head the location of which is displaced a given angle from the location of said vertical magnetization recording head with respect to the rotational center of said rotary cylinder; and

wherein the vertical magnetization recording head helically scans the magnetic plane of the video tape wound around the rotary cylinder; and the rotational locus of the vertical magnetization recording head is displaced from the rotational locus of the playback head at a distance corresponding to the distance between adjacent recording tracks formed on the video tape by a helical scanning operation, so that immediate post-monitoring of recorded data can be obtained via the playback head; and

control means for activating said vertical magnetization head to record on said video tape the shorter wavelength component of a signal to be recorded, for activating said

playback head to record on said video tape the longer wavelength component of said signal to be recorded, and for activating said playback head to play back from said video tape both said shorter and longer wavelength components of said signal.

4,642,712

AUTOMATIC TAPE LOADING TYPE RECORDING AND/OR REPRODUCING APPARATUS HAVING A PLURALITY OF MODES

Kazuo Kohda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

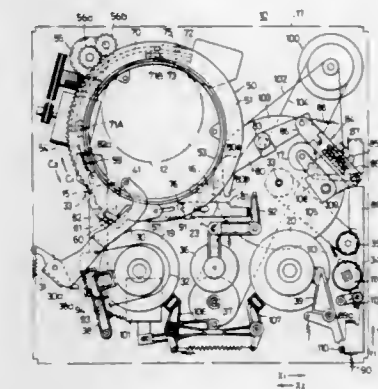
Filed Feb. 16, 1984, Ser. No. 580,897

Claims priority, application Japan, Feb. 28, 1983, 58-33475; Mar. 7, 1983, 58-32569[U]; Mar. 7, 1983, 58-32570[U]

Int. Cl.⁴ G11B 5/027, 5/008, 15/00, 17/00

U.S. Cl. 360—85

8 Claims



1. An automatic tape loading type recording and/or reproducing apparatus having a plurality of modes and being set to one of the modes at one time, said recording and/or reproducing apparatus comprising:

a guide-drum having at least a pair of heads for recording and/or reproducing an information signal onto and/or from a tape;

tape guide means for drawing the tape out of a tape cassette which is loaded within the apparatus while said guide means moves to a predetermined position, and for guiding the tape in a predetermined tape path so that the tape is wrapped around a peripheral surface of said guide drum when said guide means is in said predetermined position; a supply reel disc and a take-up reel disc for rotating reels of said tape cassette, said reels being respectively fitted over said supply and take-up reel discs when said tape cassette is loaded into the apparatus;

a pair of ring-shaped bodies being disposed so as to generally encompass said guide drum in a plan view and rotating to move said tape guide means, each of said pair of ring-shaped bodies assuming a rotational position depending on a set mode of the apparatus so that said pair of ring-shaped bodies move said tape guide means in one direction from an original position up to the predetermined position when each of said pair of ring-shaped bodies rotates from a first rotational position to a second rotational position and moving said tape guide means in a direction opposite to said one direction and back from the predetermined position to the original position when each of said pair of ring-shaped bodies rotates from the second rotational position to the first rotational position;

tape driving means for driving the tape in said predetermined tape path, said tape driving means being displaced to one of a plurality of predetermined positions so that said tape driving means drives the tape at a tape traveling speed and in a tape traveling direction depending on the set mode of the apparatus;

braking means for braking said supply reel disc and said tape-up reel disc, said braking means being displaced to assume one of operating and nonoperating positions depending on the set mode of the apparatus;

first control means responsive to the rotational position of said pair of ring-shaped bodies for displacing said tape driving means to one of said plurality of predetermined positions in correspondence with the set mode of the apparatus; and

second control means responsive to the rotational position of said pair of ring-shaped bodies for displacing said braking means to one of the operating and nonoperating positions in correspondence with the set mode of the apparatus and further said tape driving means comprises a pinch roller which presses against a capstan with the tape pinched between the pinch roller and the capstan, and rotary bodies for making contact with said reel discs and for rotating said reel discs in a tape take-up direction, and said first control means comprises first cam means and second cam means, said first cam means being displaced due to a rotation of said pair of ring-shaped bodies and moving said pinch roller so that said pinch roller presses against said capstan, said second cam means being displaced by a displacement of said first cam means and moving said rotary bodies so that said rotary bodies make contact with said reel discs.

4,642,713

HELICAL SCAN TYPE RECORDING AND/OR REPRODUCING APPARATUS

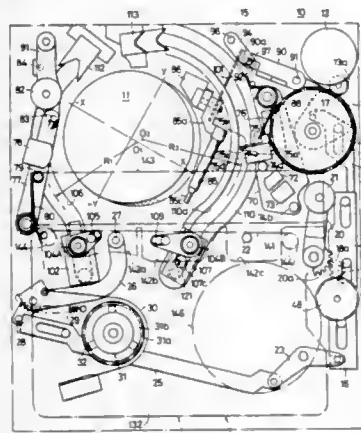
Tsunehisa Ohira, Sagami-hara; Shinji Hirano, Tokyo, and Koji Sadakane, Sagami-hara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 25, 1984, Ser. No. 623,984

Claims priority, application Japan, Jul. 11, 1983, 58-125866
Int. Cl.⁴ G11B 15/06

U.S. Cl. 360—85

10 Claims



1. A helical scan type recording and/or reproducing apparatus comprising:

- a cassette loading part into which a tape cassette accommodating therein a tape is loaded;
- a guide drum having recording and/or reproducing heads for recording and/or reproducing signals on and/or from the tape which is drawn out of said tape cassette loaded in said cassette loading part, the drawn tape being spirally wrapped around said tape guide drum and traveling along a tape traveling path which comprises an upstream tape path part extending from said tape cassette to a first point where said tape begins to make contact with a peripheral surface of said tape guiding drum, a spiral tape path part extending from said first point to a second point where said tape terminates a contact with the peripheral surface

of said tape guide drum, and a downstream tape path part extending from said second point to said tape cassette;

first loading means for drawing the tape out of said tape cassette loaded in said cassette loading part during a tape loading operation by moving from an unloading position to a loading completion position which is located on said upstream tape path part, without changing a height position thereof which corresponds to a height position of a reference plane which is determined by a center line of the tape within said tape cassette;

second loading means for drawing the tape out of said tape cassette loaded in said cassette loading part during the tape loading operation by moving from an unloading position to a loading completion position which is located on said downstream tape path part and is in a plane lower than the reference plane, said first and second loading means in the respective loading completion positions guiding the tape so that the height of the center line of the tape gradually lowers between said first and second loading means in the respective loading completion positions, and said spiral tape path part extends around the peripheral surface of said tape guide drum over an angle which is substantially equal to or larger than 270°;

driving means for driving each of said first and second loading means to move from the unloading position to the loading completion position during the tape loading operation; and

tape guiding means arranged on a downstream side of said second tape loading mean, for making contact with the tape which is drawn out of said tape cassette by said second loading means and for guiding the tape which has been guided by said second loading means in the loading completion position so as to change a traveling direction of the tape so that the center line of the tape has the same height position as said reference plane in the downstream side of said tape guiding means,

said tape guiding means comprising a guide pole for guiding the tape in the downstream side of said second tape loading means, said guide pole being fallen when said first and second loading means are in the respective unloading positions, and said guide pole being driven by said driving means during the tape loading operation so that said guide pole rises to make contact with the tape from the same side of the tape as the second loading means and to guide the tape in the downstream side of the second loading means.

4,642,714

TAPE CASSETTE LOADING AND EJECTING DEVICE IN A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Ritsu Miyamoto, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

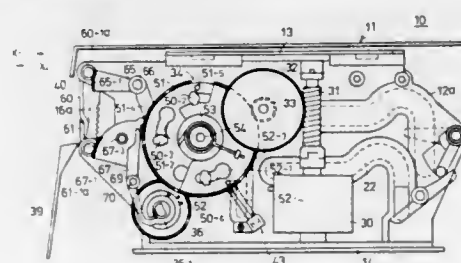
Filed Feb. 7, 1984, Ser. No. 577,857

Claims priority, application Japan, Feb. 8, 1983, 58-16924[U]; Feb. 22, 1983, 58-27900

Int. Cl.⁴ G11B 5/008, 15/00, 17/00

U.S. Cl. 360—96.5

6 Claims



1. A tape cassette loading and ejecting device comprising:

a cassette holder for accommodating and holding a tape cassette which is inserted therein;

support means for supporting said cassette holder, said cassette holder being movable relative to said support means between a cassette loading position and a cassette ejecting position;

first stopper means provided on said support means for stopping said cassette holder in said cassette loading position when said cassette holder reaches said cassette loading position;

second stopper means provided on said support means for stopping said cassette holder in said cassette ejecting position when said cassette holder reaches said cassette ejecting position;

moving means provided on at least one of said cassette holder and said support means for moving said cassette holder between said cassette loading position and said cassette ejecting position;

a motor for operating said moving means, said motor rotating in a forward direction during a tape cassette loading operation and rotating a reverse direction during a tape cassette ejecting operation;

rotation transmitting means for transmitting the rotation of said motor to said moving means, said rotation transmitting means comprising an output gear for transmitting the rotation of said motor to said moving means, a first gear which is rotated by the rotation of said motor during the tape cassette loading operation, a second gear which is rotated by the rotation of said motor during the tape cassette ejecting operation, and spring means which is resiliently deformable and is disposed between said first and second gears so that rotary axes of said output gear, said first gear and said second gear are coaxially provided, said output gear rotating unitarily with said first gear during the tape cassette loading operation until said cassette holder is stopped by said first stopper means at said cassette loading position, said first gear continuously rotating but separately from said output gear after said cassette holder reaches said cassette loading position during the tape cassette loading operation so that said spring means is deformed to press said cassette holder to said first stopper means, said output gear rotating during the tape cassette ejecting operation unitarily with said second gear until said cassette holder is stopped by said second stopper means at said cassette ejecting position, said second gear continuously rotating but separately from said output gear after said cassette holder reaches said cassette ejecting position so that said spring means is deformed to press said cassette holder to said second stopper means; and

a switch for stopping the rotation of said motor in an activated state thereof, said switch being activated by the separate rotation of said first gear from said output gear during the tape cassette loading operation and the separate rotation of said second gear from said output gear during the tape cassette ejecting operation.

4,642,715

ENVIRONMENTAL CONDITIONING AND SAFETY SYSTEM FOR DISK-TYPE MASS MEMORIES

Don S. Ende, Commack, N.Y., assignor to Miltope Corporation, Melville, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,121

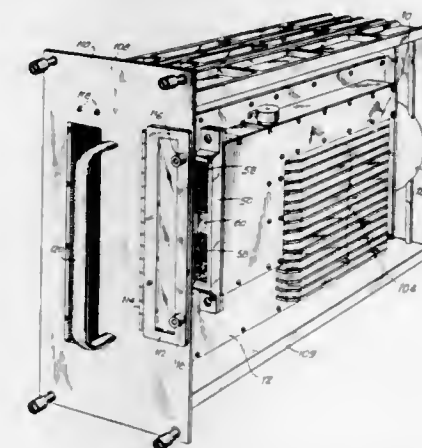
Int. Cl.⁴ G11B 23/04

U.S. Cl. 360—97

11 Claims

1. An environmental control apparatus for a disk-type mass memory device having at least one sealed head/disk compartment, said apparatus comprising means for exchange of air between said compartment and the atmosphere, means for drying the air drawn in by said air exchange means, means for filtering the air drawn by said air exchange means, means for dissipating heat from within said compartment, means for preventing rapid depressurization of said sealed compartment, means for sensing and signalling a low barometric pressure condition within said compartment and means for interrupting

the operation of said mass memory device, said sensing and signalling means comprising an altitude pressure switch dis-



posed within said sealed compartment, said switch including means for generating an interrupt signal for transmittal to said mass memory device.

4,642,716

MAGNETIC TRANSDUCER HEAD ASSEMBLY WITH SUPPORT SYSTEM THEREFOR

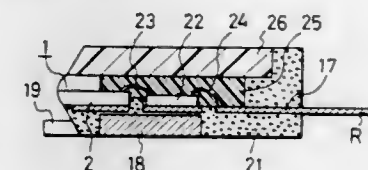
Noboru Wakabayashi, Tagajo; Katsuhiko Akiyama, Atsugi; Yutaka Soda, Ebina, and Hiroyuki Uchida, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,995

Claims priority, application Japan, Oct. 28, 1982, 57-189860
Int. Cl.⁴ G11B 5/48, 21/16, 5/127, 5/17

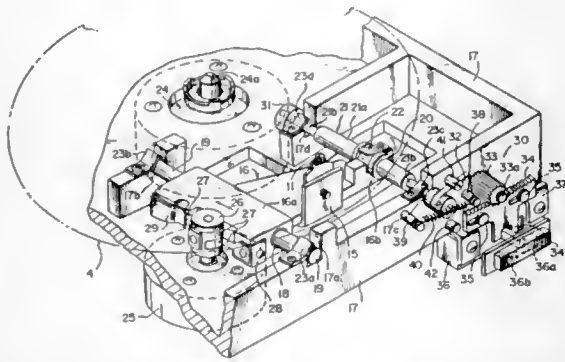
U.S. Cl. 360—104

7 Claims



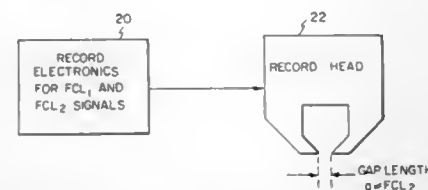
1. A magnetic transducer head assembly comprising:
 - a unitary support member comprising a lead frame and a resin molding, said lead frame having a body including a magnetic transducer head mounting portion, an integrated circuit element mounting portion, and a plurality of lead terminals, and said resin molding surrounding said lead frame but leaving exposed said magnetic transducer head mounting portion, said integrated circuit element mounting portion and one end portion of each of the lead terminals;
 - a multi-channel magnetic transducer head mounted on said magnetic transducer head mounting portions;
 - an integrated circuit element mounted on said integrated circuit element mounting portions, said integrated circuit element having a reproducing or recording circuit for said magnetic transducer head element; and
 - wiring means forming pre-determined electrical connections between said transducer head and said integrated circuit element and between said integrated circuit element and said lead terminals; and
 - a second resin molding encapsulating said magnetic transducer mounting portion and said integrated circuit mounting portion exposing a surface of said magnetic transducer head facing toward a travelling magnetic recording medium.

4,642,717
MECHANISM FOR LIFTING AND LOWERING
MAGNETIC HEAD IN MAGNETIC RECORDING AND
REPRODUCING DEVICE
 Shinichi Matsuda, and Kazuhisa Seki, both of Saitama, Japan,
 assignors to Fuji Photo Optical Co., Ltd., Japan
 Filed Mar. 18, 1985, Ser. No. 712,664
 Claims priority, application Japan, Mar. 30, 1984, 59-63041
 Int. Cl.⁴ G11B 5/54
 U.S. Cl. 360—105 6 Claims



1. A mechanism for lifting and lowering a magnetic head in a magnetic recording and reproducing device, comprising:
- (i) a frame;
 - (ii) a first guide shaft supported on said frame, and a second guide shaft rotatably supported on said frame and having an eccentric portion;
 - (iii) a magnetic head carriage supporting a magnetic head thereon and slidably movable along said guide shafts toward a recording/playback position, drive means operably connected to said carriage for sliding said carriage along said guide shafts, said magnetic head carriage having an end held in engagement with said eccentric portion of said second guide shaft;
 - (iv) a positioning plate mounted on said frame; and
 - (v) a driver mechanism mounted on said frame for rotating said second guide shaft to cause said eccentric portion to display said magnetic head carriage and rotate said magnetic head carriage about said first guide shaft toward said positioning plate whereby a magnetic medium interposed between said positioning plate and said magnetic head permits transducing contact between a magnetic medium and said magnetic head.

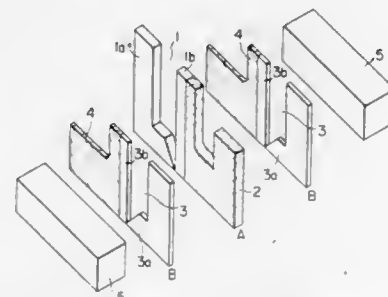
4,642,718
OPTIMUM CONTROL OF OVERWRITE BY RECORD
GAP LENGTH SELECTION
 David E. Wachenschwanz, San Diego, and Frederick J. Jeffers, Escondido, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Nov. 28, 1984, Ser. No. 675,574
 Int. Cl.⁴ G11B 5/25, 5/02
 U.S. Cl. 360—119 8 Claims



1. In apparatus for efficiently overwriting atop, thereby to erase, a first magnetically recorded signal having a given flux change length by means of a second signal having a second flux change length that is one half as great as that of said first signal, the improvement wherein the length of the gap of the record

head of said apparatus is approximately the same as the flux change length of said second signal.

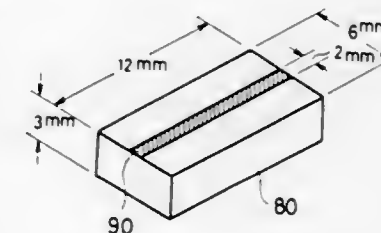
4,642,719
MAGNETIC HEAD ASSEMBLY
 Shigetoshi Morita, Saitama; Masaaki Ashizawa, Fukaya, and Hirohide Yamada, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
 Filed Feb. 17, 1983, Ser. No. 467,287
 Claims priority, application Japan, Feb. 18, 1982, 57-24802; Feb. 18, 1982, 57-24808; Feb. 18, 1982, 57-24811; Feb. 18, 1982, 57-24823
 The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.
 Int. Cl.⁴ G11B 5/22, 5/16
 U.S. Cl. 360—126 9 Claims



1. A magnetic head assembly comprising:
- a read/write magnetic head disposed to read and write data, said magnetic head consisting essentially of a Mn-Zn ferrite, and having a magnetic gap formed therein;
 - a first reinforcing member comprised of a non-magnetic ceramic material bonded by a glass to said magnetic head such that said reinforcing member is in line with said magnetic gap;
 - a pair of magnetic erasing heads one of which is affixed on each side of said first reinforcing member, each of said pair of erasing heads having a magnetic gap, said erasing heads limiting the width of data written by said read/write magnetic head;
 - a pair of second reinforcing members comprised of a non-magnetic ceramic material, each of said second reinforcing members being bonded to one of said erasing heads with each of said second reinforcing members being in line with the magnetic gap of the adjacent erasing head and on either side of said read/write magnetic head, wherein the area (Af) defined by the thermal expansion coefficient curve of said Mn-Zn ferrite in the temperature range between room temperature and the softening point of said glass and the area (Ac) defined by the thermal expansion coefficient curve of said non-magnetic material comprising said first reinforcing member in the same temperature range satisfy the following condition:

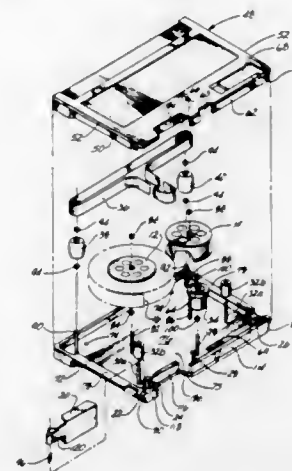
$$-3.8 \times 10^{-4} \leq A_f - A_c \leq 1.8 \times 33 \times 10^{-4}$$

4,642,720
MAGNETIC HEAD COMPRISED OF AN IMPROVED
BASE SUBSTANCE FOR HIGH DENSITY MAGNETIC
RECORDING
 Nobuyuki Kishine; Tetsuya Imamura, both of Tochigi; Michihide Yamauchi, Wakayama, and Tsuyoshi Ootani, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan
 Filed Nov. 3, 1983, Ser. No. 548,566
 Claims priority, application Japan, Nov. 4, 1982, 57-194013; Jan. 11, 1983, 58-3124; Feb. 8, 1983, 58-19293; Mar. 15, 1983, 58-41471
 Int. Cl.⁴ G11B 5/187, 5/147
 U.S. Cl. 360—126 12 Claims



1. A magnetic head comprising a converter for writing or reading on a magnetic recording medium, the converter including a converter support made of an aggregate of a glass-like carbon material or a composite material comprising an aggregate of glass-like carbon material and thermosetting resin and/or carbonaceous filler.

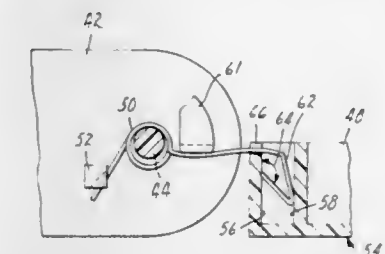
4,642,721
MAGNETIC TAPE CARTRIDGE WITH INCREASED
DATA PACKING DENSITY
 Harold H. Georgens, Rancho Santa Fe, and Dean L. Christensen, Bonsall, both of Calif., assignors to Data Electronics, Inc., San Diego, Calif.
 Continuation-in-part of Ser. No. 533,640, Sep. 19, 1983. This application Dec. 3, 1984, Ser. No. 677,197
 The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.
 Int. Cl.⁴ G11B 23/02
 U.S. Cl. 360—132 5 Claims



1. Apparatus for increasing the data recording track packing density in a belt-driven tape cartridge of the type which includes a cartridge housing, a pair of reels in the housing for holding a magnetic tape, an endless belt extending around portions of the carried on the reels, and a belt-driving roller for engagement with a drive capstan of a tape transport for driving the belt to move the tape past a magnetic read/write head in the tape transport and in contact with a portion of the tape in

the cartridge housing, in which the cartridge housing comprises a base plate joined to a cover plate for forming the cartridge housing, opposing side flanges extending at an intermediate elevation along opposite sides of the cartridge housing, in which opposing upper grooves extend along opposite side walls of the cover plate at an elevation above the side flanges, in which the side flanges extend along opposite side walls of the base plate, and in which opposing lower recessed regions extend along the opposite side walls of the base plate below the side flanges, the side walls of the cover plate and the base plate being juxtaposed when the two base plates are joined to form the cartridge housing, and in which the lower recessed regions of the base plate extend along opposite sides of a stepped down recessed wall portion of the base plate for providing sufficient depth to the internal spacing within the cartridge housing below the side flanges of the housing for permitting the tape contained within the housing to be up to 1/4-inch in width, the tape being wound on reels within the cartridge housing of sufficient width to accommodate the width of the tape.

4,642,722
SPRING MECHANISM FOR LID OF VIDEO CASSETTE
 Charles D. Gebeke, White Bear Lake, and Mark W. Weavers, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
 Filed Feb. 7, 1984, Ser. No. 577,777
 Int. Cl.⁴ G11B 23/02, 23/04, 15/32; G03B 1/04
 U.S. Cl. 360—132 15 Claims



1. A cassette including a visor-type lid having a corner part at which a pin journals the lid to a sidewall of the cassette for pivotal movement between open and closed positions of the lid relative to the sidewall, a coil spring having a helical central portion around the pin and opposite first and second end portions, and means for fixing said first end portion to said lid and said second end portion to said sidewall to bias the lid toward the closed position, wherein said means for fixing said second end portion to said sidewall comprises said sidewall including walls defining a well having an opening and opposed interior surfaces, with one of said opposed interior surfaces facing toward said pin and the other of said opposed interior surfaces facing away from said pin, and said second end portion is bent to form an end part ending at a tip, which end part is positioned in said well and is at least partially under compression between said opposed interior surfaces of the well to bias the tip into engagement with one of said opposed interior surfaces while forming an obtuse angle between the portion of the end part adjacent the tip and the portion of the opposed interior surface contacted by the tip between the tip and said opening.

4,642,723

A HEAT PROTECTION DEVICE FOR OVERVOLTAGE ARRESTER MAGAZINES

Peter Achtnig, and Gunter Hegner, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

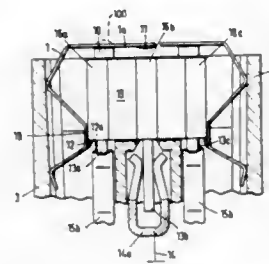
Filed Jun. 11, 1984, Ser. No. 618,997

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323687

Int. Cl.⁴ H02H 3/22

U.S. Cl. 361—124

6 Claims



1. A heat protection device for overvoltage arresters for use in telecommunications, comprising a resilient element having: a solder preform; and an S-shaped clip spring, one leg thereof being supported by the solder preform and the switch contact and the other leg thereof having latching means including two resilient tabs, said latching means engaging in an overvoltage arrester magazine beneath a two-way overvoltage arrester, the clip spring being supported by the inner wall of the overvoltage arrester magazine.

4,642,724

TRIP SIGNAL GENERATOR FOR A CIRCUIT INTERRUPTER

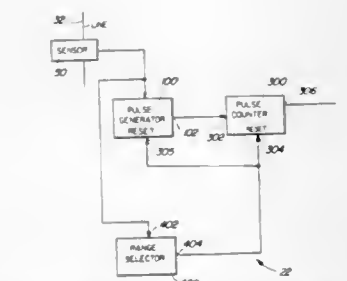
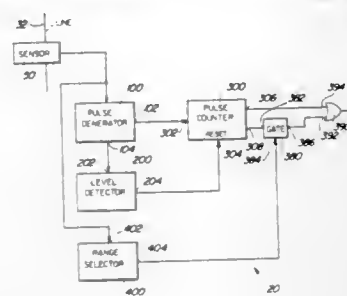
Joseph W. Ruta, Elmhurst, Ill., assignor to S&C Electric Company, Chicago, Ill.

Continuation-in-part of Ser. No. 506,943, Jun. 22, 1982. This application Oct. 3, 1984, Ser. No. 658,239

Int. Cl.⁴ H02H 3/093

U.S. Cl. 361—96

16 Claims



1. An apparatus for producing a trip signal in response to the occurrence of overcurrent in an alternating-current line, the

overcurrent being greater than a threshold current, the trip signal being produced after a time delay that is inversely related to such overcurrent, said apparatus comprising:

pulse generator means for generating pulses at a rate proportional to the overcurrent in the line;

counter means having first and second outputs for counting the pulses generated by said pulse generator means and producing a first trip signal at said first output after said counter means has counted a first selected number of the pulses, and producing a second trip signal at said second output after said counter means has counted a second selected number of pulses, the first selected number of pulses being greater than the second selected number of pulses;

reset means for resetting said counter means to an initial count whenever the current in the line is below a selected level;

range selector means responsive to the current in the line for generating a blocking signal that is in a first state when the current in the line is below a transition current higher than the threshold current and in a second state when the current in the line exceeds the transition current; and

gate means responsive to the blocking signal, said gate means having an input for receiving said second trip signal at said second output, said gate means also having an output to which is passed said second trip signal when the blocking signal is in the second state, and said gate means not passing to its output the second trip signal when the blocking signal is in the first state.

4,642,725

DC SOLENOID ACTUATOR CIRCUITS

David Vincent, Burgess Hill, and Aloysius G. Mahabir, Crawley, both of United Kingdom, assignors to Vent-Axia Limited, United Kingdom

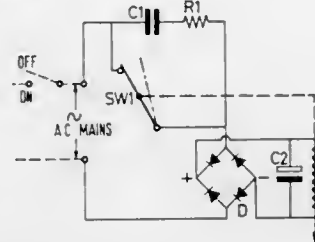
Filed Oct. 3, 1985, Ser. No. 783,417

Claims priority, application United Kingdom, Oct. 4, 1984, 8425120

Int. Cl.⁴ H01F 7/18

U.S. Cl. 361—154

3 Claims



1. A DC solenoid actuator circuit comprising: a DC solenoid suitable for operating an armature; a rectification circuit connectable to an AC supply and connected to the DC solenoid to apply a DC actuating voltage for the solenoid; capacitor means connected to said solenoid, the impedance values of the capacitor means and solenoid being selected to produce resonance whereby an over-rated actuating voltage is applied thereto to operate the armature; and switch means connected by a mechanical link with the armature and actuated at a predetermined point during the initial armature stroke to interconnect with the rectification circuit by way of reducing means to reduce said over-rated voltage to acceptable operating voltage for said DC solenoid.

4,642,726

SOLENOID OPERATOR CIRCUIT FOR MOLDED CASE CIRCUIT BREAKER

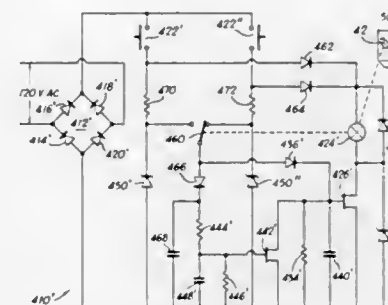
Joseph J. Matsko; Kurt A. Grunert, both of Beaver, and Bruce R. Terhorst, Carnegie, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,055

Int. Cl.⁴ H01H 47/18

U.S. Cl. 361—198

4 Claims



1. Electrical apparatus comprising: a circuit breaker adapted to be placed in a full open position or in a full closed position, an electrically operated solenoid coupled to said circuit breaker for positioning said circuit breaker in said full open and full closed positions, means for providing a solenoid actuation signal, means responsive to said actuation signal for energizing said solenoid, electronic timing circuit means coupled to said providing means for rendering said energizing means operative to energize said solenoid for a predetermined variable time interval, said electronic timing circuit means being responsive to a signal representative of the solenoid energizing voltage for increasing said time interval in response to a decrease in said solenoid energizing voltage, and said means for providing a solenoid actuation signal comprising first and second switches electrically coupled to said energizing means and to said electronic timing circuit means, said first switch being operative to cause said solenoid to position said circuit breaker in said full open position and said second switch being operative to cause said solenoid to position said circuit breaker in said full closed position, said means for providing a solenoid actuation signal further comprising a third switch electrically coupled to said first and second switches, to said energizing means and to said electronic timing circuit means, said third switch being mechanically coupled to said solenoid for actuation thereby to alternately connect said first switch and said second switch to said energizing means and said electronic timing circuit means upon successive energizations of said solenoid.

4,642,727

ELECTROSTATIC DISCHARGE PROTECTION FOR ELECTRONIC EQUIPMENT

Samir K. Dalal, El Paso, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1985, Ser. No. 706,820

Int. Cl.⁴ H05F 3/02

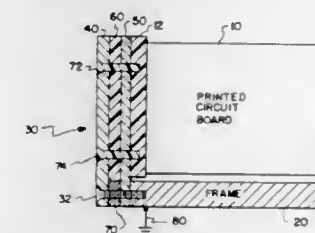
U.S. Cl. 361—212

8 Claims

1. Apparatus for use with a housing containing sensitive electronic equipment to protect the equipment against damage from radio frequency interference which may be generated when a discharge of electrostatic energy occurs from a person touching the apparatus comprising:

a sandwich structure including a pair of conductive plates with an insulator therebetween and means electrically connecting said plates at only one end; means adapted to mount the sandwich structure on the

housing between the equipment and the person so that the person will normally touch the sandwich structure first; and



means connecting the one end of the sandwich structure to a source of reference potential.

4,642,728

SUPPRESSION OF ELECTROSTATIC CHARGE BUILDUP AT A WORKPLACE

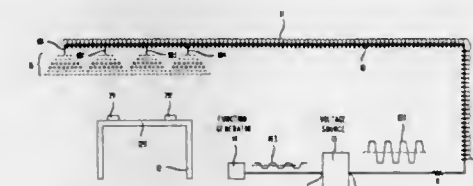
Burton A. Unger, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 655,767, Oct. 1, 1984. This application Oct. 24, 1985, Ser. No. 790,801

Int. Cl.⁴ H05F 3/04

U.S. Cl. 361—213

9 Claims



1. A method for processing a workpiece at a workplace comprising injecting successive showers alternately of positive and negative ions into a region of ambient atmosphere located above the workplace while the workpiece is located on a surface of the workplace for being processed thereat, each of the showers being generated during a separate time interval of the order of 1 second in duration whereby electrostatic charge buildup on the workpiece is suppressed by the showers.

4,642,729

VARIABLE PORCELAIN CONDENSER STRUCTURE

Mikio Abe, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

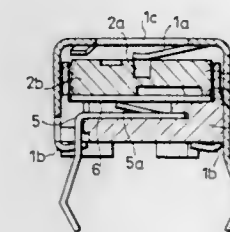
Filed May 29, 1986, Ser. No. 868,793

Claims priority, application Japan, May 29, 1985, 60-79268[U]

Int. Cl.⁴ H01G 5/06

U.S. Cl. 361—293

3 Claims



1. A variable porcelain condenser structure comprising: a bottomed, generally cylindrical insulating frame;

a stator of a ceramic dielectric member having a stator electrode formed on one side and mounted on the bottom of said insulating frame;
 a rotor of a metallic material having a generally semicircular rotor electrode formed on one side and mounted on the bottom of said insulating frame through said stator;
 a case of a metallic material including leg means for fixing said insulating frame and elastic means associated with said leg means for holding said rotor, said stator and said insulating frame in elastic contact with one another and for providing an electrical connection between said case and said rotor; and
 a stator terminal held in said insulating frame and having its leading end contacting electrically with the stator electrode of said stator,
 whereby the opposing areas of said stator electrode and said rotor electrode through said stator can be varied to provide an arbitrary capacity when said rotor is turned relative to said stator.

4,642,730
ELECTRICAL INSULATING OIL AND OIL-FILLED ELECTRICAL APPLIANCES

Atsushi Sato, Tokyo; Keiji Endo, Yokosuka; Shigenobu Kawakami, Ichikawa; Eiichi Matsuzaka, Kawasaki, and Satoshi Narui, Ayase, all of Japan, assignors to Nippon Petrochemicals Company, Ltd., Japan

Filed Jul. 30, 1985, Ser. No. 760,402

Claims priority, application Japan, Aug. 3, 1984, 59-163550
 Int. Cl.⁴ H01G 4/22; H01B 3/22

U.S. Cl. 361—315 23 Claims
 1. An electrical insulating oil which comprises a fraction having boiling points in the range of 350° to 450° C. that is prepared by disproportionating a by-product oil fraction having boiling points in the range of 260° to 320° C. and containing diarylalkanes at temperatures in the range of 20° to 500° C. in the presence of a disproportionation catalyst, wherein said by-product oil fraction is obtained in the process to produce alkylated benzene or toluene by alkylating benzene or toluene with ethylene in the presence of an alkylation catalyst.

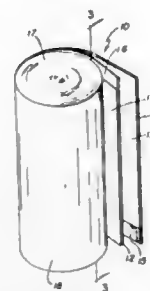
4,642,731
DIELECTRIC FLUID FOR A CAPACITOR
 Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 16, 1986, Ser. No. 875,055

Int. Cl.⁴ H01G 4/22

U.S. Cl. 361—319

5 Claims



3. A capacitor comprising:
 a housing;
 a pair of convolutely wound metallized film electrodes enclosed within said housing; and
 a dielectric liquid excluding gasses from said housing and including glyceryl triacetate and about 30 to 90 vol. per cent of epoxidized soybean oil.

4,642,732
DIELECTRIC CERAMIC COMPOSITION AND METHOD OF PRODUCING SAME, AND A MONOLITHIC CAPACITOR

Masaaki Ikeda; Wataru Takahara; Junichi Iteguchi; Hiroyuki Satoh, and Shyuji Itoh, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Apr. 25, 1986, Ser. No. 855,572

Claims priority, application Japan, Apr. 26, 1985, 60-89999
 Int. Cl.⁴ H01G 4/10, 7/00; C04B 35/48

U.S. Cl. 361—321

12 Claims

2. A monolithic capacitor comprising:
 a plurality of layers of dielectric ceramic composition $(\text{Ba}_{1-x}\text{Sr}_x\text{O})_a\text{Ti}_{1-y}\text{Zr}_y\text{O}_2 + \alpha((1-z)\text{MnO} + z\text{CoO}) + \beta((1-t)\text{A}_2\text{O}_5 + t\text{L}_2\text{O}_3) + w\text{SiO}_2$, wherein:
 $A = \text{Nb, Ta, V}$;
 $L = \text{Y or a rare earth element}$;
 $0.002 \leq x + y + 1.7\alpha \leq 0.250$;
 $0.000 \leq z \leq 0.980$;
 $0.990 \leq a \leq 1.020$;
 $0.010 \leq \alpha \leq 15.00$ (mol %);
 $0.01 \leq \beta/\alpha \leq 0.55$;
 $0.000 \leq t \leq 0.980$; and,
 $0.002 \leq w \leq 1.00$ (wt %);
 a plurality of layers of base metal electrodes, each layer being bonded between a pair of the dielectric ceramic compositions; and,
 a pair of external electrodes electrically and selectively connected to the base metal electrodes.

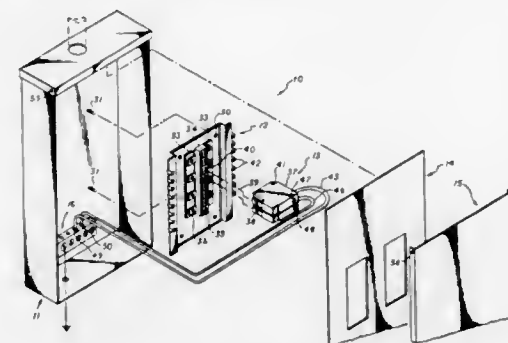
4,642,733
LOADCENTER "PLUG-IN" SURGE PROTECTOR
 Ezra L. Schacht, 1620 W. Main St., Houston, Tex. 77006

Filed Apr. 25, 1985, Ser. No. 727,291

Int. Cl.⁴ H02H 9/00

U.S. Cl. 361—363

3 Claims



1. A surge-protection device for electrical wiring systems including "plug-in" breakers within a loadcenter enclosure, the loadcenter enclosure containing within it:
 (i) a plurality of branch circuit breakers with operating levers;
 (ii) an interior mounting pan on which said breakers are mounted;
 (iii) a plurality of buses, the buses insulatively mounted upon the interior mounting pan, said breakers electrically connected to the buses;
 (iv) mounting pan supporting means;
 (v) a dead-front panel, having apertures aligned with the operating levers of said breakers and means securing the dead-front panel to the enclosure;
 (vi) a front cover over said dead-front panel;
 (vii) a system neutral and grounding bus in said enclosure;
 the surge protection device comprising, in combination:
 (a) a housing containing a surge protector mounted in said enclosure, said housing having a top, a bottom, a front, a rear, and two sides, said housing being substantially similar to enclosures of said breakers, having connection

means connected to said buses, having retention means attached to said mounting pan, and having load side terminals;
 (b) means for promptly dissipating energy of said electrical surge with minimal damage to said surge protective device and electrical equipment to be protected, said dissipating means being connected between said buses and said load terminal of said surge protecting device, said load terminal having connection means connected to said neutral and grounding bus through adequate current carrying means; and
 said surge protector housing having means in engagement with said dead front.

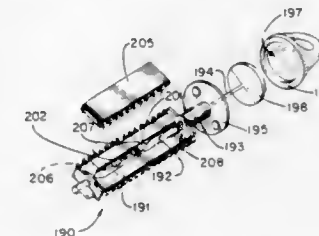
4,642,734
INTEGRATED CIRCUIT CHIP SWITCH
 James R. Anderson, Minneapolis, Minn., assignor to Research, Incorporated, Eden Prairie, Minn.

Continuation of Ser. No. 728,152, Apr. 30, 1985, abandoned, which is a continuation of Ser. No. 505,295, Jun. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 300,965, Sep. 10, 1981, Pat. No. 4,420,794. This application Dec. 9, 1985, Ser. No. 807,106

The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

U.S. Cl. 361—380

5 Claims

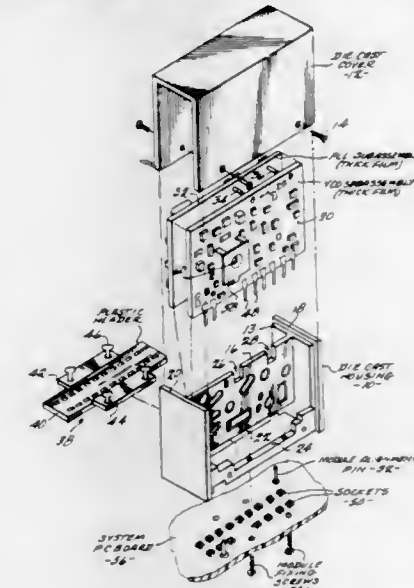


2. A carrier and dual in-line package used in connection with a wire wrap socket having a plurality of electric contact posts depending therefrom and supportable in a housing, said carrier comprising a base having a generally planar exterior surface defined by a platform having spaced edge portions with edge surfaces, a plurality of grooves defined in each of the edge portions, said grooves being defined inwardly from the edge surfaces a desired amount and spaced from adjacent grooves a distance corresponding to the spacing of the leads of said dual in-line package, said base including a center portion having means for supporting the base for rotation about a central longitudinal rotational axis, to permit rotating the base about the axis to move the edge portions in an arc as the base is rotated, said dual in-line package having a plurality of chip leads on opposite edges thereof being mounted on said planar exterior surface with each of the leads thereof in one of the grooves on the base and bent over the edge portions to retain such dual in-line package supported on the exterior of the planar exterior surface with the chip leads exposed on the exterior of the base, said carrier having a handle member removably attached to the base, means for mounting a battery on said removable handle member, said base having a recess formed therein, circuit component means usable with the dual in-line package mounted in the recess, and first means coupled between the handle and the circuit component means for connecting the circuit component means with a battery in the handle when the handle is attached to the base, and second means for coupling the circuit component means with selected leads of the dual in-line package supported on said base, said first means being disconnectable when the handle is removed from the base.

4,642,735
FREQUENCY SYNTHESIZER MODULE
 Roy F. Hodsdon, and Robert K. Bell, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.
 Filed Feb. 27, 1984, Ser. No. 583,732
 Int. Cl.⁴ H05K 9/00

U.S. Cl. 361—424

19 Claims



1. A frequency synthesizer module comprising:
 a two-piece metallic die cast housing and cover assembly including an internal metallic wall disposed between two end walls which divides the space enclosed thereby into two isolated cavities;
 a VCO circuit sub-assembly on a first substrate which is solder-affixed onto a first side of said internal metallic wall;
 a PLL circuit sub-assembly on a second substrate which is removably affixed with adhesive into position adjacent a second side of said internal metallic wall, each said circuit sub-assembly being electrically interconnected directly to the other by at least one conductor passing through at least one aperture in said internal metallic wall; and
 said housing includes said two end walls transverse to said internal metallic wall which is centrally disposed therebetween and wherein said housing further includes two mounting brackets, each extending generally parallel to said internal metallic wall and located between respective lower inside corners of said end walls.

4,642,736
LIGHT DIFFUSER
 Tokihiko Masuzawa, Kani; Yoshitaka Kageyama, and Norizou Tomita, both of Nagoya, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

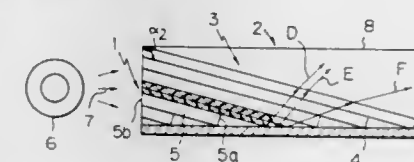
Filed Apr. 17, 1985, Ser. No. 724,275

Claims priority, application Japan, Jul. 2, 1984, 59-136691; Oct. 29, 1984, 59-227537

Int. Cl.⁴ F21V 7/04

U.S. Cl. 362—31

14 Claims



1. An edge lighting type light diffuser comprising:
 (a) a plane of light incidence;

- (b) light transmitting means which, in use, receive light rays from said plane of light incidence;
- (c) a plane of light emission through which the light rays are emitted; and
- (d) means for reflecting the light rays transmitted through said light transmitting means,
- (e) said light transmitting means comprising a plurality of light-transmitting plates having planar surfaces superimposed on each other, each one of said plurality of light-transmitting plates having:
- (i) a first edge against which light is incident during use of the diffuser, said first edges collectively comprising said plane of light incidence, and
- (ii) a second edge normal to the surfaces of said light transmitting plates, said second edges being spaced from each other to form a staircase structure, each of said second edges being inclined relative to said plane of light incidence, and
- (f) said means for reflecting the light rays being located in linear contact with said second edges of said light transmitting plates.

4,642,737

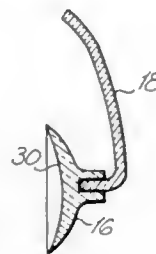
MOTOR VEHICLE HEADLIGHT INDICATOR

George N. Meyers, Jr., 5418 21st West, Bradenton, Fla. 33507
Filed Jul. 2, 1985, Ser. No. 751,233

Int. Cl.⁴ B60Q 1/00

U.S. Cl. 362-61

11 Claims



1. A motor vehicle light indicator comprising:
- a transparent, solid, light conveying conduit;
- a suction cup for holding one end of said light conveying conduit on said light to face the radiation of said light; and
- said conduit so configured that it bends through an angle of more than 90 degrees so that the other end of said conduit will be in the field of view of the operator of said motor vehicle.

4,642,738

ILLUMINATED DENTAL DRILL

Moshe Meller, 20 Rachel Street, Haifa, Israel (34402)

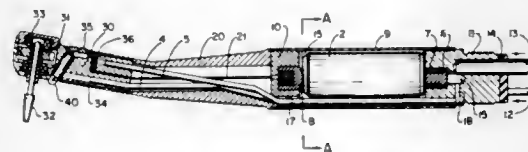
Filed Jan. 16, 1986, Ser. No. 819,871

Claims priority, application Israel, Feb. 21, 1985, 74405

Int. Cl.⁴ A61C 1/00, 3/00

U.S. Cl. 362-119

11 Claims



1. Illuminating means for a high-speed drill handpiece, said handpiece comprising an oblong casing in the shape of a cylindrical rear part and a front part, an air-propelled turbine wheel positioned in said front part adapted to drive a burr directly connected to said turbine wheel, and air- and water-duct means, extending from said rear part to said front part, said illuminating means comprising: a light source positioned in said

front part in a position effecting light rays to be directed towards the tip of said burr; an electric cell exchangeably placed in a chamber in the cylindrical rear part of said casing, said chamber being positioned eccentrically to the axis of said rear part and being openable through the cylindrical periphery of said rear part, permitting sideways insertion and removal of said electric cell; a first contact point mounted in the rear of said chamber adapted to contact the rear terminal of said electric cell and conductively connected to a first bulb terminal; a second contact point firmly fixed in the front of said chamber and adapted to contact the front terminal of said cell and conductively connected to a second bulb terminal; and switching means adapted to energize or de-energize said light source.

4,642,739

BULB ASSEMBLY FOR A VEHICLE HEADLIGHT

Hans Daumüller, Bodelshausen, and Walter Weber, Weil der Stadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

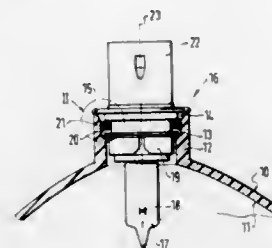
Filed Mar. 18, 1985, Ser. No. 713,261

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1984, 3426712

Int. Cl.⁴ H01R 33/00

U.S. Cl. 362-226

2 Claims



1. A bulb assembly for a vehicle headlight, comprising a reflector having a sleeve-shaped lamp holder; a bulb insertable into said lamp holder and including a housing receiving a filament, a plug portion having an end portion and a socket of insulating material in which said housing is inserted at said end portion, said socket having a peripheral surface and being formed at said surface with an annular groove; and an O-ring received in said groove, said groove having a base, said lamp holder having an inner surface encircling said socket and O-ring, said O-ring in assembly abutting against said base and also adjacent said inner surface so as to seal said bulb against said reflector, said groove extending in a direction of an axis of said reflector by a predetermined distance and said inner surface also extending in said direction by a predetermined distance, the predetermined distance of extension of said groove and said inner surface being selected so that upon pulling said socket out from said lamp holder in said direction said O-ring is in contact only with said inner surface and said base such that said O-ring executes a rolling motion.

4,642,740

CONSTANT MAGNIFICATION LIGHT COLLECTION SYSTEM

Thomas T. True, Camillus, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Oct. 22, 1984, Ser. No. 663,656

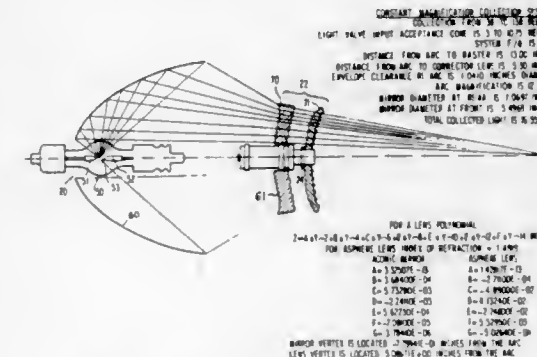
Int. Cl.⁴ F21V 7/00; H04N 5/74

U.S. Cl. 362-268

10 Claims

1. In a light projection system for projecting light from a source, the improvement in a light collection system which satisfies the relationships for constant tangential magnification for all zones so that the image of the source just fills the pupil of the projection system thereby giving the best source utilization in all zones, said light collection system comprising: a reflector positioned behind the source; and

a correcting refractor positioned in front of the source; the reflector having a reflection relationship to its surface contour and the refractor having a ray bending relationship to its surface contour such that together, they achieve the overall relationship



$$D\phi_1/d\phi_2 = \text{constant}$$

where ϕ_1 is the collection angle and ϕ_2 is the final angle leaving the refractor.

4,642,741

FLUORESCENT LIGHTING SYSTEM

David W. Cohn, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,741

Int. Cl.⁴ F21V 17/02

U.S. Cl. 362-320

8 Claims



1. A fluorescent lamp system comprising:
- an elongated generally circular fluorescent lamp; and
- conformable reflector means securely attached to said lamp and extending substantially parallel therewith along substantially the entire length of said lamp for directing light emitted by said lamp in a predetermined direction; said conformable reflector means comprising a sheet of material sufficiently compliant to be wrapped closely around said lamp or alternatively and selectively to be extended to a desired position at which at least a portion of said reflector means is spaced from said lamp to direct substantially the entire light output of said lamp in a desired direction relative to said lamp.

4,642,742

LUMINAIRE WITH PIVOTAL COVER MEMBER HAVING COMPRESSIBLE GASKET

Hendrik A. J. de Vos, and Elzear R. Labouliere, both of Swansea, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Apr. 4, 1985, Ser. No. 719,946

Int. Cl.⁴ F21V 17/00

U.S. Cl. 362-375

12 Claims

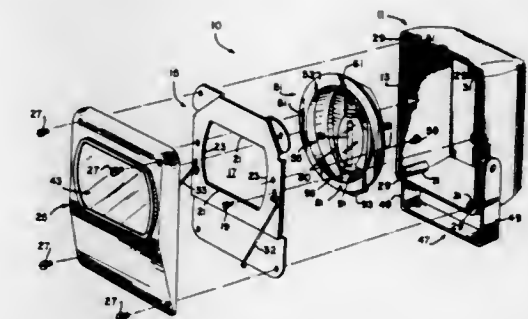
1. A luminaire comprising:
- a housing of substantially boxlike configuration and defining an opening therein;
- a substantially planar component mounting plate secured to said housing substantially across said opening and including an aperture therein defined by two pairs of opposed

sides, the sides of a first of said pairs being of substantially straight configuration and the sides of a second of said pairs being of substantially curved configuration;

a reflector positioned on said component mounting plate adjacent said aperture;

a lamp extending within said reflector; and

a cover member pivotally located on said housing for pro-



viding a cover for said opening upon closure thereof, said cover including a lens therein and a compressible gasket located substantially about said lens, said closure of said cover causing compression of said gasket against said mounting plate substantially about said aperture, said compression of said gasket providing a seal about said lens and also assisting in retaining said lens in position within said cover member.

4,642,743

POWER SUPPLIES WITH MAGNETIC AMPLIFIER VOLTAGE REGULATION

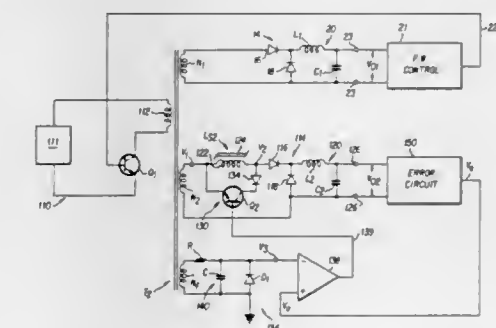
Jerry K. Radcliffe, Owego, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 5, 1985, Ser. No. 762,648

Int. Cl.⁴ H02M 3/335

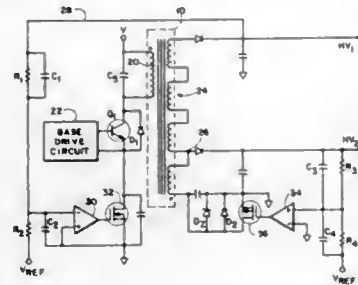
U.S. Cl. 363-21

18 Claims



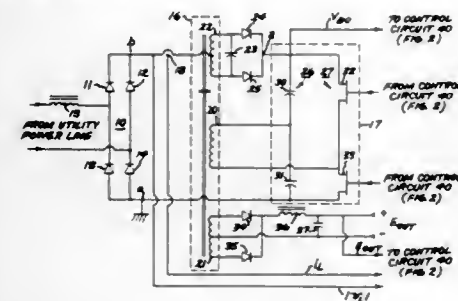
1. A power supply circuit comprising:
- a source of alternate positive and negative voltage pulsations;
- a saturable reactor having a reactor winding and a saturable core, said reactor winding being coupled between said source and an output terminal;
- rectifier means poled to couple current through said reactor winding during pulsations of one polarity, said core being driven to saturation during said one of said pulsations; and
- means for resetting said core during pulsations of the other polarity comprising clamping means which, when actuated, holds said core at a reset point on its B-H characteristic, said reset point determining the time of saturation during the next of said one pulsations.

4,642,744
REGULATED HIGH VOLTAGE SUPPLY
 Wayne D. Thomas, Tigard, Oreg., assignor to Tektronix, Inc.,
 Beaverton, Oreg.
 Filed Nov. 26, 1984, Ser. No. 674,887
 Int. Cl.⁴ H02M 3/335
 U.S. Cl. 363—21



1. A regulated high voltage supply comprising:
 means for generating a first and a second high voltage output, said generating means including a primary circuit, and a secondary circuit having a secondary winding wherein said first and second high voltage outputs are provided from the same said secondary winding;
 first means for pass regulating said first high voltage output in the primary circuit; and
 second means for offset regulating said second high voltage output in the secondary circuit including means for providing a reference voltage for a terminal of said secondary winding, said first and second regulating means interacting with each other to correct for fluctuations in said first and second high voltage outputs.

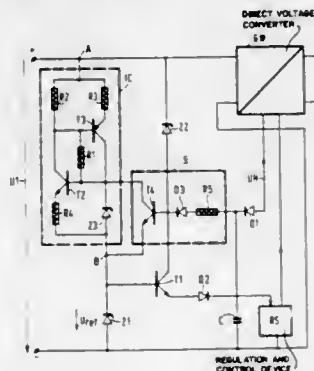
4,642,745
POWER CIRCUIT WITH HIGH INPUT POWER FACTOR AND A REGULATED OUTPUT
 Robert L. Steigerwald, Burnt Hills, and William P. Kornrumpf, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
 Filed Mar. 3, 1986, Ser. No. 835,708
 Int. Cl.⁴ H02M 5/458
 U.S. Cl. 363—37



1. A power converter comprising:
 AC rectifying means adapted to be coupled to an AC power line for providing a rectified AC voltage;
 converting means having a pair of input terminals coupled to said AC rectifying means, said converting means providing an AC signal at its output terminals, said AC signal having a frequency greater than the frequency of the voltage on said AC power line;
 a transformer having a primary winding, a closely-coupled secondary output winding and a loosely-coupled secondary boost winding, said primary winding being coupled to the output terminals of said converting means, said boost winding being coupled to said AC rectifying means and to one of said input terminals of said converting means; and
 a resonant capacitor coupled to said boost winding;

whereby the input current amplitude of said power converter depends on the frequency of said AC signal.

4,642,746
CIRCUIT ARRANGEMENT FOR FEEDING THE REGULATION AND CONTROL DEVICE OF A REGULATED DIRECT VOLTAGE CONVERTER
 Walter Lösel, Fürth-Vach, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed May 30, 1985, Ser. No. 739,580
 Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421133
 Int. Cl.⁴ H02J 11/00; H02P 13/00
 U.S. Cl. 363—49

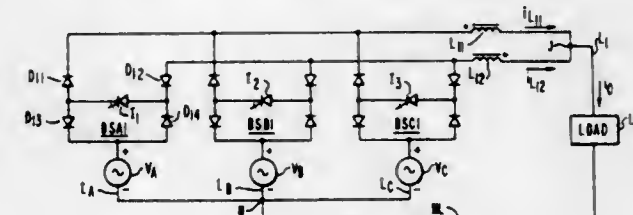


1. A circuit arrangement for energizing a regulation and control device of a regulated direct voltage converter, comprising:
 (a) a first transistor that is turned on when the input voltage of the direct voltage converter is switched on whereby emitter current of said transistor charges a charging capacitor, said capacitor supplying the regulation and control device;
 (b) as soon as the direct voltage converter operates, it supplies a sufficiently large auxiliary voltage with which the charging capacitor is charged further via a first diode thereby to cut-off the first transistor;
 (c) a constant-current circuit which, together with the voltage source for the input voltage of the direct voltage converter constitutes a constant-current source that can be switched on and off and between whose load terminals a first Zener diode is coupled, the series arrangement of the base-emitter diode of the first transistor and the charging capacitor being connected parallel to the first Zener diode;
 (d) a threshold value switch respectively which switches off and on the constant-current source when the voltage at the charging capacitor exceeds or falls below by a given amount the reference voltage produced by the first Zener diode; and
 (e) a reference voltage being maintained at the first Zener diode, even when the current source is switched off, by means of a current in a current path which comprises a first high-ohmic resistor and the first Zener diode coupled to the input voltage of the direct voltage converter.

4,642,747
FAULT-PROTECTION APPARATUS FOR STATIC AC-TO-AC CONVERTERS AND UNRESTRICTED FREQUENCY CHANGER (UFC) SYSTEM INCLUDING SUCH FAULT-PROTECTION APPARATUS
 Gyu-Hyeong Cho, Seoul, Rep. of Korea, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed May 22, 1985, Ser. No. 736,897
 Int. Cl.⁴ H02H 7/125
 U.S. Cl. 363—54

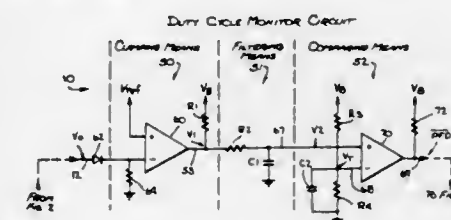
1. In an Unrestricted Frequency Changer (UFC) system for

converting AC power from AC input lines to AC output lines, the combination of:
 a plurality of diode bridges;
 each of said bridges being formed of two pairs of branches associated with respective ones of said input and output AC lines and including a power switch mounted in parallel to said pairs of branches and selectively controlled for operating with the associated diodes as a bilateral switch between input and output AC lines;
 a pair of inductors associated with at least two of said diode bridges;
 one inductor being connected to one diode of one branch in each of said two diode bridges;



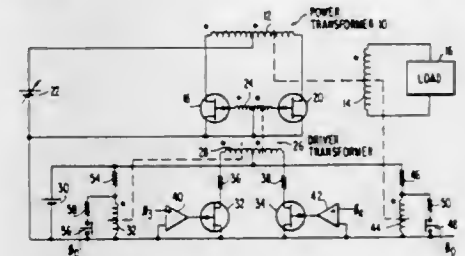
the other of said inductors being connected to the other diode of said one branch in each of said two diode bridges; said two inductors being further connected in common to one of said input and output AC lines;
 said one AC line being associated in common with said two bridges and said one branch thereof;
 the other branch of diodes in each bridge being connected to a corresponding AC line of the other of said input and output AC lines, as associated thereto;
 whereby upon the occurrence of a fault in said UFC system, said two inductors are limiting the rate of rise of the fault current while having a minimal effect on the operation of the UFC system under steady state conditions.

4,642,748
MONITORING SWITCH MODE CONVERTER PERFORMANCE UTILIZING DUTY CYCLE
 Glenn D. Kirk, El Toro, Calif., assignor to MAI Basic Four, Inc., New York, N.Y.
 Filed Aug. 29, 1985, Ser. No. 770,838
 Int. Cl.⁴ H02M 3/335
 U.S. Cl. 363—56



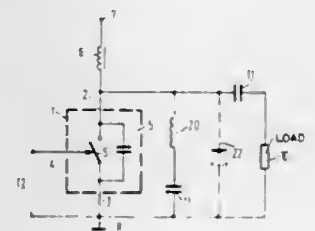
4. A circuit for detecting the occurrence of an abnormal condition in a switch mode converter comprising first means adapted to receive an input signal having a duty cycle related to the operating duty cycle at which the converter is operating and in response thereto providing a first electrical signal which is substantially a DC signal during a given cycle of the converter and has a DC value during the given cycle of the converter related to the duty cycle of the converter, second means coupled to receive the first signal and a second electrical signal having a DC value related to a threshold duty cycle indicative of an abnormal condition in the operation of the converter and in response thereto generating a third signal when the value of the first signal is at or passes through the value of the second signal.

4,642,749
REPLICA DRIVER TRANSFORMER FOR INVERTER CIRCUIT
 Charles S. Walker, King County, Wash., assignor to Honeywell, Inc., Minneapolis, Minn.
 Filed Aug. 19, 1986, Ser. No. 897,801
 Int. Cl.⁴ H02H 7/122
 U.S. Cl. 363—56



1. A power inverter circuit comprising:
 at least a first switching transistor having first and second main conducting electrodes and a control electrode;
 a power transformer having a primary winding and a secondary winding;
 a load connected to the secondary winding of said power transformer;
 a first power supply connected in series with the primary winding and the first and second main conducting electrodes of said first switching transistor;
 at least a first driver transistor having first and second main conducting electrodes and a control electrode;
 a replica driver transformer having a primary winding and a secondary winding, the secondary winding being connected to the control electrode of said first switching transistor, said replica driver transformer being a miniature version of said power transformer but designed to saturate before said power transformer;
 a second power supply connected in series with the primary winding of said replica driver transformer and the main conducting electrodes of said first driver transistor; and
 driver circuit means connected to the control electrode of said first driver transistor for turning said driver transistor on and off.

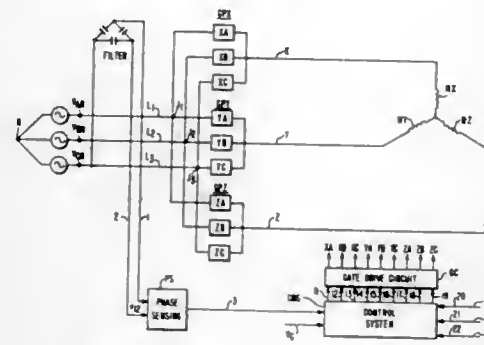
4,642,750
CIRCUIT ARRANGEMENT FOR SWITCHING A CURRENT IN AN INDUCTIVE LOAD
 Hubert C. Raets, Nieuwenhagen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Jul. 22, 1985, Ser. No. 757,579
 Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427493
 Int. Cl.⁴ H02H 7/122
 U.S. Cl. 363—56



1. A circuit arrangement for switching a current through a load which comprises an inductive component and a resistive component, comprising at least one semiconductor switch that periodically switches the current through the load at a switching frequency by means of its main current path switched alternately to the conductive and the non-conductive state, the

semiconductor switch having a parasitic capacitance, a voltage-limiting element connected in parallel with the semiconductor switch for limiting the voltage applied to said switch, characterized in that the voltage-limiting element has an inductive input impedance at the switching frequency.

4,642,751
HIDDEN DC-LINK AC/AC CONVERTER USING BILATERAL POWER SWITCHES
 Colin D. Schander, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Feb. 14, 1986, Ser. No. 829,739
 Int. Cl.⁴ H02M 5/22
 U.S. Cl. 363—159 5 Claims

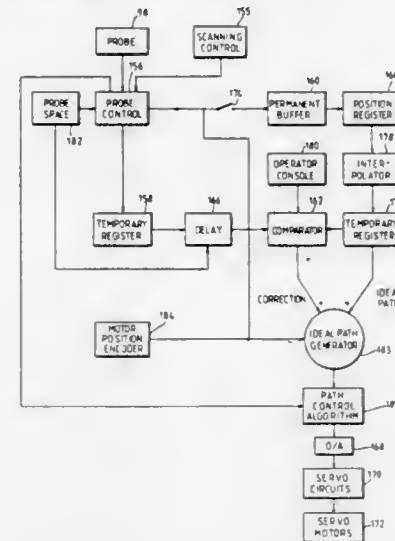


1. An AC/AC converter connected between AC input lines and AC output lines comprising a plurality of bilateral power switches connected in groups associated with the respective AC output lines, the bilateral power switches in each group being associated with the respective AC input lines, whereby each bilateral power switch is connected between one AC input line and one AC output line, first means being provided for controlling the bilateral switches of each group to generate on each associated AC output line a DC voltage, and second means being provided for controlling the conduction of said bilateral switches to modulate the DC voltage between two consecutive groups to generate an AC voltage between the corresponding AC output lines.

4,642,752
PROGRAMMABLE AUTOMATIC MANIPULATOR SYSTEM
 Franco Debarbieri, Genoa; Roberto Montorsi, Sesto Calende, and Giancarlo Zaramella, Turin, all of Italy, assignors to Armco, Inc., Middletown, Ohio
 Filed Nov. 30, 1984, Ser. No. 676,525
 Claims priority, application Italy, Nov. 30, 1983, 12685 A/83
 Int. Cl.⁴ G05B 19/00
 U.S. Cl. 364—167 18 Claims

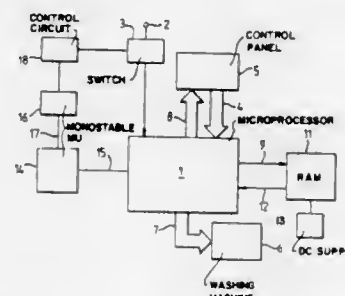
1. A programmable automatic manipulator apparatus adapted to move along a path defined on a workpiece, said apparatus comprising:
 a manipulator member capable of mounting a tool whose position is controllable by said apparatus in at least two dimensions;
 a path following probe mounted on said member adjacent said tool, said probe including a path sensing finger, said probe further including a transducer for converting sensed variations of said path into workpiece position signals;
 an interrogator for periodically sampling said position signals, said interrogator including a comparator for determining whether said position signals correspond to variations that exceed a predetermined extent;
 a first data storage medium adapted to permanently store representations of said sampled position signals that exceed said predetermined extent;

a second data storage medium adapted to temporarily store sampled position signals; and



a tool position control adapted to correct the tool position in response to said representations of said position signals temporarily stored in said second data storage medium, before said tool completely traverses said path.

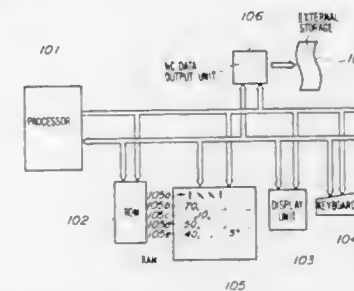
4,642,753
DOMESTIC ELECTRICAL APPLIANCE
 Stephen P. Easthill, Chessington, England, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Aug. 3, 1984, Ser. No. 637,663
 Claims priority, application United Kingdom, Aug. 17, 1983, 8322170
 Int. Cl.⁴ G06F 15/46, 11/00
 U.S. Cl. 364—184 4 Claims



1. A domestic electrical appliance comprising, a solid state processor arranged to control the operation of the appliance by selecting an optionally-variable number of operating steps from N such steps in accordance with any one of a number of programs selectable by the user, a power supply, a switch for connecting the power supply to the processor, a non-volatile memory, writing means which—prior to the processing of any said operating step—writes data into the memory identifying the selected program and which—during the processing of the steps—writes data into the memory identifying the last operating step processed, reading means arranged to read the memory contents whereby, on removal and subsequent reconnection of the power supply to the processor, the memory contents read enable the processor to continue with the program if that program had not been completed at the instant of removal of the power supply, signal means for generating a clock signal only so long as the processor is functioning correctly, and

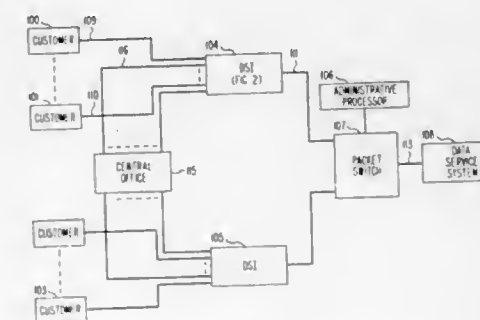
timing means which, in the absence of said clock signal for a time duration greater than the clock period, causes the switch to disconnect and then reconnect the power supply to the processor.

4,642,754
ANGLE DATA DISCRIMINATING METHOD
 Hajimu Kishi; Masaki Seki, and Takashi Takegahara, all of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan
 PCT No. PCT/JP84/00055, § 371 Date Jan. 7, 1985, § 102(e)
 Date Jan. 7, 1985, PCT Pub. No. WO84/04609, PCT Pub. Date Nov. 22, 1984
 PCT Filed Feb. 20, 1984, Ser. No. 694,383
 Claims priority, application Japan, May 18, 1983, 58-087266
 Int. Cl.⁴ G06F 15/46; G05B 19/18
 U.S. Cl. 364—191 5 Claims



1. An angle data discriminating method in a method of creating NC machining data, comprising the steps of:
 (a) entering a direction for each block of a part profile through use of a profile symbol key thereby to specify said part profile;
 (b) entering a dimension for each block of said part profile;
 (c) using these entered data to create the NC machining data;
 (d) specifying a dimension of a straight line element in a predetermined block by data including at least an angle of intersection between said straight line element and a base line; and
 (e) calculating in accordance with the magnitude of said angle data and the direction of the straight line element in said block to determine whether or not said straight line element lies on a straight line obtained by rotating the base line about the point of intersection in a predetermined direction and through a predetermined angle.

4,642,755
SHARED MEMORY WITH TWO DISTINCT ADDRESSING STRUCTURES
 Mark G. Hinch, Wheaton, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Mar. 31, 1983, Ser. No. 481,056
 Int. Cl.⁴ G06F 13/00
 U.S. Cl. 364—200 8 Claims



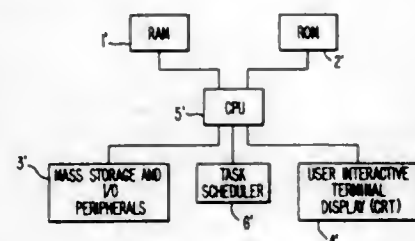
1. In a computer system having first and second processor

means, an arrangement for the communication of customer multiword messages between the two processor means with said messages destined for individual customer terminals attached to said second processor means, comprising
 main memory means associated with said first processor means;
 global status memory means for communicating system status information from said second processor means to said first processor means;
 global command memory means for communicating system related commands to said second processor means from said first processor means;
 shared memory means for storing sets of customer message control information and said shared memory means comprises a first plurality of memory blocks and responsive to a set of address signals from said first processor means for accessing said memory blocks, and further comprises a second plurality of memory blocks including said first plurality of memory blocks for storing additional sets of data words and being further responsive to another set of address signals from said second processor means for accessing said second plurality of memory blocks;
 first-in first-out memory means to store customer message status signals defining the type of operation to be performed transferred from said first processor means to said second processor means;
 said first processor means controlling a storage of one of said messages in said main memory means;
 said first processor means further controlling a storage of said customer message status signals in said first-in first-out memory means and for storing one of said sets of said customer message control information in said shared memory means and said one of said messages in said main memory means;
 said second processor means responsive to said customer message status signals and said one of said sets of said customer message control information for reading said one of said messages from said main memory means;
 said second processor means further responsive to the read one of said messages for communicating the latter message to one of said customer terminals by utilizing one of said sets of memory locations in said second plurality of memory blocks;
 said second processor means responsive to the occurrence of a second processor system error for transmitting system status information to said first processor means via said global status memory; and
 said first processor means responsive to said system status information for transmitting one of said system related commands via said global command memory to said second processor means specifying maintenance operations.

4,642,756
METHOD AND APPARATUS FOR SCHEDULING THE EXECUTION OF MULTIPLE PROCESSING TASKS IN A COMPUTER SYSTEM
 Phillip H. Sherrod, Nashville, Tenn., assignor to S & H Computer Systems, Inc., Nashville, Tenn.
 Filed Mar. 15, 1985, Ser. No. 712,137
 Int. Cl.⁴ G06F 9/40 4 Claims

1. In a computer system comprising a memory for storing a plurality of computer programs for processing user queries to said computer system and a CPU for executing said stored programs, a method for selecting the order in which said programs are executed by said CPU, said method comprising the steps of:
 examining each of said user queries to determine which of said queries can be processed in a short period of time and

which of said queries require a longer period of time to process; and



giving precedence to said user queries which can be processed in a short period of time.

4,642,757 MICROINSTRUCTION CONTROLLED ARITHMETIC CONTROL UNIT

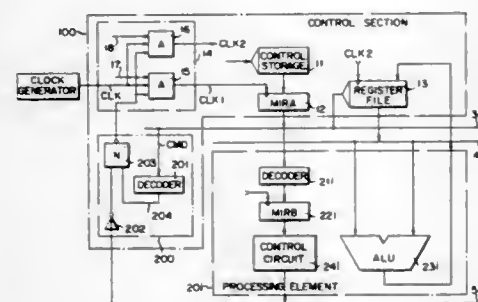
Tsutomu Sakamoto, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 12, 1983, Ser. No. 484,260

Claims priority, application Japan, Apr. 20, 1982, 57-65821
Int. Cl.⁴ G06F 9/30

U.S. Cl. 364-200

3 Claims



1. a microinstruction-controlled arithmetic control unit, comprising:

- a first clock generator for generating a reference clock signal for the arithmetic control unit;
- a microinstruction register;
- a data register;
- a second clock generator, coupled to the microinstruction register and the data register, for generating a first timing clock signal for controlling the microinstruction register, and for generating a second timing clock signal for controlling the data register, the first and second timing clock signals being synchronized with the reference clock signal;

control storage means for storing microinstructions;

a microinstruction bus, coupled to the control storage means, for transferring the microinstructions;

a data bus, coupled to the data register, for transferring data, the microinstruction register for storing the microinstruction read out from the control storage means in response to the first timing clock signal synchronized with said reference clock signal,

the data register for storing the data on the data bus in response to the second timing clock signal synchronized with the reference clock signal;

a plurality of processing elements, coupled to the microinstruction bus and the data bus, for performing an arithmetic operation specified by the microinstruction on the microinstruction bus and data on the data bus, and for producing an inhibition signal so as to inhibit the execution of the succeeding microinstruction during the execu-

tion of a microinstruction which requires a plurality of clock signals;

an inhibiting circuit, coupled to the second clock generator, for inhibiting the generation of the first and second timing clock signals when the inhibition signal is supplied thereto; and

inhibition control means, coupled to the processing elements and the microinstruction bus, for controlling the application of the inhibition signal produced from the processing elements to the inhibiting circuit in response to a decoded result of the field of the microinstruction on the microinstruction bus, wherein the inhibition signal output from a first of the processing elements is inhibited by the inhibition control means to be output to the inhibiting circuit while the microinstruction requiring a plurality of clocks is executed by the first of the processing elements, the microinstruction read out from the control storage means is latched by the microinstruction register in response to the first timing clock signal, and the latched microinstruction is output to other processing elements except the first of the processing elements.

4,642,758 FILE TRANSFER SCHEDULING ARRANGEMENT

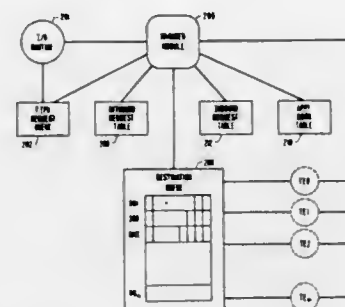
Albert Y. Teng, Bolingbrook, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1984, Ser. No. 631,176

Int. Cl.⁴ G06F 13/00

U.S. Cl. 364-200

25 Claims



1. A computer including a data transfer arrangement for transferring data files to designated destinations comprising:

- file transfer means for transmitting data files to said destinations;
- appointment book table means containing data defining a future time for availability of said file transfer means;
- means connected to said appointment book table means for extracting said future time data from said appointment book table means and for transmitting an appointment message defining said future time to a selected one of said destinations;

timing means connected to said appointment book table means for defining current time and for generating a time-out signal when the current time equals said future time; and

means connected to said timing means and said file transfer means and responsive to said time-out signal to activate said file transfer means to transmit a specified data file to said selected destination;

whereby said file transfer means is enabled to transmit a specified data file at the priorly defined future time.

4,642,759 BUBBLE MEMORY DISK EMULATION SYSTEM

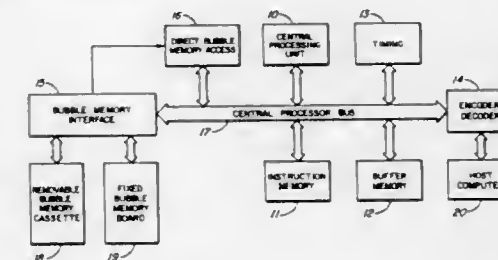
William R. Foster, Ottawa, Canada, assignor to Targa Electronics Systems Inc., Ottawa, Canada

Filed Apr. 2, 1984, Ser. No. 595,692

Int. Cl.⁴ G06F 7/06

U.S. Cl. 364-200

9 Claims



1. A magnetic bubble memory (MBM) based data storage system for emulating another data storage system, comprising:

- (a) a central processor bus (CPB);
- (b) a central processor unit (CPU), an instruction memory for said CPU, and a dynamic buffer memory, all connected to said CPB;
- (c) MBM interface means for interfacing an MBM unit with said CPB;
- (d) direct bubble memory access (DBMA) means connected to said CPB for causing said MBM interface means to transfer data from said MBM to selected parts of said dynamic buffer memory through said CPB;
- (e) encoder/decoder means connected to said CPB for transmitting and receiving data to and from a host system in a manner substantially identical to that of said another data storage system, said encoder/decoder means including two direct memory access (DMA) channels, one for transmission and the other for reception of data to and from said host system for transferring data to and from selected parts of said dynamic buffer memory through said CPB; and
- (f) said DMA channels each having registers for addressing to said dynamic buffer memory, said registers updated by said CPU through said CPB without affecting ongoing data transfers to and from said dynamic buffer memory.

4,642,760 STATUS-CHANGE DATA GATHERING APPARATUS

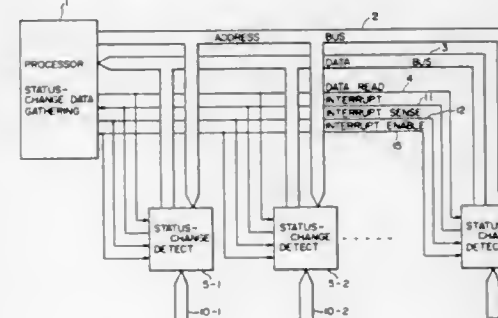
Takao Yanai, Hitachi, and Yoshiaki Takahashi, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,795

Claims priority, application Japan, Aug. 30, 1982, 57-149167
Int. Cl.⁴ G06F 13/24; G05B 11/01

U.S. Cl. 364-200

2 Claims



1. A status-change data gathering apparatus comprising a plurality of status-change detectors which detect and deliver data representing status changes in a process or the like, and a

processor connected to said status-change detectors for gathering the delivered data of said status-change detectors in response to receipt of an interrupt signal from at least one of said status-change detectors; each status-change detector including time limit means for providing an output signal every predetermined period, status-change detection means for detecting and storing status change data and for producing an output signal when status change data is detected, and interrupt means for supplying to said processor an interrupt signal to indicate the receipt of status-change data in the status-change detector in response to receipt of output signals from both said time limit means and said status-change detection means; and predetermined period of said time limit means being shorter than a desired time resolution for the detection of status-change data; wherein said processor comprises means responsive to receipt of the interrupt signal for sending an interrupt sense signal to all of the status-change detectors, and wherein each status-change detector further includes detector identifying means for transmitting a signal identifying that detector to said processor when both the interrupt sense signal is received and the output signal of said status-change detection means is produced therein.

4,642,761 DEDICATED I/O SERIAL BIT INTERFACE WITH PERIPHERAL SELECTION

Shigenobu Yanagiuchi, Tenri, and Takuro Omori, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

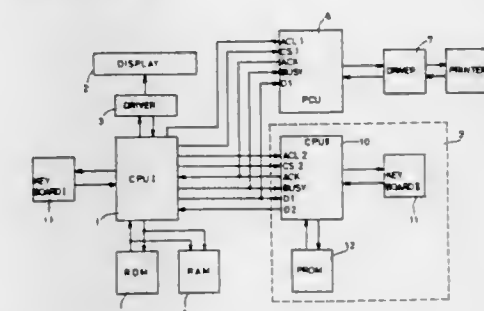
Continuation of Ser. No. 526,524, Aug. 26, 1983, abandoned.

This application Jun. 2, 1986, Ser. No. 870,669

Claims priority, application Japan, Aug. 31, 1982, 57-152009
Int. Cl.⁴ G06F 15/02

U.S. Cl. 364-200

2 Claims



1. A computer system comprising:

- a plurality of computer peripherals;
- a general purpose digital computer including,

- a first keyboard developing a first key code set, and peripheral selection means for selecting a selected peripheral from said plurality of peripherals by generating a selection signal uniquely specifying said selected peripheral and for generating a reset signal to reset said selected peripheral, and
- means for developing command codes to control said selected peripheral; and

serial data transfer means, coupling said computer and each said computer peripheral, for communicating said command codes to said selected peripheral and for bidirectionally communicating data between said selected peripheral and said computer;

each said computer peripheral including acknowledgement means for sensing said selection signal, for determining whether it is said selected peripheral, and for developing an acknowledge signal communicated to said computer by said serial data transfer means;

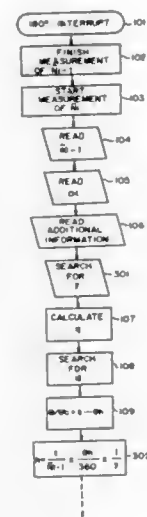
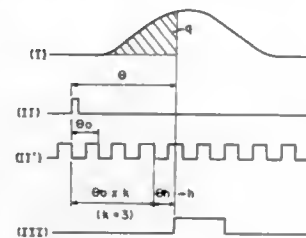
a first peripheral of said plurality of peripherals including a second keyboard also developing said first key code set,

1. A system for determining time to produce an ignition spark in an internal combustion spark-fired engine having a rotating part comprising in combination:

- means producing signals marking the beginning and the end of a fixed number M of degrees of rotation of said engine part;
- means producing clock pulses at a fixed rate;
- means responsive to said clock pulses and to said beginning and end signals for generating a number related to the number of clock pulses produced during a value X in degrees of engine part rotation, where X is unequal to M;
- means responsive to said generated number for producing a

value related to the number of degrees N of engine part rotation after said end, at which it is desired to produce said ignition spark, and means responsive to said generated number, to said clock pulses and to said value for determining when said engine part has rotated N degrees past said end.

4,642,773
METHOD AND APPARATUS FOR CONTROLLING AN ENGINE
Masahiko Miyaki, Oobu, and Tsuneyuki Egami, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan
Filed Jul. 6, 1984, Ser. No. 628,370
Claims priority, application Japan, Jul. 8, 1983, 58-125154
Int. Cl.⁴ F02D 5/02; G05B 15/02
U.S. Cl. 364—431.05 7 Claims



- (c) converting the analog output signal to a digital signal;
 (d) filtering the digital signal;
 (e) determining the level of noise in the filtered signal;
 (f) continuously analyzing, with a digital signal processor, the digital signal in response to the determined noise level to determine Doppler frequency; and
 (g) calculating the rate of rise of the surface of the liquid in response to said determined Doppler frequency.

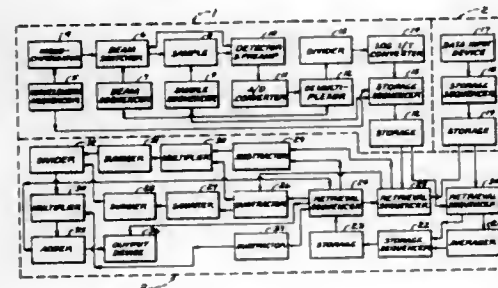
4,642,778
METHOD AND DEVICE FOR SPECTRAL RECONSTRUCTION

Gary M. Hieftje, and David H. Honigs, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 2, 1984, Ser. No. 585,575
 Int. Cl.⁴ G06F 15/46

U.S. Cl. 364—498

19 Claims



7. A device for spectral reconstruction:

- (a) means for obtaining the concentrations of a first component in a series of mixtures of components, the concentrations of the first component constituting a set of reference values;
 (b) spectrometer means for obtaining spectral values for each mixture in the series of mixtures;
 (c) data storage means for storing the reference values and spectral values;
 (d) data input means for supplying the reference values and spectral values to the data storage means;
 (e) spectral reconstructor means for cross-correlating the corresponding reference values and spectral values stored in the data storage means, thereby providing a spectral contribution for the one component;
 (f) data output means for outputting the spectral contribution for the one component.

4,642,779
WRITING-PLOTTING APPARATUS WITH KEYBOARD
 Akihiro Sawada, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

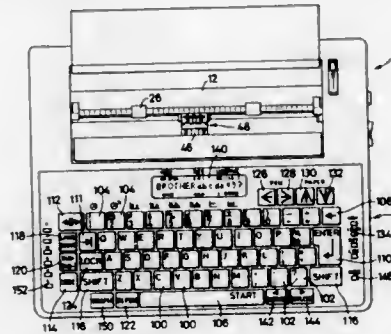
Filed Mar. 4, 1985, Ser. No. 707,675
 Claims priority, application Japan, Mar. 12, 1984, 59-47970
 Int. Cl.⁴ G01D 9/30; B41J 3/04

U.S. Cl. 364—520

9 Claims

1. A recording apparatus capable of writing characters such as letters and symbols in a writing mode, and plotting graphs in a plotting mode, comprising:
 a keyboard having character keys corresponding to said characters, and function keys;
 a paper support member for supporting a sheet of paper;
 a paper feeding device for feeding said sheet of paper in one of opposite directions;
 a carriage supporting a writing instrument, and movable in a direction perpendicular to a line of feed of said sheet of paper;
 a carriage driving device for reciprocating said carriage in said direction;

a character pattern memory for storing sets of character pattern data representative of patterns of said characters;
 a graphic pattern memory for storing at least one set of graphic pattern data representative of a graphic pattern;
 control means which, in said writing mode, reads out from said character pattern memory the sets of character pattern data corresponding to the character keys operated, and in said plotting mode, reads out from said graphic



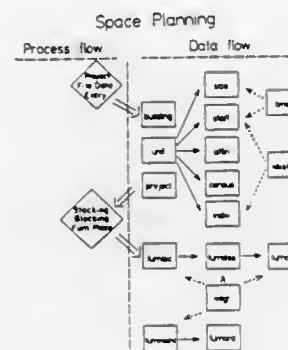
pattern memory said graphic pattern data, said control means being responsive to the read-out character and graphic pattern data and controlling the operations of said paper feeding device and said carriage driving device; and a display which displays, in said writing mode, the characters keyed in through said character keys, and which provides, in said plotting mode, messages relating to a procedure according to which data necessary to plot a graph is entered through said keyboard.

4,642,780
SPACE PLANNING/FACILITIES MANAGEMENT SYSTEM USING PRIORITY AND AFFINITY COLORS
 Robert Thomson, Northboro, Mass., assignor to Sigma Design, Inc., Englewood, Colo.

Filed Nov. 2, 1984, Ser. No. 667,644
 Int. Cl.⁴ G06F 7/00

U.S. Cl. 364—512

3 Claims



1. A computer implemented method comprising the steps of: forming and displaying on a color screen an affinity matrix, and operating in a priority color mode to cause the screen to show (i) a column of rows each identifying a respective department to which a portion of a multi-story building is to be allocated and the space requirements and relative priority of the department, wherein the priority is indicated by a block of a priority color, and the priority colors range from warmer for higher priority to cooler for lower priority, and (ii) a rectangular matrix of affinity elements, wherein each element indicates the affinity between two respective departments, and the affinity level of each element is indicated by a block of an affinity color which

is at the matrix position of the element and wherein the affinity colors range from green for high affinity to paler greens for lower affinity, white for neutral affinity and red for negative affinity;

selecting a department and selectively operating in an affinity color mode to cause the column block for that department to change to blue and the column blocks for the other departments to change to the respective affinity colors of the other departments relative to the selected department, to thereby facilitate determining at a glance the respective degrees of affinity of the other departments to the selected department, and selectively switching between the priority and affinity color display modes for the affinity matrix display and selectively assigning and reassigning priority and affinity colors to selected departments;

forming and displaying a stacking diagram on the screen, said stacking diagram showing a stack of floors in the form of blocks related in size to the available floor areas and a column of rows each identifying a respective department, its relative priority and its space requirements, and selectively operating in a priority color mode to cause the stacking diagram to show, at the respective floor block of a selected floor, an allocation block sized in relation to the space requirements of a selected department and colored in the respective priority color of the department, and an affinity color mode to cause the allocation block for that department to be colored blue and any other allocation blocks of other departments to be shown in their respective affinity colors relative to the department with the blue allocation color, to thereby facilitate the determination at a glance of the affinities between and the relative sizes of departments allocated to the stack of floors, and switching between the priority and affinity color modes for the stacking diagram and selectively creating and moving allocation blocks; and

forming and displaying on the screen a blocking diagram showing a selected floor as a block sized and shaped in accordance with the floor area thereof and a column of rows each identifying a respective department, its relative priority and its space requirements, and selectively operating in a priority color mode to cause the blocking diagram to show, at the floor block, a department allocation block sized in relation to the space requirements of a selected department and colored in the respective priority color of the department, and in an affinity color mode to cause the allocation block for that department to be colored blue and any other allocation blocks of other departments to be shown in their respective affinity colors relative to the department with the blue allocation color, to thereby facilitate the determination at a glance of the affinities between and relative sizes of departments allocated to the floor block.

4,642,781
SYSTEM FOR AUTOMATICALLY CALIBRATING A ROBOT

Laszlo Szonyi, Gamla, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1984, Ser. No. 628,922

Claims priority, application Sweden, Jul. 22, 1983, SW9-83-005
 Int. Cl.⁴ G06F 15/46; G05B 19/42

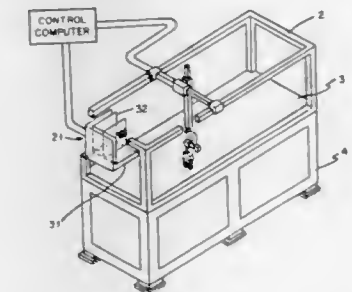
U.S. Cl. 364—513

11 Claims

1. A system for automatically compensating for positioning errors of a robot gripper in all degrees of freedom in a robot or like system, characterized by the steps of grasping a measuring device at a predetermined reference point with the robot gripper so that a predetermined gripper reference point aligns with said predetermined measuring device reference point; moving said measuring device held by the robot gripper in

response to a command representative of a predetermined nominal position within a measuring fixture known to the robot controller;

determining, by actual measurement by means of a plurality of pair of sensors the difference between sensor values of a first pair of sensors and using this difference between sensor values of a first pair of sensors for moving the robot gripper in order to compensate for an error in an associated first angular coordinate direction; thereby reducing the difference between sensor values of the first pair of sensors until the sensor values are equal; successively repeating the determining step using each difference between sensor values of successive pairs of sensors in order to compensate for errors in respective associ-



ated angular coordinate directions, thereby reducing the difference between sensor values of successive pairs of sensors until the respective sensor values are equal comparing the equal sensor values of said first pair of sensors with a first nominal value representative of said predetermined nominal position of the measuring device, using the difference value obtained by said comparing step for moving the robot gripper in order to compensate for an error in an associated first orthogonal coordinate direction, successively repeating said comparing and said using steps using each equal sensor values of successive pairs of sensors in order to compensate for errors in respective associated orthogonal coordinate directions.

4,642,782
RULE BASED DIAGNOSTIC SYSTEM WITH DYNAMIC ALTERATION CAPABILITY

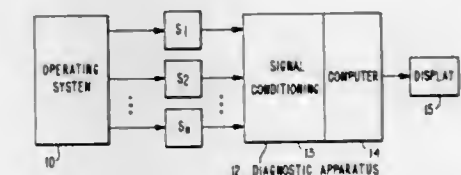
Christian T. Kemper, Winter Park, Fla.; Simon Lowenfeld, Monroeville, and Mark S. Fox, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1984, Ser. No. 636,196

Int. Cl.⁴ G06F 15/46, 11/30

U.S. Cl. 364—550

11 Claims



1. A method of diagnosing an operating system to malfunctions comprising the steps of:

(A) storing a rule base pertinent to the particular operating system being diagnosed and being operable to reach one or more conclusions relative to the condition of said system and being comprised of a plurality of schema, each said schema being defined by a data structure having a plurality of slots in which particular attributes of the schema are stored; and
 (B) changing the contents of any predetermined slot of any

predetermined other schema upon the occurrence of a predetermined event.

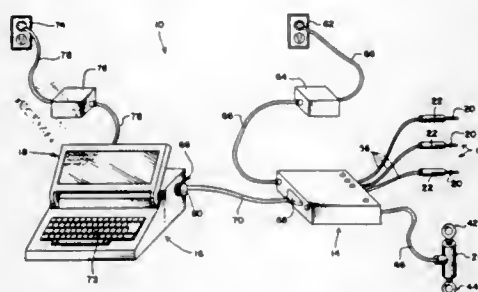
4,642,783

LIFE RAFT TESTING DEVICE

William B. Alexander, New Orleans, La., and Paul Frenger, Houston, Tex., assignors to Safe-Test, Inc., New Orleans, La.
Filed Jun. 11, 1984, Ser. No. 619,601
Int. Cl.⁴ G06F 15/20; G01N 7/00

U.S. Cl. 364-551

7 Claims



1. A testing device for evaluating the physical parameters of a life raft comprising:

transducer means for converting the physical inputs from said life raft to electrical impulses, said transducer means comprising:

- a pressure transducer for evaluating the pressure of a gas within said life raft, said pressure transducer having a chamber connected thereto;
- a temperature transducer having a nozzle for connection to a valve of said life raft, said temperature transducer positioned adjacent said nozzle; and
- a load cell transducer for weight measurement of said life raft;

connection means fastened to said transducer means for enabling said transducer means to be interactive with said physical input from said life raft, said connection means comprising:

- a pressure transducer nozzle for connection to a valve for said life raft, said chamber of said pressure transducer being adjacent to and in air-tight connection with said pressure transducer nozzle, said chamber for allowing differential pressures within said chamber and said life raft to equalize upon connection of said pressure transducer nozzle to a valve of said life raft; and
- a load cell hook physically connected to said load cell transducer for receiving the weight to be measured of said life raft, said load cell hook being interactive with said load cell transducer;

processing means electrically connected to said transducer means for selectively converting said electrical impulses of said transducer means into signals relative to said physical inputs each of said pressure transducer, said temperature transducer, and said load cell transducer having electrically conductive lines extending therefrom to said processing means, the signals from said transducer means being passed as separate inputs to said processing means; said processing means evaluating said life raft based on said signals;

control means electrically connected to and interactive with said processing means for selectively manipulating said signals from said processing means; and

output means electrically connected to said control means for producing a perceivable display of said signals from said processing means.

4,642,784

INTEGRATED CIRCUIT MANUFACTURE

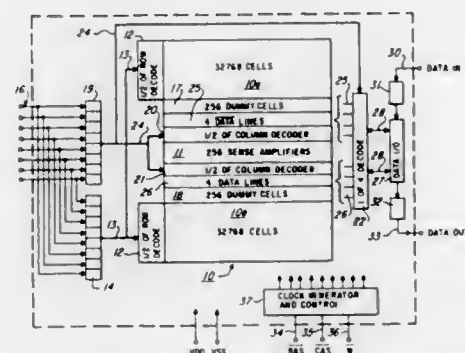
Lionel S. White, Jr., and Maury Zivitz, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 26, 1984, Ser. No. 604,115

Int. Cl.⁴ G06F 11/00

U.S. Cl. 364-551

24 Claims



1. In the method of manufacturing integrated circuits that may sporadically contain manufacturing defects not detectable visually or requiring excessively long visual inspection to detect, the improvement comprising the steps of: applying an electrical test sequence to a large number of said integrated circuits to generate a proven data base containing the responses caused by specific manufacturing defects to said electrical test sequence, said sequence including a plurality of tests of electrical characteristics of said integrated circuits, said responses being multiple-bit digital indicators of results of said tests, applying said electrical test sequence to a second group of manufactured integrated circuits to obtain a second response corresponding to said responses and when said second response is obtained indicating a defect in an integrated circuit of said second group, comparing said second response to said proven data base to specifically identify the defect.

4,642,785

CORDLESS ELECTRONIC THERMOMETER

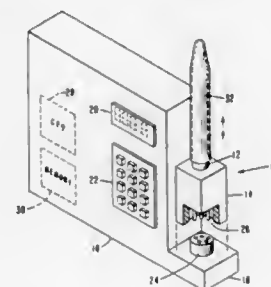
Roger E. Packard, Huntington Beach, Calif., and Jacob E. Thomas, Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 10, 1985, Ser. No. 721,724

Int. Cl.⁴ G01K 7/24, 7/10

U.S. Cl. 364-557

7 Claims



1. An electronic thermometer comprising: temperature sensing means for sensing a temperature and providing over time, a series of temperature related electric parameters, said temperature sensing means comprising a bridge circuit including a thermistor, and an analog-to-digital converter for converting the voltage across said bridge circuit to a digital representation; data storing means connected to said temperature sensing means for storing said series of temperature related elec-

tric parameters, said data storing means including a microprocessor connected to said analog-to-digital converter of said temperature sensing means, and a random access memory device connected to said microprocessor, wherein said microprocessor receives periodic digital representations of the voltage across said bridge circuit and stores them in said random access memory device;

data transmitting means having an output and connected to said data storing means for transmitting said series of temperature related electric parameters upon command, said data transmitting means including a universal asynchronous receiver transmitter (UART) connected to said microprocessor, wherein said UART receives the digital representations of the voltages across said bridge circuit in parallel fashion, and transmits them in serial fashion on the output of said data transmitting means;

connector means connected to the output of said data transmitting means, said connector means having a command input which, when connected to a power source, receives an electrical command for commanding said data transmitting means to transmit data, and further having a data output for providing thereon the data transmitted from said data transmitting means; and

electrical energy storage means electrically connected to said connector means which, when said connector means is connected to the power source, receives and stores electrical energy, and which, when said connector means is not connected to the power source, supplies the stored electrical energy to said temperature sensing element and said data storing means.

4,642,786

METHOD AND APPARATUS FOR POSITION AND ORIENTATION MEASUREMENT USING A MAGNETIC FIELD AND RETRANSMISSION

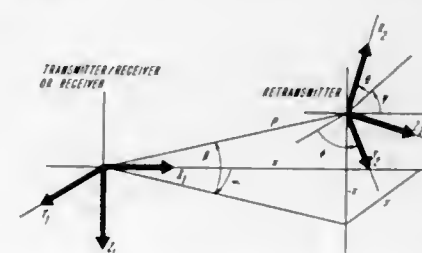
Per K. Hansen, Burlington, Vt., assignor to Position Orientation Systems, Ltd., South Burlington, Vt.

Filed May 25, 1984, Ser. No. 614,250

Int. Cl.⁴ G01B 7/14; G01S 5/14; G06F 15/32

U.S. Cl. 364-559

25 Claims



1. A magnetic position and orientation measurement system comprising:

- (a) an object, the position and orientation of which are to be measured;
- (b) retransmitter means attached to said object in predetermined position and orientation with respect thereto; and
- (c) electrical circuitry means including:

- (i) transmitter means for transmitting a magnetic field at a resonant frequency of said retransmitter means;
- (ii) receiver means for receiving a magnetic field retransmitted by said retransmitter means; said receiver means converting said magnetic field into a proportional voltage; and
- (iii) calculating means for receiving voltages from said receiver means related to said magnetic field and, therefrom, calculating the position (x, y, z) and orientation (ψ , θ , ϕ) in six degrees of freedom of said retransmitter means and said object.

4,642,787

FIELD PRESETTABLE ELECTRONIC ODOMETER

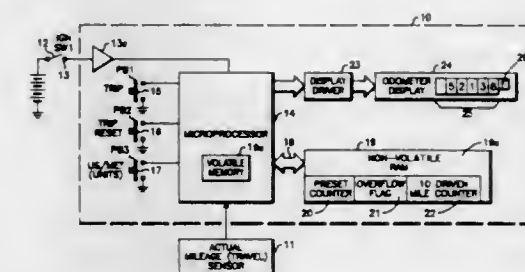
Timothy D. McCarthy, Palatine, Ill.; Scott T. Christians, and A. Dale Olmstead, both of Buda, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1984, Ser. No. 635,960

Int. Cl.⁴ G01C 22/00; G06F 15/36

U.S. Cl. 364-561

26 Claims



1. A field presettable electronic usemeter, for an apparatus, comprising:

usemeter means for developing a use count signal having a magnitude representative of total accumulated use of an apparatus in response to an input sensor signal provided in accordance with actual use of said apparatus and in response to a stored use count signal;

display means operatively connected to said usemeter means for providing a visual display representative of the magnitude of said use count signal;

non-volatile memory means operatively connected to said usemeter means for storing, at selected times, said use count signal in a non-volatile memory and thereby providing said stored use count signal; wherein the improvement comprises,

preset means operatively connected to said non-volatile memory means for implementing a preset mode while said non-volatile memory means is operatively connected to said usemeter means, in response to the occurrence of predetermined conditions, for adjusting the magnitude of the use count signal stored in said non-volatile memory means in accordance with received control signals unrelated to actual use of said apparatus such that the magnitude of said stored use count signal is unrelated to the total accumulated use of said apparatus as determined by said usemeter means prior to said implementation of said preset mode.

4,642,788

COMBINATORIAL WEIGHING METHOD AND APPARATUS

Setso Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 27, 1984, Ser. No. 605,377

Claims priority, application Japan, Apr. 27, 1983, 58-074830

Int. Cl.⁴ G01G 19/22, 19/00

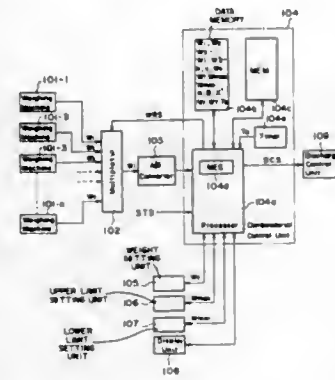
U.S. Cl. 364-567

20 Claims

16. A combinatorial measuring method comprising the steps of:

- (a) determining, during a weighing cycle, the weights of a plurality of batches of articles, and providing weight values corresponding to the respective weights of the batches of articles;
- (b) performing, during a weighing cycle, combinatorial computation based on the weight values provided in said step (a) to select the combination of batches having a total combined weight value which is closest to a target weight value within preset allowable limits;
- (c) selectively calculating a means weight value for the total combined weight values corresponding to the combina-

tions selected in said step (b) during a plurality of weighing cycles;
(d) adjusting the target weight value so that the mean weight value approaches a preset weight value which is within the preset allowable limits, said adjusting step comprising the substeps of:



- (i) diminishing the target weight value by a predetermined amount when the mean weight value is greater than the preset weight value; and
- (ii) increasing the target weight value by the predetermined amount when the mean weight value is less than the preset weight value.

4,642,789

VIDEO MEMORY CONTROLLER

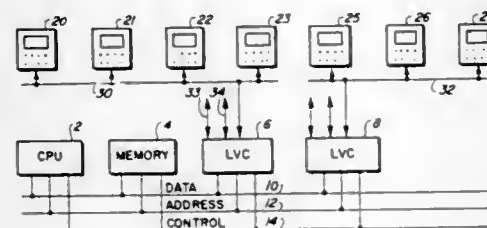
Michael G. Lavelle, San Jose, Calif., assignor to Motorola Computer Systems, Inc., Cupertino, Calif.

Filed Sep. 27, 1983, Ser. No. 536,911

Int. Cl.⁴ G06F 3/153; G09G 3/02

U.S. Cl. 364—900

8 Claims



1. A data processing system comprising:
 - a central processor;
 - a terminal communicating with said central processor, said terminal comprising:
 - a terminal processor,
 - a terminal memory for storing data, instructions, and the results of processing operations performed at said terminal,
 - a display, said display being segmented into at least two independent display segments, and said display having a trace time during which information is written to said display, and a retrace time during which information is not written to said display,
 - a display memory for storing information to be displayed by said display,
 - buffer means coupled between said terminal memory and said display memory, and
 - a video controller coupled to said terminal processor and to said buffer means for controlling the transfer of information from said display memory through said buffer means back to said display memory during said retrace time, said video controller, in response to a

single instruction from said terminal processor, controlling the transfer of a plurality of display character words, and said video controller writing substantially all of said information back to said display memory, but overwriting a predetermined portion of said information with a predetermined character in accordance with data stored in said terminal memory, to thereby perform a fill operation of a portion of a line of information being displayed by one of said display segments.

4,642,790

PRESENTATION SPACE MANAGEMENT AND VIEWPORTING ON A MULTIFUNCTION VIRTUAL TERMINAL

John F. Minshall, Winchester, England, and Martio C. Pinnell, Dalketh, Australia, assignors to International Business Machines Corporation, Armonk, N.Y.

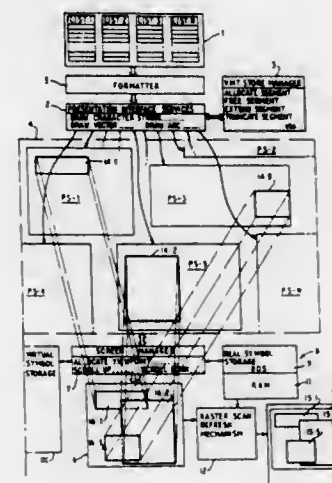
Filed Mar. 14, 1984, Ser. No. 589,381

Claims priority, application European Pat. Off., Mar. 31, 1983, 83301868.2

Int. Cl.⁴ G06F 3/00

U.S. Cl. 364—900

14 Claims



1. A method to be practiced in an interactive display system for displaying on a raster-scanned or matrix address display device of a terminal, selected windows of data supplied to or generated by the system in the course of performance of one or more applications invoked by the user of the terminal, said data being supplied or generated in the form of coded information (text, image, or vector orders) and said system comprising formatting means for expanding selected parts of the coded information into full non-coded image representation of the data, means for storing bit image representation of said selected windows of data in a refresh buffer, and means for sampling the contents of said refresh buffer in synchronism with the scan of said display device in order to display the selected data portions mapped in said refresh buffer in corresponding viewports on the display device,

said method being characterized in that said terminal is provided with storage space for on-demand storage and retrieval of bit image representations of all the data formatted by the application or applications invoked by the user whether or not such bit image representations are or will be displayed, presentation interface means is provided and rendered operable in response to such user invocation of an application to allocate presentation space within said storage and to store all formatted data associated with said application therein, and screen manager means is provided and rendered responsive to user input to identify and map the contents of those presentation spaces containing the

image representation of said selected windows of data into said refresh buffer.

4,642,791

INTERFACE FOR MAILING SYSTEM PERIPHERAL DEVICES

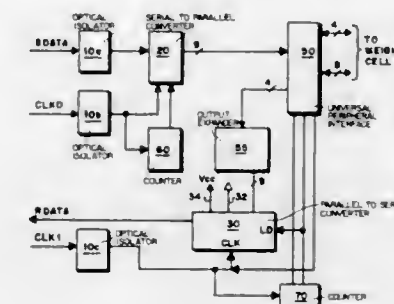
Joseph Mallozzi, Shelton; David E. Dinan, and Edward P. Daniels, both of Bridgeport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 15, 1983, Ser. No. 532,251

Int. Cl.⁴ G06F 3/00

U.S. Cl. 364—900

5 Claims



1. An interface between a weighing cell providing weight information in the form of coded digits representative of arbitrary weight units and an OCIA type port for a data processing system, comprising:

- (a) data input means connected to a serial data input line and to an associated input clock line, both from said OCIA type port, for receiving serial data input words shifted individually into said input means from said serial data input line by series of clock pulses of a predetermined length on said input clock line and for converting said serial data input words to parallel input words individually;
- (b) data output means connected to a serial data output line and to an associated output clock line, both to said OCIA port, for receiving parallel data output words individually and for shifting said data output words individually out on said output line in a serial format by means of series of clock pulses of a predetermined length received on said output clock line, said output means further comprising:
 - (1) a parallel loaded shift register, said shift register having a first stage, a second stage and a further plurality of stages, said stages each having an input and an output, said first stage's input being hard-wired to a predetermined logic level indicative of an inactive state of said output means, said second stage's input being hard-wired to the opposite logic level to said predetermined level indicative of a data available state of said output means, and the inputs of said plurality of stages receiving said individual parallel data output words, and said shift register having said first stage output connected to said data output line and a clock input connected to said output clock line and to an interface control means for receiving clock signals to shift data in said shift register, whereby when said individual parallel data output word is loaded into said shift register and shifted once said indicative opposite logic level is placed on said output line to signal said port on said output line that data is available, said port responding to said indicative opposite logic level by providing series of clock pulses to shift out the contents of said first stage (equal to said indicative opposite logic level) and said individual parallel data output word to said port; and
 - (2) means responsive to said series of clock pulses for signalling to said interface control means when said output means has transferred said individual output data

word to said port and for then initiating a load operation to reset said first stage to said predetermined logic level;

- (c) said interface control means being connected to said data input means and said data output means, and connected to said weighing cell for
 - (1) receiving said parallel input words individually, sequences of said words defining a plurality of types of messages;
 - (2) in response to one particular type of said messages, receiving weight information from said weighing cell; and,
 - (3) transferring said parallel data output words representative of said weight information to said output means.

4,642,792

DATA PROCESSOR PRINTER SETUP THROUGH A REMOTE DISPLAY TERMINAL

Silous F. Clements, Georgetown; Patrick D. Motola, and Shirley F. Swift, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

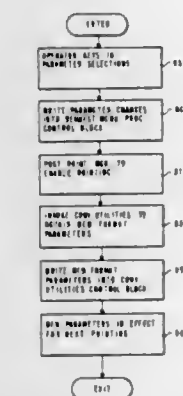
Continuation of Ser. No. 450,860, Dec. 20, 1982, abandoned.

This application Nov. 15, 1985, Ser. No. 798,703

Int. Cl.⁴ G06F 3/12

U.S. Cl. 364—900

6 Claims



1. In a data processing system comprising a host processor and a remote printer controlled by said host processor to print alphanumeric data from a data stream communicated from said host to said printer, the improvement comprising an intermediate processor, connected between said host processor and said remote printer, having an interactive display terminal, said intermediate processor comprising, means connected between said interactive display terminal and said printer for controlling the set-up of format parameters of documents containing said alphanumeric data from said host processor, means connected to said host processor and said display terminal for displaying to an operator on said display terminal the format parameters of said documents available for said set-up controlling means, means connected to said interactive terminal and said printer for disabling printing of said printer of said alphanumeric data from said host processor during said controlling of the set-up of format parameters having new format parameters, said controlling means responding to selection of the new format parameters by the operator for dynamically changing said format parameters utilized by said remote printer in printing said documents containing data from the host processor, and means connected to said host processor and said printer for enabling printing of said printer of said alphanumeric data with said new format parameters.

4,642,793 MANY-TO-ONE MAPPING HASH ADDRESS GENERATOR

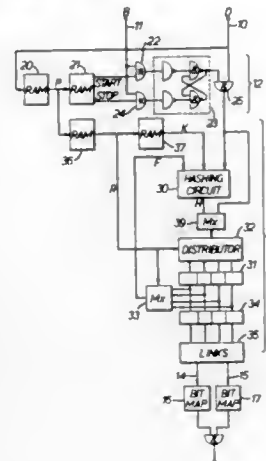
Dan F. Meaden, Stevenage, England, assignor to International Computers Limited, London, England

Filed Mar. 19, 1984, Ser. No. 590,786

Claims priority, application United Kingdom, Mar. 24, 1983, 8308148

Int. Cl.⁴ G06F 12/00
U.S. Cl. 364-900

2 Claims



1. A data transformation circuit comprising:

- input means for receiving an input data value,
- a hashing key memory for storing a plurality of values,
- means connected to the hashing key memory for reading out one of said values to provide a hashing key,
- a result register comprising a plurality of sections,
- control means for producing a control signal identifying a selected one of the sections of the result register,
- selection means, connected to the result register and responsive to said control signal to read out said selected one of the sections of the result register to provide a feedback value,
- hashing means connected to receive said input data value from the input means, the hashing key from the hashing key memory and the feedback value from the selection means, for combining said input data value, hashing key and feedback value to produce a hash value, and
- distribution means connected to receive said hash value from the hashing means and responsive to said control signal from the control means, for writing said hash value into said selected one of the sections of the result register.

4,642,794 VIDEO UPDATE FIFO BUFFER

Michael G. Lavelle, Claude A. Goldsmith, and Allin D. Kingsbury, all of San Jose, Calif., assignors to Motorola Computer Systems, Inc., Cupertino, Calif.

Filed Sep. 27, 1983, Ser. No. 536,913

Int. Cl.⁴ G06F 3/153; G09G 1/06

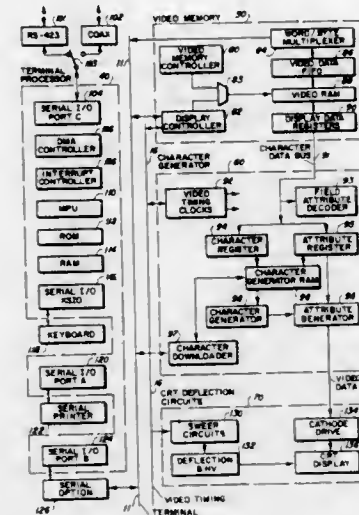
U.S. Cl. 364-900

13 Claims

1. A data processing system comprising:

- a central processor;
- a terminal communicating with said central processor, said terminal comprising:
 - a terminal processor,
 - a terminal memory connected to said terminal processor for storing data, instructions, and the results of processing operations performed at said terminal,
 - a display, said display having a trace time during which information is written to said display, and a retrace time during which information is not written to said display,

a display memory for storing information to be displayed by said display, means for conveying said information stored in said display memory to said display during said trace time, buffer means coupled between said terminal processor and said display memory,



means for reading information from said display memory to said buffer means during said retrace time, and means for writing said information back to said display memory during said retrace time in such a manner as to scroll vertically a portion of a line of information being displayed by said display.

4,642,795 THERMOMAGNETIC RECORDING SYSTEM

Hitoshi Tamada, Kawasaki; Masahiko Kaneko; Tsutomu Okamoto, both of Yokohama, and Toshiro Yamada, Kamakura, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP84/00152, § 371 Date Aug. 20, 1984, § 102(e) Date Aug. 20, 1984, PCT Pub. No. WO84/03991, PCT Pub. Date Oct. 11, 1984

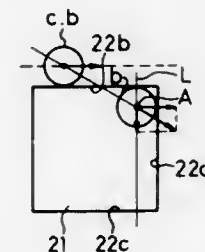
PCT Filed Mar. 30, 1984, Ser. No. 643,975

Claims priority, application Japan, Mar. 31, 1983, 58-55653

Int. Cl.⁴ G11C 19/08

U.S. Cl. 365-10

5 Claims



1. A thermomagnetic recording system in which a layer of soft magnetic material capable of holding and moving cylindrical magnetic domains is provided, said layer of soft magnetic material having an easy axis of magnetization normal to the layer surface and being magnetized in one direction by applying an external bias magnetic field thereto, and a cylindrical magnetic domain magnetized in the direction opposite to said magnetization direction is formed in said layer by irradiating a light beam on said layer surface, wherein said layer of soft

magnetic material is provided with a region having different magnetic energy from that of other region for said cylindrical magnetic domain, said cylindrical magnetic domain is held at a first stable position within said region, another cylindrical magnetic domain formed by the irradiation of a light beam is placed at a position apart by a predetermined distance from said cylindrical magnetic domain held at said first stable position and said light beam, under the condition that said light beam moves together with said another cylindrical magnetic domain, is moved to thereby move said cylindrical magnetic domain positioned at said first stable position along the border of said region to a second stable position within said region.

4,642,796 Patent Not Issued For This Number

4,642,797 HIGH SPEED FIRST-IN-FIRST-OUT MEMORY

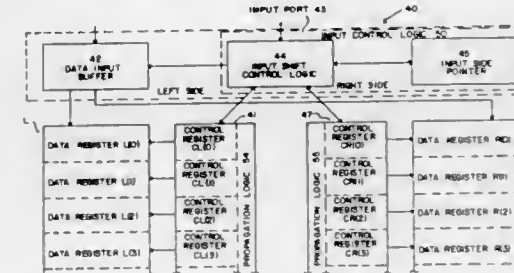
Barry A. Hoberman, Palo Alto, Calif., assignor to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Nov. 10, 1983, Ser. No. 551,735

Int. Cl.⁴ G11C 13/00

U.S. Cl. 365-221

13 Claims



1. A FIFO memory system comprising

- a memory having N word storage locations arranged in M fall-through columns 0, . . . , M-1 where $M \geq 2$ and $N \equiv 0 \pmod{M}$ and where the kth fall-through column comprises data registers DR(k,0), . . . , DR(k, N/M-1) for $k=0, \dots, M-1$;
- an input port for receiving a sequence of data words W(i);
- a column of control registers CR(k,0), . . . , CR(k, (N/M)-1) for $k=0, \dots, M-1$ for propagating a data word in data register DR(k,j) to data register DR(k,j+1) if and only if data register DR(k,j+1) is empty, $k=0, \dots, M-1$; $j=0, \dots, (N/M)-2$;
- a word propagation logic WPL(k) for each column $k=1, \dots, M-1$ for detecting when a control register CR(k,j) indicates that its associated data register DR(k,j) is empty or full and for initiating a transfer of data from data register DR(k,j) to DR(k,j+1) when DR(k,j) is full and DR(k,j+1) is empty, $k=0, \dots, M-1$; $j=0, \dots, (N/M)-2$;
- an input data buffer for receiving said sequence W(i), $i=0, 1, \dots$, of data words (where $i < j$ if and only if W(i) is received before W(j)) and for presenting said sequence of data words to said data registers DR(k,0) for $k=1, \dots, (M-1)$;
- an input control logic for directing said input port to shift said data words W(i), $i=0, 1, \dots$, in the order received by said input data buffer into said data registers DR(k,0) for $k=1, \dots, (M-1)$ so that the data word W(i) is shifted into the data register DR(i mod M, 0) only if data register DR(i mod M, 0) is empty;
- an output port for presenting said sequence of data words W(i), to an external circuit;
- an output data buffer for receiving said data words from the data registers DR(k, (N/M)-1) for $k=0, \dots, M-1$, and for presenting said data words at said output port; and
- an output control logic for directing said output data buffer to sense the data word W(0) from the data register DR(0, (N/M)-1) and to present the sensed data word W(0) to the output port, and for shifting the data word W(0) from the data register DR(0, (N/M)-1), and for directing said output data buffer to sense the data word W(i) from the data register DR(i mod M, (N/M)-1) and to present the sensed data word W(i) to the output port only if data word W(i-1) has previously been sensed from data register DR(i-1 mod M, (N/M)-1) and presented to the output port where $i=1, 2, \dots$, and for shifting the data word W(i) from the data register DR(i mod M, (N/M)-1).

(N/M)-1) and to present the sensed data word W(0) to the output port, and for shifting the data word W(0) from the data register DR(0, (N/M)-1), and for directing said output data buffer to sense the data word W(i) from the data register DR(i mod M, (N/M)-1) and to present the sensed data word W(i) to the output port only if data word W(i-1) has previously been sensed from data register DR(i-1 mod M, (N/M)-1) and presented to the output port where $i=1, 2, \dots$, and for shifting the data word W(i) from the data register DR(i mod M, (N/M)-1).

4,642,798 CMOS EPROM DECODING CIRCUIT

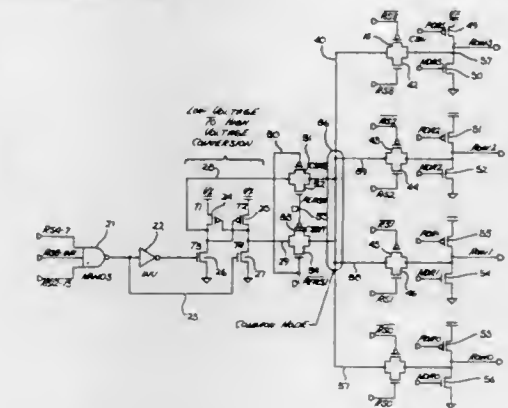
Kameswara K. Rao, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 1, 1985, Ser. No. 782,429

Int. Cl.⁴ G11C 8/00; H03K 19/096

U.S. Cl. 365-230

9 Claims



1. A CMOS electrically erasable, read only memories (E²PROM) static decoding circuit comprising:

- a first decoding means for receiving first address signals and for providing a first signal when said first address signals are in a predetermined state;
- a conversion means coupled to said first decoding means for converting said first signal into second and third signals;
- a pair of first switches coupled to said conversion means and to a first node, said first switches for providing one of said second and third signals to said first node;
- a plurality of said switches coupled to said node and to a plurality of second nodes, said second switches for passing said selected signal of said first node to said second nodes, said second nodes each coupled to at least one memory cell;
- first and second transistors coupled to each of said second nodes, said first and second transistors providing fourth and fifth signals at said second nodes; whereby signals may be provided to selected of said memory cells.

4,642,799 SYSTEM AND PROCESS FOR OPTICAL PROCESSING OF INFORMATION

Alastair M. Glass, Rumson, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1984, Ser. No. 676,676

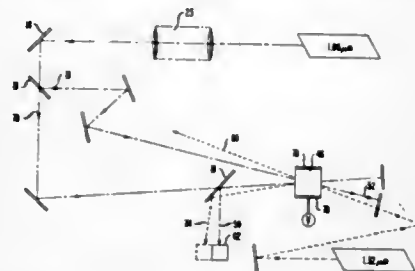
Int. Cl.⁴ G11C 11/34

U.S. Cl. 365-114

20 Claims

1. An optical processing system comprising (1) at least one light beam carrying a signal to be processed; (2) a recording medium that undergoes a refractive index change in response to said signal or said signal after processing; and (3) at least one light beam capable of allowing the reading of refractive index variations in said recording medium characterized in that said recording medium comprises a semiconductor material and a dopant wherein said dopant is present in recording

regions of said recording medium in a concentration sufficient to yield a resistivity in the range 10^3 to 10^9 ohm-cm,



and wherein a substantial portion of said resistivity is due to said dopant.

4,642,800

NOISE SUBTRACTION FILTER

Takato Umeda, Berkeley, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

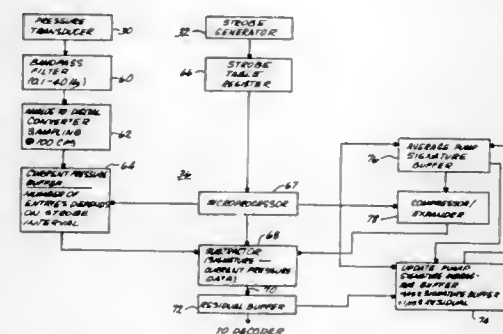
Continuation of Ser. No. 410,573, Aug. 23, 1982, abandoned.

This application Aug. 26, 1985, Ser. No. 769,129

Int. Cl.⁴ G01V 1/40; H03K 5/01

U.S. Cl. 367-85

11 Claims



1. A method of filtering noise from signals having a data component and a cyclical noise component having a substantially unidirectional polarity comprising averaging a predetermined number of the cyclical signals to produce an average signature signal in synchronism with the cyclical noise component, updating the average signature signal each cycle to produce a current average signature signal, and subtracting the current cyclical signals and the current average signature signals from one another to produce a residual signal which contains the data component, with the average signature signal being updated by adding a fraction of the residual signal to a fraction of the current average signature signal.

4,642,801

VISUAL DISPLAY PROCESS FOR SONARS

Didier Perny, Brest, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 9, 1984, Ser. No. 597,861

Claims priority, application France, Apr. 12, 1983, 83 05938

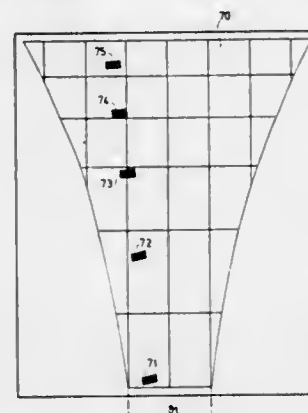
Int. Cl.⁴ G01S 7/56

U.S. Cl. 367-88

2 Claims

2. A process for visually displaying on a cathode ray tube objects at a depth H on the sea bed, the processing comprising: using a classification sonar for detecting the objects, each object having a slant range ρ and a bearing angle θ to the sonar, the sonar producing video signals and a minimum slant range ρ_{min} for each object; using a sounder to determine the depth H; first scanning the cathode ray tube along a horizontal direc-

tion X with a plurality of successive sawtooth-shaped scan



signals of constant width and maximum amplitude increasing according to the relationship

$$(X)_{max} = X_0 \sqrt{\frac{\rho^2 - H^2}{\rho_{min}^2 - H^2}}$$

where

X_0 is a value defined by the minimum slant range ρ_{min} , the X direction representing the bearing angle θ of the object; and

simultaneously second scanning the cathode ray tube along a vertical direction Y, representing the slant range ρ , according to the relationship

$$Y = \frac{k}{2} H \log \left[\frac{\rho^2 - H^2}{\rho_{min}^2 - H^2} \right]$$

where

k is a constant of proportionality.

4,642,802

ELIMINATION OF MAGNETIC BIASING USING MAGNETOSTRICTIVE MATERIALS OF OPPOSITE STRAIN

William M. Pozzo, North Easton, and John L. Butler, Marshfield, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 14, 1984, Ser. No. 682,023

Int. Cl.⁴ H04R 15/00; H01L 41/06

U.S. Cl. 367-168

7 Claims



1. A transducer comprising:
a positive strain magnetostrictive material;

a negative strain magnetostrictive material;
a tail mass and a head mass;
means for compressing said positive and negative materials between said tail and head masses;
means for applying a first magnetomotive force to said positive strain material for first intervals of time;
means for applying a second magnetomotive force to said negative strain material for second intervals of time;
said first and second intervals of time alternating and being noncoincident; and
said head mass undergoing positive and negative movement with respect to said tail mass in response to said first and second magnetomotive forces.

4,642,803

OPTICAL DATA RETRIEVAL SYSTEM FOR MULTI-CHARACTERISTIC REFLECTIVE DATA STORAGE MEDIA

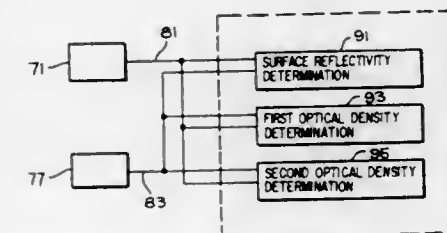
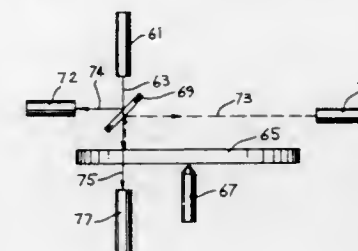
Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation of Ser. No. 406,719, Aug. 9, 1982, abandoned. This application Mar. 4, 1985, Ser. No. 707,538

Int. Cl.⁴ G11B 27/36, 7/00

U.S. Cl. 369-54

10 Claims



1. A laser system for reading data on an optical data storage medium having different optical characteristics comprising, a data medium having a high reflectivity surface layer and a light absorptive underlayer, the medium having pre-recorded data of a first absorptivity and user recorded data of a second absorptivity, and imperfections having a third absorptivity, each of the data and the imperfections having different combinations of specularly reflected and optically transmitted beam components with respect to an incident laser beam,

first and second detector means for simultaneously detecting said specularly reflected and optically transmitted beam components and generating first and second electrical signals corresponding to a quantity of light received, correlation means connected to said detector means for comparing the levels of said electrical signals with stored reference levels of specular reflectivity and optical transmissivity, the combination of said levels being indicative of different data and imperfection conditions of the medium, said levels from said detector means being first converted to radiometric values in accordance with the strength of said incident laser beam.

4,642,804

SHARED LASER LIGHTWAVE TRANSMISSION SYSTEMS

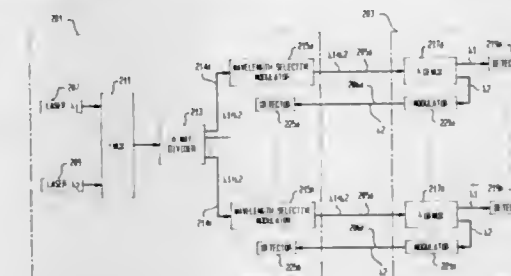
Stewart D. Personick, Middletown, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed May 10, 1985, Ser. No. 732,556

Int. Cl.⁴ H04B 9/00

U.S. Cl. 370-3

10 Claims



1. An optical transmission network comprising
(a) a first coherent light source for emitting radiation at a first wavelength λ_1 ,
(b) a second coherent light source for emitting radiation at a second wavelength λ_2 ,
(c) a wavelength multiplexer for receiving wavelength λ_1 radiation from said first light source and wavelength λ_2 radiation from said second light source, said wavelength multiplexer being adapted to output multiplexed radiation comprising a wavelength λ_1 component and a wavelength λ_2 component,
(d) power dividing means for distributing an aliquot portion of said multiplexed radiation over each of a plurality of transmission paths, and
(e) wavelength selective modulator means incorporated in at least one of said transmission paths for modulating information onto the λ_1 component of said multiplexed radiation transmitted over said one transmission path.

4,642,805

DIGITAL LINK FOR TELEPHONE STATION SETS

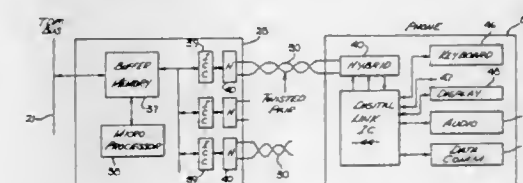
Gregory P. Dumas, Milpitas, and Philip H. Sutterlin, Sunnyvale, both of Calif., assignors to Rolm Corporation, Santa Clara, Calif.

Filed Jun. 25, 1984, Ser. No. 624,249

Int. Cl.⁴ H04Q 11/04

U.S. Cl. 370-58

31 Claims



1. A digital link apparatus for providing digital communications between a branch exchange and a telephone station set comprising:

computer means for preparing messages in a predetermined format, said computer means coupled to said branch exchange;
uplink circuit means for receiving said messages from said computer means and for preparing said messages for transmission to said telephone station set, wherein said transmission is time division multiplexed;
a pair of lines coupled to said uplink circuit means for receiving said messages; and
downlink circuit means coupled to said pair of lines for receiving said messages from said pair of lines and for

preparing said messages for coupling to said telephone station set, said downlink circuit means including:

- (a) control means for receiving and transmitting control signals for said telephone set;
- (b) timing means, synchronized with said messages carried by said pair of lines for coupling one field of voice data from said messages to said telephone station sets and another field of control data to said control means, said control means for communicating control signals to and from said telephone station set;
- (c) logic means coupled to said control means for examining said messages and for determining when a newly completed message has been transmitted to said downlink circuit means, said control means being activated to take action based upon said new message; and
- (d) means for detecting an error in said transmission of said messages and circuit means for reusing the previously transmitted voice data when said error is detected and also for providing a retransmit signal to provide a retransmission to resynchronize said timing means, whereby an improved link is established between said exchange and said telephone station set.

4,642,806

COMMUNICATIONS NETWORK HAVING A SINGLE NODE AND A PLURALITY OF OUTSTATIONS

Michael T. H. Hewitt; John W. Ballance, both of Ipswich, and Richard P. I. Scott, Woodbridge, all of England, assignors to British Telecommunications Public Limited Company, Great Britain

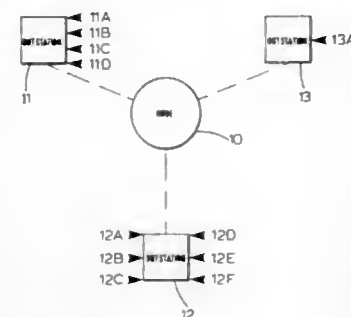
Filed Sep. 5, 1984, Ser. No. 647,441

Claims priority, application United Kingdom, Sep. 7, 1983, 8323967; Oct. 14, 1983, 8327586

Int. Cl.⁴ H04J 3/02

U.S. Cl. 370-95

25 Claims



1. A communication system comprising a single node and a plurality of outstations arranged for communication using two communication channels, one of said communication channels being used for communicating signals from the node to all of the outstations, the other of said communication channels being shared by all of the outstations, wherein said communication takes the form of traffic bursts within successive frame periods, each burst including a marker signal for synchronization wherein the node includes a plurality of burst extraction means for extracting respective selected bursts from received signal frames; wherein the outstations each include at least one burst extraction means for extracting respective selected bursts from received signal frame; and wherein each burst extraction means includes frame synchronization means responsive only to the marker signals within its respective bursts.

4,642,807

FAULT TOLERANT RECEIVER

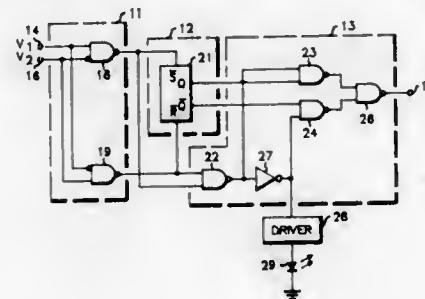
Richard A. Comroe, Dundee, and Adolore F. Petrie, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 18, 1984, Ser. No. 682,867

Int. Cl.⁴ G06F 11/00; H04L 1/00

U.S. Cl. 371-31

11 Claims



1. A fault tolerant signal receiver for use with differential voltage level transmission systems from which at least two voltage levels may be substantially simultaneously sensed to allow said at least two voltage levels to be decoded into digital signals, said receiver comprising:
 - (a) input means for receiving said two voltage levels and for producing at least one output related to said two voltage levels;
 - (b) first logic means for receiving said output from said input means and for producing an output, said output being selectively variable when said two voltage levels are valid and non-variable when said two voltage levels are invalid; and
 - (c) second logic means for receiving said output of said first logic means and for correctly outputting said decoded digital signal, provided, that said transmission system has no more than one fault condition.

4,642,808

DECODER FOR THE DECODING OF CODE WORDS WHICH ARE BLOCKWISE PROTECTED AGAINST THE OCCURRENCE OF A PLURALITY OF SYMBOL ERRORS WITHIN A BLOCK BY MEANS OF A REED-SOLOMON CODE, AND READING DEVICE FOR OPTICALLY READABLE RECORD CARRIERS

Constant P. M. J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 562,611, Dec. 19, 1983, abandoned.

This application Jan. 30, 1986, Ser. No. 824,299

Claims priority, application Netherlands, Jan. 22, 1983, 8302214

Int. Cl.⁴ G06F 11/10

U.S. Cl. 371-39

11 Claims

1. A decoding system for decoding multisymbol code words that are protected by means of a Reed-Solomon code against occurrence of multiple symbol errors within one code word, said system comprising:
 - a. receiving means for sequentially receiving the code symbols of a code word;
 - b. first calculating means fed by said receiving means and comprising a first multiplier for generating a series of syndrome symbols for a code word by means of multiplication with the parity check matrix (H) of the code;
 - c. second calculating means (104) fed by the first calculating means and having sequencing means for sequentially accessing a series of first to eighth program steps, to wit:
 - c1. a first program step for assuming $L=0$ symbol errors in the actual word for thereupon accessing a second program step;

4,642,809

SLAB ACTIVE LASING MEDIUM

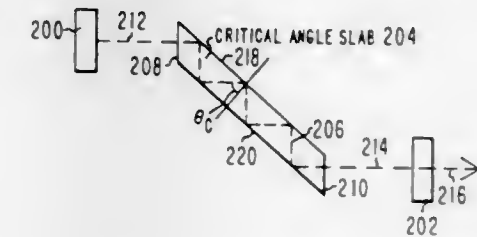
John C. Petheram, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 28, 1985, Ser. No. 707,042

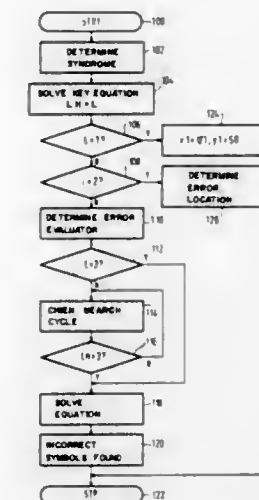
Int. Cl.⁴ H01S 3/06

U.S. Cl. 372-66

11 Claims



- c2. the second program step for activating a second multiplier for solving for the actually postulated number of L symbol errors by means of the first $N=2L$ syndrome symbols a key equation that is limited to those N syndrome symbols, according to Cramer's rule and for thereupon accessing a third program step;
- c3. the third program step for determining the value of the discrepancy delta 1 and for thereupon accessing a fourth program step;
- c4. the fourth program step for determining a non-zero value of delta 1 (138) and thereupon re-accessing the second program step while incrementing the current value of L and repeating the solving of the key equation by means of matrix incrementation operations, but upon determination a zero value of delta 1 (138) accessing a fifth program step;
- c5. the fifth program step for incrementing the number N by way of postulating a quasi-symbol error and recalculating the value of the discrepancy delta 1 as based on any current symbol errors and quasi-symbol errors, and for thereupon accessing a sixth program step;
- c6. the sixth program step for determining a non-zero discrepancy delta 1 for thereupon accessing the third



- program step while supplementing the key equation for any actual quasi-symbol error then operating as additional symbol error but for otherwise accessing a seventh program step;
- c7. the seventh program step for comparing the actual value of N with a predetermined value Nmax given by the current number of non-quasi symbol errors and for a too-low value of N accessing the fifth program step but for a sufficiently high value of N accessing an eighth program step;
- c8. the eighth program step for in case the key equation featuring at least a predetermined number of symbol errors obtaining the error locator sigma (Z) and the error evaluator omega (Z);
- d. third calculating means fed by said second calculating means for determining any zero point of the error locator to obtain corresponding positions of code symbols liable to be incorrect;
- e. fourth calculating means fed by said third calculating means for determining from said zero points any symbol error associated with incorrect code symbols, which incorrect code symbols are correctable through combination of error value and associated position data.

1. A slab to be used as an active lasing medium for a slab laser having wave energy traveling in a zig-zag path the length of said slab between the end faces thereof, to provide a gain length for said slab laser which is proportional to the total length of said zig-zag path said slab being composed of a material exhibiting a given index-of-refraction which exceeds that of its surroundings by an amount such that the critical angle for said traveling wave energy has a predetermined value; said slab having each of its end faces cut at an angle having a value such that said traveling wave energy in said slab is incident at that end face at substantially the predetermined value of said critical angle to substantially increase the total length of said zig-zag path, and hence said gain length of said slab laser.

4,642,810

REPETITIVE SEQUENCE DATA TRANSMISSION SYSTEM

Jean-Louis Picard, La Colle-sur-Loup, France, assignor to International Business Machines Corp., Armonk, N.Y.

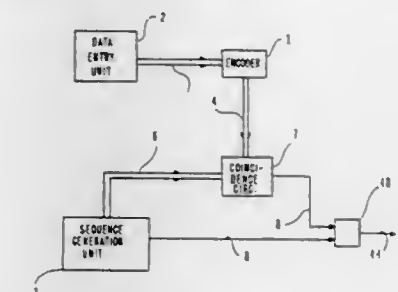
Filed Dec. 15, 1983, Ser. No. 561,848

Claims priority, application European Pat. Off., Dec. 28, 1982, 82430047.9

Int. Cl.⁴ H04L 27/00

U.S. Cl. 375-37

5 Claims



1. A repetitive sequence data signal transmission system having a transmitter means and a receiver means interconnected by a data signal transmission medium: said transmitter means including:
 - a first selectively operable means (13) for providing at an output thereof (4) a coded data signal corresponding to the operation selected;
 - a first repetitive sequence generating means (5) for generating in a synchronous manner a plurality of bits arranged according to a repetitive sequence and providing said repetitive sequence in series on a first output (8) and providing on a second parallel output (6) for each bit in the sequence a unique bit pattern,

a coincidence circuit means (7) having a first input connected to the output of the first selectively operable means (4) and a second input connected to the second parallel output of the said first repetitive sequence generation means (6) for providing on an output of the coincidence circuit means (9) an output signal whenever coincidence exists between the signal applied to the said first and second inputs of the said coincidence circuit means, and

a first exclusive OR circuit means (10) having a first input connected to the output of the said coincidence circuit means (9) and a second input connected to the first output (8) of the first repetitive sequence generating means for supplying at an output thereof the bit sequence received from the first output of the first repetitive sequence generating means except when the output from the coincidence circuit means provides an output signal indicating that coincidence exists between the first and second inputs thereto and for inverting at its output the bit received at the second input whenever the coincidence circuit means signals a coincidence between the first and second inputs thereto via a signal on its output, and

means connecting the output of the first exclusive OR circuit means to one end of the said data signal transmission medium;

said receiver means including;

a second repetitive sequence generation means (61-65) for generating in a synchronous manner a plurality of bits arranged according to the same repetitive sequence as the said first repetitive sequence generation means included in the said transmitter means, said second repetitive sequence generation means having a first output (71) for providing the said sequence of bits in series and a second output (80-83) providing a unique parallel output signal for each bit in the sequence,

a second exclusive OR circuit means having a first input connected to the other end of said data signal transmission medium and a second input connected to the said first output of the said second repetitive sequence generation means for providing at an output thereof an output control signal whenever the signals received at the said first and second inputs of the said second exclusive OR circuit means differ from each other on a bit by bit basis, and

gate circuit means connected to the said second output of the said second repetitive sequence generation means for providing the said output to a utilization means under control of the said output control signal provided by the said second exclusive OR circuit means.

4,642,811

EXAFS SPECTROMETER

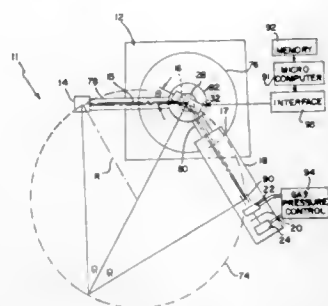
Panayotis Georgopoulos, Northbrook, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jun. 12, 1984, Ser. No. 619,841

Int. Cl.⁴ G01N 23/08

U.S. Cl. 378-53

40 Claims



1. An apparatus for performing X-ray absorption fine structure measurements on a specimen by using a source X-ray

beam and an assembly adapted to carry out a set of predetermined operating conditions, comprising:

a monochromator crystal means rotatably positioned at the center of said assembly for diffracting said source X-ray beam to provide a monochromatic X-ray beam for selected angles of incidence of said source X-ray beam with respect to said crystal means, and in accordance with said predetermined operating conditions said crystal means providing said monochromatic X-ray beam having a different wavelength upon changing to a different respective associated one of said angles of incidence;

deforming means for automatically distorting said monochromator crystal means at said angles of incidence to provide said monochromatic X-ray beam having said different wavelength at said respective associated angles of incidence;

detector means for measuring the intensity of said monochromatic X-ray beam before and after passing through said specimen; and

stage means for supporting said specimen and said detector means, said stage means being slidably engaged with a receiving track of said assembly to enable movement on said track to an angular position twice that of said respective associated angle of incidence of said X-ray beam with said crystal means.

4,642,812

SOUND FIELD ENLARGING DEVICE AND METHOD

Junichi Yoshio; Toshio Hirano; Kenichiro Yasukawa, and Masayuki Yoshida, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

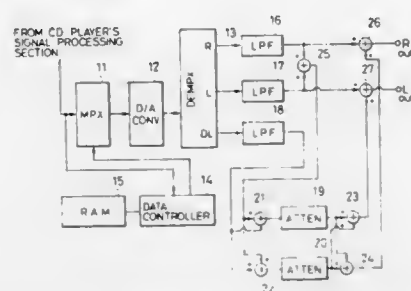
Filed Apr. 23, 1985, Ser. No. 726,267

Claims priority, application Japan, Apr. 23, 1984, 59-58456[U]

Int. Cl.⁴ H04R 5/00

U.S. Cl. 381-1

10 Claims



1. A sound field enlarging device for a reproducing apparatus supplying right-channel and left-channel signals as a sequence of pairs of digital data, comprising:

means for calculating a sum datum for each of said pairs of digital data;

means for delaying the sum data for a predetermined delay period relative to the corresponding pairs of digital data;

means for converting said digital data pairs and the delayed sum data to corresponding analog signals; and

means for combining said analog signals to produce output right-channel and left-channel signals with a negative correlation between said output right-channel and left-channel signals.

4,642,813

ELECTRO-OPTICAL QUALITY CONTROL INSPECTION OF ELEMENTS ON A PRODUCT

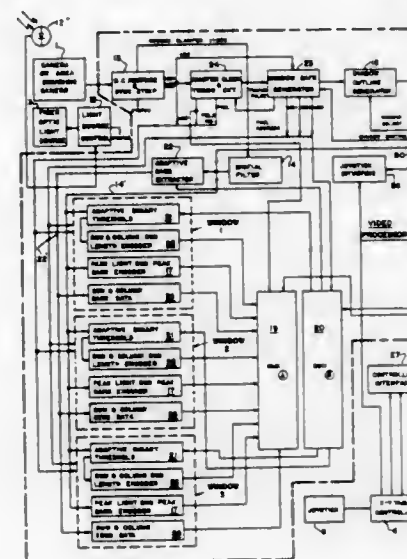
Joseph Wilder, Princeton, N.J., assignor to Object Recognition Systems, Inc., Princeton, N.J.

Filed Apr. 18, 1983, Ser. No. 486,245

Int. Cl.⁴ G06K 9/00

U.S. Cl. 382-8

18 Claims



10. Apparatus for optically inspecting a graphic pattern on a

product to see if it matches the graphic pattern of a previously examined training sample, comprising

a video camera,

a means to position a training product and later a production product, so that the camera scans a rectangular frame portion on the product,

window gate means operative to define an electronic window in the frame, and to pass the video signal from said camera solely during scans through said window,

video signal processing means operative to translate the video signal passed by said window gate means into row signals including in a first category signals representing the number of each row scan line of vertical edges V, and in a second category signals representing the number of horizontal down edge points Hdn, and the number of horizontal up edge points Hup, and into column signals including in a third category signals representing the number in each column of horizontal edge points H, and signals in a fourth category representing the number of vertical down edge points Vdn, and the number of vertical up edge points Vup,

means to compare the V signals, and Hdn and Hup signals, the H signals and the Vdn and Vup signals, obtained from scanning the product pattern, with corresponding signals obtained from scanning the training pattern,

said signals in each of the four categories of signals being the averages of signals obtained over a plurality of frame scans, and

means to data-reduce said signals by averaging the signals in the first category V, and averaging the signals in the second category Hdn and Hup, over a plurality of successive rows, and by averaging the signals in the third category H, and averaging the signals in the fourth category Vdn and Vup, over a plurality of successive columns.

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DESIGNS

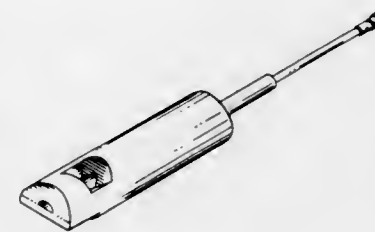
FEBRUARY 10, 1987

288,140
COMBINED WHISTLING LOLLIPOP AND MUSICAL
SLIDE

Enrique B. Fontlladosa, Av. Diagonal 662-664 5a, Barcelona
08034, Spain

Filed Mar. 7, 1983, Ser. No. 472,756
Term of patent 14 years

U.S. Cl. D1—106

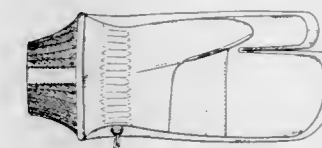
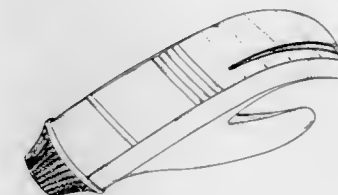


288,142
SKI MITT

A. Wellborn Gregg, 2615 Durban Dr., Houston, Tex. 77043
Continuation of Ser. No. 582,397, Feb. 24, 1984, abandoned.
This application Feb. 24, 1986, Ser. No. 833,434

Term of patent 14 years

U.S. Cl. D2—610

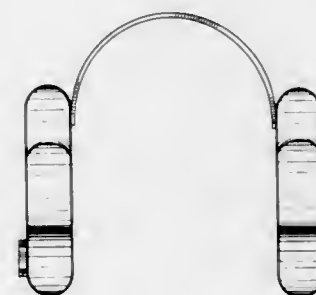
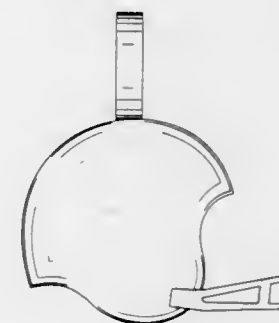


288,141
EAR MUFFS

Richard D. Pozzini, 5545 Dugan Ave., St. Louis, Mo. 63110
Filed Feb. 9, 1984, Ser. No. 578,578

Term of patent 14 years

U.S. Cl. D 29/19



288,143

WINGED PAD FOR KNEE CRUTCH

S. Glenn Scott, Memphis, Tenn., assignor to Professional Specialties Co., St. Louis, Mo.

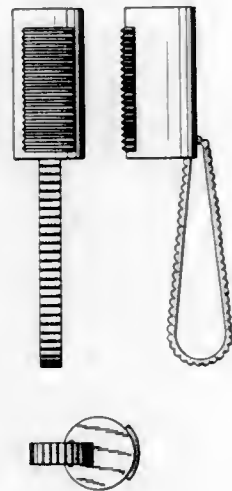
Filed Apr. 2, 1984, Ser. No. 595,666

Term of patent 14 years

U.S. Cl. D3—8



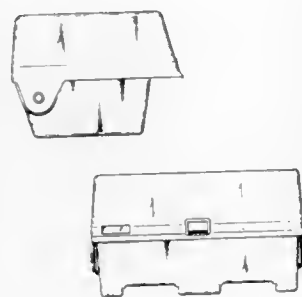
288,144
UMBRELLA HANDLE
 Ann S. Cain, Cincinnati, Ohio, assignor to 'totes', incorporated,
 Loveland, Ohio
 Filed Jan. 21, 1986, Ser. No. 820,601
 Term of patent 14 years
 U.S. Cl. D3—12



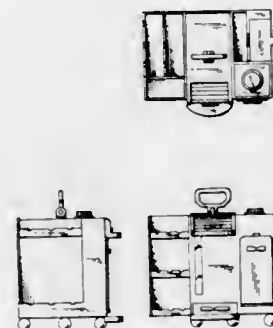
288,146
FOOD TOTE BAG
 Janet F. Cathcart, 2210 Wilshire Blvd., #314, Santa Monica,
 Calif. 90403, and Kathleen Ingersoll, 2002 E. 20th St., Santa
 Ana, Calif. 92701
 Filed Jul. 2, 1984, Ser. No. 626,976
 Term of patent 14 years
 U.S. Cl. D3—42



288,145
DISK STORAGE AND CARRYING CASE
 Allan R. Northrup, and John G. Tomkinson, both of King
 County, Wash., assignors to Amaray International Corpora-
 tion, Redmond, Wash.
 Filed Apr. 12, 1985, Ser. No. 722,344
 Term of patent 14 years
 U.S. Cl. D3—35



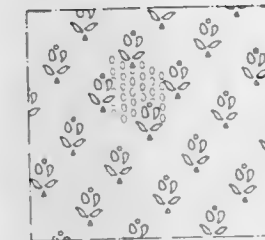
288,147
**COMBINED DISPENSER AND CADDY FOR BABY
 TOILETRIES**
 Jonathan Hellinsky, 198 Woodward Ave., Staten Island, N.Y.
 10314
 Filed May 30, 1984, Ser. No. 615,467
 Term of patent 14 years
 U.S. Cl. D3—74



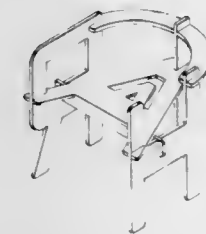
288,148
TOOTHBRUSH
 Paul Malgrain, Paris, France, assignor to La Brosse et Du Pont,
 Paris, France
 Filed Oct. 23, 1984, Ser. No. 663,912
 Term of patent 14 years
 U.S. Cl. D4—104



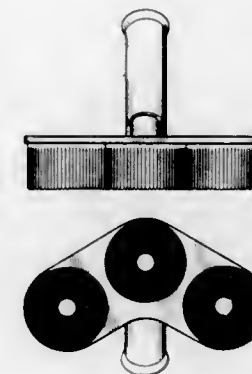
288,150
EMBOSSED PAPER TOWELING
 Galya A. Schulz, Appleton; Kenneth E. Bredendick; Chester W.
 Gooding, Jr., both of Neenah, and Allen C. Schumacker,
 Kimberly, all of Wis., assignors to James River-Norwalk, Inc.,
 Norwalk, Conn.
 Filed Mar. 23, 1983, Ser. No. 478,161
 The portion of the term of this patent subsequent to Dec. 21,
 1996, has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D5—53



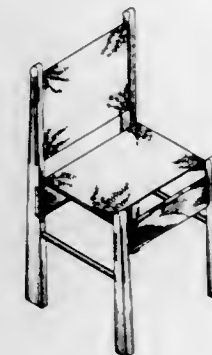
288,151
DISASSEMBLABLE CHAIR
 Richard D. Lindstrom, P.O. Box 10610, Bainbridge Island,
 Wash. 98110
 Filed Aug. 7, 1984, Ser. No. 638,444
 Term of patent 14 years
 U.S. Cl. D6—358



288,149
CARPET DEODORIZER APPLICATOR BRUSH
 Theodore J. Hasler, Chicago, Ill., assignor to Airwick Indus-
 tries, Inc., Carlstadt, N.J.
 Filed Jul. 9, 1984, Ser. No. 628,999
 Term of patent 14 years
 U.S. Cl. D4—114



288,152
CHILD'S CHAIR
 Charles E. Spinalo, Barrington, and Andrew J. Kaplan, Ports-
 mouth, both of N.H., assignors to Kinderworks Corporation,
 Portsmouth, N.H.
 Filed Jun. 1, 1984, Ser. No. 616,414
 Term of patent 14 years
 U.S. Cl. D6—380



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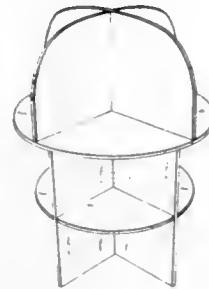
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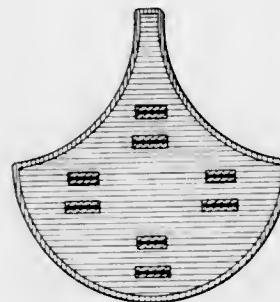
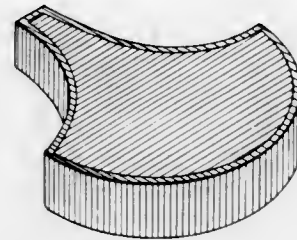
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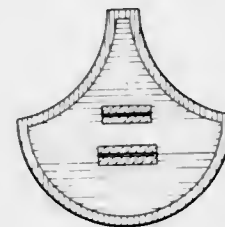
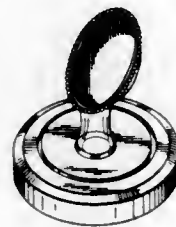
288,153
DISPLAY STAND
Sture Engstrand, Gustavsberg, Sweden, assignor to Aktiebolaget Gustavsberg, Gustavsberg, Sweden
Filed Sep. 25, 1984, Ser. No. 654,313
Claims priority, application Sweden, Mar. 28, 1984, 841027
Term of patent 14 years
U.S. Cl. D6—460



288,155
JEWELRY DISPLAY STAND
Dennis L. Crawford, Carrollton, Tex., assignor to Lenox, Incorporated, Lawrenceville, N.J.
Filed May 11, 1984, Ser. No. 609,124
Term of patent 14 years
U.S. Cl. D6—467



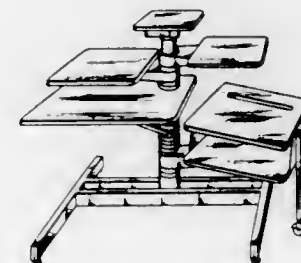
288,154
DISPLAY STAND
Barbara J. Hobgood, P.O. Box 83, Bristow, Okla. 74010
Filed Apr. 16, 1984, Ser. No. 600,997
Term of patent 14 years
U.S. Cl. D6—466



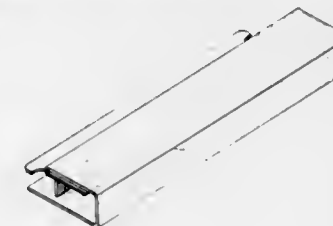
288,156
WINE RACK
Martin Nuncio, 4015 Brookhaven Club Dr., Apt. 303, Dallas, Tex. 75234
Filed Oct. 22, 1984, Ser. No. 663,192
Term of patent 14 years
U.S. Cl. D6—468



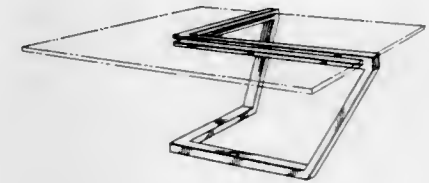
288,157
MODULAR COMPUTER SUPPORT AND DISPLAY STAND
Joseph Sandor, Woodland Hills, Calif., assignor to Frontline Products, Inc., Glendale, Calif.
Filed Apr. 24, 1984, Ser. No. 603,573
Term of patent 14 years
U.S. Cl. D6—474



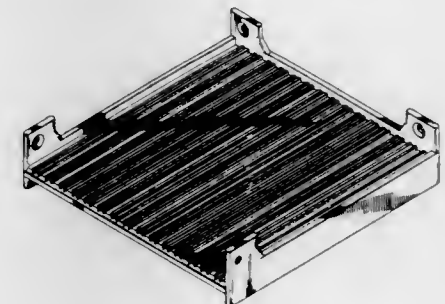
288,158
HAND REST
Bennett F. Dunnington, R.R. 2, Box 198E, Iowa City, Iowa 52240
Filed Jul. 31, 1984, Ser. No. 636,394
Term of patent 14 years
U.S. Cl. D6—491



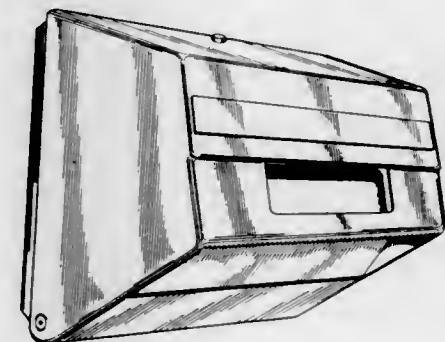
288,159
TABLE FRAME
Robert C. Winzeler, III, Montpelier, Ohio, assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Jan. 18, 1984, Ser. No. 621,603
Term of patent 14 years
U.S. Cl. D6—495



288,160
STORAGE SHELF
Ralf P. Maroney, and Gregory A. Fishkind, both of Milford, Conn., assignors to Plug-In Storage Systems, Inc., Milford, Conn.
Filed Jul. 25, 1984, Ser. No. 634,264
Term of patent 14 years
U.S. Cl. D6—511



288,161
DISPENSER FOR PAPER ROLL OR THE LIKE
Calvin L. Payne, Jr., Atlanta; Brian E. Ingersoll, Marietta, and Rickey D. Burns, Atlanta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 3, 1984, Ser. No. 567,706
Term of patent 14 years
U.S. Cl. D6—522



VOL

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288,162

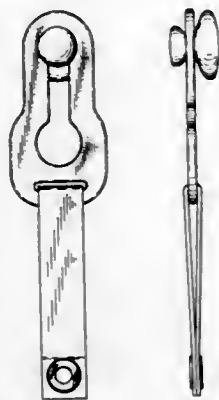
BEDCLOTHES FASTENER FOR A WATERBED

William B. Hutton, and Deatrice B. Hutton, both of 34452 Bachelor Flat Rd., St. Helens, Oreg. 97051

Filed Mar. 26, 1984, Ser. No. 593,320

Term of patent 14 years

U.S. Cl. D6—607



288,164

COFFEEMAKER

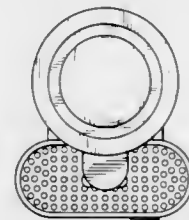
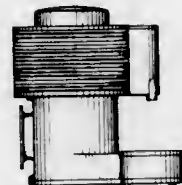
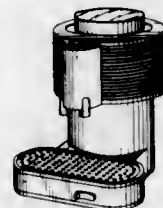
Franz A. Stützer, and Michael Knöchner, both of Offenbach, Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,580

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 5 MR 10 525

Term of patent 14 years

U.S. Cl. D7—309



288,163

SERVING TRAY

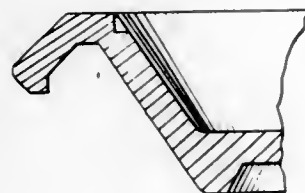
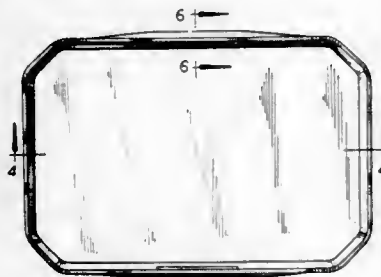
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands

Filed Oct. 5, 1983, Ser. No. 539,376

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1983, MR20974

Term of patent 14 years

U.S. Cl. D7—21



288,165

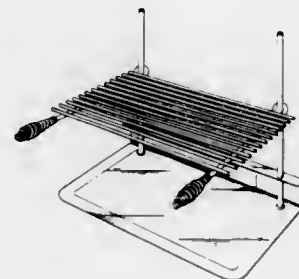
FIREPLACE COOKING GRILL INSERT

Craig R. Thomas, Cherokee, Iowa, assignor to R. J. Thomas Manufacturing Co., Inc., Cherokee, Iowa

Filed Sep. 13, 1984, Ser. No. 650,253

Term of patent 14 years

U.S. Cl. D7—408



288,166

GARDEN SHEAR CUFF

Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword Limited, High Wycombe, England

Filed Apr. 12, 1984, Ser. No. 599,404

Claims priority, application United Kingdom, Oct. 12, 1983, 1015687

Term of patent 14 years

U.S. Cl. D8—5



288,168

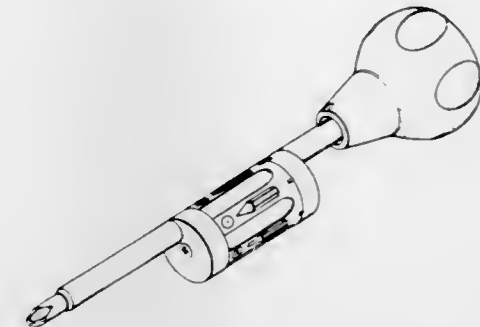
MULTIPLE-TIP TOOL

Charles H. Graham, Salt Lake City, Utah, assignor to Tekna-Tool, Inc., North Salt Lake, Utah

Filed Jun. 25, 1985, Ser. No. 748,808

Term of patent 14 years

U.S. Cl. D8—85



288,169

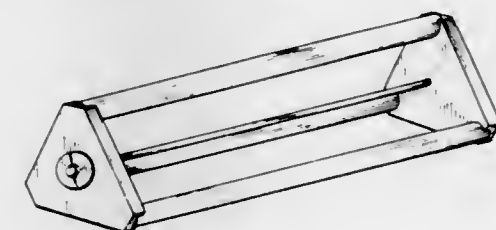
CUTLERY SHARPENER

Morton Cohen, 41-27 W. Moreland, Little Neck, N.Y. 11363

Filed Jul. 17, 1984, Ser. No. 631,746

Term of patent 14 years

U.S. Cl. D8—93



288,167

ELECTRIC PIPE THREADER AND PIPE CLAMP COMBINATION

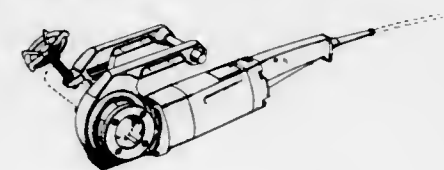
Hans Urspruch, Stuttgart, Fed. Rep. of Germany, assignor to Albert Roller GmbH & Co. KG Werkzeug- und Maschinenfabrik, Waiblingen, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,973

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, GR111004/83; Aug. 4, 1983, GR111232/83

Term of patent 14 years

U.S. Cl. D8—61



288,170

GAS PUMP NOZZLE CLIP AND KEY HOLDER

Will H. Foster, 11570 E. Snyder Rd., Tucson, Ariz. 85749

Filed Sep. 5, 1984, Ser. No. 647,510

Term of patent 14 years

U.S. Cl. D8—349



VOL

1075

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1987

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288,171
BATTERY CHARGER MOUNTING BRACKET
Ranjit Dey, 2465 Dunwin Drive, Unit 11, Mississauga, Ontario,
Canada L5L 1T1

Filed Jun. 1, 1984, Ser. No. 616,234
Term of patent 14 years

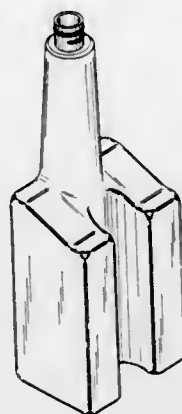
U.S. Cl. D8—73



288,173
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics
Corporation, Howell, N.J.

Filed Jan. 30, 1985, Ser. No. 696,428
Term of patent 14 years

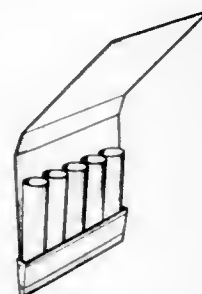
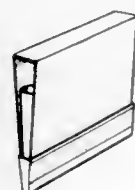
U.S. Cl. D9—375



288,172
COMBINED DISPLAY AND STORAGE CONTAINER
FOR HANDKERCHIEFS, SCARVES OR THE LIKE
William Kanellos, Park Forest, Ill., assignor to HGK Advertising, Inc., Chicago, Ill.

Filed Jul. 18, 1984, Ser. No. 632,048
Term of patent 14 years

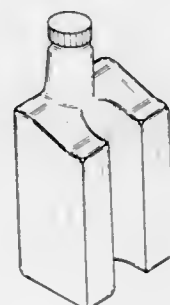
U.S. Cl. D9—304



288,174
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics
Corporation, Howell, N.J.

Filed May 1, 1985, Ser. No. 729,423
Term of patent 14 years

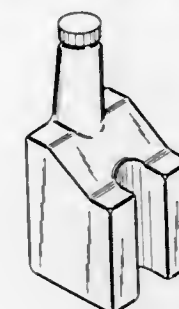
U.S. Cl. D9—375



288,175
BOTTLE OR SIMILAR ARTICLE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics
Corporation, Howell, N.J.

Filed Jun. 24, 1985, Ser. No. 748,327
Term of patent 14 years

U.S. Cl. D9—375

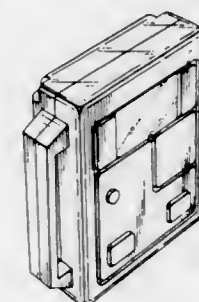


288,176
STOPWATCH
Raymond Chan, Kowloon, Hong Kong, assignor to Integrated
Display Technology Limited, Kowloon, Hong Kong

Filed Jul. 20, 1984, Ser. No. 632,884
Claims priority, application United Kingdom, May 15, 1984,
1019659

Term of patent 14 years

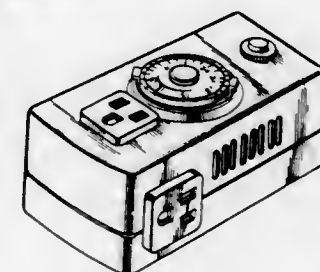
U.S. Cl. D10—30



288,177
PRESET TIMER
Tai-Her Yang, 5-1, Tai-Pin Street, Si-Hu Town, Dzan-Hwa,
Taiwan

Filed Sep. 12, 1984, Ser. No. 649,652
Term of patent 14 years

U.S. Cl. D10—40



288,178
THERMOMETER
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed.
Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,620
Claims priority, application Fed. Rep. of Germany, Aug. 16,
1983, MR 146
The portion of the term of this patent subsequent to Aug. 20,
1999, has been disclaimed.
Term of patent 14 years

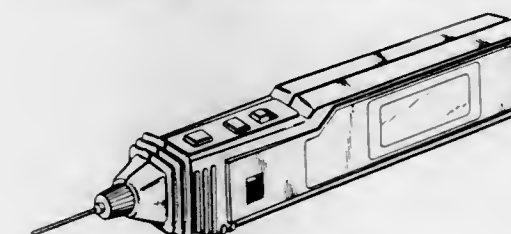
U.S. Cl. D10—58



288,179
DIGITAL MULTIMETER
Toshio Sekido, Sakaki, Japan, assignor to Soar Corporation,
Japan

Filed Oct. 23, 1984, Ser. No. 663,876
Claims priority, application Japan, Apr. 23, 1984, 59-16468
Term of patent 14 years

U.S. Cl. D10—78



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288,180
SOIL COMPACTION TESTER
Dale Shreiff, Rte. 5, Box 31A, Russellville, Ky. 42276
Filed Oct. 2, 1985, Ser. No. 783,153
Term of patent 14 years
U.S. Cl. D10—83



288,182
BASEBALL TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,062
Term of patent 14 years
U.S. Cl. D11—160



288,183
RACQUETBALL TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,064
Term of patent 14 years
U.S. Cl. D11—160



288,181
KNITTING COUNTER FOR COUNTING AND
RECORDING STITCHES OR ROWS
Takashi Matsubayashi, Habikino, Japan, assignor to Clover
Manufacturing Co., Ltd., Osaka, Japan
Filed May 30, 1984, Ser. No. 615,230
Term of patent 14 years
U.S. Cl. D10—97



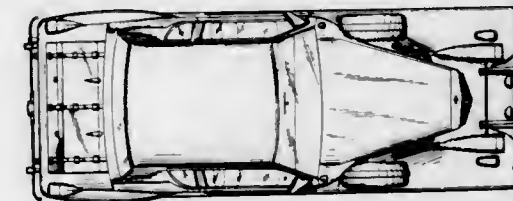
288,184
RUNNER TROPHY
Freddy T. Lee, 2008 SW. 17th St., Boynton Beach, Fla. 33435
Filed Aug. 15, 1984, Ser. No. 641,065
Term of patent 14 years
U.S. Cl. D11—161



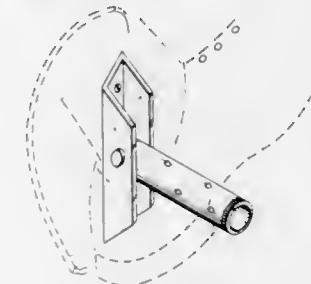
288,185
BUTTON
Alfred C. Derosa, 145 Dorwin Ave., Syracuse, N.Y. 13205
Filed Jun. 11, 1984, Ser. No. 619,535
Term of patent 14 years
U.S. Cl. D11—226



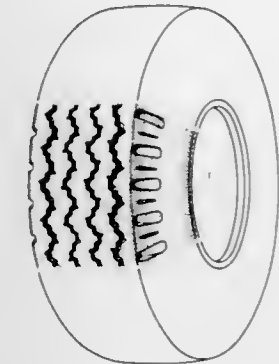
288,186
AUTOMOBILE
Thomas J. Crawford, Plantation, Fla., assignor to Classics
Motor Carriages, Miami, Fla.
Filed Nov. 7, 1984, Ser. No. 669,268
Term of patent 14 years
U.S. Cl. D12—92



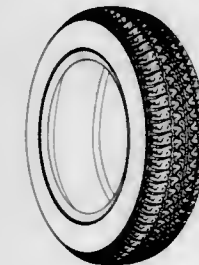
288,187
VEHICLE OPERATOR'S FOLD UP FOOT REST
Larry D. Morris, 5095 S. 6300 West, Hooper, Utah 84315
Filed Mar. 19, 1984, Ser. No. 590,634
Term of patent 14 years
U.S. Cl. D12—114



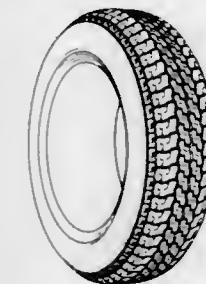
288,188
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to The Uniroyal
Goodrich Tire Company, Akron, Ohio
Filed Dec. 12, 1984, Ser. No. 680,877
Term of patent 14 years
U.S. Cl. D12—142



288,189
AUTOMOBILE TIRE
Masaharu Ono, Kobe, Japan, assignor to Sumitomo Rubber
Industries, Ltd., Kobe, Japan
Filed Dec. 20, 1984, Ser. No. 684,259
Claims priority, application Japan, Oct. 23, 1984, 59-43933
Term of patent 14 years
U.S. Cl. D12—146



288,190
AUTOMOBILE TIRE
Toshio Hayakawa, Tokyo, Japan, assignor to Bridgestone Cor-
poration, Tokyo, Japan
Filed May 30, 1984, Ser. No. 615,490
Claims priority, application Japan, Nov. 30, 1983, 58-51634
Term of patent 14 years
U.S. Cl. D12—147



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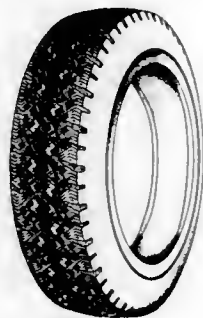
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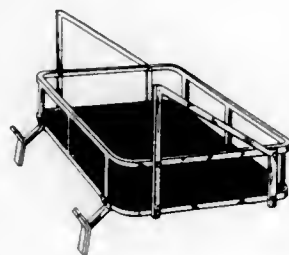
288,191
MOTORCYCLE TIRE
 Masao Nakagawa, and Toshio Hayakawa, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
 Filed Sep. 17, 1984, Ser. No. 651,129
 Claims priority, application Japan, Mar. 29, 1984, 59-11927
 Term of patent 14 years
 U.S. Cl. D12-147



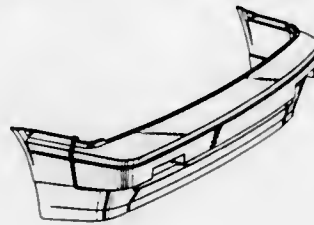
288,192
AUTOMOBILE TIRE
 Akihiro Nakatani, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed Aug. 14, 1984, Ser. No. 640,777
 Claims priority, application Japan, Feb. 28, 1984, 59-7375
 Term of patent 14 years
 U.S. Cl. D12-147



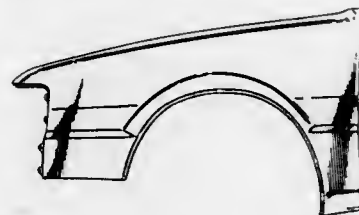
288,193
AUTOMOBILE CARRIAGE RACK
 Frederic J. Caron, 7021 Shady La., Placerville, Calif. 95667
 Filed Sep. 17, 1984, Ser. No. 651,831
 Term of patent 14 years
 U.S. Cl. D12-157



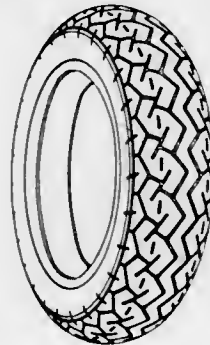
288,194
FRONT BUMPER
 Tadao Okumura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
 Filed May 3, 1984, Ser. No. 606,680
 Term of patent 14 years
 U.S. Cl. D12-169



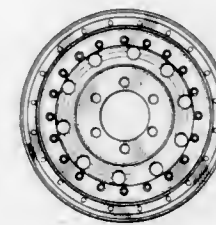
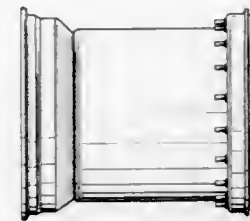
288,195
LEFT FRONT FENDER FOR AN AUTOMOBILE
 Björn E. A. Envall, Vänersborg, Sweden, and Giorgetto Giugiaro, Turin, Italy, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
 Filed Apr. 24, 1984, Ser. No. 603,949
 Claims priority, application Sweden, Oct. 26, 1983, 83-2773
 Term of patent 14 years
 U.S. Cl. D12-184



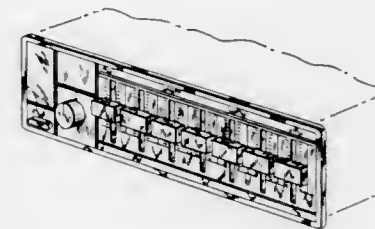
288,196
MOTORCYCLE TIRE
 Kazushige Ikeda, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
 Filed Jan. 3, 1985, Ser. No. 688,626
 Claims priority, application Japan, Oct. 17, 1984, 59-43131
 Term of patent 14 years
 U.S. Cl. D12-147



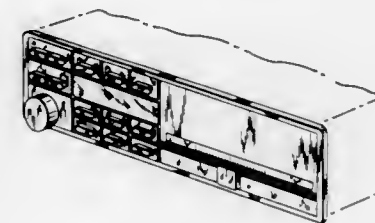
288,197
RACING WHEEL
 Richard A. Goudy, Rte. 1, El Pomar, Templeton, Calif. 93465
 Filed Jan. 14, 1983, Ser. No. 457,976
 Term of patent 14 years
 U.S. Cl. D12-210



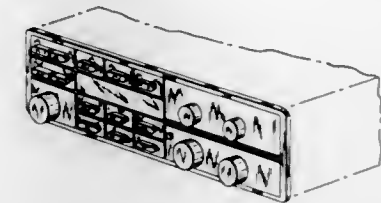
288,198
GRAPHIC EQUALIZER
 John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
 Filed Jul. 30, 1984, Ser. No. 636,045
 Term of patent 14 years
 U.S. Cl. D14-1



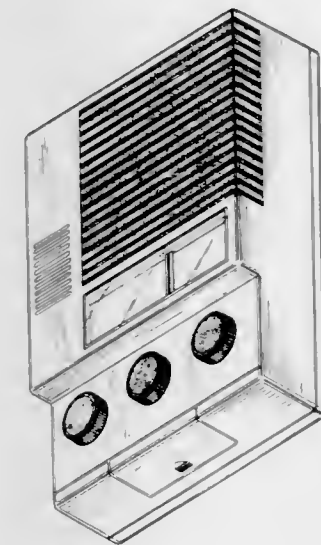
288,199
RADIO RECEIVER
 John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
 Filed Jul. 30, 1984, Ser. No. 636,047
 Term of patent 14 years
 U.S. Cl. D14-68



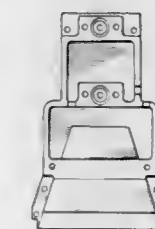
288,200
RADIO RECEIVER
 John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
 Filed Jul. 30, 1984, Ser. No. 636,049
 Term of patent 14 years
 U.S. Cl. D14-68



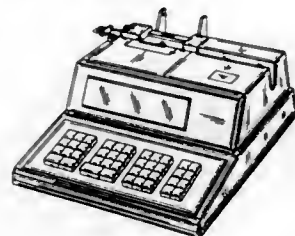
288,201
WATER RESISTANT PORTABLE RADIO
 David Fink, Dix Hill, N.Y., assignor to Windsor Industries, Inc., Farmingdale, N.Y.
 Filed Sep. 21, 1984, Ser. No. 652,718
 Term of patent 14 years
 U.S. Cl. D14-68



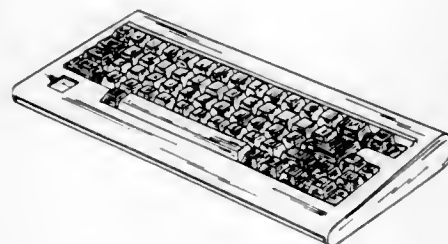
288,202
MICROWAVE RECEIVING ANTENNA
 John F. Fuhrman; Paul K. Shumaker, both of Olathe, and Dennis A. Falls, Gardner, all of Kans., assignors to Maxcom Electronics, Inc., Kansas City, Mo.
 Filed Nov. 5, 1984, Ser. No. 668,510
 Term of patent 14 years
 U.S. Cl. D14-86



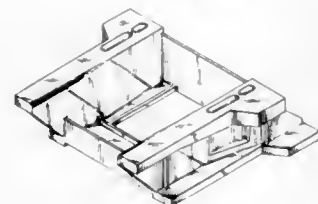
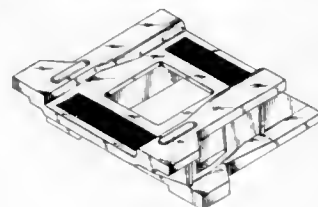
288,203
ELECTRONIC TELLER MACHINE
Kunio Akiyama, Osaka, Japan, assignor to Sharp Corporation,
Osaka, Japan
Filed Nov. 9, 1984, Ser. No. 670,476
Claims priority, application Japan, May 11, 1984, 59-19227
Term of patent 14 years
U.S. Cl. D14—106



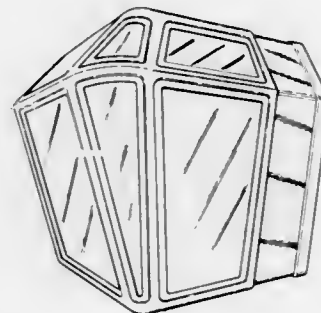
288,204
KEYBOARD FOR A PERSONAL COMPUTER
Thomas A. Anzelone, Ft. Lauderdale, and Willis Y. Jordan, III,
Boca Raton, both of Fla., assignors to International Business
Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1984, Ser. No. 624,192
Term of patent 14 years
U.S. Cl. D14—100



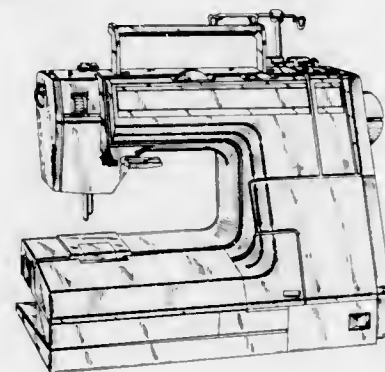
288,205
OUTBOARD MOTOR MOUNTING BRACKET
Robert M. Bergeron, 27 Ball Ave., North Salem, N.H. 03073
Filed Jun. 28, 1984, Ser. No. 625,900
Term of patent 14 years
U.S. Cl. D15—4



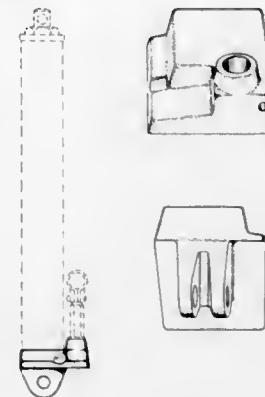
288,206
OPERATOR'S CAB FOR A CRANE
Jerry N. Moscovitch, Toronto, Canada, assignor to Engineered
Design Inc., Toronto, Canada
Filed Dec. 19, 1984, Ser. No. 683,449
Claims priority, application Canada, Jul. 5, 1984, 05-07-84-8
Term of patent 14 years
U.S. Cl. D15—30



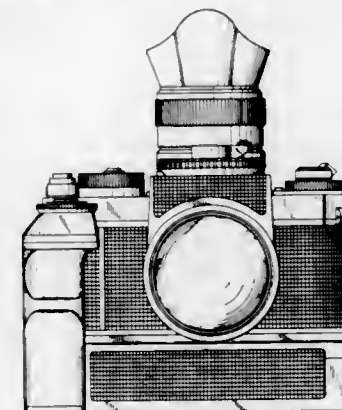
288,207
SEWING MACHINE
Nobufusa Kuroki, and Yoshikazu Ebata, both of Tokyo, Japan,
assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1984, Ser. No. 571,521
Term of patent 14 years
U.S. Cl. D15—70



288,208
BASE BRACKET FOR COMBINED RAM HOUSING AND
ACTUATOR
Joseph O. Hawkins, Rte. 7, Kensington Dr., Greenville, S.C.
29609
Filed Sep. 8, 1983, Ser. No. 530,415
Term of patent 14 years
U.S. Cl. D15—138



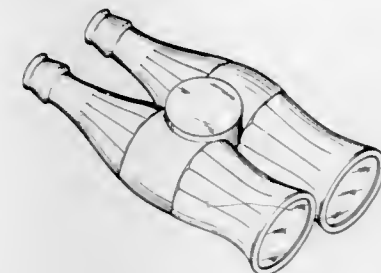
288,209
CAMERA
Sea C. Park, 3836 Birchwood, Skokie, Ill. 60076
Filed Dec. 7, 1984, Ser. No. 679,397
Claims priority, application Rep. of Korea, Jun. 23, 1984,
7428/1984
Term of patent 14 years
U.S. Cl. D16—9



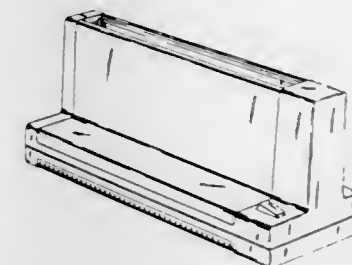
288,210
SPOTTING SCOPE
Minoru Mise, Asaka, Japan, assignor to Simmons Outdoor
Corporation, Miami, Fla.
Filed Jul. 18, 1984, Ser. No. 631,157
Term of patent 14 years
U.S. Cl. D16—132



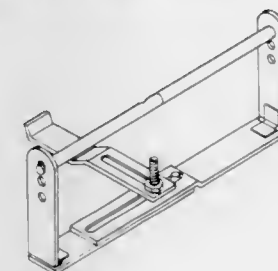
288,211
BINOCULAR
Bouziane Rabhi, 3, avenue Sacco & Vanzetti, 93420 Villepinte,
France
Filed Nov. 13, 1984, Ser. No. 670,007
Claims priority, application France, Jun. 7, 1984, 84 2550
Term of patent 14 years
U.S. Cl. D16—133



288,212
BINDING MACHINE
Hans P. Nordgren, Gustavsberg, Sweden, assignor to Semotex
AB, Stockholm, Sweden
Filed Aug. 13, 1984, Ser. No. 640,361
Claims priority, application Sweden, Feb. 13, 1984, 84-0448
Term of patent 14 years
U.S. Cl. D18—34



288,213
FOLDABLE, SELF-SUPPORTING, ADJUSTABLE BOOK
HOLDER
Liborio D. Morales, c/o Gennette Pearson, 7 S. Alisos St., Santa
Barbara, Calif. 93101
Filed Jun. 22, 1984, Ser. No. 623,250
Term of patent 14 years
U.S. Cl. D19—91



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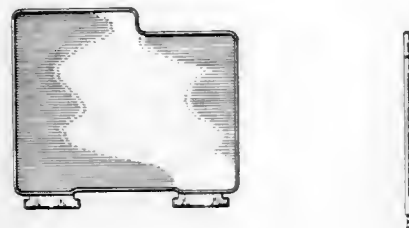
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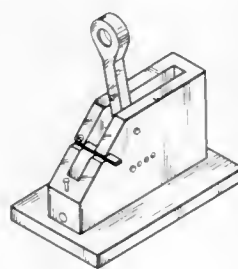
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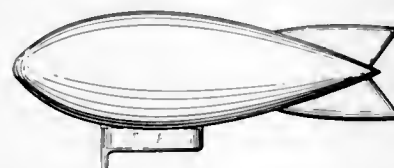
288,214
VERTICALLY EXTENDING DIVIDER FOR USE IN A FILING SYSTEM
 Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
 Filed Aug. 12, 1982, Ser. No. 373,403
 Term of patent 14 years
 U.S. Cl. D19-99



288,215
TOY CATAPULT
 Roger Tami, 3403 Honeywood St., Eugene, Oreg. 97401-4654
 Filed Jul. 23, 1984, Ser. No. 633,528
 Term of patent 14 years
 U.S. Cl. D21-2



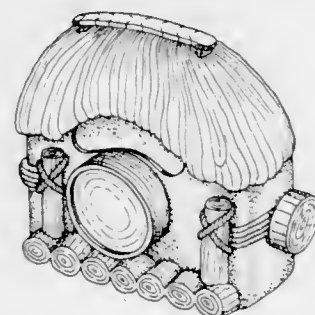
288,216
AIRSHIP TOY BALLOON
 Fritz Jensen, Nordbovej 20 C, DK-9800 Hjørring, Denmark
 Filed Feb. 13, 1984, Ser. No. 579,519
 Term of patent 14 years
 U.S. Cl. D21-84



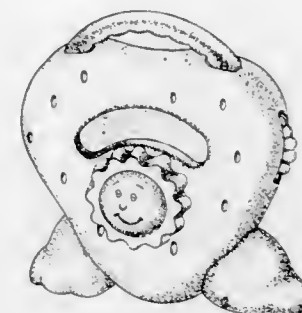
288,217
BALANCING TOY
 Ralph R. Torres, 2193 Laurelwood Dr., Thousand Oaks, Calif. 91362, and Clifford L. Rooke, 200 Clinton St., No. 1D, New York, N.Y. 11201
 Filed Aug. 7, 1984, Ser. No. 638,731
 Term of patent 14 years
 U.S. Cl. D21-102



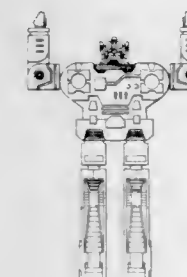
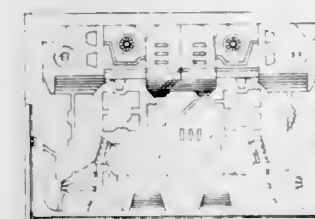
288,218
TOY RADIO
 Rickie T. Bedell, Cincinnati, Ohio, and Kathryn A. Cavnar, Covington, Ky., assignors to Kenner Parker Toys Inc., Beverly, Mass.
 Filed Jun. 15, 1984, Ser. No. 621,320
 Term of patent 14 years
 U.S. Cl. D21-113



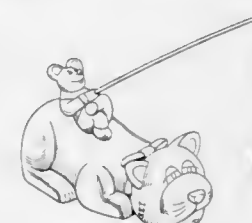
288,219
TOY RADIO
 Rickie T. Bedell, and David Winslow, both of Cincinnati, Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
 Filed Jun. 25, 1984, Ser. No. 624,483
 Term of patent 14 years
 U.S. Cl. D21-113



288,221
COMBINED RECONFIGURABLE TOY CASSETTE AND BOX
 Takashi Matsuda, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
 Filed Dec. 2, 1983, Ser. No. 557,654
 Claims priority, application Japan, Dec. 18, 1982, 57-191724
 Term of patent 14 years
 U.S. Cl. D21-150



288,220
FIGURE TOY
 Kuo-Shin Su, San-Chung, Taiwan, assignor to Chuan-Shing Mold Plastics & Toys Co., Ltd., San-Chung, Taiwan
 Filed Aug. 28, 1984, Ser. No. 644,946
 Term of patent 14 years
 U.S. Cl. D21-149



288,222
TOY KOALA BEAR
 Akito Sato, Aichi, Japan, assignor to Pilot Ink Co., Ltd., Aichi, Japan
 Filed Aug. 2, 1984, Ser. No. 637,180
 Term of patent 14 years
 U.S. Cl. D21-159

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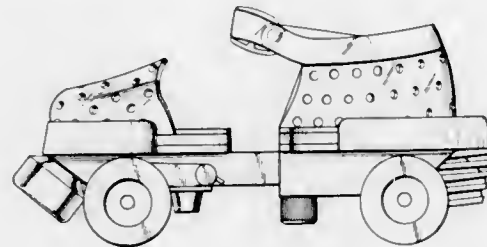
Jeannie W. Nixon, 6448 Peggy Dr., Goshen, Ohio 45122
Filed Jun. 26, 1984, Ser. No. 624,700
Term of patent 14 years
U.S. Cl. D21—184



288,225

ROLLER SKATE

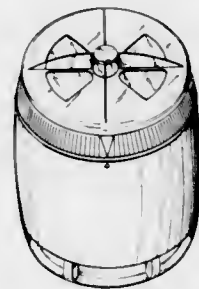
Reuben B. Klammer, Los Angeles, Calif., assignor to The Quaker Oats Company, Chicago, Ill.
Division of Ser. No. 547,648, Nov. 1, 1983. This application May 7, 1986, Ser. No. 862,423
Term of patent 14 years
U.S. Cl. D21—226



288,226

SWIMMING POOL CHEMICAL DISPENSER

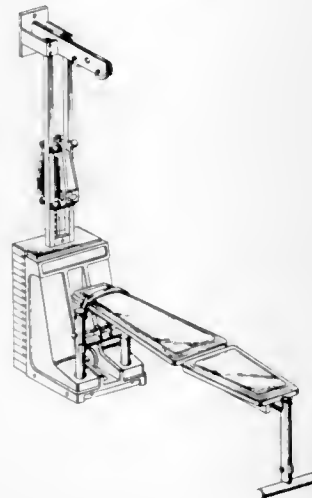
Arlon G. Sangster, Sterling, Mass., and Alan H. Milford, Hamden, Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed Dec. 11, 1984, Ser. No. 680,620
Term of patent 14 years
U.S. Cl. D23—3



288,224

PHYSICAL EXERCISER

Gary L. Rockwell, LaGrange, Ga., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Jun. 29, 1984, Ser. No. 626,118
Term of patent 14 years
U.S. Cl. D21—195



288,227

CHEMICAL FEEDER FOR SWIMMING POOLS

Ural M. Robinson, St. Louis, Mo., assignor to Helder Industries, Inc., Morristown, N.J.
Filed Aug. 27, 1984, Ser. No. 644,630
Term of patent 14 years
U.S. Cl. D23—3



288,228

SINK SPRAYER HEAD

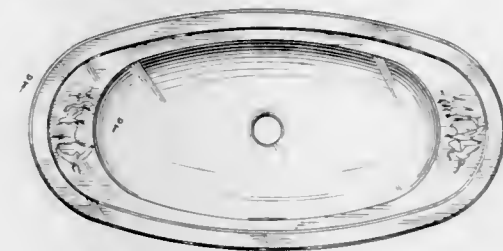
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Feb. 6, 1984, Ser. No. 577,059
Term of patent 14 years
U.S. Cl. D23—35



288,231

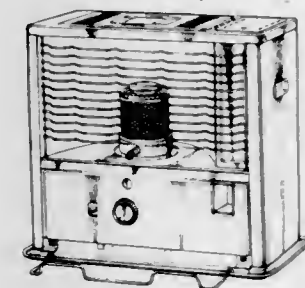
LAVATORY

Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
Filed Jun. 27, 1984, Ser. No. 625,212
Term of patent 14 years
U.S. Cl. D23—58



288,232
STOVE

Kenzo Okamoto; Hideo Nishikawa; Koichi Sakai, and Fumihiko Kitada, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Japan
Filed Jan. 10, 1984, Ser. No. 569,600
Claims priority, application Japan, Nov. 18, 1983, 58-49813
Term of patent 14 years
U.S. Cl. D23—122



288,229

QUICK-CONNECTIVE COUPLING

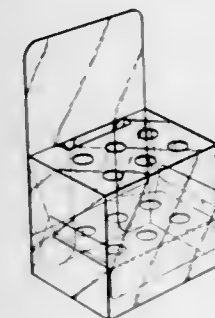
Glenn I. Beal; Harry L. Hauger, and Rick Leer, all of Somerset, Pa., assignors to Gilmour Manufacturing Co., Somerset, Pa.
Filed Dec. 9, 1983, Ser. No. 559,972
Term of patent 14 years
U.S. Cl. D23—43



288,233

CONTAINER FOR A SHADE GUIDE AND DENTAL SYRINGES

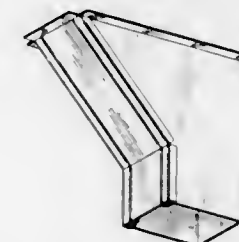
William J. Blatherwick, Hamilton Square; Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Apr. 9, 1984, Ser. No. 597,889
Term of patent 14 years
U.S. Cl. D24—31



288,230

EAVESTROUGH DOWNSPOUT CONNECTOR

Kenneth C. Thatcher, 892 Colburn St., Toledo, Ohio 43609
Filed Dec. 27, 1983, Ser. No. 565,583
Term of patent 14 years
U.S. Cl. D23—43



288,234
COMBINED CONTAINER AND DISPLAY CASE FOR
DENTAL ARTICLES

William J. Blatherwick, Hamilton Square; Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Oct. 29, 1984, Ser. No. 665,583

Term of patent 14 years

U.S. Cl. D24—31



288,235
THERAPEUTIC MITT

Thomas C. Hope, and Alexander D. Quintner, both of 26 Coonara Street, Holland Park, 4121, Queensland, Australia

Filed Jan. 6, 1983, Ser. No. 455,996

Term of patent 14 years

U.S. Cl. D24—36



288,236
TEMPOROMANDIBULAR JOINT PROSTHESIS

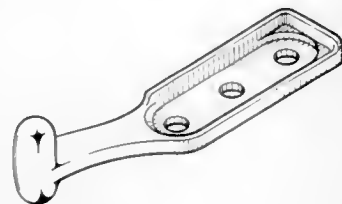
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.

Filed Feb. 1, 1984, Ser. No. 575,953

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—33



288,237
TEMPOROMANDIBULAR JOINT PROSTHESIS

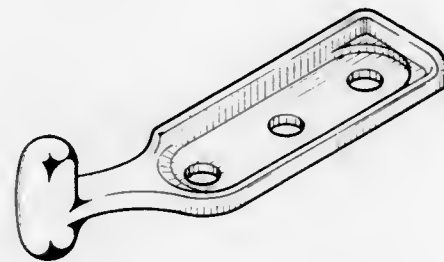
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.

Filed Feb. 1, 1984, Ser. No. 575,954

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—33



288,238
TEMPOROMANDIBULAR JOINT CONDYLAR
PROSTHESIS

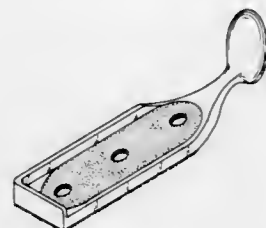
Charles A. Homsy; John W. Tellkamp, both of Houston, Tex., and John N. Kent, Metairie, La., assignors to Vitek, Inc., Houston, Tex.

Filed Apr. 30, 1985, Ser. No. 728,875

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—33



288,239
WHIRLPOOL BATH TUB

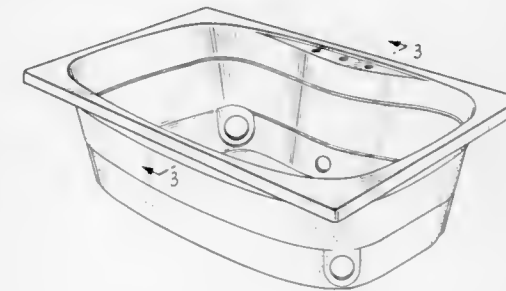
Ralph D'Innocente, Walnut Creek, and Larry Drasin, Los Angeles, both of Calif., assignors to Jacuzzi Inc., Little Rock, Ark.

Filed Jul. 15, 1985, Ser. No. 754,467

The portion of the term of this patent subsequent to Nov. 11, 2000, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—38



288,240
NEONATAL NATURAL NIPPLE

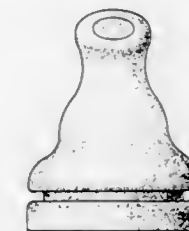
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 11, 1985, Ser. No. 710,751

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—46



288,241
NEONATAL NATURAL NIPPLE

Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Mar. 11, 1985, Ser. No. 710,770

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D24—46



288,242
SURGICAL SUCTION INSTRUMENT

Rainer Govenius, Nastola, Finland, assignor to Mediman Oy, Finland

Filed Mar. 20, 1984, Ser. No. 591,447

Claims priority, application Finland, Sep. 21, 1983, 814/83

Term of patent 14 years

U.S. Cl. D24—51



288,243
DOOR

Arthur M. Tofani, 2092 Harts La., Conshohocken, Pa. 19028

Filed Aug. 17, 1984, Ser. No. 641,685

Term of patent 14 years

U.S. Cl. D25—48



288,244
CORNER JOINT FOR PLASTIC WINDOWS

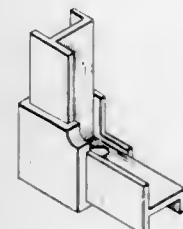
Dietrich F. Schmidt, Etters, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.

Filed Aug. 1, 1983, Ser. No. 519,290

The portion of the term of this patent subsequent to Feb. 10, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D25—52



288,245

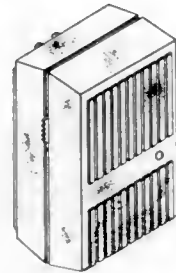
POWER FAILURE WARNING LIGHT

Thomas E. Corder, Danville, Calif., and Keith M. Mullins, Fort Collins, Colo., assignors to Intermatic Electronics Incorporated, Spring Grove, Ill.

Filed Jun. 11, 1984, Ser. No. 619,625

Term of patent 14 years

U.S. Cl. D26—26



288,246

COMBINED BICYCLE HORN, RADIO AND LIGHT

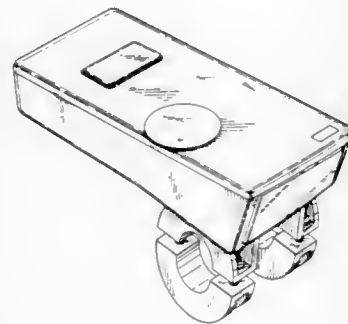
Yuen K. Wing, Hong Kong, Hong Kong, assignor to Rattner Enterprises Limited, Hong Kong

Filed Sep. 10, 1984, Ser. No. 648,438

Claims priority, application United Kingdom, Mar. 12, 1984, 1018453; Aug. 6, 1984, 1021351

Term of patent 14 years

U.S. Cl. D26—34



288,247

WALL LAMP

Michele De Lucchi, Milan, Italy, assignor to Artemide S.p.A., Pregnana Milanese, Italy

Filed Jan. 17, 1984, Ser. No. 571,412

Claims priority, application Italy, Jul. 27, 1983, 22517B/83

Term of patent 14 years

U.S. Cl. D26—85



288,248

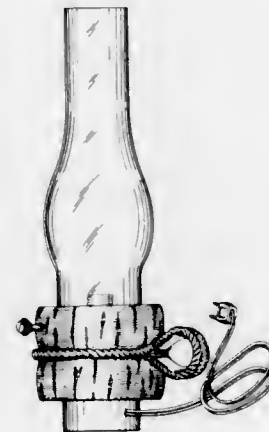
TABLE LAMP

John A. A. Weaver, 55 Hamilton Ave., Jamestown, R.I. 02835

Filed Aug. 30, 1984, Ser. No. 645,610

Term of patent 14 years

U.S. Cl. D26—105



288,249

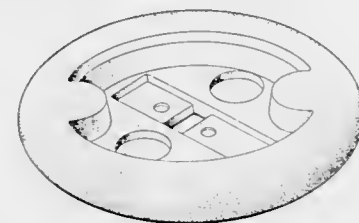
LAMP SHADE FOR WALL OR CEILING INDIRECT LIGHTING FIXTURE

Murray C. Pfister, San Francisco, Calif., assignor to Boyd Lighting Company, San Francisco, Calif.

Filed May 16, 1984, Ser. No. 610,975

Term of patent 14 years

U.S. Cl. D26—131



288,250

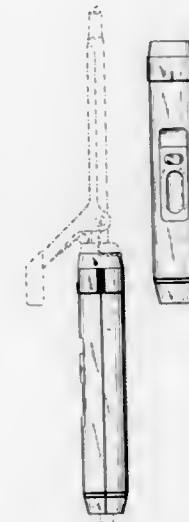
HANDLE FOR A BEAUTY CARE APPLIANCE OR THE LIKE

Duane D. Adams, Essex, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 12, 1984, Ser. No. 660,604

Term of patent 14 years

U.S. Cl. D28—35



288,252

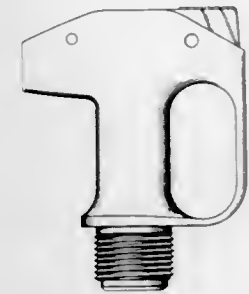
FIRE EXTINGUISHER VALVE

Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Nov. 28, 1984, Ser. No. 675,880

Term of patent 14 years

U.S. Cl. D29—5



288,253

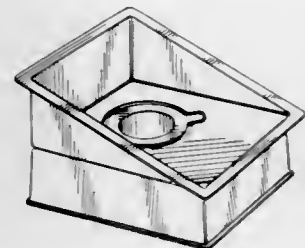
CAT LITTER BOX

Rosanne Hatton, and Bud Wallace, both of 2601 E. Victoria Space 202, Rancho Dominguez, Calif. 90220

Filed Apr. 23, 1984, Ser. No. 602,715

Term of patent 14 years

U.S. Cl. D30—99



288,254

LOWER SUPPORT COLLAR FOR ARMS OF A COLLAPSIBLE CLOTHES DRIER

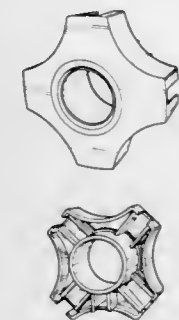
Ronald G. Meade, Edwardstown, Australia, assignor to Hills Industries Limited, Australia

Filed May 30, 1984, Ser. No. 615,205

Claims priority, application Australia, Nov. 30, 1983, 5849/83

Term of patent 14 years

U.S. Cl. D32—58



288,251

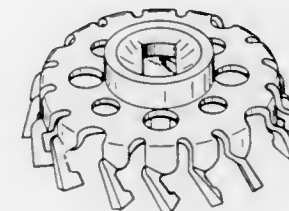
SHAVING CUTTER

Shunji Izumi, Matsumoto, Japan, assignor to Izumi Seimitsu Kogyo Kabushiki Kaisha, Matsumoto, Japan

Filed Jul. 19, 1984, Ser. No. 632,225

Term of patent 14 years

U.S. Cl. D28—45



288,255
CLOSE RIB BELT MODULE FOR AN ENDLESS CONVEYOR BELT

Robert H. Bode, and William P. Hidden, both of Wenham, Mass., assignors to The Cambridge Wire Cloth Co., Cambridge, Md.

Filed Feb. 6, 1984, Ser. No. 577,362
Term of patent 14 years

U.S. Cl. D34—29

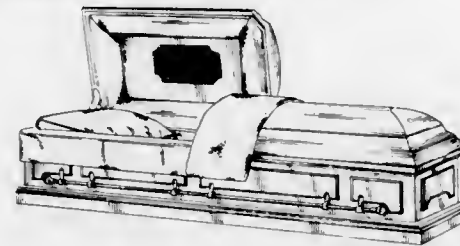


288,257
BURIAL CASKET

Michael L. Beardsley, Chittenango, N.Y., assignor to Marsellus Casket Co., Syracuse, N.Y.

Filed Sep. 24, 1984, Ser. No. 653,214
Term of patent 14 years

U.S. Cl. D99—7

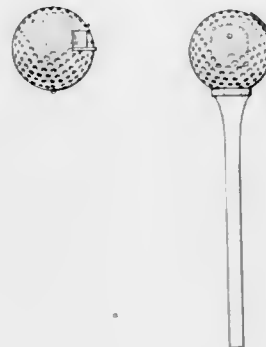


288,258
MAIL BOX

Donald D. Oden, 1868 Arrowhead Ct., Greenfield, Ind. 46140

Filed May 4, 1984, Ser. No. 607,004
Term of patent 14 years

U.S. Cl. D99—30



288,259
COIN BANK

Precious E. Tranchida, 550 E. Earll, No. 38, Phoenix, Ariz. 85012

Filed Sep. 27, 1984, Ser. No. 655,069
Term of patent 14 years

U.S. Cl. D99—37

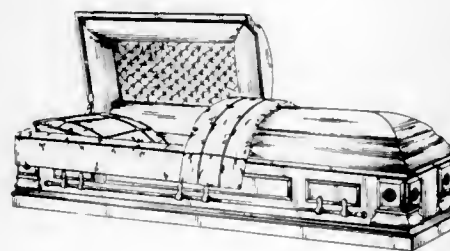


288,256
BURIAL CASKET

Michael L. Beardsley, Chittenango, N.Y., assignor to Marsellus Casket Co., Syracuse, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,232
Term of patent 14 years

U.S. Cl. D99—7



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF FEBRUARY, 1987

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Chance Company: See—
McKelvy, Marvin D., 4,641,727, Cl. 182-46,000.
- A. H. Robins Company, Incorporated: See—
Cale, Albert D., Jr., 4,642,343, Cl. 540-488,000.
Shanklin, James R., Jr., 4,642,348, Cl. 546-216,000.
- A. M. Cousin & Cie: See—
Pipon, Yves; and Droulon, Georges, 4,641,806, Cl. 248-430,000.
- A/S Kongsberg Vapenfabrikk: See—
Mowill, R. Jan, 4,641,495, Cl. 60-39,161.
- A/S Tomra Systems: See—
Planke, Tore, 4,642,470, Cl. 250-566,000.
- Aagano, Toshitaka; and Takasaki, Yoshimi, to Fuji Photo Film Co., Ltd. Method of correcting radiation image read-out error. 4,642,462, Cl. 250-327,200.
- Aaltonen, Olavi A.: See—
Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., 4,642,133, Cl. 75-2,000.
- AB Bonnierforetagen: See—
Lundberg, Krister; Tidstam, Goran; and Pope, Daniel F., 4,641,969, Cl. 356-343,000.
- AB Siba-Verken: See—
Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16,000.
- AB Volvo: See—
Lande, Goran; and Persson, Bendt, 4,641,775, Cl. 228-2,500.
- Abatmarco, Michael R. Razor blade cartridge unit with dual blades. 4,641,429, Cl. 30-41,000.
- Abe, Mikio, to Alps Electric Co., Ltd. Variable porcelain condenser structure. 4,642,729, Cl. 361-293,000.
- Abel, Stephen G.: See—
Green, C. Brad; Dobson, William; and Abel, Stephen G., 4,641,405, Cl. 29-157,10R.
- Abeles, Benjamin: See—
Tiedje, Thomas J.; and Abeles, Benjamin, 4,642,144, Cl. 148-175,000.
- Abt, Nancy G. Therapeutic cooling wrap. 4,641,655, Cl. 128-380,000.
- ACF Industries, Incorporated: See—
Needham, Robert F., 4,641,677, Cl. 137-15,000.
- Achelpohl, Fritz: See—
Mundus, Friedhelm; and Achelpohl, Fritz, 4,642,013, Cl. 414-73,000.
- Achtzig, Peter; and Hegner, Gunter, to Krone GmbH. A heat protection device for overvoltage arrester magazines. 4,642,723, Cl. 361-124,000.
- Acs, Maria; Faigl, Ferenc; and Fogassy, Elemer, to Alkaloida Vegyeszeti Gyar. Diastereomer salts of phenylalanine and N-acyl derivatives thereof and process for the separation of optically active phenylalanine and N-acyl derivatives thereof. 4,642,205, Cl. 260-501,170.
- Adachi, Hideki: See—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14,00R.
- Adams, Priscilla L.; and Farcasiu, Malvina, to Mobil Oil Corporation. Catalytic dewaxing process. 4,642,176, Cl. 208-111,000.
- Adams-Russell: See—
Fowler, Wayne D., 4,642,586, Cl. 333-122,000.
- Adler, Robert, to Zenith Electronics Corporation. Touch control system for use with or having a three-dimensionally curved touch surface. 4,642,423, Cl. 178-18,000.
- Adolph, Heinrich: See—
Hofmeister, Peter; Burstinghaus, Rainer; and Adolph, Heinrich, 4,642,368, Cl. 560-65,000.
- Advance Transformer Company: See—
Smulders, Herman, 4,642,521, Cl. 315-106,000.
- Advanced Cardiovascular Systems, Inc.: See—
Samson, Wilfred J.; and Frisbie, Jeffrey S., 4,641,654, Cl. 128-344,000.
- Advanced Micro Devices, Inc.: See—
Iranmanesh, Ali; and Schmidt, Christopher O., 4,641,416, Cl. 29-576,00W.
- Aerospatiale Societe Nationale Industrielle: See—
Bard, Max; Sibilo, Gerard; Marelli, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16,000.
- AGB Research: See—
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84,000.
- Agence Spatiale Europeenne: See—
Heinz, Stower; and Wubbo, Ockels, 4,641,386, Cl. 5-413,000.
- Agfa-Gevaert AG: See—
Muller, Jurgen; Kastl, Alfons; and Farber, Heinrich, 4,641,940, Cl. 354-322,000.
- Agfa-Gevaert, N.V.: See—
Burtin, Jean, 4,642,276, Cl. 430-30,000.
- AGIP, S.p.A.: See—
Bozzolati, Giovanni, 4,641,960, Cl. 356-2,000.
- Agranov, Vladimir. Map holder. 4,641,440, Cl. 40-10,00A.
- Aguro, Yoshinori: See—
Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, 4,641,948, Cl. 355-3,05H.
- Ahmann, John E., to Election Supplies Limited. Punching stylus for handicapped users. 4,642,450, Cl. 235-50,00R.
- Aichi Steel Works, Ltd.: See—
Takata, Yatsuka; Yamada, Tadamasu; and Kikuchi, Eiki, 4,642,219, Cl. 420-104,000.
- Aikawa, Noboru: See—
Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, 4,642,500, Cl. 310-90,500.
- Air Products and Chemicals, Inc.: See—
Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., 4,642,396, Cl. 568-934,000.
- Aisin Seiki Kabushiki Kaisha: See—
Kobayashi, Hideyuki, 4,641,553, Cl. 74-866,000.
- Aitken, Edward J.: See—
Mester, Zoltan C.; and Aitken, Edward J., 4,642,177, Cl. 208-113,000.
- Ajinomoto Co., Inc.: See—
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshi, 4,642,335, Cl. 530-409,000.
- Sasaki, Hitoshi; and Igota, Shoji, 4,642,252, Cl. 428-35,000.
- Akabane, Toshiaki: See—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99,000.
- Akahori, Ken-ichi: See—
Ito, Syoichi; and Akahori, Ken-ichi, 4,642,622, Cl. 340-724,000.
- Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Tobu, Ritsui; and Shimazaki, Takeshi, to Hitachi, Ltd. Method of bonding copper and resin. 4,642,161, Cl. 156-630,000.
- Akaike, Katsumi: See—
Ichikawa, Haruo; Chida, Fumio; Akaike, Katsumi; and Izumi, Kanichi, 4,642,598, Cl. 337-82,000.
- Akiyama, Katsuhiko: See—
Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104,000.
- Akkerman, Neil H., to AVA International Corporation. Well apparatus. 4,641,707, Cl. 166-116,000.
- Aktiebolaget Draco: See—
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200,230.
- Al-Saigh, Abbas, to Alberta Energy Company Ltd.; Canadian Occidental Petroleum Ltd.; Esso Resources Canada Limited; Gulf Canada Limited; Canada, Her Majesty the Queen in right of the Province of Alberta, as represented by the Minister of Energy and Natural Resources; HBOG-Oil Sands Limited Partnership; PanCanadian Petroleum Limited; and Petro-Canada Inc. Method for removing spent catalyst from a reactor tower and assembly for facilitating same. 4,642,223, Cl. 422-191,000.
- Alam, Mohammed K.: See—
Flagan, Richard C.; and Alam, Mohammed K., 4,642,227, Cl. 423-349,000.
- Albert Einstein College of Medicine of Yeshiva University, a division of Yeshiva University: See—
Reid, Lola C. M.; and Rojkind, Marcos, 4,642,292, Cl. 435-240,000.
- Alberta Energy Company Ltd.: See—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191,000.
- Albino, Anthony P.: See—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240,000.
- Alco Foodservice Equipment Company: See—
Bennett, Clay, 4,641,692, Cl. 141-95,000.
- Alcon Laboratories, Inc.: See—
Vlasich, Richard J., 4,641,766, Cl. 222-391,000.
- Aldenhoven, Ghislans M. A. M.: See—
Mestdagh, Gilbert E.; and Aldenhoven, Ghislans M. A. M., 4,641,747, Cl. 206-309,000.
- Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., to Duo-Therm Corporation. The Roof mount air conditioner. 4,641,502, Cl. 62-244,000.
- Alexander, William B.; and Frenger, Paul, to Safe-Test, Inc. Life raft testing device. 4,642,783, Cl. 364-551,000.
- Alfred Teves GmbH: See—
Belart, Juan, 4,641,891, Cl. 303-10,000.

- Belart, Juan, 4,641,894, Cl. 303-114.000.
Boehm, Peter; Volz, Peter; Bischoff, Gilbert; Booten, Sigmund; Engert, Klaus; and Loew, Albin, 4,641,568, Cl. 91-369.00A.
Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, 4,641,519, Cl. 73-129.000.
Alkaloida Vegyeszeti Gyar: See—
Acs, Maria; Faigl, Ferenc; and Fogassy, Elemer, 4,642,205, Cl. 260-501.170.
Alkofer, James S., to Eastman Kodak Company. Digital image processing method for images with bimodal tone value distribution. 4,642,683, Cl. 358-80.000.
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Takeuchi, Seiji; and Anger, Byron H., 4,641,760, Cl. 220-1.00B.
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Halbert, Seymour P.; and Anken, Milton, 4,642,285, Cl. 435-7.000.
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Poliak, John M.; and Anker, Herbert, 4,641,905, Cl. 339-103.00B.
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Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., 4,641,448, Cl. 40-606.000.
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Klinger, Barney, 4,641,710, Cl. 166-303.000.
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Kassai, Kenzou, 4,641,879, Cl. 296-78.00A.
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Boyle, Michael, 4,641,465, Cl. 52-127.100.
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Arakawa, Junichi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,642,658, Cl. 346-76.0PH.
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- Arana, Jorge E.: See—
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Araya, Hiroyuki: See—
Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.
Archibald, James B.; and Rink, Frederick J., Jr., to General Electric Company. Internal common neutral bus in large three-phase generator. 4,642,498, Cl. 310-71.000.
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Armco, Inc.: See—
Debarbieri, Franco; Montorsi, Roberto; and Zaramella, Giancarlo, 4,642,752, Cl. 364-167.000.
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Arvanitis, Aristotelis S., to Motorola, Inc. Laser trimming monolithic crystal filters to frequency. 4,642,505, Cl. 310-312.000.
Arzouman, Harry H., to Safe-T-Jack. Dual automobile jack for consumer use. 4,641,813, Cl. 254-8.00B.
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uruhara, Makoto, to Fujitsu Limited. Diagnostic processing system for automatic transmission of an automobile. 4,642,771, Cl. 364-424.100.
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Burstrom, Martin; and Tegman, Ragnar, 4,642,204, Cl. 252-633.000.
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Associated Concrete Products: See—
Hahne, Walter B., 4,641,993, Cl. 404-4.000.
Associated Enterprises, Inc.: See—
Hartman, John E.; and Venaleck, John T., 4,641,426, Cl. 29-839.000.
AT&T Bell Laboratories: See—
Beckner, Mark W.; and Starr, Thomas J. J., 4,642,630, Cl. 340-825.500.
Glass, Alastair M., 4,642,799, Cl. 365-114.000.
Glodis, Paul F.; and Lenhan, Terrence A., 4,641,917, Cl. 350-96.330.
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Lee, Kuo-Hua, 4,641,420, Cl. 29-511.000.
Striny, Kurt M., 4,642,670, Cl. 357-68.000.
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Martinez, Antonio, Jr., 4,642,603, Cl. 340-52.00B.
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Atochem: See—
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, 4,642,386, Cl. 568-405.000.
Attal, Jacques; and Cambon, Gaston, to Centre National de la Recherche Scientifique. Acoustic microscope for analyzing an object in depth having aspherical lenses. 4,641,530, Cl. 73-606.000.
- Aucoin, Daniel A., to Dow Chemical Company. The. Fail-safe electrical-ground indicator. 4,642,554, Cl. 324-51.000.
Auslander, Marc A.; Hopkins, Martin E.; and Markstein, Peter W., to International Business Machines Corporation. Method of developing formal identities and program bases in an optimizing compiler. 4,642,764, Cl. 364-300.000.
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Avdel Limited: See—
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Awano, Mitsuru: See—
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Awnings Unlimited, Inc.: See—
Martensson, Olof, IV, 4,641,805, Cl. 248-273.000.
Aycock, David F.; and Ting, Sai-Pei, to General Electric Company. Acyl modified polyphenylene ether composition. 4,642,358, Cl. 549-245.000.
Ayers, Robert C. Wheelchair with rocking seat assembly. 4,641,848, Cl. 280-242.0WC.
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Schmekel, Gerald; and Rudolph, Gert, 4,641,667, Cl. 131-352.000.
B. F. Goodrich Company, The: See—
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B & H Manufacturing Company: See—
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Baba, Takesi: See—
Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takesi; and Someya, Atsushi, 4,641,920, Cl. 350-173.000.
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Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.0SS.
Bacharach, Inc.: See—
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Baer, Hanspeter, to Zellweger Uster, Ltd. Method for transmitting data via a line of an alternating current distribution network, and a transmitter for carrying out the method. 4,642,637, Cl. 340-870.190.
Baggen, Constant P. M. J., to U.S. Philips Corporation. Decoder for the decoding of code words which are blockwise protected against the occurrence of a plurality of symbol errors within a block by means of a Reed-Solomon code, and reading device for optically readable record carriers. 4,642,808, Cl. 371-39.000.
Bailey, Edward J., to Cincinnati Milacron Inc. Method for locating a precision robotic base component. 4,642,212, Cl. 264-262.000.
Baird Corporation: See—
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Baitz, Guenter; and Dobring, Wilfried, to Nixdorf Computer AG. Cashbox for a cash register. 4,642,449, Cl. 235-22.000.
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Baker Oil Tools, Inc.: See—
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Vlasek, David J.; and Riddle, Harry W., 4,641,776, Cl. 228-155.000.
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Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. β -adrenergic blocking imidazolylphenoxo propanolamines. 4,642,311, Cl. 514-316.000.
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Balzers Aktiengesellschaft: See—
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Banks, Adam J. Down rigger boom hinge. 4,641,395, Cl. 16-348.000.
Baralaba Pty. Limited: See—
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Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, to Aerospatiale Societe Nationale Industrielle. Temporary edge to edge securement in space of two parts. 4,641,985, Cl. 403-16.000.
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Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., to LabAdapt, Inc. Washer for disposable cuvette rotors, 4,641,674, Cl. 134-138.000.
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Baugh, Benton F. Underwater connection apparatus, 4,641,998, Cl. 405-169.000.
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Beck, Andrew C.; and Beck, Shirley E. Method and apparatus for stabilizing a ladder, 4,641,729, Cl. 182-172.000.
Beck, John C.; and Dobberpohl, Daniel W., to Digital Equipment Corporation. Multiple phase clock buffer module with non-saturated pull-up transistor to avoid hot electron effects, 4,642,492, Cl. 307-578.000.
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Beedle, Edward E.; and Robertson, David W., to Eli Lilly and Company. Intermediates for anticonvulsant agents, 4,642,379, Cl. 564-155.000.
Been, Thomas S., to Process and Cryogenic Services, Inc. Waste solvent receptacle, 4,641,680, Cl. 137-312.000.
Beer, Wilhelm, to General Motors Corporation. Motor vehicle engine mounting arrangement, 4,641,809, Cl. 248-559.000.
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Bell Communications Research, Inc.: See—
Personick, Stewart D., 4,642,804, Cl. 370-3.000.
Bell, Robert K.: See—
Hodsdon, Roy F.; and Bell, Robert K., 4,642,735, Cl. 361-424.000.
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Beneking, Heinz, to Telefunken electronic GmbH. Optical adjusting process, 4,641,921, Cl. 350-320.000.
Bengtsson, Ulf A., to Santrade Limited. Rotary drill bit, 4,641,718, Cl. 175-331.000.
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Bennett, Barbara E., personal representative: See—
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Bennett, Clay, to Alco Foodservice Equipment Company. Beverage dispenser with automatic cup-filling control, 4,641,692, Cl. 141-95.000.
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Bennett, Wilfred P. Push-pull radio frequency circuit with integral transistion to waveguide output, 4,642,578, Cl. 331-100.000.
Beresford, H. Richard: See—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
Berg, Lloyd; and Yeh, An-I. Dehydration of formic acid by extractive distillation, 4,642,166, Cl. 203-15.000.
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Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16.000.
Bergman, Charles T., to General Electric Company. Cradle drive and release mechanism for use with a magnetic resonance scanner, 4,641,823, Cl. 269-322.000.
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McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.
Bernstein, Irwin B., to R. R. Donnelley & Sons Company. Printing fountain solution, 4,641,579, Cl. 101-451.000.
Berridge, Jack A., to Berridge Manufacturing Co. Moisture resistant seam assembly, 4,641,475, Cl. 52-584.000.
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Betteridge, Peter R., to Shell Oil Company. Process for cell disruption, 4,642,289, Cl. 435-101.000.
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinkney, Warren J.; and Wilson, Alan D., to International Business Machines Corporation. Workpiece mounting and clamping system having submicron positioning repeatability, 4,642,438, Cl. 219-121.00L.
Bianco, Eric L. Key deburring and polishing assembly, 4,641,463, Cl. 51-7.000.
Biber, Joseph N.: See—
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Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., to Eaton Corporation. Solid state hybrid switch, 4,642,481, Cl. 307-252.0UA.
Bier, Mark E., to American Sterilizer Company. Method of vaporizing multicomponent liquids, 4,642,165, Cl. 203-12.000.
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Bitonti, Frank E., to AM General Corporation. Automated vehicle tire pressurization system, 4,641,698, Cl. 152-416.000.
Bjorkman, Rune, to Pharmacia AB. Apparatus for carrying out analysis, 4,642,220, Cl. 422-101.000.

- Bjorshol, Kolbjorn. Apparatus for hooking and possibly baiting of a fishing line, 4,641,452, Cl. 43-4.000.
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Blackbourn, Inc.: See—
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Blomquist, James E.; and Wilczewski, Robert H. Dot matrix print head, 4,641,981, Cl. 400-124.000.
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- Botvidsson, Lars, to Siemens Aktiengesellschaft. Endocardial electrode arrangement, 4,641,664, Cl. 128-785.000.
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Boyd, John H., Jr.; and Muller, Alexander, to General Electric Company. Control system for an electronically commutated motor, method of controlling such, method of controlling an electronically commutated motor and laundry apparatus, 4,642,536, Cl. 318-254.000.
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Cavagna, Elio, to Elio Cavagna S.r.l. Device for embossing and/or creasing sheet, or roll material. 4,641,575, Cl. 101-23.000.
Cavanagh, Michael J., to Minnesota Mining and Manufacturing Company. Tape applying device. 4,642,157, Cl. 156-468.000.
CBC Industries, Inc.: See—
Tsui, Gary; and Heimbigner, Thomas, 4,641,986, Cl. 403-164.000.
Cedoz, Robert W., to General Motors Corporation. Brake for counter rotating bladed members. 4,642,029, Cl. 416-129.000.
Cedrone, Nicholas J.; and Lee, Kenneth R., to Daymarc Corporation. Momentum arresting device for an integrated circuit tester. 4,641,738, Cl. 193-40.000.
Celanese Corporation: See—
Che, Tessie M., 4,642,394, Cl. 568-861.000.
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.
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Ramsey, Russel G., 4,642,155, Cl. 156-359.000.
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Chalke, Brian J., to Lucas Industries public limited company. Electric starting aid for an internal combustion engine. 4,641,612, Cl. 123-145.00A.
Chambers, Jeffrey, to Oxley Developments Company Limited. Feed through filter having an insulated bush for mounting filter in a bulkhead. 4,642,589, Cl. 333-182.000.

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Unsaturated eicosanoic acids. 4,642,364, Cl. 556-438.000.
Chan, Tai W.; and Nguyen, Huong T., to Syntex (U.S.A.) Inc. Anhydrous crystalline 9-(1,3-dihydroxy-2-propoxymethyl)guanidine. 4,642,346, Cl. 544-276.000.
Chang, Clarence D.: See—
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocik, Ernest W., 4,642,226, Cl. 423-328.000.
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Caswell, Nathan S.; and Chang, Ifay F., 4,642,459, Cl. 250-227.000.
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Charra, Jean-Pierre, to Berthiez-Saint-Etienne. Tool and attachment gripping and releasing means. 4,641,415, Cl. 29-568.000.
Chase, Michael. Magnetic occluding device. 4,642,257, Cl. 428-63.000.
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Che, Tessie M., to Celanese Corporation. Production of propanediols. 4,642,394, Cl. 568-861.000.
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, to Atochem. Process for the preparation of pure hydrates of fluoral and of hexafluoroacetone from hemiacetals. 4,642,386, Cl. 568-405.000.
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Cho, Gyu-Hyeon, to Westinghouse Electric Corp. Fault-protection apparatus for static AC-to-AC converters and unrestricted frequency changer (UFC) system including such fault-protection apparatus. 4,642,747, Cl. 363-54.000.
Cho, Myong J.: See—
Lin, Santa H. C.; and Cho, Myong J., 4,642,238, Cl. 426-74.000.
Chow, Edward Y.; and Kleinberg, Robert L., to Schlumberger Technology Corporation. Fracture detection using circumferential offset acoustic paths. 4,641,724, Cl. 181-104.000.
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Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, 4,642,162, Cl. 156-643.000.
Christensen, Dean L.: See—
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Christian, Philip; and Tawse, Alan I., to Bridon plc. Method and equipment for making wire strands. 4,641,689, Cl. 140-149.000.
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Turner, John T.; and Christodoulou, Marios, 4,642,185, Cl. 210-242.300.
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Chu, George H.: See—
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Church, John E. Aerosol can agitator. 4,641,974, Cl. 366-342.000.
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Ciba-Geigy Corporation: See—
Berger, Joseph, 4,642,353, Cl. 548-431.000.
Davatz, Alexander; and Somlo, Tibor, 4,642,350, Cl. 548-260.000.
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
Wehner, Wolfgang; Muller, Horst, deceased; and Schneider, Rainer, 4,642,322, Cl. 524-191.000.
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Bailey, Edward J., 4,642,212, Cl. 264-262.000.

Citizen Watch Co., Ltd.: See—
Murata, Mitsuhiro, 4,642,628, Cl. 340-784.000.
Togashi, Seigo, 4,642,619, Cl. 340-701.000.
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Clark, Michael; and Taylor, Kenneth J., to Dunlop Limited. Vibration absorbing mountings. 4,641,817, Cl. 267-140.100.
Clark, Robin D.; and Waterbury, L. David, to Syntex (U.S.A.) Inc. Arylalkyl amines useful for lowering intraocular pressure. 4,642,378, Cl. 564-51.000.
Clarke, William, to Bremen Associates Incorporated. Cutting tool for making a smooth saw cut. 4,641,562, Cl. 83-837.000.
Clayland, John W., Jr.; and Daniel, Carl P., to American Hospital Supply Corp. Specimen analysis instrument assembly. 4,641,528, Cl. 73-597.000.
Clayman, Henry; and Longacre, James R. Buoyant posterior chamber intraocular lens implant. 4,642,116, Cl. 623-6.000.
Clayton Foundation for Research: See—
Mullani, Nizar A., 4,642,464, Cl. 250-363.00S.
Clements, Silous F.; Motola, Patrick D.; and Swift, Shirley F., to International Business Machines Corporation. Data processor printer setup through a remote display terminal. 4,642,792, Cl. 364-900.000.
Clemson University: See—
Cooke, Francis W., 4,642,124, Cl. 623-23.000.
Clifton, Orville J. Weight lifting apparatus for exercising the triceps. 4,641,836, Cl. 272-122.000.
Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., to Sundstrand Data Control, Inc. Airborne flight planning and information system. 4,642,775, Cl. 364-443.000.
Cobb, Ronald W.; Lollis, Charles A.; and Crane, Nancy S., to Apco Graphics, Inc. Post cap apparatus. 4,641,448, Cl. 40-606.000.
Cocke, John; Markstein, Peter W.; and Markstein, Victoria J., to International Business Machines Corporation. Optimization of range checking. 4,642,765, Cl. 364-300.000.
Codex Corporation: See—
Parker, Lanny L., 4,642,488, Cl. 307-475.000.
Coenen, Hubert; and Hagen, Rainer, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Process for the production of liquid hydrocarbons. 4,642,401, Cl. 585-241.000.
Coenen, Joseph D., to Kimberly-Clark Corporation. Apparatus and method for producing transverse elastic segments. 4,642,151, Cl. 156-164.000.
Cohn, David W., to General Electric Company. Fluorescent lighting system. 4,642,741, Cl. 362-320.000.
Cok, David R., to Eastman Kodak Company. Signal processing method and apparatus for producing interpolated chrominance values in a sampled color image signal. 4,642,678, Cl. 358-44.000.
Cole, Jack H.; and Fair, Delbert W., to Conoco Inc. Wide dynamic range hydraulic vibrator. 4,641,725, Cl. 181-119.000.
Colebrand Limited: See—
Daley, Edward, 4,641,601, Cl. 118-305.000.
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Collins, David W.; and Weed, Michael A., to International Business Machines Corporation. Phase difference demodulator. 4,642,562, Cl. 324-83.00D.
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Columbia Gas System Service Corporation: See—
Jatana, Subhash C., 4,641,631, Cl. 126-101.000.
Winter, Edward M.; Price, David E.; and Hook, James E., 4,641,588, Cl. 110-203.000.
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Moscardini, Robert L., 4,641,789, Cl. 241-31.000.
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Waryasz, Richard E., 4,641,608, Cl. 122-510.000.
Comdex No. Pty. Ltd.: See—
Trethewey, Reginald, 4,641,833, Cl. 272-72.000.
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Nattel, William, 4,642,420, Cl. 174-53.000.
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Dupoyet, Guy, 4,642,078, Cl. 474-206.000.
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
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Comroe, Richard A.; and Petrie, Adolore F., to Motorola, Inc. Fault tolerant receiver. 4,642,807, Cl. 371-31.000.
Conley, John M.; and Bowen, Paul D. Cleaning device for paint rollers and brushes. 4,641,673, Cl. 134-138.000.
Connolly, John C.; and Botez, Dan, to RCA Corporation. Method of making a double heterostructure laser. 4,642,143, Cl. 148-171.000.

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Cole, Jack H.; and Fair, Delbert W., 4,641,725, Cl. 181-119.000.
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.
Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., 4,642,570, Cl. 324-366.000.
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Koziol, Konrad; and Wenk, Erich, 4,642,173, Cl. 204-242.000.
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Cook, John F., to McNeil Corporation. Fluid flow monitoring system. 4,642,614, Cl. 340-608.000.
Cooke, Francis W., to Clemson University. Hip prosthesis. 4,642,124, Cl. 623-23.000.
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Hurley, James R., 4,642,564, Cl. 324-132.000.
Merrill, George O., 4,641,877, Cl. 294-101.000.
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Cormack, Alexander D.: See—
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Couture, Gerard. Overload clutch with automatic reset. 4,641,735, Cl. 192-56.00L.
Cowfer, Joseph A.; and Best, James E., to B. F. Goodrich Company. The Process for finishing vinyl chloride monomer. 4,642,400, Cl. 570-238.000.
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Crandell, Walter R., to Fast Heat Element Manufacturing Co., Inc. Method of making electrically heated nozzles and nozzle systems. 4,641,423, Cl. 29-611.000.
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Cravotta, Samuel A. Weed cutter and extractor. 4,641,712, Cl. 172-25.000.
Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagrecia, Salvatore A., to Hydromer, Inc. Hydrophilic polymer blend. 4,642,267, Cl. 428-413.000.
Creedon, Richard L., to GA Technologies Inc. Barrel assembly for electromagnetic rail gun. 4,641,567, Cl. 89-8.000.
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Crump, Herschel W. Intruder detection and deterrent system. 4,642,612, Cl. 340-541.000.
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Cumming, Stephen A.; and Kelly, James D., to Amersham International plc. Bone-seeking complexes of Technetium-99m. 4,642,229, Cl. 424-1.100.
Cummins, Edmund M., to International Business Machines Corp. Batch file processing. 4,642,763, Cl. 364-300.000.
Custom Machinery Design, Inc.: See—
Gietman, Peter J., Jr., 4,642,084, Cl. 493-190.000.

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Seydel, Scott O.; Letbetter, William D.; and Cutts, William H., 4,641,404, Cl. 28-178.000.
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Dackow, Paul N., to RCA Corporation. System for determining time duration of angular rotation. 4,642,772, Cl. 364-431.040.
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Kobayashi, Tadashi, 4,641,503, Cl. 62-259.100.
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Daiwa Cam Company, Limited: See—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.
Dalal, Samir K., to Honeywell Inc. Electrostatic discharge protection for electronic equipment. 4,642,727, Cl. 361-212.000.
Daley, Edward, to Colebrand Limited. Underwater painting. 4,641,601, Cl. 118-305.000.
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Damico, Joyce A.: See—
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.
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Dorffler, Michael K., 4,642,062, Cl. 446-68.000.
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Mueller, Fritz; and Pienta, Lothar, 4,641,533, Cl. 73-706.000.

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Bouman, Anton J.; and Geertsema, Eise B., 4,642,520, Cl. 315-73.000.

Gehring, Fritz, to Lindauer Dornier Gesellschaft mbH. Weft thread braking mechanism having a stepwise controllable braking effect. 4,641,688, Cl. 139-450.000.

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Geisthoff, Hubert; and Buthe, Theo, to Jean Walterscheid GmbH. Protective bellows assembly with plugged lubricating aperture. 4,642,067, Cl. 464-175.000.

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Archibald, James B.; and Rink, Frederick J., Jr., 4,642,498, Cl. 310-71.000.

Aycock, David F.; and Ting, Sai-Pei, 4,642,358, Cl. 549-245.000.

Bergman, Charles T., 4,641,823, Cl. 269-322.000.

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Boyd, John H., Jr.; and Muller, Alexander, 4,642,536, Cl. 318-254.000.

Cohn, David W., 4,642,741, Cl. 362-320.000.

Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.

Hayes, Cecil E.; and Eash, Matthew G., 4,642,569, Cl. 324-318.000.

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Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., 4,641,966, Cl. 356-237.000.

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Taub, Alan I.; Huang, Shyh-Chin; and Chang, Keh-Minn, 4,642,139, Cl. 148-3.000.

Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayaishi, Steven R., 4,642,617, Cl. 340-680.000.

True, Thomas T., 4,642,740, Cl. 362-268.000.

Young, Glen C., 4,642,537, Cl. 318-254.000.

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Barnett, Ronald E.; and Yarger, Ronald G., 4,642,240, Cl. 426-538.000.

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Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., 4,642,660, Cl. 346-140.00R.

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Beer, Wilhelm, 4,641,809, Cl. 248-559.000.

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Pennington, Edward J., 4,642,446, Cl. 219-121.0LD.

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Sutton, Gary, 4,642,019, Cl. 414-525.00R.

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De brey, Robert J., 4,641,391, Cl. 15-104.940.

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Markovitch, Peter; and Klepesh, Philip H., 4,641,498, Cl. 60-641.200.

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Geringer, Richard G.: See—
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Gerni, Edward J.; and Eisenhauer, David P., to NCR Corporation. Optical encoder. 4,642,634, Cl. 340-870.020.

Gerwick, B. Clifford, III: See—
Rogers, Richard B.; and Gerwick, B. Clifford, III, 4,642,338, Cl. 534-558.000.

Gessalin, Jean. Helmet fastening device. 4,641,382, Cl. 2-421.000.

Gessner, Anton: See—
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Muller, Erich; Gunter, Rühle; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.

Gettig, William A. Injector assembly. 4,642,103, Cl. 604-234.000.

Ghassemi, Farhad: See—
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.

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Giles, Dale J.; and Mercer, Garry C. Tire bead breaking device. 4,641,699, Cl. 157-1.170.

Gill, Geoffrey Y.; Hunter, Paul H.; and Venlet, Gerard W. Spade drill with replaceable cutting-insert carrier. 4,642,001, Cl. 408-59.000.

Gillette, Douglas. Space toy construction kit. 4,642,063, Cl. 446-94.000.

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Gilpin, Jo A.: See—
Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., 4,642,329, Cl. 526-284.000.

Gimpelson, George E.: See—
Batchman, Theodore E.; and Gimpelson, George E., 4,642,558, Cl. 324-72.500.

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Wilson, John F.; Gjertsen, Robert K.; and Cerni, Samuel, 4,642,217, Cl. 376-451.000.

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Glass, Alastair M., to AT&T Bell Laboratories. System and process for optical processing of information. 4,642,799, Cl. 365-114.000.

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Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.

Gleason, Kimberly R.: See—
Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., 4,642,259, Cl. 428-137.000.

Glengary, Philip J.: See—
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Glesmann, Herbert C.; and Thomas, Ronald G., to Remco. Auxiliary lubrication pump apparatus. 4,642,604, Cl. 340-60.000.

Glodis, Paul F.; and Lenhan, Terrence A., to AT&T Bell Laboratories. Single mode optical fiber. 4,641,917, Cl. 350-96.330.

Glushko, Mikhail F.; Skalsky, Viktor K.; and Zakhryamin, Anatoly D. Rope-twisting machine for making ropes. 4,641,492, Cl. 57-9.000.

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Christenson, Robert J., 4,641,835, Cl. 272-87.000.

Gold, Raymond D.; and Riegel, Leo W., to Deere & Company. Weld fixture mounting. 4,641,820, Cl. 269-58.000.

Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., to Celanese Corporation. Electrical device made of partially pyrolyzed polymer. 4,642,664, Cl. 357-2.000.

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Cox, David H.; Andreas, David W.; and Watkins, James D., 4,642,434, Cl. 219-10.55E.

Goldenberg, Tsvi. Excimer laser delivery system, angioscope and angioplasty system incorporating the delivery system and angioscope. 4,641,912, Cl. 350-96.100.

Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, to Bayer Aktiengesellschaft. Circulation-active tetrahydrothienopyridines. 4,642,310, Cl. 514-301.000.

Goldsmith, Claude A.: See—
Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., 4,642,794, Cl. 364-900.000.

Goll, Werner, to Solvay & Cie, Societe Anonyme. Clear lacquer based on polyvinylidene fluoride and a process for the coating of metallic surfaces. 4,642,249, Cl. 427-388.500.

Gonda, Michihiro: See—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikawa, Katsumasa, 4,642,663, Cl. 346-221.000.

Gonda, Tsunemi: See—
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, 4,641,964, Cl. 356-124.000.

Goodwin, Peter A., to Prime Computer, Inc. Method and apparatus for detection of AC power failure conditions. 4,642,616, Cl. 340-654.000.

Goodyear Tire & Rubber Company, The: See—
Lindner, Daniel J., 4,641,695, Cl. 152-209.00A.

Gorbunov, Boris N.: See—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov,

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Gordon, Charles, to Kal Kan Foods, Inc. Animal litter and method of preparation. 4,641,605, Cl. 119-1.000.

Gordon, Eric M.; and Weller, Harold N., III, to E. R. Squibb & Sons, Inc. Carboxy and substituted carboxy alkanoyl and cycloalkanoyle peptides. 4,642,315, Cl. 514-307.000.

Gorman, Jeremy W. Modification for heat exchangers incorporating a helically shaped blade and pin shaped support member. 4,641,705, Cl. 165-85.000.

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Schick, Jean-Francois, 4,641,398, Cl. 24-33.00R.

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Goto, Masaki: See—
Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, 4,642,077, Cl. 474-201.000.

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Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, 4,641,603, Cl. 118-724.000.

Gottschlich, Hermann: See—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Grabmaier, Josef: See—
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Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, 4,642,297, Cl. 501-78.000.

Graham, Kingsley F.: See—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Grandy, Mark E., to Baird Corporation. Mobile spectrometric apparatus. 4,641,968, Cl. 356-313.000.

Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, to W. Schlafhorst & Co. Bobbin tube magazine. 4,641,740, Cl. 198-487.100.

Green, C. Brad; Dobson, William; and Abel, Stephen G., to Garrett Corporation. The servo system method and apparatus servo valve apparatus therefor and method of making same. 4,641,405, Cl. 29-157.10R.

Green, Robin J.: See—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Greenberg, Ronald: See—
Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A., 4,641,997, Cl. 405-24.000.

Greenspon, Arnold J.: See—
Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., 4,641,649, Cl. 128-303.100.

Greenwood, C. J., to Leyland Vehicles Limited. Drive line for a track-laying vehicle. 4,641,548, Cl. 74-691.000.

Greer, Leland H. Resealing skin bandage. 4,641,643, Cl. 128-156.000.

Grenzer, Leslie J. Portaging device. 4,641,874, Cl. 294-15.000.

Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., to International Business Machines Corporation. Method of making adhesive metal layers on substrates of synthetic material and device produced thereby. 4,642,163, Cl. 156-643.000.

Gresse, Herve R.; and Carn, Annick R., to Compagnie de Materiel de Micrographie "C.M.M." Stereoscopic viewer for aerial photographs. 4,641,919, Cl. 350-138.000.

Griggs, Calvin. Compression screw assembly. 4,641,640, Cl. 128-92.0YV.

Groh, Reiner; Kotsch, Hans-Joachim; Strebn, Hans-Gunther; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method of preparing trialkyl organo-oxyasilanes. 4,642,363, Cl. 556-471.000.

Gross, Rainer: See—
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Grothe, Horst, to SMS Schloemann-Siemag AG. Flat jet nozzle for coolant spraying on a continuously conveyed billet. 4,641,785, Cl. 239-597.000.

Groves, William A.; Snook, Matthew L.; and Brown, Rodney, to Hewlett-Packard Company. Circuit tester having on-the-fly comparison of actual and expected signals on test pins and improved homing capability. 4,642,561, Cl. 324-73.00R.

Grund, Andreas: See—
Prescher, Guenter; Grund, Andreas; Petsch, Heinrich; and Boehme, Georg, 4,642,387, Cl. 568-446.000.

Grunert, Kurt A.: See—
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Grzanowski, Edmund S., Jr.; and Glengary, Philip J. Automatic light signalling system. 4,642,477, Cl. 307-113.000.

GSP Metals & Chemicals Corporation: See—
Van Antwerp, William P.; and Lincoln, Phillip A., 4,642,134, Cl. 75-101.00R.

GTE Communication Systems Corporation: See—
Blackburn, Tom L., 4,642,426, Cl. 370-13.100.

GTE Products Corporation: See—
de Vos, Hendrik A. J.; and Labouliere, Elzear R., 4,642,742, Cl. 362-375.000.

English, George J.; and Chakrabarti, Kirti B., 4,642,514, Cl. 313-111.000.

Hsieh, Martin Y., 4,642,299, Cl. 501-97.000.

Guermendi, Romano: See—
Semin, Fikret; Guermendi, Romano; and Cucco, Gian C., 4,641,696, Cl. 152-209.00R.

Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, to BBL Industries, Inc. Telephone paging system and method. 4,642,425, Cl. 379-57.000.

Gulf Canada Limited: See—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.

Gummelt, Klaus; Schulz, Jürgen; Salamon, Klaus; and Rabenstein, Heinrich, to Varta Batterie A.G. Device for indicating the fully charged state of a battery. 4,642,600, Cl. 338-34.000.

Gunn, Lawrence H., to Pestcon Systems, Inc. Apparatus for fumigating bulk-stored commodities. 4,641,573, Cl. 99-482.000.

Gunter, Mary, to Solco Basel AG. Apparatus for receiving and reinfusing blood. 4,642,088, Cl. 604-4.000.

Gunter, Rühle: See—
Muller, Erich; Gunter, Rühle; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.

Gunther, Dieter, to Zeiss Ikon Aktiengesellschaft. Lock with bolt enlargement. 4,641,508, Cl. 70-380.000.

Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., to Honeywell Inc. Ring laser lock-in correction apparatus. 4,641,970, Cl. 356-350.000.

Guthling, Klaus; Meyer, Adolf J.; and Miethe, Manfred, to Fa. Wilhelm Bareschee. Clamping device for printing plates and printing cloths on printing machines. 4,641,576, Cl. 101-415.100.

Guttinger, Hannes; and Pfister, Gustav, to Cerberus AG. Scattered radiation smoke detector. 4,642,471, Cl. 250-574.000.

Guyon, Claude: See—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.

H. Maihak AG: See—
Nestler, Volker; and Olsowski, Wolfgang, 4,641,973, Cl. 356-418.000.

Haas, Hans: See—
Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.

Haas, Jan T.; and Hadwin, Robin-Leslie, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung. Controllable diffuser for an air intake of an aircraft. 4,641,678, Cl. 137-15.100.

Hadwin, Robin-Leslie: See—
Haas, Jan T.; and Hadwin, Robin-Leslie, 4,641,678, Cl. 137-15.100.

Haack, Paul J.; and Jacobs, Gary R., to Von Duprin, Inc. Lever handle door trim. 4,641,866, Cl. 292-336.300.

Haga, Katutoshi: See—
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Coenen, Hubert; and Hagen, Rainer, 4,642,401, Cl. 585-241.000.

Hagerty, Sydney: See—
DeVisser, Richard B.; and Hagerty, Sydney, 4,642,188, Cl. 210-333.100.

Haggerty, David L.: See—
Tedesco, Robert J.; and Haggerty, David L., 4,642,431, Cl. 200-153.00G.

Hagino, Hideo: See—
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Hahn, Marlin D., to Texan Nut Sheller Pecan Company. Nut splitter. 4,641,430, Cl. 30-120.500.

Hahne, Walter B., to Associated Concrete Products. Highway barrier with level internal ducts and construction method. 4,641,993, Cl. 404-4.000.

Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Polyamines. 4,642,344, Cl. 544-196.000.

Halbert, Seymour P.; and Anken, Milton, to Diamedix Corporation. Sandwich EIA for antigen. 4,642,285, Cl. 435-7.000.

Hale, Ronald G.; Woodley, Thomas R.; and Tornstrom, Paul K., to Plastic Specialties and Technologies, Inc. Stain-resistant antimony organic sulfur-containing compounds and vinyl halide resins containing same. 4,642,200, Cl. 252-400.540.

Halioua, Maurice; and Srinivasan, Venugopal, to New York Institute of Technology. Method and apparatus for surface profilometry. 4,641,972, Cl. 356-376.000.

Hall Surgical, division of Zimmer, Inc.: See—
Pasciullo, John H., 4,641,551, Cl. 74-785.000.

Hallqvist, Ellert, to SMT Machine Company AB. Tool changer. 4,641,413, Cl. 29-568.000.

Halls, Lawrence M.: See—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.

Halvorsen, Wilmet P. Rolling boat cover. 4,641,600, Cl. 114-361.000.

Hamanaka, Toshiyuki: See—
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Hamanishi, Yoshinari, to Nippon Kokaku K. K. Four-group telephoto zoom lens. 4,641,928, Cl. 350-427.000.

- Hamburg, Douglas R., to Ford Motor Company. Adaptive feedforward air/fuel ratio control for vapor recovery purge system. 4,641,623, Cl. 123-518.000.
- Hamlin, Gregory P.: See—
Johnson, Dewey A.; Hamlin, Gregory P.; and Schukar, Gary W., 4,641,555, Cl. 83-29.000.
- Hancock, Kendal: See—
Scheurer, Robert S.; and Hancock, Kendal, 4,642,060, Cl. 441-70.000.
- Hanes, Ronnie M., to National Distillers and Chemical Corporation. Conjugated alkadiene telomerization to organo-oxyalkadienes. 4,642,392, Cl. 568-690.000.
- Hanrikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, to Oy Wartsila Ab. Method and arrangement for web handling. 4,642,164, Cl. 162-207.000.
- Hankison, Paul M. Parking guide. 4,641,994, Cl. 404-6.000.
- Hansen, Debra K.: See—
Bradley, John J.; and Hansen, Debra K., 4,642,109, Cl. 604-385.002.
- Hansen, Gerald D.; and Biber, Joseph N., to Atlantic Richfield Company. Method and composition for inhibiting corrosion in aqueous heat transfer systems. 4,642,221, Cl. 422-16.000.
- Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, to Danfoss A/S. Electromagnetic flow meter. 4,641,537, Cl. 73-861.120.
- Hansen, Henning M.: See—
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- Hansen, Henry: See—
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- Hansen, Per K., to Position Orientation Systems, Ltd. Method and apparatus for position and orientation measurement using a magnetic field and retrasmision. 4,642,786, Cl. 364-559.000.
- Hanson, Russell: See—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.
- Hanssler, Gerd: See—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.
- Harada, Kosuke; Murata, Katsuki; and Nakamizo, Takaki, to Nishimu Electronics Industries Co., Ltd. Ferroresonant constant AC voltage regulator. 4,642,549, Cl. 323-210.000.
- Harbour, John, to TRW Probe Electronics Co. Ltd. Strain gauge assemblies. 4,641,719, Cl. 177-136.000.
- Hargreaves, Edward; and Simpson, Andrew F., to Pilkington Brothers P.L.C. Apparatus for and method of coating glass. 4,642,130, Cl. 65-60.100.
- Harle, Anton. Aspirator for withdrawal of secretions from wounds. 4,642,093, Cl. 604-54.000.
- Harman, Theodore C., to Massachusetts Institute of Technology. Process for making mercury cadmium telluride. 4,642,142, Cl. 148-171.000.
- Harmer, Alan L., to Stanley Electric Co. Ltd. Immersion refractometer with angle prism. 4,641,965, Cl. 356-135.000.
- Harms, Wolfgang. Protective lens cover for optical means. 4,641,932, Cl. 350-587.000.
- Harper, Jay. Heat exchanger with radial baffles. 4,642,149, Cl. 165-160.000.
- Harrington, Earl J., to Overhead Conveyor Company. Free rotation sprocket, drag chain conveyor system. 4,641,583, Cl. 104-172.100.
- Harris, Gary L., to Baker Oil Tools, Inc. Valve with rotary valve head. 4,641,682, Cl. 137-329.040.
- Harris, Gerald. Bipod mounting device and muzzle brake. 4,641,451, Cl. 42-85.000.
- Harris Graphics Corporation: See—
Mowry, Harry E.; and Hawkes, Richard B., 4,641,825, Cl. 270-53.000.
- Harris, Stephen J.; Woods, John G.; and Rooney, John M., to Loctite (Ireland) Limited. Polymer bound calixarenes. 4,642,362, Cl. 556-419.000.
- Hartman, John E.; and Venaleck, John T., to Associated Enterprises, Inc. Surface mount compatible connector system with mechanical integrity. 4,641,426, Cl. 29-839.000.
- Harumoto Iron Works Co., Ltd.: See—
Kishida, Hiroo; and Takenaka, Hirofumi, 4,641,816, Cl. 254-228.000.
- Harvey, Frederick W.; and Johnson, Glenn W., to Eastman Kodak Company. Film leader positioning apparatus. 4,641,936, Cl. 354-212.000.
- Harvey, Richard: See—
Thomas, Charles E.; and Harvey, Richard, 4,641,599, Cl. 114-346.000.
- Harvey, Robin J.; Gallagher, Hayden E.; and Schumacher, Robert W., to Hughes Aircraft Company. Wire-ion-plasma electron gun employing auxiliary grid. 4,642,522, Cl. 315-111.310.
- Hasegawa, Yoshihiko, to Scovill Japan Kabushiki Kaisha. Socket for snap fastener. 4,641,401, Cl. 24-681.000.
- Hashimoto Forming Kogyo Co., Ltd.: See—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.055.
- Hatakeyama, Iwao: See—
Ishii, Osamu; Yoshimura, Fumikatsu; and Hatakeyama, Iwao, 4,642,245, Cl. 427-47.000.
- Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, to Honda Giken Kogyo Kabushiki Kaisha; and Fukui Sinta Kabushiki Kaisha. V-belt transmission apparatus. 4,642,077, Cl. 474-201.000.
- Hattori, Toshihiro: See—
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- Hauni-Richmond, Inc.: See—
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- Hauni-Werke Korber & Co. KG.: See—
Masuch, Gerhard; and Riedel, Claus, 4,641,771, Cl. 226-115.000.
- Haupt, Randy L., to United States of America, Air Force. Reducing grating lobes due to subarray amplitude tapering. 4,642,645, Cl. 342-379.000.
- Havenhill, Douglas D.: See—
Kral, Kevin D.; and Havenhill, Douglas D., 4,642,501, Cl. 310-90.500.
- Hawkes, Richard B.: See—
Mowry, Harry E.; and Hawkes, Richard B., 4,641,825, Cl. 270-53.000.
- Hawkey, Dale F.: See—
Reeves, Roger D.; and Hawkey, Dale F., 4,641,531, Cl. 73-622.000.
- Hayashi, Steven R.: See—
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hayashi, Steven R., 4,642,617, Cl. 340-680.000.
- Hayes, Cecil E.; and Eash, Matthew G., to General Electric Company. Shield for decoupling RF and gradient coils in an NMR apparatus. 4,642,569, Cl. 324-318.000.
- Haynie, Timothy J., to Chicago Bridge & Iron Company. Vertical shell and tube heat exchanger with spacer or clip to form uniform thickness falling films on exterior surfaces of tubes. 4,641,706, Cl. 165-118.000.
- Hays, Frank W.: See—
Wise, Carl D.; and Hays, Frank W., 4,642,643, Cl. 342-14.000.
- Wise, Carl D.; Hays, Frank W.; and Lisle, Thomas K., Jr., 4,642,644, Cl. 342-14.000.
- Hayton, Eugene P.: See—
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., 4,641,385, Cl. 5-82.00R.
- Haze, Setsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing method and apparatus. 4,642,788, Cl. 364-567.000.
- HBOG-Oil Sands Limited Partnership: See—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
- Hearn, Larry J.: See—
Whedon, Parker; and Hearn, Larry J., 4,642,065, Cl. 446-209.000.
- Hebel, Gregory F.; and Temkin, Gregg A., to Homaco, Inc. Quick connect frame. 4,641,754, Cl. 211-26.000.
- Hebert, Alfred M. Oil filter. 4,642,183, Cl. 210-232.000.
- Hedel, Rudolph H.: See—
Nyul, Paul; and Hedel, Rudolph H., 4,642,513, Cl. 313-110.000.
- Hedge, Roger W.; and Brown, Ian C., to British-American Tobacco Company Limited. Expansion of tobacco. 4,641,665, Cl. 131-296.000.
- Hediger, Edwin A., to Eastman Kodak Company. Angularly adjustable web-supporting steering roller. 4,641,770, Cl. 226-23.000.
- Heeres, Stanley D.: See—
Vanderlaan, Robert D.; and Heeres, Stanley D., 4,641,812, Cl. 251-65.000.
- Hefti, Walter: See—
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, 4,641,397, Cl. 19-258.000.
- Hegedus, Laszlo; and Horvath, Zoltan. Training apparatus for kicking a football. 4,641,834, Cl. 272-76.000.
- Hegner, Gunter: See—
Achnig, Peter; and Hegner, Gunter, 4,642,723, Cl. 361-124.000.
- Heidel, Jeffrey C.: See—
Swartz, Harold L.; and Heidel, Jeffrey C., 4,642,555, Cl. 324-60.00C.
- Heidelberger Druckmaschinen AG: See—
Rodi, Anto; and Blasius, Udo, 4,642,455, Cl. 250-221.000.
- Heimbigner, Thomas: See—
Tsui, Gary; and Heimbigner, Thomas, 4,641,986, Cl. 403-164.000.
- Heine, Otto R.; and Riede, Peter M., to R & H Technologies, Inc. Wear resistant pipe bend for slurry transport. 4,641,864, Cl. 285-179.000.
- Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, to Bayer Aktiengesellschaft. N-(3-chloro-1,2,4-oxadiazol-5-yl)-ureas. 4,642,312, Cl. 514-364.000.
- Heiniger, Peter; Masek, Jaroslav; and Senn, Herbert, to BBC Brown, Boveri & Company, Limited. Valve for steam supply on double casing turbines. 4,642,025, Cl. 415-139.000.
- Heinix, Lucien J., to Alphadent. Alignment cap for mounting artificial teeth on working models. 4,642,050, Cl. 433-56.000.
- Heinz, Karl-Otto: See—
Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, 4,642,030, Cl. 417-203.000.
- Heinz, Stoewer; and Wubbo, Ockels, to Agence Spatiale Europeenne. Method of and device for restraining the sleeping body of an astronaut in conditions of weightlessness. 4,641,386, Cl. 5-413.000.
- Heinze, Horst: See—
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, 4,642,652, Cl. 343-915.000.
- Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., to Lone Star Industries, Inc. Mineral binder and compositions employing the same. 4,642,137, Cl. 106-85.000.

- Helm, Herbert W., to F. L. Smith Machine Company, Inc. Apparatus for making window patches. 4,642,085, Cl. 493-222.000.
- Hempel, David A.: See—
Polinsky, Samuel M.; Bierman, Larry W.; and Hempel, David A., 4,642,181, Cl. 209-167.000.
- Hemsky, Robert L.: See—
Orsburn, Michael L.; Hemsky, Robert L., and Bacon, James I., 4,642,682, Cl. 358-80.000.
- Henkel Corporation: See—
Rogier, Edgar R., 4,642,391, Cl. 568-624.000.
- Henkel Kommanditgesellschaft auf Aktien: See—
Kruze, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.
- Hennard, Jean: See—
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
- Heper, Rolf; and Kienering, Rudolf, to Joseph Kieninger Uhrenfabrik GmbH. Clock with mechanical drive. 4,641,975, Cl. 368-124.000.
- Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., to Kimberly-Clark Corporation. Disposable underpants, such as infant's training pants and the like. 4,641,381, Cl. 2-400.000.
- Herb, Armin, to Hilti Aktiengesellschaft. Expansion dowel. 4,642,008, Cl. 411-16.000.
- Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontoppidan, Knud, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung. Unfoldable antenna reflector. 4,642,652, Cl. 343-915.000.
- Herdin, Gunther, to Steyr-Daimler-Puch AG. Fuel injection nozzle for internal combustion engines. 4,641,621, Cl. 123-446.000.
- Herman, Richard G.: See—
Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., 4,642,381, Cl. 564-480.000.
- Herman, Thomas: See—
Lidow, Alexander; and Herman, Thomas, 4,642,666, Cl. 357-23.400.
- Hermann Berstorff Maschinenbau GmbH: See—
Anders, Dietmar, 4,642,039, Cl. 425-140.000.
- Heskett, Don E. Method of treating fluids. 4,642,192, Cl. 210-638.000.
- Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. I., to British Telecommunications Public Limited Company. Communications network having a single node and a plurality of outstations. 4,642,806, Cl. 370-95.000.
- Hewitt, Timothy W. Wheeled pallet. 4,641,845, Cl. 280-79.10A.
- Hewlett-Packard Company: See—
Eaton, Bill; and Higgins, Marvin L., 4,642,524, Cl. 315-169.300.
- Groves, William A.; Snook, Matthew L.; and Brown, Rodney, 4,642,561, Cl. 324-73.00R.
- Heyman, Neal R. Bumper guard. 4,641,870, Cl. 293-102.000.
- Heyraud, Georges, to Forges Stephanoises S.A. Lightweight electronic torque wrench. 4,641,538, Cl. 73-862.260.
- Hibberd, Kenneth A.; Anderson, Paul C.; and Barker, Melanie, to Molecular Genetics Research and Development Limited Partnership. Tryptophan overproducer mutants of cereal crops. 4,642,411, Cl. 800-1.000.
- Hickman, John B.: See—
Webb, Russell; and Hickman, John B., 4,641,476, Cl. 52-60.000.
- Hieftje, Gary M.; and Honigs, David H., to Indiana University Foundation. Method and device for spectral reconstruction. 4,642,778, Cl. 364-498.000.
- Hiestand, Karl, to SMW Schneider & Weisshaupt GmbH. Pallet for seating interchangeable clamping jaws of a chuck. 4,641,414, Cl. 29-568.000.
- Higgins, Marvin L.: See—
Eaton, Bill; and Higgins, Marvin L., 4,642,524, Cl. 315-169.300.
- Higuchi, Hisayuki: See—
Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.
- Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, to Seiko Seiki Kabushiki Kaisha. Control arrangement for magnetic bearing apparatus. 4,642,500, Cl. 310-90.500.
- Higure, Naoto: See—
Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.
- Hill, Paul L., to USS Engineers and Consultants, Inc. Teeming apparatus and method. 4,641,768, Cl. 222-590.000.
- Hill, Robert C., to Atlantic Richfield Company. Multi-zone flow control method and apparatus. 4,642,191, Cl. 210-532.100.
- Hilti Aktiengesellschaft: See—
Herb, Armin, 4,642,008, Cl. 411-16.000.
- Himeno, Kiyoshi: See—
Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, 4,642,339, Cl. 534-650.000.
- Hinch, Mark G., to AT&T Bell Laboratories. Shared memory with two distinct addressing structures. 4,642,755, Cl. 364-200.000.
- Hinds, Walter E., to Northern Magnetics, Inc. Torque motor with unlimited angular excursion. 4,642,539, Cl. 318-439.000.
- Hinn, Werner, to RCA Corporation. Digital video signal processor with analog level control. 4,642,690, Cl. 358-169.000.
- Hinzmann, Alfred, to Hauni-Richmond, Inc. Method and apparatus for making and manipulating inner tubes for use in dry cells or the like. 4,642,083, Cl. 493-93.000.
- Hirano, Shinji: See—
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.
- Hirano, Toshio: See—
Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, 4,642,812, Cl. 381-1.000.
- Hiranuma, Hiromichi: See—
Ikematsu, Morio; and Hiranuma, Hiromichi, 4,641,681, Cl. 137-315.000.
- Hiratsuka, Shoji: See—
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- Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, to Hitachi, Ltd. Inspection method and apparatus for joint junction states. 4,641,527, Cl. 73-582.000.
- Hirosaki, Botaro; and Kuriyama, Takashi, to NEC Corporation. Phase-locked loop with supplemental phase signal. 4,642,575, Cl. 331-1.00A.
- Hirose, Kenichi: See—
Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, 4,642,409, Cl. 585-486.000.
- Hirose, Masayuki: See—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.
- Hirose, Toshiro: See—
Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.
- Hisajima, Masahiko: See—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.
- Hisatsune, Fumiyuki: See—
Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.
- Hishiki, Hideo: See—
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- Hissong, George: See—
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- Hitachi, Ltd.: See—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.
- Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.
- Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.
- Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, 4,641,527, Cl. 73-582.000.
- Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.
- Ito, Syoichi; and Akahori, Ken-ichi, 4,642,622, Cl. 340-724.000.
- Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.
- Kudo, Satoshi, 4,641,419, Cl. 29-591.000.
- Mashino, Keiichi, 4,642,548, Cl. 322-25.000.
- Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.
- Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, 4,642,495, Cl. 310-52.000.
- Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.
- Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.
- Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, 4,642,573, Cl. 329-50.000.
- Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.
- Suzuki, Toshiro; and Matsubara, Osamu, 4,642,552, Cl. 323-315.000.
- Takahashi, Koji; and Kawashima, Machio, 4,642,527, Cl. 315-368.000.
- Tsunehiro, Takashi; and Tsujioka, Shigeo, 4,642,625, Cl. 340-747.000.
- Yanai, Takao; and Takahashi, Yoshiaki, 4,642,760, Cl. 364-200.000.
- Hitachi Maxell, Ltd.: See—
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- Hitachi Metals, Ltd.: See—
Morita, Shigetoshi; Ashizawa, Masaaki; and Yamada, Hirohide, 4,642,719, Cl. 360-126.000.
- Hitachi Shipbuilding & Engineering Company Limited: See—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
- Hobas Engineering & Durotec AG: See—
Jost, Ralph, 4,642,156, Cl. 156-425.000.
- Hoberman, Barry A., to Monolithic Memories, Inc. High speed first-in-first-out memory. 4,642,797, Cl. 365-221.000.
- Hobrecht, Stephen W., to National Semiconductor Corporation. IC low-capacitance, low-frequency, low-current, non-radiating oscillator. 4,642,579, Cl. 331-111.000.
- Hodge, Ian M., to B. F. Goodrich Company, The. Method of enhancing the flexibility of polypyrrole structures. 4,642,331, Cl. 528-492.000.
- Hodges, Donald F. Boat-trailer latch. 4,641,598, Cl. 114-344.000.
- Hodogaya Chemical Co., Ltd.: See—
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikawa, Katsumasa, 4,642,663, Cl. 346-221.000.
- Hodsdon, Roy F., to General Electric Company. Illuminated compact control surface. 4,642,627, Cl. 340-765.000.

Hodsdon, Roy F.; and Bell, Robert K., to General Electric Company. Frequency synthesizer module. 4,642,735, Cl. 361-424.000.

Hoechst Aktiengesellschaft: See—

Dettbarn, Hans-Jürgen; and Zimmermann, Josef, 4,642,095, Cl. 604-72.000.

Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.

Stahlhofen, Paul, 4,642,282, Cl. 430-165.000.

Hoffman, John A.: See—

Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., 4,641,383, Cl. 4-323.000.

Hoffman, Louis S.: See—

Bohmer, William; Betancourt, Walter J.; and Hoffman, Louis S., 4,641,923, Cl. 350-335.000.

Hoffmann-La Roche Inc.: See—

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,642,364, Cl. 556-438.000.

Ruttimann, August, 4,642,361, Cl. 549-546.000.

Hoffmann, Martin, to Werner H. K. Peters Maschinen Fabrik GmbH. One-sided corrugated cardboard machine. 4,642,087, Cl. 493-463.000.

Hoffmann, Wolfgang, to B & H Manufacturing Company. Rotatable shaft assembly. 4,641,558, Cl. 83-152.000.

Hofmann, Ludwig, to Siemens Aktiengesellschaft. Digital quartz-stabilized FM discriminator. 4,642,574, Cl. 329-50.000.

Hofmeister, Peter; Burstinghaus, Rainer; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Novel esters, their preparation, and their use for controlling pests. 4,642,368, Cl. 560-65.000.

Hohenester, Otmar: See—

Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, 4,641,403, Cl. 26-3.000.

Hoitink, Harry A. J., to Ohio State University. The. Production of disease suppressive compost and microorganism culture for use therein. 4,642,131, Cl. 71-6.000.

Holland, George W.: See—

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,642,364, Cl. 556-438.000.

Hollyday, Robert D.: See—

Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,641,907, Cl. 339-147.00R.

Homaco, Inc.: See—

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Honda Giken Kogyo Kabushiki Kaisha: See—

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Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiko, 4,641,731, Cl. 188-218.0XL.

Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, 4,641,854, Cl. 280-701.000.

Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.

Okubo, Tsuyoshi, 4,641,880, Cl. 296-154.000.

Sato, Makoto; and Matsuda, Shohei, 4,641,893, Cl. 303-113.000.

Takanashi, Masami; and Komatsu, Akihiro, 4,641,723, Cl. 180-315.000.

Yamaguchi, Ken, 4,641,721, Cl. 180-229.000.

Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, to Canon Kabushiki Kaisha. Image exposing apparatus. 4,641,944, Cl. 355-1.000.

Honegger, Werner, to Ferag AG. Printed product coil. 4,641,795, Cl. 242-59.000.

Honeycutt, Kenneth D.: See—

Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., 4,642,570, Cl. 324-366.000.

Honeywell Inc.: See—

Brownell, David J.; Christensen, Daniel C.; Erie, David G.; and Youngner, Daniel, 4,642,162, Cl. 156-643.000.

Dalal, Samir K., 4,642,727, Cl. 361-212.000.

Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., 4,641,970, Cl. 356-350.000.

Walker, Charles S., 4,642,749, Cl. 363-56.000.

Honeywell Information Systems Inc.: See—

Bruce, Kenneth E., 4,642,626, Cl. 340-750.000.

Honig, Arnold, to Syracuse University. Production of spin polarized fusion fuels. 4,642,206, Cl. 264-0.500.

Honig, Emanuel M., to United States of America, Energy. Reversing-counterpulse repetitive-pulse inductive storage circuit. 4,642,476, Cl. 307-108.000.

Honig, Milton L.; and Weil, Edward D., to Stauffer Chemical Company. Process for preparing methyl phosphonamides. 4,642,366, Cl. 558-138.000.

Honigs, David H.: See—

Hieftje, Gary M.; and Honigs, David H., 4,642,778, Cl. 364-498.000.

Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, to Hitachi, Ltd. Decoder circuit using transistors or diodes of different characteristics. 4,642,486, Cl. 307-463.000.

Honmoto, Syuichi: See—

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Hoogendijk, Adrianus H.: See—

Kahlman, Josephus A. H. M.; and Hoogendijk, Adrianus H., 4,642,702, Cl. 358-322.000.

Hook, James E.: See—

Winter, Edward M.; Price, David E.; and Hook, James E., 4,641,588, Cl. 110-203.000.

Hooper, Anthony W.; Cormack, Alexander D.; and Marchand, Pierre, to Uniworld Inc. Bearing support for discharger mechanism. 4,642,015, Cl. 414-325.000.

Hooper, Anthony W., to Uniworld Inc. Rotary screen of the vertical pressure type having pulp stock feed at different axial positions on the screen. 4,642,189, Cl. 210-405.000.

Hoover, Alan A., to RCA Corporation. Projection TV deflection loss protection circuit. 4,642,532, Cl. 315-386.000.

Hopkins, F. Kenneth, to Angstrom Robotics & Technologies, Inc. Fluorescent object recognition system having self-modulated light source. 4,642,526, Cl. 315-244.000.

Hopkins, Martin E.: See—

Auslander, Marc A.; Hopkins, Martin E.; and Markstein, Peter W., 4,642,764, Cl. 364-300.000.

Horiike, Yasuhiro: See—

Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, 4,642,171, Cl. 204-298.000.

Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooij, Jacobus H. M., to Volvo Car B.V. Transmission chain. 4,642,079, Cl. 474-219.000.

Horowitz, Michael D.; and Horowitz, Robin M. Supporting bracket for a feminine hygiene cabinet. 4,641,898, Cl. 312-209.000.

Horowitz, Robin M.: See—

Horowitz, Michael D.; and Horowitz, Robin M., 4,641,898, Cl. 312-209.000.

Horstmann, Karl H.: See—

Quast, Armin W.; and Horstmann, Karl H., 4,641,799, Cl. 244-207.000.

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Johnson, Lawrence. Door brace. 4,641,869, Cl. 292-339.000.

Johnson, Michael R.: See—
Eggler, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,642,373, Cl. 560-139.000.

Johnson-Williams, Mark B.: See—
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., 4,642,710, Cl. 360-79.000.

Joint Medical Products Corporation: See—
Noles, Douglas G., 4,642,123, Cl. 623-22.000.

Jones, Arthur N.: See—
Ferrari, Andrew N.; and Jones, Arthur N., 4,642,239, Cl. 426-396.000.

Jones, Jack A., to United States of America, National Aeronautics and Space Administration. Ten degree Kelvin hydride refrigerator. 4,641,499, Cl. 62-48.000.

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Dery, Ronald A.; and Jones, Warren C., 4,642,421, Cl. 174-88.00R.

Jorgensen, Jorgen A.; and Nygren, Donald W., to Northland Aluminum Products, Inc. Apparatus for brewing coffee in microwave ovens. 4,642,443, Cl. 219-10.55E.

Joseph Kieninger Uhrenfabrik GmbH: See—
Hepler, Rolf; and Kieninger, Rudolf, 4,641,975, Cl. 368-124.000.

Jost, Ralph, to Hobas Engineering & Durotec AG. Apparatus for forming a reinforcing band on a sectional sealing liner. 4,642,156, Cl. 156-425.000.

Joule, Inc.: See—
Maddi, Frank J., 4,641,989, Cl. 403-302.000.

Juhn, Steven K. Apparatus for collecting specimens. 4,641,663, Cl. 128-765.000.

Julius Blum Gesellschaft m.b.H.: See—
Rock, Erich; and Brustle, Klaus, 4,641,394, Cl. 16-302.000.

Rock, Erich; and Brustle, Klaus, 4,641,396, Cl. 16-370.000.

Kaaden, Jurgen: See—
Geiger, Erich; and Kaaden, Jurgen, 4,642,707, Cl. 360-76.000.

Kabbaby, Charles B. Shower-mounted douche apparatus. 4,642,100, Cl. 604-150.000.

K.K. Iwai: See—
Kato, Teruyuki, 4,641,883, Cl. 297-184.000.

Kabushiki Kaisha Ishida Koki Seisakusho: See—
Haze, Setsuo, 4,642,788, Cl. 364-567.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: See—
Nagashima, Yoichi, 4,641,563, Cl. 84-1.010.

Kabushiki Kaisha Komatsu Seisakusho: See—
Yajima, Toshio, 4,641,828, Cl. 271-227.000.

Kabushiki Kaisha Sato: See—
Sato, Yoshio, 4,642,256, Cl. 428-42.000.

Kabushiki Kaisha Toshiba: See—
Fukushima, Noburu; Yoshino, Hisashi; and Nomura, Shunji, 4,642,136, Cl. 75-234.000.

Kasai, Toshihiro, 4,641,602, Cl. 118-653.000.

Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.

Oushiden, Hideshi; and Obara, Naoshi, 4,641,953, Cl. 355-14.00R.

Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigetou; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.

Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, 4,642,171, Cl. 204-298.000.

Suzuki, Hitoshi; and Sato, Hiroaki, 4,642,508, Cl. 310-321.000.

Tabata, Mitsuo; and Shibuya, Nobuo, 4,642,468, Cl. 250-548.000.

Tamada, Masuo, 4,641,753, Cl. 209-546.000.

Kabushiki Kaisha Toyota Jidoshokki Seisakusho: See—
Futamura, Kenichiro; Ohtsu, Keiichi; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Aoyama, Taro; and Oshima, Yujiro, 4,641,617, Cl. 123-262.000.

Kaczmarek, Wesley R.: See—
Zador, Eugene; Kaczmarek, Wesley R.; and Ravipati, Sitaramaiah, 4,642,126, Cl. 51-295.000.

Kageyama, Yoshitaka: See—
Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, 4,642,736, Cl. 362-31.000.

Kahlman, Josephus A. H. M.; and Hoogendijk, Adrianus H., to U.S. Philips Corporation. Apparatus for time base correction. 4,642,702, Cl. 358-322.000.

Kahr, Gerhard: See—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.

Kakimi, Fujio; and Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Encapsulated electrostaticographic toner material. 4,642,281, Cl. 430-138.000.

Kakiuchi, Hajime: See—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.

Kal Kan Foods, Inc.: See—
Gordon, Charles, 4,641,605, Cl. 119-1.000.

Kalarickal, Mathew S. Electronic algometer. 4,641,661, Cl. 128-744.000.

Kallenberger, Robert H.: See—
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.

Kalliola, Lauri: See—
Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, 4,642,164, Cl. 162-207.000.

Kalnin, Ilmar L.: See—
Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.

Kaltenbach & Voigt GmbH & Co.: See—
Lohn, Gerd, 4,642,051, Cl. 433-100.000.

Kamehara, Nobuo: See—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.

Kamei Machine Co., Ltd.: See—
Kamei, Masato, 4,641,542, Cl. 74-23.000.

Kamei, Masato, to Kamei Machine Co., Ltd. Swing mechanism for winder nozzles. 4,641,542, Cl. 74-23.000.

Kameya, Kazuo, to Elmec Corporation. Method for adjustment of variable delay line. 4,642,588, Cl. 333-139.000.

Kamihama, Kiyoshi: See—
Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.05S.

Kaminaga, Seiji: See—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.

Kampe, Wolfgang: See—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Barisch, Wolfgang; and Schumann, Wolfgang, 4,642,309, Cl. 514-269.000.

Kanehisa, Takashi; and Yokomura, Mitsunori, to Matsushita Electric Industrial Co., Ltd. Image display apparatus with deformable accelerating electrodes. 4,642,517, Cl. 313-495.000.

Kaneko, Masahiko: See—
Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, 4,642,795, Cl. 365-10.000.

Kaneko, Shinobu: See—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Kaneko, Takasi: See—
Uramoto, Yoshihito; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.

Kaneko, Takushi; Wong, Henry S. L.; and Doyle, Terrence W., to Bristol-Myers Company. Acylamino mitosanes. 4,642,352, Cl. 548-422.000.

Kania, Cheryl C.: See—
Funk, Gary L.; Terhune, Robert D.; Kania, Cheryl C.; and Kallenberger, Robert H., 4,642,766, Cl. 364-402.000.

Kansas City Rubber and Belting Company: See—
Skates, Raymond E., 4,641,745, Cl. 198-836.000.

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Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, 4,642,720, Cl. 360-126.000.

Kapich, Davorin D., to United States of America, Energy. Bearing system. 4,641,978, Cl. 384-102.000.

Kaplan, Jerome I., to Indiana University Foundation. Methods for two dimensional nuclear magnetic resonance imaging. 4,642,567, Cl. 324-309.000.

Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., to Trident Engineering, Inc. Anti-lock up mechanism for revolvers. 4,641,449, Cl. 42-65.000.

Kar, Nareschandra J., to Smith International, Inc. Copper-based spinodal alloy bearings. 4,641,976, Cl. 384-95.000.

Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, to Degussa Aktiengesellschaft. Activated carbon and process for its production. 4,642,304, Cl. 502-427.000.

Karl Lautenschlager KG, Möbelbeschlagfabrik: See—
Lautenschlager, Horst, 4,641,393, Cl. 16-241.000.

Karl M. Reich Maschinenfabrik GmbH: See—
Skuthan, Erich, 4,641,772, Cl. 227-123.000.

Karlsson, Goran: See—
Kratz, Christer; Engstrom, Ake; and Karlsson, Goran, 4,642,427, Cl. 200-16.00C.

Karp, S. Joel. Power failure responsive warning device. 4,642,605, Cl. 340-130.000.

Kasai, Hitoshi: See—
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Urihara, Makoto, 4,642,771, Cl. 364-424.100.

Kasai, Toshihiro, to Kabushiki Kaisha Toshiba. Developing apparatus. 4,641,602, Cl. 118-653.000.

Kashima Engineering Co., Ltd.: See—
Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, 4,642,138, Cl. 134-22.180.

Kashimura, Tetsuo: See—
Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, 4,642,495, Cl. 310-52.000.

Kashiwa, Norio: See—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.

Kasper, Melvin C.: See—
Niekraz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., 4,641,461, Cl. 49-404.000.

Kasperkowitz, Wolfriedrich G.; and Meeuwis, Johannes C. M., to U.S. Philips Corporation. Level-shifting circuit. 4,642,482, Cl. 307-264.000.

Kassai, Kenzo, to Aprica Kassai Kabushikikaisha. Baby carriage hood. 4,641,879, Cl. 296-78.00A.

Kastl, Alfons: See—
Muller, Jurgin; Kastl, Alfons; and Farber, Heinrich, 4,641,940, Cl. 354-322.000.

Katalistiks, Inc.: See—
Yoo, Jin S.; and Jaeger, John A., 4,642,178, Cl. 208-113.000.

Kataoka, Tadashi, to Ebara Research Ltd.; and Ebara Corporation. Shaft sealing device with floating seal member. 4,641,842, Cl. 277-83.000.

Katayama, Aiichi: See—
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.

Kato, Akira: See—
Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.

Kato, Hiroyuki: See—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.

Kato, Masayasu: See—
Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, 4,642,365, Cl. 558-83.000.

Kato, Shigeo: See—
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

Kato, Teruyuki, to K.K. Iwai. Foldable support. 4,641,883, Cl. 297-184.000.

Kato, Yasuo: See—
Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Katz, Harry R. Position locating device and method for interstitial radiotherapy. 4,642,096, Cl. 604-116.000.

Kaufhold, Manfred, to Huels Aktiengesellschaft. Process for the production of methallylbenzene and isobutenylbenzene and their p-substituted alkyl derivatives. 4,642,405, Cl. 585-435.000.

Kaufman, Norman H. Portable apparatus for the recovery of placer gold. 4,642,180, Cl. 209-44.000.

Kaufmann, Siegfried: See—
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, 4,641,397, Cl. 19-258.000.

Kawabata, Takashi: See—
Tsunekawa, Tokuchi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.

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Kawakami, Shigenobu: See—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Kawamura, Masao: See—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.

Yamagishi, Koji; Fuse, Takahiro; Kawamura, Masao; and Matsui, Shinichi, 4,642,694, Cl. 358-236.000.

Kawasaki Steel Corporation: See—
Iida, Yoshiaki; and Iwamoto, Katsuo, 4,642,141, Cl. 148-113.000.

Kawase, Shigeo: See—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

Kawashima, Machio: See—
Takahashi, Koji; and Kawashima, Machio, 4,642,527, Cl. 315-368.000.

Kazarov, Ljubomir R.: See—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

KCR Technology, Inc.: See—
Dean, Walter C., II, 4,642,661, Cl. 346-153.100.

Keiper Recaro Incorporated: See—
Klueting, Bernd A., 4,641,887, Cl. 297-362.000.

Keivanjah, Massoud. Recreational water craft. 4,642,056, Cl. 440-15.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Joint endoprosthesis and instrument for knocking it in or out. 4,642,121, Cl. 623-18.000.

Keller, Arnold: See—
Link, Helmut D.; and Keller, Arnold, 4,641,749, Cl. 206-370.000.

Kelley Company, Inc.: See—
Bennett, David E., deceased; and Bennett, Barbara E., personal representative, 4,641,388, Cl. 14-71.700.

Kelley, John. Safety bottle closure having a time indicator. 4,641,759, Cl. 215-220.000.

Kelly, James D.: See—
Cumming, Stephen A.; and Kelly, James D., 4,642,229, Cl. 424-1.100.

Kelly, Richard E.: See—
Aldrich, Roger L.; Bodett, Peter C.; and Kelly, Richard E., 4,641,502, Cl. 62-244.000.

Kelly, Steven G.: See—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.

Kemp, Dennis E., Jr. Junction device for auger conveyors. 4,641,743, Cl. 198-666.000.

Kemper, Christian T.; Lowenfeld, Simon; and Fox, Mark S., to Westinghouse Electric Corp. Rule based diagnostic system with dynamic alteration capability. 4,642,782, Cl. 364-550.000.

Kendall McGaw Laboratories, Inc.: See—
Richmond, Douglass S., 4,642,091, Cl. 604-29.000.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi. Toy vehicle launcher and sound generator. 4,642,066, Cl. 446-420.000.

Kenney, Donald M.; and Mandelman, Jack A., to International Business Machines Corporation. Single transistor driver circuit. 4,642,491, Cl. 307-571.000.

Kenny, Thomas J.: See—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Kent Scientific and Industrial Projects Limited: See—
Jackson, David A.; Corke, Michael; and Kersey, Alan D., 4,642,458, Cl. 250-225.000.

Kenyon, Eric, to Allware Agencies Limited. Portable fan for winter and summer use. 4,642,441, Cl. 219-364.000.

Kepes, William E.: See—
Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., 4,642,215, Cl. 376-249.000.

Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung: See—
Zhong, Wang D., 4,642,214, Cl. 376-221.000.

Kerr, George T.: See—
Dessau, Ralph M.; and Kerr, George T., 4,642,407, Cl. 585-640.000.

Kersey, Alan D.: See—
Jackson, David A.; Corke, Michael; and Kersey, Alan D., 4,642,458, Cl. 250-225.000.

Kerst, Gerrit; and Kerst, Hendrik, to Brelo (Proprietary) Limited. Resilient coupling. 4,641,852, Cl. 280-489.000.

Kerst, Hendrik: See—
Kerst, Gerrit; and Kerst, Hendrik, 4,641,852, Cl. 280-489.000.

Kervagoret, Gilbert, to Societe Anonyme D.B.A. Device for generating braking pressure for a braking installation with twin circuits. 4,641,497, Cl. 60-563.000.

Kerviel, Alain; and Barbarin, Remy, to Societe Francaise d'Equipements pour la Navigation Aeriene (S.F.E.N.A.). Device for detecting the angular position of the rotor of a rotary electric machine with electronic switching. 4,642,496, Cl. 310-68.00B.

Khlybov, Vyacheslav I.: See—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davitulliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Kida, Takao: See—
Miyashiro, Shigeyoshi; Kida, Takao; Shiio, Tsuyoshi; and Shibai, Hiroshiro, 4,642,335, Cl. 530-409.000.

Kieninger, Rudolf: See—
Hepfer, Rolf; and Kieninger, Rudolf, 4,641,975, Cl. 368-124.000.

Kievsky Nauchno-Issledovatel'sky Institut Klinicheskoi i Experimental'noi Khirurgii: See—
Sergienko, Nikolai M., 4,642,115, Cl. 623-6.000.

Kikkawa, Katsumasa: See—
Sensui, Hideyuki; Suzuki, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, 4,642,663, Cl. 346-221.000.

Kikuchi, Eiki: See—
Takata, Yatsuka; Yamada, Tadamasu; and Kikuchi, Eiki, 4,642,219, Cl. 420-104.000.

Kikuchi, Makoto, to Toyota Koki Kabushiki Kaisha. Manipulation arm mechanism for an industrial robot. 4,642,021, Cl. 414-735.000.

Kim, Choung U.; and Misco, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics. 4,642,341, Cl. 540-350.000.

Kim, Youn S. Apparatus for continuously preheating and charging raw materials for electric furnace. 4,642,048, Cl. 432-103.000.

Kimberly-Clark Corporation: See—
Coenen, Joseph D., 4,642,151, Cl. 156-164.000.

Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.

Kimble, Lorraine. Method for reinforcing and hardening human nails. 4,641,669, Cl. 132-73.000.

Kimura, Chikara: See—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.

Kimura, Hideo: See—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.

Kimura, Hiroshi: See—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.

Kimura, Kenji: See—
Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.

Kingsbury, Allin D.: See—
Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., 4,642,794, Cl. 364-900.000.

Kinjo, Noriyuki: See—
Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.

Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.

Kinoshita, Kimiaki: See—
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.

Kinoshita, Takao: See—
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,641,942, Cl. 354-406.000.

Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., to Dow Chemical Company. The. Prepolymer processing of arylcyclobutene monomeric compositions. 4,642,329, Cl. 526-284.000.

Kirk, Glenn D., to MA1 Basic Four, Inc. Monitoring switch mode converter performance utilizing duty cycle. 4,642,748, Cl. 363-56.000.

Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., to Zurex Corporation. Coil edge protecting coil lifter and insert. 4,641,876, Cl. 294-86.400.

Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, to Fanuc Ltd. Angle data discriminating method. 4,642,754, Cl. 364-191.000.

Kishida, Hiroo; and Takenaka, Hirofumi, to Harumoto Iron Works Co., Ltd. Apparatus for stretching, loosening, and fixing a wire member. 4,641,816, Cl. 254-228.000.

Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, to Kao Corporation. Magnetic head comprised of an improved base substance for high density magnetic recording. 4,642,720, Cl. 360-126.000.

Kitakata, Makoto, to NEC Corporation. Semiconductor device having registration mark for electron beam exposure. 4,642,672, Cl. 357-40.000.

Kitner, William M., to Vari-X. Automatic film threading apparatus for roll-film processors. 4,641,939, Cl. 354-313.000.

Kizaki, Masaharu: See—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.

Klann, Horst. Wrench for effecting screw connections of inaccessible parts of motor vehicles. 4,641,554, Cl. 81-55.000.

Klapper, Kenneth K.; and Boatwright, David A., to Westinghouse Electric Corp. Plugger guide for aligning an end plug and a fuel rod tube end. 4,641,408, Cl. 29-271.000.

Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, to Alfred Teves GmbH. Device for the determination of rotational speed. 4,641,519, Cl. 73-129.000.

Kleinberg, Robert L.: See—
Chow, Edward Y.; and Kleinberg, Robert L., 4,641,724, Cl. 181-104.000.

Kleinschmit, Peter: See—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Klepesch, Philip H.: See—
Markovitch, Peter; and Klepesch, Philip H., 4,641,498, Cl. 60-641.200.

Klier, Kamil; Herman, Richard G.; and Vedage, Gamin A., to Lehigh University. Catalyst and method for production of methylamines. 4,642,381, Cl. 564-480.000.

Kling, John P.: See—
Althouse, Rickie M.; Beamenderfer, Robert E.; Durbin, Roger; Hollyday, Robert D.; and Kling, John P., 4,641,907, Cl. 339-147.00R.

Klinger, Barney, to Applied Energy, Inc. Enhanced recovery of subterranean deposits by thermal stimulation. 4,641,710, Cl. 166-303.000.

Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., to Westinghouse Electric Corp. Universal tool for ultrasonic testing of nuclear reactor vessels. 4,642,215, Cl. 376-249.000.

Klohn, William L.: See—
Rice, James S.; and Klohn, William L., 4,641,850, Cl. 280-289.0WC.

Klueting, Bernd A., to Keiper Recaro Incorporated. Planetary seat back adjuster. 4,641,887, Cl. 297-362.000.

KMS Fusion, Inc.: See—
Tarvin, Jeffrey A., 4,641,524, Cl. 73-335.000.

Knies, Rudy D. Automatic latch between trailer and boat. 4,641,851, Cl. 280-414.100.

Knitter, Wayne L.: See—
Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, 4,642,647, Cl. 342-415.000.

Knogo Corporation: See—
Pokalsky, Peter A., 4,642,613, Cl. 340-572.000.

Knops, Hans-Joachim: See—
Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.

Kobayashi, Hideyuki, to Aisin Seiki Kabushiki Kaisha. Control system and method for a power delivery system having a continuously variable ratio transmission. 4,641,553, Cl. 74-866.000.

Kobayashi, Kazuyoshi: See—
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, 4,642,700, Cl. 358-285.000.

Kobayashi, Tadashi, to Daikin Industries Ltd. Outdoor unit for an air conditioning apparatus of through-the-wall multitype. 4,641,503, Cl. 62-259.100.

Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, to Nippon Zeon Co., Ltd. Vinyl chloride resin composition. 4,642,324, Cl. 524-559.000.

Kobayashi, Toshio; and Hishiki, Hideo, to Victor Company of Japan, Ltd. Picture correcting apparatus for use with in-line type color picture tube. 4,642,528, Cl. 315-368.000.

Kobayashi, Yoshio, to Murata Manufacturing Co., Ltd. TM-mode dielectric resonance apparatus. 4,642,591, Cl. 333-227.000.

Koerner, Andre F. Sound engine. 4,642,611, Cl. 340-385.000.

Koester, Klaus: See—
Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, 4,642,197, Cl. 252-98.000.

Koga, Hiroshi: See—
Futamura, Kenichiro; Ohtsu, Keiichi; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Kogawa, Kiyonori: See—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

Kogure, Katsura: See—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

Kohatsu, Iwao: See—
Wood, Clayton D.; Garrou, Philip E.; Kohatsu, Iwao; and Gleason, Edward F., 4,642,302, Cl. 502-332.000.

Kohberg, Ewald: See—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorthmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Kohda, Kazuo, to Victor Company of Japan, Ltd. Automatic tape loading type recording and/or reproducing apparatus having a plurality of modes. 4,642,712, Cl. 360-85.000.

Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Crystalline random propylene copolymer composition and composite laminate comprising said composition. 4,642,269, Cl. 428-516.000.

Koike, Takahisa: See—
Ito, Tadashi; Jinnai, Koichiro; Koike, Takahisa; Murai, Toshiharu; Fukazawa, Takao; and Ishima, Kazumi, 4,642,653, Cl. 346-1.100.

Koishi, Toshiro: See—
Yasumura, Takashi; Koishi, Toshiro; and Tanaka, Isao, 4,642,326, Cl. 525-153.000.

Koivula, Antti: See—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.

Koken Co., Ltd.: See—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.

Kokusai Denshindenwa Co., Ltd.: See—
Asakawa, Kenichi; Shirasaki, Yuichi; and Iwamoto, Yoshinao, 4,641,915, Cl. 350-96.180.

Kolberg, William. Portable self-powered band saw. 4,641,560, Cl. 83-788.000.

Kolblin, Karl, to Werner Thieme GmbH & Co. KG. Screen printing machine having a stationary printing table. 4,641,829, Cl. 271-268.000.

Kolev, Rusy C.: See—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

Kollmorgen Technologies Corp.: See—
Morino, Ronald; and Conti, Joseph A., 4,641,773, Cl. 228-1.100.

Schoenberg, Andrew J.; and Friedrich, Marju L., 4,642,321, Cl. 523-400.000.

Komatsu, Akihiro: See—
Takanashi, Masami; and Komatsu, Akihiro, 4,641,723, Cl. 180-315.000.

Komiya, Yutaka: See—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Komiyama, Yoshizo: See—
Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, 4,641,603, Cl. 118-724.000.

Komori Printing: See—
Watanabe, Hideo, 4,642,456, Cl. 250-223.00R.

Komori Printing Machinery Co., Ltd.: See—
Watanabe, Hideo, 4,642,457, Cl. 250-223.00R.

Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, to Fuji Seiko Limited; and Toyota Jidosha Kabushiki Kaisha. Holder for rotary cutting tools. 4,642,005, Cl. 409-232.000.

Konecsny, Helmut: See—
Musselmann, Walter; and Konecsny, Helmut, 4,641,790, Cl. 241-46.170.

Konishi, Katsuo: See—
Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.

Konov, Vyacheslav V.: See—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davitulliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

Koppers Company, Inc.: See—
Okamoto, Yoshiyuki; and Vicari, Richard, 4,642,393, Cl. 568-734.000.

Korbuly, Gergely, to Hutchinson SA. Means for protecting support structures or similar from shocks. 4,641,999, Cl. 405-215.000.

Korner, Rudolf: See—
Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, 4,642,417, Cl. 174-36.000.

Kornrumpf, William P.: See—
Steigerwald, Robert L.; and Kornrumpf, William P., 4,642,745, Cl. 363-37.000.

Korth, Hans-Erdmann, to International Business Machines Corporation. White light interferometer. 4,641,971, Cl. 356-357.000.

Kosugi, Motoki; and Nakano, Hidetaka, to Yamaichi Electric Mfg. Co., Ltd. Flat cable connecting system. 4,641,904, Cl. 339-99.00R.

Koth, Detley: See—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Kotzsch, Hans-Joachim: See—
Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.

Kouno, Shunzo: See—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.

Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, to Kashima Engineering Co., Ltd.; and Taiho Industrial Co., Ltd. Method of preventing deposition of sludge in liquid tank and of removing deposited sludge. 4,642,138, Cl. 134-22.180.

Koyo Seiko Kabushiki Kaisha: See—
Takata, Yatsuka; Yamada, Tadamasu; and Kikuchi, Eiki, 4,642,219, Cl. 420-104.000.

Koziol, Konrad; and Wenk, Erich, to Conradt GmbH & Co. Metal-lektroden KG. Cell having coated valve metal electrode for electrolytic galvanizing. 4,642,173, Cl. 204-242.000.

Kraftwerk Union Aktiengesellschaft: See—
Ruthrof, Klaus; Korner, Rudolf; and Dorner, Jurgen, 4,642,417, Cl. 174-36.000.

Kral, Kevin D.; and Havenhill, Douglas D., to Sperry Corporation. Magnetic suspension and pointing system with flux feedback linearization. 4,642,501, Cl. 310-90.500.

Kramer, Nathan R., to Hughes Aircraft Company. Continuous in situ fiberization substrate material mechanism. 4,642,038, Cl. 425-93.000.

Kratz, Christer; Engstrom, Ake; and Karlsson, Goran. Contact arrangement. 4,642,427, Cl. 200-16.00C.

Krause, Johannes: See—
Ressel, Herbert; Haas, Hans; and Krause, Johannes, 4,642,224, Cl. 423-321.00R.

Krawchuk, Myron; and Spoganetz, Joseph C., to Foster Wheeler Energy Corporation. Fixture for explosively welding a tube to a tubesheet. 4,641,774, Cl. 228-2.500.

Krebs, Gerhard, to Andreas Stihl. Starter device for an internal combustion engine. 4,641,614, Cl. 123-185.0BA.

Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., to American Home Products Corporation. 3(2-quinolinylalkoxy)-phenols. 4,642,347, Cl. 546-181.000.

Knegel, Carl P., to M.C.E. Window, Inc. Semi-manually operated service window. 4,641,460, Cl. 49-115.000.

Krolkowski, F. John; and Shahnarian, Albert. Non-traumatic bulbous catheter. 4,642,101, Cl. 604-164.000.

Krone GmbH: See—
Achtning, Peter; and Hegner, Gunter, 4,642,723, Cl. 361-124.000.

Krstic, Slobodan: See—
Bielinski, Ralph F.; Jaeschke, James R.; Krstic, Slobodan; Piber, Earl T.; and Theisen, Peter J., 4,642,481, Cl. 307-252.00A.

Kruse, Hans; Koester, Klaus; Carduck, Franz-Josef; Wilsberg, Heinz-Manfred; and Puchta, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of a washing additive in tablet form. 4,642,197, Cl. 252-98.000.

Kublick, Christian: See—
Fischer, Dietmar; and Kublick, Christian, 4,642,475, Cl. 307-66.000.

Kuchheuser, Werner: See—
Lohr, Karl-Heinz; Kohberg, Ewald; Kuchheuser, Werner; and Dorhmann, Wolfgang, 4,641,872, Cl. 293-133.000.

Kudo, Satoshi, to Hitachi, Ltd. Fabricating an integrated circuit device having a vertical pnp transistor. 4,641,419, Cl. 29-591.000.

Kuhn, Donald H., to United States of America, Army. Dual lens antenna with mechanical and electrical beam scanning. 4,642,651, Cl. 343-754.000.

Kumada, Akio, to Hitachi Maxell, Ltd. Ultrasonic motor using bending, longitudinal and torsional vibrations. 4,642,509, Cl. 310-323.000.

Kumagami, Naoki: See—
Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.

Kume, Takeshi, to Suehiro Seiko Kabushiki Kaisha. Chain saw guide bar and method of construction. 4,641,432, Cl. 30-383.000.

Kuo, Long-Cho: See—
Mar, Shih-Lin; and Kuo, Long-Cho, 4,641,844, Cl. 280-30.000.

Kupcickiewicz, Vytautas, to Viskase Corporation. Casing article. 4,641,687, Cl. 138-118.100.

Kuramitsu, Wataru: See—
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, 4,641,830, Cl. 271-274.000.

Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, to Tokuyama Soda Kabushiki Kaisha. Composite nitride sintered body. 4,642,298, Cl. 501-96.000.

Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, to Fujitsu Limited. Method for producing a multilayer ceramic circuit board. 4,642,148, Cl. 156-89.000.

Kuriyama, Takashi: See—
Hirosaki, Botaro; and Kuriyama, Takashi, 4,642,575, Cl. 331-1.00A.

Kurokawa, Yasuhiro: See—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99.000.

Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, to Koken Co., Ltd. Man-made skin composed of two layers: collagen and a poly-alpha-amino acid. 4,642,118, Cl. 623-15.000.

Kuryczak, Eugene. Ringgearless twin sun planetary power amplifier. 4,641,552, Cl. 74-802.000.

Kutz, Roland: See—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Kutzavitch, Walter G.: See—
Illuzzi, Vincent A.; Kutzavitch, Walter G.; and Rooney, Allen J., III, 4,642,550, Cl. 323-222.000.

Kyocera Corporation: See—
Yamashita, Yukio, 4,642,510, Cl. 310-348.000.

Kyowa Chemical Industry Co. Ltd.: See—
Miyata, Shigeo; Izima, Noriko; and Manabe, Tadashi, 4,642,193, Cl. 210-682.000.

Kyushima, Hiroki: See—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinori, 4,641,951, Cl. 355-7.000.

L. & C. Steinmuller GmbH: See—
Leikert, Klaus, 4,642,225, Cl. 423-244.000.

L. Schuler GmbH: See—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.

LabAdapt, Inc.: See—
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., 4,641,674, Cl. 134-138.000.

Labouliere, Elzear R.: See—
de Vos, Hendrik A. J.; and Labouliere, Elzear R., 4,642,742, Cl. 362-375.000.

LaCasse, Robert G.: See—
Creasy, Walter S.; Lorenz, Donald H.; LaCasse, Robert G.; and Malagrea, Salvatore A., 4,642,267, Cl. 428-413.000.

Lacey, Raymond D.: See—
Bradley, William D.; Alvi, Zia R.; and Lacey, Raymond D., 4,642,010, Cl. 411-69.000.

Lade, Robert W.; Benjamin, James A.; and Schutten, Herman P., to Eaton Corporation. Vertically layered MOMOM tunnel device. 4,642,665, Cl. 357-6.000.

Lagowski, Jacek: See—
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,642,565, Cl. 324-158.00R.

Laird, Bruce A.; and Laird, Richard A. Athletic shoe for runner and joggers. 4,641,438, Cl. 36-59.00C.

Laird, Richard A.: See—
Laird, Bruce A.; and Laird, Richard A., 4,641,438, Cl. 36-59.00C.

Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, to Maremont Corporation. On-vehicle spring compressor tool. 4,641,814, Cl. 254-10.500.

Lampard, Robert D., to Barrack Technology; and Baralaba Pty. Limited. Internal combustion engine. 4,641,616, Cl. 123-256.000.

Lande, Goran; and Persson, Bendt, to Nitro Nobel AB; and AB Volvo. Means for splicing two pipes. 4,641,775, Cl. 228-2.500.

Landers, Jerry L.; and Fischer, Gregory E., to Servend International. Ice and beverage dispensing apparatus and method with dual purpose liner. 4,641,763, Cl. 222-129.100.

Landsberger, David; and Broels, John, to Maddak, Inc. Battery operated eyewash system. 4,641,384, Cl. 4-620.000.

Lanfranco, Gianmario; and Vecellio, Bernardino, to Societa' Cavi Pirelli S.p.A. Joint for interconnecting two electrical cables of different types. 4,642,415, Cl. 174-22.00R.

Lang, Egon: See—
Piotrowski, Bernhard; Buning, Robert; Janser, Bernhard; and Lang, Egon, 4,642,262, Cl. 428-296.000.

Langner, Jaroslav; and Weitemeyer, Christian, to Th. Goldschmidt AG. Fluoroalkylsilanes or siloxanes, their synthesis and use. 4,642,356, Cl. 549-214.000.

Lannen Tehtaast Oy: See—
Saarinen, Kari, 4,642,014, Cl. 414-96.000.

Lardon, Marcel: See—
Moll, Eberhard; Lardon, Marcel; and Muller, Edgar, 4,641,450, Cl. 42-76.020.

Larson, Kim A. Electronic playing die. 4,641,840, Cl. 273-138.00A.

Lassithiotakis, Konstantin: See—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.

Jacobsen, Hans E.; Hansen, Henning M.; Nyrupe, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.

Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A. Synthetic seaweed kit and synthetic seaweed matrix formed thereby. 4,641,997, Cl. 405-24.000.

Laure Prosthetics, Inc.: See—
Steffee, Arthur D., 4,642,122, Cl. 623-21.000.

Lautenschlager, Horst, to Karl Lautenschlager KG. Möbelbeschlagfabrik. Cabinet hinge. 4,641,393, Cl. 16-241.000.

Lavelle, Michael G., to Motorola Computer Systems, Inc. Video memory controller. 4,642,789, Cl. 364-900.000.

Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., to Motorola Computer Systems, Inc. Video update FIFO buffer. 4,642,794, Cl. 364-900.000.

Lawrence, Manuel. Valve-spring tool. 4,641,521, Cl. 73-161.000.

Lawton, Rodney J., to Plessey Overseas Limited. Amplitude variation suppression arrangements. 4,642,490, Cl. 307-540.000.

Laxton, Raymond: See—
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84.000.

Lazzati, Jean P., to U.S. Philips Corporation. Photographic shutter of the focal-plane type. 4,641,938, Cl. 354-243.000.

Learn, Arthur J.; and DuBois, Dale R., to Anicon, Inc. Chemical vapor deposition wafer boat. 4,641,604, Cl. 118-728.000.

LeBeque, Maurice K.; and Wilson, Henry E., to National Mine Service Company. Material gathering device for a mining machine. 4,641,888, Cl. 299-64.000.

Lee, Kenneth R.: See—
Cedrone, Nicholas J.; and Lee, Kenneth R., 4,641,738, Cl. 193-40.000.

Lee, Kuo-Hua, to AT&T Bell Laboratories. Metalization process for headless contact using deposited smoothing material. 4,641,420, Cl. 29-511.000.

Lee, Minyoung: See—
Thomas, Charles E.; Lee, Minyoung; Bedard, James F.; and Hays, Steven R., 4,642,617, Cl. 340-680.000.

Le Gal, Pascal: See—
Dubuisson, Jacques; Le Gal, Pascal; and Bouterin, Rene, 4,641,425, Cl. 29-830.000.

Lehigh University: See—
Klier, Kamil; Herman, Richard G.; and Vedage, Gamini A., 4,642,381, Cl. 564-480.000.

Lehmann, Ernesto: See—
Thalman, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, 4,642,154, Cl. 156-272.200.

Lehnerer, Patrick: See—
Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.

Leikert, Klaus, to L. & C. Steinmuller GmbH. Method of binding sulfur compounds by adding additives. 4,642,225, Cl. 423-244.000.

Leiner, Dennis C.: See—
Prescott, Rochelle; and Leiner, Dennis C., 4,641,927, Cl. 350-413.000.

Leir, Charles M., to Riker Laboratories, Inc. Process for the preparation of derivatives of pyrrolidine and piperidine. 4,642,384, Cl. 568-337.000.

LeMay, Christopher A. G., to EMI Limited. Robot control systems. 4,642,540, Cl. 318-568.000.

Remelson, Jerome H. Magnetic recording and reproduction apparatus, system and method. 4,642,705, Cl. 360-18.000.

Leming, Anthony D.; and Dawson, Luther C. Hedge trimmer. 4,641,431, Cl. 30-276.000.

Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., to General Electric Company. Automated inspection system. 4,641,966, Cl. 356-237.000.

Lenhan, Terrence A.: See—
Glodis, Paul F.; and Lenhan, Terrence A., 4,641,917, Cl. 350-96.330.

Lenk, Erich: See—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,641,504, Cl. 68-500E.

Lentz, Frank R.: See—
Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., 4,641,407, Cl. 29-237.000.

Leonard Storch Enterprises, Inc.: See—
Storch, Leonard; and Hotto, Robert, 4,642,624, Cl. 340-735.000.

LePage, James: See—
Moffatt, Michael; LePage, James; and Englar, Gerald, 4,641,918, Cl. 350-125.000.

Lepper, James M., to American Hospital Supply Corp. Cardiac flow monitor. 4,641,658, Cl. 128-633.000.

Lerner, Moisey. Bookkeeping and accounting system. 4,642,767, Cl. 364-406.000.

Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, to Compagnie des Transmissions Mecaniques Sedis; Generale de Transport et d'Industrie; and Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet. Automatic device for loading the total volume of a transport vehicle. 4,642,018, Cl. 414-502.000.

Letbetter, William D.: See—
Seydel, Scott O.; Letbetter, William D.; and Cutts, William H., 4,641,404, Cl. 28-178.000.

Lever Brothers Company: See—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Levine, James L.: See—
Garwin, Richard L.; and Levine, James L., 4,642,422, Cl. 178-18.000.

Levine, Peter A., to RCA Corporation. Back-illuminated CCD imager adapted for contrast transfer function measurements thereon. 4,641,963, Cl. 356-124.500.

Leviton Manufacturing Company, Inc.: See—
Poliak, John M.; and Anker, Herbert, 4,641,905, Cl. 339-103.00B.

Lewbart, Harry M., to Campbell Soup Company. Apparatus for cleaning dish-like objects. 4,641,672, Cl. 134-62.000.

Lewis, Meirion F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Surface acoustic wave device with reflectors in inter-electrode location. 4,642,506, Cl. 310-313.00D.

Lewis, Robert T.; and Tudor, Thomas T., to Brown & Williamson Tobacco Corporation. Package for cigarettes and the like. 4,641,748, Cl. 206-263.000.

Lewis, Alexander J. Static phase conversion circuits for three-phase motors. 4,642,545, Cl. 318-749.000.

Leyland Vehicles Limited: See—
Greenwood, C. J., 4,641,548, Cl. 74-691.000.

Liang, Tzu P.: See—
Tzen, Ching B.; and Liang, Tzu P., 4,641,436, Cl. 33-483.000.

Lidow, Alexander; and Herman, Thomas, to International Rectifier Corporation. High power MOSFET with low on-resistance and high breakdown voltage. 4,642,666, Cl. 357-23.400.

Liedtke, Raymond J.: See—
Batjer, John D.; Eades, Lindsay R.; Liedtke, Raymond J.; and Zebelman, Arthur M., 4,641,674, Cl. 134-138.000.

Liepse, Donald E. Fryer filter and pump. 4,642,184, Cl. 210-240.000.

Lietz Company, The: See—
Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., 4,641,804, Cl. 248-205.100.

Lightfoot, Fred M., to Boeing Company, The. Passive ranging method and apparatus using interferometric scanning. 4,642,649, Cl. 342-458.000.

Lim, Wah L.: See—
Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., 4,641,970, Cl. 356-350.000.

Lin, Santa H. C.; and Cho, Myong J., to Ralston Purina Company. Process for the production of a mineral fortified protein composition. 4,642,238, Cl. 426-74.000.

Lin, Tung Y., to United States of America, Navy. Anchoring system for concrete floating pier. 4,642,000, Cl. 405-221.000.

Lincoln, Phillip A.: See—
Van Antwerp, William P.; and Lincoln, Phillip A., 4,642,134, Cl. 75-101.00R.

Lindauer Dormier Gesellschaft mbH: See—
Gehring, Fritz, 4,641,688, Cl. 139-450.000.

Lindner, Daniel J., to Goodyear Tire & Rubber Company, The. Tread for a pneumatic tire. 4,641,695, Cl. 152-209.00A.

Link, Charles M., II: See—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.

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- Look, Raymond J.: See—
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- Lopresti, William J. Bearing-less positive displacement flowmeter. 4,641,522, Cl. 73-261.000.
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- Losel, Walter, to U.S. Philips Corporation. Circuit arrangement for feeding the regulation and control device of a regulated direct voltage converter. 4,642,746, Cl. 363-49.000.
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- Louis, Raymond, to Gaz de France. Process for preheating a combustible gas by means of combustion gases and preheating device associated with a burner for carrying out the said process. 4,642,049, Cl. 432-223.000.
- Loveless, Frederick C., to Uniroyal Chemical Company, Inc. Catalytic poly alpha-olefin process. 4,642,410, Cl. 585-524.000.
- Lowe, James H. C., to Degussa Electronics Inc. Continuous casting method and ingot produced thereby. 4,641,704, Cl. 164-474.000.
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- Lowry, John D.; and Lucas, Keith, to Scientific Atlanta, Inc. Method and apparatus for creating encrypted and decrypted television signals. 4,642,688, Cl. 380-11.000.
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- Loy, Fernand R., to U.S. Philips Corporation. Semiactive night viewing system. 4,642,452, Cl. 250-213.000.
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- Majewski, Donna M.; and Morganson, Stephen A., to Economics Laboratory, Inc. Treatment of fabrics in machine dryers using treating means containing fabric treating composition having resistance to change in viscosity and release rate with temperature change. 4,642,258, Cl. 428-68.000.
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- Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Automobile route information display. 4,642,776, Cl. 364-449.000.
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Meister, Siegfried. Apparatus for the steam treatment of foods. 4,641,630, Cl. 126-20.000.
Meller, Moshe. Illuminated dental drill. 4,642,738, Cl. 362-119.000.
Melvin, Lawrence S., Jr.: See—
Eggle, James F.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,642,373, Cl. 560-139.000.
Memorex Corporation: See—
El-Sadi, Ashraf I., 4,642,541, Cl. 318-616.000.
Menchetti, Robert J., to Donn Incorporated. Utility module for walls and the like. 4,642,418, Cl. 174-48.000.
Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, to Schott Glaswerke. Optical glass with refractive indexes of 1.60-1.69 and Abbe numbers of at least 54 with particularly low density and particularly good chemical stability. 4,642,297, Cl. 501-78.000.
Menor, George, to Siemens Medical Laboratories, Inc. Filter adjustment system for use in electronic accelerators and the like. 4,642,572, Cl. 328-228.000.
Mercer, Garry C.: See—
Giles, Dale J.; and Mercer, Garry C., 4,641,699, Cl. 157-1.170.
Merck & Co., Inc.: See—
Baldwin, John J.; and Ponticello, Gerald S., 4,642,311, Cl. 514-316.000.
Mercury Machine Company: See—
Petrenchik, John R., 4,641,702, Cl. 164-137.000.
Merki, Hubert, to Zumbach Electronic AG. Method and apparatus for checking the wall thickness of a layer. 4,641,525, Cl. 73-432.100.
Merrill, George O., to Cooper Industries, Inc. Lifting clamp cam wear indicator and method. 4,641,877, Cl. 294-101.000.
Mesa, Jesus G., to Progreso, S.A. Parking space blocking device. 4,641,459, Cl. 49-35.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: See—
Haas, Jan T.; and Hadwin, Robin-Leslie, 4,641,678, Cl. 137-15.100.
Herbig, Henning; Heinze, Horst; Drachenberg, Franz; and Pontopidan, Knud, 4,642,652, Cl. 343-915.000.
Mitsching, Rainer; and Nennstiel, Heinz, 4,641,510, Cl. 72-53.000.
Mestdagh, Gilbert E.; and Aldenhoven, Ghislans M. A. M., to U.S. Philips Corporation. Latching storage case for a holder containing an information carrier. 4,641,747, Cl. 206-309.000.
Mester, Zoltan C.; and Aitken, Edward J., to Union Oil Company of California. Process for reducing sulfur oxide emissions from catalytic cracking units. 4,642,177, Cl. 208-113.000.
Metalquimia, S.A.: See—
Corominas, Narciso L., 4,641,691, Cl. 141-73.000.
Metcalfe, Jeffrey D.: See—
Gillingham, Gary D.; and Metcalfe, Jeffrey D., 4,641,737, Cl. 192-141.000.
Mettler, Karl, to Etablissement Supervis. Crankshaft assembly for small gasoline motors. 4,641,546, Cl. 74-598.000.
Metz, Bruce E., to Athena Controls Inc. Heat station for a heat sealing system. 4,641,482, Cl. 53-388.000.
Metzger, James J., Jr.: See—
Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., 4,641,557, Cl. 83-71.000.
Meulen, Antonius M., to Stork Screens B.V. Method and apparatus for the manufacture of a screen roller. 4,641,411, Cl. 29-424.000.
Meyer, Adolf J.: See—
Guthling, Klaus; Meyer, Adolf J.; and Miethe, Manfred, 4,641,576, Cl. 101-415.100.
Meyers, George N., Jr. Motor vehicle headlight indicator. 4,642,737, Cl. 362-61.000.

Meyman, Usher. Automatic transmission utilizing gyroscopic satellite gears. 4,641,550, Cl. 74-751.000.
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Marshall, Michael S.; and Ingham, Vernon R., 4,642,007, Cl. 410-78.000.
Michalke, Klaus A., to Chrysler Motors Corporation. Windshield wiper extension mechanism. 4,641,390, Cl. 15-250.230.
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Indolin-2-one derivatives preparation thereof and intermediates for the preparation thereof. 4,642,309, Cl. 514-269.000.
Micromanipulator Microscope Co., Inc.: See—
Podvin, T. Charles; and Porter, Gene A., 4,641,930, Cl. 350-529.000.
Microtel Limited: See—
Fast, Raymond D.; and Murray, Brian A., 4,642,576, Cl. 331-1.00R.
Miethe, Manfred: See—
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Mikami, Takeshi: See—
Kakimi, Fujio; and Mikami, Takeshi, 4,642,281, Cl. 430-138.000.
Mildrum, Claude M.: See—
Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., 4,642,216, Cl. 376-327.000.
Miller, Ira, to Motorola, Inc. Current to voltage converter circuit. 4,642,551, Cl. 323-314.000.
Miller, Jon E.: See—
Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., 4,642,502, Cl. 310-156.000.
Miller, Luitpold; and Raschbichler, Hans-Georg, to Thyssen Industrie AG. Magnetic suspension railway. 4,641,586, Cl. 104-284.000.
Miller, Matthew S.: See—
Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.
Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., to Dow Corning Corporation. Method and apparatus for edge contouring lenses. 4,642,439, Cl. 219-121.0LN.
Milligan, James H., to Megabit Communications, Inc. Enhanced distance data transmission system. 4,642,629, Cl. 340-825.000.
Milton Bradley Company: See—
Hughes, David C., 4,641,831, Cl. 272-31.00R.
Milton Bradley International, Inc.: See—
Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., 4,642,710, Cl. 360-79.000.
Miltope Corporation: See—
Ende, Don S., 4,642,715, Cl. 360-97.000.
Minami, Kazuo; and Awano, Mitsuru, to Tokyo Institute of Technology. Microwave pulse source. 4,642,571, Cl. 328-59.000.
Minisci, Francesco: See—
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Ministry of Agriculture, Forestry and Fisheries: See—
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Minnesota Mining and Manufacturing Company: See—
Cavanagh, Michael J., 4,642,157, Cl. 156-468.000.
Gebeke, Charles D.; and Weavers, Mark W., 4,642,722, Cl. 360-132.000.
Minolta Camera Kabushiki Kaisha: See—
Shibuya, Kouji; and Imazeki, Chiharu, 4,642,656, Cl. 346-76.0PH.
Takeda, Katsuhiko; and Sugiyama, Masamichi, 4,641,957, Cl. 355-58.000.
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,278, Cl. 430-66.000.
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,279, Cl. 430-66.000.
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Minoura, Kazuo: See—
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Minshull, John F.; and Pinnell, Martin C., to International Business Machines Corporation. Presentation space management and viewpointing on a multifunction virtual terminal. 4,642,790, Cl. 364-900.000.
Miro Roig, Pedro: See—
Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, 4,642,288, Cl. 435-99.000.
Miron, William L., to Computerized Security Systems, Inc. Recentering for shafts of locks and other mechanisms. 4,641,868, Cl. 292-336.300.
Misawa, Rokuro: See—
Ishiwatari, Takeo; Sasaki, Yasuchiyu; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
Misco, Peter F., Jr.: See—
Kim, Choung U.; and Misco, Peter F., Jr., 4,642,341, Cl. 540-350.000.
Missel GmbH & Co.: See—
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Mita Industrial Co., Ltd.: See—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, to Nippon Kogaku K. K. Apparatus for measuring optical characteristics of optical systems. 4,641,964, Cl. 356-124.000.
Mitchell, Emile. Magnetic driven motor. 4,642,534, Cl. 318-138.000.

Mithui, Syuzi: See—
Okimoto, Haruo; Mithui, Syuzi; and Ebino, Hiroshi, 4,641,619, Cl. 123-479.000.
Mitsching, Rainer; and Nennstiel, Heinz, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Electromagnetically operated peening tool. 4,641,510, Cl. 72-53.000.
Mitsubishi Denki Kabushiki Kaisha: See—
Furumura, Takashi; and Ohba, Takeo, 4,642,544, Cl. 318-696.000.
Mori, Teiji; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.
Sako, Yuji, 4,642,597, Cl. 337-82.000.
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Ueda, Akinori; and Okamoto, Kouichi, 4,642,503, Cl. 310-214.000.
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Mitsubishi Kinzoku Kabushiki Kaisha: See—
Yoshimura, Hironori, 4,642,003, Cl. 408-144.000.
Mitsubishi Paper Mills, Ltd.: See—
Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, 4,642,662, Cl. 346-215.000.
Mitsubishi Pencil Co., Ltd.: See—
Ohmori, Hirofumi, 4,642,102, Cl. 604-210.000.
Mitsubishi Petrochemical Co., Ltd.: See—
Nojiri, Naohiro; and Sakai, Yukio, 4,642,360, Cl. 549-534.000.
Mitsubishi Rayon Company, Ltd.: See—
Masuzawa, Tokihiko; Kageyama, Yoshitaka; and Tomita, Norizou, 4,642,736, Cl. 362-31.000.
Mitsubishi Belting Ltd.: See—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.
Mitsui Petrochemical Industries, Ltd.: See—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.
Miyaki, Masahiko; and Egami, Tsuneyuki, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method and apparatus for controlling an engine. 4,642,773, Cl. 364-431.050.
Miyamoto, Junichi; and Iizuka, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Floating gate type EEPROM with a substrate region used for the control gate. 4,642,673, Cl. 357-23.500.
Miyamoto, Ritsu, to Victor Company of Japan, Ltd. Tape cassette loading and ejecting device in a magnetic recording and/or reproducing apparatus. 4,642,714, Cl. 360-96.500.
Miyashiro, Shigeyoshi; Kida, Takao; Shio, Tsuyoshi; and Shibai, Hiroshiro, to Ajinomoto Co., Inc. Anthracene compounds bound to hydrophilic polypeptides. 4,642,335, Cl. 530-409.000.
Miyashita, Norio; and Nemoto, Akira, to Honda Giken Kogyo Kabushiki Kaisha; and Tachikawa Spring Co. Ltd. Seat for vehicles. 4,641,884, Cl. 297-284.000.
Miyata, Kenji: See—
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.
Miyata, Masanori; Komiyama, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, to Canon Kabushiki Kaisha. Apparatus for forming an image on one side of a record medium and in another mode to form images on both sides thereof. 4,641,954, Cl. 355-14.00R.
Miyata, Shigeo; Iizima, Noriko; and Manabe, Tadashi, to Kyowa Chemical Industry Co. Ltd. Method for purification of the cooling water used in nuclear reactors. 4,642,193, Cl. 210-682.000.
Miyata, Teruo: See—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.
Miyazaki, Koichiro: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
Miyazaki, Yoshihiko; Goto, Taizan; Komiyama, Yoshizo; and Iwata, Kotei, to Toshiba Kikai Kabushiki Kaisha. Epitaxial growing apparatus. 4,641,603, Cl. 118-724.000.
Miyoshi, Tadayoshi: See—
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Mizuno, Takeshi: See—
Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, 4,642,500, Cl. 310-90.500.
Mizusawa, Kenichi: See—
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Mobay Corporation: See—
Jackman, Dennis E., 4,642,385, Cl. 568-393.000.
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Adams, Priscilla L.; and Farcasiu, Malvina, 4,642,176, Cl. 208-111.000.
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Vayocsk, Ernest W., 4,642,226, Cl. 423-328.000.
Dessau, Ralph M.; and Kerr, George T., 4,642,407, Cl. 585-640.000.
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Shihabi, David S., 4,642,404, Cl. 585-415.000.
Wallace, James P., 4,642,460, Cl. 250-256.000.
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Mochizuki, Ken: See—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujiwara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, to Dynamit Nobel Aktiengesellschaft. Process for the production of dimethyl terephthalate from p-xylene and methanol. 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, to Dynamit Nobel Aktiengesellschaft. Process for producing terephthalic acid from p-xylene and methanol by way of dimethyl terephthalate. 4,642,377, Cl. 562-483.000.
Moffatt, Michael; LePage, James; and Englar, Gerald, to EML Environmental Simulations Inc. Portable panoramic theatre. 4,641,918, Cl. 350-125.000.
Mohri, Katsuo: See—
Furuhata, Takashi; Mohri, Katsuo; and Konishi, Katsuo, 4,642,708, Cl. 360-77.000.
Mok, Walter Y. W., to MCM Laboratories, Inc. Probe-and-fire lasers. 4,641,650, Cl. 128-303.100.
Moldowan, Mervin J. Composition and method for ethanol determination. 4,642,286, Cl. 435-25.000.
Molecular Genetics Research and Development Limited Partnership: See—
Hibberd, Kenneth A.; Anderson, Paul C.; and Barker, Melanie, 4,642,411, Cl. 800-1.000.
Moll, Eberhard; Lardon, Marcel; and Muller, Edgar, to Balzers Aktiengesellschaft. Tube having strain-hardened inside coating. 4,641,450, Cl. 42-76.020.
Mondini, Giancarlo; Hefti, Walter; and Kaufmann, Siegfried, to Maschinenfabrik Rieter AG. Drafting mechanism for spinning machines. 4,641,397, Cl. 19-258.000.
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Hoberman, Barry A., 4,642,797, Cl. 365-221.000.
Monsanto Company: See—
Walker, George E., 4,642,254, Cl. 428-36.000.
Montorsi, Roberto: See—
Debarbieri, Franco; Montorsi, Roberto; and Zaramella, Giancarlo, 4,642,752, Cl. 364-167.000.
Moore, David E., to Cryoblast, Inc. Nozzle for cryogenic cleaning apparatus. 4,641,786, Cl. 239-590.000.
Moore, John S.: See—
Powers, Maston L.; Dodson, Christopher J.; Moore, John S.; and Ghassemi, Farhad, 4,641,709, Cl. 166-252.000.
Moore, Kevin W.; and Zaffaroni, Alejandro, to DNAX Research Institute of Molecular and Cellular Biology, Inc. Hybrid DNA prepared binding composition. 4,642,334, Cl. 530-388.000.
Moore, Stanley E.: See—
Hunter, Douglas L.; and Moore, Stanley E., 4,642,395, Cl. 568-883.000.
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., to Intevap, S.A. Catalyst for removing sulfur and metal contaminants from heavy crudes and residues. 4,642,179, Cl. 208-217.000.
Moreland, Jack, to MPC Containment Systems, Ltd. Airtight, watertight mechanical seam for joining panels of industrial strength fabrics. 4,641,400, Cl. 24-389.000.
Moren, Nils F. E.: See—
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.
Morganson, Stephen A.: See—
Majewski, Donna M.; and Morganson, Stephen A., 4,642,258, Cl. 428-68.000.
Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, to Hitachi, Ltd. Electric rotary machine having superconducting rotor. 4,642,495, Cl. 310-52.000.
Mori, Teiji; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Switch. 4,642,429, Cl. 200-144.00R.
Morille, Robert; and Saroul, Jacques, to Crouzet. Device for controlling continuity of printed circuits. 4,642,560, Cl. 324-73.0PC.
Morino, Ronald; and Conti, Joseph A., to Kollmorgen Technologies Corp. Ultrasonic stylus position stabilizer. 4,641,773, Cl. 228-1.100.
Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, to Nippondenso Co., Ltd. Electronic ignition device for interval combustion engines. 4,641,626, Cl. 123-620.000.
Morita, Atsuo: See—
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Morita, Haruyuki; Yoshinari, Jiro; and Fukuda, Kazumasa, to TDK Corporation. Magnetic recording medium. 4,642,270, Cl. 428-621.000.
Morita, Kousaku: See—
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.
Morita, Shigetoshi; Ashizawa, Masaaki; and Yamada, Hirohide, to Hitachi Metals, Ltd. Magnetic head assembly. 4,642,719, Cl. 360-126.000.
Morohashi, Kazuo: See—
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, 4,641,964, Cl. 356-124.000.

Morris, George E.: See—
Lucy, Andrew R.; and Morris, George E., 4,642,374, Cl. 560-204.000.

Morrisroe, John J., Jr. System and method for leveling a converted motor home. 4,641,843, Cl. 280-6.00R.

Mors: See—
Marie, Jean-Pierre E., 4,641,739, Cl. 194-253.000.

Mort, Edgar A., to Inter-Lock Steel Company, Inc. Combination connector plate and tail truss. 4,641,480, Cl. 52-693.000.

Mortier, Frederic; and Vidal, Jean L., to BP Chimie Societe Anonyme. Copolymerization of ethylene and an alpha-olefin having 6 carbon atoms in a fluidized bed. 4,642,328, Cl. 526-125.000.

Morton, Thomas M. Portable HF antenna. 4,642,650, Cl. 343-745.000.

Moscardini, Robert L., to Combustion Engineering, Inc. Compactor enhancement system. 4,641,789, Cl. 241-31.000.

Moss, Gerald. Gastrointestinal aspirating device with suction breakers. 4,642,092, Cl. 604-43.000.

Motola, Patrick D.: See—
Clements, Silous F.; Motola, Patrick D.; and Swift, Shirley F., 4,642,792, Cl. 364-900.000.

Motorola Computer Systems, Inc.: See—
Lavelle, Michael G., 4,642,789, Cl. 364-900.000.

Lavelle, Michael G.; Goldsmith, Claude A.; and Kingsbury, Allin D., 4,642,794, Cl. 364-900.000.

Motorola, Inc.: See—
Arvanitis, Aristotelis S., 4,642,505, Cl. 310-312.000.

Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., 4,642,511, Cl. 310-348.000.

Comroe, Richard A.; and Petrie, Adeline F., 4,642,807, Cl. 371-31.000.

Dunkerton, Stephen H.; Reynolds, Gary R.; Chapman, Scott G.; and Erickson, Gary D., 4,642,633, Cl. 340-825.760.

Gasparaitis, Bernard V.; and Richardson, C. Patrick, 4,641,925, Cl. 350-345.000.

Jobling, David T.; and Newton, Anthony D., 4,642,531, Cl. 315-371.000.

Lombardi, Steven A.; and Potter, David O., 4,642,479, Cl. 307-141.000.

McCarthy, Timothy D.; Christians, Scott T.; and Olmstead, A. Dale, 4,642,787, Cl. 364-561.000.

Miller, Ira, 4,642,551, Cl. 323-314.000.

Uurtamo, Stephen J., 4,642,642, Cl. 343-165.000.

Mottola, Michael J.: See—
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Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, to Canon Kabushiki Kaisha. Recording medium. 4,642,247, Cl. 427-214.000.

Mowill, R. Jan, to A/S Kongsberg Vapenfabrikk. Dual entry radial turbine gas generator. 4,641,495, Cl. 60-39.161.

Mowry, Harry E.; and Hawkes, Richard B., to Harris Graphics Corporation. Collator with moveable stitcher over saddle conveyor system. 4,641,825, Cl. 270-53.000.

MPC Containment Systems, Ltd.: See—
Moreland, Jack, 4,641,400, Cl. 24-389.000.

MTU Motoren-und Turbinen-Union Muenchen GmbH: See—
Popp, Joachim, 4,642,027, Cl. 415-177.000.

Mueller, Fritz; and Pienta, Lothar, to Gebrueder Mueller Apparatebau GmbH & Co. KG. Pressure measuring apparatus. 4,641,533, Cl. 73-706.000.

Mueller, Sieghard: See—
Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.

Mullane, William E.; and Lund, David, to Taylor-Winfield Corporation. The Battery intercell connection by induction heating. 4,642,442, Cl. 219-10.410.

Mullani, Nizar A., to Clayton Foundation for Research. Positron emission tomography camera. 4,642,464, Cl. 250-363.00S.

Muller, Alexander: See—
Boyd, John H., Jr.; and Muller, Alexander, 4,642,536, Cl. 318-254.000.

Muller, Anneliese, Silvia Muller, Werner J. Muller, heirs: See—
Wehner, Wolfgang; Muller, Horst, deceased; and Schneider, Rainer, 4,642,322, Cl. 524-191.000.

Muller, Edgar: See—
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Muller, Erich; Gunter, Ruhle; and Stocker, Wilhelm, to Getrag Getriebe-und Zahnradfabrik GmbH. Synchronizing mechanism for clutches. 4,641,734, Cl. 192-53.00F.

Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, to Electrolux S.a.r.l. Apparatus for cooking and/or for heating of air. 4,641,629, Cl. 126-6.000.

Muller, Helmut, to J. M. Voith GmbH. Multiple stage gearbox shiftable under load. 4,641,549, Cl. 74-732.000.

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Munchbach, George E.: See—
Walton, Richard R.; and Munchbach, George E., 4,641,827, Cl. 271-18.300.

Mundus, Friedhelm; and Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for stacking flat articles. 4,642,013, Cl. 414-73.000.

Murai, Toshiharu: See—
Ito, Tadashi; Jinnai, Koichiro; Koike, Takahisa; Murai, Toshiharu; Fukazawa, Takao; and Ishima, Kazumi, 4,642,653, Cl. 346-1.100.

Murakami, Jyoji; and Yamada, Kenji, to Fujitsu Limited. Integration type analog-to-digital converter having continuously charging and discharging functions. 4,642,609, Cl. 340-347.0AD.

Murakami, Kanji: See—
Akaoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsui; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

Murakami, Takashi: See—
Ohta, Takahiro; Inuiya, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, 4,642,700, Cl. 358-285.000.

Murakami, Terukiyo, to Nissan Motor Company, Limited. Apparatus for throttle valve control. 4,641,622, Cl. 123-479.000.

Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, to Hitachi, Ltd. Photo-electronic conversion apparatus with light pattern discriminator. 4,642,412, Cl. 136-244.000.

Muranaka, Takeshi: See—
Kohyama, Masaki; Muranaka, Takeshi; Fukui, Kunisuke; and Kashiwa, Norio, 4,642,269, Cl. 428-516.000.

Murata, Katsuaki: See—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, 4,642,549, Cl. 323-210.000.

Murata Kikai Kabushiki Kaisha: See—
Fukunaga, Mitsuo, 4,641,493, Cl. 57-296.000.

Murata Manufacturing Co., Ltd.: See—
Kobayashi, Yoshio, 4,642,591, Cl. 333-227.000.

Murata, Mitsuhiro, to Citizen Watch Co., Ltd. Color liquid crystal display apparatus with improved display color mixing. 4,642,628, Cl. 340-784.000.

Murata, Shiro: See—
Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyouki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.

Murata, Taneo, to Alps Electric Co., Ltd. Pushbutton switch with aural confirmation of operation. 4,642,433, Cl. 200-308.000.

Murayama, Seiichi: See—
Matsuno, Hiromitsu; Murayama, Seiichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.

Murner, Ulf, to Voith Turbo GmbH & Co. KG. Valve arrangement for controlling the flow of mediums. 4,641,683, Cl. 137-487.500.

Murphy, John W.: See—
Carpenter, Keith H.; Miller, Jon E.; and Murphy, John W., 4,642,502, Cl. 310-156.000.

Murphy, Richard W. Extruder screw for minimizing the opposing pressure flow. 4,642,041, Cl. 425-208.000.

Murray, Brian A.: See—
Fast, Raymond D.; and Murray, Brian A., 4,642,576, Cl. 331-1.00R.

Murtha, Eugene A.; Johnson-Williams, Mark B.; Madison, Theodore N.; and Cartabiano, Michael C., to Milton Bradley International, Inc. Animated display controlled by an audio device. 4,642,710, Cl. 360-79.000.

Musselmann, Walter; and Konecsny, Helmut, to J. M. Voith GmbH. System for wastepaper processing using a wash filter. 4,641,790, Cl. 241-46.170.

Musser, Glenn A.: See—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.

Musser, John H.: See—
Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., 4,642,347, Cl. 546-181.000.

N.J. Phillips Pty. Limited: See—
Phillips, Ian R.; Lodge, Robert H.; and Bunyan, Glen W., 4,642,099, Cl. 604-136.000.

N P S P "Desintegrator": See—
Cermanov, Atanas S.; Kazarov, Ljubomir R.; Valev, Marco S.; Jelyazcov, Jelyazco C.; and Kolev, Rusy C., 4,641,791, Cl. 241-66.000.

Nagae, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, to Hitachi, Ltd. Liquid crystal device. 4,641,924, Cl. 350-339.00R.

Nagai, Michiko: See—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

Nagano, Fumikazu, to Sharp Kabushiki Kaisha. Color image reading apparatus. 4,642,679, Cl. 358-75.000.

Nagano, Jun; and Tanaka, Shuichi, to Bridgestone Corporation. System for measuring amount of rubber bank between rolls. 4,642,686, Cl. 358-107.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,642,072, Cl. 474-82.000.

Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, to Kabushiki Kaisha Toshiba. Image building apparatus. 4,642,659, Cl. 346-76.0PH.

Nagashima, Satoshi, to Sakae Ringyo Co., Ltd. Multiple sprocket wheel. 4,642,075, Cl. 474-160.000.

Nagashima, Yoichi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,641,563, Cl. 84-1.010.

Nagayasu, Isao: See—
Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, 4,642,260, Cl. 428-215.000.

Nagel, Dietmar: See—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Avi, 4,642,066, Cl. 446-420.000.

Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, to Takeda Chemical Industries, Ltd. Method for production of 1,3,2-dioxaphospholes. 4,642,365, Cl. 558-83.000.

Nakadai, Shigeru; and Tamada, Teruo, to Tokc, Inc. Miniaturized transformer. 4,642,596, Cl. 336-98.000.

Nakagaki, Shintaro: See—
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.

Nakagawa, Yasuo: See—
Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, 4,641,527, Cl. 73-582.000.

Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, to Canon Kabushiki Kaisha. Method of and device for preventing disturbance of unfixed visible image. 4,641,948, Cl. 355-3.0SH.

Nakajima Dokosho Company Limited: See—
Nakajima, Masahiko, 4,641,632, Cl. 126-413.000.

Nakajima, Masahiko, to Nakajima Dokosho Company Limited. Heating iron using liquefied gas. 4,641,632, Cl. 126-413.000.

Nakajima, Masayoshi: See—
Mashimo, Satoshi; Kakiuchi, Hajime; and Nakajima, Masayoshi, 4,642,082, Cl. 474-260.000.

Nakamizo, Takazi: See—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takazi, 4,642,549, Cl. 323-210.000.

Nakamura, Mitsutoshi: See—
Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,278, Cl. 430-66.000.

Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, 4,642,279, Cl. 430-66.000.

Nakamura, Nobuo: See—
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.

Nakamura, Shinichi: See—
Miyata, Masanori; Komiya, Yutaka; Nakamura, Shinichi; Hirose, Masayuki; Adachi, Hideki; and Tomosada, Masahiro, 4,641,954, Cl. 355-14.00R.

Nakamura, Shizuo; Inoue, Makoto; and Tsuda, Yoshiaki, to Otsuka Pharmaceutical Factory, Inc. Proline derivatives. 4,642,355, Cl. 548-533.000.

Nakamura, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Clarifying apparatus. 4,642,186, Cl. 210-257.100.

Nakanishi, Shigeo; Calco, Frank S.; and Searpelli, August R., to United States of America. National Aeronautics and Space Administration. Precision tunable resonant microwave cavity. 4,642,523, Cl. 315-111.810.

Nakanishi, Toru: See—
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.

Nakano, Hidetaka: See—
Kosugi, Motoki; and Nakano, Hidetaka, 4,641,904, Cl. 339-99.00R.

Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, to Anritsu Corporation. Digital wave observation apparatus. 4,642,519, Cl. 315-1.000.

Nalco Chemical Company: See—
Johnson, Donald A., 4,642,194, Cl. 210-699.000.

Nambu, Hiroaki: See—
Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiro, 4,642,486, Cl. 307-463.000.

Namekawa, Koroku, to Aloka Co., Ltd. Ultrasonic blood flow imaging method and apparatus. 4,641,668, Cl. 128-663.000.

Narui, Satoshi: See—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.

Narutomi, Yasuhisa: See—
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.

Nash, Donald R., to Allied Corporation. Ignition module. 4,641,627, Cl. 123-651.000.

National Distillers and Chemical Corporation: See—
Hanes, Ronnie M., 4,642,392, Cl. 568-690.000.

National Mine Service Company: See—
LeBegue, Maurice K.; and Wilson, Henry E., 4,641,888, Cl. 299-64.000.

National Research Institute for Metals: See—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.

National Semiconductor Corporation: See—
Hobrecht, Stephen W., 4,642,579, Cl. 331-111.000.

Skovmand, Timothy J.; and Mottola, Michael J., 4,642,484, Cl. 307-362.000.

Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., 4,642,607, Cl. 340-310.00A.

Wilcox, Milton E., 4,642,489, Cl. 307-514.000.

National Starch and Chemical Corporation: See—
Neigel, Dennis, 4,642,389, Cl. 568-604.000.

Neigel, Dennis, 4,642,390, Cl. 568-604.000.

Nattel, William, to Commander Electrical Materials, Inc. Formed metallic wiring box. 4,642,420, Cl. 174-53.000.

Nauchno-Issledovatel'sky Institut Khimikatov Dlya Polimernykh Materialov: See—
Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov,

Boris N.; Makarova, Evgenia S.; Davitulliani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

NCR Corporation: See—
Gerri, Edward J.; and Eisenhauer, David P., 4,642,634, Cl. 340-870.020.

Packard, Roger E.; and Thomas, Jacob E., 4,642,785, Cl. 364-557.000.

Neal, William D.: See—
Stich, Roger L.; and Neal, William D., 4,641,547, Cl. 74-606.00R.

NEC Corporation: See—
Hirosaki, Botaro; and Kuriyama, Takashi, 4,642,575, Cl. 331-1.00A.

Kitakata, Makoto, 4,642,672, Cl. 357-40.000.

Ohyagi, Takashi; and Ichikawa, Yoshio, 4,642,632, Cl. 340-825.440.

Needham, Robert F., to ACF Industries, Incorporated. Coaxial operating rod and packing seal for top-operated, bottom outlet valve in railway tank car and method of aligning same. 4,641,677, Cl. 137-15.000.

Neely, Judith L., to Polaroid Corporation. Photographic camera with electronic flash having periodically disabled charging apparatus. 4,641,943, Cl. 354-413.000.

Neigel, Dennis, to National Starch and Chemical Corporation. Process for the manufacture of chloroacetaldehyde dialkyl acetals. 4,642,389, Cl. 568-604.000.

Neigel, Dennis, to National Starch and Chemical Corporation. Process for the manufacture of acetals of chloroacetaldehyde. 4,642,390, Cl. 568-604.000.

Nelson, David A., to Rockwell International Corporation. Multichannel DME ranging system. 4,642,639, Cl. 342-47.000.

Nelson, E. Delbert, Jr. Construction bolt holder. 4,641,478, Cl. 52-704.000.

Nemoto, Akira: See—
Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.

Nemoto, Kayoko; and Ohya, Takeshi, to Yokogawa Medical Systems, Limited. Image display system for computerized tomographs. 4,642,621, Cl. 340-721.000.

Nennstiel, Heinz: See—
Mitsching, Rainer; and Nennstiel, Heinz, 4,641,510, Cl. 72-53.000.

Nestler, Volker; and Olsowski, Wolfgang, to H. Maihak AG. Method and apparatus for measurement of the concentration of a component of a mixture. 4,641,973, Cl. 356-418.000.

Nestor, Charles R.: See—
Pavlak, John J.; and Nestor, Charles R., 4,641,911, Cl. 339-276.00T.

Netsch, Robert L.: See—
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.

Neuner, James A.: See—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., 4,642,636, Cl. 340-870.040.

Nevo, Zvi; and Itay, Samuel, to Ramot University Authority for Applied Research and Industrial Development Ltd. Repair of cartilage and bones. 4,642,120, Cl. 623-16.000.

New England Thermoplastics, Inc.: See—
Tayebi, Amad, 4,641,645, Cl. 128-206.190.

New Holland Inc.: See—
Wynn, Edward J.; Musser, Glenn A.; and Halls, Lawrence M., 4,641,490, Cl. 56-10.200.

New Product, Inc.: See—
Stinson, Donald B.; and Orofino, Arthur A., 4,641,715, Cl. 173-129.000.

New York Institute of Technology: See—
Halioua, Maurice; and Srinivasan, Venugopal, 4,641,972, Cl. 356-376.000.

Newton, Anthony D.: See—
Jobling, David T.; and Newton, Anthony D., 4,642,531, Cl. 315-371.000.

NGK Insulators, Ltd.: See—
Ogawa, Yutaka; Yamada, Shunichi; and Hamanaka, Toshiyuki, 4,642,210, Cl. 264-62.000.

Nguyen, Hoc M.; and Chu, George H., to Collagen Corporation. Mechanically sheared collagen implant material and method. 4,642,117, Cl. 623-11.000.

Nguyen, Huong T.: See—
Chan, Tai W.; and Nguyen, Huong T., 4,642,346, Cl. 544-276.000.

Nguyen, Tuan A.: See—
Smith, Eugene F.; and Nguyen, Tuan A., 4,641,761, Cl. 220-66.000.

Nichirei Corporation: See—
Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,641,500, Cl. 62-70.000.

Niekraz, Francis M.; Kasper, Melvin C.; and Bockwinkel, Gerald J., to Ardeo, Inc. Sliding door assembly. 4,641,461, Cl. 49-404.000.

Nigorikawa, Kazunori: See—
Sugimori, Shigeru; and Nigorikawa, Kazunori, 4,642,199, Cl. 252-299.610.

Nil, Walter. Screening system including a screen cleaning means for and a method of cleaning a screen in a waste water purification plant. 4,642,195, Cl. 210-798.000.

Ninomiya, Takanori: See—
Hiroi, Takashi; Ninomiya, Takanori; and Nakagawa, Yasuo, 4,641,527, Cl. 73-582.000.

Nippon Ball Valve Co., Ltd.: See—
Ikematsu, Morio; and Hiranuma, Hiromichi, 4,641,681, Cl. 137-315.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Okamoto, Shimaji, 4,641,564, Cl. 84-1.220.

- Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, 4,641,565, Cl. 84-431.000.
- Nippon Kogaku K. K.: See—
Mitani, Kiyoharu; Morohashi, Kazuo; Yamada, Kenji; Gonda, Tsunemi; and Mizutani, Hideo, 4,641,964, Cl. 356-124.000.
Yamada, Kenji, 4,641,961, Cl. 356-124.000.
- Nippon Kokaku K. K.: See—
Hamanishi, Yoshinari, 4,641,928, Cl. 350-427.000.
- Nippon Kokan Kabushiki Kaisha: See—
Ishiwatari, Takeo; Sasaki, Yasuichi; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
- Nippon Notion Kogyo Co., Ltd.: See—
Oura, Hiroshi, 4,641,741, Cl. 198-493.000.
- Nippon Oil Company, Ltd.: See—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
- Nippon Petrochemicals Company, Ltd.: See—
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, 4,642,730, Cl. 361-315.000.
- Nippon Sheet Glass Co., Ltd.: See—
Funaki, Masaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
- Nippon Shinyaku Co., Ltd.: See—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
- Nippon Soken, Inc.: See—
Matsumoto, Muneaki; and Numata, Koji, 4,642,776, Cl. 364-449.000.
- Miyaki, Masahiko; and Egami, Tsuneyuki, 4,642,773, Cl. 364-431.050.
- Nippon Telegraph & Telephone Public Corporation: See—
Ishii, Osamu; Yoshimura, Fumikatsu; and Hatakeyama, Iwao, 4,642,245, Cl. 427-47.000.
- Nippon Zeon Co., Ltd.: See—
Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, 4,642,324, Cl. 524-559.000.
- Nippondenso Co., Ltd.: See—
Miyaki, Masahiko; and Egami, Tsuneyuki, 4,642,773, Cl. 364-431.050.
- Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, 4,641,626, Cl. 123-620.000.
- Shibata, Masahiro, 4,642,174, Cl. 204-408.000.
- Nishida, Hiroshi: See—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
- Nishimu Electronics Industries Co., Ltd.: See—
Harada, Kosuke; Murata, Katsuaki; and Nakamizo, Takashi, 4,642,549, Cl. 323-210.000.
- Nishimura, Minoru: See—
Hattori, Torao; Nishimura, Minoru; and Goto, Masaki, 4,642,077, Cl. 474-201.000.
- Nishiura, Yozo: See—
Nishiwaki, Yoshikazu; and Nishiura, Yozo, 4,641,913, Cl. 350-96.110.
- Nishiwaki, Yoshikazu; and Nishiura, Yozo, to Sumitomo Electric Industries, Ltd. Optical integrated circuit utilizing the piezoelectric and photoconductive properties of a substrate, 4,641,913, Cl. 350-96.110.
- Nishiyama, Hiroshi: See—
Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.
- Nishizawa, Tetsuo: See—
Umez, Takao; Ishiguro, Minoru; and Nishizawa, Tetsuo, 4,641,935, Cl. 354-173.110.
- Nissan Motor Company, Limited: See—
Murakami, Terukiyo, 4,641,622, Cl. 123-479.000.
- Okubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,641,890, Cl. 301-37.055.
- Nisshin Flour Milling Co., Ltd.: See—
Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.
- Nissin-High Voltage Co., Ltd.: See—
Yamawaki, Masakatsu; Sakamoto, Isamu; Mizusawa, Kenichi; and Iwamoto, Eiji, 4,642,467, Cl. 250-492.300.
- Nitro Nobel AB: See—
Lande, Goran; and Persson, Bendt, 4,641,775, Cl. 228-2.500.
- Nittan Company, Limited: See—
Suzuki, Takashi, 4,642,615, Cl. 340-630.000.
- Niwa, Koichi: See—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
- Niwa, Takao: See—
Osana, Akinori; and Niwa, Takao, 4,642,068, Cl. 474-11.000.
- Niwa, Toshio; Himeno, Kiyoshi; and Yoshihara, Junji, to Research Association of Synthetic Dyestuffs. Thiazoleazophenylaminoethyl carbonyloxy-C₈-C₁₀-alkyl compounds useful as dyes for polyester fibers, 4,642,339, Cl. 534-650.000.
- Nixdorf Computer AG: See—
Baitz, Guenter; and Dobring, Wilfried, 4,642,449, Cl. 235-22.000.
- NL Industries, Inc.: See—
Malguarnera, Salvatore C., 4,641,535, Cl. 73-861.010.
- Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, to Hitachi, Ltd. Phase locked loop circuit for demodulating suppressed carrier signals, 4,642,573, Cl. 329-50.000.
- Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, to Daikin Industries Ltd. Automatic dishwasher, 4,641,671, Cl. 134-57.00D.
- Noguchi, Akinori, to Director of National Food Research Institute; and Ministry of Agriculture, Forestry and Fisheries. Method for the preparation of textured soybean draft, 4,642,241, Cl. 426-634.000.
- Nohara, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Marine contra-rotating propeller apparatus, 4,642,059, Cl. 440-75.000.
- Noiles, Douglas G., to Joint Medical Products Corporation. Ball and socket bearing for artificial joint, 4,642,123, Cl. 623-22.000.
- Nojiri, Naohiro; and Sakai, Yukio, to Mitsubishi Petrochemical Co., Ltd. Method for producing ethylene oxide, 4,642,360, Cl. 549-534.000.
- Nolte, Albert C., Jr.: See—
Walker, Harold L., 4,642,070, Cl. 474-57.000.
- Nomura, Kazuhiro; and Nomura, Masayuki, to Toyota Jidosha Kabushiki Kaisha. Side door hinge mechanism in motor vehicle, 4,641,881, Cl. 296-202.000.
- Nomura, Masayuki: See—
Nomura, Kazuhiro; and Nomura, Masayuki, 4,641,881, Cl. 296-202.000.
- Nomura, Shunji: See—
Fukushima, Noboru; Yoshino, Hisashi; and Nomura, Shunji, 4,642,136, Cl. 75-234.000.
- Nordqvist, Glenn O.; and Svenson, Lars-Göte, to Telefonaktiebolaget LM Ericsson. Apparatus for increasing the dynamic range in an integrating optoelectric receiver, 4,642,453, Cl. 250-214.00A.
- Norikane, Kiyoshi: See—
Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., 4,641,449, Cl. 42-65.000.
- Normag Corporation: See—
Fox, Steve A., 4,642,040, Cl. 425-204.000.
- North American Philips Consumer Electronics Corp.: See—
Say, Donald L., 4,642,515, Cl. 313-414.000.
- North, Walter L., Jr.; and England, Barry M. Non-surgical embryo transfer device, 4,642,094, Cl. 604-55.000.
- Northern Magnetics, Inc.: See—
Hinds, Walter E., 4,642,539, Cl. 318-439.000.
- Northern Telecom Limited: See—
Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, 4,642,583, Cl. 333-14.000.
- Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.
- Northland Aluminum Products, Inc.: See—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,642,443, Cl. 219-10.55E.
- Northrop Corporation: See—
Poland, David A., 4,641,819, Cl. 269-45.000.
- Northwestern University: See—
Georgopoulos, Panayotis, 4,642,811, Cl. 378-53.000.
- Norton Company: See—
Zador, Eugene; Kaczmarek, Wesley R.; and Ravipati, Sitaramaiah, 4,642,126, Cl. 51-295.000.
- Noth, Myron A., to Square D Company. Mechanically operated pressure switch having solid state components, 4,642,478, Cl. 307-118.000.
- Noofi, Rommel; and Chen, Yih-Wen, to United States of America, Energy. Process for producing chalcogenide semiconductors, 4,642,140, Cl. 148-6.240.
- Numata, Koji: See—
Matsumoto, Muneaki; and Numata, Koji, 4,642,776, Cl. 364-449.000.
- Numata, Shunichi: See—
Nagai, Yoshiharu; Numata, Shunichi; Kinjo, Noriyuki; and Funahata, Katuyuki, 4,641,924, Cl. 350-339.00R.
- Numata, Yoshihiko: See—
Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, 4,642,298, Cl. 501-96.000.
- Nurnberger, George H. Sanitary feces collection device, 4,641,873, Cl. 294-1.400.
- N.V. Raychem S.A.: See—
Vansant, Jan; and Overbergh, Noel M. M., 4,641,402, Cl. 24-703.000.
- Nygren, Donald W.: See—
Jorgensen, Jorgen A.; and Nygren, Donald W., 4,642,443, Cl. 219-10.55E.
- Nyquist, Gary A., to Deere & Company. Cross loop attenuator for hydraulic systems, 4,642,035, Cl. 417-312.000.
- Nyrup, John: See—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
- Jacobsen, Hans E.; Hansen, Henning M.; Nyrup, John; Hansen, Henry; and Lassithiotakis, Konstantin, 4,641,536, Cl. 73-861.120.
- Nyul, Paul; and Hedel, Rudolph H., to RCA Corporation. Electrooptic assembly having an adjustable window, 4,642,513, Cl. 313-110.000.
- O.E.M. Technical Sales, Inc.: See—
Scoboria, Raymond, 4,641,861, Cl. 285-39.000.
- Obara, Naoshi: See—
Oushiden, Hideshi; and Obara, Naoshi, 4,641,953, Cl. 355-14.00R.
- Object Recognition Systems, Inc.: See—
Wilder, Joseph, 4,642,813, Cl. 382-8.000.
- O'Brien, Judy K.: See—
Friend, Beverly A.; Gierhart, Dennis L.; and O'Brien, Judy K., 4,642,236, Cl. 426-44.000.
- O'Brien, Terrence X.; and McKennie, Dale E. Concrete grade crossing system, 4,641,779, Cl. 238-7.000.

- Oce-Nederland B. V.: See—
Rongen, Josephus W.; and van Cooten, Robertus, 4,641,950, Cl. 355-3.00R.
- Ocean Technology, Inc.: See—
Carpenter, John C., 4,642,533, Cl. 315-408.000.
- O'Connell, Harold, Sr. Smoke filtering material, 4,641,666, Cl. 131-341.000.
- Oda, Noriyuki: See—
Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujihara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
- Odachi, Kazuyuki: See—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
- Odorisio, Paul: See—
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
- Oesterle, Hermann: See—
Klein, Hans-Christof; Armonier, Ulrich; Oesterle, Hermann; and Jendroska, Juergen, 4,641,519, Cl. 73-129.000.
- Oestreich, Ulrich; and Mayr, Ernst, to Siemens Aktiengesellschaft. Optical transmission element, 4,641,916, Cl. 350-96.230.
- Office National d'Etudes et de Recherches Aérospatiales: See—
Bretaud, Francis; and Sarazin, Marc, 4,642,469, Cl. 250-561.000.
- Ropars, Marcel; and Bloch, Bertrand, 4,642,264, Cl. 428-367.000.
- Ogatsu, Motohiro, to Marutamaya Ogatsu Fireworks Co., Ltd. Circuit apparatus for operating fireworks ignition, 4,641,580, Cl. 102-217.000.
- Ogawa, Hiromi: See—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,642,148, Cl. 156-89.000.
- Ogawa, Noriaki: See—
Asagi, Yasuyoshi; Ogawa, Noriaki; Kasai, Hitoshi; Hattori, Toshihiro; and Uruharu, Makoto, 4,642,771, Cl. 364-424.100.
- Ogawa, Yutaka; Yamada, Shunichi; and Hamanaka, Toshiyuki, to NGK Insulators, Ltd. Rotary cordierite heat regenerator highly gas-tight and method of producing the same, 4,642,210, Cl. 264-62.000.
- Ohara, Shuichi: See—
Sugawara, Toru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, 4,642,601, Cl. 338-35.000.
- Ohashi, Ryutaro: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
- Ohba, Takeo: See—
Furumura, Takashi; and Ohba, Takeo, 4,642,544, Cl. 318-696.000.
- Ohi, Michio, to Dainippon Screen Mfg. Co., Ltd. Method of scanning and recording images, 4,642,699, Cl. 358-280.000.
- Ohio Agricultural Research and Development Center, The: See—
Palmquist, Donald L.; and Jenkins, Thomas C., 4,642,317, Cl. 514-558.000.
- Ohio State University, The: See—
Hoitink, Harry A. J., 4,642,131, Cl. 71-6.000.
- Ohira, Tatsuo: See—
Kobayashi, Toshiaki; Arakawa, Hiromichi; and Ohira, Tatsuo, 4,642,324, Cl. 524-559.000.
- Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, to Victor Company of Japan, Ltd. Helical scan type recording and/or reproducing apparatus, 4,642,713, Cl. 360-85.000.
- Ohkubo, Tsuyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Rear door structure for motor vehicles, 4,641,880, Cl. 296-154.000.
- Ohkuma, Osamu: See—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mitsuhiro, 4,641,980, Cl. 400-120.000.
- Ohkura, Kosuke: See—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
- Ohman, Lena: See—
Johansson, Elov; and Ohman, Lena, 4,642,305, Cl. 514-182.000.
- Ohmori, Hirofumi, to Mitsubishi Pencil Co., Ltd. Injector, 4,642,102, Cl. 604-210.000.
- Ohno, Satoru: See—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.
- Ohno, Shigeru: See—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,642,277, Cl. 430-57.000.
- Ohnuki, Yukihiko: See—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,642,277, Cl. 430-57.000.
- Ohta, Takahiro; Inui, Masafumi; Kobayashi, Kazuyoshi; and Murakami, Takashi, to Fuji Photo Film Co., Ltd. Method of and apparatus for producing video signal associated with photographic image, 4,642,700, Cl. 358-285.000.
- Ohtani, Noboru: See—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
- Ohtsu, Keiichi: See—
Futamura, Kenichi; Ohtsu, Keiichi; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.
- Ohtsuka, Kazutoshi: See—
Masuda, Tatsuo; Enokimoto, Akito; and Ohtsuka, Kazutoshi, 4,641,854, Cl. 280-701.000.
- Ohya, Takeshi: See—
Nemoto, Kayoko; and Ohya, Takeshi, 4,642,621, Cl. 340-721.000.
- Ohyagi, Takashi; and Ichikawa, Yoshio, to NEC Corporation. Digital paging system having bit rate switching means and digital paging receiver therefor, 4,642,632, Cl. 340-825.440.
- Okada, Akira: See—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinori, 4,641,951, Cl. 355-7.000.
- Okado, Hiroyuki: See—
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.
- Okamoto, Kouichi: See—
Ueda, Akinori; and Okamoto, Kouichi, 4,642,503, Cl. 310-214.000.
- Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone producing device of waveform memory readout type, 4,641,564, Cl. 84-1.220.
- Okamoto, Tsutomu: See—
Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshio, 4,642,795, Cl. 365-10.000.
- Okamoto, Yoshiyuki; and Vicari, Richard, to Koppers Company, Inc. Process for preparing 1,4-dihydroxy, 5,8-dihydronaphthalene and related compounds, 4,642,393, Cl. 568-734.000.
- Okano, Haruo: See—
Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, 4,642,171, Cl. 204-298.000.
- Okano, Kiichiro: See—
Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.
- Okimoto, Haruo; Mithul, Syuzi; and Ebino, Hiroshi, to Mazda Motor Corporation. Fuel injection control in supercharged engine, 4,641,619, Cl. 123-479.000.
- Okubo, Takashi: See—
Aoyagi, Yoshiaki; Okubo, Takashi; Tomita, Toshio; Nishida, Hiroshi; and Enomoto, Hiroshi, 4,642,307, Cl. 514-252.000.
- Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, to Tokyo Juki Industrial Co., Ltd. Printer paper feeding apparatus, 4,641,830, Cl. 271-274.000.
- Okuda, Shinya: See—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mitsuhiro, 4,641,980, Cl. 400-120.000.
- Okuyama, Hideo: See—
Uda, Masahiro; Ohno, Satoru; and Okuyama, Hideo, 4,642,207, Cl. 264-10.000.
- Old, Lloyd J.: See—
Cairncross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
- Olger, Glenn E. Pin driving tool, 4,641,412, Cl. 29-426.500.
- Olin Corporation: See—
Ashok, Sankaranarayanan; and Breedis, John F., 4,642,146, Cl. 148-414.000.
- Oliver, Jim; and Watson, Pat, to United States of America, Navy. Projectile stowage rack, 4,641,755, Cl. 211-60.100.
- Olmstead, A. Dale: See—
McCarthy, Timothy D.; Christians, Scott T.; and Olmstead, A. Dale, 4,642,787, Cl. 364-561.000.
- Olowski, Wolfgang: See—
Nestler, Volker; and Olowski, Wolfgang, 4,641,973, Cl. 356-418.000.
- Olsson, Billy E., to AMP Incorporated. Shielded electrical connector, 4,641,906, Cl. 339-143.00R.
- Olympus Optical Co., Ltd.: See—
Yabe, Hisao, 4,641,635, Cl. 128-6.000.
- Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, 4,642,711, Cl. 360-84.000.
- O'Meara, Thomas R., to Hughes Aircraft Company. Nonlinear delay line encoding/decoding arrangements, 4,642,582, Cl. 332-7.510.
- Omika, Hiroyoshi: See—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
- Omori, Takuro: See—
Yanagiuchi, Shigenobu; and Omori, Takuro, 4,642,761, Cl. 364-200.000.
- O'Neill, Brian C.: See—
Beumer, Karl W.; Gaston, Charles A.; Locke, Charles H.; Mack, Alfred; O'Neill, Brian C.; Pinckney, Warren J.; and Wilson, Alan D., 4,642,438, Cl. 219-121.00L.
- Ono, Haruo: See—
Fuse, Takahiro; Kawamura, Masao; Yamagishi, Koji; Odachi, Kazuyuki; Ono, Haruo; and Kizaki, Masaharu, 4,642,693, Cl. 358-236.000.
- Ono, Tetsuo: See—
Matsumoto, Hiromitsu; Murayama, Seichi; and Ono, Tetsuo, 4,642,512, Cl. 313-25.000.
- Onystok, Michael J.: See—
Chason, Marc K.; Tomase, Joseph P.; and Onystok, Michael J., 4,642,511, Cl. 310-348.000.
- Okubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, to Nissan Motor Company, Ltd.; and Hashimoto Forming Kogyo Co., Ltd. Wheel cover for a vehicle, 4,641,890, Cl. 301-37.055.

- Ootani, Tsuyoshi: See—
Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, 4,642,720, Cl. 360-126.000.
- Orofino, Arthur A.: See—
Stinson, Donald B.; and Orofino, Arthur A., 4,641,715, Cl. 173-129.000.
- Orr, William L.; Doshi, Pratap K.; Mildrum, Claude M.; and Freeman, Thomas R., to Westinghouse Electric Corp. Control rod cluster arrangement, 4,642,216, Cl. 376-327.000.
- Orsburn, Michael L.; Hemsley, Robert L.; and Bacon, James I., to VTA Technologies, Inc. Phase responsive composite video signal control system, 4,642,682, Cl. 358-80.000.
- Osakabe, Nobuyuki: See—
Endo, Junji; Tonomura, Akira; Ozasa, Susumu; Matsuda, Tsuyoshi; Kimura, Chikara; and Osakabe, Nobuyuki, 4,642,461, Cl. 250-311.000.
- Osana, Akinori; and Niwa, Takao, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling continuously variable transmission, 4,642,068, Cl. 474-11.000.
- Oshima, Akio: See—
Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, 4,642,325, Cl. 525-65.000.
- Oshima, Yujiro: See—
Aoyama, Taro; and Oshima, Yujiro, 4,641,617, Cl. 123-262.000.
- Osthoff, Senge GmbH & Co. KG: See—
Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, 4,641,403, Cl. 26-3.000.
- Osthoff, Walter; Hohenester, Otmar; and Gessner, Anton, to Osthoff Senge GmbH & Co. KG. Machine for flame processing of textile fabric webs, 4,641,403, Cl. 26-3.000.
- Oswald, Heinz: See—
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, 4,641,793, Cl. 242-18.0PW.
- Otsuka Pharmaceutical Factory, Inc.: See—
Nakamura, Shizuo; Inoue, Makoto; and Tsuda, Yoshiaki, 4,642,355, Cl. 548-533.000.
- Otsuki, Yutaka; Omika, Hiroyoshi; Oshima, Akio; Araki, Yoshihiko; and Tsuchiya, Yasuyuki, to Nippon Oil Company, Ltd. Cathode-depositing electrodeposition coating composition, 4,642,325, Cl. 525-65.000.
- Ott, Vernon D. Adjustable vibration dampening motor mount for motorcycles, 4,641,810, Cl. 248-635.000.
- Oura, Hiroshi, to Nippon Notion Kogyo Co., Ltd. Parts supplying apparatus for button assembling and setting machines, 4,641,741, Cl. 198-493.000.
- Oushiden, Hideshi; and Obara, Naoshi, to Kabushiki Kaisha Toshiba. Image forming apparatus, 4,641,953, Cl. 355-14.00R.
- Outboard Marine Corporation: See—
Dogadko, Peter; and Enlow, David, 4,641,618, Cl. 123-335.000.
- Ferguson, Arthur R., 4,641,615, Cl. 123-196.0AB.
- Sullivan, Donald K., 4,642,058, Cl. 440-61.000.
- Outokumpu Oy: See—
Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., 4,642,133, Cl. 75-2.000.
- Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Yuri M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davitiliani, Valentin V.; and Zaitseva, Svetlana I., to Nauchno-Issledovatel'skiy Institut Khimikatsv Dlya Polimerov. Process for producing phthalimides of alkali metals, 4,642,354, Cl. 548-473.000.
- Overbergh, Noel M. M.: See—
Vansant, Jan; and Overbergh, Noel M. M., 4,641,402, Cl. 24-703.000.
- Overhead Conveyor Company: See—
Harrington, Earl J., 4,641,583, Cl. 104-172.100.
- Overy, Colin, to Black & Decker Inc. Power device housing with lubricant anti-wicking facility, 4,641,762, Cl. 220-81.00R.
- Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Power generating optical filter, 4,642,413, Cl. 136-249.000.
- Owens, Joe M. User-mounted concrete screed, 4,641,995, Cl. 404-118.000.
- Oxley Developments Company Limited: See—
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- Oy Parck Ab: See—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.
- Oy Wartsila Ab: See—
Hanhikoski, Hannu; Kalliola, Lauri; and Malkia, Hannu, 4,642,164, Cl. 162-207.000.
- Huisma, Camiel, 4,641,392, Cl. 15-302.000.
- Ozasa, Susumu: See—
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- Packard, Roger E.; and Thomas, Jacob E., to NCR Corporation. Cordless electronic thermometer, 4,642,785, Cl. 364-557.000.
- Padilla, Rigoberto. Ambulatory brace assembly, 4,641,639, Cl. 128-83.500.
- Palffy, Janos. Holder for hamburgers and the like, 4,641,752, Cl. 206-583.000.
- Palmquist, Donald L.; and Jenkins, Thomas C., to Ohio Agricultural Research and Development Center. The. Process for feeding ruminant animals and composition for use therein, 4,642,317, Cl. 514-558.000.
- PanCanadian Petroleum Limited: See—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
- Paper Converting Machine Company: See—
Bradley, John J.; and Hansen, Debra K., 4,642,109, Cl. 604-385.00Z.
- Papuga, Donald M.: See—
Matzner, Markus; and Papuga, Donald M., 4,642,327, Cl. 525-434.000.
- Pares Olivet, Eulalia: See—
Elia De Miguel, Maria-Fe; Miro Roig, Pedro; and Pares Olivet, Eulalia, 4,642,288, Cl. 435-99.000.
- Parker, Lanny L., to Codex Corporation. CMOS input buffer accepting TTL level inputs, 4,642,488, Cl. 307-475.000.
- Pasar, Inc.: See—
Pecukonis, Joseph P., 4,642,556, Cl. 324-67.000.
- Pascaloff, John H., to Hall Surgical, division of Zimmer, Inc. Apparatus for translating rotational motion and torque, 4,641,551, Cl. 74-785.000.
- Pascarella, Vincent J.: See—
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., 4,642,242, Cl. 427-2.000.
- Pastor, Stephen D.: See—
Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, 4,642,382, Cl. 568-12.000.
- Pastva, John V., to Eastern Company, The. Closure control mechanism, 4,641,865, Cl. 292-3.000.
- Patroni, Anthony F., to Boardwalk Regency Corporation, a part interest. Rod joint, 4,641,992, Cl. 403-382.000.
- Pattison, Thomas W.: See—
Kreft, Anthony F., III; Pattison, Thomas W.; and Musser, John H., 4,642,347, Cl. 546-181.000.
- Paul, James E.: See—
Fucito, Dermot T.; Paul, James E.; and Markovic, Milan, 4,642,583, Cl. 333-14.000.
- Paulsson, Bengt: See—
Andersson, Karl G., deceased; and Paulsson, Bengt, 4,641,464, Cl. 52-16.000.
- Pavlak, John J.; and Nestor, Charles R., to General Motors Corporation. Electrical connector having a funnel wrap wire crimp barrel, 4,641,911, Cl. 339-276.00T.
- Pavlov, Todor: See—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
- Paxton, Harold G. Tow apparatus and method of installation, 4,641,597, Cl. 114-253.000.
- Peabody Noise Control, Inc.: See—
Fearon, William W.; and Macy, Arnel M., 4,641,726, Cl. 181-292.000.
- Pecen, Jiri, to Tencor Instruments. Particle position correlator and correlation method for a surface scanner, 4,641,967, Cl. 356-237.000.
- Peck, Peter F.: See—
Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., 4,642,687, Cl. 358-110.000.
- Peck, Wilbur M., Jr.: See—
Wallace, Stanley J.; Jedlicka, Josef E.; and Peck, Wilbur M., Jr., 4,641,949, Cl. 355-3.05H.
- Pecukonis, Joseph P., to Pasar, Inc. Tracing electrical conductors by high-frequency constant-energy-content pulse loading, 4,642,556, Cl. 324-67.000.
- Pedersen, Allan S.: See—
Hansen, Henning M.; Jacobsen, Hans E.; Hansen, Henry; Lassithiotakis, Konstantin; Pedersen, Allan S.; and Nyrup, John, 4,641,537, Cl. 73-861.120.
- Peffley, Richard D.: See—
Turner, Robert B.; Peffley, Richard D.; and Vanderhider, James A., 4,642,320, Cl. 521-176.000.
- Penn, Cecil W., to Sperry Corporation. Apparatus and method for measuring linewidth and convergence in a color cathode ray tube display system, 4,642,529, Cl. 315-368.000.
- Pennington, Edward J., to General Motors Corporation. Laser welding of galvanized steel, 4,642,446, Cl. 219-121.0LD.
- Pennwalt Corporation: See—
De Stefanis, Vincent A.; Erickson, Robert W.; and Ranum, Peter M., 4,642,237, Cl. 426-64.000.
- Pepsi Co, Inc.: See—
Rakuciewicz, John J., 4,641,693, Cl. 141-98.000.
- Perny, Didier, to Thomson-CSF. Visual display process for sonars, 4,642,801, Cl. 367-88.000.
- Perry, Robert D. Sexual erection prosthesis and method of use, 4,641,638, Cl. 128-79.000.
- Person, Stanley. Immunologically reactive non-glycosylated amino acid chains of glycoprotein B of herpes virus types 1 and 2, 4,642,333, Cl. 530-350.000.
- Personick, Stewart D., to Bell Communications Research, Inc. Shared laser lightwave transmission systems, 4,642,804, Cl. 370-3.000.
- Persson, Bendt: See—
Lande, Goran; and Persson, Bendt, 4,641,775, Cl. 228-2.500.
- Pestcon Systems, Inc.: See—
Gunn, Lawrence H., 4,641,573, Cl. 99-482.000.
- Peters, David; Denick, John, Jr.; and Talwar, Anil K., to Warner-Lambert Company. Magnesium trisilicate suitable for preparation of medicament adsorbates of antihistamines, 4,642,231, Cl. 424-15.000.
- Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., to Simmons Universal Corporation. Armboard rail, 4,641,385, Cl. 5-82.00R.
- Petersen, Christian C.; and Wettstein, Ernst C., to Polaroid Corporation. Method of comminuting rare earth powder for producing rare earth magnet, 4,641,787, Cl. 241-5.000.

- Peterson, Francis C.: See—
Blucher, William J.; Ernst, Richard J.; and Peterson, Francis C., 4,642,012, Cl. 411-371.000.
- Peterson, Nils A. L., to 501 Brio AB. Toy railway vehicle set with constricted opening recess in hub, 4,641,878, Cl. 295-49.000.
- Petheram, John C., to RCA Corporation. Slab active lasing medium, 4,642,809, Cl. 372-66.000.
- Petrenchik, John R., to Mercury Machine Company. Method and mold for molding investment casting patterns of irregular shape, 4,641,702, Cl. 164-137.000.
- Petrie, Adeline F.: See—
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- Petritis, Demetris: See—
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- Petro-Canada Inc.: See—
Al-Saigh, Abbas, 4,642,223, Cl. 422-191.000.
- Petrofsky, Jerrold S., to Wright State University. Method and apparatus for providing stimulated exercise of paralyzed limbs, 4,642,769, Cl. 364-415.000.
- Petsch, Heinrich: See—
Prescher, Guenter; Grand, Andreas; Petsch, Heinrich; and Boehme, Georg, 4,642,387, Cl. 568-446.000.
- Peuralinna, Mauri J.: See—
Makinen, Juho K.; Peuralinna, Mauri J.; and Aaltonen, Olavi A., 4,642,133, Cl. 75-2.000.
- Peytavin, Pierre, to Vallourec. Cold rolling process for tubes, by means of a Pilger rolling mill and the rolling mill for its execution, 4,641,513, Cl. 72-214.000.
- Pfister, Gustav: See—
Guttinger, Hannes; and Pfister, Gustav, 4,642,471, Cl. 250-574.000.
- Pfizer Inc.: See—
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- Plume, Steven H.: See—
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- Poland, David A., to Northrop Corporation. Flexible assembly jig, 4,641,819, Cl. 269-45.000.
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- Popelka, Frank E. Hay bale wrapping machine, 4,641,484, Cl. 53-399.000.
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- Position Orientation Systems, Ltd.: See—
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- Potwora, William E.: See—
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Rogers, Noel A. Automatic sensitivity adjustment and audio muting for aircraft marker beacon receiver. 4,642,646, Cl. 342-407.000.

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Rogers, Richard B.; and Gerwick, B. Clifford, III, to Dow Chemical Company, The. Fluorophenoxypheoxypropionates and derivatives thereof. 4,642,338, Cl. 534-558.000.

Roggwiller, Peter; and Sittig, Roland, to BBC Brown, Boveri & Company Limited. Semiconductor device having a blocking capability in only one direction. 4,642,669, Cl. 357-52.000.

Rogier, Edgar R., to Henkel Corporation. High molecular weight products. 4,642,391, Cl. 568-624.000.

Rogner, Ludwig, to Siemens Aktiengesellschaft. High-frequency seal for casing coverings and doors. 4,642,416, Cl. 174-35.0GC.

Rohde, Kenneth A. Tree felling, log cutting and splitting machine. 4,641,694, Cl. 144-3.00K.

Rohr Industries, Inc.: See—
Rethwish, William F.; and Schneider, Samuel, 4,642,436, Cl. 219-78.110.

Rohrer, Edwin H., to Westinghouse Electric Corp. Apparatus for adjustably mounting ultrasonic testing devices. 4,641,532, Cl. 73-637.000.

Rohsler, Ivor C.; and Clark, Anthony F. C., to Lucas Industries Public Limited Company. Semi-conductor assembly. 4,642,671, Cl. 357-79.000.

Rojkind, Marcos: See—
Reid, Lola C. M.; and Rojkind, Marcos, 4,642,292, Cl. 435-240.000.

Rolls-Royce plc: See—
Woodward, Clifford S., 4,641,782, Cl. 239-265.290.

Rolm Corporation: See—
Dumas, Gregory P.; and Sutterlin, Philip H., 4,642,805, Cl. 370-58.000.

Rongen, Josephus W.; and van Cooten, Robertus, to Océ-Nederland B. V. Exposure system. 4,641,950, Cl. 355-3.00R.

Rooney, Allen J., III: See—
Illuzzi, Vincent A.; Kutzavitch, Walter G.; and Rooney, Allen J., III, 4,642,550, Cl. 323-222.000.

Rooney, John M.: See—
Harris, Stephen J.; Woods, John G.; and Rooney, John M., 4,642,362, Cl. 556-419.000.

Root, John P.: See—
Blevins, Gerald G.; Johnson, Fred, Jr.; Lentz, Frank R.; and Root, John P., 4,641,407, Cl. 29-237.000.

Ropars, Marcel; and Bloch, Bertrand, to Societe Nationale des Poudres et Explosifs; and Office National d'Etudes et de Recherches Aerospatiales. Thermoset polymers and prepolymers with rapid curing, obtained by polycondensation of pyridine derivatives and aromatic dialdehydes and adding of phenolic compounds. 4,642,264, Cl. 428-367.000.

Rosa, Daniele S. A. Posterior chamber intraocular lens. 4,642,114, Cl. 623-6.000.

Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, to Sanofi; and Institut National de la Sante et de la Recherche Medicale. Cyclic dithiodiacetamides and compositions containing them. 4,642,306, Cl. 514-222.000.

Rosen, Arye: See—
Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., 4,641,649, Cl. 128-303.100.

Rosen, Gerald M. Traction device. 4,641,637, Cl. 128-75.000.

Rosen, Perry: See—
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,642,364, Cl. 556-438.000.

Rosendale, John V., to Robotic Systems, Inc. Circulating latch transport mechanism for overhead cranes. 4,641,757, Cl. 212-205.000.

Ross, Bruce A., to Combustion Engineering, Inc. Method of and apparatus for detecting erosion. 4,642,557, Cl. 324-71.200.

Ross, David S.: See—
Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., 4,642,396, Cl. 568-934.000.

Rossi, Frank R. Novelty display device. 4,641,445, Cl. 40-410.000.

Roth, Emil: See—
Thalmann, Alfred; Lehmann, Ernesto; Roth, Emil; and Gerber, Walter, 4,642,154, Cl. 156-272.200.

Roth, Robert B. Frame retaining clip. 4,641,441, Cl. 40-156.000.

Rotorcafe AG: See—
Varga, Franz, 4,641,572, Cl. 99-286.000.

Rotta Research Laboratorium S.p.A.: See—
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, 4,642,340, Cl. 536-55.200.

Roussel, Christian M.: See—
Rajoharison, Harivelo G.; and Roussel, Christian M., 4,642,359, Cl. 549-356.000.

Roussel, Gerard: See—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,308, Cl. 514-253.000.

Roussel Uclaf: See—
Marel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,642,372, Cl. 560-124.000.
Rousset, Philippe: See—
Arnaudeau, Marcel; and Rousset, Philippe, 4,641,679, Cl. 137-88.000.
Roux, Marius, to Societe Anonyme: SABLA. Gasket incorporating implants for interfitting pipes. 4,641,858, Cl. 285-94.000.
Rovati, Luigi: See—
Senin, Paolo; Makovec, Francesco; and Rovati, Luigi, 4,642,340, Cl. 536-55.200.
Rowe, Ronnie R.: See—
Batchelor, Ronnie K.; and Rowe, Ronnie R., 4,641,509, Cl. 70-388.000.
Roxor Corporation: See—
Blom, C. James, 4,641,933, Cl. 350-613.000.
Rozelle, Bradley J.: See—
Martin, Robert H.; Rozelle, Bradley J.; and Breier, Thomas J., 4,641,804, Cl. 248-205.100.
Rozmus, John J. Tooling for manufacture of electrical contacts. 4,641,514, Cl. 72-400.000.
Rozmus, John J. Electrical contacts. 4,641,910, Cl. 339-221.00R.
Rubin, Mae K.: See—
Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Vaylonsik, Ernest W., 4,642,226, Cl. 423-328.000.
RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: See—
Speich, Herrn H., 4,641,875, Cl. 294-82.110.
Rudelick, John, to Universal-Rundle Corporation. Axially symmetric valve assembly. 4,641,685, Cl. 137-625.310.
Rudnick, Leslie R., to Mobil Oil Corporation. Process for upgrading heavy petroleum feedstock. 4,642,175, Cl. 208-88.000.
Rudolph, Gert: See—
Schmekel, Gerald; and Rudolph, Gert, 4,641,667, Cl. 131-352.000.
Ruff, Gary F.: See—
Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., 4,641,703, Cl. 164-255.000.
Ruff, John D. Centrifugal compressor with adjustable diffuser. 4,642,026, Cl. 415-150.000.
Rumbaugh, James T.: See—
McMickle, Robert L.; Rumbaugh, James T.; and Netsch, Robert L., 4,641,860, Cl. 285-38.000.
Runkel, Walter; Lenk, Erich; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Yarn heating chamber. 4,641,504, Cl. 68-5.00E.
Ruoff-Schafer, Rudolf, to Missel GmbH & Co. Insulating material for pipes. 4,642,253, Cl. 428-36.000.
Russ, David E., to Sundstrand Corporation. Motion transmitting and timing mechanism. 4,641,544, Cl. 74-435.000.
Russell, Stephen W.: See—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.
Ruta, Joseph W., to S&C Electric Company. Trip signal generator for a circuit interrupter. 4,642,724, Cl. 361-96.000.
Rutan, Elbert L. Tandem or multi-winged high performance aircraft. 4,641,800, Cl. 244-218.000.
Ruth, Bruce M. Weight lifting bench with adjustable bench sections. 4,641,837, Cl. 272-123.000.
Ruthrof, Klaus; Korner, Rudolf; and Dörner, Jürgen, to Kraftwerk Union Aktiengesellschaft. Concentric three-conductor cable. 4,642,417, Cl. 174-36.000.
Rutschmann, Erwin, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Air intake system of a multicylinder internal combustion engine. 4,641,610, Cl. 123-52.00V.
Ruttimann, August, to Hoffmann-La Roche Inc. Alpha-tocopherol intermediates. 4,642,361, Cl. 549-546.000.
Rumpol, Geurt J., to Inductive Control Systems B.V. Contactless electric control-handle. 4,642,595, Cl. 336-135.000.
Rydz, Leon. Chain turbine system. 4,642,022, Cl. 415-5.000.
S&C Electric Company: See—
Ruta, Joseph W., 4,642,724, Cl. 361-96.000.
S & H Computer Systems, Inc.: See—
Sherrrod, Phillip H., 4,642,756, Cl. 364-200.000.
Saad, Saad M., to Andrew Corporation. Superelliptical waveguide connection. 4,642,585, Cl. 333-21.00R.
Saariaho, Jorma: See—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimäki, Yrjö, 4,641,466, Cl. 52-171.000.
Saarinen, Kari, to Lannen Tehtaat Oy. Framing system. 4,642,014, Cl. 414-96.000.
Sadakane, Koji: See—
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.
Safe-T-Jack: See—
Arzouman, Harry H., 4,641,813, Cl. 254-8.00B.
Safe-Test, Inc.: See—
Alexander, William B.; and Frenger, Paul, 4,642,783, Cl. 364-551.000.
Safran, Frank: See—
Lemmers, Robert E.; Safran, Frank; and Brussee, Warren T., 4,641,966, Cl. 356-237.000.
St. Michel, André, to Domtar Inc. Wood substrate having good flame resistance. 4,642,268, Cl. 428-453.000.
St. Vincent Medical Center: See—
Bondy, Daniel A.; East, Judith A.; and Rizzo, Christina M., 4,641,387, Cl. 5-508.000.

Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, to Kabushiki Kaisha Toshiba. Pulse combustor. 4,642,046, Cl. 431-354.000.
Saito, Morikuni: See—
Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru. Photoconductive member having light receiving layer of A-Ge/A-Si and C. 4,642,277, Cl. 430-57.000.
Sakae Ringyo Co., Ltd.: See—
Nagashima, Satoshi, 4,642,075, Cl. 474-160.000.
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Focus detecting system. 4,641,942, Cl. 354-406.000.
Sakai, Yukio: See—
Nojiri, Naohiro; and Sakai, Yukio, 4,642,360, Cl. 549-534.000.
Sakaki, Mamoru: See—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuchi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Sakamoto, Isamu: See—
Yamawaki, Masakatsu; Sakamoto, Isamu; Mizusawa, Kenichi; and Iwamoto, Eiji, 4,642,467, Cl. 250-492.300.
Sakamoto, Izumi; and Takagi, Kunihiko, to Unitika Ltd. Urethral catheter capable of preventing urinary tract infection and process for producing the same. 4,642,104, Cl. 604-264.000.
Sakamoto, Izumi; and Takagi, Kunihiko, to Unitika Ltd. Injector filled with an anti-cancer composition. 4,642,111, Cl. 604-890.000.
Sakamoto, Katsuji: See—
Yamazaki, Takashi; and Sakamoto, Katsuji, 4,641,794, Cl. 242-47.010.
Sakamoto, Tsutomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Microinstruction controlled arithmetic control unit. 4,642,757, Cl. 364-200.000.
Sakarya, Dursun, to RCA Corporation. Television signal input filter. 4,642,691, Cl. 358-188.000.
Sakiyama, Kazuo: See—
Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
Sako, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Overcurrent relay. 4,642,597, Cl. 337-82.000.
Sako, Yuji: See—
Mori, Teijiyo; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,179, Cl. 200-144.00R.
Salamon, Klaus: See—
Gummelt, Klaus; Schulz, Jürgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.
Salazar, Jose A.: See—
Morales, Alfredo L.; Galiasso, Roberto; Carrasquel, Angel R.; and Salazar, Jose A., 4,642,179, Cl. 208-217.000.
Salterman, Steven S. Hemodynamic monitoring trainer. 4,642,055, Cl. 434-268.000.
Salje, Ernst; and Plester, Jörg, to Salje, Ernst. Disc-shaped tool. 4,641,561, Cl. 83-835.000.
Salzburg, Herbert: See—
Hajek, Manfred; Salzburg, Herbert; and Ziemann, Heinz, 4,642,344, Cl. 544-196.000.
Sameshima, Mutsuro: See—
Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, 4,641,620, Cl. 123-432.000.
Samson, Wilfred J.; and Frisbie, Jeffrey S., to Advanced Cardiovascular Systems, Inc. Steerable balloon dilatation catheter assembly having dye injection and pressure measurement capabilities. 4,641,654, Cl. 128-344.000.
Sancier, Kenneth M.: See—
Sanjurjo, Angel; and Sancier, Kenneth M., 4,642,228, Cl. 423-350.000.
Sanden Corporation: See—
Terauchi, Kiyoshi, 4,642,034, Cl. 417-295.000.
Sandin, Nils H. Planting system. 4,641,457, Cl. 47-9.000.
Sanjurjo, Angel; and Sancier, Kenneth M. Fluxing system for reactors for production of silicon. 4,642,228, Cl. 423-350.000.
Sanofi: See—
Rosa, Jean; Castaigne, Jean-Paul; Demarne, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.
Santrade Limited: See—
Bengtsson, Ulf A., 4,641,718, Cl. 175-331.000.
Wirfelt, Sven A. O., 4,642,006, Cl. 409-233.000.
Sanyo Electric Co., Ltd.: See—
Doutsubo, Nobuhide, 4,642,704, Cl. 360-10.200.
Tsutsumi, Masaru; Hagino, Hideo; Fujiwara, Osamu; and Goto, Hitoshi, 4,642,274, Cl. 429-35.000.
Sapitowicz, Thomas P.: See—
Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., 4,642,660, Cl. 346-140.00R.
Sarazin, Marc: See—
Bretaudau, Francis; and Sarazin, Marc, 4,642,469, Cl. 250-561.000.
Sarcos, Inc.: See—
Jacobsen, Stephen C., 4,642,504, Cl. 310-308.000.
Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., to Thetford Corporation. Portable toilet holding tank spout. 4,641,383, Cl. 4-323.000.
Saroul, Jacques: See—
Morille, Robert; and Saroul, Jacques, 4,642,560, Cl. 324-73.00C.

Sasaki, Akira, to Mitsubishi Denki Kabushiki Kaisha. Reformer reaction control apparatus for a fuel cell. 4,642,273, Cl. 429-22.000.
Sasaki, Hitoshi; and Igota, Shoji, to Ajinomoto Co., Inc. Body for a pressure-resistant vessel. 4,642,252, Cl. 428-35.000.
Sasaki, Yasuichiyo: See—
Ishiwatari, Takeo; Sasaki, Yasuichiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
Sato, Atsushi; Endo, Keiji; Kawakami, Shigenobu; Matsuzaka, Eiichi; and Narui, Satoshi, to Nippon Petrochemicals Company, Ltd. Electrical insulating oil and oil-filled electrical appliances. 4,642,730, Cl. 361-315.000.
Sato, Hiroaki: See—
Suzuki, Hitoshi; and Sato, Hiroaki, 4,642,508, Cl. 310-321.000.
Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, to Sumitomo Chemical Company, Limited. Method for selective dealkylation of a dialkylbenzene at the para position thereof. 4,642,409, Cl. 585-486.000.
Sato, Makoto; and Matsuda, Shohei, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic braking pressure control apparatus for vehicles. 4,641,893, Cl. 303-113.000.
Sato, Shigeaki: See—
Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, 4,641,565, Cl. 84-431.000.
Sato, Takane: See—
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Sato, Yoshio, to Kabushiki Kaisha Sato. Label strip. 4,642,256, Cl. 428-42.000.
Sato, Yuichi: See—
Tsunekawa, Tokuchichi; Sato, Yuichi; Kawabata, Takashi; and Matsumura, Susumu, 4,642,451, Cl. 250-201.000.
Sato, Hiroyuki: See—
Ikeda, Masaaki; Takahara, Wataru; Itaguchi, Junichi; Sato, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.
Sato, Masao, to Amada Metreco Company, Limited. Bending tool. 4,641,516, Cl. 72-481.000.
Satonaka, Shinobu: See—
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, 4,642,448, Cl. 219-216.000.
Saur, Roland, to Behr-Thomson Dehnstoffregler GmbH. Control device. 4,642,599, Cl. 337-397.000.
Sauter, Hubert: See—
Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, 4,642,132, Cl. 71-90.000.
Savioja, Heikki: See—
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Sawada, Akihiro, to Brother Kogyo Kabushiki Kaisha. Writing-plotting apparatus with keyboard. 4,642,779, Cl. 364-520.000.
Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control system for continuously variable transmission. 4,642,069, Cl. 474-28.000.
Sawyer, James L.: See—
Heitzmann, Richard F.; Fitzgerald, Mark; and Sawyer, James L., 4,642,137, Cl. 106-85.000.
Say, Donald L., to North American Philips Consumer Electronics Corp. Color cathode ray tube in-line electron gun structure incorporating deep saddle accelerating electrode. 4,642,515, Cl. 313-414.000.
Scala, Luciano C.: See—
Alvino, William M.; Fuller, Timothy J.; Cargnel, Louis A.; and Scala, Luciano C., 4,642,170, Cl. 204-181.400.
Scarpelli, August R.: See—
Nakanishi, Shigeo; Calco, Frank S.; and Scarpelli, August R., 4,642,523, Cl. 315-111.810.
Schacht, Ezra L. Loadcenter "plug-in" surge protector. 4,642,733, Cl. 361-363.000.
Schanzle, Roger E.: See—
Dornbusch, Arthur H.; and Schanzle, Roger E., 4,641,746, Cl. 206-44.00R.
Schauder, Colin D., to Westinghouse Electric Corp. Hidden DC-link AC/AC converter using bilateral power switches. 4,642,751, Cl. 363-159.000.
Schaumann, Wolfgang: See—
Michel, Helmut; Marzenell, Klaus; Kampe, Wolfgang; Bartsch, Wolfgang; and Schaumann, Wolfgang, 4,642,309, Cl. 514-269.000.
Schefer, Kurt: See—
Flueli, Adolf; Oswald, Heinz; and Schefer, Kurt, 4,641,793, Cl. 242-18.00PW.
Scheurer, Robert S.; and Hancock, Kendal, to Scheurer, Robert S. Cam locked slideable foot binder. 4,642,060, Cl. 441-70.000.
Schick, Jean-Francois, to Goro S.A. Device for providing an articulated coupling between two complementary series of belt-fasteners. 4,641,398, Cl. 24-33.00R.
Schimel, Keith A. Systems for the treatment of organic material and particularly sewage sludge. 4,642,187, Cl. 210-255.000.
Schirmer, Ulrich; Plath, Peter; Sauter, Hubert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Aminothiadiazoles and their use for controlling undesirable plant growth. 4,642,132, Cl. 71-90.000.
Schleck, Herman A. Adjustable modular building. 4,641,477, Cl. 52-646.000.
Schlegel, Gary R. Clip for suspended ceiling gridwork. 4,641,987, Cl. 403-169.000.
Schlumberger Technology Corporation: See—
Chow, Edward Y.; and Kleinberg, Robert L., 4,641,724, Cl. 181-104.000.

Schmekel, Gerald; and Rudolph, Gert, to B.A.T. Cigarettenfabriken GmbH. Process of preparing nicotine N'-oxide and smoking products containing it. 4,641,667, Cl. 131-352.000.
Schmid, Eckhardt: See—
Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, 4,641,389, Cl. 15-250.210.
Schmid, Hartmut, to DSL Dynamic Sciences Limited. Railway emergency brake system. 4,641,892, Cl. 303-47.000.
Schmidt, Christopher O.: See—
Iranmanesh, Ali; and Schmidt, Christopher O., 4,641,416, Cl. 29-576.00W.
Schmidt, Richard; and Pizzo, Joseph A., Sr., to Enviro-Spray Systems Incorporated. Container stuffing apparatus and method. 4,641,485, Cl. 53-429.000.
Schmidt, Robert J., to UOP Inc. High severity process for xylene production employing a transalkylation zone for xylene isomerization. 4,642,406, Cl. 585-477.000.
Schnackel, Jay F.; and Zverina, Karel. Semi-transferred arc in a liquid stabilized plasma generator and method for utilizing the same. 4,642,440, Cl. 219-121.00P.
Schneider, Ortwin; and Georgitsis, Nikolaos, to Erweka Apparatebau GmbH. Holding device. 4,641,534, Cl. 73-856.000.
Schneider, Rainer: See—
Wehner, Wolfgang; Muller, Horst, deceased; and Schneider, Rainer, 4,642,322, Cl. 524-191.000.
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Rethwish, William F.; and Schneider, Samuel, 4,642,436, Cl. 219-78.110.
Schnuelle, Kenneth W.: See—
Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., 4,642,607, Cl. 340-310.00A.
Schoenberg, Andrew J.; and Friedrich, Marju L., to Kollmorgen Technologies Corporation. Heat activatable adhesive for wire scribed circuits. 4,642,321, Cl. 523-400.000.
Schoengen, Anton: See—
Modic, Rudolf; Porschen, Jörg; Schoengen, Anton; and Wirges, Ralf, 4,642,369, Cl. 560-77.000.
Modic, Rudolf; Porschen, Jörg; Schoengen, Anton; and Wirges, Ralf, 4,642,377, Cl. 562-483.000.
Scholl, Wolfgang: See—
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Scholten, Werner: See—
Friebe, Karl-Heinz; Heinz, Karl-Otto; and Scholten, Werner, 4,642,030, Cl. 417-203.000.
Schonherr, Andreas, to Siemens Aktiengesellschaft. Method and apparatus for operating a load supplied via an intermediate-link converter, especially an asynchronous machine, in the event of a network disturbance. 4,642,546, Cl. 318-798.000.
Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Field effect semiconductor device having improved voltage breakdown characteristics. 4,642,674, Cl. 357-23.800.
Schott Glaswerke: See—
Mennemann, Karl; and Grabowski geb. Marszalek, Danuta, 4,642,297, Cl. 501-78.000.
Schramm, Matthias: See—
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,642,310, Cl. 514-301.000.
Schrock, Alan: See—
Kirchhoff, Robert A.; Schrock, Alan; and Gilpin, Jo A., 4,642,329, Cl. 526-284.000.
Schubert, Wolf-Dieter: See—
Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.
Schukar, Gary W.: See—
Johnson, Dewey A.; Hamlin, Gregory P.; and Schukar, Gary W., 4,641,555, Cl. 83-29.000.
Schultheiss, Georg; von Minden, Charles; and Fritzsche, Hans W., to GKSS Forschungszentrum Geesthacht GmbH. Method for avoiding or reducing the interactions and their consequences from contact of hot liquid metallic sodium with concrete. 4,642,300, Cl. 501-124.000.
Schultz, Kenneth E.; and Evans, William R., to Schultz, Kenneth E. Endotracheal tube/respirator tubing connecting lock mechanism and method of using same. 4,641,646, Cl. 128-207.140.
Schulz, Jürgen: See—
Gummelt, Klaus; Schulz, Jürgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.
Schumacher, Robert W.: See—
Harvey, Robin J.; Gallagher, Hayden E.; and Schumacher, Robert W., 4,642,522, Cl. 315-111.310.
Schutten, Herman P.: See—
Lade, Robert W.; Benjamin, James A.; and Schutten, Herman P., 4,642,665, Cl. 357-6.000.
Schwalm, Hans-Werner: See—
Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, 4,641,740, Cl. 198-487.100.
Schwanke, Lavern H., to Fosco International Limited. Method and apparatus for microwave determination of liquid rate-of-rise using Doppler detection. 4,642,777, Cl. 364-476.000.
Schwarzkopf, Eugen, to Hotset Heizpatronen und Zubehor GmbH. Device for the electric heating and fluid cooling of an injection-molding machine nozzle. 4,642,043, Cl. 425-547.000.
Schwerdt, Friedrich W.: See—
Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., 4,642,163, Cl. 156-643.000.

Sciaky S.A.: See—
Dard, Philippe, 4,642,518, Cl. 315-1.000.
Scientific Atlanta, Inc.: See—
Lowry, John D.; and Lucas, Keith, 4,642,688, Cl. 380-11.000.
Scoboria, Raymond, to O.E.M. Technical Sales, Inc. Flexible joint for pipes, 4,641,861, Cl. 285-39.000.
Scott, Bentley N., to Texas Instruments Incorporated. Stabilized microwave varactor, 4,642,580, Cl. 331-117.00D.
Scott, Richard P. I.: See—
Hewitt, Michael T. H.; Ballance, John W.; and Scott, Richard P. I., 4,642,806, Cl. 370-95.000.
Scovill Japan Kabushiki Kaisha: See—
Hasegawa, Yoshihiko, 4,641,401, Cl. 24-681.000.
Scripps Clinic and Research Foundation: See—
Cooper, Neil; and Mayes, James T., 4,642,284, Cl. 435-7.000.
Seal, Morton. Side loading boat lifts, 4,641,996, Cl. 405-2.000.
Seaman, Jeffrey M.: See—
Guinn, William H., Jr.; Corbett, Richard M.; Bundy, Robert S.; Seaman, Jeffrey M.; Duncan, Keith B.; and Link, Charles M., II, 4,642,425, Cl. 379-57.000.
Seanor, Donald A., to Xerox Corporation. Extended nip cleaning system, 4,641,956, Cl. 355-15.000.
Sederquist, Richard A., to International Fuel Cells Corporation. Integrated fuel cell and fuel conversion apparatus, 4,642,272, Cl. 429-17.000.
Seibert, Wolfram: See—
Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.
Seiko Seiki Kabushiki Kaisha: See—
Higuchi, Toshiro; Mizuno, Takeshi; and Aikawa, Noboru, 4,642,500, Cl. 310-90.500.
Seino, Mituyoshi: See—
Matsumoto, Norio; Okuda, Shinya; Ohkuma, Osamu; and Seino, Mituyoshi, 4,641,980, Cl. 400-120.000.
Seki, Kazuhisa: See—
Matsuda, Shinichi; and Seki, Kazuhisa, 4,642,717, Cl. 360-105.000.
Seki, Masaki: See—
Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, 4,642,754, Cl. 364-191.000.
Sekiguchi, Kanetaka: See—
Togashi, Seigo; and Sekiguchi, Kanetaka, 4,642,620, Cl. 340-713.000.
Sekine, Makoto; Okano, Haruo; and Horiike, Yasuhiro, to Kabushiki Kaisha Toshiba. Phototreating apparatus, 4,642,171, Cl. 204-298.000.
Sekiya, Hitoshi: See—
Nakatsugawa, Kenji; Katayama, Aiichi; Sekiya, Hitoshi; and Hiratsuka, Shoji, 4,642,519, Cl. 315-1.000.
Semiconductor Energy Laboratory Co., Ltd.: See—
Yamazaki, Shunpei, 4,642,243, Cl. 427-38.000.
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., to Societa' Pneumatici Pirelli S.p.A. Directional tires for automobiles, 4,641,696, Cl. 152-209.00R.
Senn, Paolo; Makovec, Francesco; and Rovati, Luigi, to Rotta Research Laboratories S.p.A. Stable compounds of glucosamine sulphate, 4,642,340, Cl. 536-55.200.
Senn, Herbert: See—
Heiniger, Peter; Masek, Jaroslav; and Senn, Herbert, 4,642,025, Cl. 415-139.000.
Seno, Manabu: See—
Kuroyanagi, Yoshimitsu; Miyata, Teruo; and Seno, Manabu, 4,642,118, Cl. 623-15.000.
Senoh, Hideaki: See—
Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, 4,642,662, Cl. 346-215.000.
Senoh, Makoto: See—
Izumi, Shigeru; Senoh, Makoto; Tsumaki, Koji; and Miyata, Kenji, 4,641,526, Cl. 73-572.000.
Sensormatic Electronics Corporation: See—
Woolsey, Charles W.; Eskandry, Ezra D.; and Pinneo, George G., 4,642,640, Cl. 342-42.000.
Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikkawa, Katsumasa, to Hodogaya Chemical Co., Ltd. 6-tetrahydrofurfurylaminofluoran compound useful as a color former on an heat sensitive recording sheet, 4,642,663, Cl. 346-221.000.
Sepponen, Raimo E. Medical diagnostic microwave scanning apparatus, 4,641,659, Cl. 128-653.000.
Sergienko, Nikolai M., to Kievsky Nauchno-Issledovatel'sky Institut Klinicheskoi I Experimentalnoi Khirurgii. Artificial eye lens, 4,642,115, Cl. 623-6.000.
Servas, Francis M.: See—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
Servend International: See—
Landers, Jerry L.; and Fischer, Gregory E., 4,641,763, Cl. 222-129.100.
Setani, Michitaka: See—
Honda, Haruhisa; Tsuchiya, Hiroaki; Setani, Michitaka; and Tokuhara, Mitsuhiro, 4,641,944, Cl. 355-1.000.
Seydel, Scott O.; Letbetter, William D.; and Cutts, William H. Porous warp sizing apparatus, 4,641,404, Cl. 28-178.000.
Shah, Jitender S., to Johnson & Johnson. Connective tissue prosthesis, 4,642,119, Cl. 623-13.000.
Shahnarian, Albert: See—
Krolikowski, F. John; and Shahnarian, Albert, 4,642,101, Cl. 604-164.000.

Shallenberger, John M.; and Ferlan, Stephen J., to Westinghouse Electric Corp. Reconstituting a nuclear reactor fuel assembly, 4,641,409, Cl. 29-401.100.
Shanklin, James R., Jr., to A. H. Robins Company, Incorporated. N-(aminoalkyl)-1-pyrrolidine, 1-piperidine and 1-homopiperidinecarboxamides (and thiocarboxamides) with sulfur linked substitution in the 2, 3 or 4-positions, 4,642,348, Cl. 546-216.000.
Shapiro, Marshall. Surgical instrument, 4,641,648, Cl. 128-303.00R.
Sharp, Daryl. Internal mass spectrometer interface to a gas chromatograph, 4,641,541, Cl. 73-864.810.
Sharp Kabushiki Kaisha: See—
Nagano, Fumikazu, 4,642,679, Cl. 358-75.000.
Yanagiuchi, Shigenobu; and Omori, Takuro, 4,642,761, Cl. 364-200.000.
Shedgigan, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor, 4,642,731, Cl. 361-319.000.
Sheem, Sang K., to Rockwell International Corporation. Single mode operation with non-single mode optical fiber transmission cable, 4,641,914, Cl. 350-96.150.
Shell Oil Company: See—
Betteridge, Peter R., 4,642,289, Cl. 435-101.000.
Drent, Eit, 4,642,371, Cl. 560-114.000.
Shemtov, Sami. Connector for coupling a conduit to a junction box, 4,641,863, Cl. 285-158.000.
Shepherd, Michael T.: See—
Whitehead, Derek J.; and Shepherd, Michael T., 4,642,230, Cl. 424-15.000.
Sherrrod, Phillip H., to S & H Computer Systems, Inc. Method and apparatus for scheduling the execution of multiple processing tasks in a computer system, 4,642,756, Cl. 364-200.000.
Shiba, Keisuke: See—
Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, 4,642,283, Cl. 430-303.000.
Shibai, Hiroshi: See—
Miyashiro, Shigeyoshi; Kida, Takao; Shio, Tsuyoshi; and Shibai, Hiroshi, 4,642,335, Cl. 530-409.000.
Shibasaki, Hiromi: See—
Mouri, Hidemasa; Tobita, Michiaki; Eto, Naonobu; Kouno, Shunzo; Ohkura, Kosuke; Toganoh, Shigeo; Arai, Ryuichi; Sakaki, Mamoru; Iwata, Kazuo; and Shibasaki, Hiromi, 4,642,247, Cl. 427-214.000.
Shibata, Katsuhiro: See—
Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiro, 4,641,731, Cl. 188-218.00L.
Shibata, Masahiro, to Nippondenso Co., Ltd. Apparatus for determining the oxygen content in gases, 4,642,174, Cl. 204-408.000.
Shibuya, Kouji; and Imazeki, Chiharu, to Minolta Camera Kabushiki Kaisha. Thermal printer, 4,642,656, Cl. 346-76.0PH.
Shibuya, Nobuo: See—
Tabata, Mitsuo; and Shibuya, Nobuo, 4,642,468, Cl. 250-548.000.
Shields, Charles E. Method and apparatus for applying two piece connector blocks to multiconductor cable, 4,641,427, Cl. 29-857.000.
Shigemura, Yutaka; Kimura, Hiroshi; Hisajima, Masahiko; Yada, Isao; Satonaka, Shinobu; and Kaminaga, Seiji, to Mita Industrial Co., Ltd. Electrostatic copying apparatus, 4,642,448, Cl. 219-216.000.
Shihabi, David S., to Mobil Oil Corporation. Conversion of olefins and paraffins to higher hydrocarbons, 4,642,404, Cl. 585-415.000.
Shio, Tsuyoshi: See—
Miyashiro, Shigeyoshi; Kida, Takao; Shio, Tsuyoshi; and Shibai, Hiroshi, 4,642,335, Cl. 530-409.000.
Shiley, Inc.: See—
Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., 4,642,089, Cl. 604-4.000.
Shim-A-Line, Inc.: See—
Spektor, John; and Spektor, Gerald A., 4,641,853, Cl. 280-661.000.
Shimada, Toshikazu: See—
Muramatsu, Shinichi; Shimada, Toshikazu; Matsubara, Sunao; Itoh, Haruo; and Nakamura, Nobuo, 4,642,412, Cl. 136-244.000.
Shimano Industrial Company Limited: See—
Nagano, Masashi, 4,642,072, Cl. 474-82.000.
Shimazaki, Takeshi: See—
Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsui; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.
Shimono, Mamoru: See—
Ishida, Takao; and Shimono, Mamoru, 4,641,947, Cl. 355-3.00R.
Shin Nisso Kako Co., Ltd.: See—
Yahagi, Masakichi; Igaki, Tetsuo; Yoshinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, 4,642,357, Cl. 549-226.000.
Shinkawa, Keiro: See—
Noda, Tsutomu; Shinkawa, Keiro; and Amada, Nobutaka, 4,642,573, Cl. 329-50.000.
Shinnenryoyu Kaihatsugijutsu Kenkyukumiai: See—
Inoi, Takeshi; Akabane, Toshiaki; Kurokawa, Yasuhiro; and Matsuoka, Shingo, 4,642,287, Cl. 435-99.000.
Shinoda, Nobuhiko: See—
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,641,942, Cl. 354-406.000.
Shirasaki, Masataka, to Fujitsu Limited. Polarizing element, 4,641,926, Cl. 350-394.000.
Shirasaki, Yuichi: See—
Asakawa, Kenichi; Shirasaki, Yuichi; and Iwamoto, Yoshinao, 4,641,915, Cl. 350-96.180.

Shirek, Frank A. Rock digging apparatus, 4,641,439, Cl. 37-2.00R.
Shirley, Ralph E., to Deere & Company. Vehicle accessory control system, 4,642,770, Cl. 364-424.000.
Shrier, Robert L.: See—
Roberts, Lyn M.; Shrier, Robert L.; and Laxton, Raymond, 4,642,685, Cl. 358-84.000.
Shudo, Katsuyoshi: See—
Yamamoto, Masatoshi; Kawai, Yasushi; Shudo, Katsuyoshi; Kato, Hiroyuki; and Masuda, Shunsuke, 4,642,437, Cl. 219-84.000.
Sibilo, Gerard: See—
Bard, Max; Sibilo, Gerard; Marelllo, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.
Siemens Aktiengesellschaft: See—
Botvidsson, Lars, 4,641,664, Cl. 128-785.000.
Douklias, Nikolaos; and Grabmaier, Josef, 4,642,129, Cl. 65-3.120.
Fazekas, Peter, 4,642,566, Cl. 324-158.00R.
Fischer, Dietmar; and Kublick, Christian, 4,642,475, Cl. 307-66.000.
Hofmann, Ludwig, 4,642,574, Cl. 329-50.000.
Oestreich, Ulrich; and Mayr, Ernst, 4,641,916, Cl. 350-96.230.
Rogner, Ludwig, 4,642,416, Cl. 174-35.0GC.
Schonherr, Andreas, 4,642,546, Cl. 318-798.000.
Steffinger, Karl, 4,641,908, Cl. 339-206.00R.
Steffinger, Karl, 4,641,909, Cl. 339-210.00M.
Siemens Energy & Automation, Inc.: See—
Volkmar, Ralf R., 4,642,594, Cl. 335-227.000.
Siemens Medical Laboratories, Inc.: See—
Menor, George, 4,642,572, Cl. 328-228.000.
Sigma Design, Inc.: See—
Thomson, Robert, 4,642,780, Cl. 364-512.000.
Signor, Robert G. Line viewer, 4,641,444, Cl. 40-352.000.
Sih, Charles J. Process for preparing a compound for use in the production of L-carnitine, 4,642,290, Cl. 435-128.000.
Sihto, Reijo: See—
Raninen, Jaakko; Savioja, Heikki; Koivula, Antti; Saariaho, Jorma; Sihto, Reijo; and Valimaki, Yrjo, 4,641,466, Cl. 52-171.000.
Sikkenga, David L., to Amoco Corporation. Halided alumina catalyst, 4,642,301, Cl. 502-231.000.
Simkens, Marcellus C. P. L. Device for making ice cubes, 4,641,501, Cl. 62-188.000.
Simmons Universal Corporation: See—
Peters, Gerald; Hayton, Eugene P.; and Failor, Raymond A., 4,641,385, Cl. 5-82.00R.
Simpson, Andrew F.: See—
Hargreaves, Edward; and Simpson, Andrew F., 4,642,130, Cl. 65-60.100.
Sinclair, Stuart W., to Long Reach Manufacturing Co. Tubular slide lift truck attachment, 4,642,020, Cl. 414-621.000.
Sing, Peter. Fastening system, 4,641,433, Cl. 33-137.00R.
Siposs, George G. Left ventricular vacuum control and pressure relief valve, 4,642,097, Cl. 604-119.000.
Sittig, Roland: See—
Roggwiller, Peter; and Sittig, Roland, 4,642,669, Cl. 357-52.000.
Siwon, Hans: See—
Steinel, Heinrich W.; and Siwon, Hans, 4,642,158, Cl. 156-497.000.
Sjlander, Bo A., to JCC Johnson Construction Company AB. Method and equipment for rock drilling, 4,641,716, Cl. 175-62.000.
Skalatsky, Viktor K.: See—
Glushko, Mikhail F.; Skalatsky, Viktor K.; and Zakhryamin, Anatoly D., 4,641,492, Cl. 57-9.000.
Skandiafabriken AB: See—
Andreasson, Jan, 4,641,523, Cl. 73-313.000.
Skates, Raymond E., to Kansas City Rubber and Belting Company. Adjustable skirt holder for conveyor, 4,641,745, Cl. 198-836.000.
Skovmand, Timothy J.; and Mottola, Michael J., to National Semiconductor Corporation. Latching comparator with hysteresis, 4,642,484, Cl. 307-362.000.
Skuthan, Erich, to Karl M. Reich Maschinenfabrik GmbH. Anti-jamming nose plate for driving apparatus for fasteners, 4,641,772, Cl. 227-123.000.
Slater, Jack, to Cano International, N.V. Panel structure and building structure made therefrom, 4,641,468, Cl. 52-309.400.
Slautterback Corporation: See—
Faulkner, W. Harrison, III, 4,641,764, Cl. 222-146.200.
Sloan-Kettering Institute for Cancer Research: See—
Cairneross, J. Gregory; Mattes, M. Jules; Beresford, H. Richard; Albino, Anthony P.; Houghton, Alan N.; Lloyd, Kenneth O.; and Old, Lloyd J., 4,642,291, Cl. 435-240.000.
Slough, Carlton M., to Texaco, Inc. Electrostatic field meter, 4,642,559, Cl. 324-72.000.
Smith, David F.; and Wilson, J. Pierre, to Altus Corporation. Moving piston seal activator, 4,642,275, Cl. 429-52.000.
Smith, David J. H.: See—
Alper, Howard; Smith, David J. H.; and Woell, James B., 4,642,370, Cl. 560-100.000.
Smith, Dennis M., to Hunter Engineering Co., Inc. Casting tip assembly with replaceable upstream and downstream units, 4,641,767, Cl. 222-591.000.
Smith, Eugene F.; and Nguyen, Tuan A., to Ball Corporation. Increased strength for metal beverage closure through reforming, 4,641,761, Cl. 220-66.000.
Smith International, Inc.: See—
Kar, Nareshechandra J., 4,641,976, Cl. 384-95.000.
Smith, J. Harold, to International Fuel Cells Corporation. Apparatus for making composite sheets, 4,642,042, Cl. 425-364.00R.
Smith, James E.: See—
Stiller, Alfred H.; and Smith, James E., 4,641,611, Cl. 123-55.00A.

Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriault, David G., to Westinghouse Electric Corp. Method and apparatus for auto-calibration of signal conditioning electronics, 4,642,636, Cl. 340-870.040.
Smith, Peter R., to Industrial Trade Exchange, Inc. Fuel control system, 4,641,625, Cl. 123-575.000.
Smith, Rodney M.; and Masek, Jiri, to Valmet-Dominion Inc. Calendar self-locking loading mechanism, 4,641,569, Cl. 92-43.000.
Smith, William N., III. Communications apparatus for handicapped individuals, 4,642,610, Cl. 340-365.00S.
Smits, Karel F. A. A., to Medtronic, Inc. Cardioversion and defibrillation lead method, 4,641,656, Cl. 128-419.00D.
Smrt, Thomas J. Spraying apparatus, 4,641,780, Cl. 239-150.000.
SMS Schloemann-Siemag AG: See—
Grothe, Horst, 4,641,785, Cl. 239-597.000.
SMT Machine Company AB: See—
Hallqvist, Ellert, 4,641,413, Cl. 29-568.000.
Smulders, Herman, to Advance Transformer Company. Compact igniter for discharge lamps, 4,642,521, Cl. 315-106.000.
SMW Schneider & Weissaupt GmbH: See—
Hiestand, Karl, 4,641,414, Cl. 29-568.000.
Snaper, Alvin A. Remote meter reading system, 4,642,635, Cl. 379-107.000.
Snellman Wasenius, Kaija A.: See—
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell I. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.
Snook, Matthew L.: See—
Groves, William A.; Snook, Matthew L.; and Brown, Rodney, 4,642,561, Cl. 324-73.00R.
Snyder, Richard H.: See—
Frazzelli, Michael E.; and Snyder, Richard H., 4,642,057, Cl. 440-52.000.
Societa' Cavi Pirelli S.p.A.: See—
Lanfranchi, Gianmario; and Vecellio, Bernardino, 4,642,415, Cl. 174-22.00R.
Societa' Italiana Catene Calibrate Regina S.p.A.: See—
Ancarani Restelli, Amedeo, 4,642,073, Cl. 474-111.000.
Societa' Pneumatici Pirelli S.p.A.: See—
Semin, Fikret; Guermandi, Romano; and Cucco, Gian C., 4,641,696, Cl. 152-209.00R.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: See—
Delesalle, Jacques, 4,641,613, Cl. 123-179.00H.
Societe Anonyme D.B.A.: See—
Kervagoret, Gilbert, 4,641,497, Cl. 60-563.000.
Lombardi, Michel; and Gerard, Jean-Louis, 4,641,730, Cl. 188-73.450.
Societe Anonyme: SABLA: See—
Roux, Marius, 4,641,858, Cl. 285-94.000.
Societe Auxiliaire de Manutention Acceleree de Denrees Alimentaires & Carrosserie Trouillet: See—
Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.
Societe Europeenne des Produits Refractaires: See—
Recasens, Joseph, 4,641,589, Cl. 110-341.000.
Societe Francaise d'Equipements pour la Navigation Aerienne (S.F.E.N.A.): See—
Kerviel, Alain; and Barbarin, Remy, 4,642,496, Cl. 310-68.00B.
Societe Nationale des Poudres et Explosifs: See—
Ropars, Marcel; and Bloch, Bertrand, 4,642,264, Cl. 428-367.000.
Societe Nationale d'Etude et de Construction de Moteur d'Aviation (SNECMA): See—
Camboulives, Andre A. M. L., 4,641,783, Cl. 239-265.390.
Societe Nationale Industrielle Aerospaciale: See—
Matifas, Rene, 4,642,004, Cl. 409-136.000.
Soda, Yutaka: See—
Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104.000.
Sodeno, Toshiaki; Yoshieda, Keiichi; and Honmoto, Syuichi, to Yoshida Kogyo K. K. Apparatus for finishing slide fastener chain with reinforcing strip, 4,641,424, Cl. 29-766.000.
Soeder, Edmund J.: See—
Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.
Soga, Yoshinobu: See—
Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, 4,642,069, Cl. 474-28.000.
Solco Basel AG: See—
Gunter, Mary, 4,642,088, Cl. 604-4.000.
Solomon, Donald D.; McGary, Charles W.; and Pascarella, Vincent J., to Becton, Dickinson and Company. Permanently bonded antithrombogenic polyurethane surface, 4,642,242, Cl. 427-2.000.
Solorzano, Armando N., to Xanar, Inc. Smoke evacuator system with electronic control circuitry, 4,642,128, Cl. 55-217.000.
Solvay & Cie, Societe Anonyme: See—
Goll, Werner, 4,642,249, Cl. 427-388.500.
Someya, Atsushi: See—
Matsuoka, Kazuhiko; Usui, Masayuki; Minoura, Kazuo; Baba, Takeshi; and Someya, Atsushi, 4,641,920, Cl. 350-173.000.
Somlo, Tibor: See—
Davatz, Alexander; and Somlo, Tibor, 4,642,350, Cl. 548-260.000.
Sono-Tek Corporation: See—
Erickson, John J., 4,642,581, Cl. 331-154.000.

Sony Corporation: See—
 Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, 4,642,795, Cl. 365-10.000.
 Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, 4,642,716, Cl. 360-104.000.
 Sorenson, Gary D.: See—
 Janssen, Robert A.; and Sorenson, Gary D., 4,642,246, Cl. 427-127.000.
 Spain, Ian L.: See—
 Goldberg, Harris A.; Kalnin, Ilmar L.; Williams, Clyde C.; and Spain, Ian L., 4,642,664, Cl. 357-2.000.
 Sparer, Steven J.; and Stephenson, Stanley W., to Eastman Kodak Company. Color-indexed dye frames in thermal printers, 4,642,655, Cl. 346-76.0PH.
 Spaulding, Donald M.: See—
 Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., 4,641,876, Cl. 294-86.400.
 Spektor, Gerald A.: See—
 Spektor, John; and Spektor, Gerald A., 4,641,853, Cl. 280-661.000.
 Spektor, John; and Spektor, Gerald A., to Shim-A-Line, Inc. Method and structure for caster and camber adjustment, 4,641,853, Cl. 280-661.000.
 Spector, Donald. Fabrics and garments formed thereby having thermally-sensitive chromatic properties, 4,642,250, Cl. 428-1.000.
 Speich, Herrn H., to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Device for the connection of components and tensioning and/or control devices with belts, 4,641,875, Cl. 294-82.110.
 Sperry Corporation: See—
 Kral, Kevin D.; and Havenhill, Douglas D., 4,642,501, Cl. 310-90.500.
 Penn, Cecil W., 4,642,529, Cl. 315-368.000.
 Swartz, Harold L.; and Heidel, Jeffrey C., 4,642,555, Cl. 324-60.00C.
 Spevak, Lev: See—
 Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, 4,641,529, Cl. 73-601.000.
 Spisak, Anthony F., to Ex-Cell-O Corporation. Conveyor chain adjustment means, 4,641,744, Cl. 198-813.000.
 Spivack, John D.; Pastor, Stephen D.; and Odorisio, Paul, to Ciba-Geigy Corporation. 1H-polyalkyl-phosphorinanes, 4,642,382, Cl. 568-12.000.
 Spock, Wayne R.; and Urbanik, Peter J., to United Technologies Corporation. Control system actuator position synthesis for failure detection, 4,641,517, Cl. 73-116.000.
 Spoganetz, Joseph C.: See—
 Krawchuk, Myron; and Spoganetz, Joseph C., 4,641,774, Cl. 228-2.500.
 Spurlock, Jay B. Closure insert for use in building construction, 4,641,479, Cl. 52-241.000.
 Square D Company: See—
 Noth, Myron A., 4,642,478, Cl. 307-118.000.
 Srinivasan, Venugopal: See—
 Halioua, Maurice; and Srinivasan, Venugopal, 4,641,972, Cl. 356-376.000.
 Staats, James E.: See—
 Fitzmayer, Louis H.; Staats, James E.; and Miller, Matthew S., 4,642,435, Cl. 219-10.55F.
 Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive positive copying material with alkali soluble polycondensation binder, 4,642,282, Cl. 430-165.000.
 Standard Telephones & Cables: See—
 Magee, Terence E., 4,642,667, Cl. 357-35.000.
 Stanley Electric Co. Ltd.: See—
 Harmer, Alan L., 4,641,965, Cl. 356-135.000.
 Masaru, Yasui, 4,642,208, Cl. 264-37.000.
 Stanley, Louis, to Card-O-Matic Pty. Limited. Method of forming and installing field windings, 4,641,421, Cl. 29-596.000.
 Starr, Thomas J. J.: See—
 Beckner, Mark W.; and Starr, Thomas J. J., 4,642,630, Cl. 340-825.500.
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 Zalmon, Seev W.; Engel, Shlomo; and Eyal, Joseph, 4,641,802, Cl. 244-3.280.
 Stauffer Chemical Company: See—
 Honig, Milton L.; and Weil, Edward D., 4,642,366, Cl. 558-138.000.
 Steffee, Arthur D., to Laure Prosthetics, Inc. Toe implant, 4,642,122, Cl. 623-21.000.
 Steffinger, Karl, to Siemens Aktiengesellschaft. Right-angled plug-type connector, 4,641,908, Cl. 339-206.00R.
 Steffinger, Karl, to Siemens Aktiengesellschaft. Plug connector, 4,641,909, Cl. 339-210.00M.
 Steigerwald, Robert L.; and Kornrumpf, William P., to General Electric Company. Power circuit with high input power factor and a regulated output, 4,642,745, Cl. 363-37.000.
 Steinbeck, Karl: See—
 Heinemann, Ulrich; Knops, Hans-Joachim; Steinbeck, Karl; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,642,312, Cl. 514-364.000.
 Steinel GmbH & Co., K.G.: See—
 Steinel, Heinrich W.; and Siwon, Hans, 4,642,158, Cl. 156-497.000.
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Steiner, Robert E.; Cox, Karmen D.; Terpstra, Daniel A.; Metzger, James J., Jr.; and Plume, Steven H., to Emerson Electric Co. Electronically controlled power saw, 4,641,557, Cl. 83-71.000.
 Stemmler, Kurt, to Winkler + Duennebier Maschinenfabrik + Eisengieserei GmbH & Co. KG. Method and apparatus for securing elastic tapes to a material web, 4,642,150, Cl. 156-164.000.
 Stephenson, Stanley W.: See—
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 Sternberg, Ben K.; Dunster, Donald E.; and Honeycutt, Kenneth D., to Conoco Inc. Method and apparatus for complex resistivity measurements with elimination of electromagnetic coupling effects, 4,642,570, Cl. 324-366.000.
 Stevance, Jean: See—
 Funck, Ronald; and Stevance, Jean, 4,642,584, Cl. 333-17.00L.
 Stevens, Gerald S., Jr.; Sapitowicz, Thomas P.; and Davis, Edward D., to General Instrument Corporation. Rotary drum non-impact printer, 4,642,660, Cl. 346-140.00R.
 Stevens, Michael: See—
 Lala, Sharookh; Lehnerer, Patrick; Hanson, Russell; and Stevens, Michael, 4,641,814, Cl. 254-10.500.
 Stevens, Michael P.: See—
 Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., 4,642,687, Cl. 358-110.000.
 Stewart Stamping Corp.: See—
 Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,641,901, Cl. 339-14.00R.
 Steyr-Daimler-Puch AG: See—
 Herdin, Gunther, 4,641,621, Cl. 123-446.000.
 Stich, Roger L.; and Neal, William D. Automatic transmission adapter kit, 4,641,547, Cl. 74-606.00R.
 Stiller, Alfred H.; and Smith, James E., to West Virginia University. Oscillatory motion apparatus, 4,641,611, Cl. 123-55.00A.
 Stinson, Donald B.; and Orofino, Arthur A., to New Product, Inc. Apparatus for driving and retracting ground rods or the like, 4,641,715, Cl. 173-129.000.
 Stocker, Wilhelm: See—
 Muller, Erich; Gunter, Ruhl; and Stocker, Wilhelm, 4,641,734, Cl. 192-53.00F.
 Stol, Israel, to Westinghouse Electric Corp. Shielding apparatus for metal processing operations, 4,642,445, Cl. 219-121.0FS.
 Stolk, Richard D. Hot air balloon kite, 4,641,797, Cl. 244-153.00R.
 Stone, Thomas W., to Universal Electric Company. Bearing system for fractional horsepower electric motors, 4,641,979, Cl. 384-146.000.
 Storch, Leonard; and Hotto, Robert, to Leonard Storch Enterprises, Inc. Width card, 4,642,624, Cl. 340-735.000.
 Stork Screens B.V.: See—
 Meulen, Antonius M., 4,641,411, Cl. 29-424.000.
 Storz, Karl. One-hand hysteroscope, 4,641,634, Cl. 128-4.000.
 Stranco, Inc.: See—
 Brazelton, Carl L., 4,642,222, Cl. 422-111.000.
 Strassle, Marcel, to Syma Intercontinental AG. Clamping device for the separable connection of two profile section parts, 4,641,983, Cl. 403-12.000.
 Streater, Richard W.: See—
 Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., 4,642,507, Cl. 310-313.00B.
 Strebny, Hans-Gunther: See—
 Groh, Reiner; Kotzsch, Hans-Joachim; Strebny, Hans-Gunther; and Vahlensieck, Hans-Joachim, 4,642,363, Cl. 556-471.000.
 Striny, Kurt M., to AT&T Bell Laboratories. Chip carrier package, 4,642,670, Cl. 357-68.000.
 Strobl, Gerhard: See—
 Rasch, Klaus-Dieter; and Strobl, Gerhard, 4,642,414, Cl. 136-256.000.
 Strock, Alvin E. Protective appliance for the hip joint area, 4,641,641, Cl. 128-132.00R.
 Strom, Stephen A.; Schnuelle, Kenneth W.; and Potwora, William E., to National Semiconductor Corporation. Power line carrier communications system transformer bridge, 4,642,607, Cl. 340-310.00A.
 Strommer, Kurt: See—
 Braun, Hermann; Dumschat, Helmut; Strommer, Kurt; and Mueller, Sieghard, 4,641,515, Cl. 72-405.000.
 Sturza, Mark A.; Knitter, Wayne L.; and Wu, Yi-Zen, to Litton Systems, Inc. Signal generator for radio navigation system, 4,642,647, Cl. 342-415.000.
 Sueda, Tetsuo; and Yoshii, Minoru, to Canon Kabushiki Kaisha. Aberration measuring method, 4,641,962, Cl. 356-124.000.
 Suehiro Seiko Kabushiki Kaisha: See—
 Kume, Takeshi, 4,641,432, Cl. 30-383.000.
 Sugai, Hiroshi: See—
 Matsunaga, Ichiro; and Sugai, Hiroshi, 4,642,203, Cl. 252-631.000.
 Sugawara, Tooru; Tsuchitani, Shigeki; Kinjo, Noriyuki; and Ohara, Shuichi, to Hitachi, Ltd. Humidity-sensitive element, 4,642,601, Cl. 338-35.000.
 Sugaya, Masami: See—
 Sawada, Daisaku; Sugaya, Masami; Imai, Ryuji; and Soga, Yoshinobu, 4,642,069, Cl. 474-28.000.
 Sugimori, Shigeru; and Nigorikawa, Kazunori, to Chisso Corporation. Novel liquid crystal compounds and liquid crystal compositions containing same, 4,642,199, Cl. 252-299.610.
 Sugiura, Hiroaki, to Yoshino Kogyosho Co., Ltd. Blow-molded bottle-shaped container of biaxially oriented thermoplastic synthetic resin with wide port and method of molding the same, 4,641,758, Cl. 215-1.00C.

Sugiura, Masamichi: See—
 Takeda, Katsuhiko; and Sugiura, Masamichi, 4,641,957, Cl. 355-58.000.
 Sukhman, Yefim P.: See—
 Miller, Richard T.; Sukhman, Yefim P.; and Welker, Lynn C., 4,642,439, Cl. 219-121.0LN.
 Sullivan, Donald K., to Outboard Marine Corporation. Hydraulic system for marine propulsion devices, 4,642,058, Cl. 440-61.000.
 Sumitani, Shigeto: See—
 Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.
 Sumitomo Chemical Co., Limited: See—
 Funaki, Masaaki; Ohtani, Noboru; Yoshida, Motoaki; Fujioka, Akira; and Sakiyama, Kazuo, 4,642,266, Cl. 428-412.000.
 Sato, Hiroshi; Ishii, Norio; and Hirose, Kenichi, 4,642,409, Cl. 585-486.000.
 Sumitomo Electric Industries, Ltd.: See—
 Nishiwaki, Yoshiyuki; and Nishiura, Yozo, 4,641,913, Cl. 350-96.110.
 Yamazaki, Takashi; and Sakamoto, Katsuji, 4,641,794, Cl. 242-47.010.
 Sumitomo Metal Industries, Ltd.: See—
 Ando, Takehiro; Kimura, Hideo; Oda, Noriyuki; Asai, Takeji; Mochizuki, Ken; Fujiwara, Toshihisa; and Maeda, Katsuji, 4,642,127, Cl. 55-20.000.
 Sumitomo Metal Mining Co., Ltd.: See—
 Matsunaga, Ichiro; and Sugai, Hiroshi, 4,642,203, Cl. 252-631.000.
 Sundstrand Corporation: See—
 Gillingham, Gary D.; and Metcalf, Jeffrey D., 4,641,737, Cl. 192-141.000.
 Hucker, David J., 4,642,535, Cl. 318-161.000.
 Russ, David E., 4,641,544, Cl. 74-435.000.
 Sundstrand Data Control, Inc.: See—
 Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., 4,642,775, Cl. 364-443.000.
 Sunpower, Inc.: See—
 Redlich, Robert W., 4,642,547, Cl. 322-3.000.
 Superior Electric Company, The: See—
 Lundin, Robert S.; and Petritis, Demetris, 4,642,494, Cl. 310-49.00R.
 Sustmann, Scarlet, to Vereinigte Papierwerke, Schickedanz & Co. Tampon for feminine hygiene and a process for its production, 4,642,108, Cl. 604-379.000.
 Suthers, Mark S.; Este, Grantley O.; Streater, Richard W.; and MacLaurin, Blair K., to Northern Telecom Limited. Saw devices with reflection-suppressing fingers, 4,642,507, Cl. 310-313.00B.
 Sutterlin, Philip H.: See—
 Dumas, Gregory P.; and Sutterlin, Philip H., 4,642,805, Cl. 370-58.000.
 Sutton, Gary, to General Signal Corporation; and Dempster Systems, Inc. Hydraulic control system and valve therefor, 4,642,019, Cl. 414-525.00R.
 Suzuka, Susumu: See—
 Sensui, Hideyuki; Suzuka, Susumu; Gonda, Michihiro; and Kikawa, Katsumasa, 4,642,663, Cl. 346-221.000.
 Suzuki, Hiroshi; and Sato, Hiroaki, to Kabushiki Kaisha Toshiba. Piezo-electric resonating device, 4,642,508, Cl. 310-321.000.
 Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Self-timer device for a camera, 4,641,937, Cl. 354-238.100.
 Suzuki, Takashi, to Nittan Company, Limited. Light-scattering type smoke detector, 4,642,615, Cl. 340-630.000.
 Suzuki, Toshimitsu: See—
 Nogii, Munehiro; Ohashi, Ryutarō; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.
 Suzuki, Toshio, to Toray Silicone Co., Ltd. Coating material for optical communication glass fibers and fibers made therefrom, 4,642,265, Cl. 428-375.000.
 Suzuki, Toshiro; and Matsubara, Osamu, to Hitachi, Ltd. Stabilized current source circuit, 4,642,552, Cl. 323-315.000.
 Suzuki, Tsuguya: See—
 Kawaguchi, Takeshi; Suzuki, Tsuguya; and Shibata, Katsuhiko, 4,641,731, Cl. 188-218.0XL.
 Svenson, Lars-Göte: See—
 Nordqvist, Glenn O.; and Svenson, Lars-Göte, 4,642,453, Cl. 250-214.00A.
 Swansen, James E., to United States of America, Energy. Fast counting electronics for neutron coincidence counting, 4,642,466, Cl. 250-392.000.
 Swartz, Harold L.; and Heidel, Jeffrey C., to Sperry Corporation. Differential capacitance detector, 4,642,555, Cl. 324-60.00C.
 Sweeny, Peter K. Apparatus for adjusting the plate segment of an off-set lithographic printer, 4,641,577, Cl. 101-415.100.
 SWF Auto-Electric GmbH: See—
 Egner-Walter, Bruno; Schmid, Eckhardt; and Scholl, Wolfgang, 4,641,389, Cl. 15-250.210.
 Swift, Shirley F.: See—
 Clements, Silous F.; Motola, Patrick D.; and Swift, Shirley F., 4,642,792, Cl. 364-900.000.
 Syma Intercontinental AG: See—
 Strassle, Marcel, 4,641,983, Cl. 403-12.000.
 Syntex (U.S.A.) Inc.: See—
 Chan, Tai W.; and Nguyen, Huong T., 4,642,346, Cl. 544-276.000.
 Clark, Robin D.; and Waterbury, L. David, 4,642,378, Cl. 564-51.000.

Syracuse University: See—
 Honig, Arnold, 4,642,206, Cl. 264-0.500.
 Szonyi, Laszlo, to International Business Machines Corporation. System for automatically calibrating a robot, 4,642,781, Cl. 364-513.000.
 Ta, An Tuan: See—
 Benecke, Theodor; Lux, Benno; Schubert, Wolf-Dieter; Ta, An Tuan; and Kahr, Gerhard, 4,642,135, Cl. 420-33.000.
 Taota, Mitsuo; and Shibuya, Nobuo, to Kabushiki Kaisha Toshiba. Position detecting method for detecting the relative positions of the first and second members, 4,642,468, Cl. 250-548.000.
 Tachida, Hiroki; Sato, Takane; and Sato, Shigeaki, to Nippon Gakki Seizo Kabushiki Kaisha. Upright piano, 4,641,565, Cl. 84-431.000.
 Tachikawa Spring Co. Ltd.: See—
 Miyashita, Norio; and Nemoto, Akira, 4,641,884, Cl. 297-284.000.
 Tacken, Henricus T. J., to U.S. Philips Corporation. Semiconductor device having improved thermal characteristics, 4,642,668, Cl. 357-36.000.
 Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, to Nisshin Flour Milling Co., Ltd. Anti-ulcer compounds, 4,642,314, Cl. 514-475.000.
 Taig, Alistair G., to Allied Corporation. Disabling device for a brake control device, 4,641,733, Cl. 192-13.00A.
 Taiho Industrial Co., Ltd.: See—
 Koyase, Hiroyasu; Funaki, Kinsaku; and Morita, Atsuo, 4,642,138, Cl. 134-22.180.
 Taiho Kogyo Kabushiki Kaisha: See—
 Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.
 Takada, Kazuya: See—
 Kuramoto, Nobuyuki; Takada, Kazuya; and Numata, Yoshihiko, 4,642,298, Cl. 501-96.000.
 Takagi, Atsushi: See—
 Nakahata, Kimio; Toyono, Tsutomu; Takagi, Atsushi; and Aguro, Yoshinori, 4,641,948, Cl. 355-3.0SH.
 Takagi, Kunihiko: See—
 Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,104, Cl. 604-264.000.
 Sakamoto, Izumi; and Takagi, Kunihiko, 4,642,111, Cl. 604-890.000.
 Takagi, Shinichi: See—
 Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.
 Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinori, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for electro-photographically reproducing a desired portion of an original on copying paper, 4,641,951, Cl. 355-7.000.
 Takahara, Wataru: See—
 Ikeda, Masaaki; Takahara, Wataru; Iteguchi, Junichi; Satoh, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.
 Takahashi, Hiroshi; Narutomi, Yasuhisa; Aotani, Yoshimasa; and Shiba, Keisuke, to Fuji Photo Film Co., Ltd. Plate making processing for using negative working light-sensitive lithographic plate requiring no dampening solution, 4,642,283, Cl. 430-303.000.
 Takahashi, Hisatsugu: See—
 Hosokawa, Hidehiro; Iida, Yoshimichi; and Takahashi, Hisatsugu, 4,641,500, Cl. 62-70.000.
 Takahashi, Ken; and Takahashi, Osamu, to Yokohama Rubber Co., Ltd. The Pneumatic tire tread for heavy duty trucks, 4,641,697, Cl. 152-209.00R.
 Takahashi, Koji; and Kawashima, Machio, to Hitachi, Ltd. In-line color picture tube apparatus with dynamic convergence correction device, 4,642,527, Cl. 315-368.000.
 Takahashi, Mitsugu: See—
 Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, 4,642,428, Cl. 200-144.00R.
 Takahashi, Osamu: See—
 Takahashi, Ken; and Takahashi, Osamu, 4,641,697, Cl. 152-209.00R.
 Takahashi, Tomohiko: See—
 Nagashima, Masayoshi; Takahashi, Tomohiko; Higure, Naoto; and Fukuda, Kanehiro, 4,642,659, Cl. 346-76.0PH.
 Takahashi, Yoshiaki: See—
 Yanai, Takao; and Takahashi, Yoshiaki, 4,642,760, Cl. 364-200.000.
 Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, to Victor Company of Japan, Ltd. Color TV camera with plural solid state imaging devices mutually horizontally displaced and associated filters of vertically-oriented color stripes, 4,642,677, Cl. 358-43.000.
 Takanashi, Masami; and Komatsu, Akihiro, to Honda Giken Kogyo Kabushiki Kaisha. Handle switch assembly for a motor vehicle, 4,641,723, Cl. 180-315.000.
 Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, to Mitsubishi Belting Ltd. Power transmission belt, 4,642,080, Cl. 474-244.000.
 Takao, Shingo: See—
 Ishiwatari, Takeo; Sasaki, Yasuichiyo; Misawa, Rokuro; and Takao, Shingo, 4,641,690, Cl. 141-4.000.
 Takara Co., Ltd.: See—
 Yoke, Hideaki, 4,642,064, Cl. 446-94.000.
 Takasaki, Yoshimi: See—
 Aagano, Toshitaka; and Takasaki, Yoshimi, 4,642,462, Cl. 250-327.200.
 Takashima, Kohki: See—
 Matsumoto, Kazuo; and Takashima, Kohki, 4,642,313, Cl. 514-374.000.

Takata, Yatsuka; Yamada, Tadamasu; and Kikuchi, Eiki, to Aichi Steel Works, Ltd.; and Koyo Seiko Kabushiki Kaisha. Bearing steel and method of manufacturing the same. 4,642,219, Cl. 420-104.000.

Takeda Chemical Industries, Ltd.: See—
Naito, Kenzo; Kato, Masayasu; and Tsukamura, Kazuo, 4,642,365, Cl. 558-83.000.

Takeda, Katsuhiko; and Sugiura, Masamichi, to Minolta Camera Kabushiki Kaisha. Optical member drive system for copying machine. 4,641,957, Cl. 355-58.000.

Takegahara, Takashi: See—
Kishi, Hajimu; Seki, Masaki; and Takegahara, Takashi, 4,642,754, Cl. 364-191.000.

Takenaka, Hirofumi: See—
Kishida, Hiroo; and Takenaka, Hirofumi, 4,641,816, Cl. 254-228.000.

Takenaka, Kenji: See—
Futamura, Kenichiro; Ohtsu, Keiichiro; Fukuoka, Tatsuhiko; Takenaka, Kenji; Itakura, Yoshio; and Koga, Hiroshi, 4,641,570, Cl. 92-71.000.

Takenaka, Kiyoshi: See—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinori, 4,641,951, Cl. 355-7.000.

Takeuchi, Seiji; and Anger, Byron H., to Don Fell Limited; and Donfab Investments, Inc. Inflatable bags. 4,641,760, Cl. 220-1.00B.

Talwar, Anil K.: See—
Peters, David; Denick, John, Jr.; and Talwar, Anil K., 4,642,231, Cl. 424-15.000.

Tamada, Hitoshi; Kaneko, Masahiko; Okamoto, Tsutomu; and Yamada, Toshiro, to Sony Corporation. Thermomagnetic recording system. 4,642,795, Cl. 365-10.000.

Tamada, Masuo, to Kabushiki Kaisha Toshiba. Mail sorting apparatus. 4,641,753, Cl. 209-546.000.

Tamada, Teruo: See—
Nakadai, Shigeru; and Tamada, Teruo, 4,642,596, Cl. 336-98.000.

Tamakoshi, Koichiro: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tamano, Yoshiziro: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tanabe, Kenjiro: See—
Takagi, Tsuneo; Tanabe, Kenjiro; Fukushima, Masao; Kyushima, Hiroki; Takenaka, Kiyoshi; Okada, Akira; and Isogaki, Yoshinori, 4,641,951, Cl. 355-7.000.

Tanabe Seiyaku Co., Ltd.: See—
Matsumoto, Kazuo; and Takashima, Kohki, 4,642,313, Cl. 514-374.000.

Tanaka, Isao: See—
Yasumura, Takashi; Koishi, Toshio; and Tanaka, Isao, 4,642,326, Cl. 525-153.000.

Tanaka, Makoto: See—
Okuda, Kazuhiro; Tanaka, Makoto; and Kuramitsu, Wataru, 4,641,830, Cl. 271-274.000.

Tanaka, Shuichi: See—
Nagano, Jun; and Tanaka, Shuichi, 4,642,686, Cl. 358-107.000.

Tanaka, Takashi: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Tanaka, Yoshinichi, to Mazda Motor Corporation. Cylinder head for DOHC engine. 4,641,609, Cl. 123-41.82R.

Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, to Minolta Camera Kabushiki Kaisha. Photosensitive member with an insulating layer of amorphous silicon. 4,642,278, Cl. 430-66.000.

Tanigami, Yukio; Iino, Shuji; and Nakamura, Mitsutoshi, to Minolta Camera Kabushiki Kaisha. Photosensitive member with an insulating layer of amorphous silicon. 4,642,279, Cl. 430-66.000.

Tapp, Michael R.: See—
Buckman, William C.; and Tapp, Michael R., 4,642,028, Cl. 416-95.000.

Tarasoff, Serge, to Pomagalski, S.A. Terminal for a detachable grip chairlift for gondola lift. 4,641,585, Cl. 104-173.200.

Targa Electronics Systems Inc.: See—
Foster, William R., 4,642,759, Cl. 364-200.000.

Tarvin, Jeffrey A., to KMS Fusion, Inc. Optical humidity sensor. 4,641,524, Cl. 73-335.000.

Taub, Alan I.; Huang, Shyh-Chin; and Chang, Keh-Minn, to General Electric Company. Rapidly solidified nickel aluminide of improved stoichiometry and ductilization and method. 4,642,139, Cl. 148-3.000.

Taurand, Gerard: See—
Cotrel, Claude; Guyon, Claude; Roussel, Gerard; and Taurand, Gerard, 4,642,303, Cl. 514-253.000.

Tausevich, Edward R. Concealed inventory control device. 4,641,447, Cl. 40-530.000.

Tawse, Alan I.: See—
Christian, Philip; and Tawse, Alan I., 4,641,689, Cl. 140-149.000.

Tayebi, Amad, to New England Thermoplastics, Inc. Face mask. 4,641,645, Cl. 128-206.190.

Taylor, Anne K.: See—
Fawzi, Mahdi B.; and Taylor, Anne K., 4,642,316, Cl. 514-398.000.

Taylor, Kenneth J.: See—
Clark, Michael; and Taylor, Kenneth J., 4,641,817, Cl. 267-140.100.

Taylor, Sheryl L.: See—
Behan, Diane E., 4,641,647, Cl. 128-207.180.

Taylor-Winfield Corporation, The: See—
Mullane, William E.; and Lund, David, 4,642,442, Cl. 219-10.410.

Tazawa, Hiroaki: See—
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.

TDK Corporation: See—
Ikeda, Masaaki; Takahara, Wataru; Iteuchi, Junichi; Satoh, Hiroyuki; and Itoh, Shyuji, 4,642,732, Cl. 361-321.000.

Imai, Yuji, 4,642,168, Cl. 204-129.650.

Morita, Haruyuki; Yoshinari, Jiro; and Fukuda, Kazumasa, 4,642,270, Cl. 428-621.000.

Tecumseh Products Company: See—
Farr, James B., 4,642,031, Cl. 417-223.000.

Tedesco, Robert J., to Westinghouse Electric Corp. Molded case circuit breaker with an improved contoured cradle. 4,642,430, Cl. 200-153.00G.

Tedesco, Robert J.; and Haggerty, David L., to Westinghouse Electric Corp. Molded case circuit breaker with a movable electrical contact positioned by a camming spring loaded clip. 4,642,431, Cl. 200-153.00G.

Tegman, Ragnar: See—
Burstrom, Martin; and Tegman, Ragnar, 4,642,204, Cl. 252-633.000.

Tektronix, Inc.: See—
Beeck, Carlos L., 4,642,592, Cl. 333-246.000.

Thomas, Wayne D., 4,642,744, Cl. 363-21.000.

Teleflex Incorporated: See—
McBeth, James, 4,642,032, Cl. 417-269.000.

Telefonaktiebolaget LM Ericsson: See—
Nordqvist, Glenn O.; and Svenson, Lars-Göte, 4,642,453, Cl. 250-214.00A.

Telefunken electronic GmbH: See—
Beneking, Heinz, 4,641,921, Cl. 350-320.000.

Rasch, Klaus-Dieter; and Sirobl, Gerhard, 4,642,414, Cl. 136-256.000.

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Livingston, David R., 4,642,380, Cl. 564-206.000.

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Theriat, David G.: See—
Smith, John R.; Kenny, Thomas J.; Graham, Kingsley F.; Neuner, James A.; Bauman, Douglas A.; Thompson, Timothy F.; Wassel, William W.; Rao, Dhulipala M.; and Theriat, David G., 4,642,636, Cl. 340-870.040.

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Sargent, Charles L.; Antos, John M.; Hoffman, John A.; and Cameron, John T., 4,641,383, Cl. 4-323.000.

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Uramoto, Yoshihiro; Kaneko, Takasi; and Hirose, Toshiro, 4,642,011, Cl. 411-258.000.

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Akahoshi, Haruo; Murakami, Kanji; Wajima, Motoyo; Kogawa, Kiyonori; Toba, Ritsuji; and Shimazaki, Takeshi, 4,642,161, Cl. 156-630.000.

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Ishida, Takao; and Shimono, Mamoru, 4,641,947, Cl. 355-3.00R.

Miyamoto, Junichi; and Iizuka, Tetsuya, 4,642,673, Cl. 357-23.500.

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Igarashi, Makoto; Okano, Kiichiro; and Kumagami, Naoki, 4,641,742, Cl. 198-627.000.

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Suzuki, Toshio, 4,642,265, Cl. 428-375.000.

Torii, Takahiro; Ishiguro, Mamoru; and Senoh, Hideaki, to Mitsubishi Paper Mills, Ltd. Carbonless paper for use in letter printers. 4,642,662, Cl. 346-215.000.

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Hale, Ronald G.; Woodley, Thomas R.; and Tornstrom, Paul K., 4,642,200, Cl. 252-400.540.

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Carr, Richard V. C.; Toseland, Bernard A.; and Ross, David S., 4,642,396, Cl. 568-934.000.

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Kikuchi, Makoto, 4,642,021, Cl. 414-735.000.

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Kondo, Kunio; Haga, Katutoshi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,642,005, Cl. 409-232.000.

Nomura, Kazuhiro; and Nomura, Masayuki, 4,641,881, Cl. 296-202.000.

Osana, Akinori; and Niwa, Takao, 4,642,068, Cl. 474-11.000.

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Rosa, Jean; Castaigne, Jean-Paul; Demare, Henri; and Tozzolino, Pierre, 4,642,306, Cl. 514-222.000.

Trailmobile Inc.: See—
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Transparent Packaging Corp.: See—
Howarth, Robert A., Jr., 4,642,086, Cl. 493-341.000.

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Ferrari, Andrew N.; and Jones, Arthur N., 4,642,239, Cl. 426-396.000.

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Cianci, Giuseppe; and Traverso, Carlo, 4,641,984, Cl. 403-14.000.

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Maisch, Wolfgang; and Treiber, Jurgen, 4,642,602, Cl. 338-162.000.

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Trezza, Ronald F. Clip construction for wall arrangement. 4,641,473, Cl. 52-410.000.

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Kapland, Mitchell A.; Norikane, Kiyoshi; and London, Jack W., 4,641,449, Cl. 42-65.000.

Tripp, Edwin P., III; Weisman, Jason; and Hissong, George, to Energy Sciences Inc. Method of and apparatus for electron beam curing coated, porous and other web structures. 4,642,244, Cl. 427-44.000.

Triquint Semiconductors, Inc.: See—
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Leroux, Alain; Fourtet, Jean P.; Hennard, Jean; and Trouillet, Andre, 4,642,018, Cl. 414-502.000.

True, Thomas T., to General Electric Company. Constant magnification light collection system. 4,642,740, Cl. 362-268.000.

Trumpp, Hans J.: See—
Greschner, Johann; Schwerdt, Friedrich W.; and Trumpp, Hans J., 4,642,163, Cl. 156-643.000.

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Burk, Maksymilian; and Blumenthal, Jack L., 4,642,125, Cl. 48-197.00R.

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Tsuyama, Sadaharu, 4,642,606, Cl. 340-134.000.

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Lewis, Robert T.; and Tudor, Thomas T., 4,641,748, Cl. 206-263.000.

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Wallgren, Matti; and Tynkynen, Pertti, 4,641,824, Cl. 270-31.000.

Tzen, Ching B.; and Liang, Tzu P. Ruler, 4,641,436, Cl. 33-483.000.

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Umeda, Takato, to Exploration Logging, Inc. Noise subtraction filter, 4,642,800, Cl. 367-85.000.

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Fearnhead, Ivan J., 4,642,261, Cl. 428-225.000.

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Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., 4,642,516, Cl. 313-481.000.

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Loveless, Frederick C., 4,642,410, Cl. 585-524.000.

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Poque, Dionysius J.; and Zinnen, Norbert, 4,641,670, Cl. 152-158.000.

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Kapich, Davorin D., 4,641,978, Cl. 384-102.000.
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Callahan, Patrick O., Jr., 4,642,638, Cl. 342-45.000.
Lin, Tung Y., 4,642,000, Cl. 405-221.000.
Oliver, Jim; and Watson, Pat, 4,641,755, Cl. 211-60.100.
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Baggen, Constant P. M. J., 4,642,808, Cl. 371-39.000.
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Chung, Albert E., 4,642,293, Cl. 435-240.000.

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Morino, Seiji; Uno, Eiichi; and Yoshitani, Yoshihiro, 4,641,626, Cl. 123-620.000.

UOP Inc.: See—
Jensen, Robert H., 4,642,402, Cl. 585-411.000.
Schmidt, Robert J., 4,642,406, Cl. 585-477.000.
Zinnen, Hermann A.; and Franczyk, Thad S., 4,642,397, Cl. 568-934.000.

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Urban Transportation Development Corporation Ltd.: See—
Wallace, Allen K., 4,642,493, Cl. 310-13.000.

Urbanik, Peter J.: See—
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Hill, Paul L., 4,641,768, Cl. 222-590.000.

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Utrata, Peter J. Disposable combination scalpel blade and incision irrigator for ophthalmological use, 4,642,090, Cl. 604-22.000.

Utscheid, Georg. Electric overhead trolley conveyor, 4,641,582, Cl. 104-93.000.

Uurtamo, Stephen J., to Motorola, Inc. Adaptive monopulse phase/amplitude calibration correction system, 4,642,642, Cl. 343-165.000.

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Lundquist, Ingemar, 4,642,098, Cl. 604-123.000.

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Peytavin, Pierre, 4,641,513, Cl. 72-214.000.

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Smith, Rodney M.; and Masek, Jiri, 4,641,569, Cl. 92-43.000.

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Calvert, Robert B.; Chang, Clarence D.; Rubin, Mae K.; and Valyocis, Ernest W., 4,642,226, Cl. 423-328.000.

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Vanderlaan, Robert D.; and Heeres, Stanley D., to Pneumo Corporation. Direct drive valve and force motor assembly including interchangeable stator assembly and alignment system or method, 4,641,812, Cl. 251-65.000.

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van der Weide, Egbert J., to Beisler GmbH. Machine designed to lift a flexible, flat workpiece off a support surface, 4,641,826, Cl. 271-18.300.

Van De Walle, Raymond A.: See—
Lauer, John F.; Greenberg, Ronald; and Van De Walle, Raymond A., 4,641,997, Cl. 405-24.000.

Van Gompel, Paul T.: See—
Heran, William M.; Fleischer, Glen R.; Damico, Joyce A.; and Van Gompel, Paul T., 4,641,381, Cl. 2-400.000.

Vano, Joseph A.: See—
Klinvex, Daniel E.; Crusi, Suzanne B.; Kepes, William E.; and Vano, Joseph A., 4,642,215, Cl. 376-249.000.

van Rooij, Jacobus H. M.: See—
Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooij, Jacobus H. M., 4,642,079, Cl. 474-219.000.

Vansant, Jan; and Overbergh, Noel M. M., to N.V. Raychem S.A. Branch-off clip and assembly, 4,641,402, Cl. 24-703.000.

Varga, Franz, to Rotorcafe AG. Machine with a centrifugal drum, 4,641,572, Cl. 99-286.000.

Vari-X: See—
Kitner, William M., 4,641,939, Cl. 354-313.000.

Varian Associates, Inc.: See—
Riazat, Majid; and Zdziuk, George A., 4,642,587, Cl. 333-125.000.

Varta Batterie A.G.: See—
Gummelt, Klaus; Schulz, Jürgen; Salamon, Klaus; and Rabenstein, Heinrich, 4,642,600, Cl. 338-34.000.

Vaughn, Lanny. Safety bumper and air brake actuator, 4,641,871, Cl. 293-118.000.

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Lanfranchi, Gianmario; and Vecellio, Bernardino, 4,642,415, Cl. 174-22.00R.

Vedage, Gamin A.: See—
Klier, Kamil; Herman, Richard G.; and Vedage, Gamin A., 4,642,381, Cl. 564-480.000.

Venaleck, John T.: See—
Hartman, John E.; and Venaleck, John T., 4,641,426, Cl. 29-839.000.

Venlet, Gerard W.: See—
Gill, Geoffrey Y.; Hunter, Paul H.; and Venlet, Gerard W., 4,642,001, Cl. 408-59.000.

Vent-Axia Limited: See—
Vincent, David; and Mahabir, Aloysius G., 4,642,725, Cl. 361-154.000.

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Sustmann, Scarlet, 4,642,108, Cl. 604-379.000.

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Vetanen, William A.; Gleason, Kimberly R.; and Beers, Irene G., to Triquint Semiconductors, Inc. Source-side self-aligned gate process, 4,642,259, Cl. 428-137.000.

Viale, Daniel: See—
Bard, Max; Sibilo, Gerard; Marello, Georges; Viale, Daniel; and Louis, Michel, 4,641,985, Cl. 403-16.000.

Vicari, Richard: See—
Okamoto, Yoshiyuki; and Vicari, Richard, 4,642,393, Cl. 568-734.000.

Victor Company of Japan, Ltd.: See—
Kobayashi, Toshio; and Hishiki, Hideo, 4,642,528, Cl. 315-368.000.
Kohda, Kazuo, 4,642,712, Cl. 360-85.000.
Miyamoto, Ritsuo, 4,642,714, Cl. 360-96.500.
Ohira, Tsunehisa; Hirano, Shinji; and Sadakane, Koji, 4,642,713, Cl. 360-85.000.

Takanashi, Itsuo; Miyoshi, Tadayoshi; Nakagaki, Shintaro; and Nishiyama, Hiroshi, 4,642,677, Cl. 358-43.000.

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Turner, John T.; and Christodoulou, Marios, 4,642,185, Cl. 210-242.300.

Vidal, Jean L.: See—
Mortier, Frederic; and Vidal, Jean L., 4,642,328, Cl. 526-125.000.

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Vilimek, Vaclav F., to Texas Instruments Incorporated. Sensor responding to the action of a force, 4,641,539, Cl. 73-862.670.

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Vinal, Albert W., to International Business Machines Corporation. Twin track vertical magnetic recording servo control method, 4,642,709, Cl. 360-77.000.

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Virtanen, Risto: See—
Andersson, Jan A. R.; Moren, Nils F. E.; Wetterlin, Kjell J. L.; Snellman Wasenius, Kaija A.; and Virtanen, Risto, 4,641,644, Cl. 128-200.230.

Viskase Corporation: See—
Kupcekevicius, Vytautas, 4,641,687, Cl. 138-118.100.

Vlasek, David J.; and Riddle, Harry W., to Baker Oil Tools, Inc. Segmented concentric centralizer, 4,641,776, Cl. 228-155.000.

Vlasich, Richard J., to Alcon Laboratories, Inc. Metering dispenser for high viscosity compositions, 4,641,766, Cl. 222-391.000.

Voest-Alpine Aktiengesellschaft: See—
Brandl, Erich, 4,641,889, Cl. 299-75.000.

Vogel, Ferdinand L., to Intercal Company. Compositions for improving the stability of intercalated graphite structural members, 4,642,201, Cl. 252-503.000.

Voith Turbo GmbH & Co. KG: See—
Murner, Ulf, 4,641,683, Cl. 137-487.500.

Volkmar, Ralf R., to Siemens Energy & Automation, Inc. U-shaped solid magnetic core with at least one opening through the midsection thereof, 4,642,594, Cl. 335-227.000.

Vollmann, Norbert; and Mader, Leopold, to U.S. Philips Corporation. Video cassette recorder with improved tape guiding and tensioning, 4,642,706, Cl. 360-74.300.

Volvo Car B.V.: See—
Horowitz, Alexandre; Cuypers, Martinus H.; and van Rooij, Jacobus H. M., 4,642,079, Cl. 474-219.000.

Volz, Peter: See—
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Von Duprin, Inc.: See—
Haeck, Paul J.; and Jacobs, Gary R., 4,641,866, Cl. 292-336.300.

von Minden, Charles: See—
Schultheiss, Georg; von Minden, Charles; and Fritzsche, Hans W., 4,642,300, Cl. 501-124.000.

Voss, Karl D.; Datte, Mark A.; and Ruff, Gary F., to General Motors Corporation. Countergravity casting mold and core assembly. 4,641,703, Cl. 164-255.000.

VTA Technologies, Inc.: See—
Orsburn, Michael L.; Hensky, Robert L.; and Bacon, James I., 4,642,682, Cl. 358-80.000.

W. P. Hickman Company: See—
Webb, Russell; and Hickman, John B., 4,641,476, Cl. 52-60.000.

W. R. Grace & Co.: See—
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,471, Cl. 52-361.000.
Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., 4,641,472, Cl. 52-361.000.

W. Schlafhorst & Co.: See—
Grecksch, Hans; Schwalm, Hans-Werner; and Thomalla, Johannes, 4,641,740, Cl. 198-487.100.
Raasch, Hans; and Wassenhoven, Heinz-Georg, 4,641,494, Cl. 57-401.000.

Wachenschwanz, David E.; and Jeffers, Frederick J., to Eastman Kodak Company. Optimum control of overwrite by record gap length selection. 4,642,718, Cl. 360-119.000.

Wada, Kiyokazu: See—
Takano, Hiroshi; Takagi, Shinichi; and Wada, Kiyokazu, 4,642,080, Cl. 474-244.000.

Wada, Yoshinori, to Ricoh Company, Ltd. Facsimile relay device. 4,642,697, Cl. 358-257.000.

Wada, Yoshimori. Picture book having a telephone dial therein. 4,642,054, Cl. 434-178.000.

Wada, Yuichi: See—
Mori, Teijiro; Wada, Yuichi; Sako, Yuji; Tazawa, Hiroaki; and Okado, Hiroyuki, 4,642,429, Cl. 200-144.00R.

Wade, Wallace R., to Ford Motor Company. Continuous rotary regeneration system for a particulate trap. 4,641,496, Cl. 60-274.000.

Wagerer, Helmut F.: See—
Lorenzi, Donald E.; Wagerer, Helmut F.; and Spevak, Lev, 4,641,529, Cl. 73-601.000.

Wagner, Rudolf, to REMS-WERK Christian Foll und Sohne GmbH & Co. Holder for motor driven tools. 4,642,002, Cl. 408-105.000.

Wajima, Motoyo: See—
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Wakabayashi, Noboru; Akiyama, Katsuhiko; Soda, Yutaka; and Uchida, Hiroyuki, to Sony Corporation. Magnetic transducer head assembly with support system therefor. 4,642,716, Cl. 360-104.000.

Wakita, Kazuto; Tsuchiya, Kazuo; Nagayasu, Isao; and Emoto, Ikuo, to Ube Industries, Ltd. Substrate for planographic plate. 4,642,260, Cl. 428-215.000.

Wakita, Syotaro: See—
Nogi, Munehiro; Ohashi, Ryutaro; Miyazaki, Koichiro; Tanaka, Takashi; Tamakoshi, Koichiro; Tamano, Yoshiziro; Wakita, Syotaro; and Suzuki, Toshimitsu, 4,641,671, Cl. 134-57.00D.

Waldemar Link GmbH & Co.: See—
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Link, Helmut D.; and Keller, Arnold, 4,641,749, Cl. 206-370.000.

Walinsky, Paul; Rosen, Arye; and Greenspon, Arnold J., to RCA Corporation. Method and apparatus for high frequency catheter ablation. 4,641,649, Cl. 128-303.100.

Walker, Adrian W.: See—
Humphreys, Robert W.; Walker, Adrian W.; Green, Robin J.; and Russell, Stephen W., 4,642,198, Cl. 252-94.000.

Walker, Charles S., to Honeywell, Inc. Replica driver transformer for inverter circuit. 4,642,749, Cl. 363-56.000.

Walker, George E., to Monsanto Company. Process and device for temporarily holding and releasing objects. 4,642,254, Cl. 428-36.000.

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Walker, Mildred W. Cosmetic carrier with removable resilient retaining means. 4,641,751, Cl. 206-478.000.

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Wallace, James P., to Mobil Oil Corporation. Technique for locating injected gas in oil bearing formations behind casing. 4,642,460, Cl. 250-256.000.

Wallace, Stanley J.; Jedlicka, Josef E.; and Peck, Wilbur M., Jr., to Xerox Corporation. Conductive brush paper position sensor. 4,641,949, Cl. 355-3.05H.

Wallgren, Matti; and Tynkkynen, Pertti. Cloth spreading apparatus with cutter. 4,641,824, Cl. 270-31.000.

Wally, Joseph H.; and Wilson, Samuel E. System and method for projecting multiple images directly onto printing plates. 4,641,958, Cl. 355-71.000.

Walter, Erwin: See—
Karl, Alfons; Walter, Erwin; Kleinschmit, Peter; Gottschlich, Hermann; Kutz, Roland; and Koth, Detley, 4,642,304, Cl. 502-427.000.

Walters, Tom. Coupling having spring biased locking means. 4,641,859, Cl. 285-27.000.

Walton, Richard R.; and Munchbach, George E., to Walton, Richard R. Fabric pickup and the like. 4,641,827, Cl. 271-18.300.

Wannborg, Nils A.: See—
Muller, Fernand; Wannborg, Nils A.; and Billen, Kurt, 4,641,629, Cl. 126-6.000.

Ward, George D.: See—
Cline, J. Douglas; Wilson, James A.; Feher, Stanley H.; and Ward, George D., 4,642,775, Cl. 364-443.000.

Ward, Thomas H.; Costanzo, Phillip A.; Pietrasz, Vincent; and Soeder, Edmund J., to Union Carbide Corporation. Getter assembly providing increased getter yield. 4,642,516, Cl. 313-481.000.

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Fawzi, Mahdi B.; and Taylor, Anne K., 4,642,316, Cl. 514-398.000.
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Waryasz, Richard E., to Combustion Engineering, Inc. Steam generator with expansion joint. 4,641,608, Cl. 122-510.000.

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Watanabe, Hideo, to Komori Printing. Double sheet detection method and apparatus of sheet-fed rotary press. 4,642,456, Cl. 250-223.00R.

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Watkins, James D.: See—
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Weaver, Robert F., to Emhart Industries, Inc. Method of making a permanent magnet rotor for a synchronous motor. 4,641,422, Cl. 29-598.000.

Weavers, Mark W.: See—
Gebeke, Charles D.; and Weavers, Mark W., 4,642,722, Cl. 360-132.000.

Webb, Russell; and Hickman, John B., to W. P. Hickman Company. Roof edge construction. 4,641,476, Cl. 52-60.000.

Weber, Walter: See—
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Wedgwood, Francis A.; Peck, Peter F.; and Stevens, Michael P., to United Kingdom Atomic Energy Authority. Superimposition of non-visual signals upon an image signal in a video display system. 4,642,687, Cl. 358-110.000.

Weed, Michael A.: See—
Collins, David W.; and Weed, Michael A., 4,642,562, Cl. 324-83.00D.

Wehner, Wolfgang; Muller, Horst, deceased (by Muller, Anneliese, Silvia Muller, Werner J. Muller, heirs); and Schneider, Rainer, to Ciba-Geigy Corporation. Stabilization of chlorine-containing thermoplastics with nitrogen-containing organic compounds. 4,642,322, Cl. 524-191.000.

Wehr, Rudolf: See—
Elbs, Peter; Jeserich, Wolfgang-Dieter; and Wehr, Rudolf, 4,642,211, Cl. 264-85.000.

Weickert, Chris A.; and Briosi, Gordon K., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Dual-function storage container for prilled explosive. 4,641,581, Cl. 102-307.000.

Weidner, Robert H., to United Technologies Corporation. Coolable stator assembly for a rotary machine. 4,642,024, Cl. 415-116.000.

Weihl, Richard H.: See—
Ray, Douglas M.; and Weihl, Richard H., 4,641,454, Cl. 43-26.000.

Weil, Edward D.: See—
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Weinger, Ralph, to Color Systems Technology, Inc. Priority masking techniques for video special effects. 4,642,676, Cl. 358-22.000.

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Belart, Juan; Burgdorf, Jochen; Bleckmann, Hans W.; Weise, Lutz; and Seibert, Wolfram, 4,641,895, Cl. 303-119.000.

Weisman, Jason: See—
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Gordon, Eric M.; and Weller, Harold N., III, 4,642,315, Cl. 514-307.000.

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Weresch, Thomas. Apparatus for lining up electrical components to form a belt. 4,642,159, Cl. 156-510.000.

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Bucher, George D.; and Raymond, Theodore E., 4,642,016, Cl. 414-421.000.

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Cho, Gyu-Hyeong, 4,642,747, Cl. 363-54.000.

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White, Carl R., to Mallinckrodt, Inc. Method for producing fluoronitrobenzene compounds. 4,642,399, Cl. 568-938.000.

White Consolidated Industries, Inc.: See—
Fritchman, Jack F., 4,642,037, Cl. 417-571.000.

White, Lionel S., Jr.; and Zivitz, Maury, to Texas Instruments Incorporated. Integrated circuit manufacture. 4,642,784, Cl. 364-551.000.

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Wightman, William D., to Hughes Tool Company. Casing hanger locking device. 4,641,708, Cl. 166-208.000.

Wilcox, Milton E., to National Semiconductor Corporation. Sampled data amplitude linear phase detector. 4,642,489, Cl. 307-514.000.

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Willis, W. Coy, to Aluminum Company of America. Gauge for comparing circumferences. 4,641,437, Cl. 33-522.000.

Wilmes, Manfred, to C. A. Weidmuller GmbH & Co. Identification carrier for electric lines. 4,641,443, Cl. 40-316.000.

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Wilson, J. Pierre: See—
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Wilson, James A.: See—
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Stemmler, Kurt, 4,642,150, Cl. 156-164.000.

Winter, Edward M.; Price, David E.; and Hook, James E., to Columbia Gas System Service Corp. Heat shield. 4,641,588, Cl. 110-203.000.

Wirfelt, Sven A. O., to Santrade Limited. Tool mounting. 4,642,006, Cl. 409-233.000.

Wirges, Ralf: See—
Modie, Rudolf; Porschen, Jorg; Schoengen, Anton; and Wirges, Ralf, 4,642,369, Cl. 560-77.000.

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Womack, James A.: See—
Long, Jerry M.; and Womack, James A., 4,641,897, Cl. 312-183.000.

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Woods, John G.: See—
Harris, Stephen J.; Woods, John G.; and Rooney, John M., 4,642,362, Cl. 556-419.000.

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World Color Press, Inc.: See—
Wood, James R., 4,641,489, Cl. 53-529.000.

Wright State University: See—
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Wu, Bing T. Sport's cap umbrella. 4,641,675, Cl. 135-20.00A.

Wu, Yi-Zen: See—
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Wubbo, Ockels: See—
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Wynia, Jan: See—
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Yada, Isao: See—
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Yahagi, Masakichi; Igaki, Tetsuo; Yosinaka, Sinzi; Morita, Kousaku; Saito, Morikuni; and Kinoshita, Kimiaki, to Shin Nisso Kako Co., Ltd. Chromogenic recording materials. 4,642,357, Cl. 549-226.000.

Yajima, Toshio, to Kabushiki Kaisha Komatsu Seisakusho. Method for feeding material sheet to a press. 4,641,828, Cl. 271-227.000.

Yamada, Hirohide: See—
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Yamada, Mitsuhiko, to Dainippon Screen Mfg. Co., Ltd. Method and system for processing image data stored in RGB form. 4,642,680, Cl. 358-78.000.

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Yamada, Toshiro: See—
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Yamaguchi, Ken, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,641,721, Cl. 180-229.000.

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Tahara, Yoshiyuki; Nagai, Michiko; Kogure, Katsura; Kawase, Shigeo; and Yamaguchi, Teruhito, 4,642,314, Cl. 514-475.000.

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Kosugi, Motoki; and Nakano, Hidetaka, 4,641,904, Cl. 339-99.00R.

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Yamashita, Yukio, to Kyocera Corporation. Mount for quartz crystal oscillator device. 4,642,510, Cl. 310-348.000.

Yamauchi, Michihide: See—
Kishine, Nobuyuki; Imamura, Tetsuya; Yamauchi, Michihide; and Ootani, Tsuyoshi, 4,642,720, Cl. 360-126.000.

Yamauchi, Warren. Container holder fitting device. 4,641,483, Cl. 53-390.000.

Yamawaki, Masakatsu; Sakamoto, Isamu; Mizusawa, Kenichi; and Iwamoto, Eiji, to Nissin-High Voltage Co., Ltd. Electron beam irradiation apparatus. 4,642,467, Cl. 250-492.300.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method and apparatus for forming non-single-crystal layer. 4,642,243, Cl. 427-38.000.

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Mori, Takanobu; Fukui, Yutaka; Kashimura, Tetsuo; and Yanai, Yoshimi, 4,642,495, Cl. 310-52.000.

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Yarger, Ronald G.: See—
Barnett, Ronald E.; and Yarger, Ronald G., 4,642,240, Cl. 426-538.000.

Yasukawa, Kenichiro: See—
Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, 4,642,812, Cl. 381-1.000.

Yasumura, Takashi; Koishi, Toshio; and Tanaka, Isao, to Central Glass Company, Limited. Polyvinylidene fluoride base blend polymer. 4,642,326, Cl. 525-153.000.

Yeh, An-I: See—
Berg, Lloyd; and Yeh, An-I, 4,642,166, Cl. 203-15.000.
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Saito, Kazuo; Matsuzaka, Takashi; Chiba, Mitsuyoshi; Sumitani, Shigeto; Yodo, Masami; and Araya, Hiroyuki, 4,642,046, Cl. 431-354.000.

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Nemoto, Kayoko; and Ohya, Takeshi, 4,642,621, Cl. 340-721.000.

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Yoo, Jin S.; and Jaeger, John A., to Katalistiks, Inc. Process for conversion of hydrocarbons. 4,642,178, Cl. 208-113.000.

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Honma, Noriyuki; Nambu, Hiroaki; Yoshida, Isao; Higuchi, Hisayuki; and Yamaguchi, Kunihiko, 4,642,486, Cl. 307-463.000.

Yoshida Kogyo K. K.: See—
Sodeno, Toshiaki; Yoshieda, Keiichi; and Honmoto, Syuichi, 4,641,424, Cl. 29-766.000.

Yoshida, Masayuki: See—
Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, 4,642,812, Cl. 381-1.000.

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Yoshimi, Yasuhito, to Dainippon Screen Mfg. Co., Ltd. Treatment tank in photosensitive material processing system including a plurality of overflow devices. 4,641,941, Cl. 354-324.000.

Yoshimura, Fumikatsu: See—
Ishii, Osamu; Yoshimura, Fumikatsu; and Hatakeyama, Iwao, 4,642,245, Cl. 427-47.000.

Yoshimura, Hironori, to Mitsubishi Kinzoku Kabushiki Kaisha. Rotary cutting tool of cemented carbide. 4,642,003, Cl. 408-144.000.

Yoshimura, Takeshi; Sameshima, Mutsuro; Nakanishi, Toru; and Kato, Shigeo, to Mazda Motor Corporation. Fuel injection control means for internal combustion engines. 4,641,620, Cl. 123-432.000.

Yoshinari, Jiro: See—
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Yoshio, Junichi; Hirano, Toshio; Yasukawa, Kenichiro; and Yoshida, Masayuki, to Pioneer Electronic Corp. Sound field enlarging device and method. 4,642,812, Cl. 381-1.000.

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Yoshitani, Yoshihiro: See—
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Yoshiyasu, Hajimu; Takahashi, Mitsugu; Hisatsune, Fumiyuki; and Murata, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter. 4,642,428, Cl. 200-144.00R.

Yosinaka, Sinzi: See—
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Young, Alva L. Motorized wheel chair. 4,641,720, Cl. 180-6.240.

Young, David A., to Exxon Chemical Patents Inc. Rhodium catalyzed hydroformylation of alpha-substituted alpha-olefins. 4,642,388, Cl. 568-454.000.

Young, Glen C., to General Electric Company. Laundering apparatus. 4,642,537, Cl. 318-254.000.

Young, Ian R., to Picker International Limited. Nuclear magnetic resonance methods and apparatus. 4,642,568, Cl. 324-309.000.

Young, John. Orthopedic appliance. 4,641,882, Cl. 297-183.000.

Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., to W. R. Grace & Co. Fastener for securing roofing material to cementitious roof decks. 4,641,471, Cl. 52-361.000.

Young, Kenneth E.; Dudley, Hubert T.; and Frohlich, Robert T., to W. R. Grace & Co. Fastener for securing roofing material to cementitious roof decks having removable tab. 4,641,472, Cl. 52-361.000.

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Yu, Li K., to Fu-Chi Metallic Engineering Co. Ltd. Hydraulic jack. 4,641,815, Cl. 254-93.00H.

Yuasa, Kazuhiro, to Ricoh Company, Ltd. Ion projection recording apparatus. 4,641,955, Cl. 355-14.0TR.

Yunoki, Yutaka; Kimura, Kenji; Kato, Akira; and Imamura, Tatsuo, to Olympus Optical Co., Ltd. Video tape recorder including vertical recording heads. 4,642,711, Cl. 360-84.000.

Zador, Eugene; Kaczmarek, Wesley R.; and Ravipati, Sitaramaiah, to Norton Company. Coated abrasives with rapidly curable adhesives and controllable curvature. 4,642,126, Cl. 51-295.000.

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Ovchinnikov, Alexandr A.; Dudin, Vladimir P.; Konov, Vyacheslav V.; Khlybov, Vyacheslav I.; Rapoport, Jury M.; Gorbunov, Boris N.; Makarova, Evgenia S.; Davitullani, Valentin V.; and Zaitseva, Svetlana I., 4,642,354, Cl. 548-473.000.

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Glushko, Mikhail F.; Skalsky, Viktor K.; and Zakhryamin, Anatoly D., 4,641,492, Cl. 57-9.000.

Zalmon, Seev W.; Engel, Shlomo; and Eyal, Joseph, to State of Israel, Ministry of Defence, Israel Military Industries, The. Projectile stabilization system. 4,641,802, Cl. 244-3.280.

Zambon S.p.A.: See—
Giordano, Claudio; Uggeri, Fulvio; and Minisci, Francesco, 4,642,376, Cl. 562-466.000.

Zannoni, Eros, to Tetra-Dev Co. Method and an arrangement for packing machines. 4,641,486, Cl. 53-433.000.

Zaramella, Giancarlo: See—
Debarbieri, Franco; Montorsi, Roberto; and Zaramella, Giancarlo, 4,642,752, Cl. 364-167.000.

Zdasiuk, George A.: See—
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Zebelman, Arthur M.: See—
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Zellweger Uster, Ltd.: See—
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Zeman, Francis H.: See—
Gustafson, Harry A.; Lim, Wah L.; and Zeman, Francis H., 4,641,970, Cl. 356-350.000.

Zenith Electronics Corporation: See—
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Zhong, Wang D., to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Nuclear pebble bed reactor with inherent passive stabilization in the event of damage. 4,642,214, Cl. 376-221.000.

Ziemann, Heinz: See—
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Zimmerman, John D., to Bunn-O-Matic Corporation. Brewing funnel with screen filter assembly. 4,642,190, Cl. 210-464.000.

Zimmermann, Josef: See—
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,642,095, Cl. 604-72.000.

Zinnen, Hermann A.; and Franczyk, Thad S., to UOP Inc. Process for separating isomers of dinitrotoluene. 4,642,397, Cl. 568-934.000.

Zinnen, Norbert: See—
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Zivitz, Maury: See—
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Zumbach Electronic AG: See—
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Zupkas, Paul F.; Servas, Francis M.; Pavlov, Todor; and Kelly, Steven G., to Shiley, Inc. Unitary venous return reservoir with cardiomy filter. 4,642,089, Cl. 604-4.000.

Zurex Corporation: See—
Kiser, David G.; Spaulding, Donald M.; and Wassmer, Peter J., 4,641,876, Cl. 294-86.400.

Zveibil, Salvador M. Curtain of windable oscillating blades. 4,641,700, Cl. 160-133.000.

Zverina, Karel: See—
Schnackel, Jay F.; and Zverina, Karel, 4,642,440, Cl. 219-121.0PP.

Zwanenburg, Rob: See—
De Haan, Frans W.; Wynia, Jan; and Zwanenburg, Rob, 4,641,798, Cl. 244-173.000.

501 Brio AB: See—
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501 Saipem S.p.A.: See—
Cianci, Giuseppe; and Traverso, Carlo, 4,641,984, Cl. 403-14.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bhattacharya, Bhairab C., to Bhattacharya, Bhairab C.; and Bhattacharya, Manju. Thermal convection counter streaming sedimentation and forced convection galvanization method for controlling the sex of mammalian offspring. Re. 32,350, Cl. 204-180.100.
- Bhattacharya, Manju. See—
Bhattacharya, Bhairab C., Re. 32,350, Cl. 204-180.100.
- Glucksman, Dov Z. Hair roller. Re. 32,349, Cl. 132-33.00R.
- Pevsner, Paul H. Miniature balloon catheter method and apparatus. Re. 32,348, Cl. 128-325.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Brandolf, Henry E., to Multi-Arc Vacuum Systems Inc. Planetary substrate support apparatus for vapor vacuum deposition coating. B1 4,485,759, 2-10-87, Cl. 118-503.000.
- Contempart Originals, Inc.: See—
Ross, Gilbert B.; and Stevens, Theodore E., B1 4,433,070, Cl. 523-171.000.
- Emmett, Robert C., Jr., to Envirotech Corporation. Thickening device and method. B1 4,055,494, 2-10-87, Cl. 210-715.000.
- Envirotech Corporation: See—
Emmett, Robert C., Jr., B1 4,055,494, Cl. 210-715.000.
- Gottlieb, Nathan. Self-contained activated slide apparatus and methods of constructing and utilizing same. B1 3,994,539, 2-10-87, Cl. 384-49.000.
- Horton Co., The: See—
Horton, Lowell C., B1 4,373,058, Cl. 524-705.000.
- Horton, Lowell C., to Horton Co., The. Polymer concrete comprising furfuryl alcohol resin. B1 4,373,058, 2-10-87, Cl. 524-705.000.
- Jung, Werner, to Katrapat AG. Device for carrying flexible cables or pipes from a fixed connection point to a mobile consumer by means of a flexible tube. B1 3,957,084, 2-10-87, Cl. 138-122.000.
- Katrapat AG: See—
Jung, Werner, B1 3,957,084, Cl. 138-122.000.
- Multi-Arc Vacuum Systems Inc.: See—
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- Stoddard, John; and Grinyer, Clive, to Ford Motor Company. Radio receiver. 288,199, 2-10-87, Cl. D14-68.000.
Stoddard, John; and Grinyer, Clive, to Sadler, Clifford L.; and Ford Motor Company. Radio receiver. 288,200, 2-10-87, Cl. D14-68.000.
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LeBoss, L. Gary: See—
Hollevoet, Edmond J. A., 5,879, Cl. 88.000.
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Metzler Investments: See—
Chamberlin, Thomas O., Sr., 5,874, Cl. 43.000.
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Mikkelsen, James C., to Mikkelsens, Inc. Kalanchoe plant named Bingo. 5,876, 2-10-87, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Kalanchoe plant named Cherry Jubilee. 5,877, 2-10-87, Cl. 68.000.
Mikkelsens, Inc.: See—
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 10, 1987

NOTE.—First number, class; second number, subclass; third number, patent number

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9	4,641,379	352	4,641,444	CLASS 68	369 A	4,641,568	CLASS 125	95	4,641,692				
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400	4,641,381	444	4,641,446	CLASS 70	43	4,641,569	CLASS 126	3 K	4,641,694				
421	4,641,382	530	4,641,447	63	4,641,505	71	4,641,570	6	4,641,629				
CLASS 4	606	4,641,448	129	4,641,506	CLASS 98	72	4,641,571	20	4,641,630				
323	4,641,383	65	4,641,449	339	4,641,507	CLASS 99	6	4,641,631	101	4,641,632			
620	4,641,384	76.02	4,641,450	380	4,641,508	286	4,641,572	413	4,641,633				
CLASS 5	85	4,641,451	388	4,641,509	482	4,641,573	CLASS 128	1.3	4,641,633				
82 R	4,641,385	CLASS 43	6	4,642,131	CLASS 100	229 A	4,641,574	4	4,641,634				
413	4,641,386	4	4,641,452	90	4,642,132	CLASS 101	23	4,641,575	6	4,641,635			
508	4,641,387	17	4,641,453	53	4,641,510	CLASS 102	415.1	4,641,576	69	4,641,636			
CLASS 14	26	4,641,454	160	4,641,511	CLASS 104	93	4,641,582	75	4,641,637				
71.7	4,641,388	42.13	4,641,455	201	4,641,512	172.1	4,641,583	79	4,641,638				
CLASS 15	73	4,641,456	214	4,641,513	173.2	4,641,584	CLASS 105	83.5	4,641,639				
104.94	4,641,391	CLASS 47	9	4,641,457	284	4,641,586	419 D	92 YV	4,641,640				
250.21	4,641,389	CLASS 48	197 R	4,642,125	CLASS 73	217	4,641,580	132 R	4,641,641				
250.23	4,641,390	CLASS 49	20	4,641,458	104	4,641,518	307	4,641,581	134	4,641,642			
302	4,641,392	35	4,641,459	116	4,641,517	CLASS 106	3	4,641,587	156	4,641,643			
241	4,641,393	115	4,641,460	129	4,641,519	CLASS 110	85	4,642,137	200.23	4,641,644			
302	4,641,394	404	4,641,461	151	4,641,520	CLASS 112	203	4,641,588	206.19	4,641,645			
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241	4,641,393	CLASS 51	7	4,641,463	261	4,641,522	CLASS 118	43	4,641,594	207.18	4,641,647		
302	4,641,394	295	4,642,126	313	4,641,523	CLASS 122	44	4,641,595	303 R	4,641,648			
348	4,641,395	CLASS 52	60	4,641,464	572	4,641,526	CLASS 123	253	4,641,596	303.1	4,641,649		
370	4,641,396	127.1	4,641,465	582	4,641,527	CLASS 125	443	4,641,598	305	4,641,650			
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389	4,641,400	CLASS 28	309.12	622	4,641,531	CLASS 130	341	4,641,589	344	4,641,653			
681	4,641,401	CLASS 29	309.17	637	4,641,532	CLASS 132	43	4,641,594	380	4,641,654			
703	4,641,402	157.1 R	309.4	706	4,641,533	CLASS 134	73	4,641,595	630	4,641,655			
CLASS 26	127.1	4,641,405	361	856	4,641,534	CLASS 136	22.18	4,642,138	633	4,641,656			
3	4,641,403	159.2	4,641,406	861.01	4,641,535	CLASS 138	57 D	4,641,671	653	4,641,657			
CLASS 28	171	237	4,641,407	861.12	4,641,536	CLASS 140	62	4,641,672	660	4,641,658			
178	4,641,404	271	4,641,408	862.26	4,641,537	CLASS 142	138	4,641,673	663	4,641,659			
CLASS 29	297	401.1	4,641,409	863.53	4,641,540	CLASS 144	33 R	Re.32.349	666	4,641,660			
157.1 R	309.12	424	4,641,410	864.81	4,641,541	CLASS 146	73	4,641,669	666	4,641,661			
159.2	4,641,405	426.5	4,641,412	CLASS 74	23	4,641,542	CLASS 131	296	4,641,665	757	4,641,662		
237	4,641,407	511	4,641,420	23	4,641,543	CLASS 75	CLASS 131	341	4,641,666	765	4,641,663		
271	4,641,408	568	4,641,421	410	4,641,544	CLASS 81	CLASS 132	352	4,641,667	785	4,641,664		
401.1	4,641,409	571	4,641,413	410	4,641,545	CLASS 83	CLASS 134	352	4,641,667	CLASS 157	1.17	4,641,699	
407	4,641,410	576 W	4,641,414	435	4,641,546	CLASS 84	CLASS 136	352	4,641,667	CLASS 160	133	4,641,700	
424	4,641,411	588	4,641,415	476	4,641,547	CLASS 85	CLASS 138	352	4,641,667	CLASS 162	207	4,642,164	
426.5	4,641,412	591	4,641,416	598	4,641,548	CLASS 86	CLASS 140	352	4,641,667	CLASS 164	90	4,641,701	
511	4,641,420	596	4,641,417	606 R	4,641,549	CLASS 87	CLASS 142	352	4,641,667	CLASS 166	137	4,641,702	
568	4,641,421	598	4,641,418	691	4,641,550	CLASS 88	CLASS 144	352	4,641,667	CLASS 168	255	4,641,703	
571	4,641,419	598	4,641,419	732	4,641,551	CLASS 89	CLASS 146	352	4,641,667	CLASS 170	474	4,641,704	
588	4,641,418	611	4,641,420	751	4,641,552	CLASS 90	CLASS 148	352	4,641,667	CLASS 172	85	4,641,705	
591	4,641,419	766	4,641,421	802	4,641,553	CLASS 91	CLASS 150	352	4,641,667	CLASS 174	118	4,641,706	
596	4,641,421	830	4,641,422	866	4,641,554	CLASS 92	CLASS 152	352	4,641,667	CLASS 176	160	4,641,707	
598	4,641,422	839	4,641,423	CLASS 55	20	4,642,127	CLASS 154	20 A	4,641,675	CLASS 178	208	4,641,708	
611	4,641,423	857	4,641,424	CLASS 56	217	4,642,128	CLASS 156	110	4,641,676	CLASS 180	252	4,641,709	
766	4,641,424	863	4,641,425	CLASS 57	10.2	4,641,490	CLASS 158	256	4,642,414	CLASS 182	303	4,641,710	
830	4,641,425	CLASS 30	41	4,641,429	228	4,641,491	CLASS 160	15	4,641,677	CLASS 184	44	4,641,711	
839	4,641,426	120.5	4,641,430	276	4,641,431	CLASS 33	CLASS 162	15.1	4,641,678	CLASS 186	15.1	4,641,678	
857	4,641,427	276	4,641,431	383	4,641,432	9	4,641,492	88	4,641,679	CLASS 188	25	4,641,712	
863	4,641,428	383	4,641,432	137 R	4,641,433	296	4,641,493	312	4,641,680	CLASS 190	49	4,641,713	
CLASS 33	366	4,641,434	401	4,641,494	39.161	4,641,495	CLASS 60	315	4,641,681	CLASS 192	109	4,641,714	
137 R	4,641,433	427	4,641,435	274	4,641,496	563	4,641,497	329.04	4,641,682	CLASS 194	129	4,641,715	
483	4,641,436	522	4,641,437	641.2	4,641,498	CLASS 62	48	4,641,499	487.5	4,641,683	CLASS 196	22 R	4,642,415
CLASS 36	59 C	4,641,438	CLASS 64	70	4,641,500	CLASS 66	70	4,641,500	561 A	4,641,684	35 GC	4,642,416	
CLASS 37	2 R	4,641,439	CLASS 66	188	4,641,501	CLASS 68	188	4,641,501	625.31	4,641,685	36	4,642,417	
CLASS 40	10 A	4,641,440	CLASS 68	244	4,641,502	CLASS 70	244	4,641,502	625.65	4,641,686	48	4,642,418	
156	4,641,441	219	4,641,442	259.1	4,641,503	CLASS 72	259.1	4,641,503	CLASS 138	118.1	52 FP	4,642,419	
219	4,641,442	3.12	4,642,129	CLASS 65	1.13	4,641,566	CLASS 69	1.13	4,641,567	CLASS 140	53	4,642,420	
3.12	4,642,129	8	4,641,567	CLASS 67	1.13	4,641,566	CLASS 71	1.13	4,641,567	CLASS 142	88 R	4,642,421	
8	4,641,567	431	4,641,565	CLASS 73	1.13	4,641,566	CLASS 73	1.13	4,641,567	CLASS 144	117 M	4,642,422	
431	4,641,565	518	4,641,623	CLASS 75	1	4,641,605	CLASS 75	1	4,641,605	CLASS 146	149	4,641,689	
518	4,641,623	571	4,641,624	CLASS 77	214	4,641,606	CLASS 77	214	4,641,606	CLASS 148	450	4,641,688	
571	4,641,624	575	4,641,625	CLASS 79	360	4,641,607	CLASS 79	360	4,641,607	CLASS 150	149	4,641,689	
575	4,641,625	620	4,641,626	CLASS 81	510	4,641,608	CLASS 81	510	4,641,608	CLASS 152	4	4,641,690	
620	4,641,626	41.82 R	4,641,609	CLASS 83	510	4,641,608	CLASS 83	510	4,641,608	CLASS 154	4	4,641,690	
41.82 R	4,641,609	52 MV	4,641,610	CLASS 85	41.82 R	4,641,609	CLASS 85	41.82 R	4,641,609	CLASS 156	4	4,641,690	
52 MV	4,641,610	55 A	4,641,611	CLASS 87	55 A	4,641,611	CLASS 87	55 A	4,641,611	CLASS 158	4	4,641,690	
55 A	4,641,611	145 A	4,641,612	CLASS 89	145 A	4,641,612	CLASS 89	145 A	4,641,612	CLASS 160	4	4,641,690	
145 A	4,641,612	179 H	4,641,613	CLASS 91	179 H	4,641,613	CLASS 91	179 H	4,641,613	CLASS 162	4	4,641,690	
179 H	4,641,613	185 BA	4,641,614	CLASS 93	185 BA	4,641,614	CLASS 93	185 BA	4,641,614	CLASS 164	4	4,641,690	
185 BA	4,641,614	196 AB	4,641,615	CLASS 95	196 AB	4,641,615	CLASS 95	196 AB	4,641,615	CLASS 166	4	4,641,690	
196 AB	4,641,615	256	4,641,616	CLASS 97	256	4,641,616	CLASS 97	256	4,641,616	CLASS 168	4	4,641,690	
256	4,641,616	262	4,641,617	CLASS 99	262	4,641,617	CLASS 99	262	4,641,617	CLASS 170	4	4,641,690	
262	4,641,617	335	4,641,618	CLASS 101	335	4,641,618	CLASS 101	335	4,641,618	CLASS 172	4	4,641,690	
335	4,641,618	432	4,641,620	CLASS 103	432	4,641,620	CLASS 103	432	4,641,620	CLASS 174	4	4,641,690	
432	4,641,620	446	4,641,621	CLASS 105	446	4,641,621	CLASS 105	446	4,641,621	CLASS 176	4	4,641,690	
446	4,641,621	479	4,641,622	CLASS 107	479	4,641,622	CLASS 107	479	4,641,622	CLASS 178	4	4,641,690	
479	4,641,622	518	4,641,623	CLASS 109	518	4,641,623	CLASS 109	518	4,641,623	CLASS 180	4	4,641,690	
518	4,641,623	571	4,641,624	CLASS 111	571	4,641,624	CLASS 111	571	4,641,624	CLASS 182	4	4,641,690	
571	4,641,624	575	4,641,625	CLASS 113	575	4,641,625	CLASS 113	575	4,641,625	CLASS 184	4	4,641,690	
575	4,641,625	620	4,641,626	CLASS 115	620	4,641,626	CLASS 115	620	4,641,626	CLASS 186	4	4,641,690	
620	4,641,626	41.82 R	4,641,609	CLASS 117	41.82 R	4,641,609	CLASS 117	41.82 R	4,641,609	CLASS 188	4	4,641,690	
41.82 R	4,641,609	52 MV	4,641,610	CLASS 119	52 MV	4,641,610	CLASS 119	52 MV	4,641,610	CLASS 190	4	4,641,690	
52 MV	4,641,610	55 A	4,641,611	CLASS 121	55 A	4,641,611	CLASS 121	55 A	4,641,611	CLASS 192	4	4,641,690	
55 A	4,641,611	145 A	4,641,612	CLASS 123	145 A	4,641,612	CLASS 123	145 A	4,641,61				

331	4,641,718	699	4,642,194	CLASS 248	205.1	4,641,804	CLASS 280	214	4,642,503	17 L	4,642,584
	CLASS 177	715	B1 4,055,494			4,641,805	6 R	308	4,642,504	21 R	4,642,585
136	4,641,719	798	4,642,195	CLASS 211	273	4,641,806	30	312	4,642,505	122	4,642,586
	CLASS 178	26	4,641,754		430	4,641,807	79.1 A	313 B	4,642,507	125	4,642,587
18	4,642,422	60.1	4,641,755		480	4,641,808	80 B	313 D	4,642,508	139	4,642,588
	4,642,423	89	4,641,756	CLASS 212	550	4,641,809	242 WC	321	4,642,509	182	4,642,589
	CLASS 180				559	4,641,810		323	4,642,510	218	4,642,590
				CLASS 215	635		270	348	4,642,511	227	4,642,591
6.24	4,641,720	205	4,641,757				289 WC			246	4,642,592
229	4,641,721			CLASS 249	414.1	4,641,851		CLASS 312		CLASS 335	
271	4,641,722				489	4,641,852		110	4,641,896	52	4,642,593
315	4,641,723	1 C	4,641,758	CLASS 250	661	4,641,853		183	4,641,897	227	4,642,594
			4,641,759		701	4,641,854		209	4,641,898	CLASS 336	
	CLASS 181	220	4,641,759		716	4,641,855				CLASS 337	
104	4,641,724			201	722	4,641,856		25	4,642,512	98	4,642,596
119	4,641,725	10.41	4,642,442	213 VT	821	4,641,857		110	4,642,513	135	4,642,595
292	4,641,726	10.55 E	4,642,434	214 A			CLASS 285	25	4,642,514	CLASS 338	
			4,642,443	221				111	4,642,515	82	4,642,597
	CLASS 182		4,642,435	223 R				414	4,642,516	397	4,642,598
46	4,641,727	10.55 F	4,642,436					481	4,642,517	CLASS 339	
146	4,641,728	69 D	4,642,444	225				495		34	4,642,600
172	4,641,729	78.11	4,642,436	227						35	4,642,601
		84	4,642,437	256				1.0	4,642,518	162	4,642,602
	CLASS 188	121 FS	4,642,445	311					4,642,519		
73.45	4,641,730	121 L	4,642,443	327.2					4,642,520		
218 XL	4,641,731	121 LD	4,642,446	336.1					4,642,521		
379	4,641,732	121 LN	4,642,439	363 S					4,642,522	14 R	4,641,901
	CLASS 192	121 PP	4,642,440	389					4,642,523	17 LC	4,641,900
		124.34	4,642,447	392					4,642,524	59 M	4,641,899
13 A	4,641,733	216	4,642,448	492.3					4,642,525	91 R	4,641,902
53 F	4,641,734	364	4,642,441	548					4,642,526	99 R	4,641,903
56 L	4,641,735			561					4,642,527		
89 B	4,641,736	1 B	4,641,760	566					4,642,528		
141	4,641,737	66	4,641,761	574					4,642,529	103 B	4,641,905
	CLASS 193	81 R	4,641,762	578					4,642,530	143 R	4,641,906
40	4,641,738			CLASS 251	65	4,641,812			4,642,531	147 R	4,641,907
	CLASS 194	129.1	4,641,763						4,642,532	206 R	4,641,908
253	4,641,739	146.2	4,641,764	CLASS 252					4,642,533	210 M	4,641,909
		386.5	4,641,765							221 R	4,641,910
	CLASS 198	391	4,641,766	88						276 T	4,641,911
		590	4,641,768	94							
		591	4,641,767	299.61							
				400.54							
				503							
				511							
				631							
				633							
	CLASS 200	23	4,641,770	CLASS 254							
16 C	4,642,427	115	4,641,771								
144 R	4,642,428			8 B		4,641,813					
	4,642,429			10.5		4,641,814					
153 G	4,642,430	123	4,641,772	93 H		4,641,815					
	4,642,431			228		4,641,816					
155 R	4,642,432			CLASS 260		4,642,205					
308	4,642,433	1.1	4,641,773								
		2.5	4,641,774	501.17							
	CLASS 203		4,641,775								
12	4,642,165	155	4,641,776								
15	4,642,166			CLASS 264		4,642,206					
60	4,642,167										
	CLASS 204	110	4,641,777								
129.65	4,642,168			CLASS 229		4,642,207					
180.1	Re.32.350										
	4,642,169	50 R	4,642,450	10		4,642,208					
181.4	4,642,170			46.4		4,642,209					
231	4,642,172			62		4,642,210					
242	4,642,173	22	4,642,449	85		4,642,211					
298	4,642,174	50 R	4,642,450	262		4,642,212					
408	4,642,174										
	CLASS 206	7	4,641,779	CLASS 267							
44 R	4,641,746										
263	4,641,748	150	4,641,780	CLASS 269							
309	4,641,749	159	4,641,781								
370	4,641,749	265.29	4,641,782	43		4,641,818					
387	4,641,750	265.39	4,641,783	45		4,641,819					
478	4,641,751	453	4,641,784	58		4,641,820					
583	4,641,752	590	4,641,786	234		4,641,821					
	CLASS 208	597	4,641,785	296		4,641,822					
				322		4,641,823					
				CLASS 270							
				31		4,641,824					
				53		4,641,825					
	CLASS 241			CLASS 271							
88	4,642,175										
111	4,642,176	5	4,641,787	18.3		4,641,826					
113	4,642,177	14	4,641,788			4,641,827					
	4,642,178	31	4,641,789			4,641,828					
217	4,642,179	46.17	4,641,790	220		4,641,829					
		66	4,641,791	268		4,641,830					
	CLASS 209	74	4,641,792	274							
44	4,642,180			CLASS 272							
167	4,642,181										
546	4,641,753			31 R		4,641,831					
						4,641,832					
	CLASS 210	18 PW	4,641,793	67		4,641,833					
		59	4,641,795	72		4,641,834					
				76		4,641,835					
				122		4,641,836					
				123		4,641,837					
	4,642,182			CLASS 273							
240	4,642,184	3.14	4,641,801								
242.3	4,642,185	3.28	4,641,802	73 J		4,641,838					
257.1	4,642,186	35 R	4,641,796	128 A		4,641,839					
258	4,642,187	153 R	4,641,797	138 A		4,641,840					
333.1	4,642,188	173	4,641,798								
405	4,642,189	207	4,641,799	CLASS 277							
464	4,642,190	218	4,641,800								
532.1	4,642,191										
638	4,642,192										
682	4,642,193	34 CT	4,641,803								

140 R	4,642,660	236	4,642,693	900	4,642,789	232	4,642,005	42	4,642,256	190	4,642,084
153.1	4,642,661		4,642,694		4,642,790	233	4,642,006	43	4,642,257	222	4,642,085
215	4,642,662	237	4,642,695		4,642,791		CLASS 410	68	4,642,258	341	4,642,086
221	4,642,663	243	4,642,696		4,642,792			137	4,642,259	463	4,642,087
	CLASS 350	257	4,642,697		4,642,793	78	4,642,007	215	4,642,260		
96.10	4,641,912	260	4,642,698		4,642,794		CLASS 411	225	4,642,261	CLASS 501	
96.11	4,641,913	280	4,642,699			16	4,642,008	296	4,642,262	78	4,642,297
96.15	4,641,914	285	4,642,700	CLASS 365		38	4,642,009	336	4,642,263	96	4,642,298
96.18	4,641,915	296	4,642,701	10	4,642,795	69	4,642,010	367	4,642,264	97	4,642,299
96.23	4,641,916	322	4,642,702	114	4,642,796	258	4,642,011	375	4,642,265	124	4,642,300
96.33	4,641,917	342	4,642,703	221	4,642,797	371	4,642,012	412	4,642,266	CLASS 502	
125	4,641,918		CLASS 360		230			413	4,642,267		
138	4,641,919	10.2	4,642,704	CLASS 366		73	4,642,013	453	4,642,268	231	4,642,301
173	4,641,920	18	4,642,705		342	4,641,974	96	516	4,642,269	315	4,642,303
320	4,641,921	74.3	4,642,706	CLASS 367		325	4,642,014	621	4,642,270	332	4,642,302
331 R	4,641,922	76	4,642,707	85	4,642,800	448	4,642,015	698	4,642,271	427	4,642,304
335	4,641,923	77	4,642,708	88	4,642,801	421	4,642,016			CLASS 514	
243	4,641,924	339	4,642,709	168	4,642,802	502	4,642,017	CLASS 429			
345	4,641,925					525 R	4,642,018	17	4,642,272	182	4,642,305
394	4,641,926	79	4,642,710			621	4,642,019	22	4,642,273	222	4,642,306
413	4,641,927	84	4,642,711			735	4,642,020	35	4,642,274	252	4,642,307
427	4,641,928	85	4,642,712	124	4,641,975		4,642,021	52	4,642,275	253	4,642,308
432	4,641,929		4,642,713		CLASS 369		CLASS 415	CLASS 430		269	4,642,309
529	4,641,930	96.5	4,642,714	54	4,642,803	5	4,642,022	30	4,642,276	301	4,642,310
538	4,641,931	97	4,642,715			53 R	4,642,023	57	4,642,277	307	4,642,311
587	4,641,932	104	4,642,716	CLASS 370		116	4,642,024	66	4,642,278	316	4,642,312
613	4,641,933	105	4,642,717	3	4,642,804	139	4,642,025	73	4,642,279	364	4,642,312
	CLASS 351	119	4,642,718	3.1	4,642,426	150	4,642,026	103	4,642,280	374	4,642,313
159	4,641,934	126	4,642,719	58	4,642,805	177	4,642,027	138	4,642,281	398	4,642,316
	CLASS 354	132	4,642,720	95	4,642,806		CLASS 416	165	4,642,282	475	4,642,314
			4,642,721			95	4,642,028	303	4,642,283	558	4,642,317
173.11	4,641,935		4,642,722	CLASS 371		129	4,642,029	CLASS 431		560	4,642,318
212	4,641,936			31	4,642,807		CLASS 417	4	4,642,045	CLASS 521	
238.1	4,641,937	96	4,642,724	39	4,642,808	203	4,642,030	354	4,642,046	175	4,642,319
313	4,641,938	124	4,642,723	CLASS 372		223	4,642,031			176	4,642,320
329	4,641,939	154	4,642,725	66	4,642,809	269	4,642,032	CLASS 432		CLASS 523	
324	4,641,941	198	4,642,726	CLASS 375		295	4,642,033	13	4,642,047	171	BI 4,433,070
406	4,641,942	212	4,642,727	37	4,642,810	312	4,642,034	103	4,642,048	400	4,642,321
413	4,641,943	213	4,642,728	CLASS 376		353	4,642,035	223	4,642,049	CLASS 524	
	CLASS 355	293	4,642,729			571	4,642,036	CLASS 433		191	4,642,322
1	4,641,944	319	4,642,730	218	4,642,811		4,642,037	56	4,642,050	458	4,642,323
3 DD	4,641,945	321	4,642,731	221	4,642,812	11	4,642,218	100	4,642,051	559	4,642,324
	4,641,946	363	4,642,732	249	4,642,813		CLASS 420	189	4,642,052	705	BI 4,373,058
3 R	4,641,947	380	4,642,733	327	4,642,814	33	4,642,135	225	4,642,053	CLASS 525	
	4,641,950	424		451		104	4,642,219	CLASS 434		65	4,642,325
3 SH	4,641,948		CLASS 362			16	4,642,221	178	4,642,054	153	4,642,326
	4,641,949	31	4,642,736	53	4,642,811	101	4,642,220	268	4,642,055	434	4,642,327
7	4,641,951	61	4,642,737	CLASS 379		111	4,642,221	CLASS 435		CLASS 526	
14 R	4,641,952	119	4,642,738	57	4,642,425	191	4,642,222	7	4,642,284	125	4,642,328
	4,641,953	226	4,642,739	107	4,642,635	111	4,642,220	25	4,642,285	284	4,642,329
14 TR	4,641,954	268	4,642,740	CLASS 380		191	4,642,223	99	4,642,286	CLASS 528	
15	4,641,956	320	4,642,741	11	4,642,688		CLASS 423	101	4,642,288	335	4,642,330
58	4,641,957	375	4,642,742	48	4,642,424	244	4,642,225	128	4,642,289	492	4,642,331
71	4,641,958		CLASS 363			321 R	4,642,224	240	4,642,290	CLASS 530	
	4,641,959	21	4,642,743	CLASS 381		328	4,642,226		4,642,292	313	4,642,332
	CLASS 356	37	4,642,744	1	4,642,812	349	4,642,227	350	4,642,293	350	4,642,333
2	4,641,960	49	4,642,745	CLASS 382		350	4,642,228	CLASS 436		388	4,642,334
124	4,641,961	54	4,642,746	8	4,642,813		CLASS 424	5	4,642,294	409	4,642,335
	4,641,962	56	4,642,747			1.1	4,642,229	87	4,642,295	500	4,642,336
124.5	4,641,963		4,642,748	CLASS 384		15	4,642,230	138	4,642,296	CLASS 534	
135	4,641,965		4,642,749	BI 3,994,539		19	4,642,231	CLASS 440		11	4,642,337
237	4,641,966	159	4,642,750	95	4,641,976	78	4,642,232	15	4,642,056	558	4,642,338
	4,641,967		4,642,751	99	4,641,977		4,642,233	52	4,642,057	650	4,642,339
313	4,641,968		CLASS 364	102	4,641,978	93	4,642,038	61	4,642,058	CLASS 536	
343	4,641,969	167	4,642,752	146	4,641,979	140	4,642,039	75	4,642,059	55.2	4,642,340
350	4,641,970	184	4,642,753	CLASS 400		204	4,642,040	70	4,642,060	CLASS 540	
357	4,641,971	191	4,642,754	120	4,641,980	208	4,642,041	83	4,642,061	350	4,642,341
376	4,641,972	200	4,642,755	124	4,641,981	364 R	4,642,042	CLASS 446		356	4,642,342
418	4,641,973		4,642,756	690.1	4,641,982	547	4,642,043	68	4,642,062	488	4,642,343
	CLASS 357		4,642,757			593	4,642,044	94	4,642,063	196	4,642,344
2	4,642,664		4,642,758	CLASS 403		5	4,642,235	209	4,642,064	251	4,642,345
6	4,642,665		4,642,759	12	4,641,983	44	4,642,236	420	4,642,065	276	4,642,346
23.4	4,642,666		4,642,760	14	4,641,984	64	4,642,237	CLASS 464		181	4,642,347
23.5	4,642,673	300	4,642,761	16	4,641,985	74	4,642,238	175	4,642,067	216	4,642,348
23.8	4,642,674		4,642,762	164	4,641,986	396	4,642,239	CLASS 474		302	4,642,349
35	4,642,667		4,642,763	169	4,641,987	538	4,642,240	11	4,642,068	CLASS 548	
36	4,642,668		4,642,764	245	4,641,988	634	4,642,241	28	4,642,069	260	4,642,350
40	4,642,672	402	4,642,765	302	4,641,989		CLASS 426	57	4,642,242	317	4,642,351
52	4,642,676	406	4,642,766	317	4,641,990	2	4,642,243	63	4,642,244	422	4,642,352
68	4,642,670	408	4,642,767	382	4,641,992	47	4,642,245	82	4,642,246	431	4,642,353
79	4,642,671	415	4,642,768	397	4,641,991	127	4,642,247	111	4,642,248	473	4,642,354
	CLASS 358	424	4,642,770	CLASS 404		224	4,642,249	160	4,642,075	533	4,642,355
21 R	4,642,675	431.04	4,642,771	4	4,641,993	388.5	4,642,249	201	4,642,076	CLASS 549	
22	4,642,676	431.05	4,642,772	6	4,641,994		CLASS 427	206	4,642,077	214	4,642,356
43	4,642,677		4,642,773	118	4,641,995		4,642,250	219	4,642,078	226	4,642,357
44	4,642,678	443	4,642,774	CLASS 405		36	4,642,251	244	4,642,079	245	4,642,358
75	4,642,679	449	4,642,776	2	4,641,996		4,642,252	253	4,642,080	356	4,642,359
78	4,642,680	476	4,642,777	24	4,641,997		4,642,253	260	4,642,082	534	4,642,360
79	4,642,681	498	4,642,778	169	4,641,998		4,642,254	93	4,642,083	546	4,642,361
80	4,642,682	512	4,642,780	215	4,641,999		CLASS 428			CLASS 556	
	4,642,683	513	4,642,781	221	4,642,000		4,642,255			419	4,642,362
	4,642,684	520	4,642,779	CLASS 408			4,642,256				
84	4,642,685	550	4,642,782	59	4,642,001		4,642,257				
107	4,642,686	551	4,642,783	105	4,642,002		4,642,258				
110	4,642,687		4,642,784	144	4,642,003		4,642,259				
166	4,642,689	557	4,642,785	CLASS 409			4,642,260				
169	4,642,690	559	4,642,786	136	4,642,004		4,642,261				
188	4,642,691	561	4,642,787				4,642,262				
229	4,642,692	567	4,642,788				4,642,263				

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471	4,642,363	483	4,642,377	624	4,642,391	435	4,642,405	119	4,642,097	6	
	CLASS 558		CLASS 564	690	4,642,392	477	4,642,406	123	4,642,098		4,642,113
83	4,642,365	51	4,642,378	734	4,642,393	486	4,642,409	136	4,642,099		4,642,114
138	4,642,366	155	4,642,379	861	4,642,394	524	4,642,410	150	4,642,100		4,642,115
	CLASS 560	206	4,642,380	883	4,642,395	640	4,642,407	164	4,642,101		4,642,116
40	4,642,367	480	4,642,381	934	4,642,396	836	4,642,408	210	4,642,102	11	4,642,117
65	4,642,368		CLASS 568	937	4,642,397		CLASS 604	234	4,642,103	13	4,642,119
77	4,642,369			938	4,642,398			264	4,642,104	15	4,642,118
100	4,642,370	12	4,642,382	938	4,642,399	4	4,642,088	323	4,642,105	16	4,642,120
114	4,642,371	48	4,642,383		CLASS 570	22	4,642,090	332	4,642,106	18	4,642,121
124	4,642,372	337	4,642,384	238	4,642,400	29	4,642,091	342	4,642,107	21	4,642,122
139	4,642,373	393	4,642,385		CLASS 585	43	4,642,092	379	4,642,108	22	4,642,123
204	4,642,374	405	4,642,386			54	4,642,093	385 Z	4,642,109	23	4,642,124
	CLASS 562	446	4,642,387	241	4,642,401	55	4,642,094	385.1	4,642,110		CLASS 800
		454	4,642,388	411	4,642,402	55	4,642,095	890	4,642,111	1	4,642,411
442	4,642,375	604	4,642,389	415	4,642,403	72	4,642,095				

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D1—	106	288,140	511	288,160	83	288,180		288,200	149	288,220	46	288,240			
D2—	259	288,141	522	288,161	97	288,181		288,201	150	288,221		288,241			
	610	288,142	607	288,162	D11—	160	288,182	86	288,202	159	288,222	51	288,242		
D3—	8	288,143	21	288,163			288,183	100	288,204	184	288,223	D25—	48	288,243	
	12	288,144	309	288,164		161	288,184	106	288,203	195	288,224	52	288,244		
	35	288,145	408	288,165		226	288,185	D15—	4	288,205	226	288,225	D26—	26	288,245
	42	288,146	5	288,166	D12—	92	288,186		30	288,206	3	288,226	34	288,246	
	74	288,147	61	288,167		114	288,187		70	288,207		288,227	36	288,247	
D4—	104	288,148	73	288,171		142	288,188		138	288,208		288,228	85	288,248	
	114	288,149	85	288,168		146	288,189	D16—	9	288,209	35	288,229	105	288,249	
D5—	53	288,150	93	288,169		147	288,190		13	288,210	43	288,230	131	288,249	
D6—	358	288,151	349	288,170			288,191		133	288,211	58	288,231	D28—	35	288,250
	380	288,152	304	288,172	D9—		288,192		18	288,212	122	288,232	D29—	5	288,251
	460	288,153	375	288,173			288,193	D18—	34	288,212	31	288,233	D30—	99	288,253
	466	288,154		288,174			288,196	D19—	91	288,213	31	288,233	D31—	58	288,254
	467	288,155		288,175		157	288,193		99	288,214	31	288,234	D32—	58	288,254
	468	288,156		288,176	D10—	30	288,176	D21—	2	288,215	33	288,236	D34—	29	288,255
	474	288,157		288,177		184	288,195		84	288,216		288,237	D99—	7	288,256
	491	288,158		288,178		210	288,197		102	288,217		288,238		30	288,258
	495	288,159		288,179	D14—	1	288,198		113	288,218	36	288,235		37	288,259
						68	288,199			288,219	38	288,239			

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P—	43	5,874	68	5,875	5,876	5,877	74	5,878	88	5,879
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PATENTS

01	4,642,037	4,641,862	4,642,539	4,642,710	4,642,012	4,641,848
04	4,641,405	4,641,864	4,642,541	4,642,791	4,642,058	4,641,860
	4,641,429	4,641,867	4,642,563	10	4,641,482	4,642,035
	4,641,692	4,641,871	4,642,572	11	4,642,113	4,642,107
	4,642,439	4,641,873	4,642,579	12	4,641,522	4,642,178
	4,642,488	4,641,897	4,642,582		4,641,639	4,642,190
	4,642,501	4,641,898	4,642,587		4,641,655	4,642,194
	4,642,529	4,641,903	4,642,603		4,641,839	4,642,235
	4,642,545	4,641,930	4,642,631		4,641,850	4,642,236
	4,642,551	4,641,933	4,642,647		4,641,925	4,642,301
	4,642,555	4,641,939	4,642,666		4,641,996	4,642,397
	4,642,607	4,641,967	4,642,718		4,642,070	4,642,398
	4,642,642	4,641,976	4,642,721		4,642,100	4,642,402
	4,641,416	4,641,978	4,642,748		4,642,116	4,642,406
	4,641,418	4,641,986	4,642,775		4,642,285	4,641,451
	4,641,453	4,641,993	4,642,785		4,642,240	4,641,748
	4,641,478	4,642,000	4,642,789		4,642,682	4,641,888
	4,641,483	4,642,023	4,642,794		4,642,737	4,642,505
	4,641,498	4,642,038	4,642,797		4,642,782	4,642,511
	4,641,499	4,642,052	4,642,800		4,642,782	4,642,521
	4,641,505	4,642,089	4,642,803		4,642,797	4,642,535
	4,641,520	4,642,091	4,642,805	13	4,641,404	4,642,585
	4,641,528	4,642,097	4,642,808		4,641,448	4,642,630
	4,641,543	4,642,098	4,642,810		4,641,562	4,642,633
	4,641,551	4,642,117	4,641,669	08	4,641,628	4,642,724
	4,641,558	4,642,125	4,641,676		4,641,917	4,642,755
	4,641,567	4,642,134	4,641,711		4,642,019	4,642,758
	4,641,573	4,642,149	4,641,761		4,642,047	4,642,787
	4,641,599	4,642,177	4,642,062		4,642,246	4,642,807
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	4,641,654	4,642,299	4,641,521	09	4,641,427	4,641,733
	4,641,658	4,642,346	4,641,705		4,641,456	4,641,763
	4,641,673	4,642,378	4,641,789		4,641,461	4,641,851
	4,641,680	4,642,419	4,641,843		4,641,469	4,641,866
	4,641,704	4,642,426	4,642,024		4,641,489	4,641,977
	4,641,710	4,642,436	4,642,123		4,641,529	4,642,029
	4,641,751	4,642,446	4,642,146		4,641,544	4,642,345
	4,641,767	4,642,450	4,642,172		4,641,579	4,642,379
	4,641,800	4,642,454	4,642,184		4,641,615	4,642,530
	4,641,801	4,642,465	4,642,193		4,641,618	4,642,532
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	4,641,838	4,642,522	4,642,233		4,641,754	4,642,593
	4,641,840	4,642,533	4,642,244		4,641,780	4,642,691
	4,641,841		4,642,255		4,641,846	4,642,731
			4,642,266		4,641,882	4,642,778
					4,641,995	4,641,820
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4,642,142		4,642,734		4,641,525		4,642,432		4,641,847		4,642,137
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4,642,383		4,641,596		4,641,770	39 :	4,641,385		4,641,910		4,642,332
4,642,492		4,641,677		4,641,773		4,641,387		4,641,912		4,642,380
4,642,514		4,641,727		4,641,807		4,641,426		4,641,987		4,642,395
4,642,586		4,641,788		4,641,811		4,641,480		4,641,994		4,642,460
4,642,616		4,641,797		4,641,825		4,641,532		4,642,007		4,642,464
4,642,742		4,642,076		4,641,863		4,641,588		4,642,016		4,642,534
4,642,767		4,642,184		4,641,877		4,641,627		4,642,041		4,642,559
4,642,780		4,642,238		4,641,899		4,641,631		4,642,085		4,642,580
4,642,802		4,642,399		4,641,901		4,641,694		4,642,094		4,642,610
4,641,383	26 :	4,642,614		4,641,905		4,641,695		4,642,096		4,642,611
4,641,390		4,642,650		4,641,923		4,641,702		4,642,103		4,642,612
4,641,395	30 :	4,642,166		4,641,936		4,641,726		4,642,105		4,642,733
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4,641,821		4,641,774		4,642,206		4,642,317		4,642,333		4,642,218
4,641,832		4,641,900		4,642,237		4,642,330		4,642,347		4,642,271
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4,642,536		4,642,394		4,642,648		4,642,202		4,641,651		4,641,560
4,642,645		4,642,404		4,642,651		4,642,570		4,641,756		4,641,637
3,994,539		4,642,407		4,642,655		4,642,766		4,641,759		4,641,685
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4,641,663		4,642,664		4,642,740		4,642,493		4,641,475		4,641,997
4,641,750		4,642,692		4,642,743		4,642,524		4,641,477		4,642,057
4,641,853		4,642,705		4,642,745		4,642,592		4,641,531		4,642,084
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
All cases:	1015.00
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Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

Sept. 30, 1986. DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 14, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,430,759 through 4,432,098
Reissue Patents based on the above identified patents.

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No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . \$ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) \$ 225.00
By other than a small entity \$ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 \$ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) \$ 55.00
By other than a small entity \$ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable \$ 500.00"

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

ings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Frisco Fine Foods, Inc., Belmont, Calif., Reg. No. 1,149,966, for the mark "SEA LORD AND DESIGN", Canc. No. 15,429.

Pathotox Publishers, Inc., Park Forest South, Ill., Reg. No. 1,155,990, for the Mark "NEUROTOXICOLOGY", Canc. No. 15,532.

The Company's Resource, Inc., Tulsa, Okla., Reg. No. 1,236,667, for the mark "COMSOURCE AND DESIGN", Canc. No. 15,551.

P.B.R. Systems, Inc., aka The Summerfield's Family Restaurant, Grand Haven, Mich., Reg. No. 1,158,578, for the mark "SUMMERFIELDS THE FAMILY RESTAURANT AND DESIGN", Canc. No. 15,743.

Coes & Young Co., Boston, Mass., Reg. No. 689,549, for the mark "JOY WALKERS", Canc. No. 15,751.

Lorenzo Johnson, dba Wings "N" Things, Washington, D.C. Reg. No. 1,217,913, for the mark "WINGS 'N' THINGS", Canc. No. 15,822.

Euphrates Bakery, Inc., Watertown, Mass., Reg. No. 853,328, for the mark "CHIZZA", Canc. No. 15,852.

Bernhoft Laboratories, Inc., Bremerton, Wash., Reg. No. 564,361, for the mark "CORINA", Canc. No. 15,893.

Michael L. Schachel, Miami, Fla., Reg. No. 1,141,333, for the mark "THE CLOSET PEOPLE", Canc. No. 15,913.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

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PATENT NOTICES

Certificates of Correction for the Week of Feb. 17, 1987

Re. 32,288	4,585,260	4,606,908	4,618,199
D. 286,447	4,585,279	4,607,387	4,618,583
4,203,976	4,585,761	4,607,412	4,618,734
4,232,433	4,585,938	4,609,268	4,619,366
4,321,337	4,587,829	4,609,291	4,620,192
4,400,220	4,589,015	4,609,466	4,620,223
4,405,051	4,589,356	4,609,903	4,620,446
4,428,941	4,589,598	4,609,937	4,620,699
4,440,851	4,589,781	4,610,295	4,620,840
4,455,068	4,589,970	4,610,335	4,621,241
4,467,410	4,590,038	4,610,363	4,621,582
4,491,827	4,591,248	4,610,875	4,622,161
4,501,602	4,591,900	4,611,155	4,622,209
4,507,680	4,592,524	4,611,701	4,622,340
4,511,519	4,592,983	4,613,009	4,622,365
4,512,641	4,592,993	4,613,144	4,622,504
4,518,004	4,594,333	4,613,330	4,622,512
4,524,141	4,595,092	4,614,213	4,622,605
4,537,071	4,595,290	4,614,395	4,622,760
4,544,327	4,595,350	4,614,621	4,623,078
4,562,426	4,596,892	4,614,729	4,623,121
4,565,931	4,597,681	4,614,921	4,623,447
4,567,008	4,597,890	4,615,014	4,623,988
4,567,073	4,598,366	4,615,097	4,624,038
4,567,241	4,599,292	4,615,708	4,624,356
4,568,177	4,599,875	4,616,103	4,625,947
4,568,935	4,601,000	4,616,316	4,626,354
4,569,337	4,601,560	4,616,416	4,626,420
4,573,478	4,601,883	4,616,691	4,626,637
4,579,887	4,605,060	4,616,826	4,627,763
4,581,494	4,605,871	4,616,877	
4,584,184	4,606,017	4,617,403	
4,584,934	4,606,744	4,618,080	

Disclaimers

3,464,799.—Charles L. Kimbell, Houston, Tex. GAS DETECTOR. Patent dated Sept. 2, 1969. Disclaimer filed Aug. 29, 1986, by the assignee, Tracor-Atlas, Inc.

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Hereby enters this disclaimer to claims 3, 5, and 6 of said patent.

3,996,471.—James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of John R. Cameron, Madison, Wis. and Philip F. Judy, Boston, Mass. METHOD AND SYSTEM FOR IN VIVO MEASUREMENT OF BONE TISSUE USING A TWO LEVEL ENERGY SOURCE. Patent dated Dec. 7, 1976. Disclaimer filed Oct. 29, 1986, by the Administrator.

Hereby enters this disclaimer to the remaining term of said patent.

4,350,523.—Kazumasa Taguchi, Amagasaki; Hiroshi Isako, Kobe; Koichi Ikeda, Kakogawa; Keisuke Honda, Kasai; Masaru Kanemoto, Kakogawa and Keishiro Hanaoka, Kobe, Japan. POROUS IRON ORE PELLETS. Patent dated Sept. 21, 1982. Disclaimer filed Dec. 9, 1986, by the assignee, Kabushiki Kaisha Kobe Seiko Sha.

Hereby enters this disclaimer to the entire remaining term of said patent.

4,381,335.—Miyoshi Okamoto, Osaka, Japan. MULTI-COMPONENT COMPOSITE FILAMENT. Patent dated Apr. 26, 1983. Disclaimer filed Sept. 12, 1986, by the assignee, Toray Industries, Inc..

Hereby enters this disclaimer to claims 2 and 11 of said patent.

Disclaimer and Dedication

Des. No. 252,175.—Sol Koffler, Providence, R.I. CAR- RYING CASE. Patent dated June 19, 1979. Disclaimer and Dedication filed Dec. 12, 1986, by the assignee, American Tourister, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Connecticut	New Haven: Science Park Library	(203) 786-5000
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

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PATENT EXAMINING CORPS
RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner
CONDITION OF PATENT APPLICATIONS AS OF January 3, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	3-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-29-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	7-18-84
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	11-06-84
DESIGN, GROUP 290—K. L. CAGE, Director	6-15-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-15-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during January 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,487,470 to 3,492,671, inclusive
Plant Patents	Numbers 2,959 to 2,966 inclusive

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FEBRUARY 17, 1987

U.S. PATENT AND TRADEMARK OFFICE

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**PATENTS WHICH EXPIRED NOVEMBER 30, 1986,
DUE TO FAILURE TO PAY MAINTENANCE FEES**

Patent Number	Serial Number	Issue Date
4,360,932	06/246,634	11/30/82
4,360,937	06/234,355	11/30/82
4,360,940	06/249,917	11/30/82
4,360,954	06/235,060	11/30/82
4,360,978	06/226,523	11/30/82
4,360,984	06/287,218	11/30/82
4,360,988	06/224,886	11/30/82
4,360,999	06/252,274	11/30/82
4,361,011	06/300,533	11/30/82
4,361,013	06/243,553	11/30/82
4,361,016	06/230,453	11/30/82
4,361,034	06/234,393	11/30/82
4,361,040	06/216,416	11/30/82
4,361,061	06/259,969	11/30/82
4,361,070	06/270,502	11/30/82
4,361,084	06/228,827	11/30/82
4,361,088	06/250,279	11/30/82
4,361,106	06/245,185	11/30/82
4,361,111	06/334,019	11/30/82
4,361,117	06/285,309	11/30/82
4,361,128	06/241,839	11/30/82
4,361,160	06/344,768	11/30/82
4,361,163	06/222,212	11/30/82
4,361,226	06/323,829	11/30/82
4,361,243	06/265,010	11/30/82
4,361,251	06/264,411	11/30/82
4,361,258	06/226,027	11/30/82
4,361,264	06/257,535	11/30/82
4,361,268	06/245,313	11/30/82
4,361,277	06/251,083	11/30/82
4,361,282	06/238,019	11/30/82
4,361,297	06/278,394	11/30/82
4,361,337	06/234,155	11/30/82
4,361,345	06/243,114	11/30/82
4,361,346	06/228,586	11/30/82
4,361,367	06/254,942	11/30/82
4,361,405	06/217,591	11/30/82
4,361,406	06/275,453	11/30/82
4,361,407	06/275,680	11/30/82
4,361,427	06/322,518	11/30/82
4,361,463	06/232,295	11/30/82
4,361,474	06/224,205	11/30/82
4,361,475	06/238,663	11/30/82
4,361,525	06/317,118	11/30/82
4,361,526	06/272,859	11/30/82
4,361,536	06/236,928	11/30/82
4,361,538	06/244,658	11/30/82
4,361,542	06/324,210	11/30/82
4,361,566	06/255,544	11/30/82
4,361,572	06/332,856	11/30/82
4,361,573	06/242,703	11/30/82
4,361,585	06/258,662	11/30/82
4,361,586	06/300,653	11/30/82
4,361,613	06/303,899	11/30/82
4,361,614	06/265,491	11/30/82
4,361,631	06/360,073	11/30/82
4,361,650	06/290,943	11/30/82
4,361,658	06/223,482	11/30/82
4,361,671	06/290,663	11/30/82
4,361,674	06/232,218	11/30/82
4,361,698	06/244,612	11/30/82
4,361,699	06/305,804	11/30/82
4,361,706	06/289,404	11/30/82
4,361,707	06/289,418	11/30/82
4,361,719	06/244,825	11/30/82
4,361,744	06/223,949	11/30/82
4,361,765	06/269,234	11/30/82
4,361,799	06/338,409	11/30/82
4,361,822	06/293,950	11/30/82
4,361,824	06/291,871	11/30/82
4,361,864	06/244,237	11/30/82
4,361,911	06/266,025	11/30/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,033,586, Re. S.N. 945,484, Filed Dec. 23, 1986, Cl. 273/260, CHESS GAME APPARATUS, Michael J. Corinthios, Owner of Record: *Inventor*, Attorney or Agent: Ronald D. Cohn, Ex. Gp.: 334

4,233,031, Re. S.N. 938,231, Filed Dec. 4, 1986, Cl. 436/151, ELECTROCHEMICAL TESTING SYSTEM AND METHOD, Wayne R. Matson, et al., Owner of Record: *Environmental Sciences Associates, Inc.*, Attorney or Agent: Norman P. Soloway, et al., Ex. Gp.: 134

4,357,484, Re. S.N. 896,229, Filed Dec. 15, 1986, Cl. 585/740, ADAMANTANE CATALYZED PARAFIN ISOMERIZATION, George M. Kramer, Owner of Record: *Exxon Research and Engineering Co., Florham Park, N.J.*, Attorney or Agent: Henry E. Naylor, et al., Ex. Gp.: 116

4,488,350, Re. S.N. 944,647, Filed Dec. 18, 1986, Cl. 29/577C, METHOD OF MAKING AN INTEGRATED CIRCUIT BIPOLAR MEMORY CELL, Madhukar B. Vora, et al., Owner of Record: *Fairchild Camera and Instrument Corp., Mountain View, Calif.*, Attorney or Agent: Carl L. Silverman, et al., Ex. Gp.: 114

4,573,297, Re. S.N. 930,544, Filed Nov. 13, 1986, Cl. 52/221, ECONOMY POKE-THUR, Richard D. Benscoter, et al., Owner of Record: *Butler Manufacturing Co., Kansas City, Mo.*, Attorney or Agent: Frederick J. Olsson, Ex. Gp.: 354

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Week.

Trademark Expo '87

Applications are being accepted from exhibitors wishing to participate in the Fifth Annual National Trademark Exposition. Expo '87 will be held on June 27 and 28 in the National Tourist Center at the Great Hall of the Department of Commerce, 14th St. and Pennsylvania Ave., N.W., Washington, D.C.

The exhibit fee is \$250. For a brochure or additional information, contact Trish Appelle or Sheila Pellman, Expo Coordinators, at (703) 557-3061.

MARGARET M. LAURENCE,
Assistant Commissioner,
for Trademarks.

Office of the United States Trade Representative

Notice Regarding Transitional Provisions for Improved Patent Protection in the Republic of Korea

Agency: Office of the United States Trade Representative

Action: Notice given regarding opportunity to amend pharmaceutical and chemical process patent applications pending in the Republic of Korea (Korea), and request for submissions regarding protection of certain chemical products in Korea.

Summary: During the two years leading up to Nov. 1985, the United States and the Republic of Korea held a series of consultations aimed at improving Korea protection of U.S. intellectual property rights (patents, copyrights, trademarks). These consultations provided a useful exchange of views, but were unsuccessful in eliciting changes in Korean laws. During that time, losses to U.S. intellectual property owners were increasing from unauthorized reproduction of copyrighted materials and unauthorized use of U.S. inventions.

Accordingly, in Nov. 1985, the President directed the United States Trade Representative to initiate an investigation under Section 301 of the 1974 Trade Act, as amended, of Korean intellectual property laws and practices. The President terminated the investigation in Aug. 1986, upon agreement by Korea to introduce copyright and software legislation and amendments to the patent laws.

Pursuant to the agreement, Korea has enacted certain amendments to its patent law to take effect on July 1, 1987. These changes include patent coverage for chemical and pharmaceutical products, and for new uses of chemical and pharmaceutical products. Further, Korea will institute certain transitional provisions to minimize the disadvantages to certain owners of U.S. patents and to applicants for Korean patents, which may have resulted from the limitations of the present Korean patent law. Both governments agreed that these provisions would be implemented in a manner to ensure a manageable process.

Specifically, two alternative options will be made available. They are:

- I. Applications for process patents pending in the Republic of Korea on the effective date of the new patent law may be amended by adding product claims, upon the request of the applicant. The opportunity to amend process patent applications in this manner will be in effect for ninety (90) days following the effective date of the new patent law. The specific procedures for filing such amendments will be substantially the same as those under the present law.

This option is applicable to products which will be patentable under the amended Korean patent law. A Korean patent granted on an amended application provides a period of protection of 15 years from publication for opposition.

If a U.S. patent application relating to a chemical product is presently pending and the 12-month priority period under the Paris Convention for the Protection of Industrial Property has not yet expired, a related process patent application filed now in the Republic of Korea could be amended after the effective date of the new patent law, provided the Korean application is pending at that time. A related process application may also be filed outside the Convention year, provided the absolute novelty requirement of the Korean Law is satisfied.

- II. Chemical products, including pharmaceuticals and agrichemicals, subject to pre-marketing regulatory review in the Republic of Korea under relevant laws (e.g., the Pharmaceutical Affairs Law and the Agricultural Chemicals Management Law), which were patented in the United States between Jan. 1, 1980, and July 1, 1987, but were marketed neither in the Republic of Korea nor in the United States of America prior to the effective date of the new patent law, will be protected by denying permission, for ten (10) years from such effective date, to manufacture or market such products in the

Republic of Korea without the authorization of the owner of the U.S. patent.

Any natural or juridical person who owns a U.S. patent claiming a chemical product, including pharmaceutical and agrichemical products, that would be subject to pre-market review if manufactured or sold in the Republic of Korea, is eligible to avail himself of this option.

Eligible products will be limited to those which are protected by U.S. patents issued after Jan. 1, 1980, and before the effective date of the new Korean patent law, July 1, 1987. In this respect, it has been agreed that the Republic of Korea would be furnished with an identification of such products no later than the effective date of the new patent law. Information provided to the Korean Government based upon submissions made pursuant to this notice will not be treated confidentially.

In order to provide the Republic of Korea with the agreed upon information, owners of U.S. patents eligible for such treatment must submit a Declaration to the Office of the United States Trade Representative NOT LATER THAN MAR. 31, 1987, containing the following information:

1. A copy of the relevant U.S. patent
2. An identification of the product that has not and will not be marketed in the United States and in Korea prior to the effective date of the new patent law.

Although the product in question must have been the subject of U.S. patent protection after Jan. 1, 1980, a patent may not yet have issued by the time the Declaration is to be submitted to the Office of the United States Trade Representative. Accordingly, information should be supplied identifying the relevant patent application on the basis of which a patent is expected to be granted before July 1, 1987. If a patent is issued before July 1, 1987, on such application, the declarant is required to submit a supplementary Declaration to that effect, together with a copy of such patent.

The product in question must have been identified for commercial applicability and should be identified by its tradename, if such has been established, and also by its generic and chemical names. The Declaration must include a statement that such product is subject to pre-market regulatory review in Korea under relevant laws (e.g., the Pharmaceutical Affairs Law and the Agricultural Chemicals Management Law).

The Declaration will be accepted if, and only if, the declarant acknowledges his understanding in the Declaration that willfully false statements and the like will subject him to fine or imprisonment, or both, under 18 U.S.C. 1001. The declarant must also set forth in the body of the Declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true. Declarations and materials specified above should be submitted to the Office of the U.S. Trade Representative, Office of the General Counsel, Rm. 223, 600 17th St., N.W., Washington, D.C. 20506.

FOR FURTHER INFORMATION REGARDING TRANSITIONAL PROVISIONS OR OTHER CHANGES IN KOREAN LEGISLATION CONTACT: Emery Simon, Director for Intellectual Property, (202) 395-6864; Sandra Kristoff, Deputy Assistant United States Trade Representative for Asia and Pacific, (202) 395-4755; or Catherine Field, Assistant General Counsel, (202) 395-3432.

JUDITH HIPPLER BELLO,
Chairman, Section
301 Committee.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceed-

REISSUES

FEBRUARY 17, 1987

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,351

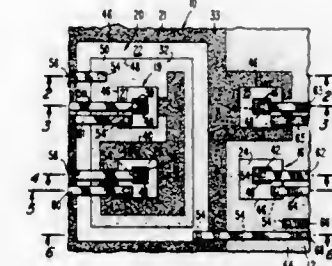
METHOD OF MANUFACTURING A PASSIVATING COMPOSITE COMPRISING A SILICON NITRIDE (Si₃N₄) LAYER AND A PHOSPHOSILICATE GLASS (PSG) LAYER FOR A SEMICONDUCTOR DEVICE LAYER

Robert H. Dawson, Princeton, N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, Princeton, N.J.
Original No. 4,273,805, dated Jun. 16, 1981, Ser. No. 917,106, Jun. 19, 1978. Application for reissue Sep. 22, 1981, Ser. No. 304,347

Int. Cl.⁴ H01L 21/473

U.S. Cl. 29—571

7 Claims



1. An improved method of passivating an integrated circuit device of the type comprising a substrate of semiconductor material having semiconductor devices formed therein, said semiconductor devices being covered by a first layer of insulating material, the improvement comprising the steps of:

- (a) forming contact openings through said first layer of insulating material;
- (b) covering said first layer of insulating material [which] with an impervious layer of silicon nitride; then
- (c) covering said impervious layer with a phosphosilicate glass layer that contains less than about 7% phosphorus by weight; then
- (d) forming contact openings through said phosphosilicate glass layer which align with said contact openings formed through said first layer of insulating material; then
- (e) heating said phosphosilicate glass layer in the presence of steam at a temperature sufficient to cause the edges of said contact openings formed in said phosphosilicate glass layer to become rounded, said temperature not being sufficient to affect said impervious layer; then
- (f) extending said contact openings through those portions of said impervious layer which are exposed through the contact openings formed in the phosphosilicate glass layer; and
- (g) applying a metal over the surface of said phosphosilicate glass layer, whereby said metal will extend through said contact openings to make electrical contact to underlying portions of the semiconductor material which are exposed through said contact openings.

Re. 32,352

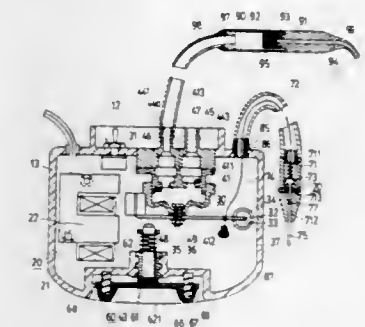
PORTABLE MULTI-FUNCTION MANICURE APPARATUS

Cheng C. Wang, Room 3, 11th Fl., 311, Sec. 4, Chung-Hsiao-East Rd., Taipei, Taiwan
Original No. 4,303,086, dated Dec. 1, 1981, Ser. No. 185,143, Sep. 8, 1980. Application for reissue Nov. 4, 1982, Ser. No. 439,281

Int. Cl.⁴ A45D 29/05

U.S. Cl. 132—73.6

9 Claims



1. A multi-function apparatus which comprises: a casing having a plurality of through holes; means provided in said casing for producing an alternating magnetic field; oscillating means mounted on an inner wall of said casing and actuated by the induced alternating magnet field; means driven by said oscillating means and [communicated] communicating with at least two of the through holes of said casing for sucking and exhausting fluid; and means mounted movably on said casing and oscillated by said oscillating means for performing the function of massage [; a cleaning device communicated with the suction through hole of said casing for performing the function of cleaning by operation of said suction and exhaust means; and means connected with and actuated by said oscillating means for filing one's nails].

Re. 32,353

APPARATUS FOR CONVEYING ROD-LIKE ARTICLES
David S. Bennett, and Grantley R. Hoath, both of High Wycombe, England, assignors to Molins PLC, London, England
Original No. 4,344,521, dated Aug. 17, 1982, Ser. No. 151,984, May 21, 1980. Application for reissue Aug. 10, 1984, Ser. No. 640,322

Claims priority, application United Kingdom, May 22, 1979, 7917752

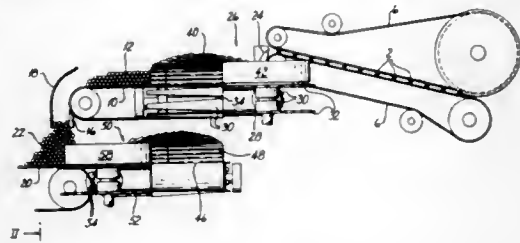
Int. Cl.⁴ B65G 47/24, 47/68, 57/03, 17/12

U.S. Cl. 198—404

13 Claims

13. Apparatus for conveying rod-like articles including first and second conveyors respectively arranged to move first and second single-row streams in generally similar directions transverse to the lengths of the articles, the articles in one stream having corresponding ends at one side of the stream relative to its direction of movement and the articles in the other stream having corresponding ends at the other side of the stream relative to its direction of movement, first and second stack-forming means for respectively converting said first and second streams into multi-layer stack formation, further conveyor means for conveying said first and second streams in stack formation on a substantially common path, and transfer conveyor means for conveying at least one of

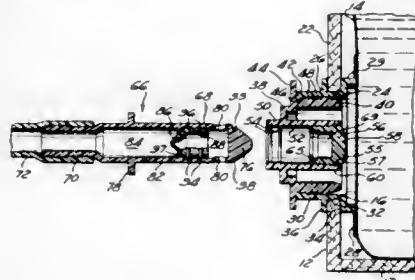
said streams in stack formation onto said path so that said first and second streams form a combined multi-layer stream on said path with corresponding ends of the articles all at the same side of the stream, the transfer conveyor means including first and second transfer conveyors, said first transfer conveyor defining a first curved path about an axis generally perpendicular to the direction of movement of the stream on said conveyor, and said second



transfer conveyor defining a second curved path about an axis generally perpendicular to the direction of movement of the stream on said conveyor, said first and second curved paths curving in opposite directions relative to the respective directions of movement of the stream on said paths and respectively including portions in which articles are conveyed in substantially parallel and opposite directions.

Re. 32,354
CONTAINER FOR HOLDING AND DISPENSING FLUID
Chester Savage, Irvine, Calif., assignor to Scholle Corporation, Irvine, Calif.
Original No. 4,375,864, dated Mar. 8, 1983, Ser. No. 170,541, Jul. 21, 1980. Application for reissue Mar. 4, 1985, Ser. No. 707,698

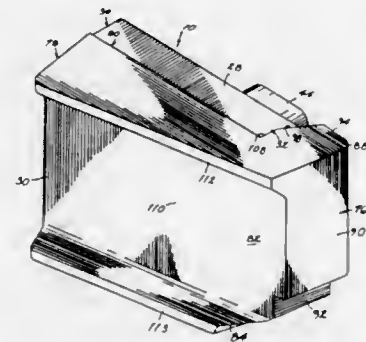
Int. Cl.⁴ B67B 7/24
U.S. Cl. 222—81 9 Claims



8. A container adapted to dispense fluid comprising:
- a fluid container;
 - a spout attached to said container, said spout having a bore which provides communication between the interior and the exterior of the container, said bore being adapted to receive a dispenser probe having an interior fluid channel; and
 - a plug sized to fit coaxially within said bore to seal said bore, said plug being coaxially slidable within said bore to extend into the interior of said container flexible bag to break the seal in response to being pushed by said probe and having means for fixedly fastening the plug to said probe so that the plug will move axially with the probe in said bore when being pushed or pulled, the plug being fixedly fastened to said probe upon axial pushing engagement by said probe before breaking said seal, said plug adapted to be pulled by said probe back into sealing engagement with said bore, and then to separate from said probe during axial pulling removal of said probe from the interior of said bore.

Re. 32,355
IMPELLER SHOE ASSEMBLY
Kenneth D. Warren, and Gregory G. Tenold, both of Spokane, Wash., assignors to Portec, Inc., Oak Brook, Ill.
Original No. 4,355,769, dated Oct. 26, 1982, Ser. No. 160,068, Jun. 16, 1980. Application for reissue Sep. 7, 1984, Ser. No. 648,812

Int. Cl.⁴ B02C 19/06
U.S. Cl. 241—300 13 Claims



1. An impeller shoe assembly for directing material radially outward from a central distribution disc on a horizontal turntable of a vertical shaft centrifugal impact crushing machine to impact the material against stationary anvils circumscribing the turntable, comprising:
- an elongated supporting base member having a bottom face, a top face, a back face and a front face extending from an inner end to an outer end with securing means projecting from the back face to releasably secure the base member to a turntable bracket with the back face engaging the bracket;
 - an inner end of the base member having a shoulder surface; said front face of the base member having a longitudinal female dovetail groove formed therein extending from the inner end face towards the outer end face intermediate the bottom face and the top face;
 - an elongated wear resistant member having a bottom face, a top face, back face and a front face extending from an inner end to an outer end with the front face directing the material therealong radially outward from the central disc to impact against the stationary anvils;
 - said back face of the wear resistant member having a longitudinal male dovetail projection formed therealong extending from the outer end toward the inner end between the bottom and top faces for interfitting within the complementary dovetail groove to releasably secure the wear resistant member to the supporting base member; and
 - said back face of the wear resistant member having an abutment surface for engaging the shoulder surface to position the wear resistant member longitudinally relative to the supporting base member to minimize wear of the supporting base member.

Re. 32,356
CONTROLLED RELEASE OF COMPOUNDS UTILIZING A PLASTIC MATRIX
Nathan F. Cardarelli, Barberton, Ohio, assignor to Consolidated Fertilizers Limited, Queensland, Australia
Original No. 4,400,374, dated Aug. 23, 1983, Ser. No. 171,835, Jul. 24, 1980. Continuation-in-part of Ser. No. 51,102, Jun. 22, 1979, Pat. No. 4,299,613, and Ser. No. 14,118, Feb. 20, 1979, Pat. No. 4,228,614, said Ser. No. 51,102, is a continuation-in-part of Ser. No. 14,118, which is a continuation-in-part of Ser. No. 5,174, Jan. 22, 1979, Pat. No. 4,237,114, which is a continuation-in-part of Ser. No. 916,520, Jan. 19, 1978, Pat. No. 4,166,111. Application for reissue Aug. 22, 1984, Ser. No. 643,142

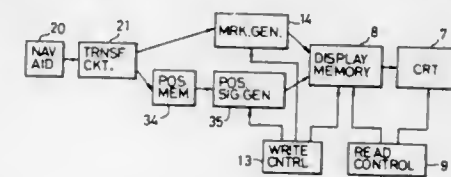
Int. Cl.⁴ A01N 55/04
U.S. Cl. 424—78 54 Claims

1. A floating controlled release pesticide dispenser, comprising:

- a polymer, an aquatic pesticide, and a porosity inducing agent,
- said polymer in the form of a matrix and containing said aquatic pesticide and said porosity inducing agent, the amount of said polymer being 100 parts by weight,
- said polymer of said matrix selected from the group consisting of a thermoplastic polymer, a thermoset polymer, and combinations thereof;
- said aquatic pesticide being a pesticide for destroying aquatic pests in an aqueous environment, the amount of said pesticide ranging from about 2 parts by weight to about 80 parts by weight per 100 parts of said polymer except when said pesticide is an organotin compound, the amount of said organotin compound ranging from about 25 to about 75 parts; and
- said aquatic pesticide slowly being released from the dispenser;
- said dispenser having a density of less than 1.0 grams per cc; and
- an anchor, said anchor having a density of greater than 1.0 grams per cc and connected to said dispenser.

Re. 32,357
MOVING BODY TRACK INDICATOR SYSTEM
Suyji Nagao; Ryoichi Nakai, and Kazuo Yamauchi, all of Hyogo, Japan, assignors to Furuno Electric Co., Ltd., Nagasaki, Japan
Original No. 4,400,780, dated Aug. 23, 1983, Ser. No. 142,793, Apr. 22, 1980. Continuation of Ser. No. 600,269, Apr. 12, 1984, abandoned. Application for reissue Aug. 23, 1985, Ser. No. 768,187
Claims priority, application Japan, Apr. 27, 1979, 54-52716; Jun. 21, 1979, 54-78973

Int. Cl.⁴ G01S 7/04
U.S. Cl. 364—449 24 Claims

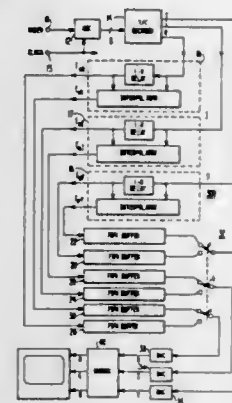


17. A moving body track indicating system comprising:
- means for measuring the position of a moving body and producing first and second signals representative of said position;
 - line markers signal generating means for producing signals corresponding to longitude line and latitude line markers based on said first and second signals from said means for measuring the position of a moving body;
 - first storing means for storing signals corresponding to each

- of the track of the moving body and the longitude and latitude line markers;
- second storing means for storing said first and second signals from said means for measuring the position of the moving body;
- body position signal generating means for generating signals corresponding to the position of the moving body in response to said first and second signals from said second storing means;
- writing means for writing said signals produced by said body position signal generating means and from said line markers signals generating means into said first storing means;
- indicating means for displaying on an indicating surface thereof the track of the moving body and the longitude line and the latitude line markers; and
- controlling means for reading said signals from said first storing means and supplying them to said indicating means.

Re. 32,358
TELEVISION DISPLAY SYSTEM WITH REDUCED LINE-SCAN ARTIFACTS
Kerns H. Powers, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.
Original No. 4,400,719, dated Aug. 23, 1983, Ser. No. 300,227, Sep. 8, 1981. Application for reissue Aug. 23, 1985, Ser. No. 768,739

Int. Cl.⁴ H04N 7/01
U.S. Cl. 358—21 R 16 Claims



1. A method for producing a flat-field representation of a line-scanned image, said method comprising the steps of:
- producing scanned lines of video signals each of which is representative of a line scan of one field of interlaced fields comprising a frame of the image information, which scanned lines of video signals, if displayed, produce an objectionable line-scan structure;
 - storing at least one line of said scanned lines of video signals but substantially less than the number of scanned lines of video signals per field to provide stored video;
 - comparing said stored video with at least one temporally adjacent scanned line of video to produce an estimated value of the video which would be produced by a line-scan of said image between said stored and adjacent lines, thereby producing an estimated line of video;
 - time-compressing said stored, estimated and adjacent lines by a factor related to the quotient of a sum and the number of scanned lines of video per frame, where said sum is the sum of the number of said estimated lines and said scanned lines of video per frame; and
 - displaying non-interlaced fields of video by progressive scanning of said scanned lines of video alternated with said estimated lines of video, each of said progressively scanned non-interlaced fields being derived from only one of said interlaced fields, whereby said objectionable line-scan structure is made less visible.

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PLANT PATENTS

GRANTED FEBRUARY 17, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,880

MINIATURE ROSE PLANT NAMED MINPCO
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 29, 1985, Ser. No. 728,666
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—7

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright to slightly spreading, much branched habit substantially as illustrated and described, characterized by buds and flowers of a soft to medium pink color, being of a shade generally near Azalea Pink 618/3 or deeper, the bud and flower resembling the variety Over The Rainbow (U.S. Pat. No. P.P. 3,472) in form, and Little Darling in color (but smaller in size); and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,881

MINIATURE ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed Apr. 29, 1985, Ser. No. 728,667
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—9

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched, upright habit, substantially as illustrated and described, characterized by buds and flowers of a medium red color, being of a shade generally near Carmine 21/1, the bud and flower resembling the variety Over The Rainbow (U.S. Pat. No. P.P. 3,472) in form and size and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,882

STRAWBERRY PLANT—SS484
Chester D. Schwartze, Puyallup, Wash., and Atsusa Sakuma, deceased, late of LaConner, Wash. by Grace H. Sakuma, Executrix, assigns to Sakuma Bros. Farms, Inc., Burlington, Wash.
Filed Aug. 16, 1984, Ser. No. 641,497
Int. Cl.⁴ A01H 5/03

U.S. Cl. Plt.—49

1 Claim

1. A new and distinct variety of strawberry plant, as illustrated and described herein.

5,883

AFRICAN VIOLET NAMED ALENA
Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836
Filed Apr. 22, 1985, Ser. No. 725,985
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. An African violet plant having uniform, red-purple blooms over a long period.

5,884

AFRICAN VIOLET (VARIETY—EILEEN)
Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836
Filed Apr. 24, 1985, Ser. No. 726,830
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. An African violet plant having violet blue-edged white flowers and abundant foliage.

5,885

AFRICAN VIOLET NAMED MARINA
Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836
Filed Apr. 24, 1985, Ser. No. 726,848
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. An African violet plant with blue, ruffled blossoms borne on a compact plant.

5,886

CHRYSANTHEMUM PLANT NAMED CINNAMON
Leonard H. Shoesmith, deceased, late of Westfield, England by May Victoria Shoesmith, executrix, assignor to Ball Pan Am Plant Co., Parrish, Fla.
Filed Mar. 18, 1985, Ser. No. 712,696
Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar of Chrysanthemum named Cinnamon, as described and illustrated, and particularly characterized by its dwarf habit; flat capitulum form and single capitulum type; bronze flower color; eight week response, and by its ability to be grown in 9 cm. pots year around.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
152-223	4,643,251
254-250	4,643,474
420-012	4,643,767
420-578	4,643,768
526-261	4,644,025
379-042	4,644,103
379-056	4,644,105
379-375	4,644,106
379-354	4,644,107
379-406	4,644,108
379-027	4,644,109
343-767	4,644,343
380-006	4,644,396

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PATENTS

GRANTED FEBRUARY 17, 1987

GENERAL AND MECHANICAL

4,642,814

ATHLETIC PADDING

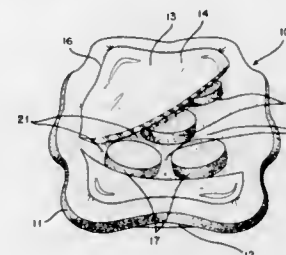
Jerry W. Godfrey, 6812 Radial Dr., Fayetteville, Cumberland County, N.C. 28301

Filed Nov. 1, 1985, Ser. No. 793,777

Int. Cl.⁴ A41D 13/00

U.S. Cl. 2-2

14 Claims



1. A protective pad means having the capability to absorb the force of a blow comprising: an outer layer and an inner layer of material forming an envelope; a plurality of spring columns mounted interiorly to said envelope; and air passages internal to said envelope and surrounding said spring columns whereby, when said pad means is impacted, said outer and inner layers of the envelope restrict air flow from said air passages so as to form an air cushion that operates in conjunction with said inner and outer layers and said spring columns to absorb the force of the blow.

4,642,815

ADJUSTABLE GUN PAD FOR A SHOOTING GARMENT

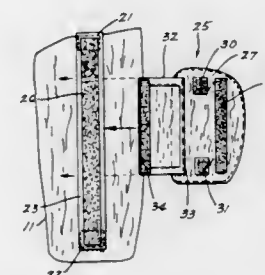
Robert E. Allen, 3105 Stanton Ave., Des Moines, Iowa 50321

Filed Jan. 31, 1986, Ser. No. 824,792

Int. Cl.⁴ A41D 13/00

U.S. Cl. 2-2

3 Claims



1. A shooting garment comprising: coat means for extending over a wearer's shoulders and having a front portion and a rear portion; a first VELCRO means anchored at each end thereof to said front portion of said coat means for overlying one shoulder of the wearer, said first VELCRO means being substantially vertically disposed when said coat means in being worn; pad means for cushioning the recoil shock from a gun in use when placed against said pad means; second VELCRO means operably attached to said pad means for selective engagement with said first VELCRO means, said first VELCRO means being substantially vertically longer than said second VELCRO means whereby said pad means can be adjusted vertically by placing the second VELCRO means at different places on said first VELCRO means; and further wherein an intermediate portion of said first VELCRO means intermediate the ends thereof is not attached to the front portion of

the coat means thereunder, and said pad means further comprises: flap means attached along one edge thereof to the back of said pad means and having third VELCRO means attached to the opposite free edge thereof; and fourth VELCRO means attached to the back of said pad means for selective engagement with said third VELCRO means whereby said flap means can be extended between said intermediate portion of the first VELCRO means and the front portion of said coat means when said third and fourth VELCRO means are disengaged with respect to each other and reconnected once the second VELCRO means is connected at the desired location to said first VELCRO means.

4,642,816

EYE PROTECTOR

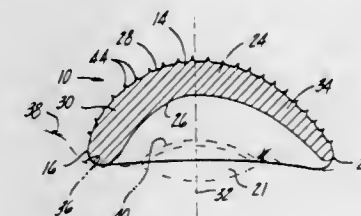
Anne Miller, P.O. Box 61, Harrow, Ontario, Canada (N0R 1G0)

Filed Jan. 13, 1986, Ser. No. 818,044

Int. Cl.⁴ A61F 9/00

U.S. Cl. 2-15

7 Claims



1. An eye protector comprising: a body having an upper edge, a lower edge and an arcuate section extending between said upper and lower edges, said body being dimensioned so that, with said body positioned over a human eye, said upper edge is positioned closely adjacent and above the eye, said lower edge is positioned closely adjacent and below the eye, and said arcuate portion is spaced outwardly from and covers the eye, wherein said arcuate portion has a thickness which decreases substantially continuously from said upper edge to said lower edge.

4,642,817

ADJUSTABLE SWEATBAND FOR HAT

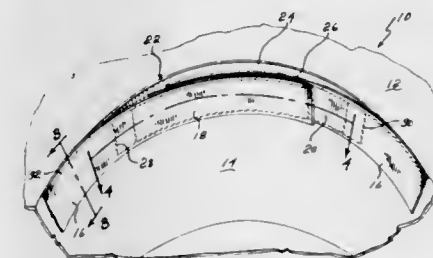
Bernard Ferstenfeld, Hampstead, Canada, assignor to Fersten Headwear, Inc., Laurent, Canada

Filed Jun. 6, 1985, Ser. No. 741,794

Int. Cl.⁴ A42B 1/22

U.S. Cl. 2-183

4 Claims



1. In a hat of soft or semi-rigid material having an uninter-

rupted crown, a sweatband attached on the interior of the crown at least along the lower margin thereof to the crown for a major portion of the extent of the crown and being unattached to the crown for the remaining minor portion of the crown, thus leaving a portion of the crown free of the sweatband; the ends of the sweatband adjacent the minor portion of the crown including extensions adapted to subtend the minor portion of the crown and overlap each other at the interior of the crown, the overlapping extensions of the sweatband including fastening means operable for adjusting the girth of the crown at any position falling within a given range of adjustment, the minor portion of the crown including a rigid reinforcing strip fixed to the crown such that the minor portion of the crown is rigid and resists gathering when the hat is being worn.

4,642,818

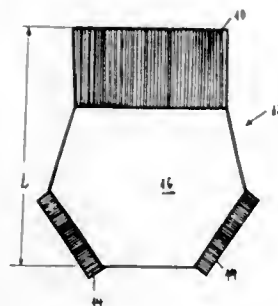
PANTY-LIKE GARMENT OF TEXTILE MATERIAL
Christiane Dehnert, and Heinz Dehnert, both of Im Mittleren Sand 48 a, 6230 Frankfurt am Main 80, Fed. Rep. of Germany
Filed Jan. 16, 1985, Ser. No. 692,281

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414637; Nov. 2, 1984, 3440179

Int. Cl.⁴ A41B 9/00

U.S. Cl. 2—400

14 Claims



1. A panty-like garment of textile material especially adapted for babies, comprising a body member (16) of an elastically stretchable and absorptive textile material, a waistband (10) and leg bands secured to said body member, said waistband being of an elastically stretchable material and having a width in the range of about one-fourth to one-half of the overall length (1) of the body member (16), said leg bands being of an elastically stretchable material and each having a width in the range of about one-fifth to one-half of the width of said waistband.

4,642,819

DISPOSABLE GARMENTS WITH MULTIPLE STRAND ELASTICIZED OPENINGS

Thomas M. Ales, Winnebago County; David T. Strohbeen, Outagamie County, and Joyce A. Damico, Winnebago County, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 10, 1985, Ser. No. 690,349

Int. Cl.⁴ A61F 13/16

U.S. Cl. 2—400

7 Claims

1. In a disposable garment of the type having at least one opening intended to fit snugly about a wearer's body, which opening is defined by an exterior marginal portion of material and an interior marginal portion of material together with elastic means joined thereto to provide an elasticized opening for the garment,

the improvement wherein:

- (1) the elastic means consists of a plurality of elastic elements positioned between the exterior marginal portion and the interior marginal portion, and extending substantially about the periphery of the opening;
- (2) each elastic element has a cross-sectional shape having an

aspect ratio in the range of 0.25 to 1 with its shortest axis in the range of about 0.8 to 3.2 mm long and an area in the range of about 0.5 to 8 mm²; wherein each elastic element can have a cross-sectional shape, an aspect ratio, and an area different from the other elastic elements to provide different elastic characteristics thereto;

- (3) each elastic element is joined to both the exterior marginal portion and the interior marginal portion in a



stretched condition to provide an elasticized opening when in a retracted condition; and

- (4) the elastic elements are spaced from one another in a direction transverse to the direction of stretch of the elements, there being an unbroken continuous zone of the exterior marginal portion and interior marginal portion between adjacent spaced elastic elements and extending substantially about the periphery of the opening.

4,642,820

BIDET

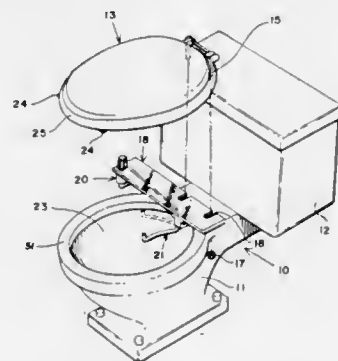
Glenn E. Boring, Jr., 8020 24th Ave. North, St. Petersburg, Fla. 33710

Continuation-in-part of Ser. No. 625,605, Jun. 28, 1984, abandoned. This application Sep. 19, 1985, Ser. No. 777,932

Int. Cl.⁴ A47K 3/20

U.S. Cl. 4—420.4

6 Claims



1. Hygiene apparatus adapted to be fitted to a toilet bowl for cleansing or bathing a user's posterior or genital areas, comprising: a base mounted onto said toilet bowl; nozzle means connected to said base for directing the flow of a fluid to said user's posterior or genital areas; combination control means for controlling the flow of said fluid through said nozzle means and for controlling arcuate movement of said nozzle means from a nonuse position to a use position; means connected to said combination control means and said nozzle means for moving said nozzle means in said arcuate manner; and conduit means connected to said combination control means and said nozzle means for providing flow communication of said fluid from said combination control means to said nozzle means, wherein said conduit means comprises an opening integral with said base and extends from an outlet port at said combina-

tion control means to an inlet port at said nozzle means, and said means for moving said nozzle means comprises an elongated bar pivotally attached at one end to a rotatable member of said control means and pivotally attached at its other end to a nozzle of said nozzle means whereby rotation of said rotatable member of said combination control means causes rotation of said nozzle means in said arcuate manner, and said elongated bar member fits within said conduit opening integral with said base.

4,642,821

SELF-CLEANING SANITARY APPARATUS

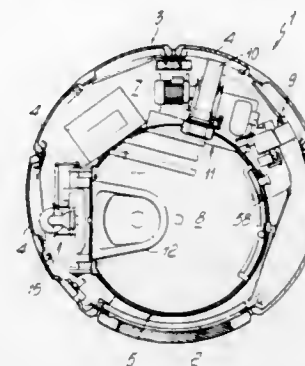
Marco Zanuso, and Fabio Fratti, both of Milan, Italy, assignors to I.C.A. S.p.A. Industria Componenti per l'Architettura, Pomezia, Italy

Continuation-in-part of Ser. No. 506,483, Jun. 21, 1983, abandoned. This application Mar. 17, 1986, Ser. No. 840,338
Claims priority, application Italy, Jun. 28, 1982, 22105A/82

Int. Cl.⁴ A47K 4/00; E03C 1/01

U.S. Cl. 4—662

15 Claims



1. A self-cleaning sanitary apparatus comprising: a booth having an automatically openable arcuate door, actuator members adapted for opening said arcuate door, a tubular outer shell including a number of arcuate panels defining a tubular outer wall, a tubular inner shell at least vertically surrounded by said outer shell said tubular inner shell defining within said booth a tubular inner wall of a smaller diameter than said tubular outer shell, said inner shell being positioned off-center with respect to said outer shell to define a space, between said inner and outer shells, having a region of maximum breadth and a region of minimum breadth, a bowl seat housed within said inner shell, a tilting footrest defining the floor of said inner shell and having a center portion of larger height than its peripheral portion, members for sensing a person in said inner shell and connected to said tilting footrest and to said actuating members for said door, an automatic toilet paper dispenser housed in said space for dispensing a metered amount of said toilet paper inside said inner shell, a hand washing compartment housed in said space and including an automatic soap dispenser, a plurality of washing liquid dispensing nozzles arranged peripherally around said inner wall to form a layer of said liquid exhibiting laminar flow over the lower portion of said inner wall, directed nozzles dispensing water at differentiated pressures and housed in said bowl seat, members for flushing said bowl seat housed in said space and comprising a flushing hood said flushing hood having a hood face and defining such a conformation as to overlap said bowl seat, a fan defining a rotation plane and having end portions, said fan being associated rotatably with said hood face confronting said bowl seat, said fan having in said end portions respectively a first opening for dispensing said liquid over said bowl seat surfaces affected by a user along an angled direction to said rotation plane of said fan and a second opening for dispensing said liquid along an orthogonal direction to said rotation plane, a motor having a motor side and being adapted for driving said fan, a cogged belt for transmitting the motion from a first pulley fast with said motor to a second pulley fast with said fan,

4,642,822

RECREATIONAL POOL

Nils Tvengsberg, Oslo, Norway, assignor to Norca Industries Limited, Montreal, Canada

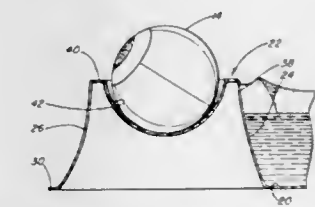
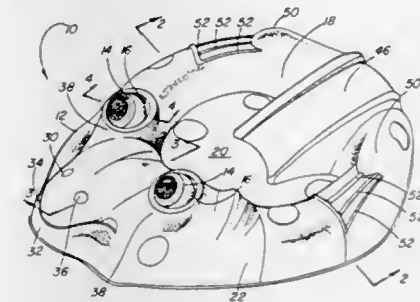
Filed Sep. 27, 1984, Ser. No. 654,947

Claims priority, application Canada, Oct. 4, 1983, 438339

Int. Cl.⁴ E04H 3/18

U.S. Cl. 4—488

5 Claims



1. A recreational device, comprising: a unitary body constructed of synthetic plastic material, said body having a substantially planar bottom wall and an endless peripheral wall surrounding and extending upwardly from said bottom wall, said peripheral wall being generally U-shaped in cross section and including an inner side wall smoothly merging with said bottom wall and extending upwardly therefrom and defining with said bottom wall a water retaining container, a generally convexly curved top wall generally paralleling said bottom wall and merging smoothly from said inner side wall and an outer side wall merging smoothly from said top wall and extending downwardly toward and terminating at the plane containing said bottom wall, said peripheral wall having a portion at one end of said body formed in the shape of the head of a frog, said head portion having a pair of recesses representing eye sockets, a slide extending from said top wall at the end of said body remote from said one end toward said bottom wall and at an angle thereto; and a pair of inflatable balls, each said ball being generally spherical and being dimensioned to be removably received in one of said recesses, each said ball having an air receiving chamber and an eccentrically disposed liquid receiving chamber, each said chamber having passage means for admitting fluid therein and a closure means for closing

said passage means, and means defining the iris and pupil of an eye on said ball.

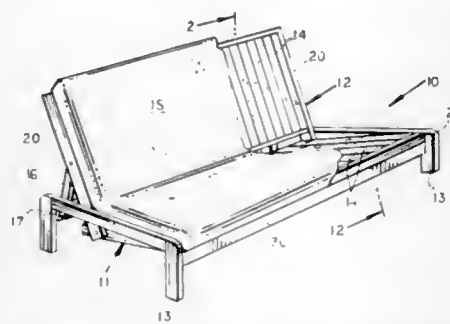
4,642,823

SOFA BED RECLINER

William B. Wiggins, New York, N.Y., assignor to Robert Fireman's Furniture Gallery, Inc., New York, N.Y.
Filed Jan. 8, 1985, Ser. No. 689,658
Int. Cl.⁴ A47C 23/00

U.S. Cl. 5—47

4 Claims



1. A sofa bed recliner comprising a seat frame; a back frame; a base; at least one support arm; and interactive guide means, said back frame including a rear rail; a front rail; and end rails, said seat frame including a rear rail; a front rail; and end rails, said end rails of said back frame and said end rail of said seat frame being pivotally joined, said base including end portions; a rear cross piece; and a front cross piece, said cross pieces joining said end portions, said seat frame slideably resting on said front cross piece of said base, said interactive guide means comprising a groove and a wheel that slideable supports the back frame upon said base end portions as to guide said frames forward to a horizontal position and back to a sitting position, said at least one support arm pivotally mounted at the rear of said base at one end and on said back frame at its other end, said front rail of said back frame and rear rail of said seat frame each including at least one opening, said openings adapted to be juxtaposed when said seat frame and back frame are in horizontal position, said seat frame including at least one leg pivotally mounted by the front rail of seat frame, said leg adapted to be rotated to extend vertically of said seat frame to a support position, a rod pivotally mounted on said at least one leg, as to be eccentric of the pivot point of said leg, said rod extending horizontally through said back and seat frame openings when said seat frame and said back frame are in horizontal position and said leg is rotated to its support position, and at least one arm adjacent said at least one support, said arm pivotally mounted to said back frame, said arm being longer than the distance from said arm's pivot point to said seat frame's rear rail when said back frame and seat frame are in horizontal position and shorter than the distance from said pivot point to said seat frame's rear rail when said back frame and said seat frame are in sitting position said arm including a biasing tether extending between said support arm at its other end adjacent the back frame to aid arm beyond its pivot point adjacent said support arm whereby said arm is interlockable with said seat frame's rear rail to said frames to revert them to sitting position and said tether is adapted to pivot said arm clear of said seat frame when said back frame is in sitting position.

4,642,824

BED ACCESS APPARATUS FOR INVALIDS AND HANDICAPPED

Ronald R. Hodges, 5577 Kenowa, Grandville, Mich. 49418
Filed Sep. 27, 1985, Ser. No. 781,260
Int. Cl.⁴ A61G 7/08

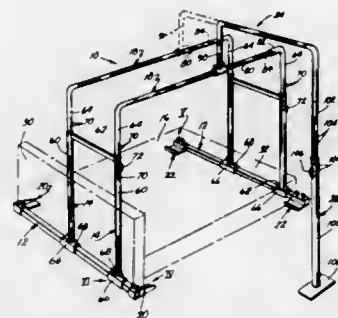
U.S. Cl. 5—81 R

21 Claims

1. A freestanding bed access apparatus for use with a bed

having a head, a foot, sides and floor support that support the bed on a supporting floor surface, comprising:

means defining a base for resting on the floor surface and for supporting the bed access apparatus thereon, said base including a head base for locating at the head of a bed and a foot base spaced therefrom for locating at the foot of a bed to accommodate said bed therebetween;
a generally vertical upright extending upwardly from said head base and a generally vertical upright extending upwardly from said foot base;



at least one overhead bar spanning between said uprights to extend over a bed located between said head base and said foot base; and

a head anchor plate secured to said head base and a foot anchor plate secured to said foot base, said head anchor plate and said foot anchor plate disposed to rest on the floor surface supporting a bed, said head anchor plate and said foot anchor plate having a size and spacing therebetween to accommodate floor supports of a bed thereon, whereby said bed access apparatus is stabilized by the bed resting thereon, such that additional securance to the bed frame is not required.

4,642,825

CONTROL APPARATUS FOR CLINIC BED

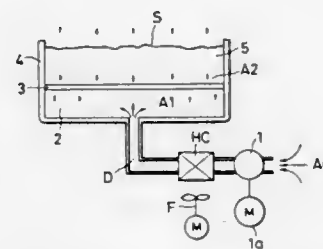
Masaya Kurita, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 8, 1985, Ser. No. 752,564

Int. Cl.⁴ A47C 27/08

U.S. Cl. 5—453

5 Claims



1. In a control apparatus for a clinic bed so constructed as to make air pressurized by air pressurizing means upwardly escape through a diffuser board dotted with a number of small openings and to support a human body by floating the body on a bead mattress formed with beads caused to circulate by the flow of the escaped air, said control apparatus comprising excessively high temperature detecting contacts responsive to the detection of a bead temperature exceeding a predetermined level and responsive to the production of an excessively high temperature warning signal and for deenergizing load means for driving said air pressurizing means while said excessively high temperature warning signal is produced, the improvement of operational instruction output means for giving instructions concerning energizing said means for driving said air

pressurizing means while said excessively high temperature warning signal is produced, closed circuit holding means for closing and holding said load means according to said instructions, and resetting means for resetting the operation of said closed circuit holding means through reset signal output means after the closing and holding operation is performed.

4,642,826

REMOVABLE LININGS FOR SNUGLY WRAPPING TRIDIMENSIONAL ARTICLES

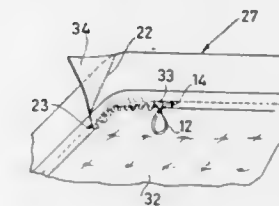
Piero Bassetti, Milan, Italy, assignor to Bassetti S.p.A., Milan, Italy

Filed Dec. 27, 1983, Ser. No. 565,455

Claims priority, application Italy, Jan. 6, 1983, 19019 A/83
Int. Cl.⁴ A47G 9/02, 9/04

U.S. Cl. 5—496

9 Claims



1. An adjustable fitted sheet, comprising:

a substantially quadrilateral piece of cut fabric, one edge of which is formed into an edge-fold having at least one substantially perpendicular corner at an end thereof, said edge-fold including a stitched sheath provided at said end and extending parallel to said edge and gathering means provided within said sheath, said sheet further comprising a stitch line extending substantially diagonally across said corner and joining said edge-fold to said sheet, said stitch line further securing a first end of said gathering means within said sheath substantially about said edge-fold end.

4,642,827

BOTTLE OPENER AND LIGHTER COVER

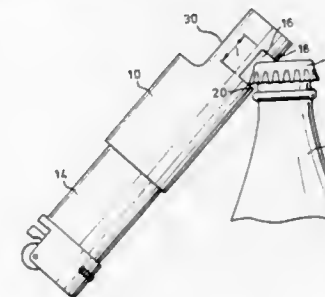
Jonas Karuzas, 2329 Brinell Avenue, Burlington, Ontario, Canada L7R 3T5

Filed Nov. 13, 1985, Ser. No. 797,479

Int. Cl.⁴ B25F 1/04

U.S. Cl. 7—151

10 Claims



1. A combination bottle opener and lighter case comprising an elongate metal body formed by a wall that extends about a longitudinal axis, said wall defining an internal hollow chamber with an opening at one end of the body such that a disposable lighter can be inserted longitudinally into the chamber, said body having internal cross-sectional dimensions of such size that said body accommodates said lighter in a snug fitting manner and a notch for removing a crown cap from a bottle, said notch being located in said wall a short distance from one end of said body, said notch forming a fulcrum at one end thereof and a prying lip at the opposite end thereof, the fulcrum and prying lip being formed such that the opener can be

placed on a crown cap in such a manner that the lip engages a bottom edge of the cap and the fulcrum engages, and extends partially across, the top surface of the cap such that when the opener is pivoted upwardly with respect to the bottle, the cap is removed.

4,642,828

METHOD FOR PREVENTING CONTACT WITH CONTAMINATED TEXTILES AND/OR SPREADING OF CONTAMINANTS THEREIN

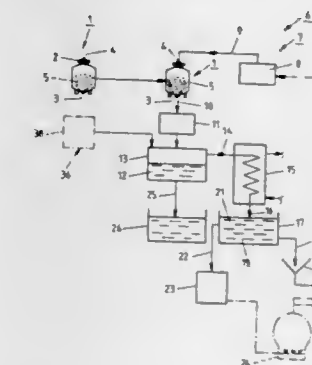
Knut B. L. Lundberg, Stenöregatan 19, S-230 44 Vintrie, Sweden

Filed Jun. 20, 1985, Ser. No. 747,167

Claims priority, application Sweden, Jun. 26, 1984, 8403385
Int. Cl.⁴ D06B 5/24

U.S. Cl. 8—149.3

8 Claims



1. Method for preventing contact with contaminated textiles and/or spreading of contaminants therein during transport and cleaning of said textiles (5), characterised by collecting the textiles (5) in a hermetically sealable, transportable and to a cleaning device (6) connectable transport container (1), which in hermetically sealed condition is transported to the cleaning device and connected thereto for admission of medium for driving out contaminants for the textiles (5) before the container is opened for removing said textiles.

4,642,829

SHOE UPPER LINER EXTENDER MECHANISM

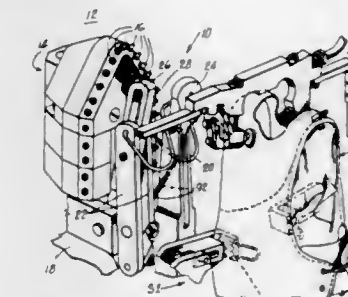
Donald B. McIlvin, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 28, 1984, Ser. No. 656,136

Int. Cl.⁴ A43D 11/00; B05B 7/06

U.S. Cl. 12—54.3

3 Claims



1. A machine for stiffening an area between the heel pocket of a shoe upper and the lining which is secured to the shoe upper at the top edge of the heel pocket by applying a hot resinous material to the heel pocket comprising nozzle means for discharging hot resinous material, said nozzle means including a nozzle base,

means for supporting said nozzle base for pivotal displacement about a first axis between an advanced position and a retracted position.

elongated wiper means including a wiper blade, said nozzle base including means for supporting said wiper means at a location remote from said wiper blade for pivotal displacement about a second axis parallel to said first axis from a remote position to a fully wiped position when said nozzle base is displaced from said advanced position to said retracted position,

liner extending means including a liner engaging member, an elongated arm having first and second ends, means for securing said liner engaging member to the first end of said elongated arm, and

means for supporting said liner extending means between said nozzle means and said wiper means including a first link member having first and second ends, said first link member pivotally secured at said first end to the second end of said elongated arm means and pivotally secured at the second end to said wiper means, a second link member having first and second ends, said second link member pivotally secured at said first end, with said first link, to the second end of said elongated arm and pivotally secured at the second end to said nozzle base,

said elongated arm having a pin extending therefrom, and a control arm having a slot for receiving said pin.

4,642,830

BRIDGE TRUSS, BRIDGE SPAN INCLUDING SUCH TRUSSES, AND METHOD OF CONSTRUCTING THE TRUSS

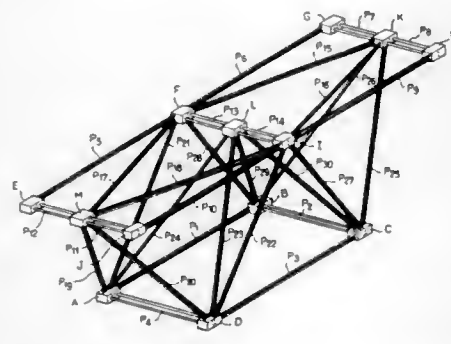
Pierre Richard, Neuilly s. Seine, France, assignor to Bouygues, Clamart, France

Filed Dec. 7, 1984, Ser. No. 679,554

Claims priority, application France, Dec. 7, 1983, 83 10584
Int. Cl.⁴ E01D 7/02

U.S. Cl. 14-4

9 Claims



1. A prefabricated concrete three-dimensional unit truss for a bridge, wherein the unit truss is constituted by bars of prestressed high strength concrete interconnected by blocks.

4,642,831

ROLLER BRUSH

Eric M. Roth, 153 Lake Drive N, Keswick, Ontario, Canada L4P 3C8

Filed Sep. 27, 1985, Ser. No. 781,048

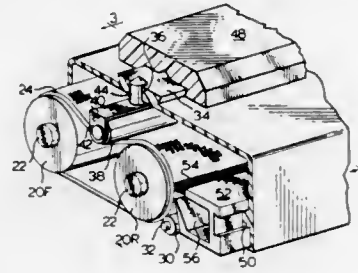
Int. Cl.⁴ A46B 13/08, 15/00

U.S. Cl. 15-1.5 R

20 Claims

1. Roller brush defining a brushing direction, including a housing, a pair of parallel rollers rotatably mounted in said housing, the periphery of each said roller extending below the bottom of said housing, an endless belt designed to extend about said rollers, thus

defining the lower flight of said belt below the bottom of said housing, and an upper flight within said housing, means for tensioning said belt designed to provide that said lower flight is substantially straight between said rollers, said belt being provided with an outwardly facing surface of



slanted synthetic fibres said fibres being slanted outwardly in one of the longitudinal directions of said belt, the direction of slant of said fibres from said belt on said lower flight defining the brushing direction, means yieldably resisting movement of said belt over said rollers.

4,642,832

FLOOR-WASHING APPARATUS PROVIDED WITH A SELF-WRINGING DEVICE

Giorgio S. Trisolini, Via Donatello, 5, 74019 Palagianò (Taranto), Italy

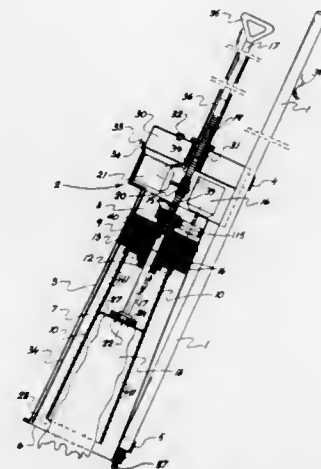
Filed Apr. 10, 1985, Ser. No. 721,851

Claims priority, application Italy, Apr. 17, 1984, 66302 A/84; Mar. 18, 1985, 35689/85[U]

Int. Cl.⁴ A47L 13/58

U.S. Cl. 15-3

12 Claims



1. An improved floor-washing apparatus including a self-wringing device, comprising:

a handle (1); a housing (2) including an upper portion, a lower portion in which is disposed a container (3) having an open bottom end (6) and support means dividing said housing into said upper and lower portions; a cage (10), substantially cylindrical in shape and exhibiting a regularly perforated surface, located within the container (3) and having an open bottom end (28) positioned adjacent the open bottom end (6) of the container (3), said cage being rotatably coupled at the top end thereof with said support means (9); a mop (18);

means, supporting at least a top end of said mop within said cage, for moving said top end between a first limit position

in which the mop is substantially fully retracted into the cage (10), and a second limit position in which the mop is substantially free of the cage (10),

said cage (10) being mounted rotatably on the support (9) by annular drive means (15) coupled at a point above the support to a first motor (16), said first motor and said drive means cooperating to transmit rotation to said cage;

said mop (18) being rotatably coupled with the bottom end of said moving means and disposed longitudinally within the cage for free sliding movement through said drive means;

at least one side of said moving means being formed as a rack (19) extending at least a part of the length thereof;

a second motor (21) supported at a location above said support and including a pinion (20) for driving said rack, whereby said second motor imparts axial movement to said moving means, and hence the mop, between the two limit positions in which the mop is retracted into the cage, or extended to be substantially free thereof;

said first motor producing rotation of said cage by way of said drive means (15) and a substantially circular flat component (27) fitted coaxially to said driving means, integral with said mop, and frictionally engaged with the inner wall of the cage, so that the mop rotates in each of the two limit positions, and in positions intermediate thereof;

said mop being urged against the inner wall of said cage, when in the retracted limit position and in rotation, such that residual washing liquid is expelled therefrom and drained from said cage;

and a tank (30), provided at the upper portion of the housing (2), for liquid, detergent, wax and other cleaning aids, said tank including means (32, 33, 34) for metering the cleaning aids onto or around the mop (18).

4,642,833

VALVE ASSEMBLY

Andries J. Stoltz, Pretoria, and Dieter H. F. Kallenbach, Sandton, both of South Africa, assignors to Coxwold (Proprietary) Limited, Johannesburg, South Africa

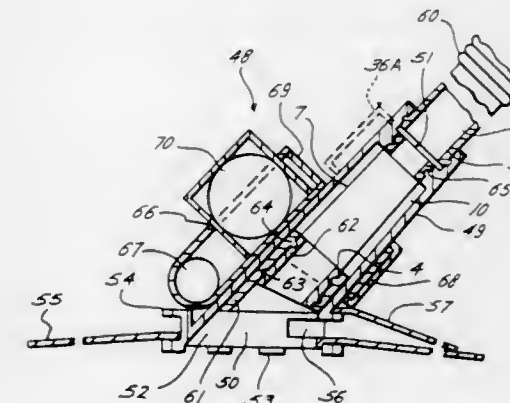
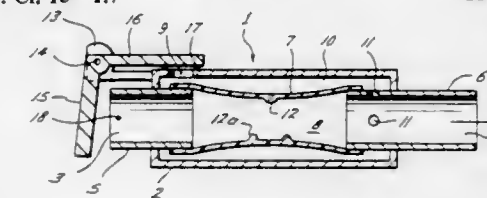
Continuation-in-part of Ser. No. 687,568, Dec. 28, 1984. This application Jun. 28, 1985, Ser. No. 749,793

Claims priority, application South Africa, Mar. 14, 1985, 85/1914

Int. Cl.⁴ E04H 3/20

U.S. Cl. 15-1.7

28 Claims



1. A valve assembly comprising:

a body having a fluid inlet and a fluid outlet; a flow passage between the inlet and the outlet at least partly defined by a tubular member which is transversely contractible and expandable over at least part of its length to control the flow of fluid through the passage, the body forming a chamber around the tube and being made of elastic material less elastic than the contractible and expandable part of the tubular member; and means, responsive to variation in pressure internally and externally of the tubular member, for controlling the flow of fluid through the flow passage.

22. A device for cleaning the submerged surface of a swimming pool, comprising:

a head having an open mouth to be disposed proximate the surface to be cleaned, having an outlet to be coupled with a flexible hose, and having a passage defined between the mouth and the outlet to permit liquid to be drawn there-through by suction applied to the outlet;

the wall of said passage being defined at least in part by a flexible member for autonomous deflectable movement to sufficiently restrict said passage upon the application of suction to the outlet to create an interruption of liquid flow adequate to impart motive force to the head and move the head along the submerged surface;

said flexible member being enclosed by a chamber adapted to contain water at ambient pressure, said chamber being in pressure communication with the suction applied to the outlet to cause a reduction in pressure in the chamber below ambient upon interruption of liquid flow.

25. A device for cleaning the submerged surface of a swimming pool, said device comprising:

a head having an open mouth to be disposed proximate the surface to be cleaned and having an outlet for connection with a flexible hose to permit liquid to be sucked through the head by suction applied to the outlet;

an automatic valve between said mouth and said outlet comprising a contractible tubular member adapted to contract sufficiently to create an interruption in water flow to said outlet, said interruption of flow being sufficient to produce a movement of said device along said submerged surface,

the head including a body defining a chamber enclosing the tubular member and adapted to contain water at ambient pressure;

the outlet of the head including first and second conduits of differing diameter concentrically disposed relative to one another to form an annulus, the first, inner conduit being in communication with the tubular member of the automatic valve and the second, outer conduit being attached to the body of the head; and

a plate carried by the body of the head to define the downstream end of the chamber, said plate having a port opening therein to place the interior of the chamber in pressure communication with the annulus between the concentric pipes to provide for a reduction in pressure in the chamber upon interruption of liquid flow.

4,642,834

WASHING APPARATUS

Tsuneo Suzuki, Tokyo, Japan, assignor to Suzuki Mechanical Engineering Co., Ltd., Japan

Continuation of Ser. No. 658,383, Oct. 5, 1984, Pat. No. 4,581,785. This application Oct. 16, 1985, Ser. No. 777,177

Claims priority, application Japan, Oct. 8, 1983, 58-188922
Int. Cl.⁴ A46B 11/06

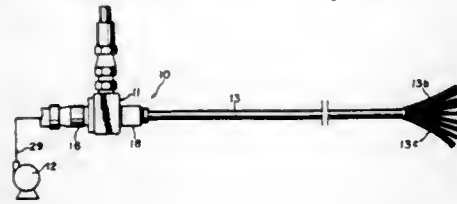
U.S. Cl. 15-21 R

1 Claim

1. A washing apparatus comprising: a liquid pump for supplying wash liquid under pressure; and a washing unit including:

a nozzle having a liquid inlet to which said liquid pump is connected to apply the wash liquid thereto, an outlet, a passage interconnecting said liquid inlet and said outlet, and an air inlet communicating with said passage for

introducing air thereto to form a liquid/air mixture; and
a sweeper member comprising a flexible hose secured at one end to said outlet of said nozzle for discharging the liquid/air mixture in a jet from the other end, said flexible hose having a substantially uniform cross-section throughout the entire length thereof and having at said



other end a plurality of slits formed therethrough and extending along a length thereof to provide a plurality of flexible strips, said flexible hose being so flexible that it is bent downwardly under the influence of gravity, whereby said flexible hose is caused to extend straight with said flexible strips fluttering when the jet of liquid/air mixture is discharged from said other end.

4,642,835

TWO-SIDED BRUSH AND CONTAINER

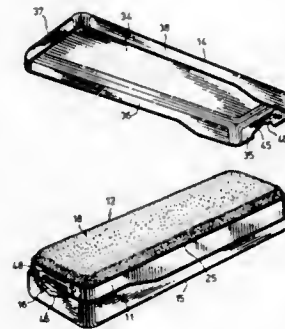
Bertram Schmitz, 55 Harbour Square, Suite 1214, Toronto, Ontario, Canada M5J 2L1

Filed Sep. 23, 1985, Ser. No. 778,974

Int. Cl.⁴ A47L 13/12, 23/04, 25/08

U.S. Cl. 15—104 A

16 Claims



1. A two-sided brush and container therefor comprising a body member having first and second oppositely disposed ends and first and second oppositely disposed faces; a first brush affixed to and extending from said first face; a second brush affixed to and extending from said second face and thus being oppositely disposed to said first brush; first and second covers respectively cooperating with said body member to house said first and second brushes respectively in first and second compartments respectively formed between said first cover and said body member and between said second cover and said body member respectively, each of said covers at one end thereof being of greater depth than at the other end thereof, such that if said covers are mounted on said body member with the deeper ends adjacent to each other, said deeper ends will abut each other and preclude said covers from being latched to said body member; first and second latch members at said first and second ends respectively of said body member, said first latch member being formed integral with said body member and comprising a cantilevered finger having a first detent thereon engageable with a second detent on said first cover, said second latch member being formed integral with said body member and comprising a cantilevered finger having a third detent thereon engageable with a fourth detent on said second cover; and detent means on said body member and on said

cover members remote from said first and third detents and from said second and fourth detents respectively for removably securing said covers to said body member.

4,642,836

CLEANING WAND

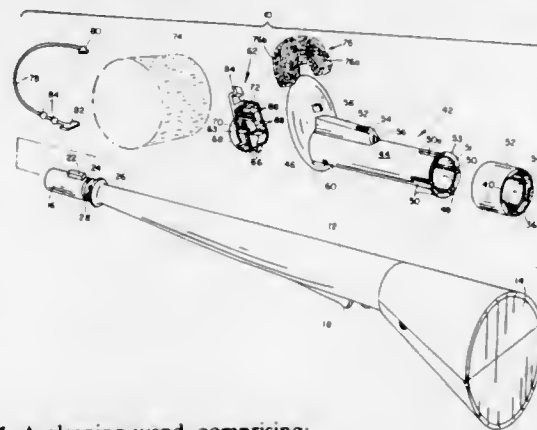
David J. Bokmiller, San Antonio, Tex., assignor to Sani-Fresh International, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 592,945, Mar. 23, 1984. This application Sep. 20, 1984, Ser. No. 652,863

Int. Cl.⁴ A47L 13/12

U.S. Cl. 15—118

23 Claims



1. A cleaning wand, comprising:
a head having a longitudinal axis;
a handle having a longitudinal axis;
means for removably attaching said head to said handle comprising:

a lip on an inner surface of said head, said lip being substantially transverse to said longitudinal axis of said head, said head having a passage therein within which to receive said handle, said handle having a handle groove in an outer surface thereof substantially transverse to said longitudinal axis of said handle for mating with said lip, said lip and handle groove adapted to become releasably engaged upon alignment of said lip with said groove at the end of relative axial movement of said handle through said head passage; and

a collar in surrounding relation to a portion of said head, said collar slidable along an outer surface of said head between a first position and a second position along said longitudinal axis of said head, said collar having a collar groove in an inner surface thereof substantially transverse to said longitudinal axis of said head for mating with a head shoulder on said head, said shoulder being substantially transverse to said longitudinal axis of said head, said shoulder and collar groove adapted to become releasably engaged when said collar is in said second position at the end of relative axial movement of said collar, said collar overlaying said head shoulder, said lip, and said handle groove when said lip and handle groove are releasably engaged and said collar is in said second position, to releasably lock said head, collar, and handle together, thereby permitting removable attachment of said head to said handle without requiring rotation of said head, said collar, or said handle;

a cleaning element; and
means for removably attaching said cleaning element to said head.

4,642,837

BROOM HAVING INTERLOCKING COMPONENTS

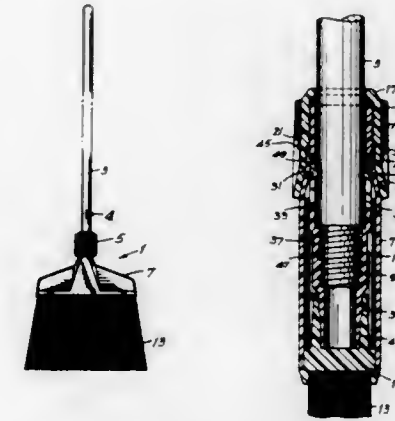
Charles Nichols, Woodridge, and John Howard, West Chicago, both of Ill., assignors to The Drackett Company, Cincinnati, Ohio

Filed Aug. 20, 1985, Ser. No. 767,559

Int. Cl.⁴ A46B 9/08

U.S. Cl. 15—171

12 Claims



6. A broom assembly comprising a broom shroud having a top with an opening therethrough; resilient gripping means extending upwardly from the top of said broom shroud; bristle retaining means; broom handle receiving means integral with and extending upwardly from said bristle retaining means, said broom handle receiving means including means for receiving the resilient gripping means and said broom handle receiving means passing through the opening in the top of the broom shroud, with the resilient gripping means registering with the means for receiving the resilient gripping means and with said broom shroud being superposed relative to said bristle retaining means; a broom handle releasably connected to the broom handle receiving means, and fastening means engaging the broom handle receiving means, whereby said resilient gripping means is flexed inwardly against the broom handle when the fastening means is tightened about the broom handle receiving means.

4,642,838

BEARING DEVICE OF BENDING AND STRETCHING TYPE WINDSHIELD WIPER

Kazuhiro Fuzita, Toyohashi; Kazunori Nishizawa, and Shinzi Imamura, both of Kosai, all of Japan, assignors to ASMO Co., Ltd., Kosai, Japan

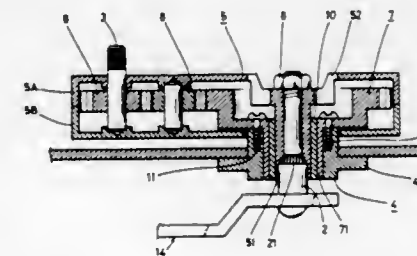
Filed Oct. 28, 1985, Ser. No. 791,730

Claims priority, application Japan, Oct. 29, 1984, 59-163376[U]

Int. Cl.⁴ A47I 1/00; B60S 1/26

U.S. Cl. 15—250.21

8 Claims



1. A bearing device of the bending and stretching type windshield wiper having a gear train to interlink the wiper link output shaft and the wiper arm head shaft, wherein the improvement comprising, a wiper pivot having a first installing

hole on the center thereof, and fixed to the body of a car; a stationary gear member extrudingly providing a boss part which has a bearing hole in the center thereof, said stationary gear member is rigidly secured with said wiper pivot, and of which the boss part is inserted in the first installing hole of said wiper pivot; a bearing member of a cylinder form; and a gear housing member extrudingly providing a cylinder part which has a second installing hole on the center thereof, the cylinder part of said gear housing member is inserted in the bearing hole of said stationary gear member together with said bearing member and the wiper link output shaft is fixedly secured in the second installing hole of said gear housing member.

4,642,839

DEVICE FOR THE RECIPROCATING LINEAR DRIVE OF A PART

Peter Urban, Meerbusch, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

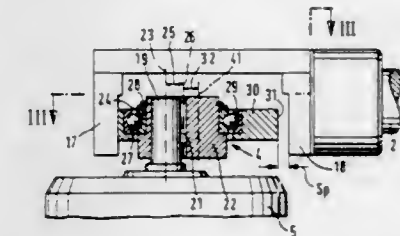
Filed Jun. 6, 1985, Ser. No. 741,868

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 3421632

Int. Cl.⁴ B31F 1/14; F16H 21/18

U.S. Cl. 15—256.53

12 Claims



1. A device for driving a part with a reciprocating linear motion, comprising:

a pair of abutment members spaced a predetermined distance from one another;
linking means for rigidly connecting said abutment members to one another and to the part to be driven;
a first eccentric disposed between said abutment members; power source means operatively connected to said first eccentric for rotating same about an axis of rotation; and a second eccentric disposed between said abutment members and around said first eccentric, said second eccentric being floatingly mounted to said first eccentric so that said second eccentric is substantially freely rotatable with respect to said first eccentric, said second eccentric having a perimeter with a largest diametric dimension smaller than said predetermined distance so that the perimeter of said second eccentric can engage at most one of said abutment members, said second eccentric being mounted to said first eccentric by means of an antifriction bearing.

4,642,840

HOUSING FOR A VACUUM CLEANER

Gernot Jacob, Weissach-Flacht, and Leon Radom, Ellbogen, both of Fed. Rep. of Germany, assignors to Progress-Elektrogeräte Mauz and Pfeiffer GmbH & Co., both of Nürtingen, Fed. Rep. of Germany

Filed Sep. 23, 1985, Ser. No. 779,364

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435503

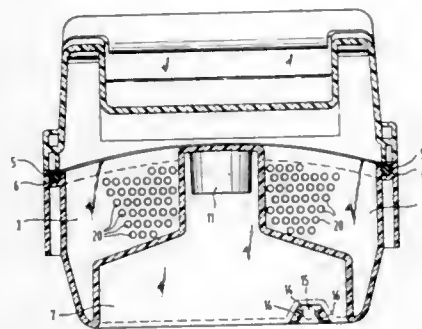
Int. Cl.⁴ A47L 9/00

U.S. Cl. 15—323

6 Claims

1. A housing for a vacuum cleaner, comprising a front dust chamber and a rear motor chamber, which are connected with each other by air flow-through openings in a baffle, further comprising a dust chamber cover swingably arranged near the

affle, an endless seal circumferentially arranged at the housing between the housing and the dust chamber cover and a stowage chamber for at least one accessory part, characterized in that said stowage chamber (7) is formed in the bottom side of the housing by a cavity made in the housing wall, said cavity being provided for formfit holding of the accessory part and its



longitudinal dimension being arranged perpendicular to the longitudinal axis of the housing, and further characterized in that the stowage chamber (7) is integrated in the baffle (3) and at least partially projects into said dust chamber (1), and that a portion of said endless seal (5) extends along an upper wall (9) of said stowage chamber (7).

4,642,841

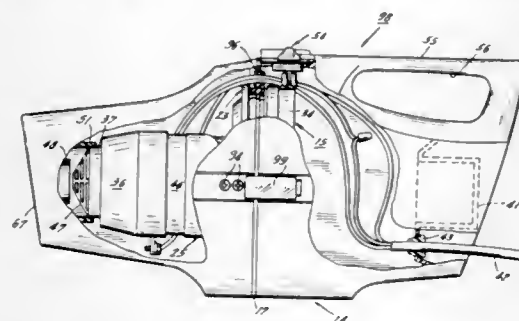
HAND HELD VACUUM CLEANER

Robert C. Berfield, Jersey Shore, and Richard M. Fegan, Cogan Station, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Sep. 9, 1985, Ser. No. 773,589
Int. Cl.⁴ A47L 5/24

U.S. Cl. 15—330

15 Claims



1. A vacuum cleaner including:

a casing, fan means within said casing, a motor within said casing and drivably connected to said fan means whereby the latter rotates to create a stream of working air that flows axially through said casing between first and second openings at opposite ends thereof;

said casing including a forward tank section having said first opening therein and a rear housing section having said second opening therein, said tank section being separable from said housing section;

a subassembly including said motor, said fan means and a support means to which said motor and said fan means are secured;

said casing having positioning formations constructed to cooperatively engage said subassembly for selectively mounting the latter in a first and a second position relative to said casing;

with said subassembly in said first position said motor being behind said fan means and said working air entering said

casing through said first opening and exiting from said casing through said second opening;
with said subassembly in said second position said motor being forward of said fan means and said working air entering said casing through said second opening and exiting from said casing through said first opening.

4,642,842

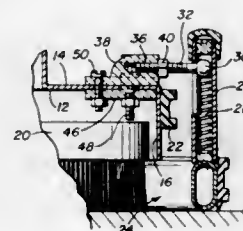
ROTARY SCRUBBER WITH INWARDLY RETRACTABLE FOAM EXTRACTOR RING MOUNT

Robert R. Hughes, Lutherville, Md., and Robert G. Scott, Lemont, Ill., assignors to Chemical Specialties Manufacturing Corporation, Baltimore, Md.

Filed Oct. 22, 1985, Ser. No. 790,248
Int. Cl.⁴ A47L 5/34

U.S. Cl. 15—359

8 Claims



1. In a rotary scrubber-polisher of the type including a base centrally beneath which a motor-driven scrubber-polisher head is removably mounted and wherein said base includes an arcuate peripheral portion and an arcuate vacuum pickup attachment removably, floatingly and universally mounted from opposite side supports carried by and projecting outwardly from opposite side portions of said base, the improvement comprising mounting means mounting said supports from said opposite side portions for shifting of said supports relative thereto between operative positions with attachment supporting portions thereof projecting outwardly from said opposite side portions for removable support of said pickup attachment therefrom and retracted inoperative positions with said attachment supporting portions retracted to positions spaced inwardly of said opposite side portions.

4,642,843

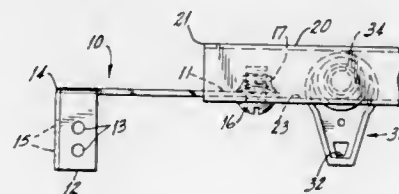
DRAPERY TRACK HAVING A ROD RETURN EXTENDER

Alan Hershfield, Hialeah, and Gary P. Danis, Cape Coral, both of Fla., assignors to Superior Linen Company, Inc., Miami, Fla.

Filed Sep. 11, 1984, Ser. No. 649,367
Int. Cl.⁴ A47H 1/142

U.S. Cl. 16—87.4 R

10 Claims



1. A traverse track assembly having a horizontally extending longitudinal slotted hollow track having a slot extending longitudinally along the bottom of the track and carriers movably mounted in said slot to support drapery pins along the length of the track, said drapery pins constructed and arranged to hold a drapery, a rod return extender cooperating with an end of said track, said rod return extender comprising an elongated

4,642,845

BALANCE ASSEMBLY FOR A WINDOW

Gary J. Marshik, Canton, S. Dak., assignor to The Celotex Corporation, Tampa, Fla.

Filed Jul. 8, 1985, Ser. No. 752,875
Int. Cl.⁴ E05D 13/00

U.S. Cl. 16—194

12 Claims



base plate having a width less than that of said track, and slidably mounted inside said track along said slot such that said base plate is movable longitudinally along a longitudinally extending end portion of said track to extend an adjustable longitudinal distance from the end of said track, a front flange merging with a front side edge of said elongated base plate and extending vertically downward therefrom in a plane parallel to said track, an end flange merging with an end edge of said elongated base plate and extending vertically downward therefrom in a plane transverse to said track, and means for releasably securing said elongated base plate to said slot in said track whereby said base plate extends from the end of said track an adjustable longitudinal distance.

4,642,844

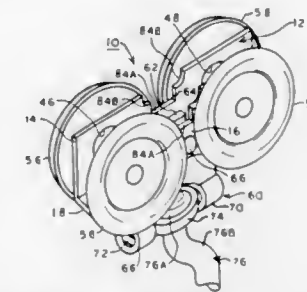
TROLLEY HANGER FOR SLIDING DOOR

James R. Johnston, Sterling, Ill., assignor to National Manufacturing Co., Sterling, Ill.

Filed Feb. 22, 1985, Ser. No. 704,203
Int. Cl.⁴ E05D 15/06

U.S. Cl. 16—98

2 Claims



1. A trolley assembly comprising:

a channel shaped body member having a web and side flanges;

first and second spaced apart openings in each of said flanges;

a first tubular spring liner positioned in said first openings in said side flanges;

a second tubular spring liner positioned in said second openings in said side flanges;

a plurality of needle bearings disposed within each of said liners;

a first axle rotatably journaled in said needle bearings in said first liner;

a second axle rotatably journaled in said needle bearings in said second liner;

a first pair of trolley wheels attached to opposite ends of said second axle;

a second pair of trolley wheels attached to opposite ends of said second axle;

a first pair of spacers on said first axle respectively positioned between respective said side flanges of said body member and respective ones of said first pair of trolley wheels; and

a second pair of spacers on said second axle respectively positioned between respective said side flanges of said body member and respective ones of said second pair of trolley wheels;

each of said spacers having an annular recess receiving one end of its associated said liner, a first annular portion extending into said one end of said liner for limiting the axial movement of said bearings in said liner and a second annular portion adapted to engage the adjacent flange to limit axial movement of said axle and to space said spacer from the end of said liner.

1. A balance assembly adapted to be positioned in a side jamb of a window frame comprising:

an elongated housing having enclosing sidewalls and a back wall,

a gas pressurized cylinder and piston assembly wherein said piston has one end partially enclosed within said cylinder and in which said piston is reciprocally movable within said enclosing sidewalls of said elongated housing,

said cylinder and piston assembly being adapted to oppose said reciprocal movement,

a first pulley assembly fixed to the end of said piston opposite said enclosed end,

said first pulley assembly having a plurality of grooved pulley wheels and having a shaft forming the axis of rotation of said pulley wheels

a second pulley assembly fixed to the end of said cylinder opposite said enclosed end of said piston,

said second pulley assembly having a plurality of grooved pulley wheels and having a shaft forming the axis of rotation of said pulley wheels,

means for locking one of said pulley assemblies against movement within said elongated housing assembly,

a sash cord connected at one end to one of said pulley assemblies and wound alternately around pulleys of said first and second pulley assemblies with a free end of said sash cord extending through the lower end of said elongated housing, and

a connector member secured to said free end of said sash cord, said connector being adapted to be connected to a window sash.

4,642,846

MOUNTING PLATE FOR FURNITURE HARDWARE, ESPECIALLY CABINET HINGES

Karl Lautenschlager, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Dec. 6, 1985, Ser. No. 805,736

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444851

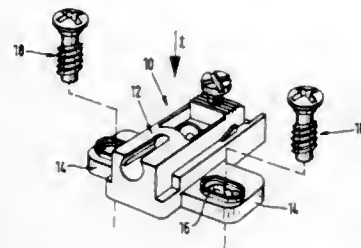
Int. Cl.⁴ E05D 5/00

U.S. Cl. 16—382

4 Claims

1. A mounting plate for furniture hardware, to be fastened on a piece of furniture, said mounting plate having at least one

elongated slot therein for receiving a fastening screw having a head of a predetermined diameter, a section with threads remote from the head, and a threadless section between the head and the section with threads, the threadless section having a predetermined diameter; said elongated slot having confronting longitudinal margins, projections extending from said con-



fronting margins towards each other in a central area of the slot, and a depression above said margins, of a predetermined depth and width, for receiving the head, whereby the section with threads can be held by the projections in a central position of the screw and the screw is displaceable in longitudinal direction of the slot when the threadless section is between said projections.

4,642,847

APPARATUS FOR FORMING SAUSAGE PRODUCTS

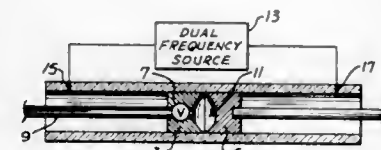
Henry M. Ross, 10527 Vint Hill Rd., Nokesville, Va. 22123

Filed Oct. 8, 1985, Ser. No. 785,510

Int. Cl.⁴ A22C 7/00

U.S. Cl. 17-1 F

5 Claims



1. In an apparatus for forming sausage products, the combination comprising
a hollow cylinder,
electrode piston means slidably mounted at opposite ends of said cylinder to define a mold cavity therebetween,
means for injecting meat paste into said mold cavity under pressure, said meat paste thereby making contact with and forcing apart said electrode piston means until a predetermined amount of paste has filled the cavity to define the length of sausage being formed,
said means for injecting meat paste comprising valve means mounted in said electrode means,
power supply means connected to said electrode means, said power supply means being operable at plural frequencies, whereby electric currents of different frequencies are produced between the electrode means to form a coagulated surface on the meat paste within said mold cavity.

PROCESS FOR AUTOMATED MANUFACTURE OF LINK SAUSAGES HAVING CASINGS FORMED OF SYNTHETIC TUBULAR MATERIAL

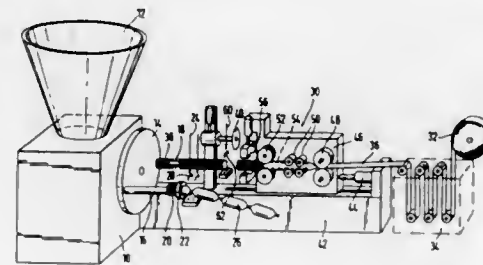
Gunter Kollross, Dornheim, Fed. Rep. of Germany, assignor to Teepak Produkte N.V., Lommel, Belgium
Continuation-in-part of Ser. No. 526,225, Aug. 25, 1983, Pat. No. 4,538,326, which is a continuation of Ser. No. 430,017, Sep. 30, 1982, abandoned, which is a division of Ser. No. 188,045, Sep. 17, 1980, Pat. No. 4,358,873. This application Aug. 30, 1985, Ser. No. 771,399

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938371; Oct. 16, 1979, 2941872

Int. Cl.⁴ A22C 11/02

U.S. Cl. 17-49

16 Claims



1. A method for packaging food products in tubular casings, which comprises the steps of shirring a tubular film into a pleated strand at a shirring station and automatically positioning said strand on a stuffing horn at a filling station adjacent to said shirring station, completing the shirring of the film at the shirring station before positioning the shirred film at the filling station, severing and closing off the outermost terminal end of the strand to retain food product, stuffing said pleated strand with the food product at the filling station, and closing off the stuffed casing to form a packaged food product.

4,642,849

MEAT PACKAGING APPARATUS WITH BACKFLOW RESTRICTOR

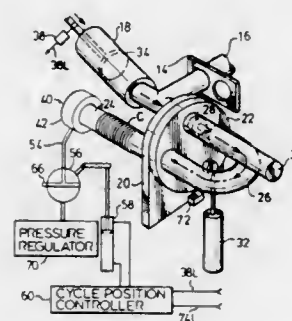
Ludwig Piereder, Squire Court, R.R. #1, Waterloo, Ontario, Canada N2J 4G8

Filed Oct. 1, 1985, Ser. No. 782,331

Int. Cl.⁴ A22C 11/02

U.S. Cl. 17-49

11 Claims



1. Apparatus for cyclically stuffing a length of casing to provide a plurality of discrete packages comprising:
a horn having an inlet end and an outlet end and upon which a length of casing for stuffing is storable;
means for cyclically feeding meat through said horn in a first step during which air contained in said horn is displaced and exhausted through said outlet end, and in a second step in which meat is entirely extruded from said horn through said outlet end;
a backflow restrictor means associated with said horn at said

outlet end, said backflow restrictor means being actuable between a first, off, condition for permitting the escape of fluid from said casing, and a second, on, condition for substantially preventing the escape of fluid from said casing, and

control means for detecting said first step and responsive thereto for actuating said backflow restrictor means to an off condition for the duration of said first step, and for detecting said second step and responsive thereto for actuating said backflow restrictor means to an on condition for the duration of said second step.

4,642,850

ROTATING CLEANER FOR COTTON AND WOOL CARD IN GENERAL

Marcello Giuliani, Cellerese n. 33, Campi Bisenzio, Firenze, Italy 50013

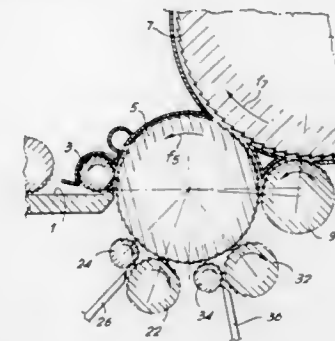
Filed Dec. 14, 1984, Ser. No. 681,667

Claims priority, application Italy, Dec. 21, 1983, 9584 A/83

Int. Cl.⁴ D01G 15/40

U.S. Cl. 19-105

7 Claims



1. In a cleaning device for textile fibres comprising at least one carding drum and a taker-in cylinder or drum in tangential arrangement with a lower peripheral portion of said carding drum, said taker-in drum having cooperatively associated therewith means for feeding textile fibres thereto for subsequent delivery to said carding drum for further treatment thereof, the improvement which comprises:

at least a pair of cleaning cylinders located at a lower peripheral portion of said taker-in drum and tangential thereto, one of said cleaning cylinders being tangentially associated with said other cleaning cylinder, the rotation of said taker-in drum being such as to cause textile fibres fed thereto to pass around said drum and provide an outer layer thereof for transfer to one of said cleaning cylinders and from there to the other cleaning cylinder and then back to said taker-in drum for delivery to said carding drum, the speed of rotation of one of said cleaning cylinders containing the outer layer relative to the speed of the other cylinder and to the speed of said taker-in drum being such as to remove particles therefrom by centrifugal force while returning workable fibres to said taker-in drum for delivery to said carding drum for further treatment.

4,642,851

CONVEYING ARRANGEMENT FOR CONVEYING TEXTILE CANS

Georg Hera, Frauenfeld, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed May 28, 1986, Ser. No. 867,457

Claims priority, application Switzerland, Jun. 3, 1985, 2326/85

Int. Cl.⁴ D01H 9/00; B65H 75/16; B65G 65/00

U.S. Cl. 19-159 A

15 Claims

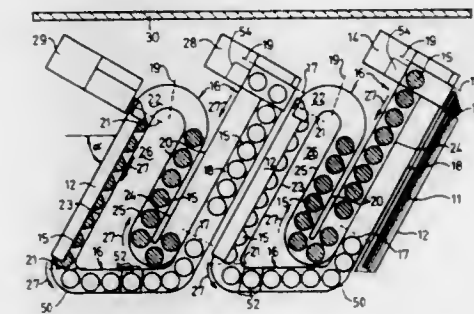
1. An arrangement for conveying textile cans between a

textile material delivering machine and a textile material using machine, comprising:

a closed conveying path containing a predetermined number of sections;

said predetermined number of sections encompassing:

a reserve section operatively associated with said textile material delivering machine and provided for accommodating empty cans;
a feed section operatively associated with the textile material using machine and accommodating a predetermined number of series-arranged cans filled by textile material;
a substantially syphon-shaped stand-by section extending intermediate said reserve section and said feed section;
said stand-by section containing two legs which extend substantially parallel to each other and which are interconnected at one of their ends;



one of said two legs of said stand-by section leading away from said textile material delivering machine;
an other one of said two legs of said stand-by section leading to said feed section;
a free section interconnecting said other leg of said stand-by section and said feed section and remaining free of stationary cans during operation of the arrangement;
said reserve section and said stand-by section at least accommodating a number of series-arranged cans equal to said predetermined number of cans; and
said reserve section, said two legs of said stand-by section and said feed section being arranged substantially parallel to each other and with an intermediate space provided between said other leg of said two legs of the stand-by section and said feed section.

4,642,852

DUST EXTRACTOR FOR DRAWFRAME

Nicholas J. Turner, Altrincham; Geoffrey A. Ogden, Rochdale, and Richard S. Bridge, Ramsbottom, all of England, assignors to National Research Development Corporation, London, England

Filed Jun. 13, 1985, Ser. No. 744,271

Claims priority, application United Kingdom, Jun. 14, 1984, 8415214

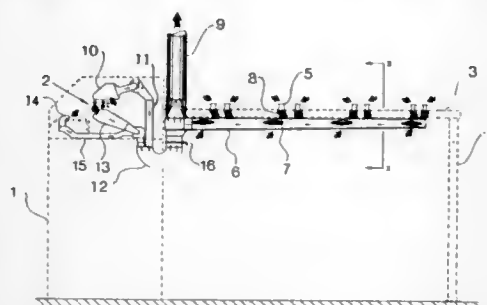
Int. Cl.⁴ D01H 5/62, 11/00

U.S. Cl. 19-236

11 Claims

1. Dust extraction apparatus on a drawframe, the apparatus comprising guide means mounted on an axis to cause a change of direction of a sliver and a plurality of individual air inlet vents disposed at a plurality of spaced positions about the drawframe along a sliver path where dust and other pollutant particles may be generated, and connected via outlet ducting to one or more suction and collection means adapted continuously to remove particles from the surrounding air, character-

ised in that at least some of said air inlet vents are disposed so as to extend along the axis of said guide means so that free liquid attaching means, wherein, said body member is contoured to conform to the angle of the tail-board of a vehicle



access to operating parts of the drawframe is not hindered thereby.

4,642,853

SEAT BELT GUIDE LOOP

Edward J. Plesniarski, Warren; Richard D. Loose, Birmingham, and Juan M. Capo, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 31, 1986, Ser. No. 846,279

Int. Cl.⁴ B60R 22/00

U.S. Cl. 24—163 R

2 Claims



1. A guide loop adapted for pivotal mounting on a vehicle body pillar to mount a seat belt for sliding movement there-through comprising a stamped metal bracket having a belt slot therein and a molded plastic cover enclosing the belt slot and defining a low friction wall over which the belt is slidable, said plastic cover having a clearance slot underlying the low friction wall and cooperating therewith to define a plastic bridge integral with and supporting the low friction wall, said bridge being elastically yieldable in response to a belt load imposed on the guide loop during restraint of an occupant by the seat belt whereby the low friction wall is bowed into a curvilinear sagging configuration by which the belt is induced to remain in the center of the belt slot against a tendency to migrate to a bunched-up condition at one end of the belt slot.

4,642,854

SOCKET FOR MOUNTING ON THE END OF A STEEL CABLE

Robert D. Kelly, Houston, and Lawrence T. Yatsko, Spring, both of Tex., assignors to Southwest Wire Rope, Inc., Houston, Tex.

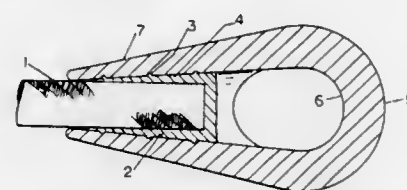
Filed Mar. 18, 1985, Ser. No. 714,843

Int. Cl.⁴ F16G 11/00

U.S. Cl. 24—265 R

4 Claims

1. In a socket to be mounted on one end of a wire rope, an elongated tubular, outwardly tapered body forming a socket bowl to receive said rope, an integral inwardly tapered bail formed at one end, annular grooves in the internal wall of said bowl adapted to cooperate with a liquid attaching means, said bail extends from two points in one end surface of said body member and the remainder of said end surface being tapered inwardly and provides access to said bowl for insertion of



without kinking said wire rope as the wire rope is drawn there-over.

4,642,855

BELT AND BUCKLE CONNECTOR

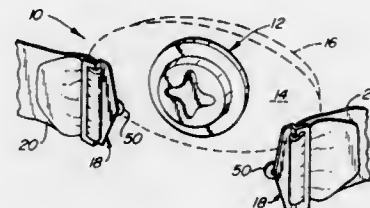
Lin B. Densmore, San Francisco, Calif., assignor to The Meilin Corporation, San Francisco, Calif.

Filed Sep. 24, 1985, Ser. No. 779,440

Int. Cl.⁴ A44B 11/00

U.S. Cl. 24—310

4 Claims



1. A quick disconnecting belt and buckle assembly comprising:
a buckle member including a base with a decorative front side and a rear side;
a female connector member fixed to said rear side and including a connector plate having an opening in a central area thereof with a plurality of narrow slots extending radially away therefrom and circularly spaced from each other by ninety degrees;
a flexible belt;
a male connector member attached to each end of said belt and each male member comprising a stud member with an enlarged knob at its outer end, said knob being small enough to pass through a central area of said opening but larger than said narrow slots; whereby tension of said belt when being worn will pull the knob of each male connector member at the opposite ends of the belt to the extremities of the oppositely extending slots when located therein, thereby holding the buckle member attached to the belt.

4,642,856

CLAMP ASSEMBLY FOR INFLATABLE MEMBRANE CONCRETE FORM

Horral Harrington, 613 Berlin Rd., Pittsburgh, Pa. 15221

Filed Mar. 24, 1982, Ser. No. 361,521

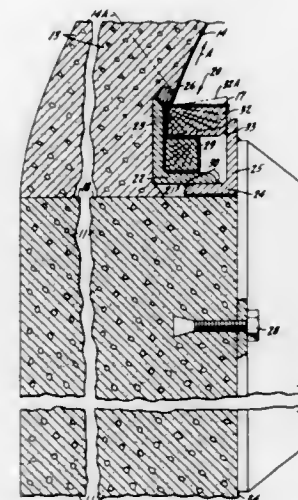
Int. Cl.⁴ E04G 11/04

U.S. Cl. 24—531

9 Claims

1. A clamp assembly for mounting an edge portion of the membrane of an inflatable form for a concrete shell on a support at the base of the shell, the clamp assembly comprising:
a rigid channel of substantially U-shaped cross-sectional configuration, including first and second rigid legs joined by a rigid base of internal width W, the first leg having a height H and including a guide lip projecting a short distance into the longitudinal opening of the channel, the second leg having a height not substantially less than H; mounting means for mounting the channel on a support at the base of the shell with the channel legs projecting

upwardly from the base so that the longitudinal opening of the channel faces upwardly;
a first rail, of substantially incompressible material, wrapped in an edge portion of the form membrane, the first rail having a cross-sectional configuration affording a plurality of relatively sharp corners joined by flat surfaces and having maximum dimensions substantially smaller than H and W to allow the first rail to fit easily into the bottom of the channel;



and a second rail of substantially incompressible material, having a cross-sectional configuration affording a plurality of flat surfaces and fitting tightly into the channel above the first rail, the second rail filling the longitudinal opening of the channel below the guide lip and releasably clamping both rails and the edge portion of the membrane into the channel.

4,642,857

BELT BUCKLE ASSEMBLY

Katsuyasu Ono, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

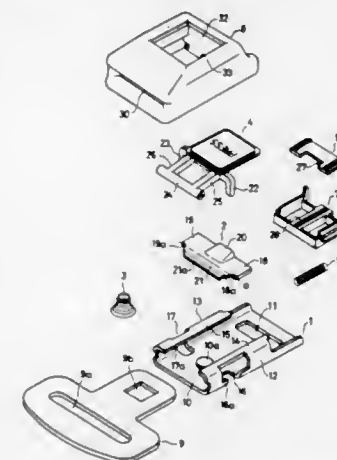
Filed Oct. 20, 1983, Ser. No. 543,842

Claims priority, application Japan, Oct. 28, 1982, 57-162291[U]

Int. Cl.⁴ A44B 11/26

U.S. Cl. 24—637

3 Claims



1. A belt buckle assembly comprising a tongue plate and a buckle body, said buckle body including a cover having a slot through which the tongue plate is inserted, a base attached to the cover, a latch member supported on the base for pivotal movement between a locking position and a non-locking posi-

tion about a pivotal axis extending transverse to a direction of insertion of said tongue plate through said slot, said latch member having latch means thereon located at one side of said pivotal axis, said latch means engaging said tongue plate inserted through said slot when said latch member is in said locking position and locking said tongue plate to said base, said latch means unlocking said tongue plate from said base when said latch member is in said non-locking position, biasing means supported in the buckle body and urging the latch member toward the locking position, and push-button means supported on the buckle body for moving the latch member to the non-locking position against the action of the biasing means, said tongue plate and said latch member having mutually engageable means for causing said tongue plate to engage said latch member at a side of said pivotal axis opposite to said one side when said tongue plate is locked to said base by said latch means and is twisted relative to said buckle body, said mutually engageable means applying a moment to said latch member about said pivotal axis in a direction tending to keep said latch member at said locking position.

4,642,858

BUCKLE APPARATUS

Kazuyoshi Ishiguro, and Hidemoto Araki, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

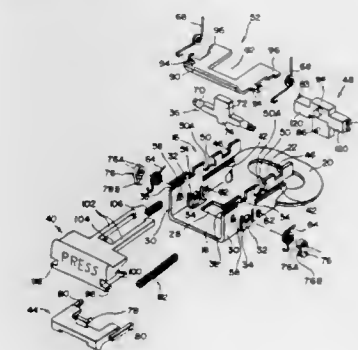
Filed Oct. 15, 1985, Ser. No. 787,141

Claims priority, application Japan, Oct. 15, 1984, 59-155492[U]

Int. Cl.⁴ A44B 11/26

U.S. Cl. 24—641

22 Claims



1. A buckle apparatus for engagement with a tongue plate having an opening which is employed in a seatbelt system designed to protect an occupant of a vehicle in an emergency situation of the vehicle, comprising:

(a) a buckle body mounted on the vehicle body having an insertion passage for receiving said tongue plate;
(b) a lock member having a tongue plate retaining portion, said lock member being pivotally mounted on said buckle body at a first side of the insertion passage of said buckle body, said lock member being able to pivot until its tongue plate retaining portion extends through the opening in said tongue plate in a projecting position toward a second side of said insertion passage to latch said tongue plate when said tongue plate is received within the insertion passage of the buckle body;

(c) a subsidiary lock member pivotally mounted on said buckle body at said second side of said insertion passage so as to engage with the distal end of said tongue plate retaining portion in its projecting position, wherein the tongue plate is retained by an intermediate section of said tongue plate retaining portion of said lock member, and said lock member is supported by the subsidiary lock member and the portion of the buckle body that pivotally mounts the lock member, so that said tongue plate is prevented from being undesirably pulled out of said buckle body; and

(d) a release member actuated for disengaging said subsidiary lock member from said tongue plate to retaining portion, thereby allowing said tongue plate to be pulled out of said buckle body.

4,642,859

RETAINING CLIP

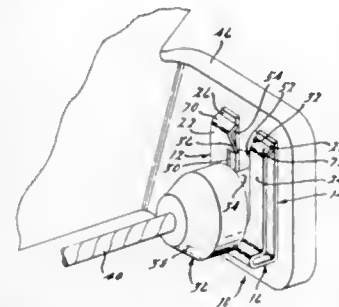
David Kaiser, Warren, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Jun. 23, 1986, Ser. No. 877,088

Int. Cl.⁴ F16B 1/00; A44B 21/00

U.S. Cl. 24-669

4 Claims



1. A retaining clip comprising a U-shaped structure fabricated of springy sheet material and having first and second legs joined together at one end by a web, the other ends of the legs being free, each leg having a slot extending from the free end thereof toward the web and terminating intermediate the ends of the leg, the slots defining first and second arms in the first leg and third and fourth arms in the second leg, the slots being offset laterally with respect to each other but with a portion of each slot being in registry with the other slot to define an opening to receive the shank of a member to be retained, said member including said shank with an enlarged head thereon, the first arm being oppositely disposed from the third arm and the second arm being oppositely disposed from the fourth arm, each arm having an inner edge defined by the respective slots, the inner edge of the first arm being offset inwardly with respect to the inner edge of the third arm and the inner edge of the fourth arm being offset inwardly with respect to the inner edge of the second arm whereby the inner edges of the first and fourth arms define said opening to receive the shank of a member to be retained, an inwardly extending nib on the inner edge of the first and fourth arms adjacent the free ends thereof, the retaining clip being adapted to be received on the shank of said member after the shank and enlarged head have been inserted through an aperture in a support structure, the retaining clip, by means of said opening, being received on the shank between the enlarged head and the support structure with the nibs first contacting the shank and causing the first and fourth arms to spread apart in a scissors action with the first and fourth arms closing after the nibs have passed by the shank, the legs thereafter exerting a spring pressure between the enlarged head and support structure and the nibs preventing repassage of the shank out of said opening.

4,642,860

APPARATUS FOR LUBRICATING AND DISSIPATING HEAT FROM CHEEK PLATES OF A TEXTILE CRIMPING MECHANISM

Lotfy L. Saleh, Matthews; John A. Turton, Charlotte, and Steven L. Matthews, Salisbury, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 15, 1985, Ser. No. 787,598

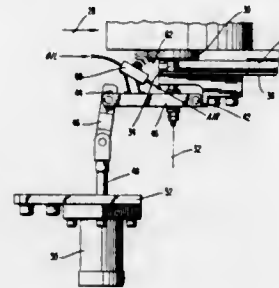
Int. Cl.⁴ D02G 1/12

U.S. Cl. 28-269

1 Claim

1. A crimping apparatus for textile fibers, comprising: a stuffer box, opposed motor-driven rotatable crimper rolls mounted in

front of said stuffer box and defining a nip through which the fibers are force-fed into said stuffer box, a pair of cheek plates disposed at opposite sides of said opposed rolls such that a front surface of each cheek plate is engageable with ends of both said adjacent said nip to retain the fibers against lateral displacement from said nip, drive means for rotating said cheek plates about a common access disposed parallel to axis of rotation of said rolls, displacement means for moving said cheek plates toward



and away from said ends of said rolls wherein said displacement means comprises a pair of motors and linkage interconnecting each motor with a respective cheek plate; and

lubricating/heat dissipating means comprising atomizing sprayers disposed at both sides of said opposed rolls for spraying atomized liquid toward a region, including an inlet of said nip and portions of said ends of said rolls approaching said nip, and backside of said cheek plates, said sprayers being mounted on said linkage.

4,642,861

MACHINE TOOL CONSTRUCTION

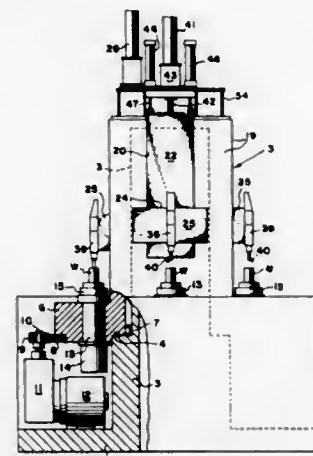
Kenneth E. Riley, Sterling Heights, and Eugene Skowron, Mt. Clemens, both of Mich., assignors to Saginaw Machine Systems, Inc., Troy, Mich.

Continuation of Ser. No. 531,044, Sep. 12, 1983, abandoned. This application Oct. 8, 1985, Ser. No. 785,603

Int. Cl.⁴ B23P 23/00; B23B 3/20

U.S. Cl. 29-38 A

6 Claims



1. In a machine tool having a base; a support frame mounted on said base; means for mounting a series of work holders and a series of generally axially aligned tool holders in juxtaposed relation on said frame and base; said latter means including a series of first slides mounted on said frame for longitudinal reciprocating movement along a "y" axis; a cross slide mounted on each first slide for reciprocating perpendicular movement to said first slide along an "x" axis; means on said

cross slides for supporting one of said series of holders; a tappet for each cross slide mounted for longitudinal movement on said frame in a reciprocable path parallel to the path of movement of said first slides; and a series of bell crank motion transmission mechanisms on each first slide interposed for transmitting movement of each tappet to a cross slide; the improvement comprising:

- NC controlled rotary servo motors for said first slides supported on said frame;
- NC controlled rotary servo motors for driving said cross slides supported by said frame;
- ball screw and nut assemblies coupling certain of said rotary motors to said first slides;
- longitudinally extending push bars mounted for movement on said frame along vertical axes parallel to said "y" axis;
- means fixedly coupling said tappets to said push bars;
- ball screw and nut assemblies coupling certain of said rotary motors to said push bars;
- said push bars having longitudinally extending sides with vertically extending flat face portions thereon extending parallel to said push bar axes; and
- rotation restraining means fixed to said frame adjacent each push bar flat face portion and consisting of a bar assembly comprising: an elongate wedge-shaped bar extending off-axis lengthwisely parallel with each flat face portion crosswisely to the vertical extent of the flat face portion, the bar having a first vertically extending flat face parallel to and adjacent said flat face of the push bar portion and an opposite flat side face vertically parallel to said first flat face and axis inclined in a crosswise direction with relation to said push bar axis and push bar flat face portion and said first flat face, the first identified flat face on said wedge-shaped bar being spaced from said push bar flat portion by only an operating clearance; slideway means fixed to said frame and having a vertically parallel flat face inclined to match and interact with said inclined side face to vary the operating clearance between said flat face portion and bar, with movement of said wedge-shaped bar relative to said slideway means; and means for releasably anchoring said wedge-shaped bar in position relative to said slideway means flat face portion to positively preclude rotation of said push bar while permitting its linear longitudinal movement parallel to the "y" axis.

4,642,862

STONE ROLLER FOR PAPER MAKING MACHINES

Erwin Mühle, and Hermann Rahmig, both of Heidenheim, Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Mar. 17, 1986, Ser. No. 840,405

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1985, 3511038

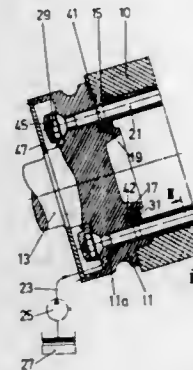
Int. Cl.⁴ B31B 31/08; B02C 19/00

U.S. Cl. 29-132

22 Claims

1. A stone roller for a paper making machine, comprising: a unitary roller body comprised of stone having a central borehole extending axially through the roller body, said roller body having opposite axial ends; a respective clamping plate positioned at each said axial end of said roller body;
- a plurality of tie-rods extending between said clamping plates and axially through said roller body, said tie-rods being adapted to draw said clamping plates together to place said roller body under axial stress, said tie-rods being embedded in a filler material, said filler material comprising a compound which is liquid at room temperature and which hardens without substantial shrinkage; and
- a corepiece disposed in said central borehole of said roller body, shaped and sized for creating a space for said tie-rods and said filler material between the inner surface of said roller body and said corepiece.

21. A method of manufacturing a stone roller for a paper making machine, comprising: boring a central borehole in the stone roller extending axially through the stone roller body; providing a plurality of tie-rods extending axially through said borehole;



providing a corepiece in the borehole of said roller body, thereby creating a space for said tie-rods between the inner surface of said roller body and said corepiece; and introducing a filler material in liquid state into said space and allowing said filler material to harden, whereupon said tie-rods become embedded in said filler material.

4,642,863

MANUFACTURING METHOD FOR HOLLOW METAL AIRFOIL TYPE STRUCTURE

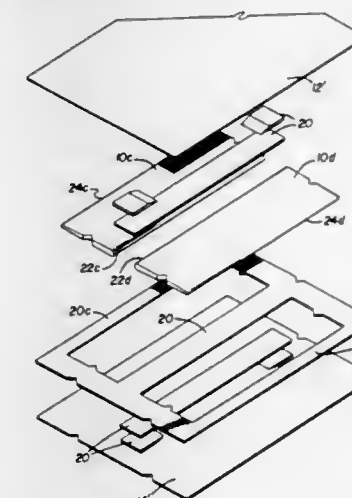
David W. Schulz, Belmont, Calif., assignor to Ontario Technologies Corporation, Menlo Park, Calif.

Filed Apr. 15, 1985, Ser. No. 723,630

Int. Cl.⁴ B21K 3/04; B23P 15/02; B23K 20/18

U.S. Cl. 29-156.8 B

12 Claims



1. A process for making a structure formed of at least two metallic workpiece sections each of which is formed of a reactive metal, comprising: sandwiching a mandrel having a non-reactive surface between said workpiece sections in a position which prevents said workpiece sections from being in contact over a first selected area and allows said workpiece sections to be in facing relation over a second selected area; forming a reactive metal contact of said workpiece sections over said second selected area; maintaining said workpiece sections under coordinated tem-

perature-pressure-time duration conditions to produce diffusion bonding of said workpiece sections at said second selected area;
 applying a gas pressure differential between intermediate the workpiece sections and external of the workpiece sections to cause breakthrough at said first selected area and super-plastic forming of at least one of said workpiece sections causing it to stretch in excess of its original surface area; and
 removing said mandrel from between said workpiece sections.

4,642,864

RECUPERATOR TUBE ASSEMBLY

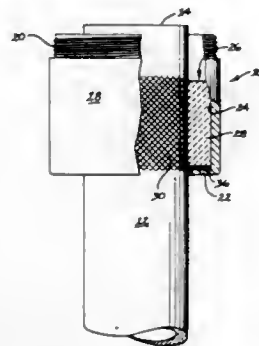
Arthur G. Metcalfe, National City, and Michael E. Ward, San Diego, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Dec. 20, 1985, Ser. No. 811,258

Int. Cl.⁴ B21D 53/02; B23P 15/26

U.S. Cl. 29—157.3 R

11 Claims



1. A ceramic to metal joint comprising:
 a ceramic member;
 a metallic member encircling said ceramic member in spaced relationship thereto to therewith define a partially closed chamber;
 a bonding material disposed in at least a portion of said chamber and contacting both said ceramic and said metallic members; said bonding material being formed by casting, in situ, an aqueous slurry of a refractory material having a composition including Al_2O_3 and SiO_2 and comprising a blend of sharp-edged aggregate particles less than 2.0 mm in size and fine particles less than 1.0 mm in size; and
 a seal member interposed said ceramic and said metallic members.

4,642,865

METHOD AND APPARATUS FOR AUTOMATIC PRESSURE PACKING OF A FOOD CASING

Howard Kelem, 34-05 Ocean Ave., Oceanside, N.Y. 11572

Filed Sep. 17, 1984, Ser. No. 651,329

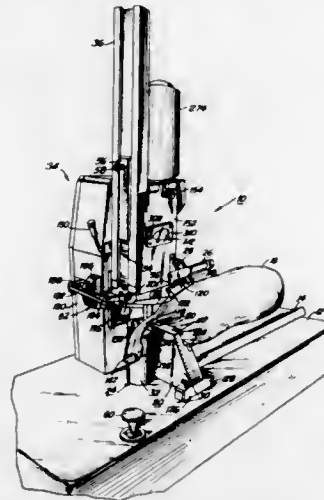
Int. Cl.⁴ B65B 51/08

U.S. Cl. 29—243.56

34 Claims

1. An apparatus for automatic pressure packing of a food casing, comprising:
 a yoke assembly having a throat section for slidably retaining therein a neck portion of the casing;
 a jaw assembly for grasping a forward end of the casing and pulling the casing through said throat section, said yoke assembly restraining the food behind the throat section to thereby pack the food tightly into the casing;
 a feed mechanism for feeding pre-cut flat substantially planar strips through a sequence of operating stations, including a forming station and a crimping station;
 a reciprocating forming die descending onto a flat strip

positioned at the forming station and bending it into an inverted U-shaped clip;
 a reciprocating crimping die operatively coupled to said reciprocating forming die and descending onto a bent clip at the crimping station and carrying said bent clip into said throat section to crimp the bent clip around the casing neck portion being retained in the throat section,
 said feed mechanism comprising a chute for receiving a stack of said pre-cut flat substantially planar strips, a plat-



form individually receiving thereon said pre-cut flat strips, a reciprocating strip injector for individually injecting the flat strips from said chute onto said platform, and retaining means for slidably retaining said pre-cut flat strips onto said platform, wherein each strip fed onto the platform can transversely move previously fed strips along the platform such that previous strips move a strip into the forming station for forming a bent clip and a formed bent clip is moved by previous flat strips into the crimping station.

4,642,866

HUB REMOVING DEVICE AND METHOD

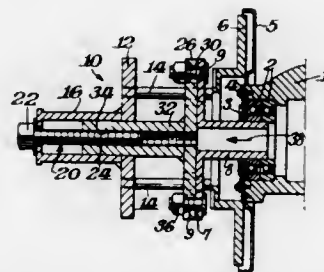
Bernard H. Murtaugh, 512 Woodland Dr., Havertown, Pa. 19083

Filed May 23, 1985, Ser. No. 737,107

Int. Cl.⁴ B23P 19/04

U.S. Cl. 29—259

6 Claims



1. A hub removing device comprising a support plate, a plurality of abutting members secured to and extending outwardly from said support plate, a lifting plate disposed parallel to said support plate, securing means on said lifting plate for securement to the hub, said abutting members extending beyond said lifting plate for abutting against a fixed surface, a receiving member secured to said lifting plate, an actuating member mounted at a fixed distance with respect to said support plate and extending beyond said support plate in the same direction as said abutting members, said actuating member

being engaged with said receiving member whereby manipulation of said actuating member causes said receiving member to draw said lifting plate toward said support plate to thereby lift the hub toward said support plate, a hollow boss being mounted to said support plate parallel to but extending in the opposite direction as said abutting members, said boss having an end wall remote from said support plate, said actuating member being mounted to said end wall, said actuating member extending from said end wall through said boss and to said receiving member, two sets of co-arcuate holes extending through said lifting plate, said abutting members extending through one of said sets of holes, the other of said sets of holes comprising said securing means an internally threaded boss being mounted to said lifting plate and telescoped into said hollow boss and through said support plate and generally in contact with said support plate and said actuating member being threadably engaged with said internally threaded boss whereby said internally threaded boss comprises said receiving means.

4,642,867

BRUSH SEAL MANUFACTURE

Gerald W. Hough, and Ian A. Hunt, both of Derby, England, assignors to Rolls-Royce Limited, London, England

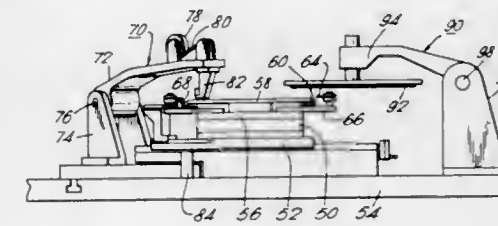
Filed Feb. 7, 1986, Ser. No. 827,055

Claims priority, application United Kingdom, Feb. 20, 1985, 8504330

Int. Cl.⁴ B23K 31/02

U.S. Cl. 29—423

27 Claims



1. An apparatus for use in the manufacture of brush seals which comprise a plurality of filaments of brush material sandwiched between a first and a second side plate, the apparatus comprising:

a work plate, adapted to receive the first side plate;
 a plurality of first clamping members, spaced along a patch adjacent to the first side plate and operable in a direction towards the side plate;
 actuator means, operable to lift sequentially selected first clamping members thereby to define a gap between the lifted member and the side plate;
 insertion means, operable to insert a plurality of filaments into the gap and to cause the filaments to lie on, and project beyond, the first side plate;
 a second clamping means, for clamping against the first side plate those plurality of filaments which lie against the side plate and;
 releasing means for releasing the clamping effect of the first clamping members when the plurality of filaments are clamped by the second clamping means.

25. A method of manufacturing a brush seal comprising the steps of providing a first side plate of the seal sequentially laying tufts of brush material side-by-side onto the first side plate and clamping each tuft against a reaction surface as it is laid onto the first side plate with a first clamping means and subsequently clamping a second side plate against those tufts clamped by the first clamping means prior to securing the two side plates and the tufts together to form the brush seal.

4,642,868

METHOD FOR PUNCHING HOLES IN EDGE BINDING AND THE PRODUCT PRODUCED THEREBY

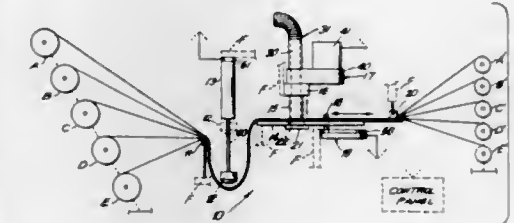
Nestor W. Pandell, Schenectady, N.Y., assignor to Weathermate Marine Manufacturing, Inc., Salem, Mass.

Continuation-in-part of Ser. No. 664,910, Oct. 26, 1984. This application Mar. 20, 1985, Ser. No. 713,958

Int. Cl.⁴ B21D 28/00

U.S. Cl. 29—429

8 Claims



1. A method of making a series of holes, equally spaced from one another along a common center line, through a heavy duty fabric of the type woven from high density yarn, comprising the steps of:

(a) providing, in seriatim, a supply roll of the fabric, a tubular punch cutting die and pulling means for drawing the fabric lengthwise from the supply roll;
 (b) threading the fabric from the supply roll to beneath the punch cutting die and thence to the pulling means;
 (c) securing, against lengthwise movement, the fabric which is in downstream adjacency to the punch cutting die;
 (d) while the fabric is thus secured, successively providing a given slack to the fabric which is in upstream adjacency to the die and punch cutting one of said series of holes in the fabric by rotating and bearing the die upon and through the fabric;
 (e) releasing, for lengthwise movement, the fabric which is in downstream adjacency to the punch cutting die;
 (f) operating the pulling means to draw a length of fabric beneath the punch cutting die equal to the desired equal spacing of the series of holes to be made in the fabric; and
 (g) repeating steps (c) to (f) to provide for the making of additional ones of said series of holes in the fabric.

4,642,869

PROCESS OF ATTACHING A NUT TO A PLATE-SHAPED WORKPIECE

Rudolph R. M. Muller, Frankfurt, Fed. Rep. of Germany, assignor to Multifastener Corporation, Detroit, Mich.

Filed Jan. 24, 1985, Ser. No. 694,365

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1984, 3404118

Int. Cl.⁴ B23P 11/00

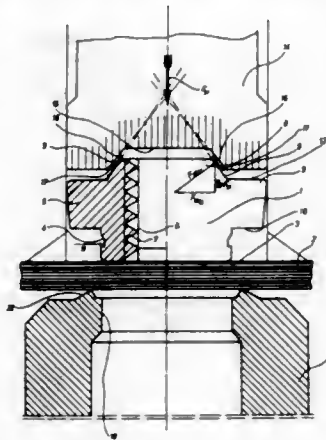
U.S. Cl. 29—432.2

5 Claims

4. A method of attaching a metal female fastener to a plate-shaped workpiece, said fastener including a body portion having a bearing end portion, a threaded bore extending through said body portion and an extension portion adjacent said bore on at least opposed sides of said bore opposite said bearing end portion, said extension having an external driving surface tapered outwardly along the axis of said bore on opposed sides of said bore, said method comprising:

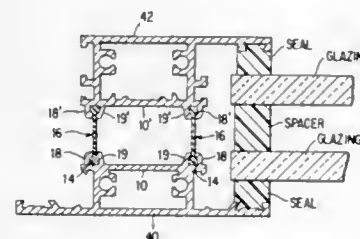
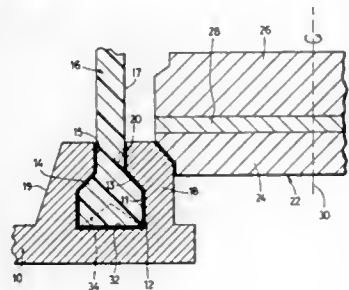
locating said fastener against said workpiece with a driving member against said fastener driving surface, said driving member having a plurality of projecting ribs each having an internal driving surface angularly inclined relative to said fastener driving surface; and driving said driving member projecting ribs into said fastener extension portion driving surface on opposed sides of said fastener bore, driving said fastener bearing end portion against said plate-shaped workpiece to pierce said fastener into said

workpiece and said driving member ribs simultaneously plastically deforming said fastener extension radially in-



wardly to deform the threads located within said extension.

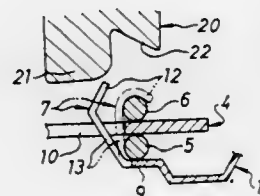
4,642,870
COMPOSITE PROFILE
Harald Schulz, Kammeltal, Fed. Rep. of Germany, assignor to Joseph Gartner & Co., Fed. Rep. of Germany
Filed Aug. 31, 1984, Ser. No. 646,689
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332618
Int. Cl.⁴ B21D 39/00; B23P 19/04
U.S. Cl. 29—509



1. A method of producing a connection between at least one metal part having means defining at least one channel or groove at one surface thereof and a thermoinsulating part having a plate, strip or bar form the material of which is firm and hard but susceptible to a melting or softening thereof on the application thereto of a predetermined level of heat characterized by providing that at least a portion of the wall surfaces bounding said channel or groove includes a plurality of projections directed inwardly thereof in a spaced relation and that side wall surfaces bounding said channel or groove are laterally spaced a distance sufficient to receive therebetween a portion of said thermoinsulating part, inserting said portion of said thermoinsulating part within said channel or groove and

between said side surfaces thereof, applying heat to localized relatively spaced surface areas of said portion of said thermoinsulating part the spacing of which corresponds substantially to that of said projections, the temperature of which heat is made sufficiently high to melt or soften said spaced surface areas and establishing relative positions of said melted or softened spaced surface areas of said thermoinsulating part and said projections so that material of said melted or softened spaced surface areas molds about said projections and on setting thereof produces a joint between said parts having a substantial strength.

4,642,871
MANUFACTURING METHOD OF A CLUTCH COVER ASSEMBLY
Mamoru Ookubo, Neyagawa; Takayuki Iwasaki, Ikoma, and Kenji Mieda, Hirakata, all of Japan, assignors to Kabushiki Kaisha Daikin Seisakusbo, Osaka, Japan
Filed May 29, 1985, Ser. No. 738,790
Claims priority, application Japan, May 31, 1984, 59-112683
Int. Cl.⁴ B21D 39/00; B23P 11/00
U.S. Cl. 29—513



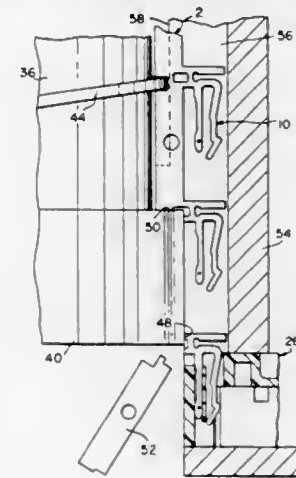
13 Claims
1. A method of manufacturing a clutch cover assembly comprising the steps of:
forming an annular clutch cover body of a clutch cover having a plurality of projections extending substantially radially inwardly from an inner periphery of the clutch cover body; bending ends of said projections at an angle to the radially extending projections so that the ends of the projections extend in an axially inward direction of the clutch cover toward a center of the clutch cover;
bending in the same direction of the bending of the projection ends projection bodies at an angle to said radially extending projections between the clutch cover body and said projection ends so that the projection bodies extend in the axially inward direction of the clutch cover toward the center of the clutch cover and the projection ends are displaced to extend in an axially and outward direction of the clutch cover body; and
assembling over the ends and bodies of the projections of the clutch cover an annular diaphragm spring with a pair of wire rings disposed each on a corresponding side of said spring for forming fulcrums for the spring; and
progressively bending the projection bodies in a radially outward direction of the clutch cover and then simultaneously bending the projection ends over and around an outermost wire ring toward the inner periphery of the clutch cover.

4,642,872
TERMINAL FEEDING AND INSERTION DEVICE
Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 584,274, Feb. 27, 1984, abandoned. This application Feb. 6, 1986, Ser. No. 826,822
Int. Cl.⁴ B23P 23/00; B23Q 7/00
U.S. Cl. 29—564.6

8 Claims
1. A strip feeding means and severing means for feeding a continuous strip of articles, such as electrical terminals, along a strip feed path to an operating zone and severing the leading article on the strip from the strip in the operating zone, the

strip having gaps therein at periodic intervals, the strip feeding means and severing means being characterized in that:

a cylindrical support surface is provided, the support surface being mounted for rotation on an axis which extends parallel to, and is adjacent to, the strip feed path, the support surface having a first end, which is adjacent to the operating zone, and a second end, which is upstream, relative to the direction of strip feed, from the operating zone,
the strip feed means comprises a feeding thread on the support surface, the feeding thread being dimensioned for reception in the gaps in the strip and having a thread pitch which is equal to the distance between adjacent gaps, the feeding thread extending helically on the support surface

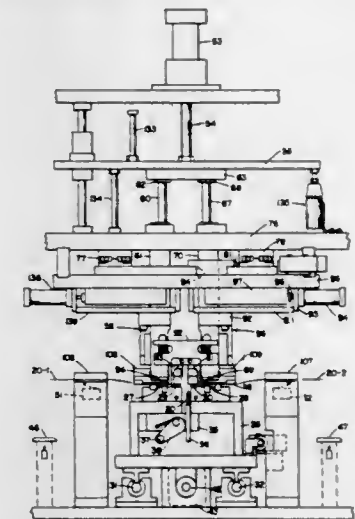


from the second end towards the first end of the support surface,
the severing means comprising a fixed shearing member which is beside the strip feed path in the operating zone and a movable shearing member which is movable past the fixed shearing member to sever the leading article on the strip from the strip, the movable shearing member being on, and extending from the support surface whereby,
upon rotating of the support surface, the strip is fed in the strip feed direction and the leading article on the strip is fed to the operating zone, and the leading article on the strip is thereafter severed from the strip by the fixed and movable shearing members.

4,642,873
APPARATUS FOR CUTTING AND STUFFING WIRES INTO CONNECTOR CONTACTS
Hadley H. Bower, Jr., Oklahoma City, and Ernest F. Kulka, Bethany, both of Okla., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Oct. 31, 1983, Ser. No. 547,532
Int. Cl.⁴ H05K 13/06
U.S. Cl. 29—566.3

17 Claims
1. An apparatus for inserting wires in insulation piercing terminations and in strain relief grooves mounted in an electrical device wherein the terminations are positioned in a coordinate array of rows and columns with a pair of grooves associated with each one of the terminations, the apparatus comprising:
a movable wire guide for receiving a wire;
a housing including a first blade slideably mounted therein for engaging and inserting each wire into one of the insulation piercing terminations;
a holder for supporting the electrical device;
means for moving said holder to align successive columns of terminations with said first blade;
means rendered effective following each movement of the

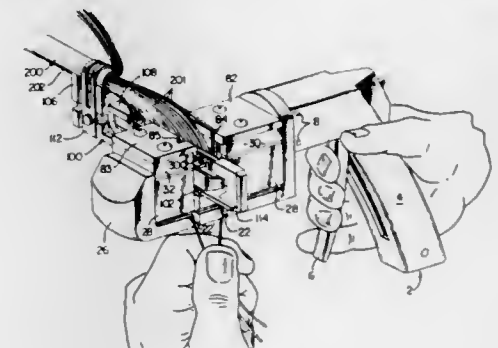
holder for shifting the housing into positions to overlay the first blade with each termination in successive rows of terminations in the aligned column of terminations;
means operated by the shifting of the housing for moving the wire guide into positions to overlay the pair of strain relief grooves associated with each successive row termination in the aligned column of terminations;



means for actuating said first blade overlaying a termination in a row position to insert a wire in the overlaid termination; and
a second blade moved with the first blade for inserting a portion of the wire positioned in the wire guide into the overlaid pair of strain relief grooves.

4,642,874
HAND HELD TOOL FOR WIRE INSERTION
Melvin P. Litebizer, Jr., Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 24, 1985, Ser. No. 791,016
Int. Cl.⁴ H01R 43/04
U.S. Cl. 29—566.4

17 Claims



1. A hand tool for inserting wires into the wire receiving portions of electrical terminals of a connector with the wire receiving portions of the terminals being oppositely directed in two parallel rows, the tool comprising:
a head,
a reciprocal shaft mounted in the head,
means for moving the shaft from a retracted position within the head to an extended position relative to the head and
means for retracting the shaft to the retracted position, said head having a cavity for receiving the connector, two inserters disposed in said head on opposite sides of the

cavity for inserting wires into the wire receiving portions of the terminals,

linkage means mounted in said head and comprising a first link operatively connected to the shaft, a second link attached to the first link extending below and to the opposite side of the cavity, and a third link connected to the second link and pivotably mounted to the head, the inserter means being attached to the first and third links respectively, and moveable relative to the head, towards and away from the cavity and towards and away from each other,

indexing means mounted in said head for movement of the connector in a direction lateral to that of the shaft reciprocation and for sequentially positioning the terminals in alignment with the inserters.

4,642,875

MACHINE TOOL WITH A HEADSTOCK

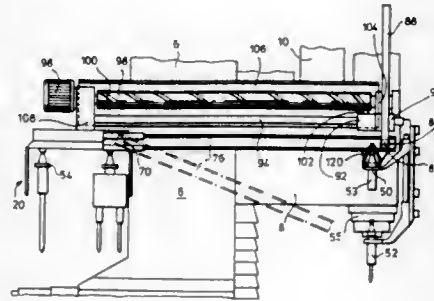
Eugen Rüttschle, Mühlheim, and Hans-Henning Winkler, Tuttlingen, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH, Tuttlingen, Fed. Rep. of Germany
Filed Mar. 18, 1985, Ser. No. 712,887

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410656

Int. Cl.⁴ B23Q 3/157

U.S. Cl. 29—568

8 Claims



1. A machine tool, comprising:

- a headstock arranged displaceably along one axis with respect to a base of said machine tool;
- a work plate arranged on a frontside of said headstock for mounting workpieces;
- a magazine for storing tools, said magazine being arranged on a backside of said headstock;
- a conveying device arranged on a lateral side of said headstock for transporting said tools between said magazine and a spindle in said headstock, said conveying device comprising a guide rail, one end of which is connected to said magazine and the other end of which is connected to said headstock;
- a gripping element on said guide rail for conveying said tools along said guide rail between a first position at said magazine and a second position at said headstock;
- a gripping arm rotatably mounted on said headstock for transferring said tools between said second position at said headstock and a third position within said spindle;
- a guide rod connected to said gripping element, said guide rod being axially displaceable in a carriage in a first direction parallel to said one axis; and
- means for displacing said carriage between said headstock and said magazine in a second direction perpendicular to said first direction.

4,642,876

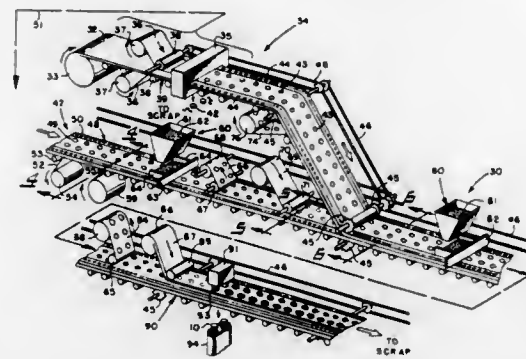
APPARATUS USEFUL IN THE MANUFACTURE OF ELECTROLYTIC CAPACITORS

Myles N. Murray, 15 Skyline Dr., Chagrin Falls, Ohio 44022, and Joseph Murphy, 1476 Bradford, Macedonia, Ohio 44056
Division of Ser. No. 486,047, Apr. 18, 1983, Pat. No. 4,531,281
This application Apr. 18, 1985, Ser. No. 724,458

Int. Cl.⁴ H01G 9/00, 13/00

U.S. Cl. 29—570

2 Claims



1. An apparatus for manufacturing electrical storage cells of the type including a pair of opposed electrodes, a separator between and in operative contact with inner surfaces of the electrodes, a pair of electrode connectors respectively in operative contact with outer surfaces of the electrodes, and a pair of gaskets respectively confining the electrodes between the separator and respective electrode connectors, said apparatus comprising means for longitudinally advancing and assembling together an inner sheet of separator material, outer sheets of connector material at opposite sides of the inner sheet, intermediate sheets of gasket material between the inner sheet and respective outer sheets with holes in each intermediate sheet aligned with respective holes in the other intermediate sheet and spanned at opposite ends by the inner sheet and respective outer sheet, to form a composite belt including a plurality of such cells integrally in such belt; means for positioning electrodes at such holes in one intermediate sheet and other electrodes at such holes in the other intermediate sheet prior to assembling of the inner and respective outer sheets at opposite sides of the respective intermediate sheet; and means for separating the individual cells from the composite belt.

4,642,877

METHOD FOR MAKING CHARGE COUPLED DEVICE (CCD)-COMPLEMENTARY METAL OXIDE SEMICONDUCTOR (CMOS) DEVICES

Ricky B. Garner, Garland; Thomas H. Payne, Plano, and Farid M. Tranjan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 1, 1985, Ser. No. 750,364

Int. Cl.⁴ H01L 21/263

U.S. Cl. 29—571

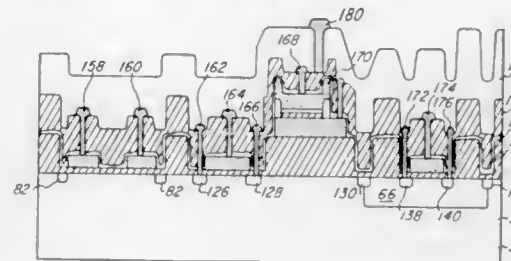
19 Claims

2. A CCD/CMOS process for producing a signal processing apparatus comprising the steps of:

- (a) providing a silicon epitaxial layer;
- (b) providing an N-tank region for a P-channel MOSFET in said epitaxial layer;
- (c) growing SiO₂ layer on the epitaxial layer and depositing a Si₃N₄ layer on the SiO₂ layer;
- (d) patterning a moat over the epitaxial layer;
- (e) selectively masking the moat, etching the Si₃N₄ layer and providing a CCD pattern and ion implanting P-type material for forming channel separations between N and P channel transistors and for forming isolation regions and channel stops for the CCDs;
- (f) after cleanup including removal of the Si₃N₄ layer and at

least 2000 Angstroms of the SiO₂, growing a layer of SiO₂ on the epitaxial layer;

- (g) providing a first poly silicon layer on the SiO₂ layer and an N-type ion implant made onto the SiO₂ layer;
- (h) growing a SiO₂ layer on the poly silicon layer and depositing a Si₃N₄ layer on the SiO₂ layer;
- (i) patterning the Si₃N₄ layer and etching the poly layer for a stacked capacitor;
- (j) patterning the Si₃N₄ layer and ion implanting P-type material for both N-channel and P-channel threshold adjust;
- (k) after patterning, ion implanting an N-type material for forming buried channels for the CCDs;
- (l) providing CCD clock wells by ion implanting N-type material in the CCD regions;



- (m) providing a second level layer of poly silicon material selectively to complete the stacked capacitors, transistor gates and CCD clock gates;
- (n) providing source and drain regions by ion implanting N+ material P+ material, respectively, to form N+ source and drain regions and P+ source and drain regions for completing the CMOS circuitry;
- (o) providing virtual phase regions in the CCD regions by ion implanting N type material and for deepening the potential profile of the virtual phase region, barrier and well for completing the CCD circuitry; and
- (p) providing electrical contacts for the CMOS and CCD circuitry.

4,642,878

METHOD OF MAKING MOS DEVICE BY SEQUENTIALLY DEPOSITING AN OXIDIZABLE LAYER AND A MASKING SECOND LAYER OVER GATED DEVICE REGIONS

Satoshi Maeda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1985, Ser. No. 770,179

Claims priority, application Japan, Aug. 28, 1984, 59-178651; Aug. 28, 1984, 59-178652

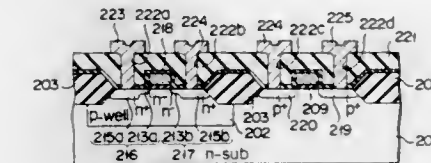
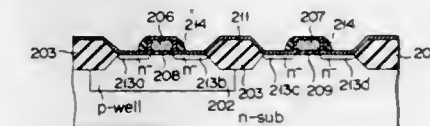
Int. Cl.⁴ H01L 21/265, 21/26

U.S. Cl. 29—571

8 Claims

1. A method for manufacturing a semiconductor device, comprising the steps of:
 - forming an element isolating region on a semiconductor substrate of a first conductivity type;
 - forming an insulating film at the surface of an element region of said semiconductor substrate isolated by said element isolating region;
 - selectively forming a gate electrode having a side wall on said insulating film;
 - doping an impurity of a second conductivity type in the element region as a first doping step with the gate electrode and element isolating region as masks;
 - sequentially forming an oxidizable first film and a second film on the surface of the resultant structure;
 - anisotropically etching the second film to leave partly said second film on that portion of oxidizable first film located on the side wall of the gate electrode;
 - doping an impurity of a second conductivity type in said element region, as a second doping step, with the left

second film, gate electrode and element isolating region as masks, said impurity of said second conductivity type being higher than that of said second conductivity type in said first doping step;



removing said left second film; and
converting said oxidizable first film to an oxide film.

4,642,879

METHOD OF MAKING SELF-ALIGNED FET USING GAAS SUBSTRATE AND SPATIALLY CONTROLLED IMPLANTED CHANNEL REGION

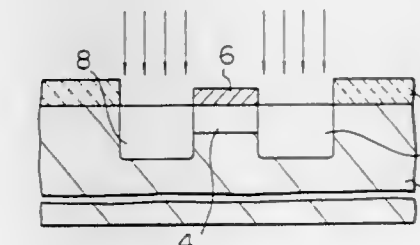
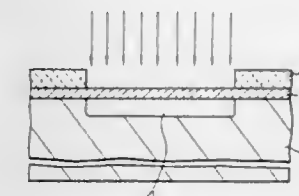
Haruo Kawata, Atsugi, and Hidetoshi Nishi, Yamato, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1983, Ser. No. 555,547

Claims priority, application Japan, Nov. 29, 1982, 57-209078
Int. Cl.⁴ H01L 21/263, 21/324

U.S. Cl. 29—576 B

9 Claims



1. A process for fabricating an FET including a source and a drain formed in a gallium arsenide substrate having a top surface and a bottom surface, and a control gate formed on the top surface of the gallium arsenide substrate, comprising the steps of:

- (a) forming a first aluminum nitride layer on the top surface of the gallium arsenide substrate;
- (b) ion implanting through the first aluminum nitride insulating layer into an area in the gallium arsenide substrate adjacent to the top surface of the gallium arsenide substrate;

- (c) forming a second aluminum nitride layer on the first aluminum nitride layer; and
 (d) heat treating the ion-implanted gallium arsenide substrate to form a channel layer adjacent to the top surface of the gallium arsenide substrate by activating the ions employing the first and second aluminum nitride insulating layers as protective layers for said heat treating step.

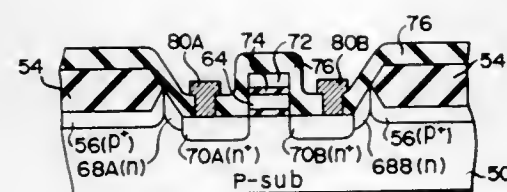
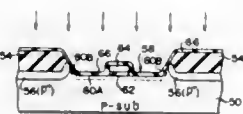
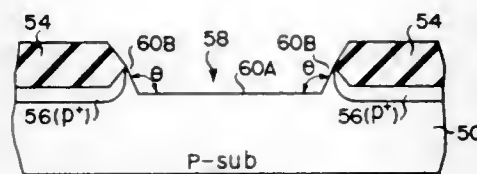
4,642,880
METHOD FOR MANUFACTURING A RECESSED SEMICONDUCTOR DEVICE

Yoshihisa Mizutani, Tokyo, and Syunzi Yokogawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 17, 1985, Ser. No. 724,152
 Claims priority, application Japan, Apr. 19, 1984, 59-79133
 Int. Cl.⁴ H01L 21/308, 29/78

U.S. Cl. 29—576 B

11 Claims



1. A method for manufacturing a semiconductor device, comprising the steps of:

- (1) forming, in the surface area of a semiconductor substrate, a flat surface and an inclined surface adjacent said flat surface and at a predetermined angle thereto;
- (2) forming a covering layer of a uniform thickness on said flat and inclined surfaces;
- (3) implanting impurity ions into the substrate through said covering layer in a direction substantially perpendicular to said flat surface; and
- (4) annealing the ion-implanted substrate, thereby forming first and second regions of different impurity concentration below said flat and inclined surfaces, respectively, the impurity concentrations being dependent from the predetermined angle.

4,642,881
METHOD OF MANUFACTURING NONVOLATILE SEMICONDUCTOR MEMORY DEVICE BY FORMING ADDITIONAL IMPURITY DOPED REGION UNDER THE FLOATING GATE

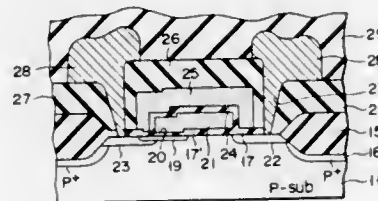
Naohiro Matsukawa, Kamakura; Sigeru Morita, Tokyo, and Hiroshi Nozawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 17, 1985, Ser. No. 735,211
 Claims priority, application Japan, May 17, 1984, 59-99262; Aug. 28, 1984, 59-177436

Int. Cl.⁴ G11C 11/40; H01L 21/283

U.S. Cl. 29—576 B

19 Claims



1. A method of manufacturing a nonvolatile semiconductor memory device comprising the steps of:

- (i) forming an element isolation insulating film on a surface of a silicon substrate of a first conductivity type and forming an island element region isolated by said insulating film;
- (ii) thereafter forming a gate oxide film including a relatively thin silicon dioxide film portion in said element region by thermal oxidation; and
- (iii) thereafter forming a floating gate electrode at least on said silicon dioxide film portion, wherein the step (ii) of forming said gate oxide film comprises the steps of:
 - (a) forming said gate oxide film on said element region;
 - (b) thereafter removing a portion of said gate oxide film to expose a portion of said silicon substrate, and implanting impurity ions in the exposed portion to an extent that a peak concentration thereof exceeds a solid solution limit at a temperature in the following thermal annealing step;
 - (c) thereafter activating the implanted impurity by thermal annealing so as to form a high concentration impurity layer; and
 - (d) thereafter thermally oxidizing a surface of said high concentration impurity layer so as to form a silicon dioxide thin film.

4,642,882
METHOD OF MAKING A LAMINATED STATOR
 Ralph M. Castiglione, Gloversville, and Ralph Hurst, Clifton Park, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Aug. 21, 1985, Ser. No. 767,905

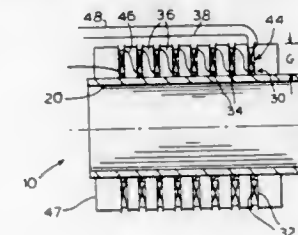
Int. Cl.⁴ H02K 15/06

U.S. Cl. 29—596

3 Claims

1. A method of making a laminated stator for a linear electrodynamic machine comprising the steps of: providing a cylindrical stator member of magnetic material defined by a cylinder of a predetermined radius; forming a plurality of uniformly spaced, axially extending radial slots in said stator member each being of uniform width and of a first preselected radial depth which is less than said predetermined radius to form radially tapered laminations which remain joined together at their radially inward ends by a cylindrical core portion; forming a plurality of uniformly spaced circumferential grooves of a second preselected radial depth and uniform cross section in the cylindrical stator member;

electrically insulating on all the surfaces of the circumferential grooves;
 electrically insulating all the surfaces of a preselected one of the axially extending radial slots to form an insulated wireway extending between the ends of the cylindrical stator member;
 winding a plurality of turns of a continuous wire in each of the circumferential grooves to form toroid-shaped coils therein such that the continuous wire is passed in sequence to each adjacent circumferential groove through the insulated wireway;
 providing a cylindrical stator shell of magnetic material and

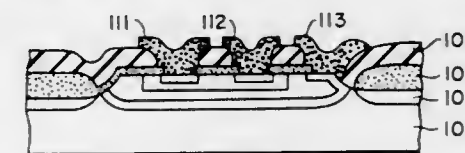


having an inner dimension adapted to fit tightly over the stator member outer periphery to form a stator assembly and having on the inner dimension surface axially extending radial slots of the same spacing as the radial slots on the stator member;
 introducing an uncured bonding material into all the voids in the stator assembly;
 curing the bonding material in the stator assembly; and forming a bore of a preselected radius in the stator assembly such that the core portion is completely removed and the radially tapered laminations are separated from the adjacent laminations by cured bonding material and held in radial compression by the cylindrical stator shell.

4,642,883
SEMICONDUCTOR BIPOLAR INTEGRATED CIRCUIT DEVICE AND METHOD FOR FABRICATION THEREOF
 Junji Sakurai, Tokyo, and Hajime Kamioka, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
 Continuation of Ser. No. 531,588, Sep. 13, 1983, abandoned, which is a continuation of Ser. No. 218,006, Dec. 18, 1980, abandoned. This application Jan. 28, 1985, Ser. No. 695,746
 Claims priority, application Japan, Dec. 21, 1979, 54-166596

U.S. Cl. 29—576 B

3 Claims



1. A method for fabricating a bipolar semiconductor integrated circuit device comprising the steps of:

- (a) forming an insulating layer on a semiconductor substrate;
- (b) defining an active region of said semiconductor substrate by the window;
- (c) ion implanting impurities into the semiconductor substrate using the insulating layer as a mask;
- (d) forming buried ion implanted layer in the area not masked by the insulating layer, the buried layer extending up to the surface of the semiconductor substrate at the tapered edges of the insulating layer and extends continuously into the insulating layer from the surface of the semiconductor substrate;
- (e) exposing at least a part of the ion implanted layer at the

surface of the semiconductor substrate by removing a portion of the insulating layer; and
 (f) forming a circuit element having the ion implanted layer as the buried layer, in a region of the semiconductor substrate surrounded by the ion implanted layer.

4,642,884
METHODS OF ASSEMBLING A DYNAMOELECTRIC MACHINE

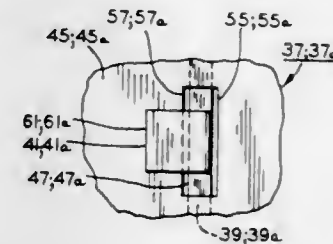
Robert W. White, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 506,344, Jan. 21, 1983, Pat. No. 4,549,346. This application Mar. 25, 1985, Ser. No. 715,845

Int. Cl.⁴ H02K 15/14

U.S. Cl. 29—596

37 Claims



1. A method of assembling a set of beams mounted to a stator for a dynamoelectric machine with at least one end frame therefor so as to retain the at least one end frame against both axial and radial displacement with respect to the stator, the beams having at least one abutment end with a tab extending therefrom, respectively, and the at least one end frame having a pair of opposite faces with a set of apertures intersecting therebetween and sized predeterminedly larger than the tabs, respectively, the method comprising the steps of:

seating one of the opposite faces of the at least one end frame against the at least one abutment ends of the beams and receiving the tabs on the beams through the apertures in the at least one end frame so as to extend beyond the other of the opposite faces thereof, respectively; and deforming the tabs into engagement with the at least one end frame within the apertures therein and into engagement with the other opposite face of the at least one end frame at least generally adjacent the apertures therein so as to retain the at least one end frame against the axial and radial displacement with respect to the stator, respectively.

4,642,885
METHOD OF ASSEMBLING A STATOR
 James L. King, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 580,384, Feb. 15, 1984, Pat. No. 4,544,856, which is a continuation-in-part of Ser. No. 496,552, May 20, 1983, abandoned. This application Jul. 24, 1985, Ser. No. 758,627

Int. Cl.⁴ H02K 15/14

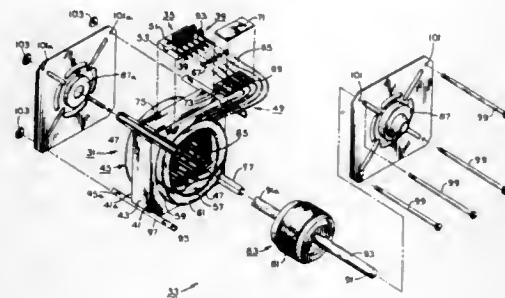
U.S. Cl. 29—596

15 Claims

1. A method of assembling a stator for a dynamoelectric machine with a terminal assembly therefor, the terminal assembly including a casing with a plurality of terminals mounted thereto, at least one electrical connector section on at least some of the terminals, and one of the terminals comprising a ground terminal, retaining means for the terminal assembly including means for grounding the ground terminal, the stator including a pair of opposite end faces with a circumferential surface interposed therebetween, at least one flat portion on the circumferential surface intersecting with one of the opposite end faces of the stator, winding means for the stator having a pair of generally annular groupings of end turns arranged

generally adjacent the opposite end faces of the stator with the end turn groupings having an outer circumferential portion, and a plurality of leads integral with the winding means extending from one of the end turn groupings adjacent the one end face of the stator and at least in part beyond the outer circumferential portion thereof, the method comprising the steps of:

locating the stator and the terminal assembly in preselected located positions with respect to each other and with respect to a crimping mechanism;
positioning preselected ones of the integral leads of the winding means extending from the one end turn grouping at least generally adjacent preselected ones of the at least one electrical connector sections on the at least some terminals of the terminal assembly when the stator and the terminal assembly are located in the preselected located positions with respect to each other and with respect to the crimping mechanism and thereafter actuating the crimping mechanism to crimp the preselected ones of the integral leads of the winding means into direct terminating engagement with the preselected ones of the at least one electrical connector sections on the at least some terminals,



moving at least the terminal assembly from the preselected located position thereof subsequent to actuating the crimping mechanism and extending the integral leads of the winding means in spaced relation across at least a part of the outer circumferential portion of the one opposite end turn grouping in a direction generally toward the intersection of the at least one flat portion with the one opposite end face of the stator;
arranging the casing of the terminal assembly at least in part in seating relation with the at least one flat portion at least adjacent the one opposite end face, and securing the casing in the seating relation thereof with the at least one flat portion; and
associating the retaining means with the stator and the casing of the terminal assembly so as to retain the casing against displacement from the seating relation thereof with the at least one flat portion and engaging the grounding means on the retaining means with the ground terminal so as to interconnect the ground terminal in ground circuit relation with the stator during the arranging and securing step.

4,642,886
METHOD FOR BALANCING WOUND ROTORS OF ELECTRICAL MACHINES
Jürgen Muck, Veitshöchheim; Hans Fischer, Würzburg, and Richard Krämer, Marktstett, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,541
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1983, 3327744

Int. Cl.⁴ H02K 15/16
U.S. Cl. 29—598
1. A method for balancing an electrical machine rotor wound with wire windings, said rotor having a lamination

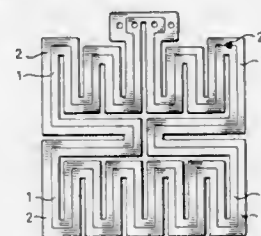
stack and an insulating disc secured to an end face of said lamination stack and provided with a multiplicity of integrally formed pockets for receiving and holding a weight, said method comprising the steps of:

providing a multiplicity of balancing weights seatable in the pockets on the insulating disc, said balancing weights having a common first weight value;
determining a second weight value and a balancing position on said insulating disc at which disposition of a weight



having said second weight value would balance the rotor; and
seating at least one of said balancing weights in a pocket on one side of a plane extending through said balancing position and the axis of rotation of said rotor and seating at least one other of said balancing weights in a pocket on the other side of said plane, so that the distribution of the balancing weights with respect to said insulating disc at least substantially approximates a disposition of a weight of said second weight value at said balancing position.

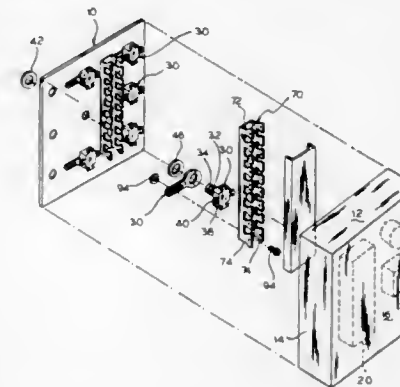
4,642,887
METHOD OF MANUFACTURING LOOP-FORMED METAL FOIL ELEMENTS
Tommy Fredriksson, Hallstahammar, Sweden, assignor to Kantal AB, Hallstahammar, Sweden
Filed Aug. 23, 1985, Ser. No. 768,592
Claims priority, application Sweden, Aug. 24, 1984, 8404231
Int. Cl.⁴ H05B 3/00
U.S. Cl. 29—611
4 Claims



1. A method of manufacturing loop-formed metal foil elements intended to serve as electrical resistance heating elements and having substantially the same electrical resistance, comprising simultaneously forming at least two loop elements (1, 2) from a unitary metal foil, said loop elements extending complementarily inside one another and jointly covering at least 70% of the surface area confined within the outer contour of the outer of the at least two elements.

4,642,888
WIRE MOUNTING FOR CONTROL PANELS
James H. Love, 3909 Woodland Ave., Western Springs, Ill. 60558

Filed Nov. 7, 1984, Ser. No. 669,218
Int. Cl.⁴ H05K 3/30; H02B 1/02
U.S. Cl. 29—832
13 Claims

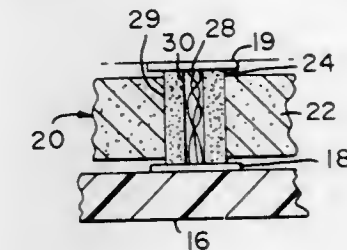


1. An improved method for securing wiring and conduits to the inner side of a control display panel without penetrating the panel, said method comprising:
inserting all necessary controls, actuators, signals and devices through openings cut in said panel;
securing mounting means in the form of brackets to at least some of said controls, actuators, signals and devices said brackets being secured between the connector ends of said controls, actuators, signals and devices and the inner face of said panel and being spaced from the inner face of said panel;
fastening encasement means to one or more of said brackets, said encasement means being positioned to hold a plurality of wires and conduits in at least one pathway disposed adjacent to a plurality of said controls, actuators, signals and devices; and
connecting a plurality of wires and conduits to said controls, actuators, signals and devices arranging said wires and conduits to run within one or more of said encasement means.
6. An article of manufacture for use in securing wiring and conduits to the inside of a control panel having controls, actuators, signals and devices mounted therethrough, said article comprising:
a mounting bracket having a first opening whereby said mounting bracket may be secured to one of said controls, actuators, signals and devices, and a fastener receiving portion of said mounting bracket spaced from said first opening, said first opening being adapted to conform to the shape of the portion of said controls, actuators, signals and devices extending from a rear face of said panel and the bracket is secured between the panel and one of said controls, actuators, signals and devices.

4,642,889
COMPLIANT INTERCONNECTION AND METHOD THEREFOR
Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 29, 1985, Ser. No. 728,065
Int. Cl.⁴ H05K 3/34, 7/00
U.S. Cl. 29—840
9 Claims

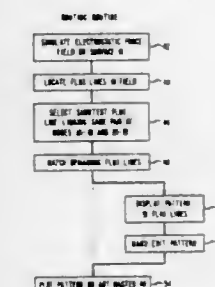
1. A device for compliantly attaching a component/connector to a substrate, comprising:
a substrate having at least one conductive strip thereon;
an electrical component electrically connected to the substrate, the electrical component having at least one electrical contact disposed therein, the electrical contact having

a pad in opposing relationship to the conductive strip of the substrate;
an interposer disposed between the substrate and the electrical component, the interposer having a nonconductive carrier which has at least one interconnect area disposed therein, the interconnect area being aligned between a conductive pad on the electrical component and a corresponding conductive strip on the substrate;
the interconnect area having wire means for electrically connecting the substrate to the electrical component, solder or the like surrounding the wire means, and means for ensuring a positive electrical connection between the substrate and the electrical component.
7. A method for compliantly interconnecting an electrical component or connector having electrical contacts therein



with a substrate having conductive strips thereon, comprising the steps of:
a. placing an interposer having a nonconductive soluble carrier with electrically conductive and solderable interconnect areas having flux means therein onto a substrate such that the interconnect areas are in alignment with corresponding conductive strips on the substrate;
b. placing the electrical connector adjacent the interposer such that portions of the electrical contacts in the connector are in alignment with a corresponding interconnect area in the interposer; and
c. heating the interconnect areas causing the flux means to clean the conductive strips on the substrate and the electrical contacts in the connector such that a positive electrical soldered connection is formed between the conductive pads and corresponding conductive strips.

4,642,890
METHOD FOR ROUTING CIRCUIT BOARDS
Charles D. Hechtman, Plainsboro Township, Middlesex County, and Zachary H. Levine, Lawrence Township, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Oct. 31, 1985, Ser. No. 793,618
Int. Cl.⁴ H05K 3/10
U.S. Cl. 29—846
6 Claims



1. A method for routing conductive paths between each of two families of nodes of a body comprising the steps of:
simulating an electrostatic force field between the two families of nodes by attributing an equal charge to each of the

nodes of one family which is opposite in polarity to the point charge attributed to each of the nodes of the other family such that the total sum of the charges is zero; locating lines of electric flux within the simulated electrostatic force field; selecting, from the lines of electric flux, a subset of lines which each terminate at a separate one of the nodes in each family; and routing the conductive paths between the nodes of the two families such that each path coincides with a separate one of the selected subset of flux lines.

4. A method for routing conductive paths on a substrate between each of two families of nodes thereon comprising the steps of:

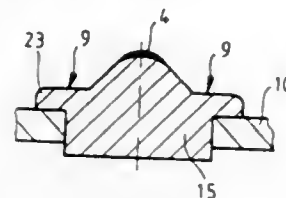
- simulating a two-dimensional electrostatic force field on the surface of the substrate by attributing an equal charge to each of the nodes of one family which is opposite to that attributed to each of the nodes of the other family such that the total sum of the charges is zero;
- locating lines of electric flux within the force field; designating the shortest flux line within each set of lines which terminate the same pair of nodes;
- eliminating all the remaining lines within each set otherwise not designated;
- successively eliminating the longest of the designated flux lines and then matching the flux lines that remain to obtain a subset of lines which link the nodes in the two families, the step of successively eliminating the longest of the designated flux lines and the matching of the lines that remain being repeated until one of the nodes in each family is no longer linked to a separate one of the nodes in the other family by a flux line; and
- routing conductive paths between the nodes of the two families so that each path coincides with the location of a separate one of the flux lines which each link a separate one of the nodes in the two families.

4,642,891 METHOD OF MANUFACTURING CONTACT STRUCTURES

Guenter Weik, Engelsbrand, and Max Ackermann, Wildbad, both of Fed. Rep. of Germany, assignors to Inovon-Stroebe GmbH & Co. K.G., Birkenfeld, Fed. Rep. of Germany
Filed Apr. 12, 1985, Ser. No. 722,702
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414656

Int. Cl.⁴ H01R 43/02
U.S. Cl. 29—879

11 Claims



1. A method of manufacturing contact structures for low energy switching applications wherein a number of contact members consisting of layered contact materials are mounted on a support strap, said method comprising the steps of: providing a T-shaped metal strip of an easily cold stampable material, said metal strip having a stem and a cross-web and said cross-web having a center portion and shoulder portions alongside said center portion; firmly applying to the center portion of said cross-web at least one layer of a contact material thereby providing a contact strip; providing in said support strap openings of a width corresponding to the width of said stem and of a length corre-

sponding to a predetermined length of the stem of said contact members; cutting from said contact strip sections with stem portions of said predetermined length thereby providing contact members and placing said contact members on said support strap from one side thereof such that the stems of said contact members extend through the openings in said support strap; holding said contact members in position on said shoulder portions; and stamping said stems from the other side of said support strap so as to firmly engage said contact members with said support strap.

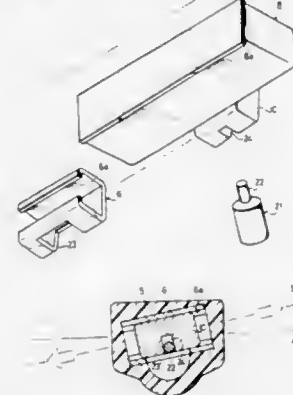
4,642,892 T-SHAPED RAZOR

Minoru Ishida, Gifu, Japan, assignor to Feather Safety Razor Co., Ltd., Seki, Japan
Filed Dec. 5, 1984, Ser. No. 678,438

Claims priority, application Japan, Dec. 19, 1983, 58-195235[U]; Dec. 22, 1983, 58-197350[U]; Jul. 5, 1984, 59-101778[U]; Oct. 5, 1984, 59-151465[U]
Int. Cl.⁴ B26B 21/38

U.S. Cl. 30—44

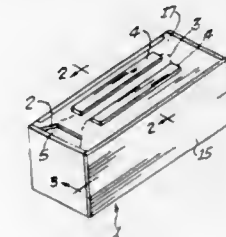
11 Claims



1. A T-shaped razor comprising: a holder adapted to be held by a user for shaving, said holder having an upper end portion, and front, rear and two side portions, said front portion being adapted to face parallel to a skin surface to be shaved when the holder is held by the user for shaving; means for supporting a blade cartridge slidably connected to the upper end portion of the holder, said supporting means being at least obliquely and rectilinearly slidable along a path extending from the front side portion to the rear side portion of the holder so that the supporting means is gradually moved between the front and rear portions as the supporting means moves laterally between the two side portions; a blade cartridge connected to the supporting means and having at least one blade with a blade edge for shaving, said blade cartridge being inclined relative to the supporting means so that the blade edge extends perpendicularly to the longitudinal direction of the holder and parallel to the front portion of the holder, said blade edge, when the blade cartridge is moved along the path while the blade edge abuts against the skin surface to be shaved, moving obliquely relative to the longitudinal direction of the blade edge and substantially parallel to the skin surface to be shaved thereby to cut hairs with an action that also pulls the hairs; and means for reciprocating the supporting means along the path, said reciprocating means being installed in the holder so that when the reciprocating means is actuated, the blade cartridge reciprocates together with the supporting means.

4,642,893
SHAVING COOLER
Charles Borenstein, North Miami Beach, Fla., assignor to Cryogenics, Inc., Miami, Fla.
Filed Mar. 11, 1985, Ser. No. 710,419
Int. Cl.⁴ B76B 21/40; B26D 5/64
U.S. Cl. 30—90

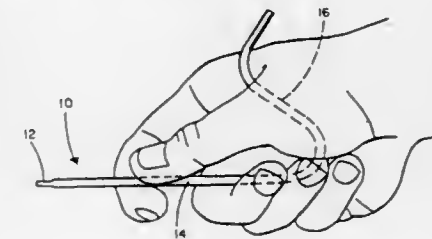
11 Claims



1. An apparatus for improving the performance of a razor, said razor having at least one metallic, sharpened edge, and a handle, comprising: receptacle means for receiving and supporting said razor, said receptacle means having an internal compartment and at least one external wall, said external wall having securing means for receiving and removably supporting said razor handle, said external wall having an opening for receiving the head of said razor; cannister means for containing a fluid under pressure, said cannister means including means for spraying said fluid in a controlled direction, said cannister means moveably secured within said internal compartment of said receptacle means, said receptacle means including means for disposing said spraying means such that said spraying means is aligned with said receptacle means wall opening; said means for spraying being a valve having a venturi flow orifice causing said fluid to expand and cool when exiting said cannister; said receptacle means including means for activating said cannister spraying means; whereby a razor can be secured to said receptacle means, said cannister spraying means can be activated, causing said fluid to substantially cool the head of said razor, thereby increasing the sharpness and reducing the irregularities of said razor's edge.

4,642,894
HOME CARE DENTURE GRINDING INSTRUMENT
Bruce T. Campbell, Lakewood, Calif., assignor to Camdent Laboratories, Cerritos, Calif.
Division of Ser. No. 511,190, Jul. 6, 1983, Pat. No. 4,530,259.
This application May 13, 1985, Ser. No. 733,086
Int. Cl.⁴ B26B 3/00; A61C 3/00
U.S. Cl. 30—169

1 Claim

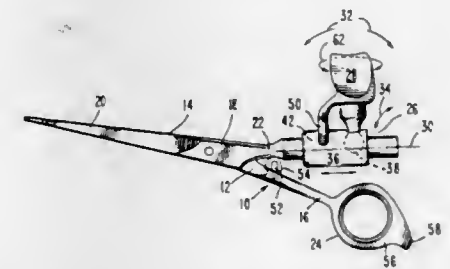


1. A denture grinding instrument for use in one hand and comprising a unitary elongated cylindrical wire having about one-half of its length formed into an S-shaped handle portion and the remaining length formed into a substantially straight shaft terminating in the angular surfaced blade, said S-shaped

handle portion being angled relative to said shaft whereby to permit grasping of said shaft between the thumb and forefingers with the palm bearing against said handle portion.

4,642,895
SCISSORS WITH ADJUSTABLE THUMB LOOP
Glenn A. Garry, 6100 Henry Ave., Apt. 7-N, Philadelphia, Pa. 19128
Filed Nov. 4, 1985, Ser. No. 794,826
Int. Cl.⁴ B26B 13/20
U.S. Cl. 30—341

16 Claims



1. A scissors comprising: (a) a first member including a first blade means at one end thereof and a first handle means at the other end thereof; (b) a second member including a second blade means at one end thereof and a second handle means at the other end thereof, said second member being pivotally secured, at a point between said second blade means and said second handle means, to said first member, at a point between said first blade means and said first handle means, with said first and second blade means adjacent to one another for cutting therebetween; (c) a first gripping means on said first handle means to facilitate gripping of said first handle means by the fingers of the user; (d) a second gripping means on said second handle means to facilitate movable securement of the thumb of the user with respect to said second handle means, said second gripping means comprising a thumb loop means movably secured with respect to said second handle means to allow pivotal movement of said thumb loop means longitudinally along and perpendicularly around the axis of said second handle means; and (e) movable interconnecting means comprising: (1) a ball means fixedly secured with respect to said thumb loop means; (2) a socket means defined in said second handle means and adapted to receive said ball means therein to provide a ball and socket interconnection between said thumb loop means and said second handle means; (3) a telescoping slide means extending about said second handle means and in telescoping movable engagement therewith, said telescoping slide means positioned adjacent to said socket means and defining a slot means selectively registrable therewith, said slot means adapted to retain said ball means within said slot means while allowing movement of said ball means and said thumb loop longitudinally along and perpendicularly around the axis of said second handle means.

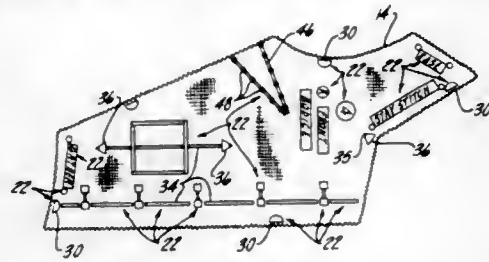
4,642,896
SEWING AID
Susan P. Grimm, 36000 Jefferson, Apt. B-307, Mt. Clemens, Mich. 48043
Filed Dec. 27, 1982, Ser. No. 453,586
Int. Cl.⁴ A41H 3/00
U.S. Cl. 33—17 R

13 Claims

1. A method for assembling a finished garment from cloth

and a garment pattern, said pattern comprising at least one conventional template, and said pattern bearing indicia instructing the assembly of said cloth into said garment, said method comprising the steps of:

- (a) reversibly attaching said at least one template to said cloth;
- (b) cutting said cloth according to said template;
- (c) detaching said template from said cloth;
- (d) placing a plurality of removable markers upon said cut cloth at positions corresponding to said indicia on said pattern, said markers being adapted to direct the assembly



- of said cloth in accordance with the instructions of said indicia, wherein said markers are differentiable according to the instructions of the corresponding indicia on said pattern, wherein each of said markers comprises an adhesively-backed material distinguishable by feel or sight from said cloth when applied to said cloth, and wherein said cloth is substantially free of residue upon removal of said markers from said cloth;
- (e) assembling said cloth into said finished garment as directed by said markers; and
 - (f) removing said markers from said cloth.

4,642,897

METHOD AND APPARATUS FOR MARKING WORKPIECES

Hans-Peter Kirsch, Schafrucke, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

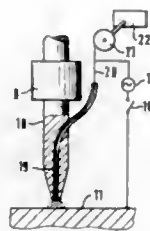
Filed Dec. 14, 1984, Ser. No. 681,942

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345525

Int. Cl.⁴ B43L 13/00

U.S. Cl. 33—18.1

4 Claims



1. A device for effecting the marking of workpieces when using a probe intended for measuring machines and in particular using a multicoordinate measuring machine, comprising a measuring probe having a tracer pin chuck, a pin in said chuck having a scribe tip, means electrically insulating said scribe tip from said probe, a voltage source connected to said tip in such a manner that said scribe tip carries a potential and a voltage prevails between said scribe tip and the work-piece surface, said scribe tip being made of a ceramic material having an axial hole, a thin wire extending through said hole exiting at the tip of said scribe tip and being connected to said voltage source so that said wire carries a potential and a voltage exists between the wire and the workpiece surface and

means for feeding the wire to said tip at a rate comparable to the burn-off of said wire.

4,642,898

MARKING AND MEASURING TOOL

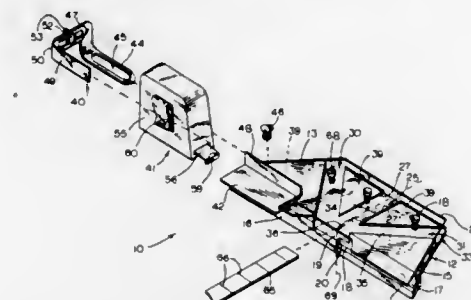
Dana K. Miller, 5237 Bouldercrest Rd., Ellenwood, Ga. 30049

Filed Apr. 14, 1986, Ser. No. 851,249

Int. Cl.⁴ G01B 3/10; B43L 7/06

U.S. Cl. 33—138

6 Claims



1. A marking and measuring tool comprising a housing that has a flat side face adapted to be placed flushly against a side of an object to be marked or measured and having a groove formed therein through which a longitudinal portion of a measuring tape may extend with another longitudinal portion of the tape overlaying the object to be marked or measured, and a plurality of substantially coplanar guide channels that extend from adjacent said side face at a plurality of angles with respect thereto with said channels merging adjacent said side face and with a side of each channel extending towards a common reference line lying substantially in the plane of said flat side face; and a bar of a size and shape adapted to be slid within said guide channels.

5. A square having a body formed with a flat side adapted to be placed flushly against a side of an object to be marked or measured and with a guide channel extending at least partially therethrough at a right angle with respect to said flat side and at least one other guide channel extending at least partially therethrough obliquely with respect to said flat side and which merges with said first mentioned guide channel adjacent said flat side; a bar of a size and shape adapted to be slid within said guide channels; and means for releasibly mounting a measuring tape dispenser upon said body for dispensing of flexible tape along said flat side and over an end of said guide channel.

4,642,899

MEASURING ATTACHMENT

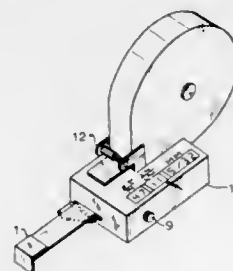
Leon Fass, 47 Knob Hill Rd., Hackettstown, N.J. 07840, and Vladimir Loyevsky, 29 Jacoby St., Maplewood, N.J. 07040

Filed Jul. 22, 1985, Ser. No. 757,141

Int. Cl.⁴ G01B 3/12

U.S. Cl. 33—140

11 Claims



1. A distance measuring attachment to be associated with

an elongated movable element, such as a tape and the like, comprising a housing; receiving means provided on said housing and formed so that an elongated movable element can be received in said receiving means and move in said receiving means; rotary means provided in said housing and bringable into a frictional contact with said element; means for adjusting said rotary means so as to bring said rotary means into frictional contact with said element; means for transforming the rotary movement of said rotary means, caused by the frictional contact with said movable element, into signals; means for receiving said signals and transforming them into distance measuring data; means for displaying said data; and means for mounting said housing to a casing of a tapeline and the like, said mounting means including first clamping means for clamping the casing of a tapeline and the like, and second clamping means connected with said first clamping means and clamping said housing.

4,642,900

SHIM SELECTOR

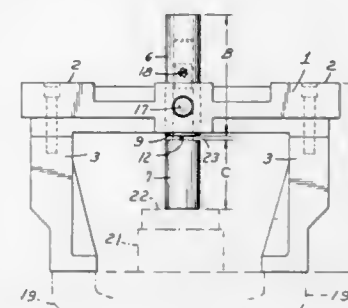
Lawrence A. Provost, Warren, and Robert D. Boyer, Ferndale, both of Mich., assignors to Kent-Moore Corporation, Warren, Mich.

Filed Jul. 8, 1985, Ser. No. 752,520

Int. Cl.⁴ G01B 5/18

U.S. Cl. 33—169 B

7 Claims



1. A shim selector device for selecting shims to take up the end play of bearings in a housing comprising a bridge, a plurality of legs for supporting the bridge, said bridge having a planar upper surface and planar lower surface defined by the lower surfaces of the legs, said upper and lower surfaces of the bridge being parallel, said bridge having an opening therethrough, a gauge adjustable as to length mounted in the opening of the bridge, the overall minimum length of the gauge being equal to the height of the bridge and leg assembly, said gauge comprising a cylindrical sleeve adjustably mounted in said opening of said bridge and a gauging plunger having a reduced end telescoped within said cylindrical sleeve and having a free end, said sleeve and gauging plunger being movable axially relative to one another to define a gap between the lower face of the gauging sleeve and the upper face of the gauging plunger, said sleeve having a longitudinal axis and upper and lower ends, said surfaces being planar and parallel, said surface being perpendicular to the longitudinal axis of said sleeve, the free end of said gauging plunger being planar and perpendicular to the longitudinal axis of said gauging plunger, means for locking said sleeve in adjusted position on said bridge, means for locking said plunger in adjusted position on said sleeve, said upper surface of said bridge being unobstructed such that the bridge can be initially placed with said lower surface in contact with one section of a housing to detect end play in a bearing with the sleeve free to move so that

the sleeve will drop into contact with the base of a bore in the one section, the sleeve can then be locked in position relative to the bridge by actuating the means for locking the sleeve, the lower surface of the bridge being unobstructed so that the gauging plunger can be inserted and temporarily locked in position, the bridge can then be inverted to bring the second surface into contact with a surface of the other mating section of said housing, the means for locking the gauging plunger released permitting the gauging cylinder to rest on the upper surface of a bearing in the other section of the housing thereby forming a gap between the lower face of the sleeve and the upper face of the gauging plunger, which gap indicates the amount of play of the bearing which can be measured for determining the size of the shim.

4,642,901

PROPELLER CHECKING

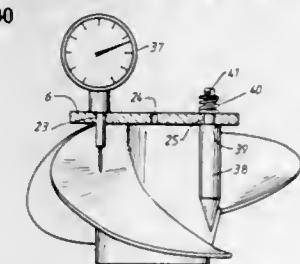
Thomas A. Webb, 20 Prentice Street, Brunswick, Victoria 3056, Australia

Filed Jul. 10, 1985, Ser. No. 753,521

Int. Cl.⁴ G01B 5/24, 7/30

U.S. Cl. 33—530

7 Claims



1. A propeller checking device comprising: a mounting means adapted to be mounted so as to intersect the axis of the propeller; a datum pin mountable to said mounting means at a first position for contacting the propeller; and a dial indicator mountable to said mounting means at a second position and having a sensing pin for contacting the propeller, said second position and said first position being radially equidistant from the propeller axis and being arcuately spaced apart to subtend a predetermined angle about the propeller axis, said dial indicator being so calibrated that, when the datum pin and sensing pin are in contact with said propeller, the dial indicator will give a direct reading of one of the pitch of the propeller, a multiple thereof, and a fraction thereof.

4,642,902

APPARATUS FOR DETERMINING THE DEVIATIONS FROM A CIRCULAR FORM IN A DYNAMICALLY BALANCED PART

Erich Niedermayr, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,475

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 3423547

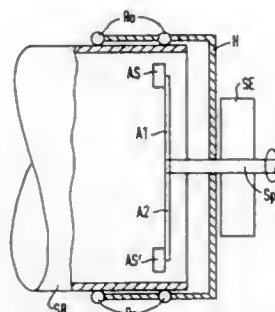
Int. Cl.⁴ G01B 7/28

U.S. Cl. 33—543

14 Claims

1. In an apparatus for determining deviations from a circular form in dynamically balanced parts, particularly in steel pipes, said apparatus having a spindle, which can be set in approximate alignment with an axis of a unit under test and an interval sensor being rotatable around a spindle axis for radially sensing a circumferential surface of the unit under test and creating a sensor signal, the improvements comprising said apparatus including electronic signal processing means for separating a

deviation signal component of the sensor signal which occurs for detected deviations from a circular form from other signal components of the sensor signal which other components occur for an eccentric setting of the spindle with respect to the axis of the unit being tested, said electronic signal processing



means utilizing the first mentioned sensor signal and a second signal having the same signal curve as the first sensor signal but phase-shifted by 180° rotational angle of the spindle, said processing means having an adder element for adding the two signals to form a sum signal.

4,642,903

FREEZE-DRIED FOAM DOSAGE FORM

J. Desmond Davies, Grosse Pointe Farms, Mich., assignor to R. P. Scherer Corporation, Troy, Mich.

Filed Mar. 26, 1985, Ser. No. 716,341

Int. Cl. F26B 5/06

U.S. Cl. 34—5

19 Claims

1. A method of preparing an effective unit dosage form of an active ingredient, said active ingredient being selected from the group consisting of pharmaceuticals, nutrients, vitamins, minerals, diagnostic agents, fertilizers and insecticides, comprising the following steps in combination:

- forming a dispersion of a gas and a solution or suspension, said solution or suspension containing said active ingredient dissolved or suspended therein;
- maintaining said gas in a dispersed state within said dispersion; and
- freeze-drying a unit volume of said dispersion to form a freeze-dried foam containing said active ingredient dispersed therethrough, said freeze-dried unit volume containing an effective unit dosage of said active ingredient.

4,642,904

ENERGY CONSERVING PROCESS FOR DRYING A CLAY SLURRY

James M. Smith, Jr., Macon, Ga., assignor to Georgia Krolin Company, Inc., Union, N.J.

Filed Aug. 1, 1985, Ser. No. 761,643

Int. Cl. F26B 3/12

U.S. Cl. 34—9

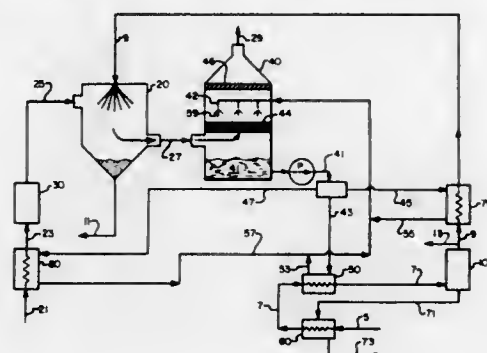
14 Claims

3. A process for concentrating solids in an aqueous clay slurry comprising:

- dewatering the aqueous clay slurry by filtration to remove a first portion of water therefrom and collecting the water removed from the aqueous clay slurry as the filtrate from said filtration step;
- contacting the partially dewatered aqueous clay slurry from said filtration step with a hot drying gas in an evaporative dryer whereby an additional portion of the water in the aqueous clay slurry is removed therefrom by evaporation and entrained as water vapor in the drying gas exhausted from the evaporative dryer;
- contacting the drying gas exhausted from the evaporative dryer with a spray of an aqueous cooling liquid in a cooling tower whereby at least a portion of the water vapor evaporated from the aqueous clay slurry is condensed from the drying gas exhausted from the evaporative dryer

and collected with the cooling liquid as the condensate from the cooling tower;

- passing at least a portion of the condensate from the cooling tower in heat exchange relationship with the aqueous clay slurry being processed thereby cooling the condensate and recovering at least a portion of the energy



expended in evaporating the water from the aqueous clay slurry in the evaporative dryer; and

- recycling the cooled condensate having passed in heat exchange relationship with the aqueous clay slurry to the cooling tower to form at least a portion of the spray of cooling liquid contacted with the drying gas exhausted from the evaporative dryer.

4,642,905

HEAT EXCHANGER

Lars M. Barlebo, and Joachim Nickelsen, both of Copenhagen, Denmark, assignors to F. L. Smidth & Co. A/S, Denmark

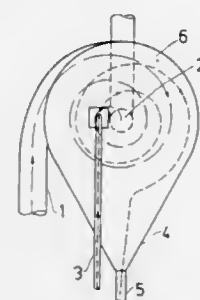
Filed Apr. 2, 1985, Ser. No. 718,898

Claims priority, application United Kingdom, Apr. 10, 1984, 8409202

Int. Cl. F26B 3/10

U.S. Cl. 34—10

6 Claims



1. In a heat exchanger comprising a cylindrical chamber having a horizontal axis, a tangential gas inlet at the periphery of said chamber, at least one gas outlet through an end of said chamber adjacent to the axis thereof whereby in use a spiral gas flow is produced from said gas inlet to said gas outlet, at least one material inlet for introducing material into said chamber adjacent to the axis thereof, and a material outlet for discharge of material which, in use, has been flung centrifugally outwards through said spiral gas flow to said periphery of said chamber, the improvement wherein said material inlet is separate from said gas inlet and is so arranged that material is introduced into said chamber therethrough having a tangential velocity component with respect to said chamber axis which is in the same sense about said axis as said spiral gas flow.

4,642,906

METHOD AND APPARATUS FOR ROASTING SMALL QUANTITIES OF COFFEE

Michael Kautze, Tostedt, and Dieter Reiff, Tornesch, both of Fed. Rep. of Germany, assignors to TCHIBO-Frisch-Rost-Kaffee AG, Hamburg, Fed. Rep. of Germany

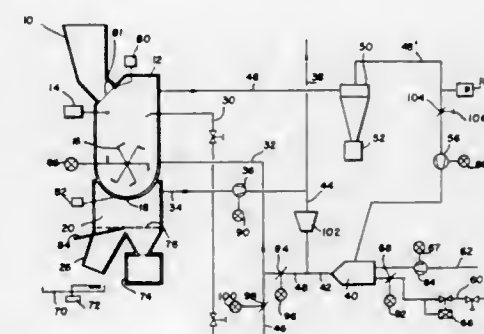
Filed Aug. 13, 1985, Ser. No. 765,209

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430103

Int. Cl. F26B 3/14

U.S. Cl. 34—13

8 Claims



1. In a method for roasting small quantities of coffee beans in an apparatus including a roasting chamber having means for controlling the temperature thereof, means for filling beans into the chamber, means for detecting the temperature in the chamber, means for actuating the filling means when the temperature in the chamber reaches a predetermined level within the range of 220 to 350 degrees C., cooling means and means for discharging the roasted beans to a cooling screen, the steps comprising:

- selecting a desired temperature level for the chamber corresponding to the beans to be roasted, feeding the coffee beans into the roasting chamber when the selected temperature level in the chamber of between 220 and 350 degrees C. has been reached, allowing the beans to reach a first predetermined temperature and then a second temperature correlated to the particular type of coffee bean disposed in the chamber with said first temperature being lower than said second temperature, stopping the roasting by adding water to the chamber upon detection of the second temperature to carry out a first cooling of the beans, then discharging the cooled beans to a movable cooling screen disposed in an adjacent cooling chamber and further cooling the beans in the cooling chamber.

4,642,907

THERMAL BIAS AND TIMER RUN-OUT FOR AUTOMATIC DRYER CONTROL

Richard A. Best, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 22, 1985, Ser. No. 790,210

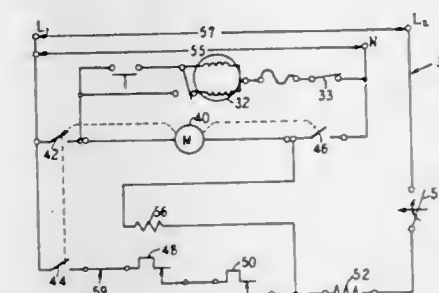
Int. Cl. F26B 21/06

U.S. Cl. 34—48

19 Claims

1. In a control for a clothes drying apparatus having an operating thermostat, the improvement comprising: a timer operable upon receiving a predetermined current; a timer shunt branch removable by the opening of the operating thermostat to shunt current around said timer; means for providing bias heat to the operating thermostat,

said means connected in series with said timer and forming a current carrying branch for the predetermined current



to enable said timer to advance upon the removal of said shunt branch.

4,642,908

ADDITIVE DISPENSER FOR CLOTHES DRYER

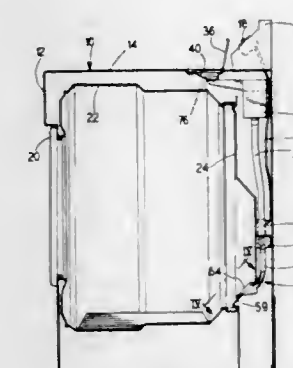
Robert A. Brenner, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 26, 1985, Ser. No. 727,886

Int. Cl. F26B 11/04

U.S. Cl. 34—60

18 Claims



1. In a fabric drying apparatus having a drum arranged for rotation about a generally horizontal axis and a non-rotating bulkhead member, a fluid additive dispenser comprising:

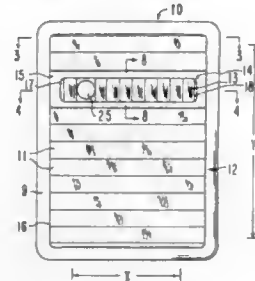
- a body of porous material comprising a pad with at least one flat surface mounted to said bulkhead member within said drum;
 - said material having a first surface portion exposed to the interior of said drum and a second surface position for receiving the fluid additive, said first surface portion being said flat surface; and
 - means for selectively supplying a predetermined quantity of the fluid additive to the second surface;
- whereby a fabric load within the dryer drum will contact said first surface of said porous material during a drying operation and thereby gradually absorb said fluid additive from said material.

4,642,909
WALL MOUNTED HAIR DRYER HAVING ADJUSTABLE
OUTLET WITH MULTIPLE POSITIONS AND
DIRECTIONS

Roy Garcia, P.O. Box 937, Elsa, Tex. 78543
 Filed Feb. 27, 1985, Ser. No. 706,135
 Int. Cl.⁴ F26B 9/06

U.S. Cl. 34—97

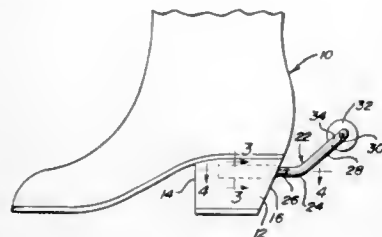
4 Claims



1. A wall mounted hair dryer whose outlet is moveable to multiple positions and in multiple directions, comprising: a housing for mounting on a wall, said housing containing the motor and blower of said hair dryer and including said outlet for blowing heated air; means for moving said outlet to multiple translational positions on the exterior surface of said housing; means for changing the direction in which said outlet directs said heated air; whereby said outlet will blow heated air from multiple positions which are adjustable to be in close proximity to the head of the person whose hair is being dried and in multiple directions which are adjustable to effectively blow dry said hair of said person.

4,642,910
BOOT WITH DETACHABLE SPUR
 Nathan B. Carter, Jr., P.O. Box 4324, Meridian, Miss. 39301,
 and Larry F. Ligon, Rt. 3, Box 217, New Albany, Miss. 38652
 Filed Apr. 11, 1986, Ser. No. 850,548
 Int. Cl.⁴ A43B 5/00, 23/24; A43C 17/00
 U.S. Cl. 36—1

8 Claims



1. A boot with a detachable spur, said boot incorporating a depending heel including an upstanding rear side, means defining an elongated cavity in said heel opening lengthwise outwardly through said rear side and of non-circular cross-sectional shape, an elongated shank including first and second end portions, said second end portion defining said spur, said first end portion being of a non-circular cross-sectional shape complementary to the first mentioned non-circular cross-sectional shape, one side of said first end portion including an elongated relieved area extending longitudinally therealong and including first and second ends remote from and adjacent said second end portion, respectively, an elongated spring arm keeper including a first end anchored in the first end of said relieved area remote from said second end portion and with said spring arm keeper extending longitudinally along said relieved area toward said second end portion and including a second end curving outwardly of said relieved area and resiliently laterally

displaceable into said second end of said relieved area, said first end portion and said spring arm keeper being freely longitudinally displaceable into said cavity when said second end of spring arm keeper is fully displaced into said second end of said relieved area, said second end of said spring arm keeper and said means defining said cavity including first and second coacting abutment means, respectively, operative, when said second end of said keeper is only partially displaced into said relieved area, to prevent longitudinal displacement of said first end portion of said shank from said cavity, said first coacting means being carried by said second end of said spring arm keeper a spaced distance longitudinally therealong from the terminal end of said second end of spring arm keeper, said terminal end, when said first end portion of said shank is displaced into said cavity to a position with said first and second abutment means coacting with each other to prevent displacement of said shank first end portion from said cavity, projecting rearward of said rear side for manual digit pressure thereon to displace terminal end fully into said relieved area.

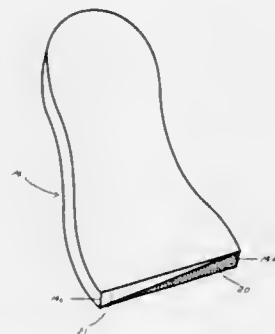
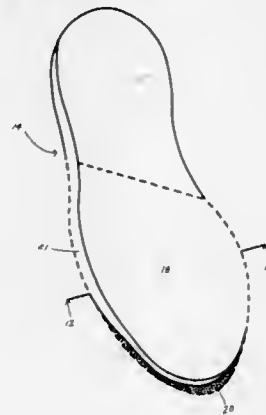
4,642,911
DUAL-COMPRESSION FOREFOOT COMPENSATED
FOOTWEAR

Louis C. Talarico, II, 116 Wood St., P.O. Box 180, Lewiston, Me. 04240

Filed Feb. 28, 1985, Ser. No. 706,582
 Int. Cl.⁴ A43B 13/12

U.S. Cl. 36—30 R

17 Claims



1. In an article of footwear for use with a foot, said article having a sole, said sole having a forefoot and a rearfoot portion, said sole forefoot portion having a medial aspect and a lateral aspect, said sole forefoot portion being comprised of materials having differing compressibilities of materials selected and arranged across the width thereof such that said sole forefoot portion effectively slopes at an angle upwardly from said lateral aspect to said medial aspect when compression forces are exerted on the forefoot to provide an effective inclined surface of resultant thickness greater at said medial

aspect of the forefoot than at said lateral aspect as a result of less compressible material being incorporated at said medial aspect of the forefoot than at said lateral aspect to compensate said forefoot in its naturally inverted angulation and to maintain the natural alignment, position, motion, and function of the entire foot during use of said article of footwear, and wherein said rearfoot portion is of constant thickness across the width thereof.

4,642,912
SHOE INSOLE
 Gary C. Wildman, Germantown; Frank Wirth, and Vijay Surpuriya, both of Memphis, all of Tenn., assignors to Scholl, Inc., Memphis, Tenn.

Filed May 2, 1984, Ser. No. 606,027
 Int. Cl.⁴ A43B 13/40

U.S. Cl. 36—44

5 Claims

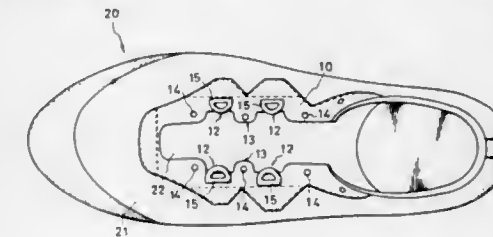


1. An insole for disposition in an article of footwear to provide cushioning and comfort to the user consisting of:
 (a) a bottom layer constructed of flexible foam having a compressive strength of at least 0.3 kg/cm² at 40 percent strain, a compressive set of less than 20% and a substantially uniform thickness,
 (b) an intermediate layer constructed of flexible foam having a compressive strength at 40 percent strain less than that of said bottom layer, a compressive set of less than 20% and a substantially uniform thickness, and
 (c) a top layer constructed of fabric, said layers laminated together and shaped to fit inside of an article of footwear to provide cushioning and comfort to the user without substantial permanent deformation of any of said layers to the users foot.

4,642,913
SPORTS SHOES
 Yoshiaki Hase, Akashi, Japan, and Toshio Shigi, Irvine, Calif., assignors to ASICS Corporation, Kobe, Japan
 Filed Aug. 6, 1984, Ser. No. 638,060
 Claims priority, application Japan, Apr. 12, 1984, 59-54270[U]

Int. Cl.⁴ A43B 11/00; A43C 1/00
 U.S. Cl. 36—50

12 Claims

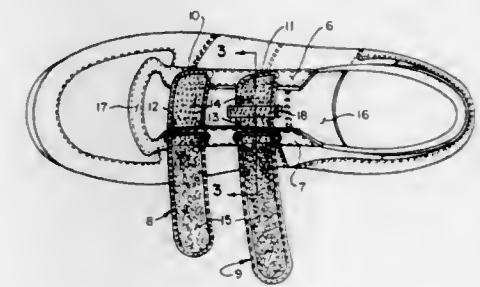


1. A sports shoe comprising first engaging means having at least two contacting points and second engaging means having at least one contacting point, said first and second engaging means being arranged at each of two side portions of an upper cover means of the shoe having a forward opening which is opened at a fore part of said upper cover means along a longitudinal direction of the shoe, both the side portions being opposed to each other along the longitudinal direction of the shoe and both the side portions being disposed in the vicinity of both side peripheral edges of the upper cover means, the edges profiling the forward opening, the side portions each having an uppermost part adjacent to the forward opening, and a lower-

most part adjacent to the forward opening, the lowermost part being forward of the uppermost part with respect to the longitudinal direction, the contacting points of the second engaging means being adapted to engage a shoe string more smoothly as compared with the contacting points of the first engaging means, the one contacting point of the second engaging means being arranged adjacent to each of the two contacting points of the first engaging means and between the two contacting points of the first engaging means along each of the side portions, the contacting points of the first engaging means at one of the side portions being arranged so as to oppose the contacting points of the first engaging means at the other side portion, and further the contacting point of the second engaging means at the one side portion being arranged so as to oppose the contacting point of the second engaging means at the other side portion, whereby the contacting points of the first and second engaging means are laced by a shoe string and a uniform and well-balanced tightening effect throughout a substantial part of the side portions is obtained by tying both ends of the shoe string after engaging the shoe string with the contacting points of the first and second engaging means arranged along each of the side portions.

4,642,914
FASTENING MEANS FOR FOOTWEAR
 Adelino Caldeira, Bristol County, Mass., assignor to Kangaroos U.S.A., Inc., Chesterfield, Mo.
 Filed Mar. 4, 1985, Ser. No. 707,829
 Int. Cl.⁴ A43B 11/00, 23/26, 5/00
 U.S. Cl. 36—50

1 Claim



1. A fastening means for footwear, such footwear comprising an athletic shoe, said shoe being of the type incorporating a vamp, quarters, counter, and tongue portions, all integrated together with the sole structure, the improvement which comprises, said fastening means cooperating with the approximate upper edges of the quarter portions and when secured holding said footwear into closure, said fastening means including a pair of strap means, said strap means connecting between the said approximate upper edges of the said quarter portions, securing means provided upon said strap means for fastening of said strap means and the footwear into closure, said securing means comprising hook and pile fastener means, said securing means provided upon the upper disposed surface of said strap means, loop means, provided upon the said tongue, and disposed for insertion of one of the strap means therethrough for positioning of said fastening means with respect to the tongue portion of the footwear during closure, said loop means also having securing means provided upon its upper disposed surface, said strap means, at one end, secured to the approximate upper edge of one quarter portion, there being corresponding slots for each strap means formed through the approximate upper edge of the other quarter portion, said strap means respectively inserting through the said loop means and the slots, and each strap means being folded back upon itself and fastening upon the securing means of the underlying strap and loop means, whereby the folding over of the strap means upon itself providing for the engagement by the securing means of one of the strap means by locking onto the securing means provided upon the loop means and the securing means further

provided upon said strap means and thereby providing for the permanent aligned positioning of the tongue and the footwear as applied to the foot of its wearer.

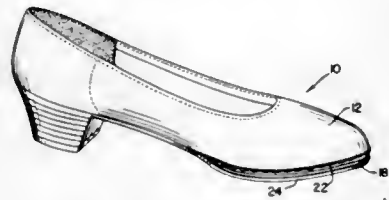
4,642,915
ARTICLE OF FOOTWEAR AND METHOD OF MAKING SAME

Wilhelm Pfander, Brewer, Me., assignor to Penobscot Shoe Company, Old Town, Me.

Filed Aug. 14, 1985, Ser. No. 765,400
Int. Cl.⁴ A43B 9/00

U.S. Cl. 36—57

12 Claims

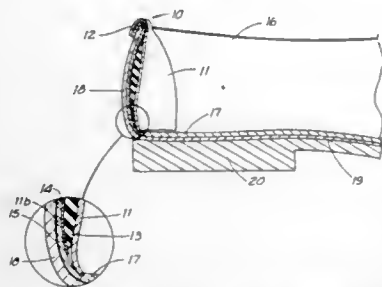


1. An article of footwear comprising a flexible top portion shaped to surround the top front portion of a foot; a flexible under portion shaped to surround the bottom front portion of a foot; said top portion and said under portion being shaped to form a forepart of said article of footwear that is closed at its top, bottom and side portions; means joining the peripheries of said top portion and said under portion to form a seam therebetween and to form said forepart so that it will substantially enclose and contact the front portion of a foot in a manner like a moccasin; and a sole portion joined to said under portion; said seam being located closely adjacent and substantially parallel to said sole portion.

4,642,916
HEEL SPAWN
Van B. Collins, 7637 Canton, St. Louis, Mo. 63130
Continuation of Ser. No. 678,465, Dec. 5, 1984, abandoned. This application Jun. 12, 1986, Ser. No. 873,675
Int. Cl.⁴ A43B 23/10, 23/08

U.S. Cl. 36—58.6

8 Claims



1. For use with a shoe, a podiatric appliance of unitary character for selective insertion interiorly of a shoe along the back of the shoe and for selective removal therefrom to provide heel lining for the back of the shoe, comprising:

front and back covers each of flexible material, the front cover and back cover each having identically configured upper and lower portions, the lower portion of the front cover providing a surface confronting the heel of a wearer of the shoe and the lower portion of the back cover confronting the back of the shoe, the lower portions both extending from a socklining of the shoe to the top of the back of the shoe coextensively with the back of the shoe; a thin gauge aluminum form having lower and upper portions positioned between the front and back covers of pliable character for shaping the appliance to fit the heel of the wearer;

a layer of padding positioned between the aluminum form and the front cover;

the lower portion of the aluminum form and layer of padding each being of area less than the lower portions of the front and back covers to provide the front and rear covers with marginal portions surrounding at least portions of the aluminum form and layer;

first means for securing together the front and back cover marginal portions to provide side edges smoothly meeting interior surfaces of sides of the shoe;

the lower portions of the front and back covers having a lower edge meeting the socklining and side edges and extending in converging relation from the lower edge to provide a neck of narrow width between upper and lower portions of the front and back covers, the neck being located substantially at the top of the back of the shoe;

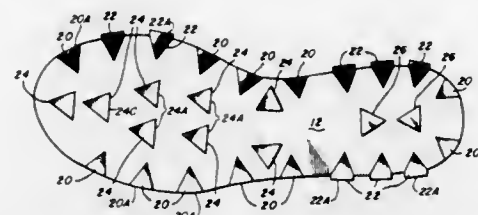
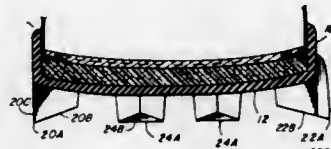
the upper portions of the front and back covers having side edges extending in diverging relation from the neck to an upper edge of curvilinear shape to provide a tab for being folded over the top of the back of the shoe for stabilizing the appliance within the shoe; and

non-permanent adhesive provided on a shoe-confronting surface of the lower portion of the back cover for causing the appliance to be adhered within the shoe but selectively removed for being installed in a different shoe.

4,642,917
ATHLETIC SHOE HAVING IMPROVED SOLE CONSTRUCTION
Marvin J. Ungar, Brookline, Mass., assignor to Hyde Athletic Industries, Inc., Cambridge, Mass.
Filed Feb. 5, 1985, Ser. No. 698,405
Int. Cl.⁴ A43C 15/16

U.S. Cl. 36—59 C

6 Claims



1. A shoe having an improved sole construction comprising an upper portion, a sole, and traction device extending downwardly from said sole, said traction devices having a substantially triangular cross-section in a plane parallel to and closely adjacent said sole, at least some of the devices being beveled to form a gripping edge at the lowermost edge thereof each gripping edge being parallel to said sole and being defined by the intersection of the bottom beveled surface and one side surface of the respective traction device, said side surface being generally perpendicular to said sole.

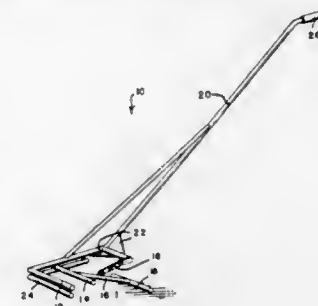
4,642,918
PLANT EXTRACTOR
Charles R. Venables, Wagonwheels, District Lillyfontein, East London, Cape Province, South Africa
Filed Oct. 2, 1985, Ser. No. 783,449
Claims priority, application South Africa, Oct. 2, 1984, 84/7747

U.S. Cl. 37—2 R

10 Claims

1. A plant extractor which includes a pair of jaws, at least one of the jaws being a displaceable jaw which is movable towards the other of the jaws, a ground engaging member forming a fulcrum and being pivotally attached to the plant

extractor, the ground engaging member being linked to the displaceable jaw so that when placed on the ground, the ground engaging member displaces the displaceable jaw



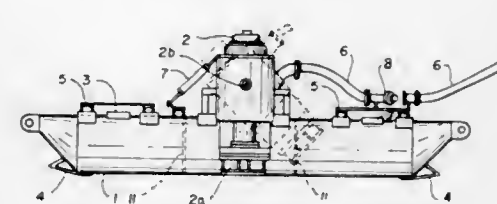
towards the other jaw to grip the plant, and a lever operable to pivot the plant extractor about the fulcrum thereby to permit extraction of the plant from the ground.

4,642,919
SUBMERSIBLE SLUDGE REMOVING APPARATUS
Roy H. Werner, Pittsburgh, and Clifford Decker, Bethel Park, both of Pa., assignors to Barrett, Haentjens & Co., Hazelton, Pa.

Filed Mar. 1, 1985, Ser. No. 707,146
Int. Cl.⁴ E02F 3/88

U.S. Cl. 37—58

5 Claims



1. Apparatus for removing sludge from a sludge basin, comprising pontoon means, a submersible pump having a suction inlet and a discharge outlet, said pontoon means comprising a pair of laterally spaced, longitudinal pontoons having a plurality of compartments into each of which selective amounts of air and water are introduced, said pump being vertically pivotal on said pontoon means so as to move said suction inlet to selective depths in the sludge basin to variably dilute the sludge, means for introducing selective amounts of air and water into said pontoon means to serve as a variable ballast to submerge and maintain said pontoon means at selective distances above the bottom of said basin, said pump having a discharge hose connected to said discharge outlet and extending beyond one end of said apparatus between said pontoons and having a pair of recirculation outlet hoses extending laterally outwardly on both sides of said apparatus, and valve means for selectively diverting pumped water to either said discharge hose or said recirculation outlet hoses.

4,642,920
DIGGER TOOTH ARRANGEMENT
Peter A. Lehnhoff, Baden-Baden, Fed. Rep. of Germany, assignor to Lehnhoff Hartstahl GmbH & Co., Baden-Baden, Fed. Rep. of Germany
Filed Dec. 6, 1985, Ser. No. 805,890
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 3444563

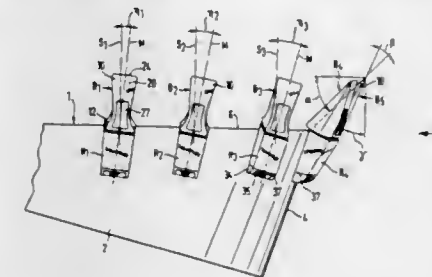
U.S. Cl. 37—141 T

8 Claims

1. An integrally formed digger tooth including a tooth base and a tooth shank with a bead serving as an abutment disposed

therebetween for use in an arrangement of digger teeth wherein:

- said tooth base has a bottom portion (20) which with respect to a planar contact surface (14) of the tooth shank presents a positively inclined surface ($\sigma = \text{sigma}$) of 1° to 3°, preferably 2°;
- the upper portion (21) of the tooth base with respect to said contact surface (14) presents a surface ($\tau = \text{tau}$) nega-



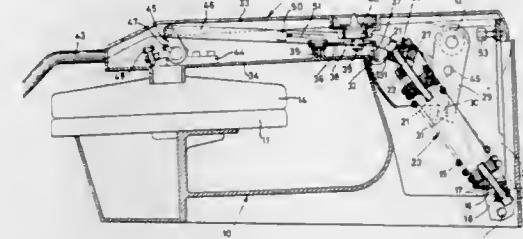
tively inclined between 20° to 25°, preferably 23°, wherein the rake angle ($\beta = \text{beta}$) of the tooth base (10) is 10° to 22°, preferably 21°; and

- said contact surface (14) is provided with a projection (30) to be engaged by a retaining lug (31), said retaining lug by means of a threaded bolt (32) extending through the end of said socket (H) away from the digger tooth and carrying a closure cap (34) said closure cap being secured by means of a lock nut (35) to the adjacent end (37) of said socket.

4,642,921
HINGED SUPPORT FOR PORTABLE MECHANICAL IRONING MACHINE
Marco Primati, Cinisello Balsamo, Italy, assignor to Stabilitamento Industriale Singer Srl, Milan, Italy
Filed Mar. 1, 1985, Ser. No. 706,882
Claims priority, application Italy, Mar. 5, 1984, 21108/84[U]
Int. Cl.⁴ D06F 71/02

U.S. Cl. 38—36

4 Claims



1. A portable mechanical ironing machine suitable for household use, comprising:

- a base;
- a fixed lower ironing plate connected to said base;
- a head pivoted to said base;
- a movable upper ironing plate connected to said head, said head being rotatable with respect to said base to move said movable ironing plate between a first open position in which it is raised with respect to said fixed ironing plate and a closed position in which said movable ironing plate contacts said fixed lower plate;
- compression spring means for providing ironing pressure to said movable ironing plate when said movable ironing plate is in said closed position;
- a spring support for supporting said compression spring means, said support being movable between two stable positions angularly offset one to the other, said support being positionable in a first position in such a way that said

compression spring means apply ironing pressure and in a second position in such a way that said compression spring means urges said movable ironing plate towards said open position;

an operating handle hinged to said head, said handle being connected to said spring support through a kinematic connecting rod and crank mechanism;

a fork pivoted at one end to said base and coupled at the other end to said spring support through a slot and pin coupling, said connecting rod being pivoted to said fork;

a first locking hook connected to an upper end of said spring support, said first locking hook being movable with said spring support;

a second locking hook connected to said head and having two ends, said second locking hook being pivoted at one of its ends, and being movable between a first locking position in which the second end engages said first locking hook in a second neutral position;

means connected to said head and accessible from outside of said machine for moving said second locking hook between said first and second positions;

electrical switching devices operable by said second locking hook when in said first position so as to deactivate said machine by cutting off the supply of electrical power to the machine.

4,642,922

REMOVABLE STEAM IRON SOLE PLATE

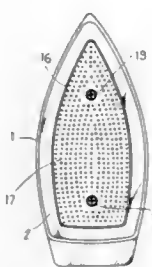
Giorgio Prudenziati, Borgosatollo, Italy, assignor to D.M.D.S.r.l., Italy

Filed Dec. 6, 1985, Ser. No. 806,275

Int. Cl.⁴ D06F 75/38

U.S. Cl. 38—81

4 Claims



1. A steam iron comprising a sole plate on the base of which is provided a perforated stainless steel sheet, characterised in that a housing or recess bounded and surrounded by a perimeter border and having longitudinal and transverse channels for passage of steam, is provided in the undersurface of the said plate, and wherein said stainless steel sheet is seated and centered in said housing or recess and removably attached thereto, said sheet being thin and having a plurality of holes made by stamping and laid out in accordance with the channels in the undersurface of the plate, said sheet having a turned back perimeter edge and at least one intermediate reinforcing rib bounding the area containing the plurality of holes.

4,642,923

MOUNTING BOARD FOR NEEDLEWORK DESIGNS

Helga Mueller, 2216-51st Ave., Greeley, Colo. 80632
Continuation of Ser. No. 577,203, Feb. 6, 1984, abandoned. This application Jun. 11, 1985, Ser. No. 743,285

Int. Cl.⁴ D03C 6/08

U.S. Cl. 38—102

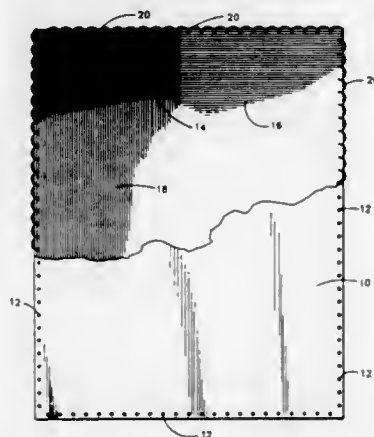
1 Claim

1. A method for permanently mounting a canvas or other fabric material composed of orthogonally woven fibers and having an artwork design stitched thereon onto a flat, rigid, generally rectangular mounting board having a multiplicity of

generally evenly spaced prepunched perforations along the periphery thereof, the method comprising the steps of:

laying the canvas or other fabric material in a flat position in total and direct contact with a front surface of the flat mounting board such that the artwork design is in a desired position with respect to the periphery of the flat mounting board;

trimming the canvas or other fabric material such that the dimensions thereof exceed the corresponding dimensions of the flat mounting board so as to provide a border of excess canvas or other fabric material overlaying the periphery of the flat mounting board;



aligning the orthogonally woven fibers of the canvas or other fabric material with the corresponding edges of the flat mounting board;

folding the border of the canvas or other fabric material over the respective edges of the flat mounting board to the back surface thereof;

lacing opposite edges of the folded over border on the back surface of the flat mounting board; and

securing the canvas or other fabric material to the flat mounting board by applying whip stitches through the canvas or other fabric material and the prepunched perforations located along the periphery thereof.

4,642,924

EMBROIDERY HOOP

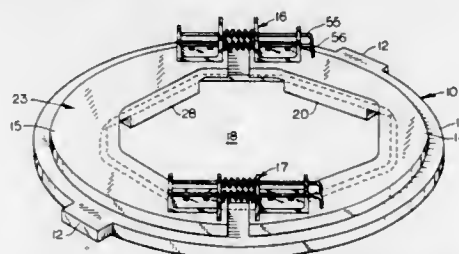
William H. Sudderth, Kernersville, and Gary Vos, Oak Ridge, both of N.C., assignors to Blue Bell, Inc., Greensboro, N.C.

Filed Jan. 10, 1984, Ser. No. 569,653

Int. Cl.⁴ D05C 1/04; D06C 3/08

U.S. Cl. 38—102.2

6 Claims



1. An embroidery hoop comprising: a base member having an opening therein; a pair of sectors together forming an inner assembly; said inner assembly being releasably supported on said base member and having an opening substantially coincident with the opening in said base member; said base member further including an inwardly facing beveled edge at least in the portions thereof surrounding said opening; each of said sectors including at least one depending lug means for releasably engaging the perimeter of said opening in said base mem-

ber; each of said lug means having a cooperating outwardly facing beveled edge for releasable locking engagement with said beveled edge in said base member; said pair of sectors being selectively movable between a first position whereby said inner assembly is engaged with said base member, and a second position wherein said inner assembly is released from said base member; and connecting means for retaining said sectors together and activating said sectors between said first and second positions.

4,642,925

X-RAY FILM MOUNT

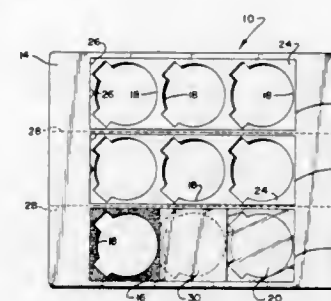
Greg J. Thompson, Andover, Minn., assignor to International Radiology Systems, Inc., Minneapolis, Minn.

Filed Nov. 22, 1985, Ser. No. 801,082

Int. Cl.⁴ G09F 1/10

U.S. Cl. 40—158 B

7 Claims



1. A mount for supporting a plurality of film transparencies for viewing, comprising in combination:

a pair of superposed sheets having opposite sides and edges; a layer of pressure-sensitive adhesive extending co-extensively between adjacent sides of said sheets;

said sheets both including a plurality of aligned predetermined viewing openings of identical size and shape extending completely through said sheets;

said viewing openings being arranged in a plurality of rows with each row including a plurality of viewing openings; only one of said sheets including a rectangular die cut therein surrounding one row of viewing openings in spaced relationship to define a removable portion which normally covers portions of said adhesive layer, but which, when removed, exposes portions of said adhesive layer surrounding the openings in the other sheet so that film transparencies can be mounted thereover; and said one sheet further including an arcuate die-cut adjoining the rectangular die cut to facilitate lifting and separation of the removable portion of said one sheet.

4,642,926

KNOCK-DOWN EXHIBITION PANEL ASSEMBLY

Arthur L. Friedman, Philadelphia, Pa., assignor to General Exhibits, Philadelphia, Pa.

Filed Nov. 15, 1983, Ser. No. 551,962

Int. Cl.⁴ G09F 7/00

U.S. Cl. 40—605

17 Claims

1. A display system comprising:

(a) at least two rigid supporting members and

(b) a selected number of generally planar panel members each having:

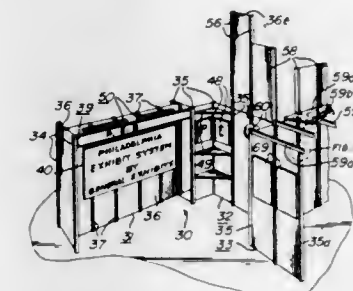
(1) an intermediate portion, and

(2) two flange portions along respective opposite edges thereof, said flange portions extending generally perpendicular to said intermediate portion in mutually opposite directions, and

(c) means for demountably connecting each planar member by its flange portions to respective ones of said rigid supporting members;

at least three of said rigid supporting members and a first of

said panel members being disposed between a first and second of said rigid supporting members and a second of



said panel members being disposed between said second and a third of said rigid supporting members.

4,642,927

SELECTOR DEVICE FOR FIREARMS

Eduardo I. Zamacola, Elgoibar, Spain, assignor to Laurona Armas, S.A., Eibar, Spain

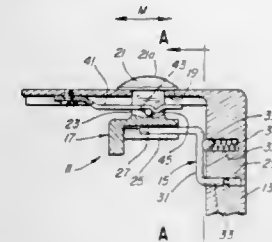
Filed Dec. 6, 1985, Ser. No. 806,093

Claims priority, application Spain, Dec. 19, 1984, 538838

Int. Cl.⁴ F41C 7/00

U.S. Cl. 42—42.01

8 Claims



1. A selector device for controlling the locking and striker mechanisms of a firearm, said selector device comprising: a button selector which is movable along a first path for activating the locking mechanism of said firearm and movable along a second path for activating the striker mechanism of said firearm; and a shaft rotatably mounted to said firearm for guiding said button selector along said first and second paths, said shaft including at least one axle gudgeon for journaling said shaft to said firearms, a base gudgeon in sliding engagement with said button selector for guiding said selector in one direction longitudinally of said base gudgeon along said first path and in a second direction transversely of said base gudgeon along said second path, and at least one connecting segment joining said axle and base gudgeon and spacing apart said axle and base gudgeons a predetermined distance, whereby movement of said button selector transversely of said base gudgeon forces said base gudgeon to rotate about said axle gudgeon and guide said selector along said second path.

4,642,928

INSERT FOR REDUCING THE CALIBER OF A WEAPON
Roland Bertiller, Gerd Kellner, both of Schramberg, and Helmut Reudelsterz, Oberndorf, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 620,892

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322979

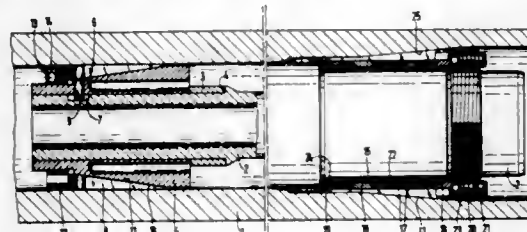
Int. Cl.⁴ F41C 21/10; F41F 17/06

U.S. Cl. 42—77

10 Claims

1. An insert for a weapon barrel having a larger caliber, for

facilitating the firing of a smaller caliber ammunition through the barrel, the barrel including a cartridge chamber cone portion, comprising a tubular insert having a muzzle end and an opposite breech end, said tubular insert having an annular shoulder near said muzzle end facing toward said muzzle end and an annular stop near said breech end facing said breech end, a compensating bushing engaged around said muzzle end of said tubular insert and engaged axially against said annular shoulder, a locking sleeve engaged on and being radially fixed with respect to said muzzle end of said tubular insert, said locking sleeve having an outer tapered surface and being axially engaged with said compensating bushing for urging said compensating bushing against said annular shoulder, a first spreader sleeve having an inner tapered surface engaged with said outer tapered surface of said locking sleeve, said first spreader sleeve having an outer surface engaged with a bore of the weapon barrel for holding said locking sleeve in a radially fixed position with respect to the weapon barrel, clamping means connected to said locking sleeve and said first spreader sleeve for urging said tapered surfaces toward each other to axially and radially fix said locking sleeve with respect to the



weapon barrel, said tubular insert having an external thread on said breech end thereof, a collet threaded onto said external thread of said tubular insert and engaged axially against said annular stop, said collet having a collet shaft which is concentric with the breech end of said tubular insert and a collar connected to said collet shaft and spaced away from said annular stop, said collar having a pitch circle of threaded holes there around, a second spreader sleeve engaged around said collet shaft a plurality of annular clamping elements engaged with each other and concentrically engaged around said collet shaft in between said collet shaft and said second spreader sleeve, and a plurality of clamping screws engaged in said pitch circle of threaded holes, said clamping screws being engaged against at least one of said annular clamping elements for moving said at least one annular clamping element with respect to another annular clamping element for applying radial spreading forces between said collet shaft, and said second spreader sleeve for fixing said breech end of said tubular insert with respect to the weapon barrel, said second spreader sleeve having an outer surface conforming to and engaged against the chamber cone portion of the weapon barrel.

4,642,929
ARCHERY FISH POINT
Dwayne R. Franklin, 1845 Arizona Ave., Yuma, Ariz. 85364
Filed Feb. 18, 1986, Ser. No. 829,942
Int. Cl.⁴ A01K 81/00

U.S. Cl. 43-6

18 Claims

1. An archery fish point for arrows including in combination:

- a main body member having a central axis and including a penetrating point terminating in a rear shoulder portion;
- a barb support member having first and second ends and having a cross-sectional dimension in a plane perpendicular to the axis of said body member which is less than such a cross-sectional dimension of the shoulder portion of said main body member, said support member attached at the first end thereof to the center of said shoulder portion;
- floating barb means having an elongated barb portion attached at one end to a ring portion, with the ring portion thereof substantially encircling said support member and

having an inner diameter greater than the maximum cross-sectional dimension of said support member; and

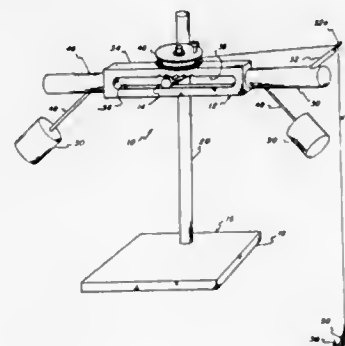


means for attaching the second end of said support member to an arrow shaft.

4,642,930
FISHING APPARATUS FOR AUTOMATICALLY BOBBING THE BAIT AND SIGNALLING A CATCH
Warren D. Graf, 16 Meadowlark Dr., Fairport, N.Y. 14450
Filed Nov. 29, 1985, Ser. No. 802,684
Int. Cl.⁴ A01K 97/12

U.S. Cl. 43-19.2

4 Claims



1. Fishing apparatus for automatically effecting mechanical bobbing of a baited hook on a fishing line and signaling when a fish has taken such bait, said apparatus comprising:

fulcrum means for providing a substantially horizontal fulcrum;

an elongated member adapted to have a fishing line connected to such member adjacent to one end thereof, said elongated member having a transverse slot defined therein, said slot having a first surface adjustably engageable with said fulcrum means where said elongated member is substantially horizontally balanced on said fulcrum means, and a second surface engageable with said fulcrum means where said elongated member is remote from the horizontal to generate a signal that a fish has taken the bait;

oscillation means, coupled to said elongated member, for effecting oscillation of said elongated member about said fulcrum means, whereby said one end of said elongated member to which a fishing line is connected vertically reciprocates such line for bobbing of a baited hook on such line to attract a fish;

and said first surface of said slot has a plurality of transverse grooves, and wherein said fulcrum means comprises a

substantially horizontal member having an upstanding knife edge extending parallel to the longitudinal axis of such horizontal member and adapted to extend through said slot in selective engagement with one of said grooves whereby said first surface of said slot is supported on said knife edge and said elongated member is thereby adjustably mountable relative to said horizontal member to assume a balanced position on said knife edge.

4,642,931
COMPACT, FOLDABLE FISHING POLE SUPPORT
Rick Flores, 1121 N. Mariposa St., Burbank, Calif. 91506
Filed May 1, 1986, Ser. No. 857,994
Int. Cl.⁴ A01K 97/10

U.S. Cl. 43-21.2

18 Claims



1. A compact fishing rod support assembly comprising: at least three rods of substantially equal length; means for pivotally connecting said rods together to permit them to be folded side by side; slip sleeve means mounted on said rods for selectively holding said rods aligned with one another to form a rigid support, with the ends of said rods abutting and in engagement with one another; the outer end of one rod at one end of said assembly being pointed to easily penetrate the earth for mounting said assembly upright; the outer end of a recessed rod at the other end of said assembly having an inner recess; spring means mounted in the recessed outer end of said recessed rod and having a substantial V-shape for receiving and holding a fishing pole on the upper end of the assembly; pin means extending across said recess for retaining said spring means at the end of said recessed rod; and said recess being of sufficient depth and having a configuration to permit said spring means to slide down into said recess below the outer end surface of said rod; whereby said assembly may be unfolded, said slip sleeve means slid over the joints thereof, with the spring in said recess, and the assembly may be pounded into the ground using a rock or the like without damaging the pivot points or the spring, and the V-shaped spring may be subsequently extended to hold a fishing pole.

4,642,932
UNDERWATER ICE WALKER
Michael Austin, P.O. Box 58, Elmhurst, Pa. 18416
Filed Oct. 17, 1985, Ser. No. 788,480
Int. Cl.⁴ A01K 91/00

U.S. Cl. 43-27.2

16 Claims

1. A self-propelled device for movement across a bottom surface of a block of ice disposed over water comprising: a floating base; and

propelling means attached to the base for selectively propelling said base in a preselected direction, the propelling means comprising a first member pivotally attached to said base and a second member secured to said first member for moving said base in said direction when said first member rotates upwardly with respect to said base, said first member having a first position extending down-

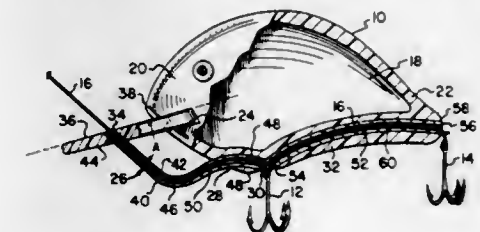


wardly from the base and a second upper position at an angle with respect to the first position, the second member being constructed and arranged to push against said bottom surface of the ice to propel said base as said first member rotates from the first position to the second position, the first member being heavier than water and the second member being lighter than water, whereby the first member returns from the second position to said first position due to gravity.

4,642,933
FISHING LURE RIGGING SYSTEM
Frank E. Brown, c/o Vic Berger's World of Archery, 2819 E. Main St., Springfield, Ohio 45503
Filed Nov. 4, 1985, Ser. No. 794,816
Int. Cl.⁴ A01K 85/00

U.S. Cl. 43-42.36

10 Claims



1. A fishing lure rigging system comprising: a buoyant lure body having a nose portion, a tail portion, a forward tubular channel extending from said nose portion downwardly and rearwardly to an underside of said body midway along a length thereof, said forward channel having a front opening at said nose portion and a rear opening at said underside midway along a length thereof, and a rearward tubular channel extending from said forward passage rear opening upwardly and rearwardly to said tail portion, said rearward channel having a front opening adjacent to said forward channel rear opening and a rear opening at said tail portion; forward hook means positioned at a junction of said forward channel rear opening and said rearward channel front opening; rear hook means positioned at said rearward channel rear opening; a length of fishing line attached at an end thereof to said rear hook means and extending therefrom through said rearward channel rear opening, said rearward channel, and said rearward channel front opening, then being slidably attached to said forward hook means, then through said forward channel rear opening, said forward channel, and out of said forward channel front opening; and said forward and rearward tubular channels being sized to slidably receive said length of fishing line, and said body being sufficiently buoyant whereby severance of said line forwardly of said body, in the event that either or both of

said hook means become snagged, permits said body to float upwardly therefrom and disengage itself from said line.

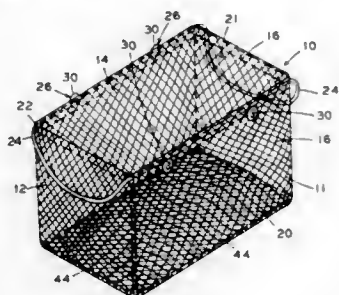
4,642,934

TRANSPORTABLE LIVE WELL LINER

Joseph D. Carlson, 52705 Winding Waters La., and Bruce D. Goode, 23552 Thistle Ct., both of Elkhart, Ind. 46514
Filed Apr. 12, 1985, Ser. No. 722,469
Int. Cl.⁴ A01K 97/00

U.S. Cl. 43—55

19 Claims



1. A transportable liner for use in holding a catch within a live well having an aqueous solution therein, which comprises:
 - (a) adjoining side and bottom portions of a substantially flexible, porous material having apertures therethrough of a size less than the size of the catch, the side and bottom portions forming a liner enclosure having a top opening, the liner enclosure sized for use within the live well;
 - (b) a draw string receiving means disposed about the upper portion of the liner sides;
 - (c) a draw string disposed through the draw string receiving means and extending externally of the draw string receiving means on at least a portion of two opposing sides of the liner;
 - (d) a plurality of releasable retaining means disposed about the upper portion of the liner sides for releasable securing of the liner to the live well on at least two sides;
 - (e) a weighted cord secured in proximity to the bottom of the liner, the weighted cord of a weight sufficient to resist buoyancy of the liner within the live well in the presence of the aqueous fluid therein;
 wherein the liner is disposed and releasably secured within the live well, and the catch is disposed through the open top of the liner into the aqueous fluid in the live well for safekeeping, and the externally exposed portion of the drawstring may be pulled to draw the upper portions of the liner sides together to secure the catch within the liner for subsequent removal and transport of the catch from the live well.

4,642,935

WASTE PLUMBING ROACH TRAP

Mayer Fierer, 400 N. Oakhurst Dr., Beverly Hills, County of Los Angeles, Calif. 90210

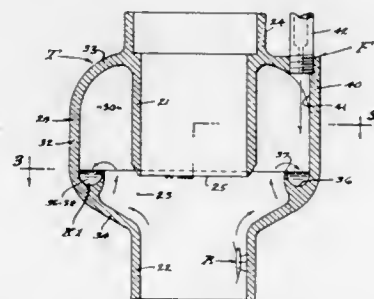
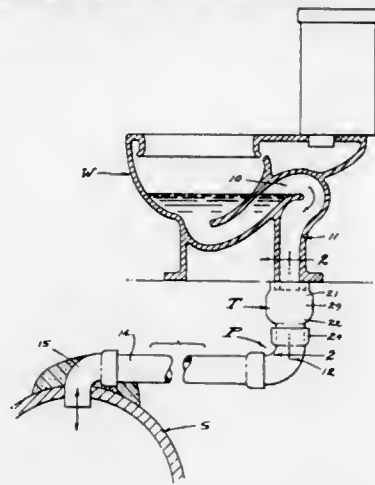
Filed May 8, 1986, Ser. No. 860,802
Int. Cl.⁴ A01M 1/00

U.S. Cl. 43—121

14 Claims

1. A plumbing trap for roaches and the like to be installed in a vertically disposed waste pipe, and including:
 - axially spaced upper and lower tubular sections continuing from separated upper and lower portions of the vertically disposed waste pipe,
 - the upper tubular section terminating at an end defining the upper extremity of an annular opening,
 - the lower tubular section continuing upwardly and outwardly and then upwardly forming a housing surrounding the upper tubular section, the housing having a header joined to the upper tubular section establishing an annular

chamber accessible from the lower tubular section through the annular opening between the spaced sections, and skilled means carried by the housing in spaced relation-



4,642,936

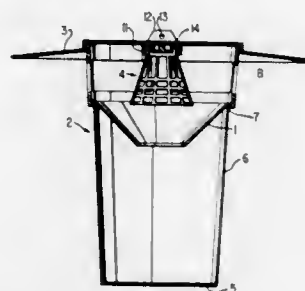
MULTI-FUNCTIONAL HIGH CAPACITY INSECT TRAP

Luc Jobin, Ste-Foy, and Charles Coulombe, St.-Joseph de Lévis, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 8, 1985, Ser. No. 731,726
Int. Cl.⁴ A01M 1/02

U.S. Cl. 43—122

4 Claims



1. An insect trap comprising:
 - a base having a base wall and side wall, the latter wall having a plurality of circumferentially disposed openings distal to the base wall, the openings being selected to admit insects;
 - a frusto-conical shaped funnel member having an included angle of the order of 90° and a diameter at its narrow end of approximately 1/3 of the diameter of its wide end and with its narrow end directed towards the base wall, a

4,642,938

PLANT PROTECTION SYSTEM

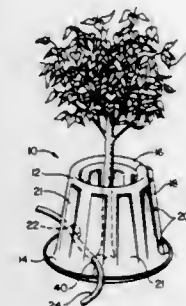
Richard P. Georges, 749 Avenue M, SE., Winter Haven, Fla. 33880, and George B. Epperson, P.O. Box 231, San Antonio, Fla. 78206

Filed Aug. 14, 1985, Ser. No. 765,448
Int. Cl.⁴ A01G 13/00

U.S. Cl. 47—2

14 Claims

ledge on the side wall for removably attaching the funnel member to the side wall below the openings whereby the base wall, the side wall and the funnel member delimit a receiving chamber for retaining insects in the trap, and the funnel member will not be readily dislodged in use;
a cover having lure holder mounting means which is situated on an underneath portion of the cover, the cover being for attachment to the side wall.



4,642,937

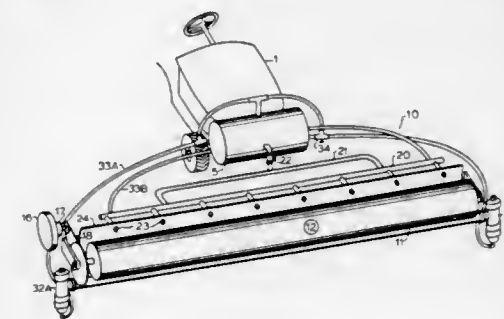
NONABSORBENT ROLLER APPLICATOR

Robert A. McKelvey, Bloomington, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 18, 1984, Ser. No. 651,563
Int. Cl.⁴ A01G 13/00

U.S. Cl. 47—1.5

2 Claims



1. A contact roller-type apparatus for applying a fluid to plants and adapted for mounting on a vehicle, said apparatus comprising:
 - a. a reservoir for storing said fluid;
 - b. a roller adapted for rotation about a generally horizontal axis and having a nonabsorbent textured surface for applying the fluid to the plants as the leading edge of the roller surface contacts the plant when the vehicle is moved in a forward direction, wherein the surface texture is sufficiently pronounced to inhibit the tendency of the liquid to bead on the roller surface;
 - c. means for rotating said roller such that the leading edge of the surface moves in an upward direction;
 - d. delivery means comprising a plurality of low-pressure nozzles spaced along a line parallel to the trailing edge of the roller and communicating with the reservoir by means of a manifold, wherein the nozzles are adapted to deliver the fluid directly to the roller surface;
 - e. wiper means for spreading said fluid delivered to the roller surface into a substantially uniform film across the length of the roller and for removing excess fluid from the surface, said wiper means comprising first and second wiper blades parallel to the axis of said roller and biased against the roller surface along virtually the entire length of the roller and adapted to channel the excess fluid into a collecting means wherein said second wiper blade is positioned near the forward edge of said collecting means; and
 - f. means for collecting the excess fluid and recycling it to the reservoir or the delivery means, wherein said collecting means comprises a trough generally positioned below the roller, extending at least the length of the roller parallel to its axis, and spaced apart from the roller surface.

1. Apparatus for protecting a tree or other plant against extreme weather conditions without ice formation through a water irrigation system having at least one conduit for supplying water to each said plant from a water pressure control means coupled to a supply of water at a temperature higher than ambient, comprising: a housing for positioning around said plant, said housing including a continuous side wall portion having upper and lower ends with an opening in the upper end of a size sufficient to allow said plant to pass through, and with an inwardly extending lip configuration around the periphery of said upper end, a portion of said conduit being received through said side wall portion of said housing so that said conduit portion is positioned in a generally central location within the lower end of the interior of said housing; and water spray emitter means attached to said conduit portion positioned in said housing in fluid communication with the interior of said conduit.

4,642,939

SPROUTING VEGETABLE CULTIVATION APPARATUS

Tomosaburo Suzuki, Tsukui, Japan, assignor to Kabushiki Kaisha Daisei Kikai, Tokyo, Japan

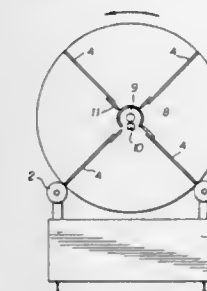
Filed Apr. 1, 1985, Ser. No. 718,372

Claims priority, application Japan, Apr. 25, 1984, 59-83211

Int. Cl.⁴ A01C 1/00

U.S. Cl. 47—14

3 Claims



1. A sprouting vegetable cultivation apparatus, comprising:
 - a rotary drum for growing sprouting vegetables, the rotary drum including a plurality of partition plates extending both in a longitudinal and radial direction; a stationary pipe-shaped guide located in said rotary drum and arranged at a center of rotation of said rotary drum and having an opening formed along an underside portion thereof in a longitudinal direction;

a water spray pipe arranged inside said pipe-shaped guide for spraying water downwardly into the rotary drum through said underside opening of the pipe-shaped guide; and a slide lip member connected to a radially inner portion of at least one of said partition plates and contacting said pipe-shaped guide.

4,642,940

TRELLIS STAKE AND WIRE SUPPORT TO BE USED IN CONNECTION WITH SUCH A TRELLIS STAKE

Ernst Ettema, Hardenberg, and Jan de Vries, Hilversum, both of Netherlands, assignors to Wavin B.V., Zwolle and Somevena B.V., Hilversum, both of, Netherlands, a part interest

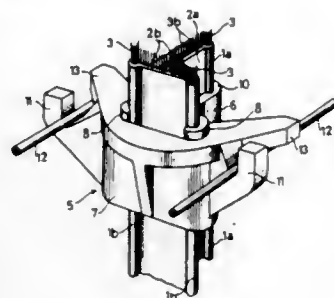
Filed Nov. 2, 1984, Ser. No. 667,562

Claims priority, application France, Nov. 2, 1983, 38 17380

Int. Cl.⁴ A01G 17/06; A01K 3/00

U.S. Cl. 47-44

7 Claims



1. A two piece wire support for use with a trellis stake for receiving rows of tensioned wires for supporting grape vines and the like wire support means comprising, a first flexible plastic support having free ends snap fit and positioned selectively along the major axis externally of said stake, wedge means carried by said first plastic support externally thereof, a second rigid plastic tensioned wire support having an open mouthed wedge means positioned internally thereof and opening rearwardly of said stake and being complementary to and receivable over the wedge means carried externally by said first flexible plastic support, at least one wire hook and wire support means on said second rigid plastic support positioned thereon to receive and retain at least one tensioned wire to prohibit disengagement of the tensioned wire from said first and second plastic supports and trellis stake without any wrapping and flexible locking member to retain the tensioned wire in the hook of said wire support means, said first flexible plastic support forming a resilient clamp of two parts each receivable about the external configuration of the cross-section of said stake to position the clamp along the axis of said stake and said free ends of said clamp being tapered from top to bottom transversely of the cross-section of said resilient clamp and said rigid plastic wire support has an open wire support hook to each side of said open mouth wedge to support a tensioned wire on each side of said stake and cam means carried by said rigid plastic wire support above the bottom of said open wire support hooks for directing the tensioned support wires into the open end of said hooks.

4,642,941

FLEX DRIVE WINDOW REGULATOR SYSTEM
Michael E. Staran, Bloomfield Hills; Ronald B. Czulinski, Warren, and Albert J. Hammond, West Bloomfield, all of Mich., assignors to Ferro Manufacturing Corporation, Southfield, Mich.

Filed Sep. 9, 1985, Ser. No. 773,465

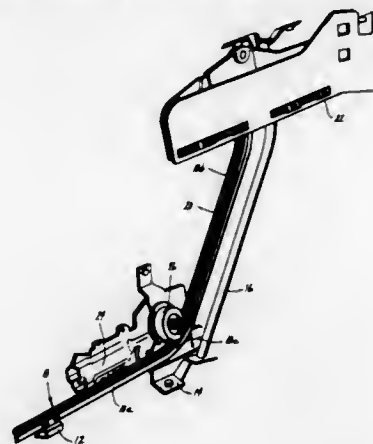
Int. Cl.⁴ E05F 11/48

U.S. Cl. 49-352

3 Claims

1. A window regulator comprising a functionally rigid elongated track formed of one integral member which is bendable into a desired configuration but remains rigidly in bent position

in use, said track comprising an elongated guide channel having an inner wall and edge portions reversely bent to provide confronting guide flanges parallel to but spaced from said inner wall to form guide slots, the edges of said guide flanges being spaced apart to provide a longitudinally extending lateral opening into said channel, a normally flat flexible tape having



a width to thickness ratio on the order of 10/1, said tape being positioned in said channel and having edge portions slidable in said slots and confined between said guide flanges, said tape having a series of substantially rack shape teeth extending longitudinally from the outer side of said tape and projecting through said lateral opening, and a drive pinion in mesh with said teeth.

4,642,942

METHOD AND APPARATUS FOR GRINDING THE TIP OF A TWIST DRILL

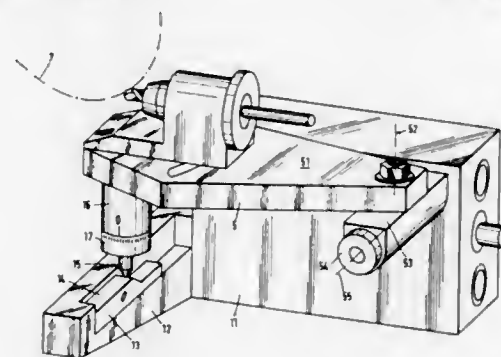
Knut Gühring, Ebingen, Fed. Rep. of Germany, assignor to Gottlieb Gühring, Ebingen, Fed. Rep. of Germany
Continuation of Ser. No. 460,922, Jan. 25, 1983, abandoned. This application Jul. 16, 1985, Ser. No. 755,003

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202362

Int. Cl.⁴ B24B 3/28, 3/32

U.S. Cl. 51-100 R

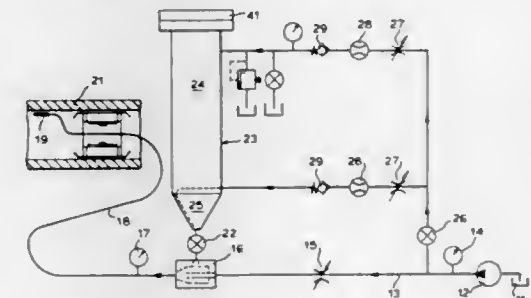
27 Claims



1. An apparatus for grinding a specific surface of a twist drill bit to a desired contour in accordance with a predetermined controlled path, the drill bit having an axis and an outer tip surface, the specific surface being axially spaced from the outer tip surface of the bit, comprising:

- a grinding disk means having a fixed and constant cross-sectional shape and a substantially point contact grinding surface;
- a drill bit holder means for fixing the twist drill stationary against movement during the grinding;

means for carrying the drill bit holder means for grinding contact engagement of the drill axially spaced surface with the point contact grinding surface;
replaceable template means for providing the predetermined controlled path in a first coordinate direction of motion between the disk means and the drill bit holder means;
means for providing the predetermined controlled path in a second coordinate direction of motion between the disk means the drill bit holder means; and
means for varying the first and second coordinate directions of motion;
the first and second coordinate directions of motion being rotational about two mutually perpendicular axes whereby the relative orientation of the drill bit axis and the grinding disk permits the template means and the second direction means to provide grinding contact engagement between the disk point contact grinding surface and the bit axially spaced surface in accordance with the first and second coordinate directions of motion and independent of the cross-sectional shape of the disk means, the disk point contact surface grinding the bit axially spaced surface to the desired contour.



horizontal component, whereby said slurry is formed in said lower portion.

4,642,945

ENTERTAINMENT STRUCTURE

Michael R. Browning, Flinders; Evelyn I. Cronk, Gardenvale, and Phillip A. Adams, Hawthorn, all of Australia, assignors to Cinemotion Pty. Ltd., Toorak, Australia

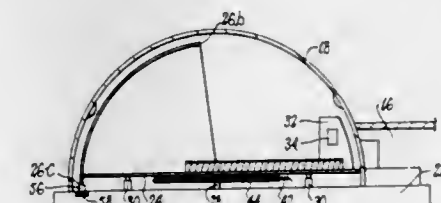
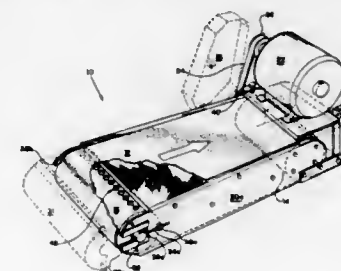
Filed Jul. 3, 1985, Ser. No. 752,259

Claims priority, application Australia, Jul. 3, 1984, PG5820; Oct. 19, 1984, PG7714; Oct. 19, 1984, PG7715

Int. Cl.⁴ E04H 3/22; A63G 31/16; G03B 21/56, 31/00

U.S. Cl. 52-10

28 Claims



1. In an abrading machine comprising an endless belt having a working face of abrasive material, a drive roller positioned within said endless belt, an idler roller positioned within said belt in spaced-apart relationship to said drive roller, and a support table positioned under the upper run of said endless belt, the improvement wherein said idler roller defines a plurality of surface cavities therein for introducing an air cushion between said belt and said table at the beginning of the upper run of said belt, and said table surface comprises a plurality of lands and grooves for maintaining said air cushion under the upper run of said belt.

4,642,944

FEEDING ABRASIVE MATERIAL

Robert M. Fairhurst, Northampton, and David H. Saunders, Buckinghamshire, both of England, assignors to The British Hydromechanics Research Association, Bedford, England

Filed Aug. 6, 1985, Ser. No. 762,870

Claims priority, application United Kingdom, Aug. 6, 1984, 8419960

Int. Cl.⁴ B24C 7/00

U.S. Cl. 51-436

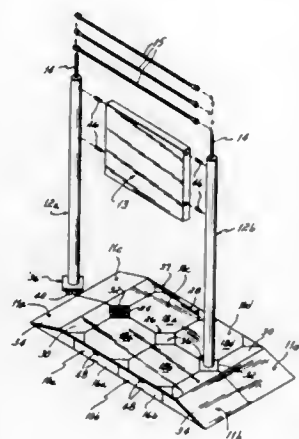
12 Claims

1. A system for supplying a slurry, comprising a hopper body for particulate material, said hopper body having a main portion in communication with a lower portion that tapers toward an outlet at a lower end of said lower portion, and

1. An entertainment structure having a horizontally disposed, substantially circular floor or decking support plate on which seating for members of an audience is arrangeable; support means on which the support plate is mounted for rotation about an upwardly extending central axis thereof; orientation varying means operable to tilt the support plate, from the horizontal, in a required direction; drive means operable to rotate said support plate on said support means about said upwardly extending axis; a drive system operable to actuate said orientation varying means; control means operable to control actuation of said drive means and said drive system for varying the angular disposition and tilt of said support plate with respect to said axis; a cinematic screen extending above the level of said support plate adjacent a substantial peripheral portion of the latter, the screen being arcuate in a horizontal plane such that the screen has a viewing face which curves around the periphery of the support plate and which is concave as viewed from the support plate, said screen being mounted in relation to the support plate so that during rotation and tilting of the support plate the latter is at least tiltably relative to the screen; seating for an audience arranged on said support plate and facing toward said screen; and a projector system operable to project a cinematic programme onto a projection area of the viewing face of said screen, said projector system being spaced from said screen beyond said upwardly extending axis and mounted on said support plate for rotation and tilting therewith to vary the location of said projection area on said viewing face; said control means comprising a microprocessor, the projector system being operable to provide timing pulses for the microprocessor by which the

latter is operable to integrate rotation and tilting of the support plate in synchronism with cinematic action projected by said projector system onto said screen.

4,642,946
MODULAR DISPLAY SYSTEM
 Charles P. Koch, Wyoming, Ohio, assignor to Adex, Inc., Cincinnati, Ohio
 Filed Oct. 2, 1985, Ser. No. 783,110
 Int. Cl.⁴ E04B 5/58
 U.S. Cl. 52—38 17 Claims



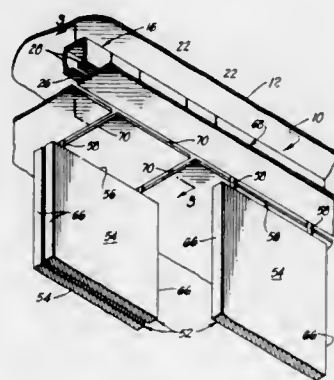
1. A modular display platform system comprising,
 - (a) a series of modular platforms arrayed side-by-side on a floor, in edgewise contact with one another, each platform comprising,
 - (1) an open centered rectangular peripheral frame having square corners, and
 - (2) a planar rectangular panel separate from but supported by the frame, the panel seated on the edges of the frame so that the panels of said series form an uninterrupted surface, the panel having a triangular corner notch at at least two of its corners, the triangular notches exposing the respective square corners of the frame below; and
 - (b) frame corner connecting means for securing adjacent frames together at their corners, comprising a rectangular plug which fits into the open area defined by the adjacent corner notches on the respective panels, the plug having downwardly depending prongs which engage within the open centers of the frames at the adjacent square corners of the frames, to hold the frames together.

4,642,947
OPERABLE WALL
 Wesley B. Dickson, Brea, Calif., assignor to Advanced Equipment Corporation, Fullerton, Calif.
 Filed Aug. 21, 1985, Ser. No. 768,505
 Int. Cl.⁴ E05D 15/06
 U.S. Cl. 52—64 7 Claims

1. An operable wall for use beneath the ceiling of a building, said operable wall having a track system including a primary track and a set of at least two storage tracks, said storage track intersecting said primary track, said operable wall also having a series of wall sections including a wall panel having an upper end, a set of shafts extending upwardly from the upper end of each wall panel and a trolley means located on each of said shafts so as to be rotatable with respect thereto, said wall panels being vertically supported by said trolley means engaging tracks of said track system in which the improvement comprises:

said storage tracks being located parallel to one another, rotary switch means being located at the intersection of said primary track with the tracks of said sets of storage tracks, said trolley means on each of said wall sections being spaced

with respect to one another so as to be capable of concurrently fitting within said rotary switch means and so as to be capable of concurrently fitting within said tracks of said set of storage tracks, said switch means being capable of being positioned so that trolley means located thereon may be either moved onto said tracks of said set of storage tracks or along said primary track, actuator means for concurrently operating said switch means so that the trolley means located thereon will concurrently be positioned to either go onto said tracks of said set of storage tracks or onto said primary track, positioning means for supplying a force to move said wall sections between said switch means and said storage tracks and from said storage tracks to said switch means adapted to be located on said ceiling,

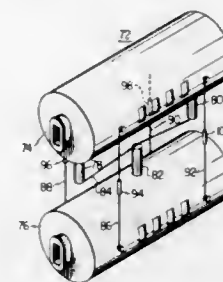


said positioning means comprises a carriage mounted so as to be capable of being moved parallel to said storage tracks and means for moving said carriage toward and away from said primary track, holding means for engaging said wall sections in order to temporarily secure them with respect to said positioning means so that during the operation of said positioning means the wall section can be moved between said primary track and said set of storage tracks and between said tracks of said storage tracks and said primary track, said holding means are mounted on said carriage and extend therefrom into engagement with the one of said wall sections being moved at any one time so as to hold said section so that it moved as said carriage is moved, and said holding means include members mounted on said carriage for engaging the shafts of a wall section to be moved so as to engage said shaft during the movement of said carriage.

4,642,948
TENSION RETENTION ANCHORAGE
 William B. Travis, 10021 Caribou Trail, Dallas, Tex. 75238
 Filed Oct. 18, 1984, Ser. No. 663,470
 Int. Cl.⁴ E04H 1/04; B64G 1/10
 U.S. Cl. 52—79.13 6 Claims

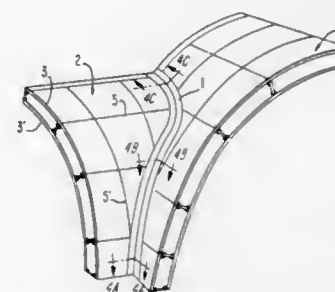
1. Apparatus operative independent of gravity of connecting first and second bodies to carry both tension and compressive forces between said bodies, comprising:
 - a first flexible tension bearing means connected between first and second points of said first member,
 - a projecting compressive member joined to said second body and mated to said first tension bearing means between said first and second points and directed toward said first body for deflecting said first tension bearing means toward said first body whereby a tension force is applied to said first tension bearing member and a compressive force is applied to said compressive member to

oppose said first and second members from moving together, a second flexible tension bearing means connected between said first and second bodies for carrying a tension force to oppose said first and second bodies from moving apart,



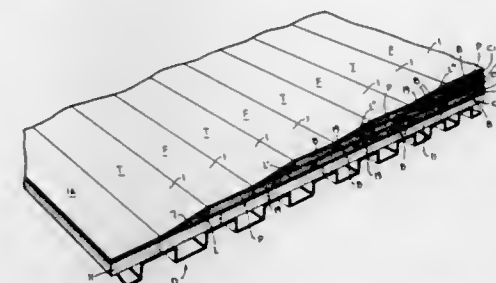
said first and second tension bearing means being cables, and means for selectively adjusting the tension on said second tension bearing means.

4,642,949
METHOD OF JOINING CURVILINEAR STRUCTURAL INSULATING PANELS AND THE LIKE AND IMPROVED JOINED PANEL STRUCTURE
 Thomas P. Hopper, Concord, N.H., assignor to Kalwall Corp., Manchester, N.H.
 Filed Mar. 27, 1986, Ser. No. 844,838
 Int. Cl.⁴ E04B 1/32
 U.S. Cl. 52—80 16 Claims



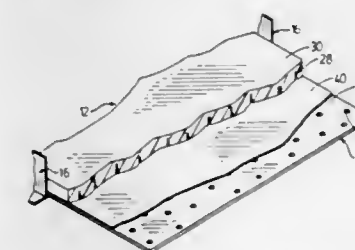
1. A method of joining curvilinear structural panels and the like having inner and outer parallel cover sheets held spaced apart by substantially longitudinally and transversely extending internal support members, that comprises, determining the lines of desired joining of adjacent panels; transversely cutting the panels to provide panel edges accommodating such a joining with substantially ellipsoidal transverse cuts, the ellipses for the outer and inner cover sheets being different and the internal support members being correspondingly cut along varying diagonal directions to the normal between the panel cover sheets; abutting a pair of panels thus cut that are to be joined with a small gap therebetween; and joining abutting panels with a weather-sealing and structurally connecting batten-like joint overlapping said edges both along the outer and inner panel cover sheet edges.

4,642,950
REROOFING WITH SLOPING PLATEAU FORMING INSULATION
 Thomas L. Kelly, 50 Randolph Ave., Waterbury, Conn. 06710
 Continuation of Ser. No. 21,152, Mar. 16, 1979, abandoned. This application Mar. 25, 1981, Ser. No. 247,287
 Int. Cl.⁴ E04B 7/02
 U.S. Cl. 52—90 6 Claims



1. For use in roofing applications having different design specifications with variable overall roof height and variable area coverage and requiring positive water drainage, a sloping plateau insulation system for a roof with alternately disposed flat and tapered modular insulation units, the insulation system comprising a level deck, a plurality of courses of insulation blocks of rectangular cross-section supported on the deck, the plurality of courses being in overlying relation to one another, the rectangular blocks of each course being disposed in edge-to-edge abutment to adjacent blocks of its respective course, the rectangular blocks being of uniform height to provide a flat level surface for each course contained in a common plane, the rectangular blocks of each course including an end block, the end blocks of adjacent courses being in stepped offset relation to one another, the courses collectively forming built-up insulation sections of varying height, and a plurality of insulation blocks of generally triangular cross-section, each triangular insulation block being in abutment with the rectangular end block of its respective course, the triangular insulation blocks each being of uniform size and having a maximum height corresponding to the height of the rectangular blocks, the triangular insulation blocks each being dimensioned and configured to provide a uniformly tapered configuration with a sloping surface in merging relation with adjacent flat surfaces of adjacent courses, whereby the insulation system in cross-section provides alternating flat and tapered surfaces.

4,642,951
SUSPENDED CEILING TILE SYSTEM
 Francis J. Mortimer, Scarborough, Canada, assignor to Fam Tile Restoration Services, Ltd., Scarborough, Canada
 Continuation-in-part of Ser. No. 682,348, Dec. 17, 1984, abandoned. This application Sep. 25, 1985, Ser. No. 779,959
 Claims priority, application Canada, Dec. 4, 1984, 469264
 Int. Cl.⁴ E04B 1/84
 U.S. Cl. 52—145 45 Claims

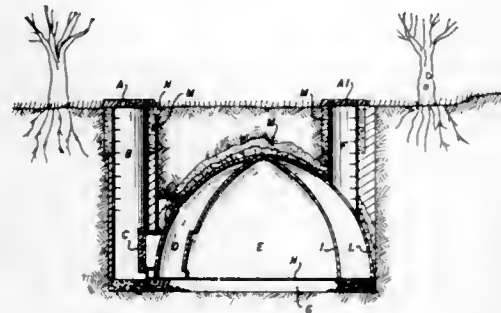


1. A method for refurbishing a suspended acoustical tile ceiling when the acoustical tiles become soiled, the suspended tile ceiling includes a plurality of soiled suspended tile supporting members arranged in a grid formation, said supporting

members supporting a tile by engaging a perimeter portion of each tile, said method comprising inserting a tile insert beneath each soiled tile, said insert being of a size to correspond with the size of the soiled tile whereby said supporting members support said tile insert beneath and thereby covering said soiled tile, said tile insert comprising a thin layer of substantially rigid material with a plurality of holes extending therethrough in the form of an acoustical pattern of holes, said tile insert having a front face which is of washable material, a moisture barrier layer being affixed to a rear face of said tile insert whereby said barrier layer cover said holes and isolates said insert tile rear face from said soiled acoustical tile.

4,642,952
A-SHELTER

Otello Prandin, Via Guanzasca 24, Fino Mornasco Como, Italy
Filed Feb. 11, 1985, Ser. No. 700,266
Claims priority, application Italy, Feb. 23, 1984, 19752 A/84
Int. Cl.⁴ E02D 27/00
U.S. Cl. 52—169.6 3 Claims



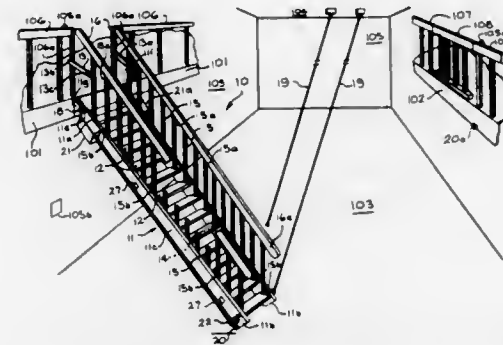
1. A nuclear bomb shelter having a room with a roofing wall of curvilinear shape and directly resting on a floor for the room and comprising a plurality of prefabricated elements suitable to constitute a formwork for concrete casting, and having said room comprising the following essential parts:

- (a) an outer wall of cupola shape with a circular or polygonal base with a parabolic or ogival profile, constituted by prefabricated elements of spherical sector shape provided with reinforcing elements, and means for connection to each other, and anchored at their base on a floor;
- (b) an inner wall having the shape of a cupola with a circular or polygonal base, with parabolic or ogival profile, defining a central living space and an essentially crown-shaped air space located between said inner and outer walls, said inner wall at its top is in contact with and forms an integral part of the outer wall, said inner wall being constituted by prefabricated elements of spherical sector shape, connected to each other, and anchored at their base to the floor;
- (c) said floor, preferably of plastic material, being prefabricated of detachable elements or of a folding type structure;
- (d) an entrance shaft of tubular form, having a tightly sealable door at its outer entry, and having a safety door for communication with said air space or directly with the central living space; and
- (e) an emergency exit provided at ground level with a tightly sealable door.

4,642,953
MOVEABLE STAIR APPARATUS
David A. DeGood, 3174 Hudson, Hudsonville, Mich. 49426
Filed Feb. 10, 1986, Ser. No. 827,818
Int. Cl.⁴ E04F 11/04; E06C 9/10
U.S. Cl. 52—183 10 Claims

1. A moveable stair apparatus for use inside a building which comprises:

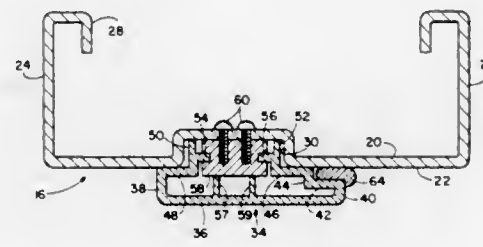
- (a) a pair of spaced apart girder assemblies having a top and bottom and parallel opposed sides;
- (b) a plurality of equally spaced apart horizontally oriented steps which are pivotably positioned on a horizontal longitudinal axis between the opposed sides of the girder assembly;
- (c) a plurality of rods mounted in a horizontal plane along the axis beneath the steps and journaled between the opposed sides of the girder assembly and rigidly mounted to the steps so that the steps are pivotable;
- (d) a pair of spaced apart parallel hand rails mounted above the girder assembly and steps including a plurality of vertically extending posts rigidly mounted at ends adjacent the girder assembly on each of the steps and pivotably connected at opposite ends to the parallel hand rails;
- (e) a pivot means mounted on a first upper floor in the building and connected to the top of the girder assembly and on



the rails or posts allowing pivoting of the moveable stair apparatus to a raised or lowered position relative to a lower floor and to a second upper floor of the building to provide a walkway to the second upper floor or stairway to the lower floor;

- (f) a pair of cables mounted on each side adjacent to the bottom of the girder assembly for moving the moveable stair apparatus to the raised or lowered position;
- (g) power means connected to the cables for lengthening or shortening the cables and mounted on the building or stair apparatus to move the moveable stair apparatus to and from the lowered position to the raised position, wherein the power means is actuated by operating stations located in easily accessible positions on each of the lower floor and the upper floors of the inside of the building; and
- (h) lock means between the girder assembly and upper floor for securing the walkway to the upper floor in the raised position.

4,642,954
DOORJAMB ASSEMBLY
Helmut Sigerist, Fort Langley, Canada, assignor to Venturetech Enterprises, Inc., Vancouver, Canada
Filed Jul. 2, 1985, Ser. No. 751,002
Int. Cl.⁴ E06B 1/04
U.S. Cl. 52—204 8 Claims

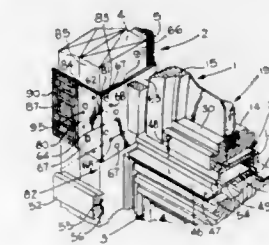


1. A doorjamb assembly comprising

an elongate jamb element having a face side that faces a door opening with the assembly installed and opposed spaced elongate margin sides joined with the face side along opposite margins of the face side and disposed generally normal to the face side, an elongate doorstop element adjacent and outwardly of said face side of the jamb element, said stop element having a base that faces the jamb element and opposed side edges extending along the length of the doorstop element, fastener means securing said stop element to the face side of the jamb element, said doorstop element having an elongate interior ledge surface disposed rearwardly on the doorstop element from the base of the doorstop element and joining along one margin with a side edge of the element and defining, in cooperation with an expanse of the face side of said jamb element, a groove extending the length of the stop element, and an elongate sealing means extending along and seated within said groove, said face side of said doorjamb element having a channel formed therein indented from the plane of the face side and extending longitudinally thereof intermediate the margin sides of the element, said doorstop element having a ridge structure along the base thereof and facing the jamb element which seats within said channel.

4,642,955
MOLDED WINDOW ASSEMBLY AND TRANSOM SUPPORT THEREFOR

Dale P. Webb, Conneaut, Ohio, assignor to Webb Manufacturing, Inc., Conneaut, Ohio
Filed Mar. 28, 1986, Ser. No. 845,846
Int. Cl.⁴ E06B 1/04
U.S. Cl. 52—204 27 Claims



1. In combination, a window assembly and transom support therefor, said window assembly comprising an integrally molded sash, sill and frame formed of plastic, said frame including a generally flat bottom wall, and said transom support comprising a transom stiffener attached to said bottom wall, said sash extending downwardly below said bottom wall to conceal said stiffener, and attachment means for attaching the ends of said stiffener to opposite sides of an opening in an exterior wall for supporting said window assembly above a window or patio door unit or the like in such exterior wall.

4,642,956
FIRE-RETARDANT FLUID COUPLING ASSEMBLY AND METHOD
Gerold Harbeke, 2807 S. Military Trail, West Palm Beach, Fla. 33415
Continuation-in-part of Ser. No. 729,495, May 1, 1985. This application Dec. 26, 1985, Ser. No. 813,450
Int. Cl.⁴ E04C 2/00
U.S. Cl. 52—232 7 Claims

1. A fire-retardant, fluid-coupling assembly for producing a fire-retardant, fluid-conveying pipe-coupling joint embedded in a concrete barrier during the casting of said barrier, said coupling assembly comprising:
a fluid-conveying pipe-coupling joint comprising a tubularly-shaped wall for forming a fluid passage, said tubularly-

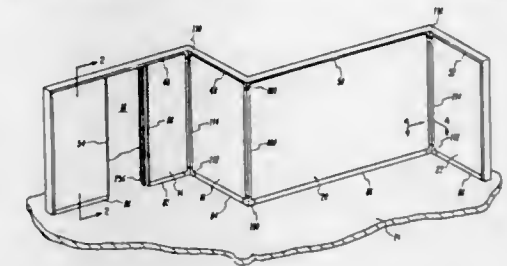
shaped wall having opposite open ends for receiving therein pipes to be coupled with said pipe-coupling joint, said fluid-conveying pipe-coupling joint further comprising a stop means positioned inside said fluid passage for contacting the ends of said pipes inserted into the opposite ends of said tubularly-shaped wall for preventing said pipes from passing further through said tubularly-shaped wall, said fluid-conveying pipe-coupling joint having a form-wall mounting end which does not have an outwardly extending flange for attaching said pipe coupling joint to a form wall thereat;

a pipe-coupling support apparatus for holding said pipe coupling joint on a concrete form while wet concrete is poured into said form, said pipe coupling support apparatus comprising an outer rigid disc means for engaging an outer end of said fluid-conveying pipe-coupling joint which is furthest from said form wall; an elongated compression column attached to said outer disc means for extending through said fluid-conveying pipe-coupling joint to said form wall, said elongated compression column having a length such that it can be attached to said form wall so that said outer disc means pulls the form-wall-mounting end of said pipe coupling rigidly against said form wall; and, a fastening means attached to said compression column for engaging said form wall and thereby holding said fluid-conveying pipe-coupling joint rigidly compressed in a fixed position between said form wall and said outer disc means during the pouring and curing of said concrete; and

an intumescent material wrapped about said fluid-conveying pipe coupling at the form-wall-mounting end of said pipe-coupling joint immediately adjacent said form wall to be in contact therewith during the pouring of said concrete into said form, said intumescent material swelling up when it becomes hot;

whereby, when said pipe-coupling support apparatus is used to mount said fluid-conveying pipe-coupling joint with said intumescent material wrapped thereabout on a form wall while concrete is poured thereabout and said form is later removed after the concrete has hardened, an outer edge of the intumescent material wrap adjacent the form-wall-mounting end of the fluid-conveying pipe-coupling joint is exposed to atmosphere below the concrete floor so that a fire in the story below the floor would quickly heat the wrap of intumescent material, causing it to expand and close off the fluid-conveying pipe-coupling joint.

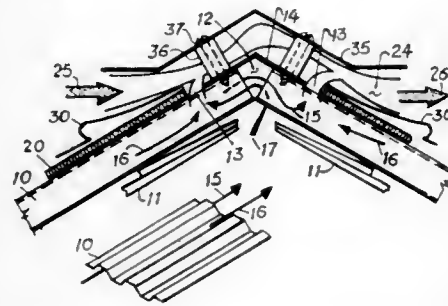
4,642,957
INTERIOR WALL TRIM SYSTEM
Troy C. Edwards, 2801 Church Dr., Denton, Tex. 76205
Continuation-in-part of Ser. No. 680,302, Dec. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 526,435, Aug. 25, 1983, abandoned. This application Mar. 13, 1986, Ser. No. 839,868
Int. Cl.⁴ E04F 19/04
U.S. Cl. 52—242 13 Claims



1. In a room partition wall trim cap assembly for trimming the junction between wall panels and ceiling, the combination of spaced apart cap trim retainer members, with vertical adjustment means; corner cap junction members having cap

portions extending at right angles to each other and including retainer part means on each cap portion, extending beyond said cap portions; and elongated trim cap members having a planar web and opposed flanges engageable and disengageable with one or more of said retainer members and one of said retainer part means when said corner cap junction members and said retainer members are mounted on a wall adjacent a ceiling.

4,642,958
VENTILATED WALL AND ROOFING SYSTEM
Bernard B. Pewitt, 12115 Lantern La., Pinehurst, Tex. 77362
Continuation-in-part of Ser. No. 374,176, May 3, 1982, abandoned. This application May 16, 1984, Ser. No. 610,879
Int. Cl.⁴ E04B 1/70
U.S. Cl. 52—302 5 Claims



1. A system for ventilating a building space comprising: upwardly sloping, corrugated roofing members on the building extending from a lower portion of the building to an apex; roofing material covering the corrugated roofing members and spaced apart therefrom to form air channels extending from a lower portion of the building to the apex; air eduction means located at the apex comprising: a baffle plate on an upward portion of the corrugated roofing members; an outer cover disposed over but spaced away from the baffle plate to form an annular air space therebetween open to the atmosphere; and openings communicating with the air channels and the annular air space; said annular air space being configured to provide a partial vacuum at at least some of said openings upon the passage of atmospheric wind through the annular air space to cause eduction of air from the air channels through at least some of the openings and into the atmosphere.

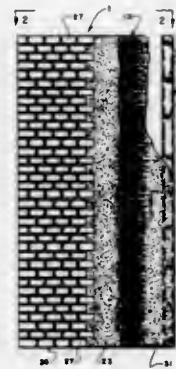
4,642,959
VENDING MACHINE PANELS
Tom E. Swiech, Jr., 13344 Stephen Dr., Palos Park, Ill. 60464, and David P. Maher, 8941 Biloba, Orland Park, Ill. 60462
Filed Nov. 29, 1983, Ser. No. 556,147
Int. Cl.⁴ B24B 1/00
U.S. Cl. 52—311 19 Claims



1. A decorative metal replacement panel for a dispensing machine of the like which comprises flat metal sheet material, a polymeric seal layer of polyester thermosetting material

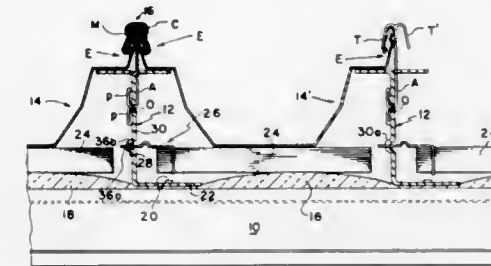
coating the entire front surface of said metal sheet material and being bonded strongly thereto, a colored graphic formed of ink material and disposed upon the front surface of said polymeric seal layer, said ink material being strongly chemically bonded directly to the front surface of said polymeric seal layer as a result of heat-curing, an optically clear hard, polyester material overcoat strongly and permanently bonded to the front surface of said graphic-bearing coated sheet material across substantially the entire surface of said polymeric seal layer thereof including the region where said ink material is disposed, and protective film material laminated to said overcoat, said coated sheet metal material and film laminate being bent from planar configuration into a three-dimensional configuration replacement panel designed for attachment to a dispensing machine or the like.

4,642,960
PREFABRICATED BUILDING PANEL AND METHOD OF MAKING THE SAME
Edwin M. Wallover, III, 409—30th St. NW., Canton, Ohio 44709
Filed Dec. 12, 1984, Ser. No. 680,900
Int. Cl.⁴ E04F 13/08; E04C 2/06, 5/19
U.S. Cl. 52—390 20 Claims



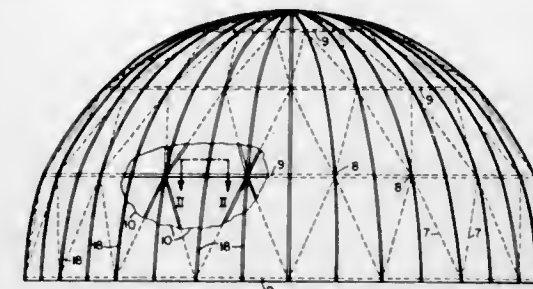
1. A prefabricated exterior building panel including: (a) a plurality of spaced parallel elongated support members; (b) a plurality of spacers attached in a spaced relationship to the support members; (c) a wire mesh attached to the support members and spaced a predetermined distance from said members by the spacers, said mesh being formed by a plurality of interwoven spaced wires arranged at generally right angles providing interstices therebetween and with the total thickness of the mesh consisting of the thickness of five wire strand layers; (d) a generally planar layer of cement generally encapsulating the wire mesh and having an outer surface and an opposite inner surface with said inner surface abutting the support members; (e) a layer of grouting applied to the outer surface of the encapsulating cement; and (f) a plurality of facing elements attached to the outer surface of the cement by the grouting.

4,642,961
METHOD AND APPARATUS FOR INSTALLING BOARD-LIKE INSULATING PANELS IN A STANDING SEAM ROOF CONSTRUCTION
Robert R. Cruise, Columbus, Nebr., assignor to Behlen Mfg. Co., Columbus, Nebr.
Filed Nov. 14, 1980, Ser. No. 206,822
Int. Cl.⁴ E04B 1/74, 5/00
U.S. Cl. 52—408 8 Claims



1. In a standing seam roof construction including spaced apart elongate parallel purlins, a blanket of deformable, squeezable insulating material overlying said purlins, a roof panel supporting bracket above each purlin overlying said blanket and having a lower end fixedly supported by the purlins and an upper end for supporting roof panels, and an elongate standing seam roof panel supported at its one longitudinal side edge in mating relation with the longitudinal side edge of an adjacent roof panel by each bracket in overlying relationship with said blanket and with its longitudinal extent normal to that of said purlin; the improvement wherein said bracket includes a generally vertical web interjacent its ends extending transversely of said purlin and panel, having at least one clip receiving portion, a board-like unit of insulating material located between said panel and said blanket in overlying relationship to said purlin, and clip means embracing said one end of said unit, said clip means including projection means extending longitudinally beyond said one end of said board unit to secure to the clip receiving portion of said web to retain said one end of said unit against displacement relative to said purlin.

4,642,962
DEVICE FOR SEALED ATTACHMENT OF FLEXIBLE COVER STRIPS FOR SINGLE- OR DOUBLE-CURVE ROOF SURFACES OF BUILDINGS
Josef Walter, Würzburg, Fed. Rep. of Germany, assignor to Mero-Raumstruktur GmbH & Co., Würzburg, Fed. Rep. of Germany
Filed Jul. 12, 1985, Ser. No. 754,128
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 34260277
Int. Cl.⁴ E04D 1/36; E04B 1/32
U.S. Cl. 52—460 8 Claims

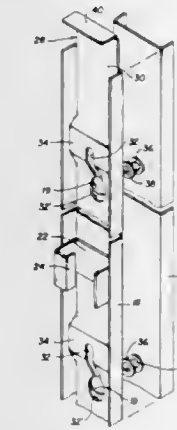


1. Device for sealed attachment of substantially flat-surfaced flexible cover strips, especially of sheet metal, for single- or

double-curve roof surfaces of buildings, with top and bottom clamping members, which can be braced for the side attachment of adjacent cover strips by opposing bolts and which can be attached to a supporting frame, characterized in that:

- (a) the clamping members (11,12) have flat clamping surfaces (11a,12a) to contact the substantially flat-surfaced cover strips (10),
- (b) the clamping members (11,12) have clamping bolts (13) that extend through openings (14) on the lengthwise edge of at least one of any two adjacent cover strips (10),
- (c) cover rails (15) are attached to the top clamping members (11) and pass therethrough and are clamped by means of crosspieces (25) which feather out to the side, which on their lengthwise edges carry sealing strips (16) pressed against the outsides of adjacent cover strips (10),
- (d) the bottom clamping members (12) each have a cross-piece (26) extending downwardly and having side retaining flanges (27), by which they are held in the lengthwise slit (21) in profile rods (18), which run parallel to the cover strips (10) and are attached to the supporting frame (7-9), and
- (e) threaded openings (23) for the clamping bolts (13) of the clamping members (11,12) are provided in the crosspiece (26) which extends downwardly from the bottom clamping member (12).

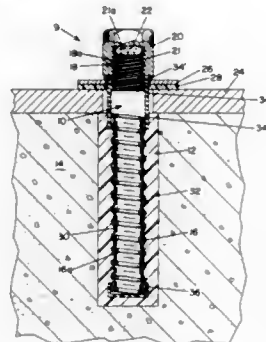
4,642,963
PREFABRICATED BUILDING PANELS AND SYSTEM
Anthony A. Borges, 18601 South Main St., Gardena, Calif. 90248
Filed Jun. 21, 1984, Ser. No. 623,155
Int. Cl.⁴ E04B 2/62; E04C 1/10
U.S. Cl. 52—584 9 Claims



1. A prefabricated building panel, comprising: peripheral frame means; an interior surface having a predetermined finish secured to one side of said frame means; an exterior surface having a predetermined finish secured to the other side of said frame means; male locking means on one edge portion of said frame means; an aperture on the opposite edge portion of said frame means, said aperture being of a size and shape to allow male locking means on an adjacent panel to extend there-through; female locking means slidably mounted on said opposite edge portion of said frame means, said female locking means being movable between an unlocked position wherein it is adapted to receive a corresponding male locking means on an adjacent building panel that is positioned through said aperture, and a locked position wherein it engages said corresponding male locking means

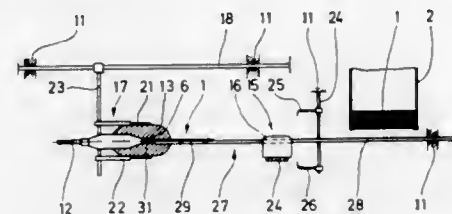
to connect the building panel to said adjacent building panel;
 actuating means on said female locking means for enabling it to be moved to said locked and unlocked positions from the exterior of the building panel;
 an intermediate section mounted on said frame means between said interior and exterior surfaces; and
 clip means mounted on said frame means for supporting said intermediate section and for slidably supporting said female locking means on said frame means, said clip means being spaced from said frame means to provide an elongated space in which said female locking means is slidably movable, said clip means comprising a plurality of generally U-shaped clips having flexible and resilient fingers for engaging said intermediate section, and having a generally flat section spaced from said frame means and substantially parallel thereto for slidable engagement with said female locking means.

4,642,964
GROUT IN PLACE FASTENER SYSTEM
 Roger C. Kellison, 8200 Blvd. East, North Bergen, N.J. 07047
 Filed Sep. 27, 1984, Ser. No. 655,508
 Int. Cl.⁴ E04B 1/38; E04C 5/00
 U.S. Cl. 52—699



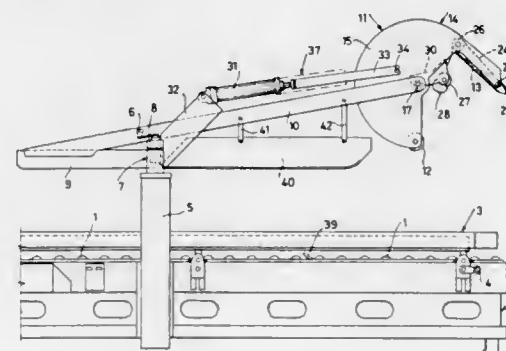
1. A fastener system for securing an object to a surface, comprising
 an elongate member having a threaded first end to be embedded in a hole in the surface, and an oppositely threaded external second end to extend out of said hole and receiving a nut only partially threaded therethrough with threads mating with threads of the oppositely threaded external end to couple said object to said elongate member,
 a securing agent means for pouring in said hole and to harden around said first end to form female threads cooperating with the male threads of said first end,
 a release agent applied to said first end to permit said elongate member to be turned in said hole after said hardening agent has hardened, and
 whereby turning the nut to thread the external end more deeply in the nut first tightens the nut on the secured object and then binds with the elongate member to turn the elongate member and back the elongate member out of the female threads of the hardened securing agent.

4,642,965
DEVICE FOR AUTOMATICALLY ATTACHING AN ARROW LABEL
 Gerhard Arendt, Hohentengen; Klaus-Peter Brodbeck, Singen; Reinhold Engenhardt, Mengen; Viktor Schmidt, Saulgau, and Klaus Wedler, Mittelhörsching, all of Fed. Rep. of Germany, assignors to Croon & Lucke Maschinenfabrik GmbH & Co. KG, Fed. Rep. of Germany
 Filed Feb. 14, 1985, Ser. No. 701,506
 Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406635
 Int. Cl.⁴ B65B 61/20, 63/04
 U.S. Cl. 53—118



1. A device for automatically attaching an arrow label in the center hole of a ball, skein, or a package of yarn or thread, said device comprising a winding mandrel having a free end for winding said yarn into a ball, a movable label conveyor means for positioning one arrow label at a time, tip first, in the immediate vicinity of the free end of the winding mandrel and aligning said arrow label with the center hole of the ball, gripping means for gripping said ball while on said mandrel, and means for moving said gripping means to withdraw the ball of yarn from the winding mandrel, for sliding it onto the shaft of the arrow label and for transferring the ball with the label to a conveyor means.

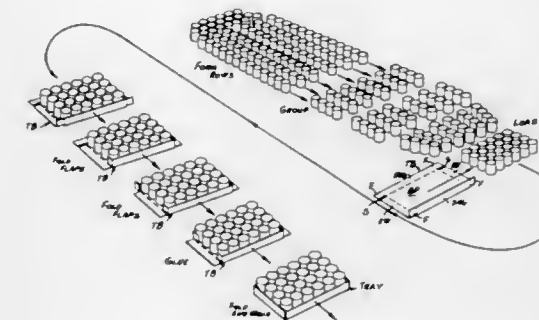
4,642,966
MACHINE FOR CLOSING THE TOP END FLAPS OF BOXES HAVING FOLDING FLAPS
 Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy
 Filed Mar. 4, 1986, Ser. No. 836,133
 Claims priority, application Italy, Mar. 6, 1985, 21011/85[U]
 Int. Cl.⁴ B65B 7/20
 U.S. Cl. 53—374



1. Machine for closing the top end flaps of boxes with over-turnable flaps comprising a supporting plane for the boxes, means for advancing the boxes along said supporting plane and, located above said supporting plane along the path of travel of the boxes, a first closing member for the front end flap of the boxes and a second closing member for the rear end flap of the boxes, said closing members being born by a single support rotatable on command from a first to a second position, in said first position said first closing member being in-

serted in the path of travel of the top end flaps of the boxes to engage from the front the front flap and overturn it to the closing second position and said second closing member being outside said path, in said position said first closing member being outside the path of travel of the top end flaps of the boxes and said second closing member being inserted in said path with a combined descent and advance movement at a speed greater than that of the boxes to engage from behind the rear flap and overturn it to the closing position, said second closing member being made up of a vane pivoted on said support and further restrained at a fixed point of the machine by flexible connection means which react to the rotation of said support from said first to said second position in such a manner as to bring about a reverse rotation of said vane from a rest inclined position to a horizontal working position, which allows said vane to accompany the rear flap until it is completely overturned to the closing position, characterized in that said rotatable support is made in the form of a boxed disc extended for three quarters of a circle and pivoted on its central axis, a front end of said disc bearing and constituting a housing for said first closing member and a rear end of said disc bearing in a turning manner said vane in such a manner as to constitute a housing therefore when it is in said rest inclined position.

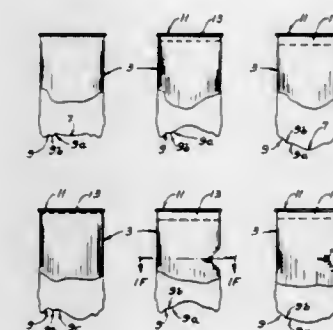
4,642,967
PACKAGING MACHINE
 Will L. Culpepper, Tucker, Ga., assignor to The Mead Corporation, Dayton, Ohio
 Filed Jun. 27, 1983, Ser. No. 507,860
 Int. Cl.⁴ B65B 35/44, 49/02
 U.S. Cl. 53—398



1. A method of loading articles in trays comprising the steps of:
 supporting a stack of pre-cut try blanks in a feeder station where each of the tray blanks has fold lines defining a bottom panel, front and rear walls with flaps, and a pair of end walls;
 pulling one of the tray blanks from the bottom of the stack; folding the front wall of the tray blank toward an upright position;
 pushing the tray blank onto a tray conveyor in a loading station and under a dead plate with a downstream edge while maintaining the front wall of the tray blank in the folded position as the tray blank is pushed onto the tray conveyor to maintain the bottom panel in a flat condition; releasing the front wall of the tray blank as the tray blank is positioned under the dead plate;
 pushing the tray blank out from under the downstream edge of the dead plate while the bottom panel is supported on the tray conveyor;
 pushing a load of articles over the dead plate and off of the downstream edge thereof synchronously with the movement of the tray blank out from under the dead plate so that the load of articles are deposited onto the tray blank in registration with the bottom panel;
 as the load of articles is pushed off of the dead plate onto the

tray blank, passing the tray blank between front flap folding means and folding the front flaps to a square position with respect to the front wall;
 releasing the load of articles deposited on the tray blank so that the load of articles is supported on and conveyed with the tray blank;
 after the load of articles are released and supported on the tray blank, passing the tray blank and articles between rear flap folding means positioned downstream of the front flap folding means and folding the rear flaps to a square position with respect to the rear wall; and
 while maintaining the front and rear flaps in the square position with respect to said front and rear walls respectively, transferring the loaded tray to erection means, and folding the front and rear walls to a square position with respect to the bottom panel and folding the end walls to a square position with respect to the bottom panel while adhesively bonding the end walls to the front and rear flaps to maintain the tray in an erected position.

4,642,968
METHOD OF OBTAINING ACCEPTABLE CONFIGURATION OF A PLASTIC CONTAINER AFTER THERMAL FOOD STERILIZATION PROCESS
 Robert J. McHenry, St. Charles; Joseph B. Brito, Wildwood; Wilson T. Platt, Jr., Sugar Grove; Robert J. Reed, Crystal Lake; Krishnaraju Vavadarajan, Hoffman Estates; Kenneth B. Spencer, Barrington; Boh C. Tsai, Rolling Meadows; Mark A. Williams, Arlington Heights; Donald C. Vosti, Crystal Lake, and James A. Wachtel, Buffalo Grove, all of Ill., assignors to American Can Company, Greenwich, Conn.
 Filed Jan. 5, 1983, Ser. No. 455,865
 Int. Cl.⁴ B65B 55/02, 55/14
 U.S. Cl. 53—425



1. A method of thermal sterilization of a plastic container packed with food to obtain a thermally sterilized packed container having an acceptable configuration, comprising pre-shrinking the container, filling the pre-shrunk container with food, sealing the container, either or both of said filling and sealing steps including selecting an initial container headspace volume and an amount of gas, taking into account an initial vacuum level, if any, at sealing such as to cause bulging of the container bottom wall and subsequent reformation of the container bottom wall without significant side wall panelling, thermally sterilizing the packed container at a temperature and pressure for a time sufficient to sterilize the container and food and to cause the container bottom wall to bulge, and, reforming the bulged container bottom wall by providing that the plastic of the bulged container bottom wall is at a reformable

temperature at which the plastic is soft while providing a pressure differential such that the pressure external of the container exceeds the pressure internal of the container.

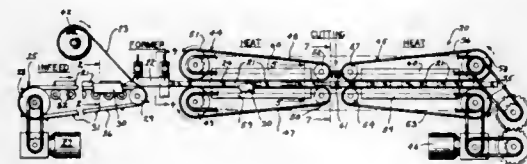
4,642,969 METHOD AND APPARATUS FOR WRAPPING BLOCKS OF CHEESE

Charles H. Johnson, Hwy. 51 & Leigh Rd., Hazelhurst, Wis. 54531

Filed Mar. 27, 1985, Ser. No. 716,810
Int. Cl.⁴ B65B 31/04, 53/02

U.S. Cl. 53—433

17 Claims



1. In apparatus for wrapping blocks of cheese, tube former means, means for feeding blocks of cheese in spaced relation into the tube former means, means for feeding a web of heat shrinkable and sealable plastic film wrap to the tube former means for entubement of the spaced blocks of cheese in an elongated tube of plastic film wrap, said film wrap including lateral edge portions of said web that overlap each other over the length of the tube, vertically spaced endless conveyors disposed between the tube former means and a cutoff station and sandwiching the entubed blocks of cheese therebetween with a gripping pressure, drive means for the endless conveyors for advancing the entubed spaced blocks of cheese from the tube former means to the cutoff station, heating means adjacent at least one of the endless conveyors whereby the endless conveyor passes between said heating means and said entubed spaced blocks of cheese such that said endless conveyor transfers heat from said heating means to said entubed blocks of cheese for heating the entubed blocks of cheese and thereby shrinking the plastic film wrap tightly onto surfaces of the blocks of cheese extending in the direction of travel to drive air out from between the cheese and the film wrap and sealing the overlapped edge portions of the wrap as the entubed blocks of cheese are advanced by the endless conveyors toward the cutoff station, means at the cutoff station for severing the tube corresponding to each block of cheese with the severance being effected intermediate the space between adjacent blocks and leaving each block with opposed severed tube ends, means for folding the severed tube ends against a surface of each wrapped block of cheese extending in the direction of travel, and means to heat the separate individually wrapped blocks of cheese to seal the respective tube ends together and against said surface.

4,642,970 REUSABLE INSULATED BOX AND METHOD OF MANUFACTURE

William Bane, 1303 Del. Ave., Wilmington, Del. 19806
Division of Ser. No. 664,883, Oct. 25, 1984, abandoned. This application Jan. 3, 1985, Ser. No. 815,937
Int. Cl.⁴ B65B 31/02

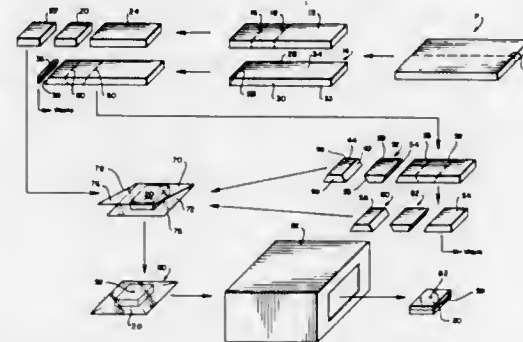
U.S. Cl. 53—433

7 Claims

1. A process for manufacturing a reusable insulated box, comprising the steps of:

- providing a rectangular foam panel having one surface thereof coated with a reflective material;
- slicing said panel into first and second portions;
- slicing said first portion into a top and a bottom for the box, said top and bottom having corresponding configuration and dimension;
- slicing said second portion into a plurality of sides for the box, said second portion being sliced at an angle to said

- material for providing oppositely disposed mitred complementary edges for each of said sides;
- wrapping each of said top, bottom and sides in a heat shrinkable thermoplastic film;
- sealing the edges of said film and thereby encapsulating each of said top, bottom and sides in a film envelope;
- piercing the film adjacent the major surfaces of each of



said top, bottom and sides and thereby providing each envelope with a pair of anti-blister openings; and
(h) heating each of said envelopes to a temperature sufficient to cause the film to shrink so that entrapped air vents through said anti-blister openings during shrinking and thereby permits the thermoplastic film to tightly sheath the top, bottom and sides and thereby provide top, bottom and side insert members for the box.

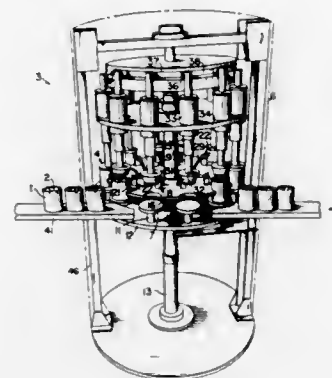
4,642,971 METHOD AND APPARATUS FOR TRIMMING PRODUCT FROM CAN FLANGE AREA

Lance R. Gilkey, Puyallup, Wash., assignor to Alaska Canning & Marine Equipment, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 494,565, May 13, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,548
Int. Cl.⁴ B65B 63/00

U.S. Cl. 53—435

25 Claims



1. A method for clearing solid product debris from the peripheral edge of the opening of a container filled with the product prior to lidding with the use of high pressure fluid cutting jet means comprising the steps of:
providing a container filled with said solid product;
forming at least one high pressure fluid cutting jet stream; aiming said at least one high pressure fluid cutting jet stream at the peripheral edge of the opening of the container; and producing relative movement between said container and said at least one high pressure cutting jet to move the cutting jet along said peripheral edge, the path of the cutting jet being aimed so as to contact and

sever any solid debris on said peripheral edge prior to lidding.

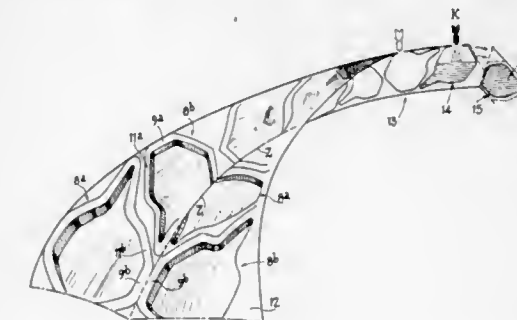
4,642,972 METHOD FOR MANUFACTURING CONTAINERS OF A FLEXIBLE OR SEMI-RIGID MATERIAL AND HAVING AN ELONGATED NECK, AND CONTAINERS MANUFACTURED BY SAID METHOD

Michel Guiffroy, 136 Rue Vulfran Warmé 80000 Amiens, France
Filed Dec. 28, 1984, Ser. No. 687,445

Claims priority, application France, Dec. 30, 1983, 83 21117
Int. Cl.⁴ B65B 47/00

U.S. Cl. 53—453

3 Claims



1. In a method for manufacturing and filling containers of a flexible or semi-rigid sheet material which are symmetrical relative to an axis and comprise an elongated neck, a body and a bottom, and are adapted to receive a flowing product, carried out in a production line where the containers are formed one after the other from sheet means in which sheet means are formed complementary semi-shells each symmetrical about an axis, said semi-shells being adapted to be assembled along parallel edges so as to constitute each container; the improvement comprising:

moulding the semi-shells in the sheet means in head-to-toe relation to one another so as to be imbricated in pairs, the moulding forming on each lateral edge of each semi-shell to be located between the neck and bottom of the container at least two rectilinear sections arranged in a broken line so that each rectilinear section of an edge of a semi-shell is parallel to one of the rectilinear sections of the opposite edge of said semi-shell and, at the same time, offset relative to said other section along the axis of the semi-shell and consequently of the container to be assembled therefrom, the axes of symmetry of said semi-shells moulded in said sheet means being parallel to one another; assembling the semi-shells so as to form containers; welding together the contiguous parallel edges of the semi-shells except for pairs of confronting contiguous rectilinear sections of those edges, extending along one edge portion of the sheet means, to leave a gap therebetween; filling the semi-shells with a flowing product through said gaps with the sheet means positioned generally upright with said gaps at the top edge portion thereof; and welding together said pairs of edge sections to close said gaps.

4,642,973 APPARATUS FOR FABRICATING DUAL COMPARTMENT POWDER CARTRIDGE

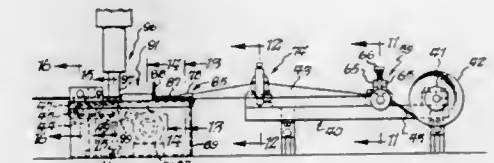
John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Division of Ser. No. 596,041, Apr. 2, 1984, Pat. No. 4,548,322. This application Aug. 5, 1985, Ser. No. 762,683

Int. Cl.⁴ B65B 51/26

U.S. Cl. 53—546

12 Claims



1. A machine for fabricating a dual compartment powder-carrying cartridge comprising a base, first means on said base for supporting a roll of strip material having substantially parallel opposite edges and a central portion and first and second edge portions proximate said first and second edges, respectively, second means for scoring said strip material along two score lines substantially parallel to said opposite edges and spaced from said central portion, third means comprising first folding means for initially folding said strip material along said two score lines, fourth means comprising second folding means for further folding said strip material to cause said first and second edge portions to lie in superposed relationship to each other and to said central portion, fifth means for bonding said first and second edge portions and said central portion to each other, and sixth means for pulling said strip material through said first, second third and fourth means.

4,642,974 MACHINE FOR FOLDING FLANGES OF BLISTER PACKAGE

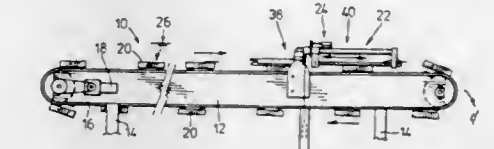
David R. L. Macmorine, Mississauga; Andrzej Maczyszenko, Scarborough, and Terence F. Karley, Mississauga, all of Canada, assignors to Macmorine Fabrications Ltd., Toronto, Canada

Filed Feb. 24, 1986, Ser. No. 832,010

Int. Cl.⁴ B31B 17/26; B65B 47/02

U.S. Cl. 53—558

9 Claims



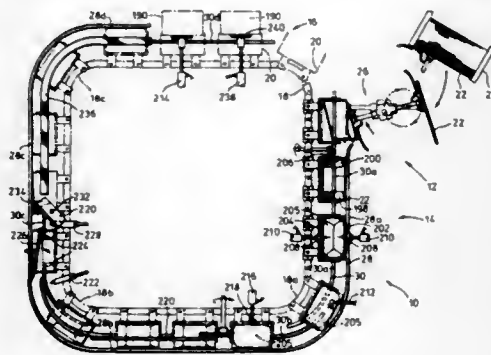
1. A flange folding machine for folding the distal end of the flanges of a blister package or the like inwardly upon the proximal ends thereof to form closure panel receiving channels comprising:

- a plurality of carriers mounted on a conveyor for continuous movement along a path which extends through a folding station, each carrier being adapted to support a package with the distal ends of its flanges projecting outwardly therefrom;
- side flange folding means in said folding station at opposite sides of said path for folding the distal ends of the side flanges along a first fold line, said side flange folding means having a first length adapted to fold the distal end of the side flanges to an upright position and a second length adapted to fold the distal end of the flanges in-

wardly to overlie their proximal ends, said flange folding means including mandrel means extending along said second length and located at said fold line whereby the flanges are folded around said mandrel means to form inwardly opening channels which have a wide base to facilitate the sliding of a closure panel therealong; and

(c) first heater means located in close proximity to each first fold line and extending along at least a major portion of said first length and being operable to heat said side flanges to a sufficient extent to render them formable.

4,642,975
CARTON LOADING MACHINE
 Marinus J. M. Langen, Toronto, and Peter Guttinger, Milton, both of Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada
 Filed Feb. 3, 1986, Ser. No. 825,147
 Int. Cl.⁴ B65B 43/28, 43/52
 U.S. Cl. 53—564 13 Claims



1. In a carton loading machine in which cartons are vertically oriented and upwardly open when loading, the loading machine having a carton receiving station and a carton discharge station, the improvement of;

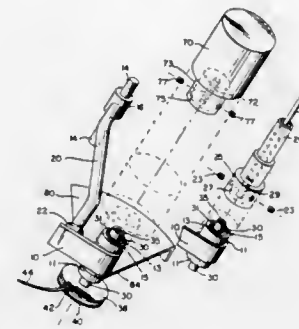
- (a) an endless carton conveyor extending in a generally horizontal plane along an endless path from the receiving station to the discharge station and back to the receiving station,
- (b) a plurality of carton receptacles mounted on said endless conveyor for movement therewith along said path, each receptacle having an open front end opening laterally from said path,
- (c) a plurality of first retainer members arranged in an overlapping end-to-end relationship extending along said path between said receiving station and said discharge station and disposed opposite the open ends of said receptacles for retaining an open carton in said receptacles in use,
- (d) mounting means mounting said first retainer members for simultaneous movement of said first retainer members with respect to said receptacles for movement toward and away from the open front ends thereof to accommodate cartons of different front to back width.

4,642,976
LAWN MOWER TRIMMER AND EDGER ATTACHMENT
 Boyd L. Owens, P.O. Box 142, Cartersville, Okla. 74934
 Filed Sep. 20, 1985, Ser. No. 778,047
 Int. Cl.⁴ A01D 53/14
 U.S. Cl. 56—16.9 3 Claims

1. A trimmer and edger attachment especially constructed to be fitted to a lawn mower having a frame and having a source of power on the frame, the attachment being adaptable quickly and easily to be driven by the type of electrical or mechanical power available on the frame of the mower, comprising:
- (a) a cutting head assembly including a cutting head having a bearing housing and having a spindle supported in bearing means for rotation about an axis of the housing and

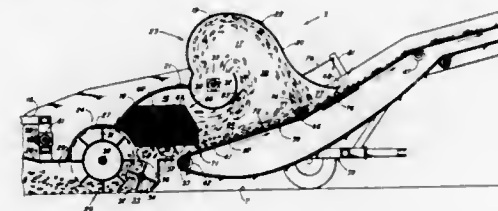
having flail means fixed to the spindle and when rotated thereby defining a cutting plane, and the cutting head assembly further including head mounting means including a bracket fixed to the mower frame and supporting adjustable means connected between the bracket and the bearing housing and operative to lock the bearing housing at a selected height and horizontal angular position with respect to the mower frame and operative to lock the bearing housing at a selected angle of inclination of the cutting plane of the flail means with respect to the ground;

(b) multiple selectable different types of drive means each cooperative with one of said types of available power and each directly mountable on the bearing housing and each having a drive shaft directly connectable to the spindle;



- (c) and the cutting head assembly and drive means having quick-detach connecting means constituting the sole means for supporting the drive means on said bearing housing and for connecting its shaft with said spindle, the quick-detach means comprising cooperatively mating connecting means on the bearing housing and on the drive means and cooperatively mating connecting means on the spindle and on the drive shaft, means for removably securing said mating connecting means together whereby different ones of the drive means can be interchangeably selected and cooperatively connected to drive the cutting head and to follow said bearing housing into whatever position it is locked by said adjustable means, and means for selectively connecting and disconnecting the coupled drive means with respect to said power source.

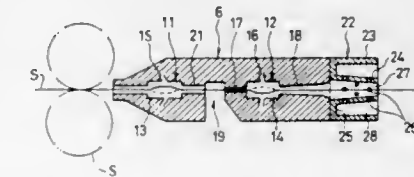
4,642,977
TRASH SEPARATOR FOR NUT HARVESTER
 Barry Ramacher, Stockton, Calif., assignor to Ramacher Manufacturing Company, Linden, Calif.
 Filed Nov. 1, 1985, Ser. No. 793,801
 Int. Cl.⁴ A01D 51/00
 U.S. Cl. 56—328 R 12 Claims



1. A nut harvester and trash separator comprising:
- a. a longitudinally extending frame adapted to advance along the ground in a forward direction;
 - b. a substantially solid top and side walls on at least the forward portion of said frame to define corresponding portions of a fore and aft elongated plenum, said plenum extending from a forward inlet portion to and after outlet portion;

- c. a foraminous conveyor belt on said frame forming the bottom portion of said plenum and extending longitudinally from a forward location on said frame near the ground past said after outlet portion and terminating at a rearward location on said frame substantially above the ground;
- d. a suction fan on said frame having an inlet in communication with said plenum;
- e. means for connecting the outlet of said fan directly to the atmosphere;
- f. means for picking up and delivering nuts and debris in a generally upward and rearward direction into the inlet portion of said plenum in free falling condition;
- g. primary separating means including at least one air inlet positioned at the inlet portion of said plenum for admitting atmospheric air into said plenum in a direction substantially transverse to the free falling travel of the nuts and debris in order to separate a portion of the more aerodynamically responsive debris while allowing the nuts and remaining portion of the debris to descend onto the lower forward end of said conveyor belt, forming an air impervious blanket over at least a portion of said conveyor belt;
- h. secondary separating means for removing said remaining portion of the debris from the nuts, defined by a transverse updraft passing through said conveyor belt in the region between the leading edge of said blanket and said outlet portion of said plenum; and,
- i. means for releasing the isolated nuts from said plenum near the rearward portion of said conveyor belt.

4,642,978
PNEUMATIC SPINNING APPARATUS
 Koshi Noda, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
 Filed Jul. 22, 1985, Ser. No. 757,637
 Claims priority, application Japan, Jul. 26, 1984, 59-156230
 Int. Cl.⁴ D01H 5/28; D02G 1/04; F01N 1/00, 1/10
 U.S. Cl. 57—328 1 Claim

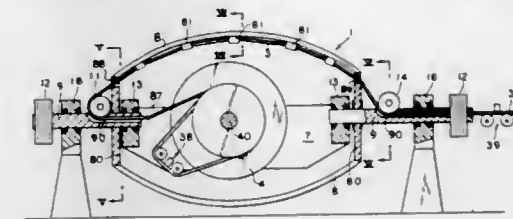


1. In a pneumatic spinning apparatus wherein multiple spindles utilizing spinning nozzles are provided on a single spinning frame and a sliver is introduced into each individual air injection nozzle in which the sliver is acted upon by a flow of compressed air to produce a spinning yarn, characterized in that

each nozzle comprises first and second nozzles in tandem with air injection holes opened tangentially to cylindrical yarn passing holes of the nozzles, respectively, said first and second nozzles being formed in a unitary body provided with an escape recess formed between the first nozzle and the second nozzle so that compressed air within the first nozzle may be discharged outside the body through said recess, a silencer connected to said body in contiguous relationship at the yarn exit hole of the second nozzle to reduce sound emission from said nozzle, a yarn entrance hole and a yarn exit hole in the second nozzle having different diameters such that the diameter of the yarn exit hole is greater than that of the yarn entrance hole and the diameter of the exit hole increases toward the yarn exit hole, a solid annular wall surrounding the exit hole of said second nozzle, said silencer comprising a hollow cylindrical body which includes an outer cylinder, an inner cylinder and an annular connecting portion between said cylinders at the inner end to fit against said annular wall of said second nozzle

for connecting the silencer to an exit end of the second nozzle, said inner cylinder being located in coaxial relationship to the yarn exit hole of the second nozzle and said hollow cylindrical body being opened at the exit end thereof between said cylinders to form an expansion chamber, said inner cylinder of the silencer being gradually reduced in diameter toward the advancing direction of the sliver, and having a plurality of small ventilating holes perforated in a circumferential wall thereof leading to said expansion chamber to reduce the energy of the air and sound emission.

4,642,979
APPARATUS FOR ADJUSTING LAY OF WIRE ROPE
 Hiroyuki Tomioka, Ashiya; Mitsuo Nakata, Suita; Nobuhiro Kusakawa, Ibaragi, and Kaname Torigoe, Abiko, all of Japan, assignors to Shinko Kosen Kogyo Kabushiki Kaisha, Amagasaki, Japan
 Filed Oct. 30, 1985, Ser. No. 792,882
 Claims priority, application Japan, Nov. 20, 1984, 59-246436
 Int. Cl.⁴ D07B 3/02, 3/10, 3/12, 7/00
 U.S. Cl. 57—264 2 Claims



1. Apparatus for simultaneously adjusting the pitch of a wire rope and removing residual stress in the wire rope, said apparatus comprising:

- (a) a winding reel (4) mounted for rotation around a first axis (40);
- (b) first means for adjusting the pitch of a wire rope (3) paid off said winding reel (4) by imparting a lay to the wire rope (3), said first means comprising:
 - (i) a first shaft (9) spaced from said winding reel (4) on one side thereof and mounted for pivotal movement around a second axis that is perpendicular to said first axis, said first shaft (9) comprising second means (87) for receiving the wire rope (3) from said winding reel (4) and for guiding it;
 - (ii) a second shaft (9) spaced from said winding reel (4) on the opposite side thereof from said first shaft (9) and mounted for pivotal movement about a third axis that is at least substantially coincident with said second axis, said second shaft (9) comprising third means (90) for receiving the wire rope (3) from said first shaft (9) and for guiding it;
 - (iii) fourth means (38) for detecting the pitch of the lay of the wire rope (3) before it is received by said second means (87);
 - (iv) fifth means (39) for detecting the pitch of the lay of the wire rope (3) after it has left said third means (90);
 - (v) sixth means (8) for guiding the wire rope (3) from said second means (87) to said third means (90); and
 - (vi) seventh means (7) for rotating said sixth means (8) about said second axis in response to outputs from said fourth means (38) and said fifth means (39);
- (c) eighth means for removing residual stress in the wire rope (3), said eighth means comprising:
 - (i) ninth means (5,5 and 6,6) for receiving the wire rope (3) from said second shaft (9) and for allowing a portion of the wire rope (3) to hang loosely in a U-shape;
 - (ii) a dancer roller (24) sized, shaped, and positioned so that, in use, the bottom of the U-shaped portion of the wire rope (3) passes around said dancer roller (24), said dancer roller (24) being mounted for both vertical

movement and twisting movement about a fourth axis (17) that is vertical and perpendicular both to the first axis and to the second axis in response to variations in the residual stress in the wire rope (3);

(iii) tenth means (32) for detecting residual torque in the wire rope (3) by detecting the rotational angle of said dancer roller (24) about said fourth axis (17); and

(iv) eleventh means (12) for rotating said first and second shafts (9) about their respective axes in response to outputs from said tenth means (32); and

(d) twelfth means for selectively performing either of the following operations:

(i) rotating said first and second shafts (9) about their respective axes in response to outputs from said tenth means (32) to thereby remove residual torque in the wire rope (3) and,

(ii) when an at least approximately zero torque is detected by said tenth means (32), stopping rotating said first and second shafts (9) and imparting a lay to the wire rope (3) by rotating said sixth means (8) in response to outputs from said fourth means (38) and said fifth means (39).

4,642,980

TENSION DEVICE FOR USE IN TWO-FOR-ONE TWISTER

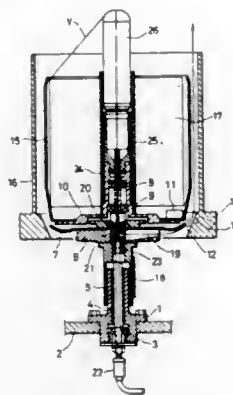
Mitsuo Fukunaga, Kyoto, and Yoshihisa Inoue, Ibaragi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan
Continuation of Ser. No. 565,928, Dec. 27, 1983, abandoned.

This application May 21, 1986, Ser. No. 870,287
Claims priority, application Japan, Dec. 28, 1982, 57-198102[U]

Int. Cl.⁴ D01H 7/86, 13/10, 1/40; B65H 59/22

U.S. Cl. 57—58.86

5 Claims



1. A tensioning device for use in a yarn twisting apparatus for applying a tension force to yarn fed through said apparatus; said tensioning device having a yarn inlet opening, a yarn outlet opening and a chamber between said inlet and outlet openings; a tensioning member disposed in said chamber between said inlet and outlet openings; and manually-operable means for moving said tensioning member between a tensioning position wherein said tensioning member applies a tensioning force to yarn passing through said tensioning device and a retracted position wherein said tensioning member permits unrestricted passage of yarn through said tensioning device, wherein the manually-operable means includes a fixing means for independently holding the tensioning member in either the tensioning position or the retracted position.

4,642,981 ROTOR WITH YARN GUIDE FOR OPEN-END SPINNING

Akira Shimano, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

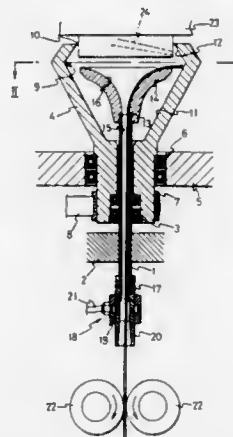
Filed Oct. 31, 1985, Ser. No. 793,295

Claims priority, application Japan, Nov. 6, 1984, 59-233434

Int. Cl.⁴ D01H 1/135, 7/885, 7/90

U.S. Cl. 57—414

6 Claims



1. An apparatus for manufacturing a spun yarn comprising:

(a) a rotor having a recess with a fiber accumulating surface in the inner surface thereof at the conjunctive base surface of two oppositely disposed conical surfaces, and a yarn guide hole formed coaxially with the axis of rotation,

(b) means forming a yarn guide surface comprising a stationary yarn guide tube projecting into the yarn guide hole of said rotor and a funnel guide surface expanding outwardly from said yarn guide tube into said recess of said rotor, said funnel surface extending smoothly from said guide tube to an outer diameter closely adjacent said fiber accumulating surface of said rotor, and

(c) a pneumatic false twisting unit in said guide tube spaced axially from said funnel wherein said false twisting unit can impart a false twisting component to fibers accumulating on said expanding funnel guide surface.

4,642,982

CHAIN BELT AND METHOD OF MANUFACTURE

Danny J. Gray, 101 N. Summit, Red Oak, Tex. 75154

Filed Jul. 25, 1985, Ser. No. 758,968

Int. Cl.⁴ B21L 3/00

U.S. Cl. 59—35.1

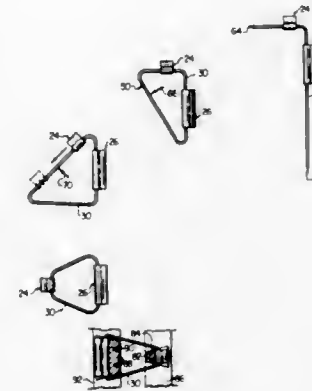
10 Claims

1. A method of forming a chain link belt comprising:

placing a first tube on a predetermined length of wire having a first and a second end,

placing a second tube on the predetermined length of wire,

initially bending the wire to bring the ends in abutting relation, joining the ends of said wire, and



finally bending said wire to form a quadrilateral with said tubes on opposite sides thereof and with the joint of the ends of the wire within one of said tubes.

4,642,983

CHEMICAL RELEASING FLASH SUPPRESSOR

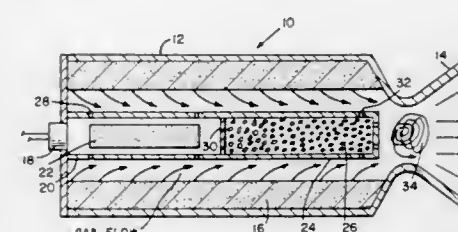
William S. Melvin; Robert E. Betts, both of Huntsville, and Lawrence B. Thorn, Madison, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1985, Ser. No. 731,193

Int. Cl.⁴ C06D 5/00

U.S. Cl. 60—219

6 Claims



1. In combination with a rocket motor comprised of a rocket motor case having a forward end and an aft end; a solid propellant grain contained within said rocket motor case; ignitor means positioned within said rocket motor case for igniting said solid propellant grain to produce combustion gases; an exhaust nozzle secured at the aft end of said rocket motor case for exhausting said rocket motor combustion gases; and additionally comprising clathrate means with a source of ammonia gas included therein, said clathrate means with the included source of ammonia gas contained within a sealed container whereupon firing said ignitor means for igniting said solid propellant grain a subsequent pressurization and flowing of said combustion gases achieve rupturing of said sealed container and releasing of said ammonia gas by boiling said ammonia gas off from said clathrate means for containing said source of ammonia gas, said ammonia gas being mixed with said combustion gases in a mixing zone within said rocket motor wherein said ammonia gas functions as a flash suppressor for said combustion gases exiting said exhaust nozzle.

4,642,984

CONTROL DEVICE FOR AT LEAST ONE HYDRAULICALLY OPERATED LOAD

Carl C. Diken, Horuphav, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

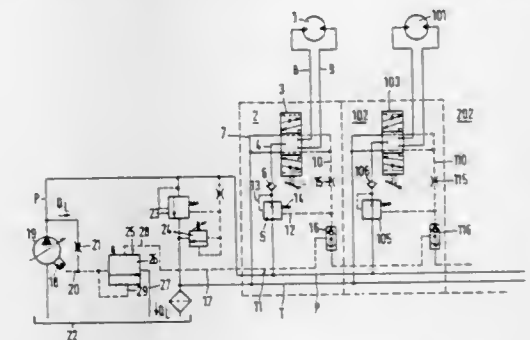
Filed Apr. 18, 1986, Ser. No. 853,393

Claims priority, application Fed. Rep. of Germany, May 2, 1985, 3515732

Int. Cl.⁴ F15B 13/06

U.S. Cl. 60—427

4 Claims



1. A hydraulic system comprising pump and tank means and at least two modules each of which includes a bidirectional servomotor and a control valve having operating positions for supplying pressurized fluid from said pump means to said tank means and for exhausting fluid from said servomotor to said tank means, each of said modules having compensating valve means between said control valve thereof and said pump means, said pump means including a feedback loop having a throttle and a pump pressure regulator in series, a sensing conduit header, each of said modules having sensing conduit means connected to said header and being operable to sense load pressure at the inlet side of said control valve thereof for controlling said compensating valve means in accordance with said load pressure, and a pressure divider comparator valve connected to said header and to a point in said feedback loop between said throttle and said pump pressure regulator, said comparator valve being operable to compare the pressure at said point with the pressure in said header and to bleed pressurized fluid from said point to said tank means to equalize said pressures.

4,642,985

OIL PUMP SYSTEM IN POWER TRAIN

Koji Nozawa, Higashikurume, and Yukio Mizukoshi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 14, 1985, Ser. No. 744,691

Claims priority, application Japan, Jun. 15, 1984, 59-88254[U]

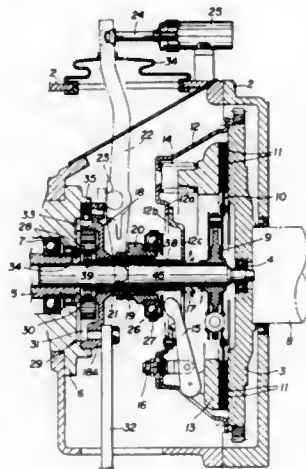
Int. Cl.⁴ F16D 31/02, 13/60

U.S. Cl. 60—435

19 Claims

1. An oil pump system in a power train, comprising: a hollow torque-input member accommodating a member to which oil is to be delivered; a drive shaft extending from the interior of said torque-input member and capable of being rotated by said torque-input member; an oil pump having a casing coaxial with said drive shaft; a hollow pump-drive shaft coaxially surrounding said drive shaft with a rotatable clearance defined therebetween, one end of said pump-drive shaft driving said oil pump and opening into an oil-discharge chamber of said oil pump, the other end of said pump-drive shaft being driven by said torque-input member and opening into the interior of said torque-input member, the clearance forming an oil-discharge passageway between the oil-discharge chamber and the interior of said torque-input member; a sleeve fixed to the casing of said oil pump and surrounding

said pump-drive shaft, the sleeve rotatably bearing said pump-drive shaft; and means for rotatably coupling said torque-input member and said pump-drive shaft, said coupling means comprising an



opening formed in said torque-input member and said other end of said pump-drive shaft fitted within the opening, said other end of said pump-drive shaft having radial clearance from part of the edges of the opening.

4,642,986

HYDRAULIC SERVO MOTOR

Jacques H. Chatelin, 53, rue Lamartine, Drancy (Seine Saint Denis), France

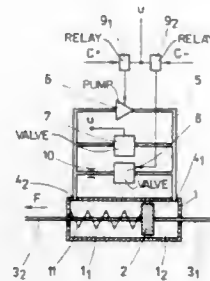
PCT No. PCT/FR83/00070, § 371 Date Dec. 13, 1983, § 102(e) Date Dec. 13, 1983, PCT Pub. No. WO83/03643, PCT Pub. Date Oct. 27, 1983

PCT Filed Apr. 18, 1983, Ser. No. 568,234

Claims priority, application France, Apr. 19, 1982, 82 06683 Int. Cl.⁴ F16D 31/02

U.S. Cl. 60—474

4 Claims



1. A hydraulic servo motor comprising

- (i) a double acting jack having
 - (a) a hollow cylinder closed off by end walls, the cylinder being adapted to be filled with a fluid,
 - (b) a piston disposed in the cylinder and providing a movable partition wall therein whereby the cylinder is divided into two chambers,
 - (c) piston rods extending from the opposed faces of the piston through the end walls of the cylinder, the rods being secured to the piston for movement therewith and those rods being adapted to be connected to a component for accurately controlling the movement and position of the component,
 - (d) ports in the cylinder for enabling fluid transfer from each chamber to the other,
- (ii) a conduit interconnecting said ports for enabling fluid to flow between the chambers,

- (iii) an electric pump interposed in the conduit's fluid flow path for pumping fluid in one direction only,
- (iv) first means providing a first flow path bypassing the electric pump,
- (v) an electrically actuated safety valve disposed in the first bypass flow path, the valve being closed when electrically energized and preventing fluid from bypassing the electric pump through the first bypass flow path, the safety valve obtaining its electric power from the same source as the electric pump,
- (vi) resilient means urging the piston in the direction opposite that in which the piston is driven by the electric pump, the resilient means acting to oppose the fluid pressure exerted by the electric pump,
- (vii) second means providing a second flow path bypassing the electric pump, and
- (viii) electrically actuated means disposed in the second bypass flow path, the electrically actuated means providing an open bypass path for liquid flow when the means is electrically energized.

4,642,987

PROCESS AND EQUIPMENT FOR THE UTILIZATION OF GEOTHERMIC ENERGY

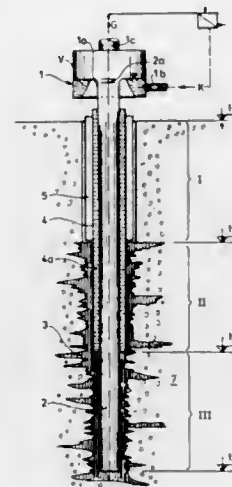
István Csorba; Lajos Székely, and Sándor Bódás, all of Budapest, Hungary, assignors to Melyepítési Tervező Vállalat, Budapest, Hungary

Filed Feb. 13, 1984, Ser. No. 579,809

Claims priority, application Hungary, Feb. 14, 1983, 484/83 Int. Cl.⁴ F03G 7/04

U.S. Cl. 60—641.2

12 Claims



1. Process for the utilization of geothermal energy wherein a vapor producing pipe is set in the rock under the terrain in contact with a source of geothermal heat, a superatmospheric pressure is set in the vapor producing pipe and a liquid heat carrying medium is let trickle down in a film-like layer on the pipe walls the saturated vapor of which is containing a latent heat of evaporation of at least 1000 kJ/m³ at the set superatmospheric pressure, said liquid becoming evaporated by the geothermic energy and extracted at the head of the vapor producing pipe.

4,642,988

SOLAR POWERED FREE-PISTON STIRLING ENGINE

Giendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.

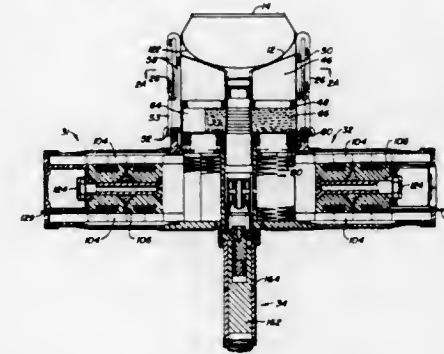
Continuation-in-part of Ser. No. 292,771, Aug. 14, 1981,

abandoned. This application Jul. 29, 1983, Ser. No. 518,607

Int. Cl.⁴ F03G 7/02; F02G 1/04

U.S. Cl. 60—641.14

87 Claims



1. A solar-powered Stirling engine comprising:

- a solar receiver which converts solar radiation to thermal energy;
- a storage chamber for thermal energy in heat transfer communication with the receiver;
- a displacer including a displacer chamber and a differential area displacer piston with variable electromagnetic damping means dividing the displacer chamber into separate hot and cold subchambers respectively, the hot subchamber being in heat transfer communication with the storage chamber;
- means for cooling the cold subchamber;
- an alternator including an alternator chamber and an alternator piston dividing the alternator chamber into working and bounce subchambers respectively, the working subchamber being in fluid communication with the cold subchamber of the displacer;
- a working fluid circulating through be cold subchamber and the working subchamber and in heat transfer communication with the storage chamber, said working fluid being displaced by the displacer piston to drive the alternator piston; and
- means for obtaining work output from the alternator piston.

4,642,989

HYDRAULIC POWER BOOSTER

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 23, 1984, Ser. No. 613,604

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319465

Int. Cl.⁴ B60T 13/20

U.S. Cl. 60—551

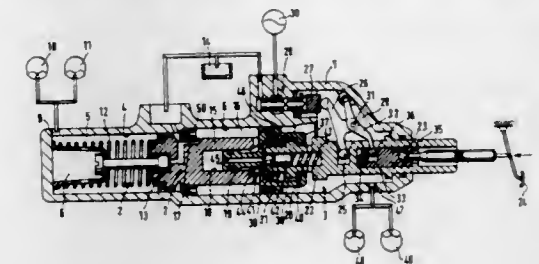
10 Claims

- 1. A hydraulic power booster for the actuation of a master cylinder in an automotive vehicle brake system, comprising a booster piston,
- a brake valve, said brake valve arranged in parallel to the booster piston and by means of which a pressure fluid is metered into a booster chamber in dependence upon an actuating force on a pedal operated piston rod connected to said brake valve, said booster chamber being confined by said pedal-operated piston rod and by the booster piston,
- the booster piston including a projection at an end remote from the pedal, said projection extending into a blind-end bore of a master cylinder piston, said end defining a first effective surface area of said booster piston, said booster

piston having a second effective surface area facing said booster chamber,

said booster piston including a hydraulic connection between the blind-end bore and the booster chamber, normally open valve means in said hydraulic connection operatively connected to said piston rod adapted to be open during an initial movement of said piston rod in an actuating direction,

said first effective surface area sized to displace said master cylinder piston during said initial movement an amount for delivering a volume of brake fluid from said master cylinder equal to an absorption volume of a pair of brakes connected to said master cylinder, said valve means further adapted to close during movement of said piston rod in the actuating direction in excess of said initial movement, said second effective surface area of said booster



being greater than an effective surface area of said master cylinder piston.

10. A hydraulic power booster for actuation of a master cylinder in an automotive vehicle brake system comprising; a booster piston and a brake valve, said brake valve arranged in parallel to the booster piston by means of which pressure fluid is metered into a booster chamber in dependence upon an actuating force, said booster chamber being confined by a pedal-operable piston rod and by the booster piston, said booster piston including a projection at an end remote from the pedal extending into a blind-end bore of a master cylinder piston, a hydraulic connection in said booster piston between the blind-end bore and said booster chamber adapted to be closed by a pedal operable valve assembly, and a pedal side axial stop on said booster against which a projection on the piston rod is resiliently preloaded.

4,642,990

MASTER CYLINDER AND OIL-HYDRAULIC BOOSTER ASSEMBLY

Mitutoyo Mizusawa, Ueda, and Makoto Horiuchi, Maruko, both of Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Nagano and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Dec. 11, 1984, Ser. No. 680,624

Claims priority, application Japan, Mar. 13, 1984, 59-47897; Mar. 13, 1984, 59-47899

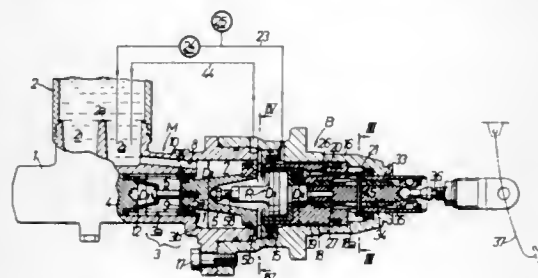
Int. Cl.⁴ B60T 13/20

U.S. Cl. 60—554

2 Claims

- 1. A master cylinder and oil-hydraulic booster assembly comprising a master cylinder and an oil-hydraulic booster connected to the rear of the master cylinder and in which a master cylinder piston, slidably fitted in the axial bore of the master cylinder and operable to produce oil-hydraulic pressure, and a booster piston, slidably fitted in the cylinder bore of the oil-hydraulic booster so as to be power-actuated in accordance with the input thereto, are interconnected through the intermediary of an output rod held in engagement with the rear face of the master cylinder piston and a reaction mechanism arranged to feed the reaction force from the master cylinder back to the input side of the assembly, the master cylinder and oil-hydraulic booster assembly being characterized in that the axial bore of the master cylinder is comprised of a forward, small-diameter bore section and a rearward, large-diameter

bore section having a diameter larger than that of a front end portion of the booster piston, the master cylinder piston being comprised of a small-diameter piston section slidably fitted in said small-diameter bore section of the master cylinder and a



large-diameter piston section slidably fitted in said large-diameter bore section thereof, said booster piston being arranged proximate said large-diameter master cylinder piston section so as to be movable into said large-diameter bore section of the master cylinder when the booster piston is advanced.

4,642,991

TURBOCHARGER CONTROL SYSTEM

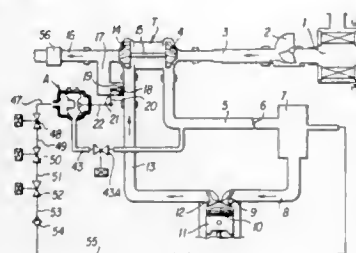
Yasuhiro Kawabata, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 726,915, Apr. 4, 1985, abandoned, which is a continuation of Ser. No. 452,924, Dec. 27, 1982, abandoned. This application Sep. 27, 1985, Ser. No. 780,840

Claims priority, application Japan, Dec. 30, 1981, 56-211681 Int. Cl.⁴ F02B 37/12

U.S. Cl. 60—602

9 Claims



1. A turbocharger control system utilized in an internal combustion engine having a turbocharger turbine with a downstream passage, a combustion chamber, an exhaust treatment device, an actuator, a link mechanism connected to said actuator, a compressor, a throttle valve, an engine intake manifold, air flow passage means leading from said compressor to said throttle valve and an exhaust passage leading from said combustion chamber, said system comprising:

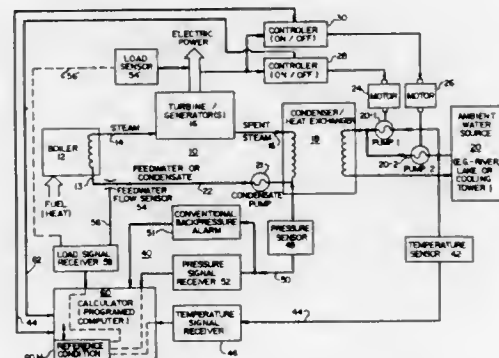
- bypass passage means connecting said exhaust passage leading from said combustion chamber to said turbocharger turbine with said downstream passage of said turbine so as to connect said combustion chamber directly to said exhaust treatment device around said turbine;
- a waste gate valve connected to said actuator by means of said link mechanism so as to close said bypass passage wherein said actuator comprises a first chamber continuously communicating with atmospheric pressure, a second chamber connected to said air flow passage means leading from said compressor to said throttle valve, and a third chamber connected to said engine intake manifold;
- first spring means interposed in said first chamber for biasing said waste gate valve toward a closed position; and
- second spring means interposed in said third chamber and having a stronger spring load characteristic than said first spring means for biasing said waste gate valve towards an opened position.

4,642,992 ENERGY-SAVING METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING COOLING PUMPS OF STEAM POWER PLANTS

George C. Julovich, 3487 N. Vineyard Dr., LaPorte, Ind. 46350
Filed Feb. 4, 1986, Ser. No. 826,670
Int. Cl.⁴ F01K 9/00

U.S. Cl. 60—661

11 Claims



1. In an electric power generating plant of the type which employs steam to generate electricity, using a condenser which is cooled by being supplied with ambient water whose temperature (T) is subject to changes over time, and which water may be supplied to the condenser by a number of pumps operated in parallel, each pump driven by its own motor, and said plant being constructed to operate with over a range between a minimum and a maximum number of such pumps, the method of more optionally operating the plant, comprising the steps of:

- (a) recording a set of reference values for at least temperature and load (Tr, Fr) for the number of pumps in initial operation;
- (b) monitoring the current temperature and load (Ty, Fy) and, if either of these change significantly (increasing or decreasing), if not already at the end of the range in that direction, changing the number of pumps in steps, in the same direction of change (increasing or decreasing), and
- (c) calculating the net gain or loss in overall energy efficiency of each new pump added, until the end of the range is reached or a most efficient number of pumps is determined, and then operating at that number, while updating the reference values (Tr, Fr) to its values and returning to step (b).

4,642,993

COMBUSTOR LINER WALL

Ervin J. Sweet, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 29, 1985, Ser. No. 728,637

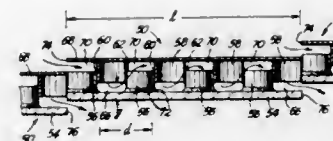
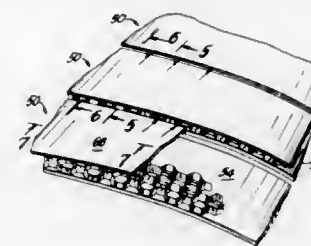
Int. Cl.⁴ F02C 1/00; F02G 3/00; B21D 39/00

U.S. Cl. 60—752

15 Claims

1. A combustor liner wall comprising a generally annular interior wall, a generally annular exterior wall spaced radially with respect to a longitudinal axis of the combustor from the interior wall to form a generally annular space disposed between said walls, a honeycomb structure defined by a plurality of adjacent partitions extending radially with respect to the longitudinal axis of the combustor, said adjacent partitions arranged and constructed to form honeycomb cells within said annular space, said honeycomb structure further being formed such that portions of said structure adjacent each said cell are spaced radially from said exterior wall to define exterior gaps,

and such that other portions thereof adjacent each said cell are spaced radially from said interior wall to define interior gaps,



whereby cooling air can be directed alternately through the interior and exterior gaps to cool the combustor liner wall.

4,642,994

MAGNETIC REFRIGERATION APPARATUS WITH HEAT PIPES

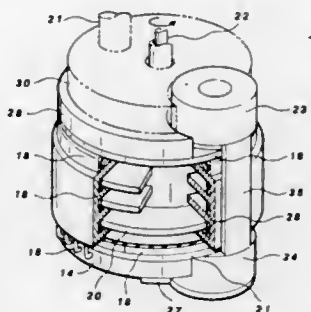
John A. Barclay, Los Alamos, N. Mex., and F. Coyne Prenger, Jr., Madison, Wis., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1985, Ser. No. 791,280

Int. Cl.⁴ F25B 21/02

U.S. Cl. 62—3

23 Claims



1. An about 4 to about 20 K. refrigeration apparatus comprising:

- a magnetic field generating means;
- a fluid contactable magnetic material interacting with the magnetic field produced by said magnetic field generating means so as to be subjected to a cyclically time varying magnetic field;
- a fluid effective to transfer heat at temperatures between about 4 and about 20 K.;
- an external heat sink; and
- at least two directional heat pipes, one such pipe disposed between said fluid and the object of cooling whereby heat from the object of cooling is transmitted through said fluid to said magnetic material when said magnetic material absorbs heat, and another such pipe disposed between said fluid and said external heat sink whereby heat from said magnetic material when said magnetic material is rejecting heat is transmitted through said fluid to said external heat sink, and also whereby the heat from the hot ends of said directional heat pipes is minimally transmitted to the cold ends of said directional heat pipes.

4,642,995

DAMPED DISPLACER REFRIGERATING MACHINE

Werner Bächler, Rösarath; Rolf Heisig, Weilerswist; Hans-Hermann Klein, Rösarath, and Karl-Heinz Völker, Titz, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

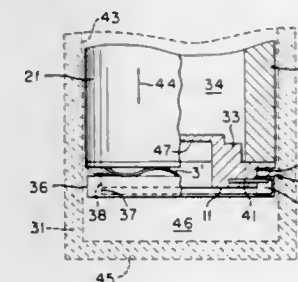
Filed Apr. 3, 1985, Ser. No. 719,363

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1984, 8411307[U]

Int. Cl.⁴ F25B 9/00

U.S. Cl. 62—6

7 Claims



1. In a refrigerating machine having a hollow space with at least one substantially-closed end and a displacer across the hollow space and reciprocable toward and away from the substantially-closed end of the hollow space, the improvement comprising:

- a corrugated spring in the hollow space between the substantially-closed end of the hollow space and the displacer, the spring having spring action in the direction of displacer reciprocation and a maximum dimension which is less than the maximum distance from the substantially-closed end of the hollow space to which the displacer reciprocates and greater than the minimum distance from the substantially-closed end of the hollow space to which the displacer reciprocates, whereby to damp noise and vibration which would occur if the displacer contacted the substantially-closed end of the hollow space undamped as the spring is compressed while therefore avoiding interference with the thermodynamic cycle produced by the displacer for the refrigerating operation of the machine.

4,642,996

CARRIAGE OF COMESTIBLES AND IN PARTICULAR TO CONTAINERS AND RELATED MEANS AND METHODS SUITABLE FOR SUCH PURPOSES

Samuel Harris, Takapuna, and John R. Lovegrove, Remuera, both of New Zealand, assignors to The 501 Shipping Corporation of New Zealand, New Zealand

Continuation of Ser. No. 641,537, Aug. 16, 1984, abandoned. This application Dec. 20, 1985, Ser. No. 811,704

Claims priority, application New Zealand, Sep. 1, 1983, 205453; Aug. 14, 1984, 205453

Int. Cl.⁴ F24F 3/16

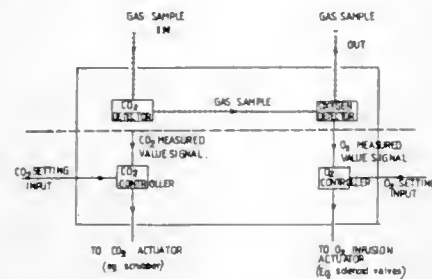
U.S. Cl. 62—78

14 Claims

1. A method of transporting a quantity of a respiring comestible selected from plants, fruit and vegetables comprising the steps of

- loading the quantity of respiring comestible into a container, sealing the container sufficient to ensure that less oxygen from ambient air can diffuse into the container than is required for respiration by said quantity and sufficient to ensure a production of carbon dioxide by said quantity as a result of the respiration greater than can diffuse from the container,
- flushing the container with a nitrogen-rich gas to reduce the oxygen level in the container atmosphere and
- transporting the container including the quantity of respiring comestible while monitoring the temperature, carbon

- dioxide and oxygen levels within said container and adjusting as necessary
- the temperature by refrigeration in response to such monitoring towards an optimum or predetermined value or range of values,
 - the oxygen content by positive infusion of ambient air



- into the container in response to such monitoring towards an optimum or predetermined value or range of values and
- the carbon dioxide content by absorbing carbon dioxide from the atmosphere in the container in response to such monitoring towards an optimum or predetermined value or range of values.

4,642,997
PROCESS AND APPARATUS FOR POWER-AND AIR
CONDITIONING-FRESH AIR GENERATION IN
AIRCRAFT

Herfried Krafft, Toulouse, France, assignor to Deutsche Airbus GmbH, Munich, Fed. Rep. of Germany

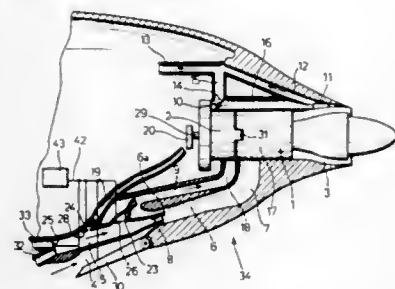
Filed Mar. 29, 1985, Ser. No. 717,377

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412101

Int. Cl.⁴ F25B 9/00

U.S. Cl. 62—87

23 Claims



1. A process of supplying power and air-conditioned fresh air in an aircraft comprising means forming an aircraft tail section, an auxiliary power unit within the tail section, an air-conditioning compressor arranged to be driven by said auxiliary power unit, an air intake for fresh air connected to the air-conditioning compressor, said auxiliary power unit including a turbine, a diffuser connected to the auxiliary power unit for supplying air thereto, an exhaust nozzle connected to the auxiliary power unit for discharging exhaust out of the tail section, a heat exchanger in heat transfer relation with the exhaust nozzle, means for supplying boundary layer suction air from the aircraft wings to at least the diffuser, and comprising the steps of directing exhaust air from at least one of the aircraft cabin and the boundary layer suction to the air intake and mixing the exhaust air from at least one of the aircraft cabin and the boundary layer with fresh air from the air intake at a location upstream from the auxiliary power unit, aspirating a part of the fresh air from the air intake and supplying the aspirated air to the air-conditioning compressor and driving the air-conditioning compressor by means of the auxiliary

power unit, supplying at least a part of the air from the boundary layer suction and mixing such air with fresh air from the air intake and compressing the air mixture in the air-conditioning compressor, withdrawing the air mixture from the air-conditioning compressor and conveying it to the aircraft cabin, providing the air-conditioning compressor with a first stage and further stages, supplying compressed fresh air from the air intake to one of the first stage and the turbine of the auxiliary power unit after passage through the further stages, and supplying the further stages of the air-conditioning compressor with one of exhaust air and a mixture of exhaust air and fresh air.

4,642,998
REFRIGERATOR COOLING AIR FLOW CONTROL
APPARATUS

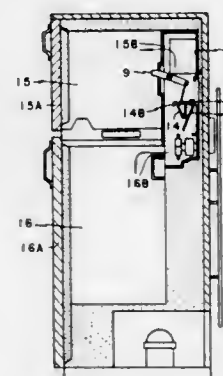
Yun H. Kang; Wha S. Im, and Kil S. Lee, all of Kyunggi-do, Rep. of Korea, assignors to Samsung Electronic Co., Ltd., Ky Inggido, Rep. of Korea

Filed Sep. 6, 1985, Ser. No. 773,062

Int. Cl.⁴ F25D 17/04

U.S. Cl. 62—187

6 Claims



1. Switching apparatus for selectively controlling the flow of cooling air in a central cooling air duct of a refrigerator of the type having a cold storage space and a freezing storage space, said switching apparatus comprising:

- control valve means movably mounted in the central cooling air duct, and
- manually operable control valve actuating means for moving the control valve means between a normal refrigerator operating position with cooling air flow to the freezing storage space to accommodate freezing therein and cooling air flow to the cold storage space to accommodate nonfreezing cooling therein and a cold storage operating position with cooling air flow to both the freezing storage space and cold storage space to accommodate nonfreezing cooling in both storage spaces so that said freezing storage space serves as an extension of the cold storage space, wherein the control valve means is a control flag valve which is disposed to open the central cooling air duct when in the normal refrigerator operating condition and to substantially close the central cooling air duct when in the cold storage operating position, and wherein said control flag valve is pivotally mounted at the cooling air duct, and wherein said control flag valve is constructed as a flat member having a bearing key projection extending laterally outward at one side thereof for engagement in a cooling air duct bearing opening and a control flap bearing opening at the opposite side thereof for accommodating the insertion of a drive shaft key of the control valve actuating means.

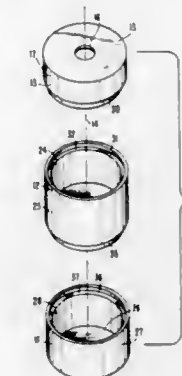
4,642,999
COOLER WITH CONTAINER CENTERING MEANS
James W. Justice, Indianapolis, Ind., assignor to Pakway Container Corp., Indianapolis, Ind.

Filed Feb. 13, 1986, Ser. No. 829,182

Int. Cl.⁴ F25D 11/00

U.S. Cl. 62—440

10 Claims



1. A beer barrel cooler comprising:
 - a plastic foam produced lid having a horizontally extending top wall with an aperture extending therethrough to receive a beer barrel outlet, said lid having a first annular wall depending from and integrally attached to said top wall with said annular wall having a first outer surface and a first inner surface with said inner surface having an interior diameter of a size to allow said lid to be placed around a beer barrel with space between said annular wall and said barrel, said aperture being located centrally in said top wall to locate said beer barrel concentric within said annular wall allowing ice to occupy said space and extend completely circumferentially around said beer barrel, said annular wall including a bottom end with a continuous cylindrically extending first skirt integrally attached thereto;
 - a plastic foam produced middle ring having a second annular wall with said second annular wall having a second outer surface and a second inner surface with said second inner surface having an interior diameter of a size to allow said second wall to be placed around said beer barrel with second space therebetween, said second wall including a bottom end with a continuous cylindrically extending second skirt integrally attached thereto, said second wall including a top end of reduced thickness forming an upwardly extending first rim and an upwardly facing first ledge with said first skirt fitting matingly with respect to said rim and resting atop said ledge locating said beer barrel concentric within said ring allowing ice to occupy said second space and extend completely circumferentially around said beer barrel; and,
 - a plastic foam produced base having a horizontally extending bottom wall upon which said beer barrel may rest, said base having a third annular wall extending upwardly from and integrally attached to said bottom wall with said third annular wall having a third outer surface and a third inner surface with said third inner surface having an interior diameter of a size to allow said beer barrel to rest therein atop said bottom wall with third space between said barrel and said third annular wall, said base including a top end of reduced thickness forming an upwardly extending second rim and an upwardly facing second ledge with said second skirt fitting matingly with respect to said second rim and resting atop said second ledge locating said beer barrel concentric within said base allowing ice to occupy said third space and extend completely circumferentially around said beer barrel.

4,643,000
ABSORPTION-RESORPTION HEAT PUMP
Juan B. Rheinfelder, Kerkade, Netherlands, assignor to Rendamax A.G., Zug, Switzerland

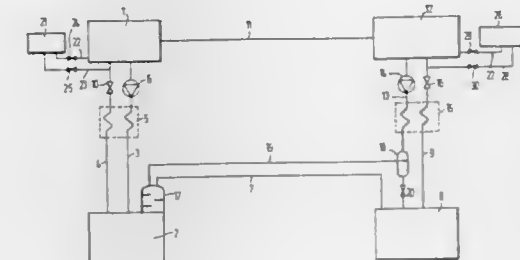
Filed Nov. 14, 1985, Ser. No. 797,797

Claims priority, application Netherlands, Nov. 19, 1984, 8403517

Int. Cl.⁴ F25B 17/00

U.S. Cl. 62—467

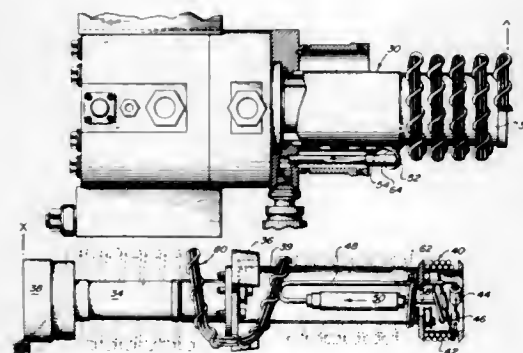
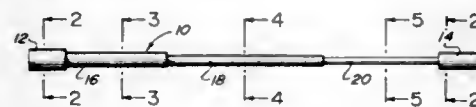
10 Claims



1. In an absorption-resorption heat pump, comprising:
 - a first circulatory flow circuit, for a first system of liquid substances, including volatile components, having:
 - (1) a desorber for separating volatile components from said first system of liquid substances,
 - (2) an absorber,
 - (3) a first heat exchanger,
 - (4) first conduit means extending between said desorber and said absorber through said first heat exchanger, and
 - (5) means for maintaining a flow of said first system of liquid substances through said first conduit means from said desorber to said absorber and from said absorber to said desorber;
 - a second circulatory flow circuit, for a second system of liquid substances, including volatile components, having:
 - (1) a resorber,
 - (2) an evaporator for separating volatile components from said second system of liquid substances,
 - (3) a second heat exchanger,
 - (4) second conduit means extending between said resorber and said evaporator through said second heat exchanger, and
 - (5) means for maintaining a flow of said second system of liquid substances through said second conduit means from said resorber to said evaporator and from said evaporator to said resorber;
 - means for conducting the separated volatile components from the desorber of said first circulatory flow circuit to said resorber of said second circulatory flow circuit;
 - means for conducting the separated volatile components from the evaporator of said second circulatory flow circuit to said absorber of said first circulatory flow circuit; and
 - a branch circuit extending from said second circulatory flow circuit to said desorber of said first circulatory flow circuit, the improvement comprising:
 - a storage vessel in said second conduit means disposed between said second heat exchanger and said resorber;
 - an overflow mechanism in said storage vessel; and
 - means for communicating said overflow mechanism with said branch circuit.

4,643,001
PARALLEL WRAPPED TUBE HEAT EXCHANGER
 Ralph C. Longworth, Allentown, and William A. Steyert, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
 Division of Ser. No. 627,958, Jul. 5, 1984, Pat. No. 4,567,943.
 This application Jan. 14, 1986, Ser. No. 818,833
 Int. Cl.⁴ F25B 19/00; F28D 7/02
 U.S. Cl. 62—514 JT

14 Claims



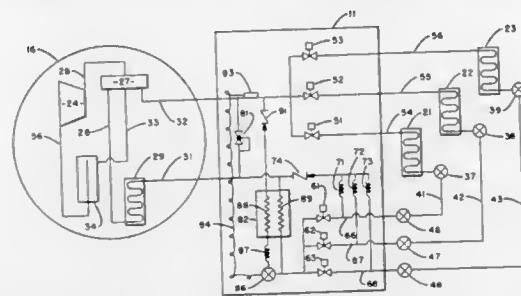
1. In an apparatus for condensing liquid cryogen boil-off in a confined space comprising in combination a multi-stage displacer-expander refrigerator with each stage of said refrigerator containing a heat station, said refrigerator having a coldest stage capable of being cooled to between 10° and 20° K.; a helium recombiner disposed axially and spaced apart from the coldest stage of said refrigerator; a Joule-Thomson heat exchanger coiled around said refrigerator and in thermal contact with each of said heat stations, said heat exchanger constructed and arranged to conduct high pressure helium to a Joule-Thomson valve disposed upstream of said helium recombiner and return low pressure helium, said Joule-Thomson heat exchanger adapted to approximately match thermal gradients in said refrigerator and in the stratified helium between the coldest stage of said refrigerator and said helium recombiner, the improvement comprising; said Joule-Thomson heat exchanger low pressure return comprising in combination a plurality of tubes arranged in a bundle with each of said tubes having a plurality of deformed sections of generally reduced cross-section intermediate the ends of said tubes and at least one high pressure tube helically disposed around said bundle to conduct high pressure helium to said Joule-Thomson valve.

4,643,002
CONTINUOUS METERED FLOW MULTIZONE AIR CONDITIONING SYSTEM
 Richard D. Dennis, Bridgeport, and Theodore L. Woolis, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
 Filed Sep. 26, 1985, Ser. No. 780,465
 Int. Cl.⁴ F25B 39/02

7 Claims

1. In a multizone air conditioning system of the type having a single outdoor coil and a plurality of indoor coil circuits with isolating valves on the respective high and/or low pressure sides thereof for selectively isolating said indoor coil circuits, a noise reduction arrangement comprising:
 means for fluidly connecting one of said isolated coil circuits with the high pressure side of the active system; and
 pressure drop means within said connecting means to meter

a flow of refrigerant to said isolated circuit to thereby reduce the pressure drop across the closed valve on the



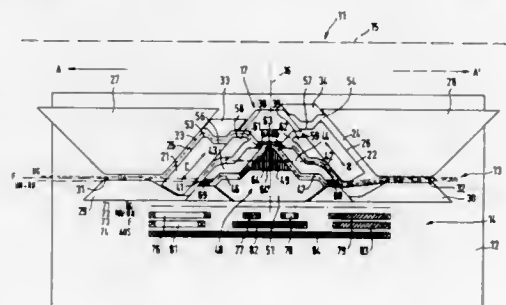
high pressure side thereof so that resulting noise will be reduced when the isolating valve is subsequently opened.

4,643,003
CAM SYSTEM AND METHOD FOR COMBINED LOOP FORMATION AND TRANSFER IN FLAT-BED KNITTING MACHINES
 Hermann Schmodde, Albstadt, German Democratic Rep., assignor to H. Stoll GmbH & Co., Fed. Rep. of Germany
 Filed Sep. 13, 1985, Ser. No. 775,559
 Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433628

Int. Cl.⁴ D04B 7/00

U.S. Cl. 66—78

9 Claims



1. In a cam system for flat-bed knitting machines having a needle cam unit including at least one combined knitting/transfer cam assembly for both carriage travel and transfer directions, said knitting/transfer cam assembly including a knitting cam and a transfer cam, the knitting cam including adjustable needle sinkers and a knitting cam/knitting element that raises needles for knitting, and the transfer cam including at least one transfer cam element and at least one receiving cam element associated therewith, the improvement wherein the knitting cam/knitting element also defines or forms the receiving cam element.

4,643,004
NEEDLE BAR OF A WARP KNITTING MACHINE
 Roland Wunner, Bernstein, Fed. Rep. of Germany, assignor to Liba Maschinenfabrik GmbH, Fed. Rep. of Germany
 Filed Mar. 14, 1986, Ser. No. 839,591
 Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509214

Int. Cl.⁴ D04B 23/00

U.S. Cl. 66—208

2 Claims

1. A needle bar of a warp knitting machine, the needles of which comprise a needle shank bent at an angle, the end of which needle shank is located in relation to the needle bar by a tongue-and-groove arrangement and the bent portion of which is supported against a correspondingly shaped abutment

on the needle bar, characterized in that the end (6) of the needle shank lies in a groove in the needle bar (9) in a manner known per se, and the bent portion (5) bears against an end face (8) of



the needle bar (9) with a face which extends substantially perpendicular to the direction of the movement of the needle (1) through the goods.

4,643,005
MULTIPLE-BOLT LOCKING MECHANISM FOR SLIDING DOORS
 Duane K. Logas, San Bernardino, Calif., assignor to Adams Rite Manufacturing Co., City of Industry, Calif.
 Filed Feb. 8, 1985, Ser. No. 699,847
 Int. Cl.⁴ E05B 65/08

U.S. Cl. 70—95

5 Claims



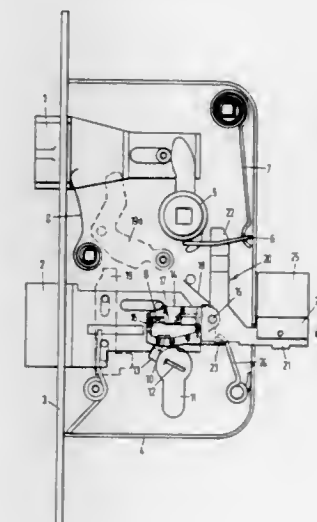
1. A multiple-bolt locking mechanism for a door having a vertical stile slidably movable into and out of closed engagement with a vertical door jamb;
 vertically spaced upper and lower hook-type bolts supported on said door stile for movement to locked and unlocked positions with respect to said door jamb, when in said closed engagement;
 means interconnecting said bolts concerted movements to said locked and unlocked positions;
 key-controlled means operatively connected with one of said hook-type bolts for selectively actuating it to said locked and unlocked positions;
 dead-bolt locking means operatively connected with one of said hook-type bolts; and
 header bolt means connected for reciprocal actuation by said key-controlled means into locked and unlocked positions

respectively with door frame header keepers at door closed and door partially open positions.

4,643,006
LOCK HAVING AN EXTERNAL BOLT UNLOCKING DEVICE
 José Bron, Amsterdam, Netherlands, assignor to Brondool, BV., Amsterdam, Netherlands
 Filed Feb. 4, 1986, Ser. No. 826,141
 Int. Cl.⁴ E05B 59/00

U.S. Cl. 70—107

3 Claims



1. A lock comprising a day bolt (1) and a night bolt (2), each slidable between an extended locking position and a retracted releasing position, said day bolt (1) being urged by a spring (8) to the extended locking position and being retractable by a handle-operated tumbler to the releasing position, said night bolt (2) being urged by a spring to the retracted releasing position and being lockable in both the locking position and the releasing position by a locking mechanism (14) pivotable by a key bit or by the nose (10) of a lock cylinder (11) against a spring biasing force (18) to a position wherein the night bolt (2) is slidable and further including an actuating member (20) for the locking mechanism (14) operable from outside the lock, characterized in that in a lock wherein the locking mechanism is designed as a packet of tumblers (14) through which extends a locking pin (9) projecting laterally from the night bolt (2), the actuating member for the locking mechanism is a swivelling lever (20) having an arm (21) projecting from the lock housing (4), and arranged to be retained by an energized electric magnet (25) in a position in which the lever (20) does not influence the tumblers (14), said lever (20) being loaded by a spring which tends to move it in a direction wherein the lever (20) loads the tumblers to the position releasing the night bolt (2), all this without influencing the day bolt (1).

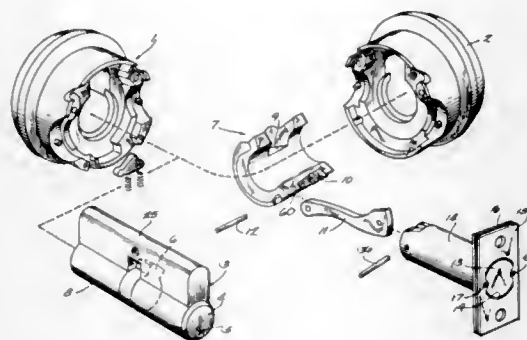
4,643,007
DEADBOLT LOCKING SYSTEM
 Aaron M. Fish, Cote St-Luc, and Jean-Paul Dausseing, Laval, both of Canada, assignors to Ilco-Unican Corp, Rocky Mount, N.C.
 Filed Aug. 19, 1985, Ser. No. 766,441
 Int. Cl.⁴ E05B 65/06

U.S. Cl. 70—134

14 Claims

1. A deadbolt locking system comprising:
 a key cylinder,
 a key cylinder housing defining an opening receiving and rotatably supporting said key cylinder,
 a hub rotatably mounted on said key cylinder housing,

a key cylinder lock cam operated by the key cylinder for rotating and counter-rotating said hub,
a deadbolt mounted in a sleeve for reciprocal movement on a reciprocal axis,
a link pivotally connected between said hub and said deadbolt and moving to overcenter positions above and below said reciprocal axis of said deadbolt,
said key cylinder housing defining a stop engaging said hub defining the extended and locked position of said deadbolt, and



a second stop defining the retracted and unlocked position of said deadbolt and overcenter positions of said link when said hub is rotated and counter-rotated by said key cylinder cam,
and resilient means compressively mounted between said sleeve and said deadbolt to selectively and alternatively bias said link to the overcenter positions and retain said deadbolt in the locked or unlocked positions.

4,643,008

LOCK FOR FUEL FILLER CAP

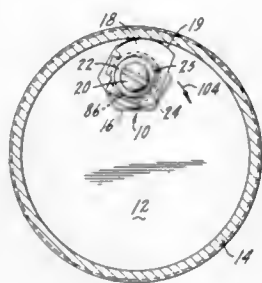
Frederic Lissau, deceased, late of Chicago, Ill. (by Edith Lissau, executrix), assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Mar. 4, 1985, Ser. No. 708,359

Int. Cl.⁴ B65D 55/14

U.S. Cl. 70—167

5 Claims



1. A lock for a fuel filler cap of the type used to close a fuel tank filler neck, comprising:
a hollow, generally cylindrical body having an axial keyway formed therein;
a tumbler body rotatably disposed in the body and mounting a plurality of tumbler plates which are slidable into and out of the keyway; and
locking means eccentrically mounted on and rotatable with the tumbler body about a different axis from the tumbler axis of rotation, the locking means moving tangentially and radially to the fuel filler neck to releasably engage a fixed portion of the fuel filler neck.

4,643,009

STEERING LOCK ARRANGEMENT

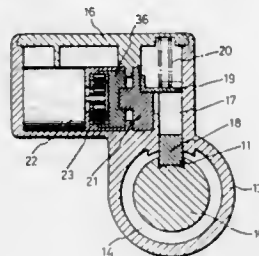
Hidekazu Sato, Kasukabe, Japan, assignor to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1984, Ser. No. 683,043

Int. Cl.⁴ B60R 25/02; E05B 65/12, 43/00

U.S. Cl. 70—252

9 Claims



1. A keyless steering shaft lock arrangement, said arrangement comprising:
a frame,
an electric motor,
a gearing unit mounted in said frame and operatively connected with said electric motor;
a rotator operatively connected with said gearing unit; and
a rod movable between a locking and an unlocking position to engage with and disengage from a reception recess on the steering shaft depending upon rotational position of said rotator, said gearing unit including magnet means mounted thereon, and switches energizable by proximity to said magnet means, said switches being connected to an electronic control circuit adapted for controlling the locking and unlocking movement of said bar.

4. A keyless steering shaft lock arrangement for an automotive vehicle, said arrangement comprising:
a stationary frame mounted on the vehicle,
an electric motor mounted in said frame,
a reduction gearing mounted in said frame and operatively connected with said motor,
an output shaft mounted in said frame and operatively connected with said reduction gearing,
a rotator mounted in said frame and mechanically coupled with said output shaft,
a sector cam defined by said rotator,
a spring biased hanger kept in pressure contact with said sector cam,
a slidable shaft-locking and shaft unlocking bar engageable with the steering shaft, said sector cam having a semi-circular cam surface for holding said bar at an unlocking position and having another cam surface including a rounded apex and a pair of outwardly angled side edges for holding said bar at a locking position, and
a first and a second switch arranged at diametrically opposite positions for magnetically sensing two opposite rotary positions of said output shaft for steering shaft unlocking and locking, said first switch and said second switch being connected to an electronic control circuit adapted for controlling the locking and unlocking movement of said bar.

4,643,010

TWO MOVEMENT TIME LOCK

Bert Krivec; Gary R. Murphree, both of Lexington, and Walter R. Evans, Danville, all of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Mar. 25, 1985, Ser. No. 715,962

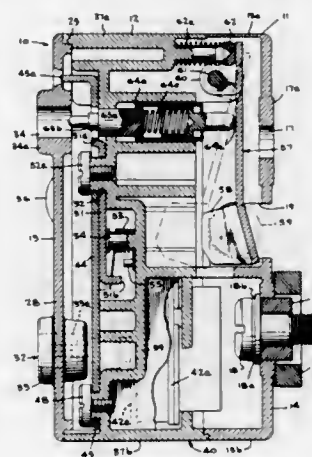
Int. Cl.⁴ E05B 43/00

U.S. Cl. 70—272

17 Claims

1. A time lock for bank vault doors and the like comprising a lock case for enclosing a plurality of timer units of the settable dial type with a clockwork mechanism and associated locking mechanisms and a cover having transparent portions

through which the dials of the timer units can be viewed, the dials of the timer units having a zero position and being rotatable about parallel axes and each including trip means associated therewith adapted to reach a trip position when the timer unit has timed out the desired time period, a pivoted locking lever of generally inverted distorted "T" shaped configuration having a vertically elongated arm pivoted near its lowermost end for movement about an axis paralleling the axes of the timer unit dials and having a pair of oppositely extending foot formations terminating in abutment surfaces to be engaged and moved by said trip means upon reaching the trip position, spring biased lever means interlinked with said locking lever at a location along the arm portion thereof spaced upwardly from the pivot therefor for normally positioning the locking lever at a cocked position when the trip means of the timer unit dials



are displaced from the zero position, a pivoted snubber-bar blocking lever in the lock case normally spring biased by first spring means to a release position freeing a snubber bar to move to an unlocking position, spring biased plunger means in the case biased to engage the blocking lever having a first plunger position for overcoming the spring force of the first spring means and forcing the blocking lever to snubber-bar blocking position and having a portion engagable by the locking lever for releasably restraining the plunger in its position when the locking lever is in cocked position, and said locking lever having means movable to a released position releasing said plunger means from said first position to free said first spring means to move the blocking lever to snubber bar releasing position when the locking lever is displaced from cocked position to released position by engagement with said trip means of said timer units.

4,643,011

METHOD OF MANUFACTURING A CYLINDER MEMBER OF A CYLINDER PISTON UNIT

Felix Wössner, Schweinfurt, and Wolfgang Geiling, Schonungen-Hausen, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 647,985

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332216

Int. Cl.⁴ B21D 17/04

U.S. Cl. 72—113

10 Claims

1. A method of manufacturing a cylinder member (1) of a cylinder piston unit,
said cylinder piston unit comprising said cylinder member (1) and a piston member received by said cylinder member (1);
said cylinder member (1) having a cylinder axis and a side wall with an internal face (2) surrounding a cavity and an external face (3);
said piston member being axially movable within said cavity and defining two working chambers within said cavity,

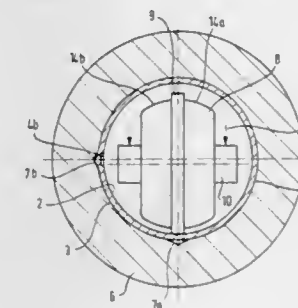
said working chambers being interconnected across said piston member by an interconnection groove (4a, 4b) in said internal face (2) of said wall, said interconnection groove (4a, 4b) extending substantially parallel to said cylinder axis and having terminal entry and exit slopes (5, 5) inclined from said internal face (2) to the base of said interconnection groove;

said method comprising:

providing a substantially cylindrical tube member (1) having said cylinder axis and substantially smooth internal and external faces (2, 3);

supporting said tube member (1) by its external face (3) on a support face having a profile adapted to said external face (3), said support face being provided with a metal receiving groove (7a, 7b) extending in the direction of the cylinder axis to be covered by said tube member (1) and having an axial length and shape conforming to the axial length and shape of the interconnecting groove including the entry and exit slopes thereof;

introducing a roller member (8) into said cavity, said roller member (8) having a roller axis substantially perpendicular with respect to said cylinder axis and a circumferential face extending continuously along a closed circle concentrically about the roller axis and defined by a radially outwardly projecting annular elevation (9) and an annular



downholder face located on each of the opposite sides of said annular projection and spaced radially inwardly of said projection, said downholder faces (14a, 14b) having when regarded in a section containing the roller axis—a radius of curvature substantially corresponding to said internal face (2);

angularly aligning said elevation (9) with said metal receiving groove (7a, 7b) of said support face;

and

pressing said roller member (8) in a direction radial with respect to said cylinder axis and at a location spaced from the ends of said cylinder member into engagement with the internal face (2) of said side wall while simultaneously moving said roller member (8) along said cylinder axis such as to be rotated about its roller axis and embossing said interconnection groove (4a, 4b) including the entry and exit slopes thereof (5, 5) into said internal face (2) of said tube member (1), and said downholder faces engaging said internal faces of said tube on both sides of said annular elevation and rotating with said roller as said elevation presses said tube member into the depth of said interconnection groove determined by the depth of said receiving groove between the entry and exit slopes with the metal corresponding to said interconnection groove (4a, 4b) being urged to flow into said metal receiving groove (7a, 7b).

4,643,012
APPARATUS FOR FORMING EDGEWISE WOUND
CORES

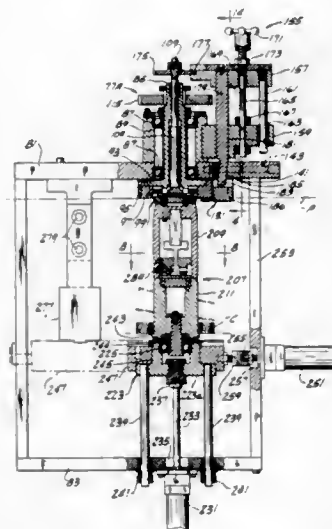
Gustave F. Wiedemann, New Haven, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 12, 1984, Ser. No. 660,116

Int. Cl.⁴ B21C 47/04

U.S. Cl. 72-134

29 Claims



1. Apparatus for forming edgewise wound cores from a continuous strip of generally thin ferromagnetic material, the apparatus comprising:

means operable generally for deforming the continuous strip generally edgewise thereof into a plurality of generally helical convolutions;

a first generally elongate sleeve including a first circumferential surface about which the helical convolutions are received, a chamber within said first sleeve, a first free end on said first sleeve intersecting with said first circumferential surface and said chamber, respectively, and a plurality of openings in said first sleeve spaced from said first free end and intersecting with said first circumferential surface and said chamber, respectively;

a plurality of pins having a pair of opposite end portions and movable in said openings in said first sleeve between protracted and retracted positions, one of said opposite end portions of said pins extending beyond said first circumferential surface of said first sleeve into supporting relation with an accumulated generally axial stack of the helical convolutions received about said first circumferential surface of said first sleeve and said one opposite end portions of said pins being disposed within said openings in said first sleeve when said pins are in the retracted positions thereof, respectively;

a plurality of spring means engaged with the other of said opposite end portions of said pins within said chamber of said first sleeve and operable generally for urging said pins toward the protracted positions thereof, respectively;

a cam movable in said chamber of said first sleeve between an at-rest position and a camming position and including a plurality of cam surfaces associated in camming engagement with said other opposite end portions of said pins, respectively;

a spring in said chamber of said first sleeve and engaged with said cam to urge said cam toward the at-rest position thereof; and

a second generally elongate sleeve arranged generally in axial alignment with said first sleeve and movable between a position displaced from said first sleeve and another position at least adjacent thereto, said second sleeve including a second circumferential surface at least generally

in axial alignment with said first circumferential surface of said first sleeve, a second free end intersecting with said second circumferential surface and disposed at least in part generally in opposed relation with said first free end of said first sleeve and said cam therein, said second free end being responsive to movement of said second sleeve from the displaced position toward the another position thereof to abut and move said cam from the at-rest position toward the camming position thereof against said spring so as to drive said cam surfaces into the camming engagement thereof with said other opposite end portions of said pins and move said pins toward the retracted positions thereof against said spring means thereby to disassociate said one opposite end portions of said pins from the supporting relation thereof with the accumulated axial stack of the helical convolutions received about said first circumferential surface of said first sleeve, and a flange on said second sleeve spaced from said second free end and extending beyond said second circumferential surface, the accumulated axial stack of the helical convolutions being transferred from said first sleeve and received about said second circumferential surface of said second sleeve in supported relation on said flange thereof when said pins are moved into the retracted positions thereof, respectively.

4,643,013

COIL GUIDE SYSTEM FOR HOT STRIP MILLS

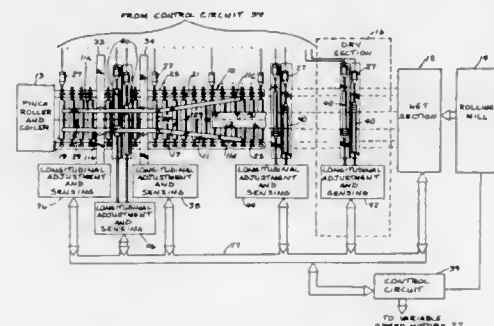
David T. Blazevic, 201 Lake Dr.—Unit 1A, Olympia Fields, Ill. 60461

Filed Jun. 25, 1985, Ser. No. 748,483

Int. Cl.⁴ B21B 39/14, 43/04

U.S. Cl. 72-252

15 Claims



1. An apparatus for guiding elongated steel strips over a series of rollers mounted on a table, said apparatus comprising: at least first and second pairs of dual-diameter rollers in said series of rollers wherein each roller is mounted on said table in a position that is reversed with respect to the position of the other dual-diameter roller in the pair, each dual-diameter roller being mounted for rotation about its longitudinal axis for guiding the elongated steel strips along the center of the table;

a first section of each dual-diameter roller having a first diameter for supporting the strips when they are centered on the table;

a second section of each dual-diameter roller adjacent said first section and having a gradient formed by a diameter which changes along the longitudinal axis of the roller so as to form a sloped surface on each of said dual-diameter rollers such that each of said first and second pairs of dual-diameter rollers form a channel in the strip's direction of motion, whereby the side edges of said elongated steel strips engage the sloped surface when the leading ends of said strips wander from a central position on said table so as to inhibit, but not prevent, cambering of the strip and movement of the strip to an off-centered position and to redirect the leading end of the strip to a centered position on said table;

a pair of parallel beams mounted to said table at its downstream end and over a said first pair of dual-diameter rollers so as to form a channel that guides said strips toward the center of said table; and
said second pair of dual-diameter rollers located upstream of said pair of parallel beams and each of said rollers in at least said second pair including a third section of a second diameter greater than the first diameter of said first section, each of said third sections supporting sides of said elongated strips that have climbed over an associated second section of a dual-diameter roller, thereby causing the faster surface velocity of each of said third sections to urge the sides of the strip resting on the third sections to move at a faster velocity than the opposite sides of the strips resting on said first sections so as to direct the strips back toward the center of said table.

4,643,014

VEHICLE SUPPORT ASSEMBLY

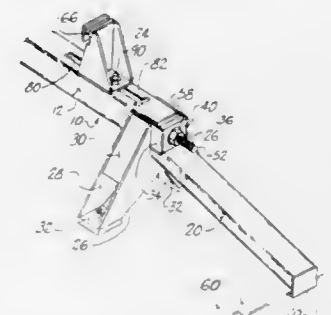
Timothy L. Eppinger, 119 E. Grandview Ave., Zellenople, Pa. 16063

Filed Oct. 11, 1985, Ser. No. 786,684

Int. Cl.⁴ B21D 1/12

U.S. Cl. 72-305

7 Claims



1. A support assembly for stationarily securing an automobile in an elevated, substantially level position on a floor surface, including a freestanding bench structure having spaced-apart pedestals adapted for interconnection by an elongated crossbeam, each of said pedestals having a vertically-oriented weight-bearing portion terminating upwardly in an integral pocket, said pocket having a laterally-facing opening, a tension leg projecting in a direction generally opposite from said opening, said pocket being adapted to fitably receive therein an end of said crossbeam, said pocket having a back plate portion defining the end of said pocket opposite said opening, means for adjustably securing an end of said crossbeam to said back plate and selectively adjusting the distance between the crossbeam end and said back plate, said tension leg having means at its outer end to removably connect it to a stationary anchor whereby selective adjustment of the securing means to close the distance between said crossbeam and said back plate at either of said pedestals will exert a pulling force on said tension leg and thereby firmly secure the bench to said anchor.

4,643,015

APPARATUS FOR REPAIRING DEFORMED,
YIELDABLE STRUCTURES

Byron A. Larson, 116 LaCrosse Ave., S., San Francisco, Calif. 94080, and John J. Molteni, 540 Keelson Cir., Redwood City, Calif. 94065

Filed Sep. 23, 1985, Ser. No. 778,802

Int. Cl.⁴ B21D 1/12

U.S. Cl. 72-305

5 Claims

1. An apparatus for repairing a deformed, yieldable structure comprising:

a frame having an outer boundary;
a platform secured to said frame having both an outer boundary and an upper surface disposed above said frame,

said upper surface of said platform being adapted to receive and support the deformed, yieldable structure;
restraining means disposed at the outer boundary of said platform and at a selected location on the deformed, yieldable structure for securing the deformed, yieldable structure to said platform for restraining the deformed, yieldable structure from movement in a predetermined direction relative to said platform; and

pull-tower means mounted on said frame and movable along the outer boundary of said platform, said pull-tower means being activated for applying a restoring force to the deformed, yieldable structure to move in the direction in which the deformed, yieldable structure is restrained by said restraining means;

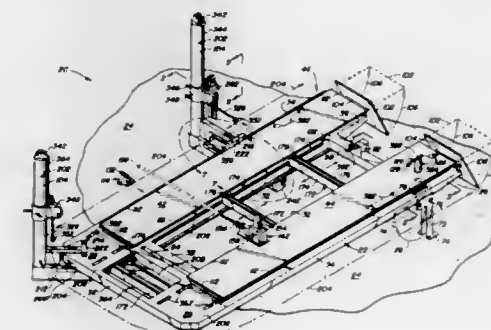
said pull-tower means including:

a post having an axis extending above the upper surface of said platform outside the outer boundary thereof;

power head means adjustably secured to said post along said axis of said post, said power head means being activated for producing a force for application to a predetermined location on the deformed, yieldable structure;

winch means mounted at the upper end of said post and having a cable, one end of said cable being attached to said power head means for raising and lowering said power head means along said post; and

coupling means for said power head means connecting the



predetermined location on the deformed, yieldable structure at which said pull-tower means applies a restoring force for repairing the deformed, yieldable structure;

said power head means including:

a power head frame having a collar surrounding said post;
an outer pulley on said power head frame in spaced relation to said post, said outer pulley being rotatable about an axis which is perpendicular to a radial line extending outwardly from and perpendicular to said axis of said post;

a power cylinder secured to said power head frame intermediate the axis of rotation of said outer pulley and said post, said cylinder having an axis disposed perpendicular to a plane passing through said radial line and the axis of rotation of said outer pulley, said cylinder being disposed with one end thereof projecting upwardly above said plane; and

an upper pulley secured to the upper end of said cylinder, said upper end of said cylinder projecting upwardly above the radial line and rotatable about an axis which is disposed parallel to the radial line, said coupling means extending along an inverted, U-shaped path upwardly from its connection with said power head means, over said upper pulley, then downwardly to engage said outer pulley, and thence outwardly from said outer pulley of said power head means to the predetermined location on the deformed, yieldable structure at which said pull-tower means applies a force.

4,643,016

SLAT BENDING TOOL

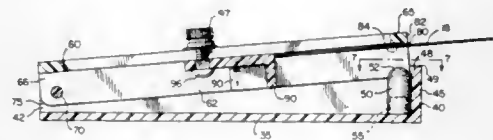
Frank G. Barberine, and David D. Flora, both of c/o Arcanum Precision Products, P.O. Box 114, Arcanum, Ohio 45304-0114

Filed Mar. 14, 1986, Ser. No. 839,847

Int. Cl.⁴ B21D 31/00

U.S. Cl. 72—387

11 Claims



9. A hand tool for crimping sections of venetian blind slat material to form a right angle bend such as for a valance or the like, comprising:

a lower member having a working end and a remote end, means associated with said working end thereof defining a low friction non-marring transverse surface portion to permit the folding movement of a slat therepast without marking said slat, means immediately inward of said transverse surface portion defining a high-friction resilient surface for engaging and gripping such slat during forming;

an upper member having a remote end and a forming end, means pivotally connecting said upper member to said lower member providing for movement of said members between an open slat-receiving position and a closed slat-bending position, said upper member at said forming end thereof having in said top transverse metal-forming surfaces joined along a generally right-angled edge which edge in said closed position is immediately adjacent said lower transverse surface portion and in immediately superimposed relation to said resilient surface, whereby a venetian blind slat partially inserted into said channel members between the sides thereof in said open position is transversely folded about said edge and along said forming surfaces by moving said members to said closed position.

4,643,017

PRESS HAVING NOVEL GUIDE BARS

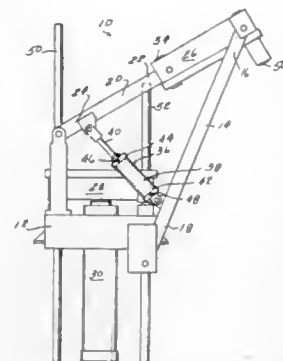
Richard E. Nelson, 53 E. Tacoma, Clawson, Mich. 48017
Division of Ser. No. 591,124, Mar. 19, 1984, Pat. No. 4,580,436.

This application Jan. 21, 1986, Ser. No. 820,061

Int. Cl.⁴ B21J 13/00

U.S. Cl. 72—446

2 Claims



1. In a press for forming a work piece; the press comprising a base, a first platen supported by the base, a movable platen carried by the base and movable between a first position adjacent the base and a second position adjacent the first platen, the invention comprising:

a plurality of guide rods each having a free end, said guide rods movable with and carried by the movable platen; guide bushings carried by the first platen, said guide bushings positioned to receive said guide rods and align the first and movable platens as the movable platen is moved toward the first platen; wherein when the movable platen is in the first position said guide rods are disengaged from said guide bushings.

4,643,018

RECTANGULAR BOX-LIKE HOUSING FOR A BENDING MACHINE

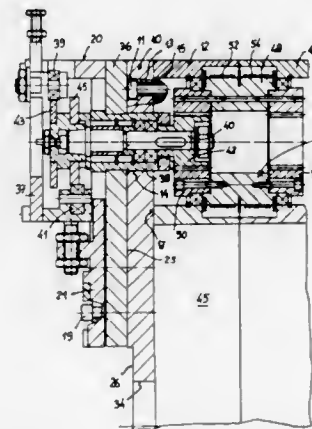
Adolf Wunsch, Ried 210, D-8959 Seeg, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 631,020, Jul. 17, 1984, Pat. No. 4,502,314, which is a continuation-in-part of Ser. No. 250,691, Apr. 3, 1981, abandoned. This application Dec. 3, 1984, Ser. No. 677,566

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3425994

Int. Cl.⁴ B21J 13/00

U.S. Cl. 72—456

20 Claims



1. A rectangular box-like housing for a bending machine, comprising a housing having a front wall with a front face, a driving means within said housing, a plurality of slide units removably fastened to the front face of the front wall, each one of said plurality of slide units comprising a reciprocally mounted tool carrier and a drive mechanism for said slide unit, said drive mechanism including rotation means mounted in a frame of the slide unit coupled with the driving means by a plug-in connector means, the front wall being a plate having a plurality of through-holes, with the connector means of each one of the plurality of slide units passing through one of the plurality of through-holes in the front plate, the front plate together with said plurality of slide units fastened thereon being removably fastened to a front face of the housing with the connector means forming a plug-in connection with said driving means.

4,643,019

POROUS END PLUG DISK FOR TESTING CORE SAMPLES

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 651,561, Sep. 14, 1984, Pat. No. 4,561,289. This application Oct. 25, 1985, Ser. No. 791,627

The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.

Int. Cl.⁴ G01N 15/08

U.S. Cl. 73—38

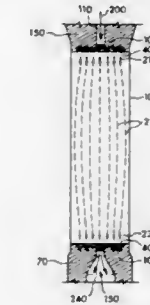
8 Claims

1. An end plug abutting an end of a core sample during testing of said core sample, said end plug being in fluid commu-

nication with a fluid and capable of delivering said fluid into said end of said core sample, said end plug comprising:

a porous disk (400) having a substantially flat first surface (410) abutting a face (100) of said end plug and a substantially flat second surface (420) abutting said end of said core sample;

said face (100) having at least one circular channel (330, 340) formed therein between the center and outer circumference of said face, a plurality of radial channels (350)



formed in said face in fluid communication with said at least one circular channel (330, 340) and a central channel (360) formed in the center of said face from which said plurality of radial channels (350) emanate outwardly to said circumference;

said central channel (360) in fluid communication with said fluid for extending said fluid through said radial channels (350) into said at least one circular channel (330, 340), through said porous disk and into said core sample.

4,643,020

VISCOSIMETER

Werner Heinz, Dabringhauserstrasse 72, 5000 Köln-Dellbrück, Fed. Rep. of Germany

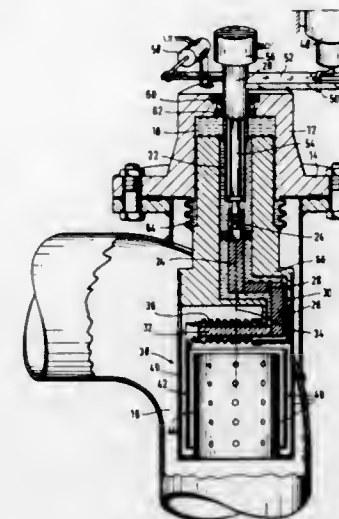
Filed Jun. 11, 1985, Ser. No. 743,469

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3421715; Jul. 16, 1984, 3426139

Int. Cl.⁴ G01N 11/14

U.S. Cl. 73—59

10 Claims



1. An oscillatory viscosimeter comprising:
a housing filled with a liquid and adapted to be connected to a measuring chamber containing a substance having a viscosity to be measured;
a measuring system including a rotationally symmetrical measuring member having an axis of symmetry, disposed

in said measuring chamber when said housing is connected to said measuring chamber;

oscillatory drive means for producing a rotary movement of said measuring member to thereby produce a measuring flow between said measuring member and said substance in said measuring chamber;

linkage means rotationally driven in an oscillatory manner, about an axis of rotation in alignment with said axis of symmetry, by said drive means, and extending through said housing, for connecting said drive means to the measuring member, said linkage means including carrier means at an end thereof for carrying said measuring member, said carrier means extending substantially normal to said axis of rotation of said linkage means;

torque measuring means connected to said linkage means; and

a flexible hollow metal bellows sealingly enclosing said carrier means.

4,643,021

METHOD AND APPARATUS FOR MEASURING THE RHEOLOGICAL CHARACTERISTICS OF A FLUID, IN PARTICULAR OF A BIOLOGICAL FLUID SUCH AS BLOOD

Richard Mattout, Saint-Cloud, France, assignor to Bertin & Cie, Plaisir, France

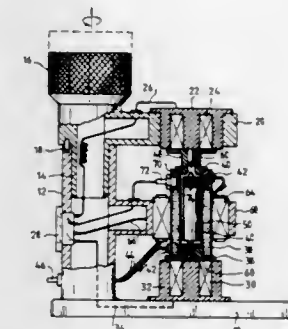
Filed Oct. 22, 1985, Ser. No. 790,186

Claims priority, application France, Oct. 30, 1984, 84 16603

Int. Cl.⁴ G01N 11/16

U.S. Cl. 73—59

13 Claims



1. In a method of measuring the rheological characteristics of a fluid, in particular the viscosity of a biological fluid such as blood, by applying, without contact, a torque to a cylinder which is completely immersed in the fluid, and determining the viscosity of the fluid from measurements of the torque and of the speed of rotation of said cylinder, the improvement comprising the steps of:

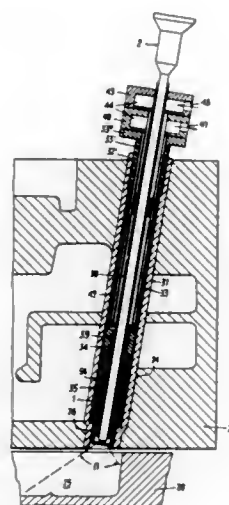
- (a) maintaining said cylinder immersed and suspended in the fluid by means of a magnetic or electromagnetic cylinder-supporting field acting on the axial ends of said cylinder in such a manner as to prevent the ends of said cylinder from contacting said tube;
- (b) driving the cylinder to rotate by means of a rotating electromagnetic field produced by a winding which coaxially surrounds a tube containing the cylinder and the fluid;
- (c) providing the winding with electric current of non-zero frequency;
- (d) varying the magnitude of said electric current to produce a plurality of values of torque on said cylinder; and
- (e) measuring the instantaneous speed of rotation of the cylinder for each value of torque.

4,643,022
DEVICE FOR OBSERVING THE PROCESSES TAKING PLACE IN THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE DURING OPERATION

Peter Werlberger; Irolt Killmann, and Wolfgang Cartellieri, all of Graz, Austria, assignors to AVL Gesellschaft für Verbrennungskraftmaschinen und Messtechnik mbH, Graz, Austria
 Filed Jun. 6, 1984, Ser. No. 617,803
 Claims priority, application Austria, Jun. 8, 1983, 2097/83
 Int. Cl.⁴ G01M 15/00

U.S. Cl. 73—117.3

7 Claims

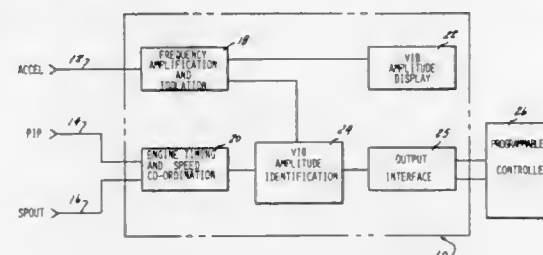


1. The combination of an internal combustion engine which defines a combustion chamber and a bore which communicates with said combustion chamber, said bore leading into said combustion chamber at a mouth, said mouth having a certain inner diameter, and an observing device located in said bore for observing the processes taking place in said combustion chamber during operation thereof, said observing device including (1) an insert sleeve which extends along said bore to a point near the mouth thereof, (2) a window tube for image transmission which is made of a heat-resistant material and which extends within said insert sleeve so as to leave an annular recess therebetween, said window tube having an inner diameter and including a first end which faces said combustion chamber and a second end which faces away from said combustion chamber, said window tube also including a disc-shaped end portion which closes the first end thereof and having an outer diameter which is less than the inner diameter of said bore, (3) adhesive means located in said annular recess to fixedly connect said window tube in said insert sleeve, (4) an optical pickup device which is positionable within said window tube, said optical pickup device including a cylindrical portion which has a free end which is movably located within said window tube, said cylindrical portion having an outer diameter which is less than the inner diameter of said window tube, and (5) a support sleeve which extends along said bore and around the cylindrical portion of said optical pickup device, said support sleeve having an outer diameter which is less than the inner diameter of said window tube, thus leaving a first annular gap between the support sleeve and the window tube therearound and a second annular gap between the support sleeve and the insert sleeve therearound, the first annular gap between the support sleeve and the window tube preventing dissipation of heat.

4,643,023
VIBRATION TESTING APPARATUS
 David F. Capps, 18171 Criswood, Mt. Clemens, Mich. 48044
 Filed Nov. 1, 1985, Ser. No. 793,956
 Int. Cl.⁴ G01M 15/00

U.S. Cl. 73—117.3

7 Claims



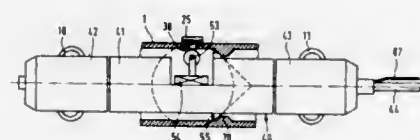
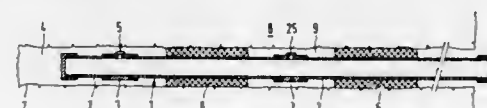
1. A vibration testing apparatus for reciprocating internal combustion engines having a plurality of cylinders, each including at least one detonatable spark plug, comprising: means, mounted on the engine, for detecting the frequency of vibrations in the engine; means for generating a signal corresponding to the detonation of the spark plug in each cylinder of the engine; and means, responsive to the signal generating means and the detecting means, for comparing the detected vibrations in a timed sequence from each cylinder in the engine with pre-set frequencies for each cylinder and generating an output signal for each cylinder indicative of an excessive vibration frequency in any cylinder of the engine.

4,643,024
METHOD OF, AND MEASURING TUBE AND MEASURING PROBE FOR, MEASURING FLUID PRESSURE IN A SEALED BORE HOLE
 Kalman Kovari, Zollikon, and Jakob Köppel, Würenlos, both of Switzerland, assignors to Gesellschaft zur Förderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen, Zurich, Switzerland
 Filed Nov. 18, 1985, Ser. No. 799,473
 Claims priority, application Switzerland, Nov. 21, 1984, 5556/84

Int. Cl.⁴ E21B 47/06

U.S. Cl. 73—151

20 Claims



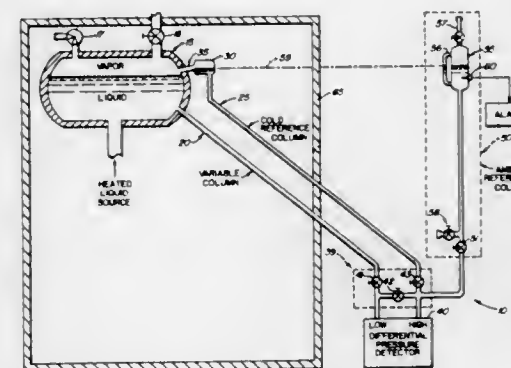
1. A method of measuring fluid pressure in a bore hole bounded by a bore hole wall and comprising the steps of: inserting into said bore hole a measuring tube defining both a measuring tube wall and at least one measuring location at which a pressure sensing element is movably and sealingly supported in said measuring tube wall; sealing at least one predetermined region of said bore hole on two sides of said at least one predetermined region by placing sealing means between said measuring tube and said bore hole wall;

introducing into said measuring tube a measuring probe containing measuring means constructed for measuring the fluid pressure acting upon said pressure sensing element in said bore hole; during said step of introducing said measuring probe into said measuring tube, placing said measuring portion of said measuring probe at said at least one measuring location provided in said measuring tube wall; measuring said fluid pressure in said at least one predetermined region by means of said measuring probe placed at said at least one measuring location; and said step of measuring said fluid pressure entailing measuring the force which is applied to said measuring probe by said pressure sensing element transverse to said measuring tube wall due to said fluid pressure prevailing in said at least one predetermined region of said bore hole on the outside of said measuring tube.

4,643,025
SYSTEM FOR MEASURING LIQUID LEVEL IN A PRESSURIZED VESSEL
 Gerald P. Stone, 425 Nelson Rd., Santa Cruz, Calif. 95066
 Filed Jun. 3, 1985, Ser. No. 740,835
 Int. Cl.⁴ G01F 23/14

U.S. Cl. 73—302

19 Claims

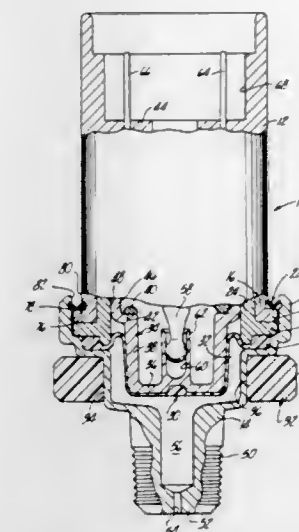


1. A system for measuring liquid level in a pressurized vessel containing a liquid, said pressurized vessel being disposed within a containment vessel, said system comprising: (a) a variable column communicating with said pressurized vessel for indicating the head of the liquid contained in said pressurized vessel; (b) a cold reference column for providing a constant reference head and subject to the environmental changes within said containment vessel, said cold reference column containing a column of liquid, said cold reference column communicating with said pressurized vessel through a wall of said containment vessel; (c) an ambient reference column containing a column of liquid at ambient temperature, said ambient reference column being disposed outside of said containment vessel, said ambient reference column being in communication with said cold reference column for liquid in said ambient reference column to flow into said cold reference column to replace the head of the liquid in said cold reference column when the pressure in said pressurized vessel drops for maintaining a constant head in said cold reference column; and (d) a differential pressure detector intermediate one end of both said variable column and said cold reference column and one end of said ambient reference column sensing the head of said variable reference column and said cold reference column for the measuring of the liquid level in said pressurized vessel, said differential pressure detector being disposed outside of said containment vessel.

4,643,026
COMPOSITE FASTENING DEVICE
 Joseph T. Betterton, Arab, and Alfred H. Glover, Decatur, both of Ala., assignors to Chrysler Motors Corporation, Highland Park, Mich.
 Filed Nov. 12, 1985, Ser. No. 796,336
 Int. Cl.⁴ G01L 7/16, 19/14

U.S. Cl. 73—431

3 Claims



1. A fluid pressure transducer with a relatively easily crushed thin walled housing means and a threaded portion thereof for rotation into a similarly threaded aperture of a support, the housing means having an improved wrenching portion for non-destructive engagement by an installation tool in which the housing means is thin-walled and generally cup-shaped with an axially directed generally cylindrical portion and a radially outwardly directed end portion with axially facing surfaces; a wrenching means molded intimately around the housing's axially directed portion and on both axially facing surfaces; interruption means of the housing's radially outwardly directed end portion permitting portions of the wrenching means on each side of the axially facing surfaces of the housing means to be joined by integral portions of the wrenching means.

4,643,027
APPARATUS FOR TESTING CIGARETTE PACKS AND THE LIKE
 Reinhard Deutsch, Geesthacht; Klaus Jürgen Pohl, Reinbek, and Gerhard Masuch, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körper & Co. KG., Hamburg, Fed. Rep. of Germany
 Filed Jun. 25, 1985, Ser. No. 748,771
 Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3426031

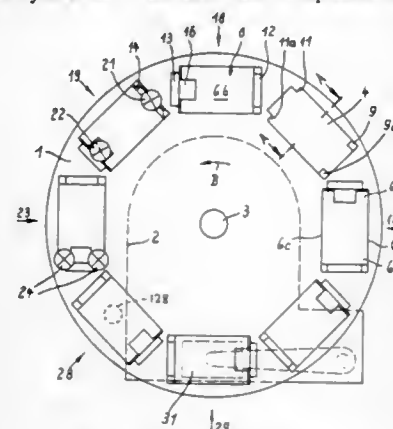
Int. Cl.⁴ B65B 57/00

U.S. Cl. 73—432.1

13 Claims

1. Apparatus for testing block-shaped commodities of the type having a plurality of corner portions, particularly cigarette packs in a packing machine, by monitoring selected portions of such commodities, comprising a conveyor having a plurality of receptacles each arranged to receive one commodity at a time and each having means for engaging and holding a small part of the external surface of the respective commodity so that at least said selected portions of the commodity in a receptacle remain exposed, said engaging means including several devices for engaging at least some corner portions of the commodities in the respective receptacles, at least one of

said devices in each of said receptacles having a substantially triangular commodity-contacting surface; means for driving said conveyor so as to advance said receptacles in a predeter-



mined direction and along a predetermined path; and means for monitoring a plurality of different parameters of each commodity in at least one portion of said path.

4,643,028

PHASING CIRCUIT FOR USE IN A SCANNING TYPE ULTRASONIC EQUIPMENT

Toshio Kondo, Kunitachi, and Masao Kuroda, Matsudo, both of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

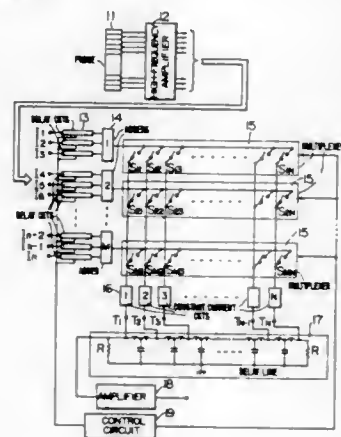
Filed Mar. 11, 1985, Ser. No. 710,388

Claims priority, application Japan, Mar. 19, 1984, 59-53328

Int. Cl.⁴ G01N 29/00

U.S. Cl. 73-625

2 Claims



1. In a scanning type ultrasonic equipment including a probe having a plurality of transducer elements and a phasing circuit for signals which are delivered from said transducer elements on the basis of a received ultrasonic wave, said phasing circuit comprising a constant current circuit for converting said signals from said transducer elements into a constant current signals, and a delay line having taps and driven by said constant current signal from said constant current circuit, said constant current circuit including a current mirror circuit.

4,643,029 ULTRASONIC PROBE FOR THE REMOTE INSPECTION OF NUCLEAR REACTOR VESSEL NOZZLES

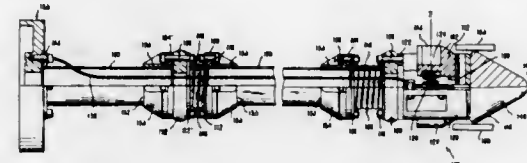
Daniel E. Klinvex, McKeesport, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1983, Ser. No. 546,603

Int. Cl.⁴ G01N 24/04; G21C 17/00

U.S. Cl. 73-632

26 Claims



1. A probe for inspecting an object for locating defects therein, said probe comprising an elongated body which is insertable within an opening in said object, a sensing means movably arranged within said body for sensing defects within said object, and biasing means for biasing said sensing means away from the longitudinal axis of said body while permitting movement toward said axis, said biasing means being operative to cause contact of said sensing means with a portion of said object to be examined when said body is inserted within an opening in said object, wherein said elongated body is formed from a plurality of segments interconnected in end-to-end relationship by resiliently flexible couplings having different elasticities in order to reduce stress on the object resulting from misalignment between the probe and the opening in said object.

4,643,030

TORQUE MEASURING APPARATUS

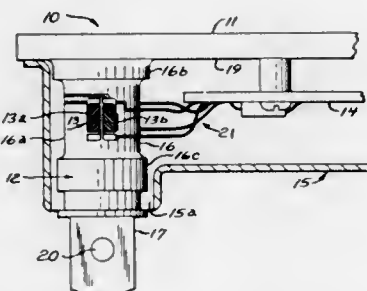
Thomas P. Becker; Donald D. Grover, both of Kenosha, Wis.; Christopher B. Stout, Union Lake, Mich.; Glenn A. Kaufman, and Gene E. Olson, both of Kenosha, Wis., assignors to Snap-On Tools Corporation, Kenosha, Wis.

Filed Jan. 22, 1985, Ser. No. 693,256

Int. Cl.⁴ B25B 23/142; G01L 5/24

U.S. Cl. 73-862.23

16 Claims



1. A torque wrench comprising a torque lever, a torque stud, strain responsive means, signal processing means and digital display means, said torque lever including an elongated rigid arm member having a longitudinal axis, said torque stud having a drive axis extending perpendicular to the longitudinal axis of said arm member near one end thereof, said torque stud including a generally cylindrical base portion having a first end fixed to said arm member near said one end and a second end formed with a drive portion which is adapted to engage a workpiece, said torque stud projecting from said arm member in cantilever fashion supported on said arm member only by its first end, and said strain responsive means being mounted on said cylindrical base portion of said torque stud between its first and second ends for producing a torque signal related to torque transmitted to the workpiece by said torque stud as said arm member is

rotated about the drive axis of said torque stud, said signal processing means responding to torque signals provided by said strain responsive means to cause said digital display means to display a numerical representation of the amount of torque transmitted by said torque stud.

4,643,031

LOAD TESTING

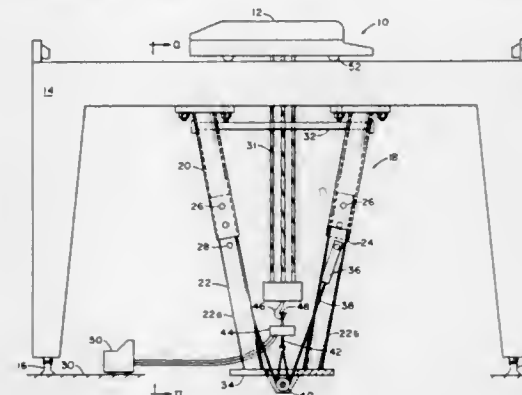
Walter J. Mentzell, 486 Willowbrook Rd., Apollo, Pa. 15613

Filed Aug. 27, 1984, Ser. No. 644,447

Int. Cl.⁴ G01L 5/00

U.S. Cl. 73-862.56

18 Claims



1. A method of testing the load lifting ability of a lifting device, including connecting the lifting device to a securement able to resist a force greater than a weight for which the lifting device is to be tested, and operating the lifting device until the force exerted by the lifting device on the securement equals said weight, wherein the improvement comprises connecting the lifting device to itself as the securement.

4,643,032

FRANGIBLE MOLTEN METAL SAMPLING DEVICE

Dennis A. Lawrenz, Bridgman, and Ken A. Rinkenberger, Stevensville, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Apr. 30, 1985, Ser. No. 729,170

Int. Cl.⁴ G01N 1/12

U.S. Cl. 73-864.53

11 Claims



1. A device for use in the sampling of molten metal comprising: a cylindrical tube of vitreous material having an outer cylindrical section with first and second ends and an inner cylindrical section having first and second ends, said inner

and outer sections integrally joined only at said first ends with said inner section coaxially aligned with and radially spaced from said outer section, said inner section having a smaller outer diameter than the inner diameter of said outer section to provide a cylindrical space between said sections, and wherein said second end of said inner section is restricted to define a generally circular opening having a diameter less than the inner diameter of said inner section.

4,643,033

SAMPLE CUP FOR USE IN X-RAY SPECTROSCOPY

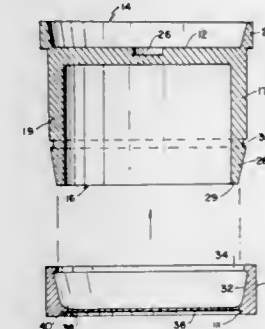
Monte J. Solazzi, Eastchester, N.Y., assignor to Chemplex Industries, Inc., Tuckahoe, N.Y.

Filed Sep. 20, 1985, Ser. No. 778,079

Int. Cl.⁴ G01N 1/10

U.S. Cl. 73-864.91

19 Claims



1. A sample cup for retaining a specimen to be subject to spectrochemical analysis, comprising: a cup-shaped member having a closed bottom surface and an opened top and an annular collar for encircling said opened top, said annular collar having an integrally molded thin film for closing said opened top and including sealing means to seal said specimen within said cup-shaped member during spectrochemical analysis, said annular collar being thick with respect to said integrally molded thin film and said integrally molded thin film being sufficiently thin to enable said specimen contained within said cup-shaped member to be subjected to radiation during said spectrochemical analysis without significantly altering the characteristic radiation of said specimen or the intensity of said radiation impinging upon said specimen within said cup-shaped member.

4,643,034

GYROSCOPICALLY STABILIZED MAGNETIC SUSPENSION SYSTEM

David Favatella, 46 Gould St., Clifton, N.J. 07013

Filed Apr. 11, 1984, Ser. No. 599,014

Int. Cl.⁴ G01C 19/24, 19/10

U.S. Cl. 74-5.46

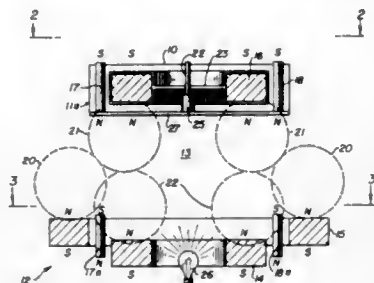
2 Claims

1. A gyroscopically stabilized magnetic suspension system, comprising:

- (A) a base assembly comprising:
 - (i) a directed source of electromagnetic energy disposed substantially at the radial center of said assembly;
 - (ii) a first toroidal magnet surrounding said source of electromagnetic energy, said first toroidal magnet having an axis of polarity transverse to its toroidal plane; and
 - (iii) first anti-spin magnets disposed beyond the outer toroidal radius of said first toroidal magnet, said anti-spin magnets having the same axis of polarity as said first toroidal magnet but having an opposite polarity thereto; and
- (B) a suspended assembly, comprising:
 - (i) electromagnetic energy receiving and converting means;
 - (ii) a motor disposed upon said energy receiving and con-

verting means, having a drive shaft disposed along the axis defined by the axial center of said first toroidal magnet, said motor powered by the output of said energy receiving and converting means;

(iii) a second toroidal magnet surrounding said motor and radially connected to the drive shaft of said motor, said second toroidal magnet disposed parallel to the plane of said first toroidal magnet, said second toroidal magnet having a polarity transverse to its toroidal plane, said polarity opposite to the polarity of the first toroidal magnet to thereby form a repulsion mode therebetween; and



(iv) second anti-spin magnets disposed axially above said first anti-spin magnets, said second anti-spin magnets having the same polarity as said first anti-spin magnets to thereby form an attraction mode therebetween, whereby the rotation of the drive shaft of said motor will induce a rotation of said second toroidal magnet at a velocity defined by said energy receiving and converting means, and said anti-spin magnets radially beyond said second toroid will define a gyroscopic plane of reference within which said second toroidal magnet will function as a gyroscope.

4,643,035

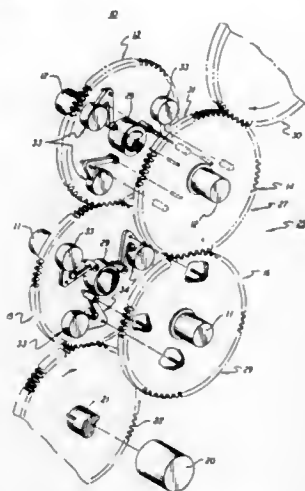
ENERGY TRANSFER AND CONSERVATION APPARATUS

Wesley T. Murphy, 94 Prospect St., Auburn, N.Y. 13021
Filed May 10, 1985, Ser. No. 732,591

Int. Cl.⁴ F16H 33/02, 33/08

U.S. Cl. 74—64

9 Claims



1. Apparatus for minimizing the loss of energy in transit that includes

a pair of parallel support shafts,
a first gear set having an input wheel and a transfer wheel that are spaced apart along one of said shafts to provide a work region therebetween,
a second gear set having an output wheel and a transfer

wheel that are spaced apart along the other shaft to provide a work region therebetween,

said input wheel of said first gear set meshing with the transfer wheel of the second gear set and the output wheel of said second gear set meshing with the transfer wheel of the first gear set,

a plurality of pivot pins mounted for rotation within the input and output wheels, said pivot pins being located along a small diameter circle on said wheels and extending into the work zone between the gear sets,

a plurality of transfer pins mounted for rotation within each of the two liftoff wheels said transfer pins being positioned along a large diameter circle on said liftoff wheels, said large diameter circle being greater than the said small diameter circle, said transfer pins extending into the work zone between the gear sets,

a plurality of L-shaped support arms each having two elongated support members that are joined at an elbow, each of said arms supporting a weight at its distal end and being pivotally mounted at its proximal end by one of said pivot pins,

one of said transfer pins being loosely received in each of said arms at the elbow thereof whereby the arm is permitted to pivot slightly about the pivot pin,

a plurality of stops mounted in the input and output wheels for rotation therewith said stops extending into the work zone, between gear sets, each of said stops being further arranged to engage one of said support arms and support the arm against rotation about the pivot pin when the wheels are turning below a predetermined speed, and
a drive means for turning the wheel at a speed at which the said arms lift off the said stops to realign the forces acting on the wheels.

4,643,036

POWER TRANSMISSION DEVICE IN INDUSTRIAL ROBOTS

Karl-Erik Forslund, Västerås, Sweden, assignor to Asea AB, Västerås, Sweden

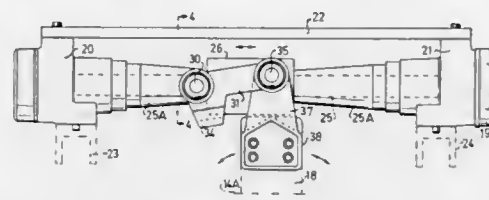
Filed May 15, 1985, Ser. No. 734,196

Claims priority, application Sweden, May 18, 1984, 8402692

Int. Cl.⁴ F16H 21/44

U.S. Cl. 74—105

3 Claims



1. In a power transmission device for use in industrial robots, said power transmission device including a rotatably mounted drive screw which is adapted to being rotated by a motor; a nut means which is mounted on said drive screw to be movable therealong in a plane when said drive screw is rotated, said nut means having arms on opposite sides which mount respective journaling pins which are parallel to one another; a driven member which is movable along a predetermined path in said plane; a pair of parallel links, each of said links having first and second ends, the first end of each of said links including a ball bearing which is rotatably mounted to a respective journaling pin and the second end of each of said links being connected to said driven member,

the improvement wherein said power transmission device includes a torsionally stiff member rigidly connected between said parallel links so as to eliminate any relative angular displacement therebetween.

4,643,037

GEAR CHANGE MECHANISM

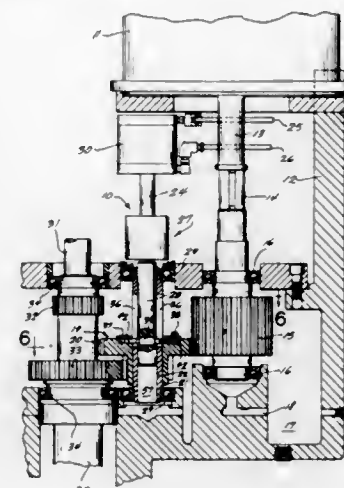
Charles J. Kis, Mukwonago, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Sep. 5, 1984, Ser. No. 647,554

Int. Cl.⁴ F16H 3/22

U.S. Cl. 74—342

5 Claims



1. In a transmission connectable to drive a machine tool spindle and to receive power from a power source, and having a gear train including a gear shiftable along a supporting shaft to establish a specified gear ratio for said transmission, a gear shifting mechanism comprising:

a draw bar:

means for supporting said draw bar for rotary and rectilinear movements;

means for applying a shifting force to said draw bar to move said draw bar rectilinearly; and

means for coupling said draw bar to said gear to establish said gear ratio, wherein said coupling means comprises:

a member secured to said draw bar having a pair of arms extending radially outward from the axis of said draw bar in opposing relationship with each other for distributing said shifting force over a face of said gear to retain said gear in balance relative to said supporting shaft as said gear is shifted and;

means for securing each of said arms to the face of said gear so that said arms extend radially outward from the axis of said gear in opposing relationship with each other.

4,643,038

ELECTRIC MOTOR SERVO FOR CRUISE CONTROL

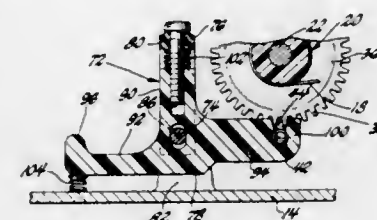
Robert J. Byram, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 23, 1985, Ser. No. 737,241

Int. Cl.⁴ F16H 35/06, 3/34; B60K 31/02

U.S. Cl. 74—397

4 Claims



1. A lever mechanism for engaging a pair of coupling elements through which motion is transmitted to operate the throttle of an engine, the mechanism comprising:

a first member mounted for angular displacement about an axis;

a second member mounted to the first member for angular displacement therewith, the second member having first and second arms extending transverse of the axis to define a relative displacement angle with respect to the axis as measured between an input location on the first arm and an output location on the second arm;

input means coacting at the input location on the first arm for displacing the first arm to a first angular position with respect to the axis as measured from the input location when it is desired to engage the coupling elements;

output means coacting at the output location on the second arm for engaging the coupling elements when the second arm is displaced to a second angular position with respect to the axis as measured from the output location; and

means for adjusting the mounting of the second member in relation to the first member so as to shift the position of the second member at least radially with respect to the axis thereby altering said relative displacement angle of the first and second arms in relation to the axis such that the second arm attains the second angular position when the first arm attains the first angular position whereby the lever mechanism is calibrated to compensate for manufacturing and assembly tolerances.

4,643,039

SPEED REDUCTION GEAR HAVING AXIAL AND TRANSVERSE COMPONENTS WHICH ARE IN EQUILIBRIUM

Roland R. Guichard, 10210 Chaurice, France

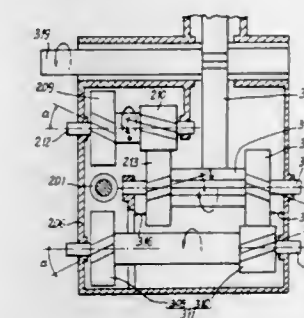
Filed Mar. 13, 1985, Ser. No. 711,482

Claims priority, application France, Mar. 13, 1984, 84 03834

Int. Cl.⁴ F16H 1/16, 1/20

U.S. Cl. 74—410

3 Claims



1. A speed reduction gear having two drive chains, comprising an inlet shaft bearing two endless screws having threads inclined at an angle a in opposite directions, four gear wheels meshing together in pairs and with the endless screws on respective opposite sides thereof, two of the gear wheels which are diagonally opposite to each other being fixed in rotation with respective secondary gear wheels, characterized in that the secondary gear wheels have teeth inclined at an angle b and in opposite directions, the angles a and b being related by the relationship $\tan a / \tan b = D1 / D2$, where $D1$ is the pitch diameter of the gear wheels and $D2$ is the pitch diameter of the secondary gear wheels, said secondary gear wheels each meshing with a respective tertiary gear wheel and the two tertiary gear wheels having their teeth inclined in opposite directions and being borne by an intermediate shaft on which they are fixed in rotation with a gear wheel having straight teeth which is the first gear wheel of a reduction stage, said intermediate shaft being free to move in an axial direction for balancing the transmitted torque.

4,643,040

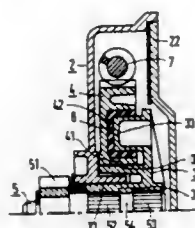
WORM GEAR TRAIN ARRANGEMENT AND HOUSING
Peter Adam, Hoechberg, and Wolfram Knappe, Kitzingen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany
Filed Aug. 7, 1985, Ser. No. 763,351

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429249

Int. Cl.⁴ F16H 1/18

U.S. Cl. 74-425

12 Claims



1. A worm gear train arrangement, comprising: a gear housing having a hole in the center thereof; an output shaft; a catch plate, consisting of a single-piece, injection molded plastic part, having a circular shape and a hole through the center thereof; said output shaft being snugly fitting in said hole in said catch plate connecting said output shaft to said catch plate; a first bearing bushing being a part of said single-piece, injection molded plastic catch plate concentrically located to said center hole for rotatably mounting said catch plate and said output shaft in said gear housing; a worm wheel having a center hole therein which is concentric with said catch plate center hole; a second bearing bushing being a part of said single-piece, injection molded plastic catch plate concentrically located in said worm wheel center hole for slidably mounting said worm wheel thereon; catch means being a part of said single-piece, injection molded plastic catch plate for rotatably linking said catch plate to said worm wheel; an elastic rotating linkage located between said catch means and said worm wheel for elastically connecting said catch means to said worm wheel; and a worm gear drive extending into the housing and engaging the worm wheel to drive the wheel and via the catch plate linkage drive the output shaft.

4,643,041

PRELOADED BALL NUT AND SCREW ASSEMBLY AND METHOD OF MANUFACTURE

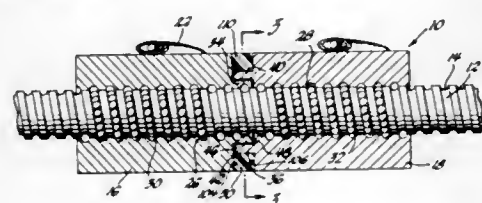
Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1985, Ser. No. 811,712

Int. Cl.⁴ F16H 25/22, 55/18

U.S. Cl. 74-441

5 Claims



1. A ball nut and screw assembly preadjusted and preloaded to inhibit lash between the components thereof, said assembly comprising a pair of helically grooved nut means laterally spaced from one another and operatively connected to a heli-

cally grooved screw by independent circuits of recirculating balls and held captive in helical tracks formed by the helical grooves in each nut and said screw and including ball return passage means, said nuts having a locking means extending thereacross to inhibit relative rotation of said nut means, liquefied and hardenable plastic means operatively applied a liquid under predetermined pressure in the space between said nuts to initially preload load bearing components of said assembly formed by said circuits of recirculating balls and said tracks and subsequently hardening into a unit to maintain said preload on said load bearing components.

4,643,042

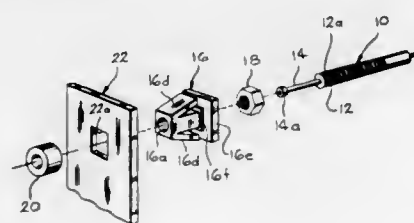
CONTROL CABLE ATTACHMENT ASSEMBLY
Jack E. Swoveland, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 22, 1985, Ser. No. 757,657

Int. Cl.⁴ F16L 1/10

U.S. Cl. 74-501.5 R

6 Claims



1. A control cable attachment assembly comprising: a control cable having an outer casing surrounding a relatively movable cable element, one end of said outer casing provided with an externally threaded portion; an adapter element having an aperture formed therein for slidably receiving the externally threaded end of said cable casing; means for non-rotatably and latchingly securing said adapter element relative to a support member; an adjusting nut threadably mounted on the externally threaded end of said cable casing adjacent one end of said adapter element for adjustably positioning said cable casing in a predetermined position relative to the support member; and means for maintaining said adapter element adjacent said adjusting nut.

4,643,043

STICK TYPE VEHICLE HAND BRAKE LEVER MEANS
Yohichi Furuta, Takeo Yamasaki, Tomio Tachino, and Masayoshi Tanikawa, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Feb. 9, 1984, Ser. No. 578,569

Claims priority, application Japan, Feb. 11, 1983, 58-21863; Jun. 10, 1983, 58-89468[U]; Sep. 12, 1983, 58-142034[U]

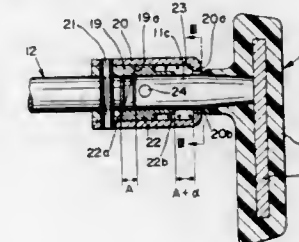
Int. Cl.⁴ G05G 1/00

U.S. Cl. 74-503

6 Claims

1. A vehicle hand brake comprising: braking means for applying braking force in response to linear movement; a longitudinal rod being rotationally and slidably movable about the axis thereof and having a first end attached to said braking means and a second end, said rod also having an outer peripheral surface containing a series of ratchet teeth; support means for receiving said rod and having pawl means

for engaging said ratchet teeth and rigidly positioning said rod relative to said support means; a locking member affixed on said second end and including projection means and a first cam surface having a predetermined cam stroke defined with respect to movement along the axis of said rod; guide means coaxially positioned in relation to said rod for engagement with said locking member and including a sleeve and a housing, said sleeve having a second cam surface complementary with said first cam surface to restrict rotational movement of said first cam surface relative to said second cam surface in response to axial movement less than said cam stroke, said housing having an aperture extending about said rod and including at least one indentation for receiving said projection means by slidably moving said housing a predetermined distance relative to said locking member;



- lever means attached to said housing for positioning said projection means into engagement with said at least one indentation to move said rod about and along said axis and to allow disengagement of said pawl means from said ratchet teeth; and resilient means affixed between said guide means and said locking member for biasing said lever means toward said rod to position said first and second cam surfaces normally in abutment, wherein said cam stroke required to realign said first and second cam surfaces is less than said predetermined distance of axial movement necessary for engaging said projection means of said locking member with said at least one indentation of said housing, thereby preventing disengagement of said pawl means from said ratchet teeth through independent rotation of said lever means when the axial movement of said lever means is less than said predetermined distance.

4,643,044

CLAMPING OF MACHINE CASINGS FORMED FROM AT LEAST TWO PARTS ONE OF WHICH IS MADE FROM A METAL OF RELATIVELY LOW HARDNESS
Georges Bitton, Oullins, France, assignor to Rexroth-Sigma, France

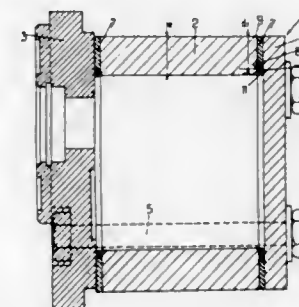
Filed Apr. 9, 1985, Ser. No. 721,449

Claims priority, application France, Apr. 10, 1984, 84 05651

Int. Cl.⁴ F16H 57/02

U.S. Cl. 74-606 R

6 Claims



1. A machine casing comprising at least first and second

body parts, which parts are assembled together by mechanical clamping means with opposing faces of the two body parts facing each other, at least a first body part which is subjected to deforming forces during operation of the machine, which forces are likely to cause micromovements of the said opposing faces, the first body part being made from a metal of relatively low hardness,

a plate having flat surfaces on both sides tightly clamped in position between said opposing faces of the two body parts, the area of said plate on its flat sides generally approximating the shape of the said opposing faces, but being substantially less than the area of the surfaces of the said opposing faces of the two body parts, at least one edge of the plate which is located against the first body part being relatively sharp, and the plate being made from a metal which is of a hardness greater than that of the metal forming said first body part, such that the said sharp edge of the plate bites into the relatively low hardness material of the first body part so as to avoid the micromovements and the resultant local corrosion and the consequent slackening of the mechanical clamping means.

4,643,045

POWER TRANSFER DEVICE FOR FOUR WHEEL DRIVE
Nobuaki Katayama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

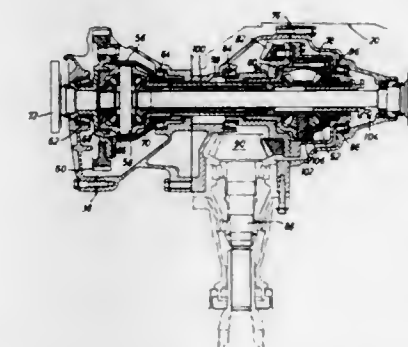
Filed Jul. 10, 1984, Ser. No. 629,519

Claims priority, application Japan, Jul. 11, 1983, 58-125665

Int. Cl.⁴ F16A 37/08

U.S. Cl. 74-695

7 Claims



1. A power transfer device for four-wheel drive in combination with a power transmission having a transmission casing secured at one side thereof to a cylinder block of an internal combustion engine, an input shaft rotatably mounted within said transmission casing and arranged coaxially with a crankshaft of said engine, an output shaft rotatably mounted within said transmission casing in parallel with said input shaft, a change-speed gearing mounted on said input and output shafts, and an output gear integral with said output shaft, the power transfer device comprising:

a transfer casing detachably secured at one side thereof to said transmission casing;
a first inner casing positioned within said transmission casing and rotatably supported by a pair of axially spaced bearings which are supported by said transmission casing;
a second inner casing positioned within said transfer casing coaxially with said first inner casing and rotatably supported by a pair of axially spaced bearings which are supported by said transfer casing;
an output gearing assembled within said transfer casing;
a first ring gear mounted on said first inner casing for rotation therewith and in mesh with said output gear on said output shaft;
a second ring gear mounted on said second inner casing for

rotation therewith and drivingly connected to said output gearing;

- a first differential gear unit for front wheel drive positioned within said first inner casing, said first differential gear unit including a first gear case rotatably mounted within said first inner casing;
- a first wheel axle having an inner end, said inner end being drivingly connected with said first differential gear unit and extending outwardly through said first inner casing;
- a second wheel axle having an inner end, said inner end being drivingly connected with said first differential gear unit and extending outwardly through said first and second inner casing;
- a second differential gear unit for rear wheel drive positioned within said second inner casing, said second differential gear unit including a second gear case rotatably mounted within said second inner casing, in surrounding relationship with said second wheel axle and drivingly connected to said first inner casing and, an output element journaled on said second gear case and drivingly connected to said first gear case, to said first differential gear unit; and

means for locking said second differential gear unit.

4,643,046

ACCESSORY DRIVE DEVICE IN ENGINE

Kazutoshi Kaneyuki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

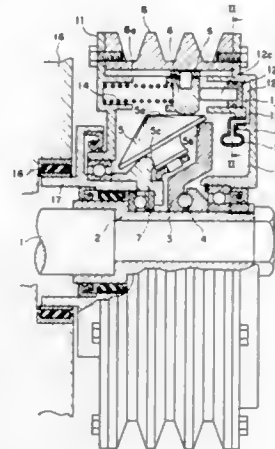
Filed Nov. 29, 1985, Ser. No. 802,998

Claims priority, application Japan, Nov. 30, 1984, 59-182906[U]

Int. Cl.⁴ F16H 17/06, 15/50, 15/60

U.S. Cl. 74—752 C

6 Claims



1. A device for driving accessories such as an alternator, a cooling water pump, an air-conditioning compressor or the like, utilizing power taken from an output shaft of an engine, said device comprising:

- an input shaft pivotally supported to a stationary element and receiving output from said output shaft and rotated at the rotational speed corresponding to that of said output shaft;
- a transmission output member rotatably supported on said input shaft for transmitting the power to said accessory;
- a planetary cone which can rotate on said input shaft in the revolution around the axial center of the input shaft and in the rotation around the axial center inclined with respect to said axial center of the input shaft, said planetary cone having a first part of nearly conical shape, and a second part of nearly cylindrical shape leading to a bottom surface of the first part, and first, second and third frictional transmission surfaces being formed on the conical surface of the first part, the bottom periphery of the first part and

the circumferential surface of the second part, respectively;

- an input transmission member installed rotatable with said input shaft and engaged at outer periphery of frictional engagement with the second frictional transmission surface of said planetary cone;
- a support shaft of nearly cylindrical shape having a center hole through which said input shaft passes and arranged on coaxial relation to said input shaft and supported rotatably with respect to said stationary member;
- a one-way clutch installed between said stationary member and said support shaft for allowing said support shaft to rotate only in the rotational direction of said output shaft;
- an orbit ring fixedly supported by said support shaft, said orbit ring extending along the revolution path of said planetary cone and having an annular frictional engaging surface to be engaged in frictional engagement with the third frictional transmission surface of said planetary cone;
- a shifting ring supported on said transmission output member and movable only in the axial direction thereof and having a frictional engaging surface engaged in frictional engagement with the first frictional transmission surface of said planetary cone always within the movable region in the axial direction; and
- a transmission ratio varying member for varying the position of said shifting ring in a direction toward or away from the rotation center of said planetary cone using the rotational speed of said transmission output member as a parameter and suppressing the rise of the rotational speed of said transmission output member in the range of the rotational speed of said input shaft larger than a prescribed value.

4,643,047

SPEED REDUCING GEARING MECHANISM EMPLOYING TROCHOIDALLY FORMED GEAR SURFACES FOR ROLLING TORQUE TRANSMISSION

Robert Distin, Louisville, and James Shaffer, Estes Park, both of Colo., assignors to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

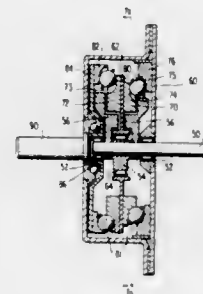
Filed Oct. 20, 1981, Ser. No. 313,442

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.

Int. Cl.⁴ F16H 1/28

U.S. Cl. 74—804

37 Claims



23. A speed reducing transmission, comprising:

- an input;
- an output;
- a stator;
- an intermediate member between said stator and said output;
- means for orbitally driving said intermediate member;
- a plurality of rolling torque transmitting elements arranged between said intermediate member and said output, and between said intermediate member and said stator, said intermediate member being provided with first and second race members on either side thereof in rolling contact with said rolling elements, wherein said stator is provided with a race member complementary to the confronting race member of said intermediate member and upon which said

rolling elements therebetween bear as they roll, said complementary race members being formed with substantially trochoidal curvature such that said rolling elements travel along a substantially trochoidal path, said complementary race members being further formed such that all of said rolling elements disposed therebetween are maintained in substantially constant rolling contact with both of said complementary race members.

4,643,048

METHOD OF CONTROLLING AUTOMATIC TRANSMISSION IN ACCORDANCE WITH DETERMINATION OF OPTIMUM GEAR RATIO

Toshihiro Hattori, Ayase; Makoto Urihara, Yokohama; Hitoshi Kasai; Yasuyoshi Asagi, both of Kanagawa, and Noriaki Ogawa, Tokyo, all of Japan, assignors to Isuzu Motors Limited, Tokyo and Fujitsu Limited, Kawasaki, both of Japan

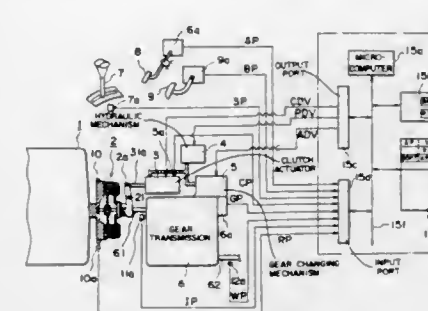
Filed Jun. 28, 1984, Ser. No. 625,695

Claims priority, application Japan, Jun. 30, 1983, 58-118450

Int. Cl.⁴ B60K 41/18, 41/10

U.S. Cl. 74—866

10 Claims



1. A method of controlling the gear changing operation in an automatic transmission having a gear transmission, a gear changing actuator assembly for changing gears in the gear transmission, a vehicle speed sensor for detecting a vehicle speed, an accelerator pedal, an accelerator pedal sensor for detecting the extent of depression of the accelerator pedal, and an electronic control system responsive to signals from the vehicle speed sensor and the accelerator pedal sensor for determining an optimum gear position and controlling the gear changing actuator assembly to operate the gear transmission to select the optimum gear position, comprising the steps of:

- (a) detecting an extent of depression of the accelerator pedal from the accelerator pedal sensor, and a vehicle speed from the vehicle speed sensor;
- (b) determining an optimum gear position based on the extent of depression of the accelerator pedal and the vehicle speed; and
- (c) controlling the gear changing actuator assembly to operate the gear transmission to select a neutral position, for interrupting gear changing operation until the accelerator pedal is depressed, when said determined optimum gear position is lower than a currently selected gear position and when the extent of depression of the accelerator pedal is zero.

4,643,049

CONTROL SYSTEM FOR A HYDRAULIC TRANSMISSION TO PREVENT VEHICLE CREEP

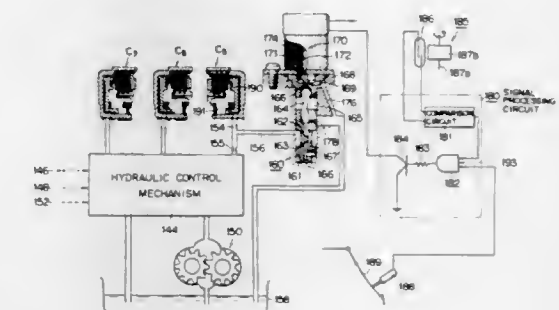
Masao Nishikawa, Tokyo; Takashi Aoki, Fujimi; Yoichi Sato, Wako, and Hiroshi Yoshizawa, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 534,214, Sep. 20, 1983, abandoned. This application Oct. 18, 1985, Ser. No. 788,520

Int. Cl.⁴ B60K 41/06

U.S. Cl. 74—868

13 Claims



1. A hydraulic shift transmission for a vehicle including a hydraulic torque converter for transmitting a torque from an engine to a road wheel driving system, comprising:
 - a plurality of gear trains interposed between the hydraulic torque converter and the road wheel driving system; said gear trains being different in the gear ratio;
 - said gear trains including a first speed gear train adapted for the running at relatively low speeds;
 - a plurality of clutch mechanisms alternatively installed in said gear trains;
 - said clutch mechanisms being each hydraulically connectable and disconnectable;
 - said clutch mechanisms including a first speed clutch mechanism installed in said first speed gear train having a spring with a preset load;
 - a hydraulic control system for selectively supplying a hydraulic pressure to said clutch mechanisms in accordance with shift operations;
 - an oil supply line connecting said hydraulic control mechanism to said first speed clutch mechanism;
 - a release valve means, provided in the oil supply line, for releasing said hydraulic pressure while the vehicle speed is lower than a preset reference value with the engine idling;
 - an oil return port open relative to said oil supply line and releasing said hydraulic pressure while opened;
 - a piston member having an axis and being slidable axially for closing said return port;
 - a resilient member normally biasing said piston member in one axial direction such that said piston member closes said return port;
 - orifice means provided upstream of said return port for maintaining the pressure applied to the first speed clutch mechanism while said return port is open to be slightly less than the preset load of the clutch spring;
 - and a hydraulic circuit means for, at least either when the vehicle speed becomes higher than said preset reference value or the engine is accelerated, gradually allowing said piston member to be moved in said one axial direction by the biasing of said resilient member.

4,643,050

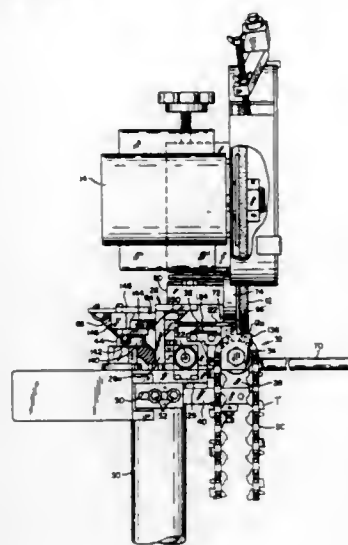
SAW CHAIN DEPTH GAUGE GRINDER

E. Ray Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524
Continuation-in-part of Ser. No. 544,435, Oct. 21, 1983, Pat. No. 4,522,087. This application Jun. 7, 1985, Ser. No. 742,715
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.⁴ B23D 63/16

U.S. Cl. 76—25 A

14 Claims



1. A saw chain grinding machine for grinding the depth gauges of saw chain cutter links each having both a front depth gauge and a rear cutter tooth, said machine comprising: grinding means including a grinding surface; carrier means for mounting a saw chain with the depth gauge of a selected cutter link in grinding position thereon, said carrier means being movable in a predetermined path to move said cutter link depth gauge toward and away from said grinding means; mounting means mounting said carrier means and said grinding means for generally vertical relative movement therebetween; indexing means positioned along said path and cooperable with the cutter tooth to induce generally vertical relative movement between said grinding means and said cutter tooth when said carrier means is moved along said path to determine the grinding position of said grinding surface relative to the depth gauge; and shield means positioned along said path cooperable with the top of the cutter tooth and the indexing means to prevent any sliding contact with the cutter tooth as said indexing means induces generally vertical relative movement between said grinding means and cutter tooth.

4,643,051

PACK CARBURIZING PROCESS FOR EARTH BORING DRILL BITS

Robert W. Simons, Pasadena; Danny E. Scott, and John R. Poland, both of Houston, all of Tex., assignors to Hughes Tool Company-USA, Houston, Tex.

Filed Dec. 6, 1985, Ser. No. 806,253

Int. Cl.⁴ C21D 9/22

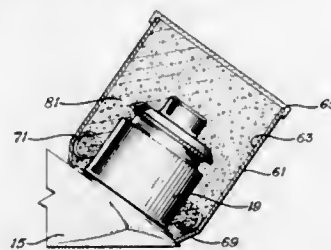
U.S. Cl. 76—108 A

5 Claims

1. A method of manufacturing an earth boring drill bit of the type having a bearing pin extending from a head section of the drill bit for rotatably mounting a cutter, comprising the steps of:

providing a container having opposing end openings with sidewalls therebetween which define a container interior;

placing the container over a portion of the head section so that the pin extends within the interior of the container; installing a spring spacer within the interior of the container about at least a portion of the circumference of the bearing pin at at least one axial location;



packing the container with a particulate treating medium; covering the container; and placing the pin and container into a furnace for a time and at a temperature to activate the treating medium.

4,643,052

BEVEL GEAR DRIVEN OFFSET SCREWDRIVER ARRANGEMENT

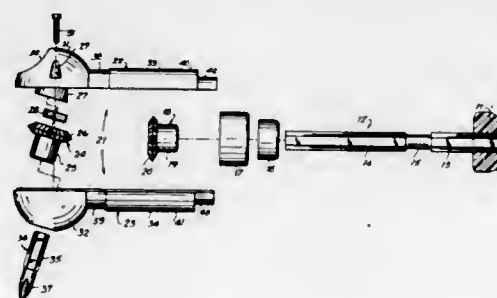
John A. Badiali, Brockton, Mass., assignor to Custom Spec Engineering, Inc., Brockton, Mass.

Filed Mar. 21, 1985, Ser. No. 714,432

Int. Cl.⁴ B25B 17/00

U.S. Cl. 81—57.28

5 Claims



1. A bevel gear driven offset screwdriver arrangement, comprising:

- (A) a housing including two separate half-shell elements assembleable in an assembled condition to bound an internal space, said assembled elements surrounding an elongated passage centered on a first axis and having end portions surrounding an opening that communicates with the passage and that is centered on a second axis that includes an obtuse angle of between substantially 100° and 135° with the first axis, said housing having first, second and third tubular regions respectively having first, second and third exterior circular walls arranged next to one another along the passage, said third circular wall having a larger exterior diameter than said first circular wall;
- (B) a shaft extending through and beyond the passage and mounted on the housing for rotation about the first axis;
- (C) a handle operatively connected to the shaft for rotating the shaft about the first axis;
- (D) means for holding the half-shell elements together in the assembled condition, including a smaller and a larger holding ring having smaller and larger interior circular walls respectively, said smaller and larger interior circular walls having smaller and larger diameters respectively corresponding to said first and third exterior circular walls of the elements,
 - (i) said smaller interior circular wall of the smaller holding ring circumferentially and tightly engaging the first exterior circular wall of the assembled elements, and for circumferentially holding the half-shell elements to-

gether in the assembled condition at one holding zone on the first axis,

- (ii) said larger interior circular wall of the larger holding ring circumferentially and tightly engaging the third exterior circular wall of the assembled elements, and for circumferentially holding the half-shell elements together in the assembled condition at another holding zone on the first axis;
- (E) a first bevel gear mounted on the shaft for rotation within the housing about the first axis therewith at a region close to the opening;
- (F) a second bevel gear mounted in the opening for rotation within the end portions about the second axis and meshing with the first bevel gear in the internal space of the housing, said second bevel gear having a coaxial central recess of a non-circular configuration;
- (G) a bit element having a bit portion of a predetermined configuration compatible with that of a threaded element to be manipulated, and a support portion of a cross-sectional configuration compatible with that of the recess of the second bevel gear for the support portion to be received in the latter and entrained for joint rotation with the second bevel gear during the operation of the arrangement in response to the rotation of the first bevel gear with the shaft and the handle, said support portion of the bit element being of a magnetically attractable material and having a bearing surface; and
- (H) means for retaining the support portion in the central recess of the second bevel gear against falling out of the latter during periods of non-use of the arrangement, including a permanent magnet mounted in the housing in alignment with the second gear and attracting the support portion of the bit element with a magnetic force that is sufficient to keep the support portion in the central recess until overcome by the user of the arrangement during disassembly of the bit element from the remainder of the arrangement, said magnet having an axial thrust surface against which the bearing surface of the bit element journalably bears during rotation of the bit element relative to the magnet.

4,643,053

OIL FILTER REMOVAL TOOL

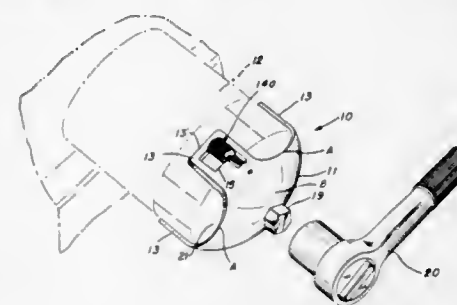
Charles W. Rhodes, 204 Tanglewood, Victoria, Tex. 77901

Filed Sep. 9, 1981, Ser. No. 300,479

Int. Cl.⁴ B25B 13/28

U.S. Cl. 81—90.3

8 Claims



1. A hand tool for removal of oil filter canisters and the like comprising:

a cup-shaped housing having an open end adapted to fit over one end of a filter canister to be removed, said housing including a longitudinal axis, a bottom portion centered on said axis, and axially extending finger portions projecting from said bottom portion and defining said open end, said finger portions being circumferentially spaced thereby defining axially extending openings to aid in visually aligning the tool housing upon a filter canister, said axially extending openings extending into said bottom portion and forming inwardly extending recesses in said

bottom portion between said finger portions, the radial inward extent of said recesses being sufficient for the bottom portion between said finger portions to be substantially less than coextensive with the end of an oil filter canister over which said hand tool is adapted to fit, each of said finger portions having a free end and a cam receiving opening formed therein and spaced from said free end, a hole extending longitudinally through each finger portion from said free end and intersecting said cam receiving opening, a pin mounted in each said hole and extending through said cam receiving opening and cam means for each of said finger portions mounted on said pin to swing within said cam receiving opening for engagement with a filter canister near said one end, and means for rotating the housing in one direction to bring the cam means of each finger portion into operative position to engage a filter canister and rotate same.

4,643,054

QUICK SQUEEZE TOOL

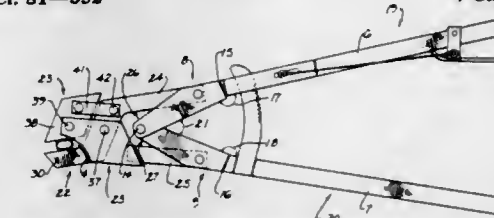
Gary E. Nelson, 3304 Limerick, El Paso, Tex. 79925

Filed Dec. 30, 1985, Ser. No. 814,378

Int. Cl.⁴ B25B 7/12

U.S. Cl. 81—352

4 Claims



at the opposite end of the said first jaw from the end of the said first jaw that is attached to the said first handle, said first tooth is at a 120° angle with the said first midsection, this angle is in the same plane as the angle between the said first handle and the said second handle but it opens in the opposite direction than that of the angle between the said first handle and the said second handle, a second tooth fits into and is attached to a corner of the forked portions of the said second midsection, this corner is at the opposite end of the said second jaw from the end of the said second jaw that is attached to the said second handle, the said second tooth is attached to said corner of the forked portions of the said second midsection in a manner that would allow rotation of the said second tooth with respect to the forked portions of the said second midsection about the point of attachment, rotation would be in the same plane as the angle between the said first handle and the said second handle, a connection lever connects the said second tooth to the said first jaw at a point on the said first jaw where the said first midsection makes a 120° angle with the end of the said first jaw that is attached to the said first handle, a first end of the said connection lever is attached to the said first jaw in a manner that would allow the said connection lever to rotate with respect to the said first jaw about the point of attachment in the same plane as the angle between the said first handle and the said second handle if a second end of said connection lever was not also attached, the said second end of the said connection lever is attached to the said second tooth in a manner that would allow the said connection lever to rotate with respect to the said second tooth about the point of attachment in the same plane as the angle between the said first handle and the said second handle if the said first end of the said connection lever was not also attached, the said second tooth is thus attached directly to the said second jaw and attached by means of connection lever to the said first jaw, the said second tooth's rotation or movement is thus limited by and dependent on the movement of the said first jaw and the said second jaw, a side of the said second tooth will always be parallel to a side of the said first tooth.

4,643,055

LATHE SPINDLE ASSEMBLY

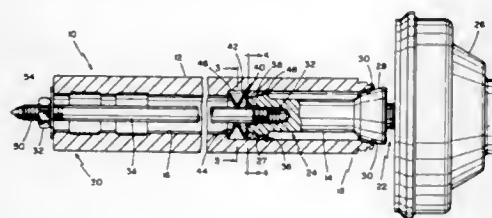
Peter Contoyonis, Libertyville, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed May 9, 1986, Ser. No. 861,588

Int. Cl.⁴ B23B 5/02, 19/02, 31/26

U.S. Cl. 82—30

8 Claims



1. A lathe spindle assembly for mounting a workpiece for rotation during machining comprising:

- a generally cylindrical spindle body having a forward end and a rearward end,
- an internal bore extending longitudinally of said spindle body from the forward end to the rearward end thereof,
- an arbor having a forward end and a rearward end, said workpiece being connectable to said forward end thereof,
- a first annular tapered surface formed on said arbor at said rearward end thereof,
- a second annular tapered surface formed on said arbor intermediate said forward and rearward ends thereof and disposed in spaced relation to said first annular tapered surface,
- an interior annular tapered surface formed at the forward end of said spindle body and configured to seat against said second annular tapered surface of said arbor,
- a collar member insertable within said bore of said spindle

body and having an interior tapered surface formed thereon,

a drawbar extending through said bore and threadedly received by the rearward end of said arbor,

means associated with said drawbar for drawing said arbor interiorly of said spindle body, and

means for biasing said collar member into engagement with said spindle whereupon said first annular tapered surface of said arbor seats against said interior annular tapered surface of said collar and said second annular tapered surface of said arbor seats against said interior annular tapered surface of said spindle body.

4,643,056

CHIP BREAKING SYSTEM FOR AUTOMATED MACHINE TOOL

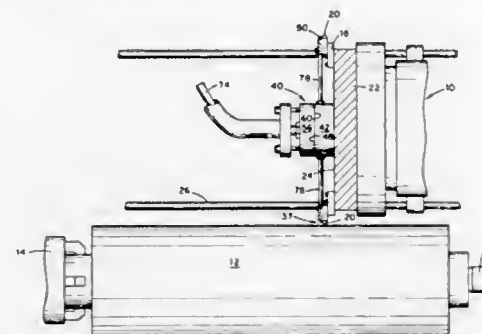
Theodore A. Arehart, Clinton, and Donald O. Carey, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1986, Ser. No. 817,218

Int. Cl.⁴ B23B 29/24

U.S. Cl. 82—36 A

2 Claims



1. A chip-breaking system in combination with an automated machining apparatus wherein a rotatable turret having a plurality of circumferentially spaced apart stations each supporting machine tool means is selectively rotated about an axis for positioning one of said machine tool means in a material-removing relationship with a work piece, said chip-breaking system comprising nozzle means carried by each of said machine tool means, a valve assembly comprising manifold means supported by the turret for rotation therewith about said axis and having a plurality of circumferentially spaced apart passageways therein, header means carried by said manifold means and relatively stationary with respect thereto, said manifold means and said header means respectively comprising first and second plate means longitudinally positioned on the rotational axis and having contiguously disposed planar surfaces located therebetween with each of said passageways being radially spaced from said axis and having one end thereof in registry with the planar surface on said first plate means, means for maintaining the planar surfaces in juxtaposition while permitting relative rotation therebetween, third plate means axially spaced from said second plate means, means coupling said third plate means to said second plate means for preventing rotation of said second plate means about said axis and for providing longitudinal displacement of said second plate means with respect to said third plate means, a plurality of conduit means each having one end thereof in registry with the planar surface on said manifold means and each coupling one of said passageways in said manifold means to one of said nozzle means, conduit means coupled to said header means for preventing rotation thereof about said axis, a single passageway in said header means extending through said second plate means with one end thereof in registry with said axis and with the other end thereof in registry with the planar surface on said header

means and a selected one of said passageways in said manifold means upon rotation of said turret, seal means disposed about each of said passageways at the interface between said planar surfaces, and further conduit means coupled to said header means for serially conveying a liquid through said conduit means coupled to said header means and said single passageway, the selected one of said passageways in a manifold means in registry with said single passageway, one of said plurality of said conduit means, and one of said nozzle means for impingement upon the tool means and the work piece at the interface thereof for breaking chips formed during material removal, said further conduit means including pipe means disposed thereabout and secured to said third plate means for preventing rotation thereof about said axis.

4,643,057

CUTTING TOOLS

Trevor J. Hall, Melton Mowbray, and Robert E. Beechey, Oakham, both of England, assignors to The Victaulic Company PLC, Hertfordshire and Rutland Plastics Limited, Leicestershire, both of, England

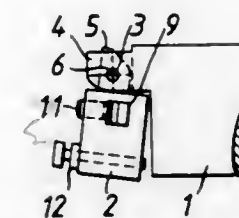
Filed Oct. 15, 1984, Ser. No. 660,749

Claims priority, application United Kingdom, Oct. 24, 1983, 8328392

Int. Cl.⁴ B23B 29/04

U.S. Cl. 82—36 R

10 Claims



1. A cutting tool for incising a helical cut around the internal surface of a hollow member comprising: tool carrier means defining a longitudinal axis for insertion into the hollow member adjacent the internal surface thereof to be cut; cutting block means carried by the tool carrier means, the block means being freely pivotally mounted on the carrier about an axis normal to the axis of relative rotation of the carrier means and the hollow member; and a cutting member secured to the cutting block means and extending from the block means generally parallel to the axis of pivot thereof upon the carrier means, whereby as the tool moves in a helical path around the internal surface, the cutting edge of the cutting member moves in a direction generally towards the axis of the pivot of the cutting block means on the tool carrier means, whereby in cutting use the cutting block means turns on its pivot connection on the tool carrier means such that the cutting member is aligned with and cuts at a helical angle determined by the relative rotational and axial speeds of the hollow member and tool during cutting.

4,643,058

FLOATING GANG ROTARY SLITTING DEVICE AND METHOD

Christian J. Zingler, Succasunna, and James D. Bonner, Flemington, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 10, 1984, Ser. No. 609,050

Int. Cl.⁴ B26D 1/24

U.S. Cl. 83—23

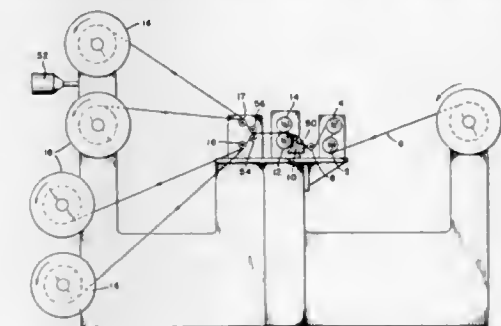
15 Claims

11. A method for slitting sheet material, comprising the steps of:

- a. providing a first free-wheeling rotary cutter, on a first arbor shaft, said first cutter comprised of at least one rotary knife element having two opposite side faces, and said first

arbor shaft constructed to allow axial movement of said knife element along said first arbor shaft;

- b. providing a second free-wheeling rotary cutter, on a second arbor shaft, said second cutter comprised of at least one rotary knife element which has two opposite side faces and is moveable axially along said second arbor shaft;
- c. selectively moving said second arbor shaft radially with respect to said first arbor shaft to provide a selected,



- d. intermeshing overlap region between said first cutter knife element and said second cutter knife element;
- d. rotatively driving at least said first arbor shaft; and
- e. resiliently urging said first cutter knife element axially along said first arbor shaft to contact said second cutter knife element, thereby providing a substantially zero clearance between each pair of intermeshing faces of said first and second cutter knife elements at said overlap region.

4,643,059

TAPE DISPENSER

Ian R. Phillips, 12 Garnet Street, Killara, New South Wales 2071; Robert H. Lodge, 30 Kirkstone Road, Wheeler Heights, New South Wales 2098, and Alan A. Loveday, 1 Poate Place, Davidson, New South Wales 2085, all of Australia

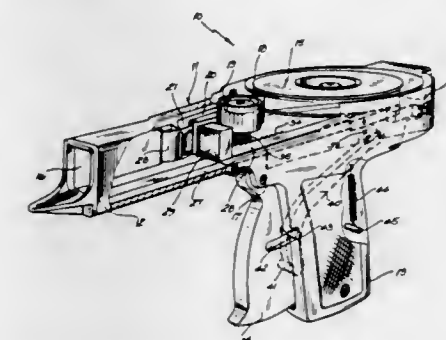
Filed Jul. 25, 1985, Ser. No. 759,048

Claims priority, application Australia, Jul. 27, 1984, PG6258

Int. Cl.⁴ B26D 5/22

U.S. Cl. 83—162

10 Claims



1. A tape dispenser to deliver predetermined lengths of a medication in tape form into an animal's mouth, said tape dispenser comprising: a body to receive a supply of said tape and having an elongated delivery barrel having a terminal end from which said tape is dispensed, roller means to move the tape from said supply, in predetermined length, into said barrel, said roller means including at least one driven roller having a rotational axis transverse of the tape, and a delivery head including blade means to sever each predetermined length of said tape from said supply of tape when delivered into said

barrel thus enabling dispensing of said predetermined length into the mouth of said animal from said terminal end of said barrel.

4,643,060

AIR COOLED SLOTTER AND SLITTER BLADE CUTTING EDGES

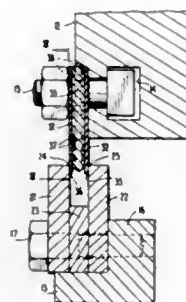
Edwin A. Fremion, Cleveland, Tenn., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 3, 1986, Ser. No. 825,447

Int. Cl.⁴ B26D 7/08

U.S. Cl. 83—171

3 Claims



1. A rotary shear apparatus for cutting paperboard comprising at least two, rotatively driven die elements secured to respective, parallel drive shafts having shear edges passing each other rotatively in substantially the same shear plane, one of said die elements comprising the structurally clamped, contiguous assembly of a thin, sheet steel edge body and a stiffening means, said edge body sheet having parallel front and back surfaces with the front surface thereof being disposed within said cutting plane and the back surface having intimate, heat transfer contact with a channelled surface of said stiffening means, said channelled surface comprising a matrix pattern of interconnected grooves into and below the plane of said channelled surface and a corresponding pattern of heat conducting fins for transfer of heat in said edge body sheet to said stiffening means heat conducting fins and to air flow within said channel matrix.

4,643,061

ROTARY BLADE SHEET MATERIAL CUTTER WITH SHARPENER

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific Inc., South Windsor, Conn.

Filed May 30, 1985, Ser. No. 739,422

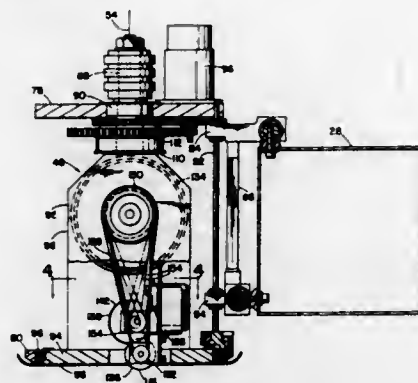
Int. Cl.⁴ B26D 7/12

U.S. Cl. 83—174.1

5 Claims

1. In a sheet material cutter having a powered rotary cutting blade, the combination comprising:
a rotary cutting blade rotatable about a first axis,
a rotary sharpening element with a sharpening face rotatable about a second axis,
a single drive motor having energized and deenergized states,
means drivingly connecting both said rotary cutting blade and said rotary sharpening element to said single drive motor for causing both said cutting blade and said sharpening element to be driven continuously about said first and second axes respectively when said drive motor is in its energized state, and
means for periodically moving said sharpening element relative to said cutting blade to first bring said sharpening face into and then back out of sharpening engagement with said cutting blade while said single drive motor remains in its energized state and drives both said cutting blade and said sharpening element about said first and second axes respectively,
said means for drivingly connecting both said cutting blade

and said sharpening element to said single drive motor comprising said single drive motor having a rotary output shaft, a first drive shaft supporting said rotary cutting blade for rotation about said first axis, a second drive shaft supporting said rotary sharpening element for rotation about said second axis, first and second pulleys fixed to



said output shaft of said drive motor, a third pulley fixed to said first drive shaft, a fourth pulley fixed to said second drive shaft, a first drive belt trained over said first and third pulleys to drivingly connect said motor to said rotary cutting blade and a second drive belt trained over said second and fourth pulleys to drivingly connect the said motor to said rotary sharpening element.

4,643,062

ROTARY DIE CUTTING MACHINE

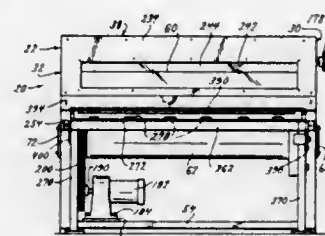
James H. Highfield, Sedgley Hall Estate, and Roy Pugh, Birmingham, both of England, assignors to Kirby's Engineers, Ltd., West Midlands, England

Filed Aug. 28, 1985, Ser. No. 770,347

Int. Cl.⁴ B26F 1/42

U.S. Cl. 83—285

16 Claims



1. A die cutter for cutting a blank of a sheet material against a die comprising a backboard having upwardly facing cutting edges, the die cutter comprising:
a first roller and means for driving the first roller;
a second roller mounted parallel to the first roller and spaced therefrom, and, means for driving the second roller oppositely of the first;
a first feed means for conducting the die to the rollers, the rollers drawing the die therethrough and pressing the die; second feed means for conducting the die from the rollers, and means to permit at least one roller to slip to accommodate dies passing between the first and second rollers;
the first and second rollers being vertically opposing, with the second roller above the first roller, the first feed means positioned in front of the rollers and the second feed means positioned in the rear of the rollers;
the die cutter further comprising a first sensor means for sensing when a die is on the rearward side of the roller; and

means responsive to the first sensor means for stopping the first and second feed means and the rollers.

4,643,063

TUBE CUTOFF MACHINE

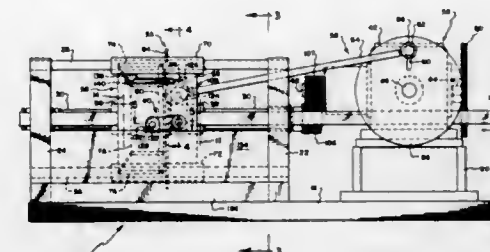
Eric W. Gobien, Delevan, N.Y., assignor to McKenica Inc., Buffalo, N.Y.

Filed Aug. 1, 1985, Ser. No. 761,752

Int. Cl.⁴ B23D 21/00, 25/04

U.S. Cl. 83—311

8 Claims



1. Apparatus for cutting a tube to relatively precise lengths, which tube moves along a predetermined generally linear path initially past a first location and then past a second location at a substantially constant speed; said apparatus including
a frame;
a carriage mounted on the frame for generally linear reciprocal movement between the first and second locations and parallel to said linear path;
a tube shearing apparatus supported on said carriage;
a rotating crank drive mechanism including a drive wheel rotatable about its axis, a connecting rod, and pin means on said drive wheel at a location spaced away from the axis of said drive wheel, one end of the connecting rod being journaled on said pin means;
connecting means which connects the other end of the connecting rod with said carriage in such a manner that said carriage will be moving at a constant linear speed for a duration of time sufficient to shear said tube as the carriage moves from the first location to the second location, said connecting means including a cam follower and a cam supported by said frame and which is engaged by said cam follower; and
shear operating means capable of operating said shearing apparatus when the carriage is being moved at said constant linear speed.

4,643,064

CODING ASSEMBLY

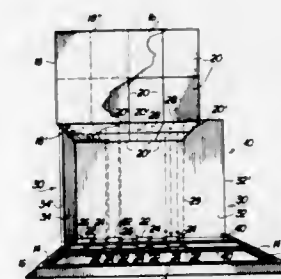
Donald M. Arnel, Davie, Fla., assignor to Hallmark Cargo Services, Inc., Ft. Lauderdale, Fla.

Filed Jan. 2, 1986, Ser. No. 815,612

Int. Cl.⁴ B26F 1/00

U.S. Cl. 83—522

14 Claims



1. A coding assembly used for the simultaneous encoding of a plurality of packages while disposed in a substantially stacked

array within a shipping carton or like container, said assembly comprising:

- a base dimensioned and configured for supporting one end of the carton containing the plurality of packages thereon,
- positioning means mounted on said base and structured to engage portions of said carton and disposed for positioning of the end of the carton on said base in a consistent orientation relative to a supporting surface thereof,
- a plurality of coding pins projecting outwardly from said supporting surface of said base and being of sufficient length to penetrate both the carton end and correspondingly positioned packages,
- said plurality of coding pins arranged in pin pairs, each pin pair disposed on said supporting surface in corresponding position and penetrating relation to one package disposed within the carton adjacent the carton end supported on said base,
- each of said pin pairs comprising a target pin and a secondary pin, said target pin disposed in a fixed reference position and said secondary pin disposed in one of a plurality of spaced positions relative to said target pin, and
- each of a plurality of codes formed in said packages and said pin pairs being defined by the position of said secondary pin relative to said target pin.

4,643,065

SAW CHAIN COMPRISED OF SAFETY SIDE LINKS DESIGNED FOR REDUCING VIBRATION

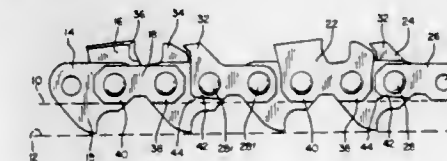
Donald J. MacGavin, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Jun. 2, 1986, Ser. No. 869,344

Int. Cl.⁴ B27B 33/14

U.S. Cl. 83—830

5 Claims



1. A saw chain formed into a continuous loop and designed to be entrained on the edge of a guide bar of a chain saw comprising: alternating center links and pairs of side links pivotally interconnected by front and rear rivets, certain pairs of said side links including a cutting link and opposed tie strap link, and a preceding pair of side links including a safety link and opposed tie strap link, said preceding pair of side links each having a toe portion and a heel portion positioned under the front and rear rivets, respectively, and each of said toe and heel portions having bar engaging surfaces, said bar engaging surface of the heel portion spaced below the rear rivet a distance less than the distance of the bar engaging surface of the toe portion below the front rivet, whereby the tension applied to the saw chain about the guide bar that normally maintains the rivets in alignment, raises the heel portions of said preceding pairs of side links off the guide bar edge.

4,643,066

ELECTRONIC MUSICAL INSTRUMENT

Akiyoshi Oya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 700,941, Jun. 29, 1976, abandoned.

This application Jul. 7, 1978, Ser. No. 922,883

Claims priority, application Japan, Jul. 3, 1975, 50-82208; Jul. 3, 1975, 50-82209

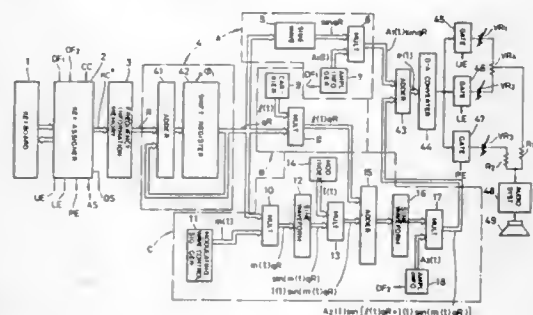
Int. Cl.⁴ G10H 1/08, 7/00

U.S. Cl. 84—1.01

21 Claims

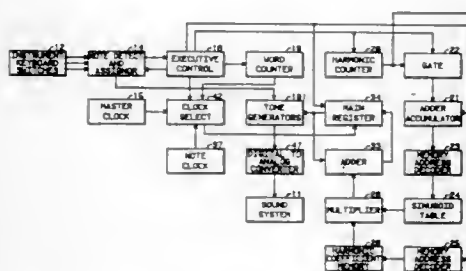
1. A musical tone forming electronic musical instrument comprising:

first circuit means for generating a first signal to define a time-varying modulation index;
second circuit means for generating a second signal to define a time-varying carrier frequency;
third circuit means for generating a third signal to define a time-varying modulation frequency; and
fourth circuit means, cooperatively connected to said first, second and third circuit means, for combining said first and third signals and for frequency modulating said sec-



ond signal with said combined first and third signals to form a frequency modulated wave wherein the frequency spectrum of said wave is defined by said second signal and by the product of said first and third signals to form a representation of a musical tone, the number of harmonics in said frequency spectrum changing as a function of the time-varying modulation index while the positions of said harmonics therein change as a function of the respective time variations of the carrier and modulation frequencies.

4,643,067
SIGNAL CONVOLUTION PRODUCTION OF TIME VARIANT HARMONICS IN AN ELECTRONIC MUSICAL INSTRUMENT
Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan
Filed Jul. 16, 1984, Ser. No. 631,131
Int. Cl.⁴ G10H 1/00
U.S. Cl. 84—1.01 11 Claims

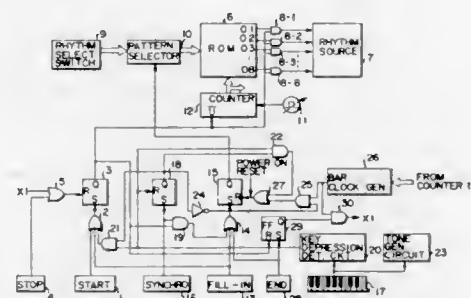


1. In combination with a musical instrument in which a plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone are computed from a preselected set of harmonic coefficients and are transferred sequentially to a means for conversion into musical waveshapes, apparatus for producing musical tones having a time variant spectra comprising;

- a waveshape memory means for storing a plurality of data words;
- a means for computing responsive to said preselected harmonic coefficients whereby said plurality of data words corresponding to the amplitude of points defining the waveform of a musical tone are computed and stored in said first waveshape memory means;

a memory addressing means for reading out data words stored in said waveshape memory means;
a mask data generator means whereby a mask data word is generated wherein said mask data word is in a binary digital format having a number of bits equal in number to said plurality of data words stored in said waveshape memory means;
a bit selection means responsive to said memory addressing means whereby consecutive bits are selected from said mask data word in a cyclic and periodic order wherein the starting bit position is changed in a time variant manner;
a mask gate responsive to said selected bits from said mask data word whereby a data word read out from said waveshape memory means is transferred unaltered if the selected bit has a logic value of "1" and whereby a zero value data word is transferred if said selected bit has a logic value of "0"; and
a means for producing musical tones responsive to said product data words.

4,643,068
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC RHYTHM PLAYING UNIT
Hiroko Okuda; Keiichi Sakurai, and Junichi Minamitaka, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed May 3, 1985, Ser. No. 730,352
Claims priority, application Japan, May 16, 1984, 59-70313[U]
Int. Cl.⁴ G10F 1/00
U.S. Cl. 84—1.03 5 Claims

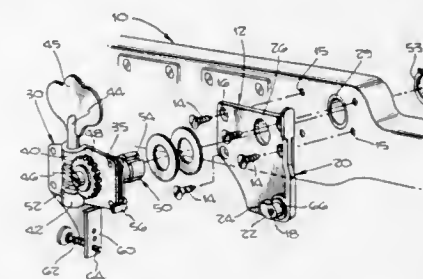


1. An electronic musical instrument with an automatic rhythm playing unit comprising:
rhythm generating means for selectively generating rhythm pattern data of a normal rhythm and a plurality of extra rhythms other than said normal rhythm;
rhythm designation means for designating one of said rhythm pattern data;
an accompaniment keyboard;
tone generating means for generating a tone corresponding to an operated key on said accompaniment keyboard; and
control means including means for functioning in response to a key operation of said accompaniment keyboard to stop the sounding of an extra rhythm while said extra rhythm designated by said rhythm designation means is being sounded and to start the sound of said normal rhythm.

4,643,069
STRING TUNER ATTACHMENT
David J. Borisoff, and Boris Borisoff, both of 7726 Burnet Ave., Van Nuys, Calif. 91405
Filed Aug. 1, 1985, Ser. No. 761,448
Int. Cl.⁴ G10D 3/14
U.S. Cl. 84—306 8 Claims

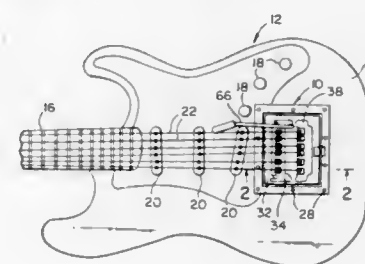
1. A tuner attachment for the peg head of a guitar having a string whose tension controls its pitch comprising:

a tuning machine having an output shaft journaled in the peg head and provided with an extension on which said string is wound;



and means for arcuately rocking the tuning machine about the axis of the shaft between a rest position and an operative position.

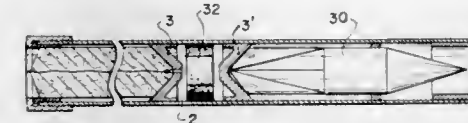
4,643,070
TREMOLO DEVICE FOR STRINGED INSTRUMENTS
Barry Petrillo, P.O. Box 292, Walden, N.Y. 12586
Filed Sep. 30, 1985, Ser. No. 781,517
Int. Cl.⁴ G10D 3/12
U.S. Cl. 84—313 6 Claims



1. In a musical instrument having a plurality of transversely spaced-apart longitudinally directed vibratable tensioned strings carried across the face of an elongated body, the improvement for selectively simultaneously varying the tension of said strings comprising:

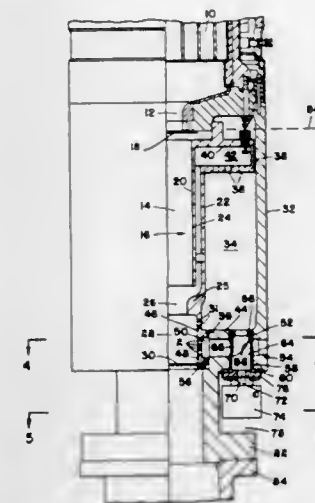
- a. a generally planar pivottable member carried on and positionable along the face of said body proximate one end of said body;
- b. pivot means coupled between said member and said body establishing an axis directed transversely of said strings and generally below said generally planar pivottable member about which said member may be pivoted;
- c. a transversely directed bridge means including tips supporting said strings and carried by the face of said member substantially directly above said axis;
- d. a transversely directed tailpiece lockably receiving one end of each said string, said tailpiece being carried by the face of said pivottable member in spaced apart relationship from said bridge;
- e. arm means coupled to said pivottable member for enabling selective pivoting of said member by a performer; and
- f. detent means including mutually engageable portions carried by said generally planar pivottable member and said body for maintaining said generally planar member positioned along the face of said body.

4,643,071
RECOILLESS LAUNCHING DEVICE
Theodor Baechler, Marklkofen-Warth, and Josef Amann, Schrobhausen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany
Filed Jun. 26, 1985, Ser. No. 749,002
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424598
Int. Cl.⁴ F41F 3/02, 15/00
U.S. Cl. 89—1.701 14 Claims



1. A recoilless launching device comprising a launching tube having a bore therethrough with opposite openings, a pair of spaced apart sabots in said bore defining a working space therebetween which can be pressurized with propellant charge vapors for moving said sabots in opposite directions in said tube, one of said sabots being adapted to push a projectile through one end of said tube, a counterweight engaged with the other of said sabots to be pushed by the other of said sabots from an opposite end of said tube, said counterweight being made of combustible material, and firing connection means connected to said counterweight and to said working space for igniting said counterweight.

4,643,072
SUBMARINE MISSILE EJECT SYSTEM
Henry A. Hillebrecht, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 3, 1985, Ser. No. 740,674
Int. Cl.⁴ F41F 3/04
U.S. Cl. 89—1.810 5 Claims



5. A variable energy missile eject missile system comprising:
(a) a solid propellant rocket motor having an outlet nozzle; and cooling apparatus including;
(b) a standpipe having an inner wall forming a central chamber which is disposed to receive the hot gas from the outlet nozzle of the rocket motor, said standpipe having an outer wall disposed to form an annular channel between said inner wall and said outer wall, said outer wall extending below said inner wall, the inner surface of the outer

wall converging to form a nozzle at the base of the central chamber;

- (c) a housing disposed around said standpipe and forming a cooling chamber between said outer wall and said housing, said cooling chamber extending below the nozzle of said standpipe, said central chamber being in communication with said cooling chamber through said annular channel;
- (d) a fluid injection chamber disposed below the nozzle of said standpipe, said injection chamber formed by the inner surface of said outer wall extending below the nozzle of the standpipe, said injection chamber having a first set of injection apertures communicating with said cooling chamber, said first set of injection apertures being disposed circumferentially around said chamber immediately below said nozzle, said injection chamber having a plurality of additional sets of apertures disposed in its wall;
- (e) said cooling chamber extending to just below said first set of apertures so that said first set of apertures communicates between said cooling chamber and said injection chamber, said housing having an inwardly extending flange which is joined to a first outwardly extending horizontal rib of the outer wall to form the bottom of the cooling chamber;
- (f) the wall of said injection chamber having a second horizontal rib disposed below said first horizontal rib, said second horizontal rib being joined to said inwardly extending flange, and said plurality of additional set of apertures being disposed in the wall of said injection chamber below said first horizontal rib and above said second horizontal rib, the wall of said injection chamber having a plurality of outwardly extending vertical ribs, said vertical ribs being joined to the inwardly extending flange, each of said plurality of additional sets of apertures being disposed in the wall of the injection chamber between a first horizontal rib, a second horizontal rib, and two vertical ribs;
- (g) means for selectively establishing communication between said cooling chamber and said injection chamber through said plurality of additional sets of injection apertures; and
- (h) a burst diaphragm disposed at the base of the injection chamber to seal said injection chamber, said cooling apparatus being filled with cooling liquid above said diaphragm.

4,643,073

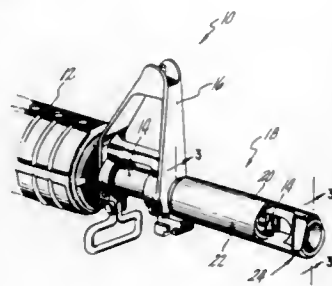
MUZZLE STABILIZATION ARRANGEMENT FOR FIREARMS

Harold E. Johnson, 505 Adelman Cir., Vienna, Va. 22180
Filed Jul. 23, 1984, Ser. No. 633,217

Int. Cl.⁴ F41F 17/12

U.S. Cl. 89—14.3

5 Claims



1. A muzzle stabilization arrangement for a firearm having a barrel with a bore comprising:

a muzzle stabilizer having a first section mounted upon the barrel and a second section forming a rigid extension of said first section, said second section extending forwardly of the muzzle of the barrel and having an opening extending transversely therethrough in front of the muzzle of the barrel, the transverse opening being at least partially de-

fined by a lower surface for being contacted by propellant gases from the barrel;

passage means defined between the muzzle stabilizer and the outer periphery of the barrel for directing a gas screen in coaxial relationship to the bore over the opening in the stabilizer; and

a radially extending gas port in the barrel rearward of the muzzle of the barrel in fluid communication with the bore of the barrel and the passage means for supplying propellant gases thereto.

4,643,074

POWER TRANSMISSION

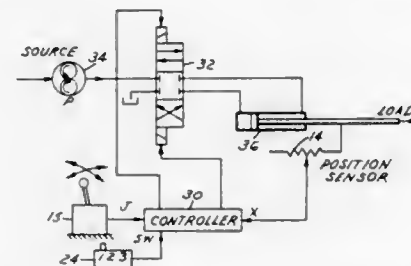
Rajamouli Gunda, Rochester, and Melvin A. Rode, West Bloomfield, both of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Mar. 7, 1985, Ser. No. 709,134

Int. Cl.⁴ F15B 13/16

U.S. Cl. 91—361

5 Claims



1. An electrohydraulic servo system comprising a servo actuator coupled to variably position a load, position sensing means coupled to said actuator and load to provide an electrical signal indicative of actual position at said load, means for generating an input command signal, command means responsive to said input command signal in differing modes of operation for generating a position command signal as correspondingly differing functions of said input command signal, said differing modes of operation including at least a position control mode wherein said input command signal is indicative of desired position at said load, and a velocity control mode wherein said input command signal is indicative of desired velocity at said load, means for providing an error signal to control said servo actuator as a function of a difference between said actual position signal and said position command signal, and means coupled to said command means for selecting between said position and velocity control modes of operation said command means comprising means operable in said position control mode to provide said position command signal as a direct function of said input command signal, and means operable in said velocity control mode for integrating said input command signal to provide said position command signal.

4,643,075

VACUUM-OPERATED BRAKE POWER BOOSTER

Wilfried Wagner, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 20, 1985, Ser. No. 703,375

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406520

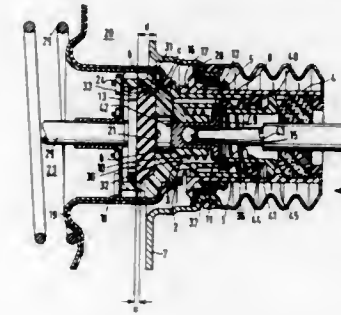
Int. Cl.⁴ F15B 9/10

U.S. Cl. 91—369 A

4 Claims

1. A vacuum-operated brake power booster for assisting the operation of a master cylinder comprising a booster piston sealed relative to a booster housing and a piston rod coupled to a brake pedal, said piston rod serving to actuate a double valve by means of which a power chamber is alternatively connectible either to vacuum or to a higher differential pressure, said

double valve including a first valve formed by a valve seat at said booster piston and a poppet valve preloaded in the direction of said valve seat and a second valve formed by said poppet valve and a valve piston connected to said piston rod, said booster piston connected to a control housing within which said valve piston is slidably supported, and a rubber reaction disc retained within said control housing, said rubber disc being subject to the action of said valve piston on one side thereof and of a push-rod connected to a piston of the master



cylinder on the other side, said rubber reaction disc including a first cylindrical portion defining a first uninterrupted planar circular disc-shaped area adjacent said push rod, a second portion extending from said cylindrical first portion configured as a truncated cone having an external surface tapering symmetrically, linearly from said first cylindrical portion defining a second uninterrupted planar circular disc-shaped area adjacent said valve piston less than said first area and at least equal to the area of said valve piston.

4,643,076

CONTROLLER FOR VALVE MECHANISM OF BRAKE BOOSTER

Satoru Satoh, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

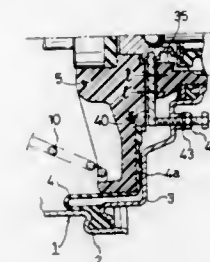
Division of Ser. No. 252,702, Apr. 9, 1981, abandoned. This application Sep. 16, 1985, Ser. No. 776,091

Claims priority, application Japan, Apr. 21, 1980, 55-52730

Int. Cl.⁴ F15B 9/10

U.S. Cl. 91—369 R

9 Claims



1. A brake booster of the type having an operating rod adapted to be mechanically interlocked with a brake pedal, a housing having a rear shell, a power piston movable in said housing toward said rear shell, and a valve mechanism for controlling a fluid pressure applied to said power piston in response to movement of said operating rod, wherein the valve mechanism comprises:

an opening formed in the power piston and a stop member movable in the opening through a limited distance in the axial direction of the power piston;

a valve plunger responsive to movement of the operation rod and valve means responsive to movement of said valve plunger for controlling the fluid pressure applied to said power piston, said valve means having a clearance, said valve plunger having an outer surface and an annular

groove in said outer surface, the inner end of the stop member being engaged in the annular groove formed in the outer surface of the valve plunger, rearward movement of the valve plunger with respect to the power piston being limited by the stop member, the power piston having an inoperative position;

an adjustable abutment member provided on the rear shell and abutting one of the stop member and power piston in the inoperative position of the power piston for adjusting a clearance of said valve means.

4,643,077

HYDRAULIC RADIAL PISTON MACHINE

Rudolf Bock, Palmerstrasse 9, D-7038-Holzgerlingen, Fed. Rep. of Germany

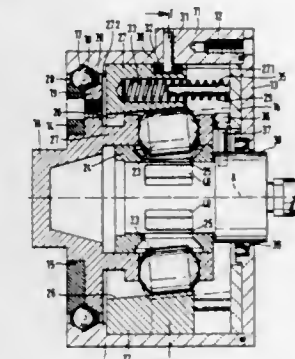
Filed Aug. 28, 1985, Ser. No. 770,648

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1984, 3433289

Int. Cl.⁴ F01B 13/06

U.S. Cl. 91—497

9 Claims



1. A hydraulic radial piston machine with steplessly adjustable piston stroke, comprising a control pin; a rotatable cylinder body arranged concentrically to said control pin and having a plurality of openings; a plurality of pistons which are formed as rolling bodies and distributed symmetrically over a periphery of said cylinder body in said openings; and means forming a control curve which is displaceable relative to said cylinder body and over which said pistons roll, said pistons having a circular cylindrical region which linearly abut against said control curve, said pistons being arranged in said cylinder body tiltably with their axes of rotation in a relatively small angular region; and a control ring axis-parallel with and displaceable relative to said cylinder body, said control curve being formed on said control ring as a symmetrical spatial curve such that said pistons are tilted by said curve within said openings, and the curve regions which form both an inner dead point for said pistons and an outer dead point for said pistons change in direction of displacement of said control ring.

4,643,078

FIBER-REINFORCED LIGHTWEIGHT ALLOY PISTON FOR AN INTERNAL-COMBUSTION ENGINE AND ASSOCIATED METHOD

Keisuki Ban, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1984, Ser. No. 608,138

Claims priority, application Japan, May 26, 1983, 58-93063

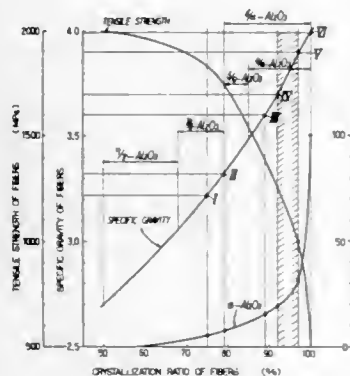
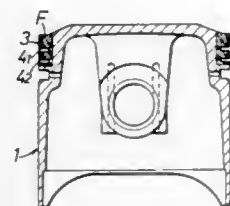
Int. Cl.⁴ B23P 15/10

U.S. Cl. 92—212

9 Claims

1. A fiber reinforced lightweight alloy piston for an internal-combustion engine comprising a piston body of lightweight alloy provided with a compression ring groove having an inner surface, and a reinforcement means at said inner surface con-

sisting of alumina fibers having a $\theta/\alpha\text{-Al}_2\text{O}_3$ crystalline structure with a specific gravity between 3.7 and 3.9, said alumina



fibers further having a crystallization ratio of 92-97% and an $\alpha\text{-Al}_2\text{O}_3$ content of 20-30 weight %.

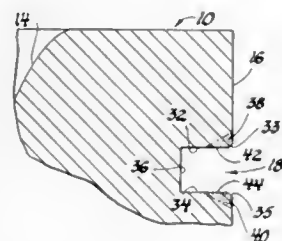
4,643,079 IRON PISTON HAVING SELECTIVELY HARDENED RING GROOVE

David E. Brann, Lemont, and James E. Lindsay, Warrenville, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1985, Ser. No. 716,873
Int. Cl.⁴ C21D 5/00

U.S. Cl. 92-222

2 Claims



1. A long-lasting cast iron piston body for an internal combustion engine, said piston body comprising a generally cylindrical sidewall and having an annular groove in said wall encircling said body for receiving a piston ring, said groove being defined by opposed faces that intersect the wall, said piston body being composed predominantly of gray iron characterized by an as-cast pearlitic microstructure, each said groove face comprising an integrally cast, selectively hardened iron band adjacent the piston sidewall and encircling the piston body, said band being characterized by a martensitic microstructure substantially harder than said pearlitic microstructure and effective to reduce wear resulting from a piston ring seated within said groove.

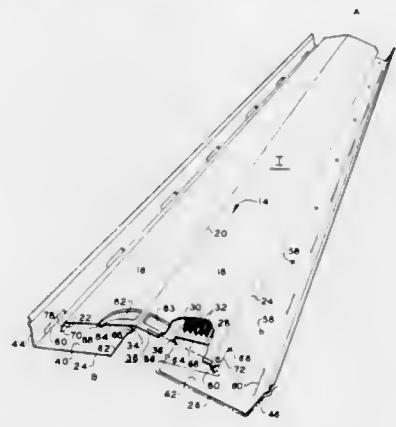
4,643,080 ROOF RIDGE VENTILATOR SYSTEM

John W. Trostle, 1880 Concord Dr., Allison Park, Pa. 15101, and James D. Klingensmith, Apollo, Pa., assignors to Aluminum Company of America and John W. Trostle, both of Pittsburgh, Pa.

Filed Jun. 24, 1985, Ser. No. 748,021
Int. Cl.⁴ F24F 7/02

U.S. Cl. 98-42.21

9 Claims



1. In a roof ridge ventilator system of the type adapted to be installed on the open ridge of a building's roof, wherein said ventilator system comprises, at least two elongated sections having ends, said sections being joinable together endwise, each of said sections having a top part, a pair of outer sides depending from the top part, a pair of ventilating louvered panels spaced below the top part and extending from the sides inwardly towards each other so to form a throat in ventilating flow communication with the open ridge, a pair of flashing panels spaced below the louvered panels and extending downwardly and outwardly from the throat formed by said louvered panels, and a pair of baffles upstanding from the outer edge of each flashing panel, said baffles having openings in the lower part thereof; the improvement comprising means for reducing the likelihood of water entering the roof ridge opening due to water migration between joined ventilator section ends, said means including a first end of one ridge ventilator section having a top part and a second end of another ridge ventilator section having a top part, said second end's top part being adapted to be overlapped by at least a portion of the first end's top part, said overlapping inhibiting the migration of water between the overlapped top parts, said second end's top part further defining at least one capillary groove in its outer surface, said groove comprising means to (1) collect water attempting to enter the ridge vent opening by migrating between the overlapped parts, and (2) dispose of said water collecting in said groove by permitting said water to flow over the end edge of said second end at a point where it will fall onto said flashing panels of said one ridge ventilator section and out said opening in said baffles of said one ridge ventilator section so that the possibility of said water entering the ridge vent opening is minimized.

4,643,081 LOUVER SYSTEM WITH ADJUSTABLE SLATS, FEATURING REMOVABLE MODULAR SLAT CLIPS

Camillo Vicinanza, Pontecagnano, and Felice Del Giudice, S. Antonio di Pontecagnano, both of Italy, assignors to Pillar Naco Industries (Europe) Srl, Salerno, Italy

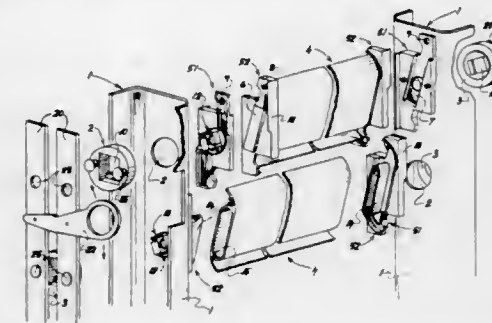
Filed Dec. 23, 1985, Ser. No. 812,234
Claims priority, application Italy, May 6, 1985, 48171 A/85
Int. Cl.⁴ F24F 13/16

U.S. Cl. 98-114

16 Claims

1. A louver system with adjustable slats featuring removable

modular slat clips, comprising: a frame with two parallel uprights (1), each upright (1) having an identical series of holes (2) which are spaced a predetermined distance apart; a series of single swivel mounts (3), each swivel mount (3) being rotatably accommodated within a hole (2) in one of the uprights (1); a set of single clips (5), each clip (5) being insertable into a swivel mount (3); and a set of slats (4) supported by and between a pair of the clips (5) by connection of each end of a single slat (4) to a respective clip (5); wherein each single clip has a first half-section (51) and a second half-section (52), the first half-section



(51) of which is snap-fitted to a respective swivel mount (3), and the second half-section (52) of which is insertable into one respective end of a slat (4), with the mutually opposed surfaces of the half-sections (51, 52) having matched sliding-fit profiles (6, 7) for permitting the half-sections (51, 52) to slide bodily relative to one another from a first position in which one profile (6) locates in the other (7) to a second position in which the two half-sections (51, 52) of the clip lock together; and wherein the half-sections (51, 52) of each clip (5) are locked together by a releasable snap-fit catch mechanism (8, 9) incorporated into the clip (5).

4,643,082 SPRAY BOOTH

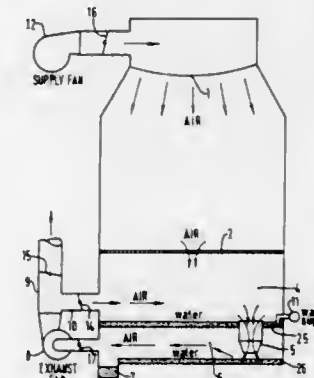
Ian H. Lynham, Gerrards Cross, and Roy S. Windall, Sevenoaks, both of United Kingdom, assignors to Haden Drysys International, Ltd., United Kingdom

Filed Aug. 20, 1984, Ser. No. 642,195
Claims priority, application United Kingdom, Feb. 17, 1984, 8404199

Int. Cl.⁴ B05C 15/00

U.S. Cl. 98-115.2

12 Claims



1. Spray coating apparatus comprising a chamber in which a spray coating operation is performed; means for inducing air flow through said coating chamber, washing means disposed under said chamber and through which said material laden air flow is required to pass in the course of exiting said chamber, and means for supplying cleaning liquid to said washing means, said washing means being arranged such that said material laden air flows therethrough in intimate contact with said cleaning liquid, the apparatus further comprising auxiliary air

supply means for supplying auxiliary air to the area immediately adjacent the inlet of said washing means so that said auxiliary air does not flow through the chamber on immediate route to said washing means, and means for controlling the volume of air supplied by said auxiliary air supply means whereby the total volume of air flowing through said washing means can be maintained substantially constant irrespective of changes in the volume of air flowing through said chamber.

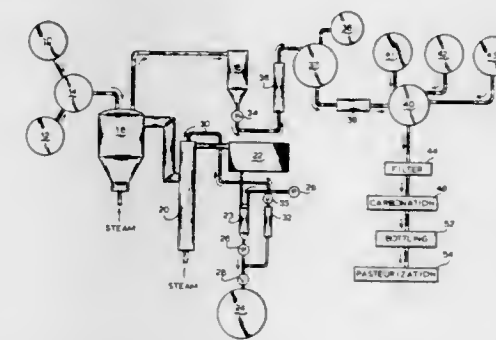
4,643,083 ALCOHOL-FREE WINE AND ITS MANUFACTURE

Armand R. Boucher, Stamford, Conn., assignor to Joseph E. Seagram & Sons, Inc., New York, N.Y.

Division of Ser. No. 523,466, Aug. 16, 1983, which is a continuation-in-part of Ser. No. 341,362, Jan. 21, 1982, abandoned, which is a continuation-in-part of Ser. No. 445,064, Nov. 29, 1982, Pat. No. 4,570,534. This application Jun. 18, 1985, Ser. No. 746,075

Int. Cl.⁴ C12F 1/00
U.S. Cl. 99-275

7 Claims



1. A system of producing an alcohol free base wine for making an alcohol free drinkable wine beverage comprising: a source of an original finished feed wine and a demineralized water preblend; a feed wine, water preblend inlet line coupled with the preblend source; a feed wine, water preblend feeding means for feeding the feed wine, water preblend from the preblend source through the inlet line; a centrifugal film evaporator coupled with the inlet line for elevating the temperature of the feed wine, water preblend while being centrifuged to a temperature at which a predetermined part thereof is divided into a liquid phase and another part into a vapor phase, the liquid phase being the alcohol free base wine, the centrifugal film evaporator having means for removing the liquid phase by centrifugation from the evaporator; a first source of the original finished feed wine and a second source of the demineralized water being provided; and means for coupling the first and second sources to the preblend source.

4,643,084 COOKIE MACHINE

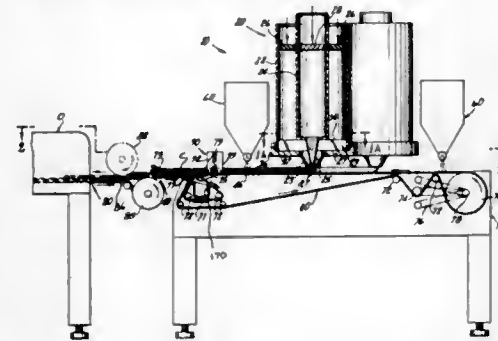
Isaac Gomez, 8623 Bridle Path Ct., Davie, Fla. 33328
Filed Apr. 17, 1986, Ser. No. 853,042
Int. Cl.⁴ A47J 37/00; A21B 1/48

U.S. Cl. 99-352

9 Claims

1. A machine for making cookies, comprising:
A. a table member having an upper surface;
B. conveyor means mounted to said table member having a conveyor belt that travels substantially on the upper surface of said table member;
C. a plurality of base members mounted at a predetermined spaced apart relationship with respect to the upper surface of said table member and said base members having a through opening;

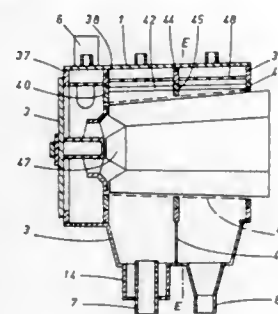
D. a plurality of means for dispensing dough mounted on said base members and including removably mounted cylinder members containing said dough and said cylinder members having upper and lower ends and further including piston heads slidably engaged therein; and



E. a plurality of spout members mounted to said through openings so that said dough is allowed through in response to the movement of said piston heads and said dough being deposited on said conveyor belt.

4,643,085
ROTARY MACHINE FOR EXTRACTION OF JUICE AND PUREE FROM TOMATOES, FRUIT AND OTHER PRODUCE

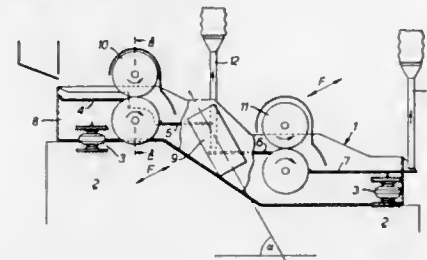
Primo Bertocchi, No. 8 Via Argonne, Parma, Italy
Filed Mar. 26, 1985, Ser. No. 716,321
Claims priority, application Italy, Apr. 6, 1984, 3414 A/84
Int. Cl.⁴ A23N 1/02
U.S. Cl. 99—510 9 Claims



1. A rotary juice and puree extraction machine for extracting juice and puree from tomatoes, fruit and other produce, having a cylindrical body with an underside which feeds into a hopper for collecting the juice and puree, said hopper being separated into at least two stages with each stage having a separate outlet, a perforated strainer positioned between the body and the hopper, a cylindrical vane positioned in said housing and acting with said strainer to separate juice and puree from waste matter causing the juice and puree to pass through the strainer into the selected stages of the hopper; said rotor being provided with a plurality of vanes extending substantially the length of the rotor, each vane having a working surface which is raked forward in the direction of rotation at the outer edge nearest the strainer and forming an obtuse angle with a plane lying tangential to the strainer at the tip of each vane.

4,643,086
APPARATUS FOR THE MECHANICAL TREATMENT OF FOOD PRODUCT

Spiros Christodoulou, Hertfordshire, United Kingdom, assignor to Din Engineering Limited, Bedfordshire, United Kingdom
Filed Oct. 5, 1984, Ser. No. 658,437
Claims priority, application United Kingdom, Jul. 16, 1984, 8418058
Int. Cl.⁴ A23N 5/01
U.S. Cl. 99—574 7 Claims



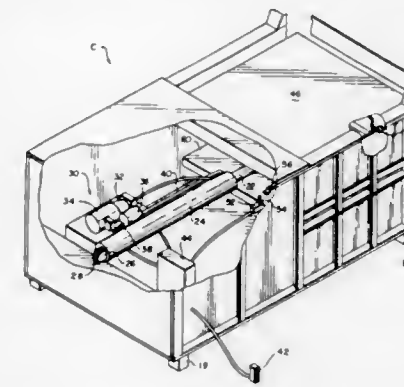
1. An apparatus for the treatment of a product such as peanuts which comprises:
a main frame;
a plurality of air mounts;
a subframe supported on the main frame by said air mounts;
at least one vibration motor mounted on the subframe for driving the subframe in an oscillating motion relative to the main frame;
a plurality of substantially horizontal product conveying surfaces mounted on the subframe and arranged in a cascading series wherein each of the conveying surfaces is mounted at a lower level on the subframe than the preceding conveying surface;
at least one pair of resilient rotating rollers mounted on the main frame independently of the subframe, said rollers being arranged with their axes substantially horizontal and spaced such that a nip is formed between each pair of rollers through which the product can pass;
the arrangement being such that the product is delivered to the nip between the pair of rollers from a respective one of said conveying surfaces.

4,643,087
PROCESS FOR MONITORING THE FULLNESS OF A COMPACTOR

Gordon H. Fenner, Columbus, Miss., and Ronald L. Brown, Vernon, Ala., assignors to Marathon Corporation, Birmingham, Ala.
Division of Ser. No. 631,998, Jul. 18, 1984. This application Jan. 3, 1986, Ser. No. 815,910
Int. Cl.⁴ B30B 1/32
U.S. Cl. 100—35 16 Claims

1. The method of monitoring the fullness of a compactor waste receiving container wherein a hydraulically operated cylinder and piston assembly displaces a ram for thereby compacting the waste, comprising the steps of:
(a) supplying said compactor with a quantity of waste to be compacted;
(b) displacing said ram for a waste-receiving position to a waste-compacted position whereby said quantity is transferred to said container and compacted therein;
(c) hydraulically locking said ram in said waste-compacted position and thereby preventing further displacement of said ram;

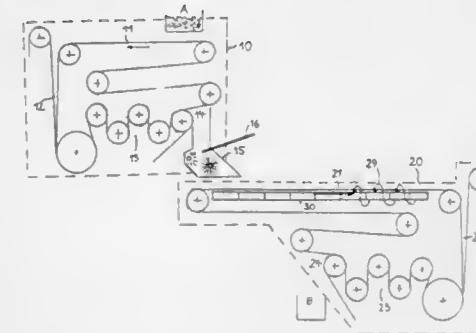
(d) monitoring the hydraulic pressure of said cylinder after locking said ram in said waste-compacted position comprising in combination:



whereby the pressure is proportional to the fullness of said container; and,
(e) signaling said container fullness.

4,643,088
METHOD AND DEVICE FOR EXTRACTING JUICE FROM FRUIT

Ulrich Kollmar, Auf dem Berg 17, 7530 Pforzheim-Würm, Fed. Rep. of Germany
Filed Dec. 31, 1984, Ser. No. 687,857
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1983, 3347447
Int. Cl.⁴ B30B 9/24, 13/00
U.S. Cl. 100—37 9 Claims

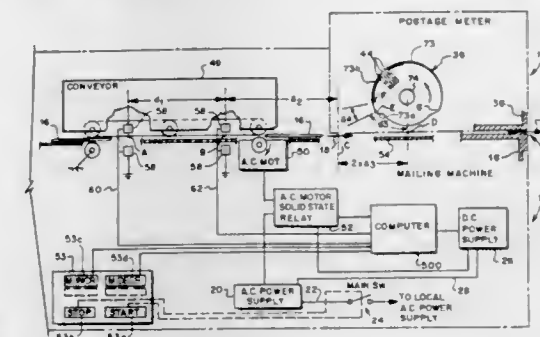


1. A method of successively extracting from fruit mash pure fruit juice and fruit juice of inferior quality, the method comprising the steps of:
feeding a substantially continuous stream of fruit mash to a first juice extraction press of the type which has cooperating endless webs;
pressing the mash between the webs of the first juice extraction press to extract pure fruit juice, while reducing the fruit mash to a once-pressed pomace;
breaking up the once-pressed pomace, as it is being discharged from the first juice extraction press;
directly feeding the once-pressed, broken-up pomace to a second juice extraction press of the type which has cooperating endless webs;
adding water to the once-pressed pomace and allowing the water to soak and swell the pomace to a pomace mash, as the pomace advances in the second juice extraction press; and
pressing the pomace mash between the webs of the second juice extraction press to extract juice of inferior quality, while reducing the pomace mash to a twice-pressed pomace.
4. A device for the separate extraction from fruit mash of

pure fruit juice and fruit juice of inferior quality, the device comprising in combination:
a first juice extraction press adapted for receiving said fruit mash and for compressing the fruit mash so as to extract therefrom pure fruit juice, while reducing the fruit mash to once-pressed pomace which is discharged on the downstream side of the press;
a pomace breakup device arranged on the downstream side of the first juice extraction press, the pomace breakup device including moving mechanical means for diminishing the once-pressed pomace into a loose aggregate;
means for adding water to the once-pressed, broken-up pomace, so as to convert said pomace into a pomace mash; and
a second juice extraction press adapted for receiving said pomace mash and for compressing the pomace mash so as to extract therefrom fruit juice of inferior quality, while reducing the pomace mash to twice-pressed pomace which is discharged on the downstream side of the second press; and wherein
the second juice extraction press is arranged in tandem with the first juice extraction press, the once-pressed pomace discharged from the first press being directly transferred to the second press.

4,643,089
APPARATUS FOR CONTROLLING PRINTING MEANS

Edilberto I. Salazar, Brookfield, and Wallace Kirschner, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Jan. 18, 1985, Ser. No. 692,754
Int. Cl.⁴ B41K 3/48, 3/64
U.S. Cl. 101—91 16 Claims



1. In combination with rotary printing means for printing indicia on a continuously moving sheet, and microcomputer means including a microprocessor programmed for controlling the angular velocity of the indicia printing means in consideration of the velocity of the sheet and of sampled increments of angular velocity of the indicia printing means to normally cause the indicia to be printed on the sheet a predetermined marginal distance from an edge of the sheet substantially independently of the velocity of the sheet, an improvement for changing the marginal distance, the improvement comprising:
a. operator-controlled means for providing at least one signal representative of at least one increment of distance; and
b. the microcomputer means including means for processing the at least one signal to provide a changed marginal distance, wherein the changed marginal distance includes the predetermined marginal distance changed by the at least one increment of distance.

4,643,090

PRINTING PRESS AND METHOD

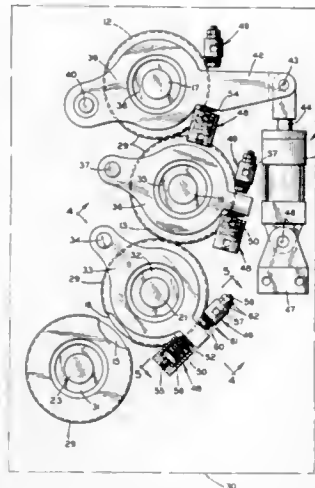
Richard L. McKrell, Ledyard; W. Robert Gelinas, Jewett, and Yakov Z. Brovman, Mystic, all of Conn., assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Feb. 26, 1985, Ser. No. 705,640

Int. Cl.⁴ B41F 5/12, 13/20, 13/40

U.S. Cl. 101—218

6 Claims



1. A printing press for printing on material, said printing press including a plurality of movable printing cylinders, a pair of bearers connected with each of said printing cylinders, each of said bearers being disposed adjacent to an axial end portion of a printing cylinder, a plurality of support means for supporting said printing cylinders for movement between a thrown off position in which the bearers of each printing cylinder are separated from the bearers of an adjacent printing cylinder and a printing position in which the bearers of each printing cylinder are in abutting engagement with the bearers of an adjacent printing cylinder, a plurality of spring means each of which is associated with one of said printing cylinders to urge the associated printing cylinder to its thrown off position, and motor means for moving said printing cylinders from their thrown off positions to their printing positions against the influence of said spring means, said motor means being operable to apply force directly to a first of said printing cylinders to move said first printing cylinder to its printing position, each of the printing cylinders other than said first printing cylinder being movable from its thrown off position to its printing position against the influence of the associated one of said spring means under the influence of forces transmitted directly to the bearers of each of the other printing cylinders from the bearers of an adjacent printing cylinder upon operation of said motor means, each of said support means including a pair of pivotal arms connected with opposite end portions of a respective one of said printing cylinders and pivot means for supporting said arms for pivotal movement about an axis offset to one side of the printing cylinder to which the arms are connected, each of said spring means being engageable with one of said arms to urge said one of said arms to pivot toward a position in which the printing cylinder connected with said one of said arms is in its thrown off position.

4,643,091

ELECTROMAGNETIC CLUTCH-BRAKE POSITIONING ASSEMBLY

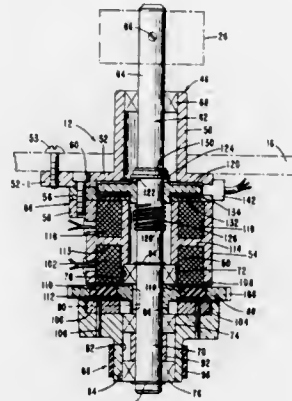
Brian M. Fairey, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 25, 1985, Ser. No. 801,651

Int. Cl.⁴ B41F 33/08, 13/12, 21/00

U.S. Cl. 101—233

12 Claims



1. A positioning assembly comprising:
a frame having first and second ends;
a shaft having an output portion near said second end;
mounting means for rotatably mounting said shaft in said frame and for restraining said shaft against axial movement therein;
input means located near said first end for supplying rotary motion to said assembly;
a first rotatable member fixed to said shaft to rotate therewith and having a friction area facing said first end;
a motion transfer member mounted in said input means to rotate therewith and to be moveable axially along said shaft;
a first electromagnetic coil mounted in said assembly to attract said motion transfer member to said friction area of said first rotatable member when said first electromagnetic coil is energized to thereby transfer rotary motion from said input means to said shaft;
a second rotatable member mounted on said shaft to rotate therewith and to be moveable axially along said shaft;
a brake member fixed in said assembly and facing said second rotatable member;
means for biasing said second rotatable member axially away from said brake member;
a second electromagnetic coil mounted in said assembly to attract said second rotatable member to said brake member when said second electromagnetic coil is energized to thereby brake said shaft; and
control means for controlling the rotational position of said shaft relative to a reference point by controlling the energization and de-energization of said first and second electromagnetic coils;
said control means including:
detector means which are operatively coupled to said second rotatable member to detect its position in relation to said reference point and to produce at least one positional signal in accordance therewith; and
circuit means responsive to said at least one positional signal to adjust the energization and de-energization of said first and second magnetic coils to control the rotational position of said shaft relative to said reference point.

4,643,092

EASY-TO-CLEAN INKING MECHANISM FOR A PRINTING PRESS

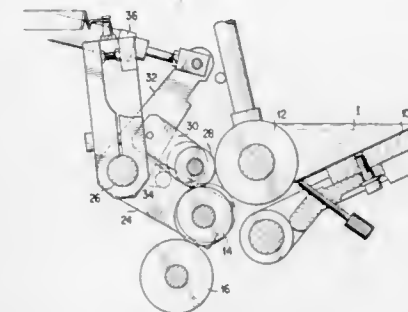
Kenich Yamagishi, Yachiyo, and Katsuyuki Mori, Tokyo, both of Japan, assignors to Miyakoshi Printing Machinery Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1986, Ser. No. 828,739

Int. Cl.⁴ B41F 35/04, 31/10

U.S. Cl. 101—350

2 Claims



1. An inking mechanism for a printing press comprising:
(a) an ink fountain for containing a printing ink;
(b) a fountain roller disposed in the ink fountain to be dipped in the printing ink;
(c) a series of ink rollers including a first ink roller disposed opposite the fountain roller with a spacing therebetween;
(d) a drawout roller movable alternately into and out of rolling engagement with the fountain roller and with the first ink roller for ink transfer from the former to the latter; and
(e) a cleaning roller movable into and out of simultaneous rolling engagement with both the fountain roller and the drawout roller, the cleaning roller when in rolling engagement with the fountain roller and the drawout roller being effective to cause joint rotation of the fountain roller with the drawout roller and the series of ink rollers and hence to make possible the cleaning of the fountain roller simultaneously with the drawout roller and the ink rollers.

4,643,093

DOUBLE-CREASED LITHOPLATE AND METHOD OF MOUNTING ON A WEB PRESS

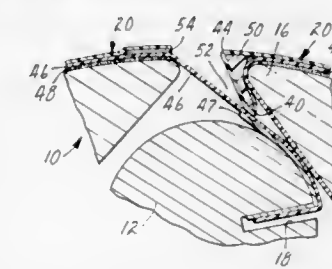
Richard T. Goar, and John H. Tholen, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 1, 1985, Ser. No. 707,047

Int. Cl.⁴ B41F 27/12

U.S. Cl. 101—401.1

8 Claims



1. Method of mounting a lithoplate on the plate cylinder of a web press, which cylinder has a longitudinal channel for receiving the lead edge of the lithoplate, said method comprising the steps of:

(1) twice crimping the lithoplate along lines parallel to each other and parallel to registration-line openings near its lead edge so that the portion of the lithoplate between the

outer crimp and the lead edge of the lithoplate extends toward the main body of the lithoplate,
(2) fitting a thin, elongate stiffener snugly between the two crimps thus formed in the lithoplate,
(3) applying adhesive to the underside of the lithoplate along its trailing edge,
(4) inserting the stiffener and crimped portion of the lithoplate snugly into the longitudinal channel of the plate cylinder, and
(5) wrapping the lithoplate around and attaching the trailing edge to the plate cylinder by pressing the adhesive against the plate cylinder.

4,643,094

PRINTING PLATE FOR OFFSET PRINTING

Hakan Holmström, Löberöd, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

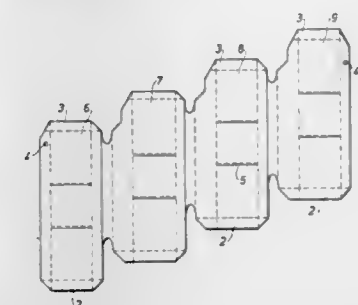
Filed Nov. 22, 1985, Ser. No. 800,773

Claims priority, application Sweden, Dec. 5, 1984, 8406157

Int. Cl.⁴ B41N 1/10

U.S. Cl. 101—401.1

8 Claims



1. A printing plate for offset printing comprising a plurality of printing patterns having similar outer contours, said printing patterns located on the printing plate parallel to one another and adjoining one another but displaced in a longitudinal direction in relation to one another, the printing plate being one piece and having a width which corresponds with a combined width of the individual printing patterns, the printing plate being provided along both its front edge and its rear edge with stepped edge contours so as to define a plurality of generally rectangular parts longitudinally displaced from one another, each part having a length at least as long as a length of one of the printing patterns.

4,643,095

PRINTING UNIT CYLINDER FOR ROTARY OFFSET PRINTING MACHINES AND METHOD OF PRODUCTION

Wolfgang Pfizenmaier, Neckargemünd, and Hans-Jürgen Beck, Heidelberg, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Nov. 25, 1985, Ser. No. 801,476

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 8434353[U]

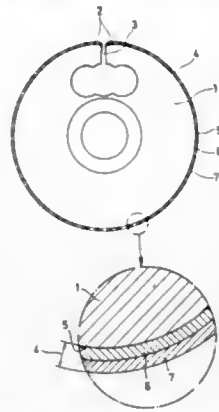
Int. Cl.⁴ B41F 13/08

U.S. Cl. 101—401.1

2 Claims

1. Printing unit cylinder of a given diameter for offset rotary printing machines having a galvanically applied wear and corrosion-resistant jacket surface coating, comprising a cylinder body formed with a cylinder channel and having a transitional surface from a cylindrical jacket surface thereof to said cylinder channel, said cylindrical jacket surface and said transitional surface having a sand-blasted surface roughness of 10 to 20 microns, a nickel undercoating having a hardness of 180 to 220 vickers hardness disposed on said cylindrical jacket surface and said transitional surface; and a chromium layer disposed on

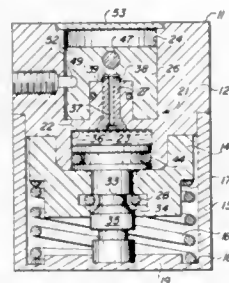
said undercoating and having a hardness of greater than 900 vickers hardness and a microcracked surface of greater than 400 cracks per cm^2 , said cylinder body having a diameter less



than the given diameter of the printing unit cylinder by a thickness corresponding to the superimposed thicknesses of said nickel undercoating and said chromium layer.

4,643,096
SAFETY AND ARMING MECHANISM
Robert R. Durrell, Glendale, and Kenneth E. Willis, Litchfield Park, both of Ariz., assignors to Unidynamics Phoenix, Inc., Phoenix, Ariz.

Filed Nov. 22, 1985, Ser. No. 800,742
Int. Cl.⁴ F42C 15/24, 15/28
U.S. Cl. 102—250



1. A safety and arming mechanism for a missile comprising a set back weight movable from a first position to a second position in response to acceleration of the missile during launch, means biasing said set back weight toward its first position, a fluid reservoir, a piston in said reservoir, means for connecting said set back weight to said reservoir piston when the weight has moved from its first position to its second position whereby when said weight is moved toward its first position thereafter by said biasing means said reservoir piston is moved to expel fluid from said reservoir, a working cylinder having an arming piston therein and means comprising a flow restricting orifice providing communication between said reservoir and said working cylinder.

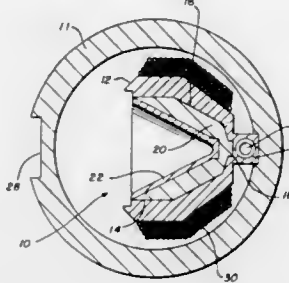
4,643,097
SHAPED CHARGE PERFORATING APPARATUS
Manmohan S. Chawla, Houston, and William A. McPhee, Jersey Village, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 25, 1985, Ser. No. 791,633
Int. Cl.⁴ F42B 1/02

U.S. Cl. 102—306

1. An explosive shaped charge comprising:

a housing having a forwardly opening cavity formed therein;
a quantity of explosive material within said cavity;



a liner cooperatively arranged to retain said explosive material in said cavity; and
a jacket of fiber material substantially surrounding said housing.

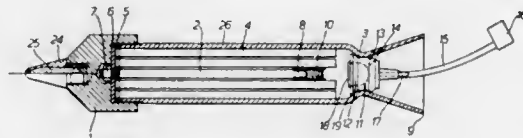
4,643,098
ROCKET WITH TRACER CHARGE AND GUNPOWDER RODS

Gunnar F. Gudbrandsen, Raufoss; Per Kristian Skjerven, Trevatn, and Bjorn S. Bjerkvoll, Raufoss, all of Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed Oct. 18, 1984, Ser. No. 662,023
Claims priority, application Norway, Oct. 20, 1983, 833817
Int. Cl.⁴ F42B 13/36

U.S. Cl. 102—513

8 Claims



1. A rocket which can be launched from a rocket launcher, said rocket comprising
a head element,
a hollow sleeve which extends away from said head element, said hollow sleeve having a tubular portion which defines an interior space and a nozzle portion,
a support rod located within said interior space, said support rod having a first end facing said head and a second end facing said nozzle portion of said hollow sleeve,
a tracer charge mounted on said rod, and
a plurality of gunpowder rods positioned within said interior space and around said central rod, each of said gunpowder rods including a first end facing said head and a second end facing said nozzle portion of said hollow sleeve.

4,643,099
ARMORED-PIERCING PROJECTILE (PENETRATOR)
Hans-Werner Luther, Kaarst, and Udo Sabranski, Willich, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 625,457, Jun. 28, 1984, abandoned, which is a continuation-in-part of Ser. No. 308,200, Sep. 24, 1981, abandoned. This application Jul. 10, 1985, Ser. No. 753,655

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037560

Int. Cl.⁴ F42B 11/00

U.S. Cl. 102—517

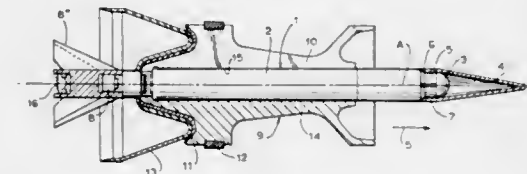
3 Claims

1. An improved armor-piercing projectile having a target-effective core occupying the entire cross-section of said projectile and being made of a material having a density of at least

15.63 g, cm^{-3} , the front portion of said core being in the shape of a hemisphere, said hemisphere being covered by a ballistic hood forming a nose point of said projectile, the improvement comprising

said core being in sub-caliber shape and having a length/diameter-relationship of at least 12 and being made of a material with a high metal tungsten alloy content of at least 90 weight percent of tungsten,

on the outer surface of said core at least being partially provided with means to formlockingly interact with corresponding means of a sabot being segmented for discarding after having passed the muzzle of a barrel,



the aft portion of said core having stabilizing fins connected thereto, said ballistic hood, so as not to hinder a point contact between the hemisphere and a target, is made of a suitable and thin-walled material and is mounted on said core so as to detach upon impact on the target of said projectile; and

said hemisphere and ballistic hood defining an empty chamber therebetween so that said ballistic hood can detach upon impact on a target thereby ensuring direct contact between the hemispherically shaped front portion of the projectile and the surface of the target.

4,643,100
RAILWAY TRAIN SET FOR THE RENEWAL OF RAILWAY TRACKS, WITH SUPPORT AND ADVANCEMENT GUIDE MEANS

Enrico Valdittera, Viale Rimembranze 67, I-15067 Novi Ligure, Alessandria, Italy

Filed Jun. 25, 1985, Ser. No. 748,608
Claims priority, application Italy, Jul. 10, 1984, 67701 A/84
Int. Cl.⁴ E01B 29/05

U.S. Cl. 104—2

4 Claims



1. A railway train set intended to be used for the renewal of railway tracks, comprising an operative assembly having means for removing the old rails, at least one axle intended to advance on the railway track already deprived of the rails, and means for allowing said axle to advance on the railway track already deprived of the rails, wherein said means for allowing said axle to advance on the railway track already deprived of the rails comprise: an auxiliary bogie, mounted on said operative assembly for lifting and lowering displacements; means for controlling the lifting and lowering displacements of said auxiliary bogie; first and second rail sections adapted to be disposed, during periods of operation, below said auxiliary bogie and below said axle, respectively, in order to allow them to travel thereon, and first and second means for displacing forward said first and second rail sections in a longitudinal direction whereby said first and second rail sections are alternately

loaded and unloaded as said auxiliary bogie is raised and lowered and can be shifted forward when unloaded.

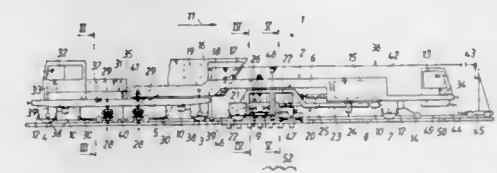
4,643,101
MOBILE TRACK LEVELING, LINING AND TAMPING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Continuation-in-part of Ser. No. 498,261, May 26, 1983, Pat. No. 4,596,193. This application May 4, 1984, Ser. No. 607,207
Claims priority, application Austria, Nov. 23, 1982, 4266/82; Sep. 9, 1983, 3223/83

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.
Int. Cl.⁴ E01B 27/17

U.S. Cl. 104—7.2

25 Claims



1. A mobile track leveling, lining and tamping machine comprising a main machine frame supported on undercarriages spaced apart in the direction of the track for mobility on the track in an operating direction, the track consisting of two rails fastened to successive ties resting on ballast; an operating unit mounted for adjustment in relation to the main machine frame in the operating direction and comprised of a separate carrier frame means supporting a ballast tamping assembly and a track leveling and lining assembly forwardly of the ballast tamping assembly, in the operating direction, at a fixed distance from the tamping assembly; a pivotal bearing supporting a front end of the operating unit on the machine frame; a track stabilization assembly mounted on the main machine frame between the operating unit and a succeeding one of the undercarriages supporting the main machine frame on the track for continuous and non-stop movement therewith; a drive for continuously and non-stop advancing the main machine frame in the operating direction; and an adjustment drive for adjusting the operating unit in relation to the main machine frame for intermittently advancing the operating unit while the main machine frame advances continuously.

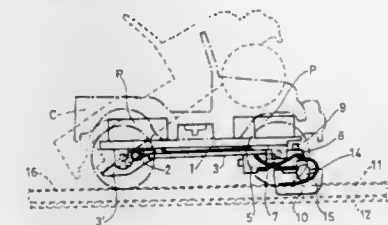
4,643,102
TOY VEHICLE

Luis M. Arnau Manresa, Barcelona, Spain, assignor to Exin-Iber, S.A., Barcelona, Spain

Filed Oct. 30, 1984, Ser. No. 666,317
Claims priority, application Spain, Mar. 13, 1984, 278170
Int. Cl.⁴ A63H 17/26

U.S. Cl. 104—305

5 Claims



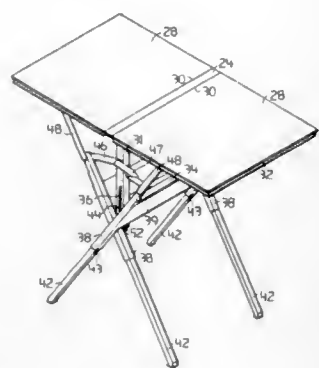
1. A toy vehicle, of the type having a chassis including wheels and means for driving at least some of the wheels, comprising:

a first member connectable to the chassis and having an underside, a second member having one end pivotally connected to said underside, means constantly urging said first and second members apart, said second member having a second end opposite said one end and bushing means disposed adjacent said second end, said vehicle further including an intermediate member having a generally horizontally extending shaft rotatably received in said bushing means of said second member so as to permit rotating movement of the intermediate member about an axis extending longitudinally of the vehicle, said intermediate member having bushing means for rotatably receiving a shaft at a right angle to said shaft received in said bushing means of said second member, a guide means for cooperation with a guide track, said guide means including said shaft received in said bushing means of said intermediate member.

4,643,103
COLLAPSIBLE TABLE
Robert A. Jorgensen, P.O. Box 64, Leavenworth, Wash. 98826
Filed Mar. 25, 1985, Ser. No. 715,673
Int. Cl.⁴ A47B 3/091

U.S. Cl. 108—36

4 Claims



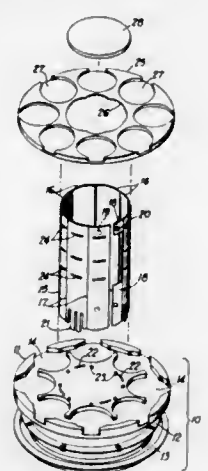
1. A collapsible table comprising:

- a spine having a top component and a vertical support component extending downwardly substantially normal to the top component,
- a pair of leaves hinged to opposite sides of the spine top component, the leaves being foldable selectively between a substantially co-planar, open position wherein they form a tabletop with the spine top component, and a closed position wherein they extend downwardly parallel to and on opposite sides of the vertical support component to form a container,
- two pairs of scissor-type, crossed legs, and pivot means pivotally connecting the legs of each pair intermediate their ends, and
- collapsible mounting means including slide and guide means pivotally and slidably interconnecting the leg pairs and the vertical support component of the spine, the mounting means further including first pivotally mounted link pairs pivotally interconnecting the upper ends of the legs and the vertical support component of the spine, centrally of said support component, and second pivotally mounted link pairs pivotally interconnecting the upper ends of the legs and the leaves, centrally of the leaves, for moving the legs and mounting means between an extended position laterally outward of opposite sides of the vertical support component for supporting the leaves in open position, and a collapsed position substantially aligned with the vertical support component and contained within the outer periphery of the folded leaves.

4,643,104
ROTATING TRAY ASSEMBLY
Svien Rasmussen, 24179 Wright Dr., Hayward, Calif. 94545
Filed Oct. 10, 1985, Ser. No. 786,041
Int. Cl.⁴ A47B 11/00

U.S. Cl. 108—105

4 Claims



1. A rotating stacked tray apparatus comprising:
 - a base;
 - a generally circular lower tray rotatably mounted on said base for rotating around its axis;
 - a shaft coaxially mounted on said lower tray which comprises a generally rectangular flexible element, having a series of connected arc portions wherein the arc portions are generally inflexible and the arc connections are flexible, such that the shaft formed thereby has an undulating arc surface, and having connection means on opposing edges, such that said shaft is formed when said opposing edges are brought together and connected;
 - and at least one generally circular shelf having a central opening for receiving said shaft and supported along the height of said shaft, wherein the central opening of said at least one shelf has complementary shape with said shaft, such that said opening is a series of arcs meeting at apexes around said opening, wherein said at least one shelf is supported by said shaft by means comprising horizontal slits centered on each of the arc portions of said shaft in the same plane, said slits having generally the same width as said shelf, and the length of said slits being such that the apexes of the opening of said shelf may be securely received within said slits when said shelf is rotated around the axis of said shaft in the plane of said slits.

4,643,105
TABLE TOP SUPPORT
Elliott W. Baum, St. Louis County, Mo., assignor to Berco Industries, Inc., St. Louis, Mo.
Filed Mar. 13, 1985, Ser. No. 711,258
Int. Cl.⁴ A47B 13/02

U.S. Cl. 108—150

8 Claims

1. In a table top support for use in securing the top of a table at its underside to its upstanding column, and with said table top capable of pivoting between a horizontally disposed and usable position upon its column, or being pivoted to a vertical and storage position upon the same column, comprising, said support incorporating a pair of first and second mating members, the first mating member comprising a base member securing to the top of said column, the second mating member comprising a connectable member securing with the under surface of the said table top and being removably attachable with the base member and being capable of adherence through a first shaft means located proximate one edge of the connectable member and cooperating with a proximate edge of the

base member for providing pivotal support for the table top upon its supporting column, said proximate edge of the base member including a formed recess therein, said base member recess extending across the said base member proximate its edge and being aligned with the said first shaft means of the connectable member and capable of receiving the same therein during table usage, said formed base member recess having another and communicating offset portion whereby the first said shaft means being received and retained therein during pivoting of the table top from its usable horizontal and useful position and to a proximate vertical and storage position, said formed recess of the base member opening upwardly and its offset portion extending from the said recess and in a direction towards the center of the structured table, wherein the said formed offset portion in cooperation with the said first shaft means tending to seat the said shaft within said base member recess as during the pivot of the table top between its usable and storage positions, a second shaft means located proximate an opposite edge from the formed base member recess and cooperating with the connectable member to stably support the said table top in its usable position upon its column, said connectable member having at least one recess formed therein and disposed for reception of the base member second shaft



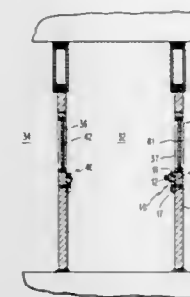
means therein, said connectable member recess having a communicating offset portion formed therewith, whereby the said second shaft means being received and retained within said base member recess while the table top is maintained in its horizontal and usable position, said connectable member formed recess opening downwardly and its offset portion extending from the said formed recess in a direction towards the center of the structured table, wherein said connectable member recess with its offset portion in cooperating with the said second shaft means of the base member tending to seat the said base member shaft means within the said connectable member recess during a pivoting of the table top between its usable and storage positions, wherein said first shaft means of the connectable member aligned for seating within the base member recess and said second shaft means of the base member being aligned for simultaneous seating within the connectable member recess while said table top is disposed in said horizontal and usable position upon the upstanding column, and whereby the said table top and its attaching connectable member is capable of pivoting in two directions about both of the said first and second shaft means when maneuvering the said table top from its horizontal and usable position to the vertical and storage position.

4,643,106
SAFETY LOCK DEVICE
Joel Aragona, 328 W. 89th St., New York, N.Y. 10024
Filed Oct. 12, 1984, Ser. No. 660,148
Int. Cl.⁴ E05G 3/00; E05B 47/00

U.S. Cl. 109—6

9 Claims

1. In combination, a first door, said first door being formed with a key actuatable lock, and a second door, said second door being oppositely disposed from said first door so as to form a vestibule, said second door being formed with a safety lock comprising: a first housing; a laterally displaceable bolt operatively disposed in said first housing; a second housing, said second housing being juxtaposed with said first housing, so that said bolt may be at least partially displaced from within



said first housing and extended into said second housing by manipulation; a rotatable knob means, said knob means being operatively connected to said bolt for temporarily extending said bolt from said first housing and towards said second housing; the operative connection including a cam element, said cam element being attached to said knob means for displacement, and having two opposed ears comprising cam surfaces; two plates, each of said cam surfaces alternately cooperating with and displacing one of said plates; two movable cylindrical posts, each of said plates being mounted to one end of one of said movable cylindrical posts, said posts being in registration and parallel to each other with the other end of each of said posts extending to attachment to said bolt, so that alternate displacement of one of said posts, serves to at least partially displace said bolt; a transverse cross member perpendicular to said posts, said cross member being fixedly mounted to said

first housing and having two opposed circular openings to guide the rectilinear movement of said posts; two helical compression springs, each of said springs being mounted to one of said cylindrical posts and extending between said cross member and one of said plates; a yoke, said yoke having a bifurcation comprising two opposed lateral arms, each of said arms extending to an attachment to one of said plates, said arms straddling a middle leg portion of said yoke; a dash pot, said leg portion extending to the piston portion of said dash pot, said dash pot including an enclosed cylindrical member containing a fluid, so that a slow fluid bleed is attained when said piston is displaced, and the base of said cylinder opposite to said yoke being fixedly and centrally attached and mounted to said cross member; the action of said two helical compression springs being capable of being alternately retarded by said yoke and said dash pot, so that said remains extended for a pre-determined locking period and then is retracted for self-unlocking.

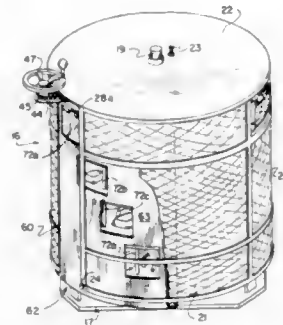
4,643,107
SECURITY VAULT
William L. Gunn, and Gerry G. Hull, both of Atlanta, Ga., assignors to Bellsouth Corporation, Atlanta, Ga.
Filed Feb. 11, 1985, Ser. No. 700,117
Int. Cl.⁴ E05G 1/00

U.S. Cl. 109—48

14 Claims

1. Security vault apparatus for receiving and permitting seriatim access to a number of articles, comprising: support means defining plural sets of receptacles for receiving articles, each said set comprising a plurality of said receptacles; barrier means associated with said support means and including opening means selectively operative to block access to all but a selected one such set of receptacles at a time, thereby permitting access only to said one set of receptacles at a time; means operative to move said support means relative to said barrier means and expose seriatim each separate receptacle of a selected set of receptacles to access through said opening means; and means operative to reposition said barrier means relative to said support means only when all the receptacles of said

one set have been exposed to access, blocking further access to said one set of receptacles and permitting access only to another said set of receptacles for seriatim exposure through said opening means,



whereby articles can be inserted or removed at only one receptacle at a time.

4,643,108

APPARATUS FOR DEHYDRATING METAL HYDROXIDE SLUDGE

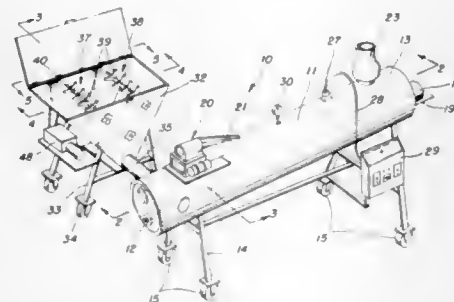
Daniel D. Singelyn, and Paul J. Singelyn, both of 133 Lyle La., Nashville, Tenn. 37210

Filed Jan. 3, 1986, Ser. No. 815,983

Int. Cl.⁴ F23G 5/04

U.S. Cl. 110—228

6 Claims



1. An apparatus for dehydrating a sludge comprising:
 - (a) an elongated dehydrator chamber having an upper portion, a bottom portion, an inlet end, and an outlet end,
 - (b) an elongated dryer auger extending along the bottom portion of said dehydrator chamber from said inlet end toward said outlet end,
 - (c) drive means for said dryer auger to move sludge from said inlet end toward said outlet end,
 - (d) a feed hopper having an upper portion and a bottom portion for receiving sludge,
 - (e) a feed auger in the bottom portion of said feed hopper in communication with said inlet end for feeding sludge from said hopper into the inlet end of said dehydrator chamber,
 - (f) means for driving said feed auger,
 - (g) a rotary breaker bar,
 - (h) means mounting said breaker bar in the lower portion of said feed hopper for rotation parallel about a substantially horizontal rotary axis above said feed auger,
 - (i) drive means for rotating said breaker bar about said rotary axis for separating the lower portion of sludge from the upper portion of the sludge within said feed hopper sufficiently to gravitate toward said feed auger,
 - (j) means for moving hot gas within said dehydrator chamber from said inlet end toward said outlet end to dry said sludge,

- (k) exhaust means at said outlet end for venting gases from said dehydrator chamber, and
- (l) said outlet end comprising a discharge port for the sludge dried in said dehydrator chamber.

4,643,109

GASIFICATION OF COAL

Philippus J. Meyer, Secunda, South Africa, assignor to Sasol Operations (Proprietary) Limited, Johannesburg, South Africa

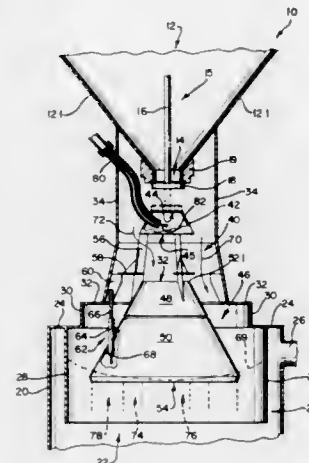
Filed Nov. 26, 1985, Ser. No. 802,033

Claims priority, application South Africa, Nov. 27, 1984, 84/9260

Int. Cl.⁴ F23G 5/12

U.S. Cl. 110—229

14 Claims



1. A fixed bed dry bottom coal gasifier which includes a cylindrical wall providing a fixed bed coal gasification chamber for gasifying coal to produce synthesis gas; a coal lock above the chamber and having a coal discharge opening leading into the chamber; a gas outlet leading from the chamber at a high level, a first static coal distributor located in the gasification chamber below the coal discharge opening of the coal lock, the first coal distributor having an upper opening spaced with vertical clearance from the coal discharge opening, a lower opening spaced from the upper opening, and an upwardly directed peripheral coal distributing surface flaring downwardly outwardly from said upper opening and extending beyond the vertical projection of the periphery defining the coal discharge opening; and a second static coal distributor located below the first coal distributor and spaced with clearance therefrom, the second coal distributor having an upper opening and a lower opening with its upper opening being spaced with vertical clearance from the lower opening of the first distributor, the second distributor also having a passageway extending from its upper opening to its lower opening through which coal can be distributed into the space below the first coal distributor.

4,643,110

DIRECT FUEL-FIRED FURNACE ARRANGEMENT FOR THE RECOVERY OF GALLIUM AND GERMANIUM FROM COAL FLY ASH

Bohdan Lisowyj, Omaha, Nebr.; David Hitchcock, Independence, Mo., and Henry Epstein, Omaha, Nebr., assignors to Enron, Inc., Houston, Tex.

Filed Jul. 7, 1986, Ser. No. 882,762

Int. Cl.⁴ F23G 5/12

U.S. Cl. 110—229

7 Claims

1. A furnace arrangement for the recovery of gallium and germanium from pelletized fly ash, comprising:

a vertically disposed shaft furnace;
said furnace having an upper portion with means for heating the contents thereof in an oxidizing atmosphere;
said furnace upper portion adapted to receive a continuous charge of "green" pelletized fly ash;
said furnace having a lower portion with means for subjecting the contents thereof to a reducing atmosphere;
said furnace having a transition portion between said upper and lower portions, said transition portion having barrier means for hindering the flow of gases from said lower

- (iv) means for introducing refuse into said landfill;
- (v) means for compacting said refuse;
- (vi) means for removing and recovering methane generated by anaerobic bacterial digestion of organic materials contained in said refuse; and
- (vii) means for removing at least a portion of the compacted refuse from said landfill.

4,643,112

DEVICE FOR BRAKING THE LIMBS OF NEEDLE THREADS IN OSCILLATING HOOK TYPE SEWING MACHINES

Gregor Sidler, and Jakob Rickenbach, both of Steckborn, Switzerland, assignors to Fritz Gegauf AG, Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

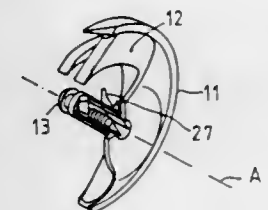
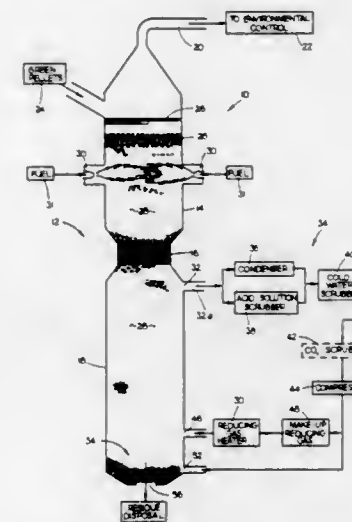
Filed Sep. 19, 1985, Ser. No. 777,927

Claims priority, application Switzerland, Sep. 19, 1984, 4487/84

Int. Cl.⁴ D05B 57/12

U.S. Cl. 112—185

17 Claims



portion to said upper portion, whereby said oxidizing and reducing atmospheres are effectively segregated;
said furnace lower portion having an outlet port in the upper part of its wall for carrying reducing gas from said furnace lower portion to an adjacent recovery system;
said furnace lower portion having a first inlet port in a lower part of its wall for conveying reducing gas to said furnace lower portion; and
said furnace lower portion having an opening in the bottom thereof adapted to continuously discharge pellet residue therefrom.

1. A sewing machine comprising a substantially vertically reciprocable needle for the upper thread; means for reciprocating said needle; a shuttle hook mounted for oscillatory movement in a substantially vertical plane about a predetermined axis; means for oscillating said hook so that the hook and the needle cooperate in converting the upper thread into a series of loops each having a plurality of limbs; and means for temporarily braking at least one limb of each loop, including a loop-engaging member movable by successive loops with reference to said hook in a second plane which is at least substantially parallel to said vertical plane from a first position to a second position in which a loop is cast off said member as a result of upward movement of the engaged portion of the loop; and means for yieldably biasing said member to said first position.

4,643,111

RESOURCE RECOVERY UTILITY

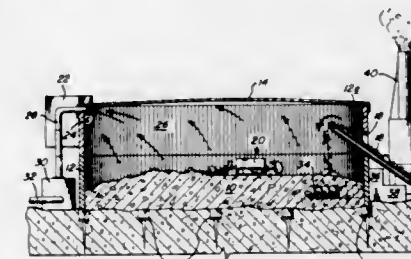
Robert L. Jones, 275 Brooks Rd., Bethany, Conn. 06525

Filed Aug. 21, 1985, Ser. No. 767,892

Int. Cl.⁴ F23B 7/00

U.S. Cl. 110—234

16 Claims



1. A resource recovery utility comprising:
 - (i) a landfill;
 - (ii) a continuous wall surrounding the perimeter of said landfill;
 - (iii) a containment structure extending completely over said landfill and affixed to said continuous wall;

4,643,113

CHAIN STITCH SEWING MACHINE

Reinhold Schrudde, Oerlinghausen-Lipperreithe; Rainer Loh, Oerlinghausen, and Klaus Hampel, Bielefeld, all of Fed. Rep. of Germany, assignors to Kochs Adler, AG, Fed. Rep. of Germany

Filed Feb. 15, 1985, Ser. No. 702,038

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1984, 3411217

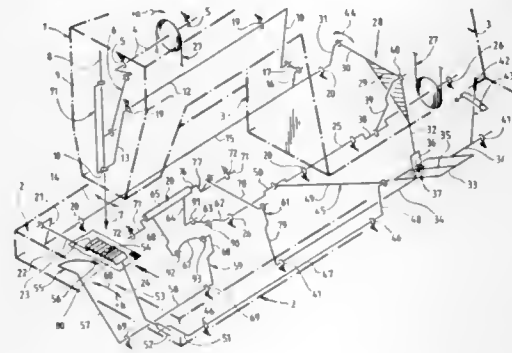
Int. Cl.⁴ D05B 1/10, 27/22, 57/02

U.S. Cl. 112—199

5 Claims

1. A double chain stitch swing machine having:
 - a feed device swingably driven in and oppositely to a fabric feeding direction for generating a relative motion as a feed movement between a sewing head and a workpiece;
 - a needle bar with a needle synchronously drivable with respect to said relative motion and reciprocatingly driven by a crank drive;
 - adjustment means for commonly adjusting said feeding device and said needle on different stitch lengths;
 - a double chain stitch looper swingably driven in and oppositely to said fabric feeding direction and cooperating with said needle; and
 - a looper drive mechanism formed as a six-bar-linkage mechanism having three stationary pivots, said pivots comprising:

a first pivot at the drive input,
a second pivot at the drive output and
an intermediate pivot,
said looper drive mechanism generating a swing motion of
said looper of high velocity to and from an extreme



position placed in said fabric feeding direction, at which
a short period of dwell is achieved in said extreme
position and a long period of dwell is achieved in an
oppositely directed extreme position, and said interme-
diate pivot being relocatably provided.

4,643,114

**DEVICE FOR CONTROLLING THE LOOPER THREAD
OF A DOUBLE CHAINSTITCH SEWING MACHINE**
Klaus Hampel, Bielefeld, and Wilfried Goldbecker, Steinhagen,
both of Fed. Rep. of Germany, assignors to Kochs Adler AG,
Fed. Rep. of Germany

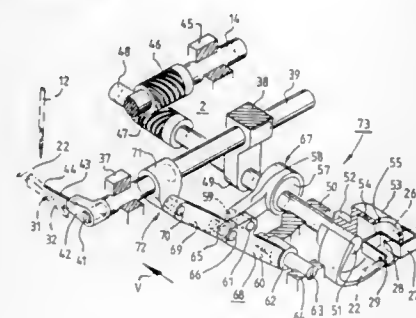
Filed Jun. 7, 1985, Ser. No. 742,119

Claims priority, application Fed. Rep. of Germany, Jun. 28,
1984, 3423753

Int. Cl.⁴ D05B 1/10, 57/02

U.S. Cl. 112—199

5 Claims



1. A device for controlling the looper thread of a double
chainstitch sewing machine, whose stitch length can be ad-
justed with a needle and with a thread guiding system includ-
ing a thread delivery for a needle thread and for a looper
thread, a looper which can be oscillatingly driven in a sewing
direction and a looper thread spreader which can be oscillat-
ingly driven perpendicular to the sewing direction by means of
a link mechanism for spreading a triangle of thread formed by
the needle thread and the looper thread when said needle
penetrates into said triangle of thread, wherein said link mecha-
nism is a six-link mechanism with three bearings, said link me-
chanism consisting of a basic four-bar linkage and a second-
ary two-link group whereby two links are guided during a
movement of said spreader in an extreme position in which it
does not spread said looper thread whereby the looper thread
spreader is almost at a standstill in the said extreme position.

4,643,115 WORKPIECE HOLDER FOR SEWING THE TIP AREA OF NECKTIES

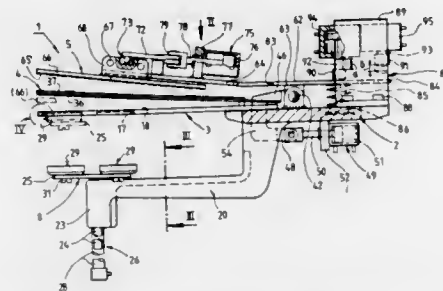
Hubert Jünemann, Bielefeld, Fed. Rep. of Germany, assignor to
Kochs Adler, AG, Fed. Rep. of Germany
Filed Apr. 2, 1986, Ser. No. 847,160

Claims priority, application Fed. Rep. of Germany, Apr. 4,
1985, 3512358

Int. Cl.⁴ D05B 23/00

U.S. Cl. 112—121.22

11 Claims



1. Workpiece holder for sewing the area of a tip of a necktie,
comprising a lower plate as a support for a lining cut,
and comprising a center folding device to be supported on a
necktie material cut to be arranged above the lining out,
the center folding device having two folding plates which
can be adjusted in opposite directions to one another and
transversely with respect to a longitudinal direction of the
cuts and by means of which a material fullness of the
necktie material cut can be drawn into a gap between the
folding plates to form a central fold,
and the center folding device being pivotable upwardly
from the lower plate or towards the lower plate, and the
two cuts being connectable to one another, when the
central fold is gathered, by means of two outer seams
extending towards the tip and by means of lateral seams
following these outer seams,
wherein between the lower plate and the center folding
device a longitudinal displacing device with a longitudinal
sliding plate is arranged, between which plate and the
center folding device the necktie material cut is to be
arranged, and wherein the longitudinal displacing device
is displaceable after the sewing of the outer seams and
before the sewing of the lateral seams while the central
fold is drawn out of the gap and outer folds are formed
parallel to the outer seams.

4,643,116 SELF-ADJUSTING PRESSER FOOT FOR SEWING MACHINES

Christian Ulmer, Steckborn, Switzerland, and Georg Tröndle,
Constance, Fed. Rep. of Germany, assignors to Fritz Gegauf
AG, Bernina-Nähmaschinenfabrik, Steckborn, Switzerland
Filed Aug. 27, 1985, Ser. No. 769,862

Claims priority, application Switzerland, Sep. 19, 1984,
04486/84

Int. Cl.⁴ D05B 29/00

U.S. Cl. 112—240

19 Claims

1. A sewing machine presser foot comprising a first compo-
nent constituting a shank and arranged to be connected to the
presser bar of a sewing machine; a second component consti-
tuting a sole plate; and a ball and socket joint articulately
connecting said components to each other so that the sole plate
can change its position relative to said shank while the presser
bar is in actual use in the sewing machine, said joint comprising
a substantially spherical portion on one of said components and
a complementary socket provided for said spherical portion on

the other of said components, said second component having
freedom of movement with reference to said first component



about a plurality of axes which intersect each other and are
defined by said joint.

4,643,117

SEWING MACHINE FEED SETTING DEVICE
Klaus Wentz, and Heinrich Bungert, both of Kaiserslautern,
Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen
GmbH, Fed. Rep. of Germany

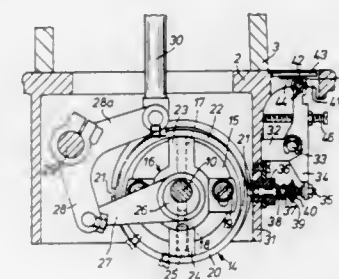
Filed Nov. 14, 1985, Ser. No. 797,818

Claims priority, application Fed. Rep. of Germany, May 9,
1985, 8513725[U]

Int. Cl.⁴ D05B 3/04

U.S. Cl. 112—315

4 Claims



1. In a sewing machine having a housing including a base
portion having a cover base plate, an upright standard adjacent
an end of said base plate, and an arm portion extending out of
said upright standard and overlying said base plate, a threaded
needle mounted in said arm portion and movable upwardly and
downwardly, a feed drive in said said housing driven by a
drive means including a variable drive for variable drive of the
feed means, the improvement comprising setting means for
setting the speed of the feed drive and actuating means con-
nected to said setting means and the variable drive means to
regulate the speed of the feed drive, the base plate having an
opening, a holding plate pivotally mounted on the base portion
in the opening and closing the opening in an inactive position,
a lever pivotally mounted in said base portion adjacent the
opening and positioned to engage said actuating means and an
axle mounted on said lever and extending across the opening of
the base plate carrying said holding plate.

4,643,118

SEWING MACHINE WITH STEP MOTOR OPERATED FEED DEVICE

Heinrich Bungert, Kaiserslautern; Mathias Ulmen, Kirdsbach,
and Herbert Wenz, Kaiserslautern, all of Fed. Rep. of Ger-
many, assignors to Pfaff Industriemaschinen GmbH, Fed.
Rep. of Germany

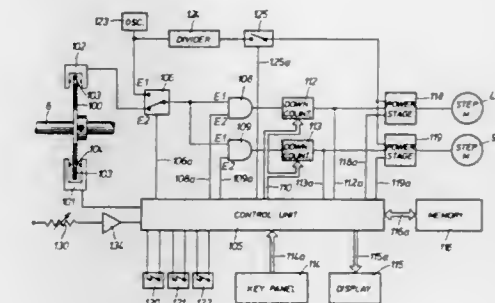
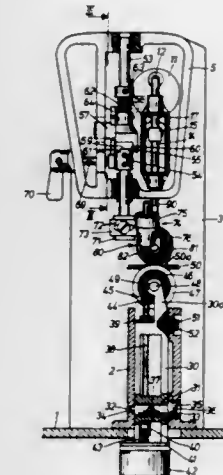
Filed May 8, 1986, Ser. No. 861,229

Claims priority, application Fed. Rep. of Germany, May 9,
1985, 3516715

Int. Cl.⁴ D05B 27/14, 27/06, 35/10

U.S. Cl. 112—318

10 Claims



1. A sewing machine comprising a housing, a main shaft
rotatably mounted in said housing, stitch formation means
operatively connected to said main shaft for forming stitches at
a stitch formation point, a support mounted to said housing, a
feed wheel mounted for rotation to said support and disposed
adjacent to said stitch formation point for engaging and feed-
ing a workpiece by selected amounts, a memory for storing
digital data corresponding to feed amounts for said wheel, a
pulse generator operatively connected to said main shaft for
generating pulses, counting means connected to said pulse
generator for counting pulses, said counting means being con-
nected to said memory for receiving selected digital data there-
from corresponding to a desired feed amount, a power stage
connected to said counting means for receiving said counted
pulses and producing stepping pulses, and a step motor con-
nected to said feed wheel for rotating said feed wheel and
connected to said power stage for receiving stepping pulses to
determine the feed amount for said feed wheel.

4,643,119

INDUSTRIAL TEXTILE FABRIC

Mark C. Langston, and David G. Boutwell, both of Summerville, S.C., assignors to Exxon Chemical Patents Inc., Linden, N.J.
 Filed Jul. 12, 1985, Ser. No. 754,504
 Int. Cl.⁴ B32B 7/08; D03D 3/02, 15/00
 U.S. Cl. 112—421

23 Claims



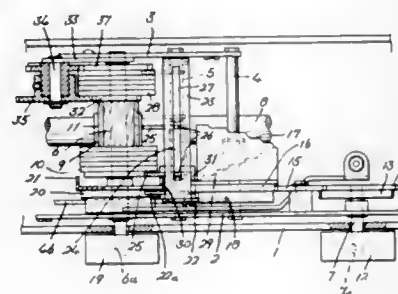
1. A textile fabric comprising
 (a) synthetic warp yarns disposed in side-by-side relationship and parallel to one another; and
 (b) synthetic fill yarns disposed in side-by-side relationship and parallel to one another and being interlaced with said warp yarns, said warp yarns or said fill yarns or both being extruded flat tapes have a corrugated configuration wherein the tapes (i) have a width-to-thickness ratio of at least 10:1 and (ii) comprise from 10 to 40 rounded filaments arranged in side-by-side relationship and integral with adjacent filaments by intersecting segmental portions, the juncture of adjacent filaments having a thickness of from 0.3 to 0.8 of the thickness of the filaments, and (iii) have a denier of at least 500.

4,643,120

ZIGZAG SEWING MACHINE

Susumu Hanyu, and Akio Koide, both of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan
 Filed Oct. 17, 1985, Ser. No. 788,304
 Claims priority, application Japan, Oct. 18, 1984, 59-156472
 Int. Cl.⁴ D05B 3/02, 3/06
 U.S. Cl. 112—466

2 Claims



1. A zigzag sewing machine having a drive shaft rotated to vertically reciprocate a swingable needle, the swinging movement of said needle being controlled by pattern cams rotated in association with the rotation of the drive shaft, said pattern cams being selectively connected to the needle by way of a transmission rod, said sewing machine comprising a first group of pattern cams rotated in association with said drive shaft with a predetermined speed reduction; a second group of pattern cams rotated in association with said first group of pattern cams; transmission means arranged between said first and second groups of pattern cams to transmit the rotation of said first group of the pattern cams to the second group of pattern cams, said transmission means having a predetermined transmission ratio to vary the rotation speed of said second group of pattern cams from that of said first group of pattern cams; follower means including a cam follower which is swingable

with respect to said first and second groups of pattern cams; means normally biasing said cam follower to engage a selected pattern cam in said first and second groups of pattern cams; and cam selecting means operated to disengage said cam follower by way of said biasing means and slidingly move said cam follower along said first and second pattern groups.

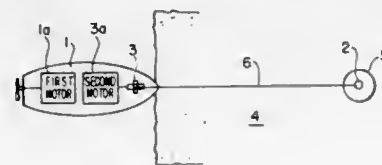
4,643,121

METHOD OF ADDING PROPULSIVE FORCE TO ICE BREAKER

Shigeru Gohdo, Sagami-hara, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
 Filed May 8, 1985, Ser. No. 731,837
 Claims priority, application Japan, May 31, 1984, 59-111370
 Int. Cl.⁴ B63B 35/08

U.S. Cl. 114—40

4 Claims



1. A method of adding propulsive force to an ice breaker ship during the process of breaking a large, solid piece of ice, comprising the steps of:
 inserting a pile at a substantial distance from the advancing direction of said ship to permit a substantially continuous movement of the ship over a long distance;
 connecting one end of a cable to said pile and the other end to winch means of said ship, said winch means including second motor means for winding up said cable,
 driving the ice breaker ship through the ice by first motor means; and
 adding propulsive force to said ship by winding up said cable about said winch means by said second motor means thereof according to the advance of said ship by said first motor means.

4,643,122

DIFFUSION CONTROLLED SECURITY TAGS

Paul G. Seybold, Dayton, Ohio, assignor to Wright State University, Dayton, Ohio
 Filed Jul. 23, 1984, Ser. No. 633,554
 Int. Cl.⁴ G01D 21/00; G01N 31/00, 33/18

U.S. Cl. 116—206

25 Claims

1. A diffusion-controlled security tag comprising a carrier and a solution of a compound which changes color upon evaporation of the solvent forming said solution, said carrier being impregnated with said solution and being completely enclosed within a barrier film, said barrier film limiting the rate of diffusion of said solvent from said carrier such that a change in the color of said compound indicates that an object with which said tag is associated has been subjected to tampering or adverse storage time or temperature.

4,643,123

ENVELOPE MOISTENING APPARATUS

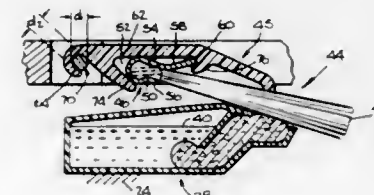
David R. Auerbach, Georgetown, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
 Continuation of Ser. No. 324,192, Nov. 23, 1981, abandoned.
 This application Nov. 8, 1985, Ser. No. 797,744
 Int. Cl.⁴ B05C 1/02

U.S. Cl. 118—32

5 Claims

1. Envelope flap moistening apparatus for use in a machine for feeding an envelope having a flap in a predetermined path of travel, the apparatus comprising:

- (a) a hinge pin connected to the machine so as to extend across the path of travel of an envelope flap;
 (b) an elongate brush for applying moisture to an envelope flap, the brush including an elongate base;
 (c) an elongate brush retainer cut from an extruded length of resilient plastic material, the brush retainer including an elongate upper wall portion, the retainer including an elongate first wall portion depending from the upper wall portion and defining a first open-ended channel, the first channel having a C-shaped transverse cross-section and being dimensioned for engagement with the hinge pin, the first channel having a longitudinally-extending opening therethrough which is dimensioned for receiving the hinge pin therethrough and into the first channel against the resilient force exerted on the hinge pin by the retainer for attaching



the retainer and hinge pin to each other, said retainer and hinge pin being detachable from each other against the resilient force exerted on the hinge pin by the retainer, the brush retainer including second and third elongated opposing wall portions depending from the upper wall portion and defining a second open-ended channel having a generally inverted-U-shaped transverse cross-section, the second and third wall portions converging to define a longitudinally-extending opening into the second channel, the second channel opening dimensioned for insertion of the brush base into the channel against the resilient force exerted on the brush base by the second and third wall portions of the retainer for attaching the brush to the retainer, and the retainer and brush being detachable from each other against the resilient force exerted on the brush base by the second and third wall portions of the retainer.

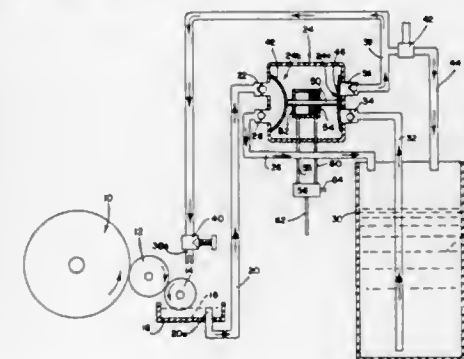
4,643,124

LIQUID COATING SUPPLY SYSTEM FOR A PRINTING PRESS BLANKET COATER

Thomas G. Swital, Wheeling, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.
 Filed May 13, 1985, Ser. No. 733,387
 Int. Cl.⁴ B05C 1/08, 11/10

U.S. Cl. 118—259

5 Claims



1. A liquid coating supply system for a printing press blanket coater, said system comprising, a vessel for holding a supply of liquid coating material, a holding tray for holding a portion of the liquid coating material for pick up by a feed roller, first

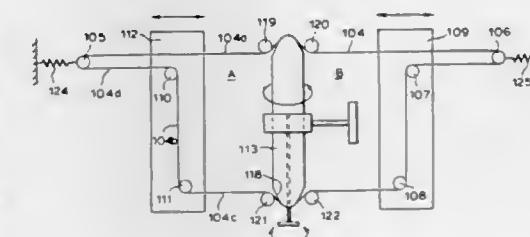
liquid transfer means for transferring liquid coating material from said supply vessel to said holding tray, and second liquid transfer means, including a discharge pump means intermediate said holding tray and said supply vessel for withdrawing liquid coating material from said holding tray and forcibly pumping it into said supply vessel at a rate of flow which is at least equal to the rate of flow from said first liquid transfer means to said holding tray, and said second liquid transfer means having an intake within said holding tray above the bottom of said tray whereby said discharge pump means will withdraw the liquid coating material in the tray above the level of said second transfer means intake, said first liquid transfer means comprising an adjustable flow valve for regulating the liquid flow from said first liquid transfer means, supply pump means intermediate said supply vessel and said adjustable flow valve for withdrawing liquid coating material from said supply vessel and for forcing the liquid coating material through said valve under a pressure which is dependent upon the adjustment of said valve, and pressure responsive means intermediate said pump and said adjustable valve for conducting the liquid coating material flowing from said pump back to said supply vessel when the pressure between said pump and adjustable valve exceeds a predetermined value.

4,643,125

BARRIERS

William A. Barlow, West Derby, and Graham Merrington, Kingsley, both of United Kingdom, assignors to Vickers Public Limited Company, London, England
 Filed Nov. 12, 1985, Ser. No. 796,900
 Claims priority, application United Kingdom, Nov. 13, 1984, 8428593; Jan. 18, 1985, 8501352
 Int. Cl.⁴ B05C 3/12; B05D 1/20
 U.S. Cl. 118—402

7 Claims

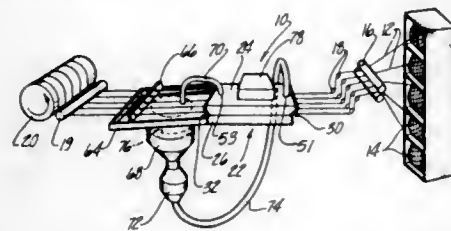


1. A barrier assembly for use on a Langmuir trough to confine an area of monomolecular film on a subphase, the barrier assembly comprising a first barrier portion of constant angular configuration consisting of a transverse part extended by a longitudinal part and a second barrier portion of stepped configuration fixed to said first barrier portion to form a closed loop therewith, said second barrier portion consisting of a second transverse part, a second longitudinal part of variable length extending from one end of said second transverse part and a third longitudinal part of variable length extending from the other end of said second transverse part, said second and third longitudinal parts extending in opposite directions from said second transverse part to join the ends of said first barrier portion, and means for varying the lengths of said second and third longitudinal parts while keeping their total length constant and thereby varying the separation between said first and second transverse portions and consequently the area confined by said barrier portions.

4,643,126
METHOD AND APPARATUS FOR IMPREGNATING FIBER STRANDS
 Robert E. Wilkinson, Birmingham, and Joseph N. Epel, Southfield, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed Nov. 21, 1984, Ser. No. 673,904
 Int. Cl.⁴ B05C 3/02
 U.S. Cl. 118—405

1 Claim



1. Apparatus for impregnating strands of fibers with resin, said apparatus comprising:
 - a substantially closed container having a top and a bottom defining a hollow interior region therebetween, an inlet in one side of the container through which the strands enter, and an outlet on an opposite side of the container arranged so as to permit the strands to pass through the interior in essentially a straight line;
 - a plurality of metering orifices adjacent the outlet of the container through which the resin impregnated strands pass;
 - collector means disposed beneath the metering orifices for collecting excess resin;
 - a holding tank into which resin from the collecting means drains, operative to maintain the resin therein for a sufficient period of time to allow air entrapped in the resin to be removed;
 - first means for recirculating resin through the interior of the container in such a manner so as to keep the interior substantially filled with resin, said first means including an outlet port through which resin from the interior of the container exits, means connected to the outlet for de-aerating the resin and pumping means for pumping the de-aerated resin to an inlet port for supplying the resin to the interior of the container;
 - a plurality of transversely extending bars alternately extending from the top and bottom of said container along the path of travel of the strands, said bars having a triangular shape having an apex, with the strands contacting the apex of the bars serving to disturb the normally straight line path of travel of the strands by no more than about 0.250 inch thereby spreading the fibers in the strands while submerged in the recirculating resin whereby the strands are uniformly impregnated with the resin while minimizing air entrapment and bending of the fibers.

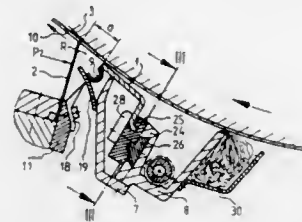
4,643,127
COATING DEVICE FOR UNIFORM WEB COATING
 Wilhelm Wanke, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany
 Filed Oct. 3, 1984, Ser. No. 657,228
 Claims priority, application Fed. Rep. of Germany, Oct. 20, 1983, 3338095

Int. Cl.⁴ B05C 5/02
 U.S. Cl. 118—413

17 Claims

1. A coating device for coating a traveling web of material, comprising:
 - a counter-roll over which the web of material is guided for movement past the coating device;
 - a doctor element spaced from the counter-roll and the web thereon for defining the thickness of a coating on the web,

the doctor element extending across the web transversely of the direction of web motion;
 means defining a coating composition application chamber also extending over the width of the counter-roll and the web, including means for delivering coating composition into the application chamber; the chamber having upstream and downstream sides with respect to the movement of the web; and
 a resilient tongue extending from the application chamber downstream in the path of travel of the web spaced from and substantially parallel to the web for defining a hydro-

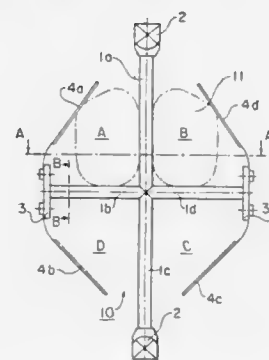


dynamic pressure slot between the tongue and the web extending across the web and extending to the downstream end of the tongue; the tongue being swingable and being supported against the hydrodynamic pressure in the pressure slot; the downstream end of the tongue being spaced from the doctor element to define a pressure space along the counter-roll and the web and between the downstream end of the tongue and the doctor element wherein coating composition at a pressure higher than ambient pressure is supported to be fed to the doctor element.

4,643,128
MULTIPLE HOLDER FOR SUBSTRATES TO BE TREATED
 Bernhard Bracher, Balzers, Liechtenstein; Karl Baumann, Sargans, and Hermann Staub, Azmoos, both of Switzerland, assignors to Balzers AG, Liechtenstein
 Filed May 30, 1985, Ser. No. 739,568
 Claims priority, application Switzerland, May 30, 1984, 2652/84

Int. Cl.⁴ B05C 13/02
 U.S. Cl. 118—503

5 Claims



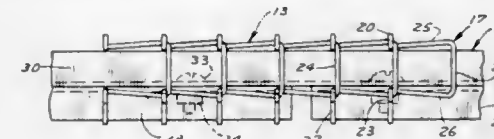
1. A holder for substrates comprising a rail structure formed of four arm portions which extend radially outwardly from a central area and define quadrants therebetween, each rail element bordering a quadrant having a surface facing toward the quadrant with a groove for receiving the substrate and a spring member carried by selective ones of said rail members extending into an adjacent quadrant and bearing on the substrate urging it into a receiving groove of said rail members.

4,643,129
SYSTEM FOR THE TREATMENT OF EDGE SUPPORTED SUBSTRATES
 Eric T. Sari, Plymouth, Minn., assignor to ETS Energy Technology Systems Inc., Plymouth, Minn.

Filed Sep. 13, 1985, Ser. No. 775,636
 Int. Cl.⁴ B05B 5/00

U.S. Cl. 118—641

10 Claims

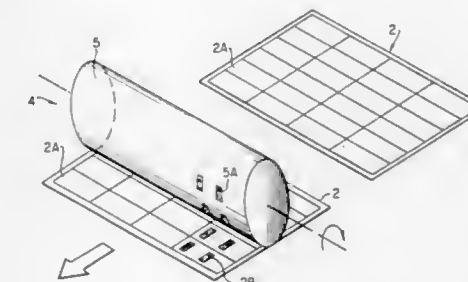


1. A system for the thermal and liquid treatment of edge supported substrates comprising:
 - (A) an elongated tunnel treating chamber,
 - (B) a pair of elongated tracks extending through said chamber,
 - (C) support members for said tracks outside of said chamber at opposite ends thereof,
 - (D) a lubricant-free chain conveyor on each of said tracks, said conveyor comprising a plurality of successively interconnected wire links each comprising:
 - (1) a generally horizontal member in engagement with the top surface of said track,
 - (2) a pair of spaced apart generally vertical members spaced from said horizontal member and connected thereto, and in loose engagement with the sides of said track,
 - (3) an integral substrate-supporting pin extending outwardly from one of said vertical members, the pins of each conveyor being directed in wardly toward each other to support a substrate therebetween by its edges,
 - (4) a connection between said links, the horizontal member of one link engaging the vertical members of an adjacent link, and
 - (E) means for moving said conveyors along said tracks.

4,643,130
GRAVURE PRINTING MACHINE
 Jeremy C. Sheath, and William D. Hodges, both of London, England, assignors to Machines Chambon S.A., Orleans-Cedex, France
 Filed Feb. 2, 1984, Ser. No. 576,508
 Claims priority, application United Kingdom, Feb. 4, 1983, 8303174

Int. Cl.⁴ B05C 1/02, 11/00
 U.S. Cl. 118—681

20 Claims



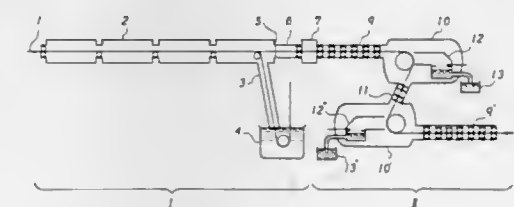
1. Apparatus for forming matchbox skillets from pre-printed sheets, each sheet having a plurality of rows of matchbox blanks printed thereon, the apparatus comprising:
 - (a) a sheet feeder for storing pre-printed sheets and removing the sheets one-by-one,

- (b) conveyor means for conveying the sheets from the sheet feeder to a gravure printing machine along a path,
- (c) means for longitudinally and transversely cutting the matchbox blanks from the sheets to form matchbox skillets, and
- (d) a gravure printing machine for applying coating material to pre-determined areas of the sheets as they pass there-through, (i) the gravure printing machine including an upper engraving roller, a lower pressure roller, and means for feeding pre-printed sheets between the two rollers so that said predetermined areas are in register with complementary areas on the matchbox blanks of the pre-printed sheets, (ii) the surface of the engraving roller including a plurality of axially-extending rows of patterned areas, each of which corresponds in shape to that of the striking panel of a box of matches, there being as many rows of patterned areas as there are rows of pre-printed matchbox blanks on each of the sheets fed to the printing machine.

4,643,131
COMBINED CONTINUOUS PLATING APPARATUS FOR HOT-DIP PLATING AND VACUUM DEPOSITION
 Shozo Umeda, Tokyo; Norio Tsukiji, Sakai; Takuya Aiko, Sakai; Toshiharu Kittaka, Sakai; Heizaburo Furukawa, Hiroshima; Kanji Wake, Hiroshima; Yoshio Shimozato, Hiroshima; Kenichi Yanagi, Hiroshima; Mitsuo Kato, Hiroshima, and Tetsuyoshi Wada, Hiroshima, all of Japan, assignors to Nisshin Steel Company, Ltd. and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 20, 1985, Ser. No. 778,386
 Claims priority, application Japan, Sep. 28, 1984, 59-201423
 Int. Cl.⁴ C23C 13/08
 U.S. Cl. 118—718

4 Claims



1. A combined continuous plating apparatus for hot-dip plating and vacuum deposition plating characterized in that the outlet of the gas reduction annealing furnace of a gas reduction annealing continuous hot-dip plating apparatus and the inlet of the seal roll chamber of a continuous vacuum deposition plating apparatus are connected through a pressurized chamber.

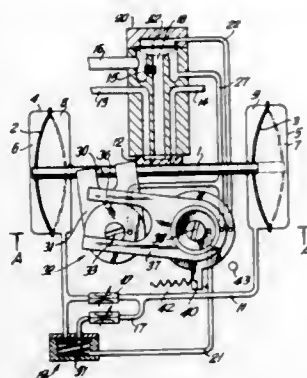
4,643,132
PULSATOR FOR MILKING MACHINES
 Friedrich Icking, Oelde, and Eberhard Willach, Gutersloh, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany
 Filed Jan. 17, 1986, Ser. No. 820,755
 Claims priority, application Fed. Rep. of Germany, Jan. 31, 1985, 3503245

Int. Cl.⁴ A01J 5/04
 U.S. Cl. 119—14.41

6 Claims

1. In a pulsator for a milking machines, having two diaphragms connected by a rod, each diaphragm dividing a pressure chamber into a processing space and a damping space, wherein the damping spaces communicate through a channel with a throttle therein and the processing spaces are connected either to a source of vacuum or to the atmosphere to move the rod back and forth, a switchover attached to the rod for connecting lines leading to the pulsation spaces of test cups to either the atmosphere or a source of vacuum, a main line having a throttle therein, wherein the throttles are detoured by

bypasses with chokes therein that are vacuum-activated through first and second control channels the improvement comprising: a control disk having control chambers therein including one chamber constantly communicating with the vacuum source and the other chambers subject to atmospheric



pressure, means mounting the disk for rotation relative to the control channels such that each control channel is always connected either to the control chamber that is subject to vacuum or to one of the control chambers that are subject to atmospheric pressure, and transmission means responsive to the back and forth movement of the rod for rotating the disk.

4,643,133

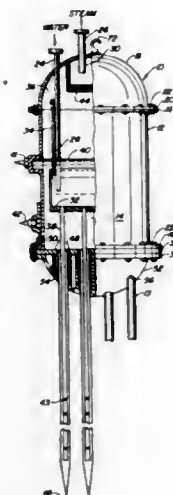
CLUSTER BOILER

Hector A. Dauvergne, 419 Merle Ct., San Leandro, Calif. 94577
Filed Mar. 14, 1985, Ser. No. 711,673

Int. Cl.⁴ F22B 21/00

U.S. Cl. 122—318

12 Claims



1. An improved cartridge type boiler system designed primarily for use in multiples according to the steam output capacity desired, comprising:

- a boiler having a cylindrical configuration with the axis of the cylinder vertically disposed, wherein the boiler has an overhead water drum with depending fire tubes each fire tube having an internal feed water tube; and
- wherein the cylindrical configuration is elongated having a middle cylindrical section with top and bottom end caps, the bottom end cap including a connection plate and the depending fire tubes being coupled to the connection plate, wherein the connection plate is flat and the bottom end cap further includes a hemispherical reinforcement

structure which interfaces and reinforces the flat connection plate.

4,643,134

ENGINE COOLING SYSTEM AIR VENTING ARRANGEMENT WITH BUOYANT AIR PURGE VALVE

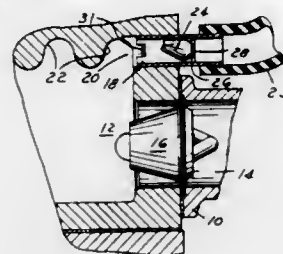
Melvyn E. Schnitzlein, Inkster, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 10, 1985, Ser. No. 743,133

Int. Cl.⁴ F01P 7/16

U.S. Cl. 123—41.1

7 Claims



1. An air vent arrangement for the cooling system of an automotive type engine having a radiator with a coolant inlet, the engine having coolant passages communicating with the radiator through an outlet essentially horizontally disposed, tubing connecting the radiator inlet and coolant outlet, a thermostat in the outlet horizontally movable to open and closed positions, and a horizontally disposed air bleed bypass passage located vertically above the thermostat connecting the coolant outlet to a portion of the tubing downstream of the thermostat bypassing the same when the thermostat is in a closed position for bleeding air from the cooling system, the bypass passage having a valve therein movable between a position blocking flow of coolant through the same and a second position opening the passage permitting the bleed of air therethrough, the valve being buoyant and constructed and arranged to pivot from a non flowblocking air bleed position into a flow blocking position in response to flow of coolant into the bypass passage acting thereagainst.

4,643,135

INTERNAL COMBUSTION ENGINE

Peter Wünsche, Graz, Austria, assignor to AVL Gesellschaft für Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof. Dr. Dr. h.c. Hans List, Graz, Austria

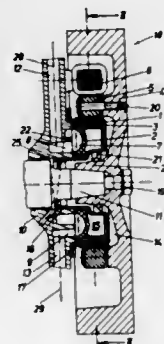
Filed Oct. 10, 1985, Ser. No. 785,951

Claims priority, application Austria, Oct. 17, 1984, 3310/84

Int. Cl.⁴ F01P 5/10

U.S. Cl. 123—41.44

3 Claims



1. An internal combustion engine comprising an engine housing, a flywheel generator with rotating permanent magnets and a cooling-water pump, whose housing is attached to

said engine housing, said water pump comprises an impeller and a squirrel cage rotor which is rigidly connected with said impeller and can be driven without physical contact via the rotatory field of said permanent magnets, wherein said housing of said water pump with its impeller is placed in a concentric recess of said generator flywheel that is positioned next to said permanent magnets.

4,643,136

INLET SYSTEM FOR INTERNAL COMBUSTION ENGINE

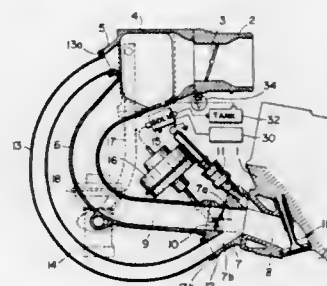
Shozabu Ura, Fujisawa, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 17, 1984, Ser. No. 611,438

Claims priority, application Japan, May 19, 1983, 58-88163

Int. Cl.⁴ F02B 3/00

U.S. Cl. 123—52 M

9 Claims



1. An inlet system for an internal combustion engine having a plurality of combustion chambers, comprising: means defining a throttle chamber; a throttle valve mounted within said throttle chamber; a surge tank communicating with and disposed downstream of said throttle chamber; a plurality of main inlet passageways, each having a first end opening to said surge tank and an opposite second end communicable with one of the combustion chambers and each having a first flow cross sectional area; a plurality, corresponding in number to the number of said main inlet passageways, of auxiliary inlet passageways, each having a first end opening directly into and in constant communication with said surge tank and an opposite second end communicable with one of the combustion chambers, each of said auxiliary inlet passageways having a second flow cross sectional area smaller than said first flow cross sectional area; each of said auxiliary inlet passageways having said opposite second end opening to a respective one of said main inlet passageways at an acute angle; control valve means for closing each of said main inlet passageways; and means for supplying fuel to each of said main inlet passageways at a portion between said control valve means and said opposite second end of said each of main inlet passageways.

4,643,137

ENGINE CONSTRUCTION

Masahiro Choushi, and Shin Hiraoka, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed May 14, 1985, Ser. No. 733,747

Claims priority, application Japan, May 14, 1984, 59-70710[U]

Int. Cl.⁴ F02B 75/22

U.S. Cl. 123—52 MV

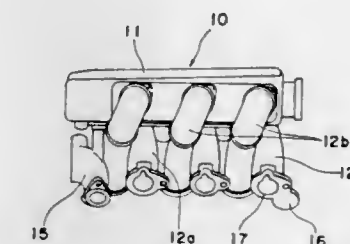
15 Claims

1. A V-type engine construction which comprises, in combination: an engine block having a pair of upwardly diverging cylinder banks and also having a plurality of engine cylinders

defined in each of the cylinder banks, said cylinder banks being displaced a certain distance from each other in a direction parallel to an engine output shaft;

cylinder heads of identical shape having respective coolant water jackets defined therein and adapted to be mounted on the respective cylinder banks, each of said cylinder heads having intake ports communicateable with the respective engine cylinders in the associated cylinder banks and defined therein so as to open generally towards a space between the cylinder heads and also having two spaced coolant outflow ports, said outflow ports in each of the cylinder heads being located adjacent to and inwardly of the two intake ports, which are respectively closest to front and rear ends of the respective cylinder head with respect to the direction of arrangement of the engine cylinders in the associated bank, and defined therein so as to open generally towards the space between the cylinder heads;

an intake manifold adapted to be mounted on the cylinder heads with a downstream end thereof communicated with the intake ports in each said cylinder head, said intake manifold comprising a surge tank positioned within the space between the cylinder heads, an intersecting area where a first suction manifold communicated with the surge tank and with the intake ports in one of the cylinder heads at a location beneath the surge tank and a second



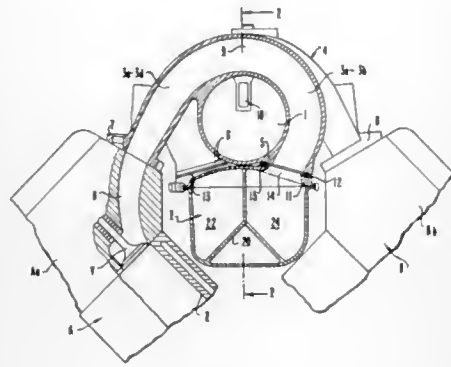
suction manifold communicated with the surge tank and with the intake ports in the other of the cylinder heads at a location beneath the surge tank, an intersecting area intersect with each other, and a generally U-shaped area curved so as to represent the shape of a figure "U" for communicating the intersecting area and the surge tank together;

lids formed integrally with the intersecting area of the intake manifold for closing off flow through respective ones of the outflow ports in the associated cylinder heads when the intake manifold is mounted on the cylinder heads; a coolant conduit means formed integrally with the intersecting area of the intake manifold and adapted to be communicated with the other of the outflow ports in each said cylinder head;

each of the cylinder heads having a water jacket defined therein, the two coolant outflow ports in each of the cylinder heads in communication with the water jacket of the cylinder head;

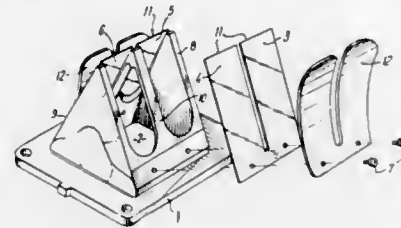
the lids positioned so as to align with and close off flow through one of the outflow ports in one cylinder head and one of the outflow ports in the other cylinder head, the one outflow port in the other cylinder head being in a juxtaposed position with respect to said one of the outflow ports in said one cylinder head when the manifold is mounted on the cylinder heads.

4,643,138
SUCTION PIPE SYSTEM FOR MULTICYLINDER INTERNAL COMBUSTION ENGINE
 Max Ruf, Obereisheim; Erwin Korostenski, Oedheim, and Johannes Steinwart, Obersulm-Willebach, all of Fed. Rep. of Germany, assignors to Audi AG, Fed. Rep. of Germany
 Filed Oct. 10, 1985, Ser. No. 785,964
 Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437102
 Int. Cl.⁴ F02B 75/22
 U.S. Cl. 123—52 M 4 Claims



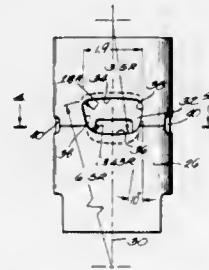
1. An intake system for a multicylinder internal combustion engine having first and second angularly disposed banks of cylinders with a certain firing order, comprising:
 - (a) a monolithically formed intake manifold which extends longitudinally between said banks and has a longitudinal center plane, said manifold comprising a central, essentially straight tubular cavity extending the whole length of said manifold and having an inlet end and an outlet end on respective spaced ends of the cavity; first and second flanges extending in parallel to said tubular cavity and arranged on either side of said longitudinal center plane, and first and second individual suction pipes leading to the cylinders of the first and second cylinder bank, respectively, the first suction pipes extending from one end from the first flange adjacent to the second cylinder bank in a clockwise direction around said tubular cavity crossing said longitudinal center plane, and the second suction pipes extending from one end from the second flange adjacent to the first cylinder bank in an anticlockwise direction around said tubular cavity crossing said longitudinal center, wherein the first and second suction pipes are arranged side-by-side longitudinally of the intake manifold with a first pipe alternating with a second pipe,
 - (b) a plenum chamber mounted by an intermediate flange on flanges formed on opposite ends of said first and second individual suction pipes extending in parallel to said tubular cavity and arranged on either side of said longitudinal center plane and having an internal cavity divided by a separation wall into two compartments, each compartment being in communication with an equal number of suction pipes of such cylinders of the first and second cylinder bank which follow each other in firing order and have a common ignition distance,
 - (c) a part containing a throttle valve and connected to one end of said intake manifold and communicating the outlet end of said tubular cavity with the internal cavity of said plenum chamber, and
 - (d) an air flow meter for a fuel injection system disposed in said central tubular cavity.

4,643,139
REED VALVES FOR INTERNAL COMBUSTION ENGINES
 Bernard J. Hargreaves, 20 Southbank Road, Bury, Lancashire, United Kingdom
 Filed Jul. 20, 1984, Ser. No. 632,810
 Claims priority, application United Kingdom, Jul. 20, 1983, 8319533; Jul. 23, 1983, 8319907
 Int. Cl.⁴ F02B 75/02
 U.S. Cl. 123—65 V 16 Claims



1. An internal combustion engine removable reed valve assembly, comprising a plate member means for providing an inlet aperture passing therethrough closable by abutment of a plurality of opposed resilient valve members, said resilient valve members being composed of an epoxide resin extending angularly with respect to the charge flow path and being remotely secured from said inlet aperture, wherein edges of said resilient valve members abut each other to close the valve assembly.

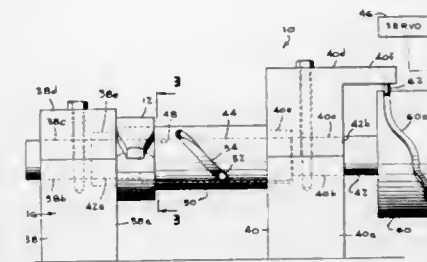
4,643,140
TWO-CYCLE ENGINE EXHAUST PORT
 Roger B. Whipple, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
 Filed Jun. 10, 1985, Ser. No. 742,768
 Int. Cl.⁴ F02B 75/02
 U.S. Cl. 123—65 PE 19 Claims



16. A cylinder liner comprising a generally cylindrical outer wall, a generally cylindrical inner wall defining a cylinder having a diameter, a bottom end and a longitudinal axis, and an exhaust port communicating with said cylinder and defined by an upper wall extending between said inner and outer walls, said upper wall having a radius of curvature equal to approximately twice said diameter and being curved concavely with respect to said bottom end, and said upper wall having a radially inner edge bevelled outwardly and downwardly at an angle of approximately 45° with respect to said inner wall, a lower wall extending between said inner and outer walls, said lower wall having a radius of curvature approximately equal to said diameter and being curved convexly with respect to said bottom end, and said lower wall having a radially inner edge bevelled outwardly and upwardly at an angle of approximately 30° with respect to said inner wall, and opposite side walls extending between said inner and outer walls and between said upper and lower walls, said side walls converging toward said bottom end of said cylinder and each forming an angle of approximately 10° with a line parallel to said longitudinal axis,

each of said side walls meeting said upper wall to form respective corners having an upper radius of curvature, and each of said side walls meeting said lower wall to form respective corners having a lower radius of curvature equal to approximately 1.5 times said upper radius.

4,643,141
INTERNAL COMBUSTION ENGINE VALVE LIFT AND CAM DURATION CONTROL SYSTEM
 Phillip G. Bledsoe, Rte. 1, Box 355A, Blountville, Tenn. 37617
 Filed Jan. 26, 1986, Ser. No. 823,266
 Int. Cl.⁴ F01L 1/18
 U.S. Cl. 123—90.16 19 Claims

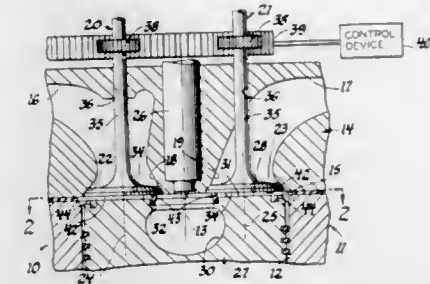


1. A mechanism for varying the lift, timing and duration of a valve member associated with an internal combustion engine having a camshaft, a cam on said camshaft, and a rectilinear reciprocable valve member for opening and closing a valve port in communication with a combustion chamber of the engine; the mechanism comprising an elongated rocker arm having a first pivot end and a second end forming a valve member actuating free end and an intermediate portion extending therebetween, said free end having a shaped valve member contact formation projecting therefrom and said pivot end having a circular opening therethrough receiving a pivotal mounting assembly therethrough having an exterior cylindrical surface within and corresponding substantially to the diameter of said circular opening forming the surface about which the rocker arm pivots, a pair of eccentric means forming a first eccentric member and a second eccentric member collectively defining a pivot axis within said circular opening for said rocker arm, said first eccentric member comprising a shaft having cylindrical end portions journaled for rotation about a shaft axis and an eccentric cylindrical portion located within said opening of said rocker arm, the eccentric cylindrical portion being concentric with a first eccentric axis spaced from said shaft axis, and said second eccentric member comprising a tubular sleeve defining said exterior cylindrical surface and having a cylindrical bore having an inner diameter corresponding to said eccentric cylindrical portion of said shaft rotatably supported on the surface of the latter and concentric with a second eccentric axis spaced from said shaft axis and said first eccentric axis, a first means for rotating said shaft, and second means for rotating said second eccentric member relative to the first eccentric member of said shaft to provide a pivot axis for said rocker arm which is formed by the collective angular position of said first and second eccentric members.

4,643,142
SQUISH CONTROL ENGINE
 Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
 Filed Jan. 30, 1986, Ser. No. 824,194
 Int. Cl.⁴ F01L 1/32, 3/06
 U.S. Cl. 123—90.28 7 Claims

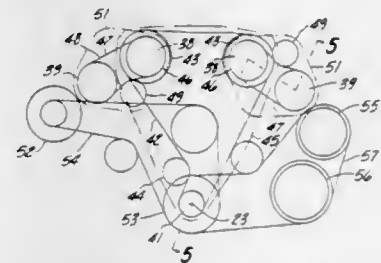
1. A combination in an internal combustion engine of first means defining a closed end cylinder, second means rotatable upon an axis and having an inner face generally normal to the axis and forming a part of the

cylinder closed end and a raised arcuate dam extending from the face and centered on the axis, a piston reciprocably disposed in the cylinder and having an end wall facing the cylinder closed end, said end wall including a raised portion forming a squish land that extends into closely opposed relation to the cylinder closed end and the inner face when the piston approaches a top dead center position in the cylinder,



- said piston having an arcuate recess in the squish land and formed to receive the dam when the piston is near the top dead center position so as to direct squish flow around the dam, and means for altering the angular position of the second means on its axis to change the position of the dam so as to alter the direction of the squish flow generated from between said inner face and the squish land.

4,643,143
VALVE DRIVING MEANS FOR V-TYPE ENGINE OF VEHICLE
 Kazuo Uchiyama, Hamamatsu, and Takamitsu Suzuki, Shizuoka, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
 Filed Apr. 30, 1985, Ser. No. 728,843
 Claims priority, application Japan, May 1, 1984, 59-86164
 Int. Cl.⁴ F01L 1/12
 U.S. Cl. 123—90.31 23 Claims



1. A camshaft drive for an internal combustion engine comprising at least one cylinder, first and second camshafts supported for rotation about parallel and offset axes, an output shaft, first timing drive means for driving said first camshaft directly from said output shaft on one side of said one cylinder, and second timing drive means for driving said second camshaft from said first camshaft on the other side of said one cylinder.

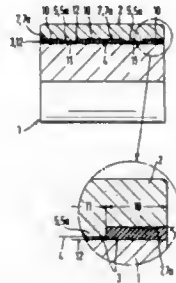
4,643,144
OPERATING ELEMENT FOR OPERATING THE VALVES
OF AN INTERNAL COMBUSTION ENGINE

Dieter Fingerle, Hochdorf, and Gernot Habel, Plochingen, both of Fed. Rep. of Germany, assignors to Feldmuele Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
 Filed Aug. 5, 1985, Ser. No. 762,617

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429169

Int. Cl.⁴ F01L 3/02
 U.S. Cl. 123—90.39

10 Claims



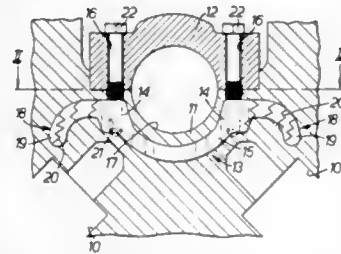
1. Operating element of metal for operating the valves of an internal combustion engine, which has on its working surface engaged with the cams of a camshaft an insert of ceramic material, characterized in that the insert (2) of ceramic material is fastened on the operating element (1) by means of a bonding layer (3) comprising an uninterrupted area or separated areas of an oil- and heat-resistant, vulcanized elastomer.

4,643,145
REINFORCEMENT OF ENGINE BLOCKS
 Albert E. Bolton, Sutton Coldfield, and William J. Hepworth, Hampton-in-Arden, both of England, assignors to AE PLC, Warwickshire, England

Filed Dec. 7, 1984, Ser. No. 679,308
 Claims priority, application United Kingdom, Dec. 10, 1983, 8333036

Int. Cl.⁴ F02F 7/00
 U.S. Cl. 123—195 R

13 Claims



1. An aluminium alloy block for an internal combustion engine comprising:
 a plurality of scantlings,
 means defining a bearing support formed on each scantling for providing a bearing support for a respective bearing of a crankshaft,
 two surfaces on each scantling on opposite sides of said means defining a bearing support for engagement with co-operating surfaces of an associated cap,
 means defining a bolt hole leading from each said surface into said scantling for receiving a bolt securing said associated cap on said scantling,
 a scantling reinforcement of a ferrous material incorporated in at least one scantling,
 means defining a threaded hole formed in said scantling reinforcement, said threaded hole means forming a continuation of said bolt hole means in the scantling and threadably receiving a substantial threaded portion of said bolt,
 an elongate torsion resisting member formed on the scant-

ling reinforcement, extending away from the associated threaded hole means and lying generally in a plane including the axis of said threaded hole means to reduce tendency of the associated scantling to crack under twisting loads.

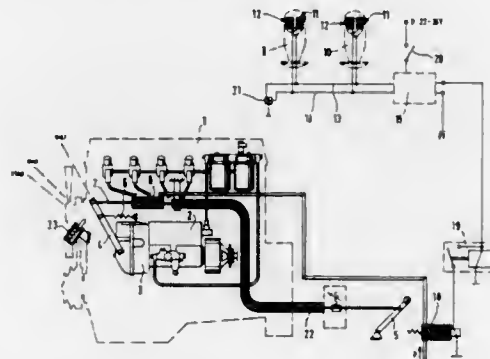
4,643,146
APPARATUS FOR CONTROLLING THE ROTARY
SPEED OF A DIESEL ENGINE FOR A HYDRAULIC
EXCAVATOR OR THE LIKE

Heinz Spriessler, Senden, Fed. Rep. of Germany, assignor to Liebherr-Hydraulikbagger GmbH, Kirchdorf, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,794
 Claims priority, application Fed. Rep. of Germany, Jan. 4, 1983, 3300151; Mar. 3, 1983, 3307596

Int. Cl.⁴ F02M 39/00
 U.S. Cl. 123—357

7 Claims



1. Apparatus for controlling the speed of a diesel engine for a hydraulic excavator or the like provided with control levers for the hydraulically movable implements, comprising a piston-cylinder unit which pivots the setting lever of the speed regulator of the injection pump against the force of a return spring and which, before or during operation under load, brings the setting lever to a preselected load position and, after termination of interruption of operation under load, moves it to its idling position, characterized in that at least one handle of the control levers is provided with a switch consisting of plates arranged in or on the surface of the handles and producing a switching signal through contact by the hand, said switching signal actuating a relay and being amplified by an amplifier and stabilized by a Schmitt trigger, said switch on its first actuation so operating a magnetic valve by way of an actuating circuit therefor which is connected to said switch and to said magnetic valve that the piston-cylinder unit or the return spring moves the setting lever to the load position and which, on being actuated again, returns it to the idling position, said actuating circuit including a delay circuit to retard the actuation of said piston-cylinder unit after the second actuation of said switch.

4,643,147
ELECTRONIC FUEL INJECTION WITH FUEL
OPTIMIZATION AND EXHAUST PRESSURE
FEEDBACK
 Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

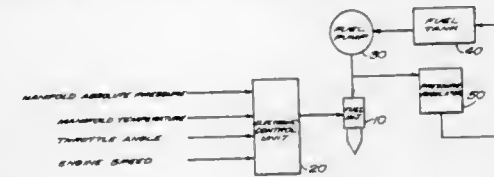
Filed Mar. 14, 1984, Ser. No. 589,413
 Int. Cl.⁴ F02M 39/00

U.S. Cl. 123—357

5 Claims

1. In a multi-cylinder internal combustion engine having an electronically controlled fuel-injection system wherein a pulse generator provides, to associated fuel injectors, fuel-injection control pulses of time duration proportioned to engine speed

and to other factors including desired throttle setting and manifold temperature, and wherein a fuel pump delivers fuel at a predetermined pressure from a tank to a manifold serving the fuel injectors for the respective cylinders, and a pressure regulator associated with said fuel tank and with said fuel pump maintains substantially constant said predetermined pressure and thereby maintains a controlled pressure differential across



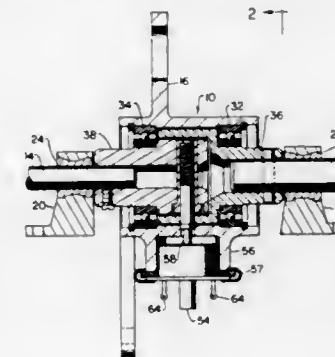
said fuel injectors, the improvement comprising a pulse generator control unit having no manifold absolute pressure detector coupled thereto, means for monitoring the exhaust back pressure from said internal combustion engine and means responsive to said monitoring means and coupled to said pressure regulator for effecting control of said pressure differential as a function of changes in said exhaust back pressure.

4,643,148
MECHANICAL OVERRIDE FOR ELECTRONIC FUEL
CONTROL ON A PISTON ENGINE
 Stanley T. Jedziewski, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Sep. 16, 1985, Ser. No. 776,691
 Int. Cl.⁴ F02D 41/22

U.S. Cl. 123—376

6 Claims



1. Apparatus for controlling the throttle of a fuel burning engine from either a shaft powered by automatic fuel control equipment or by the translational motion of a manually positioned throttle lever, said apparatus being attached to said engine via a throttle shaft extending outwardly from the wall of the engine fuel-air metering system, said apparatus comprising:

an outer housing shell having a generally cylindrical interior and a lever arm rigidly attached to and extending radially away from the periphery thereof, the lever end furthest from the periphery of said outer housing shell being pivotally connected to said manual throttle lever;
 an output spool mounted for rotation within one end of said outer housing shell, said output spool having an axial boring at its outermost end sized to receive and be secured to said throttle shaft, the inward facing end of said output spool being coaxially formed into a cup shaped annulus;
 an input spool having a generally cylindrical shape, said input spool mounted for rotation within the second end of said outer housing shell, the innermost end of said input spool being sized to fit within the cup shaped annulus on the inward facing end of said output spool, the input spool having an axial boring at its outermost end sized to receive

and be secured to a shaft powered by said automatic fuel control equipment;
 a spring loaded pin sized to slide freely in a boring formed transverse to the axis of said input spool adjacent its innermost end, said spring being compressed when said pin is fully within said input spool;
 an opening formed in the cup shaped portion of said output spool, said opening being positioned and sized to allow said spring loaded pin to slide outward locking said input and output spools together for one specific orientation thereof;
 an opening formed in said outer housing shell, positionally in alignment with the transverse boring in said input spool, allowing said spring loaded pin to rotationally lock together said input spool, said output spool and said outer housing shell for one specific orientation of each; and
 a solenoid having a plunger along its central axis, the solenoid being attached to said outer housing shell such that said plunger moves in and out of the opening formed in said housing wall, the activated state of said solenoid preventing said spring loaded pin from locking said outer housing shell to said output spool.

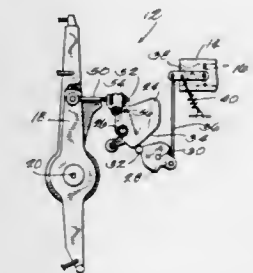
4,643,149
ADJUSTABLE THROTTLE LINKAGE FOR OUTBOARD
MOTORS

William D. Dunham, Waukegan, and Gerald L. Miller, Antioch, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 5, 1985, Ser. No. 752,063
 Int. Cl.⁴ F02D 9/00

U.S. Cl. 123—403

8 Claims



1. An adjustable throttle linkage for use in controlling operation of an internal combustion engine having a carburetor including a pivotable throttle valve, a throttle valve position control member operably connected to the throttle valve and movable so as to control the position of the throttle valve, and a throttle lever for controlling the position of the throttle valve, the adjustable throttle linkage comprising a connecting link having one end connected to one of said throttle lever and said control member, and having a threaded portion, means for adjustably connecting said threaded portion to the other of said throttle lever and said control member, said adjustable connecting means including a slot in the other of said throttle lever and said control member, and a rotatable member threaded onto said threaded portion and receive in said slot such that rotation of said rotatable member causes relative movement between said link and said other of said throttle lever and said control member.

4,643,150

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Nobuo Miura, Wako; Norihisa Ishii, Sakado, and Sumitaka Ogawa, Ohmiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

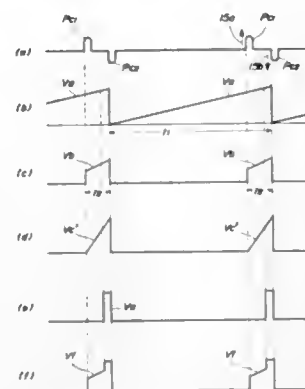
Filed Oct. 23, 1985, Ser. No. 790,512

Claims priority, application Japan, Oct. 26, 1984, 59-160978[U]; Nov. 14, 1984, 59-238292

Int. Cl.⁴ F02P 5/145

U.S. Cl. 123—418

1 Claim



1. An ignition timing control system for an internal combustion engine having an ignition circuit, an ignition coil, and a spark plug, for applying a trigger signal to the ignition circuit which, in response to the trigger signal, applies a high-voltage pulse to the ignition coil for driving the spark plug, said system comprising:

pulse generating means for generating first and second timing pulses corresponding to respective predetermined crank angles of the engine;

a first sawtooth wave generating circuit which receives the first and second timing pulses from said pulse generating means for generating a first sawtooth signal of a predetermined slope in synchronism with a leading edge of the second timing pulse;

a second sawtooth wave generating circuit which receives the first and second timing pulses from said pulse generating means for generating a second sawtooth signal which rises generally vertically at a leading edge of the first timing pulse, decays generally vertically at the leading edge of the second timing pulse, and rises between the leading edges of the first and second timing pulses at a slope greater than the predetermined slope of the first sawtooth signal;

a third sawtooth wave generating circuit connected to said first and second sawtooth wave generating circuits for generating a third sawtooth signal which rises at the leading edge of the first timing pulse at a slope greater than the predetermined slope of the first sawtooth signal, and decays generally vertically at the leading edge of the second timing pulse;

a rectangular wave signal generating circuit which compares the first and third sawtooth signals for producing a rectangular wave signal of a level higher than that of the second sawtooth signal from an instant at which signal levels of the first and third sawtooth signals coincide until the leading edge of the second timing pulse;

a comparator circuit which compares the first sawtooth signal with one of the second sawtooth signal and rectangular wave signal for generating a drive signal when signal levels of the two compared signals coincide; and

a trigger signal generating circuit which receives the drive signal from said comparator circuit for generating the trigger signal in response to the drive signal.

4,643,151

FUEL CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Teruo Yamauchi, Katsuta; Toshiharu Nogi, Hitachi, and Yoshi-shige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

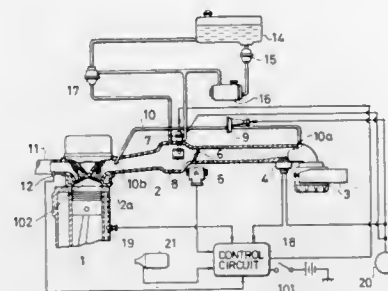
Filed Dec. 27, 1985, Ser. No. 813,720

Claims priority, application Japan, Jan. 8, 1985, 60-1243

Int. Cl.⁴ F02M 23/00

U.S. Cl. 123—432

4 Claims



1. A fuel control apparatus for an internal combustion engine comprising:

air-fuel mixture supplying means, provided in an intake pipe of a cylinder of said engine, for atomizing fuel supplied thereto and mixing the atomized fuel with air drawn into the intake pipe so as to produce an air-fuel mixture to be delivered to said cylinder to be burned therein;

auxiliary air supplying means, coupled to said intake pipe in the vicinity of an intake port of said cylinder, for supplying additional air into said intake pipe independently of said air drawn into the intake pipe so that, during a suction stroke of said cylinder, said additional air is initially introduced into said cylinder followed by the introduction of said air-fuel mixture delivered by said air-fuel mixture supplying means;

air-fuel ratio sensing means, coupled to an exhaust port of said cylinder, for monitoring the air-fuel ratio of the air-fuel mixture burned in said engine cylinder; and

control means, coupled to said air-fuel ratio sensing means and responsive to operational and load conditions of the engine, for generating control signals in accordance with which said air-fuel mixture supplying means adjusts the quantity of fuel to be atomized, so as to cause the air-fuel ratio of the air-fuel mixture burned in said cylinder to correspond to a predetermined reference value of the air-fuel ratio on the basis of the operational condition of the engine and for controlling said auxiliary air supplying means in accordance with the load condition required of the engine.

4,643,152

METHOD FOR CONTROLLING THE FUEL SUPPLY OF AN INTERNAL COMBUSTION ENGINE

Akihiro Yamato, Shiki, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,700

Claims priority, application Japan, May 23, 1984, 59-104315

Int. Cl.⁴ F02M 51/00

U.S. Cl. 123—480

18 Claims

1. A method for controlling the fuel supply of an internal combustion engine having a throttle valve in an intake air system, comprising the steps of:

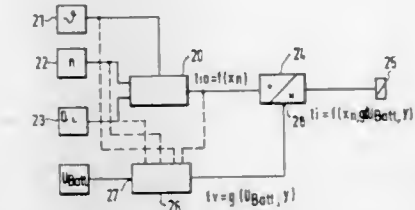
detecting when an angular position of a crankshaft of the engine coincides with a predetermined crankshaft angular position;

detecting a pressure in an intake air passage downstream of said throttle valve whenever said coincidence is detected; calculating a present reference value P_{BAVE} having a prede-

termined functional relation to a present detection value P_{BAN} of said pressure in the intake air passage and a preceding reference value $P_{BAVE(n-1)}$ calculated by a preceding step of calculating a said reference value, and

circuit means for forming the metering signal in accordance with the equation

$$ti = f(x_n, g(U_{Batt}, y))$$



wherein x_n is at least dependent upon load and rotational speed, U_{Batt} is the battery voltage and y is dependent upon operating characteristic quantities.

4,643,154

METHOD OF AND DEVICE FOR CONTROLLING FUEL INJECTION TIMING IN DIESEL ENGINE

Kiyotaka Matsuno; Masaomi Nagase, both of Toyota, and Keisuke Tsukamoto, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

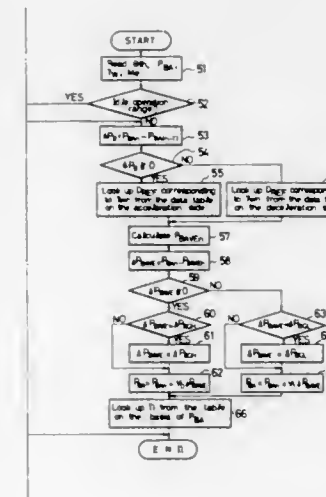
Filed Aug. 26, 1985, Ser. No. 769,467

Claims priority, application Japan, Aug. 27, 1984, 59-177833

Int. Cl.⁴ F02D 41/40

U.S. Cl. 123—501

8 Claims



determining an amount of fuel supply into the engine on the basis of said present reference value P_{BAVE} .

4,643,153

ELECTRONIC ARRANGEMENT FOR GENERATING A FUEL METERING SIGNAL FOR AN INTERNAL COMBUSTION ENGINE

Albrecht Clement, Kornwestheim; Gustav Virgilio, Winnenden, and Hugo Weller, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,639

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1984, 3434339

Int. Cl.⁴ F02D 41/04

U.S. Cl. 123—486

7 Claims

1. An electronic arrangement for generating a fuel metering signal for an internal combustion engine in dependence upon operating characteristic quantities and a battery voltage correction, the arrangement comprising:

4,643,155

VARIABLE STROKE, ELECTRONICALLY CONTROLLED FUEL INJECTION CONTROL SYSTEM

Cormac G. O'Neill, Walnut Creek, Calif., assignor to Olin Corporation, Stamford, Conn.

Filed Oct. 5, 1984, Ser. No. 658,264

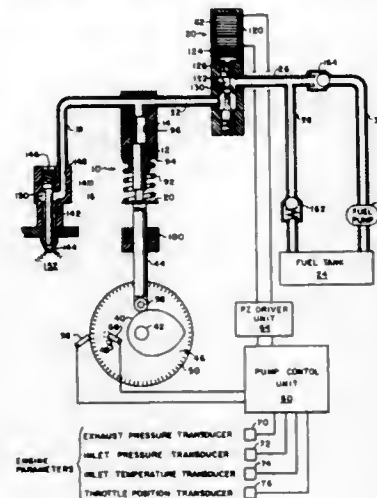
Int. Cl.⁴ F02M 39/00

U.S. Cl. 123—506

6 Claims

1. A fuel injection control system comprising an internal combustion engine having a crankshaft, a fuel supply, a spill valve in fluid communication with said fuel supply,

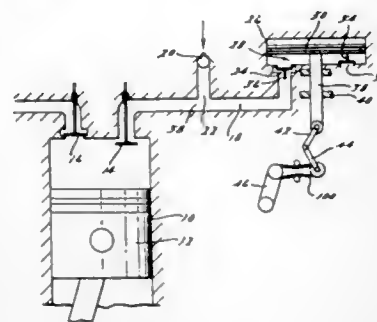
a fuel injection nozzle,
a fuel pump comprising
a piston and cylinder, said cylinder in fluid communication
with said fuel injection nozzle and said spill valve,
means for actuating said fuel pump piston comprises
means for actuating said fuel pump piston to achieve a constant
velocity relative to angular rotation of said crank-
shaft for said piston during the delivery portion of the



pumpstroke during the travel of the piston in said cylinder,
means for closing said spill valve when said piston, during
the delivery portion of the pumpstroke, reaches a first
predetermined position in said fuel pump cylinder and
opening said spill valve when said piston, during the delivery
portion, reaches a second predetermined position in
said fuel pump cylinder.

4,643,156
**INTERNAL COMBUSTION ENGINE WITH A POSITIVE
DISPLACEMENT SUPERCHARGER MECHANICALLY
DRIVEN FROM THE ENGINE CRANKSHAFT**
Oskar Schatz, Tellbohe 14, D-8031 Stockdorf, Fed. Rep. of
Germany

Filed May 14, 1984, Ser. No. 609,927
Claims priority, application Fed. Rep. of Germany, May 18,
1983, 3318094; May 18, 1983, 3318113; May 18, 1983, 3318136
Int. Cl.⁴ F02B 33/06
U.S. Cl. 123—560 5 Claims

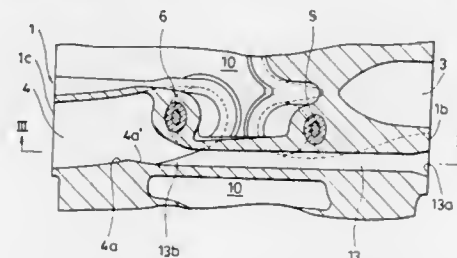


1. A positive displacement supercharger adapted for use
with an internal combustion engine, comprising:
said supercharger having a chamber with an internally mov-
ing piston, wherein the displacement of said supercharger
piston in said chamber is related to the maximum air re-
quirement of one of the cylinders of said engine,
duct means for conducting pressurized air from said super-

charger to said engine including a branch duct which
permits said engine to draw atmospheric air by suction,
a mechanical drive for driving said supercharger in a timed
relationship with said engine such that the motion of the
pistons of said engine and said supercharger have a phase
relationship such that pressurized air is supplied by said
supercharger to said engine cylinder at a point in the
operating cycle of said engine where the engine piston is
near its bottom dead center position, check valve means
coupled with said branch duct enabling atmospheric air to
be drawn through said branch duct during one portion of
the suction stroke of said engine cylinder and pressurized
air is provided by said supercharger during another por-
tion of said suction stroke.

4,643,157
**CYLINDER HEAD FOR INTERNAL COMBUSTION
ENGINES**
Masayasu Nishikawa, Tokyo, and Kenji Kimura, Sayama, both
of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha,
Tokyo, Japan

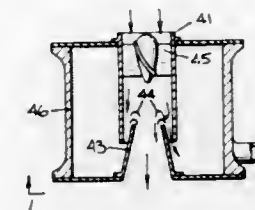
Filed Sep. 21, 1983, Ser. No. 534,385
Claims priority, application Japan, Sep. 27, 1982, 57-
146167[U]
Int. Cl.⁴ F02M 25/06
U.S. Cl. 123—568 11 Claims



1. In a cylinder head for an internal combustion engine
including at least one cylinder, and at least one piston, said
cylinder head having an interior thereof formed with a cavity
for defining a combustion chamber in cooperation with said
piston of said engine associated with said cylinder head, an
intake port located at one side of said cylinder head and com-
municating with said cavity, an exhaust port located at another
opposite side of said cylinder head and communicating with said
cavity, said exhaust port having an inner peripheral surface,
at least one exhaust gas recirculating passage communi-
cating with said exhaust port, and a guide hole opening at one
end in said exhaust port for a valve guide to be slidably fitted
therethrough, the improvement wherein said exhaust gas recir-
culating passage has one end opening in said exhaust port, said
inner peripheral surface of said exhaust port having a portion
curved longitudinally of said exhaust port, said curved portion
of said inner peripheral surface of said exhaust port having a
lateral portion, said one end of said exhaust gas recirculating
passage opening in said inner peripheral surface of said exhaust
port at a location downstream of said one end of said guide
hole and directed at a predetermined sharp angle with respect
to said inner peripheral surface of said exhaust port in a direc-
tion reverse to the direction in which exhaust gases are emitted
into said exhaust port from said combustion chamber and said
one end of said exhaust gas recirculating passage opening in
said lateral portion of said curved portion of said inner periph-
eral surface portion of said exhaust port at a side of said exhaust
port remote from said cavity, and said one end of said exhaust
gas recirculating passage is directed substantially tangential to
said opening in said lateral portion of said exhaust port.

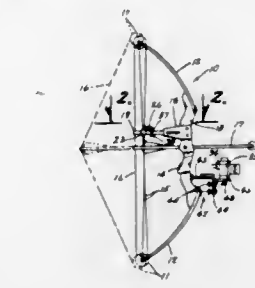
4,643,158
VORTEX PARTICLE SEPARATOR
Hugo V. Giannotti, 879 S. Country Rd., E. Patchogue, N.Y.
11772

Continuation of Ser. No. 387,352, Jun. 11, 1982, Pat. No.
4,524,748. This application Mar. 25, 1985, Ser. No. 715,206
Int. Cl.⁴ F02M 33/02
U.S. Cl. 123—591 1 Claim



1. In a vortex particle separator comprising, in combination,
a housing having an inlet and an outlet arranged for flow
therethrough of air carrying particles of different weights and,
disposed in the housing across the line of air flow from the inlet
to the outlet, an array of elements each having a cylindrical
central passage therethrough and an inlet and an outlet at
opposite ends, and deflectors adjacent the inlet for creating a
vortex stream in the inlet air to concentrate heavier particles in
the air at the periphery of the passage and provide a main core
of air at the center of the passage containing lighter particles,
and an outlet member having a central core air passage com-
municating with the cylindrical central passage of the tubular
body and disposed within the passage at the outlet, the exterior
wall of the outlet member defining a generally annular contain-
ment scavenge passage for heavy particle outlet within the
cylindrical central passage of the tubular body through which
pass the heavier particles, while main core air at the center of
the passage passes through the central core of air passage of the
outlet members; an array of turning vanes disposed upstream of
the leading edge of the outlet member to cause that portion of
the main core air which normally turns radially inward to the
outlet member to negotiate a sharp turn radially inward into
said vanes consequently depositing more of the heavier parti-
cles to the heavy particle outlet defined by said annular con-
tainment scavenge passage.

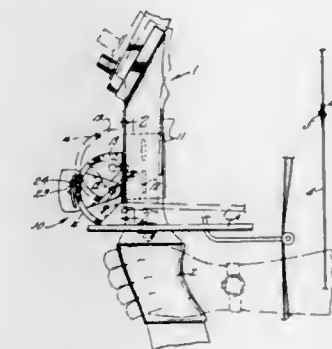
4,643,159
**AUTOMATIC CAMERA ACTUATING APPARATUS FOR
AN ARCHERY BOW**
Lawrence W. Ryan, 1404 Horse & Buggy Dr., Adel, Iowa 50003
Filed Oct. 7, 1985, Ser. No. 784,772
Int. Cl.⁴ F41B 5/00; G03B 29/00, 17/38, 17/00
U.S. Cl. 124—24 R 8 Claims



1. An archery apparatus comprising:
an archery bow having a bowstring for use in shooting
arrows;
a camera having a shutter and shutter control means for
opening and closing said shutter;
means for attaching said camera to an archery bow; and
means for actuating said shutter control means in response to

release of the bowstring and thereby the shooting of an
arrow from said bow.

4,643,160
BOW SIGHT
Richard L. Gray, 07695 Hwy. 126, Florence, Oreg. 97439, and
George M. Howard, Box 23, Blachly, Oreg. 97412
Filed Sep. 27, 1984, Ser. No. 654,964
Int. Cl.⁴ F41B 5/00; F41G 1/00
U.S. Cl. 124—87 8 Claims

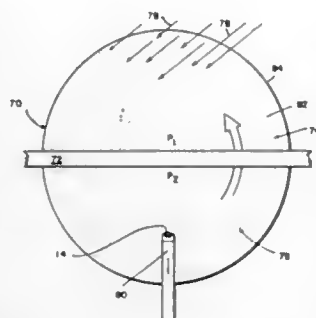


1. A bow sight comprising,
a base for securement to the bow,
a carrier including a sighting post,
means pivotally mounting said carrier on said base for move-
ment about a horizontal axis, and
stop means carried by said base and said carrier to retain the
carrier and sighting post thereon in a preselected eleva-
tional position, a plurality of recesses defined on said base,
and each positioned at spaced apart locations from said
horizontal axis, a stop element selectively positionable in
one of said recesses and hence at spaced apart locations
from said horizontal axis, a plurality of grooves defined on
said carrier and arranged in non-parallel fashion and se-
quentially engageable with said stop element during carrier
movement to maintain said carrier and sighting post
thereon in a selected position of elevation with the magni-
tude of carrier travel between successive positions af-
fected by the spatial relationship of said stop element to
said horizontal axis.

4,643,161
**METHOD OF MACHINING HARD AND BRITTLE
MATERIAL**
George A. Kim, 4754 N. Jenny Rd., Indianapolis, Ind. 46208
Division of Ser. No. 628,024, Jul. 5, 1984, Pat. No. 4,581,969.
This application Sep. 9, 1985, Ser. No. 773,590
Int. Cl.⁴ B28D 5/00 27 Claims

1. A method of machining a hard and brittle material, the
method comprising the steps of
rotating a platter having surfaces,
continuously applying a nonabrasive machining composition
to one of the platter surfaces in a vacuum during rotation
of the platter, and
during the continuously applying step, positioning the hard
and brittle material in proximity to the rotating platter to

cause the material to contact the nonabrasive machining composition,



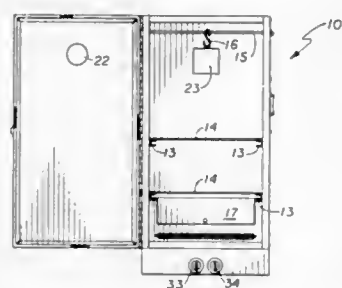
whereby the nonabrasive machining composition operates on the positioned material to machine and polish the material.

4,643,162
BARBEQUE SMOKER
Walter Collins, 8957 Autumnwood Dr., Sacramento, Calif. 95826

Filed Sep. 3, 1985, Ser. No. 771,704
Int. Cl.⁴ F24C 3/04

U.S. Cl. 126—41 R

1 Claim



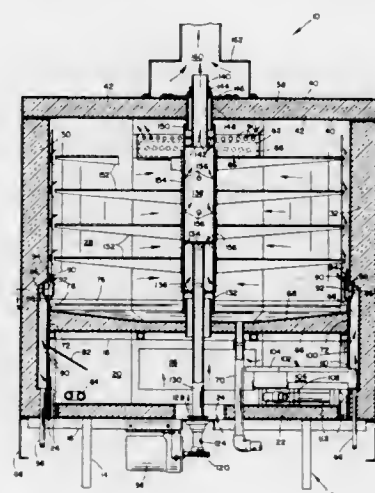
1. A barbeque smoker comprising in combination:
a housing having an interior provided with means to support food holders therein;
a bottom portion of said housing having a perforate wall which admits combustion air therebeyond, and a heat source, and
a sensor for gauging characteristics within said housing interior without opening said housing and altering the characteristics measured;
wherein said housing is formed as a rectangular hollow having a top wall, a perforate bottom wall, a pair of spaced, parallel opposed side walls and a back wall interconnecting to top, bottom and side walls, and a front door, hinged to one side wall;
wherein said housing is supported on a base formed from first and second vertically extending base members having folded portions for stability, said folded portions including a side portion and a front portion;
wherein said heat source includes a burner of substantially "H"-shaped configuration having first and second portions and further having first and second cooking controls associated respectively with said first and second portions of said burner, said controls extending to an exterior face of said housing allowing access thereat; and a tray carried within said housing interior above said burner and supported on channel members carried on interior side walls of said housing, said tray having a bottom wall and four upwardly extending side walls including two ledges extending from two opposed said side walls formed as lips adapted to ride within said channel members;

said tray having passageways for air and adapted to contain wood for flavoring and cooking the meat;
wherein a further pair of channel members is spaced upwardly from said first named channel members and adapted to carry a metallic lathe-like meat rack shelf thereon;
a meat supporting rod extending between side walls of said housing interior fastened thereto by means of nuts on threaded extremities of said meat support rod, a slidable damper disposed on a back wall of said housing, said damper carried on said upper portion to provide back-pressure and therefore control the residence time of smoke within said interior, by upper and lower trackways, first and second handle members disposed on exterior faces of said side walls, a handle on said front wall defining a door, and a latch mechanism associated therewith for latching said door in a closed position.

4,643,163
BARBECUE OVEN
Cesar G. Martinez, San Antonio, Tex., assignor to Roto-Flex Oven Co., San Antonio, Tex.
Filed Dec. 16, 1985, Ser. No. 809,426
Int. Cl.⁴ A47J 37/00

U.S. Cl. 126—41 A

9 Claims



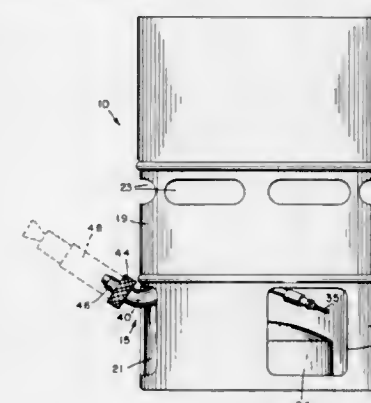
1. A barbecue oven comprising:
a supporting frame;
a plurality of connectable side panels supported by said supporting frame;
a door frame for an upper and lower door supported by said supporting frame, said door frame with said upper and lower doors and said plurality of said connectable side panels forming a walled area;
a floor in said walled area, said floor having openings therein to allow air flow therethrough;
a top on said walled area, said top having a top opening therein;
intermediate floor inside said walled area forming an upper compartment accessible through said upper door and a lower compartment accessible through said lower door, said intermediate floor being substantially sealed to said plurality of said connectable side panels and said door frame;
means for generating heat and/or smoke in said lower compartment;
flue means formed in said connectable side panels allowing said heat and/or smoke to flow therethrough from said lower compartment, around said intermediate floor, and into said upper compartment, wherein said upper compartment is substantially sealed from said lower compartment.

ment except through said flue means, said flue means having deflectors to prevent fluids, such as grease, cleaning fluids, or water, from flowing to said lower compartment;
shaft means extending upward through said upper compartment with shelves therein being connected to said shaft means, shaft openings allowing said heat and/or smoke to flow therethrough and out said top opening; and means for rotating said shaft means.

4,643,164
PORTABLE STOVE ASSEMBLY
Laurence E. LaForge, Northboro, Mass., assignor to Environments, Limited, Montreal, Canada
Filed Jan. 23, 1986, Ser. No. 821,756
Int. Cl.⁴ F41F 9/00

U.S. Cl. 126—44

8 Claims



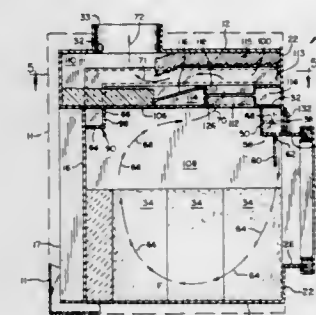
1. Portable stove assembly comprising:
(a) a support member for a cooking utensil, said support member having a bottom wall and a continuous side wall extending vertically from the bottom wall, said side wall having at least one aperture;
(b) a stove for burning liquid fuel, said stove being freely supported on said bottom wall within the side wall of the support member and having a fuel reservoir, a burner unit which is attached to the top of the tube, an inlet fixture at the top of the reservoir which comprises a tubular projection with external threads for receiving a fill cap having internal threads, said fixture having an inlet opening to the reservoir for filling the reservoir with fuel, and
(c) an air pressure assembly comprising:
(1) a cap which has an end wall, a central opening in said end wall, an annular side wall extending from said end wall and having an open end and internal threads for enabling the cap to be threaded onto said inlet fixture;
(2) an elongated connecting tube, one end of which has an opening and extends through said central opening so that said cap is free to rotate relative to said connecting tube, said connecting tube having an outer annular flange which is located between said end wall and the open end of said cap;
(3) an elastomeric sealing washer between the flange and said open end for engaging the end of said tubular projection and for being forced against said flange by said tubular projection when the cap is threaded onto the threaded projection to form a gas seal between the cap and said tubular projection, and
(4) a gas fixture which is operatively connected to the opposite end of said connecting tube and which is adapted for operatively receiving a portable air pump, said connecting tube being configured so that when said cap is attached to said inlet fixture, the connecting tube

extends through said aperture so that said gas fixture tube lies outside of the side wall of said support member.

4,643,165
NONPOLLUTING, HIGH EFFICIENCY FIREBOX FOR WOOD BURNING STOVE
Joseph G. Chamberlain, 12350 SW, 124th, Tigard, Ore. 97223
Filed Feb. 26, 1986, Ser. No. 833,905
Int. Cl.⁴ F24C 1/14

U.S. Cl. 126—77

5 Claims



1. A wood stove comprising:
a firebox having top, bottom, rear, and side heat-exchanging walls, and adapted to contain a wood burning fire therein; the firebox including a frontal access opening, a door adapted to close the frontal access opening, and a flue outlet through the top wall;
a primary air inlet means comprising a primary inlet port through the front wall adjacent the frontal access opening, and a primary inlet slot adjacent the frontal access opening and in communication with the primary inlet port to provide a primary supply of combustion air to the fire in the firebox and establish a combustion flow to the fire and thence to the flue outlet;
a secondary air inlet means comprising a secondary inlet port through the front wall adjacent the frontal access opening, an elongated secondary air inlet member extending across the rear of the firebox above the fire and a conduit communicating between said port and said air inlet member, the conduit being in heat receiving relationship to the fire to provide a secondary supply of heated combustion air to the combustion flow between the fire and flue outlet;
a baffle dividing the firebox into a bottom chamber and a top chamber, the baffle having an open area adjacent the front wall through which the combustion flow passes; and
a tertiary air inlet means comprising a tertiary inlet port through the front wall adjacent the frontal access opening, and a tertiary inlet slot around the open area in the partition, the tertiary inlet port communicating with the tertiary inlet slot to provide a tertiary supply of heated combustion air in surrounding relationship to the combustion flow downstream of the secondary air inlet.

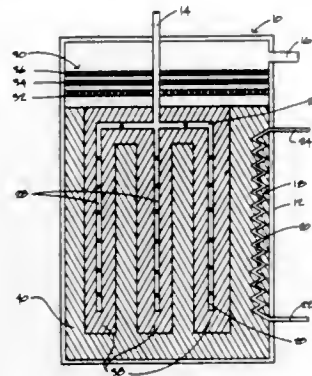
4,643,166
STEAM ENGINE REACTION CHAMBER, FUEL COMPOSITION THEREFORE, AND METHOD OF MAKING AND OPERATING SAME
Norman D. Hubele, and Kim L. Johnson, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Dec. 13, 1984, Ser. No. 681,160
Int. Cl.⁴ F24J 1/00; F02K 9/06; F22B 31/04

U.S. Cl. 126—263

22 Claims

1. Heat-supplying reaction chamber apparatus for use with a heat engine comprising: a vessel defining a chamber there-within, an inlet means for receiving a reactant, and an outlet means for efflux of a gaseous reaction product; a two-part fuel mass disposed within said chamber including a hypergolic first

starting fuel part comprised of lithium hydride and at least one other metallic element and being so disposed with respect to said inlet as to be first contact by said reactant for reaction therewith to liberate (a) heat, (b) a reaction intermediate which is more reactive with the remainder of said fuel mass at ambient temperatures than is said reactant, and (c) said gaseous reaction product at a first determined rate of evolution; a second main fuel part comprising a metallic element which upon being raised to a determined temperature by reaction of said starting



fuel part with said reactant itself reacts with the latter to further liberate heat and said gaseous reaction product at a second certain rate of evolution which is substantially equal to said first determined rate of evolution of said gaseous reaction product; and heat transfer means in association with said fuel mass for transfer of heat energy therefrom to said heat engine; whereby said reaction chamber apparatus provides during operation including both a starting reaction phase and a main fuel reaction phase a substantially constant rate of efflux of said gaseous reaction product from said outlet means.

4,643,167

OVEN VENTILATION SYSTEM

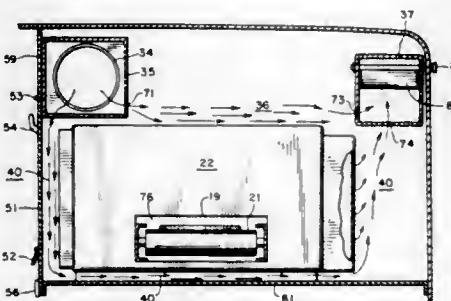
David E. Brewer, Wichita, Kans., assignor to Pizza Hut, Inc., Wichita, Kans.

Filed Apr. 2, 1985, Ser. No. 718,624

Int. Cl.⁴ F24C 15/20

U.S. Cl. 126—299 R

20 Claims



1. A ventilation system for venting an oven with external surfaces, the oven being located within an enclosed space, the system comprising:
intake means for collecting air from the external environment of the enclosed space;
means for forming a sheet of said air and passing the sheet across a plurality of the external surfaces of the oven; and
exhaust means for exhausting the sheet of said air to the external environment of the enclosed space after said air has been passed across said external surfaces.

4,643,168
LIQUID COOLED FIBER THERMAL RADIATION RECEIVER

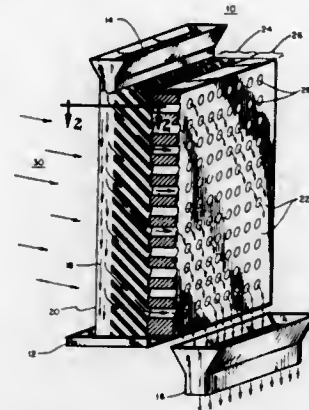
Barry L. Butler, Del Mar, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 29, 1985, Ser. No. 718,059

Int. Cl.⁴ F24J 3/02

U.S. Cl. 126—449

9 Claims



9. A solar energy absorbing thermal receiver apparatus of rectangular elongate orientation maintained by a support stand and having inlet and outlet ports on opposite ends thereof, said receiver including a support plate having a plurality of bores for transmitting thermal energy, said receiver adapted to operate within a temperature range of 100°–1200° C. and at a 10 sun or greater solar energy intensity;
said thermal receiver comprising:
an array of blackened, closely-spaced, small-diameter fibers for capturing incident solar radiation striking a side of said receiver, said array having an orientation adapted to govern the absorption of solar energy by said receiver, said array having a predetermined configuration and density;
a transparent molten salt for collecting incident solar radiation captured by said fibers, the collecting action adapted to cool said fibers as solar energy is removed, said molten salt having a low vapor pressure; and
means for transferring said solar energy disposed within said said array of fibers and said bores disposed within said support plate to said outlet port.

4,643,169

DEVICE FOR SELECTIVELY OPENING AND CLOSING TUBULAR ORGANS OF THE BODY

Walter Koss, Industriestrasse, 6222 Geisenheim, and Udo Jonas, Warmond, both of Fed. Rep. of Germany, assignors to Walter Koss, Geisenheim, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,107

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 8331338[U]

Int. Cl.⁴ A61B 19/00

U.S. Cl. 128—1 R

41 Claims



1. A device such as an implantable device for selectively

opening and at least partially closing tubular organs of the body, comprising a sleeve of elastomeric plastic material adapted to embrace the organ, wherein the sleeve has a slit-like through opening for the organ, the width of the opening being such that the organ is at least partially closed off; said slit-like opening defining a plane through said sleeve, and said organ defining a first direction of fluid flow through said organ which lies in said plane; and wherein the elastomeric plastic material of said sleeve is relatively stiff but manually resiliently deformable in a second direction in said plane of said slit-like opening and transverse to said direction of flow through said organ, so that said opening expands upon the manual application of pressure to said sleeve in said second direction.

4,643,170

ENDOSCOPE APPARATUS

Atsushi Miyazaki, and Yoshikazu Tohjoh, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

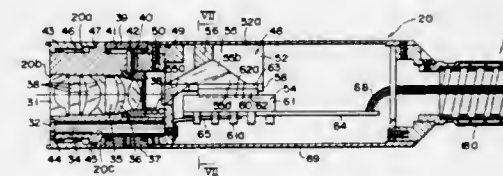
Filed Nov. 27, 1985, Ser. No. 802,377

Claims priority, application Japan, Dec. 5, 1984, 59-256820; Dec. 24, 1984, 59-272255

Int. Cl.⁴ A61B 1/06

U.S. Cl. 128—6

11 Claims



1. An endoscope apparatus comprising:
a control unit;
a light source;
an elongate, flexible insertion section adapted to be inserted into a desired region;
a distal end structure attached to the distal end of the insertion section, said distal end structure including a view window, an illumination window, an objective lens system optically connected to the view window, for focusing an optical image projected through the view window, and a support portion;
a light guide extending from the illumination window through the insertion section to the light source, for guiding a light beam emitted from the light source and radiating the light beam to the outside through the illumination window;
a solid-state image sensor having a light receiving surface receiving the optical image focused by the objective lens system, for converting the optical image into an electrical signal and delivering the signal to the control unit, said image sensor being mounted on the support portion of the distal end structure to be movable in a direction parallel to the light receiving surface;
urging means for pressing the image sensor against the support portion to prevent the image sensor from moving in a direction perpendicular to the light receiving surface; and
an adjusting mechanism for adjusting the position of the image sensor in the direction parallel to the light receiving surface.

4,643,171

METHOD OF MANUFACTURING AN OTOSCOPE

Karlheinz Riester, Juningen, Fed. Rep. of Germany, assignor to Rudolf Riester GmbH & Co. KG Fabrik med. Apparate, Juningen, Fed. Rep. of Germany

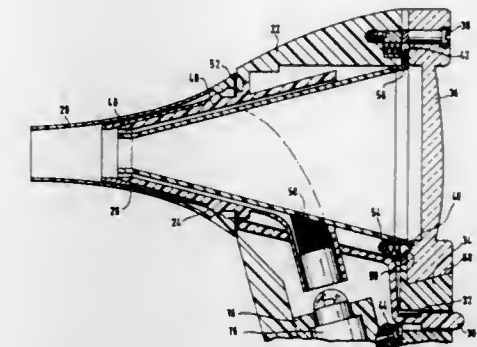
Filed Apr. 17, 1985, Ser. No. 724,194

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414730

Int. Cl.⁴ A61B 1/22

U.S. Cl. 128—9

9 Claims



1. A method of manufacturing an otoscope having a housing head provided with fiber optics assembly and loupe, the housing head being attached to a battery-holding grip member; the method comprising attaching the housing head, provided with an opening extending there-through to the battery-holding, grip, providing a prefabricated fiber optics assembly of funnel means and a fiber optics bundle associated therewith, inserting the assembly into the opening passing through the housing head, fixing the assembly in place therein, and attaching the loupe to the housing head, wherein prior to inserting the prefabricated fiber optics assembly into the housing head, a funnel ejector is assembled with the fiber optics assembly, and both parts are then inserted into the housing head together.

4,643,172

LUMINESCENT TONGUE DEPRESSOR

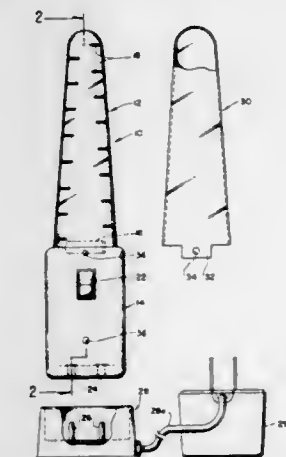
Barry E. Taff, 8665 Pickford St. #8, Los Angeles, Calif. 90035, and Kenneth P. Stoller, 2919 N. Lake Ave., Altadena, Calif. 91001

Filed Oct. 21, 1985, Ser. No. 789,417

Int. Cl.⁴ A61B 13/00, 1/24

U.S. Cl. 128—16

16 Claims



1. A luminescent tongue depressor assembly comprising: an elongated luminiferous depressor element having light dispers-

ing grooves formed therein, said depressor element having a handle portion at one end thereof; means to illuminate said depressor element including a vacuum tube proximate said handle portion and containing a monatomic gas and means to electrically energize said gas in said tube and thereby generate light; means to concentrate and direct said light toward and through said depressor element; and removable sheath means to protect said depressor element.

4,643,173

HEATED TRACTION BELT

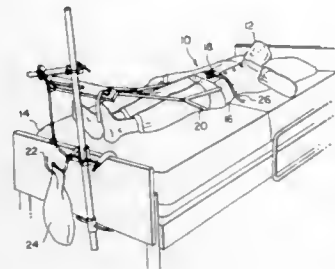
John H. Bell, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Jan. 29, 1985, Ser. No. 696,256

Int. Cl.⁴ A61F 5/01

U.S. Cl. 128—68.1

1 Claim



1. A heated traction belt for a user comprising: a belt; heating means mounted in said belt; means for activating said heating means; and a front closure for holding said belt on the user, said heating means being a heater disposed internally in the rear portion of said belt connected by a wire to a controller that is attached to said front closure, said activating means including a heat control switch disposed on said belt and connected to a weight strap so that when a weight is applied to said weight strap the weight strap pulls taut and closes the heat control switch and operates said heater.

4,643,174

ADJUSTABLE CERVICAL SPINE CORSET AND TRUCK CORSET

Tohru Horiuchi, 2-1-1 Shintomi-cho, Tomakomai-shi, Hokkaido, Japan

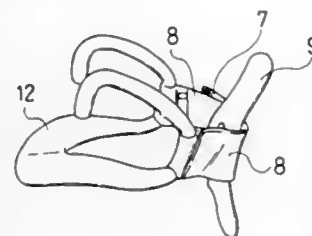
Filed Jun. 15, 1984, Ser. No. 620,830

Claims priority, application Japan, Oct. 1, 1983, 58-184266; Oct. 1, 1983, 58-184267; Oct. 1, 1983, 58-184268

Int. Cl.⁴ A61F 5/08

U.S. Cl. 128—76 R

10 Claims



1. A cervical spine corset which comprises: (a) a cheek rest part adapted to be abutted against a cheek of a patient; (b) an upper chest contact part; and (c) a posterior neck part adapted to be abutted against the

posterior neck of the patient lower than the occipital node of the patient;

- (d) said cheek rest part and said upper rest contact part being capable of being manually adjustably bent into a desired shape and having recovering resiliency;
- (e) said upper chest contact part comprising a U-shaped portion which has a U-shaped configuration when viewed from above, first turning portions integrally turning from the two upper ends of said U-shaped portion generally perpendicularly thereto, and second turning portions integrally turning from each of said first turning portions generally perpendicularly thereto, said first turning portions forming belt attaching portions to which said posterior neck rest part is adjustably attached during use;
- (f) the relative positions between said cheek rest part and said posterior neck rest part being adjustable;
- (g) the two free ends of said second turning portions being spaced from each other so that the patient can open his or her mouth freely; and
- (h) said U-shaped portion and said first and second turning portions being formed integrally.

4,643,175

DEVICE FOR ASSISTING AND MAINTAINING PENILE ERECTION

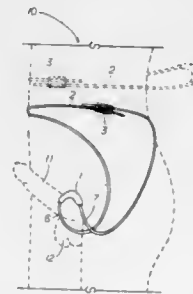
Kenneth Chapman, P.O. Box 735, Bellaire, Tex. 77401

Filed Sep. 13, 1985, Ser. No. 775,726

Int. Cl.⁴ A61F 5/41

U.S. Cl. 128—79

8 Claims



1. A device for assisting in and maintaining erection of the human penis, comprising: a relatively rigid arc member for engagement with the top of the penis at the base thereof; and an elastic cord member extending from each end of said arc member and joined to form a large loop, said loop being positionable around the user's waist with said arc member at the user's back and permitting said arc member to be pulled between the user's legs for placement in said engagement with said top of said penis at the base thereof, first and second portions of said cord member then extending from said arc member between the legs on opposite sides of the user's scrotum.

4,643,176

ATHLETIC KNEE PROTECTOR WITH BOWED LEAF SPRING STRUCTURE

Bradley R. Mason, Carlsbad, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Don Joy, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 657,356, Oct. 3, 1984,

abandoned. This application Jul. 19, 1985, Ser. No. 756,660

Int. Cl.⁴ A61F 3/00, 5/00

U.S. Cl. 128—80 C

17 Claims

1. An athletic knee protector for protecting the knee of a wearer from forces and impacts directed toward the lateral side of a knee, which comprises: first and second pad means attachable respectively to the thigh and shin of the wearer; an upper leaf spring connected to said thigh pad means at a

location spaced substantially above the knee and extending downwardly generally parallel to the thigh to a lower end portion located generally laterally of the knee; a lower leaf-spring having a lower end portion connected to said shin pad means and extending upwardly generally parallel to the shin to an upper end portion located generally laterally of the knee; and hinge means hingedly connecting said lower end portion of said upper leaf spring and said upper portion of said lower leaf spring, said hinge means providing substantially free anterior/posterior pivotal movement between said leaf springs corresponding to anterior/posterior pivotal movement of the knee, but providing a substantially rigid connection between said leaf springs in the lateral/medial direction;



said leaf springs and said hinge means together defining a bowed leaf spring structure that is generally continuously bowed between said connection to said thigh pad means and said connection to said shin pad means, said leaf springs bowing laterally outwardly from their said connections to their respective said pad means so that said hinge means is substantially spaced laterally outward from the knee of the wearer; said bowed leaf spring structure being resiliently flexible in the lateral/medial direction so as to absorb forces and impacts directed toward the lateral side of the knee, distributing such forces and impacts in a cushioned manner through said thigh and shin pads to the thigh and shin, respectively, at locations substantially spaced from the knee, and spreading out the time of application of such forces and impacts so as to reduce the shock characteristics thereof.

4,643,177

DYNAMIC TRACTION WRIST CAST BRACE

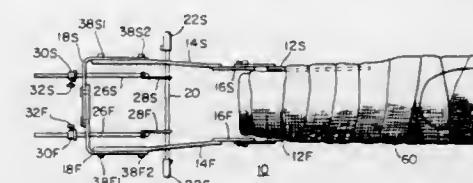
Joseph E. Sheppard; Paul C. Dell, both of Micanopy; Peter F. Gearen, Gainesville; Edward S. Bittar, Alachua, and Gary J. Miller, Gainesville, all of Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jun. 13, 1984, Ser. No. 620,024

Int. Cl.⁴ A61F 5/04

U.S. Cl. 128—84 C

21 Claims



10. A dynamic traction wrist brace comprising: (a) first and second forearm frame members for disposal on opposite sides of a forearm cast; (b) first and second hand frame members; (c) first and second hinges respectively pivotally connecting

said first and second forearm frame members to said first and second hand frame members, said first and second hinges operable to allow patient wrist motion; (d) an end portion extending between said first and second hand frame members; and (e) a transmetacarpal pin mounted to said first and second hand frame members and slidable in slots in said first and second hand frame members, said transmetacarpal pin operable to cause said first and second hand frame members to track movement of a patient's hand.

4,643,178

SURGICAL WIRE AND METHOD FOR THE USE THEREOF

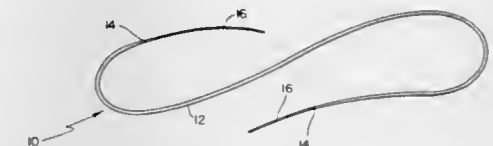
John J. Nastari, N. Providence, and Walter C. Cotter, Providence, both of R.I., assignors to Fabco Medical Products, Inc., Lincoln, R.I.

Filed Apr. 23, 1984, Ser. No. 603,228

Int. Cl.⁴ A61F 5/04

U.S. Cl. 128—92 YD

2 Claims



1. A surgical wire for interconnecting two or more adjacent portions of bone structures and the like in surgical procedures in order to provide support for one of said bone structure portions comprising an elongated substantially smooth flexible and malleable main portion of substantially circular cross section, a substantially smooth flexible and malleable tapered portion of substantially circular cross section which extends integrally from an end of said main portion, and a substantially smooth flexible and malleable leader portion of substantially circular cross section which has a substantially reduced diameter with respect to said main portion and extends integrally from the reduced end of said tapered portion.

4,643,179

WOUND COVERINGS AND PROCESSES FOR THEIR PREPARATION

Paul Y. Wang, 47 Marblemount Crescent, Agincourt, Ontario, M1T 2H5, Canada

Filed Mar. 25, 1981, Ser. No. 247,604

Int. Cl.⁴ A61F 13/00, 5/44

U.S. Cl. 128—156

5 Claims

1. A wound covering material comprising epichlorohydrin insolubilized dextran C polysaccharide sheet impregnated with a humectant for application to skin wound for covering and protection thereof.

4,643,180

ANTIMICROBIAL DRESSING

David Feld, Arlington, and Toby A. Soto, Ft. Worth, both of Tex., assignors to Surgikos, Inc., Arlington, Tex.

Filed Feb. 28, 1985, Ser. No. 707,113

Int. Cl.⁴ A61L 15/00

U.S. Cl. 128—156

7 Claims

1. A surgical dressing comprising a sheet of polymeric film coated on one side with a water based adhesive, said adhesive coating being from 10 to 100 microns in thickness and having a film facing surface and a body facing surface, an antimicrobial agent deposited on the body facing surface of said adhesive, said antimicrobial agent being present in the body facing surface to a depth of from no more than 10% to 50% of the thickness of said adhesive, said antimicrobial agent comprising a salt of polyhexamethylene biguanide and being present in an

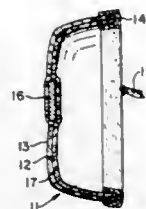
amount of from 0.05% to 2% by weight based on the total weight of the adhesive.

4,643,181
ANTIMICROBIAL DRESSING OR DRAPE MATERIAL
 Craig C. Brown, Arlington, Tex., assignor to Surgikos, Inc.,
 Arlington, Tex.
 Filed Apr. 4, 1986, Ser. No. 848,663
 Int. Cl.⁴ A61L 15/00
 U.S. Cl. 128—156 7 Claims



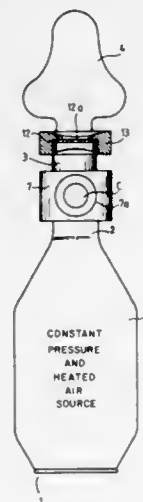
7. A process of forming adhesive coated surgical dressing containing an antimicrobial comprising mixing a 20% aqueous solution of polyhexamethylene biguanide hydrochloride with a solvent which is compatible with the adhesive at a mixing speeding of no more than 300 RRM, adding the mixture to an adhesive, applying the adhesive to a release surface in an amount of from 40 to 55 grams per square meter, drying the adhesive, and applying a substrate for the dressing to the adhesive.

4,643,182
DISPOSABLE PROTECTIVE MASK
 Max Klein, P.O. Box 3, Dalton, Mass. 01226, assignor to Max Klein and Frederick G. Crane, Jr., both of Dalton, Mass.
 Filed Apr. 20, 1983, Ser. No. 486,737
 The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
 Int. Cl.⁴ B01D 39/16, 46/00
 U.S. Cl. 128—201.25 28 Claims



1. A protective mask comprising a non-woven, air-permeable sheet material consisting essentially of glass fibers, a binding agent and polymer micro-bits derived from an expanded, non-brittle thermoplastic polymer selected from the group of a styrene polymer, a polyolefin having from 2 to 6 carbon atoms, or co-polymers or blends thereof, or micro-bits of a flexible foamed polyurethane, said polymer micro-bits being substantially completely free of intact cells of the expanded polymer from which they are produced; said sheet material being adapted to sealingly engage the wearer and envelop at least a portion of the face of the wearer, including the nose and mouth; and means for securing the mask in place during use.

4,643,183
APPARATUS FOR PRODUCING HOT AIR FOR INHALATIONS
 Alexandre Sellinger, 2, Square de la Baume Rocquencourt, 78150 Le Chesnay, France
 Filed Mar. 27, 1985, Ser. No. 716,482
 Claims priority, application France, Mar. 27, 1984, 84 04742
 Int. Cl.⁴ A61M 15/00
 U.S. Cl. 128—204.17 6 Claims

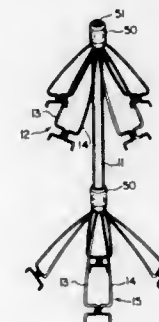


1. An apparatus for producing heated air for therapeutic purposes at stabilized pressure and temperature comprising a source for delivering air at a constant pressure; means for heating said air under pressure; an intermediate chamber in communication with said source including means for receiving all of the heated air; movable shutter means by which said intermediate chamber communicates with the atmosphere, said shutter means being adapted to selectively exhaust said heated air into the atmosphere whereby the pressure and temperature of said heated air in said intermediate chamber is regulated; an inhaling device connected to said intermediate chamber and flow limiting means disposed between said intermediate chamber and said inhaling device, said flow limiting means being adapted to limit the flow of said heated air from said intermediate chamber into said inhaling device to a minute value with respect to the heated air flow exhausted into the atmosphere.

4,643,184
EMBOLUS TRAP
 Kazi Mobin-Uddin, 393 E. Town St., Suite 115, Columbus, Ohio 43215
 Continuation-in-part of Ser. No. 428,254, Sep. 29, 1982, abandoned. This application Apr. 17, 1984, Ser. No. 601,220
 Int. Cl.⁴ A61B 17/00
 U.S. Cl. 128—303 R 14 Claims

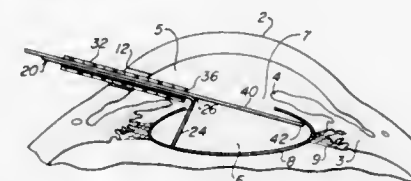
1. An embolus trap for positioning in spaced relation in a fluid passageway in the human body comprising a tubular central column and one or more axially spaced tiers of radially outwardly urged elongated loops of filaments spaced around

the column inclined thereto and attached thereto at one end, the other ends of at least some of the filaments terminating in



at least one hook backed by a circumferential offset limiting the penetration of the hook into the wall of the fluid passage.

4,643,185
INTRAOCULAR LENS INSERTION GUIDE
 Rodolfo Gaba, Simi Valley, Calif., assignor to Iolab Corporation, Covina, Calif.
 Filed Oct. 1, 1984, Ser. No. 656,387
 Int. Cl.⁴ A61B 17/00
 U.S. Cl. 128—303 R 2 Claims

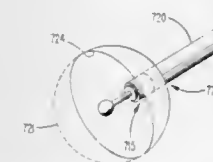
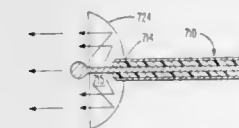


1. A lens insertion guide to facilitate the insertion of an intraocular lens into the capsular bag comprising:
 a thin, elongated body portion;
 a thin flap portion;
 a flexible, resilient connecting portion integrally connecting said flap portion and said body portion and permitting said flap to move from a first position, aligned with said body to facilitate insertion of said guide into the eye, to a second position disposed at a predetermined angle to said body portion to act as a backstop to facilitate proper insertion of a lens into the capsular bag;
 wherein said connecting portion permits said flap to move to a third position extending from said connecting portion in a direction away from said body portion and aligned generally parallel therewith to permit the lens guide to be easily removed from the eye; and
 further including a hollow insertion tube for said guide having an axial length shorter than the axial length of said insertion guide so that said guide may be moved from said second position to said third position for removal from the eye by merely pulling said guide through said tube.

4,643,186
PERCUTANEOUS TRANSLUMINAL MICROWAVE CATHETER ANGIOPLASTY
 Arye Rosen, Cherry Hill, N.J., and Paul Walinsky, Philadelphia, Pa., assignors to RCA Corporation, Princeton, N.J.
 Filed Oct. 30, 1985, Ser. No. 792,852
 Int. Cl.⁴ A61N 1/32
 U.S. Cl. 128—303.1 8 Claims

1. A catheter for percutaneous transluminal angioplasty, comprising:
 a coaxial transmission line having distal and proximal ends and including a center conductor coaxial with an outer conductor;

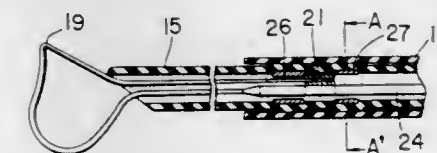
an antenna electrically coupled to said distal end of said coaxial transmission line;
 coaxial connecting means coupled to said proximal end of said coaxial transmission line, said coaxial connecting means being adapted for coupling to a source of radio frequency or microwave electrical energy;
 a fluid-tight jacket surrounding said outer conductor and defining a longitudinal channel through which fluid can flow;
 a balloon the os of which is joined to the distal end of said jacket said balloon surrounding and enclosing said antenna, and being formed from a material which is electromagnetically transparent and impermeable to said fluid, a portion of the inside of said balloon being metallized whereby said balloon when inflated acts as a reflector for coacting with said antenna to direct said electromagnetic energy generally in a preferred direction; and



fluid coupling means coupled to the proximal end of said jacket coupling a source of said fluid under pressure to said balloon by way of said channel for inflation or deflation thereof.

4. A method for reducing the occlusive effect or plaque located at point in a blood vessel in tissue, comprising the steps of:
 obtaining access to the interior of said blood vessel;
 inserting a first end of an elongated electromagnetic transmission line terminated in an antenna into said blood vessel;
 adjusting the position of said transmission line until said antenna is adjacent said point; and
 applying radio frequency or microwave frequency electrical energy to the other end of said transmission line in such an amount that said antenna couples at least a portion of said energy to said plaque for heating thereof without vaporization or death of the underlying tissue.

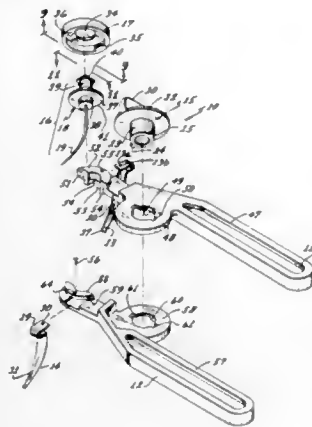
4,643,187
HIGH-FREQUENCY INCISING AND EXCISING INSTRUMENT
 Tsutomu Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
 Filed May 30, 1984, Ser. No. 615,419
 Claims priority, application Japan, May 30, 1983, 58-95530; Jul. 12, 1983, 58-108851[U]; Jul. 20, 1983, 58-133074
 Int. Cl.⁴ A61B 17/39
 U.S. Cl. 128—303.15 7 Claims



1. A high-frequency incising and excising instrument in which excision is made by applying a high-frequency current to a crescent loop in a wire extended from the front end of a

tubular sheath and bent into a crescent loop and hooked around the portion to be excised and tightened therearound, said instrument being characterized by having a slider having a diameter larger than the diameter of the wire and smaller than the inside diameter of said sheath and fixed to the end of the bent wire at one side of said loop, said slider having a passage for free advance and retraction of said wire at the other side of said loop through said slider and being free to be advanced and retracted in said sheath; a wire movement operating pipe connected to said wire at said other side of said loop and movable in said sheath and having a diameter at the connection to said wire larger than the diameter of said wire; a stopper secured to said wire at the wire loop side of said slider for engaging said slider and retracting said slider and said wire loop into said sheath when said wire movement operating pipe is retracted for retracting said slider and said wire loop; a first engagement member having an inside diameter smaller than the outside diameter of said slider attached to said sheath for engaging said slider and for holding said slider and said one side of said wire loop fixed to said slider as said wire movement operating pipe advances said wire and bends said bent end of said wire into said crescent loop; said operating pipe and said first engagement member including means for moving said slider laterally in said sheath for engaging the forward end of said slider with said first engagement member and pressing said slider into engagement with a rearward end of said first engagement member as said operating pipe is advanced; and a second engagement member having an inside diameter larger than the outside diameter of said slide attached to said tubular sheath rearward from said front end of said sheath and from said first engagement member, said means for moving said slider laterally in said sheath including means for engaging the rear end of said slider with the forward end of said second engagement member and holding said slider between said first and second engagement members until said operating pipe is retracted and said moving means for moving said slider laterally in said sheath is released.

4,643,188
SURGICAL DEVICE FOR PERFORMING EMERGENCY
CRICOTHYROTOMIES AND TRACHEOTOMIES
 Sol Weiss, 17227 Quesan Pl., Encino, Calif. 91316
 Filed Feb. 14, 1985, Ser. No. 701,914
 Int. Cl.⁴ A61B 17/32, 17/34
 U.S. Cl. 128—305.3 1 Claim



1. In a surgical instrument comprising:
 a pair of upper and lower handle portions, each of said handle portions having an elongated handle at one end and an extension portion at the other end, each of said extension portions having a generally semi-circular opening therethrough on one side thereof, said handle portions being independent of each other and adapted to abut against each other so that said handles extend in a direction substantially parallel to each other but spaced there-

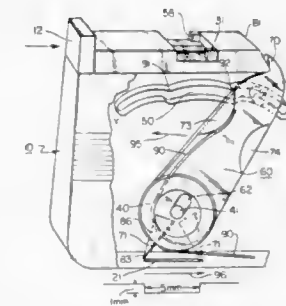
from with said extension portions abutting against each other such that said semi-circular openings abut against each other with said openings forming a generally circular opening;

each of said handle portions having a flange intermediate said handle and said extension portion, each of said flanges having an opening therethrough, said last-mentioned openings being adapted to coincide with each other to form a single opening through said flanges when said handle portions are abutted against each other as heretofore stated;

a key member removably mounted in said single opening, said key member and said openings in said flanges having key means therein keying said key member within said single opening so that said key member can quickly and easily lock said handle portions together or be removable therefrom to release said handle portions from engagement with each other; and

a straight needle half secured to each extension portion extending downwardly from said semi-circular opening, each of said needle halves having an inner groove terminating at their terminal ends in sharp edges, each of said grooves being aligned with its respective semi-circular opening so that, when said handle portions abut against each other as heretofore stated, said needle halves form a generally circular channel communicating at one end with the exterior of said extension portions and at the other end with said sharp edges, a semi-circular boss on each of said extension portions above said semi-circular openings therethrough and coinciding therewith, said semi-circular bosses being adapted to form a circular boss when said handle portions are in an abutting position as heretofore stated, a stylet having a straight needle at one end and a hollow tubular member at the other end holding said needle, said tubular member having an upper flange at one end and a lower flange at the other end, and a collar having an upper opening therein for receiving said upper stylet flange therethrough and a lower opening, said lower stylet flange being receivable within the lower opening of said collar and retained within said collar with said upper stylet flange extending out of the upper opening in said collar and the lower stylet flange extending out of the lower opening in said collar, said lower opening of said collar receiving said circular boss therein with said needle extending downwardly between said needle halves and said tubular member between said upper and lower flanges disposed between, and retained within, said semi-circular openings, said needle extending below the terminal ends of said needle halves when said stylet is retained between said extension portions, said needle terminating in a sharp end having a bulged portion abutting against the terminal ends of said needle halves so that fluid cannot flow between said sharp end and said terminal ends, said needle halves having cooperating means thereon adjacent said terminal ends preventing fluid flow through said needle halves when said needle is removed from between said needle halves, said cooperating means including one of said needle halves having a concave portion therein between said extension portion and said terminal end adjacent said terminal end and the other of said needle halves having a convex portion therein between said extension portion and said terminal end adjacent said terminal end, said convex portion mating with said concave portion to seal off fluid flow.

4,643,189
APPARATUS FOR IMPLEMENTING A STANDARDIZED
SKIN INCISION
 Michael Mintz, Edison, N.J., assignor to W. T. Associates, Somerville, N.J.
 Filed Feb. 19, 1985, Ser. No. 703,199
 Int. Cl.⁴ A61B 17/32
 U.S. Cl. 128—314 27 Claims



1. Apparatus for implementing a standardized skin incision, comprising:

a housing having an internal hollow and having located on a surface an elongated slot, with said slotted surface adapted to be placed flush against the skin,
 an arcuate cam surface having a series of convolutions located within said hollow, a movable arm having a first pivotal end and a second end having means adapted to engage with the cam surface, with said pivotable end end coupled to a surface of said housing to allow said arm to pivot at a location apart from said cam surface, means associated with said arm to allow said arm to move in a transverse direction to said slot while pivoting along said slot, said arm further including a cutting edge coupled thereto which cutting edge extends through said slot when said arm is pivoted, and
 spring biasing means coupled to said arm to bias said arm in a first position where said cutting edge is within said housing and an activatable trigger means coupled to said arm to hold said arm in said first position and to release said arm when activated to cause said edge to traverse through and along said slot in a path according to said cam surface to provide an incision in the skin of a given length and substantially of a uniform depth.

4,643,190
MEDICAL FORCEPS
 Rudolf Heimberger, Oberderdingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany
 Filed Jun. 20, 1985, Ser. No. 746,641
 Claims priority, application Fed. Rep. of Germany, Jun. 23, 1984, 8418993[U]
 Int. Cl.⁴ A61B 17/28
 U.S. Cl. 128—321 8 Claims



1. Medical forceps comprising a hollow shaft having proximal and distal ends, a fixed jaw element being attached to the distal end of said shaft, a housing receiving the proximal end of said shaft, a rotary rod extending through said shaft and having

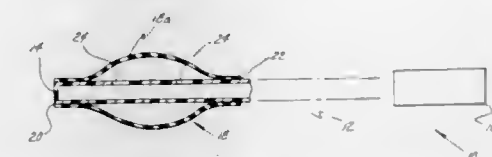
proximal and distal ends with the proximal end extending into the housing, a movable jaw element being attached to the distal end of said rod to cooperate with said fixed jaw element, at least one operating handle on said housing to actuate said movable jaw element, a first bevel gear being attached to the proximal end of the rod, a second bevel gear being mounted in the housing to mesh with the first bevel gear and for rotation about an axis transverse to the axis of rotation of said first gear, said second gear being connected to and rotatable by a radial lever arm pivotally connected to one end of a push rod which in turn is pivotally connected to a pivot arm of said operating handle so that actuation of the operating handle causes rotation of the rod to actuate the movable jaw element.

4,643,191
CRYSTALLINE COPOLYMERS OF P-DIOXANONE AND
LACTIDE AND SURGICAL DEVICES MADE
THEREFROM
 Rao S. Bezawada, Whitehouse Station; Shalaby W. Shalaby, Lebanon; Hugh Newman, Jr., Chester, and Adel Kafrawy, Flemington, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 29, 1985, Ser. No. 802,546
 Int. Cl.⁴ C08G 63/08

U.S. Cl. 128—335.5 16 Claims
 1. Process for producing a crystalline copolymer of p-dioxanone and lactide which comprises subjecting a mixture of p-dioxanone homopolymer, p-dioxanone monomer, and lactide to an elevated temperature for a period of time sufficient to produce a crystalline copolymer of p-dioxanone and lactide.

4,643,192
HOLLOW VISCUS TONOMETRY
 Richard G. Fiddian-Green, Ann Arbor, Mich., assignor to Regents of the University of Michigan, Ann Arbor, Mich.
 Continuation of Ser. No. 360,718, Mar. 22, 1982, abandoned.
 This application Feb. 27, 1986, Ser. No. 833,287
 Int. Cl.⁴ A61B 5/02
 U.S. Cl. 128—632 5 Claims

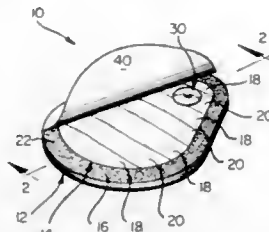


1. A method for detecting the onset of ischemia in a hollow internal organ which comprises providing a catheter having a catheter tube; and a walled sampling chamber on the tube in communication with the interior of the tube; the wall of said walled sampling chamber comprising a material which is freely permeable to carbon dioxide gas in solution but poorly permeable to liquid fluid, introducing the catheter into the organ of interest so that the sampling chamber is disposed at a desired sampling site and leaving the sampling chamber disposed at the sampling site for a length of time sufficient to allow any carbon dioxide gas present at the sampling site to diffuse across the wall of the sampling chamber into aspirating liquid contained within the sampling chamber, withdrawing at least a portion of said aspirating liquid containing any diffused carbon dioxide gas via the catheter tube, analyzing the sample thus withdrawn for carbon dioxide, directly measuring the bicarbonate concentration of the arterial blood of the patient, determining of pH of said hollow internal organ at the sampling site on the carbon dioxide and bicarbonate measurements thus obtained, and determining whether ischemia is present on the basis of pH determination.

4,643,193
ECG ELECTRODE WITH SENSING ELEMENT HAVING A CONDUCTIVE COATING IN A PATTERN THEREON
 Arthur P. DeMarzo, Wheaton, Ill., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jun. 4, 1985, Ser. No. 741,252
 Int. Cl.⁴ A61N 1/04; A61B 5/04
 U.S. Cl. 128—639

17 Claims



1. A medical electrode comprising: a backing member having an adhesively coated surface, sensor means affixed to said backing member and being of a lesser overall dimension such that said adhesively coated surface of the backing member is exposed about a substantial portion of the periphery of said sensor means, said sensor means being formed of an electrically conductive material and having a flat, electrically conductive surface portion for engagement with the skin of a patient, and an electrically conductive coating applied to selected areas of said flat surface portion of said sensor means such that areas of said surface portion other than said coated selected areas are substantially free of said conductive coating, thereby defining a predetermined pattern on said flat surface portion of said sensor means of areas having said conductive coating applied thereto and areas substantially free of said conductive coating, respectively, such that upon application of the electrode to a patient the exposed portion of said adhesively coated surface of the backing member will hold the sensor means in contact with the patient's skin whereby those areas of said surface portion that are free of said conductive coating will be brought into electrically conductive surface-to-surface contact with the patient's skin, while the coated areas of said surface portion will be in electrical contact with the patient's skin by means of said conductive coating.

4,643,194
FLEXIBLE CALIBRATOR
 Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304, assignor to Thomas J. Fogarty, Palo Alto, Calif.
 Continuation of Ser. No. 114,979, Jan. 24, 1980. This application Jan. 15, 1982, Ser. No. 339,317
 Int. Cl.⁴ A61B 5/10

U.S. Cl. 128—668

2 Claims



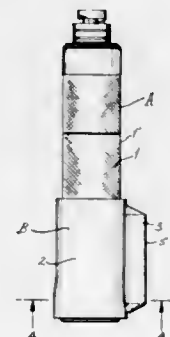
1. A device for measuring the degree of stenosis of arterial vessels comprising a flexible tubular shaft having a continuous generally imperforate side wall, a rounded tip member attached to said shaft at the distal end thereof, said tip member having an axial socket at its proximal end, an enlarged annular bulbous element forming part of said shaft and disposed adjacent said tip member, said element having a predetermined maximum diameter whereby said element serves as a lumen-sizing calibrator for an arterial vessel, a flexible stiffener member adapted to extend generally along the axis of said shaft for the full length thereof, said shaft and stiffener member having adjacently disposed complementary, interfitting and separable,

handle portions at their proximal ends, said stiffener member having a distal end portion which interfits with the socket of said tip member when said handle portions are interfitted with each other, said stiffener member distal end portion and said socket being separated from each other when said handle portions are separated from each other.

4,643,195
ATTACHMENT FOR DETERMINING HUMAN REFLEX REACTIONS AND METHOD FOR DETERMINING SAME
 Robert H. Friedman, 2828 Stonington Pl., St. Louis, Mo. 63131
 Filed Sep. 10, 1984, Ser. No. 648,480
 Int. Cl.⁴ A61B 5/16

U.S. Cl. 128—740

13 Claims



1. The combination with a portable, manually manipulative medical instrument having an elongated rigid body incorporating a handle, said instrument having a tool or a working element provided at one end thereof and being free in the end portion remote from said tool, of a reflex hammer comprising a body of tubular form being open at the opposite ends thereof, the inside cross-section of said tubular body being substantially complementary to the outside cross-section of the handle of said instrument to effect a detachable, snug, yet operationally reliable disposition thereon, said tubular body being of less axial length than said instrument handle, said tubular body being frictionally fitted over a portion of the tool-remote end portion of said handle whereby a portion of said handle between said tubular body and the tool is not covered by said tubular body, said tubular body being provided on the outer surface thereof with a continuous ridgiform projection extending outwardly therefrom and defining an impact surface, said tubular body being of such overall length that the uncovered portion of said handle is of adequate extent for gripping by the user for applying the impact surface of the hammer for medical diagnostic purposes as well as for appropriate manipulation of the tool.

4,643,196
BIOPSY NEEDLE SET
 Masataka Tanaka, Nagano; Masao Obto, Togane; Tetsuo Sekine, Tokyo; Koji Isobe, and Masaru Maruyama, both of Nagano, all of Japan, assignors to Hakko Electric Machine Works Co., Ltd., Japan

Filed Apr. 23, 1985, Ser. No. 726,069
 Claims priority, application Japan, Oct. 24, 1984, 59-160900[U]; Nov. 26, 1984, 59-178791[U]
 Int. Cl.⁴ A61B 10/00

U.S. Cl. 128—753

8 Claims

1. A biopsy needle set for taking tissue specimens consisting of a cylinder, a plunger slidably located within said cylinder and a hollow outer puncturing needle secured to one end of said cylinder, an inner needle having a front and rear end and a uniform diameter along its entire length, said inner needle being slidably and axially located within said hollow outer puncturing needle and being secured at its rear end to one end

of said plunger, said outer needle having a first section wherein the inside wall of said outer puncturing needle is in close contact with said inner needle at the distal end of said outer puncturing needle, and a second section extending from said first section which is not in close contact with said inner needle

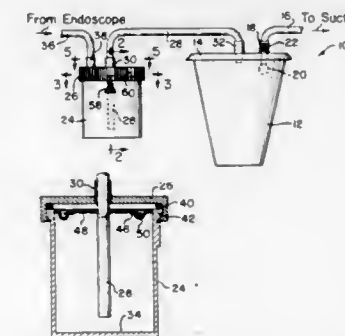


and comprises the portion of said outer puncturing needle which is attached to said cylinder, whereby retracting said plunger within said cylinder creates a negative pressure within the biopsy needle set thereby facilitating removal of the tissue specimen.

4,643,197
SUCTION COLLECTION AND DRAINAGE APPARATUS
 Franklin R. Greene, Flushing; Arthur L. Zimmet, Centerport; Jerome D. Waye, New York, and Edward A. Petix, Syosset, all of N.Y., assignors to E-Z-Em, Inc., Westbury, N.Y.
 Filed May 10, 1985, Ser. No. 733,214
 Int. Cl.⁴ A61B 5/00; A61M 1/00

U.S. Cl. 128—762

20 Claims



1. A suction collection and discharge apparatus for use in collecting body fluids and tissue specimens from a patient, said apparatus comprising:

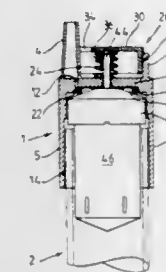
- a first container for receiving and collecting body fluids, said container having a cover;
 - a first tube having one end extending through said cover and communicating with the interior of said first container, the other end of said tube adapted to be connected to a source of suction;
 - a second container for collecting tissue specimens, said second container having a cover;
 - a second tube connecting said second container to said first container to provide fluid communication between said first and second containers, said second tube adapted to receive and permit passage therethrough of body fluids;
 - a third tube having one end extending through the cover of said second container and communicating with the interior of said second container, the other end of said third tube adapted to receive and permit passage therethrough of body fluids and tissue specimens; and
 - a filter supported within said second container, said filter having a plurality of traps and a plurality of enlarged openings spaced around said filter;
- said second container and its associated cover being movable relative to each other between a first position wherein a selected one of said traps is positioned to receive and collect the tissue specimen and a second position wherein a selected one of said openings is positioned to permit passage therethrough of body fluids when suction is applied to said apparatus.

4,643,198
CAP FOR A TUBE FOR EXTRACTING BLOOD
 Uwe Ballies, Jagersberg 7-9, D-2300 Kiel, Fed. Rep. of Germany
 Filed Feb. 9, 1984, Ser. No. 578,701
 Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 8304179[U]

U.S. Cl. 128—763

Int. Cl.⁴ A61B 5/14

16 Claims

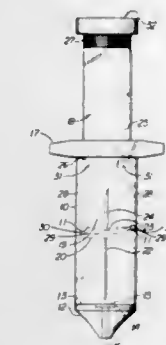


1. A cap for a tube for extracting blood or the like using a needle which has a hub, comprising: a base having an axis, including a receiving surface means for receiving a blood tube attached thereto, cannula cone means, parallel to said axis of the base, for receiving the hub of the needle, extending from the base, and having a bore therethrough, said base having a first and a second opening therethrough which are spaced from one another, said first opening being in communication with said bore of said cannula cone means and with said second opening thereof, valve means for selectively closing said second opening, said valve means including a stem extending through said second opening in said base, and pushbutton means, movably mounted on said base, for allowing opening of said valve means by movement of said pushbutton means toward said base.

4,643,199
SAFETY BLOOD SAMPLE APPARATUS
 Baldwin P. Jennings, Jr., 330 Sharon La., and Pamela M. Kivlighan, 314 Berkeley Pl., both of Staunton, Va. 24401
 Filed Feb. 28, 1986, Ser. No. 834,573
 Int. Cl.⁴ A61M 5/32

U.S. Cl. 128—763

9 Claims



1. A safety blood sample apparatus or the like comprising a telescopically interfitting barrel and piston sleeve each having forward and rear ends and being adapted for relative axial and rotational movements, interengageable locking means on the barrel and piston sleeve enabling the piston sleeve to be locked relative to the barrel in a forward position and a retracted position, a tubular needle on the forward end of the piston sleeve extending forwardly and rearwardly of said forward end

and adapted to be bodily enclosed within the barrel and piston sleeve when the piston sleeve is locked in the retracted position, and
a safety needle shield carried by the forward end of the barrel and having a needle through opening and an elastic membrane extending across an inner end of said through opening, said through opening and membrane being substantially coaxially aligned with said needle, and
closure cap means for non-releasably locking engaging the rear end of the piston sleeve when the piston sleeve is in said second retracted position.

4,643,200

SAFETY BLOOD DONOR APPARATUS

Baldwin P. Jennings, Jr., 330 Sharon La., Staunton, Va. 24401
Filed Mar. 27, 1986, Ser. No. 844,889

Int. Cl.⁴ A61B 5/14

U.S. Cl. 128—763

3 Claims



1. A safety blood donor apparatus comprising
a body having a longitudinal bore,
a needle fixed to one end of the body in communication with said bore and having a rear end disc provided on its periphery with an O-ring seal,
a tube connector fixed to the other end of said body,
a sleeve slidably and rotatably mounted on the exterior of said body and receiving said O-ring wiping in the interior thereof,
a safety shield having a bore and an elastic membrane fixed to the forward end of said sleeve with the bore of the safety shield and membrane being coaxially aligned with said needle,
interengaging locking means on said body and sleeve whereby the sleeve may be locked to the body in a retracted position with the needle projecting through said membrane and through the bore of the safety shield and forwardly of the safety shield and may be locked to said body in a forwardly extending position with the needle bodily enclosed in said sleeve rearwardly of the safety shield and membrane, and
a closure cap for the tube connector.

4,643,201

SINGLE-PASS A-V LEAD

Kenneth B. Stokes, Brooklyn Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 2, 1981, Ser. No. 230,940

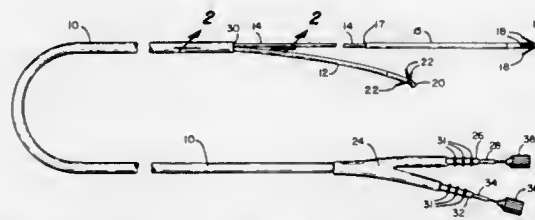
Int. Cl.⁴ A61N 1/04

U.S. Cl. 128—786

4 Claims

1. A single pass lead which may be implanted in a typical human heart, comprising:
a connector;
an atrial electrode for location in the right atrial appendage of said human heart when said lead is implanted in said human heart;
a ventricular electrode for location in the right ventricular

apex of said human heart when said lead is implanted in said human heart;
an insulated atrial conductor having a proximal end coupled to said connector and a distal end coupled to said atrial electrode; and
an insulated ventricular conductor substantially longer than said atrial conductor having a proximal end coupled to said connector and a distal end coupled to said ventricular electrode, said ventricular conductor fixedly attached to said atrial conductor from said connector to a first point a



sufficient distance from said atrial electrode that when said atrial electrode is located in the right atrial appendage of said human heart, said first point is also located within the right atrium of said human heart, said ventricular conductor having sufficient length that when said ventricular electrode is located in the right ventricular apex of said human heart, said first point is located within the superior vena cava of said human heart, whereby when said lead is implanted in said human heart, said ventricular conductor is not fully extended and exhibits slack.

4,643,202

MULTI-MATERIAL INSULATION SHEATH FOR PACER LEAD

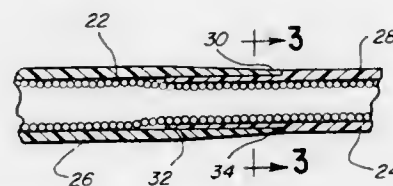
Thomas J. Roche, North Lauderdale, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 15, 1985, Ser. No. 723,163

Int. Cl.⁴ A61N 1/04

U.S. Cl. 128—786

10 Claims



1. In an insulated electrical lead having a proximal end, a distal end, an electrical conductor extending from the proximal end to the distal end and having insulation covering the conductor along the lead, a portion of the conductor at the distal end being free of insulation with the distal end being adapted for implantation and contact of the free portion of the conductor with the tissue of the patient, the improvement comprising, in combination:

said insulation comprising a first section of insulation and a second section of insulation occupying a different portion of the lead than said first section of insulation, said first section of insulation extending along most of the lead and said second, different section of insulation being located at the distal end of the lead, said first section of insulation being harder and stiffer than said second section of insulation, whereby the first section of insulation has the ability to transmit torque more effectively than the second section but the patient's tissue is protected by the softer, second section of insulation.

4,643,203

CONVEYING AND UNITING ROD-LIKE ARTICLES OF THE TOBACCO INDUSTRY

Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins PLC, London, England

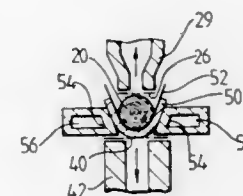
Filed Jun. 27, 1983, Ser. No. 508,399

Claims priority, application United Kingdom, Jul. 1, 1982, 8219096

Int. Cl.⁴ A24C 5/47

U.S. Cl. 131—94

22 Claims



22. Apparatus for uniting axially-aligned rod-like articles of the tobacco industry, comprising means for transporting said articles successively in an axial direction, means for feeding a succession of wrappers towards said articles, and means for wrapping said wrappers around at least the adjacent portions of at least some of said articles to unit them, said wrapping means comprising a lateral-flexible conveyor carrying spaced laterally-flexible resilient pads each arranged to be interposed between said conveyor and one of said wrappers, and guide means for wrapping said conveyor, pads and wrappers at least partially around said articles such that said pads resiliently press said wrappers onto and around said articles.

4,643,204

VEHICLE MOUNTED ARRANGEMENT FOR RECEIVING SMOKING RESIDUES OR THE LIKE

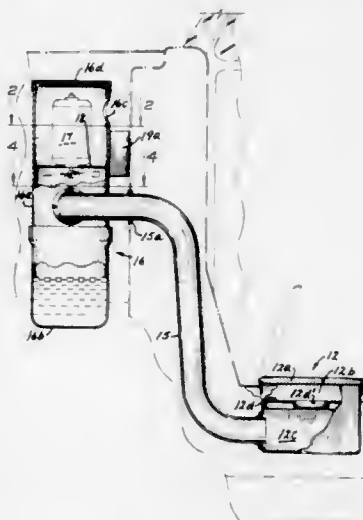
Johnny D. Ford, 1829 W. Seventh St., Owensboro, Ky. 42301

Filed Oct. 17, 1983, Ser. No. 542,265

Int. Cl.⁴ A24F 19/00, 19/10

U.S. Cl. 131—231

4 Claims



1. An arrangement for receiving smoking residues in a vehicle having a passenger compartment and an engine compartment comprising a receiving container disposed within said passenger compartment, a storage receptacle disposed within said engine compartment serving to withdraw and separate air carried and heavier-than-air smoking residues, and a conduit interconnecting said receiving container and said storage receptacle, said storage receptacle including rotatable exhaust means disposed above the entry of said conduit into said storage receptacle, venting means communicating with said rotatable

able exhaust means, and a water containing reservoir disposed below the entry of said conduit into said storage receptacle, where said exhaust means removes said smoking residues from said receiving container through said conduit, where heavier than air smoking residues gravity feed into said water containing reservoir, and where other of said smoking residues carried by air pass from said storage receptacle through said venting means.

4,643,205

SMOKING PRODUCT

Jerry W. Redding, Lexington; Donald L. Roberts, and Donna K. Woods, both of Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Feb. 2, 1984, Ser. No. 576,305

Int. Cl.⁴ A24D 3/00

U.S. Cl. 131—275

24 Claims

1. A smoking product comprising a charge of smokable material enveloped by a combustible wrapper with a section of said wrapper adapted to be contacted by a smoker's lips, said section being treated with a flavoring material which comprises a naturally occurring terpenoid glycoside sweetener which is capable of yielding glucose on hydrolysis.

4,643,206

CIGARETTE FILTER

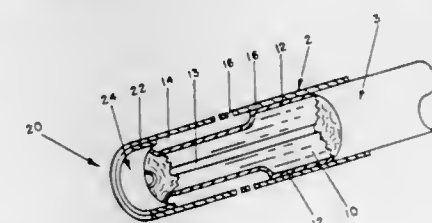
Martin L. Reynolds; Dorothy M. Frank, and Tilford F. Riehl, all of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 581,516, Feb. 21, 1984, Pat. No. 4,580,584. This application Nov. 29, 1985, Ser. No. 802,920

Int. Cl.⁴ A24D 3/04

U.S. Cl. 131—336

10 Claims



1. A filter for a cigarette comprising:
a porous filter rod of cylindrical configuration having a smoke flow capillary passageway formed concentrically with the longitudinal axis of the filter rod and extending longitudinally therethrough;
an impervious wrapper extending longitudinally along said rod and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining impervious, said at least one groove being open ended at and extending from the mouth end of the rod a distance less than the length of the filter rod;
tipping material extending longitudinally of and circumscribing said wrapper, said tipping material extending a preselected distance beyond the mouth end of the filter rod thereby defining a recess at the mouth end of the filter, said tipping material including means to introduce ventilating air into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette during normal smoke draw; and,
a coaxially disposed collar in said recess, said collar being adjacent to the inner surface of the tipping material and in abutment with the mouth end of the filter rod, the collar having a wall thickness less than the depth of the open end

of the at least one groove at the mouth end of the filter rod measured generally radially of the filter rod to partially close the open end of the at least one groove so as to partially obstruct the flow of ventilating air leaving the at least one groove into the recess.

4,643,207

CUTICLE MANICURING DEVICE

Arnold Grahame, 225 Hillturn La., Roslyn Heights, Long Island, N.Y. 11577

Filed Oct. 31, 1985, Ser. No. 793,335

Int. Cl.⁴ A45D 29/05

U.S. Cl. 132—73.6

13 Claims



1. A cuticle manicuring device, comprising:
 - (a) an elongated housing adapted to be hand-held;
 - (b) a vibrating motor housed within said housing;
 - (c) a vibrating stem operatively connected to said vibrating motor to oscillate in a single plane and extending axially from a first end of said housing;
 - (d) a crescent shaped abrasive element disposed on the distal end of said vibrating stem; and
 - (e) a cuticle guide extending from said first end of said housing substantially parallel to said vibrating stem, said guide having a breadth parallel to the plane of the oscillations of said vibrating stem to support said abrasive element thereon, the tip of said guide having the shape of a point extending beyond said abrasive element to engage beneath a cuticle to be manicured so as to establish a limit stop for said abrasive element.

4,643,208

NAIL FORM FOR USE IN APPLYING NAIL EXTENSION MATERIAL

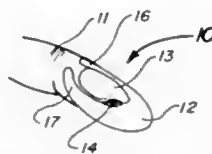
Glenda K. Amour, 5516 Truck Village Dr., Weed, Calif. 96094

Filed Nov. 13, 1984, Ser. No. 670,266

Int. Cl.⁴ A45D 40/30

U.S. Cl. 132—88.5

1 Claim



1. A nail form for use in extending a nail by applying nail extension material to said nail form and said nail, comprising: a sheet of nonporous material having a top surface and a

bottom surface and consisting of a platform and two side extensions, both extending outward from said platform in the same general direction, with an open area between said side extensions, said open area being bordered on two sides by said side extensions and on one end by said platform and having a substantially oval shape so that, when said platform is positioned under the edge of a nail with said top surface facing said nail, said side extensions extend around said nail, leaving said nail exposed while covering skin adjacent to said nail;

first adhesive material covering said bottom surface of said sheet of nonporous material and positioned so that said bottom surface of said sheet securely attaches to said skin when said platform is positioned under said edge of said nail and said extensions extend around said nail, contacting said skin adjacent to said nail, and

second adhesive material covering a small area of said top surface of said platform, said small area covered by said second adhesive material being positioned along the edge of said platform adjacent to said open area, whereby said top surface of said platform securely attaches to the bottom surface of said nail when said platform is positioned under said edge of said nail, thereby limiting buildup of said nail extension material under said edge of said nail, increasing a manicurist's efficiency, reducing cleanup required and reducing likelihood of injury to a customer during cleanup.

4,643,209

VEHICLE WASHING MACHINE

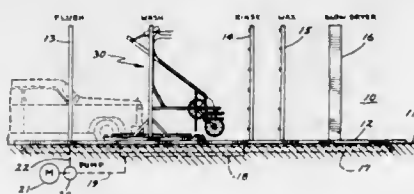
Benjamin Fast, Sioux Falls, S. Dak., assignor to Ronald D. Fast, Sioux Falls, S. Dak.

Continuation of Ser. No. 570,838, Jan. 16, 1984, abandoned. This application May 1, 1986, Ser. No. 858,180

Int. Cl.⁴ B08B 3/02

U.S. Cl. 134—123

5 Claims



1. A vehicle washing apparatus comprising, in combination;
 - a boom pivotally suspended above an elongated surface through which a vehicle to be washed is moved, said boom having a lower end adapted to be vertically movable as a vehicle passes thereunder;
 - a tiltable frame pivotally disposed intermediate its ends at said lower end of said boom, said frame being rotatable in a vertical plane about about a horizontal axis and of lesser length than said boom;
 - first and second wheels rotatably disposed at each end of said tiltable frame for rotation in said vertical plane;
 - an elongate manifold pipe having a multiplicity of spray nozzles thereon and being mounted intermediate its ends on said tiltable frame for rotation therewith, said manifold pipe extending transversely of and horizontally from the tiltable frame and from the lower end of the boom in both directions, said tiltable frame being normally disposed at rest in a generally vertical attitude and said wheels being operable to sequentially engage the generally upright front surfaces, horizontal top surfaces and the generally upright rear surfaces of a vehicle, and nearly invert the frame as said vehicle is moved thereunder, to vertically displace the lower of said boom and to rotate said manifold pipe with the tiltable frame to maintain said nozzles at a predetermined attitude with respect to the front, top and rear surfaces of said vehicle; and a stiff and resiliently

flexible water supply hose having connection with a source of wash water under pressure and extending downwardly along the single rigid arm of the boom to the manifold pipe intermediate its ends, the stiff hose having connection to the lower portion of the boom in spaced relation to the manifold pipe and forming a looped end portion free of the boom, the lower end of the hose being connected to the manifold at its lower side through a connector so that when the manifold is tilted away from its rest position the stiff resilient hose is flexed, whereby the flexed stiff hose tends to return the tiltable frame and nozzles to rest position after being nearly inverted during passage of a vehicle thereunder.

4,643,210

INFLATABLE UMBRELLA

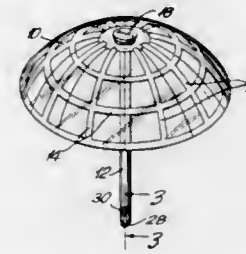
Oscar Feld, 2965 Avenue Z, Brooklyn, N.Y. 11235

Filed Aug. 12, 1985, Ser. No. 764,634

Int. Cl.⁴ A45B 19/02

U.S. Cl. 135—20 B

1 Claim



1. An inflatable umbrella comprising, when inflated, a substantially circular canopy with a handle depending downwardly from its apex, said canopy and handle being constructed of readily inflatable material, said material being deflatable and when deflated being completely non-selfsupporting, the handle being tubular when inflated and having at its lower end a compartment for a cartridge which emits pressurized gas when punctured, a needle associated with said compartment for puncturing the cartridge to release gas therefrom to inflate the umbrella, a removable closure member for the compartment, the closure member having means for forcing the cartridge against the needle as well as closing off the handle at its lower end, the tubular handle being in communication with a plurality of air passages formed in the canopy, some of said passages extending radially from the apex of the canopy to its circumferential edge, others extending circularly around the canopy, at its apex, at its circumferential edge and in between, and intersecting the radially directed air passages, and valve means at the apex of the canopy for releasing gas from the umbrella to deflate the same.

4,643,211

COLLAPSIBLE WALKING FRAME HAVING PIVOTAL SEAT

Thomas A. Morris, and Leslie D. Norman, both of Basildon, England, assignors to Uniscan Limited, Essex, England

Filed Nov. 2, 1984, Ser. No. 667,881

Claims priority, application United Kingdom, Nov. 8, 1983, 8329723

Int. Cl.⁴ A61H 3/04

U.S. Cl. 135—67

1 Claim

1. A collapsible walking frame comprising a pair of upright and laterally spaced side frames each having a front frame member and a rear frame member, wheels rotatably mounted on the lower end portions of said front frame members, the extreme upper ends of said front frame members extending generally horizontally and rearwardly and defining gripping handles, a front brace member extending laterally between and interconnecting the front frame members of said side frames, a rear brace member extending laterally between and interconnecting the rear frame members of said side frames, the front

and rear frame members of each side frame being pivotally connected to one another adjacent their upper ends to enable each side frame to be folded from an operative position to a collapsed position, the lower end portions of the frame members of each side frame being spread relatively far apart when the side frame is in its operative position and being located closely adjacent one another when the side frame is in its collapsed position, said brace members being located intermediate said side frame members and both being located at substantially the same elevation when said side frames are in said operative positions, a seat pivotally supported on said front brace member and freely swingable thereon between an upright stored position and a substantially horizontal active position



when said side frames are in said operative positions, said rear brace member being located so as to support the underside of the free end portion of said seat when said side frames are in said operative positions and said seat is swung downwardly to said active position, a third brace member located above said front brace member and extending laterally between and interconnecting said front frame members, means for releasably securing the free edge portion of said seat to said third brace member when said seat is in said upright stored position and wherein the front and rear frame members of each respective side frame are interconnected by a respective pivotal locking side brace to stabilize the walking frame in the operative position and permit folding to the collapsed position.

4,643,212

HOT LIQUID THERMAL ENERGY STORAGE TANK AND METHOD

Elmer W. Rothrock, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Mar. 28, 1984, Ser. No. 594,324

Int. Cl.⁴ E03B 11/00

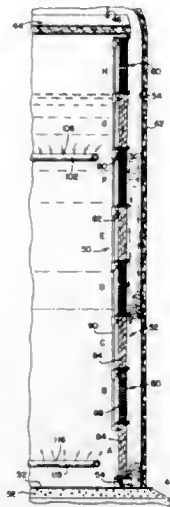
U.S. Cl. 137—1

23 Claims

1. An enclosed liquid storage tank for storing a liquid at a temperature above 400° C. comprising:
 - a metal shell with a flat metal bottom, a vertical cylindrical metal side wall and a metal roof;
 - a vertical circular cylindrical essentially freestanding internal wall, supported by the tank bottom, axially located in the tank to provide an annular space between the tank side wall and the internal wall;
 - means to provide gravity flow of liquid between both sides of the internal wall; and
 - the internal wall comprising a plurality of interconnected insulating blocks constituting thermal insulation surrounded by a covering layer impervious and corrosion resistant to liquid to be stored in the tank.

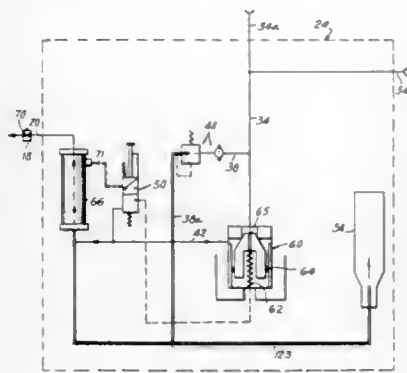
14. A method comprising: feeding a hot liquid at a temperature above 400° C. into an

enclosed liquid storage tank having a metal shell with a flat metal bottom, a vertical cylindrical internal wall, supported by the tank bottom, axially located in the tank to provide an annular space between the tank side wall and the internal wall; ports or openings in the internal wall along the flat metal bottom to provide gravity flow of liquid between both sides of the internal wall; and the internal wall comprising a plurality of interconnected insulating blocks constituting thermal insulation surrounded by a covering layer impervious and corrosion resistant to liquid to be stored in the tank, with said feeding continuing until the tank contains a layer of hot liquid



within the internal wall and at least a layer of cold liquid in the annular space and along the flat metal bottom at least for the depth of the ports; removing hot liquid from the tank in a volume equal to cold liquid fed to the tank so that the total liquid volume in the tank is about constant and substantially fills the tank; and removing cold liquid from the tank in a volume equal to hot liquid fed to the tank until the layer of cold liquid at the bottom of the tank has a depth adequate for the thermocline to be above the ports so that thereby the hot liquid cannot flow from within the space surrounded by the internal wall, through the ports and into the annular space.

4,643,213
METHOD AND APPARATUS FOR CONTROLLING LEAKS IN PRESSURIZED FLUID SYSTEMS
Arthur G. Mirel, Scarsdale, N.Y., assignor to Techrad Corporation, Scarsdale, N.Y.
Filed Aug. 3, 1984, Ser. No. 637,615
Int. Cl.⁴ F16K 31/40; G01M 3/26; G01F 1/24
U.S. Cl. 137—10 21 Claims



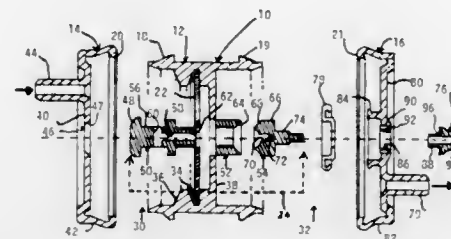
1. In a pressurized fluid system including at least one fluid

conduit means and equipment associated with said conduit means, said system adapted to provide fluid at a line pressure to said fluid conduit means to operate said equipment upon initiation of a usage demand condition, apparatus for automatically controlling fluid leakage from existing points of leakage in said at least one fluid conduit means during non-use of said equipment, comprising:

control unit means coupled into said fluid system including pressure reducing means upstream of said fluid conduit means for reducing the fluid pressure in said conduit means to a low pilot pressure so that during non-use of said equipment a first pilot leak fluid flow at pilot pressure exists in said conduit means through said existing points of leakage therein, said first pilot leak flow having a flow rate which varies continuously, and upon an initial actuation of said equipment a second pilot demand flow at pilot pressure exists in said conduit means, said second pilot demand fluid flow having a flow rate greater than said continuously varying flow rate of said first pilot leak flow, said control unit means further including main valve means for selectively isolating and effecting communication between line pressure and said conduit means in response to a signal;

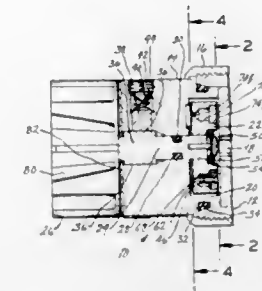
said control unit means further including sensing means coupled into said conduit means between said pressure reducing means and said equipment for detecting and discriminating between said continuously varying flow rate of said first pilot leak flow and said flow rate of said second pilot demand flow, said sensing means comprising floating means for establishing a floating equilibrium position indicative of said continuously varying flow rate of said first pilot leak flow during non-use of said equipment and a target position indicative of said flow rate of said second pilot demand flow upon initial actuation of said equipment, said sensing means further including means for generating a signal upon sensing said flow rate of said second pilot demand flow and means for transmitting said signal to said main valve means of said control unit means for communicating said conduit means with line pressure.

4,643,214
PRESSURE MODIFYING SYSTEM
Michael B. Blumenthal, 807 Honeysuckle Crescent, Gallo Manor, Ext'n 3, Sandton, South Africa
Filed Feb. 11, 1985, Ser. No. 700,447
Claims priority, application South Africa, Feb. 15, 1984, 84/1089
Int. Cl.⁴ F17D 3/00
U.S. Cl. 137—12 15 Claims



1. A method of modifying pressure in a fluid path including the steps of forming a restriction in the fluid path to control the flow of fluid in the path and venting the fluid path on one side of the restriction when a pre-determined pressure limit is exceeded, with the improvement of including the further steps of: sensing the fluid pressure on at least one side of the restriction; generating a movement in response to the sensed pressure; and applying the movement to varying the restriction to control the flow of fluid in the path.

4,643,215
GAS FLOW CONTROL VALVE
James R. Philpot; Steve R. Pinkston, both of St. Louis, and Harry Nurre, St. Louis County, all of Mo., assignors to Essex Industries, Inc., St. Louis, Mo.
Filed Jul. 19, 1985, Ser. No. 756,710
Int. Cl.⁴ F16K 51/00
U.S. Cl. 137—15 13 Claims



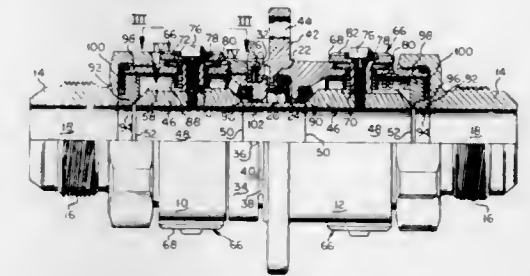
1. For use in making a compact gas flow control valve for providing gas at substantially constant delivery pressure, including flow control means comprising a rotor, a flow control plate covering the rotor having a plurality of orifices therein, and selector means for orienting the rotor to permit flow through selected orifices, the orifices defining a preselected schedule of different flow rates according to the dimension of respective orifices, a process for precision chemical etching of the orifices comprising the following steps:

- calculating the diameters of the orifices to be etched by the use of predetermined flow rate formulas, the orifices being circular;
- producing an enlarged artwork facsimile of the flow control plate including circular patterns for each of the orifices;
- producing a negative of the facsimile reduced to the actual size of the flow control plate;
- applying a photosensitive, etchant-resistant coating at both sides of a flow control plate blank;
- transferring the negative image from said negative to both sides of the coated flow control plate blank;
- selectively exposing such coating from all areas of the flow control plate to be etched, by photographic development;
- applying an etchant to the selectively exposed areas until etched orifices are formed within said exposed areas; and
- removing the remaining coating from all other areas of the etched flow control plate.

4,643,216
FRANGIBLE BALL VALVE CONNECTOR
Alan R. Allread; William C. Marrison, both of Jackson; Russell L. Rogers, Munith, and Alexander P. Webster, Concord, all of Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed Feb. 6, 1986, Ser. No. 826,621
Int. Cl.⁴ F16K 17/14
U.S. Cl. 137—68.1 17 Claims

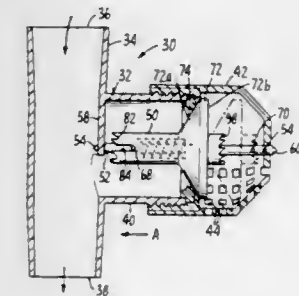
1. A frangible fluid flow connector comprising, in combination, first and second tubular bodies each having an axis, an axial flow passage, a fluid conduit connecting end and a body connection end, frangible means interconnecting said bodies at said connection ends in coaxial relationship, an annular ball valve located within each body flow passage having a bore coaxially alignable with the associated body passage at an open position and perpendicularly disposed to the associated body passage at a closed position, pivot means located on said bodies pivotally supporting said valves for rotation between said open and closed positions about axes perpendicular to the associated body axis, valve retaining means retaining said valves in said open position when said bodies are interconnected and releasing said valves for movement to said closed position upon fracture of said frangible means, first spring means connected

to said ball valves biasing said valves about said pivot means toward said closed position, an exterior surface defined on said valves, a projection defined on said valves' exterior surface disposed at substantially 90° to the length of said valves' bores, a stop ring mounted in each body axially intermediate the body



fluid conduit connecting end and the associated valve concentrically disposed to the associated body flow passage and retained therein, a bore defined in said stop ring adapted to receive said valve projection when the adjacent valve is in said closed position, and second spring means biasing said stop ring toward the adjacent valve to receive said valve projection.

4,643,217
AUTOMATIC VALVE FOR USE WITH POOL CLEANING DEVICES
Herman E. Frentzel, Kentfield, Calif., assignor to Arneson Products, Inc., Corte Madera, Calif.
Filed May 24, 1985, Ser. No. 737,521
Int. Cl.⁴ G05D 11/00
U.S. Cl. 137—112 23 Claims



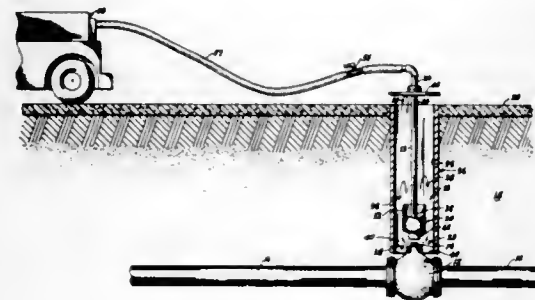
1. An automatic valve for controlling the direction of fluid comprising:
a primary conduit for fluid flow;
a branch segment, in communication with said primary conduit to define an alternative path for fluid flow;
a piston mounted for reciprocal movement between first, second and third positions within said branch segment, said piston carrying a sealing means configured to restrict fluid flow through said branch segment when the piston is in the first position and to permit fluid flow through said branch segment when the piston is in the second position; and
means for providing automatic indexing of said piston between said first and second positions in response to the nonuniform flow of fluid, said means including a first cammed surface at one end of said piston and formed integrally therewith, said surface including a plurality of slots, said means further including a stop pin receivable in one of said slots when the piston is in one of the first or second positions, with the selection of said first and second positions being governed by the length of the particular slot within which the pin is presently engaged, said

means further including a biasing member for urging the piston towards said third position when the fluid flow is lessened thereby disengaging the pin from a slot, and with said cammed surface being configured such that when the fluid flow is increased and the piston moves towards said first and second positions, the pin will become engaged with the next successive slot and wherein said means for indexing further includes a second cammed surface located at the other end of said piston, said cammed surface having slots offset from the slots in said first surface, and said indexing means further including a second stop pin arranged to engage with one of the slots in second cammed surface when said piston means is in the third position.

4,643,218
CLEANER AND ACTUATOR DEVICE FOR REMOTE ACCESS VALVE CONTROLS
 Robert L. Reed, Jr., 781 Forest Ave., Greenwood, Ind. 46142
 Filed Apr. 24, 1986, Ser. No. 855,423
 Int. Cl.⁴ F16L 5/00

U.S. Cl. 137—237

6 Claims



1. A cleaner and actuator device for a remote valve having a remote access valve control body, comprising:
 a pipe or tube body member having a hollow bore, and being of a length such that its upper end may be grasped by a workman at an access position remote from the valve control body, and its lower end is operatively close to the valve control body to achieve the control-cleaning and control-actuation specified below,
 there being provided adjacent the lower end of the pipe or tube an upwardly-open basket member, it being of lesser overall diametrical size than the inside diameter of the associated valve box or cistern which has been provided to achieve access to the remote valve control body,
 the lower end of the pipe or tube, below the said basket member, being provided with a downwardly-open socket member for operatively manipulating the valve control body, the socket member being open to communication with the bore of the pipe or tube,
 and there being means provided to supply the bore of the pipe or tube with compressed air,
 the arrangement of pipe or tube, its supply of compressed air, the basket member, and the socket member all cooperating to provide that with the pipe or tube positioned into the associated valve box or cistern, and with compressed air being supplied to bore of the pipe or tube, the air will emerge from the socket member and act to disturb and move debris from the region of the valve control body, and impinge against and flow along the valve control body, thereby providing a cleaning function with respect to the valve control body sufficient that the socket may be lowered thereonto to permit control manipulation of the valve control body by the socket as the workman may perform manipulation of the pipe or tube, the debris having been caused by the compressed air emerging from

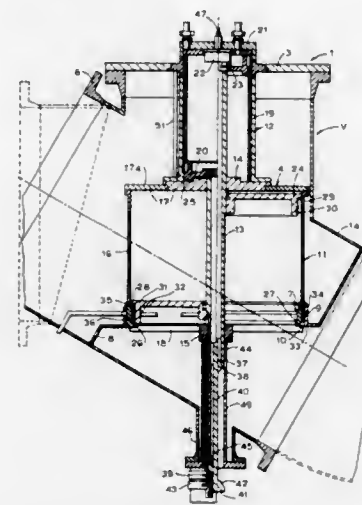
the socket member to move about in the valve box or cistern and eventually to fall into the basket member.

4,643,219
VALVE FOR REGULATING THE PASSAGE OF A FLUID
 Manfred Schmitt, Friedelsheim, and Herbert Illius, Lampertheim, both of Fed. Rep. of Germany, assignors to Bopp & Reuther, Mannheim, Fed. Rep. of Germany
 Filed Jul. 14, 1983, Ser. No. 513,987
 Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226274

Int. Cl.⁴ F16K 25/00

U.S. Cl. 137—454.6

4 Claims



1. A valve for regulating the passage of a fluid through a pipe, and in particular of a pipe having a large diameter, comprising: a housing; a spindle movable in vertical direction in the housing; means for supporting the spindle within the housing; first means for shutting off and opening the passage through the valve and being associated to the spindle; means for moving the spindle in vertical direction between a first position in which the passage of the fluid through the valve is shut off and a second position in which the passage is opened; second means for holding the spindle in the second position during passage of the fluid through the valve and for releasing the spindle when the passage is to be shut off, the spindle, the supporting means, the first means, the moving means and the second means being parts of a unit which is insertable into and removable from the housing in its entirety, said second means including a holding member provided on said spindle and a holding magnet positioned on said moving means and cooperating with the holding member in such a manner that the spindle is held in said second position during passage of the fluid through the valve, said first means including a valve disk connected to the spindle so as to be movable simultaneously with the spindle between the first and the second position; a valve seat engageable with the housing and cooperating with the valve disk so that the valve disk abuts the valve seat when moved into the first position; and a flow cylinder including a perforated casing having a lower end connected to the valve seat, and a connector plate, wherein the upper end of the casing is covered by one surface of the connector plate, the casing surrounding the valve disk and extending parallel to the spindle along the entire valve stroke of the valve disk, said moving means including a lifting cylinder supported by the other surface of the connector plate and having an upper part, a piston slidably guided within the lifting cylinder, the piston being connected to the spindle so as to move the valve disks between the first and the second position, and a cover plate for closing the upper part of the cylinder and connected to said holding magnet, said supporting means including a lower guide bearing for supporting a lower

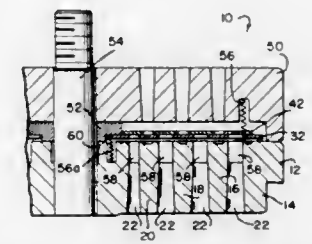
portion of the spindle, an upper guide bearing integrally connected with the connector plate and supporting an upper portion of the spindle, and at least one rib extending radially with respect to the spindle and connecting the lower guide bearing with the valve seat, said housing including a cylinder jacket, a separating wall inwardly projecting from the cylinder jacket, a supporting ring integral with the separating wall, the valve seat being engageable with the supporting ring and sealed thereagainst by at least one sealing ring located in the valve seat, a housing socket projecting outwardly from the cylinder jacket in parallel direction to the spindle, and a cover for closing the housing socket and providing access to the unit.

4,643,220
UNIDIRECTIONAL FLUID CONTROL VALVE
 Kevin Hartshorn, Plainsboro, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
 Continuation of Ser. No. 811,446, Dec. 20, 1985. This application May 19, 1986, Ser. No. 864,316
 The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.

Int. Cl.⁴ F16K 15/08

U.S. Cl. 137—516.13

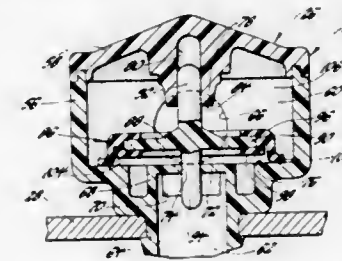
4 Claims



1. A unidirectional, fluid control valve, comprising:
 first means defining a valve seat having a seating surface, and fluid ports formed therein;
 second means, coupled to said valve seat, defining a ported, valving element stop having a planar, stop surface;
 an apertured valving element interposed between said seat and said stop for movement thereof through a given distance, (a) in a first direction toward said stop, and (b) in a second direction toward said seat; and
 third means movably disposed between said element and said seat for (a) lift thereof from said seat, and (b) interception of said valving element, intermediate said given distance, during movement of said element in said second direction.

4,643,221
VACUUM CHECK VALVE
 Donald L. Parker, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.
 Filed Aug. 30, 1985, Ser. No. 771,295
 Int. Cl.⁴ F16K 15/06
 U.S. Cl. 137—516.29

1 Claim



1. A vacuum check valve assembly comprising:
 a housing having

a first section and a second section, said first section having a valve chamber formed therein and an inlet connectable to a vacuum suspended power brake booster and an outlet in a sidewall of said housing first section opening into said valve chamber and connectable to an engine intake manifold for vacuum pressure supply to the booster, said housing second section being a cover secured to said housing first section to provide a closed end for said valve chamber, a valve seat in said valve chamber formed on a part of said housing first section and positioned in axial alignment with said housing inlet, said valve seat being a flat annular surface,

a poppet valve member in said valve chamber having an axially extending guide stem cooperating with axially aligned openings in said valve housing to guide and maintain said valve member first and second valve seat engageable sections in operative surface engageable alignment with said flat annular surface valve seat for full sealing engagement and disengagement therewith,

the guide opening in said housing second section being a closed recess formed in a boss extending into said valve chamber toward said inlet, said boss acting as a valve open position stop, and the guide opening in said housing first section being in an open web having a surface thereof defining with said flat annular surface valve seat a coplanar wall of said valve chamber on the opposite side thereof from said housing second section,

said valve member having a rubber-like valve seal forming said first and second valve seat engageable sections and a valve member body including a disc-like section mounted on said valve stem in planar parallel relation with said flat annular surface valve seat,

said disc-like section receiving and supporting said valve seal,

said valve seal having a first annular seal surface on said first valve seat engaging section axially aligned with a first annular part of said flat annular surface valve seat for surface sealing engagement therewith and also axially aligned with an annular part of said valve member body disc-like section so as to be axially reinforced thereby against planar distortion relative to said flat annular surface valve seat to insure full sealing engagement between said valve seal first annular seal surface and said valve seat first annular part;

said valve seal further having a flexible annular lip providing a second annular seal surface axially aligned with a second annular part of said flat annular surface valve seat for surface sealing engagement therewith, said flexible lip extending radially beyond said valve member body disc-like portion and axially toward said valve seat and when said valve seat first annular seal surface is disengaged from said flat annular surface valve seat extending axially closer to said flat annular surface valve seat than does said valve seat first annular seal surface;

said valve seal lip being subject to a differential pressure biased toward said valve seat to be moved by such differential pressure and sealingly engage said valve seat second annular part before there is sufficient pressure differential pressure acting across all of said valve member to move all of said valve member toward said valve seat, there being sufficient pressure differential imposed on all of said valve member upon the sealing of said valve seat by said flexible lip second annular seal surface to quickly move said valve member axially toward said valve seat and establish sealing engagement of said valve seat first annular seal surface with said valve seat first annular part;

said valve member being axially movable in response to a pressure differential bias away from said valve seat and tending to unseat said valve seal from said valve seat, said axial movement of said valve member first moving said valve seal first annular seal surface away from engagement with said valve seat first annular part to permit said last

named pressure differential to then act on said flexible lip and flex said lip to lift said lip second annular seal surface from said valve seat second annular part.

4,643,222

CHECK VALVE

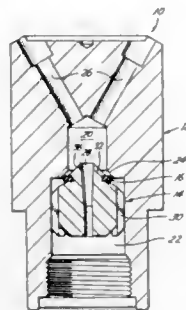
David Wiser, Austin, Tex., assignor to Chatleff Controls, Inc., Austin, Tex.

Filed Apr. 17, 1985, Ser. No. 724,347

Int. Cl.⁴ F16K 15/02

U.S. Cl. 137—528

11 Claims



1. A check valve operable for providing a seal against a seat disposed at the end of a passageway, the check valve comprising:

piston means adapted for sliding reception within the passageway and having a tip adapted for disposition towards said seat, the tip including structure defining a circumscribing groove, a distal portion on one side of the groove, and a proximal portion on the other side of the groove having a seal support surface radially outwardly inclined away from the groove; and

seal means operably received in the groove and including an inboard region and an outboard region, said groove defining structure providing support to the inboard region with the outboard region extending beyond the groove defining structure, the distal portion and proximal portion being dimensioned relative to the seat such that with the piston received within the passageway and biased towards said seat, the distal portion will not contact the seat, the proximal portion seal support surface being nonaligned in an outwardly converging orientation relative the seat, the seal means and piston means being operable when disposed in said passageway with relatively low fluid pressure applied towards the seat to bend the outboard region towards said proximal portion when the seal means contacts the seat to cause an initial flexing seal between the seat and outboard region of the seal means, increasing fluid pressure towards the seat causing subsequent compression of the outboard region of the seal means between the seat and proximal portion.

4,643,223

SOLENOID VALVE

Tatsuhiko Abe, and Nobukazu Takagi, both of Higashimasyuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1986, Ser. No. 829,255

Claims priority, application Japan, Feb. 27, 1985, 60-26495[U]

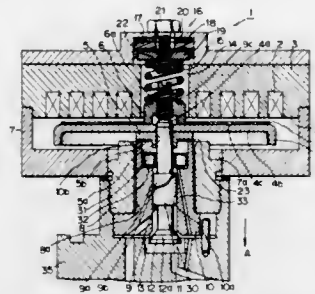
Int. Cl.⁴ F16K 37/00, 31/06

U.S. Cl. 137—554

8 Claims

1. A solenoid valve comprising:
a valve member made of an electrically conductive material;
an electrically conductive body having a guide hole for guiding said valve member slidably;
a valve seat provided in said electrically conductive body;
an insulation layer formed on a sliding surface of said valve

member for establishing an insulating condition between the sliding surface and a guide surface of the guide hole so as to construct a switch for electrically connecting said electrically conductive body with said valve member when said valve member is seated on said valve seat;
a solenoid actuator having a stator with an exciting coil and an armature fixed to said valve member, said solenoid actuator providing an electromagnetic force to seat said valve member on said valve seat;



a spring means for biasing said valve member to separate from said valve seat at the time said solenoid actuator is in the de-energized state;

a stopper which is connected to said valve member for setting the stroke of said valve member and comes in contact with said body when said solenoid actuator is in the de-energized state; and

an insulating member provided between said stopper and said body so as to prevent said valve member from coming in contact with said body through said stopper.

4,643,224

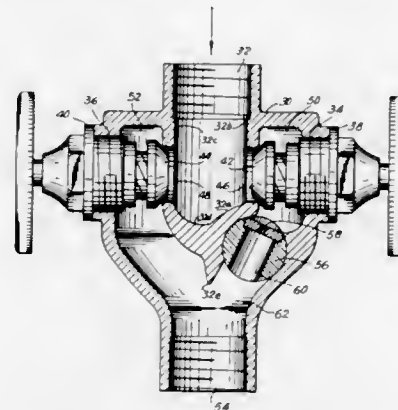
ALARM TEST DEVICE FOR A SPRINKLER SYSTEM
Robert Rung, Hopatcong, N.J., and Philip R. Schwarz, Easton, Pa., assignors to Victaulic Company of America, Easton, Pa.

Filed Sep. 4, 1985, Ser. No. 772,993

Int. Cl.⁴ F16K 37/00

U.S. Cl. 137—559

5 Claims



1. An alarm test module for a fire extinguishing sprinkler system, including in combination:

a unitary valve body providing an inlet, an outlet, and at least one valve seat communicating said inlet with said outlet;

a sight glass in the form of a solid cylinder of transparent material extending transversely through said valve body and exposed at opposite end viewing surfaces located externally of said valve body, said sight glass being interposed between said inlet and said outlet and having a metering passage extending diametrically therethrough

providing for controlled communication of said inlet with said outlet; and,
valve means cooperating with said at least one valve seat for selectively connecting said inlet directly to said outlet, for selectively connecting said inlet to said outlet via said metering orifice, and for selectively isolating said inlet from said outlet.

4,643,225

PRESSURE REGULATING VALVE

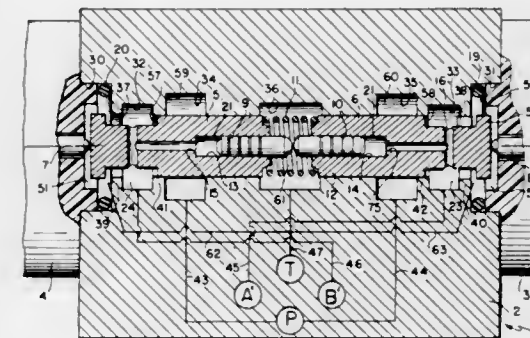
Rainer Imhof, Frammersbach, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany
Filed Feb. 25, 1985, Ser. No. 705,193

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1984, 3406794

Int. Cl.⁴ F15B 13/044

U.S. Cl. 137—596.17

7 Claims



1. A pressure regulating valve comprising:
a valve housing having a longitudinal bore defined by an inner bore surface;

first and second control spools reciprocally mounted with outer ends and opposing spaced inner ends for movement in said housing bore between a rest position and an operating position, each spool defining with said inner bore surface an operating chamber adapted to be connected to a pressure fluid source in said operating position and disconnected in said rest position and each adapted to be connected to a respective load so fluid flows to said load in said operating position, each spool having a spool bore in communication with said operating chamber and defining a pressure metering area smaller than the cross-sectional area of the control spool;

first and second metering spools respectively mounted for movement in said spool bores and extending into the space between said control spools to abut, each said metering spool responding to pressure in the respective operating chamber to apply a force to both control spools; and
first and second actuating means for applying a force respectively to the outer end of said control spools to cause said spools to move to said operating position, the forces produced by said metering spools opposing the force applied by said actuating means.

4,643,226

SLIDE GATE VALVE

Jürgen Bälz, Weinsberg, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany
Filed Dec. 7, 1984, Ser. No. 679,256

Int. Cl.⁴ F16K 3/314, 11/065

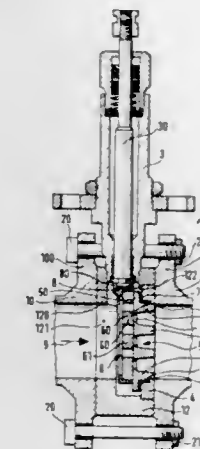
U.S. Cl. 137—625.33

13 Claims

1. A slide gate valve for pipeline, comprising:
(a) a stationary valve plate;
(b) a displaceable valve plate associated with said stationary plate;
(c) a flangeless housing adapted for being clamped between the ends of two pipelines, said housing having an inner chamber which is axially enlarged between the two pipe-

line ends for accommodating said stationary and displaceable valve plates, and slightly radially enlarged on a discharge side thereof for receiving said plates, but having an inside diameter on an inlet side thereof substantially the same as that of the adjacent pipeline end; and

(d) an annular insert having substantially the same inside diameter as an adjacent pipeline, said insert being provided on a discharge side within said flangeless housing, having a pipeline sealing surface between itself and said adjacent pipeline, said a plate sealing surface between



itself and said stationary plate, said plate sealing surface having a substantially smaller area than said pipeline sealing surface so as to reduce forces transmitted to said stationary plate through said insert during on-site clamping of said housing between the ends of two pipelines; wherein

said stationary plate is supported against said insert as a seal in a small annular area of said stationary plate in contact with said plate sealing surface, and further wherein the remaining area of said stationary valve plate and said insert define a clearance therebetween.

4,643,227

LINEAR SOLENOID-OPERATED VALVE FOR USE IN POWER STEERING SYSTEM

Mikio Suzuki, Hekinan, and Shigeo Tanooka, Okazaki, both of Japan, assignors to Toyota Koki Kabushiki Kaisha, Kariya, Japan

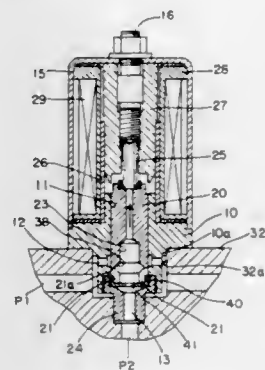
Filed Oct. 17, 1985, Ser. No. 788,723

Claims priority, application Japan, Oct. 25, 1984, 59-225515

Int. Cl.⁴ F16K 31/06, 47/04

U.S. Cl. 137—625.38

3 Claims



1. A solenoid-operated valve, comprising:

a housing having a bore, a first port opening into the bore and a second port extending coaxially from said bore; a cylindrical spool axially slidably disposed in said bore; said cylindrical spool having an axial through hole; at least one radial slot formed at one end thereof, said slot opening into said axial through hole and defining in combination with side walls and an end wall thereof and a side wall of said first port a bypass passageway which is operable to a variable degree upon axial movement of said spool in said bore and allows fluid under pressure to flow therethrough from said first port to said second port or vice versa, and a chamfered portion formed on said spool and extending to said slot; spring means for urging said spool in a direction to close said bypass passageway; a solenoid mounted on said housing for shifting said cylindrical spool in a direction to open said bypass passageway against a resilient force of said spring means, and restrictor means provided at said one end of said cylindrical spool and which has an orifice formed therein for restricting flow of fluid therethrough.

4,643,228
CONVERTIBLE HIGH OR LOW PRESSURE PILOT VALVE

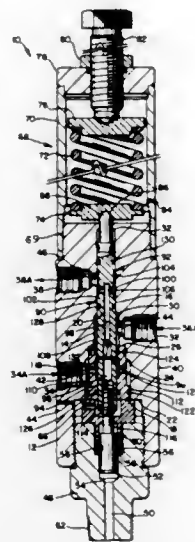
Larry K. Spencer, Carrollton, Tex., assignor to Sigma Enterprises, Inc., Dallas, Tex.

Filed Mar. 2, 1984, Ser. No. 585,823

Int. Cl.⁴ F15B 13/042

U.S. Cl. 137—625.66

17 Claims



8. A pilot valve for controlling the flow of fluid in a control system in response to pressure variations in a flow line, said valve comprising: a body having an axial bore formed therein, said body having a plurality of body ports including a supply port, and exhaust port and a common port communicating with said bore, said body ports being axially spaced, said supply port and said exhaust port communicating with said bore at positions between said common port and an end of said bore; plunger means movably disposed in said bore, said plunger means having an axially extending passageway and first and second bands of radially directed plunger ports communicating with said passageway, said plunger means being positioned in said bore to form an annulus; pressure sensing means at one end of said body, said pressure sensing means being adapted to impart translational motion to the plunger means in response to variations in flow line pressure, said sensing means being adapted to move said plunger between first and second positions, one of said bands of radially directed plunger ports communicating with said supply port when said plunger is in said first position, said band communicating with said exhaust

port when said plunger is in said second position; and seal means secured to said body and urged into sealing engagement with said plunger means, said seal means having a dimension measured longitudinally of said bore which is greater than the maximum dimension measured longitudinally of said bore of each of said plunger ports.

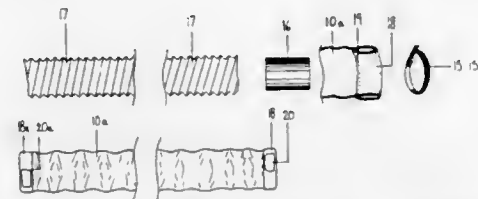
4,643,229
SEWAGE DISPOSAL HOSE
Ray Hlekin, 43-046 Old Orchard Rd., Sardis, British Columbia, Canada V2R 1A9

Filed Jun. 12, 1985, Ser. No. 744,054

Int. Cl.⁴ F16L 3/00; B60R 15/04

U.S. Cl. 138—109

2 Claims



1. A flexible hose for discharging waste from holding tanks in recreational vehicles or the like, which comprises an inner flexible and stretchable tubular hose member and an outer flexible protective tubular sleeve surrounding said inner hose member in a close fitting manner and having such length and diameter as to conform to the inner hose member in both its collapsed and stretched configuration, a rigid tubular insert positioned within each end of the inner hose member and surrounded thereby and by the ends of the protective sleeve surrounding said inner hose member, said outer protective sleeve having circumferential pockets formed at each end by folding over and securing ends of said sleeve, and a clamp positioned within each fold in clamping engagement with the ends of the outer sleeve, the inner hose and the rigid tubular inserts at the ends thereof.

4,643,230
METHOD AND APPARATUS FOR THE AUTOMATIC MONITORING OF TEXTILE FABRICS, ESPECIALLY WOVEN FABRICS

Peter F. Aemmer, Wettswil, and Kurt Aeppli, Uster, both of Switzerland, assignors to Zellweger Uster, Ltd., Uster, Switzerland

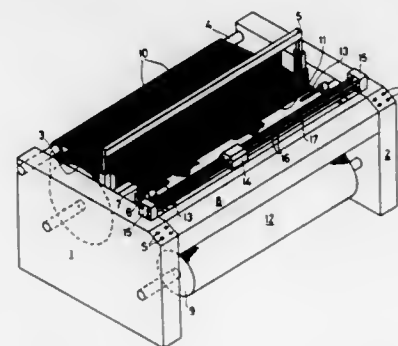
Filed Apr. 18, 1985, Ser. No. 724,770

Claims priority, application Switzerland, Apr. 24, 1984, 2003/84

Int. Cl.⁴ D03J 1/00; G01N 21/89

U.S. Cl. 139—1 B

8 Claims



1. Method for the automatic monitoring of textile fabrics, especially woven fabrics, comprising the steps of:

continuously scanning the woven fabric by means of an electro-optical device including a scanning head traversing across the width of the fabric immediately at the weaving machine on which the fabric is produced by scanning linear scanning zones of the fabric with an elongate detection area, the longitudinal direction of which is oriented in the warp direction so that an output signal is produced from the scanning head indicative of the texture of the surface of the fabric; and detecting variations in the normal texture of the fabric by evaluating the signals produced by said scanning head to classify said signals by giving priority to signals which represent variations beyond a predetermined amount greater than zero in size or number, or which have a certain periodicity in said texture.

5. Apparatus for the automatic monitoring of textile fabrics, especially woven fabrics, comprising: electro-optical means including a scanning head to be mounted on a weaving machine on which the fabric is produced for continuously scanning the woven fabric, said scanning head including a lighting unit directed towards the fabric to be monitored and a sensor unit for producing a detection signal representative of the texture of the fabric in an elongate area of the fabric in response to receipt of light from said lighting unit reflected by said fabric in said elongate area; scanning means coupled to said scanning head for scanning said elongate area over said woven fabric by causing said scanning head to scan said fabric on the weft direction transversely to the length of the cloth; and evaluation means connected to receive said detection signal for detecting variations in the normal texture of the fabric by evaluating said detection signal to classify said signal by giving priority to values which represent variations beyond a predetermined amount greater than zero in size or number, or which have a certain periodicity in said texture.

4,643,231
ROTARY DOBBY

Josef Brock, Viersen, and Paul Surkamp, Kempen, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

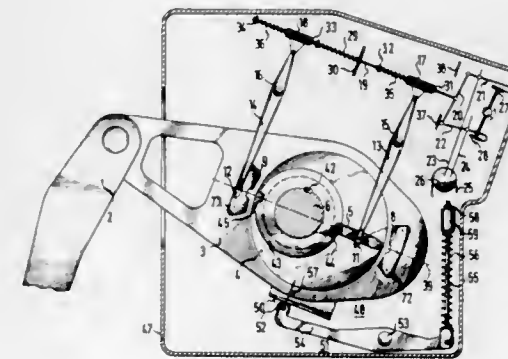
Filed Apr. 18, 1985, Ser. No. 724,983

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1984, 3414640

Int. Cl.⁴ D03C 1/00

U.S. Cl. 139—66 R

10 Claims



1. Rotary dobby for moving a shaft, comprising a connecting rod connected to the shaft to be moved, said connecting rod having two mutually-opposite wedge detents disposed thereon along a given wedge-detent diametral line, an eccentric disk carried on said connecting rod having a wedge guide extended radially in said eccentric disk, a driven shaft assembly having at least one detent groove formed therein, a coupling wedge disposed between said drive shaft assembly and said eccentric

disk, said coupling wedge having an open shifting groove formed therein, two control pieces engageable in said shifting groove, two control rods each being connected to a respective one of said control pieces and being controlled according to a given pattern for pushing one of said control pieces into said shifting groove and for pushing said coupling wedge alternately into said detent groove along the length of said wedge guide when said drive shaft assembly is not rotating and into one of said two wedge detents, and an automatic zero setting device associated with said connecting rod for maintaining said connecting rod and said eccentric disk in a zero position for receiving said coupling wedge.

4,643,232
HARNESS FRAME FOR A WEAVING LOOM
Theodor E. Wagner, 101 Mabry Dr., Spartanburg, S.C. 29302
Filed Dec. 13, 1985, Ser. No. 808,649
Int. Cl.⁴ D03C 9/06

U.S. Cl. 139—92

11 Claims



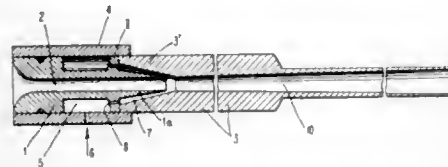
1. An improved harness for a weaving loom comprising a support frame having upper and lower spaced frame members for adjustably positionally supporting a plurality of heddles in planar array therebetween, each of said upper and lower frame members having an elongate, slotted guide channel extending along its interior edge with the channels of the members disposed in facing relation to each other, at least one rigid supporting centerstay extending between the upper and lower support frame members and having a channel-insert portion at its upper and lower end disposed within the respective slotted guide channel of the frame members for adjustable sliding movement therealong to position the supporting centerstay at a desired location along the frame members, and fluid-actuated, pressure-applying means communicating with the elongate guide channels for applying pressure to the channel-insert portions of the centerstay in the guide channels to fix the position of the centerstay at a desired location along the frame members.

4,643,233
METHOD FOR CONVEYING A FLEXIBLE THREAD BY
MEANS OF A PRESSURIZED GAS

Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Riit-Te Strake B.V., Netherlands
 Continuation of Ser. No. 394,936, filed as PCT NL81/00026, Nov. 13, 1981, published as WO 82/01728, May 27, 1982, Pat. No. 4,550,752. This application Jun. 3, 1985, Ser. No. 741,1882
 Claims priority, application Netherlands, Nov. 17, 1980, 8006265; Nov. 17, 1980, 8006264; Dec. 31, 1980, 8007127; PCT Int'l Appl., Nov. 13, 1981, PCT/NL81/00026
 The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
 Int. Cl.⁴ D03D 47/28

U.S. Cl. 139—435

2 Claims



1. A method for conveying a flexible thread by means of a subsonic flow of pressurized gas, particularly for inserting a weft into the weaving shed of a weaving machine, provided by an injector including an inlet element wherein a first channel for a primary gas flow extends from a chamber connected to a supply of pressurized gas, a central channel conducts the thread to be conveyed together with a secondary gas flow, and a second channel merges with said first channel, further including a mixing tube abutting said inlet element and defining a third channel of circular cross-section wherein the primary and secondary gas flows are combined into a single flow transporting the thread to be conveyed, the third channel defines a restriction downstream of the merger of said first and second channels, the circular cross-section of said third channel increases, as seen in the conveying direction, by a conical angle of between a fraction of one degree and one degree, comprising the steps of:

- generating the primary gas flow by connecting said inlet element to the pressurized gas supply;
- conducting the secondary gas flow and the thread to be conveyed through said central channel;
- combining said flows and said thread in said third channel; and
- compensating for a loss of density due to friction of the gas flow by the increasing cross-section of said third channel.

4,643,234
APPARATUS TO STRAIGHTEN THE LEADS OF A PIN
GRID ARRAY

James C. Alemanni, Oceanside, Calif., assignor to Alpha Modular Systems, Covina, Calif.

Filed Sep. 13, 1985, Ser. No. 775,806

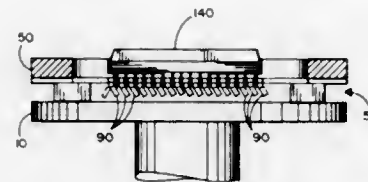
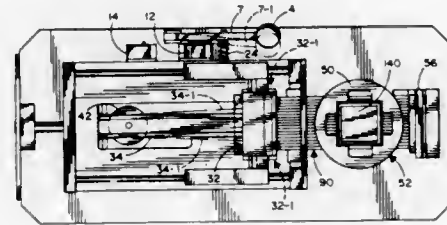
Int. Cl.⁴ B21F 1/02

U.S. Cl. 140—147

17 Claims

1. Apparatus to straighten the bent leads of a pin grid array, comprising a plurality of elongated blades, a track attached to said apparatus, oscillator assembly means received by said track and movable therealong, said oscillator assembly means retaining said plurality of blades in an alignment so as to permit said blades to be introduced to or retracted from the leads of the pin grid array when said oscillator assembly means moves along said track, means interconnected with said track by which to pivot said track and thereby cause the side-to-side movement of said oscillator assembly means so as to cause said blades to oscillate back and forth between respective rows of said leads to thereby engage and straighten the leads when said plurality of blades are introduced thereto, and means within said apparatus by which to receive a pin grid array having

leads to be straightened, said receiving means being rotatable to rotate the pin grid array when said plurality of blades are



retracted from the leads thereof, so that said leads can be variably oriented for repeated engagement by said blades.

4,643,235
METHOD FOR MAKING OXYGEN ELECTRODE FOR
ALKALINE GALVANIC CELLS

Peter Schmoede, Brilon, Fed. Rep. of Germany; Detlef Katryniok, deceased, late of Brilon, Fed. Rep. of Germany (by Christine Katryniok, legal representative), and Jean P. Ruch, Brilon, Fed. Rep. of Germany, assignors to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG, Brilon, Fed. Rep. of Germany

Division of Ser. No. 646,418, Aug. 31, 1984. This application Nov. 27, 1985, Ser. No. 802,861

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3331699

Int. Cl.⁴ H01M 4/21; B65B 3/04

U.S. Cl. 141—1.1

5 Claims



1. A method of producing a single-layer oxygen electrode for alkaline galvanic cells and including a carbon layer having 30 to 40% by weight carbon, 15 to 30% by weight silver, 10 to 20% by weight palladium and 20 to 30% by weight binder, comprising the steps of:

- mixing a catalyst salt solution with a liquid to form an aqueous activated carbon suspension, for distribution thereof so that there is depositing of catalyst on said activated carbon to form a catalyst dispersion;
- separating off the liquid to form a catalyst composition; and
- at least partially embedding a metal grid in said catalyst composition to produce the single-layer oxygen electrode.

4,643,236
FEED ROLL TENSIONING DEVICE
 John A. O'Brien, Jr., Birmingham, and James H. Hutson, Pell City, both of Ala., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 6, 1985, Ser. No. 805,718

Int. Cl.⁴ B27L 5/02

U.S. Cl. 144—208 E

12 Claims

4. A log debarking machine comprising: a frame, a rotor

supported by said frame for rotation about a longitudinal axis, said rotor including a central opening, and a feeding means for feeding logs in the direction of said longitudinal axis of said rotor through said central opening of said rotor, said feeding means including a plurality of log gripping rollers positioned for rolling contact with the logs, means for supporting said log gripping rollers for movement toward and away from said longitudinal axis of said rotor, and means for applying a force on said log gripping rollers to bias said log gripping rollers toward said longitudinal axis, said means for applying force on said rollers including a cylinder having opposite ends, a first fluid conduit connected to one of said opposite ends of said cylinder and a second fluid conduit connected to the other of said opposite ends of said cylinder, said first fluid conduit including first means for supplying fluid pressure to said one of said opposite ends of said cylinder at a first fluid pressure, and first means for selectively venting said one of said opposite

parallel to and beneath the plane of said table and perpendicular to said given direction, a second milling unit mounted for rotation about an axis parallel to and above the plane of said table and perpendicular to said given direction, and drive means for driving said first and second milling units in rotation, said first and second milling units each comprising at least one milling tool, each said at least one milling tool comprising a pair of spaced parallel rotary cutting blades and a profiling tool mounted between said pair of rotary cutting blades and having a lesser diameter than said pair of blades, each said at least one milling tool being so dimensioned that its pair of cutting blades will cut at least half way but not all the way through a piece of advanced board stock and its profiling tool will profile the adjacent surface of said piece of advanced board stock, each said at least one milling tool of said first milling unit having its pair of cutting blades disposed coplanar with a pair of cutting blades of said second milling unit, whereby a plurality of slats having opposed profiled edges may be formed in a single pass from a said piece of advanced board stock.

8. Process for making slats having opposed profiled edges from board stock, said process comprising the steps of: providing a piece of board stock of predetermined length; advancing said piece of board stock in a given direction; simultaneously cutting a plurality of parallel grooves on the bottom face of said piece of board stock and profiling the bottom face of each piece of board stock between each two adjacent grooves, said grooves extending in said given direction and penetrating said piece of board stock at least halfway, but not all the way, through its thickness; simultaneously cutting a second plurality of grooves coplanar with said first plurality of grooves on the top face of said piece of board stock and profiling the top face of each piece of board stock between each two adjacent grooves, said grooves extending in said given direction and penetrating said piece of board stock at least halfway, but not all the way, through its thickness.

4,643,238
VENETIAN BLIND

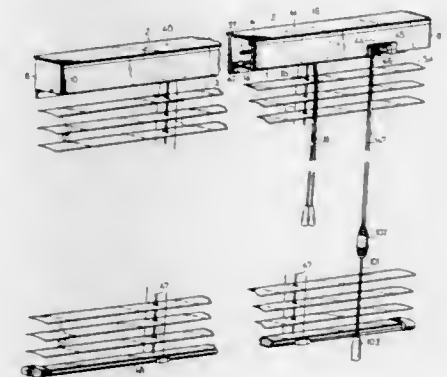
Takeyoshi Tachikawa, Yokohama, and Shigeo Ohkubo, Misato, both of Japan, assignors to Tachikawa Corporation, Tokyo, Japan

Continuation of Ser. No. 531,487, Sep. 12, 1983, abandoned. This application Sep. 25, 1985, Ser. No. 779,614

Int. Cl.⁴ E06B 9/30

U.S. Cl. 160—168 R

18 Claims



1. A venetian blind comprising:

- (a) a head box having a rectangular tubular cross section composed of an elongated support bar including at least a front side wall and a lower wall and having an open side, an elongated cover bar attached to said support bar with a plurality of interfitting joints in covering relation to said open side of said support bar;
- (b) a multiplicity of horizontal slats arranged in vertically

4,643,237
METHOD FOR FABRICATING MOLDING OR
SLOTING BOARDS SUCH AS SHUTTER SLATS,
MOLDING FOR CARPENTRY OR FOR CONSTRUCTION
AND APPARATUS FOR PRACTICING THIS PROCESS

Jean Rosa, Bousquet, 47140 Pennes d'Agenais, France

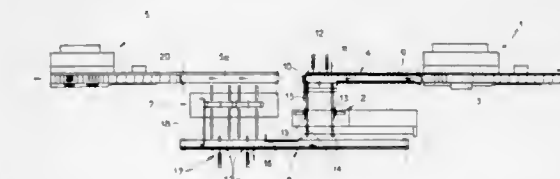
Filed Mar. 14, 1985, Ser. No. 712,003

Claims priority, application France, Mar. 14, 1984, 84 04478

Int. Cl.⁴ B27M 1/08; B27L 7/00

U.S. Cl. 144—369

10 Claims



1. Apparatus for making slats having opposed profiled edges from board stock, said apparatus comprising a planar table having means for advancing the board stock in a given direction, a first milling unit mounted for rotation about an axis

spaced relation and positioned downwardly of said head box;

(c) a slat tilt adjustment device accommodated in said head box for adjusting the angle of tilt of said slats, which comprises a plurality of support members disposed in said head box and spaced from each other longitudinally of said head box, an elongated rotatable drive shaft extending between and having portions journaled by said support members, said support member having insertion holes for extending ladder cord through them and slits positioned behind said insertion holes in communication therewith for introducing said ladder cords into said insertion holes; and

(d) said lower wall of said support bar includes a plurality of attachment recesses extending from a rear edge thereof and each of said support members has a lower neck portion for slidable engagement with one of said attachment recesses from said rear edge, thereby allowing said ladder cords to extend through said head box.

4,643,239

OVERHEAD SECTIONAL DOORS

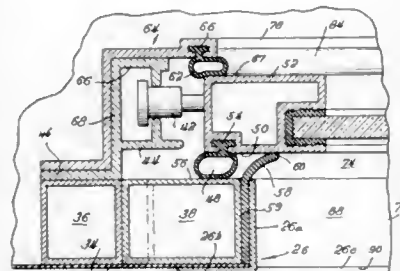
Harold G. Wentzel, Elkhart, Ind., assignor to Uneek Cap and Door, Inc., Elkhart, Ind.

Filed Nov. 19, 1984, Ser. No. 672,629

Int. Cl.⁴ E05D 15/00

U.S. Cl. 160—201

7 Claims



1. In an overhead sectional door for a capped pickup truck characterized by a doorway bounded by parallel, vertical side members having interior flat faces disposed in a common plane and extending from the top to the bottom of said doorway; an overhead sectional door for closing said doorway; guide means comprising rollers and guide members for guiding said door from a vertical closed position to a substantially horizontal open position, and vice versa; and sealing means for effecting, only when said door is closed, a seal between said door and said doorway side members functioning to seal said door against infiltration of dust and water;

the improvement in which:

said door has flat faces on its exterior side parallel to and along the entire length of its side edges which, in the closed position, are parallel to and opposed to the flat faces of said side members;

elongate, parallel sealing members affixed to said exterior flat faces of said door adapted to effect a seal, when the door is closed, between opposed faces of said door and each side member;

said rollers are affixed to the door sections at the ends thereof thereby leaving said flat faces on the exterior and interior sides thereof smooth and uninterrupted from the top to the bottom of the door;

the vertical portion of each said guide member is disposed in a channel member comprised of a side member, a fixed base member, and a web connecting the two;

each said guide member has a flat base abutting said web and a flat end portion abutting said fixed base member;

each said base member has an extended portion extending over an interior flat face of said door; and

elongate, parallel sealing members affixed to the extended portion of each of said fixed base members adapted to

effect a seal, when the door is closed, with the interior flat faces of said door.

4,643,240

METHOD OF BLOWING CORES ETC. USING QUICK-SET SAND, AND IMPROVED MOLD-BLOWING APPARATUS

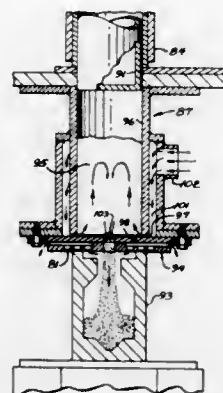
Robert S. Lund, Elmhurst, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Division of Ser. No. 599,728, Apr. 12, 1984, Pat. No. 4,570,694, which is a continuation-in-part of Ser. No. 342,071, Jan. 25, 1982, Pat. No. 4,460,032. This application Oct. 30, 1985, Ser. No. 783,144

Int. Cl.⁴ B22C 15/28

U.S. Cl. 164—20

12 Claims



4. The method of blowing foundry sand into a mold, including the steps of dumping the sand into a blow box, blowing air into the blow box to fluidize the sand and blow it into a mold, and moving a displacement means within the blow box to displace the fluidized sand for more complete discharge thereof toward the mold.

4,643,241

METHOD OF PREPARING COMPOSITE ALUMINUM MATERIAL

Koji Yonekura; Kenichi Suzuki; Yoshiyasu Takahashi, all of Nagoya, and Hiroaki Iwahori, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

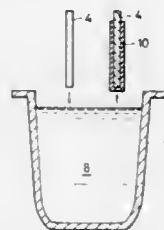
Filed Jul. 23, 1985, Ser. No. 757,876

Claims priority, application Japan, Jul. 26, 1984, 59-156276

Int. Cl.⁴ B22D 19/00

U.S. Cl. 164—101

8 Claims



1. A method of preparing a composite aluminum material comprising the steps of:

contacting an aluminum member at least partially with a treating solution containing 0.5–40 g/l of potassium ions and 1–10 moles of fluorine ions per mole of potassium ions, said treating solution used to form a chemical conversion coating layer of potassium pentafluoroaluminate on a specified surface of said member; and

contacting said surface with a molten aluminum or aluminum alloy.

4,643,242

DEVICE FOR COLLECTING MOLTEN METAL BREAK-OUTS IN CASTING OF LIGHT METALS

Neil B. Bryson, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

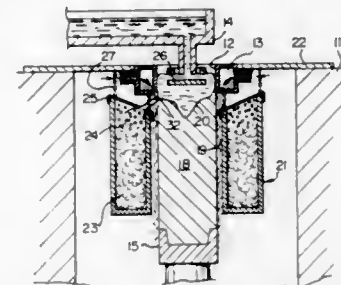
Filed Nov. 27, 1985, Ser. No. 802,837

Claims priority, application Canada, Nov. 30, 1984, 469060

Int. Cl.⁴ B22D 11/00

U.S. Cl. 164—153

7 Claims



1. An apparatus for the direct chill casting of light metal ingots comprising a water-cooled mould of the cross-sectional shape of the ingot desired, said mould having a vertically moveable base portion to support the ingot formed and being disposed above a pit for receiving the resultant casting and means for applying water onto the freshly solidified surface of the ingot as it emerges from the mould and moves downwardly into the pit,

characterized by at least one hollow container adjacent the side or sides of the ingot being formed, said at least one container being packed with dry, highly heat-absorptive, finely divided material having a large surface to volume ratio and said container having an open top positioned a short distance below the mould such as to catch a break-out of molten metal at the exit of the mould.

4,643,243

MACHINE FOR IMPACT CLEANING CASTING

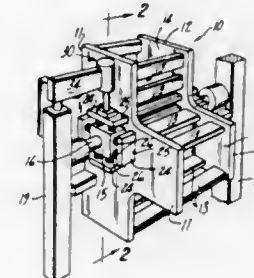
Kenneth D. McKibben, Defiance, Ohio; Alan P. Gould, Au Gres, Mich.; Craig J. Groh, Standish, Mich., and Thomas E. Wuelper, Alger, Mich., assignors to Seaton-SSK Engineering Co., Inc., Au Gres, Mich.

Filed Aug. 5, 1985, Ser. No. 762,540

Int. Cl.⁴ B22D 27/08

U.S. Cl. 164—260

15 Claims



1. A machine for repeatedly impacting a casting for cleaning debris from the casting, comprising:

a horizontally arranged flat plate supported upon springs; means for positioning and rotating a casting upon and removing a casting from said plate, said means including said plate forming the bottom wall of an open top compartment having a pair of side walls, with said compart-

ment being rotatably mounted upon a horizontal axis for rotating the compartment until the plate is vertical and the side walls are horizontal for loading a casting into the compartment, and then rotating the compartment until the plate is horizontal beneath the casting for supporting the casting thereon during impact and for then rotating the casting until the plate is vertical for horizontally removing the casting from the compartment

a generally vertically downwardly directed hammer means for applying repeated blows directed to impact against an end portion of the plate for resiliently vibrating the plate and for spreading out and transmitting the forces of the blows through the plate to the casting located upon the plate;

whereby debris, such as sand, clinging to the casting is loosened and removed from the casting.

4,643,244

GAS-LIQUID HEAT EXCHANGE PROCESS AND APPARATUS

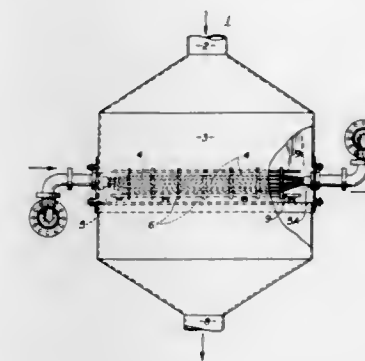
Robert T. Bosworth, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 668,972, Nov. 7, 1984, abandoned. This application Apr. 2, 1986, Ser. No. 847,149

Int. Cl.⁴ F28D 1/00

U.S. Cl. 165—1

14 Claims



1. In a process for changing the temperature of a gaseous stream by passing the stream through a heat exchanger maintained at a temperature different from that of the gaseous stream by circulating a heat transfer medium through the heat exchanger, the improvement which comprises passing said gaseous stream through said heat exchanger in a direction transverse to a bank of fluoropolymer tubes in the heat exchanger, said tubes having a diameter of from about 3 to 10 mm and a free span for each tube segment of from about 20 to 90 cm, the ratio of free span to tube diameter being from about 50 to 150, passing the gaseous stream across at least five rows of said tubes while circulating a heat transfer medium through said tubes, said tubes being arranged to provide center to center spacing between the tubes of from about 1.25 to 3.0 times the diameter of the tubes, maintaining the gaseous stream at a velocity to provide a Reynolds number through the bank of tubes of from about 800 to 3000 whereby a low frequency, high amplitude vibration is set up in said tubes.

4,643,245

SYSTEM COOLER FOR A COMPUTER

Edmond Smoot, III, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Jan. 31, 1985, Ser. No. 697,074

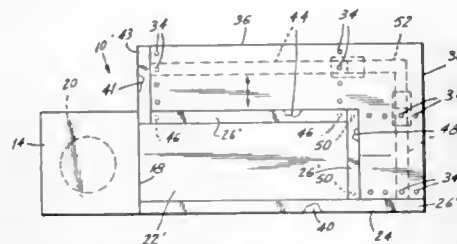
Int. Cl.⁴ F24H 3/00; H02B 1/00

U.S. Cl. 165—47

3 Claims

1. A cooling system for a computer having a circuit board which comprises:

- (a) a blower box having an air intake port and an air exit port;
 (b) a blower with motor mounted within said blower box;
 (c) an elongated and wide flat base member extending from a side of said blower box adjacent said exit port, said base member having a plurality of apertures near lateral edges thereof;
 (d) two fixed side moldings, one formed on a front edge of said base member and other formed on a wide edge of said base member adjacent said blower box;



- (e) a moveable rear molding having downwardly extending pins to engage with said apertures in different positions near a rear edge of said base member;
 (f) a moveable lateral molding perpendicular to said rear molding having downwardly extending pins to engage with other of said apertures in different positions near one of said lateral edges of said base member;
 (g) a moveable corner molding having means to engage with said moveable rear molding and said moveable lateral molding in different positions, whereby different size computers can be mounted on said base member for cooling purposes.

4,643,246

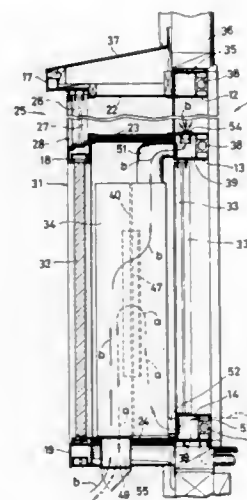
BAY WINDOW WITH VENTILATOR

Akio Ikemura, Kurobe, and Minoru Kajiki, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
 Filed Jul. 10, 1985, Ser. No. 753,585

Claims priority, application Japan, Jul. 10, 1984, 59-104177[U]

Int. Cl.⁴ F24D 5/10
 U.S. Cl. 165-54

1 Claim



1. A bay window for attachment to a wall defining a house interior space, comprising:

- (a) a frame assembly including an inner head, an inner transom, an inner sill, and a pair of horizontally spaced inner side jambs which are connected together, an outer head, an outer transom, an outer sill, and a pair of horizontally spaced outer side jambs which are connected together, a

middle horizontal panel interconnecting said inner and outer transoms, and a lower horizontal panel interconnecting said inner and outer sills, said inner side jambs having a thermally insulating structure, each of said inner head, said inner transom, said inner sill and said inner side jambs having a conduit extending longitudinally there-through for passage of heat-transfer liquid, each of said inner transom and said inner sill further having an internal air passage disposed in heat-exchange relation to said conduit thereof, said inner transom having air outlets opening into the house interior space, said inner sill having air inlets opening into the house interior space, said outer head, said outer transom, said outer sill and said outer side jambs all having a thermally insulating structure;

- (b) a window unit disposed between said outer head and said outer transom;
 (c) a housing disposed between said middle and lower horizontal panels and including at least one thermally insulating panel extending vertically between said outer head and said outer sill;
 (d) a ventilator accommodated in said housing and having an air inlet port communicating with said air inlets through said air passage in said inner sill, and an air outlet port communicating with said air outlets through said air passage in said inner transom, said ventilator further having a heat exchanger rotor; and
 (e) an air discharge duct and an air supply duct both supported on said lower horizontal panel, said air discharge duct communicating with said air inlets successively through said heat exchanger rotor, said air inlet port and said air passage in said inner sill, said air supply duct communicating with said air outlets successively through said heat exchanger rotor, said air outlet port and said air passage in said inner transom.

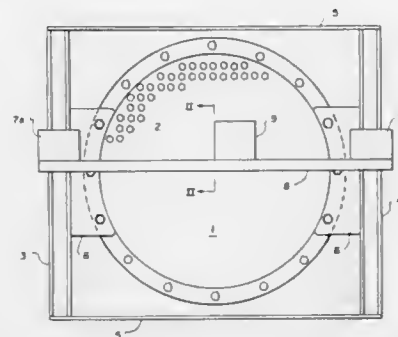
4,643,247

TUBE EXTRACTING AND REPLACING APPARATUS

Ronald L. Tomasula, 358 Iroquois Pl., Beaver, Pa. 15009
 Filed Dec. 14, 1984, Ser. No. 681,674

Int. Cl.⁴ F28F 7/00
 U.S. Cl. 165-76

1 Claim



1. In a heat exchanger comprising a bundle of tubes, enclosed by a housing; the improvement comprising positioning means located at each end of said bundle of tubes, each positioning means comprising a pair of vertical carriages fastened to diametrically opposite portions of said housing, a horizontal positioning track rigidly connected to each of said pairs of vertical carriages, a coil of new tubing mounted on one of said horizontal positioning carriages, extracting means mounted on the other of said horizontal positioning carriages for extracting individual replaced tubes, a tube straightener mounted in association with said coil of new tubing for straightening the new tubing as it is being inserted in the tubing bundle for replacing a defective tube in said bundle, and a tube puller mounted on said other of said horizontal positioning carriages opposite said tubing coil mount for extracting defective tubes to be replaced

and guide nut and a threaded rod inside of and extending the full length of said tubes to be replaced, which rod will pull the guide nut and attached tube through the heat exchanger.

4,643,248

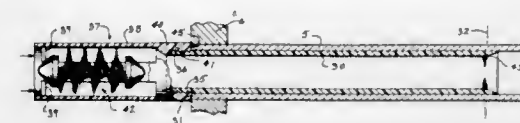
PROTECTION OF HEAT EXCHANGER TUBE ENDS

Donald J. Voith, Milwaukee, Wis., and Kaveh S. Someah, San Rafael, Calif., assignors to Water Services of America, Inc., Milwaukee, Wis.

Filed Feb. 14, 1986, Ser. No. 829,706

Int. Cl.⁴ F28G 1/06, 1/12; F28F 19/00
 U.S. Cl. 165-95

7 Claims



1. In a heat exchanger, the combination comprising:

- (a) a housing (2),
 (b) a plurality of metallic fluid flow tubes (5) disposed in general parallelism within said housing and with said tubes being arranged with exposed open end portions communicating with a housing chamber (8, 10, 11),
 (c) the inner surfaces of said metallic tubes being subjected, for a finite distance (21) inwardly from the outer terminus (31) thereof, to visually observable erosion (19) caused by fluid turbulence (17, 18), and with the inner surfaces of said tubes inwardly of said finite distance being relatively free of said turbulence and erosion due to laminar fluid flow, said inner tube surfaces being also subjected to corrosion by the fluid flowing therewithin,
 (d) and a non-metallic sleeve-like insert (30) mounted in telescoping engagement within the outer end portion of at least some of said tubes,
 (e) said non-metallic inserts being elongated and extending axially inwardly within their respective tubes for at least said finite distance (21) and thereby forming means to protect said inner tube surfaces against said corrosion and said turbulence-caused erosion throughout said finite distance,
 (f) and a heat exchanger tube cleaning system comprising:
 (1) a plurality of tube cleaning elements (42) shuttletable within said tubes and with said elements having an O.D. approximating the I.D. of said inserts (30),
 (2) and a tube cleaning element capturing device (37) connected to the outer end of the respective inserts (30) and disposed in a respective said chamber,
 (3) said devices being of similar material as said inserts,
 (g) said inserts (30) providing a single element which is of substantially constant inner diameter between its ends, and wherein said finite distance (21) subject to turbulence-caused erosion and the length of said elongated inserts (30) and in the range of about 5 to 12 inches as determined by the I.D. of said heat exchanger tubes (5) and the velocity, pressure and composition of the flowing fluid.

4,643,249

HEAT EXCHANGER BAFFLE PLATE

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 713,359, Mar. 18, 1985, abandoned, which is a division of Ser. No. 443,811, Nov. 22, 1982, Pat. No. 4,520,868. This application May 19, 1986, Ser. No. 865,938

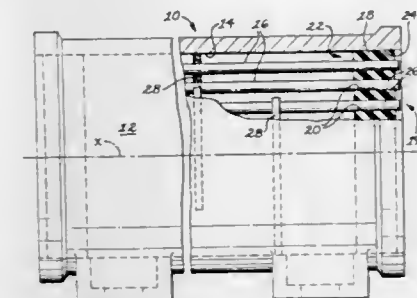
Int. Cl.⁴ F28D 7/00

U.S. Cl. 165-159

2 Claims

1. A one-piece baffle plate for supporting a plurality of tubes of predetermined hardness in spaced relation to each other and to a shell of a heat exchanger through which oil passes around the tubes, the baffle plate being formed from a single sheet of vibration-absorbing fiber-reinforced neoprene rubber having a

hardness of about 65 to 80 durometer as measured on the shore D scale and less than the tube hardness, having a thickness of about 3 mm, and having an ability to swell in the presence of oil; the plate having a plurality of circular openings there-through for the tubes; each of the openings being defined by a continuous sidewall having a uniform dimension through the plate and shaped and sized to correspond to the shape and size



4,643,250

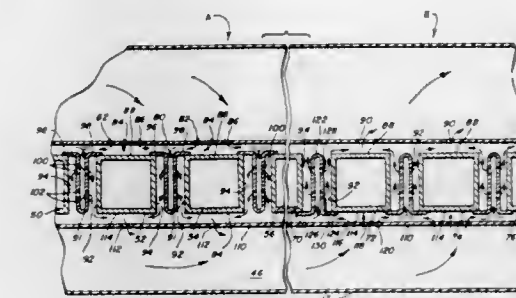
FLUID JET IMPINGEMENT HEAT EXCHANGER FOR OPERATION IN ZERO GRAVITY CONDITIONS

Richard Niggemann, and John Readman, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 750,166, Jul. 1, 1985. This application Jul. 7, 1986, Ser. No. 882,417

Int. Cl.⁴ F28D 7/02; F28F 9/22
 U.S. Cl. 165-159

5 Claims



1. An impingement and convection heat exchanger comprising:

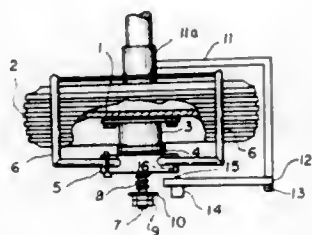
- a plurality of spaced tube sections in side-by-side relation, said tube sections having generally rectangular cross sections and being adapted to receive a first fluid in a heat exchange operation; and
 a baffle means surrounding said tube sections including a first barrier adjacent to and extending about three sides of each of said tube sections including generally U-shaped channels disposed between adjacent ones of said tube sections, said first barrier having a plurality of rows of apertures, at least one row for each of said three sides of each of said tube sections, the apertures opening toward the adjacent side of the associated tube sections and adapted to cause a second fluid in a heat exchange operation and passing through the apertures to impinge on said adjacent side along the length of said rows, and a second barrier oppo-

site of said first barrier and adjacent the remaining side of each of said tube sections and cooperating with said first barrier to substantially enclose said tube sections, said second barrier having a plurality of rows of second fluid exit ports, one row for each of said tube sections and opening away from said remaining sides; whereby the second fluid will be placed in heat exchange relation with said tube section by impingement on said three sides thereof and by convection on said remaining side thereof.

4,643,251
TRACTION DEVICES FOR AUTOMOTIVE WHEELS
Philip Ziccardi, 1700 New Haven Ave., Pittsburgh, Pa. 15216, and John Ziccardi, R.D. 1 Marshall Rd., Evans City, Pa. 16033

Filed Jan. 28, 1985, Ser. No. 695,798
Int. Cl.⁴ B60C 27/14, 27/00
U.S. Cl. 152—223

5 Claims



1. A traction device for mounting on a vehicle wheel, comprising a hub detachably mounted concentrically on said wheel, said hub having a spindle protruding outwardly therefrom, a disc rotatably mounted on said spindle and from which radiates a plurality of circularly spaced, flexible traction members overhanging the tread of the wheel, an electromagnetically operated pin mounted on a support arm of said traction device and cooperable with a hole in said disc in the rotary path of said pin to selectively couple said support arm of said traction device to the disc to prevent rotation of said disc and traction members to maintain the traction members in inactive position, said electromagnetically operated pin including a solenoid having said support arm attached to the axle of said wheel, and control means including a switch operable from the driving position of the vehicle and arranged to selectively energize said solenoid and electromagnetically operate said pin to selectively uncouple said support arm of said traction device from the disc to allow said disc and traction members to rotate with said hub and thereby activate said traction members.

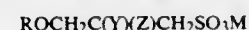
3. A traction device for mounting on a vehicle wheel, comprising a hub detachably mounted concentrically on said wheel, said hub having a spindle protruding outwardly therefrom, a disc rotatably mounted on said spindle and from which radiates a plurality of circularly spaced, flexible traction members overhanging the tread of the wheel, a centrifugal force operated pin mounted on a support plate of said traction device and cooperable with a hole in said disc in the rotary path of said pin to selectively couple said support plate of said traction device to the disc to prevent rotation of said disc and traction members to maintain said traction members in inactive position, said centrifugal force operated pin including centrifugal force operated means which allows an axially movable collar to selectively uncouple said support plate of said traction device from the disc to allow said disc and traction members to rotate with said hub and thereby activate said traction members.

4,643,252
CARBON DIOXIDE MISCIBLE DISPLACEMENT PROCESS
Frank S. Kovarik, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Jun. 24, 1985, Ser. No. 747,738
Int. Cl.⁴ E21B 43/22, 43/40

U.S. Cl. 166—263 4 Claims
3. A method of displacing oil in a subsurface oil-bearing formation wherein there is at least one injection well and at least one producing well comprising:
a. injecting a propane containing fluid into said formation through said injection well, thereby enriching in place oil with said propane containing fluid;
b. ceasing injection of said propane containing fluid at said injection well;
c. thereafter, producing fluids from said formation by back-flowing fluids into said injection well; and
d. thereafter, injecting a fluid containing substantial carbon dioxide into said formation through said injection well to displace said oil enriched in said propane containing fluid toward said producing well.

4,643,253
OIL RECOVERY PROCESS
Lawrence H. Shepherd, Jr.; William J. DeWitt, and Gerhard O. Kuehnhauss, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
Filed Oct. 29, 1980, Ser. No. 202,009
Int. Cl.⁴ E21B 43/22

U.S. Cl. 166—274 16 Claims
1. A method for obtaining oil from a subsurface oil-bearing formation, which method comprises contacting the formation with an aqueous solution containing an effective amount of a compound having the following structural formula:



wherein R is a hydrocarbon group having from about 6 to about 24 carbon atoms; Y is SO_2M or SO_3M ; Z is hydrogen or a methyl group; M is an alkali metal, alkylammonium or ammonium cation, and then recovering at least a part of the available oil.

4,643,254
PROCESS FOR THE CORRECTION OF OIL WELL PRODUCTIVITY AND/OR INJECTIVITY PROFILES
Luiz C. F. Barbosa; Adelman M. Ribeiro; Euclides J. Bonet, and Celso C. M. Branco, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil
Filed May 6, 1985, Ser. No. 730,971
Claims priority, application Brazil, May 4, 1984, 8402084
Int. Cl.⁴ E21B 33/138

U.S. Cl. 166—292 4 Claims
1. A process for the correction of oil well productivity, or injectivity profiles, or both, comprising the steps of:
(a) injecting a dilute solution of hydrochloric acid having a concentration less than 1% into an oil well;
(b) injecting a solution of sodium silicate and hydrochloric acid of long-curing time;
(c) injecting a solution of sodium silicate and hydrochloric acid of short-curing time; and
(d) carrying out well shut-in for several hours.

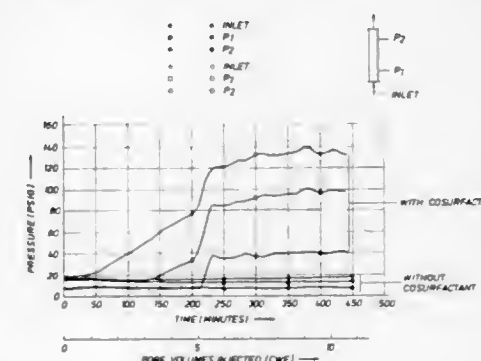
4,643,255
GEL AND PROCESS FOR PREVENTING LOSS OF CIRCULATION, AND COMBINATION PROCESS FOR ENHANCED RECOVERY
Burton B. Sandiford, Balboa Island, Calif., and Roger C. Zillmer, Bloomington, Minn., assignors to Cities Service Oil and Gas Corporation, Tulsa, Okla.
Continuation-in-part of Ser. No. 623,915, Jun. 25, 1984, abandoned. This application Dec. 18, 1985, Ser. No. 810,939
Int. Cl.⁴ E21B 33/138

U.S. Cl. 166—295 24 Claims
1. A process for reducing the loss of circulation fluids into flow passages of a subterranean formation during well drilling, completion, or workover operations, said circulation fluids being selected from the group consisting of drilling fluids, completion fluids and workover fluids, said process comprising:
(a) stopping the injection of a circulation fluid selected from the group consisting of drilling fluids, completion fluids and workover fluids into a wellbore;
(b) introducing into said flow passages, an effective amount of a gel-forming composition comprising
i. an aqueous solution comprising a first substance selected from the group consisting of polyvinyl alcohols, polyvinyl alcohol copolymers, and mixtures thereof,
ii. an amount of an aldehyde, and
iii. an amount of a crosslinking catalyzing substance, which in combination with said aqueous solution and said aldehyde is operable for effecting gelation, at the temperature of said subterranean formation, of said gel-forming composition in a period of time no greater than about 12 minutes after being introduced into said subterranean formation; and
(c) allowing said gel-forming composition to enter into said flow passages and to form a gel therein within said period of time mentioned in step (b), thereby reducing the loss of said circulation fluid upon resuming well drilling, completion or workover operation.

4,643,256
STEAM-FOAMING SURFACTANT MIXTURES WHICH ARE TOLERANT OF DIVALENT IONS
Richard E. Dilgren, Houston, and Kenneth B. Owens, Spring, both of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Mar. 18, 1985, Ser. No. 712,932
Int. Cl.⁴ E21B 43/24

U.S. Cl. 166—303

5 Claims



1. In a process in which oil is displaced by injecting steam and steam-foaming surfactant into a subterranean reservoir having an ion-exchange capacity capable of reducing the rate of propagation of the surfactant through the reservoir due to a tendency for polyvalent cations from ion-exchange sites within the reservoir to be exchanged for monovalent cations dissolved in the injected fluids, an improvement for enhancing the rate of surfactant propagation which comprises:
injecting a reservoir-tailored steam-foaming surfactant mixture

consisting essentially of (a) a predominant amount of a sulfonate surfactant which, by itself in the presence of the reservoir oil and in the absence of polyvalent cations, is capable of yielding a steam foam of significantly reduced mobility, and (b) a lesser amount of an alkylpolyalkoxyalkylene or an alkylarylalkoxyalkylene sulfonate surfactant which is effective for causing the steam-foaming surfactant mixture to be capable of yielding a steam foam of significantly reduced mobility in the presence of the reservoir oil and the ion-exchangeable cations on the reservoir rocks.

4,643,257
METHOD OF RECOVERING HYDROCARBONS FROM AN UNDERGROUND FORMATION
David L. Roberts, and Johan F. G. van Velzen, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Apr. 15, 1985, Ser. No. 722,919
Claims priority, application United Kingdom, May 16, 1984, 8412476

Int. Cl.⁴ E21B 43/24 8 Claims
U.S. Cl. 166—303
1. In an oil producing process in which aqueous liquid is flowed into contact with siliceous solid material in and around a well borehole, an improvement for reducing the extent to which the siliceous solid material is dissolved in the aqueous liquid, comprising:
contacting the siliceous solid material with a polar liquid solution containing an effective amount of water and between about 0.5 and 100 ppm cobalt ions at Co concentrations that are required for slowing down the rate at which the silicate gel that bonds the grains together is dissolved by the formation water passing through the pore space of the consolidated formation part in a solution from which the cobalt ions tend to be deposited as cobalt silicates on siliceous solids, without requiring an electronless metal plating process, at least substantially as soon as the siliceous solid material is contacted by the flowing aqueous liquid.

4,643,258
PUMP APPARATUS
James A. Kime, 5360 Godown Rd., Columbus, Ohio 43220
Filed May 10, 1985, Ser. No. 732,850
Int. Cl.⁴ F04B 47/04

U.S. Cl. 166—369

18 Claims



1. In a gas-oil well production system for pumping formation fluid wherein a down hole pump is provided having a barrel including a barrel fluid inlet, a barrel fluid outlet, a barrel chamber, and a plunger mounted in said barrel chamber having

a plunger chamber, said plunger being reciprocally driven between an upper terminal position at the end of the plunger upstroke and a lower terminal position at the end of the plunger downstroke, the method for removing developed gaseous fluids in the formation fluid from the barrel chamber which comprises the steps of:

- drawing formation fluid into said barrel chamber during said plunger upstroke;
- providing gas port means in said barrel;
- expelling said developed gaseous fluids from said barrel chamber through said gas port means during the occurrence of that portion of said plunger downstroke from said upper terminal position to said gas port means; and
- substantially blocking said gas port means and moving formation fluid into said plunger chamber during the occurrence of that portion of said plunger downstroke from below said gas port means to said lower terminal position.

4,643,259

HYDRAULIC DRILL STRING BREAKDOWN AND BLEED OFF UNIT

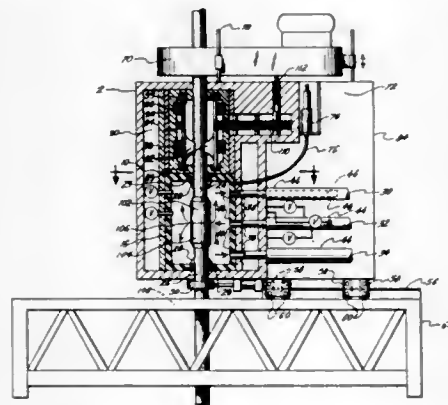
Freddie J. Zeringue, Jr., Houma, La., assignor to Autobust, Inc., Thibodaux, La.

Filed Oct. 4, 1984, Ser. No. 657,623

Int. Cl.⁴ E21B 19/16; B25B 17/00

U.S. Cl. 166—77.5

11 Claims



1. An apparatus for use within an oil well rig for decoupling a tubing string into a plurality of pipe segments comprising, in combination:

- rotary tong means for applying an unthreading torque to a first, upper pipe segment within the tubing string;
- torque resisting means for securing a second, lower pipe segment within the tubing string against said unthreading torque;
- containing means, intermediate said rotary tong means and said torque resisting means, enclosing a threaded joint of said tubing string, adapted for containing pressurized gases, liquids, and particulates, released from said threaded joint upon said decoupling;
- fluid communicating means for allowing fluid communication between said containing means and a receiving point adapted for receiving said pressurized gases, liquids, and particulates;
- means for moving said rotary tong means, said torque resisting means and said containing means between a closed, engaging position with the tubing string and an open position; and
- means for horizontally moving said rotary tong means, said torque resisting means and said containing means between a position adjacent said tubing string and a position away from said tubing string.

4,643,260 FIRE SUPPRESSION SYSTEM WITH CONTROLLED SECONDARY EXTINGUISHANT DISCHARGE

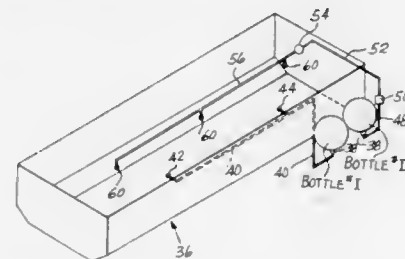
Ralph G. Miller, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 26, 1985, Ser. No. 781,919

Int. Cl.⁴ A62C 35/12, 3/00; B64D 45/00

U.S. Cl. 169—46

30 Claims



19. A method of extinguishing or controlling a fire in an aircraft cargo compartment or the like, comprising:
- rapidly releasing and spreading a gas extinguishant into a compartment in an amount sufficient for an initial flame knockdown of a fire in the compartment;
 - the extinguishant being under substantial pressure in a first container so as to be in liquid form before being released;
 - at a predetermined time releasing and spreading more of the extinguishant into the compartment from a second container in which the extinguishant is under substantial pressure so as to be in liquid form;
 - maintaining the extinguishant from the second container in wholly liquid form in a discharge bleed and metering line and nozzles, and avoiding significant pressure loss, preventing freeze-up and providing controlled rate flow accuracy maintenance in the line and nozzles, and providing violent boil-off when discharged from the nozzles to provide a thorough and rapid mix of the gas within the compartment; and
 - releasing and spreading the liquid near the ceiling from the second container at a predetermined rate at least equal to the amount lost through compartment leakage to ensure a predetermined average gas extinguishant concentration for a predetermined time in the compartment to adequately control or extinguish a fire in the compartment.

4,643,261

MOTOR GRADER WITH SUPPLEMENTARY SURFACE TREATMENT ATTACHMENT

George E. Long, 118211 219th Ave., SE., Monroe, Wash. 98272

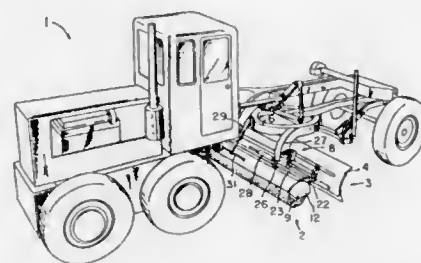
Continuation-in-part of Ser. No. 488,084, Apr. 25, 1983,

abandoned. This application Aug. 13, 1984, Ser. No. 639,726

Int. Cl.⁴ A01B 63/118; E02F 3/85

U.S. Cl. 172—2

18 Claims



1. In combination with a motor grader having an adjustably

mounted mold board and adjustment control means therefore, a supplementary surface treatment attachment comprising:

- a supplementary surface treatment member for contacting the surface traversed by said motor grader,
- mounting means for mounting said surface treatment member on said motor grader for movement in conjunction with said mold board and for adjusting the position of said surface treatment member relative thereto,
- position control means for selectively controlling the adjustment of said surface treatment member relative to said mold board, and
- sensing means operatively associated with said position control means for adjusting the surface treatment member to avoid interfering contact between said surface treatment member and the structure of the motor grader, whereby said mold board and said surface treatment member may be positioned to operate simultaneously or independently without interruption of the operation of the motor grader.

4,643,262

PRESSURIZED MEDIUM ACTUATED GRIPPING DEVICE

Nils G. Jonsson, Täby, Sweden, assignor to Crælius Aktiebolag, Marsta, Sweden

Continuation of Ser. No. 565,355, Dec. 27, 1983, abandoned.

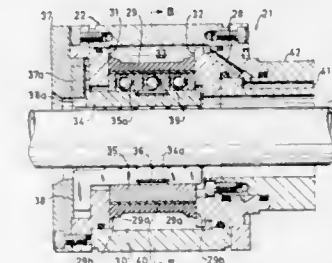
This application Mar. 10, 1986, Ser. No. 838,415

Claims priority, application Sweden, Dec. 27, 1982, 8207418

Int. Cl.⁴ B23Q 5/00

U.S. Cl. 173—149

3 Claims



1. Pressurized medium actuated gripping device included in a rock or earth drilling machine for rotary drilling and adapted for gripping a drill rod such as to transmit rotation and/or axial movement to a string of drill rods, said device including a rotatable housing in which gripping jaws are arranged around the drill string and movable substantially radially relative to the drill string, and also including a sleeve-shaped piston element of elastomeric material, which is sealingly arranged in the housing for separating a pressure chamber arranged for the supply of pressurized medium and between the housing and the piston element, from a central space wherein the gripping jaws are arranged, and which is arranged for actuating the gripping jaws into engagement with the drill rod when the pressure chamber is supplied with pressurized medium, the device further including separate jaw holders inserted between the piston element and the gripping jaws, said holders being urged by spring bias in a direction towards the interior of the piston element for keeping the gripping jaws connected to the jaw holders from engagement with the drill rod when the pressure chamber is not subjected to pressure from the pressurized medium at least one element are mounted on the outside of the jaw holders and bridging over the spacing between the holders, said element(s) forming an annular protective means between the outsides of the jaw holders and the inside of the piston element, the piston element having a circular cross section and its sealing surfaces including two opposing annular, radial end edges of the piston element.

4,643,263

PORTABLE POWER TOOL

Karl G. Karden, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

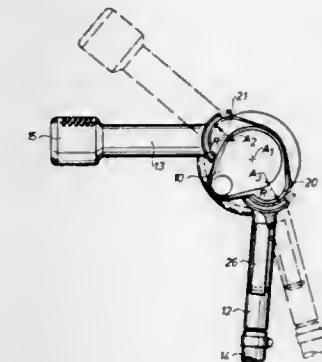
Filed Sep. 17, 1984, Ser. No. 651,620

Claims priority, application Sweden, Sep. 16, 1983, 8304986

Int. Cl.⁴ B23B 45/04

U.S. Cl. 173—168

5 Claims



1. A portable power tool, comprising:
- a housing;
 - a motor mounted in said housing for rotating an output spindle about a rotation axis;
 - at least one handle having an inner end mounted to said housing and extending substantially perpendicularly to said rotation axis of said output spindle;
 - said housing including at least one handle support means which has a part-cylindrical contact surface the axis of which extends substantially in parallel with said rotation axis of said output spindle;
 - said at least one handle being adjustably coupled to said housing, and including mounting means having a part-cylindrical mounting surface, said mounting means being cooperatively coupled with and having substantially the same radius for said mounting surface as said part-cylindrical contact surface, said mounting surface having a shorter circumferential extent than said contact surface for enabling angular adjustment of said at least one handle relative to said housing about an axis substantially parallel to said rotation axis; and
 - clamping means for clamping the mounting surface of said mounting means against said contact surface in a substantially radial direction to lock said at least one handle at a desired angular position relative to said housing.

4,643,264

METHOD FOR REDUCING DRILLING TORQUE IN THE DRILLING OF A DEVIATED WELLBORE

Thomas B. Dellinger, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 6, 1984, Ser. No. 668,920

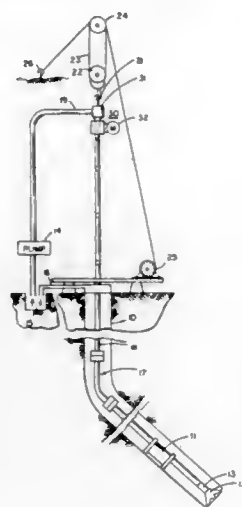
Int. Cl.⁴ F21B 7/04

U.S. Cl. 175—61

3 Claims

1. A method for the rotary drilling of a deviated wellbore with a drill string formed with a plurality of sections of drill pipe and a drill bit at the lower end thereof lying along the lower side of the deviated wellbore, comprising the steps of:
- (a) rotating the drill pipe against the friction provided by the lower side of the wellbore as said drill pipe drags along the lower side of the wall of said wellbore during the drilling of a deviated wellbore that is inclined to such an extent that the entire weight of said drill string rests on the lower side of the wall of said wellbore and the drill string does not slide along the wellbore under its own weight, and

(b) rotating the drill bit oppositely of the rotation of said drill pipe such that the torque utilized for rotating said drill bit



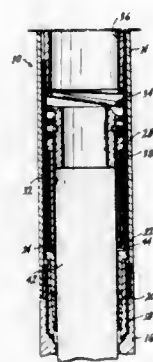
subtracts from the torque otherwise required for the rotation of said drill pipe.

4,643,265
CORE BARREL APPARATUS FOR DISPOSING A CORE WITHIN A THIN, FLEXIBLE FILM CASING
Noboru Aiura, Tokyo, and Yoshio Sawaki, Kawasaki, both of Japan, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 4, 1985, Ser. No. 707,895
Int. Cl.⁴ E21B 25/06

U.S. Cl. 175—226

2 Claims

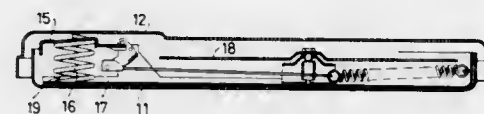


2. An apparatus for retaining and retrieving cores comprising:

- tubular mandrel means for defining an annular space, said core disposable concentrically within said mandrel means wherein said mandrel means comprises a spring loaded inner cylindrical tubular mandrel longitudinally extending within said apparatus; and an outer tubular mandrel concentric with said inner mandrel and longitudinally overlapping said inner mandrel to define said annular space between said inner mandrel and outer mandrel, said inner and outer mandrels being urged into mutual contact at the lower extremity of said inner mandrel;
- a pliable sleeve stored within said annular space, said pliable sleeve characterized as thin film material, said pliable sleeve being disposed between and contacted by said inner and outer mandrels across said lower extremity of said inner mandrel at said point of contact, said pliable sleeve being temporarily secured in place by resilient compres-

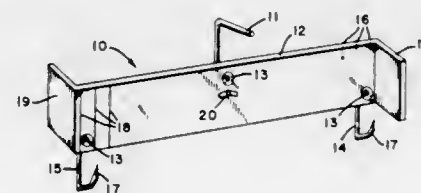
sion of said inner mandrel toward said outer mandrel against said sleeve; and
guide plug means concentrically disposed within said mandrel means and coupled to said pliable sleeve, said guide plug means for abutting said core when said core is disposed within said apparatus and for drawing said pliable sleeve from said annular space to thereby wrap said pliable sleeve about said core as said core is disposed into said apparatus;
whereby said pliable sleeve is fed about said core under tension at a rate no greater than relative disposition of said core into said apparatus, whereby a substantial length of said pliable sleeve made of said thin film material is disposed in said annular space, and whereby said pliable sleeve is wrapped about said core to retain said core intact even when said core is unconsolidated and fractured.

4,643,266
SCALES
Giovanni Baccini, Via del Pignone, 30R - 50142 Firenze, Italy
Filed Aug. 12, 1985, Ser. No. 764,477
Claims priority, application Italy, Oct. 17, 1984, 23539/84[U]
Int. Cl.⁴ G01G 23/14, 21/08
U.S. Cl. 177—169 2 Claims



1. In a scale of the type having a base carrying a weighing platform, and a lever system with a weighing spring interposed between said base and said platform, the improvement characterized in that said spring is a compression spring having its lower end adjustably secured to a flat member which is urged against said base, and having its upper end threaded through a cover which is supported for vertical movement of said spring, said lever system being tied to said cover so that said spring can be calibrated by screwing more or less of the upper end of said spring through said cover.

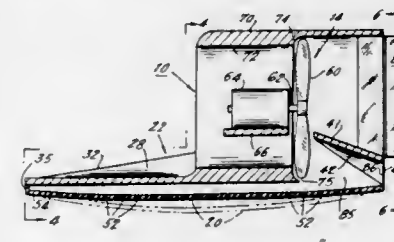
4,643,267
FISH WEIGHT AND LENGTH COMPARISON APPARATUS
Thomas W. Southern, Rt. 1, Box 99B, Lineville, Ala. 36266, and Phillip G. Daniel, 1108 Whippoorwill Ln., Roanoke, Ala. 36274
Filed Nov. 22, 1985, Ser. No. 800,736
Int. Cl.⁴ G01G 19/00, 1/18
U.S. Cl. 177—190 8 Claims



1. Apparatus for comparing the lengths and weights of two apparently identical items, comprising:
an elongated beam;
a first attachment means rotatably secured to a first end of said beam;
a second attachment means rotatably secured to a second end of said beam;
a first stop means extending from a first end of said beam in

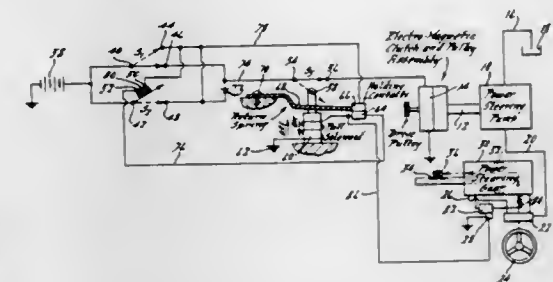
a direction which is 90 angular degrees from the longitudinal axis of said beam;
a second stop means extending from a second end of said beam in a direction which is 90 angular degrees from the longitudinal axis of said beam and is opposite to the direction of extension of said first stop means;
a handle rotatably secured to said beam at the center of gravity of said beam; and
length indication means inscribed in a surface of said beam, located between said first stop means and said second stop means.

4,643,268
AIR LIFTED AND PROPELLED VEHICLE
Thomas E. Jones, and Raynor A. Johnson, both of Newark, Del., assignors to American Antigravity Co., Inc., Great Neck, N.Y.
Continuation of Ser. No. 479,082, Mar. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 365,520, Apr. 5, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,319
Int. Cl.⁴ B60V 1/14
U.S. Cl. 180—116 42 Claims



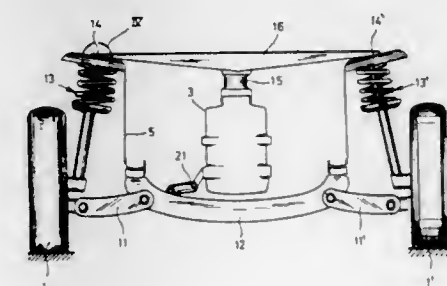
1. A vehicle which rides on an air cushion and which is propelled by air, comprising:
upper deck means, having a bottom edge which defines the periphery of an area;
a thin, flexible sheet located below the upper deck means, extending beneath the bottom edge and secured beneath the bottom edge for defining a plenum that is defined by and closed off by the upper deck means and the sheet; the deck means being shaped within the area defined by its bottom edge for causing the plenum to always be an open space and the upper deck means being rigid enough to maintain that open condition of the plenum; the sheet being secured in a manner permitting the sheet to pillow when air is pressurized in the plenum;
the sheet being perforated below the upper deck means for permitting exit of air from the plenum at a controllable rate through the perforations; the sheet having a large plurality of the perforations dispersed over most of its area below the upper deck means; each of the perforations being a hole;
air pressure generating means; a plenum inlet for communicating air from the generating means into the plenum for pressurizing the plenum, whereby the sheet may pillow and air may escape through the perforations, for both jacking up the upper deck means and for creating an air cushion between the sheet and the surface over which the vehicle moves; the upper deck means having the plenum inlet for air from the air pressure generating means defined therein and the upper deck means being inclined down toward the sheet, moving away from the plenum inlet, for diminishing the height of the plenum away from the plenum inlet; and
air propulsion means connected with the vehicle for propelling the vehicle once it is raised on the air cushion.

4,643,269
POWER STEERING SYSTEM FOR AN AUTOMOTIVE VEHICLE HAVING A POWER STEERING PUMP CUT OUT CIRCUIT
Carlo Arciero, Livonia, Mich., and Mohammed K. Mynuddin, Irvine, Calif., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 10, 1985, Ser. No. 786,395
Int. Cl.⁴ B62D 5/04
U.S. Cl. 180—141 4 Claims



1. In a power steering system for an engine powered vehicle having steerable wheels, said steering system having a fluid pressure pump, a pulley connected drivably to said engine, a fluid motor having a piston connected to said wheels for directional control thereof, and a driver actuated valve means communicating with said pump for controlling distribution of steering pressure to said fluid motor;
an electromagnetic clutch means for connecting said pulley with said pump whereby said pump is actuated when said clutch is applied;
a source of voltage;
and a pump cut-out circuit establishing an electrical connection between said clutch and said voltage source, said circuit comprising a vehicle speed sensing switch means for activating said clutch when the vehicle speed is less than a critical speed and breaking a circuit between said voltage source and said clutch when the vehicle speed is greater than said critical speed, and a directional steering switch means for overruling the action of said speed sensing switch when the vehicle speed increases above or decreases below said critical speed when said vehicle is in a turning maneuver.

4,643,270
MOTOR VEHICLE DRIVE UNIT SUPPORT ARRANGEMENT
Wilhelm Beer, Russelsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 28, 1985, Ser. No. 792,194
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510335
Int. Cl.⁴ B60K 5/12
U.S. Cl. 180—299 4 Claims

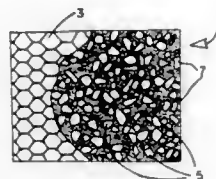


1. A motor vehicle whose power unit is mounted on a cross

member which is supported elastically on telescopic struts of the motor vehicle, which are in turn supported on a vehicle body in each case by means of an elastic support bearing which is mainly subjected to shear stress, characterized by support bearing means including a first rubber body portion subjected essentially to shear stress for supporting the cross member on a telescopic strut in each case, a second rubber body portion subjected essentially to shear stress for supporting each telescopic strut on the vehicle body, and said rubber body portions and the associated strut all being concentrically arranged with the cross member supported intermediate the strut and vehicle body.

4,643,271
SOUND BARRIER

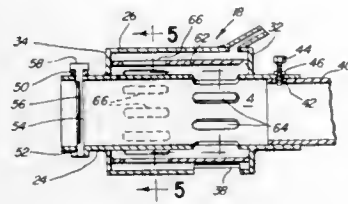
David E. Coburn, Cleveland Heights, Ohio, assignor to Thomas J. Kelley, Bay Village, Ohio
Filed Dec. 18, 1984, Ser. No. 683,230
Int. Cl.⁴ E04H 17/00; G10K 11/00
U.S. Cl. 181—210 1 Claim



1. A sound barrier for reducing vehicular noise along vehicular pathways, said sound barrier comprising:
a wire gabion cage defining an interior chamber, said cage having a core section and a base section;
a first filler of stone disposed in said core section and in said base section for providing ballast to said sound barrier;
a second filler of resilient shredded vehicle tires disposed in said gabion cage about said core and base sections for absorbing sound and for cushioning the impact of vehicles striking the sound barrier.

4,643,272
MARINE MUFFLER FOR WATER-COOLED INTERNAL COMBUSTION ENGINES

James W. Gaffrig, 5212 N. Glenwood Ave., Chicago, Ill. 60640
Filed May 30, 1985, Ser. No. 739,551
Int. Cl.⁴ F01N 3/04
U.S. Cl. 181—260 21 Claims



1. An improved wet-type exhaust silencer for a water cooled, internal combustion engine for a power boat, that is being operated in a body of water, in which cooling water from the body of water is injected into and mixed with the high-pressure, hot exhaust gases issuing from an exhaust pipe for the engine;
the improved silencer comprising, in combination:
an axially elongated first tube with an open inlet end adapted to be sealingly connected to the outer surface of the en-

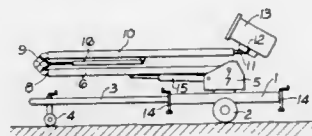
gine exhaust pipe carrying high temperature, high-pressure, exhaust gas being discharged from said engine;
an axially elongated second tube means surrounding a portion of said first tube and being connected thereto, said second tube being spaced radially outwardly from said first tube to define a first axially elongated annular chamber located between said first and second tubes;
an axially elongated third tube means surrounding at least a portion of said second tube means and being connected thereto and spaced radially outwardly of said second tube means to define a second axially elongated annular chamber between said second tube means and said third tube means;
water inlet passageway means operatively associated with said second annular chamber for introducing, into said second annular chamber of the silencer, cooling water which is at a cooling temperature that is much below the temperature of the high temperature exhaust gas;
an outlet means, for the mixture of water and exhaust gases issuing from said silencer, through which a mixture of cooled exhaust gas and heated cooling water is discharged from the silencer downwardly into said body of water in which the high-powered speedboat is operating, so as to reduce the noise of the exhaust gases issuing from the silencer; and

flow aperture means provided in the surrounded portion of each of said first and second tube means and cooperating with the two axially elongated chambers, one provided between said third tube and second tube and the other provided between said second tube and first tube, for providing a circuitous flow path through said silencer which operates to cause cooling water to intimately mix with the exhaust gases before both are discharged from the silencer.

4,643,273
ACCESS EQUIPMENT

Ridley Stokoe, Tyne and Wear, United Kingdom, assignor to Aerial Access Equipment Limited, England
Filed Oct. 15, 1984, Ser. No. 661,291
Claims priority, application United Kingdom, Oct. 18, 1983, 8327848

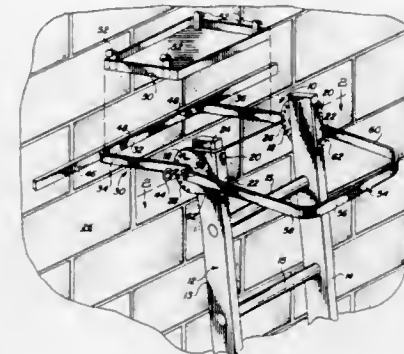
Int. Cl.⁴ B66F 11/04
U.S. Cl. 182—2 4 Claims



1. Access equipment comprising a mobile base, a turntable mounted upon said base for rotation relative to said base about an essentially vertical axis, an hydraulically extendible lower boom pivotted at a first end upon said turntable, a first hydraulic ram for pivoting said lower boom and thereby elevating the other end of said lower boom, at least one hydraulically extendible upper boom pivotted at a first end thereof upon said other end of said lower boom, a second hydraulic ram for pivoting said at least one upper boom and thereby elevating the other end of said upper boom, a platform pivotted on said at least one upper boom, and interlock means whereby said first and second hydraulic rams are interlocked so that said second hydraulic ram cannot be operated until said first hydraulic ram has been operated to elevate said lower boom and said lower boom has been locked in a resulting elevated posi-

tion, which said platform has a rest position in which said platform is inclined to the upper boom such that said platform is inclined to the horizontal when the booms are lowered and that said platform is horizontal in said rest position when said first boom is locked in its elevated position before operation of the second hydraulic ram, hydraulic levelling means being provided to maintain said platform horizontal during operation of said second hydraulic ram, neither the lower boom nor the upper boom being extensible nor the levelling means being operable until the lower boom is locked in its elevated position.

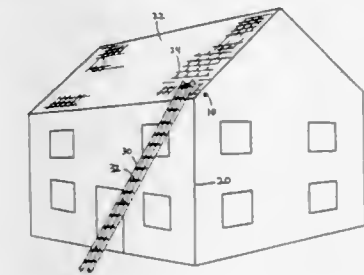
4,643,274
LADDER STAND-OFF DEVICE WITH SAFETY HARNESS
Victor Tataseo, 8410 N. 31st Dr., Phoenix, Ariz. 85021
Filed Jul. 11, 1986, Ser. No. 884,497
Int. Cl.⁴ E06C 5/36, 7/18, 7/48
U.S. Cl. 182—106 20 Claims



1. A ladder stand-off device with a safety harness for use with a ladder having a spaced apart pair of side rails, said ladder stand-off device with a safety harness comprising:
(a) a pair of mounting plates for attachment to different ones of the side rails of the ladder and including means defining a pivot axis which is disposed transversely of the ladder;
(b) a wall engaging brace extending from said pair of mounting plates, said brace being pivotably movable about the pivot axis defined by said pair of mounting plates for movement into a desired angularly extending position relative to one side of the ladder;
(c) means for locking said wall engaging brace in a selected angularly extending position; and
(d) safety harness means connected to said pair of mounting plates so as to extend therefrom in a direction substantially opposite to said wall engaging brace for placement about the body of a user of the ladder.

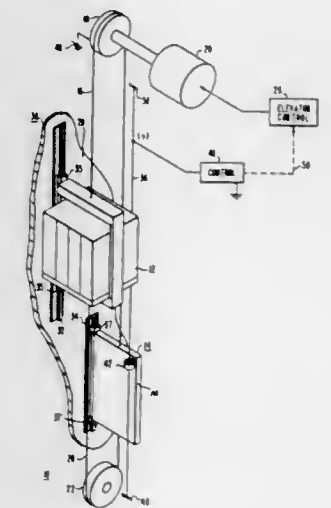
4,643,275
SAFETY LADDER DEVICE
Gerard J. LeBlanc, 1323 Worcester Rd., Framingham, Mass. 01701
Continuation-in-part of Ser. No. 641,874, Aug. 17, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 819,391
Int. Cl.⁴ E06C 1/36, 7/48
U.S. Cl. 182—107 15 Claims
1. A safety apparatus for securing a ladder to a structure and comprising:
base means for securement to the structure;
retainer means for engaging a ladder leaning against the structure; and
coupling means connecting said base means to said retainer

means and allowing relative movement therebetween, and said coupling means comprising adjustment means for



adjustably fixing the spacing between said base means and said retainer means.

4,643,276
ELEVATOR SYSTEM
Alexander M. Philobos, Edison, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 2, 1985, Ser. No. 729,603
Int. Cl.⁴ B66B 5/02 3 Claims
U.S. Cl. 187—107

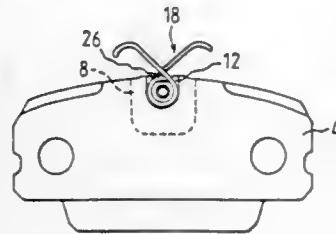


1. A traction elevator system including an elevator car and an electrically grounded counterweight mounted for guided vertical movement in the hoistway of a building via car and counterweight guide rails, a vertically oriented metallic wire strung tautly in the hoistway, a metallic ring carried by the counterweight which normally encircles the wire without contact therewith, and control means connected to the wire for detecting electrical contact between the metallic wire and ring, the improvement comprising:
means mounting said metallic ring on said electrically grounded counterweight such that the ring is electrically insulated from the counterweight,
switch means having open and closed positions,
means mounting said switch means on said counterweight such that the switch means is normally in said open position, switching to said closed position in response to a predetermined abnormal horizontal movement of the counterweight,
and means electrically connecting said switch means between said metallic ring and said electrically grounded counterweight, grounding said metallic ring when the switch means is in said closed position to enable the con-

trol means to detect contact between the metallic ring and wire.

4,643,277
BRAKE SHOE ARRANGEMENT AND A METHOD OF MANUFACTURING A BRAKE SHOE
 Dieter Bangert, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
 Filed Jul. 10, 1985, Ser. No. 753,662
 Int. Cl.⁴ F16D 66/00
 U.S. Cl. 188—1.11

1 Claim



1. A brake shoe assembly comprising:
 an anchor plate;
 a friction pad secured to said anchor plate;
 said anchor plate being formed with a recess for accommodating a brake shoe spring winding;
 said friction pad being formed with a recess for accommodating a pad-wear warning contact assembly;
 said friction pad recess being juxtaposed to said anchor plate recess;
 a pad-wear warning contact assembly received within said friction pad recess;
 a substantially planar projection integrally secured to said anchor plate and extending into said anchor plate recess;
 a brake shoe spring wire including at least one coil extending into said anchor pad recess between said planar projection and said pad-wear warning contact;
 said planar projection extending across the center of said wire coil and being formed with a 360-degree-bounded through bore adjacent said wire coil;
 and a dual-purpose holding member supporting said pad-wear contact assembly in said friction pad recess, said holding member passing through said wire coil for retaining said coil in said anchor plate recess, and being mounted within said through hole of said planar projection.

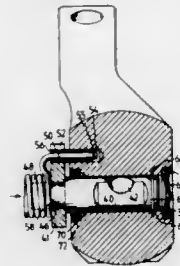
4,643,278
ACTUATING APPARATUS FOR A DISC BRAKE
 Rudolf Thiel, and Andreas Doell, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
 Filed Jan. 25, 1985, Ser. No. 695,010
 Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404352

Int. Cl.⁴ F16D 65/16
 U.S. Cl. 188—72.7

1 Claim

1. An actuating apparatus for a disc brake comprising:
 a brake cylinder housing including a brake cylinder, a first bore intersecting with said brake cylinder at a right angle therewith and a second blind bore disposed in parallel relation with said first bore;
 a brake piston slidably mounted in said brake cylinder;
 an actuating shaft rotatably journaled in said first bore having a first end protruding from said housing and having a second end in said first bore;
 a thrust member slidably mounted in said brake cylinder between said piston and said actuating shaft;
 first stop means associated with said first bore and said sec-

ond end of said actuating shaft for axially positioning said actuating shaft in said first bore at a constant axial position relative to said thrust member;
 an actuating lever non-rotatably affixed to said first end of said actuating shaft;
 a tubular sleeve having a first portion extending a predetermined partial distance into and being affixed within said second bore and having a second portion extending externally from said second bore defining second stop means engaged by said actuating lever in a released position of said lever for positioning said actuating shaft at a constant angular position relative to said thrust member in said released position;
 a closed coil helical torsion-spring around said actuating shaft having one end coil abutted against said actuating



lever, said spring attached to said housing and to said actuating lever by way of a first stem portion of said coil abutted against said lever extending through said sleeve and having an expanded portion in said second bore against an internal end of said sleeve within said second bore; and
 a second stem portion of a second end coil opposite said first end coil engaged to said actuating lever, said internal end of said sleeve located in said second bore at said predetermined distance, defining a non-resilient axial force on said actuating shaft positioning said second end thereof against said first stop means, whereby said actuating shaft is non-resiliently maintained at said constant axial position;
 said torsion spring resiliently axially biasing said actuating lever against said second stop means, whereby said actuating shaft is maintained at said constant angular position.

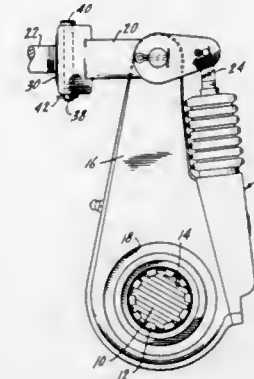
4,643,279
MEANS FOR CONNECTING A BRAKE ROD TO THE LEVER ARM OF AN AUTOMATIC SLACK ADJUSTER
 James A. Skurka, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed May 6, 1985, Ser. No. 730,733
 Int. Cl.⁴ F16D 65/46; B60T 11/00
 U.S. Cl. 188—79.5 K

1 Claim

1. In a slack adjuster for vehicle brakes adapted to be mounted between the brake chamber and the brake operating shaft, a body, a drive member movable relative to and positioned by said body on the brake operating shaft, a lever arm pivoted to said body, an adjustable connection between said lever arm and drive member for adjusting the relationship between said drive member and body, the improvement comprising means for connecting a brake rod to said lever arm including a generally cylindrical bore in said lever arm, a bushing having a generally cylindrical exterior surface rotatably mounted upon the brake rod and rotatably positioned within the lever arm bore, mating chordal grooves on the exterior of said bushing and in said bore, an opening extending through said lever arm and coextensive with said bore groove, a pin extending from the exterior of said lever arm, through said opening and positioned within said mating grooves to prevent rotation of said bushing relative to said lever arm when inserted therein, said pin having an enlarged head at one

end which contacts the exterior of said lever arm and a fastener extending through the other end of said pin to hold said pin within said opening and thereby prevent rotation of said bushing within said lever arm bore, a reinforcing shoulder at one



end of said bore for supporting said bushing, with said pin preventing pullout of said bushing from said lever arm in one direction, and said shoulder supporting said bushing in the lever arm against removal in the opposite direction.

4,643,280
PORTABLE DESK AND ARTICLE CARRYING STRUCTURE FOR USE WITH SHOPPING CARTS
 Howard L. Hensley, 3020 W. Foothill Dr., Phoenix, Ariz. 85027
 Filed Mar. 3, 1986, Ser. No. 835,202
 Int. Cl.⁴ A45C 11/36; B62B 5/00; A45F 4/00
 U.S. Cl. 190—11

14 Claims



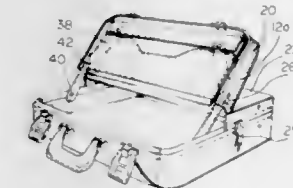
8. A portable desk and article carrying structure for demountable placement on a shopping cart of the type having a transverse cross rod proximate the push handle thereof and a top cross rod at the upper end of the back rest of a child's seat of the shopping cart, said structure comprising:

- (a) a planar desk top;
- (b) case means beneath said desk top, said case means having a front wall, a back wall and an opposed pair of sidewalls, said front, back and pair of sidewalls each having a lower edge with those edges surroundingly defining an open bottom of said case means;
- (c) said opposed pair of sidewalls of said case means having a first pair of aligned notches formed in the lower edges thereof proximate the front wall of said case means for

engaging the transverse cross rod of the shopping cart upon placement of said structure thereon;
 (d) said opposed pair of sidewalls of said case means having a second pair of aligned notches formed in the lower edges thereof proximate the back wall of said case means for engaging the top cross rod of the back rest of the shopping cart upon placement of said structure thereon; and
 (e) article carrying means in said case means in upwardly spaced relationship with respect to the open bottom thereof.

4,643,281
CARRYING CASE
 Kenneth E. Erickson, R.R. #13 Lakeshore Drive, Thunder Bay, Canada P7B 5E4
 Filed Feb. 18, 1986, Ser. No. 830,341
 Int. Cl.⁴ A45C 3/00, 13/10; E05B 65/50
 U.S. Cl. 190—119

12 Claims



1. In a carrying case having rectangular planar front and back panels, each having circumscribing, rigid top, bottom and side edges extending towards the other panel to provide, when the panels are in closed position, a completely enclosed interior volume, the front and back panels pivoting about an axis along the junction of the bottom edges between open and closed positions, closure means secured to the top edges of the panels to hold the panels in closed position against unintended opening, and a handle means secured centrally to one of the top edges, the improvement characterized by the front panel being hinged along a fold line parallel to its top and bottom edges and spaced therebetween, this line dividing the front panel into an upper and lower portion, the continuity of each of the side edges of the front panel being broken by a cut at the fold line to form a lower and an upper portion of said side edge and permit folding of this front panel about said line, and a clamp means secured to the lower portion of an exposed side edge of the front panel to swivel between one position extending across the cut of that side edge to releasably engage an engaging means mounted on the upper portion of that side edge of the front panel and a second position extending to the corresponding side edge of the back panel to releasably engage an engaging means mounted on said side edge of the back panel, the clamp means, front panel side edge mounted engaging means and cut of the front panel side edge being such that when the clamping means engages this side edge mounted engaging means the front panel maintains its planar shape and is prevented from folding, and the clamp means and back panel side edge mounted engaging means being such that when the clamp means engages this engaging means, the lower portion of the front panel is held in closed position with respect to the back panel but the upper portion of the front panel is free to fold thereby providing access to the interior volume of the carrying case.

4,643,282
MOTOR HAVING AN ELECTROMAGNETICALLY
ACTUATED FRICTION CLUTCH AND FRICTION
BRAKE

Josef Edl, Griesheim, Fed. Rep. of Germany, assignor to Quick-Rotan Elektromotoren GmbH, Darmstadt, Fed. Rep. of Germany

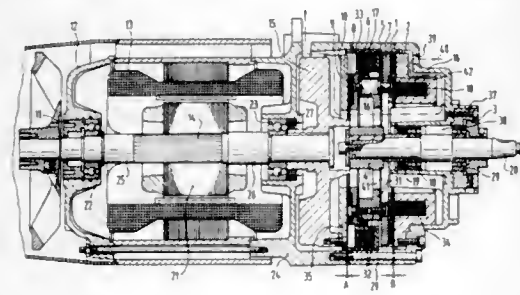
Filed Jun. 1, 1984, Ser. No. 616,298

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 8316122[U]

Int. Cl.⁴ F16D 67/06

U.S. Cl. 192—18 B

10 Claims



1. A motor comprising an output shaft means, a friction clutch means for transferring a driving torque and a friction brake means for applying a brake torque to the output shaft means, the friction clutch means including a ring-shaped clutch disk means, the friction brake means including a ring-shaped friction disk means, a rigid hub means mounted on the shaft means for rotation therewith, a supporting ring means attached to said hub and disposed between and axially spaced from the clutch disk means and the brake disk means, a first prestressed axially deflectable spring washer means disposed on one side of the supporting ring means for normally urging the clutch disk means in a direction toward the supporting ring means, a second prestressed axially deflectable spring washer means disposed on an opposite side of the supporting ring means for normally urging the brake disk means in a direction of the supporting ring means, electromagnetic means for selectively actuating the clutch disk means and brake disk means so as to alternatively press the clutch disk means against a driving plate and the brake disk against a braking means, means for connecting said first prestressed axially deflectable spring means to said clutch disk means, means for connecting said second prestressed axially deflectable spring means to the supporting ring means, means for connecting said first prestressed axially deflectable spring means to said brake disk means, said connecting means for said first and second prestressed axially deflectable spring means being disposed at substantially a same radial distance from a center axis of the hub means but staggered with respect to one another in a direction of rotation of the motor, means for enabling an axial adjustment of the output shaft means so as to permit an adjustment of a play in the brake means and the clutch means including a threaded ring means accessible from an outside of the motor, said threaded ring means being adapted to be adjustably threadably inserted into a member attached to a housing of the motor, said threaded ring means being displaceable in an axial direction against a side surface of a bearing means of the output shaft means so as to enable an axial adjustment of the output shaft means, and wherein means are provided for enabling an adjustment of the driving plate and a motor shaft means of the motor in an axial direction including a further threaded ring means accessible from outside of said motor, said further threaded ring means being threadably insertable into a member attached to the housing, said further threaded ring means being adapted to rest against a further bearing means of the motor shaft means so as to enable an axial adjustment of the further bearing means of the motor shaft means.

4,643,283
TORQUE CONVERTER SLIPPING CLUTCH AND
CONTROL

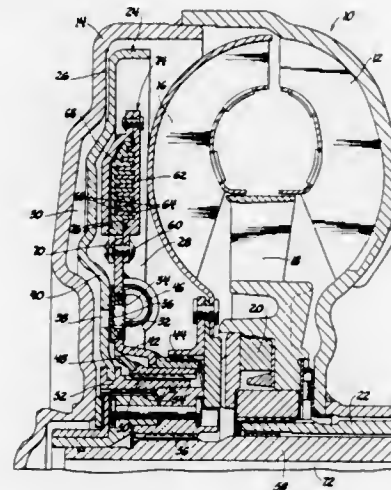
Quinby E. Wonn, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 23, 1985, Ser. No. 778,868

Int. Cl.⁴ F16D 39/00, 47/06, 3/80

U.S. Cl. 192—3.33

2 Claims



1. A controlled slip torque converter and clutch comprising: an input shell; a torque converter means having an impeller drivingly connected with said input shell, a turbine and a stator disposed for toroidal flow, said torque converter means transmitting drive torque from said impeller to said turbine in a slipping relation; clutch means engageable in response to fluid pressure to limit the slip relation between the impeller and turbine and being disposed in drive relation between said input shell and said turbine and cooperating therewith to form clutch apply chamber means and clutch release chamber means; variable flow restriction means including spring means disposed between said clutch apply chamber means and said release chamber means for providing a controlled flow from said apply chamber means to said release chamber means; and viscous damper means disposed in parallel relation with said spring means on said variable flow restriction means and being responsive to torque disturbances at said clutch means and said turbine to restrict the rate at which the flow restriction means varies.

4,643,284
NON-DIFFERENTIAL DRIVE AXLE

John G. Hardt, Sylvania, and Dennis W. Shea, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Jul. 2, 1984, Ser. No. 626,897

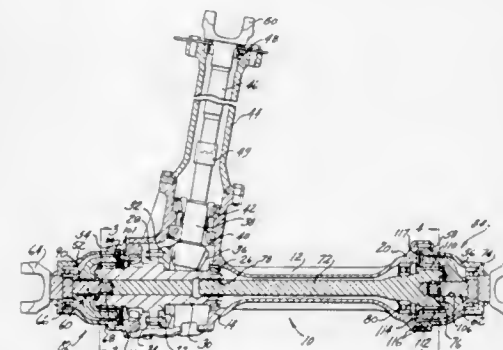
Int. Cl.⁴ F16D 21/08; F16H 35/04

U.S. Cl. 192—50

7 Claims

1. A drive axle for a vehicle, said vehicle having a set of wheels spaced along a first axis of rotation of said wheels, said drive axle comprising: a housing adapted to extend generally along said first axis between said two wheels, said housing first and second axially spaced ends, a gear support rotatably journaled in said housing adjacent said first end of said housing, an intermediate shaft drivingly connected to said gear support and rotatably journaled in said housing adjacent said second end of said housing, a first output shaft rotatably journaled in said first end of said housing and said gear support, a second output shaft rotatably journaled in said second end of said housing and said intermediate shaft, a first bi-directional overrunning clutch positioned adjacent

said first end of said housing and operable to connect said first output shaft with said gear support for conjoint rotation, said first overrunning clutch including a first non-circular surface on said gear support, a first drum connected to said first output shaft and overlying said first non-circular surface, and a first plurality of rollers disposed between said first drum and said first non-circular surface actuatable to connect said first drum and said first non-circular surface for conjoint rotation, and



a second bi-directional overrunning clutch positioned adjacent said second end of said housing and operable to connect said second output shaft with said intermediate shaft for conjoint rotation, said second overrunning clutch including a second non-circular surface on said intermediate shaft, a second drum connected to said second output shaft and overlying said second non-circular surface, and a second plurality of rollers disposed between said second drum and said second non-circular surface actuatable to connect said second drum and said second non-circular surface for conjoint rotation.

4,643,285
HYDRAULIC CONTROL FOR A MASTER CLUTCH OF A
TRANSMISSION

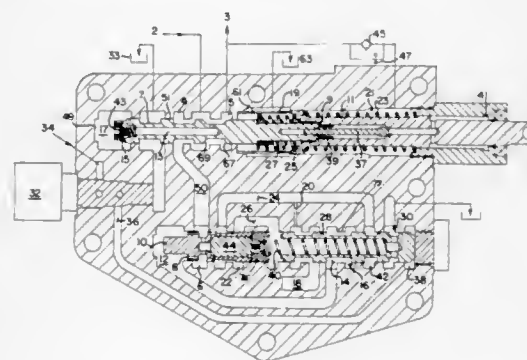
Joachim Horsch, Lombard, Ill., assignor to J.I. Case Company, Racine, Wis.

Filed Jan. 14, 1985, Ser. No. 691,602

Int. Cl.⁴ F16D 25/11

U.S. Cl. 192—87.13

1 Claim



1. A manually activated valve for a fluid activated master clutch of a transmission comprising: a valve body having a bore, a fluid inlet and a clutch outlet intersecting with said bore; a valve spool slidably mounted within said bore for selectively allowing fluid communication between said fluid inlet and clutch outlet, said valve spool dividing said bore into first, second, and third fluid chambers wherein said clutch outlet intersects said second chamber;

biasing means urging said valve spool towards said second chamber;

means for permitting fluid communication between said clutch outlet and said first chamber, said means for permitting fluid communication including a unidirectional fluid resistive element, and said unidirectional fluid resistive element comprising first and second fluid lines connected in parallel wherein said first fluid line having a check valve preventing flow to said first chamber and said second fluid line having a fluid resistive element allowing flow through the fluid resistive element to said first chamber;

said valve spool comprising a first spool member mounted within said first chamber and a second spool member mounted within said second chamber, a spring biasing means interposed between said first and second spool members, said spring biasing means including first and second springs, said first and second springs having different free lengths, and said first spring being concentrically positioned within said second spring;

said third fluid chamber located at the opposite end of said bore from said chamber and said valve having means for permitting fluid communication between said fluid inlet and said third chamber, said means for permitting fluid communication between said inlet and said third chamber comprising an internal passage within said valve spool, and said valve spool internal passage further comprising an orifice allowing fluid communication between said fluid inlet and said third chamber and a check valve allowing reverse flow through said internal passage towards said fluid inlet;

said valve body including a drain line intersecting said bore, and said drain line intersecting said bore between said clutch outlet and said first chamber;

a lost motion connection between said first and second spool members, said lost motion connection including a pin fixably attached to one of said valve spool members and inserted into the other of said valve spool members for allowing limited relative motion between said valve spool members; and

an auxiliary clutch outlet intersecting said bore wherein movement of said second valve spool member selectively connecting said fluid inlet with said auxiliary clutch outlet.

4,643,286
CLUTCH RELEASE BEARING
 Philippe Lassiaz, Boulogne, France, assignor to Valeo, Paris, France

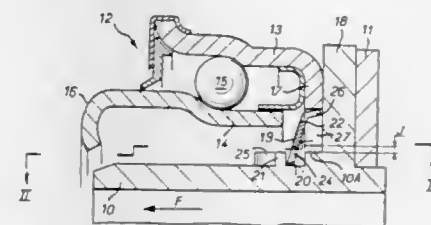
Filed Feb. 19, 1985, Ser. No. 702,727

Claims priority, application France, Feb. 21, 1984, 84 02584

Int. Cl.⁴ F16D 23/14; B21D 39/03, 53/10; F16C 19/02

U.S. Cl. 192—98

21 Claims



11. A clutch release bearing assembly having an axis and comprising an operating sleeve adapted to be axially displaced in response to a clutch release control means, an antifriction bearing having a rotating race cooperable with a clutch cover assembly, a nonrotating race, and antifriction means between said races, radial clearance between said nonrotating race and said sleeve, said nonrotating race and said sleeve having respective rims extending transversely relative to the axis of the

clutch release bearing assembly, bearing means provided on said operating sleeve, an elastic clamping ring bearing against said bearing means for biasing said rim on said nonrotating race toward said rim on said operating sleeve and providing friction gripping for sustained self-centering of the clutch release bearing relative to a clutch cover assembly, said bearing means comprising circumferentially spaced part annular radial projecting means and passage means therethrough, an inclined surface extending circumferentially between said passage means and said part annular projecting means and axially toward said rim on said operating sleeve, said elastic clamping means having transverse lugs adapted to be inserted through said passage means and ride along said inclined surface for guiding said transverse lugs to said part annular projecting means.

4,643,287

MULTI-STAGE TORSIONAL DAMPING DEVICE

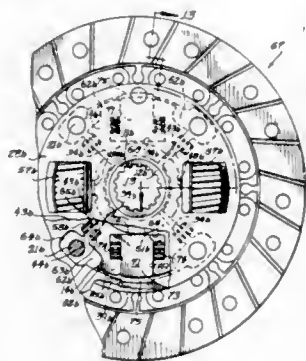
Thaddeus Lech, Jr., Sterling Heights, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 423,878, Sep. 27, 1982, Pat. No. 4,548,311. This application Jun. 28, 1985, Ser. No. 749,910

Int. Cl.⁴ F16D 3/14, 37/00

U.S. Cl. 192—106.2

8 Claims



1. In a multi-stage torsional damping device providing a low rate, substantially frictionless primary stage to eliminate idle gear rattle and a normal rate final stage with both resilient and friction damping, including a hub assembly having a barrel receiving a transmission input shaft, a clutch driven plate journaled on said hub barrel and carrying annular friction facings at its outer periphery, a spring retainer plate secured in spaced relation to said clutch driven plate by a plurality of stop pins, said plates sandwiching said hub assembly therebetween, the improvement comprising a two-part hub assembly including an inner hub having said hub barrel and a pair of oppositely disposed radially outwardly extending inner hub flange portions having diverging edges, an outer hub having an annular ring with an inner periphery encompassing said flange portions and integral radially inwardly extending outer hub flange portions with converging edges between the inner hub flange portions, said outer hub flange portions having spring windows axially aligned with complementary spring windows in said plates, a pair of friction plates on opposite sides of said hub assembly and positioned between said hub assembly and said plates, said friction plates being operatively connected to said outer hub, radial gaps between said inner and outer hub flange portions, said outer hub ring and flange portions and said inner hub flange portions having complementary corner notches forming elongated slots for said stop pins and facing recesses in the edges receiving idle rattle damper springs therein, each said inner hub flange portion having an outer periphery with a relatively deep notch opening thereinto, a complementary centrifugal weight received in each notch for radial reciprocation therein and having an outer end adapted to project from the flange portion periphery to engage the annular ring of the outer hub to lock the hubs together, retractor springs in each

notch for each weight, and at least one pair of damper springs received in said aligned spring windows.

4,643,288

CLUTCH DISC

Dagwin Tomm, Kaiserslautern, and Franz Hartig, Dittelbrunn, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

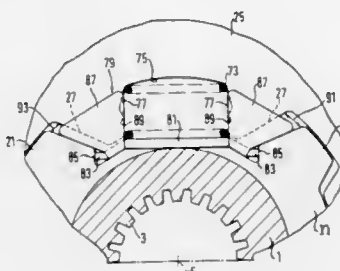
Filed Apr. 29, 1985, Ser. No. 728,592

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1984, 3415927

Int. Cl.⁴ F16D 3/14

U.S. Cl. 192—106.2

11 Claims



1. A clutch disc for a motor vehicle friction disc clutch, comprising:

- a hub part rotatable about an axis having radially a extending hub flange provided with radially outwardly protruding teeth,
- a disc part mounted rotatably on the hub part and provided with clutch friction linings, said disc part comprising an annular disc provided with radially inwardly protruding teeth engaging with limited rotational play in the circumferential direction the teeth of the hub flange, wherein the hub flange teeth are in a radial overlapping relationship with said annular disc teeth.
- at least one pair of first stop faces, directed towards one another in the circumferential direction, being located on each of the annular disc and the hub flange,
- a spring being elastically stressable by the relative rotation of the annular disc and of the hub flange and said spring positioned radially outwardly from the hub part axis, the spring arranged between the first stop face pairs of each of the annular disc and of the hub flange, a first pair of said first stop faces pairs formed either of the teeth of the annular disc or of the teeth of the hub disc and extending substantially over the entire radial height of the spring and
- a retaining stirrup piece forming a second pair of said pairs of first stop faces, said stirrup piece being U-shaped as seen in the circumferential direction and having legs extending in the circumferential direction with edges thereof extending in the axial direction of said hub part and forming the second pair of said first stop faces, said legs being spaced apart for and holding the spring therebetween in the circumferential direction and the second pair of said first stop faces extending substantially over the entire radial height of the spring, said retaining stirrup piece comprising a cross-piece extending in the circumferential direction between the second pair of said stop faces and connecting the legs with one another.

4,643,289

WET CLUTCH DISC

Kazuhiko Yoneda, Katano; Seichi Kitano, Shijounawate, and Yoshinobu Fukuda, Osaka, all of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

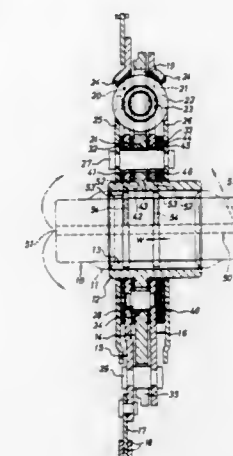
Filed Jul. 11, 1985, Ser. No. 753,926

Claims priority, application Japan, Jul. 11, 1984, 59-105454[U]

Int. Cl.⁴ F16D 3/14, 13/74

U.S. Cl. 192—106.2

3 Claims



1. A wet clutch disc comprising an output shaft; a hub connected to the output shaft through a spline; a radial flange provided at the hub; a pair of side plates rotatably fitted to the outer periphery of the hub on opposite sides of the flange with outer portions rigidly connected together; a pair of sub-plates rotatably fitted to the outer periphery of the hub on opposite sides of the side plates and connected together, one of said side plates having an internal diameter greater than an outside diameter of the hub radially aligned therewith so as to define a radial clearance between the hub and the one of said side plates; a spring disposed in openings in the flange, the sub-plates, and the side plates and circumferentially connecting the side plates to the flange; a friction facing being adapted to be pressed against a flywheel and connected to one of the side plates; a first friction mechanism disposed radially inside the spring at opposite sides of the flange and being adapted to slide with respect to the flange in accordance with torsion operation of the side plates with respect to the flange; a second friction mechanism disposed radially inside the spring between the side plates and the sub-plates, fixed to the sub-plates so as to move therewith, slidable with respect to the side plates, and operable to exert a greater frictional force than said first friction mechanism; a lubricating oil feed passage provided inside the output shaft for feeding the lubricating oil and an outlet connected to said feed passage and opening at the outside surface of the output shaft at a location axially spaced from said hub for supplying the lubricating oil to the friction facing;

said output shaft is provided with a shaft oil passage extending from said feed passage to the inner periphery of the hub for delivering oil to the friction mechanism, said hub is provided with spline teeth and an annular groove connected to said shaft oil passage, so that the lubricating oil leaked from the groove may be supplied onto surfaces of teeth of the spline, and said hub is provided with a hub oil passage communicating with said shaft oil passage in the output shaft and opening at the outer periphery of the hub in general radial alignment with sliding surfaces between said second friction mechanism and said side plates and in fluid communication with the radial clearance between the one sub-plate and the hub, so that the lubricating oil from the feed passage can flow through the shaft oil passage and the hub oil passage and may be supplied to the sliding surfaces of said second friction mechanism and through the radial clearance to the first friction mechanism.

4,643,290

BI-DIRECTIONAL OVERTRAVEL STOP

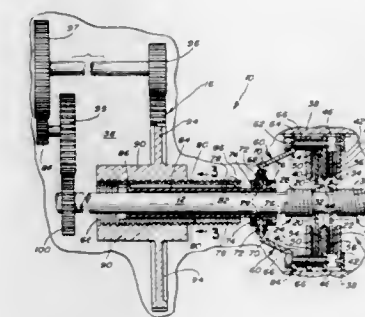
Jeffrey D. Metcalf, Rockford, and Gary D. Gillingham, Cherry Valley, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 4, 1985, Ser. No. 804,388

Int. Cl.⁴ F16D 11/00

U.S. Cl. 192—141

20 Claims



1. A bi-directional overtravel stop for a rotatable shaft comprising:

- first and second brake plates secured for rotation in first and second directions respectively with the shaft by a pair of oppositely disposed one-way clutches;
- a non-rotatable brake member mounted for axial movement relative to the shaft, wherein the brake member frictionally engages the first brake plate at one end of its movement and the second brake plate at the other end of its movement;
- means for biasing the brake member axially to said one end of its movement when the shaft has reached a selected limit of its rotation in the first direction; and
- means for biasing the brake member axially to said other end of its movement when the shaft has reached a selected limit of its rotation in the second direction.

4,643,291

LINEAR ARTICULATED PUSHER

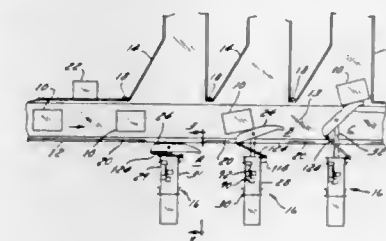
Louis F. Counter, Greendale; Fritz A. Callies, Menomonee Falls, and Phillip L. Lee, Milwaukee, all of Wis., assignors to Rexnord Inc., Brookfield, Wis.

Filed Jan. 21, 1986, Ser. No. 820,855

Int. Cl.⁴ B65G 47/46

U.S. Cl. 198—356

13 Claims



1. In a diverting mechanism mounted on a framework adjacent a moving conveyor surface for deflection of objects therefrom, the combination comprising:

- a retractable pusher having an inner end and an outer end adjacent said conveyor surface, said pusher being mounted on said framework for movement transversely across said conveyor surface;

a paddle having a leading end portion closest to objects conveyed along said conveyor surface and a trailing end portion, said paddle being pivotably attached between said leading and said trailing end portions to said outer end of said pusher;
a movable link pivotably connected to said framework and said leading end portion of said paddle; and
means secured on said framework for providing retractable movement of said pusher transversely across but preventing movement longitudinally along said conveyor surface and causing said paddle to articulate on said retractable pusher from a rest position to an operating position at which an object is deflected from said conveyor surface and back to the rest position.

4,643,292

GRAIN CONVEYOR

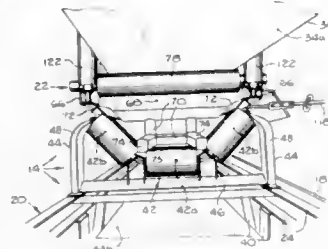
Jerrel Whited, 2041 Crawford Dr., Walla Walla, Wash. 99362

Filed May 6, 1985, Ser. No. 730,466

Int. Cl.⁴ B65G 47/46

U.S. Cl. 198—364

4 Claims



1. Grain conveyor comprising, a main conveyor component including, a horizontal longitudinal main frame, an endless belt running longitudinally therein and including an upper run and a lower run, trougher rolls supporting the upper run, a plow including, a plow frame, longitudinal supporting rails bearing on the trougher rolls, and the trougher rolls thereby supporting the plow, and the plow being movable longitudinally along the main frame, the plow being adapted to have the upper run of the belt run therethrough and thereby carry grain on itself through the plow, and deflector means operable for deflecting grain laterally from the upper run of the belt, the trougher rolls including bottom rolls and inclined end rolls, and the longitudinal rails in the plow including inner rails positioned and arranged to bear on the trougher rolls at the juncture of the bottom rolls and end rolls respectively.

4,643,293

CONVEYOR BELT CLEANER

Robert T. Swinderman, Kewanee, Ill., assignor to Martin Engineering Company, Neponset, Ill.

Division of Ser. No. 579,707, Feb. 13, 1984, Pat. No. 4,598,823.

This application Feb. 18, 1986, Ser. No. 830,275

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

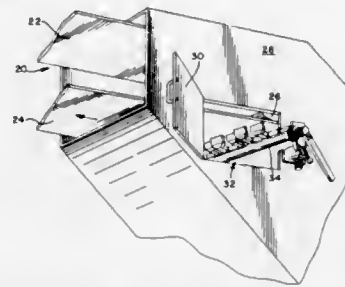
Int. Cl.⁴ B65G 45/00

U.S. Cl. 198—497

7 Claims

1. A conveyor belt cleaning arrangement consisting of a linear support member disposed transverse to the direction of conveyor belt travel, connector means associated with said support member, one or more cleaner units, each unit including an arm formed of resilient elastomeric material defining a generally linearly extending central axis, said arm being resiliently rotatable about its central axis, each arm including lock-

ing means disposed at one end adapted to matingly engage with said connector means on said support member to removably secure said arm to said support member, each cleaner unit also including a blade member, also formed of resilient elastomeric material, attached to said arm, whereby when said locking means on said arm is engaged with said connector means, said arm extends from said support member and supports and positions said blade, such that when said blade is moved into



engagement against said conveyor belt, the resilient elastomeric construction of said arm and said blade allow said blade to resiliently rotate about the central axis of said arm to accommodate variations in belt angles and to automatically align with the surface of the belt being cleaned, said resilient elastomeric construction of said arm and said blade being further effective to substantially reduce or eliminate vibration of said blade with respect to said belt while maintaining contact between said blade and belt.

4,643,294

GRAIN CONVEYOR-TOTAL ENCLOSED

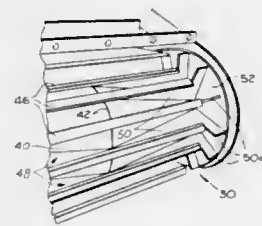
Jerrel Whited, 2041 Crawford Dr., Walla Walla, Wash. 99362

Filed May 13, 1985, Ser. No. 733,070

Int. Cl.⁴ B65G 45/00

U.S. Cl. 198—498

8 Claims



1. A grain conveyor having a tail end and a head end, comprising, an enclosing casing, an endless belt in the casing and a tail pulley and a head pulley operably supporting the belt and adapted for connection of a power source for driving the belt, the endless belt having an upper run normally carrying the grain to be conveyed, and a lower run, and the conveyor being subject to spillage of grain from the upper run, and the lower run thereby tending to carry the spilled grain toward the tail end and to the tail pulley, the tail pulley having radial vanes defining a peripheral belt surface with slots in that surface leading into an interior space opening axially outwardly, the belt and pulley being operable to effect passage of the grain carried by the lower run through said slots into said interior space, and such grain then being capable of passing axially outwardly from the interior space, the pulley including end members secured to the axially outer ends thereof and engaging the vanes throughout the radial extent of the vanes, and the end members and vanes being capable of carrying the

grain passing from the interior space up and onto the upper run, in response to rotation of the pulley and the passage of the belt therearound.

4,643,295

APPARATUS FOR LOADING AND UNLOADING BULK MATERIALS AND/OR PIECE GOODS

Gerhard Arneemann, Hamburg, Fed. Rep. of Germany, assignor to Baas Technik GmbH, Fed. Rep. of Germany

PCT No. PCT/DE83/00106, § 371 Date Dec. 15, 1983, § 102(e)

Date Dec. 15, 1983, PCT Pub. No. WO83/04405, PCT Pub.

Date Dec. 22, 1983

Continuation of Ser. No. 566,135, Dec. 15, 1983, abandoned.

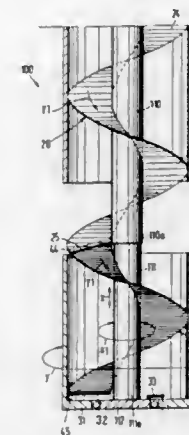
This PCT application Jun. 9, 1983, Ser. No. 865,948

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1982, 3221726

Int. Cl.⁴ B65G 21/14

U.S. Cl. 198—594

3 Claims



1. Apparatus for loading and unloading piece goods and/or bulk material from a location such as a ship comprising a first vertically extending, central cylindrical carrier rod; an annular supporting frame encircling at least the upper portion of the length of said first carrier rod; a second vertically extending central cylindrical carrier rod rotatingly and telescopingly extending from the lower end of said first carrier rod; an annular supporting cage encircling the lower end of said second carrier rod; a first endless conveyor belt spirally positioned about said first carrier rod, extending substantially the length thereof, and supported by said first carrier rod and said supporting frame; a second endless conveyor belt spirally positioned about said second carrier rod, extending substantially the length thereof, and supported by said second carrier rod and said supporting cage; drive means for driving said first and second conveyor belts alternatively in a first conveyor direction in which piece goods or bulk material placed on the upper end of said first conveyor belt is conveyed down said first and second conveyor belts to the lower end of said second conveyor belt and in a second conveyor direction in which piece goods or bulk material placed on the lower end of said second conveyor belt is conveyed up said second and first conveyor belts to the upper end of said first conveyor belt; and locking means adapted to assume alternatively a first condition in which rotation of said second carrier rod, second conveyor belt, and supporting cage relative to said first carrier rod, first conveyor belt and supporting frame is prevented and a second condition in which such rotation is permitted; whereby with said locking means in the first locking means condition and said second conveyor belt positioned in a first conveyor belt position with the upper end thereof beneath the lower end of said first conveyor belt, said drive means can drive said first and second conveyor belts in said first conveyor direction to convey piece goods or bulk material from the upper end of said first conveyor belt to the lower end of said second conveyor belt, the piece goods or bulk material dropping off the lower

4,643,296

CONVEYOR TROUGH SECTION CONSTRUCTION

Gert Braun, and Ernst Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun Industrieanlagen, Fed. Rep. of Germany

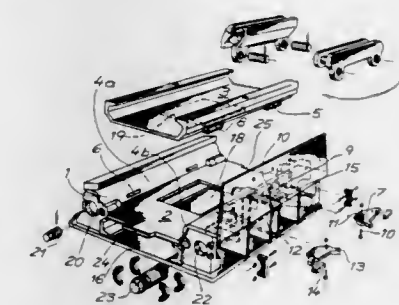
Filed Aug. 19, 1985, Ser. No. 766,951

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1984, 3431351

Int. Cl.⁴ B65G 19/28

U.S. Cl. 198—735

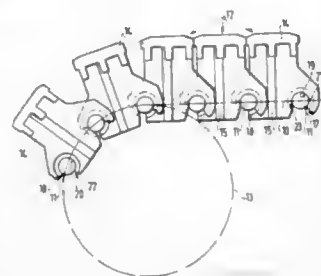
13 Claims



1. A trough section for a conveyor trough having a working side and a stowage side, comprising a mounting frame having a bottom wall, a first upright side wall at the working side and a second upright side wall at the stowage side, said bottom wall being connected to and between said side walls to form space for upper and lower trough section above said bottom wall, a wear tub at least in said upper section supported on said lower trough section between said first and second side walls, said tub forming a trough profile for said upper section, said side walls forming lateral flanges for said wear tub, said wear tub having at least on pocket on each side thereof, at least one fixing lug fixed to said first upright side wall and extending into said upper section and into engagement with said at least one pocket on one side of said wear tub adjacent said working side, said at least one pocket on said working side and said at least one fixed fixing lug being shaped for engagement of said fixing

lug in said pocket while tilting said wear tub and rotating said wear tub about a horizontal axis near said working side to bring said wear tub into supporting engagement onto said bottom wall, at least one fixing shackle pivotally mounted about a vertical axis on said second upright side wall and extending through said second upright side wall for engaging said at least one pocket of said wear tub on a side of said wear tub adjacent said stowage side, and locking means for locking said pivotally mounted fixing shackle into said pocket adjacent said stowage side when said wear tub is supported on said lower trough section.

4,643,297
PLATFORM CONVEYOR
Eberhard Krieger, Weinstadt, and Theo Moser, Steinenberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 25, 1985, Ser. No. 695,110
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413910
Int. Cl.⁴ B65G 17/06
U.S. Cl. 198—803.01



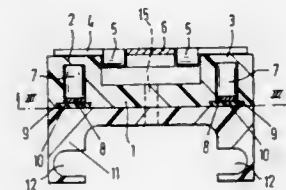
1. A platform conveyor comprised of a stock articulated chain having laterally offstanding links, interconnected bolt means and bearing elements adapted to be mounted upon said bolt means outboard of said links, said bearing elements including an upstanding platform and a pair of retaining feet in laterally opposed relation, each of said retaining feet having front and rear claws including substantially circular means defining openings having a diameter arranged to grasp said bolt means, said means defining openings in said rear claw being canted rearwardly and downwardly, said front claws being offset laterally with respect to said rear claws for complementary lateral engagement therebetween, each said front claw having an inwardly-directed protrusion and each said rear claw having a complementally formed recess, each said protrusion and each said recess being oriented about said means defining openings and the protrusion of a respective front claw of one bearing element arranged to simultaneously engage said bolt means of said endless chain and the recess of a respective rear claw of the adjacent bearing element, whereupon said rear claw is initially snapped over one of said bolt means and thereafter rotated downwardly to engage said front claw with another bolt means.

4,643,298
MAGNETIC BEND SEGMENT FOR A CHAIN CONVEYOR
Jacobus J. Wallaart, 's-Gravenzande, Netherlands, assignor to 501 M.C.C. Nederland B.V., 's-Gravenzande, Netherlands
Filed Mar. 21, 1985, Ser. No. 714,232
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 8408857[U]
Int. Cl.⁴ B65G 23/18
U.S. Cl. 198—805

1. A bend segment for a chain conveyor, including a chain movable over a track including one or more bends, said chain being composed of links of magnetizable material having a substantially rectangular load bearing surface, the successive

links in the chain being pivoted together; said bend segment comprising

- (a) an integral element, U-shaped in cross-section and being made of synthetic plastics material, the upper surface of the legs of the U-shaped element being able to support the chain links;
- (b) a plurality of elongate permanent magnets with rounded ends, as viewed in the longitudinal direction, disposed along the length of the bend segment to generate a magnetic field for keeping the chain links flat on the upper surface of the legs of the U-shaped element;



- (c) a plurality of elongate pockets with rounded ends, as viewed in the longitudinal direction, which are formed in the under surface of the U-shaped element, said pockets extending into the legs of the element and extending in the longitudinal direction of the bend segment, said pockets being arranged to receive the magnets;
- (d) flexible closure strips for confining the magnets in said pockets, said closure strips cooperating with means at the under surface of the element for keeping the strips in place at said under surface.

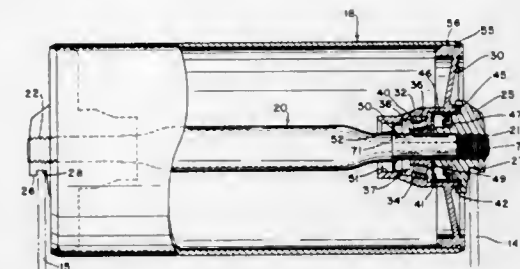
4,643,299
TELESCOPIC BELT CONVEYOR
Kaj B. Calundan, Skanderborg, Denmark, assignor to Caljan A/S, Hasselager, Denmark
Filed Jun. 7, 1984, Ser. No. 618,258
Int. Cl.⁴ B65G 21/14
U.S. Cl. 198—812



1. A telescopic belt conveyor comprising a plurality of slidably mounted belt conveyor sections arranged above each other, said sections being extendable and retractable from and into a supporting housing and sharing a guide means for a common conveyor belt which in each section comprises at least two conveyor belt guiding rolls, of which one roll is positioned farther out in the section than the at least one other roll which is positioned at a length at least equal to the section extension length behind the first mentioned roll of the section; a common drive means for driving a driven tackle means, said driven tackle means including at least one tackle guide direction changing means and being drivably connected with an extendable and retractable belt conveyor section which is above an intermediate section of said belt conveyor sections and with the supporting housing driving the extension and retraction of said extendable and retractable belt conveyor sections; a second undriven tackle means having one end connected to the inner end of the outermost of said belt conveyor sections and another end connected to the supporting housing, the common drive means for the driven tackle means being positioned at the rear end portion of said intermediate section of said extendable and retractable belt conveyor sections, and each of said tackle means comprising at least one flexible por-

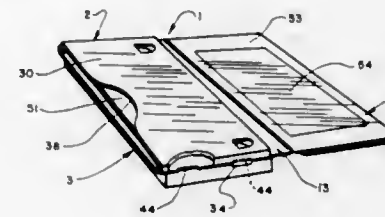
tion and at least one drive direction changing means whereby at least two belt conveyor sections can be provided and can be extended and retracted by said common drive means, said driven tackle means and said undriven tackle means.

4,643,300
IDLER ROLL ASSEMBLY
Thomas E. Morrison, Guin, Ala., assignor to Continental Conveyor & Equipment Co., Sherman, Tex.
Filed Apr. 10, 1985, Ser. No. 721,730
Int. Cl.⁴ B65G 39/10
U.S. Cl. 198—842



1. In an idler roll assembly for a belt conveyor in which the ends of the idler are supported by upstanding frame members, a roll, a hollow circular shaft extending through said roll, said shaft having swaged reduced circular end portions with outside diameters substantially less than the major outside diameter of a midportion of the shaft between such end portions and with inside diameters substantially less than the major inside diameter of such midportion and with the very ends thereof being threaded, a supporting nut threadedly engaging each of said threaded ends, bearing units mounted between said roll and said swaged end portions inwardly of the ends of each supporting nut for supporting the roll for rotation about said shaft, said nuts being mounted on said frame members for supporting said idler roll assembly, the bearing units each having an inner race directly engaging its associated shaft end portion.

4,643,301
BOOKLET POCKET FOR VIDEO CASSETTE STORAGE CONTAINERS
Bruce A. Hehn, Massillon, and Donald E. McInnes, Louisville, both of Ohio, assignors to Alpha Enterprises, Inc., Canton, Ohio
Filed Jul. 5, 1985, Ser. No. 751,949
Int. Cl.⁴ B65D 71/00, 85/672
U.S. Cl. 206—232



1. An improved video cassette storage container having spaced side, end, top and bottom walls forming a hollow enclosure with projections formed on an inside surface of either the top or bottom walls and projecting into the enclosure for engagement with spaced reel hub openings of a video cassette, wherein the improvement includes panel means mounted on an outside surface of the bottom wall for forming a pocket with said bottom wall surface for removably holding a booklet therein; said panel means being formed of a relatively stiff

plastic material and having a panel wall with flanges formed integrally therewith and extending from three sides of said panel wall and having a continuous open forth side; and means for mounting the panel wall in a fixed position on the bottom wall of the container and in a spaced relationship from said bottom wall to form the pocket therebetween with the open forth side of the panel means providing access into said pocket means, said mounting means including a plurality of lugs extending between and engaged with the panel means and bottom wall of the storage container.

4,643,302
CONTAINER FOR SPORTS EQUIPMENT
Edward W. Baumgardner, 4088 Sells Mill Rd., P.O. Box 1, Taneytown, Md. 21787
Filed Mar. 15, 1985, Ser. No. 712,168
Int. Cl.⁴ B65D 13/00; A45C 7/00; A63B 55/00
U.S. Cl. 206—315.1



1. A container assembly for transport and secured storage therein of elongated sports equipments, having means for locking and an adjustable strap for two point suspension of said container during manual handling and carrying, wherein the improvement comprises:

- (a) an elongated tube of uniform cross section substantially elliptical in shape but having truncations at opposite extremities of the major elliptical axis thereby forming first and second flat areas that extend along the length of said tube, said first flat area adapted for attachment of said adjustable strap thereto, said second flat area for stabilizing said container when it is placed on supporting surfaces;
- (b) a pair of interchangeable and removable end caps having deep skirts for adjustably fitting upon opposing ends of said tube of truncated elliptical cross section for providing means of closure and access to a cavity of adjustable length within said container, each said end cap having at least one stationary portion of a lockable draw catch assembled thereto for securing said container cavity, said draw catch stationary portion located on said major elliptical axis in near proximity to the edge of said end cap skirt;
- (c) at least one pair of adjustment plates, each having a manually operable portion of said draw catch mounted thereon, each said adjustment plate having a multiplicity of holes uniformly spaced along the longitudinal axis thereof;
- (d) at least two holes, of the size and spacing of said adjustment plate holes, located along the longitudinal center line in said first flat area in near proximity to each end of said tube; and
- (e) at least one stud bolt for assembly of each adjustment plate and said manually operable portion of said draw catch to said elongated tube at selectable longitudinal locations by insertion of said bolt through matching holes

of said plate and said tube so that manual closure of said draw catch positions its respective end cap longitudinally upon said elongated tube for minor adjustment of the length of said container cavity.

4,643,303

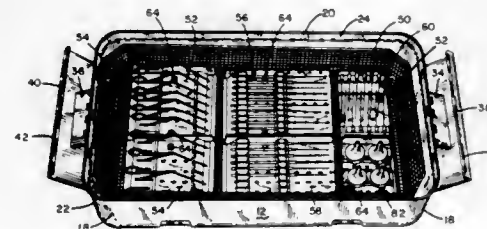
MODULAR STERILIZING SYSTEM

Robert A. Arp, Eden Prairie; W. Patrick Conroy, Minneapolis; Curtis H. Miller, Burnsville, and James M. Weinzel, Mahomedi, all of Minn., assignors to Micromedics, Inc., St. Paul, Minn.

Filed Oct. 15, 1985, Ser. No. 787,787
Int. Cl.⁴ A61L 2/26; B65D 81/18

U.S. Cl. 206—370

4 Claims



1. An autoclavable surgical tray storage and transporting assembly, comprising:

- a fluid impervious box-shaped base having a bottom surface and four mutually perpendicular side walls extending upwardly therefrom to define an open top;
- a generally rectangular top member having means for receiving the upper edges of said four side walls defining said open top, said top member having a pattern of perforations extending through the major surface thereof by which steam can enter;
- means for clamping said top member to said base;
- a removable wire basket having a bottom and four upwardly projecting, mutually perpendicular sides, the length, width and height dimensions of said basket allowing it to fit within said box-shaped base;
- a plurality of instrument modules removably situated in said wire basket, each of said modules supporting in a predetermined orderly manner, instruments to be used in carrying out surgical procedures, said instrument modules each comprising a generally flat, rectangular sheet having its peripheral edges formed normal to the plane of said flat sheet, said sheet having a pattern of apertures there-through and at least one flexible, deformable, plastic instrument supporting member on said sheet, said instrument supporting member including a recess dimensioned to receive a surgical instrument therein with a predetermined gripping force; and
- means for releasably securing said instrument modules to said bottom of said basket.

4,643,304

TAPE CARTRIDGE WITH EXTENDING REFERENCE SURFACES

Takashi Sumida, Takatsuki; Shigeo Sasaki, Kyoto, and Takao Ketori, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Nov. 9, 1984, Ser. No. 669,844

Claims priority, application Japan, Nov. 12, 1983, 58-213003; Mar. 2, 1984, 59-040781

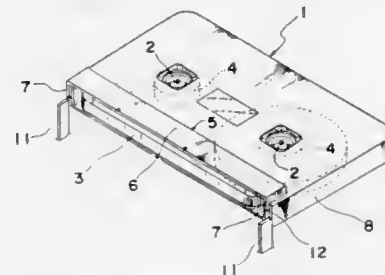
Int. Cl.⁴ B65D 85/672

U.S. Cl. 206—387

2 Claims

1. In a tape cartridge comprising a case body of a predetermined thickness having a pair of side walls, top and bottom walls and a front lid having a front plate with a front face and connecting members projected away from respective end portions of said front plate, said front lid being movable on support shafts between a closed position and an opened position,

characterized in that a reference surface is provided as a vertical front end face corresponding to the thickness of each case body formed on each side wall of said case body, said respective end faces being directed in a front direction relative to said front lid so as to position said case body in relation to a front to rear direction in a tape player, said reference surfaces



being positioned outside of and extending frontward lateral to said respective connecting members of said front lid and extending frontward beyond said support shafts of said front lid lateral to said end portions of said front plate so that said reference surfaces can readily contact corresponding position members of a tape player.

4,643,305

METHOD FOR OBTAINING A WIRE COIL WOUND TO A VARIABLE DIAMETER WHICH IS PACKAGED ONTO A DISPLAY BACKING AND THE PRODUCT OBTAINED THEREBY

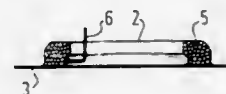
Pierre R. De Roure Olivier, Rougemont le Chateau, France, assignor to Manufacture de Rougement, France

Filed Mar. 26, 1985, Ser. No. 716,441

Claims priority, application France, Mar. 30, 1984, 84 05107
Int. Cl.⁴ B65B 11/52, 63/04

U.S. Cl. 206—388

15 Claims



1. A method for obtaining a wire coil wound to a variable diameter which is packed onto a display backing in the form of a card characterized by the steps of

- winding a plurality of groups of turns at an increasing or a decreasing diameter according to a pattern complying with the relation $E = D_0 \pm 2n\phi$ where E is the increasing or decreasing winding, D_0 is the initial diameter of the first turn, n is a positive integer and ϕ is the diameter of the wire
- spreading out and heating a thin plastic film so as to stretch and soften it
- disposing opposite the film a porous substrate having placed thereon the coil of wire wound according to (a), one end of the wire in contact with the substrate being extended away from the first turn applied on the substrate
- applying the plastic film on the substrate and exerting a suction from below the substrate for thereby causing the plastic film to take the exact shape of the wire coil wound to a variable diameter and sticking the film to the substrate.

4,643,306

POSTAL TRAY

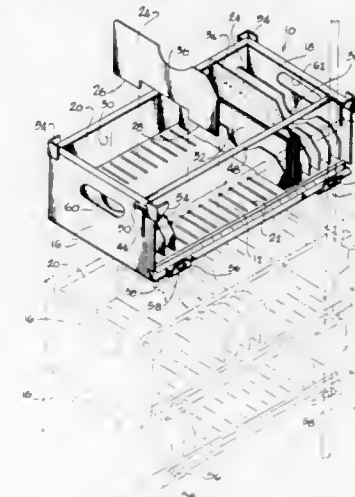
Patrick Ryan, Reseda, Calif., assignor to Alpha Mail Systems, Newport Beach, Calif.

Filed Nov. 8, 1985, Ser. No. 796,248

Int. Cl.⁴ B65D 1/34, 21/02

U.S. Cl. 206—425

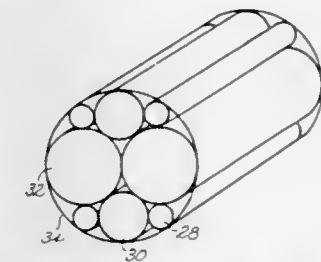
5 Claims



1. A postal tray facilitating the sorting and distribution of mail comprising:

- a housing, said housing having a planar bottom wall which has a peripheral edge, a pair of planar side walls attached to said peripheral edge and extending from said bottom wall, a planar back wall attached to said peripheral edge and extending from said bottom wall, said back wall located between said side walls, said housing having an open top and open front, an internal chamber defined by said bottom wall and enclosed by said side walls and said back wall;
- an opening assembly formed within said bottom wall, said opening assembly connecting with said internal chamber;
- a plurality of planar partition members removably mounted within said opening assembly, said partition members extending within said internal chamber, pockets being formed between directly adjacent partition members, said pockets being adapted to receive postal envelopes; and
- a rod connected to said side walls and extending therebetween, said rod being located directly adjacent said top and directly adjacent said front, said rod being movable with respect to said side walls between an upper position and a lower position, said upper position locating said rod across said top, said lower position locating said rod across said front.

said circular cross-sections having radii proportional to one, two and three; and



each of said bodies having one of said radii being tangent to at least two of said bodies having the other two radii.

4,643,308

SHIELDED DISKETTE CASE

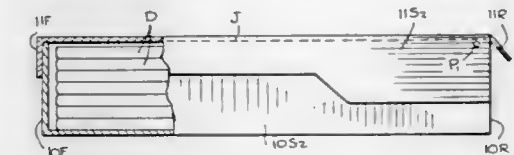
Thomas J. Michel, Miami, Fla., assignor to Data Medi-Card, Inc., Lake Worth, Fla.

Filed Feb. 5, 1986, Ser. No. 826,309

Int. Cl.⁴ B65D 85/57, 47/24

U.S. Cl. 206—444

6 Claims



1. A case for protectively housing diskettes having data magnetically recorded thereon, the case also acting to shield the diskettes from stray magnetic fields, electrostatic discharges and ionizing radiation, said case comprising:

- A a box adapted to house the diskettes; and
- B a cover hinged to the rear of the box, the cover being provided with front and side flanges which, when the cover is closed, lie against the corresponding walls of the box, and with an outwardly inclined rear baffle which, when the cover is open, lies against the rear wall of the box, and when the cover is closed is angled with respect to said rear wall to permit the cover to swing open, said box and said cover including said flanges and said baffle being formed of a paramagnetic metallic material which is not substantially penetrated by said stray magnetic fields, electrostatic discharges and ionizing radiation, the angle assumed by the baffle when the cover is closed being such as to prevent penetration into said box, whereby the diskettes housed in the box are fully shielded.

4,643,309

FILLED UNIT DOSE CONTAINER

Hans C. A. Evers, Södertälje, Sweden, assignor to Astra Lakemedel AB, Sweden

Continuation of Ser. No. 713,999, Mar. 20, 1985, abandoned, and a continuation-in-part of Ser. No. 461,594, Jan. 27, 1983. This application Mar. 21, 1986, Ser. No. 844,215

Claims priority, application Sweden, Feb. 8, 1982, 8200720
Int. Cl.⁴ B65D 73/00

U.S. Cl. 206—484

10 Claims

1. A filled thermoplastic solution container containing a single dose of a sterile medication for administration to a human or animal patient by injection using a hypodermic syringe comprising a syringe having a conical tip to which a hypodermic needle is attached, said container having a neck portion with an inner surface which has converging and diverging sections which intersect and define an orifice at their intersection, the diverging section extending outwardly from

4,643,307

PACKING ARRANGEMENT FOR ARTICLES OF DIFFERENT SIZE

Don Wilkinson, 32 S. Palm Ave., Sarasota, Fla. 33577

Filed Feb. 7, 1986, Ser. No. 827,071

Int. Cl.⁴ B65D 85/20, 85/62; B65B 59/00

U.S. Cl. 206—443

12 Claims

1. A packing arrangement comprising:
a plurality of bodies having circular cross-sections;

said orifice to a sealing zone which is larger in diameter than said orifice, and a non-reusable tear seal which extends over and is sealed to said sealing zone at a tear line, which tear seal thereby protects the inner surfaces of said converging and diverging sections and the contents of said container from contamination, the inner surface of said diverging section being shaped in the vicinity of said orifice for removably and tightly receiving the conical tip of said syringe to thereby form a substantially leak-proof seal between said diverging section



and syringe tip when said syringe tip is inserted for filling said syringe, whereby said tear seal can be removed by tearing it away, while the portion of the divergent section in the region of the orifice intended to receive said conical tip maintains its shape whereby the conical tip of said syringe can be inserted thereto in a leak-proof connection between said container and said syringe through which connection the single dose of medication can be transferred directly from the container to the syringe and the container can be thereafter discarded.

4,643,310

ONE HUNDRED EIGHTY DEGREE STACK AND NEST BAKERY TRAY WITH BAILS

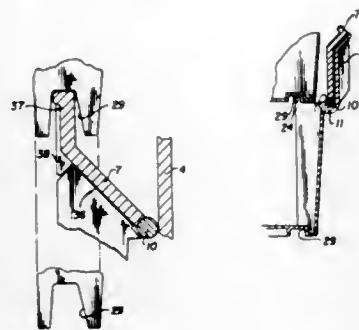
Thomas P. Deaton, Mason, and Eric D. Stein, Cincinnati, both of Ohio, assignors to Buckhorn Material Handling Group, Inc., Milford, Ohio

Filed Sep. 20, 1984, Ser. No. 652,489

Int. Cl.⁴ B65D 21/04, 21/06

U.S. Cl. 206—506

8 Claims



1. In a nestable and stackable bakery tray comprising: a unitary, one piece tray body of molded synthetic resin material having a bottom wall and two pairs of opposed side walls integrally joined together and integrally extending upwardly from the periphery of said bottom wall; said side walls being shaped and extending upwardly and outwardly from said bottom wall to permit said container

body to be nested within a like container body and the latter to be nested therein when disposed in vertical aligned relationship therewith;

a pair of bails, each being a unitary, one piece, construction of molded synthetic resin;

hinge means unitary in one piece only with each of said bails and one pair of said opposed side walls for pivotally connecting said bails to said one pair of side walls, respectively, for movement about respective parallel horizontal axes that are parallel to said bottom and the longitudinal extent of said one pair of side walls to provide for pivotal movement of said bails relative to said container body between a stacking position wherein each bail extends generally inwardly from its associated pivot axis into the adjacent interior of the body toward the opposed side wall of said one pair of side walls to provide respective upwardly facing support stack surfaces, and a nesting position wherein each bail is disposed outwardly of the adjacent interior of the body to permit said nesting of two like container bodies;

bail support surfaces on said one pair of opposed side walls spaced from the adjacent corresponding pivot axes and engaging the respective bails in their stacking position at contact points spaced radially from said respective pivot axis to resist further inward turning movements of said bails;

said bail structures, when in said stacking position, having their support stack surfaces simultaneously engaging the bottom of a like container stacked thereon in vertical aligned relationship above said container body;

said side walls extending rigidly upward along the entire length of said bails to a height substantially equal to the height of the bails in said stacking and nesting positions and to the outside of the associated bails, to protect the bails from damage during handling and to generally prevent usage of the bails as handles for protection of the bails;

said bails, when in said nesting position, extending vertically upward from their associated hinge axes;

wherein the improvement comprises:

said hinge means including unitary shaft portions on said bails, and side wall bearing portions being concentric with and rotatably engaging said shaft portions;

said bails having a major portion that extends generally inwardly in the stacking position at a 45 degree angle from the nesting position;

said bail support surfaces extending in a corresponding substantially 45 degree angle to provide a ramp upon which said associated bail slidably rests so that downward forces on said bail in said stacking position caused by the weight of loaded upward stacked like trays will be transferred along the extent of said bail directly to said side wall bearing portions; and

each of said bails having an uppermost portion extending upwardly vertically from the inward end of its major portion and the inward end of said support stack surfaces to provide an upwardly facing free edge to be received with the correspondingly shaped bottom of a like upper stacked container.

4,643,311

STACKABLE LONG-TERM STORAGE CONTAINER, PREFERABLY FOR RADIOACTIVE WASTE

Günter Höhle, Helmsheim; Wilhelm Hempelmann, Eggenstein-Leopoldshafen; Günter Waldenmeier; Rainer Küster, both of Karlsruhe; Fritz Meyer, Sulingen, and Ulrich Pfeifer, Attendorn, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

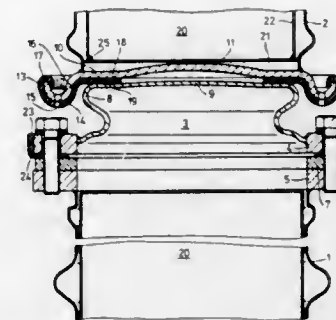
Filed Mar. 18, 1985, Ser. No. 713,314

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3425978

Int. Cl.⁴ B65D 21/04, 8/18; G21F 5/00

U.S. Cl. 206—508

2 Claims



1. A stackable long-term storage container for hazardous substances, especially for the storage of radioactive waste, said container comprising a hollow cylindrical body having an inwardly protruding bottom and an outwardly projecting lid with the lid convolution having a height greater than the depth of the floor convolution, and adapted to fit inside the bottom convolution upon stacking, said lid having a radially projecting rim portion for grabbing of the container, said bottom having a rim and said lid having a flange and said container having seal flanges of a diameter greater than the diameter of said cylindrical body which thereby form rolling edges, the bottom rim of said container being bent smoothly axially away from the body and then bent over upwardly toward the drum body with the bent over section having formed therein drain openings, a resilient jacket disposed about said floor rim such that it extends around the bottom edge and covers the roll edge and with its inner end extends inwardly at the bottom toward the center thereof so as to be disposed between the contact area of two vertically stacked drums, said jacket also being perforated at the locations of the drainage openings, said floor having an inwardly curved center portion and said drum lid having an outwardly curved center section with a curvature smaller than that of the center bottom section, said container further having a cylindrical fiberglass reinforced plastic insert with a bottom piece abutting the drum bottom and a wall section abutting the drum wall and the corner area adjacent the bottom piece and the wall section of said insert having a cast in edge.

4,643,312

STACKING SYSTEM

Frank Zarges, Bismarckstrasse 26, D-8130 Starnberg, Fed. Rep. of Germany

Filed Apr. 25, 1985, Ser. No. 727,401

Claims priority, application Fed. Rep. of Germany, May 7, 1984, 3416844

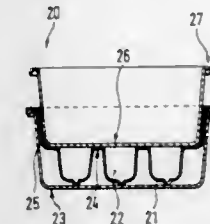
Int. Cl.⁴ B65D 21/04

U.S. Cl. 206—514

17 Claims

1. A stacking system comprising: a tray-shaped member with interior troughs for accommodating articles in said troughs, said tray-shaped member being stackably nested; a stacking member that can be stacked nested with the top of a tray-shaped member engaging the bottom of a stacking member, the top of each stacking member conforming to the bottom of each tray-shaped member, the distance between the top and bottom

of each stacking member being independent of the height of any tray-shaped member, so that a plurality of tray-shaped members may be nested with stacking members to form a stack of tray-shaped members and stacking members, said stacking member having a height that can remain constant and need not



be changed with varying inserted tray-shaped members, said tray-shaped member being fittable to said stacking member with said troughs having a height that only needs to be dependent on said articles and said tray-shaped member only needing to be changed.

4,643,313

APPARATUS FOR THE CONTROLLED DISPENSING OF TABLETS FROM MULTIPLE CONTAINERS

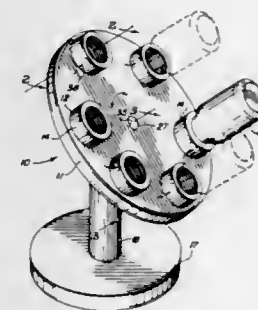
Charles H. Robson, 6241 S. 30th St., Phoenix, Ariz. 85040

Filed Nov. 26, 1985, Ser. No. 801,850

Int. Cl.⁴ B65D 83/04, 85/56

U.S. Cl. 206—533

9 Claims



1. Apparatus for controlling the dispensing of articles from a plurality of individual containers which comprises:

- a support member having first and second opposing surfaces, said first surface including a plurality of recesses therein;
- feed means located in each of said plurality of recesses for communicating between the corresponding recess and the second surface of the support member;
- removable receiving means dimensioned to fit within one of said plurality of recesses for receiving an open end of one of said containers and supporting same in an inverted position on the support member, said receiving means being movably fitted within said recess;
- channel means formed in each of said receiving means for providing passageways therethrough for articles within said container; and
- means for engaging a basal surface and maintaining said support member in a spaced overlying position, the rotation of a receiving means into alignment with a channel means resulting in the dispensing of an article from the container received therein.

4,643,314

CONTAINER CONSTRUCTION

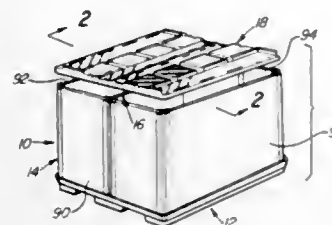
Garry B. Kidd, Novi, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed May 27, 1986, Ser. No. 866,801

Int. Cl.⁴ B65D 19/00, 21/02, 6/18, 25/04

U.S. Cl. 206—600

13 Claims



1. A container construction comprising a pallet, a sidewall structure, a divider and a lid, the pallet being generally rectangular and including a bottom wall having an upper face and a lower face, sidewall means extending around the periphery of the bottom wall on the upper face thereof, the bottom wall having a pair of substantially parallel spaced apart hollow open-ended raised portions on the upper face extending between two opposed edges of the bottom wall defining a pair of channels to receive the skids of a fork lift truck, lug structure on the upper face of the bottom wall extending around the inner periphery of the pallet sidewall means and spaced therefrom to form, with the pallet sidewall means, a support structure receiving the lower edges of the sidewall structure, channel structure on the upper surface of the bottom wall extending between and substantially parallel to the hollow raised portions for receiving the lower edge of the divider, the sidewall structure comprising four vertical wall members, first hinge means connecting the four wall members together along vertical edges thereof to form a generally rectangular boxlike structure with the lower edges thereof being received in the space between the lug structure and pallet sidewall means as aforesaid, each of two oppositely disposed wall members of the sidewall structure comprising a pair of panels of substantially equal size, the first hinge means connecting one vertical edge of each panel to a vertical edge of an adjacent sidewall member to result in the aforesaid connection, second hinge means connecting the remaining adjacent vertical edges of each pair of adjacent panels together, a vertical channel defined by the second hinge means and adjacent edges of each pair of adjacent panels, each of said vertical channels being in alignment with the channel structure on the upper surface of the pallet bottom wall, the divider comprising a wall member extending between the side wall members which comprise a pair of panels and having vertical edge portions received in said vertical channels and a lower edge portion received in the channel structure on the upper surface of the pallet bottom wall with lower corner portions of the divider being received between said pairs of spaced apart projections, the lid being generally rectangular and having a top wall with an upper face and a lower face, sidewall means extending around the periphery of the top wall on the lower face thereof, lug structure on the lower face of the top wall extending around the inner periphery of the lid sidewall means and spaced therefrom to form, with the lid sidewall means, a support structure received on the upper edges of the sidewall structure, channel structure on the lower surface of the top wall extending between the vertical channels defined by the second hinge means and panels, the divider having an upper edge portion received in the channel structure on the lower surface of the top wall.

4,643,315

CARTON FOR FILM CASSETTES

Howard R. Hopwood, Wilmslow; Sylvia A. Lewis, Congleton, and Peter C. Walker, Wilmslow, all of England, assignors to Ciba-Gelgy AG, Basel, Switzerland

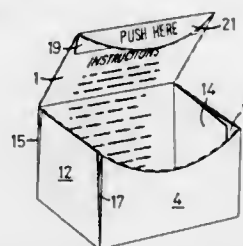
Filed May 22, 1986, Ser. No. 866,190

Claims priority, application United Kingdom, May 24, 1985, 8513153

Int. Cl.⁴ B65D 5/54

U.S. Cl. 206—620

2 Claims



1. A carton which comprises first, second, third and fourth rectangular side walls hingedly connected in sequence along parallel edges, first and second pairs of opposed overlapping end walls connected to edges of said first and third side walls whereby said side walls and said opposed end walls form an enclosure when the said overlapping end walls are adhered together and said first and said fourth rectangular side walls are adherently connected by use of an extended end portion of either the first or fourth rectangular side walls, there being tear lines where each of the first pair of said end walls are connected to the edges of said first side wall, together with a tear line extending across said fourth side wall to both ends of an adjacent edge of the said first side wall, whereby said first side wall can be disengaged from portion of said fourth side wall and from the end walls so that the carton can be opened flat when all three lines are severed.

4,643,316

SORTING TRAY

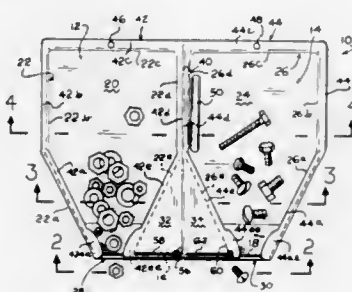
Thomas M. Hoffmann, 1215 Andrew La., Santa Cruz, Calif. 95062

Filed Dec. 7, 1984, Ser. No. 679,396

Int. Cl.⁴ B07C 7/00

U.S. Cl. 209—702

13 Claims



1. A sort tray comprising:

a first sorting section including a first sorting surface almost entirely surrounded by a first contiguous containment wall, said first containment wall being provided with a first gap proximate a forward edge of said first sorting section, wherein ends of said first contiguous containment wall angle together proximate said first gap to provide a first funnel, wherein a first angled portion of said first sorting section proximate said first gap extends downwardly from the plane of said first sorting surface, and wherein the portions of said first contiguous containment wall immediately proximate said first gap are flared up-

wardly and inwardly over said first gap to at least partially close said first funnel;
first gate means engaged with said first containment wall and adapted to selectively close said first gap;
a second sorting section coupled to said first sorting section, said second sorting section including a second sorting surface almost entirely surrounded by a second contiguous containment wall, said second contiguous containment wall being provided with a second gap proximate a forward edge of said second sorting section, wherein ends of said second contiguous containment wall angle together proximate said second gap to provide a second funnel, wherein a second angled portion of said second sorting section proximate said second gap extends downwardly from the plane of said second sorting surface, and wherein the portions of said second contiguous containment wall immediately proximate said second gap are flared upwardly and inwardly over said second gap to at least partially close said second funnel; and
second gate means engaged with said second containment wall and adapted to selectively close said second gap;
wherein said first sorting section and said second sorting section are integrally formed and are hinged together by a live hinge to permit the closure of said sort tray; and
wherein one of said first sorting section and said second sorting section is provided with a handle positioned so as not to interfere with said closure of said sort tray.

4,643,317

COMBINATION SPORTS EQUIPMENT STORAGE RACK AND BALL RETRIEVER

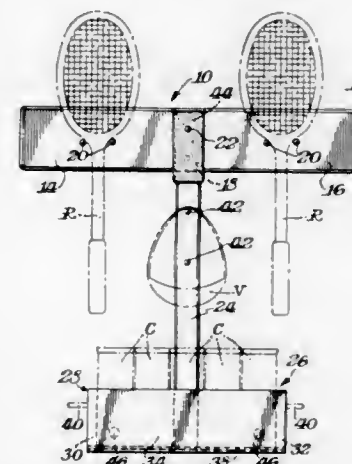
William F. Wilkinson, Old Meadow Rd., Seaford, Del. 19773, and William T. Wilkinson, Morris Farm, Rte. 841, Kemblesville, Pa. 19347

Filed Jun. 26, 1985, Ser. No. 748,822

Int. Cl.⁴ A47F 7/00

U.S. Cl. 211—14

10 Claims



1. A combination sports equipment storage rack and ball retriever comprising a support member for attachment to a fixed surface, said support member having a pair of wing portions separated by a central portion, each of said wing portions including receptacle means to which a sports racket may be mounted, a ball retriever, said ball retriever including an elongated handle, a basket secured to said handle, said basket having a bottom wall and an upstanding peripheral side wall, said bottom wall being formed from spaced parallel resiliently mounted rod members whereby a ball may be inserted into and stored in said basket by pressing said bottom wall downwardly on a ball to cause said rod members to spread to permit the passage of the ball therethrough and then return to their original position to hold the ball therein, said handle being detachably mounted to said central portion of said support member whereby said support member and said basket may be used to store equipment and whereby upon detachment of said handle from said central portion said basket may be used for retrieving

balls, said upstanding peripheral side wall of said basket being solid, said handle comprising a unitary vertically oriented bar being made of a flat solid material, including at least one hook member on said handle for holding sports equipment thereon, including cushioning material at the end of said handle to facilitate the gripping thereof, said receptacle means including sets of pegs, and said hook members comprising pegs, including pegs on said side wall of said basket for holding sports equipment thereon, including a peg mounted to said central portion, and said handle being mounted from said central portion peg, and said central portion being provided with an elongate recess snugly detachably receiving an upper portion of said unitary vertically oriented handle.

4,643,318

SAFETY CLOSET ROD SYSTEM

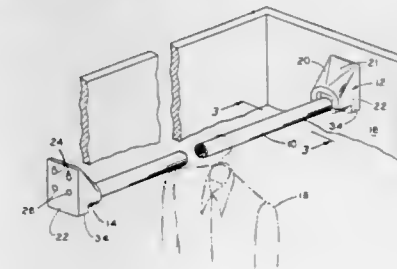
Laurence D. Kopp, 74 B Cuba Hill Rd., Greenlawn, N.Y. 11740

Filed Feb. 28, 1986, Ser. No. 834,781

Int. Cl.⁴ A47H 1/00

U.S. Cl. 211—123

5 Claims



1. A safety clothes rod system comprising a pair of brackets adapted to be attached to opposing walls or similar vertical support and a rod extending between said brackets and held thereby, at least one of the brackets comprising a body having an inverted U-shaped recess into which the end of said rod may be inserted and a depending vertical plate member to the rear of said recess and having a pair of horizontally disposed pegs on which the ends of said rod sits extending outwardly from said plate member perpendicular thereto, said pegs being spaced apart a distance less than the diameter of said rod and of sufficient rigidity to support said rod thereon when holding a weight less than a predetermined amount, and being flexible so as to spread apart a distance at least equal to the diameter of said rod when a weight greater than said predetermined amount is applied to said rod, whereby said rod is released and falls as a consequence of having the greater weight applied thereto.

4,643,319

FRAMEWORK FOR A SWITCHBOARD CABINET

Jurgen Debus; Hans-Georg Koch, both of Dietzholdtal; Jurgen Zachrai, Dillenburg, and Helmut Butergerds, Eschenburg, all of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,805

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344598

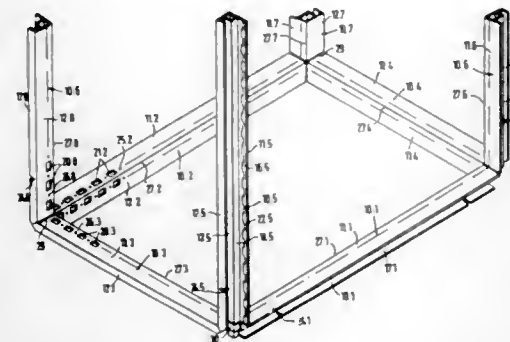
Int. Cl.⁴ A47F 5/00

U.S. Cl. 211—189

26 Claims

1. Framework for a switchboard cabinet comprising at least twelve interconnecting frame sections (10) having the same cross-sectional configuration, each said frame section (10) comprising a first external side (11) and a second external side (12) substantially perpendicular to one another and joined at one end by an exterior corner (27), an opposite terminal end of said first external side (11) substantially planar with said first external side (11), and an opposite terminal end of said second external side (12) forming an end section (17) extending substantially perpendicular inwardly from said second external side (12); a first internal side (13) and a second internal side (14) shorter than said first and second external sides (11, 12), respec-

tively, and extending at substantially right angles to one another and joined at one end by an internal corner, opposite ends of said first and second internal sides (13, 14) abutting said second and first external sides (12, 11), respectively, said internal sides (13, 14) forming in combination with said external sides (11, 12) a hollow, generally rectangular receiving space (28); four said frame sections (10) joined at their ends to form a rectangular first frame having a central opening, four said frame sections (10) joined at their ends to form a rectangular second frame having a central opening, said second frame substantially coextensive with said first frame, said first and second frames maintained in parallel spaced relation forming a first pair of substantially parallel opposite sides of said framework structure, said parallel spaced relation maintained by four spaced said frame sections (10) joining said first frame to said second frame, said four spaced frame sections forming in



combination with frame sections of said first and second frames a second pair of substantially parallel opposite sides having central openings, a top and a substantially parallel opposite bottom, each having a central opening; said frame sections (10) comprising said framework structure aligned to provide said exterior corners (27) of each said frame section (10) directed to the interior of said framework structure, said opposite terminal ends of said first external sides (11) forming a sealing strut around said opening of said first pair of opposite sides, said sealing strut extending substantially perpendicular to the plane of said first pair of opposite sides, said opposite terminal ends of said second external sides (12) forming an abutment frame around the outer edges of an opening of said second pair of opposite sides of said framework structure, said abutment frame extending parallel to the plane of said second pair of opposite sides.

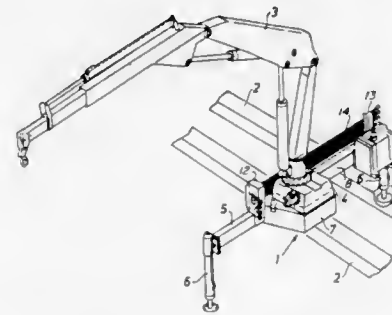
4,643,320
CRANE BRACKET FOR MOUNTING OVER THE CHASSIS SIDE MEMBERS OF A TRUCK
Gunnar M. Larsen, Vaerloese, Denmark, assignor to Hiab Export A/S, Humlebaek, Denmark
Filed Dec. 6, 1984, Ser. No. 678,718
Claims priority, application Denmark, Dec. 16, 1983, 5812/83
Int. Cl.⁴ B66C 23/44

U.S. Cl. 212-180

8 Claims

1. A bracket for mounting a crane on a vehicle, comprising: an elongated body member (8) for mounting the bracket on the vehicle, and a platform (7) protruding transversely from the body member (8) for supporting the crane, the body member (8) and platform (7) being symmetrical about a center plane (C-C), longitudinal of the body member (8), whereby the platform (7) is designed for releasable acceptance of the crane

on either side, and the platform (7) being closer to one end of the body member (8) than the other, whereby the bracket is

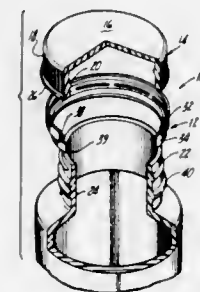


adapted for mounting the crane on opposite sides of the vehicle by turning the bracket upside down.

4,643,321
TAMPER INDICATING BAND FOR THREADED CAP
Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Oct. 3, 1985, Ser. No. 783,737
Int. Cl.⁴ B65D 41/34

U.S. Cl. 215-252

19 Claims

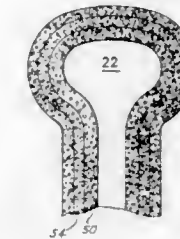


1. A two-piece tamper indicating closure for an originally packaged threaded neck container, comprising, in combination: a cap having a top and a depending skirt with internal threads and an outwardly extending scuff band at the bottom thereof; a tamper indicating band having a large diameter upper ring and a smaller diameter lower ring and frangible web means connecting said rings; said upper ring having an inwardly projecting flange at its upper end for coacting with said scuff band, said flange snapping over and being retained by said scuff band, said upper ring also having a lower open cylindrical portion and said scuff band contacting said cylindrical portion to form said two-piece closure; said lower ring of smaller diameter than said upper ring having a top abutting the bottom of said cap skirt and an inwardly projecting flange for coaction with an outwardly projecting flange on the neck of said container, said lower ring flange snapping over and being retained by said container flange as said cap is screwed onto said container to close said original package without fracture of said frangible web means, said web means requiring fracture to remove said cap from said container, said fracture and retention of said lower ring on said container providing evidence of tempering or initial opening of said original package.

4,643,322
CAN FOR CONTAINING MATERIAL FOR CONSOLIDATION INTO WIDGETS AND METHOD OF USING THE SAME
James Dickson, P.O. Box 172, Stirling, N.J. 07980
Division of Ser. No. 495,692, May 18, 1983, Pat. No. 4,545,955.
This application Sep. 30, 1985, Ser. No. 771,497
Int. Cl.⁴ B65D 90/00

U.S. Cl. 220-15

6 Claims



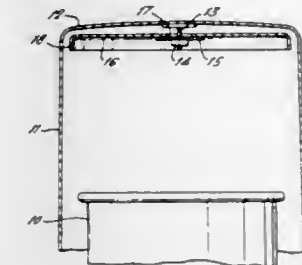
1. A can for containment of material which is to be consolidated at a consolidation temperature, said can having lamellar walls wherein:

- (a) said first permeable lamella having a first melting temperature surrounds the material which is to be consolidated;
- (b) said second permeable lamella having a second melting temperature surrounds said first lamella;
- (c) said first melting temperature is lower than said second melting temperature; and
- (d) said consolidation temperature is intermediate between said first melting temperature and said second melting temperature.

4,643,324
WASTE BIN HAVING FIRE PREVENTING LID
Eric Palmer, Blackpool, England, assignor to Glasdon Limited, Lancashire, England
Filed Mar. 19, 1986, Ser. No. 841,450
Int. Cl.⁴ B65D 25/00

U.S. Cl. 220-88 R

8 Claims

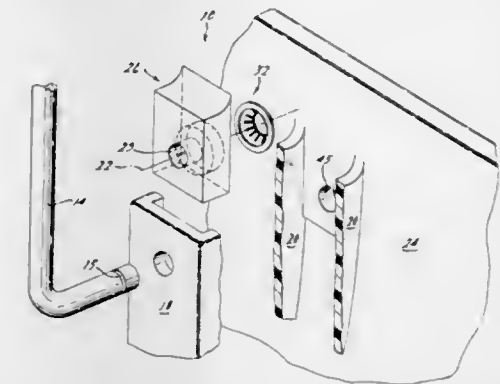


1. A waste bin having a container and a cover extending over the container top having a top wall spaced above the container with a port or ports in the side of the cover above the container through which refuse may be placed in the bin, a lid for the container and heat responsive means for supporting the lid adjacent the underside of the top wall of the cover to release the lid in response to a rise in temperature caused by a fire within the container and thereby allow or caused the lid to move downwardly onto the container to close or substantially close the top of the container to extinguish the fire therein by preventing or restricting air flow into the container.

4,643,325
BAIL MOUNTING STRUCTURE
Kenneth F. Streit, Mt. Prospect, Ill., assignor to Geerpres, Inc., Muskegon, Mich.
Filed Aug. 2, 1985, Ser. No. 762,148
Int. Cl.⁴ B65D 25/32

U.S. Cl. 220-91

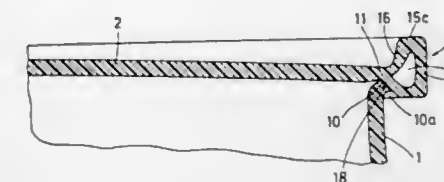
15 Claims



4,643,323
DRUM OF THERMOPLASTIC SYNTHETIC RESIN
Udo Schütz, 4, Am Rückersteg, D-5418 Selters, Fed. Rep. of Germany
Filed Sep. 20, 1985, Ser. No. 778,072
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1984, 3440434
Int. Cl.⁴ B65D 7/42, 7/02

U.S. Cl. 220-72

5 Claims



1. In a bunghole-equipped barrel of a thermoplastic synthetic resin, produced by blow molding, with hollow rolled rings arranged coaxially to the cylindrical barrel sidewall in the zone of the upper and lower heads, these rolled rings projecting in the direction of the longitudinal axis of the barrel past the heads, there being a cavity between these rolled rings which is in communication with the barrel chamber by way of a gap, the lower rolled ring having an annular standing surface arranged concentrically to the barrel center; the improvement in which at least one of the rolled rings has predetermined breaking points (18-20) spaced apart uniformly over the barrel circumference, said breaking points each comprising means interconnecting said rings across said gap.

1. A bail mounting structure for a container having a plurality of receptacles for maintaining the mounting structure, the receptacles having an outer wall and side walls forming a slot between the outer wall and the container wall for inserting the bail mounting structure, the container wall having a recess for receiving a bail, the outer wall having an aperture for receiving the bail; the bail mounting structure comprising: an elongated planar member insertable into said receptacle slot, an aperture in said planar member for passage of a bail through said elongated planar member, a recess in said planar member, said recess being concentric with said planar member aperture, a retaining means for securing the bail into said mounting structure.

4,643,326

DRINKING CUP CONSTRUCTION

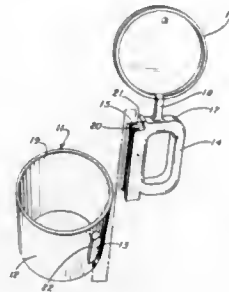
Josef F. Klingler, Wilmette, Ill., assignor to Janler Corporation, Chicago, Ill.

Filed May 24, 1985, Ser. No. 737,503

Int. Cl.⁴ B65D 25/28

U.S. Cl. 220—94 R

25 Claims



1. A drinking cup comprising:
 - a molded cup-shaped container having a sidewall portion provided with integral connector means configured to permit removal of the molded container from a maintained rigid mold in which it is molded;
 - a handle having an integral connector portion configured to be removably connected to said connector means with a variable connection force, said connector means and connector portion being constructed to cause an increase in the connection force as a result of weight of liquid placed in the container with the handle being supported as by a person drinking the liquid from the cup; and
 - means operatively associated with a closure for said container and with said handle for increasing the connection force selectively independently of the presence of liquid in the container.

4,643,327

INSULATED CONTAINER HINGE SEAL

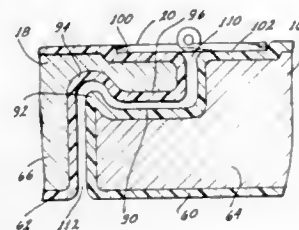
William P. Campbell, 2103 Bayside Dr., Corona del Mar, Calif.

Filed Mar. 25, 1986, Ser. No. 843,656

Int. Cl.⁴ B65D 6/10

U.S. Cl. 220—215

22 Claims



1. A container for the storage of foods, beverages and the like having a lid thereover which is hinged wherein the improvement comprises:
 - at least one first lid member hinged by hinge means to a second lid member for overlying said container having a split hinge point between said first and second lid members; and,
 - a channel underlying said split hinge point in connected relationship to said first lid member providing a groove therealong so that when fluids flow between said lid members, they are allowed to flow along said channel and not be introduced into the interior of said container.

4,643,328

DEVICE FOR THE TIGHT CONNECTION OF TWO ENCLOSURES

Robert Lorenzelli, Saint-Remy-Les-Chevreuses; Pierre Dabernard, Gif Sur Yvette, and Christian Maire, Bures-sur-Yvette, all of France, assignors to Cogema, Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, France

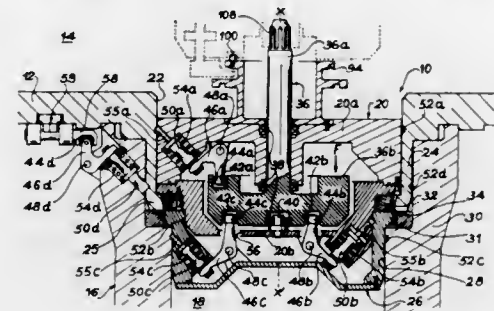
Filed Nov. 21, 1985, Ser. No. 799,867

Claims priority, application France, Nov. 26, 1984, 84 17967

Int. Cl.⁴ B65D 51/18

U.S. Cl. 220—256

4 Claims



1. A device for the tight connection of a first enclosure having a first flange forming an opening normally closed by a first door to a second enclosure having a second flange forming an opening normally closed by a second door, said device having means for locking the doors to the flanges and the doors to one another, wherein the locking means comprise at least one control member supported in a rotary manner by the first door and having at least three cam surfaces; a first set of at least three bolts and a second set of at least three bolts able to slide in the first door between a retracted position and a locking position in which said bolts project into recesses respectively formed in the first flange and in the second door; a third set of at least 3 bolts able to slide in the second door between a retracted position and a locking position in which said third set of bolts projects into a recess formed in the second flange; and three sets of at least three transmission members respectively placed between each cam surface and one of the sets of bolts for moving the latter between their retracted and locking positions under the effect of a rotation of the control member.

4,643,329

TAMPER EVIDENT CONTAINER

Laura P. Mobberley, 3715 Harrison, Kansas City, Mo. 64109; Ernest L. Smith, 5910 N. Adrian Ter., Kansas City, Mo. 64151, and George E. MacEwen, 729 NW. 60th, Apt. 11, Kansas City, Mo. 64118

Filed Mar. 21, 1986, Ser. No. 842,315

Int. Cl.⁴ B65D 51/20

U.S. Cl. 220—257

20 Claims



1. A tamper evident container assembly comprising:
 - a container having a hollow interior for holding materials packaged therein and an open top providing access to the container contents when exposed;
 - a removable lid applicable to the container to close the top of the container, said lid covering said top of the container when applied thereto and presenting a peripheral portion engaging the container in a manner to releasably retain the lid on the container, said peripheral portion being

- deformable to release from the container to permit removal of the lid; and
- a plate member on the lid acting against said peripheral portion of the lid in a manner to retain said peripheral portion against deformation, said plate member fitting tightly on the lid and having a frangible section which must be broken before the plate member can be removed from the lid to permit removal of the latter from the container.

4,643,330

CONTAINER SYSTEMS

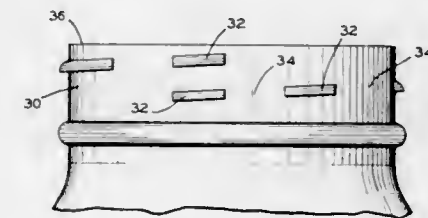
Leo J. Kennedy, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 27, 1986, Ser. No. 844,648

Int. Cl.⁴ B65D 41/04

U.S. Cl. 220—288

18 Claims



1. A package, comprising:
 - (a) a container having a neck portion with an opening formed therein for dispensing the contents,
 - (b) closure means including top wall means having a contour which covers said neck portion opening, and
 - (c) first means formed on said neck portion and second means formed on said closure means adapted to mutually cooperate at a spaced plurality of sites to maintain said closure top wall means in closing relationship over said neck portion opening, at least one of said first and second means defining a plurality of open channels around said neck portion between cooperation sites thereby enabling fluid drainage from said neck portion.

4,643,331

COMMERCIAL WASTE CONTAINER AND DISPOSAL UNIT

Robert A. May, Beeville, Tex., assignor to May Fabricating Co., Inc., Beeville, Tex.

Filed Apr. 4, 1986, Ser. No. 848,455

Int. Cl.⁴ B65D 45/16

U.S. Cl. 220—324

5 Claims



4. An improved commercial waste container and disposal unit having a door through which waste is emptied on one end of the container, the door being secured to the container by latch means comprising:
 - a latch bar which, in the closed position, presses the door against the container and, in the open position, permits the door to swing away from the container;
 - a latch rod attached to the container with a projection of the rod swivelly connected to a first end of the latch bar such that, upon rotation of the rod and projection, the latch bar moves from the closed position to the open position;
 - mechanical connection means attached to the rod which permits the rod to be rotated by the application of a me-

- chanical force applied to a portion of the connection means located along a side of the container a distance away from the door; and
- a keeper fulcrum attached to the container and located between the two ends of the latch bar such that, as the rod and projection rotates, the latch bar translates along and rotates around the fulcrum, the translational and the rotational movement combining to move the second end of the latch bar in a direction away from the container, releasing pressure on the door, and in a direction away from the door, permitting the door to swing open unimpeded.

4,643,332

TIE ROD CYLINDER WITH GASKETLESS SEAL

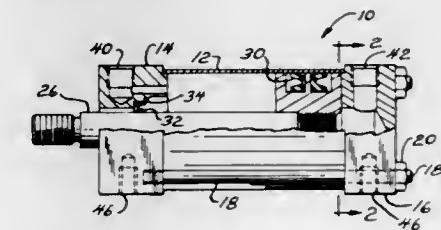
Charles W. Bimba, 9731 Newport Dr., Sun City, Ariz. 85351

Filed May 5, 1986, Ser. No. 859,831

Int. Cl.⁴ B65D 45/00

U.S. Cl. 220—327

8 Claims



1. A repairable fluid cylinder of the type having a pair of axially spaced end cap members which are axially biased toward each other and towards the ends of a length of relatively thin wall tubing mounted between said end cap members by a plurality of tensioned tie-rod members located externally of said tubing, said cylinder being characterized in that the material of said tubing has a substantially higher yield strength and is harder than the material of said end cap members, the sole means for preventing fluid leakage between flat end surfaces on each end of said tubing and a complementary flat, inner end surface of the axially adjacent end cap member being a seal formed by the deformation of the flat inner end surface of the relatively soft end cap member when the complementary flat end surface of said relatively hard tubing is axially pressed against it by the tension in said tie rod members, said flat end surfaces of said tubing and said end cap members being formed so as to lie in parallel planes normal to the axis of the cylinder and tubing, said tubing end surfaces and the complementary flat end surfaces of the end cap members having a relatively smooth surface finish.

4,643,333

EQUIPMENT CABINETS HAVING SLIDING CLOSURE

Sidney H. Martin, Mellor, Great Britain, assignor to International Computers Limited, London, England

Filed Apr. 11, 1986, Ser. No. 850,698

Claims priority, application United Kingdom, Apr. 22, 1985, 8510241

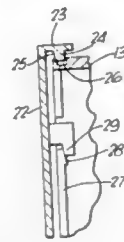
Int. Cl.⁴ B65D 43/20

U.S. Cl. 220—345

4 Claims

1. A cabinet for housing electronic equipment having an opening for permitting access to its interior and a panel for closing said opening including: first cam means provided on the cabinet; and second cam means provided on the panel for engagement with said first cam means; the first and second cam

means being engaged by moving the panel relative to the cabinet with a sliding motion across the opening, such move-



ment being effective to draw the panel into seating contact with the cabinet.

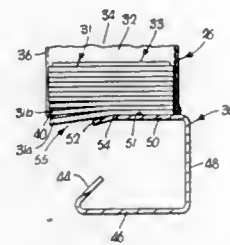
4,643,334

GRAVITY FED DISPENSER FOR SOFT DRINK CUP LIDS AND THE LIKE

Francis J. Steele, 10711 South 85th East Ave., Tulsa, Okla. 74133

Filed Jan. 7, 1985, Ser. No. 689,376
Int. Cl.⁴ B65H 1/06

U.S. Cl. 221—63



1. A gravity-fed dispenser for use in the successive, manual dispensing of a plurality of generally flat, self-sustaining, yet flexible articles such as soft drink cup lids or the like from a stack thereof, said dispenser comprising:

- upright container means provided with an internal, stack-receiving area;
- an upwardly facing abutment surface at the lower end of said container means for supporting the stack of articles against escape from said area,
- said container means having a front and a rear with respect to the direction of transverse dispensing movement of articles from the stack;
- a rearwardly facing retaining surface at the lower end of the container means adjacent the front thereof,
- said abutment surface having a front terminal edge spaced rearwardly from said retaining surface and disposed at the approximate fore-and-aft midpoint of the stack-receiving area, and said retaining surface having a portion thereof disposed at substantially the same height as said edge;
- a dispensing aperture at the lower end of the container means defined between said portion of the retaining surface and said edge of the abutment surface and through which each successively lowermost article in the stack may be flexed downwardly about said edge and withdrawn transversely forwardly from the stack while the next article thereabove is retained by said retaining surface; and
- a short, inclined lip on said abutment surface projecting downwardly and forwardly from said edge in disposition for limiting the extent of downward flexure of each successively lowermost article in the stack during dispensing withdrawal thereof,
- said lip terminating slightly below and substantially behind said portion of the retaining surface.

4,643,335 DELIVERY UNIT FOR ICE CREAMS GARNISHED WITH FLOWING MATERIAL

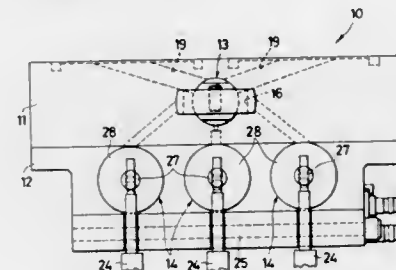
Umberto Carnisio, Via XXV Aprile, 71, 28066 Galliate (Novara), Italy

Filed Apr. 4, 1985, Ser. No. 719,989

Claims priority, application Italy, Apr. 13, 1984, 21540/84[U]
Int. Cl.⁴ B67D 5/52

U.S. Cl. 222—135

4 Claims



1. A delivery unit for ice creams of the type including at least a first piston pump having a first piston reciprocable in a chamber which has an inlet end connected to at least one ice cream producing assembly to receive ice cream therefrom, and which has an outlet end to discharge ice cream therefrom, characterized in that the cylinder defining said chamber of said first piston pump, in the portion thereof adjacent to the discharge end of said chamber, is connected through a radial port to the delivery side of at least one second pump, means for operating said second pump to effect sucking a flowing ice cream garnishing material from a suction conduit controlled by a check valve into the piston chamber of said second pump while the piston in said first pump is in a position in which it obstructs said radial port, and counteracting means operable by the stroke of the piston in said second pump in one direction during the sucking operation thereof to initiate the reciprocation of said first piston.

4,643,336

MIXING AND DISPENSING GUN

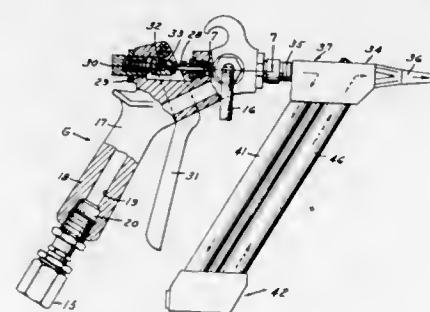
David C. Mandeville, Canton, and David W. Lazar, Garden City, both of Mich., assignors to Kent-Moore Corporation, Warren, Mich.

Filed Dec. 5, 1984, Ser. No. 678,274

Int. Cl.⁴ B01F 5/00

U.S. Cl. 222—145

24 Claims



1. A mixing and dispensing gun comprising a body having spaced inlets for receiving two components of a reactive fluid and a single outlet, a dispensing valve means in said body, an outlet nozzle, and a motionless mixing means interposed between the body and the outlet nozzle, said motionless mixing means comprising an inlet connected

to the outlet of said body and an outlet connected to said outlet nozzle and a first leg extending laterally from the inlet of the mixing means and the outlet of said body and having one end in fluid communication with said outlet of said body and a second leg extending laterally of said body and having one end in fluid communication with the other end of said first leg and the other end located adjacent said one end of said first leg and in fluid communication with the outlet of the mixing means and the outlet nozzle, said motionless mixing means further including means within the legs for directing the fluids from the body in a defined sinuous path and mixing the fluid prior to passage to the nozzle.

4,643,338

MANUAL LIQUID DISPENSER

Shigeo Iizuka, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

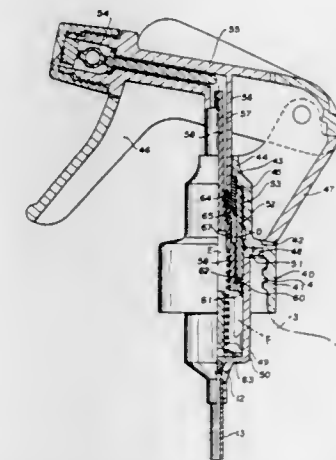
Division of Ser. No. 612,899, May 22, 1984, Pat. No. 4,591,076.

This application Oct. 29, 1985, Ser. No. 793,322

Int. Cl.⁴ B05B 9/00

U.S. Cl. 222—321

2 Claims



4,643,337

DISPENSER FOR VISCOUS MATERIALS

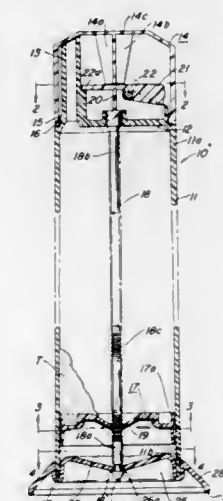
Paul Heck, Worcester, and Eugene F. Haffner, Philadelphia, both of Pa., assignors to Hex Plastics, Inc., Telford, Pa.

Filed Oct. 26, 1984, Ser. No. 665,038

Int. Cl.⁴ B67D 5/42

U.S. Cl. 222—214

10 Claims

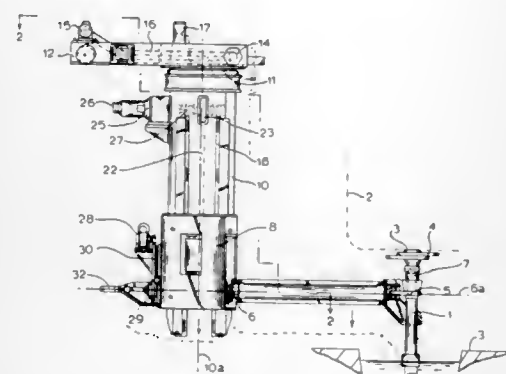


6. In a dispenser for viscous materials, including a tubular container having an end wall with a dispensing spout at its upper end, a rocker arm actuator pivotally mounted on the end wall, an operating rod connected to the rocker arm actuator and depending therefrom inside the container, a follower mounted in the container for movement along the operating rod, a sprag clutch interconnecting the follower and the operating rod for unidirectional motion toward the upper end wall in response to alternate movement of the operating rod in opposite directions, and means for biasing the operating rod downwardly to permit the sprag clutch to engage the operating rod at incremental locations, the improvement wherein said biasing means comprises a base member having a resilient portion extending across the lower end of said container and operatively engaging said operating rod adjacent to its lower end, said base member also having a recess receiving the lower end of said container, said resilient portion of said base member cooperating with the operating rod to tension the rod downwardly and to maintain the base member engaged with the lower end of the container.

1. A manual liquid dispenser comprising:
a mounting member mounted on an outer peripheral wall of a neck portion of a container and having an engaging cylinder extending upwardly therefrom;
a large-diameter cylinder extending into the container, said large-diameter cylinder having a diameter in a lower half part thereof larger than a diameter in an upper half part thereof;
a suction valve internally mounted in an opened bottom of said large-diameter cylinder;
a sucking tube communicating with said suction valve and extending to the bottom of the container;
a small-diameter cylinder inserted into and extending from the interior of said mounting member and integrally formed with a body having a liquid spraying section including a dispensing outlet;
said small-diameter cylinder being slidably moved by the operation of the body;
a rod member internally mounted in said small-diameter cylinder;
said rod member having formed at the lower part thereof a piston expanded in diameter in a skirt shape;
a flexible seal formed at the lower end of said piston and slidably contacted with the lower inner peripheral surface of said large-diameter cylinder;
a spring arranged between the interior of said piston and the bottom of said large diameter cylinder for always urging said rod member upward;
an outer cylinder formed at a lower end of said small-diameter cylinder and slidably contacted at a lower end thereof with said upper half part of said large-diameter cylinder to form a first pressure chamber beneath said outer cylinder and inside said upper half part of said large diameter cylinder;
a cylindrical member engaged with the outer periphery of said rod member, contacted at the upper end thereof with said outer cylinder and disposed at the lower end thereof at a radial communication hole formed in said rod member;
a notch, communicating the first pressure chamber and the interior of said small-diameter cylinder, formed on the upper end surface of said cylindrical member;
a flexible member formed at the lower end of said cylindrical member adjacent said radial communication hole, to ex-

ternally expand when a second pressure chamber within said piston reaches a predetermined pressure; wherein a third pressure chamber is formed between said piston and the peripheral wall of said large-diameter cylinder when said piston is depressed downwardly; wherein, a downward force on said small-diameter cylinder forces liquid from said second pressure chamber through said radial communication hole, into said first and third pressure chambers, through said notch and into said liquid spraying section; and wherein release of said downward force allows said spring to return said piston upward thereby recharging said second pressure chamber through said suction valve, and forcing liquid from said third pressure chamber into said first pressure chamber, through said notch and into said liquid spraying section.

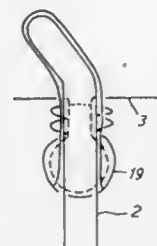
4,643,339
APPARATUS FOR MANIPULATING A PROTECTIVE TUBE FOR A JET OF MOLTEN METAL
 Patrice Petracchi, St. Maur des Fosses, France, assignor to Fives-Cail Babcock, Paris, France
 Filed Mar. 22, 1985, Ser. No. 714,819
 Claims priority, application France, Apr. 4, 1984, 84 05287
 Int. Cl.⁴ B22D 41/08; B25J 9/02
 U.S. Cl. 222—607 8 Claims



1. An apparatus for manipulating a protective tube for a jet of a molten metal discharged from a tap hole of a casting ladle for placing the protective tube under the tap hole, maintaining the tube in place during a casting operation and removing the tube, which comprises

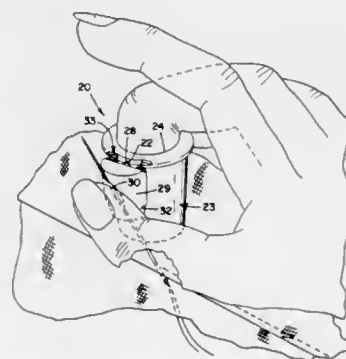
- (a) a first carriage displaceable along a horizontal track,
- (b) a vertical shaft having a longitudinal axis and connected to the first carriage for displacement therewith,
- (c) means for rotating the vertical shaft about the longitudinal axis thereof,
- (d) a second carriage vertically displaceable along the shaft,
- (e) a carrier arm for the protective tube supported on the second carriage,
- (f) support means connecting the carrier arm to the second carriage so as to allow free oscillatory horizontal movements of the carrier arm with respect to the second carriage,
- (g) means for locking the carrier arm in a predetermined position with respect to the second carriage, and
- (h) means on the carrier arm for gripping the protective tube.

4,643,340
TRANSFER MECHANISM FOR TRANSFERRING HOSIERY ARTICLES
 Peter Bailey, Loughborough, England, assignor to Pex (Holdings) Limited, Leicester, England
 Filed Nov. 20, 1985, Ser. No. 800,047
 Claims priority, application Fed. Rep. of Germany, Nov. 29, 1984, 3443432
 Int. Cl.⁴ A41H 42/00; D06G 3/02; D04B 9/56
 U.S. Cl. 223—40 12 Claims



1. A transfer mechanism for transferring hosiery between a first machine and a second machine wherein the hosiery has an open mouth, a foot end and an elastic welt portion, said transfer mechanism comprising a transfer form and a boarding form means for removing hosiery from the first machine and supporting the mouth of the hosiery upon said transfer form, means for extending the hosiery while the hosiery is supported upon the transfer form, means for driving the hosiery onto the transfer form, and means for introducing said boarding form to the foot end of the hosiery to draw the hosiery onto the boarding form while simultaneously turning the hosiery.

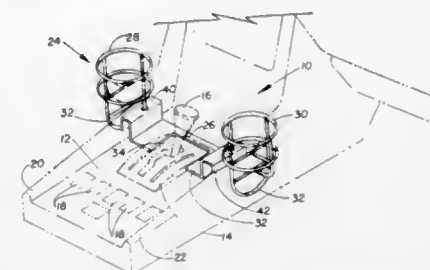
4,643,341
SEWING THIMBLE
 Ruby M. Hostetler, P.O. Box 113, Walnut Creek, Ohio 44687
 Filed Jun. 9, 1986, Ser. No. 872,265
 Int. Cl.⁴ D05B 91/04
 U.S. Cl. 223—101 3 Claims



1. A thimble for use with a needle and thread in hand sewing, said thimble comprising:
 an inner barrel having an open upper end to receive the finger of a user, a closed lower end and a laterally projecting lug beneath said upper end and having a vertically oriented notch therein;
 a blade segment positioned within said lug notch and having a thread cutting edge extending laterally beneath said inner barrel upper end; and
 an outer shell molded around and encasing said inner barrel, said outer shell having a laterally projecting and thickened bulb area covering said inner barrel lug beneath said blade segment cutting edge and extending down the side of said thimble, said bulb area having a width such that a flap cut may be formed therein, said flap cut providing a means so

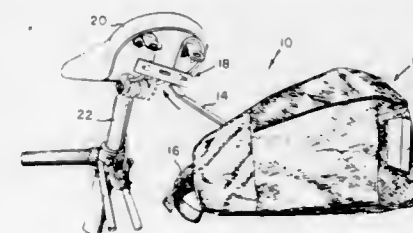
that a user may grip and pull a needle and thread by thumb pressure applied against said bulb area.

4,643,342
DUAL DRINK HOLDER FOR RECEIPT ON AN AUTOMOBILE CENTER CONSOLE
 Francis J. Borelli, III, P.O. Box 275, Okarche, Okla. 73762
 Filed Dec. 13, 1985, Ser. No. 808,550
 Int. Cl.⁴ B60R 5/02
 U.S. Cl. 224—42.42 5 Claims



1. A dual drink holder for receipt on an automobile center console having a flat center portion and opposite upwardly extending sides, the console disposed between a driver and passenger seat, the holder comprising:
 a saddle having a flat center member for receipt on top of the center portion of the console and upwardly extending side members disposed adjacent the sides of the console, the saddle having an angular-shaped indent in the center member for receipt around a portion of a gear shift panel in the center console
 a first receptacle housing cylindrical in shape and attached to one end of the saddle for receiving an article or container therein; and
 a second receptacle housing cylindrical in shape and attached to the other end of the saddle for receiving an article or container therein.

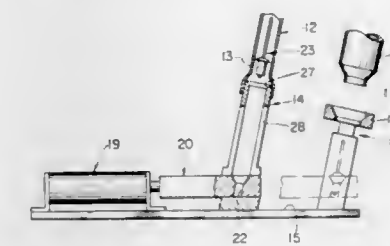
4,643,343
CANTILEVERED ARTICLE CARRIER
 Mark Goldman, Weston; Robert Frank, Andover; Craig Roberts, Amesbury, and Norman Jacobs, Andover, all of Mass., assignors to Eastern Canvas Products, Inc., Ward Hill, Mass.
 Filed Sep. 13, 1985, Ser. No. 776,000
 Int. Cl.⁴ B62J 7/00
 U.S. Cl. 224—275 13 Claims



1. An article carrier for attachment to the underside of a seat of a cycle comprising:
 an enclosed bag having an access opening, an upper wall and a lower wall;
 a bracket having a slot;
 means for securing said bracket to the underside of a cycle seat;
 cantilevered means for removably suspending said bag from said bracket, said cantilevered means comprising an arm connected at a lower end to the upper wall of said bag, said arm having an upper end extending through the slot

in said bracket and resting in contact with the underside of the cycle seat, said arm being in freely sliding relation with said bracket; and
 means for removably securing said bag to a support column for the cycle seat, said removably securing means and the weight of said bag applying a torque to the lower end of said arm about the slot in said bracket to urge said free upper end of said arm against the underside of the cycle seat.

4,643,344
RIVET SUPPLYING APPARATUS
 Hiroshi Kaita; Tsuyoshi Kojima, both of Hitachi, and Motoji Kawai, Toyohashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Apr. 15, 1985, Ser. No. 723,154
 Claims priority, application Japan, Apr. 13, 1984, 59-72855
 Int. Cl.⁴ B21J 15/10
 U.S. Cl. 227—112 8 Claims



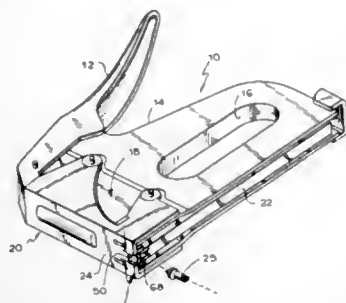
1. A rivet supplying apparatus for supplying a blind rivet having a body and a mandrel extending outwards therefrom from a rivet feeder which feeds the blind rivets sequentially one by one in an orientated manner to an access position to which a nose of a riveting device is movable from a rivet working position spaced from said apparatus, said apparatus comprising:

- a base;
- a rivet supplying conduit through which the rivets are supplied, said conduit being connected at one end portion thereof to said rivet feed to receive rivets therefrom, and said conduit being disposed at the other end portion thereof at a fixed receiving position;
- guide means supported on said base and through which said nose of said riveting device approaches said access position along an approach line during movement from said rivet working position;
- a rivet holder element having recess means for receiving the body of said blind rivet from said rivet supplying conduit in said receiving position; and
- driving means, including a cylinder and an associated piston rod to which said rivet holder element is connected, for reciprocating said rivet holder element at least between said access position in which an axis of said recess means aligns with an axis of said rivet supplying conduit and said receiving position in which the axis of said recess means aligns with said approach line.

4,643,345
COMBINATION STAPLE AND RIVETING GUN
 Barry Knispel, Hillsdale, and Rudolf Wingert, West Milford, both of N.J., assignors to Arrow Fastener Company, Inc., Saddle Brook, N.J.
 Continuation-in-part of Ser. No. 632,628, Jul. 19, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 725,122
 Int. Cl.⁴ B21J 15/38; B25C 5/00
 U.S. Cl. 227—156 4 Claims

1. In a staple gun tacker having a staple driving mechanism including a staple driving blade contained within a housing having a relatively flat elongated bottom side, the improve-

ment comprising a front cover for said housing for permitting installing or setting a rivet of the type having a pin member mounted in a rivet shank having an expandable workpiece piercing free end, said front cover including a front wall located on the working end of the staple gun tacker parallel to and adjacent said driving blade, said front wall having a lower edge portion aligned with and lying in substantially the same plane as said bottom side of the housing and also having a rear face located adjacent and parallel to the driving blade of the staple gun tacker, said rear face having a groove formed



therein extending in the direction of sliding movement of the driving blade to a lower end located and opening at the lower edge portion of said front wall thereby defining a recess in the rear face of said front wall in parallel alignment with the driving blade of the staple gun tacker for receiving a portion of the pin member of the rivet and aligning it with said driving blade such that the pin member is impacted by the driving blade when the staple gun tacker is operated to apply a driving force thereto which drives the pin member of the rivet to expand the free end of the rivet.

4,643,346 METHOD FOR MANUFACTURING A FRAME FOR AN ELECTRIC MOTOR

Tohru Gotoh, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

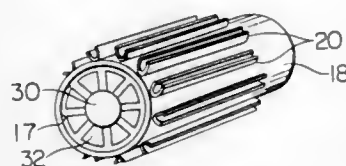
Filed Jun. 4, 1985, Ser. No. 740,998

Claims priority, application Japan, Jun. 5, 1984, 59-114924

Int. Cl.⁴ B21D 39/00

U.S. Cl. 228—155

5 Claims



1. A method for manufacturing a frame for an electric motor including a frame main body comprising the steps of: preparing a hollow cylindrical frame main body of a circular cross section; preparing a plurality of metallic elongated cooling fins to be welded to the frame main body; attaching said plurality of cooling fins to the outer surface of said frame main body by projection welding, which results in distortion of the frame main body due to radial expansion during the projection welding; and sizing the inner surface of said frame main body by applying a radially outward force thereto from inside said frame main body to expand the frame main body so as to remove the distortion and produce, by plastic expansion, a greater percent radial expansion of the inner surface of the frame main body than the mean percent radial expansion of the inner surface of the frame main body due to the distortion during projection welding, and an inner surface of said frame main body in the form of a true circle.

4,643,347 MOUNTING HARD MAGNETIC MATERIAL PERMANENT MAGNETS

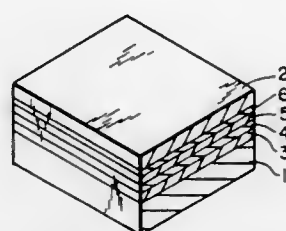
Robert L. Bronnes, Irvington; Richard C. Sweet, N. Tarrytown, both of N.Y., and James K. McKinlay, Ridgefield, Conn., assignors to North American Phillips Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 659,066

Int. Cl.⁴ B23K 31/02

U.S. Cl. 228—208

13 Claims



1. A method for mounting permanent magnets to a mounting surface comprising sputtering at least one layer of a metal on a permanent magnet of a hard magnetic material, forming a joining layer on at least parts of said metal layer, and soldering or brazing a mounting surface onto said joining layer.

4,643,348 BRAZING METHOD FOR ALUMINUM PARTS

Susumu Takahashi, Yokohama, Japan, assignor to Kanto Yakin Kogyo Kabushiki Kaisha, Hirat Suka, Japan

Filed Nov. 6, 1985, Ser. No. 795,509

Int. Cl.⁴ B23K 1/20

U.S. Cl. 228—223

4 Claims

1. Method of brazing aluminum or aluminum alloy parts, which comprises applying onto portions of the parts to be joined a non-deliquescent flux having a melting point ranging from 540° C. to below 561° C., and being made from a eutectic of 55-47 weight % of BaCl₂, 18-22 weight % of NaCl, and 27-33 weight % of KCl, to which is added 1-10 weight % of NaF or BaF₂ or combinations thereof, and heating the parts to a temperature higher than 540° C. in the presence of brazing materials which melt in the range of 561° C.-580° C., whereby first the flux and then the brazing materials at said portions of the parts melt and make joints in conjunction with the flux.

4,643,349 PROMOTIONAL DELIVERY VAN ASSEMBLY

Phil B. Sheffer, New Oxford, Pa., assignor to Merchandising Innovations Co., Inc., Hanover, Pa.

Filed Mar. 12, 1986, Ser. No. 838,763

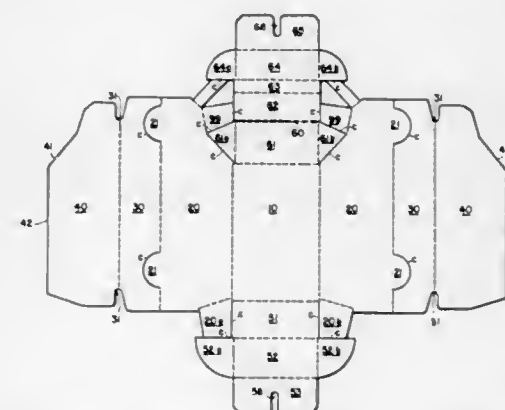
Int. Cl.⁴ B65D 5/00

U.S. Cl. 229—8

5 Claims

1. A promotional delivery van assembly device comprised of easily foldable material, said van assembly including: a first generally rectangularly shaped central section means (10) which upon assembly forms (the) an inner top roof of the delivery van, said first means (10) having lateral portions formed thereon, second section means (20) attached via score lines to each lateral portion of said first section means (10), said second section means (20) forming (the) van side panels upon assembly, said second section means (20) having wheel portions (21) formed on (the) sides thereof remote from said first section means (10), third section means (30) attached via score lines to said second section means (20), said third section means (30)

being positioned in adjacent relation upon assembly to form (the) a van bottom panel, fourth section means (40) attached via score lines to said third section means (30), said fourth section means (40) having a first sloped outer wall portion means (41) and a second outer wall portion means (42) being substantially parallel to said first central section (10), said fourth section means (40) comprising two identical outer sections (40, 40) and being positioned in edge-aligned relation upon assembly such that said second outer wall portion means (42) is in contact with said first central section means (10), said device further including rear panel means (51, 52) comprising a first rear panel (51) attached to said first central section (10) via a score line therebetween and a second rear panel (52) attached to said first rear panel (51) via a score line, said device further including front panel means (61, 62, 63, 64) comprising first (61), second (62), third (63) and fourth



(64) rectangular panels with said first rectangular front panel (61) being joined to said first central section (10) via a score line, wherein said second rear panel (52) has tab means (52a, 52b) formed on side portions thereof, said tab means being folded ninety degrees and placed internally of the van upon assembly, wherein said first front panel means (61) has tab means (61a, 61b) formed on side portions thereof, said tab means being folded ninety degrees and placed internally of the van upon assembly, wherein said fourth front panel means (64) has tab means (64a, 64b) formed on side portions thereof, said tab means being folded ninety degrees and placed internally of the van upon assembly, wherein said second section means (20) has tab means (99) formed thereon, said tab means (99) being folded ninety degrees upon assembly so as to underlie the second front panel means (62).

4,643,350 WATER TEMPERATURE SENSING AND CONTROL MEANS FOR AUTOMATIC WASHER

Clifford L. DeSchaaf, and Bruce L. Reniger, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 17, 1985, Ser. No. 809,725

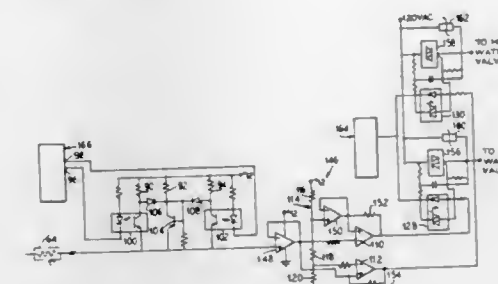
Int. Cl.⁴ D06F 33/00

U.S. Cl. 236;12.12

10 Claims

1. In an automatic washer having means for containing a wash bath, hot and cold inlet valves connected to respective sources of hot and cold water, and means for delivering a combined flow of water from said valves to said wash bath, improved means for controlling the temperature of water delivered to said wash bath comprising:

a temperature sensor mounted to sense the temperature of said combined flow of water to said wash bath; means forming a thermally semiconductive layer between said temperature sensor and said combined flow to provide a predetermined delayed response of said sensor to temperature changes of said combined flow; temperature control means for establishing a desired water bath temperature;



a valve control circuit connected to control said inlet valves, said circuit being connected to said sensor and said temperature control means and being responsive to signals therefrom to operate said valves such that an average temperature of said flow of water to said wash bath is substantially equal to said desired water bath temperature; means in said valve control circuit for providing a time delay, said time delay being shorter than said sensor delayed response.

4,643,351 ULTRASONIC HUMIDIFIER

Toshio Fukamachi, Tatebayashi; Kazuto Matsuda, Ora; Kouichi Noma, Ota; Toshiaki Kawada, Ora; Toshio Sakurai, Ashikaga, and Takeshi Osawa, Yamada, all of Japan, assignors to Tokyo Sanyo Electric Co., Japan

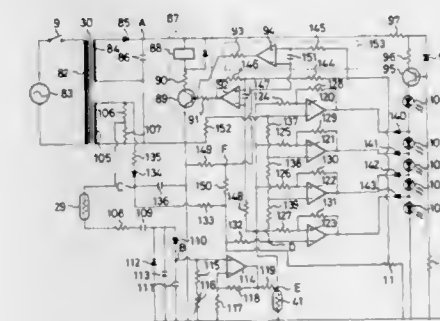
Filed Jun. 14, 1985, Ser. No. 745,420

Claims priority, application Japan, Jun. 14, 1984, 59-122307; Jun. 26, 1984, 59-132597; Jul. 6, 1984, 59-102657; Jul. 20, 1984, 59-110637

Int. Cl.⁴ B01F 3/02

U.S. Cl. 236—44 E

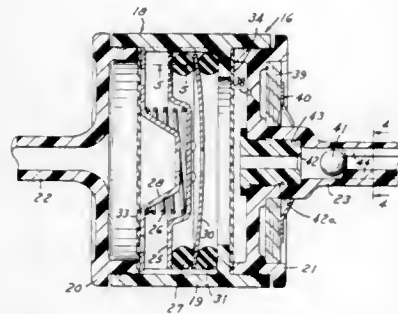
8 Claims



1. An ultrasonic humidifier, which comprises: a vessel for holding water; an ultrasonic oscillator for atomizing the water contained in the vessel; a blower for supplying the atomized water to a room in which the humidifier is used; a humidity sensor for detecting the humidity in the room, the humidity sensor providing an output signal representative of the humidity in the room; a thermosensor for detecting the temperature in the room;

means for setting the humidity in the room to a desired value;
 means for compensating the humidity in which the output signal of the humidity sensor is compensated by the thermosensor;
 means for comparing the value of the humidity compensated by the humidity compensating means with the desired value of the humidity set by the humidity setting means, the comparing means providing a compared result;
 means for controlling the operation of the ultrasonic oscillator in accordance with the compared result of the comparing means;
 means for displaying the humidity in the room in response to the humidity compensated by the humidity compensating means; and
 means for preferentially controlling the operation of the ultrasonic oscillator so that if the humidity is set at a desired value which exceeds a predetermined uppermost humidity setting, the ultrasonic oscillator will be operated continuously irrespective of the compared result obtained by the comparing means.

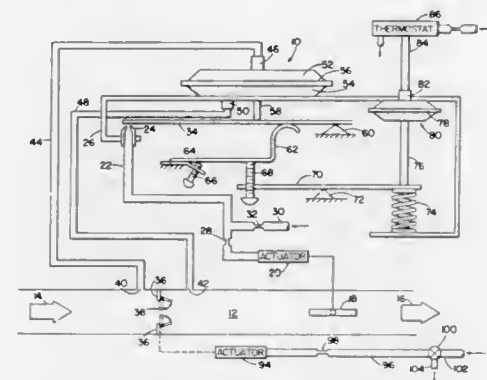
4,643,352
TEMPERATURE COMPENSATING VACUUM DELAY VALVE
 Charles A. Detweiler, Durand, Mich., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.
 Continuation of Ser. No. 677,511, Dec. 3, 1984, abandoned. This application Jun. 2, 1986, Ser. No. 871,140
 Int. Cl.⁴ G05D 23/10
 U.S. Cl. 236—48 R 10 Claims



1. For use in applying a vacuum to a choke pull-off assembly, a temperature compensating vacuum delay valve comprising
 a plastic housing having a first opening adapted to be connected to manifold vacuum,
 a second opening adapted to be connected to a choke pull-off valve which functions to close the choke when a vacuum is applied to the choke pull-off assembly,
 said housing including a valve disc,
 a resilient O-ring,
 spring means yieldingly urging the periphery of said valve disc against said O-ring,
 restrictor means on said valve disc in the area of said resilient seat permitting restricted flow between the one side of the valve disc and the other side of the valve disc when the valve disc is in sealing position,
 a purge opening to the atmosphere providing communication to the side of the valve disc adjacent the first opening,
 a check valve associated with said first opening and operable to substantially restrict flow of pressure through said first opening into said housing,
 and a snap action bi-metallic disc positioned in said housing between said first opening and said valve disc, said valve disc having a central portion extending axially toward the center of said snap action bi-metallic disc, said bi-metallic disc being normally out of engagement with said central portion of said valve disc such that said snap action disc is operable upon predetermined change of temperature to

engage the central portion of said valve disc and move said valve disc axially away from said O-ring and thereby permit unrestricted flow between the entire periphery of said O-ring and said valve disc between said first opening and said second opening.

4,643,353
AIR CONDITIONING CONTROL SYSTEM WITH ENHANCED OPERATING RANGE
 William J. Harris, Tuhannock, Pa., assignor to Anemostat Products Division, Dynamics Corp., Scranton, Pa.
 Filed Feb. 19, 1985, Ser. No. 702,667
 Int. Cl.⁴ F23N 5/20
 U.S. Cl. 236—49 12 Claims

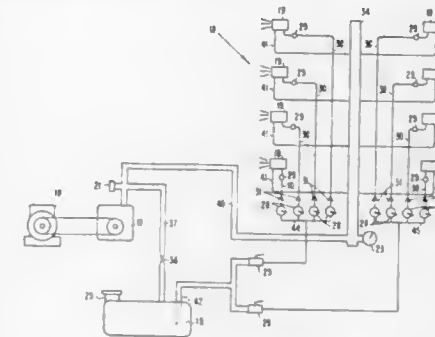


1. In a control for an air conditioning system having at least one duct for supplying conditioned air to a controlled space, the combination comprising a damper for regulating the flow of conditioned air through said duct to said space, an actuator operatively associated with said damper for positioning the same in said duct, means defining a flow orifice in said duct, a first sensor operatively associated with said orifice and producing a signal responsive to air flow through said duct and orifice, a second sensor responsive to a condition affecting said controlled space, means for combining said flow responsive signal and said condition responsive signal and for transmitting a resultant signal to said actuator for operation thereof and for corresponding movement of said damper in response thereto, and means for varying the area of said flow orifice in said duct whereby to enhance the effective operating range of the control said means for varying the area of said orifice being operatively associated with and operable by said second sensor responsive to a condition affecting said controlled space.

4,643,354
MULTI-LAYER POULTRY VACCINATOR
 John H. Stowe, Westfield, Ind., assignor to Curtis-Dyna Products Corporation, Westfield, Ind.
 Filed Jan. 23, 1985, Ser. No. 693,788
 Int. Cl.⁴ B05B 17/04; A61M 11/02
 U.S. Cl. 239—1 1 Claim

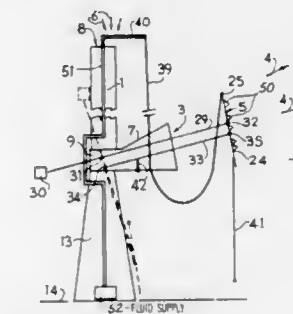
1. A method of innoculating chickens housed in multiple rows of vertically stacked cages, comprising the steps of:
 (a) providing a hand-propelled wheeled poultry vaccinator adapted for vaccination of poultry in multi-layer cages, said poultry vaccinator having a plurality of atomizing spray nozzles disposed at multiple elevations, each of said nozzles having an air intake chamber and a liquid intake chamber, a reservoir for containing, under elevated pressure, a common source of liquid vaccination serum in flow communication with each of said nozzles, a means for supplying pressurized liquid from said reservoir to the liquid intake chamber of each of said nozzles and for supplying pressurized air to the air intake chamber of each

of said nozzles, and a means for regulating an atomized spray out of each of said nozzles so that the particles in said atomized spray have a substantially uniform particle size despite the elevational differences between said nozzles;
 (b) adjusting the height of said atomizing spray nozzles to correspond to the height of each of the rows of vertically stacked cages; and



(c) pushing the poultry vaccinator along said rows of vertically stacked cages while spraying the poultry in the cages with a uniform particle size atomizing spray of the liquid vaccination serum generated from said atomizing spray nozzles at elevations corresponding to the height of the vertically stacked cages.

4,643,355
METHOD AND APPARATUS FOR MODIFICATION OF CLIMATIC CONDITIONS
 Ernest D. Sanders, Morrisville; Lawrence D. Sanders, and Nigel D. Sanders, both of Auckland, all of New Zealand, assignors to Development Finance Corporation of New Zealand, Wellington, New Zealand
 Continuation of Ser. No. 576,420, Feb. 2, 1984, abandoned. This application Dec. 16, 1985, Ser. No. 808,380
 Claims priority, application New Zealand, Feb. 2, 1983, 203159
 Int. Cl.⁴ A01G 15/00
 U.S. Cl. 239—2.1 17 Claims



1. A fog generator comprising:
 a substantially vertical duct having upper and lower ends;
 an air moving means cooperatively associated with said duct to displace air through said duct;
 air directing means rotatably mounted adjacent the lower end of said duct for rotational movement relative to said duct in a substantially horizontal plane, said air directing means having an outlet end to direct an air stream generated by said air moving means substantially horizontally away from said duct; and
 a fog generating means comprising,
 nozzle support means disposed in spaced relationship from the outlet end of said air directing means,
 a plurality of nozzles mounted on said nozzle support

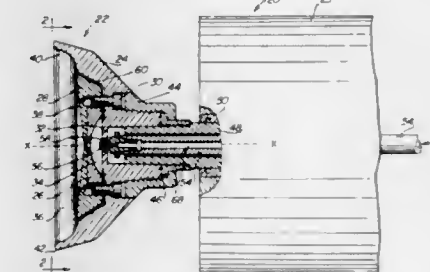
means and spaced downstream from said outlet end of said air directing means to lie within said substantially horizontal air stream, and
 fluid supply means operatively connected to said nozzles to supply a fluid to said nozzles, so that the fluid emitted from said nozzles combines with said substantially horizontal air stream to form a substantially horizontal fog blanket.

4,643,356
COOLING LINER FOR CONVERGENT-DIVERGENT EXHAUST NOZZLE
 Richard P. Holler, Palm Beach Gardens, and Connie W. McMath, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
 Continuation of Ser. No. 829,378, Aug. 31, 1977, abandoned. This application Apr. 17, 1981, Ser. No. 255,008
 Int. Cl.⁴ B64D 33/08
 U.S. Cl. 239—13 2 Claims



1. A method for recovering the energy of working medium gases compressed in the compression section of a gas turbine engine and utilized to cool a convergent-divergent exhaust nozzle in such an engine, comprising the steps of:
 flowing the working medium gases from the compression section to the convergent section of the convergent-divergent exhaust nozzle;
 passing said working medium beneath a liner in the upstream region of the convergent section to cool the exhaust nozzle; and
 discharging said working medium from the liner into the engine exhaust flow at the convergent section upstream of the nozzle throat at a point at which the static pressure of the working medium under the liner is substantially equal to the static pressure of the exhaust flow.

4,643,357
RAPIDLY CLEANABLE ATOMIZER
 Samuel W. Culbertson, Arvada, and James S. Merritt, LaFayette, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.
 Filed Nov. 22, 1985, Ser. No. 800,781
 Int. Cl.⁴ B05B 3/10, 15/02
 U.S. Cl. 239—112 6 Claims



1. A rotary material atomizer, comprising a cup-shaped device having a forward material flow surface which flares generally outwardly from an axis of rotation and which terminates at an atomizing edge from which material is discharged; means for mounting said device along said axis for rotation about said axis, said device having a material cup on a rear-

ward side thereof rearwardly of said forward surface and a circular wall extending generally perpendicular to said axis between said material cup and forward surface, a front surface of said wall defining a central portion of said forward surface and a rear surface of said wall defining a front side of said material cup; means defining a passageway through said wall for delivery of material from said cup to said forward surface for flow across said forward surface to said atomizing edge for being discharged from said edge, said passageway beginning at a non-zero radius from said axis in said material cup and terminating on said forward surface at a zero radius on said axis, said material cup being unobstructed in all radial directions from said axis to at least said non-zero radius and said non-zero radius being less than the radius of said circular wall; and means for introducing a jet of material into said material cup along said axis for impingement against said wall rear surface at said axis for flow through said cup to and through said passageway to said forward surface.

4,643,358

BOOM MOUNTING ASSEMBLY

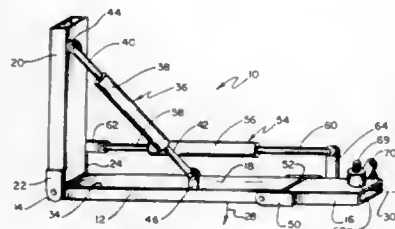
Raymond Jackson, P.O. Box 6547, Vero Beach, Fla. 32961

Filed May 3, 1985, Ser. No. 730,303

Int. Cl.⁴ B05B 1/20

U.S. Cl. 239-166

13 Claims



1. A mechanism for supporting a boom laterally of a vehicle while permitting said boom to be moved by controls carried on said vehicle to set its position at varied angles relative to the horizontal and also to alter its vertical height without having such height variation movement substantially effect said relative horizontal position setting which comprises:

- a vertical base member having an upper portion, a lower portion and a first longitudinal web extending therebetween,
- carrier means having a first proximal end, a first distal end and a second longitudinal web extending therebetween, said carrier means being mounted at said first proximal end on said support member for vertical pivotal movement about a first horizontal axis laterally of said support member,
- support means having a second proximal end, a second distal end and a third longitudinal web extending therebetween, said support means being connected by said second proximal end to said first distal end for vertical pivotal movement about a second horizontal axis,
- means on said second distal end by which to mount a boom thereon,
- a first actuator unit means for controlling the pivotal movement of said carrier means having a first inboard end, a first outboard end and rigid, variable length means connecting said first inboard end to said first outboard end,
- a second actuator unit means for controlling the pivotal movement of said support means having a second inboard end, a second outboard end and rigid, variable length means connecting said second inboard end to said second outboard end,
- said first inboard end being mounted for pivotal movement to said first longitudinal web adjacent said upper portion, said first outboard end being mounted for pivotal movement to said second longitudinal web,
- said second inboard end being mounted for pivotal move-

ment to said first longitudinal web adjacent said lower portion, and said second outboard end being mounted for pivotal movement to said third longitudinal web.

4,643,359

MINI INJECTOR VALVE

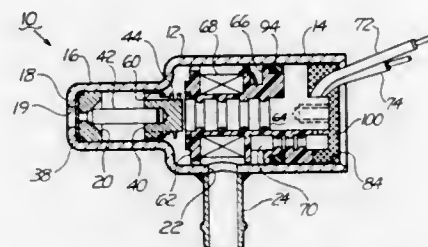
Gary L. Casey, Troy, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 19, 1985, Ser. No. 713,369

Int. Cl.⁴ B05B 1/30

U.S. Cl. 239-585

41 Claims



1. A solenoid actuated fluid injector valve of the type having a magnetically permeable housing defining a cylindrical chamber, a valve seat member having an axial fluid passageway connected to a conical valve seat disposed at one end of said chamber and a linearly displaceable valve stem for engaging the conical valve seat to close the fluid passageway, said housing further including an outlet, downstream of said fluid passageway, and a fluid inlet port, upstream of said fluid passageway, an improvement characterized by:

- an armature connected to the valve stem, said armature having a cylindrical body and a peripheral flange provided at an end of said cylindrical body, said peripheral flange having a diameter smaller than the diameter of the cylindrical chamber;
- non-magnetic means disposed between said armature and the housing for slidably supporting said armature concentrically in the cylindrical chamber;
- a stator having an axial pole concentric with said armature and a radial flange connected to said axial pole at a first end opposite said armature, said radial flange fixedly attached to said housing with a second end of said axial pole spaced a predetermined distance from said armature;
- a solenoid assembly having a plastic bobbin sealed to the stator's axial pole and extending along the length of the stator's axial pole and a solenoid coil wound on said bobbin; and
- a coil spring circumscribing the cylindrical body of said armature between said bobbin and said peripheral flange for producing a predetermined force biasing said armature away from said stator and said valve stem into engagement with said conical valve seat.

4,643,360

SPREADER

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Continuation of Ser. No. 686,527, Dec. 27, 1984, abandoned, which is a continuation of Ser. No. 409,024, Aug. 18, 1982, Pat. No. 4,497,446. This application May 28, 1986, Ser. No. 869,846

Claims priority, application Netherlands, Aug. 21, 1981, 8103896

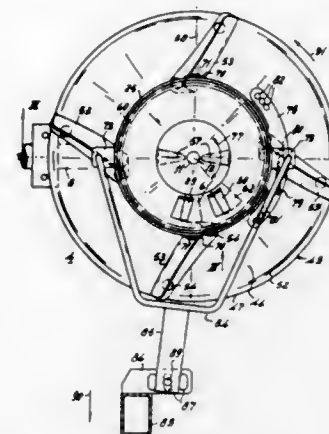
Int. Cl.⁴ A01C 17/00

U.S. Cl. 239-682

22 Claims

1. A spreader for spreading granular or powdery material or both comprising a frame which is adapted to support the spreader on a tractor's three-point lifting device, an underlying beam in said frame which carries rotary drive means including

an upwardly extending shaft, a generally horizontal rotary distribution member rigidly attached and supported by said shaft to rotate therewith, a hopper for containing the granular or powdery material disposed above said distribution member, said hopper supported by parts of said frame which extend above said distribution member, a delivery part disposed between said distribution member and said hopper, said delivery part bearing on and supported by said distribution member so that the latter forms a rotating floor of said delivery part, said



delivery part having side walls which diverge upwardly at about 45° relative to the axis of rotation of said distribution member from said floor, at least one port in said walls for delivering material from said delivery part to said distribution member by gravity, means for selectively covering said port and resilient means bearing against said covering means at at least two spaced separated locations and urging said covering means at each of said spaced separated locations against said side walls.

4,643,361

ANTI-CORROSION COMPOSITION FOR USE IN BALL MILLS

Terrence R. Chapman, #135-3280 E. 58th Ave., Vancouver, B.C., Canada (V5S 3T2)

Filed Oct. 17, 1984, Ser. No. 661,681

Claims priority, application Canada, Oct. 20, 1983, 439417

Int. Cl.⁴ B02C 23/18

U.S. Cl. 241-16

8 Claims

1. A method of milling substrate comprising the step of milling said substrate in an attrition mill containing therein grinding media, an aqueous carrier, and an anti-corrosion composition, said anti-corrosion composition comprising a water soluble phosphate salt and a water soluble zinc salt, while maintaining the pH in the range of 7 to 9.

4,643,362

GRINDING AIDS FOR HYDRAULIC CEMENT

Frank G. Serafin, Peabody, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Dec. 2, 1985, Ser. No. 803,380

Int. Cl.⁴ C04B 7/14; B02C 23/00

U.S. Cl. 241-16

8 Claims

1. A method comprising grinding a hydraulic cement, to reduce the particle size thereof, in the presence of an additive comprising a diester formed by reacting a monocarboxylic acid with an alkylene polyol, the amount of said additive present being sufficient to enhance the efficiency of the grinding operation.

4,643,363

PROCESS FOR DEAGGLOMERATING AND CLASSIFYING PHOSPHORS

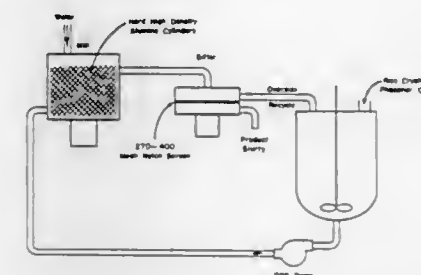
Robert A. Long, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 4, 1981, Ser. No. 270,290

Int. Cl.⁴ C22B 3/00

U.S. Cl. 241-20

3 Claims



1. A method of making a phosphor-coating suspension comprising the steps of: preparing an aqueous slurry of a phosphor powder and introducing the slurry to the bottom of a vibratory mill at a predetermined rate; introducing water to the top of the mill at a predetermined rate and under such conditions that the specific gravity of the phosphor slurry is greater at the bottom of the mill than it is at the top of the mill whereby coarse phosphor particles are milled for a longer period of time than are fine phosphor particles; removing the milled phosphor slurry out through an outlet at the top of the mill; and mixing the milled phosphor with suitable ingredients to form a phosphor-coating suspension.

4,643,364

UNWINDING MACHINE FOR DISTRIBUTING FORAGE GATHERED IN ROUND BALES

Gérard Lucas, La Verrie, France, assignor to Etablissements Lucas G., La Gaubretiere, France

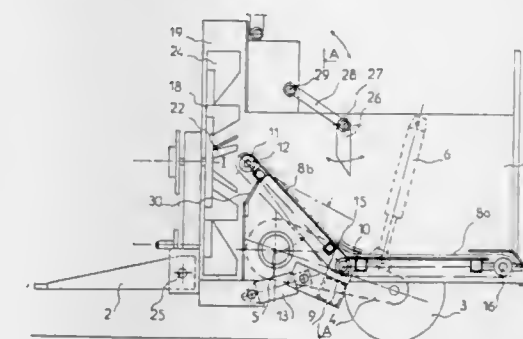
Filed Jul. 16, 1985, Ser. No. 755,507

Claims priority, application France, Jul. 20, 1984, 84 11754; Nov. 21, 1984, 84 17999

Int. Cl.⁴ B02C 18/22

U.S. Cl. 241-55

11 Claims



1. A machine for the distribution of forage provided in bales comprising a trailer paving a frame provided with a drawbar for hitching to a tractor, tub means having a movable bottom for conveying the forage toward means for shredding and ejection which comprises a turbine with a large-diameter rotor which rotates within a fairing opening outwards via at least one side orifice, means for unwinding bales comprising a movable bottom whose trajectory includes a dihedral with a variable angle inside which the bale of forage is unwound, means for diverting the active trajectory of a conveyor belt to form said dihedral, the passage of the unwound produce over said

trajectory causing a disentangling operation to be effected before its discharge towards said means for shredding and ejection, the direction of movement of the belt being reversible to discharge the unwound product towards the rear of the tub in the form of a mat.

4,643,365

APPARATUS FOR ADDING GRINDING MEDIA TO A GRINDING MILL

A. Meredith McKim, Oakville, Canada, assignor to Norcast Inc., Toronto, Canada

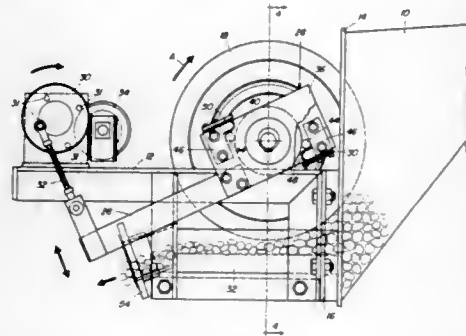
Filed Jul. 8, 1985, Ser. No. 752,651

Claims priority, application Canada, Jul. 17, 1984, 459091

Int. Cl.⁴ B02C 17/18, 23/00

U.S. Cl. 241-101.2

5 Claims



1. An apparatus for adding grinding media to a grinding mill comprising:

- a supporting structure including a face plate adapted to be mounted on a wall of a container which contains the grinding media;
- a resilient rubber wheel mounted on the supporting structure and protruding through a slot in the face plate and said wall of the container;
- a shaft on which the wheel is mounted;
- a fixed disc mounted on the shaft; and
- a friction clutch engaging the disc for rotating said disc step by step at a low speed for withdrawing grinding media from said container and delivering the same to other conveyances for direction to the grinding mill.

4,643,366

ROLLER MILL

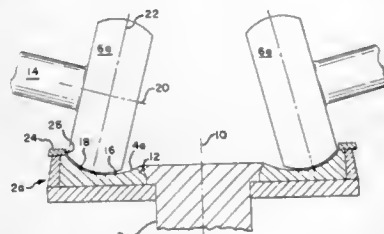
Hiroshi Soma, Kobe; Isao Hashimoto, Akashi; Tosuke Kinoshita; Masahiro Uchida, both of Kobe, and Susumu Uchiyama, Nishinomiya, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 9, 1985, Ser. No. 753,235

Int. Cl.⁴ B02C 15/00

U.S. Cl. 241-117

8 Claims



1. A roller mill for crushing material, comprising a table adapted to be rotatably driven on a substantially vertical axis, the table being adapted to receive the material in a central area adjacent said axis, said table having a substantially horizontal upper surface and an annular groove formed in said upper

surface radially outwardly from said central area, said groove having a curved bottom surface, at least one roller having an axis of rotation which is above said upper surface and which angles downwardly and radially inwardly and substantially intersects said vertical axis, said roller having a bottom portion extending into said groove and having an outer peripheral surface which is curved in cross section, said mill when in use having said table and said roller rotated and the material extending into a clearance space formed between said peripheral surface and said bottom surface, said table having an annular overhang means on said upper surface adjacent the other periphery of said groove to throttle the radially outer portion of said clearance space, said overhang means extending radially inwardly and over said outer periphery of said groove and said bottom portion of said roller being closely adjacent said overhang means.

4,643,367

CARD WIRE WINDING TOOL AND METHOD

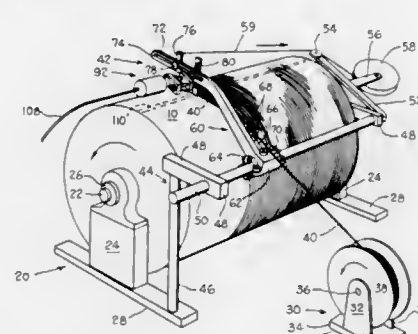
Oran G. Waters, Greenville, and Larry G. Chandler, Senseca, both of S.C., assignors to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed May 10, 1985, Ser. No. 733,671

Int. Cl.⁴ B21F 45/10; B65H 81/06

U.S. Cl. 242-7.21

8 Claims



1. In a tool for wrapping helical wraps of card clothing toothed wire about a carding drum, including wire aligning means for aligning the toothed wire into a path tangential to the point of receipt of the wire onto the drum's surface, wire packing means for forcing the received wire at the point of receipt into side by side abutment with the previously received and wrapped helical wind of wire and into bottom abutment with the drum's cylindrical surface, and force means for applying the force desired to said wire packing means to provide said side by side abutment of consecutive helical wraps of wire, an improvement comprising added force applying and relieving means for automatically applying and relieving yet added force to said wire packing means beyond that applied by said force means in a repeated continual fashion, and interconnecting means for rigidly interconnecting said wire packing means and said added force applying and relieving means.

4,643,368

CONTINUOUS SPOOLER FOR AND METHOD OF WINDING REELS WITH SELECTED LENGTH LONG ENDS

Harold J. Hattersley, Jr., Bricktown, N.J., assignor to Syneco Machine Co., Perth Amboy, N.J.

Continuation-in-part of Ser. No. 529,584, Sep. 6, 1983, abandoned. This application Jan. 13, 1986, Ser. No. 821,699

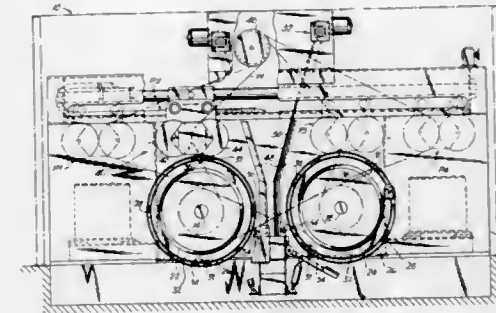
Int. Cl.⁴ B65H 54/02, 67/052

U.S. Cl. 242-25 A

17 Claims

1. In a continuous dual spooler of the type having a housing and two spaced arbors mounted for rotation on the housing and adapted to mount reels for rotation therewith, drive means for driving the arbors to wind wire on an empty reel while

slowing down and stopping a full reel thereby permitting replacement thereof with an empty reel, guide means for guiding the wire proximate the empty reel during transfer of the wire from the full reel to the empty reel, and cutter means for severing the continuous incoming wire at the full reel during wire transfer, the improvement comprising snagger means associated with each arbor for snagging the wire at the empty reel at the commencement of wire transfer and for winding initial turns of wire onto the empty reel; wire take-off means associated with each arbor for engaging the snagged wire between said snagger means and the empty reel and for unwinding a length of wire from the initial turns of wire wound on the



empty reel; and control means for timing and controlling said snagger and take-off means relative to said arbors and the reels to provide full reels with long ends having predetermined desired lengths, said control means includes means for maintaining said snagger and take-off means rigidly coupled with the associated arbor on which a reel is mounted during wire winding and for releasing the arbor to allow the reel to become free wheeling during wire take-off while selectively rotating said take-off means relative to said snagger, whereby the reel is permitted to unwind initial turns to provide a long end by the action of said take-off means applying a tension on the wire extending between the associated snagger and reel.

4,643,369

STORAGE DEVICE FOR FILAMENTARY MATERIAL

Cornelis van Donk, Mortel, Netherlands, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

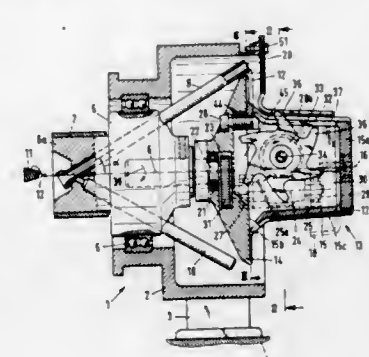
Filed Jan. 17, 1986, Ser. No. 820,265

Claims priority, application European Pat. Off., Jan. 18, 1985, 85 100493.7

Int. Cl.⁴ B65H 51/20

U.S. Cl. 242-47.01

18 Claims



1. A reel for a storage device for filamentary material, said reel comprising a support member disposed about a rotational axis; a cylindrical winding drum having a central axis; a plurality of elements mounted peripherally on said drum and being adjustable radially of said drum central axis to

guide a winding of filamentary material thereon for delivery axially therefrom; and means securing said drum to said support member in a transversely adjustable manner relative to said rotational axis.

4,643,370

WHEELED VEHICLE FOR STRINGING A CABLE

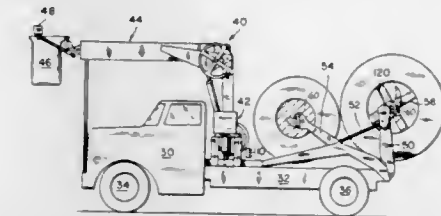
Wayne Pierce, 393 W. River Rd., Orange, Conn. 06477

Filed Mar. 4, 1985, Ser. No. 707,646

Int. Cl.⁴ B65H 75/42; H02G 1/00

U.S. Cl. 242-86.7

5 Claims



1. A wheeled vehicle adapted for carrying a spool of cable or the like comprising:

- first means for selectively inhibiting the rotation of the vehicle's wheels when the vehicle is stationary;
- means for rotating said spool; and second means for selectively inhibiting the rotation of said spool only when said first inhibition means inhibits the rotation of the vehicle's wheels when the vehicle is stationary.

4,643,371

APPARATUS FOR UNWINDING EXPOSED ROLL FILMS FROM REELS

Reinhard Würfel, Munich; Helmut Zangenfeind, Puchheim; Günther Dörmges, Deisenhofen, and Raimund Kugel, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

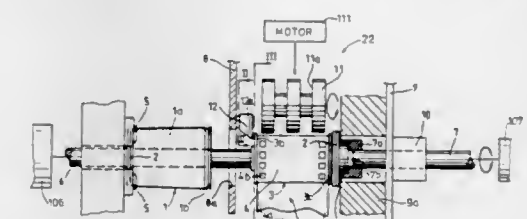
Filed Sep. 20, 1985, Ser. No. 778,611

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1984, 3437068

Int. Cl.⁴ G03D 13/00

U.S. Cl. 242-55

21 Claims



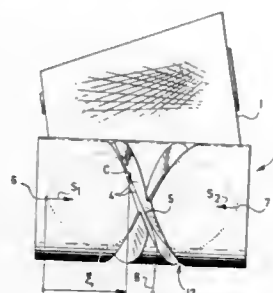
1. Apparatus for unwinding photographic roll films from successive reels of the type wherein a roll of film is convoluted around a core between two spaced-apart flanges, comprising means for releasably supporting the cores of successive reels in a predetermined orientation at an unwinding station; means for disengaging the supporting means from the core of the reel at said station; a housing provided at said station and comprising a plurality of sections including at least one mobile section and means for moving said one section between an operative position in which said sections define a chamber for the roll of film on the core of the reel at said station and a channel having an inlet in communication with said chamber, and an inoperative position in which the reel can be removed from the housing, the length of said chamber, as considered in the axial direction of the reel at said station, being less than the distance between the flanges of a reel; and means for rotating the roll of film at said station in the operative position of said one section in a

direction to unwind the film and to cause entry of the leader of the film into said channel.

4,643,372
GROOVED ROTARY YARN DISTRIBUTOR FOR WINDING CONICAL BOBBINS

Jilji Havelka; Petr Jirásko; Zdenek Koloc, and Miroslav Václavík, all of Liberec, Czechoslovakia, assignors to Elitex, koncern textilního strojírenství, Liberec, Czechoslovakia
Filed Mar. 17, 1986, Ser. No. 840,595
Claims priority, application Czechoslovakia, Mar. 18, 1985, 1892-85

Int. Cl.⁴ B65H 54/48
U.S. Cl. 242—43.2 2 Claims



1. In a grooved rotary yarn distributor of cylindrical shape with a reversing, helical yarn distributing groove and a variable radius of the bottom of the groove, the distributor is adapted for the winding of conical and varioconical bobbins with a variable crossing angle of the yarn to be wound for use on textile machines, the improvement wherein said bottom of its distributing groove, the first derivative of the axial coordinates of the bottom of the groove, according to the angular coordinate, is an increasing function of the angular coordinates in the proximity of a selected point in that case in which the first derivative of the radius of the bottom of the groove, according to the angular coordinate, is a decreasing function of the angular coordinate in the proximity of a selected point and is a decreasing function in that case, when the first derivative of the radius of the bottom of the groove, according to the angular coordinate, is an increasing function of the angular coordinate in the proximity of the selected point upon growth of the axial coordinate of the bottom of the groove only in the direction of distribution from the small end towards the large end of the conical or varioconical bobbin from zero up to the maximum value of the stroke of the grooved rotary yarn distributor.

4,643,373
MISSILE SYSTEM FOR NAVAL USE

Guy E. Adams, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 24, 1984, Ser. No. 686,047

Int. Cl.⁴ F41G 7/22
U.S. Cl. 244—3.19 2 Claims

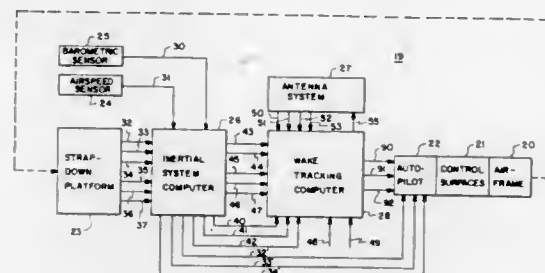
1. In a missile having control surfaces and an autopilot for actuating said surfaces in accordance with control signals, in combination:

a strap-down platform giving outputs in accordance with the angular rates of the missile about mutually orthogonal axes and with the linear accelerations of said missile along said axes;

sensing means giving outputs in accordance with the altitude and air speed of the missile;

an inertial system computer including a stored navigation program, and deriving from all said outputs further outputs representative of the attitude angles of the missile, of its velocity vector, and of body rate commands representative of deviations of said platform outputs from values in said program;

an antenna system including a directional antenna fixed in said missile and means giving further outputs representative of the elevation and azimuth angles of departure of said antenna from a moving radiometric target and of the rates of change of said angles;



a tracking computer receiving all said further outputs and deriving therefrom control signals for said autopilot, to cause said missile to impact said target;

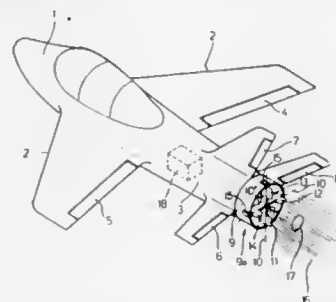
and means initializing said tracking computer to modify its operation so as to cause said missile to impact a point moving with said target at a known location with respect thereto.

4,643,374
STEERING APPARATUS FOR A FLYING BODY
Oskar Friederich, Sauerlach, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed May 31, 1985, Ser. No. 739,825

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420441

Int. Cl.⁴ B64C 15/02
U.S. Cl. 244—52 4 Claims



1. A steering system for a flying body, comprising aerodynamic control surfaces (4, 5, 6, 7, 8) operable for steering said flying body, jet engine means for emitting a propulsion jet, jet deflector flap means (11, 12, 13, 14), means mounting said jet deflector flap means in said propulsion jet for deflecting said propulsion jet, flight condition pick-up means for providing flight condition signals, flight control means (18) including attitude controller means (19) having input means connected to said flight condition pick-up means for receiving said flight condition signals, whereby said attitude controller means receive a continuous supply of actual flight information, said jet deflector flap means being arranged for controlling a pitching motion, a yawing motion, and a rolling motion of said flying body by a respective deflection of said propulsion jet, said system further comprising drive means (15) connected to said jet deflector flap means (11, 12, 13, 14), means connecting said drive means (15) to said flight attitude controller means (19) for operating said jet deflector flap means to assist or replace said

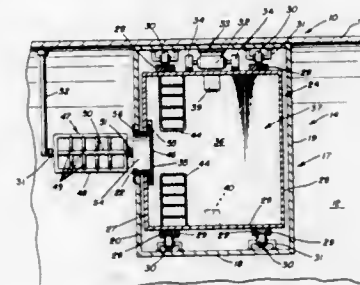
aerodynamic control surfaces (4, 5, 6, 7, 8) in response to said flight condition signals, wherein said flight condition pick-up means comprise a pressure head measuring device for supplying a pressure head input signal to said flight control means, memory means having stored therein a rated, pressure head dependent control momentum curve providing rated attitude representing control moment values to said flight control means for controlling said jet deflector flap means in such a manner, that the sum of actual control moments provided by said jet deflector flap means (11, 12, 13, 14) and of actual control moments provided by said aerodynamic control surfaces (4, 5, 6, 7, 8) corresponds to said rated, pressure head dependent control momentum curve, whereby said flight attitude controller means (19) ascertains the instantaneously required steering control effectiveness with reference to said rated, pressure head dependent control momentum curve for steering said flying body from its measured actual attitude into a rated attitude determined by said rated, pressure head dependent control momentum curve, and whereby said sum of actual control moments can be supplied by said aerodynamic control surfaces or by said jet deflector flap means or by said aerodynamic control surfaces and said jet deflector flap means to satisfy said rated, pressure head dependent control momentum curve, said system further comprising a closed loop thrust control device (25) connected to said flight control means and to said jet engine for automatically controlling the jet engine thrust in a closed loop manner to increase the steering effect of said jet deflector flap means (11, 12, 13, 14), when the steering effect of said jet deflector flap means becomes insufficient for satisfying said rated, pressure head dependent control momentum curve at all flight speeds.

4,643,375
SPACE LIVING QUARTERS HAVING ARTIFICIAL GRAVITY ENVIRONMENT

Sebree J. Allen, Rt. 2, Kevil, Ky. 42053

Filed Jun. 26, 1985, Ser. No. 748,925

Int. Cl.⁴ B64G 1/46
U.S. Cl. 244—159 15 Claims



1. In a space vehicle including a vehicle chamber subject to zero-gravity during space flight, living quarters subject to artificial gravity comprising:

- (a) a cylindrical module enclosing a living compartment for human occupants, said module having a cylindrical outer wall, opposite end walls, and a longitudinal central axis;
- (b) support means mounting said module within the vehicle chamber for rotary movement about said longitudinal central axis;
- (c) drive means for rotating said module about said central axis to create a centrifugal force of approximately 1 G within said living compartment, and
- (d) an entrance opening through the central portion of one of said end walls, large enough to permit the passage of a human occupant between the vehicle chamber and said living compartment.

4,643,376
SHOCK INDUCING POD FOR CAUSING FLOW SEPARATION

Antonius J. Vanderhoeven, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01378, 8 371 Date Sep. 30, 1982, 8 102(e)

Date Sep. 30, 1982, PCT Pub. No. WO84/00949, PCT Pub.

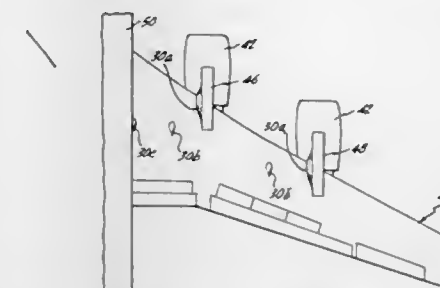
Date Mar. 15, 1984

Continuation of Ser. No. 451,656, Sep. 30, 1982, abandoned.

This PCT application Sep. 30, 1982, Ser. No. 695,759

Int. Cl.⁴ B64C 23/04

U.S. Cl. 244—198 15 Claims



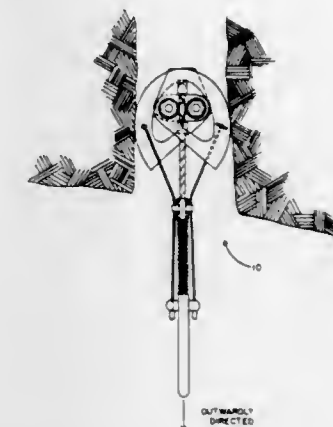
9. In an aircraft of the type having a nonlinear, unstable increase in the pitching moment above a predetermined angle of attack for a predetermined aircraft speed, said aircraft having a wing with a leading edge and an upper surface, an improvement comprising:

means located on said upper surface of said wing for forming a shock in the air flowing over the upper surface of said wing at said predetermined aircraft angle of attack of said wing and at an aircraft speed above a Mach number of approximately 0.6, said shock causing localized separation of the air flowing over said wing beginning at the trailing edge of said wing to prevent said increase in said pitching moment.

4,643,377
MECHANICALLY EXPANDING CLIMBING AID
Tony Christianson, 277 Grulla Ct., Norco, Calif. 91760

Filed Sep. 26, 1985, Ser. No. 780,375

Int. Cl.⁴ A47G 29/00
U.S. Cl. 248—1 11 Claims



1. A climbing aid comprising: opposing cam members, two axles having separate, parallel centerlines on which said cam members pivot with crossed radii, axle joining member, rope attachment member, forcing means for expanding said cam members, and operating means for retracting said cam members.

4,643,378

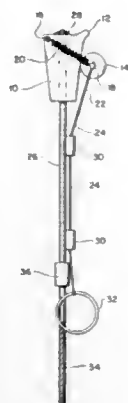
ROLLER-CHOCK CLIMBING AID

Karl Guthrie, 180 Goldenridge Dr., Apt. A, Sebastopol, Calif. 95472, and Joseph Schwartz, 22980 Wallig Rd., Geyserville, Calif. 95441

Continuation-in-part of Ser. No. 713,020, Mar. 18, 1985, abandoned. This application Aug. 29, 1985, Ser. No. 770,017
Int. Cl.⁴ A63B 29/08

U.S. Cl. 248—1

15 Claims



1. A climbing aid for providing a removable anchor in a crack in a rock formation disposed for having the safety rope of the climber clipped thereto, said climbing aid comprising: a wedge-shaped chock having two broad faces, two narrow sides, and a thick and a thin end; anchor cable means having one end affixed to the thin end of the chock and defining an anchor loop at the other end disposed for clipping to the safety rope; cylindrical roller means adjacent one broad face of the chock for effectively varying the overall thickness of the climbing aid; spring means for maintaining the roller adjacent the face of, and biasing the roller toward the thick end of, the chock; and secondary cable means for manually drawing the roller down the face of the chock to reduce the overall thickness of the climbing aid to facilitate its placement in or withdrawal from the crack in the rock.

4,643,379

SUPPORT SYSTEM FOR ELECTRICAL CABLES

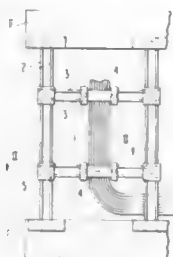
Otto J. Potocnik, Jona, Switzerland, assignor to EHV-Weidmann Industries, Inc., Jona, Switzerland

Filed Oct. 28, 1985, Ser. No. 791,809

Int. Cl.⁴ F16L 3/00

U.S. Cl. 248—49

8 Claims



1. A support system for electrical cables in high voltage equipment comprising a plurality of support beams of insulating material disposed at right angles to each other to define at least one intersection point, first clamping means of insulating material engaging said support beams at each intersecting point to adjustably secure said beams relative to each other and second clamping means of insulating material adapted to clamp at least one cable to one of said beams wherein each support

beam is comprised of two parallel spaced apart strips of material and the first clamping means is comprised of a first rectangular block of insulating material having a first pair of parallel spaced apart grooves in one surface thereof receiving said two strips constituting a first beam and a second pair of parallel spaced apart grooves in the opposite surface of said block disposed at right angles to said first pair of grooves receiving the two strips constituting a second beam at right angles to said first beam and two second blocks of insulating material each having a pair of parallel spaced apart grooves in one surface thereof receiving the two parallel strips of a first beam and a second beam respectively with said second blocks being aligned with said first blocks and insulating securing means for clamping said blocks and said beams together at said intersecting point.

4,643,380

TRASH BAG FILLING AND PACKING FORM

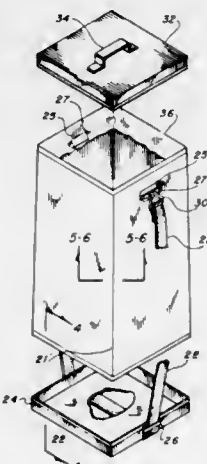
Dennis J. Copeland, Pasadena, Calif., assignor to Cardiotpic Inc., Pasadena, Calif.

Continuation-in-part of Ser. No. 693,103, Jan. 22, 1985, abandoned. This application Jan. 27, 1986, Ser. No. 822,483

Int. Cl.⁴ B65B 1/04

U.S. Cl. 248—97

10 Claims



1. A trash bag filling and packing form comprising
(a) a trash bag for captivating and retaining trash;
(b) a tapered enclosure having open ends with the top end of said enclosure smaller than the bottom end, with said trash bag positioned on the outside thereof providing an unrestricted inside surface;
(c) gripping means positioned on the side surface of said enclosure near the top for lifting the device by grasping therein simultaneously;
(d) a bottom pan having a flat underside and an upright flange sized in such a manner as to rest onto said tapered enclosure bottom end defining a removable closed base for said form;
(e) a plurality of strap retainers disposed onto said bottom pan upright flange on the outside surface thereof acting as opposed guides for holding elements captively within;
(f) a laterally flexible strap having attachment means on each end positioned in such a manner as to contiguously rest upon the flat underside surface of said bottom pan and captively pass through said strap retainers connecting, with said fastening means, said gripping means on each side restraining the bottom pan onto said enclosure while having said trash bag intimately embracing the outside surface of said enclosure covering the bottom open end while overlapping into said open top end being disposed between the enclosure and the bottom pan, allowing trash to be compacted into said enclosure and removed by

detaching said straps and sliding said enclosure upwardly exposing the filled trash bag.

said cam surface corresponds to a balanced force with respect to the moment of rotation due to the weight of said television.

4,643,381

DASHBOARD TRAY

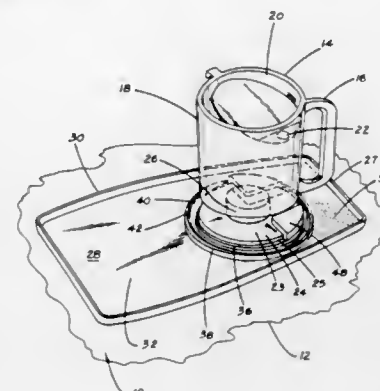
Leon M. Levy, Chicago, Ill., assignor to Rogers Merchandising, Inc., Lombard, Ill.

Filed Jan. 28, 1985, Ser. No. 695,809

Int. Cl.⁴ A47G 23/02

U.S. Cl. 248—154

18 Claims



1. A removably mountable and selectively positionable tray device for use with a footholder for a footed beverage container, comprising in operative combination:
a planar surface having an aperture therein;
said aperture being adapted to engage said footholder in releasable retentive engagement and to permit selective positioning of said planar surface in a desired angular position with respect to the axis of the footholder while remaining substantially coplanar therewith;
a continuous upraised rim extending from the outer edge of said planar surface; and
a continuous upraised rim extending from the said planar surface adjacent said aperture.

4,643,382

TELEVISION STAND HAVING A TILT MECHANISM

Juji Ojima, and Yoshiharu Kitamura, both of Aikawa, Japan, assignors to NHK Spring Co. Limited, Kanagawa, Japan

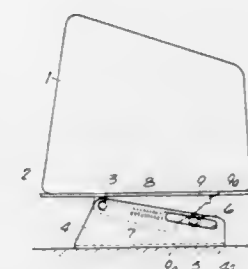
Filed Feb. 15, 1985, Ser. No. 702,125

Claims priority, application Japan, Feb. 29, 1984, 59-29062[U]

Int. Cl.⁴ A47G 29/00

U.S. Cl. 248—371

12 Claims



1. A television stand comprising: a base stand, a movable member pivotally supported on said base stand for supporting a television, a tilt mechanism including a cam surface formed by one of said movable member and said base stand and a pressurized movable device abutting said cam surface for positioning of said movable member, and said cam surface is formed so that the bias force of said movable device against

4,643,383

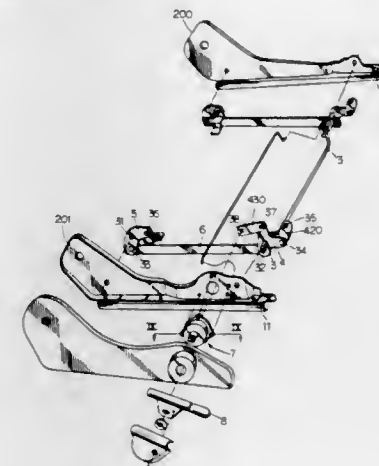
MANUAL SEAT ADJUSTER

Kinsho Fukuta, Chiryu, and Shiro Sasaki, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Continuation of Ser. No. 515,634, Jul. 20, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,969

Claims priority, application Japan, Oct. 12, 1982, 57-154851
Int. Cl.⁴ E01B 7/00

U.S. Cl. 248—396

8 Claims



1. A seat adjusting means for adjusting a height of a seat cushion, which is positioned between the seat cushion and a bracket located at a side of the seat cushion, comprising:
a first link having a front pivot point and a first, a second and a third peripheral rotational points, the front pivot point of said first link being pivotally mounted to a front portion of the bracket, and wherein said first link has a first predetermined length defined between the front pivot point and the first peripheral rotational point;
an auxiliary link having an end and another end, the end of said auxiliary link being pivotally connected to the first peripheral rotational point of said first link, and the other end of said auxiliary link being pivotally connected to a front side portion of the seat cushion;
a second link having an end and another end, the end of said second link being pivotally connected to the second peripheral rotational point of said first link;
a third link having an end and another end, the end of said third link being pivotally connected to the third peripheral rotational point of said first link;
a fourth link having a rear pivot point and a fourth and a fifth peripheral rotational points, the rear pivot point of said fourth link being pivotally mounted to a rear portion of the bracket, the fourth peripheral rotational point being pivotally connected to a rear side portion of the seat cushion, and the fifth peripheral rotational point being pivotally connected to the another end of said third link, and wherein said fourth link has a second predetermined length defined between the rear pivot point and the fourth peripheral rotational point, the second predetermined length of said fourth link being longer than the first predetermined length of said first link;
a bi-directional, anti-back drive coupling having an input shaft and an output shaft, the output shaft being pivotally connected to the another end of said second link; and
a driving means connected to the input shaft of said bi-directional, anti-back drive coupling for rotating the input shaft in either direction.

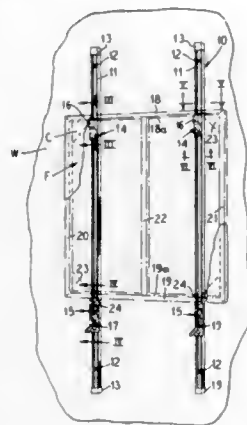
4,643,384
EASEL

Charles A. Guerin, 1023 N. Weber St., Colorado Springs, Colo. 80903

Filed Jan. 3, 1986, Ser. No. 815,938
Int. Cl.⁴ A47B 97/08

U.S. Cl. 248—476

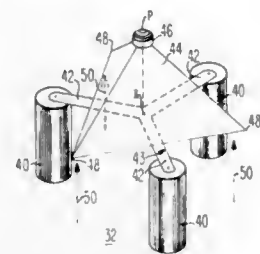
15 Claims



1. An easel for clamping in upright position at a desired level a canvas stretching frame with top and bottom cross bars having inner and outer faces behind the canvas which comprises an elongated track means, means for mounting said track means in upright position, a plurality of shoe means reversibly mounted on said track means in first and second positions, means locking said shoe means at selected levels on said track means, means on said shoe means respectively engaging an inner face of a frame cross bar in a first position of the shoe means and an outer face of a cross bar in a second position of the shoe means, and a push-pull clamp on a shoe means shiftable to selectively tension clamp and compression clamp the frame to the track means.

4,643,385
ANTI-VIBRATION SYSTEM
John R. Sandercock, Affoltern, Switzerland, assignor to RCA Corporation, Princeton, N.J.
Filed Nov. 15, 1984, Ser. No. 671,917
Int. Cl.⁴ F16M 13/00
U.S. Cl. 248—550

10 Claims



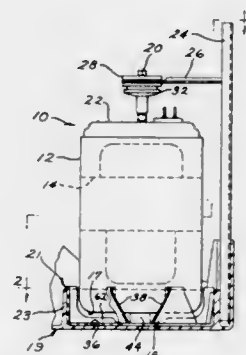
1. A dynamic antivibration system, for reducing the effects of vibrations on an object, comprising:
a support structure having a curved surface for supporting the object;
means in contact with said support structure for resiliently supporting the support structure, said resilient support means comprising: three fixed supports; and a resilient frame extending from each of the fixed supports, said support structure being supported by said frame; and
three means in contact with the support structure at separate contact points from said resilient support means, each of said three means comprising: means for sensing the vibration forces on the support structure at the contact point

which provides an electrical output signal representing the degree of sensed vibrations, means for generating forces to counter the vibration forces, and a controller responsive to the sensed vibrations for controlling the means for generating forces.

4,643,386
HOUSEHOLD REFRIGERATOR COMPRESSOR
VIBRATION ISOLATOR
Gary L. Chastine, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Nov. 16, 1984, Ser. No. 672,071
Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—632

5 Claims



1. A resilient support for mounting a hermetic motor compressor on a bottom member, said compressor including a bottom wall providing a support surface, upwardly extending wall portions on said bottom member defining a compressor support containment area, a one-piece resilient compressor support member dimensioned to be received in said compressor support containment area comprising:

- a base wall conforming substantially to said containment area;
- spaced resilient wall portions extending upwardly from the edge portion of said base wall engaging said wall portions of said containment area defining said compressor support containment area;
- a plurality of cylindrically shaped spring cylinders extending upwardly from said base wall including side walls extending upwardly from an open end in said base wall to an upper end; and
- a cover portion formed on the upper end of said spring cylinders dimensioned to engage said bottom wall of said compressor for resiliently supporting said compressor support surface in spaced relationship to said bottom member including means interacting between said cover portion and said side walls whereby movement of said compressor relative to said bottom member causes said cylinder side walls to bulge outwardly and a resistance to movement of said spring cylinders which provides both torsional damping and axial damping of said compressor.

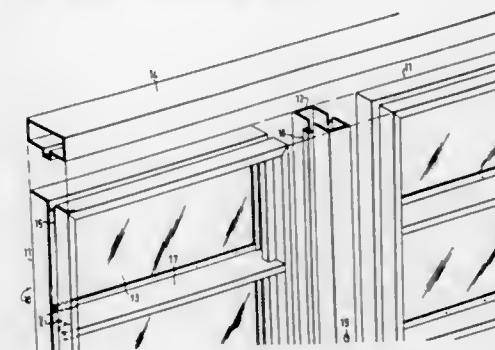
4,643,387
FORMWORK SYSTEM
Helge Bo, Bovegen, N-5200 Os, Norway
Filed Jul. 12, 1984, Ser. No. 630,070
Int. Cl.⁴ E04G 11/14, 9/02

U.S. Cl. 249—193

5 Claims

- 1. A formwork system comprising
- a plurality of frame elements having horizontal and vertical elongated members;
- a vertical elongated post adjacent a vertical member of at least one of said frame elements, with a transverse groove in an end face of said post;

a longitudinal key on either one of said vertical member of said at least one frame element or said post;
a longitudinal groove in the other of said vertical member of said at least one frame element or said post, said longitudinal groove receiving said key;



a formwork panel disposed in said frame element with a front side flush with a front side of said post; and
a beam having a longitudinal key disposed in said transverse groove of said post and said longitudinal groove in a horizontal member of said frame element.

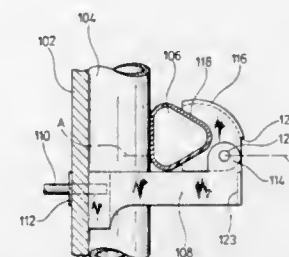
4,643,388
DEVICE FOR HOLDING REINFORCING MATERIALS
ON CONCRETE-APPLYING FRAMES
Yoshio Tazawa, Iiyama, Japan, assignor to Tazawa Koomuten Co., Ltd., Iiyamashi, Japan
Filed Mar. 2, 1982, Ser. No. 354,123

Claims priority, application Japan, Mar. 9, 1981, 56-32403[U]; Apr. 11, 1981, 56-54841; Jun. 18, 1981, 56-94169; Oct. 14, 1981, 56-163845; Nov. 11, 1981, 56-180782; Nov. 11, 1981, 56-180783

Int. Cl.⁴ E04G 17/04, 17/14

U.S. Cl. 249—219 W

6 Claims



1. A device for holding reinforcing materials, adapted to support a supporting structure for molding a fluid type concrete material, comprising:

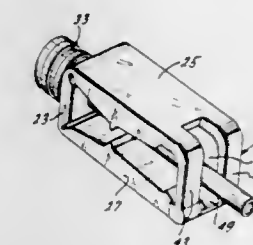
- an arm piece adapted to be attached to the supporting structure, said arm piece extending substantially perpendicularly from the supporting structure and having one end spaced from the supporting structure,
- at least one bearing section attached to said one end of the arm piece to extend perpendicularly therefrom and having a shaft in said bearing section,
- at least one support piece pivotally connected to the shaft of the bearing section, said support piece having a support section to receive the reinforcing material therein, said support piece, after the reinforcing material is situated in the support section, being rotated to about the reinforcing material against the supporting structure so that a lower contact point where the reinforcing material contacts the material to be supported is located substantially at the same level as the shaft of the bearing section to immovably hold the reinforcing material against the supporting structure, and a stopper device rotationally connected to the end of the base, said stopper device, while the support

piece and additional support piece hold the reinforcing materials, being operated to engage both support piece and additional support piece to hold the same in that position.

4,643,389
TUBING OCCLUSION CLIP
Edward E. Elson, Anaheim; Farley W. Bolwell, Newport Beach; Wayne E. Manska, Anaheim, and Stanley G. Shoffner, Irvine, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 27, 1984, Ser. No. 686,989
Int. Cl.⁴ F16L 55/14

U.S. Cl. 251—10

9 Claims



1. A tubing occlusion clip comprising:
an end wall portion;
first and second arms joined to spaced regions of the end wall portion and being resiliently movable toward each other;
a closing wall portion joined to said first arm and extendible to said second arm whereby said arms can cooperate with said wall portions to form a closed loop;
said arms being adapted to have a tube extend therebetween; first and second clamping members carried by the first and second arms, respectively, and adapted to have the tube extend between the clamping members;
said arms being relatively movable toward each other to a clamping position in which the tube is clamped between said clamping members to at least restrict flow through the tube and relatively movable away from each other to a releasing position in which the clamping members impose a lesser restriction to flow through the tube;
said second arm terminating in a cam and having a shoulder and an outer surface at opposite ends of the cam;
said closing wall portion having a cam follower and a shoulder at the inner end of said cam follower;
said shoulders being in engagement in the releasing position whereby the arms are positively locked in the closed loop in the releasing position and said cam and said cam follower being in engagement in said releasing position whereby inward movement of the second arm moves the arms to the clamping position; and
said outer surface engaging the shoulder of the closing wall portion in the clamping position to releasably retain the arms in the clamping position.

4,643,390
FAIL-SAFE VALVE ACTUATOR
Michael A. Karr, Jr., and John M. Zwiemel, both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.
Continuation-in-part of Ser. No. 705,576, Feb. 26, 1985. This application May 29, 1985, Ser. No. 738,921
Int. Cl.⁴ F16K 31/122, 37/00

U.S. Cl. 251—63.6

5 Claims

1. A fail-safe gate valve, comprising:
a valve body having a flow passage disposed therein for conducting a flowing stream of material therethrough, the valve body further having a cavity disposed therein, the cavity opening at one end thereof transversely into the

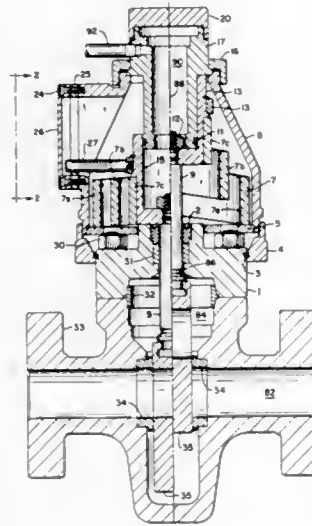
flow passage and at the other end thereof at the surface of the valve body;

a bonnet, sealingly secured to the valve body about the other end of the cavity opening, the bonnet further including a central bore therethrough opening into the cavity on one end thereof;

an elongated stem, disposed within the central bore and axially reciprocable in first and second directions therethrough, the stem having an inner end terminating within the cavity and an outer end terminating exterior to the valve body and bonnet;

a gate member, engaged with the stem at the inner end thereof and reciprocating therewith, and located to be movable transverse said flow passage for regulating the flowing stream of material in response to the axial reciprocation of the stem;

means, cooperating with the bonnet, for urging the stem axially in the first direction responsive to the presence of a source of pressurized liquid or gas;



said means for urging the stem axially including a hollow cylinder having a first closed end secured to the axially outward end of the stem, the cylinder further extending axially outward from the stem and having a second open end;

a volute spring, disposed about the valve stem and being axially compressible responsive to axial motion of the stem in the first direction, for driving the stem axially in the second direction upon removal of the control influence;

said bonnet sealingly secured to the valve body by a plurality of bonnet retaining nuts disposed circumferentially about the central bore, and further comprising:

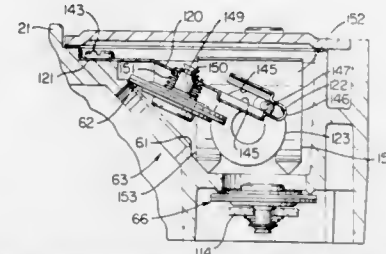
a removable lock ring, circumferentially engaged with the bonnet and extending radially outwardly therefrom;

a bonnet adapter ring, abuttingly engaged with the valve body side of the lock ring and threadably engaged to the housing for releasably securing the housing to the bonnet for preventing relative movement therebetween, the bonnet adapter ring further being movable toward the valve body upon disengagement from the housing for permitting free access to the bonnet retaining nuts.

4,643,391
FUEL CONTROL VALVE CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME
 Samuel T. Kelly, Torrance, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
 Division of Ser. No. 613,462, May 24, 1984, Pat. No. 4,549,571.
 This application Apr. 15, 1985, Ser. No. 723,068
 Int. Cl.⁴ F16K 31/528

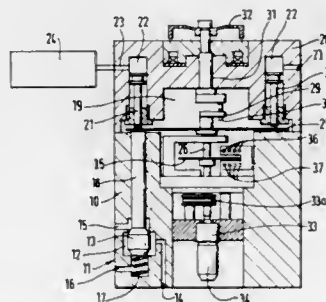
U.S. Cl. 251—85

7 Claims



1. In a valve construction having a valve unit comprising a valve seat, a movable valve member for opening and closing said valve seat, a one-piece leaf spring member carrying said valve member and having opposed ends one of which is fixed to said construction, and a rotatable actuator having cam means operating on said leaf spring member to position said leaf spring member relative to said valve seat in relation to the rotatable position of said cam means, the improvement wherein the other end of said leaf spring member is looped in a direction that is toward said one end thereof and that is substantially parallel to the longitudinal axis of said leaf spring member to define a pair of spaced apart substantially parallel elongated surface means joined together by an arcuate portion whereby said other end is substantially U-shaped, said cam means having an abutment means received between said surface means to act on said surface means of said leaf spring member to position said leaf spring member relative to said valve seat.

4,643,392
VALVES
 Richard Ward, Worsley, England, assignor to Dobson Park Industries Plc., Nottingham, England
 Filed Jan. 14, 1985, Ser. No. 691,064
 Claims priority, application United Kingdom, Feb. 8, 1984, 8403341
 Int. Cl.⁴ F16K 35/00; F01B 1/00; E21D 23/12
 U.S. Cl. 251—89 21 Claims



1. A valve for use in controlling a plurality of fluid operated functions, said valve comprising:

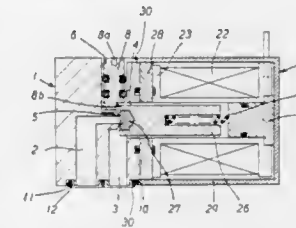
a plurality of valve means each movable independently by fluid pressure from an inoperative position to an operative position for carrying out a fluid control function, each valve means comprising a valve member and a valve actuating member, said valve means being arranged in a

circle around an axis and being movable in a direction parallel to said axis;

fluid supply means for supplying fluid simultaneously to all of said valve means; and

an interposer means for permitting at least one of said valve means to move to said operative position in response to the supply of fluid from said fluid supply means while at the same time preventing the remaining valve means from moving to said operative position, thus enabling the valve means to be selectively operable, said interposer means including an interposer disc transversely mounted for rotation about said axis, said interposer disc being disposed between said valve actuating members and said valve members for selectively preventing said valve actuating members from actuating said valve members.

4,643,393
ELECTROMAGNETIC VALVE
 Seiji Kosugi, and Tadao Suzuki, both of Soka, Japan, assignors to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Oct. 11, 1985, Ser. No. 786,756
 Claims priority, application Japan, Mar. 13, 1985, 60-35684; Jun. 10, 1985, 60-87178
 Int. Cl.⁴ F16K 31/06
 U.S. Cl. 251—129.01 8 Claims



1. An electromagnetic valve assembly of the type formed by connecting a valve casing and an electromagnetic operating section which are fabricated separately, said valve assembly comprising:

an inlet port and an outlet port provided on one side surface of said valve casing;

locking projections provided on the said surface and the opposite side surface of the said valve casing;

a plate-formed magnetic frame of said electromagnetic section, having a notched portion at one side surface displaced from said inlet and outlet ports and having locking windows on the both sides of said notched portion and on the other side surface so as the locations of these locking windows correspond to said locking projections, said locking windows being elastically engageable with said locking projections on said valve casing to connect said electromagnetic section thereto.

4,643,394
GAS SOLENOID VALVE
 Katsumasa Shimura, and Tetsuro Nakamura, both of Kasugai, Japan, assignors to C.K.D. Controls Co., Ltd., Aichi, Japan
 Filed Dec. 11, 1984, Ser. No. 680,650
 Claims priority, application Japan, Jun. 12, 1984, 59-86843[U]
 Int. Cl.⁴ F16K 31/02
 U.S. Cl. 251—129.08 16 Claims

1. A gas solenoid valve comprising:

a fixed iron core extending in a longitudinal direction;

at least one magnet extending in said longitudinal direction around said fixed iron core and spaced therefrom by a predetermined distance;

magnetic member means for completing a magnetic circuit with said fixed iron core and said at least one magnet;

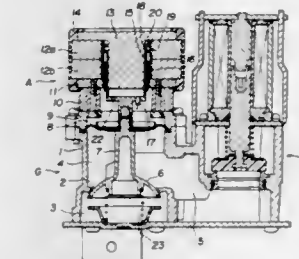
a molded resin coating disposed on said fixed iron core, said at least one magnet and said magnetic member means;

a sleeve interposed between all of said at least one magnet

and said fixed iron core so as to block any resin from interfering with movement of a coil-holder;

said coil-holder slidably disposed between said sleeve and said fixed iron core;

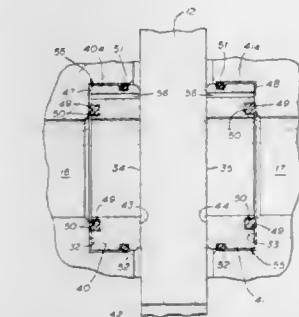
magnetic coil means disposed on said coil-holder for causing



said coil-holder to move in said longitudinal direction in response to current applied to said magnetic coil means; and

valve means connected to said coil-holder for regulating flow of a gas into said solenoid valve in response to actuation of said magnetic coil means.

4,643,395
VALVE WITH PROTECTED SEATS
 John B. Williams, Jr., Houston, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
 Filed Nov. 21, 1985, Ser. No. 800,250
 Int. Cl.⁴ F16K 3/16
 U.S. Cl. 251—172 4 Claims



1. A gate valve comprising a valve body having a valve chamber and an interior surface defining said valve chamber, inlet and outlet flow passages which intersect and communicate with the chamber and a pair of internal seat recesses formed in the valve body about the flow passages with one of said recesses in concentric surrounding relation to the inlet flow passage and the other of said recesses in concentric surrounding relation to the outlet flow passage, each said recess opening to said chamber and defined by an annular bottom end wall residing in a plane disposed substantially radially to the axis of the flow passage and having a circumferential cylindrical side wall;

a pair of valve seats received one within each of said seat recesses;

a gate member mounted in the valve body for movement between open and closed positions relative to said flow passages to control the flow of fluid through said flow passages, said gate member having parallel sealing faces adapted for fluid tight sealing engagement with said valve seats

each said valve seat comprising a metallic seat ring provided with an axial dimension slightly greater than the depth of the recess as measured from the annular bottom end wall of the recess to the interior surface defining said chamber

and having an annular rear face disposed in juxtaposition to the bottom end wall of its seat recess, in annular planar front face disposed in juxtaposition to the gate member, an innermost cylindrical wall, a circumferential cylindrical outer wall which is the wall outermost from the ring axis, an annular back seal groove in said rear face of each said seat ring in coaxial relation with the ring axis and of a diameter slightly larger than the inner diameter of the seat ring so as to be located adjacent the flow passage and the rearward inner edge of the seat ring as defined by the intersection of the annular rear face and said innermost cylindrical wall;

a first annular sealing member disposed within said back seal groove and adapted to provide a fluid tight seal with the bottom end wall of the seat recess,

each said seat ring having a circumferential annular groove in said circumferential cylindrical outer wall of the seat ring located nearer the front face than to the rear face thereof;

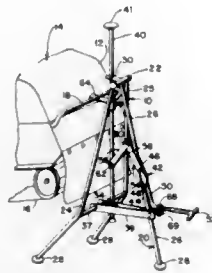
a second annular sealing member disposed within said circumferential annular groove and adapted to provide a fluid tight seal with the cylindrical side wall of the recess, and bleed passage means in the seat ring extending from said planar face of the ring of the rear face of the ring at a location intermediate the back seal groove and the circumferential annular groove whereby excessive fluid pressure between the seat ring and seat recess is precluded.

4,643,396
STAND FOR MOTORIZED SNOW VEHICLE OR THE LIKE
Michael Beals, 11081 Little Rice Dam Rd., Tomahawk, Wis. 54487

Filed Nov. 29, 1985, Ser. No. 803,057
Int. Cl.⁴ B66F 3/00

U.S. Cl. 254—116

13 Claims



1. A stand for raising the end of a motorized snow vehicle or the like and supporting the vehicle end in a raised position off the ground, comprising:

- a frame including two rigid front legs adapted for placement toward the vehicle end, and a rigid rear leg adapted for placement away from the vehicle end, said legs being joined near the top of the frame and flaring outwardly and downwardly therefrom so that the frame stands erect upon the ground;
- a rod guide on the frame for defining an elongated generally vertical channel therein;
- an elongated lift rod mounted in the channel and slidable in the channel;
- a lever pivotally mounted to the frame at a pivot point located at a distance from the lift rod, the lever having a first end which is manually accessible and pivotable between raised and depressed positions, and a second end generally opposite the pivot point from the first end which is connected to the lift rod so that depression of the first end lifts the lift rod;
- a vehicle support member mounted on and vertically adjustable in position upon the lift rod so that the vehicle

end may be raised and supported above the ground by raising the lift rod; and

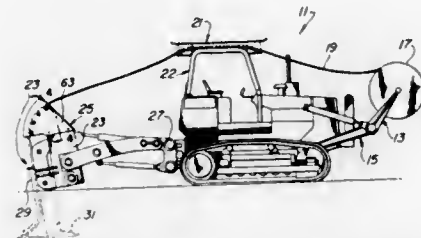
- a manually operable lock including a rearwardly extending stud formed on the rear leg and a ring entrained on the second end of the lever so that the ring can be placed on the stud to hold the lever to the frame to hold the lever in position with the lift rod raised to a selected height.

4,643,397
OFF-ROAD VEHICLE FAIRLEAD ASSEMBLY FOR FIBRE-OPTIC COMMUNICATION CABLE
Dennis L. Munns, Lancaster, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 15, 1985, Ser. No. 726,252
Int. Cl.⁴ B65H 59/00

U.S. Cl. 254—134.3 FT

5 Claims



1. A fairlead assembly comprised of an elongated housing defining an elongated open ended tunnel extending from an entry end to an exit end; an entry structure at said entry end including a plurality of rotatably mounted rollers, said rollers having a first group of horizontal transversely rotatably mounted rollers at said entry end, each of said rollers in said first group to extend sequentially to have a downwardly sloping vertical projection from said entry end with the uppermost roller being closely adjacent a lower edge of the tunnel, a second group of vertical rollers rotatably mounted sequentially at said entry end, said rollers in said second group having lower end portions dispersed between adjacent rollers of said first group and to have an outwardly sloping horizontal projection from one side of said tunnel, a third group of vertical rollers rotatably mounted sequentially in said opening, said rollers in said third group having lower ends dispersed between adjacent rollers of said first group and having an outwardly sloping horizontal projection opposite to said second group and from the other side of said tunnel, said rollers collectively defining an inwardly directed convergence at said entry end.

4,643,398
RUBBER PNEUMATIC RECTANGULAR PAD
Manfred Vetter, Burg Langendorf, 5352 Zulpich, Fed. Rep. of Germany

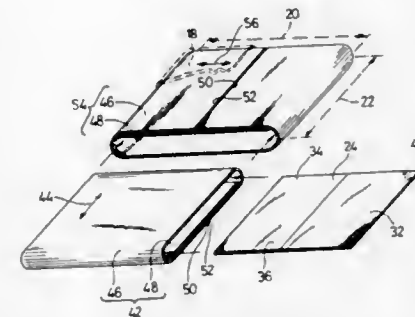
Filed Feb. 22, 1985, Ser. No. 704,634
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1984, 8406021[U]

Int. Cl.⁴ B66F 3/24
U.S. Cl. 254—93 HP

9 Claims

- Pneumatic pad made of a rubber material which is hot-vulcanized in a press, weblike and un-vulcanized before performing the step of hot-vulcanization, said pad having rectangular shape defined by a first and a second side of a rectangle, said pad incorporates
 - an airtight envelope arranged inside and connected to a connection device positioned in a corner and accessible from outside;
 - a first layer of a cord reinforced flat rubber material arranged outside this envelope, the direction of reinforcement running parallel to the said second side of the rectangle; and
 - a second layer of a cord reinforced material arranged outside

the said first layer, the direction of reinforcement running parallel to the first side of the rectangle; wherein the said first layer and the said second layer each consist of a first cut and of a second cut, the first cut of each layer exhibits a rectangular shape, and has a width which substantially equals the length of the side of the pad running crosswise to the direction of reinforcement of the respective layer, and a length which is approximately the double length of the side of the pad running parallel to the direction of reinforcement, and the said first cuts being bent around

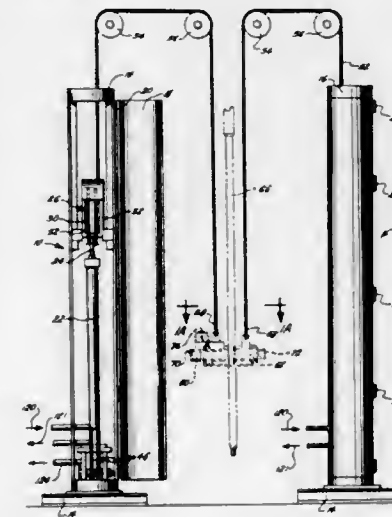


edges running parallel to the side of the pad which lies crosswise to the direction of reinforcement of the respective layer, and turned-under regions are formed whereby the two edges of the turned-under regions of each first cut abut without reciprocal overlap; and the second cut of each layer is rectangularly shaped, and is not larger in area than the area of the pad itself, and is positioned under the said regions abutting without reciprocal overlap of the respective first cut, and does not extend into the edges of the respective layer running crosswise to its direction of reinforcement.

4,643,399
APPARATUS FOR COUNTERBALANCING TONGS
Stanley Fletcher, 100 Swan Cir., Lafayette, La. 70508
Continuation-in-part of Ser. No. 379,276, May 17, 1982, abandoned. This application May 13, 1985, Ser. No. 733,717
Int. Cl.⁴ B66F 3/24

U.S. Cl. 254—386

9 Claims



1. An apparatus for counterbalancing tongs and assisting in lowering and raising the tongs within an oil derrick, comprising:

- a fluid actuated piston and cylinder assembly;
- a bracket carried by the piston;

a first pair of pulley wheels comprised of first and second pulley wheels coaxially rotatably carried the bracket; a second pair of pulley wheels comprised of third and fourth coaxially rotatably mounted pulley wheels in spaced relationship to the first pair of pulley wheels; a cable journaled alternately around the first and second sets of pulley wheels, a free end of the cable being fixed to a first tong to counterbalance and permit fine movements of the first tong;

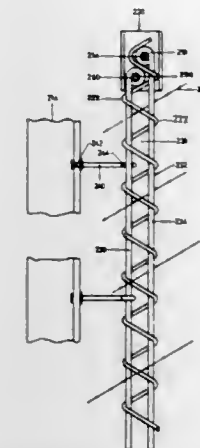
a source of fluid for reciprocally moving the piston to lift the first tong as the first and second sets of pulleys move away from each other and lower the tongs as the first and second sets of pulleys move towards each other; and a container divided by a fluid impermeable flexible diaphragm, the container on one side of the diaphragm being pressurized, the container on the other side of the diaphragm being in fluid communicating relationship with the piston and cylinder assembly through a bleed line.

4,643,400
TRIP-WIRE GUIDING DEVICE AND PROTECTIVE FENCE INCLUDING SAME
Chaim Porat, Beer-sheva, Israel, assignor to Beta Engineering and Development Ltd., Beersheva, Israel

Filed Jan. 11, 1980, Ser. No. 111,280
Int. Cl.⁴ E04H 17/12; A01K 3/00

U.S. Cl. 256—52

8 Claims



1. A trip-wire guiding device for a protective fence including a plurality of trip-wires tensioned between a pair of fence poles and connected to detector means for actuating same upon the disturbance of said trip-wires by an attempted penetration of the fence; said trip-wire guiding device including a ground-anchorable mounting pole having a stake at its lower end insertable into the ground between said pair of fence poles, an elongated trip-wire guiding means, and force-yielding attaching means attaching the elongated guiding means in a spaced, force-yielding manner to and laterally of said mounting pole; said elongated trip-wire guiding means comprising an open-spiral rod having lateral spaces between adjacent spirals which spaces serve as longitudinally-spaced openings through which said trip-wires are to be passed by sideways insertion for maintaining them in parallel space relationship; the axial space through all the spirals constituting an axial channel extending longitudinally through the open-spiral rod; and a common locking member received in said axial channel of the open-spiral rod for locking the trip-wires against removal through the lateral spaces between adjacent spirals, while permitting free longitudinal movement of the tensioned trip-wires such as to cause the detector means to be actuated upon a change in tension in the trip-wires; said force-yielding attaching means including a plurality of short rods attachable at one end to said ground-anchorable mounting pole and formed with eyes at

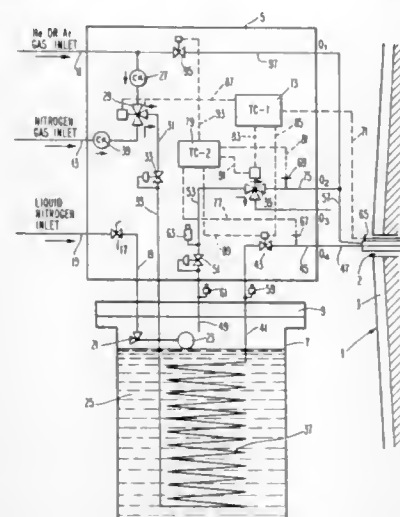
their opposite ends disposed in the spaces between adjacent spirals of the open-spiral rod, said elongated trip-wire guiding means further including a second straight rod passed through said axial channel through the open-spiral rod and through the eyes of the plurality of short rods.

4,643,401

APPARATUS FOR COOLING A VACUUM FURNACE
Howard J. Obman, Telford, and Howard D. Brodbeck, Berwyn, both of Pa., assignors to MG Industries, Valley Forge, Pa.
Filed Aug. 28, 1985, Ser. No. 770,074
Int. Cl.⁴ C21N 11/00

U.S. Cl. 266—80

20 Claims



1. Apparatus for cooling a vacuum furnace, comprising:
- first means for injecting a first cooling gas into the furnace,
 - second means for injecting a second cooling gas into the furnace,
 - means for cooling said first and second cooling gases before injection into the furnace,
 - means for sensing the rate of change of temperature in the furnace, the sensing means being connected to a control means, the control means being operatively connected to the first and second injecting means, the control means being adapted to select the first or second cooling gas for injection into the furnace, and
 - means for venting said first or second cooling gases out of the furnace,
- wherein both of said first and second cooling gases are directed through the cooling means, into the furnace, and out of the furnace, in a non-recirculating path.

4,643,402

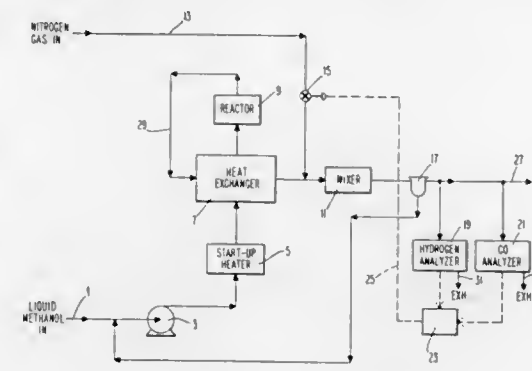
SYSTEM FOR PRODUCING A REGULATED ATMOSPHERE FOR A HIGH-TEMPERATURE PROCESS
Sudhir R. Brahmabhatt, Macungie, Pa., assignor to MG Industries, Valley Forge, Pa.
Filed Jul. 24, 1985, Ser. No. 758,330
Int. Cl.⁴ C21D 11/00

U.S. Cl. 266—82

9 Claims

1. A system for providing a regulated atmosphere for a high temperature furnace, the system comprising:
- startup heater means, connected to a source of a first fluid, for vaporizing the first fluid when the apparatus is initially activated,
 - heat exchange means, connected to receive the vaporized first fluid from the startup heater means,
 - a dissociation heater, the dissociation heater being located outside of the furnace, and being connected to receive fluid from the heat exchange means, the dissociation

heater being the sole means of dissociation of the fluid into a plurality of combustible components, the output of the dissociation heater being connected to convey dissociated fluid into the heat exchange means, whereby incoming fluid entering the heat exchange means can be vaporized by the heat provided from the output of the dissociation heater,



- means for mixing the dissociated first fluid with a diluting fluid, said diluting fluid being substantially inert at the temperatures present in the furnace,
- means for measuring the proportion of one or more of the combustible components, in the mixture of fluids, and
- means for regulating the flow of the diluting fluid into the mixing means, in response to the measured proportion of combustibles.

4,643,403

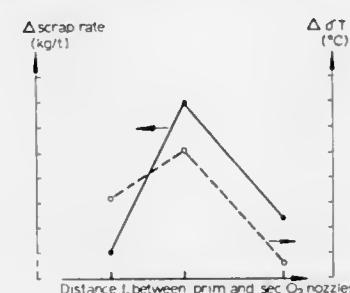
LIQUID-COOLED LANCE FOR BLOWING OXYGEN ONTO A STEEL BATH AND METHOD OF OPERATING THE LANCE

Gerardus P. Bührmann, Velsen-Zuid, and Pieter J. Kreijger, Castricum, both of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands
Filed Feb. 4, 1985, Ser. No. 697,905
Claims priority, application Netherlands, Feb. 8, 1984, 8400393

Int. Cl.⁴ C21C 5/32

U.S. Cl. 266—225

7 Claims



1. A liquid-cooled lance for blowing oxygen onto a bath of molten steel to increase the scrap production rate and temperature control, having a tip with at least one outlet from which a primary supply of oxygen is blown onto the bath, a central duct for the supply of the primary oxygen, a double tube system surrounding said central duct and for supply and removal of cooling fluid, a conical widening of the lance axially spaced from the tip, at least eight secondary outlets disposed around the lance in said conical widening for blowing a secondary supply of oxygen and a plurality of secondary supply ducts extending along the lance within the double tube system for supply of the secondary oxygen to the secondary outlets wherein said secondary oxygen outlets each have a diameter

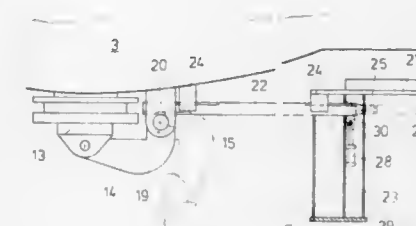
d_s which satisfies the condition $d_s/l < 0.02$ where l is the axial distance between the outlets for respectively the primary and secondary oxygen.

4,643,404

TILTABLE METALLURGICAL VESSEL ARRANGEMENT
Ernst Riegler, Enns; Ernst Zajicek, Ottensheim, and Johann Mühlbauer, Peilstein, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria
Filed May 23, 1985, Ser. No. 737,203
Claims priority, application Austria, Jun. 1, 1984, 1813/84
Int. Cl.⁴ C21C 5/48

U.S. Cl. 266—240

5 Claims



1. A tiltable metallurgical vessel arrangement having a convexly curved bottom and including a base, a cradle frame tiltably mounted on said base for supporting said vessel for tilting between an upright position and a tapping position, a receptacle placeable in the tapping position below at least one tap opening eccentrically arranged in said bottom, a closure flap for closing said tap opening in the upright position of the vessel, a lever for pivoting said closure flap, a shaft connected with said lever for rotation therewith, a pressure medium cylinder mounted on said cradle frame, and an actuation rod having a sufficient length to reach beyond the radiation region of said receptacle, said shaft being rotatable by said pressure-medium cylinder through said actuation rod.

4,643,405

TWO-CHAMBER ENGINE MOUNT WITH HYDRAULIC DAMPING

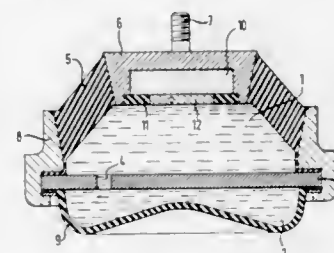
Manfred Hofmann, Hünfelden, and Giacomo Sciortino, Mülheim Kärlich, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 556,634, Nov. 30, 1983, abandoned.
This application Oct. 2, 1985, Ser. No. 783,323

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244295

Int. Cl.⁴ F16F 1/36, 15/04

U.S. Cl. 267—8 R

3 Claims



1. Two-chamber engine mount with hydraulic damping, comprising a housing, an intermediate plate disposed in said housing dividing said housing into an upper chamber above said intermediate plate and a lower chamber below said intermediate plate to be filled with fluid, said intermediate plate having a damping opening formed therein hydraulically interconnecting said chambers for preventing a hydraulic response upon the occurrence of high frequency and low amplitude vibrations, upper and lower rubbery elastic peripheral walls at

least partially defining said upper and lower chambers, respectively, a motor support plate having a bottom surface directly adjacent and partially defining said upper chamber and a top surface opposite said bottom surface, said support plate including a membrane chamber centrally formed in said bottom surface and extending partially to said top surface, said membrane chamber being pressure-tightly closed off from the surroundings, and a rubbery membrane separating said membrane chamber from said upper chamber, said rubbery membrane having a progressive spring constant, and a solid central quenching mass enclosed by said rubbery membrane.

4,643,406

FASTENING OF A LEAF SPRING OF COMPOSITE MATERIAL

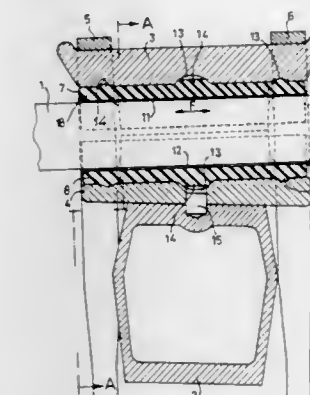
Francois Mounier-Poulat, Heyrieux; Jean Beupellet, St. Clair de la Tour, and Patrick Gardier, Villeurbanne, all of France, assignors to Renault Vehicules Industriels, Lyons, France
Filed Apr. 2, 1985, Ser. No. 719,242

Claims priority, application France, Apr. 3, 1984, 84 05212

Int. Cl.⁴ B60G 11/02; F16F 1/36

U.S. Cl. 267—52

6 Claims



1. In an assembly of a fiber reinforced plastic composite leaf spring and a suspension element of a vehicle, means for fastening said leaf spring to said suspension element, comprising: metal shoes located on two sides of said leaf spring, at least one of said shoes being fixed to said suspension element; U-shaped rubber pieces positioned between each of said shoes and said leaf spring, each of said rubber pieces having a face corresponding in shape to said leaf spring; a steel sheet positioned between each said rubber piece and said leaf spring, each said sheet being bonded to said rubber piece and to said leaf spring and having curved ends; and means for clamping said metal shoes to said leaf spring with said rubber pieces and steel sheets therebetween, whereby said leaf spring is not damaged by a clamping force of said metal shoes.

4,643,407

MECHANICAL SYSTEM COMPRISING TWO FACES MOVABLE WITH RESPECT TO EACH OTHER, AND A LUBRICANT THEREBETWEEN

Wolfgang Zirk, Dittelbrunn, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Jul. 6, 1984, Ser. No. 628,258

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324648

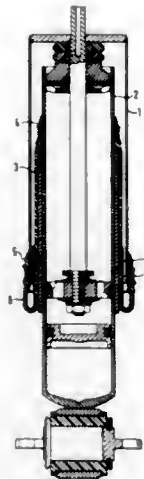
Int. Cl.⁴ F16F 9/04, 9/08; F16N 15/00

U.S. Cl. 267—64.27

14 Claims

1. A vibration damper comprising:
- a first cylindrical member defining a longitudinal axis;

a second cylindrical member mounted so as to be substantially coaxial with respect to said first cylindrical member; said cylindrical members being telescopically disposed one inside the other and being mounted so as to permit relative reciprocatory movement therebetween along said axis; a tubular bellows having a first end portion connected to said first cylindrical member so as to conjointly define a first contact interface therewith and a second end portion connected to said second cylindrical member so as to conjointly define a second contact interface therewith, said tubular bellows having an intermediate portion interconnecting said end portions thereof, said intermediate portion being folded over on itself to form a semi-toroidal folded portion and two subportions connecting said folded portion to corresponding ones of said end portions, the folded portion moving between said end portions in response to the reciprocatory movement of said cylindrical members thereby causing one subportion to become longer and the other subportion to become correspondingly shorter;

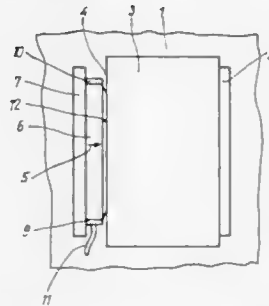


said subportions being concentric so as to have mutually adjacent wall surfaces which come into pressure contact with each other during said movement of said cylindrical members; a lubricant disposed within a predetermined boundary entirely outside of said contact interfaces on at least one of said wall surfaces of said tubular bellows; lubricant fixing means for fixing and confining the lubricant to remain within said predetermined boundary during assembly of said unit whereby said lubricant is kept from reaching said contact interfaces during said assembly; said lubricating fixing means being responsive to said pressure contact for releasing said lubricant for lubricating said wall surfaces and protecting said subportions against wear after said assembly and during the operation of said unit; and, said fixing means being a membrane destroyable in response to the contact forces developed when said subportions come into pressure contact engagement with each other thereby releasing said lubricant.

4,643,408
CLAMPING ELEMENT WITH A SHORT STROKE
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany
Filed Jan. 28, 1985, Ser. No. 695,444
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402913

Int. Cl.⁴ B25B 11/00
U.S. Cl. 269—22
6 Claims
1. A short-stroke clamping device comprising an elongated rigid bar having a rigid back wall and rigid side walls and end walls connected to said back wall and defining a pressure

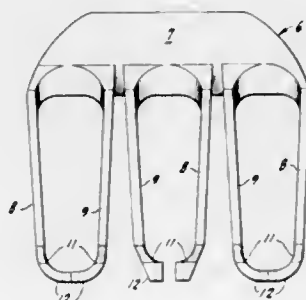
chamber having a long open front side opposite from said rigid back wall, a flexible wall extending across said long open front side and closing said pressure chamber, and a pressure connection connected to one of said end walls for supplying pressure to said pressure chamber to expand said flexible wall in a direction away from said rigid back wall, said flexible wall being at least partly corrugated with corrugations which ex-



tend through a thickness of said flexible wall so that said flexible wall is expandable when said pressure chamber is pressurized, said flexible wall includes a flat central area between said side walls of said rigid bar and a corrugated area between said flat central area and each of said side walls so that said flat central area is expandable away from said back wall when said pressure chamber is pressurized.

4,643,409
ENGINE PUSH ROD HOLDER
George Hamatani, Rte. 1, Box 400, Clarksburg, Calif. 95612
Filed Aug. 30, 1985, Ser. No. 771,535
Int. Cl.⁴ B25B 1/20

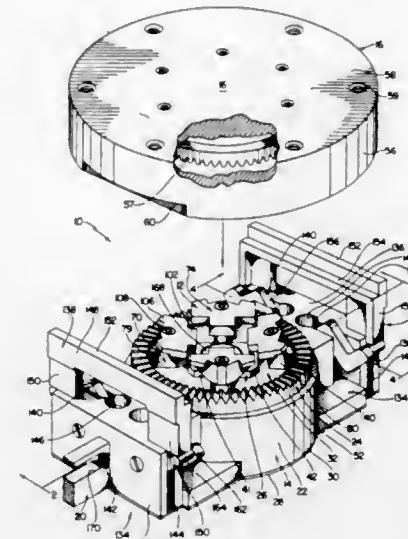
U.S. Cl. 269—43
4 Claims



1. In an alignment and supporting tool for simultaneously positioning a plurality of push rods in proper position for assembly in an internal combustion engine, the combination comprising: a body portion including a head portion displaced with respect to said body on one side of a vertical centerline of said body, a plurality of pairs of aligned finger portions extending downwardly from said head and substantially on the opposite side of said centerline, each finger of each of said pairs being integrally and resiliently secured to said body and configured to engage opposite sides of a common push rod and to apply a resilient retaining and aligning force thereto to position each of a plurality of said rods in a predetermined position with respect to each other, each finger in each pair of fingers being spaced from and generally configured to extend longitudinally along a portion of each rod and including terminal end portions having arcuate oppositely directed faces to embrace opposite arcuate surfaces of said push rod and retain said push rods in substantially parallel position during assembly of said engine while simultaneously aligning said rods with respect to each other and with respect to selected other engine components.

4,643,410
COUPLING CONSTRUCTION AND CLAMP THEREFOR
Dennis Mudge, Cumberland, R.I.; Joseph Coskie, Shrewsbury; Edward H. Jacobs, Holliston, both of Mass., and David R. Harris, Pawtucket, R.I., assignors to American Machine & Science, Inc., Park Ridge, Ill.

Filed Apr. 15, 1985, Ser. No. 724,181
Int. Cl.⁴ B23Q 3/18
U.S. Cl. 269—64
14 Claims



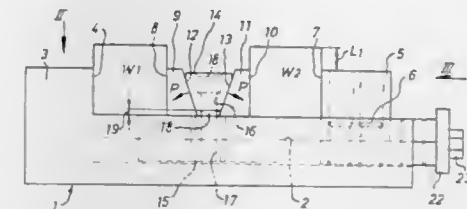
1. In a coupling construction of the type comprising a receiver and a carrier which are securable in a coupled position and a clamp for securing said receiver and said carrier in said coupled position wherein the clamp comprises a clamp body, a clamping member mounted on said clamp body, a movable member mounted on said clamp body so that it is movable toward said clamping member, spring means actuable for biasing said movable member toward said clamping member, means operable for positioning said clamp body so that said movable member is adjacent one of said carrier or said receiver, and said clamping member is adjacent the other of said carrier or said receiver and means for actuating said spring means to bias said movable member toward said clamping member to clampingly secure said carrier and said receiver in said coupled position, the improvement comprising said actuating means comprising a toggle member and first and second knuckle and socket means, said first and second knuckle and socket means cooperating to mount said toggle member so that it is pivotable to actuate said spring means and so that said spring means communicates with said movable member through said toggle member and said first and second knuckle and socket means to bias said movable member toward said clamping member.

4,643,411
VICE FOR CLAMPING TWO WORKS
Mitsuo Izumi, 2-18, Nakano-Honmachi, Shijonawate-shi Osaka, Japan

Filed Aug. 14, 1985, Ser. No. 765,496
Int. Cl.⁴ B25B 1/00
U.S. Cl. 269—153
3 Claims
1. A vise which is transformable for selectively clamping one or more works, comprising:

a vise body having a groove of generally T-shaped cross-section extending longitudinally, said groove extending all the way to a first longitudinal end of said body to form a groove open end, a first upstanding reference surface carried by said body adjacent a second longitudinal end of said body opposite said first longitudinal end, said first reference surface

oriented perpendicularly relative to a longitudinal axis of said groove, a supporting member slidably mounted in said groove adjacent said groove open end and including second and third upstanding reference surfaces spaced apart longitudinally, said second reference surface oriented parallel to said first reference surface, and said third reference surface being inclined so as to extend at an acute angle toward said groove in diverging relationship to said second reference surface, a fastener means for securing said supporting member against sliding movement in said vise body in longitudinally spaced relationship relative to said first reference surface to define a works-receiving space therebetween, first and second movable clamping members relatively slidably mountable in said groove within said works-receiving space, each of said clamping members including a clamping surface disposed parallel to said first and second reference surfaces, and a wedge surface inclined so as to extend at an acute angle toward said groove in diverging relationship to said clamping surface, said wedge surface acute angle being the same as said third reference surface acute

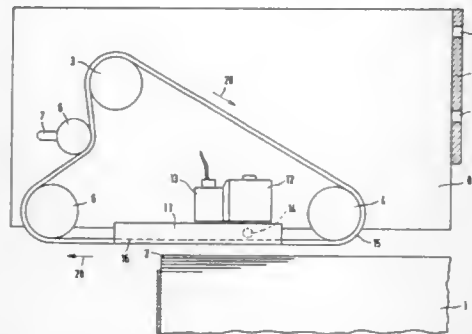


angle, said clamping members being positionable such that said wedge surfaces oppose one another and said clamping surfaces oppose respective ones of said first and second reference surfaces, a wedge positionable between said opposed clamping surfaces and including a pair of inclined surfaces diverging in a direction toward said groove and oriented complementarily to said wedge surfaces, a bolt extending through said wedge and into said vise body for moving said wedge toward said groove to urge said clamping surfaces toward the respective first and second reference surfaces for clamping first and second works therebetween, said fastener means being releasable to permit said supporting member and one of said clamping members to be removed from said groove through said groove open end, said supporting member being re-insertable into said groove after being reversed to position said third reference surface in opposing relationship to the remaining wedge surface to enable said wedge to be positioned therebetween to urge the remaining clamping surface toward said first reference surface for clamping a single work therebetween.

4,643,412
DEVICE TO PICK UP SHEETS FROM A STACK AND TRANSPORT THE SHEETS AWAY FROM THE STACK
Karl-Fritz Heina, Murrhardt; Adolf Hornung, Reichenberg; Kurt Wörner, Backnang, and Klaus Wolf, Oppenweiler, all of Fed. Rep. of Germany, assignors to Maschinenbau Oppenweiler Binder GmbH & Co., Fed. Rep. of Germany
Filed Mar. 7, 1985, Ser. No. 709,037
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3410026

Int. Cl.⁴ B65H 3/12
U.S. Cl. 271—94
5 Claims
1. Device for taking off sheets from a stack of sheets and for transporting said sheets away from the stack comprising a toothed belt (15) continuously running in a running direc-

tion (28) over at least one drive roller (3), at least two guide rolls (4,5) and at least one tension roll (6), said toothed belt (15) having spaced apart teeth (21), a valve (12) connected to a vacuum source, a guide block (11) mounted in two sections between said two guide rolls (4,5), extending with one section on an entry side of the toothed belt above the stack of sheets (1) and with the other section on an exit side of the toothed belt beyond the stack of sheets, and terminating at a front wall (27) on said exit side, a groove (16) formed in the guide block (11) facing the stack of sheets (1), the bottom of the groove (16) extending substantially parallel with respect to the stack of sheets (1), the depth of the groove (16) corresponding to the height of the toothed belt (15),



the groove (16) having side walls (25) between which the toothed belt (15) is movable free of friction, the chambers (22) being formed between each of the teeth (21) of the toothed belt (15) and the side walls (25), each chamber (22) being closed at the side walls (25), at least one hole (17) opening into each chamber (22) of the toothed belt (15), a suction port (18) being provided in the guide block (11) in alignment with respect to the holes (17), which suction port (18) is connectable to the vacuum source by the piston (23) of the valve (12) in a clock-controlled manner, and a recess (20) provided in the guide block (11) adjacent to the suction port (18) in the transport direction of the sheets, said recess (20) being arranged in alignment with respect to the holes (17) in the toothed belt (15).

4,643,413

FEEDING APPARATUS FOR PAPERBOARD SHEETS

William F. Ward, Sr., Hampstead, and John B. West, Glyndon, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Division of Ser. No. 331,245, Dec. 16, 1981, Pat. No. 4,494,745.

This application Mar. 7, 1984, Ser. No. 587,144

Int. Cl.⁴ B65H 3/12

U.S. Cl. 271-95

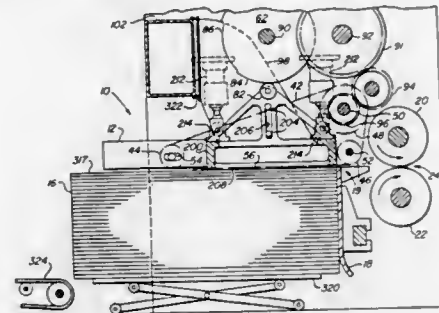
13 Claims

1. Feeding apparatus for feeding sheets successively in timed relation from above a stack of sheets comprising in combination:

- upper support means against which the top of said stack is positioned such that a top sheet thereof is aligned with a feed nip defined by a gate means and said upper support means, said gate means being adapted to meter said sheets one at a time through said nip;
- advancing means including a plurality of rotatable endless belt means supported side by side in spaced relation across said upper support means;
- drive means for rotating said belt means unidirectionally from zero to maximum velocity when they are in contact with said top sheet and for decelerating said belt means to

zero velocity when they are out of contact with said top sheet;

(d) shifting means for bringing said top sheet into and out of contact with said belt means in timed relation thereto such that said belt means begin rotating after they come into contact with said top sheet and stop rotating after they come out of contact with said sheet; and



(e) suction means in communication with said top sheet and acting between said belt means for continuously pulling said top sheet against said belt means when they are in contact with said top sheet to increase frictional engagement therebetween.

4,643,414

SHEET-DELIVERY CONTROL AND REGULATING APPARATUS

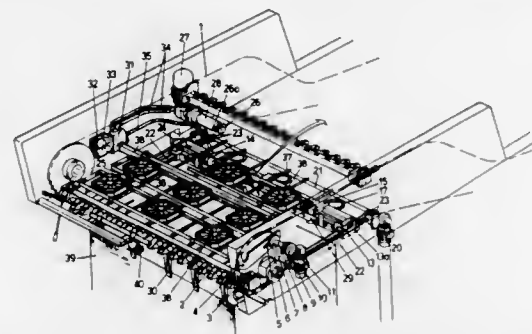
Willi Weisgerber, Johannisberg, Fed. Rep. of Germany, assignor to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden-Biebrich, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,334

Int. Cl.⁴ B65H 29/68

U.S. Cl. 271-183

7 Claims



1. An apparatus for controlling and regulating a sheet-delivery device wherein individual sheets are removed therefrom by means of gripper arrays mounted to two circulating, mutually parallel chains and guided above a receiving stack past a transversely-extending row of rotary suction means which apply physical action to each sheet, over which receiving stack the grippers are opened by means of a gripper-opening cam which is adjustable to provide for timing the gripper-opening action, and wherein the peripheral speed of the rotary suction means and the pressure applied thereat are adjustable and the longitudinal setting of the rotary suction means is adjustable in the direction of sheet movement for purposes of adaptation to different sheet-format lengths, and wherein, for altering at least two of the following values (a) to (c):

- the speed of rotation of the rotary suction means;
- the longitudinal setting of the rotary suction means;
- the pressure at the rotary suction means and the switching of the same on and off and the switching thereof over from suction to blowing air;

(d) the location of said gripper-opening cam for timing of the sheet grippers; and

(e) the speed of rotation and the switching on and off of fans which slow downwardly onto the sheet to facilitate the stacking action;

there are provided respective separate control means for the ones of said values which are to be regulated, a reference-value-setting means, means for feedback of the present-value setting with respect to said values to be controlled to said reference-value-setting means, the reference-value-setting means being provided with an input for values corresponding to the paper weight, the sheet format, and the speed of rotation of the machine, said reference-value-setting means being operatively connected with a computer which computes the reference values for all settings of the feeder, such reference values being determined empirically for each operating condition and being stored in the form of a family of characteristics, said computer emitting signals corresponding to said reference values to the reference-value-setting means, and said means transmitting signals corresponding to said values to said control motors for said ones of said values to be controlled.

4,643,415

APPARATUS FOR THE AUTOMATIC FEEDING OF A LAMINATING STATION

Hans-Gunter E. Kuehnert, Erzhansen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

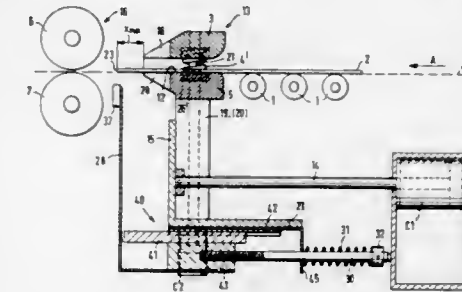
Filed Jun. 3, 1985, Ser. No. 740,554

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420426; Mar. 23, 1985, 3510579

Int. Cl.⁴ B65H 5/10

U.S. Cl. 271-268

16 Claims



1. An apparatus for the automatic feeding of a carrier to a laminating station, comprising:

a gripper device movable in a horizontal direction;

a pair of guide rods to which said gripper device is fastened, each of said guide rods being guided in a linear guide;

means for moving said gripper device towards or away from the laminating station, said means connected to said gripper device by a first connecting rod;

a sensor which detects the front edge of said carrier, said sensor being located on a holding bracket fastened to a holding block movable in the transport direction of the carrier, said sensor being at an adjustable distance in front of the front edges of the gripper strips of said gripper device in its open position;

a linear guide connecting said holding block and a cross-strut, a part of said linear guide being fixed in position and attached to the underside of a base plate connected to the underside of said cross-strut; and

a movable part of said linear guide being fastened to said holding block.

4,643,416

AMUSEMENT RIDE VEHICLE

Guus van der Veen, Kurt-Schumacher-Str. 29, 2900 Oldenburg, Fed. Rep. of Germany

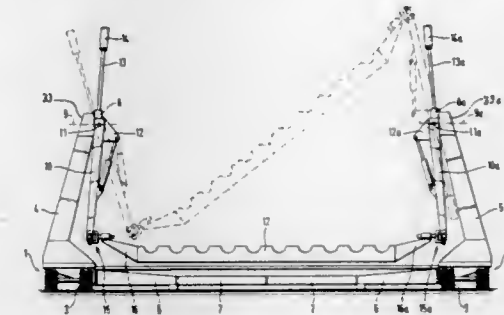
Filed Oct. 11, 1984, Ser. No. 859,661

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1983, 3338048

Int. Cl.⁴ A63G 1/08

U.S. Cl. 272-38

6 Claims



1. A passenger carrying amusement ride, comprising:

(a) a pair of first and second spaced upstanding supports;

(b) first and second motor drive means mounted at the top of each said support, said motor drive means independently controllable for forward, reverse and variable speed operation;

(c) first and second upstanding jibs, each fixedly mounted approximately at its center to a respective motor drive means, one end of each jib having counter-balancing means, the other end of each respective jib supporting one end of a passenger carrying gondola means by universal coupling means; and

(d) means associated with said gondola means to compensate for the variable spacing between the ends of the jibs to which said gondola means is coupled due to any asynchronization of said jibs.

4,643,417

HAND MANIPULATED EXERCISE DEVICE

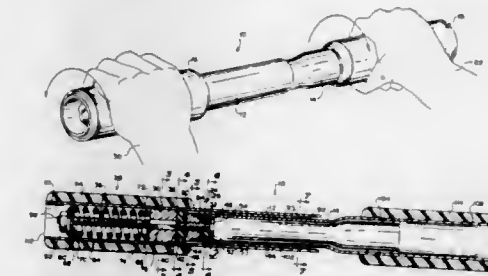
Frank C. Nieman, P.O. Box 785, Libertyville, Ill. 60048

Filed Oct. 17, 1983, Ser. No. 542,888

Int. Cl.⁴ A63B 5/00, 11/08

U.S. Cl. 272-67

18 Claims

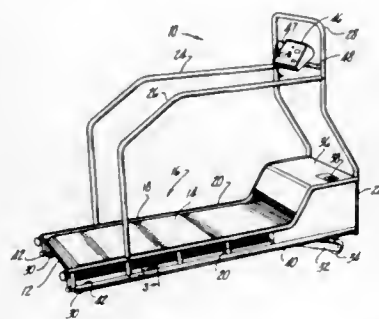


1. A hand manipulatable exercise device comprising first and second hollow tubes each having a hand grippable outer surface, said second tube being telescopically received in said first tube, and means within said tubes for coupling said tubes together in a manner permitting relative rotation therebetween against an adjustable frictional resistance to rotation thereof, said coupling means including means for establishing at least two frictional surface, means located within and rotatable with said first tube for adjusting pressure on said surfaces, said coupling means including a first plug member fixed within said first tube, a second plug member fixed to the inner end of said

second tube, means for urging said plug members toward each other including a shaft, said first plug member further having a bore therethrough having a splined cross-section, and said shaft having a spline formation on at least a middle portion thereof arranged to be received within said spline cross-section bore whereby said shaft is slidable in said spline cross-section bore and rotates with said first tube.

4,643,418
EXERCISE TREADMILL
Gordon B. Bart, Sturgis, Mich., assignor to Battle Creek Equipment Company, Battle Creek, Mich.
Filed Mar. 4, 1985, Ser. No. 708,004
Int. Cl.⁴ A63B 23/06
U.S. Cl. 272—69

10 Claims



1. In an electric exercise treadmill having a frame structure with longitudinal sides and forward and rear ends supporting an endless belt providing an exercise surface, said frame being supported from a floor surface at its forward and rear ends, an electric drive motor for moving said belt and an electric power tilt mechanism attached to said frame structure for raising the forward end of said exercise surface to change the inclination of said exercise surface from a floor level position to an elevated position, an interlock control system, comprising, in combination: an automatic perimeter protection switch means attached to the bottom of said frame along said longitudinal sides and forward end so that said switch means superposes said floor surface in close proximity thereto, preventing actuation thereof when said exercise surface is parallel to said floor surfaces, and said switch means is exposed for actuation when said exercise surface is in said elevated position; and circuitry interconnecting said perimeter switch means to supply power to said drive motor and said tilt mechanism and for interrupting said power upon the activation of said perimeter switch means by an object moving under said frame when said exercise surface has been elevated by said tilt mechanism.

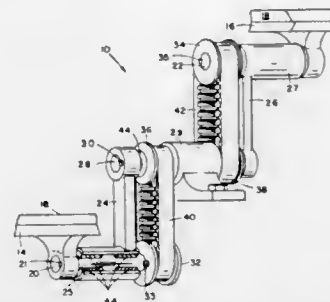
4,643,419
FIXED EXERCISE PLATFORM APPARATUS AND METHOD
Henry D. Hyde, 3229 Park Hills Dr., Austin, Tex. 78746
Filed Jan. 28, 1985, Ser. No. 695,546
Int. Cl.⁴ A63B 21/00

U.S. Cl. 272—73

6 Claims

1. A fixed exercise cycling platform apparatus for supporting an exerciser comprising:
a. a pair of support platforms upon which an exerciser's feet may be placed;
b. resilient cushioning means attached to said support platforms for cushioning said exerciser's feet;
c. platform shafts with one end of said platform shafts fixedly attached to the base of said support platforms so that said support platforms may be positioned at any desired angle and held there;
d. a pair of stationary platform gear means attached to said

platform shafts at the end of said platform shafts opposite from said support platforms;
e. a pair of spacing and support bars securably attached at one end to platform shaft carrier housings, which surround said platform shafts between said support platforms and said stationary platform gear means and which include bushings so that said platform shaft rotates freely within said shaft carrier housings;
f. a main shaft fixedly attached to the ends of each said spacing and support bars opposite from said platform shaft carrier housings;

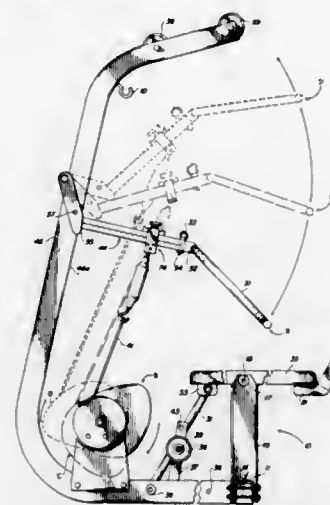


g. two oppositely positioned stationary main shaft carrier housing gear means aligned with said stationary platform gear means, fixedly attached to a main shaft carrier housing, which encloses said main shaft and includes bushings which enable said main shaft to rotate freely; and
h. a pair of oppositely positioned free spinning connecting means engagably attached to both said stationary platform gear means and said stationary main shaft carrier housing gear means so that, when said exerciser pedals, said free spinning connecting means rotates about both said stationary gear means thereby allowing said support platforms to rotate while being held in a fixed position.

4,643,420
FLOOR-MOUNTED EXERCISE MACHINE
Robert Q. Riley, 6835 E. Sheena Dr., Scottsdale, Ariz. 85254, and David L. Carey, 13627 N. 18th Dr., Phoenix, Ariz. 85029
Filed Jan. 7, 1985, Ser. No. 689,131
Int. Cl.⁴ A63B 21/02

U.S. Cl. 272—140

1 Claim



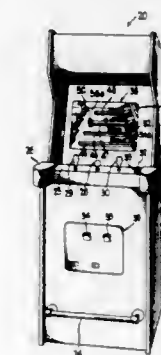
1. A muscle exercise machine, shaped and dimensioned for home use, comprising:
(a) a floor-supported frame, including
(i) an elongate rail having

a horizontal floor-supported lower portion, and an upwardly extending upper portion,
(ii) a cross-member carried transversely of said lower rail portion to maintain said upper portion perpendicular to the floor;
(b) a body support bench tiltably mounted for movement in a vertical plane above said lower rail portion;
(c) a force-applying bar, movable by muscle force in a vertical plane, pivotally attached at its forward end to said upper rail portion and extending rearwardly above said bench and said lower rail;
(d) muscle-force resisting means carried by said frame, including:
(i) a spring housing fixed to said frame,
(ii) a torsion spring enclosed by said housing, the fixed end of which is attached to said housing,
(iii) a single cam-shaped pulley in said housing, journaled for rotation co-axially with the transverse axis of said torsion spring;
and
(e) a single cable connecting said pulley and said force-applying bar such that movement of said bar causes rotation of said pulley against the resistance provided by said torsion spring.

4,643,421
VIDEO GAME IN WHICH A HOST IMAGE REPELS RAVENOUS IMAGES BY SERVING FILLED VESSELS
Steven M. Meyer, Chicago; R. Scott Morrison, Vernon Hills, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Aug. 31, 1984, Ser. No. 646,685
Int. Cl.⁴ A63F 9/22

U.S. Cl. 273—1 E

19 Claims



1. A game involving the repelling of ravenous images comprising:
means for displaying a plurality of various ravenous images;
means for displaying a host image;
means for displaying a supply image;
means for displaying a boundary image remote from the supply image;
means for advancing the ravenous images from the boundary image to the supply image;
player operable means for moving the host image and actuating the supply image upon initial operation of the player operable means and producing an image of a filled vessel;
means detecting subsequent operation of the player operable means after the producing of an image of a filled vessel and propelling the filled vessel image toward the boundary image remote from the supply image;
means discerning coincidence between the propelled filled vessel and an advancing ravenous image;
means repelling the advancing ravenous image back toward the boundary image upon the coincidence with the filled vessel being discerned;

a plurality of generally parallel sets of supply and boundary images with at least one ravenous image at each set; player controllable means for moving the host image from one of the sets to another set; and the means moving the host image from one set to another set also moving the host image between the supply image and the boundary image of each set and automatically shifting the host image into proximity with the supply image of the other set notwithstanding the position of the host image between the supply and boundary image of the one set.

16. A video game involving player selection of one of a plurality of images comprising:
means for producing a generally linear array of at least three similar images with each of the images in a respective fixed position;
means momentarily distinguishing one of the images from the others of the array only during a preselected time interval;
means displaying exchanging movement of the images of the array from one position to another position after the preselected time interval;
means generating a switching sequence whereby a randomly picked image is moved from an initial position in the linear array in one direction generally transverse to the linear array and over in a first direction generally parallel to the linear array to a position spaced from but aligned with a position in the linear array adjacent to the initial position and then in a direction opposite to the one generally transverse direction into an adjacent position while the image in said adjacent position at the start of the sequence is moved along the array in a direction opposed to said first direction into the initial position occupied by said picked image at the start of the sequence;
means for repeating the sequence one more time than the number of images in said array;
means for picking an image at the beginning of each repeat sequence that was not the said picked image in the immediately previous sequence;
player controllable means for selecting one of the images of the array after the exchanging movement;
means for producing a reward display upon selection of the one distinguished image of the array; and
means producing a consequence image upon selection of any of the other images of the array.

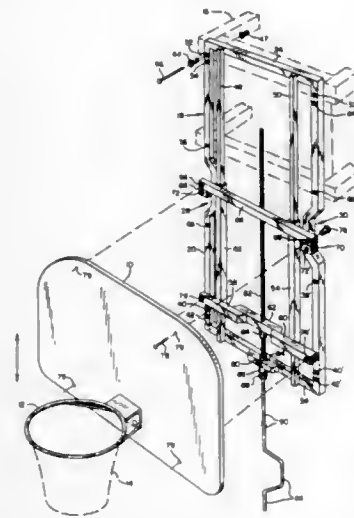
4,643,422
BASKETBALL BACKBOARD ADJUSTER
Jon J. Cramblett, 1020 SE. 36th, Troutdale, Ore. 97060
Filed Mar. 15, 1985, Ser. No. 712,272
Int. Cl.⁴ A63B 63/08

U.S. Cl. 273—1.5 R

16 Claims

1. A basketball backboard adjustment apparatus for varying the height of a basketball backboard and hoop, comprising in combination:
(a) a mounting standard having a set of mounting means;
(b) a basketball backboard having another set of mounting means configured to mate with the mounting means of the standard;
(c) a frame having generally vertically extending sides, each side including an access area at a point along the length thereof, and being configured to be attached to a set of the mounting means;
(d) a track mounted on the frame and extending substantially vertically in direction;
(e) a carriage mounted on the track for substantially vertical movement relative thereto in close proximity to the frame;
(f) attachment means mounted on the carriage and access-

ble through the access area of the frame and engageable with the other set of mounting means; and



(g) user controlled adjustment means interconnecting the frame and the carriage for moving the carriage along the track and positioning it as desired by the user.

4,643,423

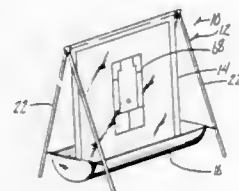
PITCHING TARGET

Robert L. Wright, 4221 - 75th St., Des Moines, Iowa 50322
Filed Oct. 31, 1984, Ser. No. 666,689

Int. Cl.⁴ A63B 69/00

U.S. Cl. 273—26 A

6 Claims



1. A free-standing baseball and softball pitching target comprising:

a frame having an elongated top crossbar supported above a support surface by leg means at each end of said crossbar, a screen having a flat front surface secured to said crossbar so as to hand and swing freely therefrom in a planar fashion and having a target depicted on said flat front surface, a stationary trough mounted on said frame in a fixed position beneath said screen for receiving balls impacting on said screen and falling downwardly therefrom, said trough being positioned sufficiently close to said support surface to prevent balls from rolling beneath said trough, said lower edge of said screen being free and independent of said frame and trough, and said screen having upper and lower edges and opposite sides, said lower edge extending into said trough so as to define a front portion and back portion of said trough, whereby balls impacting on said screen drop downwardly therefrom and are collected in said front portion of said trough, said screen freely swinging independently and relative to said trough in response to impact of said ball and said lower edge of said screen being in closely spaced proximity to the bottom of said trough.

4,643,424
BALL FOR BALLGAMES AND MANUFACTURING
PROCESS THEREOF
Keiji Nakajima, No. 22-2, Shinkamota 1-chome, Okta-ku, Tokyo, Japan

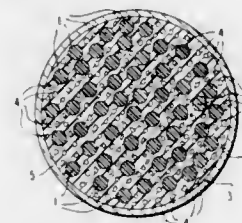
Filed Jan. 11, 1985, Ser. No. 690,450

Claims priority, application Japan, Jan. 18, 1984, 59-5744

Int. Cl.⁴ A63B 37/06, 45/00

U.S. Cl. 273—60 B

1 Claim



1. A ball for ball games comprising a spherical body and a cover body provided on the circumference thereof, the spherical body of which consists essentially of a plurality of granules of hard synthetic resin and a soft synthetic resin of which the softening point is at least 10° C. lower than that of the hard synthetic resin having a plurality of bubbles disposed substantially uniformly in the space between the hard synthetic resin granules.

4,643,425

MICROPROCESSOR CONTROLLED ROULETTE GAME
INCLUDING AN OPTICAL ENCODER FOR SENSING
THE POSITION OF THE BALL ON THE ROULETTE
WHEEL

Mario Herzenberger, Via Don Sturzo, 2, 21028 - Travedona
Monate (Varese), Italy

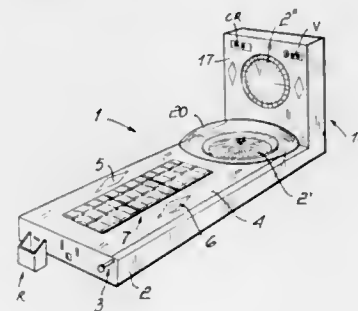
Filed Oct. 26, 1984, Ser. No. 665,062

Claims priority, application Italy, May 2, 1984, 20767 A/84

Int. Cl.⁴ A63F 5/00

U.S. Cl. 273—142 B

1 Claim



1. A microprocessor controlled roulette game comprising in combination, in a box-like body, a roulette wheel, a first electric motor operatively coupled to said roulette wheel to drive it with at least a first constant set speed, launching means to be operated by the player to launch a ball onto said roulette wheel, playing selecting means effective to be actuated by the player in order to define a stake value, position sensing means, for sensing the position of said ball on said roulette wheel, when said ball is in a rest condition, means for introducing tokens in order to set said stake value, token supplying means for supplying a predetermined number of said tokens in the case of a win by said player, a microprocessor circuit operatively coupled to and controlling said motor, said launching means, said playing selecting means, said position sensing means, and said token supplying means in such a way that, in the case of a win, said token supplying means are caused to

supply said predetermined number of said token, means for recovering said ball as said ball is in a rest condition in a case defining a number on said roulette wheel, means for recovering said ball sent to said launching means, said ball recovering means consisting of a swinging arm effective to axially move in a substantially vertical direction for predetermined stroke lengths, as driven by a second electric motor, said first and second electric motors' speed being directly controlled by said player, said arm radially extending with respect to said roulette wheel and having a free end provided with means for engaging said ball and retaining it in a ready condition to be discharged, upon command, into a recovery channel, said ball position sensing means consisting of an optical encoder comprising a perforated disc member, having a plurality of spaced radially extending holes, each hole line being indicative, in a binary code, of a predetermined number from 0 to 36, each said number of said line corresponding to the number of a numbered case or sector of said roulette wheel, said perforated disc being rigid with said roulette wheel driving shaft, said optical encoder further comprising a light emitting diode-phototransistor array effective to read each radially extending hole combination of said perforated disc, a further toothed disc member being provided associated with said driving shaft and cooperating with a stop tooth member for stopping in a predetermined position said perforated disc, said predetermined position substantially corresponding to the position of said light emitting diode-phototransistor array, photocell means associated with the top of the roulette wheel casing and substantially aligned with said light emitting diode-phototransistor array in order to detect the position of said ball on said roulette wheel case.

4,643,426

GAME PLAYING IMPLEMENT

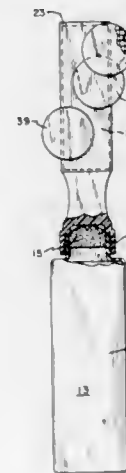
Daniel Adams, 345 W. Packard, Fort Wayne, Ind. 46807

Filed Aug. 26, 1985, Ser. No. 769,410

Int. Cl.⁴ A63F 9/00; B43K 29/00

U.S. Cl. 273—148 R

2 Claims



1. A magnetic wand for collecting a plurality of ferromagnetic playing pieces previously temporarily positioned on a game card in one mode of play, the wand having a hollow handle portion and a permanently magnetized extension portion comprising a permanent magnet structure and a thin walled plastic shell completely encasing the permanent magnet structure extending from the handle portion, the handle portion including a marking fluid dispensing wick and closure means comprising a threaded coupling between the handle portion and the extension portion for selectively covering the wick with the extension portion by threadedly joining the extension portion to the handle portion, the handle portion adapted to receive an ink supply and to dispense that ink through the wick for permanently marking a game card in

another mode of play, a game player using the handle portion only in said another mode of play while using both the handle portion and the extension portion coupled together to clear the game card at the conclusion of play in said one mode of play.

4,643,427

SET OF SCULPTURAL CONSTRUCTION PIECES

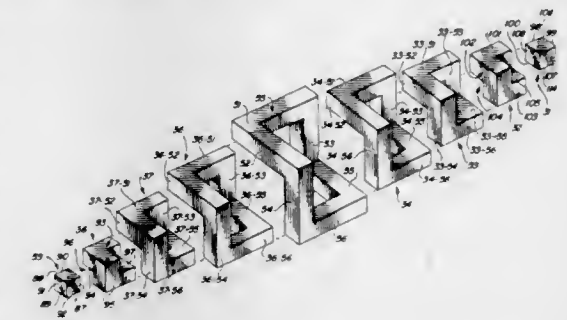
Robert A. Wozniak, 1915 E. Wesleyan Dr., Tempe, Ariz. 85282

Filed May 5, 1986, Ser. No. 859,445

Int. Cl.⁴ A63F 9/08

U.S. Cl. 273—160

3 Claims



1. A set of inter-related modular blocks for making a plurality of different and distinct geometric sculptural designs comprising:

a first block having six legs;
first and second legs being coupled to form a first L-shaped member;
third and fourth legs being coupled to form a second L-shaped member;
a fifth leg coupled between a first end of said first L-shaped member and a first end of said second L-shaped member, said fifth leg positioning said first L-shaped member in a plane parallel to the plane of said second L-shaped member but spaced apart therefrom and being perpendicular to the planes of both said first and second L-shaped members;
a sixth leg integrally coupled between the opposite end of said first L-shaped member and the opposite end of said second L-shaped member, said sixth leg positioning said first member in a plane parallel to and displaced from the plane of second member, being perpendicular to the planes of both of said first and second members, and being diametrically opposite said fifth leg and parallel thereto;
said first and second L-shaped members and said fifth and sixth legs forming a single assembly representing the skeleton of a cube where each face of the cube includes one adjacent pair of legs, and the diametrically opposite face includes the opposite pair of adjacent legs;
each of said six legs being equal in length to one another and each having a length equal to a first predetermined dimension "d₁";
a pair of second blocks each having six legs, each of said second six legs being equal in length and having a length equal to a second predetermined dimension "d₂", said second six legs being configured into a single integral assembly identical in configuration to the single integral assembly of said first block with d₂ being less than d₁ by the width of one of said six legs such that each of said second blocks can be aligned with all legs parallel to the corresponding legs of said first block and nested therein from diametrically opposite sides for storage purposes;
a pair of third blocks each having six legs, each of said third six legs being equal in length and having a length equal to a third predetermined dimension "d₃", said third six legs being configured into a single integral assembly identical to the integral assembly of said first block and said second block but with d₃ being less than d₂ by the width of one of

six legs such that said each of said third blocks can be aligned with all legs parallel to the corresponding legs of said first and second blocks and nested within said second block for storage purposes;

a fourth pair of blocks each having three legs integral with and perpendicular to one another for forming a cube lacking a pair of diametrically opposite corners, each of said fourth blocks having a fourth predetermined dimension "d₄" where d₄ is less than d₃ by the width of one of said six legs such that said fourth block can be aligned and inserted within each of said fourth blocks for storage purposes;

a pair of fifth cubic blocks dimensioned to be nested into the missing corners of each of said fourth blocks such that all of said first block and each of said pairs of second, third, fourth and fifth blocks may be nested within one another to form a hollow cube having an outer dimension d₁ × d₁ × d₁ and a wall thickness equal to the width of one of said six legs;

each of the legs of each of said blocks being rectangular and the width and height of said legs being equal, with the lengths of said legs being less than the previous block into which it is nested by one leg width, said blocks being readily disassembled from said nested storage position for building a plurality of different and distinct geometric sculptural designs therefrom.

4,643,428

GOLF CLUB GRIPPING AID

George R. Churchill, 61 Broad Reach M-59, Weymouth, Mass. 02191

Filed Jul. 3, 1985, Ser. No. 751,485

Int. Cl.⁴ A63B 53/14, 69/36

U.S. Cl. 273—166

2 Claims



1. A golf training strap and a golf glove having closing flaps having a plurality of hooks and loops, said hooks and loops meshing with each other to securely position the glove on the golfer's hand, said strap and glove combination used to develop the golfer's hand coordination, said strap comprising a length of non-stretchable fabric folded upon itself and stitched to form a relatively narrow length of strapping, one end of said strap folded over and secured to the other portion of the strap at a point spaced a distance from its free end to form therewith a loop, and a pad having a first surface of material including loops on one side and a second surface of hooks on the other side secured to the unoverlapped portion of the strap, said pad being positioned between the glove closure flaps and secured to said glove by meshing, respectively, the hooks and loops of the glove with loops and hooks on the pad.

4,643,429

EDUCATIONAL BOARD GAME

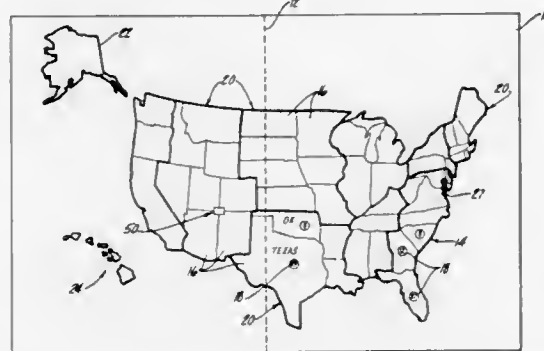
Peter D. Crandon; Melody A. Crandon; William B. Holman, and John P. Holman, all of 1500 Remsing, Hartland, Mich. 48029

Filed May 13, 1985, Ser. No. 732,921

Int. Cl.⁴ A63F 3/04

U.S. Cl. 273—251

4 Claims



1. An educational game for two or more players comprising: a game board depicting a map of the United States, said map including boundaries for each state and each state having a predetermined electoral vote, a chance device,

at least two game pieces, each game piece being associated with each player and being movable between states on said game board map, the number of moves at a turn being determined by said chance device,

a plurality of point cards, one point card being associated with each game piece for each state, each point card for each state having first indicia means on one side of the point card corresponding to the identity of the state and the number of electoral votes for the particular state, and each point card for each state having second indicia means on its other side corresponding to only one of the game pieces so that one point card is associated with each player for each state,

a plurality of question cards, each having a front and rear surface, at least one governmental question being imprinted on the front surface of each card and the answer to said at least one governmental question being imprinted on the rear surface of each said question card,

wherein, with a player's gamepiece on a state in said map, upon correctly answering the governmental question on one of said question cards, said last mentioned player is awarded the point card associated with said last mentioned player for said last mentioned state,

wherein the player who first receives the number of points on said point cards corresponding to the number of electoral votes necessary for election to the Presidency of the United States and thereafter returns to a predetermined place on said map wins the game, and

wherein, except for states contiguous to said predetermined place on the map, each game piece positioned on a state forms a blocking means to prevent other game pieces from landing on said last mentioned state.

4,643,430

TRUCKING BUSINESS—SIMULATION GAME

Valerio C. D'Aloia, 25 Third St., Edison, N.J. 08837

Filed Apr. 2, 1985, Ser. No. 719,059

Int. Cl.⁴ A63F 3/00

U.S. Cl. 273—252

20 Claims

1. A game for two or more players which simulates competitive trucking enterprises, comprising:

(a) a plurality of first playing pieces, each having the shape of a miniature truck with a truck body providing a cargo

bay forming a container, open at the top for carrying a miniature load, said plurality of first playing pieces having markings of at least two different trucking companies, with at least two of said first playing pieces being associated with each trucking company;

(b) a plurality of second playing pieces, each having the shape of miniature cargo of a size suitable for conveyance by one of said first playing pieces, individual ones of said second playing pieces being different so as to represent cargo of different monetary value;

(c) a playing board having at least one predetermined travel path constituted by a plurality of playing spaces along which the first playing pieces may be advanced;

(d) a plurality of third playing pieces, each having the shape of a miniature building and representing a trucking termi-



nal, each of said third playing pieces, respectively, carrying the markings of one of said different trucking companies, said third playing pieces being adapted to be placed at designated points on said playing board along said predetermined travel path; and

(e) random chance means for indicating to each player the number of playing spaces that such player may advance a first playing piece along said travel path during each individual turn,

whereby each player simulates the operation of a trucking enterprise by loading, carrying and unloading said second playing pieces at the positions of said third playing pieces, and at other positions along said travel path using said first playing pieces to transport said second playing pieces along said predetermined travel path.

4,643,431

BLACKJACK BOARD GAME

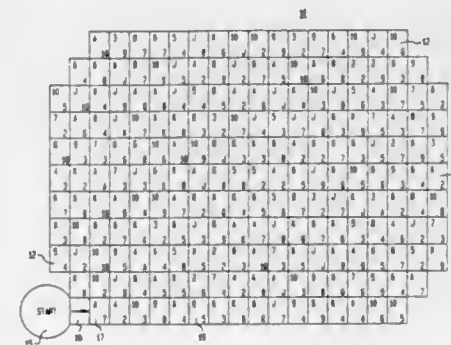
David Hilinsky, 606 Orchard St., Cranford, N.J. 07016

Filed Apr. 2, 1985, Ser. No. 718,878

Int. Cl.⁴ A63F 3/00

U.S. Cl. 273—243

7 Claims



1. A game apparatus for playing a game of chance between at least first and second player entities, the game apparatus comprising:

a first game board region having thereon a plurality of sta-

tions arranged in a predetermined sequence of stations, each such station having identified thereon a combination of specified card pairs from a blackjack card deck;

a chance device for generating from a predetermined plurality of numerical values a substantially unpredictable numerical value, means for correlating said predetermined plurality of numerical values to a specific card value from a blackjack card deck such that said generated unpredictable numerical value can be correlated to a specific card value from a blackjack card deck for addition with said combination of a specified card pair of a chance-selected one of said stations to produce a sum value for the first player entity, each of said numerical values having a respective associated probability of being generated which is different from that of another of said numerical values; and

a second game board region for selecting a further substantially unpredictable chance value for the second player entity, whereby said sum value and said further substantially unpredictable chance value are compared to one another for determining a winner between the first and second player entities.

4,643,432

CHECKER TYPE GAME UTILIZING INTERFITTING GAME PIECES

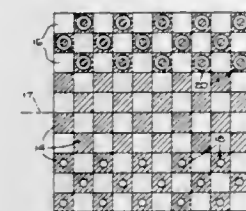
William J. Berry, 532 Jefferson, Lake Geneva, Wis. 53147, and Michael H. McManigan, Ogdensburg, Wis., assigns to William J. Berry, Lake Geneva, Wis.

Filed Dec. 18, 1984, Ser. No. 683,221

Int. Cl.⁴ A63F 3/00

U.S. Cl. 273—260

6 Claims



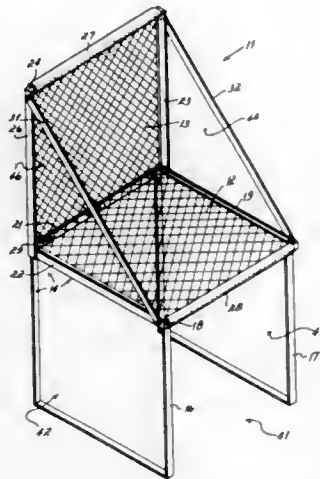
1. A game comprising, a game board of checkerboard type having an imperforate, planar upper playing surface,

two sets of playing pieces of only two different kinds, adapted to be placed on the game board, and those of each set being moved along the game board toward those of the other set in the playing of the game,

the playing pieces of the two sets being respectively identical rings and identical pegs capable of being interfitted to form a playing piece unit, each ring having opposite parallel flat side surfaces and being symmetrical relative to a central plane between and parallel with the flat side surfaces, each peg being longer than the thickness of the ring and being symmetrical relative to a central plane that is perpendicular to the longitudinal axis of the peg, and the playing pieces being capable of being so interfitted by insertion of either end of a peg into a ring from either side of the ring, the playing pieces having means for limiting insertion of the peg into the ring substantially to an extent not more than half the thickness of the ring and for holding interfitted pieces together and the peg thereby, because of the relative dimensions and proportions of the playing pieces extending beyond the ring on one side of the ring.

the playing pieces being of such relative proportions that when a playing piece unit is set on the playing board with either piece lowermost and the other piece in elevated position relative thereto, the unit is held stable on the playing board.

4,643,433
TARGET GAME
Timothy A. Wehby, 5870 Cedaridge Dr., Cincinnati, Ohio 45247
Filed Jul. 16, 1985, Ser. No. 755,495
Int. Cl.⁴ A63B 67/06
U.S. Cl. 273-402 3 Claims



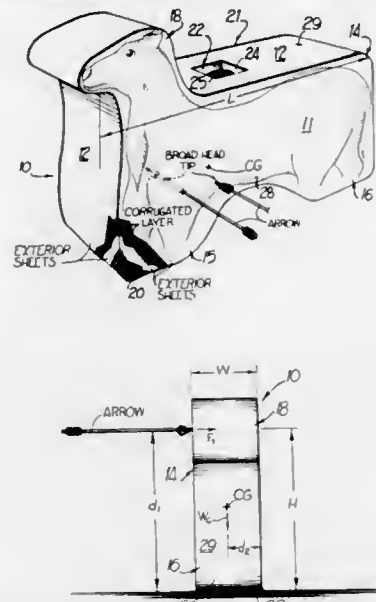
1. A game comprising (a) a scoring platform including a frame having a first generally horizontal surface and a second, generally vertical, surface having a lower edge contiguous with a rear edge of the horizontal surface, and a base including two spaced-apart frame members supporting opposite lateral edges of the horizontal surface, the spacing between the two said frame members defining an opening extending beneath the horizontal surface, said frame further including a first and a second frame element on opposite sides of the horizontal and vertical surfaces, each cooperating with a lateral edge of the horizontal surface and a lateral edge of the vertical surface to define first and second triangular openings, and (b) a disc-shaped projectile to be sailed by a player from a location remote from the frame toward the frame, with points awarded the player being dependent upon sailing the disc-shaped projectile through said opening or causing the disc-shaped projectile to come to rest on the horizontal surface or upon both the horizontal and the vertical surfaces.

4,643,434
ARCHERY TARGET AND METHOD
Eugene C. Carlin, 351 Lockheed Ave., Marietta, Ga. 30060
Filed Jul. 23, 1984, Ser. No. 633,345
Int. Cl.⁴ F41J 3/00
U.S. Cl. 273-408 11 Claims

8. An archery target comprising a foamed plastic core; a cover enclosing said core, said cover bonded directly to said core by the material of said core and said cover serving to retain said core in place when penetrated by arrows, said cover including a pair of corrugated paperboard side pieces covering opposite sides of said core and a corrugated paperboard edge piece extending around the edge of said core between said side pieces; said edge piece defining an opening therethrough; and further including a recess form member extending into said core and abutting said cover around said opening, said recess form member defining an outwardly opening recess therein in registration with said opening through said cover.

11. An archery target comprising a foamed plastic core and a cover enclosing said core, said cover bonded directly to said

core by the material of said core and said cover serving to retain said core in place when penetrated by arrows, the overall target weight and target width having been selected to offset a sidewise moment of force of a predetermined value

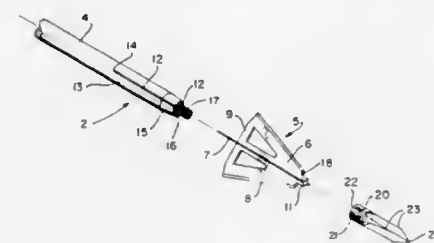


exerted on the target by an arrow impacting thereon to prevent sidewise tipping of the target where the core density ρ , effective target length L and effective target width W are selected to satisfy the equation:

$$F_1 = \rho L \frac{W^2}{2}$$

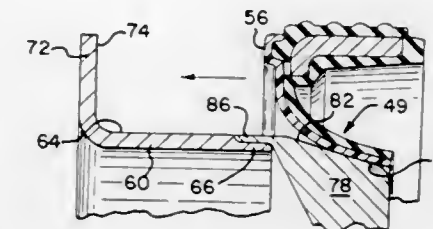
with F_1 equal to a sidewise force of a prescribed value exerted on the target by an impacting arrow and where the core density is about 3-5 lbs./ft.³; the effective target length is about 3 feet; and the effective target width is about one foot.

4,643,435
HUNTING ARROW
John Musacchia, 3705 SW. 42nd Pl., Gainesville, Fla. 32608
Filed Dec. 11, 1985, Ser. No. 807,599
Int. Cl.⁴ F41B 5/02
U.S. Cl. 273-422 14 Claims



1. A hunting arrow comprising, an arrowhead having a pair of crossed blades and including a plurality of cutting edges extending rearwardly from a forward shoulder to a rear tip, an arrow shaft having a forward portion provided with two intersecting slots therethrough, a threaded tip on the forwardmost end of said shaft, a forwardly facing stop shoulder on said shaft forward portion adjacent said threaded tip, the axial extent of said arrowhead blades fully insertable within said slots in said shaft to position said arrowhead forward shoulder substantially flush with said arrow shaft stop shoulder, and a point member removably attachable to said shaft threaded tip to retain said arrowhead secured relative said shaft.

4,643,436
FLUID SEALS WITH UNITARY WEAR SLEEVE ELEMENTS
Ronald A. Jackowski, Algonquin, Ill., assignor to Chicago Rawhide Mfg. Co., Elgin, Ill.
Division of Ser. No. 595,509, Mar. 30, 1984, Pat. No. 4,531,748.
This application Apr. 10, 1985, Ser. No. 721,683
Int. Cl.⁴ F16J 15/32
U.S. Cl. 277-1 3 Claims

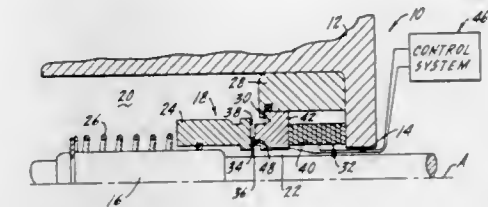


1. A method of manufacturing a fluid seal assembly from a pair of fluid seal components, said method including the steps of forming a first seal component having a casing portion with a mounting flange forming a part thereof and a seal body portion including a composite sealing lip having a generally radially extending elastomeric seal lip component in the form of a radially extending ring having axially inner and outer face surfaces, with an outer margin thereof being bonded to a portion of said casing, and an inner edge portion, and a radially extending fluorocarbon resin ring component having axially inner and outer end face surfaces and a radially inner edge portion aligned with said radially inner edge of said elastomeric ring to form a central opening, and with the mutually opposed end face surface of said elastomeric and resinous rings being bonded to each other to form a unitary composite lip, forming a unitizing casing of generally annular form and having a generally L-shaped cross-section with an axially extending wear sleeve portion of slightly greater diameter than diameter of said central opening in said composite seal body, and a radially extending protective flange joined at its inner diameter to said wear sleeve, forming an annular line of weakness on a portion of said wear sleeve spaced from the axially inner end thereof, spacing said first and second components axially from each other, positioning a tapered mandrel such that an axially outer portion thereof overlies an axially inner part of such wear sleeve, and axially moving said sealing element along said mandrel toward said casing element, with said resinous ring being thereby moved along and formed into a tapering configuration by said tapered mandrel surface, and then onto said wear sleeve surface until said composite lip edge is positioned axially outwardly of said line of weakness, and thereafter imparting a curl to said sleeve about said line of weakness to form a radially extending locking flange to unitize said wear sleeve and said seal element together with a portion of said resinous ring engaging said said wearing surface in fluid-tight relation.

4,643,437
MECHANICAL SEAL WITH AUTOMATIC GAP CONVERGENCE CONTROL
Richard F. Salant, Arlington Hts.; William E. Key, Schaumburg, and Peter L. Kay, Arlington Hts., all of Ill., assignors to Borg-Warner Industrial Products, Inc., Long Beach, Calif.
Continuation of Ser. No. 789,889, Oct. 21, 1985, abandoned.
This application Mar. 17, 1986, Ser. No. 840,369
Int. Cl.⁴ F16J 15/34
U.S. Cl. 277-28 30 Claims

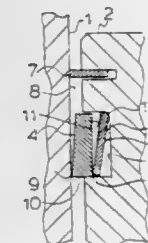
1. A controllable mechanical seal for sealing a shaft rotatable relative to the housing of a fluid machine, said seal comprising a first face element having a first radial face surface, said first element being adapted for rotation with the shaft, a second face element having a second radial face surface, said second ele-

ment being adapted to be supported within the housing, one of said elements being movable axially along the shaft, said first and second surfaces being adapted to define a gap which converges from a high pressure side to a low pressure side of said seal and within which there is a thin lubricating fluid film, actuating means for deforming at least one of said elements to



thereby adjust the convergence of said surfaces, sensing means for generating a signal indicative of a condition of the gap, and control means responsive to said signal for generating an output which is applied to said actuating means to control said deformation and thus maintain an optimum thickness of the lubricating film for a wide range of operating conditions.

4,643,438
AXIAL OIL SEAL OF A ROTARY PISTON ENGINE
Hans-Jürgen Klusowski, Hergensweiler, and Helmut Schönic, Kempten, both of Fed. Rep. of Germany, assignors to Wankel GmbH, Berlin, Fed. Rep. of Germany
Filed Jun. 5, 1986, Ser. No. 871,109
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609018
Int. Cl.⁴ F16J 15/34; F01C 19/02
U.S. Cl. 277-81 P 4 Claims



1. An axial oil seal of a rotary piston engine, especially of a rotary piston internal combustion engine of trochoidal type of construction, which has a housing consisting of two side plates and a dual-curvature mantle runway, which housing has an eccentric shaft passing therethrough and including a triangular piston upon an eccentric of the eccentric shaft, such piston rotating in continuous sliding engagement of the sealing parts thereof in a gas seal along the mantle runway and the housing side walls thereof, said oil seal being arranged within the axial gas seal in a groove in the piston, which oil seal consists of at least one sealing ring trapezoidal shaped in radial cross section and having an oil wiping and scraping edge with spring effect so that the oil wiping and scraping edge is pressed against the housing side wall as well as a seal closing and shutting off a groove path against oil leakage, comprising, the improvements wherein the following features are provided:

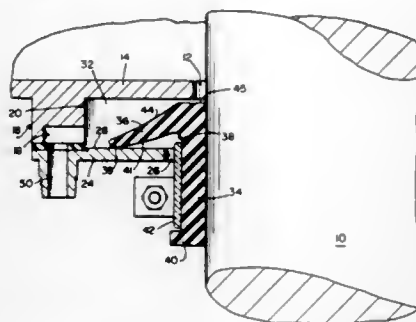
(a) the trapezoidal shaped axial cross section of said sealing ring is in a ratio in a range of 1:5 to 1:3 in the largest axial width thereof with respect to the radial distance thereof; (b) the plate spring engages in axial direction with an engagement edge thereof against said sealing ring in the radial level of the wiping and scraping edge; and (c) the engaging surface of said plate spring with respect to the sealing ring and at the base of the groove is lapped as

to the plate spring and also as to the sealing ring and the base of the groove.

4,643,439
SEAL FOR RELATIVELY ROTATABLE PARTS
Frederick Lewis, Nashua, and Robert W. Munson, Pelham, both of N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 2, 1985, Ser. No. 783,176
Int. Cl.⁴ F16J 15/32
U.S. Cl. 277—95

2 Claims

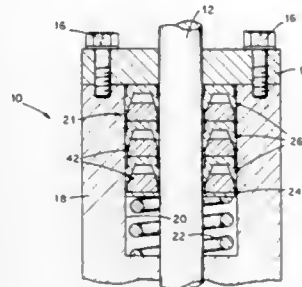


1. In combination with a rotary shaft projecting through an opening in a housing having a housing wall extending transversely of said shaft: a replaceable member positioned outside of the housing and mounted on said housing about the shaft, said replaceable member having a bore of larger diameter than the diameter of the shaft to provide a replaceable member-shaft annulus, said replaceable member having an inside surface parallel to and spaced from said housing wall to form a sealing chamber; a seal of resilient flexible material having a generally tubular body portion extending through the replaceable member-shaft annulus, an integral annular thin flexible lip connected by a hinge at one axial end of the body portion, said annular lip being located within the sealing chamber and extending outwardly radially and axially toward the tubular body portion, the radially outer portion of the inner surface of said lip being in sealing contact with said inside surface of the replaceable member, and a clamp retaining flange extending radially outwardly from the other axial end of the body portion; and a cylindrical clamp mounted about the generally tubular body portion of the seal to secure the seal to the rotary shaft.

4,643,440
PACKING WITH COMPENSATING MEANS
Arie F. Massey, Jr., Lenoir City, Tenn., assignor to Massey Products, Inc., Knoxville, Tenn.

Filed Feb. 3, 1986, Ser. No. 825,339
Int. Cl.⁴ F16J 15/18
U.S. Cl. 277—117

10 Claims



1. Packing for a stuffing box for sealing a movable shaft, the stuffing box defining a cylinder coaxial with the movable shaft

and having means for exerting an axially-directed force to said packing, said packing comprising:

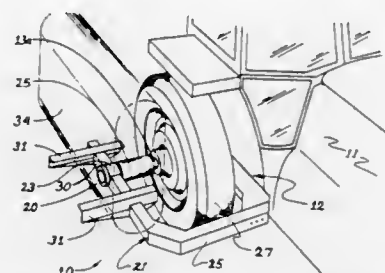
a sealing ring of yieldable material capable of sealing to the movable shaft and the cylinder of the stuffing box, said sealing ring comprising a sealing ring body and an annular shaft sealing lip extending from said ring body along the shaft for contacting and sealing the shaft, said shaft sealing lip having an annular contact face inclined away from the shaft at an acute angle to the axis of the shaft, said sealing ring further comprising an annular stuffing box sealing lip extending from said ring body along the cylinder of the stuffing box for contacting and sealing to the cylinder, said stuffing box sealing lip having an annular contact face inclined at an acute angle to the shaft axis away from said cylinder of said stuffing box;

a compensator ring having a compensator ring body and a tapered annular protrusion providing an inner wedge face opposing said inclined contact face of said shaft sealing lip and an outer wedge face opposing said inclined contact face of said stuffing box sealing lip, said compensator ring being adjustable in diametrical dimensions to establish and maintain contact between said inner wedge face and said inclined contact face of said shaft sealing lip and between said outer wedge face and said inclined contact face of said stuffing box sealing lip when the axially directed force is applied to said packing to cause said inner wedge face to apply force to and urge said shaft sealing lip towards said shaft and to cause said outer wedge face to apply force to and urge said stuffing box sealing lip towards said cylinder of said stuffing box, said inner and outer wedge faces of said compensator ring being operable to apply at least a substantially continuous line of force to said contact faces of each of said shaft and stuffing box sealing lips.

4,643,441
SADDLE MOUNT DEVICE FOR A TRACTOR
Omar Schartz, Rte. 2, Box 76, Larned, Kans. 67550
Filed Oct. 21, 1985, Ser. No. 789,555
Int. Cl.⁴ B60P 3/30

U.S. Cl. 280—5 R

2 Claims



1. A saddle mount device for a tractor having its rear axle supported by an axle housing and rear wheels located on either side of the tractor body, comprising:

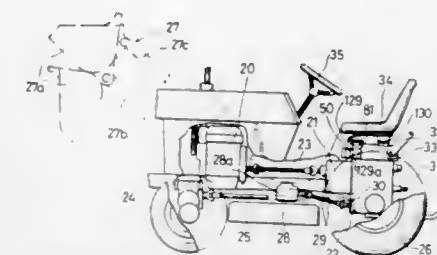
a cylindrical axle extension rigidly and coaxially mounted to the outer end of the rear axle;
a collar-shaped bearing mounted on said axle extension, for support upon said axle as it turns;
a substantially horizontal "U"-shaped bracket rigidly connected at one end to said collar-shaped bearing and at the other end to the rear axle housing between the rear wheel and the tractor body, and wherein the dimensions of said axle extension and said "U"-shaped bracket are such that it will not contact said wheel; and
horizontal mounting member means, having a center of gravity generally centered over the longitudinal axis of said rear axle and affixed to said "U"-shaped bracket in the vicinity of its connection to said collar-shaped bearing.

4,643,442
FLUID SUPPLY SYSTEM FOR WORKING VEHICLES
Ryota Ohashi, Sakai; Masahisa Kawamura, Amagasaki, and Koichiro Fujisaki, Kobe, all of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Aug. 2, 1985, Ser. No. 761,886
Claims priority, application Japan, Sep. 17, 1984, 59-195143
Int. Cl.⁴ A01B 59/043

U.S. Cl. 280—461 A

6 Claims

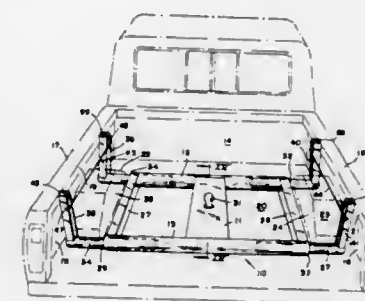


1. In a working vehicle having a hydraulic lift mechanism, mounted on the top of rear end portion of the vehicle frame for use in lifting and lowering a working implement drawn by the vehicle, and a seat located above a cylinder case of said hydraulic lift mechanism, a fluid supply system which comprises: a first control valve assembly mounted on an outer wall surface of said cylinder case for controlling operation of said hydraulic lift cylinder, said wall surface extending along the longitudinal direction of the vehicle; a second control valve assembly having therein at least one directional control valve for controlling operation of at least one fluid-operated working implement equipped to the vehicle, said second control valve assembly permitting therethrough supply of fluid to said first control valve assembly; and a single hydraulic pump for supplying operating fluid selectively to one of said hydraulic lift cylinder and said fluid-operated working implement with which the vehicle is equipped characterized in that a stop valve (52) for said hydraulic lift cylinder (39) is disposed within a cylinder head (81) of said cylinder case (33) so as to be displaced along a direction across the vehicle by a handle 95; which is arranged at a side of said cylinder case; and that the front of said cylinder head (81) is formed with a vertical seating surface (96) on which said second control valve assembly (50) is fixedly mounted in a horizontal posture so as to be disposed below a front end portion of said seat (34) with an interval therebetween said directional control valve (65, 66) having one end (65a, 66a) projected outwardly toward a side opposite to said handle (95; 295), a control mechanism for displacing said directional control valve being connected operatively to said one end.

4,643,443
TRAILER HITCH ASSEMBLY AND METHOD
Marlin V. Husa, Liberty, Nebr. 68381
Filed Apr. 18, 1984, Ser. No. 601,569
Int. Cl.⁴ B62D 53/06

U.S. Cl. 280—491 R

10 Claims



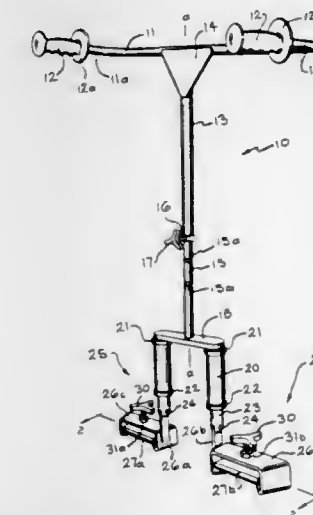
1. A removable trailer hitch assembly for connecting a

trailer to a pickup truck box, said box of the type having a floor, a pair of oppositely disposed wheel wells attached to said floor, a pair of vertical side walls attached to said floor and a pair of horizontal side rails attached to said respective side walls and extending inwardly therefrom, said hitch assembly comprising:

a base frame, having a front end and a rear end;
means for coupling a trailer to said base frame between said front end and said rear end of said base frame;
frictional engagement means movable connected to said base frame wherein said frictional engagement means comprises elongate arms, each having an upper and lower end wherein said upper end is adapted to frictionally engage a lower face of a respective one of said horizontal side rails of said pickup truck box and said lower end is moveably attached to said base frame; and
biasing means for applying a biasing force to each said elongate arms urging said upper end of each arm against a respective lower face of a respective horizontal side rail of said pickup truck.

4,643,444
SKI STEERING APPARATUS
George L. Parkinson, 4401 Devonshire, Lansing, Mich. 48910
Filed Jul. 15, 1985, Ser. No. 755,163
Int. Cl.⁴ A63C 5/06, 11/00; A63B 69/18
U.S. Cl. 280—606

14 Claims



1. A ski steering apparatus for a pair of downhill snow skis with curved tips at a downhill end, each ski having a top, opposed side edges and a bottom which comprises:

(a) a handle bar with handles at opposite ends of the bar for each hand of a skier;
(b) support means defining a longitudinal axis of the apparatus mounted on the handlebar between the grips;
(c) a fork mounted on the support means;
(d) a pair of spaced apart pivotable and rotatable joint connector means joined to the fork; and
(e) clamp means for attachment to each ski adjacent the tips of the skis joined to the joint connector means, wherein the skis are steered into a turn by a skier by rotating the apparatus on the longitudinal axis of the support means with the handlebar in a direction opposite to the direction of the turn.

13. The method of training a snow skier which comprises:

(a) providing a ski steering apparatus for a pair of downhill snow skis with curved tips at a downhill end, each ski having top, opposed side edges and a bottom the apparatus having a handle bar with handles at opposite ends of the bar for reach hand of a skier, support means defining

a longitudinal axis of the apparatus mounted on the handle bar between the grips, a fork mounted on the support means, a pair of spaced apart pivotable and rotatable joint connector means joined to the fork, and clamp means for attachment to each ski adjacent the tips of the skis joined to the joint connection means;

- (b) providing the handle bar and grips in a position with the grips in front of the tips of the skis in position for a trainer facing the skier to grip the handles to steer the skier downhill and;
- (c) steering the skis downhill, wherein the skis on the skier are steered into a turn by rotating the apparatus on the longitudinal axis of the support means with the handlebar in a direction opposite to the direction of the turn.

4,643,445

CHILDREN'S PUSH-CHAIR OR STROLLER

Ramon Jane Cabagnero, 203 Cartagena Street, 08013 Barcelona, Spain

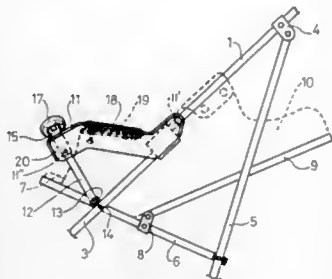
Filed Oct. 18, 1984, Ser. No. 662,340

Claims priority, application Spain, Nov. 16, 1983, 275941

Int. Cl.⁴ B62B 7/08

U.S. Cl. 280—644

3 Claims



1. In a collapsible stroller of the type having a pair of spaced front legs and a pair of spaced rear legs, said front legs each having an upper handlebar branch pivotally connected thereto at respective first pivot means, each said upper handlebar branch having an upper end pivotally connected to a rear leg, said stroller having a seat frame located between respective portions of said front and rear legs, the improvement comprising a pair of armrests with each armrest having one end pivotally connected to an associated upper handlebar branch at a second pivot means disposed between said first pivot means and said upper end of a respective upper handlebar branch, an opposite end of each armrest being pivotally connected by a third pivot means to a respective rigid rod means, with each said rigid rod means being directly pivotally connected to a respective one of said front legs.

4,643,446

MOBILE CHAIR WITH REMOVABLE REAR WHEEL ASSEMBLY

Kenneth J. Murphy; Gerald R. Baker, and Matthew F. Gard, all of Elyria, Ohio, assignors to The STC Companies, Inc., Elyria, Ohio

Filed Oct. 11, 1984, Ser. No. 659,709

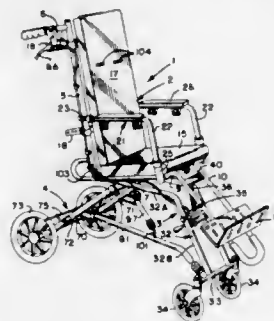
Int. Cl.⁴ B62B 3/02

U.S. Cl. 280—648

25 Claims

1. A mobile chair comprising a seat frame, a front support frame including front wheels rotatably mounted thereon for supporting said front support frame, a rear support frame including rear wheels rotatably mounted thereon for supporting said rear support frame, said seat frame being selectively pivotable about a fixed axis with respect to said front support frame to vary the inclination of said seat frame relative to said front support frame, and means for releasably connecting said rear support frame to said front support frame to permit said rear support frame selectively to be removed from and reconnected to said front support frame, said means for releasably

connecting including swivel joint means selectively permitting said front support frame to pivot in at least two planes relative



4,643,447

SUSPENSION SYSTEM FOR A TRUCK OR THE LIKE

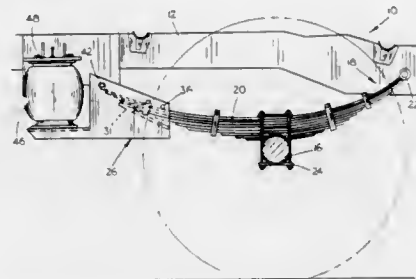
Ralph R. Rogers, 733 W. 21st, So. Sioux City, Nebr. 68776

Filed Jan. 21, 1986, Ser. No. 819,732

Int. Cl.⁴ B60G 11/26

U.S. Cl. 280—712

1 Claim



1. A suspension system for wheeled vehicles including a pair of spaced-apart longitudinally extending frame members having rearward and forward ends and a transversely extending axle housing positioned beneath the frame members forwardly of the rearward ends thereof, comprising,

a leaf spring means having rearward and forward ends positioned outwardly of each of said frame members, each of said leaf spring means having its forward end secured to the associated frame member forwardly of said axle housing, said leaf spring means being rigidly secured, intermediate its ends, to said axle housing, the rearward end of said leaf spring means being positioned rearwardly of the associated axle housing,

an elongated box-like support means including horizontally spaced-apart and vertically disposed side walls having upper and lower ends, a horizontally disposed support plate means at the rearward ends of said side walls, the rearward end of said leaf spring means being pivotally secured to said side walls adjacent the upper rearward ends thereof,

a plate means secured to said side walls and extending therebetween below the upper ends thereof rearwardly of the forward ends thereof and below said leaf spring means, a bolt means extending between said side walls adjacent the forward ends thereof above said leaf spring means, said plate means and said bolt means restricting relative vertical movement between said leaf spring means and said support means,

an upstanding air spring means having upper and lower ends, the lower end of said air spring means being mounted on said support plate means, and means rigidly connecting the upper end of said air spring

means to said frame member whereby said air spring means yieldably resists the upward movement of said axle housing and the rearward end of said leaf spring means toward said frame member and yieldably resists the downward movement of said frame member towards said axle housing.

4,643,448

ENERGY ABSORBING STEERING ASSEMBLY

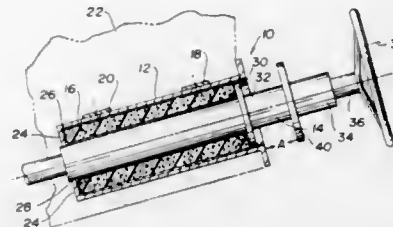
Norman S. Loren, Warren, Mich., assignor to Michael Ladney, Grosse Pte. Shores, Mich.

Filed Aug. 5, 1985, Ser. No. 762,674

Int. Cl.⁴ B60R 21/00

U.S. Cl. 280—777

14 Claims



1. An energy absorbing steering assembly comprising: an elongate tubular adapter sleeve including means for mounting the adapter sleeve on a fixed surface within the driver's compartment of a vehicle, the adapter sleeve including at least one annular, radial sleeve flange extending inward from the side walls of the adapter sleeve forming a reduction in the inner diameter of the adapter sleeve to a first preselected size;

an elongate steering column slidably retained within the adapter sleeve with the longitudinal axis of the adapter sleeve and steering column generally parallel to each other, the steering column having a relatively uniform outer diameter slightly smaller than the first preselected size, and at least one annular radial column flange extending outward from the side walls of the column, the diameter of the flange being slightly smaller than the inner diameter of the adapter sleeve; and

resilient plastic foam molded to fill the cavity defined by the sleeve flange, the sidewalls of the adapter sleeve, the column flange, and the outer surface of the column; whereby, the energy of axial impact loads is absorbed by the elastic deformation of the plastic foam during axial displacement of the steering column relative to the adapter sleeve.

4,643,449

BENDABLE REACH ARM FOR A SEAT BELT

Kiichi Sasaki, Wako; Hiroshi Tabata, Utsunomiya; Hisakazu Okuhara, Utsunomiya, and Kazuo Higuchi, Utsunomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 767,531

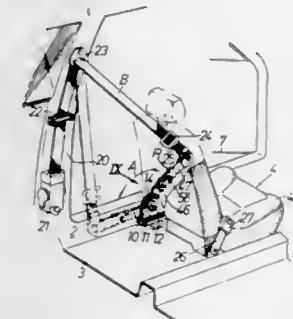
Claims priority, application Japan, Aug. 23, 1984, 59-175650; Aug. 23, 1984, 59-175651; Aug. 31, 1984, 59-182056

Int. Cl.⁴ B60R 22/00

U.S. Cl. 280—808

2 Claims

1. A seat belt device for a vehicle, comprising a reach arm provided on one side of a seat arranged within a compartment so as to be swingable towards the rear and the front of the vehicle, a seat belt drawn out from a retractor and attached to a fore end of the reach arm, and a through-tang mounted on the seat belt and capable of being detachably connected to a buckle provided on another side of the seat, wherein said reach arm comprises a base arm pivoted on the one side of said seat for swing motion towards the rear and the front of the vehicle; a fore arm connected to the base arm so as to be foldable at a



with a tying portion secured to said seat belt; and a resilient member provided between said fore arm and said base arm to hold both the arms substantially straightly.

4,643,450

READING SYSTEM

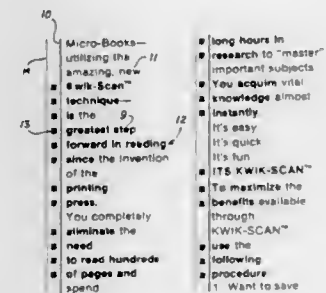
Max F. Morris, P.O. Box 457, Windermere, Fla. 32786

Filed Nov. 12, 1985, Ser. No. 796,693

Int. Cl.⁴ G09B 17/02, 17/04; B42F 21/08

U.S. Cl. 283—46

3 Claims



1. A speed reading system comprising: a plurality of printed sheets, each sheet having at least one vertically extending scan bar; a plurality of printed lines of indicia extending perpendicular to the scan bar, and selected printed lines of indicia having scan words therein in a bolder type font; a plurality of scan line indicators located adjacent to the scan bar, and one scan line indicator being adjacent each scan line having scan words in bold type font therein, each said scan line indicator being indicative of lines having scan words therein, and a second scan bar being placed parallel to the first scan bar on the other side of the scan line indicators.

4,643,451

ENVELOPE FOR RECEIVING A PLURALITY OF COUPONS OR PROMOTIONAL VOUCHERS

Derek Coates, Penn, England, assignor to Holmes & Marchant Promotions, Limited, Buckinghamshire, England

Filed May 1, 1985, Ser. No. 729,478

Int. Cl.⁴ G09F 1/00; B41L 1/20, 43/00; G09D 3/02

U.S. Cl. 283—56

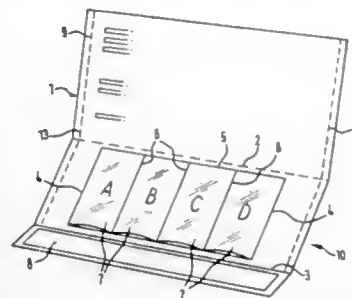
12 Claims

1. A blank foldable into an envelope for retaining promotional and advertising proof-of-purchase tokens, said envelope comprising:

- (a) a first substantially rectangular paper or board panel having first and second surfaces, advertising indicia being

printed on said first surface, and different printed indicia being printed on a second surface of said first panel;

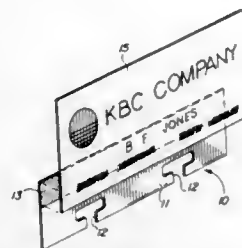
(b) a second substantially rectangular panel having dimensions no larger than the dimension of said first panel, said second panel being integrally attached to said first panel by a fold line, said second panel being foldable over said first surface of said first panel into a flat position in which said first and second panels are secured by a plurality of parallel adhesive lines, at least one additional line of adhesive being positioned substantially perpendicularly to said parallel lines of adhesive to define at least two pockets with open ends for receiving tokens, coupons or vouchers, said second panel comprising means for viewing the con-



tents of both of said pockets, said content viewing means comprising apertures in each of said pockets; and

(c) said second surface of said first panel having an additional adhesive coating positioned on a portion of said first panel adjacent to said open end of each of said pockets, said additional adhesive coating comprising means for closing said pockets when said first panel portion is folded over said pocket open ends, so that when said first panel is folded over said second panel and said pocket open ends are closed, said envelope comprises a substantially rectangular voucher adapted to be redeemed, said sealed envelope having a length between 2.5 and 6 inches and a width between 1.25 and 3.5 inches.

4,643,452
BUSINESS CARD ATTACHING STRIP
 Kwei K. Chang, 20530 Anza Ave., Torrance Venture, Apt. 112, Torrance, Calif. 90503
 Filed Aug. 15, 1985, Ser. No. 765,650
 Int. Cl.⁴ B42D 15/00; B42F 3/00, 13/00
 U.S. Cl. 283—62



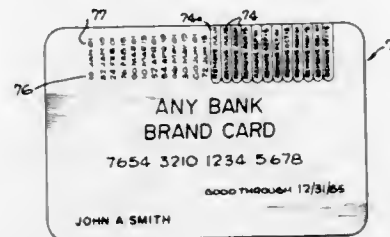
1. A business card attaching strip comprising in combination: an elongated strip of material sized to fit a business card, said elongated strip of material having a plurality of predetermined shaped edge openings including a pair of edge openings in a spaced relationship to each other, each having an enlarged aperture with a narrowed openings to one edge of said elongated strip of material and shaped for attaching to a card index;

said elongated strip of material having an adhesive coating thereon along one edge thereof and a strip of adhesive coating material covering said adhesive on said elongated strip of material, whereby said adhesive covering material

can be removed and said elongated strip of material attached to a card index; and

said elongated strip of material having an elongated visible line thereon parallel to said adhesive covering strip.

4,643,453
CREDIT CARD SECURITY SYSTEM
 Sanford S. Shapiro, 20951 Ingomar St., Canoga Park, Calif. 91304, and Mayroma Avishur, 22212 Valerio St., Canoga Park, Calif. 91303
 Filed Feb. 11, 1985, Ser. No. 700,098
 Int. Cl.⁴ B42D 15/00; G06K 5/00
 U.S. Cl. 283—73



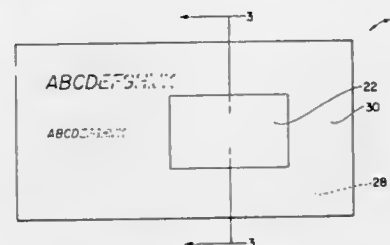
1. A fraud-resistant credit card and charge slip combination comprising:

a card having a pair of primarily flat faces, and having a plurality of regions projecting from one of said faces, each of said projecting regions representing a character, so the card can be used to mark a charge slip to form the characters thereon;

said card having a group of visually readable auxiliary character markings which do not project substantially from a surface of said card, and said card also having visually readable means for indicating a calendar period corresponding to each of said auxiliary character markings, whereby to indicate to the cardholder which auxiliary character marking is to be used on a given date;

a charge slip having a plurality of sheets which can be marked by said characters represented by said projecting regions, and which can be written upon to receive a marking represented by an auxiliary character marking.

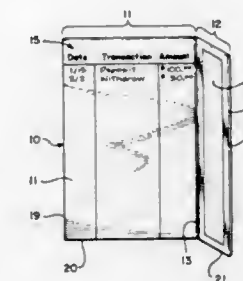
4,643,454
LOTTERY TICKET
 Albert W. Ondis, North Kingstown, R.I., assignor to Astro-Med, Inc., West Warwick, R.I.
 Filed Jan. 14, 1986, Ser. No. 819,109
 Int. Cl.⁴ G09C 3/00; G01D 15/00; B42D 15/00; B41L 1/20
 U.S. Cl. 283—74



1. A thermally imprintable ticket for use in lotteries comprising a card having a front side and a back side, a coating on the front side of said card, said coating comprising a first metallic layer extending over at least a portion of said card, a first transparent plastic film layer extending over said first metallic layer and an outwardly facing layer of a thermally responsive chemical extending over at least a portion of said film, an opaque removable layer extending over at least a portion of said thermally responsive chemical layer, said removable layer

being easily removable to expose said thermally responsive chemical layer and having a melting point which is greater than the response temperature of said thermally responsive chemical to enable game playing indicia to be thermally imprinted in said thermally responsive chemical layer through said removable layer without altering the appearance of said removable layer, and an opaque second metallic layer extending over the back side of said card in at least the area thereof which is opposite said removable layer.

4,643,455
DETACHABLE BANK CARD TRANSACTION RECORDING DEVICE
 Vaughn W. North, 2486 E. 10375 South, and Larry J. North, 8577 Six Shooter Cir., both of Sandy, Utah 84092
 Filed Oct. 3, 1985, Ser. No. 783,786
 Int. Cl.⁴ B42D 15/00, 3/12; B41L 1/36, 1/20
 U.S. Cl. 283—81



1. A detachable device for recording financial transactions with respect to a particular bank card of predetermined dimension and being adapted to be continuously carried therewith by a user, said device comprising:

a recording card having a transaction record format on one side including locations for entry of data with respect to financial transactions conducted in connection with the bank card, said recording card having dimensions no greater than said predetermined dimensions of the bank card, said recording card being rectangular in planar configuration and having a long side and a short side;

an attachment member integrally formed with and along one side of the recording card and having a preformed hinge at the juncture of the attachment member with the recording card to thereby enable the attachment member to be folded against the recording card and to retain dimensions when so folded which are approximately equal to or less than the bank card, said attachment member being approximately equal or less in length to the length of the long side of the bank card;

temporary, nontransferable adhesive means applied at one face of the attachment member to enable removable adherence of the attachment member and coupled record card to a face of the bank card along one side thereof.

4,643,456
LOCKING THREAD SAVER
 Albert N. Graham, Rte. 3, Box 233, Hanceville, Ala. 35077
 Filed Sep. 19, 1985, Ser. No. 777,914
 Int. Cl.⁴ F16L 35/00

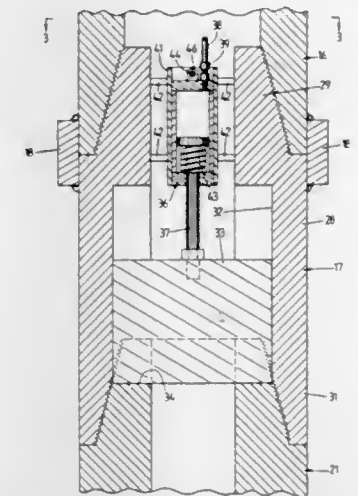
6. Apparatus for connecting a rotatable member, such as a drill pipe section, to a power transmission comprising, in combination:

(a) a tubular adapter, threaded at each end to engage said transmission at one end and said rotatable element at a second end;

(b) a plate-like element mounted within said adapter and movable therewithin to a position engaging said rotatable

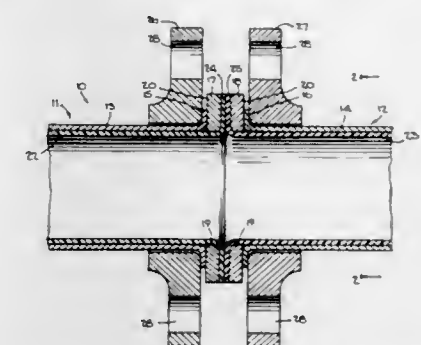
member whereby said rotatable member is constrained to rotate with said adapter; and

(c) means positioned within said adapter for moving said plate-like element to and from said engaging position



including a fluid pressure operated cylinder operatively connected to said plate-like element, means for attaching said cylinder within said adapter, and means for biasing said plate-like element away from a position engaging said rotatable member.

4,643,457
JOINT FOR PLASTIC LINED METAL PIPING WITH REDUCED DIAMETER PIPE LAP
 Irving D. Press, West Orange, N.J., assignor to Unidynamics Corporation, New York, N.Y.
 Continuation of Ser. No. 633,395, Jul. 23, 1984, abandoned. This application Jun. 2, 1986, Ser. No. 870,667
 Int. Cl.⁴ F16L 9/14, 23/00
 U.S. Cl. 285—55



1. A lined piping assembly comprising in combination a component of metal piping having a connector portion flared radially outwardly at a predetermined angle to form a pipe lap having a rearwardly facing surface engageable by a pipe flange and having a forward facing surface; a seal load ring having an inside diameter substantially matching that of said connector portion, a first face engaging said forward facing surface of said pipe lap, and a radial face on the side away from said first face; a plastic pipe lining extending out of said connector portion, through said load ring, where it is flared radially outwardly over said radial face of the seal load ring to form a gasket portion and thereby trap said seal load ring; the radial dimension of said pipe lap between its inside and outside diameters being at least 20% less than the radial dimension of said seal load ring between the inside and outside diameters of the

latter; a pipe flange encircling said piping component behind said pipe lap for engaging said rearwardly facing surface of said pipe lap to urge said connector portion axially and said plastic gasket portion against a mating surface of another component.

4,643,458

SUPPORT AND CLAMPING ASSEMBLY

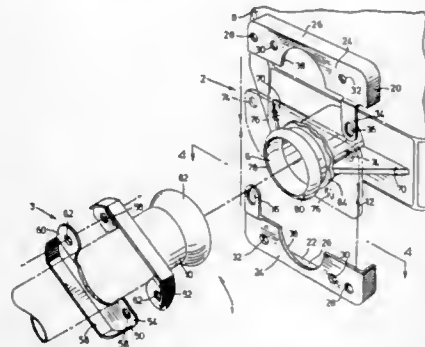
Jesse I. Ammar, 26 Crow Trail, Scarborough, Ontario, Canada (M1B 1X4)

Filed Apr. 6, 1984, Ser. No. 597,640

Int. Cl.⁴ F16L 3/10

U.S. Cl. 285—62

9 Claims



1. A support and clamping assembly for clamping together an outlet pipe of a catalytic converter having an annular projection and an end of a muffler pipe having an outwardly flared end portion, and for supporting an outlet end of the catalytic converter, the support and clamping assembly comprising:

- a first support bracket, which comprises first and second bracket members, which are substantially identical in shape and each of which has first and second diametrically opposed apertures for securing the bracket member together around the outlet pipe of a catalytic converter and a projection for overlapping the other bracket member and in which the second aperture is provided, the first and second apertures of one bracket member being complementary to the second and first apertures of the other bracket member, each of which bracket members defines a semicircular recess, the recesses together being capable of accommodating the outlet pipe of a catalytic converter, and each of which bracket members includes a hole for a stud which holes, in use, are diametrically opposed to one another, the first bracket member at least including an opening for attachment to a support strap; and
- a second bracket, which comprises third and fourth bracket members, which are substantially identical in shape and each of which includes third and fourth holes for securing the third and fourth bracket members together around a muffler pipe and a respective projection for overlapping the other of the third and fourth bracket members and in which the fourth hole is provided, the third and fourth holes of the third bracket member being complementary to the fourth and third holes of the fourth bracket member and the third and fourth holes of each bracket member being diametrically opposed and spaced by a diameter different from the diameter between the first and second apertures of the first bracket, and each of which bracket members includes a second, semicircular recess, the second recesses together being capable of accommodating a muffler pipe;

whereby, in use, the first bracket is assembled around the outlet pipe of a catalytic converter by means of bolts in the first and second apertures securing the first and second bracket members together, the first bracket being retained by said annular projection of the outlet pipe, and the second bracket is assembled around the end of a muffler pipe by means of studs located in the third and fourth

holes, the second bracket being retained by said flared end portion of the muffler pipe and the studs further passing through the holes of the first and second bracket members to secure the first and second brackets together and thereby secure the muffler pipe to the outlet pipe of the catalytic converter.

4,643,459

QUICK-CONNECT HOSE COUPLING

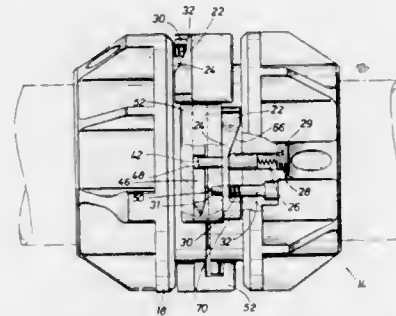
Forrest L. Carson, Borger, Tex., assignor to J. M. Huber Corporation, Rumson, N.J.

Filed Jun. 11, 1985, Ser. No. 743,551

Int. Cl.⁴ F16J 15/00

U.S. Cl. 285—84

6 Claims



1. A first coupling for use with a second coupling to form a fluid pressure seal between sections of hose, comprising:

- a cylindrical body defining a central bore therethrough formed about a longitudinal axis, said body having a face at a first end lying in a plane perpendicular to said axis;
- a circular seal seat in said face formed about said axis; and
- a collar at a second end for receiving one of said sections of hose;
- a resilient seal ring disposed in said seal seat;
- a pair of diametrically opposed extension guides carried by said body adjacent said first end;
- a pair of diametrically opposed sidewall extensions carried by said body adjacent said first end and defining a portion of said face, each said extension being disposed between said extension guides and each further defining a receptor; and
- an edge portion;
- at least one locking means carried by said body and adjacent a respective one of said extension guides, for releasably preventing angular rotation of said first coupling about said axis when said first coupling is sealingly engaged with said second coupling, each said locking means comprising a locking slide angularly rotatable about said axis between a first lock and a second unlock position;
- a locking plug disposed at least partially within said body and movable along the direction of said axis from a first lock to a second unlock position in response to corresponding movement of said locking slide from said first lock to said second unlock positions of said locking slide;
- said extension guides each having an inner surface defining a slot, and wherein said locking plug includes a locking portion moving from a first position within to a second position without said slot in response to said corresponding movement of said locking slide from said first to said second positions; and
- said locking slide being in vertical alignment with said extension guide when in said first lock position; and
- wherein said locking slide extends beyond said extension guide in the angular direction about said axis when in said second unlocked position.

4,643,460

HIGH PRESSURE CONCRETE LINE COUPLING CLAMP WITH LIMIT ADJUST APPARATUS

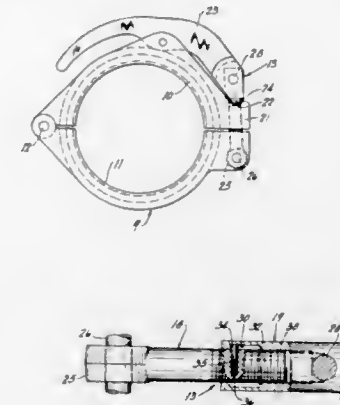
Dennis M. Lieberg, West Bend, Wis., assignor to Construction Forms, Inc., Cedarburg, Wis.

Filed Feb. 6, 1985, Ser. No. 698,635

Int. Cl.⁴ F16L 17/00

U.S. Cl. 285—112

8 Claims



1. A high pressure line coupling for coupling of pipe members in a flow line, comprising a plurality of curved sections defining a circular enclosure and including a pivot connection for pivoting a first section relative to a second section adjacent said first section, a releasable latch means connecting adjacent free end portions of said first and second sections and having a closed position with said sections forming said circular enclosure and a released position for pivoting of said sections, said latch means including an extensible link means including a first tubular link member and a second rod-like link member adjustably telescoped into said tubular link member and having telescoped overlapping portions, the extent of said overlapping portions establishing the length of said extensible link means and the relative position of said first and second sections in the closed position, said overlapping portions including means to hold the link members in fixed relationship to each other, and limit means coupled to said overlapping portions of said link members and substantially extending in the direction of the overlapping portions and limiting the relative extension of said link members to a minimum substantial overlapping portion, said limit means being totally located within said tubular link member and inaccessible without destruction of at least one of said link members to prevent bypassing of said limit means.

4,643,461

FIRE RESISTANT SEAL

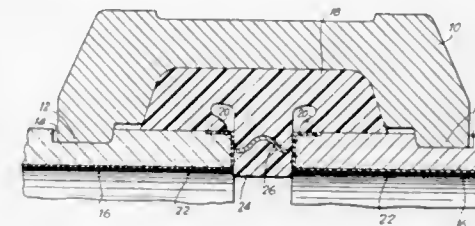
Lawrence W. Thau, Jr., Somerset, and Maurice J. Webb, Mountain Lakes, both of N.J., assignors to Victaulic Company of America, Easton, Pa.

Filed Dec. 20, 1985, Ser. No. 812,136

Int. Cl.⁴ F16L 17/06

U.S. Cl. 285—112

20 Claims



1. A fail-safe fire retardant seal assembly for use in a segmented pipe-coupling of the type including plural coupling segments adapted to be secured in encircling relationship about

the juxtaposed ends of pipes, and which provide an internal annular channel for the reception of said seal assembly, said seal assembly including:

- an annular seal member formed from a thermally destructible elastomeric material, said seal member comprising an annular body having mutually presented sealing lips on an inner periphery thereof, said sealing lips extending towards each other and terminating in free edges which seal against the ends of the pipes, said free edges being mutually presented and spaced from each other to define a circumferentially extending slot in the inner periphery of said annular body; and,
- an annular ring of a fire resistant material positioned substantially in co-axial alignment with the longitudinal axis of said annular seal member and supported by said seal member, said fire ring extending to opposite sides of a plane radial to the longitudinal axis of said annular body and which lies intermediate the free ends of said mutually presented sealing lips, said fire ring extending axially of said seal member and including at least a portion of said fire ring positioned radially inwardly of said sealing lips and which provides for direct, bridging, sealing engagement with said pipe ends, whereby said fire ring provides a direct seal with said pipe ends in the event of thermal destruction of said seal member.

4,643,462

DOUBLE-LOOPED ROTATABLE COUPLER WITH TENSION STABILIZER

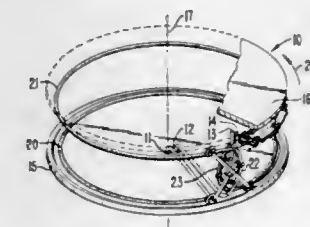
Norman R. Wallace, Walnut Creek, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Jan. 24, 1986, Ser. No. 821,940

Int. Cl.⁴ F16L 55/00

U.S. Cl. 285—119

17 Claims



1. Apparatus for coupling first and second inlet ports in a first plane to first and second outlet ports respectively in a second plane parallel to said first plane and rotatable with respect thereto about an axis perpendicular to both, comprising:

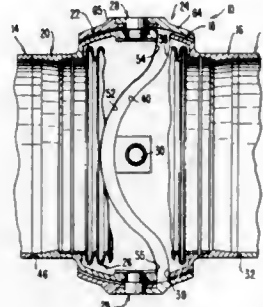
- a first flexible conduit extending from said first inlet port to said first outlet port and of sufficient length to form a first substantially full circle around said axis;
- a second flexible conduit extending from said second inlet port to said second outlet port and of sufficient length to form a second substantially full circle around said axis;
- means for supporting portions of said first and second flexible conduits along arcs of said first and second circles respectively in both said first and second planes, whereby rotation of said second plane relative to said first plane causes one of said flexible conduits to uncoil from said first plane and coil onto said second plane, and the other of said flexible conduits simultaneously with the first to uncoil from said second plane and coil onto said first plane, the crossover portions of said flexible conduits overlapping to form a closed loop; and
- means for applying radially expansive tension to said loop, said means adapted to travel with said loop as said loop travels relative to said first and second planes while continuously maintaining said radially expansive tension.

4,643,463

GIMBAL JOINT FOR PIPING SYSTEMS
 Horace P. Halling, and Se J. Oh, both of Laurel, Md., assignors
 to Pressure Science Incorporated, Beltsville, Md.
 Filed Feb. 6, 1985, Ser. No. 698,693
 Int. Cl.⁴ F16L 27/00

U.S. Cl. 285—226

19 Claims



1. A flexible gimbal joint for first and second pipes, the combination comprising:
 gimbal means, coupled to the first and second pipes, for flexibly coupling the pipes together; and
 flexible means, coupled to the first and second pipes, for interconnecting the first and second pipes in a fluid-tight manner,
 said gimbal means comprising
 a first spherical portion rigidly coupled to the first pipe, having an outer surface and a free end, and surrounding a portion of said flexible means,
 a second spherical portion rigidly coupled to the second pipe, having an outer surface and a free end, and surrounding another portion of said flexible means,
 a ring,
 means for pivotally coupling said first and second spherical portions to said ring with said free ends spaced apart by a circumferentially continuous gap,
 said ring having an inner surface substantially in the form of a spherical portion having a diameter slightly greater than the diameters of the outer surfaces of said first and second spherical portions and being out of contact with said outer surfaces, said inner surface surrounding at least a portion of said outer surfaces of said first and second spherical portions and spanning said gap,
 said outer surfaces of said first and second spherical portions having substantially equal diameters.

4,643,464

DEVICE FOR CONNECTING TWO PIPE ENDS
 Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Fed. Rep. of Germany

Filed Aug. 28, 1984, Ser. No. 645,072
 Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332518; Nov. 11, 1983, 3340899

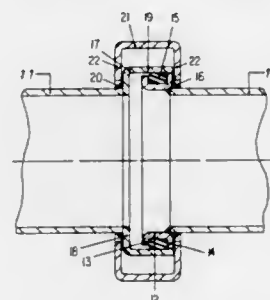
Int. Cl.⁴ F16L 21/00

U.S. Cl. 285—233

10 Claims

5. An apparatus for connecting the end of a first pipe to the end of a second pipe, comprising:
 a socket connected to the end of the first pipe, said socket including
 a sleeve having a first end oriented toward said first pipe and having a second end oriented toward said second pipe, and
 means for sealingly connecting said sleeve to the first pipe, said means including a first weld disposed at the end of the first pipe;
 a spigot connected to the end of the second pipe, said spigot including
 an annular element with a generally U-shaped cross-section and a predetermined length that is less than the distance between the first and second ends of said

sleeve, said annular element being dimensioned to plug into said sleeve, said annular element having a rear annular flange that abuts the end of the second pipe and having a front annular flange that is spaced apart from said rear annular flange, said front annular flange having an outer diameter that is smaller than that of said rear annular flange,
 a second weld which sealingly connects said annular element to the end of the second pipe, and
 an annular seal between said front and rear annular flanges;
 clamping means secured to said sleeve and surrounding the pipe ends for clamping the pipes together with said spigot inserted into said socket, said clamping means including



a first clamp flange directed toward said first weld, said first clamp flange being disposed closely adjacent said first end of said sleeve,
 a second clamp flange directed toward said second weld, said second clamp flange being disposed closely adjacent said second end of said sleeve,
 connection means for connecting said first and second clamp flanges, said connection means including a plurality of bulges directed toward said sleeve to center said clamping means around said sleeve and space said clamp flanges apart from the respective welds; and
 locking means for locking said clamping means to the pipes.

4,643,465

PIPE COUPLING

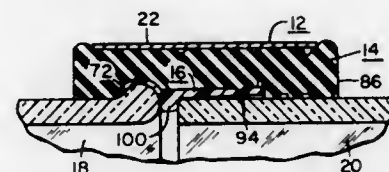
Terry D. Green, Lowman; Kenneth C. Kao, Horseheads; Robert J. O'Loughlin, Jr., and Robert C. Reese, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 23, 1985, Ser. No. 768,845

Int. Cl.⁴ F16L 21/06

U.S. Cl. 285—236

2 Claims



1. A pipe coupling for joining a beaded end glass pipe and a plain end glass pipe in alignment along a common axis comprising:
 a single outer metallic clamping band;
 a resilient elastomeric sleeve member positioned within said outer clamping band;
 a chemically resistant liner positioned within said elastomeric sleeve for positioning receiving end portions of coupled pipes;
 said metal band having outer and inner linear peripheral portions which lie wholly within and terminate within

parallel planes extending parallel to the axis of the coupled pipes;
 said band having perforation means extending therethrough for receiving portions of said elastomeric sleeve thereabout as the band is tightened thereabout and for inhibiting longitudinal elongation of the band along the axis of the pipes;
 said elastomeric sleeve having rim portions which extend both radially and axially outwardly of said clamping band; said elastomeric sleeve having unequal force distribution means in the form of varying diametrical thicknesses along its extent over the plain end pipe for creating greater force on the plain end pipe than on the beaded end pipe upon the tightening of the clamping band;
 said liner being positionably retained within a cavity formed in an inner periphery of said sleeve member;
 said sleeve member having a plurality of internal pressure ridges adjacent the plain end pipe;
 and said pressure ridges having an adhesive coating thereon for increasing the coefficient of friction of the surfaces of said pressure ridges.

4,643,466

PIPE JOINT ASSEMBLY WITH SNAP RING AND ASSOCIATED METHOD

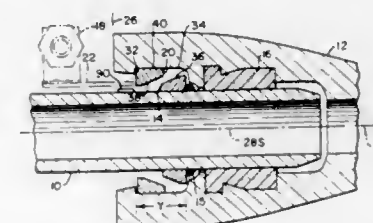
Randall C. Conner, Birmingham, and Van T. Walworth, Warrior, both of Ala., assignors to American Cast Iron Pipe Company, Birmingham, Ala.

Filed Mar. 29, 1984, Ser. No. 594,908

Int. Cl.⁴ F16L 39/00

U.S. Cl. 285—321

16 Claims



9. A pipe joint restrained against axial separation comprising:
 (a) a first pipe having a cylindrical socket;
 (b) a second pipe having a cylindrical spigot extending into said cylindrical socket and having an axis;
 (c) a bearing ring retaining portion on said socket defining an end plane and having a retaining groove bounded by a lip;
 (d) a bearing ring having two ends at a split and positioned between said retaining portion and said cylindrical spigot, said bearing ring in its unconstrained state having a major diameter and a minor diameter less than said major diameter; and; spigot
 (e) an outwardly projecting portion on said and disposed within said retaining portion; and
 wherein one of said diameters is disposed at least at one of said split ends, and wherein said bearing ring locks said spigot against separation from said socket, and wherein said minor diameter is at one of said split ends and said major diameter is 85° to 95° from a midpoint said split ends.

4,643,467

THREADED TUBING SEALS

Kenneth M. Wood, 209 Estate Dr., Houma, La. 70360

Filed Jul. 23, 1982, Ser. No. 401,300

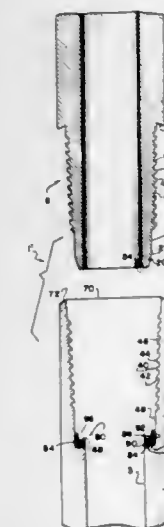
Int. Cl.⁴ F16L 25/00

U.S. Cl. 285—334

1 Claim

1. Threaded apparatus for interconnection of male and female pipe ends comprising,
 an outer cylindrical surface and an inner cylindrical surface

and a cylindrical wall separating the outer cylindrical surface and the inner cylindrical surface,
 the cylindrical wall having first and second ends and having first and second end portions extending inward along the cylindrical wall from the first and second ends, the first and second end portions respectively comprising male connection and sealing portions and female connection and sealing portions, the male connection and sealing portion comprising,
 tapered threads beginning at a position spaced inward from the first end and extending to a second position further spaced inward from the first end, the tapered male threads having a minimum diameter near the first position and maximum diameter near the second position, the tapered threads having generally sloped surfaces on sides thereof facing the first end and having generally radial surfaces on sides thereof facing away from the first end, thereby forming sealing profiles of the first male thread,
 an axially extending outer surface extending along the tubing from the second position,
 a shoulder extending outward from the axially extending surface remote from the second position, the shoulder sloping outward and toward the first end for forming one part of a shoulder seal,
 a second axial surface having a diameter smaller than a diameter of the first axial surface, the second axial surface extending from the first position toward the first end,



an outward sloping surface extending from the first end to the second axial surface, wherein the second connection and sealing portion comprise a female connection and sealing portion, the female connection and sealing portion comprising,
 female thread extending from a third position spaced from the second end to a fourth position further spaced from the second end, the female thread having a maximum dimension near the third position and a minimum dimension near the fourth position, the female threads having sloping surfaces facing the second end and having generally radial surfaces facing away from the second end thereby forming sealing profiles, the male threads and female threads cooperating and fitting together to provide a seal,
 a third axial surface extending inward from the fourth position away from the second end to an inner shoulder disposed at an innermost position of the female portion,
 a fourth axial surface extending from the third position toward the second end to a terminal sloping surface at the second end, the terminal sloping surface having a slope for lying against the shoulder on the male portion when the threads are interconnected and tightened and the fourth

axial surface overlies the first axial surface, the third axial surface having inner sealing means associated therewith for cooperating with a surface near the first end to provide an additional seal, the inner cylindrical surface extending from the first end to the inner shoulder and the outer cylindrical surface extending from the terminal surface at the second end to the shoulder on the male portion, wherein the third axial surface extends from the fourth position inward to the inner shoulder and wherein the sealing means comprises an annular compression seal having a radial surface for abutting the inner shoulder and having an outer axial surface for lying against the third axial surface, the compression seal having an inner axial portion for receiving the first end of the tubing in sealing relation therewith and having a sloping surface extending from the inner axial surface outward toward the third axial surface for receiving the outward sloping surface at the first end of the tubing in sealing relation therewith whereby the compression seal is compressed axially between the inner shoulder and the first end of the tubing and wherein the compression seal is compressed radially between the outward sloping surface near the first end of the tubing and the third axial surface in the female portion of the tubing.

4,643,468

LATCHING ARRANGEMENT AND METHOD

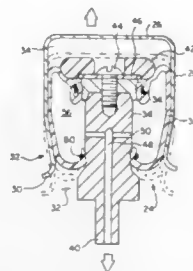
Joshua T. Oen, Castro Valley, Calif., assignor to Paccar, Inc., Bellevue, Wash.

Filed May 20, 1985, Ser. No. 735,675

Int. Cl.⁴ E05C 19/00; E05F 5/00

U.S. Cl. 292—2

9 Claims



1. In an apparatus including first and second members, at least one of which is movable relative to the other such that the members can be placed in one position adjacent each other or another spaced-apart position, an arrangement for latching and unlatching said members when the latter are in said adjacent positions, said arrangement comprising:

- means including a fluid inflatable component carried by said first member, said component being designed to operate between an inflated condition and a deflated condition;
- means including an externally accessible cavity carried by said second member for receiving said inflatable component within said cavity when said component is in its deflated condition and said first and second members are in said adjacent position, said inflatable component and said cavity being configured such that the two cannot be separated from one another readily when said component is in its inflated condition within the cavity; and
- means for controllably inflating and deflating said component when the latter is in said cavity, whereby to latch and unlatch said members;
- said apparatus being a motorized vehicle and said members including a frame and movable hood forming part of said vehicle, whereby said arrangement serves to latch and unlatch said hood with said frame.

4,643,469

GATE LATCH

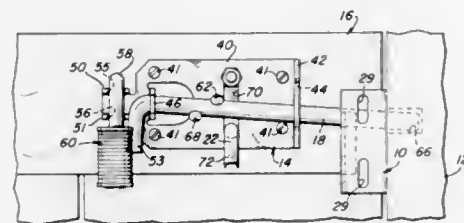
James R. Johnston, Sterling, and Marlin D. Crown, Sycamore, both of Ill., assignors to National Manufacturing Co., Sterling, Ill.

Continuation of Ser. No. 518,760, Jul. 29, 1983, abandoned. This application Sep. 3, 1985, Ser. No. 771,797

Int. Cl.⁴ E05C 5/00

U.S. Cl. 292—66

11 Claims



1. A gate latch for use with a gate, said latch comprising a latch body having a front side and a rear side and further having a generally planar mounting surface adapted to be mounted against one face of said gate, said mounting surface being disposed on the rear side of said latch body, said latch body having first and second spaced apart flanges respectively extending forwardly from said front side and being provided with openings mutually aligned along an axis lying parallel to said mounting surface, an elongate latch bolt slidably disposed in said openings for axial movement in a direction parallel to said mounting surface between an extended locking position and a retracted position, said latch bolt having an offturned portion at one end thereof, said latch bolt being rotatable in said flanges about said axis, said latch bolt having an enlargement on one side thereof which will pass through said opening in one of said flanges only when said latch bolt is in a predetermined angular position, and said offturned end being sufficiently long to extend rearwardly of said mounting surface when said bolt is oriented in said predetermined angular position.

4,643,470

LOCKING DEVICE OF OPENING AND CLOSING MEMBERS FOR VEHICLES

Ishii Kazuyuki, Shiki; Ebe Yoshio, and Fujiada Shuji, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyosha Seisakusho, both of Tokyo, Japan

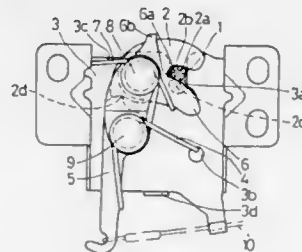
Filed Aug. 20, 1985, Ser. No. 767,610

Claims priority, application Japan, Sep. 8, 1984, 59-136545[U]

Int. Cl.⁴ E05C 3/26

U.S. Cl. 292—216

3 Claims



1. A vehicle body having an opening defined by a surrounding frame, a closure for the opening, a locking device for the closure wherein the locking device comprises a striker on the closure, bracket means of the frame defining a striker slot for

receiving the striker, a locking member rotatably mounted on the bracket means for rotation about a pivot axis adjacent the striker slot, the locking member having opposed tongue portions defining a locking slot therebetween, the locking member having a striker-receiving position wherein one of said tongue portions is disposed for engagement by the striker when entering the striker slot whereby movement of the striker into the slot is effective for rotating the locking member to bring the locking member into a locking position with the other of said tongue portions over the striker, an engaging member pivotally mounted on the bracket means, a cam portion on the locking member, an engagement portion on the engaging member for engaging with the cam portion when the locking member is in the locking position and preventing rotation of the locking member from the locking position to the striker-receiving position thereby preventing release of the striker until the engaging member is pivotally moved out of engagement with the locking member, a jack plate rotatably mounted on the bracket means about said pivot axis, the jack plate having a tongue substantially aligned with said one of said tongue portions of the locking member, and spring means biasing said tongue of the jack plate towards the other tongue portion of the locking member for engagement of the tongue with the striker when the locking member is in the locking position so as to take up play between the striker and the respective tongue portions of the locking member and reduce rattles in the locking device.

4,643,471

AUTOMOTIVE VEHICLE DENT PROTECTION DEVICE

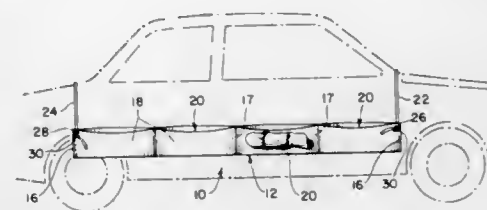
William J. Fishback, 21090 Red Fir Ct., Cupertino, Calif. 95014

Filed Nov. 15, 1985, Ser. No. 798,555

Int. Cl.⁴ B60R 19/00

U.S. Cl. 293—128

18 Claims



1. An automotive dent protection device, comprising; first and second shock absorbing elements, each including a series of laterally adjacent pockets, said pockets being open to the top so that shock absorbing material can be inserted therein or removed therefrom; and connecting means intermediate the first and second shock absorbing elements, the connecting means further providing means to interconnect the shock absorbing elements and to position the respective shock absorbing elements against opposite sides of a vehicle.

4,643,472

RAPID INSTALLATION TUBE GRIPPER

Glen E. Schukei, and Robert J. Schukei, both of South Windsor, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 24, 1984, Ser. No. 686,114

Int. Cl.⁴ B66C 1/54

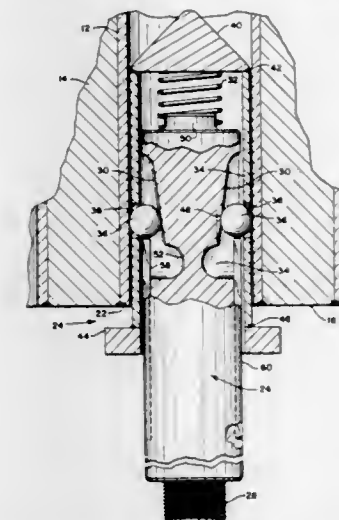
U.S. Cl. 294—94

5 Claims

1. A device for gripping a tube comprising: a shaft including an upper tapered portion, a generally cylindrical lower portion, and an intermediate neck portion; a generally cylindrical sleeve spaced around the shaft and including at least two holes opposite said tapered portion, the outer diameter of the sleeve being less than the inner diameter of the tube; resilient means connected between the shaft and the sleeve,

for biasing relative longitudinal motion between the sleeve and the shaft;

a hard ball located in each hole, having a diameter such that longitudinal motion of the shaft relative to the sleeve causes said tapered portion to contact the balls while the balls protrude outside the surface of the sleeve;



means projecting upwardly from said cylindrical portion of the shaft for limiting the downward travel of the balls relative to said tapered portion; and means at the lower end of the sleeve for limiting the sleeve insertion into the tube, such that said tapered portion may be pushed longitudinally upward relative to the holes to retract the balls into the sleeve.

4,643,473

ROBOTIC MECHANICAL HAND

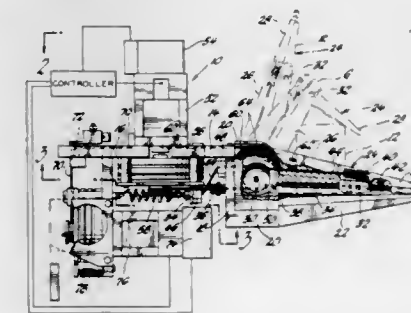
Barry D. Douglas, Mountainview, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1986, Ser. No. 825,378

Int. Cl.⁴ A61F 1/06; B66C 3/16

U.S. Cl. 294—111

3 Claims



1. A dual mode robotic mechanical hand for gripping and releasing objects, comprising; a frame, an articulated finger joined to said frame including a base digit pivoted to said frame and a tip digit pivoted to said base digit, said articulated finger being operable in a first mode by a gripping cable and an oppositely acting releasing cable, said gripping cable being adapted to move said finger into a gripping position around an object by initially pivoting said base digit relative to said frame until said base digit engages said object and then pivoting said tip digit pivot relative to said base digit until said tip digit engages said object, said releasing cable being adapted to

move said finger into a release position by pivoting said tip and base digits oppositely to said gripping cable, tensioning means acting between said frame and said release cable to continually retract said releasing cable so as to move said articulated finger into said release position, a first controllable power means to operate said gripping cable by retracting said gripping cable to move said finger in opposition to said tensioning means into said gripping position and by playing out said gripping cable so that said tensioning means may retract said releasing cable and move said articulated finger into said release position, a braking cable adapted to anchor said base digit relative to said frame so that said articulated finger is operable in a second mode where said tip digit alone will pivot relative to said anchored base digit as said gripping cable is operated, and, a second controllable power means to operate said braking cable, said second power means working in conjunction with said first power means when said finger is operating in said first mode by tracking said first power means so that said braking cable is maintained without substantial slack or tension, said second power means serving to hold said braking cable fast to thereby anchor said base digit relative to said frame when it is desired to operate said articulated finger in said second mode.

4,643,474 CHILD'S CAR BOOSTER SEAT AND RESTRAINT SYSTEM

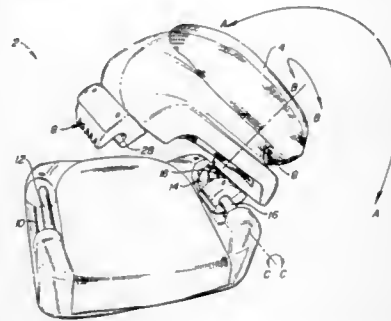
Robert D. Wise, Akron, and Steven W. Justice, Columbus, both of Ohio, assignors to Gerber Products Company, Fremont, Mich.

Filed Feb. 14, 1985, Ser. No. 701,462

Int. Cl.⁴ A47D 1/10

U.S. Cl. 254—250

6 Claims



1. A child's car seat and restraint system, for use on an automobile's existing car seat having an existing seat back, an existing seat bottom, and an existing safety belt, comprising: a booster seat having a seat portion for elevating the child above the horizontal level of the existing seat bottom; a shield, extending transversely and above said booster seat to provide a frontal restraint for the child, said frontal restraint being variably positionable into a plurality of discrete locking positions extending away from the existing seat back; joint means for pivotal interconnection between said shield and a first side of said booster seat, said joint means rotating said shield simultaneously about two mutually perpendicular axes; guide means for a slidable interconnection between said shield and said first side of said booster seat; lock means for removable interconnection between said shield and a second side of said booster seat corresponding to said discrete plurality of locking positions of said shield; and means in said shield for accepting within a contour in said shield the existing safety belt and securing the car booster seat against the existing car seat.

4,643,475

FLEXIBLE BULK CONTAINER

Dietmar J. Neumann, 67 Lakeshore Rd., Pointe Claire, Quebec H9S 4H5, Canada

Division of Ser. No. 637,798, Aug. 4, 1984, Pat. No. 4,606,570.

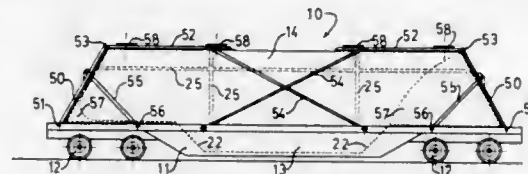
This application May 2, 1986, Ser. No. 859,021

Claims priority, application United Kingdom, Aug. 5, 1983, 8321164

Int. Cl.⁴ B60P 3/42

U.S. Cl. 296—10

20 Claims



1. A collapsible flexible bulk container for a wheeled flat vehicle comprising: main frame with two laterally spaced longitudinal members, two floor panel sections, each hinged at outside edges to extremities of the main frame, the two panel sections having a closed position where the two panel sections are substantially flat on the main frame and an open position wherein the two panel sections slope upwards and inwards towards each other, flexible liner means attached to the two panel sections and the main frame, for providing a bulk container when the two panel sections are in the open position, strut support means positioned inwards one at each end of the main frame for supporting the two panel sections in the open position, and, discharge hopper means between the longitudinal members for emptying the bulk container.

4,643,476

MOBILE BAND INSTRUMENT REPAIR SHOP

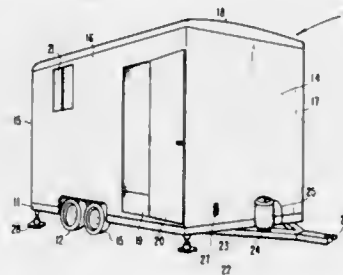
William E. Montgerard, 3232 Vermillion St., Danville, Ill. 61832

Filed Sep. 30, 1985, Ser. No. 781,873

Int. Cl.⁴ B60R 11/00

U.S. Cl. 296—24 R

19 Claims



1. A portable facility for repairing band instruments comprising: a mobile chassis; an enclosed structure mounted to said chassis; table means mounted within said enclosed structure for supporting a variety of band instruments, said table means including a top surface having a plurality of spaced apart receiving holes; a plurality of abutting posts, said abutting posts being received into the receiving holes and extending upwardly from the top surface, said abutting posts being positioned in the receiving holes in various configurations to cause said abutting posts to abut against the variety of shapes of band instruments to be supported by said table means; and, the abutting posts include a wooden main body having a first

end and a second end, and a metal post projecting from the first end, the metal post being received into a receiving hole, the second end including a domed portion, the wooden main body including a cylindrically-shaped portion between the first end and the domed portion.

4,643,477

DEMOUNTABLE WINDSHIELD ARMOR FOR VEHICLES

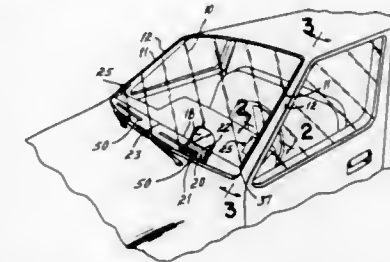
Stephen C. Kovatch, Maineville, Ohio, assignor to Hess & Eisenhardt Armoring Company, Cincinnati, Ohio

Filed Feb. 26, 1986, Ser. No. 832,871

Int. Cl.⁴ B60J 9/00

U.S. Cl. 296—84 K

9 Claims



1. In a vehicle having a windshield mounted to a windshield post at each side, windshield armoring comprising, a plate of transparent armor mounted generally parallel to said windshield but spaced rearwardly of it, said armor having side edges generally parallel to the respective windshield posts and a top edge generally parallel to the top of the windshield, each side edge of said armor mounted to the respective windshield post by a mounting means which pivots the armor for rotation about a horizontal axis extending between said posts so that the armor can be tilted relative to the windshield, each mounting means also mounting said armor for movement in the direction transverse to said axis, so that said armor can be moved rearwardly and away from the windshield as it is being tilted about said axis.

4,643,478

OPEN ROOF-CONSTRUCTION FOR A VEHICLE

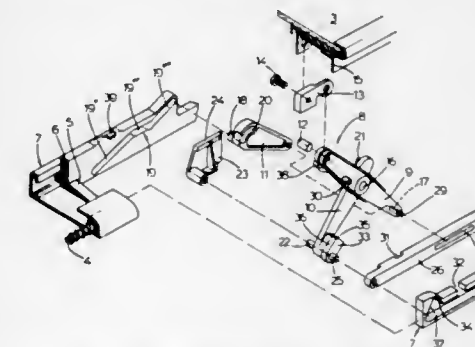
Robert T. Boots, Haarlem, Netherlands, assignor to Vermeulen-Hollandia Octroolen II B.V., Netherlands

Filed Sep. 10, 1985, Ser. No. 774,457

Int. Cl.⁴ B60J 7/05, 7/057, 7/185

U.S. Cl. 296—221

18 Claims



1. An open roof construction for a vehicle having a roof with an opening, comprising a panel movable downwardly from a first closed position in the roof opening to a second

position, from which the panel is displaceable to a third completely or partially opened position under the fixed roof, the panel being returnable to the closed position, the panel being movable from the closed position to a fourth rearwardly and upwardly inclined ventilation position and from this ventilation position being movable back again to the closed position, a slide plate which is guided in a stationary, substantially horizontal guide on at least one side of the opening, said slide plate having a guide slot, push pull means engaging the slide plate, the panel and the slide plate being connected with each other at a distance behind the front side of the panel by connection means having a guide pin engaging the guide slot in the slide plate, means for guiding said connection means in the stationary guide and said connection means comprising link means having first and second legs, a first pivot shaft pivotally connecting the upper portion of the first leg to the panel, a second transverse pivot shaft pivotally connecting the second leg to the first leg intermediate the ends of the first leg, the connection means further comprising an auxiliary leg, which is connected to one of the first and second legs of the link means and which carries the guide pin engaging the guide slot in the slide plate forwardly of the connection between the auxiliary leg and the one leg of the link means.

4,643,479

WHEELCHAIR SHADE OR CANOPY MEANS

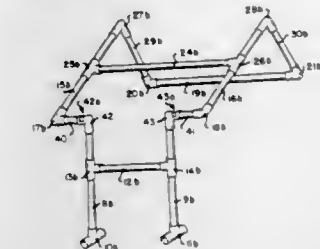
John K. Servi, 12869 Norris Ave., Sylmar, Calif. 91342

Filed Jul. 26, 1985, Ser. No. 759,481

Int. Cl.⁴ A47C 7/66

U.S. Cl. 297—184

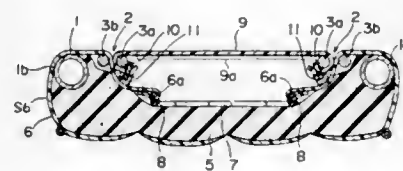
5 Claims



1. A shade means especially for protecting occupants in wheelchairs, comprising in combination:

a frame structure adapted to be connected to the handlebars of the respective wheelchair, said frame structure including at least two vertically disposed posts; with the lowermost ends of said at least two vertically disposed posts being adapted to be connected to the handlebars of the respective wheelchair; at least two roof-forming members connected with their rearward ends to the upwardly extending ends of said at least two vertically disposed posts, said roof-forming members being hingedly secured to the said at least two vertically disposed posts; and at least one end member connected with its respective ends to the forwardly directed ends of said at least two roof-forming members; for each roof-forming member, at least one intermediate member, and at least one first elbow for connecting a respective roof-forming member to its respective intermediate member and for each intermediate member at least one second elbow for connecting it to the respective one of said at least two vertically disposed posts, with each second elbow allowing pivotal movement of its respective intermediate member; and a cover means for shielding the occupant of the wheelchair, said cover means extending substantially over the area defined between said at least two roof-forming members and a predetermined distance between said at least two vertically disposed posts.

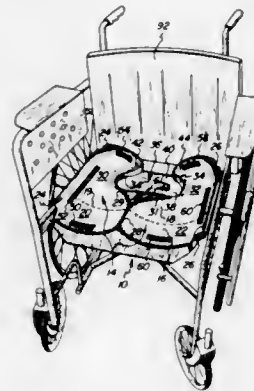
4,643,480
**STRUCTURE FOR SECURING THE TRIM COVER
 ASSEMBLY OF A SEAT BACK**
 Isao Morita, Akishima, Japan, assignor to Tachikawa Spring
 Co., Tokyo, Japan
 Filed Aug. 1, 1985, Ser. No. 761,524
 Claims priority, application Japan, Aug. 27, 1984, 59-
 129626[U]
 Int. Cl.⁴ A47C 31/00
 U.S. Cl. 297—218 1 Claim



1. A structure for securing a trim cover assembly of a seat back having a front side, an interior, a central portion, and a rear side in an automotive seat, comprising:
 a back frame having a slit so formed that it is disposed at the rear side of said seat back and further extends along an internal periphery of the back frame;
 a front-side trim cover assembly which covers the front side of said seat back, extending to the rear side of said seat back and being inserted through said slit in the back frame so that edges of said front-side trim cover assembly are fixed to the interior of said seat back in a tensioned manner at a position adjacent to the central portion of said seat back; and
 a back-side trim cover assembly which covers the rear side of said seat back, said back-side trim cover assembly having securing portions provided at a peripheral end portion thereof, wherein said securing portions are made of a plate-shaped hard material and are inserted through said slit in the back frame in a tensioned manner so as to be engaged with the internal periphery of said back frame, thereby permitting the edges of said front-side trim cover assembly to press against said securing portions of said back-side trim cover assembly so that said securing portions are further brought into engagement with said internal periphery of said back frame;
 whereby both said front-side and said back-side trim cover assembly are brought into a firm contact with each other with a clear boundary therebetween at said slit in the back frame.

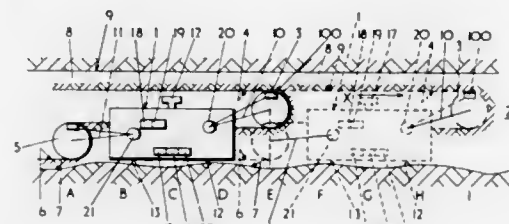
4,643,481
SEAT SYSTEM FOR PREVENTING DECUBITI
 William S. Saloff, Heather La., R.M., Gloversville, N.Y. 12078, and David Saloff, 91 Hillside Ave., Mount Kisco, N.Y. 10549
 Filed Nov. 8, 1984, Ser. No. 669,550
 Int. Cl.⁴ A47C 7/02
 U.S. Cl. 297—458 14 Claims
 1. A seat system for providing support for a seated occupant with a minimum of pressure on the occupant's seat bones so as to retard the formation of decubitous sores in tissue adjacent to those bones comprised of:
 a rigid base having a pair of side edges and having a seating surface including a rearward section for receiving the occupant's buttock and a forward section for receiving the occupant's thighs;
 the forward section having a pair of troughs between the side edges running forwardly from the rearward section and separated by a central ridge for supporting the thighs in an abducted position;
 the rearward section having a pair of wings formed of sloped support surfaces running inwardly and downwardly toward one another from either side edge, said support surfaces terminating in an inner edge defining a void generally mushroomed in cross-sectional shape having a

relatively wide laterally extending head portion located interiorly and centrally of the rearward section of the seating surface and a relatively narrow stem portion extending rearwardly and centrally from the head portion through said rearward section, the wings extending rearwardly of the forward section of the seating surface and each wing including an enlarged portion as its rearmost end in opposed relation to the other for providing support at the rearward end of the base to prevent rearward sliding of the occupant;
 the rearward section also having a central support member for preventing forward sliding of the occupant, the central support member tapering forwardly and sloping upwardly from the head portion of the void to the central ridge of the forward section;



the wings, including their enlarged portions, and the central support member of the rearward section of the seating surface having the overall shape of a partial oval bowl surrounding the void with its longer axis running transversely of the base through the void and the troughs of the forward section of the seating surface flowing smoothly into the wings, whereby an occupant may be positioned on said base with his buttock in the rear section, his ischial bones over the head portion of the void, his coccyx over the stem portion of the void and his thighs in the troughs;
 a deformable cushion having an overall peripheral shape similar to that of the seating surface of the base, including a pair of wings defining a void of the same general size and shape as that of the base; and
 means for securing the cushion to the base with the voids of each in approximate registration.

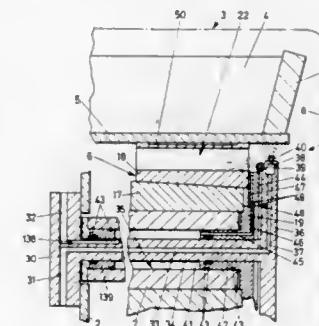
4,643,482
STEERING OF MINING MACHINES
 John R. Wolfenden, Draycott-in-the-Clay, England, assignor to Coal Industry (Patents) Limited, England
 Filed Jun. 21, 1984, Ser. No. 623,106
 Claims priority, application United Kingdom, Aug. 2, 1983, 8320840
 Int. Cl.⁴ E21C 27/24, 35/08
 U.S. Cl. 299—1 10 Claims



1. A method of steering mineral cutter means provided on a

double-ended ranging drum shearer adapted to repeatedly traverse to and fro along a longwall working face, comprising the steps of using a plurality of reference locations spaced at preselected intervals along the longwall working face, sensing the position of the machine along the working face so as to identify when the leading cutter drum reaches a desired reference location and storing that information for later use, sensing the cutting horizon of the leading cutter drum at said desired reference location and storing that information for future use, further sensing the position of the machine along the working face so as to identify when the trailing cutter drum reaches said desired reference location, and steering the trailing cutter drum through use of the previously stored information such that the vertical thickness of the strip of mineral won at said desired reference location tends to be maintained at a preselected value.

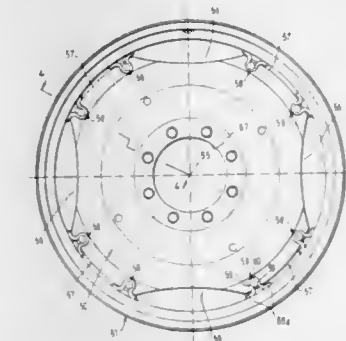
4,643,483
**FLUID SUPPLY SYSTEM TO ROTARY CUTTER HEADS
 ON MINING MACHINES**
 Derek J. Brooks, and Granville C. James, both of Ashby-de-la-Zouch, England, assignors to Coal Industry (Patents) Limited, United Kingdom
 Filed Dec. 11, 1984, Ser. No. 680,472
 Claims priority, application United Kingdom, Jan. 20, 1984, 8401507
 Int. Cl.⁴ E21C 25/10
 U.S. Cl. 299—81 6 Claims



1. A fluid supply system for a rotary cutter head for a mining machine having a non rotary body and a rotary drive shaft upon which the cutter head is mountable, the supply system comprising an adaptor unit mountable on the machine body and defining fluid inlet means, passage means for feeding fluid from the inlet means along the drive shaft, and distributor means for feeding fluid from the passage means to outlet nozzle means adapted to direct air flow inducing sprays within the rotary cutter head, the adaptor unit, passage means and distributor means constituting a non rotary component, the fluid supply system also comprising further distributor means for feeding fluid to further outlet nozzle means mountable on the cutter head, the further distributor means being adapted to rotate with the cutter head.

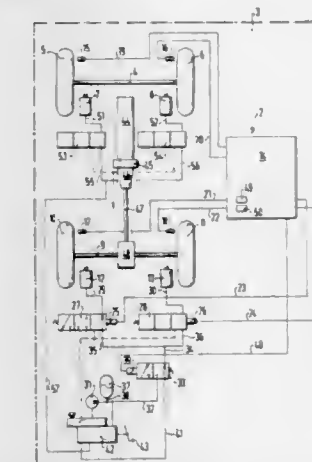
4,643,484
MANUALLY ADJUSTABLE WHEELS
 Charles H. Luter, Highfield, England; Nils L. Lethin, Kolding, Denmark; Johan Moeller, Lunderskov, Denmark, and Bjarne R. Holm, Vamdrup, Denmark, assignors to Karl Moeller Nagbol, Lunderskov, Denmark
 Continuation of Ser. No. 187,670, Sep. 16, 1980, abandoned. This application Sep. 27, 1984, Ser. No. 654,737
 Int. Cl.⁴ B60B 3/04, 23/00
 U.S. Cl. 301—11 S 3 Claims
 1. A manually adjustable wheel for a vehicle, e.g., a tractor, comprising:
 a rim to receive a tyre;
 a plurality of channel-shaped fixing lugs spaced apart around

the radially inner periphery of the rim, the lugs being arranged in pairs with the circumferential spacing between the lugs of each pair being less than the circumferential spacing between adjacent lugs of adjacent pairs, the lugs having flanges which overlie, and are welded to, the rim thus fixedly to secure the lugs to the rim;
 a disc of uniform thickness for connection to a hub of the vehicle;
 the disc having substantially the shape of a square with the corners cut off so that the disc has an irregular octagonal shape having four longer sides and four shorter sides



arranged alternately around the periphery of the octagon and with each shorter side being juxtaposed against a pair of lugs; and
 bolt means detachably securing the disc to the lugs, the disc and lugs being arranged so that the disc may be selectively secured to the lugs in either of two positions, the bolt means being located along the shorter sides of the disc only and, at each of said shorter sides comprising two bolts with each bolt passing through the disc and through one of the lugs of a pair of lugs juxtaposed to said shorter side.

4,643,485
**VEHICLE BRAKE SYSTEM INCLUDING MEANS FOR
 REDUCING DRIVE SLIP**
 Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
 Filed Nov. 21, 1984, Ser. No. 673,830
 Claims priority, application Fed. Rep. of Germany, Feb. 6, 1984, 3404018
 Int. Cl.⁴ B60K 28/16
 U.S. Cl. 303—96 6 Claims



1. A vehicle brake system intended for a vehicle comprising a drive engine, at least one differential transmission, wheels

driven via said transmission, said brake system having wheel brakes associated with at least said driven wheels, and brake pressure control valves individually associated with each of said wheel brakes, for brake pressure buildup, maintenance and reduction of brake pressure, a control unit for ascertaining angular wheel velocities and drive slip and for actuating said brake pressure control valves due to angular wheel velocity differences that exceed a switching threshold characterized in that said control unit includes a control device embodied as a differentiating device, which after said switching threshold is exceeded said control unit triggers at least one of said control valves to its pressure buildup position to cause braking of its associated wheel and thereafter when the maximum angular wheel acceleration of said associated wheel has been attained said differentiating device emits a control signal for directing said at least one brake pressure control valve into its position for brake pressure maintenance at such a time that braking moments attained substantially compensates for slip-generating excess drive moments.

4,643,486

**SLIP-CONTROLLED BRAKE SYSTEM FOR
AUTOMOTIVE VEHICLES WITH DRIVEN FRONT AND
REAR AXLE**

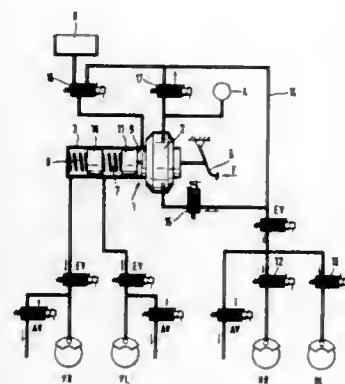
Juan Belart, Walldorf; Lutz Weise, Mainz, and Wolfram Seibert, Darmstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 27, 1985, Ser. No. 706,03
Claims priority, application Fed. Rep. of Germany, Mar. 1,
1984, 3407539

U.S. Cl. 303-114

U.S. Cl. 303-114

6 Claims



1. A slip-controlled brake system for automotive vehicles with driven front axle and rear axle, equipped with a pedal-actuated braking pressure generator comprising a power brake booster connected to an auxiliary pressure source, which booster communicates directly with a plurality of wheel brakes and which acts upon a master cylinder having working chambers to which said wheel brakes are connected, the brake system including electromagnetically actuatable multi-directional control valves in pressure fluid conduits leading to the wheel brakes, and including pressure fluid return lines which connect the wheel brakes with a pressure supply reservoir and which contain electromagnetically actuatable multi-directional control valves, wherein there is provided a normally closed pressure fluid conduit from the power brake booster to the master cylinder which can be switched to the opened position, and wheel sensors and electronic circuits for the determination of the wheels' rotational behavior and for the generation of valve control signals, wherein the auxiliary pressure source (4) communicates with said wheel brakes (HR, HL) directly connected to the power brake booster (2) and with said working chambers (6, 7) in the master cylinder (3) by way of electromagnetically actuatable multi-directional control valves (16,

17, 18, 19, 20) which, for the purpose of traction slip control, allow pressure into the wheel brakes (HR, HL) directly connected to the power brake booster (2) and into the working chambers (6, 7) in the master cylinder (3) and thereby into the wheel brakes (VR, VL) connected to the master cylinder (3).

4,643,487
SLIP-CONTROLLED BRAKE SYSTEM FOR
AUTOMOTIVE VEHICLES

Theo Neubrand, Idstein/Ts., Fed. Rep. of Germany, assignor to
Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Ger-
many

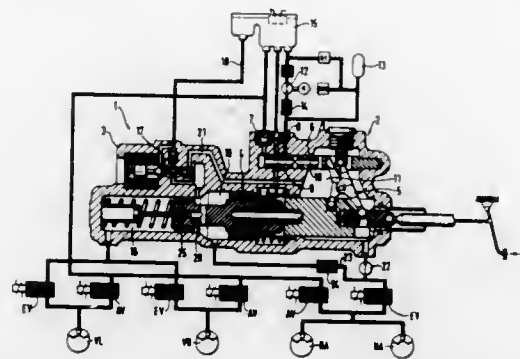
Filed Jan. 28, 1985, Ser. No. 695,489

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1984, 3403911

U.S. Cl. 303—114

U.S. Cl. 303—114

2 Claims



1. A slip-controlled brake system for automotive vehicles having front and rear brakes, said system comprising, in combination:

- a braking pressure generator including a power brake booster provided with a source of auxiliary energy and a pressure chamber, said pressure generator further including a master cylinder provided with a working chamber therein;
- a pressure supply reservoir connected to said pressure generator;
- a first pressure conduit connecting said rear brakes to said power brake booster;
- a normally open inlet valve inserted in said first pressure conduit;
- a second pressure conduit connecting said front brakes to said working chamber of said master cylinder;
- a normally open inlet valve inserted in said second pressure conduit;
- a third pressure conduit connecting said front and rear brakes to said pressure supply reservoir;
- at least one normally closed outlet valve inserted in said third pressure conduit;
- a pressure reducer device inserted in said first pressure conduit between the normally open inlet valve therein and said power brake booster; and,
- means for providing a parallel pressure conduit bridging said pressure reducer device between said first conduit and said pressure chamber of said power brake booster during slip control.

4,643,488

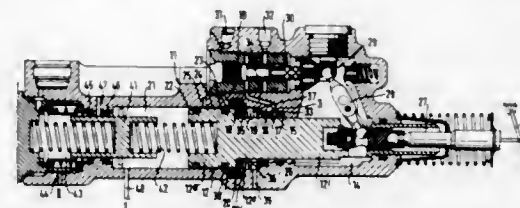
HYDRAULIC VEHICLE SERVO BRAKE

Hans-Dieter Reinartz, Frankfurt am Main, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 13, 1985, Ser. No. 744,499
Claims priority, application Fed. Rep. of Germany, Jun. 14,
1984, 3422152

Int. Cl.⁴ B60T 13/12, 8/02
U.S. Cl. 303—114

3 Claims



1. A hydraulic vehicle servo brake with a master cylinder comprising at least one stepped main-piston assembly, having an annular step connecting an enlarged main piston part to a tapered main piston part with an annular chamber provided at the annular step of the main piston, with a booster piston positively engaged with the main piston and being adapted to be acted upon by a brake pedal and by controlled auxiliary pressure in a control pressure chamber that is supplied by a brake valve governed by the brake pedal, with a first annular seal sealing the booster piston in relation to the control pressure chamber, with a second annular seal sealing the main piston in relation to the annular chamber, as well as with a valve disposed in the annular chamber which, when the brake pedal is not depressed, is opened due to the main piston being in an inactive position and connects the annular chamber with a supply reservoir and which will close upon depression of the brake pedal causing a slight advance movement of the main piston into an active position, wherein after closing of said valve, said annular chamber will be connected to a pressure chamber defined by of the main piston and a wheel-slip detecting brake control unit will shut off the connection to the annular chamber by way of valve means upon wheel slip detection and wherein an annular gap closed by two annular seals and connected to the supply reservoir by way of a port is arranged on the enlarged main piston part so that the annular chamber will be connected to the supply-reservoir port in the presence of a brake pedal travel in its active position which is sufficient for performing a panic stop that is not boosted by the controlled auxiliary pressure wherein the booster piston (12') and the tapered main piston part (12'') are united to form an integral piston (26) of constant diameter, on the integral piston the first and the second annular seals (15, 16) are provided at a close axial distance from one another, the supply reservoir being connected by a bore (17) and said port to said annular gap located between said two annular seals.

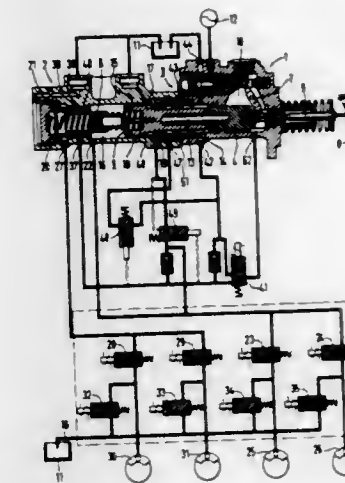
4,643,489
HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL
Hans-Dieter Reinartz, Frankfurt am Main, and Helmut Steffes,
Eschborn, both of Fed. Rep. of Germany, assignors to Alfred
Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 8, 1985. Ser. No. 699,650

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405967

Int. Cl.⁴ B60T 8/44, 11/08; F15B 7/08, 7/00
U.S. Cl. 303—114

1. A hydraulic brake system with slip control for automotive vehicles, comprising a master cylinder actuable by a hydraulic power booster, in which brake system valve means are inserted between the master cylinder and the wheel brakes connected to the master cylinder which allow removal of pressure fluid from the wheel brakes, means for replenishing the pressure fluid taken from the wheel brakes out of the pres-

sure chamber of the hydraulic power booster, wherein the master cylinder piston is designed as a stepped piston, and an annular surface of the master cylinder piston remote from the working chamber is adapted to be acted upon by the pressure of the working chamber, and wherein the chamber confined by the annular surface is connectable to a reservoir by way of a



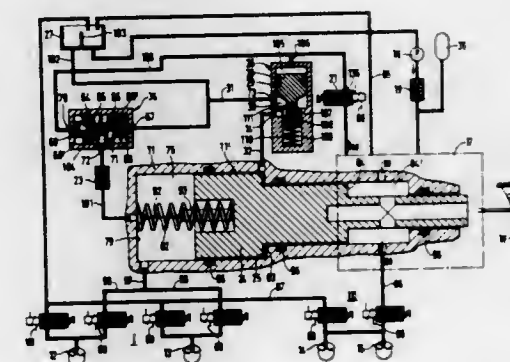
travel-responsively controllable valve, wherein an annular member (50) lying opposite to the annular surface (18) includes an axial channel (49) having a port and being connectable to the unpressurized supply reservoir (11), and wherein a resiliently preloaded sealing member (52) which is adapted to lift from said port due to displacement of the master cylinder piston (5) is mounted at said port of said axial channel (49).

4,643,490
HYDRAULIC SERVO VEHICLE BRAKE
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to Alfred
Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 20, 1985, Ser. No. 747,120

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423029

U.S. Cl. 303—115

7 Claims



1. A hydraulic servo vehicle brake with a master cylinder which contains at least one pedal-actuated master piston and at least one first brake circuit with wheel cylinders linked to a pressure chamber subjected to the pressure exerted by the master piston with a brake application valve being arranged between the brake pedal and the master piston and, on actuation by the brake pedal, applying pressure medium supplied by a hydraulic pump connected with a fluid reservoir in a controlled manner to the master piston and directly to a further brake circuit to furnish a controlled pressure, and with a wheel

slip-brake control unit which, in the event of incipient slip of one single or several vehicle wheels, automatically reduces the brake power at the relevant vehicle wheel or relevant vehicle wheels to a value just enabling the wheels to rotate and comprises a switching valve which is also subjected to the controlled pressure and is normally closed and opens at incipient slip of one or several vehicle wheels in order to apply the controlled pressure, through a non-return valve, directly to the pressure chamber on which the master piston acts, a hydraulic pedal-retaining arrangement subjected to the controlled pressure which penetrates through the opened switching valve preventing any major change of the position the pedal has assumed at the moment of opening of the switching valve, wherein the outlet (136) of the switching valve (21) is linked to the said pressure chamber (76, 176) subjected to the pressure exerted by the master piston (24, 80) through a change-over valve (34, 34') and a non-return valve (23, 123) which opens when the pressure supplied from said outlet (136) of said switching valve (21) is higher than the pressure in said pressure chamber (76) and which is closed in any other condition, wherein said master piston (24) succeeding the said brake application valve (17) and the master cylinder (11) are provided with a stepped extension (24' and 11', respectively) in the direction of said pressure chamber (76) subjected to the pressure applied by the said master piston (24), and wherein a pedal-retaining annular chamber (25) is normally connected with the fluid reservoir (27) through a pedal-retaining valve (26) controlled by the switching valve (21) and is sealed off from the atmosphere in the event of a wheel slip, said change-over valve (34, 34') linking the said non-return valve (23, 123) either to the controlled pressure (GD) when the said switching valve (21) is open or to said fluid reservoir (27) in all other conditions wherein said pedal-retaining valve (26) is provided with a piston slide element (28) subjected to the pressure conveyed by said switching valve (21) and accommodated in a cylinder (29) into whose cylinder chamber (30) facing away from the pressure side (105) hydraulic lines (31 and 32) leading to said fluid reservoir (27) and to said pedal-retaining annular chamber (25), respectively end up through connections (73 and 74) which normally are interconnected through said cylinder chamber (30), but are separated hydraulically when the said piston slide element (28) is shifted because said switching valve (21) has opened wherein a closing member (75) arranged at the said piston slide element (28) on the side of the said cylinder chamber (30) closes said connection (73) positioned opposite said piston slide element (28) on a slide of thereof, and wherein said master piston (24) is provided, on the side facing its pressure chamber (76), with a cylindrical axial bore (78) into which a fitting, stationary second master piston (80) originating from the master cylinder bottom (79) tightly extends, said non-return valve (23) being arranged in the shape of a sealing cup being provided between said second master piston (80) and the annular portion (24'') of said piston (24), said annular portion (24'') of said piston (24), said annular portion (24'') of said piston (24), said annular portion (24'') being defined by the said axial bore (78) and which further includes the said stepped extension (24'), wherein said switching valve (21) is linked to the annular chamber (22) existing around that portion of the said second master cylinder (80) which projects from said axial bore (78) of said master piston (24), said linkage being realized by way of said change-over valve (34) which normally links said annular chamber (22) with said fluid reservoir (27), but which connects the said annular chamber (22) with said switching valve (21) in the event of a wheel slip.

4,643,491
FLUID-PRESSURE OPERATED ANTI-SKID BRAKING SYSTEMS FOR VEHICLES
Denis J. McCann, Powys, and Edwin R. Carswell, Abergavenny, both of Wales, assignors to Lucas Industries Public Limited Company, England

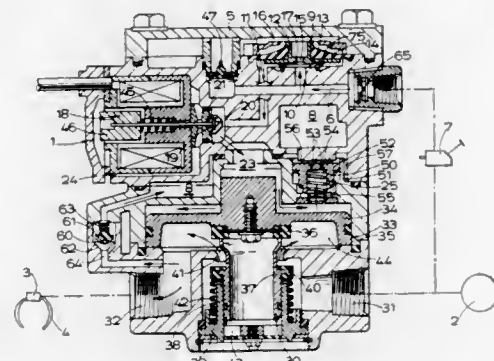
Filed Sep. 9, 1985, Ser. No. 774,096

Claims priority, application United Kingdom, Sep. 7, 1984, 8422711

Int. Cl.⁴ B60T 8/02

U.S. Cl. 303—118

10 Claims



1. A fluid-pressure operated anti-skid braking system including a wheel brake, an actuator for said wheel brake, a supply of brake-applying fluid, a brake-pressure control valve assembly through which fluid from said supply is supplied to said actuator, and control pressure means for operating said control valve assembly, wherein said control valve assembly incorporates a brake-applying chamber connected to said actuator, a fluid-flow control relay valve interposed between said supply and said brake for controlling pressurization of said brake-applying chamber by fluid from said supply, an application chamber subjected to said control pressure means to control operation of said relay valve, means responsive to a skid signal for operating said relay valve at a skid point determined by said skid signal to relieve the pressure of the fluid supplied to said actuator from said brake-applying chamber, a memory chamber for storing a memory pressure dependant upon the brake pressure occurring at said skid point to provide a datum or changeover point between first and second successive stages of brake re-application, said first stage comprising the re-application to said brake of the supply fluid from said supply until a pressure less than the pressure at said skid point is attained at said changeover point, and said second stage comprising the continued re-application to said brake of said supply fluid but at a reduced rate of pressure increase, and means connecting said memory chamber to said brake-applying chamber for feeding said memory chamber with fluid from said supply upon initial brake application in a common braking cycle.

4,643,492
BRAKE SYSTEM WITH SLIP CONTROL FOR AUTOMOTIVE VEHICLES WITH FRONT-WHEEL DRIVE OR ALL-WHEEL DRIVE
Juan Belart, Walldorf; Helmut Fennel, Bad Soden; Wolfram Seibert, Darmstadt, and Ivica Batistic, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 11, 1985, Ser. No. 754,345

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1984, 3426456

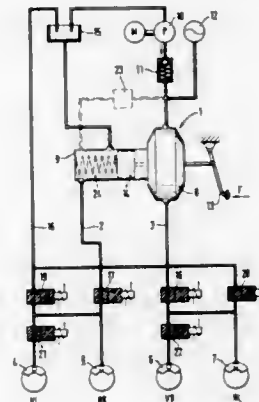
Int. Cl.⁴ B60T 8/08

U.S. Cl. 303—119

4 Claims

1. A brake system with slip control for automotive vehicles with front-wheel drive or all-wheel drive, said system including an auxiliary-energy-supplied braking pressure generator, a

plurality of wheel brakes wherein each pair of a front wheel brake and a diagonally disposed rear wheel brake are connected by way of hydraulically isolated pressure-medium circuits containing inlet valves normally maintained in a substantially open condition when inactive, said system further including return lines connecting the wheel brakes with a pressure-compensating reservoir and each having an outlet valve normally maintained in a substantially closed condition when inactive, and said system further having wheel sensors for the determination of the wheel rotational behavior and outputting



signals, electronic circuit means adapted to accept said sensor fed signals and process said sensor signals thereby generating braking pressure control signals, means for applying said control signals to said inlet valves and said outlet valves, the improvement wherein one additional valve (21,22) respectively, which is normally open when inactive, is inserted into each hydraulic pressure-medium circuit (2,3) between the outlet of the respective inlet valve (17,18) and the wheel brake (4,6) of the front wheel (VR,VL), said outlet also communicating with the port of the outlet valve (19,20).

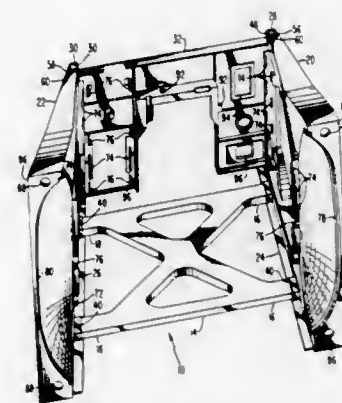
4,643,493
TELEVISION CHASSIS
Richard J. Sides, Sr., Mount Joy; Christopher L. Crawford, Middletown; Raymond J. Nunweiler, Jr., Lititz; David L. Muth, and George P. Hope, both of Lancaster, all of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 19, 1985, Ser. No. 756,829

Int. Cl.⁴ A47B 81/06

U.S. Cl. 312—7.2

16 Claims



1. A television chassis for use in combination with a cathode-ray tube within an enclosure comprising:
a base having first integral connecting means disposed at opposite ends thereof,
a pair of side frames attached, respectively, to said opposite ends of said base in a substantially orthogonal orientation,

each side frame having second integral connecting means disposed adjacent a first edge thereof for mating with the first connecting means of said base, and also having third integral connecting means disposed along a second edge thereof adjacent said first edge; and
a panel attached to said side frames, said panel having fourth integral connecting means disposed along opposite sides thereof for mating, respectively, with the third connecting means of said side frames, said first and said second integral connecting means comprising male-female snap-together means, said third and said fourth integral connecting means comprising slidable-groove means and slidable-tongue means, respectively, said panel being attached to said side frames by sliding along a direction substantially orthogonal to said base.

4,643,494
FRAMELESS, INTERLOCKING, MULTI-TRAY BOX
Gilles Marleau, 187 Eddy Street, Hull, Quebec, Canada J8X 2X2

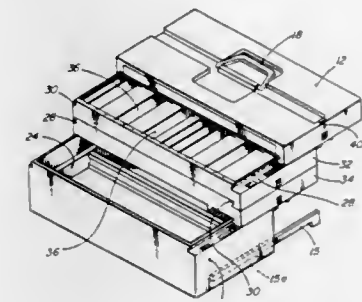
Filed Apr. 5, 1984, Ser. No. 597,175

Claims priority, application Canada, Apr. 7, 1983, 424118

Int. Cl.⁴ A47B 87/02

U.S. Cl. 312—111

2 Claims

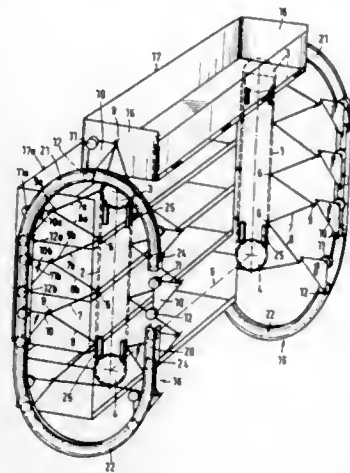


1. A frameless, interlocking, multi-tray box comprising:
a plurality of trays having front and rear walls and opposed side walls;
each tray being interlockable on top of any other tray so as to be vertically attached therewith and horizontally slidable thereon, each tray having a groove and lip in the outer and inner surfaces of each of its side walls cooperating with a correspondingly formed and situated groove and lip in adjacent trays;
lock/latch means in at least one of said side walls of each tray;
said lock/latch means in each tray cooperating to maintain said adjacent trays in locked, vertical alignment, and having release means whereby a tray may be slidably moved horizontally to permit access to the tray below;
said lock/latch means comprising a pair of lock/latch members contained within a recess provided within said at least one side wall of each tray, the first of said lock/latch members including a pair of downwardly projecting beveled fingers engageable in notches provided in the upper surface of said at least one side wall of the tray interlockably engaged therebelow, the second of said lock/latch members being T-shaped, the horizontal stem of said T being engageable within a notch provided in said first lock/latch member, said first lock/latch member having a projecting finger whereby it may be manually raised to elevate said T-shaped member, said T-shaped member projecting upwardly above said first lock/latch member, and being engageable within a notch provided on the underside of the tray interlockably engaged thereabove, each of said T-shaped members when manually elevated, elevating all T-shaped members thereabove and temporarily latching said trays together so that they may be moved together as a unit;

said first lock/latch member including unitary spring means normally urging said first lock/latch member downwardly;
each of said trays being selectively positioned so as to be locked in vertical alignment with the trays above and below, horizontally movable to a latched position with the tray above exposing the interior of the tray therebelow, and to be completely removable from said box.

4,643,495
MECHANICAL STORAGE CABINET WITH CONTAINER CONVEYOR

Karl-Heinz Pepping, Weyer, and Werner Kreuz, Wilnsdorf, both of Fed. Rep. of Germany, assignors to Electrolux Constructor GmbH, Wilnsdorf, Fed. Rep. of Germany
Continuation of Ser. No. 572,219, Jan. 19, 1984, abandoned. This application Jan. 7, 1986, Ser. No. 817,788
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3302018; Jan. 11, 1984, 3400743
Int. Cl.⁴ A47B 49/00
U.S. Cl. 312-268 11 Claims

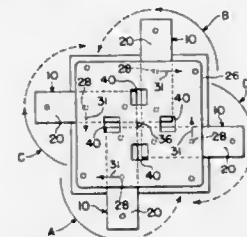


1. A mechanical cabinet including a circulating conveyor comprising:
two vertically disposed and synchronously driven endless chains, a multiplicity of shelves pivotably affixed with their end walls to the two endless chains, at predetermined equal distances, by way of pairs of supporting arms attached to chain bolts on said endless chains, and stationary endless guide rails secured to narrow sides of the cabinet, each guide rail consisting of two vertical sections and one upper and one lower arcuate section, all of said sections having parallel guide surfaces, guide members rigidly mounted to the end walls by supporting pins and disposed for guided movement by said parallel guide surfaces, a pair of guide elements mounted on each guide member, said guide elements separated from each other by a vertical distance and offset laterally with respect to each other and jointly guided in the vertical section of said guide rails,
said upper and lower arcuate sections having a "U"-shaped profile having a width to accommodate the guide element which is remotely mounted from the guide member,
said vertical sections having a "U"-shaped profile having a width to accommodate both of the laterally offset guide elements,
means for attaching one arm of one shelf and the arm of an adjoining shelf to the same chain bolt of the endless chain, and
an automatic tensioning device cooperatively associated with each endless chain to apply tension to said chain, said tensioning device including means for slidably supporting at least one of said arcuate sections in each guide rail with

respect to the respective vertical section for responding to tensioning movements.

4,643,496
STORAGE AND SECURITY SYSTEM FOR CASSETTE-LIKE OBJECTS

Ernest A. Dahl, 5419 E. Lake Shore Dr., Wonder Lake, Ill. 60097
Filed Nov. 1, 1985, Ser. No. 794,138
Int. Cl.⁴ A47B 88/18
U.S. Cl. 312-299 11 Claims



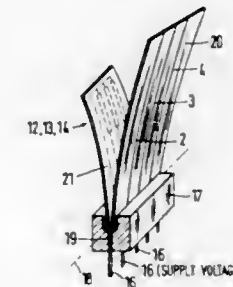
1. An access and security arrangement for a plurality of objects, said arrangement comprising a plurality of open-faced boxes, each of said open-faced boxes having a back wall with side walls, a top wall and a bottom wall extending at right angles from the periphery of said back wall to an open face, means on the walls of said boxes for supporting said objects in said boxes with said objects accessible at the open faces of said open-faced boxes,
a base member,
support means pivotally carrying each of said boxes for pivotal movement about a vertical axis on said base member with said open face thereof in a substantially vertical plane,
said support means further comprising pivot means at the center of the bottom wall of each of said boxes and on said base member for mounting each of said boxes to be pivotable about said vertical axis on said base member with said vertical axis positioned substantially at the center of the bottom wall of each box, said pivot means of each of said boxes arranged in a spaced apart relationship to each other on said base member to permit all of said boxes to be pivoted to a first position with said open faces of each of said boxes covered by said other boxes and to permit any selected number of said boxes to be pivoted to second positions with said open faces exposed for access to said objects, and
manually operable locking means for engaging and securing said boxes to prevent pivotal movement on said base member in any selected arrangement of said first and second positions.

4,643,497
DEVICE AND METHOD FOR CONNECTING A PRINTED CIRCUIT FILM

Jürgen Oelsch, Hohenroth, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany
Filed Sep. 19, 1985, Ser. No. 777,831
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1984, 3435836
Int. Cl.⁴ H01R 9/07, 13/66
U.S. Cl. 339-17 F 11 Claims

1. Connection apparatus for providing a plurality of electrical connections to conductors on a printed circuit film, comprising:
a terminal strip device having a plurality of connection pins, each said pin having a free end and an opposite end having a clamp for receiving a film, said clamps being located with a predetermined grid spacing,

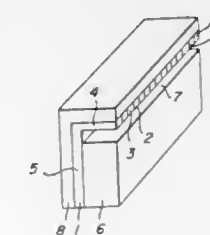
a flexible carrier film having thereon a grid of connection strips located with said grid spacing, a plurality of conductors on a first part of said film of a first side of said grid, each connected to a respective connection strip, and a plurality of resistors on a second part of said film on the opposite side of said grid and each connected to a respective connection strip, further characterized by said film



having a score line substantially at a right angle to and through said grid, the parts of said film being folded toward each other at said score line with said conductors and resistors being located on the outside of said folded film, said folded film being inserted into said terminal strip device at said score line so that each said connection strip is received into a respective one of said clamps.

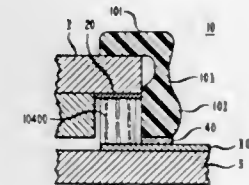
4,643,498
ANISOTROPIC ELECTRIC CONDUCTIVE RUBBER CONNECTOR

Koki Taniguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 5, 1985, Ser. No. 751,942
Claims priority, application Japan, Jul. 5, 1984, 59-102337[U]
Int. Cl.⁴ H01R 9/09
U.S. Cl. 339-17 M 10 Claims



1. An anisotropic electric conductive rubber connector, comprising:
an anisotropic electric conductive rubber formed in a reversed L-shaped and having integral horizontal and vertical portions,
a first insulating rubber attached to the inner side of said vertical portion in such a manner to form an insertion groove which provides a space for inserting a member to be mounted between said first insulating rubber and the lower side of said horizontal portion of the anisotropic electric conductive rubber, and
a second insulating rubber attached to the top surface of said horizontal portion, said first and second insulating rubber having a lower hardness than said anisotropic electric conductive rubber.

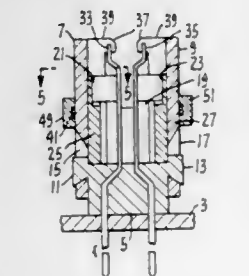
4,643,499
COMPONENT MOUNTING APPARATUS
John P. Mitchell, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 4, 1985, Ser. No. 772,304
Int. Cl.⁴ H01R 9/09
U.S. Cl. 339-17 CF 12 Claims



1. Apparatus for mounting a component with terminals on a circuit board, said apparatus comprising
an assembly for holding the component and interconnecting the terminals thereof with the circuit board characterized in that
said assembly comprises
a generally quadrilateral configured member formed of a flexible insulating material to have a central chamber for holding the component with said central chamber having side walls each with a reduced central section forming a channel therein with an upper surface of said channel hinged with respect to a lower surface of said channel for receiving and holding edges of the component and with said channel lower surface having matrices of directional conducting particles positioned therein at locations corresponding to the component terminals for engaging the component terminals and establishing an electrical conducting path between each component terminal and the circuit board.

4,643,500
SHAPE MEMORY ACTUATORS FOR MULTI-CONTACT ELECTRICAL CONNECTORS

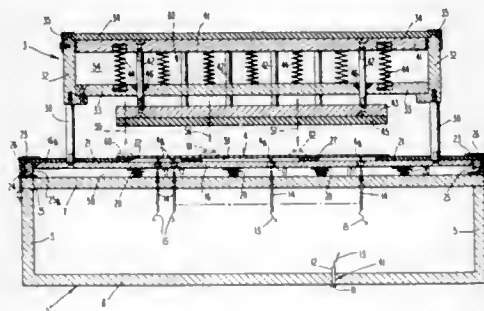
John F. Krumme, Woodside, Calif., assignor to Beta Phase, Inc., Menlo Park, Calif.
Filed Nov. 13, 1985, Ser. No. 797,652
Int. Cl.⁴ H01R 13/20
U.S. Cl. 339-30 5 Claims



1. A cam operated, multi-contact, zero insertion force electrical connector comprising:
a plurality of pairs of opposed electrical contacts;
means for supporting said pairs in parallel rows along an elongated dimension of the connector;
means for supporting each contact of said opposed pair of contacts for movement to positions toward and away from one another;
resilient means for biasing said contacts of said opposed pairs of contacts in one of said contact positions;
cam means having a first position and a second position, said cam means in its first position biasing said contacts of each

said pair of opposed contacts in the other of said contact positions, said cam means being a slide having camming surfaces;
 shape memory cam operating means having a martensitic state at room temperatures and an austenitic state above room temperatures, said cam operating means having a shape memory in its austenitic state to move said cam means to its first position, said cam operating means being a wire of shape memory material, said wire in its austenitic state capable of moving said slide to a position where said cam means is in its first position moving said opposed contacts away from one another, said resilient means capable of moving said slide to said cam means second position when said wire is in its martensitic state; and means for selectively heating wire to cause it to translate to its austenitic state.

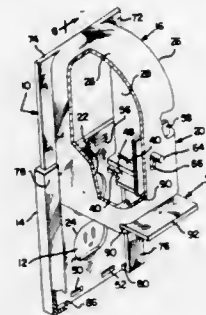
4,643,501
ELECTRONIC BOARD FIXTURE
 Harry S. Coffin, 424 Weadley Rd., King of Prussia, Pa. 19406
 Filed Oct. 1, 1984, Ser. No. 656,648
 Int. Cl.⁴ H01R 9/09
 U.S. Cl. 339—35 5 Claims



1. In fixture means arranged to support a wire-wrap board having a high density set of pins on at least one side thereof with each pin being in an upstanding accessible position and also arranged to make electrical interconnections between pins of said set, the fixture being for use in being connected in a tester for testing the board:

fixed support means;
 a plurality of spring-loaded probes mounted on said fixed support means with the axis of each probe extending in a vertical direction;
 first carrier means disposed above said probes and mounted on said fixed support means for straight-line vertical motion toward and away from said fixed support means;
 means on said first carrier means for mounting said wire-wrap board in a horizontal orientation with the pins of said set extending downwardly toward said probes;
 second carrier means mounted on said first carrier means for movement therewith and for movement relative thereto in straightline vertical motion;
 mounting plate means including resilient pad means mounted on said second carrier means for movement therewith and disposed so that the resilient pad is above the wire-wrap board mounted on said fixed support means for engaging the board; and
 means operating said first and second carrier means as follows: moving the second carrier means relative to the first carrier means so that the resilient pad engages and secures the board on the first carrier means, then moving the first and second carriers simultaneously so that pins of said set engage probes and maintaining said engagement for testing of the board and thereafter moving said first and second carriers so that said pin and said probes disengage.

4,643,502
DUPLEX OUTLET PROTECTION DEVICE
 Michael Arnold, VSS Andrew Jackson SSBN 619G, FPO, New York, N.Y. 09575-2008
 Filed Jan. 21, 1986, Ser. No. 820,109
 Int. Cl.⁴ H01R 13/44
 U.S. Cl. 339—36 9 Claims

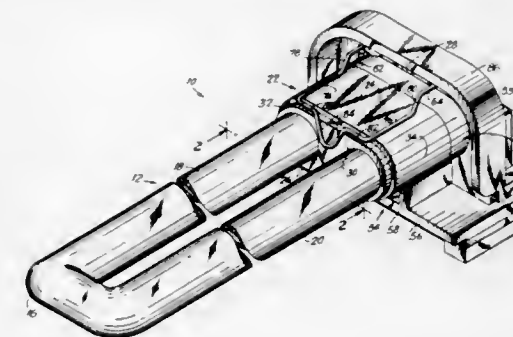


1. A duplex outlet protection device comprising:
 base plate means secured over the duplex outlet, the base plate means comprising track means;
 main body means connected with the base plate means, the main body means comprising flange means in sliding engagement within the track means, the main body means terminating downwardly in an open bottom, the main body means being movable relative to the base plate means between a base plate protecting position and a base plate exposing position;
 straddler means in sliding engagement with the main body means, the straddler means being positioned to cover at least part of the main body means open bottom, the straddler means being movable relative to the base plate means between a first position wherein a portion of the straddler means engages the base plate means and a second position wherein the straddler means does not contact the base plate means; and
 gravity door means in sliding engagement with the main body means, the gravity door means being angularly disposed relative to the straddler means, the gravity door means being movable relative to the main body means between a lower position and an upper position, the gravity door means being adapted to prevent sliding movement of the straddler means when in the said lower position and the permit sliding movement of the straddler means when in the said upper position;
 whereby the main body means may be moved relative to the base plate means only when the straddler means is not in contact with the base plate means.

4,643,503
FLUORESCENT LAMP MOUNTING SYSTEM
 George E. Johnson, Bronxville, and Walter Newman, Bayside, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.
 Filed Oct. 28, 1985, Ser. No. 790,662
 Int. Cl.⁴ H01R 33/08, 33/97, 13/62
 U.S. Cl. 339—50 R 11 Claims

1. A mounting system for a U-shaped tube of a fluorescent lamp, comprising, in combination,
 said U-tube having opposed connecting and free ends, said connecting end having male electrical contacts,
 body means connected to a surface, said body means being for mounting said U-tube at said connecting end and for providing female electrical contacts adapted to receive said male contacts, said body means also being for providing electrical contacts between said female contacts and a source of electrical power,
 support means connected to said body means for inhibiting transverse movement of said U-tube at said body means in

a first direction relative said body means when said U-tube is in a generally horizontal or vertical position, and locking means connected to said body means and removably clamped to said connecting end of said U-tube, said locking means being for preventing lateral movement of said U-tube away from said body means and the movement of said male electrical contacts away from said female electrical contacts wherein,
 said locking means is also for cooperating with said support means for preventing transverse movement of said U-tube in said first direction and for preventing transverse movement of said U-tube in a second direction opposite said first direction when said U-tube is in a generally vertical position and,
 said U-tube includes two parallel, slightly spaced tube portions and said U-tube further includes a coupling member at said connecting end adapted to hold said two tube portions in non-movable alignment, said locking means being in removable locking association with said coupling member and wherein,

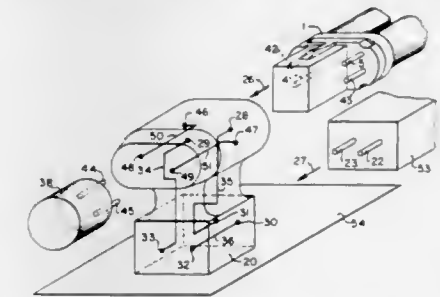


said coupling member includes a first and a second cross-wall, said cross-walls are opposed and extend across opposite sides of said two tube portions, and further includes opposed inner and outer wall relative said body means generally transverse to the parallel tubes and generally transverse to an intersecting said cross-walls,
 said locking means connected to said body means and is generally transverse to the inner and outer walls and neighboring with the first cross-wall and is adapted to clamp against said outer wall of said coupling member, whereby lateral movement of said U-tube relative said body means is prevented,
 said body means is a mounting body including a body wall generally transverse to said U-tube and generally parallel to said inner wall of said coupling member, said body wall forming two pairs of female receptacles, said connecting ends having two pairs of male prongs positioned at each end of said two tube portions adapted to be received by said two pairs of receptacles.

4,643,504
LAMPHOLDER ASSEMBLY FOR LOOP-, U- OR PI-SHAPED GAS DISCHARGE OR FLUORESCENT LAMPS WITH A SINGLE LAMP CAP
 Adrianus M. Kuiper, Lisstraat 27, Landsmeer, Netherlands 1121 AR
 PCT No. PCT/NL84/00022, § 371 Date Mar. 20, 1985, § 102(e) Date Mar. 20, 1985, PCT Pub. No. WO85/00700, PCT Pub. Date Feb. 14, 1985
 PCT Filed Jul. 18, 1984, Ser. No. 722,225
 Claims priority, application Netherlands, Jul. 20, 1983, 8302595; Jun. 25, 1984, 8402000
 Int. Cl.⁴ H01R 33/08
 U.S. Cl. 339—51 7 Claims

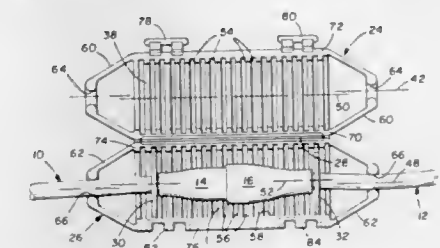
1. For use with a ballast and at least one of a loop-, u-, and pi-shaped gas discharge lamp having a lamp cap, a lampholder assembly comprising:

a unitary housing including
 means for receiving said lamp cap,
 means for receiving said ballast, and
 means for connecting to an electrical power supply; and



electrical interconnections contained within said unitary housing for providing an electrical circuit between lamp cap, said ballast, and said electrical power supply.

4,643,505
EXTENSION CORD CONNECTOR HOUSING
 David N. House, Irving, and Blas O. Sauseda, Desoto, both of Tex., assignors to Tri-Cities Tool & Die Clinic, Inc., Dallas, Tex.
 Continuation of Ser. No. 203,133, Nov. 3, 1980, abandoned. This application Dec. 31, 1981, Ser. No. 336,369
 Int. Cl.⁴ H01R 13/58
 U.S. Cl. 339—75 P 6 Claims



1. A housing for maintaining the interconnection between the plugs on a pair of extension cords comprising:
 a first member having a generally elongate hemicylindrical shape about a first central axis, the interior surface of said first member defining a plurality of spaced apart C-shaped grooves spaced along said interior surface of said first member in the elongate direction extending generally perpendicular to the first central axis;
 a second member having a generally elongate hemicylindrical shape about a second central axis, the interior surface of said second member defining a plurality of spaced apart C-shaped grooves spaced along said interior surface of said second member in the elongate direction extending generally perpendicular to the second central axis;
 a hinge member interconnecting said first and second members along edges in the elongate direction, said first member having at least one flexible means adjacent external edge for engaging said second member adjacent its external edge to secure said first and second members in abutting relationship to form a capsule for enclosing the plugs of the extension cords, the grooves of each of said first and second members being aligned along the elongate direction; and
 first and second retaining washers, each of said retaining washers being engagable with aligned grooves in said first and second members to secure said retaining washers therein when said first and second members are in abutting relationship and each having a slot formed therein for passage of a cable of an extension cord, said first and second retaining washers being positioned on opposite sides of the capsule.

sides of the interconnected plugs of the extension cords within said first and second members to prevent disconnection of the plugs, said first and second retaining washers being selectively engagable with selected ones of the grooves in said first and second members to permit the use of said housing with plugs of varied lengths.

4,643,506 WIRE SEAL

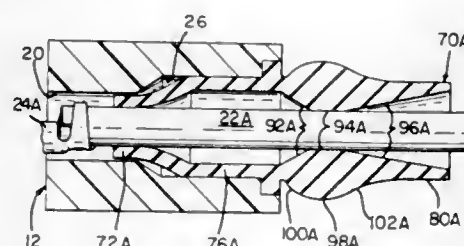
Robert J. Kobler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 17, 1985, Ser. No. 735,890

Int. Cl.⁴ H01R 4/00

U.S. Cl. 339—94 M

13 Claims



1. A wire sealing means for an electrical conductor secured in a terminal-receiving cavity of an electrical connector housing, comprising an elastomeric wire seal having:
 - a forward section of a preselected inner diameter and thickness and being elastically deformable radially outwardly;
 - a frustoconical section extending rearwardly from said forward section and having an increasing inner and outer diameter;
 - an intermediate cylindrical section of enlarged inner diameter and a preselected enlarged outer diameter rearwardly from said frustoconical section;
 - a rearward section extending rearwardly from said intermediate section and said terminal receiving cavity and being elastically deformable radially outwardly said rearward section comprising a cylindrical outer peripheral surface; and
 - a profiled bore extending axially through said wire seal; said rearward seal section having an annular portion extending radially inwardly into said profiled bore having a preselected inner diameter less than the portion of the profiled bore extending through said rearward section said annular portion and said cylindrical outer peripheral surface being radially expanded upon insertion of said electrical conductor.

4,643,507 ELECTRICAL TERMINAL WITH WIRE RECEIVING SLOT

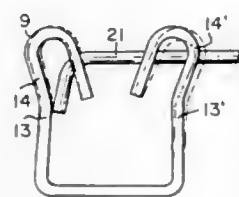
Daniel R. Coldren, Enola, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1985, Ser. No. 726,873

Int. Cl.⁴ H01R 11/20

U.S. Cl. 339—97 P

19 Claims



1. An electrical connection comprising a stamped and

formed, one piece, metal terminal of substantially channel section, portions of the channel walls remote from the base being relatively divergent as they extend away from the base and having, respectively, wire-receiving slots extending towards the base from mouths remote from the base; a wire received as a force fit in respective slots to extend across the channel in tension with the wall portions resiliently flexed towards each other by the wire, an end of the wire extending from a slot in hooked fashion.

4,643,508 DIRECTION-SENSITIVE SENSOR

Werner Schaller, Lampertheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

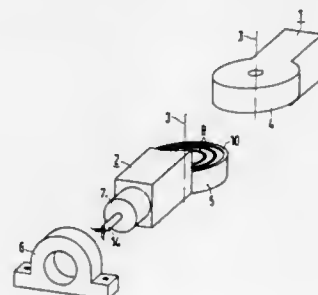
Filed Feb. 1, 1983, Ser. No. 463,046

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203520

Int. Cl.⁴ H01R 3/00

U.S. Cl. 339—147 R

23 Claims



1. A direction-sensitive sensor having a first sensor portion connected to a second sensor portion at a swivel joint, the swivel joint being formed of a bracket connection at which the sensor portions are held in a desired angle of rotation position in a holder which is rotatable about a further axis perpendicular to the axis of the joint, the sensor portions being electrically connected to one another, the arrangement further comprising:
 - at least portions of circular rings arranged concentrically about the joint axis, said portions of said circular rings being firmly connected to the connecting brackets;
 - sealing means arranged on at least one of the brackets for enclosing the outermost one of said circular rings;
 - circuit board means arranged in at least one of said sensor portions;
 - at least one electrical component arranged on said circuit board; and
 - electrical connecting elements arranged on said circuit board for providing an interconnection between said first and second sensor portions.

4,643,509 GROUNDING CLIP FOR FILTERED ELECTRICAL CONNECTOR

Robert D. Hollyday, Elizabethtown, and Patrick F. Yeager, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 621,005, Jun. 15, 1984, abandoned. This application May 3, 1985, Ser. No. 728,924

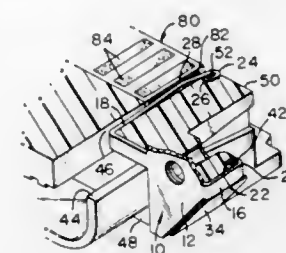
Int. Cl.⁴ H01R 4/66, 13/66

U.S. Cl. 339—147 R

22 Claims

9. An adaptor clip securable to a mounting flange of a filtered electrical connector comprised of a housing means having a plurality of electrical terminals and planar filter means therein, and said mounting flange having secured to one surface thereof a grounding clip in electrical engagement with a ground electrode of said planar filter means, said adaptor clip comprising a first body portion, two opposing bridge arms

extending normally from and laterally thereof, and second body sections extending inwardly from ends of respective said bridge arms forming a split second body portion spaced from and opposed to said first body portion, said second body sections being springably urgeable apart enabling securing of said adaptor clip to said mounting flange such that one of said first



and second body portions engages said grounding clip and the other of said first and second body portions is disposed on a surface of said mounting flange opposed from said one surface to engage a ground plane of said panel, whereby an electrical ground is formed between said ground electrode of said planar filter means and said ground plane.

4,643,510 INDICATING FUSE HOLDER

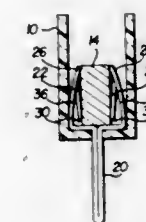
Angelo Urani, St. Louis, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 464,728, Feb. 7, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 720,062

Int. Cl.⁴ H01R 13/50

U.S. Cl. 339—176 R

4 Claims



1. A fuse holder for an indicating fuse comprising:
 - (a) a generally U-shaped clip body having a base and first and second spaced side walls each extending from a base up to free ends, said side walls forming a cavity therebetween for receiving a fuse terminal inserted between said free ends of said side walls opposite said base and into said cavity, at least said first of said side walls being flexible and pivotable about a single axis and formed from an electrically conductive material, said first of said side walls being substantially flat when no fuse is within said cavity, said free end of said first side wall opposite said base being free to move into said cavity; and
 - (b) electrically conductive lever means having a first end rigidly disposed intermediate said free end of said first side wall and having a second end projecting from said first side wall intermediate said base and projecting from said first side wall into said cavity at an acute angle with respect to said first side wall and towards said base; said second end being spaced from said base such that upon insertion of a fuse terminal into said cavity said fuse terminal initially contacts said second end of said lever means causing said first end of said lever means upon continued insertion of said fuse terminal to pivot towards said first side wall, causing said first side wall to deform such that said free end of said first side wall contacts said fuse terminal and said lever means is rotated to be substantially parallel with said fuse terminal and in electrical contact therewith such that, upon completion of insertion of said

fuse, two points of contact therewith are established, one of said points being at said lever means and the other of said points being at said first side wall.

4,643,511 AUXILIARY WIRE CONNECTIONS FOR SIDE POST BATTERIES

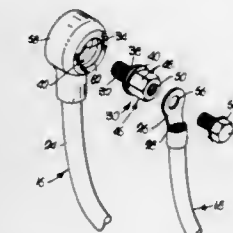
Robert F. Gawlik, and Timothy C. Eccles, both of Olathe, Kans., assignors to System Material Handling Company, Olathe, Kans.

Filed Dec. 19, 1985, Ser. No. 810,723

Int. Cl.⁴ H01R 11/26

U.S. Cl. 339—231

8 Claims



1. A mount for connecting perforated terminal lugs of a pair of cables directly to a battery side terminal having a hole provided with internal screw threads, said mount comprising: a stud adapted to extend through the perforation of the lug of one of said cables, said stud including:
 - an element at one end of the stud having external screw threads disposed to mesh with said internal threads,
 - a member intermediate the ends of the stud for clamping said lug of the one cable against said side terminal when the external threads are in mesh with the internal threads,
 - a device at the opposite end of the stud for releasably attaching the lug of the other cable to the stud, and
 - a structure for preventing displacement of the stud from the lug of said one cable,
 said stud having a socket at said opposite end thereof provided with internal screw threads, said device being a fastener adapted to extend through the perforation of the lug of the other cable and having external screw threads disposed to mesh with the threads of the socket.

4,643,512 INSULATED BRANCHING CONNECTOR FOR ELECTRICAL CABLES

Michel H. M. F. Prodel, Troche, France, assignor to SICAME Societe Industrielle de Construction d'Appareils et de Materiel Electriques, Arnac Pompadour, France

Filed Jun. 13, 1985, Ser. No. 744,331

Claims priority, application France, Jun. 15, 1984, 84 09384

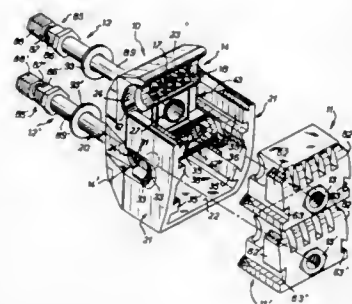
Int. Cl.⁴ H01R 13/24

U.S. Cl. 339—248 R

25 Claims

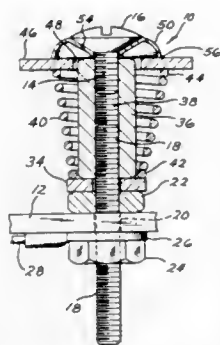
1. Branching connector of the kind comprising an insulative material body, an insulative material jaw movably mounted on said body under the control of clamping means and defining with the body a housing whereby the assembly may be fitted to a main cable, means for clamping said jaw, connecting means for connecting at least one branch cable to said body, and a metal contact member accommodated in said body and having an insulation piercing projecting part extending into said housing and adapted to make an electrical connection between said main cable and a branch cable of this kind, and is generally characterized in that at least the projecting part of the metal contact member which extends into the main cable housing is embedded in an insulative material dished member adapted to be applied against a cable of this kind all around said projecting part so as to protect and seal the electrical contact established

between said projecting part and said main cable, in that the connecting means for connecting a branch cable to the body comprise a second jaw separate from the first jaw movably mounted on said body under the control of specific clamping means and defining with said body a housing adapted to have a branch cable inserted into it, and in that, the metal contact member comprising a second insulation piercing projecting



part extending into the branch cable housing, this second projecting part is also embedded in an insulative material dished member adapted to be applied against the branch cable all around the second projecting part so as to protect and seal the electrical contact established between the second projecting part and said branch cable, whereby the connector constitutes a separate branch insulating branching connector, insulation piercing on the main cable and the branch cable(s).

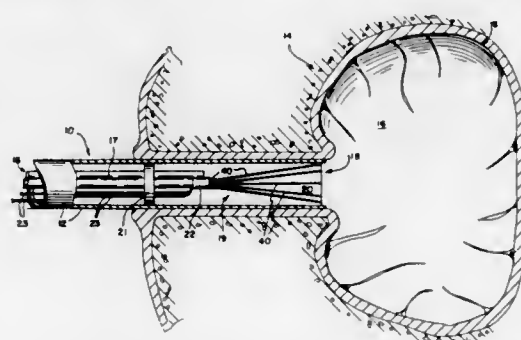
4,643,513
UNIVERSAL ELECTRICAL CONNECTOR
Charles B. Martin, 309 Old Farm Rd., Louisville, Ky. 40207
Filed Dec. 12, 1985, Ser. No. 807,966
Int. Cl.⁴ H01R 11/22, 4/30, 4/38
U.S. Cl. 339—254 R



1. An electrical connector for quick connection of ends of lead wires including terminals, said connector comprising:
 - a. a central screw means having a lower end that is adapted to be attached to a supporting structure and adjustable fastening means cooperating with the lower end for attaching the lower end of the central screw means to the supporting structure;
 - b. a lower portion of this central screw means having a flange adjacent the said supporting structure, a helical spring encircling the central screw means and seated on the lower flange, a large washer means having an enlarged opening that slips over an upper end of the central screw means, with the washer means seated upon an upper end of the said spring; and
 - c. an inverted cup washer means attached to an upper end of the central screw means and seated upon an upper surface of said washer means, said enlarged opening of said washer means being substantially larger than the dimension of said upper end of said central screw means for permitting both vertical and pivotal movement of said

washer means relative to said inverted cup washer and said upper end of said central screw means;
d. whereby the said large washer means may be depressed at one side edge so as to compress the spring and cause the large washer means to pivot from its opposite side relative to the cup washer means for capturing a lead wire end, or terminal, in the gap formed between the deflected larger washer means and the cup washer means.

4,643,514
INTERNAL STRUCTURE HOLOGRAPHY
Gil Raviv, Chicago; Michel E. Marhic, Evanston, and Max Epstein, Highland Park, all of Ill., assignors to Northwestern University, Evanston, Ill.
Filed Jul. 29, 1983, Ser. No. 518,440
Int. Cl.⁴ G03H 1/04; G01B 9/021; A61B 1/06
U.S. Cl. 350—3.6

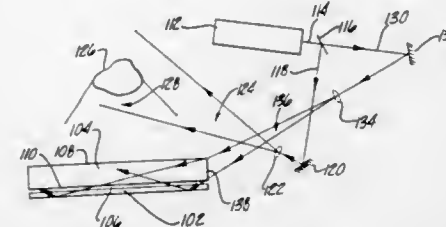


1. Medical apparatus for laser holographic examination of the internal features of selected cavities and passageways of an animal or human body comprising:
 - lasing means positionable within said body for generating a laser beam therein;
 - means for establishing a laser object beam and a laser reference beam within said body;
 - recording means for obtaining a laser hologram within the body; and
 - placement means having dimensions and being flexibly configured to permit passage through non-linear passageways and cavities of said body and including a probe housing for placing said lasing means and said recording means within said selected cavities and passageways of said body from a position external thereto and for recovering said lasing means and said recording means from said body.

4,643,515
METHOD AND APPARATUS FOR RECORDING AND DISPLAYING EDGE-ILLUMINATED HOLOGRAMS
Juris Upatnieks, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.
Filed Apr. 1, 1985, Ser. No. 718,502
Int. Cl.⁴ G03H 1/04, 1/22
U.S. Cl. 350—3.67

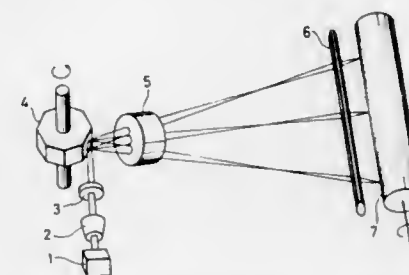
1. A method for recording a hologram, comprising:
 - placing a recording medium sensitive to electromagnetic energy in proximity to a body refractive of electromagnetic energy, said body having a plurality of surfaces and being adapted to refract electromagnetic energy impinging on at least a first of said plurality of surfaces onto said recording medium, the index of refraction of the body being greater than the index of refraction of the space adjacent said first of said plurality of surfaces;
 - filling the space between said recording medium and said refractive body with a layer of material transparent to electromagnetic energy, said material having an index of

refraction greater than or equal to the index of refraction of said refractive body;
forming a plurality of beams from a coherent source of electromagnetic energy;
creating an object wavefront by illuminating an object to be holographically recorded with a first of said plurality of beams;
directing a portion of said object wavefront to impinge on said first of said plurality of surfaces, said portion being refracted onto said recording medium;



creating a reference wavefront within said reflective body by directing a second of said plurality of beams onto a second of said plurality of surfaces;
exposing said recording medium to the portion of said reference wavefront impinging on said second of said plurality of surfaces and being refracted onto the recording medium, creating an electromagnetic interference pattern between said wavefronts within the recording medium; and
rendering said interference pattern permanent in said recording medium.

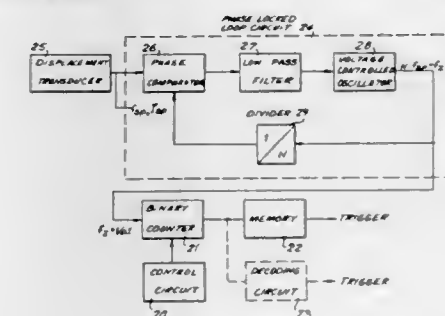
4,643,516
LASER BEAM SCANNING APPARATUS
Yukio Ogura, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Feb. 3, 1983, Ser. No. 463,408
Claims priority, application Japan, Feb. 5, 1982, 57-17291; May 1, 1982, 57-73872
Int. Cl.⁴ G02B 26/10
U.S. Cl. 350—6.5



1. A light beam scanning apparatus comprising a semi-conductor laser, a coupling lens for forming a beam from said laser into a substantially parallel beam, a beam deflector, and a focussing lens for condensing beams on a scanning surface, wherein first and second cylindrical lenses having a refractive power only in a sub-scanning direction are disposed between said coupling lens and a deflecting surface of the deflector and between the focussing lens and the scanning surface, respectively, and said deflecting surface and said scanning surface are in a geometrical-optically conjugative relation with respect to the coupling lens and said second cylindrical lens, the improvement wherein said first cylindrical lens comprises a positive lens and negative cylindrical lens, the spacing between which is variable to each other, a prism having a refractive power within a main scanning direction is disposed between said coupling lens and deflecting surface, and a beam spot size may

be adjusted independently in the main scanning direction and sub-scanning direction.

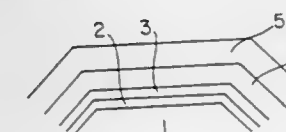
4,643,517
METHOD AND CIRCUIT ARRANGEMENT FOR FREQUENCY-, DISTANCE-, AND ANGLE-INDEPENDENT SURFACE MEASUREMENT
James Ruger, Hoffenheim; Manfred Strauss, Heidelberg, and Wolfgang Welz, Bammental, all of Fed. Rep. of Germany, assignors to Eltgo GmbH, Heidelberg, Fed. Rep. of Germany
Filed Apr. 19, 1985, Ser. No. 724,984
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415043
Int. Cl.⁴ G02B 26/10
U.S. Cl. 350—6.6



18. A circuit arrangement for triggering a beam source in a pulsed manner at predetermined times during oscillatory scanning, said beam source being arranged to project a beam pulse onto a scanned surface in response to a trigger pulse, said circuit arrangement comprising:

- (a) a displacement transducer coupled to a scanner for outputting pulses corresponding in frequency to the oscillation frequency f_{sp} of said scanner;
- (b) a phase locked loop connected to said displacement transducer for receiving said pulses of frequency f_{sp} and arranged to output pulses of frequency $N \cdot f_{sp}$;
- (c) a binary counter connected to count the pulses output by said phase locked loop;
- (d) circuit means connected to said binary counter for outputting a trigger pulse in response to said binary counter attaining a count A_n corresponding to a predetermined reference value; and
- (e) a control circuit connected to a reset terminal of said binary counter.

4,643,518
METALLIC ROTATIONAL POLYGON MIRROR
Yasushi Taniguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 11, 1985, Ser. No. 710,061
Claims priority, application Japan, Mar. 19, 1984, 59-51224
Int. Cl.⁴ G02B 26/10
U.S. Cl. 350—6.8



7. A metallic rotational polygon mirror comprising a metallic member formed of aluminum or an alloy thereof, a first thin film disposed on said metallic member and being formed of chromium, a metallic second thin film, of high reflection factor, disposed on said first thin film and being formed of copper,

and a thin film of dielectric material being provided on said metallic second thin film, said thin dielectric material film comprising, in successive order from said metallic second thin film, two or four alternate layers of Al_2O_3 and TiO_2 .

4,643,519
WAVELENGTH DIVISION OPTICAL MULTIPLEXER/DEMULTIPLEXER

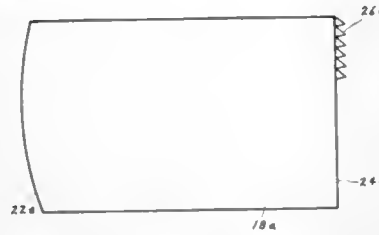
Anne B. Bussard, Salem, Va., and Robert E. Pulfrey, Joppa, Md., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 538,238, Oct. 3, 1983, abandoned. This application Jun. 12, 1986, Ser. No. 873,872

Int. Cl.⁴ G02B 6/34

U.S. Cl. 350—96.19

11 Claims



1. An optical coupler comprising an elongated optical component formed of light transmitting material, one end of said component having a convex surface coated with a light reflecting material whereby said convex surface is a light reflecting surface and the other end having a generally planar surface, one portion of said planar surface having a diffraction grating formed thereon and the remaining portion having a section for receiving a multiple fiber array, said planar surface and said convex surface being arranged so that said planar surface is perpendicular to the optical axis of said component and said convex surface is decentered with respect to said axis.

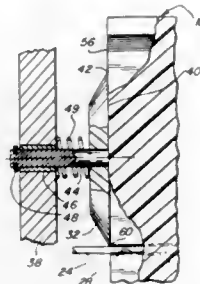
4,643,520
METHOD OF TERMINATING FIBER OPTIC CONNECTOR WITHOUT POLISHING OPTICAL FIBER
Mark Margolin, Lincolnwood, Ill., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 10, 1983, Ser. No. 474,099

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.20

11 Claims



1. A method of terminating an inner fiber core of a fiber optic cable relative to a mating end of a fiber optic connector, the cable having an outer coating about said inner fiber core, comprising the steps of:

providing a substantially complete fiber optic connector with a mating end and means for coupling to an appropriate complementary component and means for receiving said fiber optic cable with a length of said core, stripped of said outer coating, protruding from said mating end of said connector;

clamping said fiber optic cable within said connector against lengthwise movement of said cable; and cleaving said length of said inner core in situ within said connector flush with said mating end of said connector by scoring said fiber core at a point flush with the mating end of the connector while simultaneously applying a separation force to said length of said core along the axis thereof to cause a separation of said core at said scored portion as a result of said tension thereby eliminating subsequent polishing and other preparation and positioning of said core end relative to said connector with said core end flush with said mating end of said connector, and whereby an actual cutting through of the core is not required to effect termination.

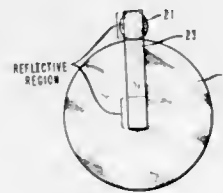
4,643,521
PLURAL-CHANNEL OPTICAL ROTARY JOINT
Edward E. Harstead, Park Ridge; Leon Klafter, Whippany, and Yan-Chi Shi, Parsippany, all of N.J., assignors to AT&T Company and AT&T Bell Laboratories, both of Murray Hill, N.J.

Filed Jul. 5, 1984, Ser. No. 628,033

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.20

11 Claims



1. A rotary coupling for lightguides and comprising a first lightguide path including first and second lightguide devices of a first predetermined transverse diameter and relatively rotatable about an axis of rotation, said devices being spaced to define a rotation interface between them, said path extending coaxially with said axis of rotation through said interface, a second lightguide path including third and fourth lightguide devices of a second and smaller predetermined transverse diameter and laterally displaced from said axis of rotation, and means for directing a predetermined portion of said second path from its displaced devices to be coaxial with said first path in said interface.

4,643,522
OPTICAL PICKUP HAVING A DRIVING UNIT FOR MOVING OBJECTIVE LENS
Mitsuru Takashima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 30, 1984, Ser. No. 635,607

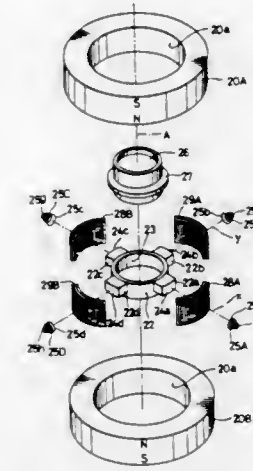
Int. Cl.⁴ G02B 7/04; G11B 7/12

U.S. Cl. 350—255

10 Claims

1. An optical pickup having a driving unit, comprising a pair of cylindrical or columnar magnets magnetized such that a pair of magnetic poles of each of said magnets are aligned with an axis and arranged such that the same magnetic poles in said

magnets oppose each other, and coils wound in a vicinity of one of said pair of magnetic poles in predetermined directions,



whereby said magnets and said coils constitute said driving unit for driving a driven member having an objective lens.

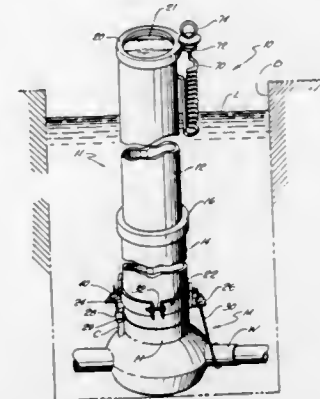
4,643,523
TELESCOPING WATER METER READING APPARATUS
James L. Smedley, 1113 N. Tolliver Rd., and Paul W. Blair, 120 Normal Ave., both of Morehead, Ky. 40351

Filed Jul. 1, 1985, Ser. No. 750,005

Int. Cl.⁴ G02B 5/00, 23/22

U.S. Cl. 350—319

15 Claims



1. An apparatus providing a clear sight path for reading a meter or the like located in an underground box, comprising: telescopic viewer means having a top end and a bottom end adapted for sealing engagement with the meter; means for connecting said viewer means to said meter; means for sealing said viewer means against the meter so as to prevent water in the meter box from entering and obstructing the sight path through said viewer means; and means for maintaining ambient pressure in said telescopic viewer means as said viewer means is extended and retracted; said telescopic viewer means being moisture tight and extensible to position said top end of said viewer means above any level of water in the meter box thereby allowing visual inspection and reading of the meter.

4,643,524
METHOD OF USING A CONDENSING LENS
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

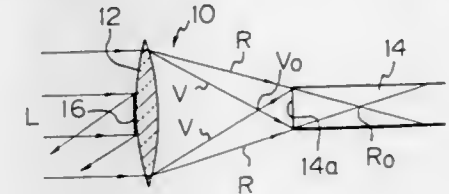
Filed Feb. 13, 1984, Ser. No. 579,840

Claims priority, application Japan, Feb. 14, 1983, 58-22573; Feb. 23, 1983, 58-28911

Int. Cl.⁴ G02B 5/22

U.S. Cl. 350—320

12 Claims



1. A method of utilizing converged light comprising the steps of disposing optical filter means on a part of a condensing lens which intersects the optical axis of the lens, leaving a peripheral exposed portion on said lens on which said filter means is not disposed, positioning a light receiving end of a conducting cable at the focal point of visible rays, utilizing said filter means for intercepting ultraviolet rays or infrared rays while transmitting visible rays through said lens to said cable, moving said light receiving end to the selected focal point of either said ultraviolet rays or said infrared rays, and transmitting either said ultraviolet rays or said infrared rays through said peripheral exposed portion of said lens depending on said selected focal point.

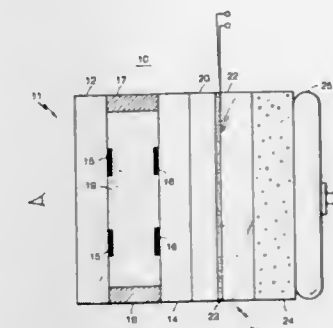
4,643,525
TRANSFLECTIVE LIQUID CRYSTAL DISPLAY WITH INTEGRAL HEATING UNIT
Elias S. Haim, Windham, N.H., assignor to General Electric Co., Schenectady, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,066

Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—331 R

6 Claims



1. In a heated liquid crystal display the combination comprising: (a) A liquid crystal cell containing a liquid crystal solution, (b) Reflector means positioned behind said cell to reflect light entering the light in front of the cell back through the cell, (c) Heating means located outside the reflective light path and positioned to be in heat exchanging relationship with the rear of said cell for maintaining the temperature of the solution above the minimal operating temperature of the solution, (d) Said heating means comprises a substrate and a heating element on the surface of the substrate in contact with the reflector means.

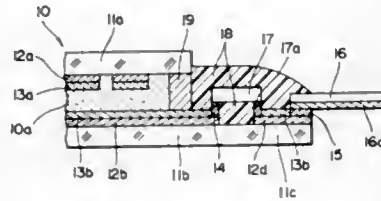
4,643,526

LIQUID CRYSTAL DISPLAY DEVICE HAVING A RESIN-COATED IC CHIP

Haruo Watanabe; Eiichi Tajima; Masaaki Matsunaga; Toshihide Hirohara; Yoshio Iinuma; Naotake Ando; Shigeyuki Takahashi, and Teruaki Takahashi, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed May 7, 1985, Ser. No. 731,274
Claims priority, application Japan, May 12, 1984, 59-095368
Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—332

4 Claims



1. A liquid crystal display device comprising:
a liquid crystal display panel having upper and lower substrates, conductive films provided on the underside of the upper substrate and on the lower substrate,
a connecting portion formed on one of the substrates;
terminal portions formed on the connecting portion and electrically connected to the conductive films on the substrate having the connecting portion;
an IC chip having terminal portions on the underside thereof;
conductive adhesives disposed between the terminal portions on the connecting portion and the terminal portions of the IC chip to join both terminal portions with each other; and
a nonconducting coating provided on the connecting portion covering the IC chip.

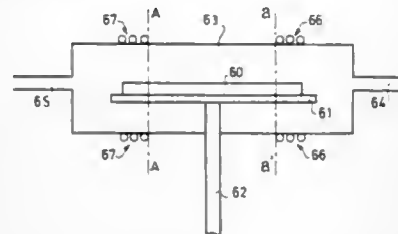
4,643,527

PROCESS FOR THE PRODUCTION OF A SUBSTRATE FOR AN ELECTRICALLY CONTROLLED DEVICE AND DISPLAY SCREEN PRODUCED FROM SUCH A SUBSTRATE

José Magarino, Plessis Robinson; Nicolas Szydio, Limours; Michel Hareng, La Norville, and Pierre Landouar, Palaiseau, all of France, assignors to Thomson-CSF, Paris, France
Filed Aug. 20, 1984, Ser. No. 642,527
Claims priority, application France, Aug. 26, 1983, 83 13788
Int. Cl.⁴ G02F 1/13; H01L 21/205

U.S. Cl. 350—333

5 Claims



1. A process for producing a silicon substrate useful for the incorporation therein of transistors and diodes comprising the steps of positioning an amorphous silicon substrate in a furnace which has a non-uniform temperature distribution such that edge regions of the substrate are in a zone at a temperature high enough to convert the amorphous silicon to the polycrystalline form while the interior regions of the substrate are in a zone at a temperature insufficiently high to crystallize the amorphous silicon, and removing the substrate from the fur-

nace after desired edge regions of the substrate have been crystallized.

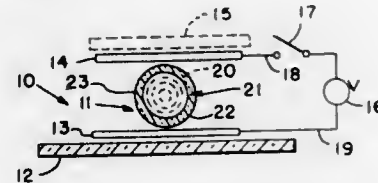
4,643,528

ENCAPSULATED LIQUID CRYSTAL AND FILLER MATERIAL

James R. Bell, Jr., Pepper Pike, Ohio, assignor to Manchester R & D Partnership, Pepper Pike, Ohio
Filed Mar. 18, 1985, Ser. No. 712,966
Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—334

8 Claims



1. In combination, liquid crystal material having a natural structure, containment means for containing said liquid crystal material in a plurality of volumes, spacer means for occupying some of the space in a plurality of said volumes, at least one of said containment means and spacer means distorting such natural structure of at least some of said liquid crystal material in the absence of a prescribed input.

4,643,529

POLARIZING FILM

Sin Hosonuma; Junichi Fujio, both of Nagoya; Kozo Tanaka, Yokohama; Harue Suzuki, Tokyo, and Kenichi Baba, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Dec. 20, 1984, Ser. No. 684,136
Claims priority, application Japan, Dec. 23, 1983, 58-242153
Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—337

4 Claims

1. A polarizing film containing a base resin and a photochromic material which is characterized in that
(1) the uniaxial orientation coefficient (f) of the principal crystal axis of the base resin with respect to the reference axis is not less than 0.7, the reference axis being defined, when the impinging X-rays are perpendicular to the surface on the polarizing film, as an axis which is in the plane of the polarizing film and which makes an angle of 90° with the axis made by normal projection of the direction of the strongest X-rays in the Debye-Scherrer ring diffracted by crystal planes parallel to the principal crystal axis of the base resin on the polarizing film; and
(2) When a specimen of the polarizing film is cut out so as to have a surface perpendicular to the reference axis and X-rays impinging on the specimen parallel to the reference axis, the product ($f \times R$) of the aforesaid uniaxial orientation coefficient (f) and the ratio ($R = (I_{min}/I_{max}) \times 100$) of the minimum value (I_{min}) to the maximum value (I_{max}) of diffracted X-ray intensity on the resulting Debye Scherrer ring is not less than 10.

4,643,530

REFLECTIVE, THIN FILM TRANSISTOR ADDRESSED, MATRIX LIQUID CRYSTAL DISPLAY

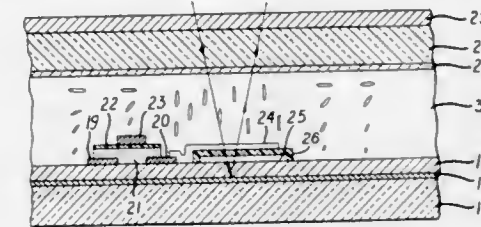
Tsuneo Yamazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed May 25, 1983, Ser. No. 497,883
Claims priority, application Japan, May 26, 1982, 57-89303
Int. Cl.⁴ G02F 1/135

U.S. Cl. 350—339 R

19 Claims

8. In a matrix liquid crystal display device: means defining a light-reflecting surface; a first polarizing layer formed on the

light-reflecting surface; an array of thin film transistors and driving elements arranged in a two-dimensional matrix on the first polarizing layer, the first polarizing layer being sandwiched between the light-reflecting surface and the array of thin film transistors and driving elements, each driving element corresponding to one thin film transistor and having a first transparent electrode; a transparent plate having opposed



major surfaces and being spaced-apart from the array of thin film transistors and driving elements; a second transparent electrode formed on the major surface of the transparent plate which faces the first polarizing layer; a liquid crystal material interposed between the first and second transparent electrodes; and a second polarizing layer disposed on the same side of the liquid crystal material as the transparent plate.

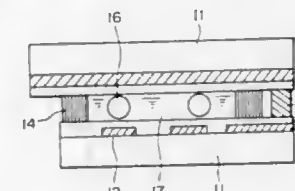
4,643,531

LIQUID CRYSTAL PANEL HAVING AN ORGANIC INDIUM AND/OR ORGANIC ZIRCONIUM ORIENTATION FILM

Hiroshi Inoue, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 6, 1985, Ser. No. 698,828
Claims priority, application Japan, Feb. 15, 1984, 59-26683; Feb. 15, 1984, 59-26684; Feb. 15, 1984, 59-26685
Int. Cl.⁴ G02F 1/13

U.S. Cl. 350—341

24 Claims



1. A liquid crystal panel, comprising a pair of base plates, at least one of which is a plastic base plate, and a liquid crystal disposed between the pair of base plates, said plastic base plate being provided with an orientation controlling film formed by applying thereon a composition comprising an organic indium compound and an organic zirconium compound.

10. A liquid crystal panel, comprising a pair of base plates, at least one of which is a plastic base plate, and a liquid crystal disposed between the pair of base plates, said plastic base plate being provided with an orientation controlling film comprising a first film formed by applying thereon a composition comprising an organic indium compound and an organic zirconium compound, and a second film formed by applying thereon a second composition comprising an organic indium compound or an organic zirconium compound.

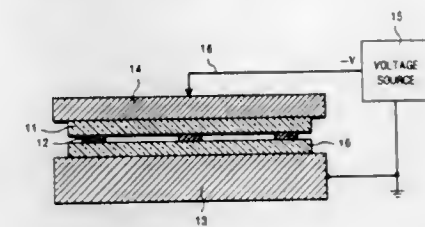
4,643,532

FIELD-ASSISTED BONDING METHOD AND ARTICLES PRODUCED THEREBY

Rafael N. Kleiman, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 24, 1985, Ser. No. 748,032
Int. Cl.⁴ C09K 3/34; C23C 27/00

U.S. Cl. 350—343

15 Claims



1. Method of manufacturing an article comprising a "cell", the cell comprising a first and a second inorganic insulator body, the insulator material having a softening temperature or a melting temperature, each insulator body having at least one substantially plane major surface, the first insulator body bonded to the second insulator body, with the major surfaces opposed and with a predetermined spacing between the opposed major surfaces, the spacing to be referred to as the "cell thickness",

characterized in that the method comprises
(a) forming a layer of bonding material on the major surface of the first insulator body such that part of the major surface is free of bonding material, the bonding material chosen from the group consisting of those metals and semiconductors that have a melting point greater than about 250°C ., the layer thickness being substantially equal to the cell thickness;
(b) forming a combination by placing the major surface of the second insulator body into contact with the layer of bonding material;
(c) heating the combination to a bonding temperature and applying a voltage across the heated combination for a time sufficient to result in bonding of the second insulator body to the bonding material to form the cell of predetermined cell spacing, the bonding temperature being lower than the melting temperature of the bonding material and the softening or melting temperature of the insulator material, the bonding temperature also being high enough to render the heated first and second insulator bodies sufficiently electrically conductive to permit some current to flow in response to the applied voltage, the applied voltage being such that the second insulator body is negative with respect to the bonding material layer for at least part of the time the voltage is applied.

12. An article produced by a process comprising the method of claim 1.

4,643,533

DIFFERENTIATING SPATIAL LIGHT MODULATOR

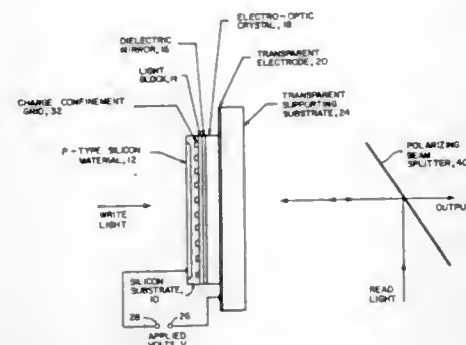
David Armitage, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 11, 1985, Ser. No. 721,977
Int. Cl.⁴ G01F 1/13

U.S. Cl. 350—350 S

7 Claims

1. A spatial light modulator which comprises:
a silicon substrate having a first surface and an opposed second surface, said substrate having p-type silicon material diffused in said first surface thereof to form a photodiode and a charge confinement grid formed in said second surface thereof to prevent lateral charge transfer;
a dielectric mirror having a first surface and an opposed

second surface, the first surface of said mirror being adjacent said second surface of said silicon substrate;
 a transverse electro-optic crystal having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said dielectric mirror, said transverse electro-optic crystal having substantially no response to longitudinally applied electric fields and having a substantial response to transversely applied electric fields;



a transparent electrode having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said electro-optic crystal;
 a transparent supporting substrate having a first surface and an opposed second surface, the first surface thereof being adjacent the second surface of said transparent electrode; and,
 means for applying a voltage between said p-type material and said transparent electrode.

4,643,534 OPTICAL TRANSMISSION FILTER FOR FAR FIELD BEAM CORRECTION

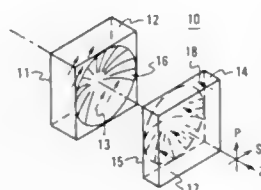
Myung K. Chun, Manlius, and Sujane C. Wang, Liverpool, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,331
 The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.

Int. Cl.⁴ G02B 3/00, 27/00

U.S. Cl. 350—403

8 Claims



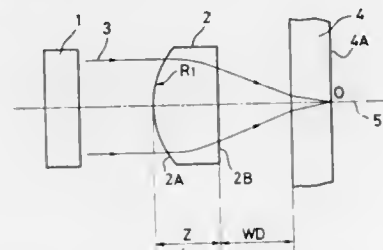
1. In combination;
 - A. means for supplying a beam of light propagating along a prescribed axis and polarized in a P dimension orthogonal to said axis, elements of said beam having a phase which deviates from an ideal reference phase as a continuous function of element position and causes an undesired increase in beam size in the far field;
 - B. an optical transmission filter having an optical axis concentric with the axis of said beam for imposing a compensatory differential phase delay upon the elements of said beam as a continuous function of position to reduce the beam size in the far field toward the minimum set by diffraction limits, said filter comprising:
 1. a first lens of birefringent material of a first center thickness having a first surface which is flat and a sec-

ond surface which has a predetermined radius of curvature,
 2. a second lens of birefringent material of a second center thickness having a first surface which is flat and a second surface which has a radius of curvature equal to the radius of curvature of said first lens but of opposite sign, the surfaces of said lenses being oriented orthogonal to and concentric with said optical axis, the crystal optical axes of the materials of said lenses being oriented in mutually orthogonal positions along said optical axis and at an angle of 45° to said P dimension, with said second surfaces adjacent.

4,643,535
OPTICAL INFORMATION RECORDING/REPRODUCING ELEMENT
 Hiroyuki Ichikawa, Takarazuka; Hisami Nishi, Nishinomiya, and Minoru Toyama, Takarazuka, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan
 Filed Jan. 10, 1985, Ser. No. 690,137
 Claims priority, application Japan, Jan. 13, 1984, 59-4575
 Int. Cl.⁴ G02B 3/00

U.S. Cl. 350—413

4 Claims



1. An optical information recording/reproducing element for focusing and projecting a parallel or substantially parallel light beam onto an optical information recording medium, wherein the element comprises a transparent columnar body having a convex surface as an incident surface of the light beam, and a flat surface as an output surface thereof, said columnar body having a refractive index distribution according to which a refractive index gradually decreases from a central axis toward a periphery of the columnar body, said refractive index distribution being given by:

$$N^2(r) = n_0^2 [1 - (gr)^2 + h_4(gr)^4 + h_6(gr)^6 + \dots]$$

where n_0 is a refractive index on the central axis, $n(r)$ is a refractive index at a point of a distance r from the central axis, and g , h_4 and h_6 are distribution constants, and said element satisfies the following conditions:

$$-150G + 52 \text{ mm} \leq r_0 \leq -100G + 40.5 \text{ mm}$$

$$r_0 \leq 2.5 \text{ mm}$$

$$G \leq 0.45$$

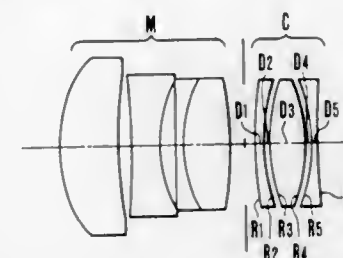
where r_0 is an effective element radius and G is a product of n_0 , g and r_0 .

4,643,536
REAR CONVERSION LENS
 Yasuyuki Yamada, Tokyo; Yasuhisa Sato, Kanagawa; Hiroki Nakayama, Kanagawa, and Kouji Oizumi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jun. 28, 1985, Ser. No. 750,699
 Claims priority, application Japan, Jul. 2, 1984, 59-137021
 Int. Cl.⁴ G02B 9/12, 15/02
 U.S. Cl. 350—422

6 Claims

4,643,538
COMBINED BEAM CROSS-SECTION CORRECTING, COLLIMATING AND DE-ASTIGMATIZING OPTICAL SYSTEM
 Scott D. Wilson, Adams County, Colo., assignor to Storage Technology Partners II, Louisville, Colo.
 Filed Jul. 6, 1984, Ser. No. 628,691
 Int. Cl.⁴ G02B 5/04

6 Claims



1. A conversion lens upon attachment on the image side of a master lens to increase the focal length, having a negative overall refractive power, consisting of a negative front lens, a positive middle lens and a negative rear lens, and satisfying the following conditions:

$$2.0 < f_1/f_3 < 4.0$$

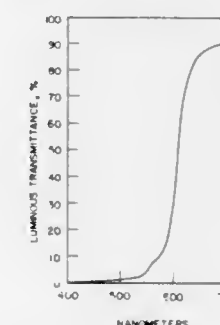
$$0.8 < |f_2/f_3| < 1.2$$

$$n_1 - n_2 > 0.15$$

where f_1 , f_2 and f_3 are the focal lengths of the front, middle and rear lenses respectively, and n_1 and n_2 are the refractive indices of the front and middle lenses respectively.

4,643,537
OPTICAL FILTER
 Jeffrey D. Vance, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
 Filed Jun. 5, 1984, Ser. No. 617,424
 Int. Cl.⁴ C03C 4/08; G02B 1/10; G02C 7/10
 U.S. Cl. 350—438

22 Claims



1. A composition of liquid polyol(allyl carbonate) monomer and 1-[(dibromo-4-methylphenyl)amino]-4-hydroxy-9,10-anthracenedione said anthracenedione being present in amounts such that a polymerizate prepared from such composition selectively absorbs at least 90 percent of the visible and ultraviolet light segments of the electromagnetic spectrum below the wavelength of 550 nanometers.

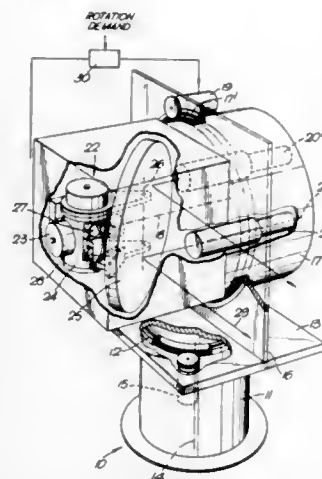
4,643,539
SIGHTLINE STABILISATION APPARATUS
 Nicolas L. Brignall, Edinburgh, Scotland, assignor to Ferranti, plc, England
 Filed Oct. 31, 1984, Ser. No. 666,638
 Claims priority, application United Kingdom, Nov. 4, 1983, 8329460
 Int. Cl.⁴ G02B 27/64, 13/16

U.S. Cl. 350—500

5 Claims

1. Sightline stabilising apparatus, adapted to be carried by a vehicle, comprising a housing rotatable about an axis with respect to the vehicle and including a gyro-stabilised reflector, capable of limited pivotable displacement with respect to said housing about said axis to maintain its orientation in space, and an image sensor, fixed with respect to said housing, having a field of view extending by way of the reflector and centered on a sensitive axis extending in said housing in the same direction as the rotation axis of said housing, said apparatus also comprising an image display device remote from the housing arranged to receive signals from the image sensor, follow-up servo means responsive to gyro induced displacement of the reflector from a predefined position with respect to the housing to cause said housing to be moved with respect to the vehicle to follow said reflector movement and null the displacement between reflector and housing, and image rotation means including means for producing a rotation demand input signal defining an angular displacement, corresponding to a demanded image rotation, about said axis between the reflector

and the housing and means responsive to said rotation demand input signal to override said nulling operation of the follow-up

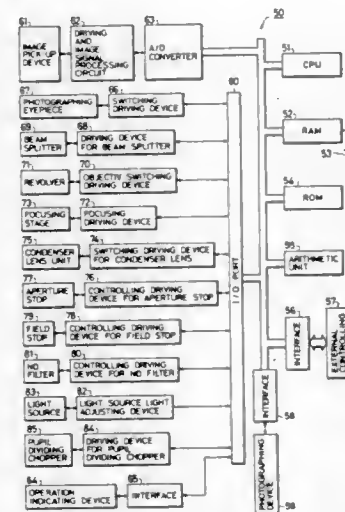


servo means to maintain said angular displacement during subsequent motion of the reflector and housing.

4,643,540
MICROSCOPE PROVIDED WITH AN AUTOMATICALLY CONTROLLED ILLUMINATING OPTICAL SYSTEM
Masami Kawasaki, Hachioji, and Masayuki Naito, Mitaka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,379
Claims priority, application Japan, Mar. 22, 1983, 58-47649
Int. Cl.⁴ G02B 21/00, 21/36
U.S. Cl. 350—502

6 Claims



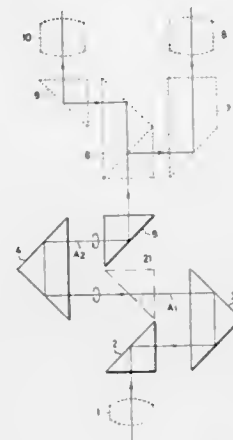
1. A microscope comprising a revolver having thereon a plurality of objectives, an objective data input means for putting in magnifications and kinds of said objectives, a first memory means functionally connected to said objective data input means and capable of storing data of said plurality of objectives put in by said input means along with position data of said revolver, a central processing unit functionally connected to said first memory means, a first detecting means functionally connected to said central processing unit and capable of recognizing the objective inserted in a light path through said revolver, a plurality of first driving means functionally connected to said central processing unit and capable of respectively driving a light adjusting device, field stop, aperture stop

and condenser lens unit, and a second memory means functionally connected to said central processing unit and capable of storing data for making an illumination system suitable for the objective inserted in the light path; the data relating to the objective inserted in the light path and the data to make the illumination system suitable for the objective inserted in the light path being read out of said first and second memory means by an output signal from said first detecting means; and a brightness of illuminating light to be adjusted by said light adjusting device, a field stop diameter, an aperture stop diameter and a condenser lens to be inserted into the light path being automatically set through said central processing unit and first driving means on the basis of the data thus read out so as to be optimum for the objective inserted in the light path.

4,643,541
OPTICAL SYSTEM FOR VARIABLE INCLINATION ANGLE MICROSCOPE TUBES
Masaki Matsubara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1985, Ser. No. 749,427
Claims priority, application Japan, Jul. 1, 1984, 59-136028
Int. Cl.⁴ G02B 21/20, 27/10, 7/18
U.S. Cl. 350—522

14 Claims

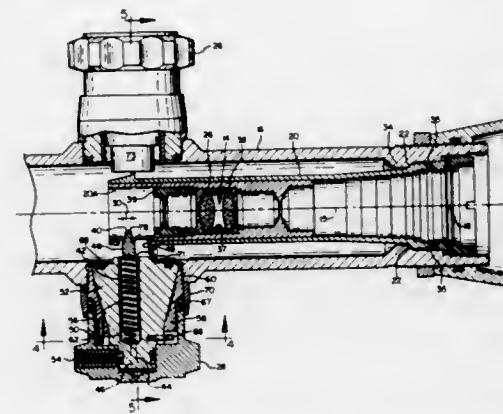


1. An optical system for variable inclination angle microscope tubes comprising a supporting frame, a first optical element secured on said supporting frame and for bending at right angles the light path of the incident light, a second optical element secured on said supporting frame and for bending twice at right angles the light path of the incident light from said first optical element, a tube frame rotatably mounted on said supporting frame, a third optical element secured on said tube frame and for bending at right angles the light path of the incident light from said second optical element and a fourth optical element rotatably mounted on said tube frame so as to be able to rotate by an angle twice as large as the angle of rotation of said tube frame interlocking with the rotation of said tube frame and for bending at right angles the light path of the incident light from said third optical element and then directing it in the same direction as of the incident light upon said first optical element, a rotary axis of said tube frame coinciding with the optical axis of the incident light upon said third optical element, and a rotary axis of said fourth optical element coinciding with the optical axis of the incident light upon said fourth optical element.

4,643,542
TELESCOPIC SIGHT WITH ERECTOR LENS FOCUS ADJUSTMENT
Dale E. Gibson, Salem, Oreg., assignor to Leupold & Stevens, Beaverton, Oreg.

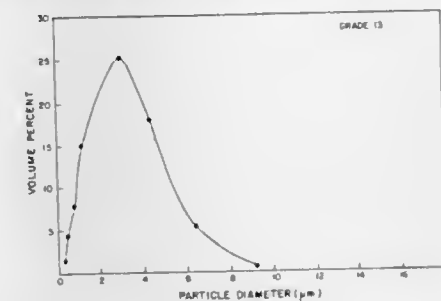
Filed Feb. 27, 1984, Ser. No. 583,810
Int. Cl.⁴ G02B 27/32
U.S. Cl. 350—562

18 Claims



11. A telescopic sight apparatus of substantially constant magnification, in which the improvement comprises: housing tube means; objective lens means and an eyepiece lens means mounted within said tube means; focusing adjustment means including image erector lens means and lens mount means for mounting said erector lens means within said tube means between said objective lens means and said eyepiece lens means for longitudinal adjustment to adjust the focus of said sight apparatus; control means for longitudinal movement of said erector lens means relative to said eyepiece lens means and said objective lens means by rotation of said control means about an axis of rotation of focusing the image of a viewed object over a wide range of viewing distances while maintaining image magnification substantially constant; and coupling means for coupling said control means to said lens mount means for causing longitudinal movement of said lens mount means in response to rotation of said control means to provide the focus adjustment of the sight apparatus, said coupling means includes a coupling element mounted at a position offset from the axis of rotation of said control means so that said coupling element orbits about said axis of rotation.

throughout about 15 to about 45 volume percent of particulate silicon carbide having an average particle diameter of about 4

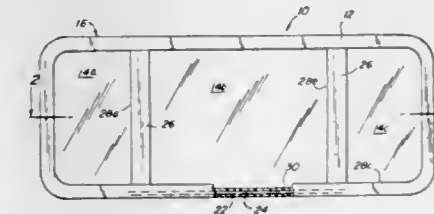


microns or less, and a reflective coating on at least one surface of said substrate.

4,643,544
THREE VIEW IN ONE MIRROR
William P. Loughran, P.O. Box 173 Station A, Flushing, N.Y. 11358

Filed Nov. 21, 1985, Ser. No. 800,275
Int. Cl.⁴ B60R 1/04; G02B 5/08
U.S. Cl. 350—615

2 Claims



1. A three view in one mirror assembly, comprising, in combination, a bendable frame, a row of three rigid mirrors set in said frame, and a holder on a rear of a central portion of said mirrors for removable attachment on a regular rear view mirror inside an automotive vehicle, said frame being molded of flexible plastic material and comprising a stiffener formed of bendable springless metal rod embedded in said frame for retaining any shape into which the frame may be bent, and further comprising a pair of vertically extending spaced apart bars integrally formed with said frame for defining three window openings for receiving said three mirrors.

4,643,545
REFLECTING ASPHERES OF REVOLUTION FOR FORMING CERTAIN BEAMS
Jonathan Vanderwall, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Continuation-in-part of Ser. No. 627,145, Jul. 2, 1984, abandoned. This application May 22, 1986, Ser. No. 873,041
Int. Cl.⁴ G02B 5/10

U.S. Cl. 350—618

20 Claims

1. Apparatus for directing electromagnetic radiation having a wavelength in the range of 0.2 microns to 10 microns, comprising a first reflecting surface which is generated by rotating a segment of a first parabola about a line which is disposed at a first angle to the axis of said first parabola and which passes through the focus of said first parabola, said rotated segment of said first parabola extending away from said line in an outward direction from said first parabola axis, said first reflecting surface having an apex and a base and extending outwardly from said apex away from said first parabola focus to said base, whereby electromagnetic radiation striking said first reflecting surface such that said radiation appears to emanate from or

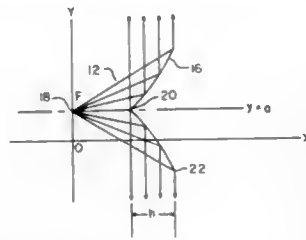
4,643,543
MIRROR OPTIC ARTICLE
Walter R. Mohn, Simpsonville, and Peter A. Roth, Greenville, both of S.C., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 27, 1986, Ser. No. 822,711
Int. Cl.⁴ G02B 1/00, 5/08, 7/18
U.S. Cl. 350—609

6 Claims

1. A mirror optic article comprised of an aluminum or aluminum alloy matrix substrate having uniformly dispersed

pass through said first parabola focus is reflected from said first reflecting surface into a first fan path having a thickness determined by the distance along said line between the apex and



base of said first reflecting surface, wherein the shortest distance between said first parabola focus and said first reflecting surface is at least three orders of magnitude greater than the electromagnetic radiation wavelength.

4,643,546

OPHTHALMOSCOPE WITH AUTOMATIC LENS SHIFTING MECHANISM

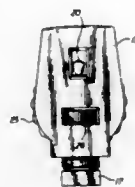
Byron A. Richards, Skaneateles, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,191

Int. Cl.⁴ A61B 3/10

U.S. Cl. 351—205

22 Claims



1. In an ophthalmoscope, a housing having a viewing passage therethrough, a first and a second lens disc rotatably mounted in the housing, said discs having a common axis of rotation and being independently and directly manually rotatable in the clockwise or counter clockwise direction and arranged so that a lens in each disc is always in registry with the axis of the viewing passage, the first lens disc having a relatively large number of lenses of different diopters, the second lens disc having a relatively small number of lenses that are adapted to coact with the lenses of the first disc to greatly expand the total number of different lens diopters beyond the number provided by the first disc, the lenses of the two discs being able to coact in this manner when one lens in each disc is in registry with the viewing passage, and cam means in the housing that permits manual rotation of either said disc in either direction and coacts with the first and second lens disc, the cam means being operable after the first lens disc has been rotated through a predetermined angular distance to automatically pivot the second lens disc so that its lens is in registry with the viewing passage is replaced by an adjacent lens, said cam means including a drive pin mounted on said first lens wheel, a cam member pivotally mounted on a pivot in the housing and having a member remote from said pivot engaging said second lens wheel across the axis of said lens wheels from said pivot, and a plurality of cam surfaces disposed on said cam member between said pivot and said engaging member and cammed by

said pin to move said engaging member and said second disc during a portion of the rotation of the first disc.

4,643,547

OPHTHALMIC INSTRUMENT SUPPORT

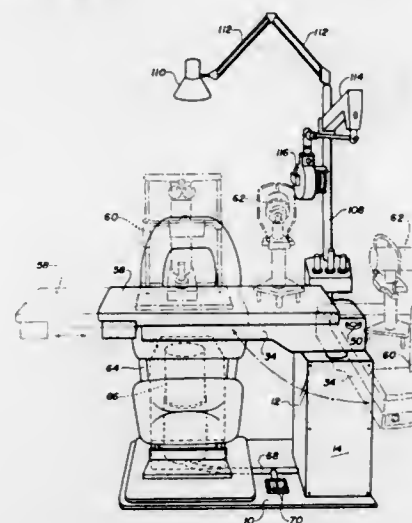
Ronald J. Collins, Fort Wright, Ky., and Michael Cain, North Andover, Mass., assignors to Dentsply Research & Development Corp., Millford, Del.

Filed Oct. 25, 1984, Ser. No. 664,832

Int. Cl.⁴ A61B 3/00; A47B 11/00

U.S. Cl. 351—245

5 Claims



1. An ophthalmic instrument support comprising in combination, a base positionable upon a floor surface for support, a horizontal frame having one end supported by the upper end of said post, an elongated table slidably supported upon the top of said frame for limited longitudinal movement, said table being adapted to support several instruments upon said table in longitudinally spaced positions thereon, whereby longitudinal movement of said table permits selective positioning of said instruments in alignment with a patient when seated upon a chair positioned adjacent one edge of said table, an electric outlet mounted beneath said elongated table, an electric conduit having an expandable and contractable portion extending between said outlet and the end of said frame farthest from said outlet and fixed respectively thereto, the end of said conduit adjacent said outlet being secured thereto and the opposite end thereof being connectable to a source of electric current, whereby any electric means requiring current on said instruments may be connected to said electric outlet and be supplied with current therefrom regardless of which instrument is positioned in front of a patient, an electrically operated means operable to elevate the seat of a chair positioned adjacent one edge of said frame and table, an electric circuit connected between said electrically operated means and said aforementioned source of current, a safety switch also in said circuit, and an actuating member for said safety switch supported by said frame below the lower surface thereof in a location to be engaged by the lap or thighs of a patient when seated in said chair and said lap or thighs being at least partially beneath said frame and table, thereby to discontinue any further elevation of a patient seated within said chair when said member is so engaged by said lap or thighs of said patient.

4,643,548

SHUTTER MECHANISM FOR A VIDEO TAPE CAMERA

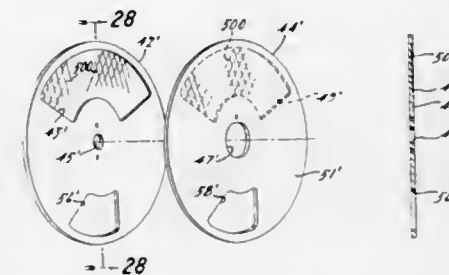
Steven L. Swinehart, Albuquerque, N. Mex., assignor to Nisus Video, Inc., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 562,233, Dec. 16, 1983, Pat. No. 4,547,051. This application Jul. 3, 1985, Ser. No. 751,596

Int. Cl.⁴ G03B 9/10

U.S. Cl. 352—216

46 Claims



1. A focal plane shutter for a video camera having a lens and pickup comprising:
disk means positioned between said lens and said pickup for rotation about an axis to define an annular locus in registration with said pickup,
said disk means having light admitting aperture means intersecting said locus,
means for substantially balancing said disk means during rotation,
said means for balancing comprising at least one recessed relief area means formed in said disk means and not extending entirely through said disk means, and
means for rotating said disk means.

4,643,549

DATA IMPRINTING DEVICE FOR A CAMERA

Toru Nagata; Chikara Aoshima, both of Kanagawa; Hiroshi Maeno, and Hideo Tamamura, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

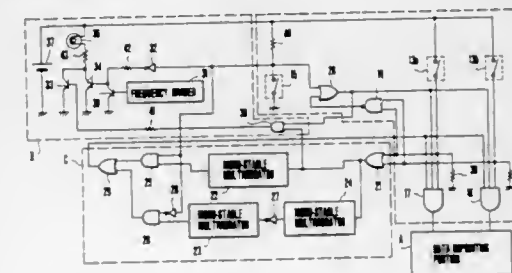
Filed Feb. 25, 1985, Ser. No. 704,787

Claims priority, application Japan, Feb. 25, 1984, 59-33343; Feb. 25, 1984, 59-33346

Int. Cl.⁴ G03B 39/00

U.S. Cl. 354—64

6 Claims



1. A data imprinting device for a camera usable for underwater photography comprising:

- (a) data imprinting means;
- (b) actuating means for setting data of said data imprinting means;
- (c) display means for displaying the data of said data imprinting means;
- (d) illuminating means for illuminating said display means; and
- (e) detection means for detecting that the camera is under water and actuating the illumination means to automatically operate.

4,643,550

PHOTOGRAPHING INDICATION DEVICE FOR MICROSCOPES

Hisao Kitagawa, and Yasuo Inoue, both of Hachiohji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

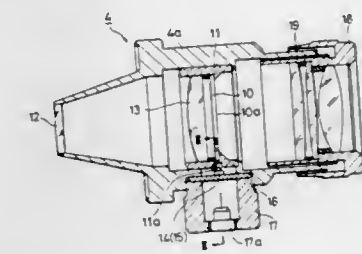
Filed Apr. 3, 1985, Ser. No. 719,541

Claims priority, application Japan, Apr. 5, 1984, 59-66645

Int. Cl.⁴ G03B 17/48

U.S. Cl. 354—79

37 Claims



1. A photographing indication device for a microscope, comprising:

- a transparent indication member arranged in an optical path of the microscope, having two substantially parallel transparent surfaces and an outer circumference surface extending between said two parallel transparent surfaces, said outer circumference surface formed with at least one incident light window thereon and being a reflecting surface except for an area of the incident light window;
- at least one indication mark engraved on at least one of said two parallel transparent surface; and
- light source means for illuminating an area, arranged adjacent said incident light window.

4,643,551

MULTIPLE LIGHT EMISSION FLASH UNIT

Kouichi Ohmori, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

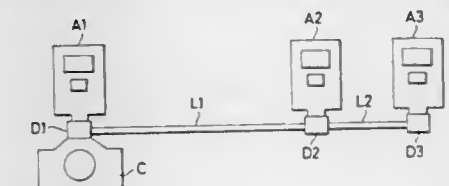
Filed Oct. 23, 1985, Ser. No. 790,357

Claims priority, application Japan, Oct. 26, 1984, 59-226538

Int. Cl.⁴ G03B 15/05

U.S. Cl. 354—132

8 Claims



1. A multiple flash unit system for use with a camera, comprising at least first and second flash units, a first adapter connected to said first flash unit and a second adapter connected to said second flash unit,

said first flash unit including:

- (a) first preliminary flash firing means for producing preliminary flash light prior to making a flash exposure, said preliminary flash firing means having a trigger terminal for receiving a trigger signal; and
- (b) first preliminary light receiving signal forming means receptive of the reflection of the preliminary flash light of said first preliminary flash firing means from an object to be photographed for producing corresponding photographic information to the amount of light received, said preliminary light receiving signal forming means having an output terminal at which said photographic information is produced;

said first adapter attached to said camera including:

- (a) a first transfer line connected to the trigger terminal to

apply said trigger signal produced from said camera to the trigger terminal of said preliminary firing means; and
(b) a second transfer line connected to the output terminal of said preliminary light receiving signal forming means to transmit said photographic information produced from said preliminary light receiving signal forming means to said camera;

said second flash unit including:

- (a) second preliminary firing means for producing preliminary flash light prior to making a flash exposure, said second preliminary firing means having a trigger terminal for receiving a trigger signal; and
(b) second preliminary light receiving signal forming means receptive of the reflection of the preliminary flash light of said second preliminary firing means from an object to be photographed for producing corresponding photographic information to the received amount of light, said second preliminary light receiving signal forming means having an output terminal at which said photographic information is produced;

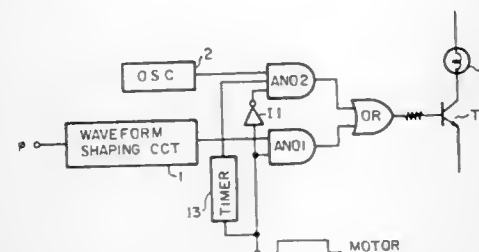
said second adapter including:

- (a) a third transfer line connected to the trigger terminal of said second preliminary firing means to apply said trigger signal produced from said camera through said first transfer line to the trigger terminal of said second preliminary firing means; and
(b) means for preventing said photographic information produced from said second preliminary light receiving signal forming means from being transmitted to said camera.

4,643,552
FILM TRANSPORT INDICATOR FOR CAMERAS
Akira Takahashi, Kanagawa, Japan, assignor to Ricoh Company, Japan

Filed Mar. 18, 1985, Ser. No. 712,680
Claims priority, application Japan, Mar. 15, 1984, 59-049695; May 1, 1984, 59-088113

Int. Cl.⁴ G03B 17/36
U.S. Cl. 354—217 8 Claims



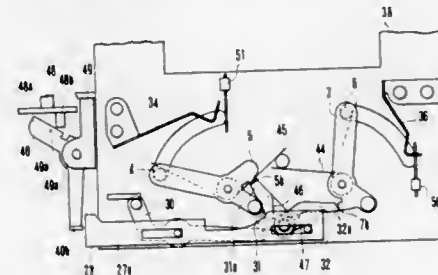
1. A film transport indicator for a camera with a motor drive, comprising:

- (a) a film transport signal generator for generating a film transport signal in response to a film being wound by the motor drive;
(b) a quasi-signal generator for generating a signal analogous to said film transport signal;
(c) switching means for passing said film transport signal when it is generated by said film transport signal generator and for passing the signal from said quasi-signal generator for a prescribed period of time when said film transport signal is ceased; and
(d) an indicator unit for indicating feeding of the film to a camera user in response to the signals having passed through said switching means.

4,643,553
ELECTRO-MAGNETICALLY DRIVEN SHUTTER
Masahisa Fujino, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1985, Ser. No. 741,633
Claims priority, application Japan, Jun. 14, 1984, 59-122620; Jun. 14, 1984, 59-122621; Jun. 14, 1984, 59-122622

Int. Cl.⁴ G03B 9/62
U.S. Cl. 354—234.1 7 Claims

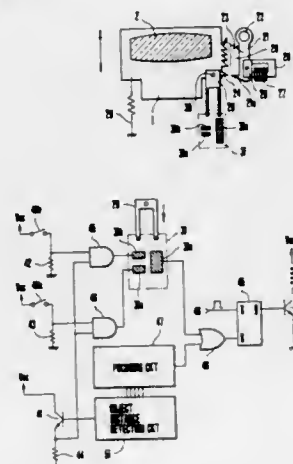


1. An electro-magnetically driven shutter comprising:
(a) shutter means for effecting an exposure by traveling from a travel start position to a travel complete position;
(b) electro-magnetic drive means for driving said shutter means by an electro-magnetic force to cause it to travel from said travel start position to said travel completed position;
(c) returning means for causing said shutter means to be returned by a driving force of a photograph preparative operation from said travel completed position to said travel start position; and
(d) holding means for holding said shutter means in said travel completed position, said holding means performing said holding of said shutter means by a mechanical holding member biased by a spring in the direction of said holding.

4,643,554
CAMERA WITH FOCAL LENGTH VARYING DEVICE
Yukio Ogawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha

Continuation of Ser. No. 561,640, Dec. 15, 1983, abandoned.
This application Nov. 1, 1985, Ser. No. 794,314
Claims priority, application Japan, Dec. 20, 1982, 57-191163[U]; Dec. 24, 1982, 57-202261[U]

Int. Cl.⁴ G03B 3/00
U.S. Cl. 354—400 37 Claims



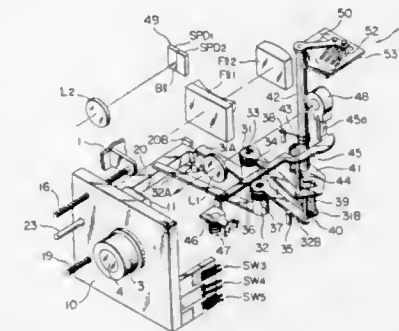
1. A camera capable of shifting a photo taking optical system thereof from one focal length to another, comprising:

- (a) automatic focusing means for automatically adjusting the focal point of said photo taking optical system;
(b) stopping means for stopping said photo taking optical system at a predetermined focusing position irrespective of a distance to an object to be photographed when the object distance is undetectable by said automatic focusing means; and
(c) switching means for varying, in response to the focal length change-over of said photo taking optical system, the position at which said optical system is to be stopped by said stopping means.

4,643,555
CAMERA WITH SWITCHABLE FOCAL LENGTH
Hiroshi Wakabayashi, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Sep. 5, 1985, Ser. No. 772,710
Claims priority, application Japan, Sep. 12, 1984, 59-191272

Int. Cl.⁴ G03B 3/10
U.S. Cl. 354—403 8 Claims



1. A camera comprising: photographing optical means including an imaging lens system having an optical axis and a first focal length, and a subsidiary lens system provided to form a second focal length in cooperation with said imaging lens system;

driving means including a driving source, a first moving member holding said imaging lens system and moved along said optical axis with said imaging lens system, and a second moving member holding said subsidiary lens system and moved with said subsidiary lens system between an active position on said optical axis and a rest position retracted from said optical axis;

said imaging lens system being adapted to move between mutually independent ranges including a first range, a second range and a third range positioned between said first and second ranges;

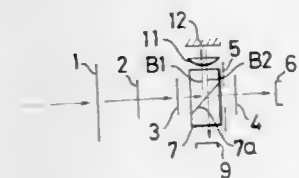
said driving means moving said imaging lens system in said first range for focusing at said first focal length, moving said subsidiary lens system from said rest position to said active position for switching from said first focal length to said second focal length while said imaging lens system is moved in said third range, and moving said imaging lens system in said second range for focusing at said second focal length;

a rotary member mechanically coupled with said first moving member and being adapted to rotate about a rotary axis, according to the movement of said imaging lens system, to a rotary position corresponding to the position of said imaging lens system on said optical axis;

focusing means including a photosensor, means for forming a light spot on said photosensor by a light beam from an object, light spot moving means mechanically coupled with and driven by said rotary member for causing a relative movement of said light spot on said photosensor, and means for controlling said driving means to move said first moving member until said light spot and said photosensor reach a determined relationship; and
position detecting means mechanically coupled with and

driven by said rotary member and adapted for generating a signal indicating the position of said imaging lens system on said optical axis.

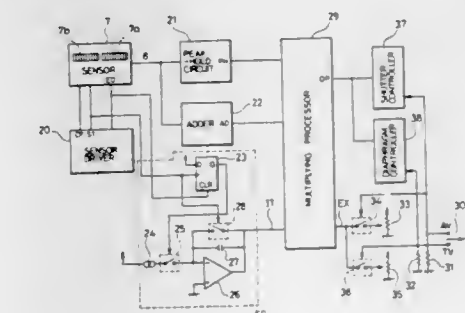
4,643,556
AUTOMATIC FOCUSING ADJUSTMENT DEVICE
Akihiro Fujiwara, Kanagawa, and Kazuo Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 30, 1985, Ser. No. 739,382
Claims priority, application Japan, Jun. 1, 1984, 59-112747; Jun. 1, 1984, 59-112748; Jun. 1, 1984, 59-112749
Int. Cl.⁴ G03B 3/00; H04N 5/238
U.S. Cl. 354—406 4 Claims



1. An automatic focusing adjustment device comprising:
(a) a light beam splitting member arranged in a photographic optical system, having an imaging component, to split light reflected from an object to be photographed to a focal plane direction and a second direction different from the focal plane direction;
(b) a first reflection mirror in the path of the light split to said second direction, said first reflection mirror being arranged so that the light reflected by said first reflection mirror passes through said beam splitting member; and
(c) an element for receiving the light passed through said beam splitting member;
(d) said light beam splitting member being located between the imaging component and the object to be photographed;
and further comprising a lens for focusing adjustment arranged between said beam splitting member and said first reflection mirror to refract the light split by said beam splitting member.

4,643,557
EXPOSURE CONTROL APPARATUS
Akira Ishizaki, Akira Akashi, both of Yokohama; Keiji Ohtaka, Tokyo; Yasuo Suda, and Akira Hiramatsu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

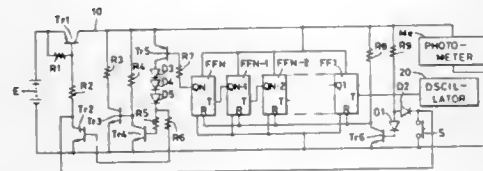
Filed Sep. 23, 1985, Ser. No. 778,718
Claims priority, application Japan, Oct. 16, 1984, 59-217149
Int. Cl.⁴ G03B 3/00, 7/08
U.S. Cl. 354—406 5 Claims



1. An exposure control apparatus comprising:
a signal storage type sensor having a plurality of pixels;

first means for producing a signal representing a maximum one of pixel information detected by said sensor;
second means for producing a signal representing a sum of the pixel information detected by said sensor;
third means for producing a signal representing a storage time of said sensor; and
calculation means for multiplying the output of said second means with the output of said third means and dividing the product by the output of said first means, whereby the exposure is controlled based on the quotient.

4,643,558
ELECTRONIC POWER SUPPLY
Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Sep. 9, 1985, Ser. No. 773,890
Claims priority, application Japan, Sep. 19, 1984, 59-195973
Int. Cl.⁴ G03B 7/26; H02J 1/00
U.S. Cl. 354-484 10 Claims



1. An electronic power supply system adapted to be used in a camera comprising a power source and a load adapted to receive power from said power source in response to an operation of a shutter button, said system comprising:

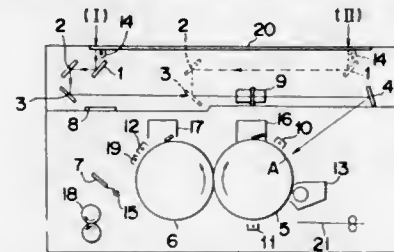
- switching means having conducting and nonconducting states, said switching means being placed in its conducting state in response to the operation of said shutter button;
- control means for generating a control signal for controlling said switching means, said switching means being maintained in its conducting state during receipt of said control signal, said control means being adapted to receive a voltage from said power source to generate said control signal when said switching means is in its conducting state, and the control means operating in an unstable manner when the voltage applied to said control means is below a first predetermined level;
- means for transmitting said control signal to said switching means; and
- means for blocking the transmission of said control signal to said switching means in response to the reduction of the voltage applied to said control means below a second predetermined level which is above said first predetermined level.

4,643,559
ELECTROPHOTOGRAPHIC COPYING METHOD
Tadashi Tonegawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 23, 1985, Ser. No. 737,069
Claims priority, application Japan, May 23, 1984, 59-105086; May 23, 1984, 59-105088
Int. Cl.⁴ G03G 15/00 4 Claims

1. An electrophotographic copying method applicable to an electrophotographic copy machine including a first photosensitive drum and a second drum capable of being brought into contact with or being separated from said first drum on the surface of which an insulation film is formed comprising the steps of:

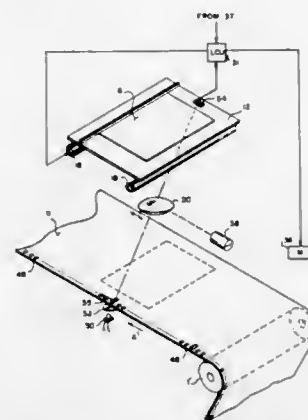
- exposing said first drum through a focusing lens assembly to an original to form a first electrostatic latent image of said original on said first drum;
- developing said first latent image with toner;
- transferring said toner image developed on said first

drum to said second drum by bringing said second drum into contact with said first drum,
(d) Separating said second drum from said first drum,
(e) exposing the toner image transferred to said second drum to said first drum through said focusing lens assembly to form a second latent image thereof on said first drum,
(f) developing said second latent image with toner,



- transferring the toner image developed on said first drum to a paper copy by bringing said paper into contact with said first drum,
- fixing said toner image transferred to said paper, and
- removing said toner and latent image from said second drum.

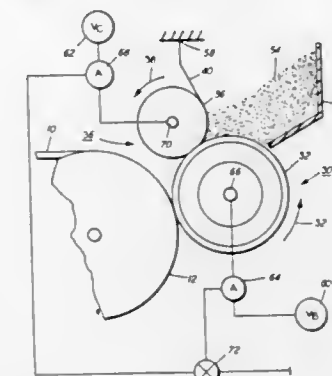
4,643,560
APPARATUS AND METHOD FOR SYNCHRONIZING EXPOSURE OF A DOCUMENT ONTO A PHOTOSENSITIVE MEMBER
John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 27, 1985, Ser. No. 802,395
Int. Cl.⁴ G03G 15/00 11 Claims



1. In a reproduction apparatus for producing one or more copies of an original the apparatus including means for supporting the original in a plane, a movable photosensitive member having indicium thereon for identifying a location upon which an image is to be located, an exposure station including means for exposing said member to a light image of the original, said exposing means including projecting means forming an optical path for transmitting a full frame light image of the original to the photosensitive member at the exposure station to image same on the photosensitive member, the projecting means including means to displace the optical path and the full frame image formed by the projecting means during the exposure of the photosensitive member in substantial parallelism with the movement of the photosensitive member at said exposure station; and the improvement comprising:
light sensor means located on the object plane or its optical equivalent;
means for imaging the indicium on the photosensitive mem-

ber onto the light sensor through the projecting means;
and
means responsive to the sensing of the image of the indicium by the light sensor for use in timing the exposure.

4,643,561
CONTROL SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE
Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 2, 1985, Ser. No. 729,706
Int. Cl.⁴ G03G 15/08 14 Claims



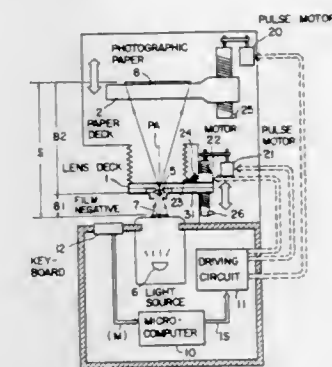
- An apparatus for measuring the electrical potential of a surface, including:
means for transporting a material closely adjacent to the surface;
means for electrically biasing said transporting means to a selected magnitude and polarity;
means for sensing the current electrically biasing said transporting means and transmitting a signal in response thereto;
means for electrically charging the material being moved to the surface by said transporting means;
means for electrically biasing said charging means to a selected magnitude and polarity;
means for detecting the current biasing said charging means and transmitting a signal in response thereto; and
means for summing the signal from said sensing means with the signal from said detecting means and transmitting a signal in response thereto indicative of the electrical potential of the surface.

4,643,562
EXPOSURE CORRECTION METHOD
Rokusaburo Kaneko, and Yuji Takenaka, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 601,849, Apr. 19, 1984, abandoned. This application Jul. 24, 1985, Ser. No. 758,272
Claims priority, application Japan, Apr. 27, 1983, 58-74821
Int. Cl.⁴ G03B 27/34; 27/40 3 Claims

- An exposure correction method for a system in which lens units are selected comprising the steps of:
selecting a lens unit from a plurality of lens units having different focal lengths in accordance with a designated magnification;
calculating a conjugate length on the basis of the magnification and focal length of the selected lens unit and selecting another lens unit from the plurality of lens units if necessary so as to select an optimum lens unit from the plurality of lens units based on predetermined parameters;
correcting the exposure of the system for the selected optimum lens unit in accordance with the equation:

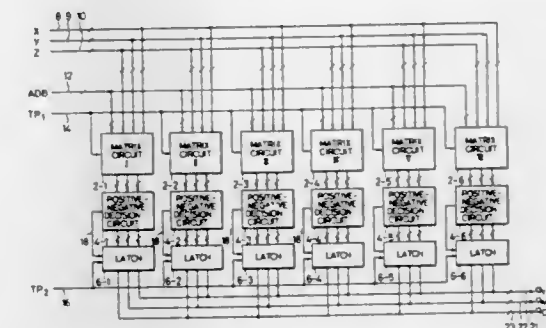
$$T_n/T(n-1) = \alpha \{ F(n-1)/F_n \times B_n/B(n-1) \}^{2k}$$

wherein: T_n is the exposure time of the n th lens unit and $T(n-1)$ is the exposure time of the $(n-1)$ th lens unit; F_n is the focal length of the n th lens unit and $F(n-1)$ is the focal length of the $(n-1)$ th lens unit; B_n is the distance between the n th lens unit and a projection plane of the



system and $B(n-1)$ is the distance between the $(n-1)$ th lens unit and the projection plane of the system; α is the coefficient of correction for the ratio of the aperture and is equal to the squared ratio of the diaphragm aperture value of the n th lens with respect to the diaphragm aperture value of the $(n-1)$ th lens; and k is a coefficient of correction constant which is greater than zero.

4,643,563
COLOR IMAGE DATA PROCESSING METHOD
Kazuo Sayanagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 25, 1984, Ser. No. 634,056
Claims priority, application Japan, Jul. 29, 1983, 58-139994
Int. Cl.⁴ G01N 21/25 6 Claims



- A color image data processing method comprising the steps of:
receiving, as input data, a plurality of color component values representing a color picture element to be reproduced;
performing in parallel a plurality of operations for a respective plurality of predetermined regions in a color coordinate system on the chromaticity chart of the color of the picture element, wherein areas for a predetermined number of colors to reproduce the picture element are determined by applying the operations to the plurality of color component values; and
selecting a result of an operation that provides positive values for the areas for using those areas to reproduce the picture element.

4,643,564

CLOUD HEIGHT MEASURING MEANS

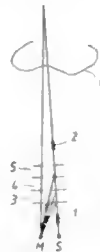
Folke Löfgren, and Sven E. Söderström, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Oct. 13, 1983, Ser. No. 541,424

Claims priority, application Sweden, Oct. 15, 1982, 8205864
Int. Cl.⁴ G01C 3/00, 5/00, 3/08

U.S. Cl. 356—5

12 Claims



1. A method for measuring cloud height, in which each measuring operation is divided into a number of altitude bands, starting at the lowest band nearest to the ground and extending up to the highest band at the top of the measuring range, emitting a train of light pulses from a transmitter towards a selected air space, integrating and measuring light signals reflected towards a receiver, compensating a currently measured value as a result of reflected light from all bands underlying the band where measurement is currently being made by controlling the measuring energy emitted for the altitude band which is of present interest by changing at least one of the time, the pulse frequency, and the pulse energy for each band in such a way that the signal energy, detected in the signal detector for each altitude band is at least substantially maintained at a specified level and is thus compensated for variations in atmospheric attenuation in the underlying bands.

4,643,565

INSPECTION DEVICE FOR HIGH-SPEED PRINTS

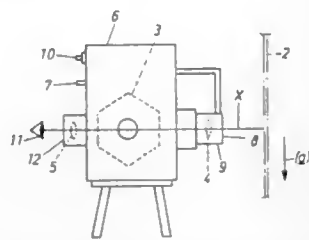
Tadashi Goto, Yokohama, Japan, assignor to Kabushiki-Kaisha Goko Eizo-Kagaku Kenkyujo, Yokohama, Japan

Filed Jun. 20, 1984, Ser. No. 622,553

Claims priority, application Japan, Jun. 24, 1983, 58-113878
Int. Cl.⁴ G01P 3/40; G01N 21/86

U.S. Cl. 356—24

3 Claims



1. An inspection device for prints traveling at high-speed, comprising: a housing having an optical axis; means mounting said housing adjacent a plane in which a plurality of like prints are fed successively and one after another, at high speed in one direction past said housing, and at right angles to said optical axis, an even-numbered polygonal prism mounted in the housing so as to rotate about an axis extending at a right angle to said optical axis and passing coaxially through a longitudinal central axis of the prism, means for projecting images of said prints through a front window which is provided in the housing at the side thereof confronting said plane in which said prints travel, and to the eye of an observer through a further window

provided in the housing oppositely to said front window, and which windows lie on said optical axis; said polygonal prism being rotatable in a direction opposite to said one direction, and means on said housing operable to cause said prism to be rotated at a speed synchronized with the running speed of the prints which travel at a right angle to said optical axis, thereby to cause stationary superimposed images of said prints to be projected to the eye of said observer.

4,643,566

PARTICLE ANALYZING APPARATUS

Shinichi Ohe, Machida, and Yuji Ito, Chigasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

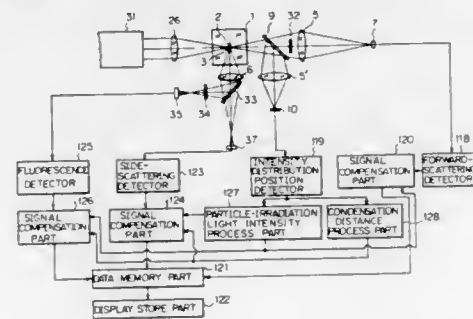
Filed Jul. 11, 1985, Ser. No. 753,871

Claims priority, application Japan, Jul. 20, 1984, 59-150641; Jul. 20, 1984, 59-150642; Aug. 16, 1984, 59-170832; Nov. 27, 1984, 59-250283

Int. Cl.⁴ G01N 33/48, 21/64

U.S. Cl. 356—72

9 Claims



1. A particle analyzing apparatus having: a flow cell provided with a flow section for passing there-through a particle to be examined; an irradiating system for irradiating the particle to be examined in said flow cell with an irradiation light beam having a light intensity distribution in a direction perpendicular to the direction of irradiation; a photodetector for photometering the light from the particle to be examined irradiated by said irradiating system, said photodetector putting out a detection signal; deviation information detecting means for detecting information related to the deviation of light intensity of the irradiation light beam of said irradiating system at a position of the particle to be examined, from a reference light intensity of the irradiation light beam at a predetermined position; and compensation means for correcting the output of said photodetector in response to the output of said deviation information detecting means.

4,643,567

DEVICE FOR CONTROLLING THE POSITION OF A TUNNELLING MACHINE

Bernhard Dröschner, and Alfred Zitz, both of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Muldenstrasse, Austria

Filed Jun. 18, 1984, Ser. No. 621,731

Claims priority, application Austria, Jun. 24, 1983, 2330/83
Int. Cl.⁴ G01B 11/26; G01C 1/00

U.S. Cl. 356—152

5 Claims

1. In apparatus for controlling the position of a tunnelling machine in relation to a guide beam having a preselected cross-sectional dimension comprising: an orientable receiver for receiving the guide beam through a wall thereof; a first measuring surface disposed vertically within the receiver, said first surface having a vertical slot therein for transmitting part of the beam, the width of said slot being less than the cross-sectional dimension of said beam; two pairs of first beam-receiver elements located on opposite sides of said slot and horizontally spaced apart a distance less than the cross-sectional dimension of said beam, the receiver elements being vertically spaced apart such that the two pairs define a quadrangle and such that a diagonal of the quadrangle is less than the cross-sectional dimension of said beam; a further measuring surface arranged

4,643,569

DUAL BEAM LASER INSPECTION APPARATUS

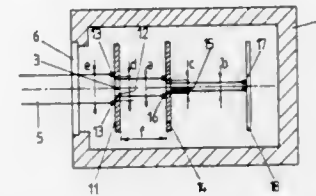
Sean Sullivan, Glendale, and Glenn E. Stutz, Scottsdale, both of Ariz., assignors to Lincoln Laser Company, Phoenix, Ariz.

Filed Jun. 18, 1985, Ser. No. 746,177

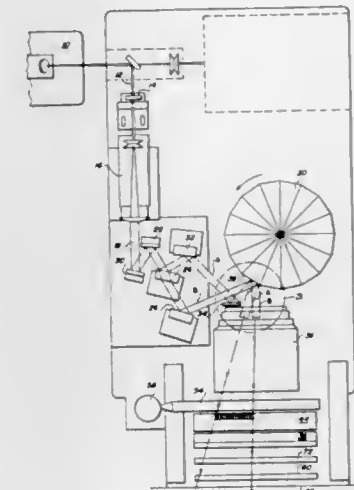
Int. Cl.⁴ G01N 21/88

U.S. Cl. 356—237

35 Claims



behind said first measuring surface to receive the beam transmitted through said slot, said further measuring surface having a vertical slot therein, of lesser width than the slot in said first surface, for transmitting part of the beam received by said second surface, a pair of second beam-receiver elements located on opposite sides of the slot in said second surface and spaced apart a distance less than the width of the slot in said first measuring surface.



1. An optical scanner for repetitively scanning a first line with first and second angularly displaced synchronized scans comprising:

- a light source for generating an input beam;
- means for receiving the input beam and generating first and second angularly displaced beams lying in first and second non-parallel planes;
- a polygon mirror scanner for receiving the first and second beams on a single facet and for generating first and second angularly displaced, non-parallel synchronized scans;

- facet to axis error correction means including a first cylindrical lens positioned in the optical path prior to said scanner;
- a second cylindrical lens positioned in the optical path between said scanner and the scanned line for reconverging the first and second synchronized scans onto the first scanned line;

redirecting means positioned in the optical path between said scanner and said second cylindrical lens for redirecting a portion of the first and second synchronized scans onto a timing plane to generate third and fourth non-coincident synchronized scans; and

- means for generating a beam position signal consisting of equally spaced, sequential pulses in response to the travel of the third or fourth synchronized scan along a second scanned line within the timing plane;

whereby the beam position signal is representative of the position of both the first and second synchronized scans along the first scanned line.

4,643,570

THROUGH-FLOW CUUVETTE

Meinrad Mächler, Ellwangen; Richard Sachse, Königsbrunn, and Harry Schlemmer, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,113

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414260

Int. Cl.⁴ G01N 1/10

U.S. Cl. 356—246

17 Claims

1. A through-flow cuvette into which light is directed for

4,643,568

METHOD AND APPARATUS FOR MEASURING THE ILLUMINATING POWER OF INCIDENT LIGHT

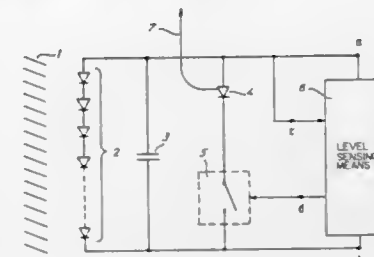
Gunnar S. Forsberg, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 18, 1985, Ser. No. 712,625

Claims priority, application Sweden, Apr. 5, 1984, 8401912
Int. Cl.⁴ G01J 1/46

U.S. Cl. 356—218

7 Claims

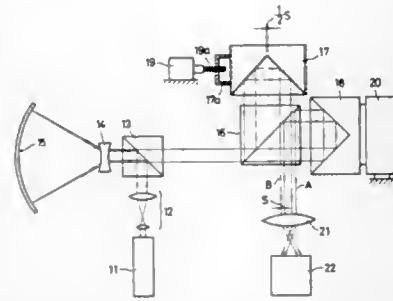


1. Apparatus requiring no external power supply for indicating the intensity of light in a region comprising photoelectric means in the region for generating an electrical quality which varies as the light intensity varies, accumulating means connected to said photoelectric means for generating an accumulated quality related to said electrical quality, level sensing means for emitting a control pulse whenever said accumulated quality exceeds a given amplitude,

switching means activated by each control pulse from said level sensing means for discharging said accumulating means, light pulse generating means connected to said switching means for emitting a light pulse each time said switching means is actuated, and means for giving an indication of the intensity of the light as a function of the frequency of the light pulses.

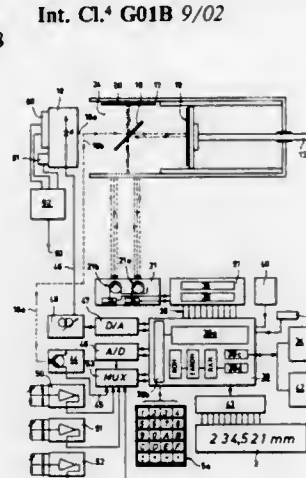
means for producing a beam of energy along a predetermined path;
means, disposed in the predetermined path, for transmitting a first portion of the produced beam to a target and reflecting a second portion of the produced beam; and
means, including the transmitting and reflecting means, for directing a target-reflected portion of the transmitted first beam portion and the reflected second beam portion to a detector along a common path, said directing means comprising means, disposed in the common path, for attenuating the reflected second beam portion along the common path and for coupling the target-reflected portion of the transmitted first beam portion along the common path with substantially no attenuation.

4,643,576
FRINGE SCANNING SHEARING INTERFEROMETER
Toshio Kanoh, Tokyo, and Taira Kouchiwa, Kanagawa, both of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan
Filed Apr. 18, 1985, Ser. No. 724,397
Claims priority, application Japan, Apr. 19, 1984, 59-79173; Apr. 19, 1984, 59-79174
Int. Cl.⁴ G01B 9/02, 11/00
U.S. Cl. 356—353



1. A fringe scanning shearing interferometer comprising:
 - (a) converter means for converting a wavefront reflected by an object under test, illuminated with light, into an approximately parallel wavefront;
 - (b) splitter means for dividing said approximately parallel wavefront into first and second wavefronts travelling in two directions;
 - (c) a pair of first and second optical path changing means which conduct the first and second wavefronts, respectively, and are disposed respectively adjacent to said splitter means in equally spaced relation thereto;
 - (d) displacement means for displacing said first optical path changing means in a direction normal to the direction in which said first wavefront falls on said first optical path changing means;
 - (e) shearing means for slightly displacing said second optical path changing means in the same direction as that in which second wavefront falls on said second optical path changing means;
 - (f) a photodetector; and
 - (g) a focusing lens for focusing said first and second wavefronts, which have passed respectively through said first and second optical path changing means and have been directed thereby so that they can be focused by said focusing lens, on said photodetector to produce interference fringes thereon.

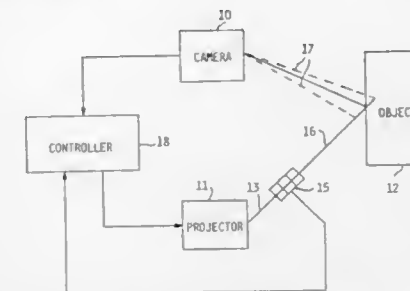
4,643,577
LENGTH MEASURING APPARATUS BASED ON THE DUAL LASER BEAM INTERFEROMETER PRINCIPLE
Rudolf Röth, and Claus Werckmeister, both of Schlüchtern, Fed. Rep. of Germany, assignors to Wero Ohg Röth & Co., Schlüchtern, Fed. Rep. of Germany
Filed Jul. 6, 1984, Ser. No. 628,238
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325549
Int. Cl.⁴ G01B 9/02
U.S. Cl. 356—358



1. Length measuring apparatus with position sensor means comprising:
 - a laser light beam source comprising a laser diode for the production of simultaneously laterally, transversely and longitudinally monomodal laser light with a coherence length which corresponds at least to the length to be measured, a beam splitter disposed in the optical axis of said laser light beam source for dividing the light beam into a measuring light beam and a reference light beam aligned at an angle thereto, a movable mirror connected to the position sensor means and reflecting the measuring light beam with transverse offset parallel to the optical axis, additional at least partially reflecting optical means for reflecting at least a portion of the reference light beam to provide an interference range of the beam paths of the reflected portion of the reference light beam and the reflected measuring light beam, at least one photodetector lying in said interference range of the beam paths, evaluating circuit means coupled to said at least one photodetector and having counting means for counting the light/dark sequences including direction recognition, said laser diode having a system for the stabilization of its operating temperature, the length measuring apparatus comprising a current-stabilized, controllable power source and said laser diode being connected to said current-stabilized, controllable power source, the length measuring apparatus including an additional photodetector, an analog-to-digital converter, a microcomputer, a digital-to-analog converter, said laser diode for intensity measurement being associated with said additional photodetector whose output signal is connected through said analog-to-digital converter to said microcomputer in which a comparison can be made with a given standard intensity value to provide an output signal, and the output signal of said microcomputer corresponding to said output signal of said additional photodetector being fed as a correction signal through said digital-to-analog converter to said power source, the length measuring apparatus including sensors for temperature, pressure and humidity in the beam path and providing output signals, and the output signals of the sensors for temperature, pressure and humidity being coupled by said analog-to-digital converter to said microcomputer in which a compensation operation is per-

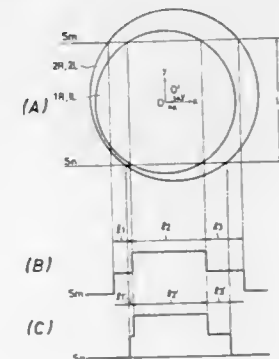
formed for the magnitudes of temperature, pressure and humidity.

4,643,578
ARRANGEMENT FOR SCANNED 3-D MEASUREMENT
Howard Stern, Greenlawn, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.
Filed Mar. 4, 1985, Ser. No. 708,155
Int. Cl.⁴ G01B 11/24
U.S. Cl. 356—376



1. A method for optically increasing the reliability of three-dimensional measurements in the presence of bright background light, comprising the steps of: scanning a surface to be measured with a narrow light beam; imaging light reflected from said light beam by said surface; masking said image to block light outside a predetermined image area; scanning said masking synchronously with said scanned light beam; recording by a light-sensitive surface said image after said masking; reading out said recording; and determining the three-dimensional coordinates of said surface to be measured at points illuminated by said scanning light beam based on the geometric relationship of said scanning light beam and said reflected light.

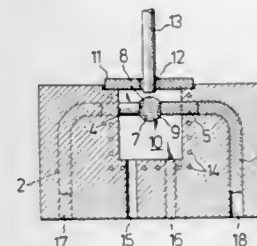
4,643,579
ALIGNING METHOD
Yuki Toriumi, Tokyo; Kazunori Suzuki, Yokohama, and Hiroo Katsuta, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 672,784
Claims priority, application Japan, Nov. 21, 1983, 58-217790; Oct. 22, 1984, 59-22652
Int. Cl.⁴ G01B 11/26
U.S. Cl. 356—401



1. A method for positioning a first object and a second object with respect to each other, comprising:
 - illuminating said first and second objects having a first area type mark and a second area type mark, respectively;
 - detecting the intensity of the light from said objects along at least two detection paths that include said marks, wherein each path crosses the marks in a first region where the

marks are superposed and in a second region where the marks are not superposed, and wherein each path further crosses a third region of the objects that does not include the area marks; and
comparing the lengths of said superposed and non-superposed regions, which lengths are obtained from differences in the intensity of the light from said three regions, so as to calculate the deviation of the relative location of said objects.

4,643,580
PHOTOMETER HEAD FOR SMALL TEST VOLUMES
Jürgen Gross, Hofheim am Taunus, and Reinhard Dinges, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 6, 1984, Ser. No. 678,779
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344387
Int. Cl.⁴ G01N 21/03
U.S. Cl. 356—440

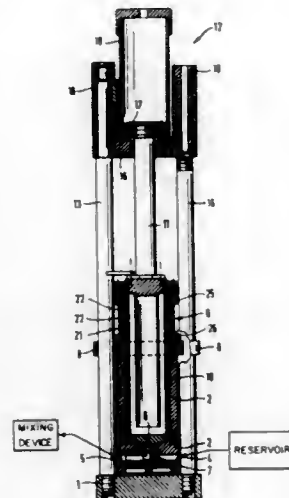


1. A photometer head for small test volumes comprising:
 - housing means for receiving and supporting the small test volumes, said housing means including a recess and plate means for substantially covering said recess, said plate means having an aperture extending therethrough;
 - light transmitter means mounted within said housing means and projecting into said recess, said light transmitter means having a first surface positioned within said recess; and
 - light receiver means mounted within said housing means and projecting into said recess, said light receiver means having a second end surface within said recess substantially opposite said first end surface, wherein said first end surface faces said second end surface to define a gap between said first end surface and said second end surface for retaining the small test volumes;
 - liquid applicator means extending through said aperture for dispensing droplets of the test volume into said gap;
 - first connection means connected to said light transmitter means for supplying optical energy to said light transmitter; and
 - second connection means connected to said light receiver means for transmitting said optical energy received at said gap from said light receiver.

4,643,581
PISTON METERING APPARATUS OF A REACTION INJECTION MOLDING MACHINE
Wolfgang Soechtig, Germering; Peter Wagner, Weichs, and Karl-Ludwig Korzeczek, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffel, A.G., Munich, Fed. Rep. of Germany
Filed Sep. 28, 1984, Ser. No. 655,556
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336036
Int. Cl.⁴ B28C 7/04
U.S. Cl. 366—76

1. A piston metering apparatus for use with a reaction injection molding machine comprising:
 - a metering chamber having walls defining an open chamber

- area and a base defining the floor of said open chamber area;
- a movable metering piston in the form of a plunger piston positioned within said open chamber area during operation of said reaction injection molding machine;
- a sealing cartridge releasably attached to said chamber walls for sealing said movable metering piston at said walls exhibiting a plurality of sealing packs;



means in the sealing cartridge for adjusting the tightness of the sealing packs and for guiding the movable metering piston in said metering chamber; and

means for movement of said metering piston, said means including a piston rod releasably attached to said metering piston and a hydraulic drive unit.

4,643,582

WETTING CHAMBER

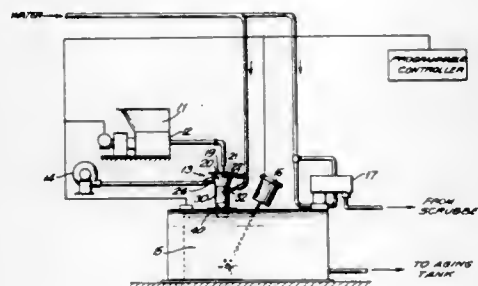
Ronald J. Ricciardi, Moonachie, N.J., assignor to Acrison, Inc., Moonachie, N.J.

Filed Oct. 8, 1985, Ser. No. 785,520

Int. Cl.⁴ B01D 47/00; B67D 5/54; B01F 15/00

U.S. Cl. 366—102

7 Claims



1. A wetting chamber for a system for wetting hygroscopic materials comprising:

- (a) an upper portion comprising two inverted conical sections concentrically arranged about a longitudinal axis, the vertex angle of the inner conical section being smaller than the vertex angle of the outer conical section so that the space between them narrows in the downward direction;
- (b) a closure for sealing the space between the conical sections at the top of the upper portion;
- (c) means for axially introducing material into the inner conical section at the top of the upper portion;
- (d) means for flooding the internal surface of the inner conical

- cal section with water to prevent the material from adhering to the internal surface, the water from the flooding means accomplishing only a minor portion of the wetting;
- (e) means for injecting pressurized air into the space between the sections;
- (f) a cylindrical second portion attached to the lower end of the outer conical section; and
- (g) means for injecting water tangentially into the cylindrical portion at a position near the top of the cylindrical portion, the water from the injecting means accomplishing a major portion of the wetting.

4,643,583

ICE CREAM MAKING MACHINE INCORPORATING A COLD STORAGE CONTAINER

Valerio Cecchini, Via A. Gramsci 11, Ravenna, Italy

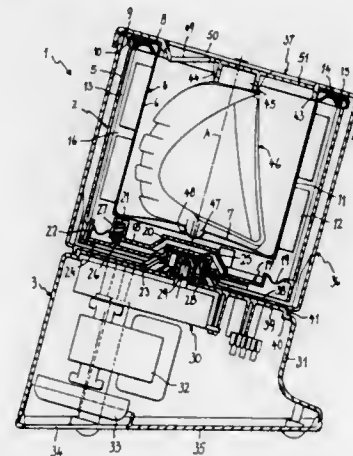
Filed Dec. 28, 1984, Ser. No. 687,229

Claims priority, application Italy, Jul. 27, 1984, 3544 A/84

Int. Cl.⁴ A23G 9/00

U.S. Cl. 366—149

18 Claims



1. An ice cream making machine comprising a motor unit having an output shaft, a container, at least one sealed space, eutectic liquid, at least one stirrer and means for removably associating said container with said output shaft of said motor unit, said container comprising at least an inner vessel having a vessel bottom and a vessel wall and an outer case having a bottom and a cylindrical wall, said at least one sealed space being defined between said cylindrical wall of said outer case and said vessel wall, and between said bottom of said outer case and said vessel bottom, said eutectic liquid being contained within said sealed space, said container further comprising means for accommodating expansion of said eutectic liquid, said at least one stirrer being adapted for being held stationary within said inner vessel of said container, said motor unit being adapted for causing rotational movement of said container about a rotation axis.

4,643,584

MOTIONLESS MIXER

Peter T. Allocca, Hopedale, Mass., assignor to Koch Engineering Company, Inc., Wichita, Kans.

Filed Sep. 11, 1985, Ser. No. 774,927

Int. Cl.⁴ B01F 5/06

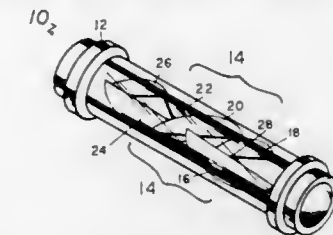
U.S. Cl. 366—337

14 Claims

1. A motionless mixer for use in a conduit, having an axis to provide for the turbulent flow mixing of two or more fluid streams, with a low pressure drop per linear mixer length and with good pickup characteristics, and which mixer apparatus comprises in combination:

- (a) a plurality of pairs of mixing plate elements composed of at least a first and second pair of mixing plate elements,

- each pair having a first and second plate element, each plate element having inner and outer edges;
- (b) the plate elements of each pair disposed at an angle of about 30° to 60° from the axis of the conduit;
- (c) the pairs of mixing plate elements in the conduit disposed at an angle of about 90° with respect to each other;
- (d) the first and second plate elements of each pair of mixing



- plate elements disposed in a nesting overlapping relationship with the first and second plate elements of the adjacent pair, so that each of the plate elements is disposed at an angle to the plane of the overlap plate element; and
- (e) means to secure together the first and second plate elements of each pair in the desired angular relationship and to secure the plate elements overlapping the adjacent pairs to the overlap plate elements.

4,643,585

LIGHT-FLASH STARTING SYSTEM

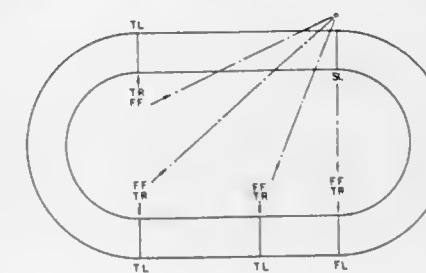
Gene G. Hillesland, 1580 Blountstown St. Apt. #41, Tallahassee, Fla. 32304

Filed Mar. 26, 1986, Ser. No. 844,386

Int. Cl.⁴ G04F 8/00; G08B 23/00

U.S. Cl. 368—9

11 Claims



1. A light-flash starting accessory for the electronic clock of a photofinish and elapsed time recorder located at the finish line for timing a race for record establishing purposes comprising a starting gun, means for generating a light-flash simultaneously with the firing of said starting gun and located in relative close proximity to the starting line of said race, a flash finder located in the vicinity of said photofinish recorder and connected thereto by electronic cable, said flash finder being adapted for aiming at and sighting a designated mark for identifying the location of the source of said light-flash when emitted, said flash finder having means detecting said flash and generating an electronic pulse transmitted through said cable to start said electronic clock.

4,643,586

EQUIPMENT AND METHOD FOR CALIBRATION OF INSTRUMENTS HAVING A TEMPERATURE SENSING UNIT

Jens S. Hansen, 232, Gl. Strandvej, DK-3050 Humlebæk, Denmark

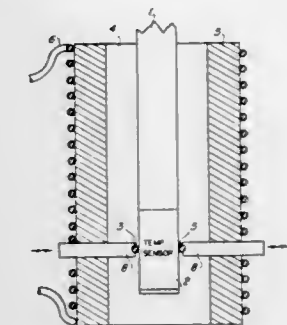
Continuation-in-part of Ser. No. 457,491, Jan. 12, 1983,

abandoned. This application Jul. 12, 1985, Ser. No. 754,814

Int. Cl.⁴ G01K 15/00

U.S. Cl. 374—1

16 Claims



1. An equipment for the calibration of a temperature sensing device, said equipment comprising means for retaining said temperature device in a predetermined position, means for producing a predetermined temperature in said device, and means for sensing the actual temperature of the surface of said device, or the surface of a heat-conductive casing in direct contact with said device, said surface being formed of magnetizable or electrically-conductive material, said means for producing the predetermined temperature comprising an induction coil, said coil generating a magnetic field when said coil is fed with an alternating current to cause heating of said surface of said magnetizable or electrically conductive material, said induction coil being fed from a controllable AC-generator controlled by a signal from a control unit, said control unit having a first and a second input, said first input receiving a signal representing said predetermined temperature, and said second input receiving a signal representing the actual temperature, said control unit including means for comparing said two input signals and producing therefrom a control signal for said AC-generator, said means for sensing the actual temperature of said device comprising a temperature sensing means serving as temperature reference sensor and being adapted to be placed in heat conductive contact, with said surface.

4,643,587

TEMPERATURE DATA PRODUCING APPARATUS FOR HIGH TEMPERATURE MOVING OBJECTS

Eiichi Makabe, Yokohama; Naoki Harada, Tokyo; Kiyotaka Imai, Yokohama; Yoshiro Hosoda, Ebina, and Akira Kato, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1985, Ser. No. 774,820

Claims priority, application Japan, Sep. 20, 1984, 59-197062

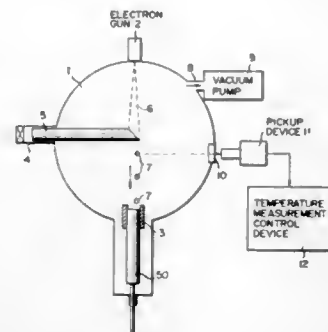
Int. Cl.⁴ G01J 5/02; G01K 3/00

U.S. Cl. 374—104

7 Claims

1. A temperature data producing apparatus, comprising: means for melting a metal material to provide a plurality of high temperature objects in droplet form naturally falling in the vertical direction in a vacuum chamber; means for generating an image signal by line scanning a plurality of said falling high temperature objects in droplet

form in a direction intersecting the direction of movement of the object;
means for detecting a maximum level of said image signals obtained within a prescribed time period; and



means for obtaining a temperature signal showing the temperature of the objects corresponding to the maximum level.

4,643,588

METHOD OF MONITORING TEMPERATURE

Stephen R. Postle, Wilmslow, and Roy P. Barber, Sale, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Apr. 2, 1985, Ser. No. 718,914

Claims priority, application United Kingdom, Apr. 25, 1984, 8410548

Int. Cl.⁴ G01K 11/06; G01D 21/00

U.S. Cl. 374—160

18 Claims

16. A method of monitoring if a stored product has exceeded a predetermined lower temperature but is still below a predetermined higher temperature which comprises forming on a carrier in clearly separate areas two colourable compositions, wherein a first of said two colourable compositions includes a colour former, an acidic reactant and a first non-aqueous solvent in which colour formation can take place when said first solvent is in a molten state at a temperature at or above said predetermined lower temperature but not when said first solvent is in a solid state at a temperature below said predetermined lower temperature, said first solvent and at least one other component of said first colourable composition being encapsulated, the capsules and the remaining component of said first colourable composition being applied to a first area of said carrier with a binder, and wherein a second of said two colourable compositions includes a colour former, an acidic reactant and a second non-aqueous solvent in which colour formation can take place when said second solvent is in a molten state at a temperature at or above said predetermined higher temperature but not when said second solvent is in a solid state at a temperature below said predetermined higher temperature, said second solvent and at least one other component of said second colourable composition being encapsulated, the capsules and the remaining component of said second colourable composition being applied to a second area of said carrier with a binder, said first composition changes colour at said predetermined lower temperature and said second composition changes colour at said predetermined higher temperature, acclimatizing the carrier and encapsulated solvents to a storage temperature of the product, said storage temperature being below said predetermined lower temperature, then when said carrier is in close proximity with the product breaking the capsules of encapsulated solvent in each of said separate areas and observing when a colour change occurs in the first colourable composition which changes colour at the predetermined lower temperature to indicate that the stored product has exceeded the said predetermined lower temperature and noting if a change in colour of the second colourable composition has occurred which, if it has, would indicate that the stored

product has exceeded also the higher predetermined temperature.

4,643,589

THERMOMETRY EMPLOYING GALLIUM ALUMINUM ARSENIDE DIODE SENSOR

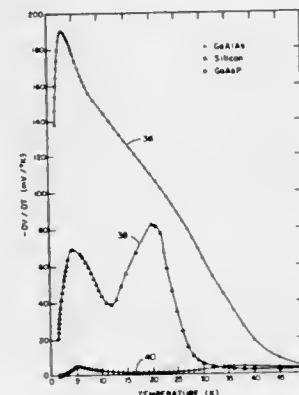
John K. Krause, Powell, and Bradley C. Dodrill, Columbus, both of Ohio, assignors to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Aug. 9, 1985, Ser. No. 764,384

Int. Cl.⁴ G01K 7/00

U.S. Cl. 374—178

17 Claims



6. A thermometer capable of measuring temperature in the cryogenic range comprising:
a solid-state junction device formed of gallium aluminum arsenide;
a source of select current;
means for applying said source of current across said junction device; and
means for determining the value of voltage drop across said device induced by said select current.

4,643,590

GUIDE SYSTEM

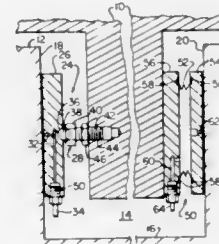
Joseph S. Olasz, N. Kingston, R.I., assignor to Federal Products Corporation, Providence, R.I.

Filed Mar. 15, 1985, Ser. No. 712,273

Int. Cl.⁴ F16C 32/06

U.S. Cl. 384—8

8 Claims



1. A system for guiding one part relative another comprising:
(a) a first part having a primary surface and an opposed parallel secondary surface;
(b) a second part designed for guidance by said primary surface;
(c) first fluid means mounted on one of said parts adjacent said primary surface for effecting said guidance;
(d) second fluid means resiliently mounted on another of said parts adjacent said opposed parallel secondary surface for floating along said secondary surface, said second fluid means including a bellows; and

(e) means for supplying fluid under pressure to said first fluid means and to said second fluid means via said bellows.

4,643,591

ADJUSTABLE GUIDE FOR RELATIVELY MOVEABLE PARTS, PARTICULARLY OF MACHINE TOOLS

Walter Schwarz, Pfronten, Fed. Rep. of Germany, assignor to MAHO Werkzeugmaschinenbau Babel & Company, Pfronten, Fed. Rep. of Germany

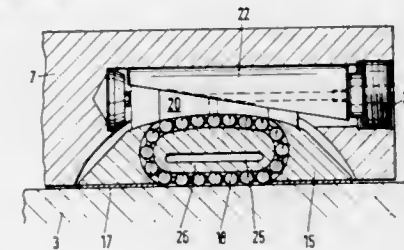
Filed Sep. 30, 1985, Ser. No. 782,208

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1984, 3438059

Int. Cl.⁴ F16C 29/06

U.S. Cl. 384—44

5 Claims



1. An adjustable guide for moving a moveable machine part relative to a fixed machine part, said adjustable guide comprising

a guide rail attached to said moving machine part and having at least two finely machined guide surfaces, and
a plurality of automatically adjusting guide shoes which form a portion of said fixed machine part, each of said guide shoes having an action surface formed of at least one sliding surface portion and a rolling surface portion, said rolling surface portion formed of a plurality of circulating roller bodies in a roller body circulation track, whereby each of said action surfaces forms a countersurface to one of said guide surfaces, and each of said guide shoes has a multiaxially acting prestressing and adjusting means which can be used to cause large adjustments in the positioning of said guide shoe while allowing minor automatic adjustments of said guide shoes to occur, thereby keeping said action surfaces and guide surfaces contiguous.

4,643,592

VIBRATION LIMITING OF ROTATING MACHINERY THROUGH ACTIVE CONTROL MEANS

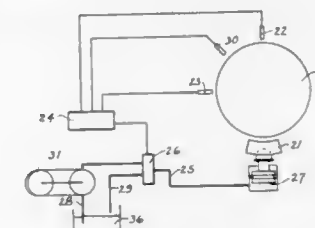
David W. Lewis, Rt. 12 Box 63; James W. Moore, 3409 Indian Springs Rd., both of Charlottesville, Va. 22901, and Julien LeBleu, Jr., 4515 W. Meadow Ln., Lake Charles, La. 70605

Filed Nov. 9, 1984, Ser. No. 669,805

Int. Cl.⁴ F16C 27/02, 32/06, 23/04, 17/03

U.S. Cl. 384—100

2 Claims



1. A device for limiting mechanical vibrations of rotary machinery, said device comprising: one or more position detectors for a rotor shaft, said position detectors generating signals each being referenced to the shaft by means of a mark or notch on the shaft or other means; a computer, having a memory, with a control algorithm for manipulating the signals coming from the position detectors, said control algorithm

having optimum gain settings; an electronic controller for manipulating hydraulic valves, said hydraulic valves controlling flow of pressurized oil, said oil being supplied by an auxiliary hydraulic pumping system; movable pads of tilt pad fluid film bearings which are radially positioned by said pressurized oil acting through hydraulic actuators, one said actuator acting on one said radially movable pad; said position detectors, hydraulic valves, auxiliary hydraulic pumping system, movable bearing pads, and hydraulic actuators functioning in concert with one another and under feedback control of the computer to continually adjust said pads, and in turn the stiffnesses and damping coefficients of said rotating machinery; during each rotation of the rotor shaft in such an optimum manner as to reduce the peak vibration level of the rotor shaft for each and every speed of rotation, said computer algorithm coacting with previously detected data or stored data, said data stored in the memory of the computer, in an optimum manner to avoid manipulating gross changes in said optimum gain settings of said control algorithm, said gain settings being included in said computer control algorithm and acting on instantaneous shaft motion and which operate on said electronic controller.

4,643,593

ASSEMBLY FOR LUBRICATING THRUST BEARINGS OF MACHINES

Karl Gaffal, Freinsheim, and Frank Etzold, Frankenthal, both of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

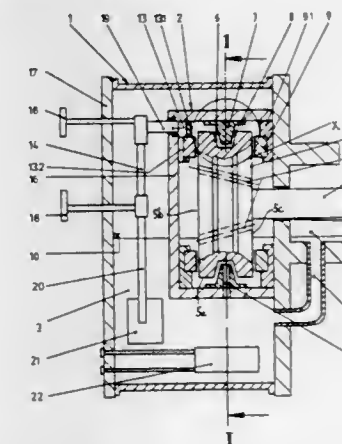
Filed Mar. 27, 1986, Ser. No. 845,175

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1985, 3512027

Int. Cl.⁴ F16C 33/10, 33/66

U.S. Cl. 384—371

18 Claims



1. A bearing assembly for use in pumps and other types of machines, comprising a vessel for a supply of lubricant which fills the vessel to a predetermined level, said vessel having an opening above said level; a substantially horizontal driven shaft extending through said opening and having an end portion in said vessel; a housing disposed in said vessel, spacedly surrounding said end portion and having an inlet below and an outlet above said level; and a thrust bearing comprising a rotor provided on said end portion in said housing and having a peripheral surface, and an annular stator having an internal surface defining with said peripheral surface an annular section channel which communicates with said inlet to draw lubricant from said vessel in response to rotation of said shaft and said rotor whereby the inflowing lubricant fills said housing and subsequently drawn lubricant returns into said vessel by way of said outlet.

4,643,594

SEALED ROLLING BEARING

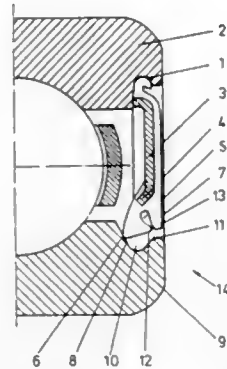
Günter Nader, Schweinfurt; Rainer Schürger, Schwanfeld, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Dec. 13, 1985, Ser. No. 808,931

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1984, 8437101.3

Int. Cl.⁴ F16C 33/78

U.S. Cl. 384—478

4 Claims



1. In a sealed rolling bearing comprised of an outer ring having a raceway and an annular groove, an inner ring having a raceway and an annular groove, a row of rolling bodies arranged in said raceways, and a seal seated in said annular groove of said outer ring, said seal being comprised of a sealing lip and a sealing projection connected to a sealing body, said annular groove of said inner ring being arranged in the area of a shoulder of said inner ring that has an axially inner side surface which said sealing lip abuts with prestress, said inner ring having a circumferential surface axially outwardly of said shoulder which forms a gap seal with said sealing projection, said seal defining an annular space between said sealing lip and sealing projection, the improvement wherein a radially inner portion of said sealing lip abuts said sealing projection radially inwardly of said annular space, and the inner periphery of said sealing lip together with the inner periphery of said sealing projection define aligned, conical, outwardly directed annular surfaces.

4,643,595

BALL BEARING RINGS

Brian K. Weavers, Colchester, England, assignor to RHP Group PLC, Billerica, England

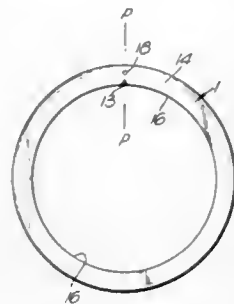
Filed Nov. 19, 1984, Ser. No. 672,927

Claims priority, application United Kingdom, Oct. 2, 1984, 8424838

Int. Cl.⁴ F16C 33/60; B21D 53/10; B21H 1/12

U.S. Cl. 384—503

13 Claims



1. An improved bearing ring of the type intended to be fractured and subsequently used in a radial rolling ball bearing of high load capacity comprising a bearing ring provided with

a raceway between lands in its inner bore for location with a plurality of balls and at least one notch in the ring adapted to create a stress raiser to permit the ring to be fractured along a single axial plane containing the notch; said notch being of sharply defined part pyramidal form, aligned predominantly in an axial plane of the ring, and located in one of the lands of the bore with its base penetrating one side face of the ring and its apex disposed in said one land adjacent the raceway but not in the raceway.

11. A method of creating a split bearing ring to permit a full complement of balls to be assembled within a raceway in the inner bore of the ring to provide a radial ball bearing of high load capacity, said method comprising making a continuous bearing ring with a raceway between lands of an inner bore, forming at least one notch in one of the lands of the inner bore of the ring, said notch being of sharply defined part pyramidal form and aligned predominantly in an axial plane of the ring with its base penetrating one side face of the ring and its apex disposed in said one land of said bore of said ring adjacent the raceway but not in the raceway the notch creating a stress raiser, and exposing the ring to force in order to crack or fracture it along a single axial plane containing the notch.

4,643,596

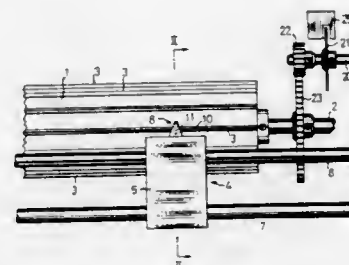
IMPACT TYPE DOT PRINTER

Tatsuo Shimada; Yoshinori Chida, and Satoru Tada, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 575,347, Jan. 31, 1984, abandoned, which is a division of Ser. No. 183,922, Sep. 3, 1980, Pat. No. 4,465,386. This application Sep. 17, 1985, Ser. No. 776,997
Claims priority, application Japan, Sep. 17, 1979, 54-119506; Jun. 30, 1980, 55-88937

Int. Cl.⁴ B41J 3/08

U.S. Cl. 400—121

4 Claims



1. An impact type dot printer for printing row-by-column dot matrix characters on a recording medium, comprising: a rotationally driven platen having on its outer periphery a plurality of circumferentially spaced ridges extending parallel to the axis of rotation of the platen; a movable print head movable from a home position in a direction parallel to the axis of rotation of the platen at a speed proportional to the speed of rotation of the platen, the print head comprising a single print hammer extending crosswise of the platen ridges and operable when actuated to impact an ink ribbon and recording medium positioned between the print head and one of the platen ridges to thereby print a dot of a dot matrix character on the recording medium, and electromagnetic driving means responsive to driving pulses for actuating the print hammer; a slotted disc rotationally driven at a speed of rotation proportional to the speed of rotation of the platen, the disc having therearound a plurality of angularly extending slotted regions separated by angularly extending slot-free regions, each slotted region having a plurality of angularly equi-spaced slots equal in number to the number of rows of the row-by-column dot matrix and each slot-free region being free of any slots, the slotted regions and the slot-free regions being alternately and symmetrically disposed around the disc; detecting means coacting with the disc for periodically producing print timing signals in accordance with the rotation of the disc, each print timing signal having a pulse component composed of a series of equi-spaced pulses corresponding in number to the number of slots in one slotted region followed by a pulse-free component corresponding to one slot-free region; timing means for measuring the pulse interval between the pulses of the print timing signals and producing column-end signals signifying the end of each dot matrix column in response to measurement of long pulse intervals corresponding to the pulse-free components of the print timing signals; means for generating a home signal when the print head leaves the home position during each line of printing; and control circuit means responsive to the home signal, the print timing signals and the column-end signals for initiating each line of printing in response to the detection of the first pulse-free component produced after generation of the home signal and for controlling the application of driving pulses to the electromagnetic driving means to thereby synchronize the actuation of the print hammer with the rotation of the platen.

4,643,598

PRINT HEAD FOR WIRE MATRIX PRINTER

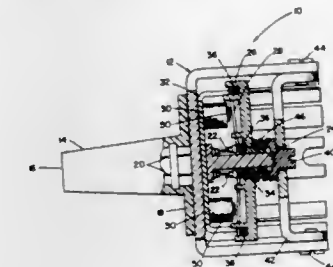
John A. Pruski, Schiller Park, Ill., assignor to AT&T Teletype Corporation, Skokie, Ill.

Filed Aug. 12, 1985, Ser. No. 764,464

Int. Cl.⁴ B41J 3/12

U.S. Cl. 400—124

4 Claims



1. A matrix print head comprising: (a) a housing formed with an annular portion and an elongated portion; (b) a plurality of print wires extending from said annular portion through said elongated portion and being movable out of an open end of the latter; (c) a plurality of cores positioned in said annular portion; (d) a plurality of armatures positioned in said annular portion, each being operatively connected to one of a single print wire and being spaced from and movable relative to a related core; (e) means for simultaneously adjusting the positions of other ends of all of the print wires relative to the open end of said elongated portion to insure that the dimension between the other ends of said wires and said open end is proportional to the dimension of the space between an armature and related core, said means comprising: (i) a circular backplate supporting said armatures; (ii) a movable sleeve mounted on a spindle, said sleeve extending through the center of said backplate and being adapted to operatively engage all of said armatures simultaneously and to move said armatures relative to related cores thereby forming a space of predetermined dimension between each armature and its related core; (iii) means for moving said sleeve axially comprising a nut operatively connected to said sleeve, wherein said nut is supported by a bracket and a compression spring positioned between said backplate and said bracket.

4,643,597

DOT PRINTER

Tsutomu Matsui; Shinichi Fujii, and Mitsutoshi Kakishima, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

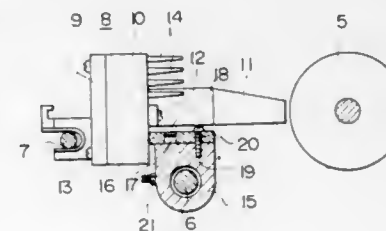
Filed Dec. 27, 1984, Ser. No. 686,899

Claims priority, application Japan, Dec. 28, 1983, 58-200459; Dec. 28, 1983, 58-200460

Int. Cl.⁴ B41J 3/04, 25/28, 11/22

U.S. Cl. 400—124

19 Claims



1. A dot printer comprising:

- (a) a platen for holding a recording sheet;
- (b) a first shaft disposed in parallel with said platen;
- (c) a second shaft disposed in parallel with said platen and with said first shaft;
- (d) a printer head;
- (e) at least one U-shaped bearing located on said printer head, said at least one U-shaped bearing being sized, shaped, and positioned so that said printer head can be assembled onto said first shaft by sliding the open end of said at least one U-shaped bearing over said first shaft and so that, in use, said at least one U-shaped bearing journals said first shaft;
- (f) a mount element located on said printer head and extending toward said second shaft;
- (g) at least one annular bearing member slidably mounted on said second shaft; and
- (h) first means for releasably connecting said mount element to said at least one annular bearing member, said first means comprising:
 - (i) at least one pin protruding from one of said mount element and said at least one annular bearing member,
 - (ii) a positioning hole located in the other one of said mount element and said at least one annular bearing member and being sized, shaped, and positioned to receive said at least one pin; and
 - (iii) means to positively hold said pin in said hole, said last mentioned means being releasable to permit removal and replacement of said printer head.

4,643,599

INKING APPARATUS FOR A WIRE MATRIX PRINTER

Tetsuo Taguchi, Kawaguchi, and Takashi Ishikawa, Toride, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

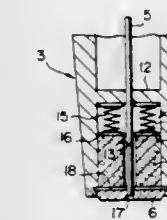
Filed Jul. 30, 1985, Ser. No. 760,599

Claims priority, application Japan, Jul. 31, 1984, 59-118621[U]; Jul. 31, 1984, 59-118622[U]

Int. Cl.⁴ B41J 3/12

U.S. Cl. 400—124

19 Claims



1. An inking apparatus for a wire matrix printer comprising:

a housing having forward and rearward ends; an actuator unit disposed at the rearward end of the housing; a plurality of print wires extending through the housing between the forward and rearward ends thereof, one end of the print wires being connected to the actuator unit; a bearing plate disposed at the forward end of the housing and having means therein defining bores for slidably supporting the other ends of the print wires; a partition wall disposed in the housing and defining an ink chamber between the partition wall and the bearing plate; an ink reservoir comprised of ink-impregnated material inserted into the ink chamber and having means therein defining an opening for receiving therethrough the print wires, the opening having a sufficient size relative to the print wires so that the print wires do not make frictional contact with the ink reservoir; and urging means disposed in the ink chamber for urging the ink reservoir against the bearing plate to enable the ink absorbed in the ink-impregnated material to be transferred through the bearing plate bores to the print wires.

4,643,600
STABILIZING DEVICE FOR HAMMER BOUNDING AT PRINTERS

Norio Shiga, Chofu, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Chofu, Japan

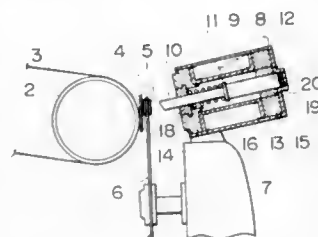
Filed Feb. 28, 1986, Ser. No. 834,962

Claims priority, application Japan, Feb. 28, 1985, 60-29112[U]

Int. Cl.⁴ B41J 9/02, 9/38

U.S. Cl. 400—157.2

1 Claim



1. A stabilizing device to prevent print-hammer rebounding in printers, comprising:

- a driving mechanism that drives a print hammer;
- a sleeve that encases said driving mechanism;
- guides that guide the print hammer to its printing position; and
- a back-stopper installed within said sleeve and positioned at the end of said print hammer, said back-stopper having a coefficient of restitution which is substantially constant despite variation in temperature, said back-stopper comprising two elastomers bonded together, said elastomers having coefficients of restitution that vary inversely with respect to each other in response to temperature change.

4,643,601
RIBBON POSITIONING MECHANISM
Dennis P. Nash, Deerfield Beach; Donald K. Rex, Highland Beach; Ludwig R. Siegl, Highland Beach, and Wendy Wusow, Highland Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1984, Ser. No. 655,496

Int. Cl.⁴ B41J 35/14

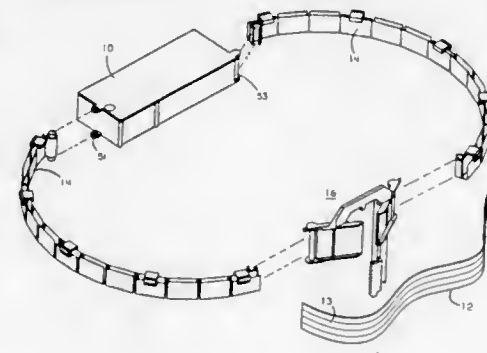
U.S. Cl. 400—216.1

22 Claims

1. In a printing machine including a print head and a ribbon having a plurality of parallel color bands, a nosepiece detachable from said printing machine for positioning and guiding said ribbon comprising:

- an upper section having two side members and a connecting bridge intermediate said side members and connected thereto; and
- a lower section rigidly attached to said upper section includ-

ing at least one leg downwardly extending from said upper section and



transfer means, attached to said leg, for transferring straight-line, vertical motion to said nosepiece.

4,643,602
CARRIAGE SUPPORTING DEVICE FOR A PRINTER
Hiroshi Ikeda, and Tsutomu Iesaka, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

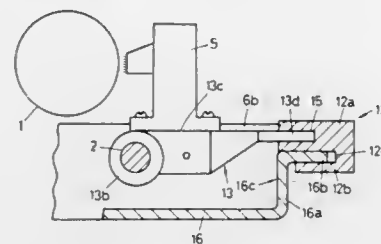
Filed Mar. 13, 1985, Ser. No. 711,363

Claims priority, application Japan, Mar. 14, 1984, 59-36396[U]

Int. Cl.⁴ B41J 11/22

U.S. Cl. 400—354

2 Claims



1. A carriage supporting device for a printer having a platen, a frame with a base plate, a guide bar disposed in parallel with the axis of the platen and supported on the frame, a guide portion formed at a side portion of the base plate, the improvement comprising

- said guide portion being in the form of a plate and having an L-shaped section comprising an upright portion and a guide rail projecting horizontally outwardly and extending in parallel with said guide bar and having a flat upper surface and a flat underside surface;

a carriage slidably mounted on said guide bar and having a first connecting portion extending horizontally outwardly from said carriage to a position above and adjacent to said guide rail so as to be positioned in parallel with said guide rail;

a guide chip made of plastic and having a second connecting portion in the form of a hole and an engaging groove below said second connecting portion,

said guide chip being removably secured to said carriage and slidably engaged with said guide rail by engaging said second connecting portion with said first connecting portion by friction, and at the same time by engaging said engaging groove with said guide rail, whereby a portion of said guide chip between said second connection portion and said engaging groove is interposed between said first connection portion and said guide rail, so that said carriage is slidably supported on said guide bar and said guide rail.

4,643,603
PRINTER FEEDER FOR EDGE-PUNCHED RECORD CARRIERS

Wolfgang Hauslaib, Langenau, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

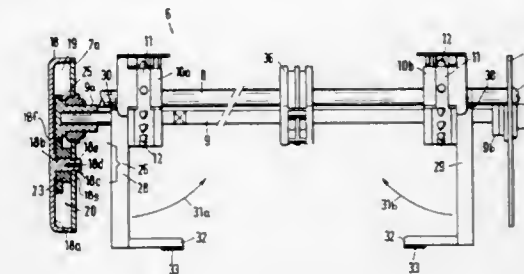
Filed Apr. 2, 1985, Ser. No. 719,245

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412853

Int. Cl.⁴ B41J 11/32

U.S. Cl. 400—616.1

6 Claims



1. A printer feeder for feeding edge-punched record carriers to a printer, said printer feeder comprising:

- (a) a pair of parallel spaced side supports;
- (b) a fastening rod connecting said pair of side supports;
- (c) a rotating drive shaft journaled in and extending between said pair of side supports, said rotating drive shaft being parallel to said fastening rod;
- (d) a pair of tractors mounted on said fastening rod and said rotating drive shaft between said pair of side supports, each one of said pair of tractors being axially movable on said fastening rod and said rotating drive shaft;
- (e) a pair of suspension hooks mounted on each one of said pair of side supports, said pair of suspension hooks being sized, shaped, and positioned to mount the printer feeder on the heads of bolts protruding from a printer;
- (f) a drive train comprising a first gear sized, shaped, and positioned to engage a gear integrally mounted on the platen shaft of the printer, a second gear sized, shaped, and positioned to engage a gear mounted on said rotating drive shaft, and at least one additional gear operatively connected between said first gear and said second gear, said drive train being axially outboard of one of said pair of side supports;
- (g) a cover mounted on said one of said pair of side supports and surrounding and protecting said drive train, said cover and said one of said side supports forming a largely enclosed housing for said drive train;
- (h) a catch mounted on said cover, said catch being sized, shaped, and positioned to engage the printer and to hold the printer feeder in operating position; and
- (i) journals for said first and second gears and said at least one additional gear formed integrally on the inside of said cover, said journals having heads which project through through-holes in said one of said side supports and shoulders which abut the inside of said one of said side supports to serve as catches between said cover and said one of said side supports.

4,643,604
MAGNETIC PEN HOLDER

Bertin Enrico, Via Breno No. 7, Milan, Italy

Filed May 16, 1985, Ser. No. 734,727

Claims priority, application Italy, Sep. 4, 1984, 22513 A/84

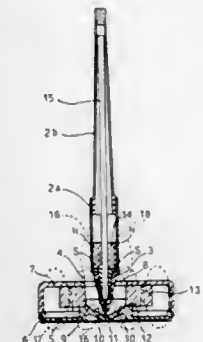
Int. Cl.⁴ B43K 41/00

U.S. Cl. 401—131

7 Claims

1. Magnetic supporting device for pens and the like, characterized by the fact that it comprises a pen and a base element, said base element being provided with a cavity for receiving the front end of the pen; a first annular-shaped permanent

magnet situated in the base element around and coaxially to the aforesaid cavity, said first magnet having north and south poles for providing a first magnetic field with flux lines; and a second permanent magnet situated close to the front end of the pen, said second magnet having north and south poles for providing a second magnetic field with flux lines; the second magnet having its magnetic polarities oriented in the opposite direction to the polarities of the annular magnet in the supporting base;



said pen having a rest position which it occupies when it is supported on said base element; said first and second magnets being located where the flux lines of their magnetic fields interact when the pen is in its rest position to exert an axial force of attraction and a radial force of repulsion, said axial force of attraction having a direction which forces the pen axially against the base member, and said radial force of repulsion having a direction which holds the pen in its rest position.

4,643,605
DEVICE FOR PREVENTING DRYING OF NIB OF CARTRIDGE TYPE PEN
Kousei Iwasaki, 2-48-15 Horikiri Katsushika-ku, Tokyo, Japan

Filed Jan. 12, 1984, Ser. No. 570,222

Int. Cl.⁴ B43K 9/00

U.S. Cl. 401—243

5 Claims



1. A device for preventing the drying out of a nib of a cartridge-type pen comprising:

- (a) packing material which surrounds and forms a hermetic seal between said packing material and an ink container, said packing material being inside and forming a hermetic seal between said packing material and a pen holder, said packing material itself being hermetic and said packing material being positioned between a vent hole in said ink

- container and the end opposite said nib of said pen, said vent hole and said packing material positioned close to the nib end of said ink container;
- (b) a cap which fits over the nib end of said pen, said cap having an internal recess therein
- (c) an internal cap member which fits engagingly into said cap recess, said internal cap member having an internal blind hole for accommodating the nib end of said pen, said internal cap member having a first circular projection, said projection facing the interior of said blind hole and positioned towards the opening of said blind hole;
- (d) a second circular projection positioned on said pen holder at the nib end of said pen holder such that when said cap is placed on the nib end of said pen, said first circular projection engages said second circular projection to form a hermetic seal; and
- (e) a bag-shaped cylinder lining the interior of said blind hole and extending towards the opening in said blind hole such that when said first circular projection engages said second circular projection said bag-shaped cylinder contacts the nib end of said pen holder to form a seal, such that, said packing material, said internal cap and said bag-shaped cylinder prevent the nib end of said pen from drying out.

4,643,606

LOCKING FASTENER

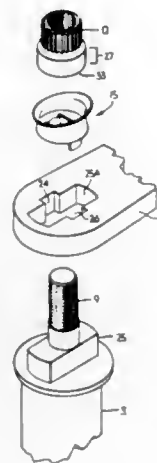
Richard P. Buchner, New Burlington, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 2, 1984, Ser. No. 667,658

Int. Cl.⁴ F16D 1/00

U.S. Cl. 403—24

3 Claims



1. A locking device for retaining a nut on a threaded shaft, the nut having a generally cylindrical region, comprising:
- (a) sleeve means which is generally elliptical into which the cylindrical bolt region fits upon threading and which deforms to apply friction to the cylindrical bolt region, and
- (b) tab means for inhibiting rotation of the sleeve means.

4,643,607

FURNITURE CONSTRUCTION

William Caudill, and Frank Klimezky, both of Lake Worth, Fla., assignors to Gulfstream Goodwill Industries, Inc., West Palm Beach, Fla.

Filed Oct. 10, 1985, Ser. No. 786,217

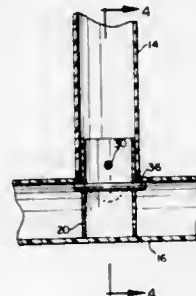
Int. Cl.⁴ F16B 9/00

U.S. Cl. 403—194

15 Claims

1. A connection comprising:
- a tubular fitting member;

- a first tubular member having a bore adapted to receive said tubular fitting member;
- a second tubular member having an inside diameter slightly larger than the outside diameter of said tubular fitting member to receive said tubular fitting member and having an end portion adapted to engage said first tubular member;



- a first fastening means to secure said tubular fitting member within said first tubular member, said tubular fitting member having an end portion contoured to and fittingly engaging the interior contour of said first tubular member; and
- a second fastening means to secure said tubular fitting member with said second tubular member.

4,643,608

STEERING LINKAGE ARM ASSEMBLIES

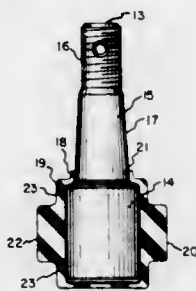
Vernon C. Warner, St. Marys, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 16, 1984, Ser. No. 631,027

Int. Cl.⁴ F16D 1/00

U.S. Cl. 403—225

9 Claims



1. In a pivotal joint assembly including a socket housing, a stud member with its terminal bearing end within said housing and with its shank end extending freely through an open window of said housing, and a bearing member between said bearing end and the inner cavity wall of a socket wall, the improvement which comprises:

said socket having an inner cavity essentially cylindrical in shape,

said bearing member comprising the bearing end of said stud member covered with a relatively thick cylindrical layer of elastomer adhered thereto and relatively thinner layers of elastomer adhered thereto and in juxtaposition to each end of the relatively thicker cylindrical layer of elastomer to give a head and shoulders appearance,

said elastomer ring resiliently interconnecting the stud member and the socket member in an operative relationship.

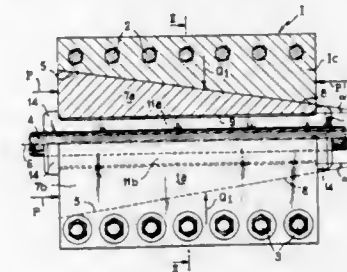
4,643,609
GRIPPING ASSEMBLY FOR ELONGATED OBJECTS
SUCH AS CABLES OR BARS
David Blass, Geneva, Switzerland, assignor to Cibeles International Inc., Panama

Filed Jan. 17, 1986, Ser. No. 820,190

Int. Cl.⁴ F16B 2/00

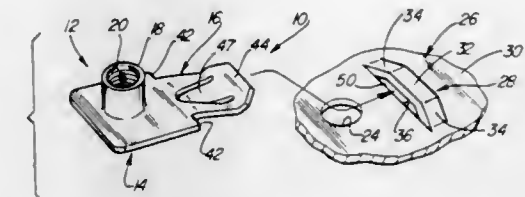
U.S. Cl. 403—369

10 Claims



1. A reversible wedge gripping assembly gripping an elongated object, such as a cable or a bar, comprising an elongated casing which is open at both ends and which defines a passage receiving said elongated object, said passage comprising two inner surfaces which are disposed respectively on each side of the longitudinal axis of said passage and which converge towards one end thereof while making a predetermined angle with said longitudinal axis, a first pair of wedge-shaped clamping jaws, which are mounted in the passage of the casing and which are movable in a first plane which contains the longitudinal axis of the passage of the casing, each of said clamping jaws comprising an outer surface which is in contact with one of the two inner surfaces of the passage of the casing, and an inner surface which faces said elongated object and in which a longitudinal groove is formed, the longitudinal groove of each of the two clamping jaws comprising two flat side walls which converge towards the bottom of the groove and each of which makes a predetermined angle with said first plane, a second pair of clamping jaws which are disposed in the longitudinal grooves of the first pair of clamping jaws, each of the clamping jaws of the second pair having an outer surface which, in cross section, has a V shape and which is in contact with one of the two side walls of the groove of one of the two clamping jaws of the first pair and with one of the two side walls of the groove of the other clamping jaw of the first pair, and an inner surface which faces said elongated object, the two clamping jaws of the second pair being movable perpendicularly to the longitudinal axis of the passage of the casing in a second plane perpendicular to said first plane, and coupling means cooperating with the clamping jaws of the first and second pairs for preventing any relative axial movement between said first and second pairs of clamping jaws, while permitting relative transverse movements between said first and second pairs of clamping jaws.

terminated distance above said supporting member one surface defining a bridged opening, said strap defining a transversely extending slot having parallel vertically disposed for and aft opposed sides, said supporting member having a fastener receiving passage therein spaced a predetermined distance from said strap portion such that the center of said passage is located equidistant from the walls of said strap portion, the other plate member comprising a sheet metal element having a generally rectangular body portion at one end extending across and overlying said passage, said body portion having longitudinal and transverse sides and formed with fastener receiving means including thread engaging means for engaging a fastener, said thread engaging means aligned with said passage in position for threadably engaging the threaded fastener applied thereto such that the fastener extends through said passage, said sheet metal element having an integral attaching ramp portion extending longitudinally in an aft direction from one transverse side of said body portion and defining an acute angle with said body portion, said attaching ramp portion having a predetermined width less than said one transverse side defining a pair of stop



shoulders on either end of said one transverse side, said attaching ramp portion having its free end formed with a transverse lip bent upwardly therefrom on a transverse bend line at an acute angle, a V-shaped cut-out in said attaching ramp portion defining a spring arm struck from said attaching portion, said arm positioned within said V-shaped cut-out and resiliently joined to said transverse lip at said bend line, said arm extending forwardly towards said body portion and terminating in a downwardly bent tongue defining an acute angle with said arm, said tongue having a forward extremity for engaging said slot forward side, said attaching ramp portion of a size to pass through said strap portion bridged opening causing said attaching ramp portion to resiliently flex said arm into contact with the undersurface of said strap bridge portion as said tongue is snapped into said slot, whereby upon said stop shoulders engaging said strap transversely facing walls said fastener receiving means is retained in alignment with said fastener receiving passage while said tongue extremity adapted to engage said slot forward side to positively retain said sheet metal element on said support plate member.

4,643,611

VIBRATORY COMPACTOR HAVING IMPROVED CAST BASE

Martin Pilachowski, Kewaskum, Wis., assignor to Wacker Corporation, Milwaukee, Wis.

Filed Apr. 8, 1985, Ser. No. 721,077

Int. Cl.⁴ E01C 19/34, 19/38, 19/40

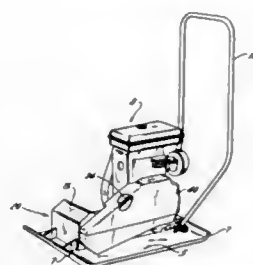
U.S. Cl. 404—133

4 Claims

1. A vibratory compactor of the type comprising a base plate having front and rear ends, laterally opposite sides, a top and a substantially flat bottom surface, power drive means supported on a plate-like console which is, in turn, supported on a rear portion of the base plate by means of a plurality of shock mounts, each comprising a pair of coaxial bolts threaded into opposite sides of a vibration damper, an exciter in an exciter housing on a front portion of the base plate, said exciter comprising a shaft which is rotatable in a pair of bearings and to which an eccentric mass is anchored for imparting up and down vibration to the base plate, transmission means drivingly

connecting the power drive means with said shaft, and a handle projecting up from the base plate for guiding and propelling the compactor, said compactor being characterized by:

- A. the base plate, the exciter housing and a pair of elongated ribs on the top of the base plate comprising a one-piece casting of ductile nodular iron, the portion of said casting that comprises the exciter housing
- (1) having a cavity in its interior and
 - (2) having a pair of opposite upright side walls that are spaced laterally inwardly from said opposite sides of the base plate and through each of which there is a bore that opens from said cavity, said bores being coaxial and having bottom edge portions spaced above the bottom of said cavity and at least one of said bores being of large enough diameter for the exciter to pass axially therethrough;
- B. a pair of bearing holders, one for each of said side walls, each said bearing holder having
- (1) a bearing bore in which one of said bearings is received with a press fit,
 - (2) a radially outer cylindrical surface concentric to its bearing bore and which is closely but axially slidably received in the bore in its side wall, and



- (3) marginal portions which project radially outwardly beyond said cylindrical surface at locations spaced circumferentially around the same and which overlie the exterior of its side wall and cooperate with fastening means to detachably secure the bearing holder against displacement relative to its side wall;
- C. each of said ribs projecting upwardly from the top of the base plate and extending lengthwise fore-and-aft along it, said ribs being laterally spaced from one another and from said laterally opposite sides of the base plate,
- (1) each said rib being integrally joined at a front end thereof to a rear wall of said portion of the casting that comprises the exciter housing, and
 - (2) each said rib having a pair of holes transversely therethrough that are spaced from one another along its length and in each of which one of said bolts of a shock mount is receivable; and
- D. said console having downwardly projecting flange portions at opposite sides thereof that laterally outwardly overlie the respective ribs, said flange portions having holes which align with said holes in their respectively adjacent flanges and in each of which the other of said bolts of a shock mount is receivable.

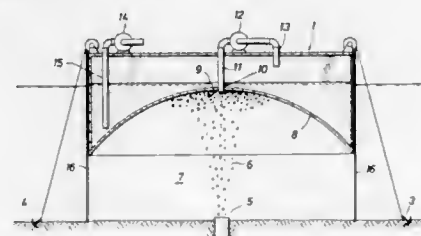
4,643,612
OIL CLEANUP BARGE
Robert P. Bergeron, Gretna, La., assignor to Shell Offshore Inc., Houston, Tex.

Filed Dec. 17, 1984, Ser. No. 682,725
Int. Cl.⁴ E02B 15/04
U.S. Cl. 405—60

1 Claim
1. A vessel for capturing oil released by leakage from an underwater source comprising a floating barge having a concave bottom and adapted to being positioned over the source of leakage;

means for transferring oil from the apex of the concave

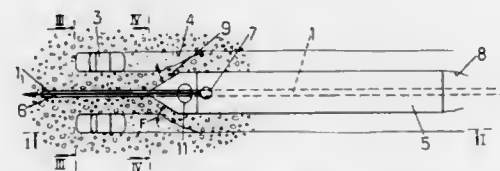
bottom to storage inside the barge which is topside, adjacent and encircling the concave bottom;
a length-adjustable flexible skirt extending downwardly from the barge and encircling oil arising from the source of leakage;



means for transferring oil from the barge storage to other storage means; and
a telescoping oil inlet at the apex of the concave bottom operative to lower the inlet through a gas layer and into an oil layer.

4,643,613
UNDERWATER TRENCHING AND PIPE-LAYING DEVICES
Yvan Durner, Paris, France, assignor to Mali S.A.R.L., Paris, France
Filed Apr. 1, 1985, Ser. No. 718,344
Claims priority, application France, Apr. 2, 1984, 84 05165
Int. Cl.⁴ F16L 1/04; E02F 5/10
U.S. Cl. 405—161

6 Claims



1. A trenching and pipe-laying method for forming a trench in a sea-bed and burying in the trench a piping previously laid on the sea-bed comprising the steps of:
excavating a first vertical trench extending parallel to and offset in a plane with respect to a front portion of the piping to be laid and buried,
excavating, by means of a guided structure advancing horizontally along the piping, a second vertical trench which is parallel to the first vertical trench, which is contiguous and offset in a plane with respect to the first vertical trench and which is extended in a plane in the extension of the front portion of the piping,
pushing the materials removed by forming the second trench back laterally into the first vertical trench by means of an oblique moldboard provided at the front of the guide structure, and
automatically burying the piping by means of the guide structure in the second trench.

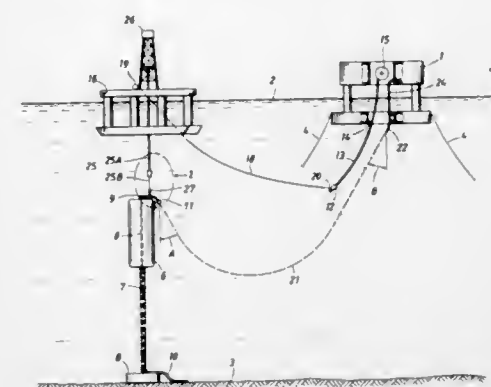
4,643,614
METHOD AND APPARATUS FOR THE INSTALLATION OF A HOSE BETWEEN A PLATFORM AND A SUBMERGED BUOY
Nils K. Laursen, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 22, 1985, Ser. No. 757,706
Claims priority, application Netherlands, Aug. 20, 1984, 8402545
Int. Cl.⁴ F16L 1/04

8 Claims
1. Method for the installation of a hose having a catenary

shape and having a first and a second end between a floating platform and a submerged buoy located at the top of a riser, wherein said riser comprises a pipe provided at its top end with a connector secured to the buoy, the connector being adapted for receiving a first end piece located at said first end of the hose, characterized in that the method comprises the following steps:

- positioning a ship above the buoy,
- placing a substantially vertically oriented guide system between the ship and a guide post positioned on the buoy at a pre-determined location relative to the connector on the buoy,
- providing the first end piece on its circumference with two opposite pivots which define a pivot axis of rotation perpendicular to the plane defined by the catenary shaped hose,
- providing a submersible device having a remotely controlled manipulator,

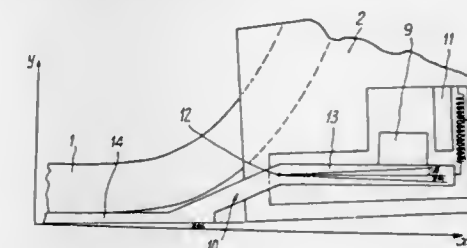


- providing said manipulator with a pair of hooks capable of cooperative linkage with said pivots,
- linking the hooks of the remotely controlled manipulator forming part of the submersible device with the pivots of the first end piece,
- placing the submersible device in operative engagement with the guide system near the top end thereof,
- lowering the submersible device along the guide system onto the guide post,
- coupling the hose at its other second end to a pipe connected to the platform,
- pulling the first end piece into a first connector forming a portion of the submersible device with the aid of the manipulator and rigidly coupling the first end piece to the first connector,
- disconnecting the manipulator from the first end piece,
- raising the submersible device, disconnecting the guide system from the guide post, and
- lifting the guide system up to the ship.

4,643,615
PROCESS AND DEVICE FOR OBTAINING DATA RELATIVE TO THE POSITION IN A VERTICAL PLANE OF A SUPPLE PIPE IN THE PROCESS OF BEING BURIED
Gilles Pelsy, 47 rue Benard, 75014 Paris, France
Continuation of Ser. No. 458,558, Jan. 17, 1983, abandoned. This application Sep. 6, 1985, Ser. No. 773,108
Claims priority, application France, Jan. 22, 1982, 82 01005
Int. Cl.⁴ E02F 5/10; F16L 1/02

13 Claims
1. A device for determining the position in a substantially vertical plane of a supple pipe which is being buried in the ground at the bottom of a trench by a working tool, comprising a sensor member constituted by an arm articulated substantially at its center on the rear end of the tool, a rear part of said arm projecting beyond the tool by a length representing an

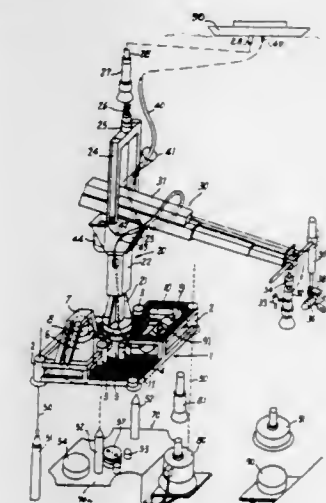
increment of the section of the pipe which has just been buried, resting on the bottom of the trench and providing a support for said section of the pipe, while a front part of said arm is associated with a member for measuring the inclination, the inclination of said sensor member being indicative of the gradient of the increment of said section of supple pipe, each section of laid pipe having an x-axis parallel to said laid pipe and a y-axis



which is transverse to said x-axis and lies in a generally vertical plane, means for calculating said y-axis of the increments of the section of laid pipe as a function of said x-axis, means for calculating the instantaneous gradients of said increments and means for recording and displaying the data calculated and measured, whereby the inclination of said sensor member connected to the tool can be continuously detected.

4,643,616
DEVICE FOR POSITIONING, ACTIVATING AND CONNECTING MODULES OF A SUB-SEA OIL PRODUCTION STATION
Yvon Castel, and Michel Iato, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), Paris La Defense, France
Filed Nov. 19, 1984, Ser. No. 672,944
Claims priority, application France, Nov. 21, 1983, 83 18457
Int. Cl.⁴ B63C 11/52; E21B 43/01

9 Claims
U.S. Cl. 405—191

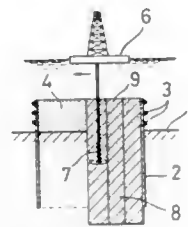


1. In a multi-functional device for positioning, activating and interconnecting, from a surface vessel, functional connecting module (70) with a subsea production means including a subsea installation and/or subsea modules positioned on said installation, the subsea production means having guideline means (50, 51) connected to the vessel, the combination of:
a polygonal frame means (1);
means (3, 52) for positioning the frame means with respect to said connecting module (70);
means on the frame means including a mechanical connector

(5) adapted to be connected to a fixed mandrel (57) on said connecting module (70); means including an umbilical cable (40) extending from a surface vessel to the frame means (1); a multiconnector (6) carried on the frame means and adapted to be connected to a multiconnector receptacle (54) on said connecting module (70); and means for manipulating said frame means (1) with said connecting module (70) associated therewith relative to said subsea production means and including a central mast (20) mounted on the frame means and adapted to be connected to a stringer train (28) extending from the surface vessel; a jib means (30) carried by the central mast and having an end extendable beyond the frame means; and an automatic mechanical connector 32 supported at said end of said jib means (30), said connector (32) being adapted to control the making of various connections to said subsea production means.

4,643,617
METHOD OF CREATING OFFSHORE SEABED MOUND
Haruki Kanno; Hidekazu Tsuyoshi; Kou Nishinakagawa; Makoto Hara; Tetsuo Mochida; Tsugio Hisaka; Munekazu Miyaki; Minoru Kwarada, all of Tokyo, and Hideaki Kawarabayashi, Kashiwa, all of Japan, assignors to Takenaka Kohmuten Co., Ltd., Osaka, Japan

Filed May 8, 1985, Ser. No. 731,889
Claims priority, application Japan, May 14, 1984, 58-96199
Int. Cl.⁴ E02D 3/00, 3/12
U.S. Cl. 405—222



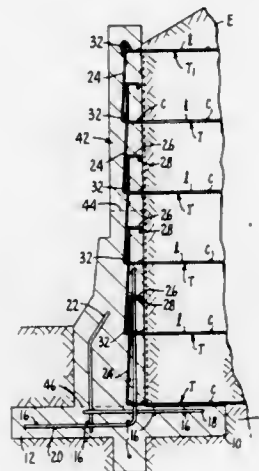
1. A method of creating an offshore seabed mound at a mound creation location on a seabed by using a barge on the surface of the sea, comprising the steps of:

- setting up partition means from said barge at least along an outer periphery of a region on the seabed where a mound is to be created in a seabed area of soft ground to form an earth-retaining wall around said region projecting from the seabed by a predetermined mound height;
- raising the ground level of said seabed within said earth-retaining wall by depositing soft soil collected from the seabed at an area around said wall into said region with said earth-retaining wall from said barge to heap the deposited soil within the wall to said predetermined mound height; and
- implementing a ground improvement process comprising a mixing and blending operation carried out by a grouting and blending apparatus to both said heaped-up soft soil and said soft ground of said seabed within said earth-retaining wall so that said ground improvement process is executed to a predetermined depth below said seabed.

4,643,618
SOIL REINFORCED CANTILEVER WALL
William K. Hilfiker, and Arthur L. Hilfiker, both of Eureka, Calif., assignors to Hilfiker Pipe Co., Eureka, Calif.
Filed Feb. 11, 1985, Ser. No. 700,552
Int. Cl.⁴ E02D 5/20, 29/02

U.S. Cl. 405—287
1. A structure for reinforcing and securing an earthen formation, said structure comprising: a plurality of welded wire trays

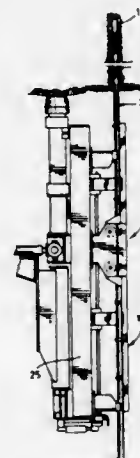
having elongate body sections embedded in the formation at vertically spaced levels to provide a largely self-supporting reinforced earthen mass, said trays having angled sections at the face of the formation; an in situ formed concrete face, at least certain of said angled sections being cast in place within said concrete face; a cantilever abutment fixed to the face at the foot of the formation; anchor means securing the abutment



against tilting and lateral movement; and wherein said certain angled sections each comprise: a first portion extending at an angle relative to the elongate body section so as to be disposed within the concrete face, a second portion extending from the first portion and toward the earthen formation, and a third portion extending from the second portion in spaced relationship to the first portion, said third portion serving as a support to space a backing mat from the first portion.

4,643,619
APPARATUS FOR FEEDING CEMENT MATERIAL INTO A DRILL HOLE FOR CEMENT BOLTING OF A ROCK
Onni Issakainen, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

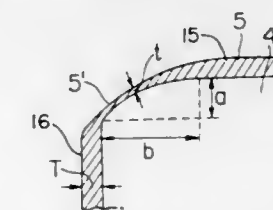
Filed Jun. 5, 1984, Ser. No. 617,335
Claims priority, application Finland, Jun. 13, 1983, 832124
Int. Cl.⁴ E21D 20/02
U.S. Cl. 405—303



1. Apparatus for feeding cement material into a drill hole for cement bolting of a rock, comprising a feeder pipe which can be pushed into a drill hole essentially over the whole length of the hole portion to be filled with cement material through the feeder pipe;

an actuator provided with means for pushing the feeder pipe into the hole and drawing the pipe outwardly in the hole, feeding means for feeding cement material through the feeder pipe into the hole; said apparatus having a sensing element provided for sensing the feed pressure of the feeding means for cement material and starting said drawing means for drawing out the feeder pipe when the feed pressure exceeds a predetermined set value (SP); said apparatus further comprising the means for drawing the feeder pipe outwardly and the means for feeding cement material are pressure medium operated having a pressure medium circuit of a driving motor provided for the means for drawing the feeder pipe outwardly connected to a pressure medium circuit of a driving motor provided for the means for feeding cement material by means of a pressure reducing valve acting as the sending means; so that the valve allows pressure medium to flow into the circuit of the driving motor of said means for drawing the pipe outwardly when the pressure in the circuit of the driving motor of said feeding means exceeds said set value (SP) of the feed pressure of the cement material.

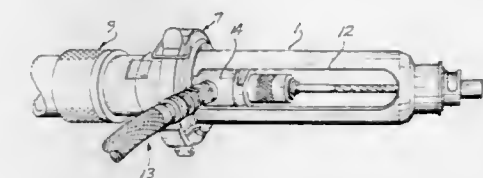
4,643,620
COATED HARD METAL TOOL
Hiroshi Fujii, Aichi; Akio Hara, Itami; Mitsunori Kobayashi, Itami, and Yoshikatsu Mori, Itami, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 16, 1984, Ser. No. 610,791
Claims priority, application Japan, May 27, 1983, 58-94743
Int. Cl.⁴ B23B 27/14
U.S. Cl. 407—119



1. A cutting tool having a rake face and flank face which intersect to form a cutting edge, said cutting tool comprising a substrate consisting of a sintered hard alloy containing at least one carbide of Group IVa, Va and VIa elements of the Periodic Table and a metal binder selected from the iron group metals and a coating film provided thereon, made of a material with a higher hardness than the substrate, which is at least one material selected from the group consisting of carbides, nitrides, carboxides, carbonitrides and oxides of Group IVa, Va and VIa elements of the Periodic Table and aluminum, and solid solutions thereof, said coating film near the cutting edge having such a thickness that the thickness continuously increases in directions away from the cutting edge along both the rake face and the flank face from a minimum value, including zero, at the cutting edge, such that the thickness of the coating at the rake face reaches a maximum thickness at a first distance from the cutting edge and the thickness at the flank face reaches a maximum thickness at a second distance from the cutting edge, the first distance being greater than the second distance.

4,643,621
QUICK-CHANGE SYSTEM FOR POWER FEED AND POSITIVE FEED DRILL MOTORS
Robert L. Fuller, Jr., Issaquah, and Dwayne E. Proff, Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 21, 1983, Ser. No. 477,564
Int. Cl.⁴ B23Q 11/10
U.S. Cl. 408—57

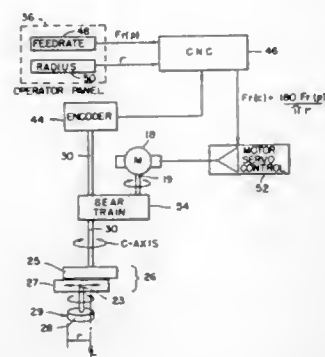


1. In combination:
a tool having a cylindrically-shaped adapter portion;
a tool-holding chuck assembly having a first end portion adapted for coupling to a motor and a second end portion for receiving said cylindrically-shaped adapter portion;
a cylindrically-shaped nosepiece member coaxially disposed about the central axis of said tool-holding chuck assembly;
said cylindrically-shaped nosepiece member having an elongated axial slot;
a cylindrically-shaped nosepiece adapter flange coaxially disposed about the central axis of said tool-holding chuck assembly, said cylindrically-shaped nosepiece adapted flange having an internally threaded coaxially disposed inner wall surface threaded for mating threaded coupling to said motor;
a fluid inducer disposed within said cylindrically-shaped nosepiece member;
a fluid coupling path coupled between said fluid inducer and said tool, said fluid coupling path extending through said tool-holding chuck assembly;
a cutting oil line extending through said elongated axial slot to said fluid inducer; and,
quick-release coupling means coaxially disposed about said cylindrically-shaped nosepiece member and said cylindrically-shaped nosepiece adapter flange for locking said cylindrically-shaped nosepiece adapter flange and said cylindrically-shaped nosepiece member together.

4,643,622
AUTOMATIC C-AXIS FEEDRATE CONTROL FOR MACHINE TOOLS
Dennis A. Winski, Fairfield, Conn., assignor to Moore Special Tool Co., Inc., Bridgeport, Conn.
Continuation-in-part of Ser. No. 604,064, Apr. 26, 1984, Pat. No. 4,547,996. This application Mar. 25, 1985, Ser. No. 715,681
The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.
Int. Cl.⁴ B23C 1/06

U.S. Cl. 409—84
9 Claims
1. A method for gauging straight surfaces and adjoining arcs at a constant feedrate without interruption comprising the steps of:
coupling a probe for rotation about an axis of a machine tool; offsetting said probe from said axis to establish a radius "r" from the axis to the tip of said probe;
mounting a workpiece to be gauged to a work holding fixture;
moving said work holding fixture at a preset feedrate "Fr(p)" along a straight path to effect gauging of a straight surface on said workpiece by said probe;
computing, as a function of the established radius "r" and said preset feedrate "Fr(p)", a rotational speed for rotating said probe about said axis to provide a uniform surface speed at the tip of said probe as said probe traverses said

workpiece from a straight surface to an arc being gauged; and



rotating said probe about said axis at the computed rotational speed when gauging an arc.

4,643,623

HOLDER FOR ROTARY CUTTING TOOLS

Kunio Kondo; Katutoshi Haga, both of Toyota; Tadashi Kurumiya, Okazaki; Minoru Haga, Toyota; Yasuo Kato, Toyota, and Shinobu Kaneko, Toyota, all of Japan, assignors to Fuji Seiko Limited and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

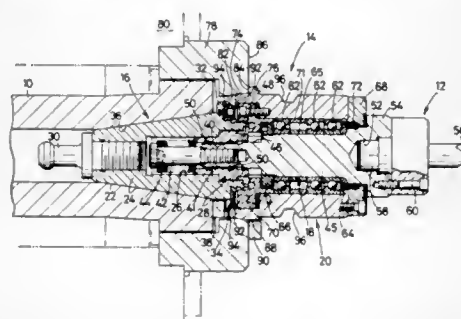
Filed Jun. 29, 1984, Ser. No. 625,960

Claims priority, application Japan, Jul. 12, 1983, 58-126768
The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.

Int. Cl.⁴ B23C 5/26

U.S. Cl. 409—232

28 Claims



1. A holder for holding a rotary cutting tool, attachable to a spindle of a machine tool for rotary cutting movement of the cutting tool by the spindle, said spindle having a longitudinal axis about which it is rotatable, and said machine tool having a substantially stationary body, the holder comprising:

a holder body fixed to the spindle for rotation therewith about the axis of the spindle;

a rotatable shaft disposed concentrically with said holder body and having a tool-mounting portion at one end thereof, said rotatable shaft further having an other end portion coupled to said holder body for receiving torque from said holder body, said rotatable shaft being axially and radially displaceable and inclinable relative to said holder body;

a positioning member fixedly disposed on the machine tool body radially outwardly of said spindle; and

a cylindrical casing disposed radially outwardly of and rotatably engaged with said rotatable shaft such that said casing and said shaft are rotatable relative to each other, said casing being engageable with said positioning member for accurate positioning thereof by the positioning member, thereby flexibly connecting said rotatable shaft to said holder body while simultaneously accurately positioning

said rotatable shaft with respect to the machine tool body when said holder body is fixed to said spindle.

4,643,624

GUIDE MEANS FOR STABILIZING PIPE STRINGS

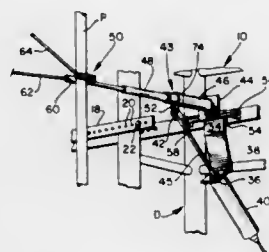
Pat D. Murphree, Rte. 1, Box 120-A, Midland, Tex. 79701

Filed Jun. 11, 1985, Ser. No. 743,565

Int. Cl.⁴ E21B 19/14

U.S. Cl. 414—22

9 Claims



5. Apparatus for positioning and stabilizing a section of pipe respective to a derrick, comprising:

a main frame, a stabilizer assembly pivotally mounted respective to said main frame, power cylinder means attached between said main frame and said stabilizer assembly for pivotally moving said stabilizer assembly from a retracted position into an operative, substantially horizontal position;

said stabilizer assembly includes a yoke attached to a jack means; said jack means has a base and a barrel attached to said base, an extension member telescopically received in attached relationship within said barrel, means for extending said extension member respective to said barrel; said base of said jack means is a pad, means pivotally attaching the pad to said main frame; the pivoted pad having opposed ends which extend outwardly thereof, journal means by which the opposed ends are mounted to said main frame to provide for the aforesaid pivotally mounted arrangement;

said yoke having an apex end attached to a free end of the extension member, and opposed outwardly extending arms which diverge from one another in an outward direction, said apex being of a size to receive and capture a section of pipe therewithin;

a plate member is attached to said main frame and extends in opposition to said pad; said plate member hingedly receives the base of the power cylinder, thereby separating the base of the power cylinder from the base of the jack and at the same time providing motion in a vertical plane for the jack and the power cylinder;

and means by which said main frame is removably mounted within a derrick in aligned relationship with the borehole to thereby enable the yoke apex to receive a marginal length of a pipe section therewithin, so that a pipe section is axially aligned with a pipe string and thereby facilitates making a connection.

4,643,625

HAY-HAULING TRAILER

Robert G. Horner, Rte. 3, Box 320, Pine City, Minn. 55063

Filed Jun. 17, 1985, Ser. No. 745,790

Int. Cl.⁴ B60P 1/04

U.S. Cl. 414—24.5

2 Claims

1. A self-loading hay-hauling trailer which can be hitched to a towing vehicle, said trailer comprising:

a generally rectangular angle frame front assembly which has a swing bar bolted onto it;

an angle frame rear assembly comprising parallel side bars pivotally attached to said front assembly and also attached to an axle of said trailer, said axle being provided with

brakes, each of said parallel side bars culminating in a hook tip;

a hook assembly pivotally attached to said rear assembly, said hook assembly comprising a pair of parallel angle flanges having a front section, a horizontal center section at obtuse angles to said front section, and a rear section at obtuse angles to said center section, each of said flanges culminating in a hook tip;

a plurality of latching means to raise and lower said hook assembly to pick up and haul bales of hay, including a first

two adjacent ones of said teeth, and means for feeding said endless belt so that the teeth having the tooth surfaces projected at least partly upwardly from said principal surface move in a predetermined sense to urge the card items to said guide plate and to make the card items form a stack of the card items received by cooperation of said principal surface and the tooth surfaces of the teeth moving in said predetermined sense, the improvement wherein:

said base member comprises a pair of longitudinal members on both sides of said endless belt with said principal surface defined by said longitudinal members above said endless belt;

each of said tooth surfaces having a first and a second end portion, said first end portion leading said second end portion and being more protruded than said second end portion when said endless belt of said second conveyor moves in said predetermined sense; said edge portion comprising a protrusion and two continuous portions on both sides of said protrusion, said protrusion being urged by said stack of card items to one of said two adjacent ones of said teeth with said continuous portions slidably received by said longitudinal members.

4,643,627

VACUUM TRANSFER DEVICE

Johannes G. Bednorz, Adliswil; Pierre L. Gueret, Richterswil; Hermann E. Nievergelt, Adliswil; Hanspeter Ott, Thalwil; Wolfgang D. Pohl, Adliswil, and Daniel F. Widmer, Hirzel, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

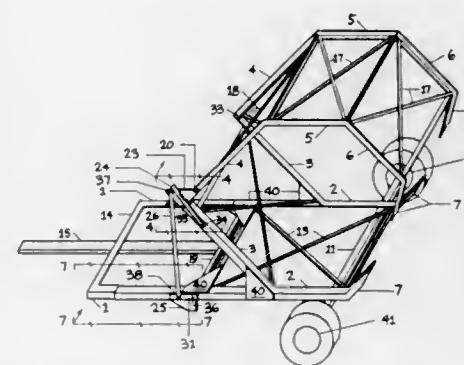
Filed Oct. 2, 1985, Ser. No. 782,849

Claims priority, application Switzerland, Oct. 16, 1984, 84112378

Int. Cl.⁴ A61K 27/02; H01L 21/68

U.S. Cl. 414—217

3 Claims



latching means forming the pivotal attachment of said hook assembly to said rear assembly, said first latching means including a partially serrated latch bar which rests on a latch catch, a second latching means which holds said front and rear assemblies in a travel position, a third latching means mounted on said front assembly to latch said swing bar, and a fourth latching means which holds said front and rear assemblies in a cocked position, said second, third, and fourth latching means being spring-loaded latches.

4,643,626

CARD ITEM STACKER CAPABLE OF READILY TAKING OUT CARD ITEMS

Masahiko Noguchi, and Kunio Hiromori, both of Tokyo, Japan, assignors to NEC Corporation, Japan

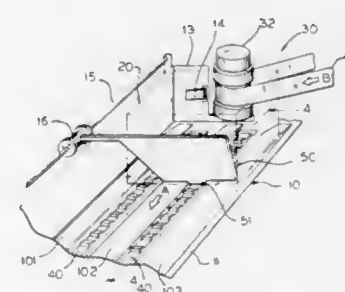
Filed Apr. 5, 1984, Ser. No. 597,162

Claims priority, application Japan, Apr. 6, 1983, 58-50946[U]

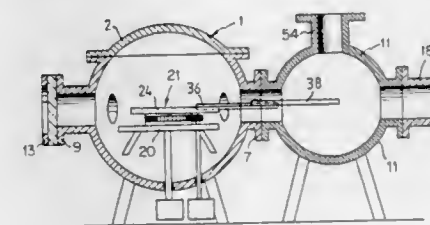
Int. Cl.⁴ B65H 31/06

U.S. Cl. 414—103

5 Claims



1. In a card item stacker comprising a base member having a substantially horizontal and upwardly directed principal surface, a first conveyor for successively supplying card items onto said principal surface with each card item directed substantially vertically, a second conveyor comprising an endless belt and teeth which have substantially planar tooth surfaces which are spaced apart on said endless belt and are movable parallel to said principal surface with the tooth surface at least partly projected upwardly from said principal surface, a guide plate which has an edge portion and is guided along a horizontal axis above said principal surface to be movable around said horizontal axis until said edge portion is positioned between



1. A transfer device for transferring objects within a system of evacuable chambers, comprising:

a central chamber;

a plurality of additional chambers arranged radially around said central chamber;

a table disposed within said central chamber having a rotor means thereon with drive means connected thereto, wherein said rotor means carries a coulis arrangement for transferring objects positioned thereon from said central chamber to one of said plurality of additional chambers, said coulis arrangement comprising:

a base plate having a groove therein;

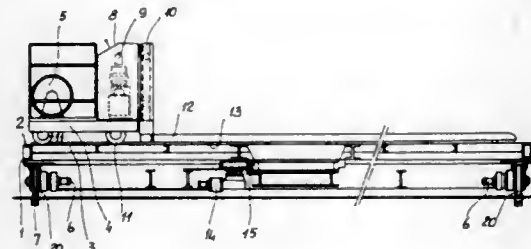
a first member slidably received in said base plate groove, said first member having a groove therein;

a second member slidably received in said groove in said first member;

means for controlling the extension and retraction of said first member and said second member with respect to said base plate; and

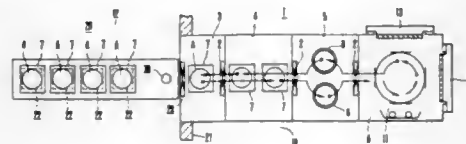
one or more means for indicating the relative positions of said first and second members and said base plate; and guide roller means positioned in said central chamber at each opening between said central chamber and said additional chambers to align said second member with a selected opening.

4,643,628
APPARATUS FOR LOADING AND UNLOADING
PALLETIZED ARTICLES
 Maria Pini, Via Giordani Bruni, 16, 20154 - Milano, Italy
 Filed Apr. 25, 1984, Ser. No. 603,827
 Claims priority, application Italy, Jul. 30, 1983, 22157 A/83
 Int. Cl.⁴ B60P 1/48
 U.S. Cl. 414—279 2 Claims



1. A pallet loading and unloading apparatus, comprising a base frame mounted on slidable wheels, said base supporting a loading floor rotatable about a substantial vertical axis thereon a fork bearing carriage is able of independently moving, said carriage supporting two different interaxis fork pairs the forks of which are provided, at the bottom, with variable position fork supporting sliding wheels, a supporting member interposed between said base frame and loading floor, hydraulic geared motors for operating said variable position fork supporting sliding wheels and said supporting member, said loading floor being provided, at the middle thereof, with a longitudinally extending guiding projection to be engaged with said fork bearing carriage, said fork bearing carriage including guides for raising said forks as well as a vertical fixed guide and a vertical movable guide for driving said forks depending on the size of the pallets loaded thereon.

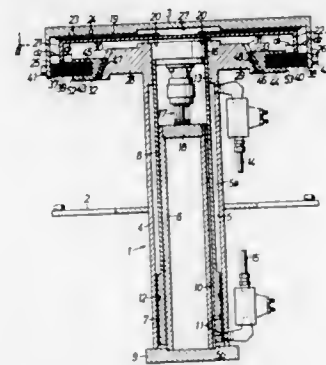
4,643,629
AUTOMATIC LOADER
 Nobuyuki Takahashi; Ryuji Sugimoto, and Yasuyuki Shirai, all of Tokyo, Japan, assignors to Anelva Corporation, Tokyo, Japan
 Filed Oct. 22, 1985, Ser. No. 790,288
 Claims priority, application Japan, Oct. 30, 1984, 59-226658
 Int. Cl.⁴ B65G 1/06
 U.S. Cl. 414—331 6 Claims



1. An automatic loader for automatically loading unprocessed substrates to a substrate processing apparatus for processing flat substrates and automatically unloading the substrates processed by said substrate processing apparatus, comprising:
 a plurality of cassette stages for moving vertically upward or downward a cassette which holds a plurality of horizontal substrates parallel to each other, the plurality of cassette stages being rotated about a substantially vertical axis;
 a first substrate convey mechanism having a common conveyance path for conveying all the substrates to said substrate processing apparatus through a single door thereof or conveying all the substrates from said substrate processing apparatus therethrough;
 a single substrate posture control stage, arranged to be substantially in contact with one end of said first substrate convey mechanism opposite to said substrate processing apparatus, for controlling within a predetermined range a

posture of the substrate to be fed in said substrate processing apparatus along a feed direction;
 a plurality of second substrate convey mechanisms, having at least one conveyance path between said plurality of cassette stages and said substrate posture control stage, for exchanging the substrate with each of said cassette stages and said substrate posture control stage and conveying the substrate; and
 a substrate counter, arranged on each conveyance path of said first and second substrate convey mechanisms, for counting the number of substrates fed in said substrate processing apparatus or returned therefrom.

4,643,630
HEAVY-OBJECT LOADING JIG
 Yoshio Shiiba, Saitama; Akira Koshigaya, Hidaka, and Kouichi Kimura, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Sep. 7, 1984, Ser. No. 648,218
 Claims priority, application Japan, Sep. 8, 1983, 58-165807
 Int. Cl.⁴ B65G 35/00
 U.S. Cl. 414—589 5 Claims



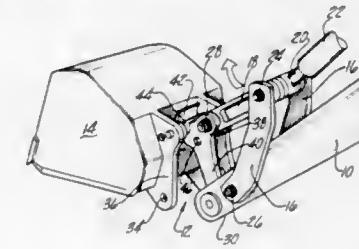
4. A heavy-object loading jig comprising:
 a slide plate provided on the upper end portion of a lifting drive means;
 a mounting plate for mounting a heavy object thereon; and
 a rolling member interposed between said slide plate and said mounting plate, said rolling member allowing said mounting plate to move in any horizontal direction within a limited range, said lifting drive means comprising a circular cylinder vertically extending with an upper end thereof opened;
 a cylindrical member which is integrally secured to an inner lower end portion of said cylinder and defines an annular cylinder chamber between the cylindrical member and an inner surface of said cylinder;
 a ring-shaped piston slidably received in said cylinder chamber;
 a cylindrical rod which is formed integral with said piston and is projected beyond the upper end of said cylinder and further has said slide plate secured to an upper end portion thereof; and a cam structure between said cylinder and said mounting plate for guiding said mounting plate to a fixed position when said mounting plate is lowered.

4,643,631
QUICK COUPLING AND RELEASE MECHANISM FOR BUCKETS
 Herman J. Maurer, Columbus, Ind., and John F. Shumaker, Mt. Pleasant, Iowa, assignors to J. I. Case Company, Racine, Wis.
 Filed Apr. 22, 1985, Ser. No. 725,858
 Int. Cl.⁴ E02F 3/70
 U.S. Cl. 414—723 1 Claim

1. A quick attachment and release mechanism for attaching

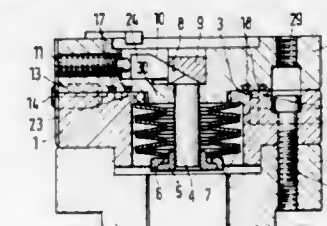
a bucket to a loader scoop arm having at least one extensible and retractable push-pull link operatively attached thereto, said mechanism comprising:

a quick coupler pivotally mounted to said loader arm for receiving various types and sizes of buckets, said quick coupler including a first end pivotally mounted between bifurcated ends on said loader arm by a first releasable mounting pin, a second end which is slotted for selective engagement with a mounting pin on said bucket, and a third end spaced from said slotted end and pivotally connected to, one end of said push-pull link by a second releasable mounting pin, said bucket and said quick coupler first end connected to said loader arm by said first releasable mounting pin for pivotal movement about a common pivot axis, the opposite end of said push-pull link connected by a first pivot pin to one end of a pivot link



and the opposite end of said pivot link connected by a second pivot pin to said loader arm, said first releasable mounting pin spaced from said second pivot pin along said loader arm and said second releasable mounting pin spaced from said first pivot pin such that a generally four-bar linkage is formed between said quick coupler, said push-pull link, said pivot link and the portion of said loader arm between said first releasable mounting pin and said second pivot pin; and
 said quick coupler third end including at least two attaching points for said push-pull link whereby said push-pull link being connected to one of said attaching points when it is desired to permit more angular displacement of said quick coupler or said push-pull link being connected to the other attaching point when it is desired to permit less angular displacement of said quick coupler.

4,643,632
OVERLOAD SAFETY DEVICE
 Hasso Beyer, Augsburg, Fed. Rep. of Germany, assignor to EKE Robotersysteme GmbH, Fed. Rep. of Germany
 Filed Apr. 10, 1985, Ser. No. 721,638
 Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3414067
 Int. Cl.⁴ B25J 19/00
 U.S. Cl. 414—730 8 Claims

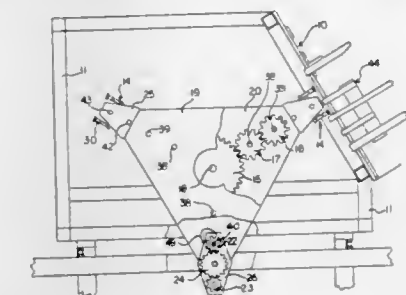


1. An overload safety device, particularly for an industrial robot having a robot arm and a robot tool and preferably arrangable between the robot arm and the robot tool, with a robot flange, and a tool flange, the latter being movable relative to the former, characterized in that the robot flange (1) and the tool flange (2) sealingly cooperate in a sealing area (3) subject to the action of a pressure medium and that a safety

cut-out can be triggered by a pressure drop in the pressure medium;

said tool flange being mounted on the robot flange by means of a compression spring, which is on the one hand supported on a supporting flange of a mounting bolt and on the other hand on the supporting flange of the robot flange, the mounting bolt (4) being axially displaceable in the tool flange (2) and is adjustably mounted in accordance with an initial stressing force to be selected; wherein the mounting bolt (4) on the tool side of the tool flange (2), has an adjusting head (9) equipped with a lift surface (8), whilst a radially movable adjusting element (11) cooperating with the adjusting head (9) and provided with an adjusting face (10) constructed in complementary manner to the lift surface (8) is used for the axial displacement of the mounting bolt (4);
 the robot flange (1) has on the tool flange side at least one rejector cam (12) and the tool has on the robot flange side a corresponding recess (13); and
 the rejector cam (12) includes a rejector cylinder (12) and the longitudinal axis (14) of the latter is aligned with a centre point (15) of robot flange (1).

4,643,633
ROTARY TRANSFER DEVICE
 Jeffrey A. Lashyro, Deerwood, Minn., assignor to Minnesota Automation, Crosby, Minn.
 Filed Feb. 17, 1984, Ser. No. 581,348
 Int. Cl.⁴ B66C 1/02
 U.S. Cl. 414—732 21 Claims



1. A rotary transfer apparatus for the pickup, transfer and delivery of articles comprising:
 (a) a frame structure,
 (b) a first stationary gear mounted to said frame structure, the first stationary gear additionally having a rotatable shaft extending through its center,
 (c) a supporting plate member fixed to the rotatable shaft for rotation therewith,
 (d) a first planetary gear mounted on said plate member for rotation about said first stationary gear,
 (e) drive means for rotating said shaft,
 (f) means for rotating said first planetary gear relative to said first stationary gear,
 (g) a second stationary gear mounted on said plate member for rotation with said first planetary gear, said second stationary gear additionally having an outward rotatable shaft through its center and being fixed for rotation with said plate member,
 (h) an outward plate member fixed to the outward rotatable shaft for rotation therewith,
 (i) a second planetary gear fixed to the outward plate member for rotation about said second stationary gear,
 (j) means for rotating said second planetary gear relative to said second stationary gear, and
 (k) an article transfer mechanism connected to said second gear and having means to pickup and deliver articles for rotation with said second planetary gear, whereby, said rotary transfer apparatus having said first and second stationary gears and said first and second planetary

gears permits said article transfer mechanism to transfer articles from and to a plurality of positions in a plurality of paths to facilitate the size, shape and location of articles to be transferred.

4,643,634

WORK PIECE TRANSPORTING APPARATUS

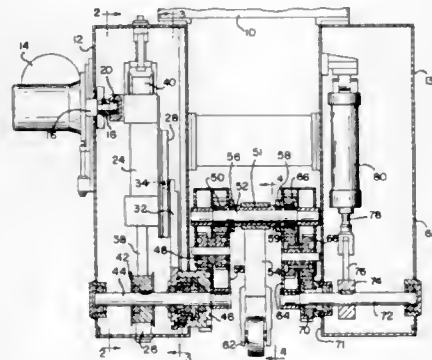
Franco G. Duina, Glenview, Ill., assignor to F. J. Littell Machine Co., Chicago, Ill.

Filed Aug. 12, 1983, Ser. No. 522,657

Int. Cl.⁴ B23Q 7/04

U.S. Cl. 414-749

35 Claims



1. In a handling apparatus having gripping means for moving work pieces along a path of movement from one location to at least one other location, the apparatus including main drive means, a primary arm driven by the drive means, and a secondary arm connected to the primary arm, said gripping means being associated with said secondary arm, the improvement wherein said drive means comprises a driver, a first support for pivotally supporting said primary arm, said driver being drivingly attached to said first support for oscillating said first support and for thereby pivoting said primary arm between first and second positions, a follower, a follower drive attachment, separate from said attachment to said first support, drivingly attaching said driver to said follower whereby movement of the driver is adapted to drive said follower, and including first and second drive connections for moving said secondary arm, said first drive connection directly connecting said secondary arm to said primary arm whereby pivoting of the primary arm moves said secondary arm and its associated gripper, and said second drive connection connecting said follower to said secondary arm whereby driving of said follower operates to drive said secondary arm and associated gripper by means of said follower drive attachment concurrently with the driving movement provided by said first drive connection whereby the combination of the first and second drive connections influences the path followed by said secondary arm and associated gripper.

4,643,635

VAPOR CORE CENTRIFUGAL PUMP HAVING MAIN AND LOW FLOW IMPELLERS

Frank A. Leachman, Jr., Bristol, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Jul. 2, 1984, Ser. No. 626,934

Int. Cl.⁴ F04D 15/00

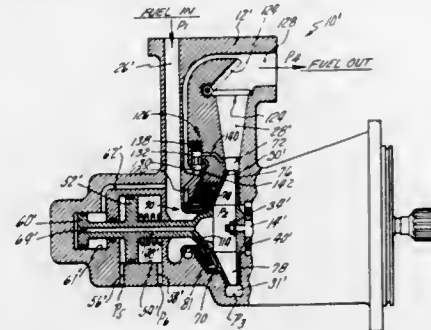
U.S. Cl. 415-1

21 Claims

1. An improved vapor core centrifugal pumping system of the type comprising: a housing having an inlet passage, an outlet passage and a pumping cavity therein in communication with the inlet and outlet passages; a main impeller mounted for rotation in the pumping cavity; and a positionable inlet throttling valve mounted in the housing for throttling flow from the inlet passage entering the main impeller, and wherein the improvement comprises:

the housing having a low flow pumping cavity, the inlet

throttling valve being located to throttle flow from the inlet passage to the low flow pumping cavity; a low flow impeller mounted for rotation in the low flow pumping cavity; and



the housing having a low flow discharge passage in communication with the low flow pumping cavity for receiving flow therefrom.

4,643,636

CERAMIC NOZZLE ASSEMBLY FOR GAS TURBINE ENGINE

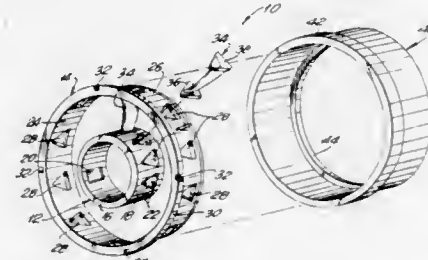
Zoltan Libertini, Stamford; Hsianmin Jen, Milford, and James Martinelli, Fairview, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jul. 22, 1985, Ser. No. 757,256

Int. Cl.⁴ F01D 9/04

U.S. Cl. 415-138

16 Claims



11. A ceramic nozzle assembly for a gas turbine engine comprising:

a generally annular inner shroud ring including at least one anti-rotation means for engaging a nonrotating part of the engine and a plurality of vane mounting means;

an outer shroud ring of greater diameter than the inner shroud ring and disposed concentrically thereabout, said outer shroud ring including at least one anti-rotation means for engaging a nonrotating part of the engine and a plurality of vane mounting means disposed generally radially in register respectively with vane mounting means of the inner shroud ring;

a plurality of radially aligned vanes extending between the respective vane mounting means of the inner shroud ring and the vane mounting means in register therewith on the outer shroud ring; and

an outer support ring slidably mounted on said outer shroud ring, said outer support ring being in contact with at least a portion of each vane, whereby said outer support ring securely retains the vanes in the nozzle assembly, said outer shroud ring including an outwardly extending flange at one axial end thereof and wherein the outer support ring includes an outwardly extending flange at one axial end thereof, the outwardly extending flanges of

said outer shroud ring and said outer support ring being adjacent one another.

4,643,637

REMOTE OPERATED TURNING GEAR ENGAGER

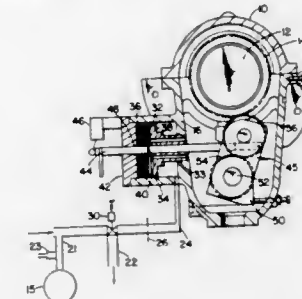
Roger D. Strickler, Mt. Pleasant, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Sep. 13, 1985, Ser. No. 775,874

Int. Cl.⁴ F16H 27/02; F01D 25/34

U.S. Cl. 415-122 R

12 Claims



1. A turbomachine having a rotor, a turning gear for engaging a portion of the rotor, means for rotating the turning gear and mounting means for securing the turning gear in a first position in engagement with the rotor and a second position disengaged from the rotor which comprises:

an actuator connected to the mounting means for displacing the turning gear between the first position and the second position;

motive means operatively engaged to the actuator for displacing the actuator to the first position wherein the turning gear is engaged with the rotor;

means for sensing that the turning gear is engaged with the rotor; and

means for initiating continuous operation of the means for rotating the turning gear when the means for sensing indicates that the turning gear is engaged with the rotor.

4,643,638

STATOR STRUCTURE FOR SUPPORTING AN OUTER AIR SEAL IN A GAS TURBINE ENGINE

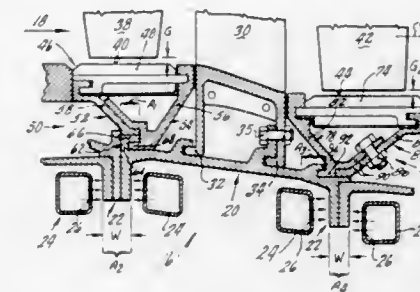
Vincent P. Laurello, Guilford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1983, Ser. No. 564,432

Int. Cl.⁴ F01D 25/26; F03D 11/00; F28F 7/00

U.S. Cl. 415-136

4 Claims



1. In an axial flow gas turbine engine of the type having an axis of rotation A, an annular flow path for working medium gases, a coolable outer case which extends circumferentially about the working medium flow path and a turbine section through which the working medium gases are passed, the turbine section including an array of rotor blades extending outwardly across the working medium flow path, each rotor blade terminating in an axially oriented tip, and an outer air seal formed of an array of arcuate seal segments which extend circumferentially about the flow path and which are spaced radially from the tips of the rotor blades leaving a gap G therebetween, the improvement which comprises:

a stator structure for radially supporting and positioning the array of outer air seal segments which includes

an upstream support ring formed of a plurality of upstream support segments which engage the segments of the outer air seal, which are circumferentially slideable with respect to the outer air seal and which extend from the outer air seal to the outer case;

a downstream support ring formed of a plurality of downstream support segments which engage the outer air seal, which are circumferentially slideable with respect to the outer air seal and which extend from the outer air seal to the outer case;

means for attaching the plurality of upstream support segments and the plurality of downstream support segments to the outer case at one axial location;

a single coolable rail integral with the outer case which extends circumferentially about the exterior of the outer case at a location which is axially adjacent to said one axial location,

means for impinging cooling air on the coolable rail; wherein movement of the coolable rail in response to cooling air impinged on the coolable rail uniformly adjusts the radial gap G between the outer air seal and the axially extending tips of the array of rotor blades by causing the upstream and downstream support rings of the outer air seal to move together by the same radial amount.

4,643,639

ADJUSTABLE CENTRIFUGAL PUMP

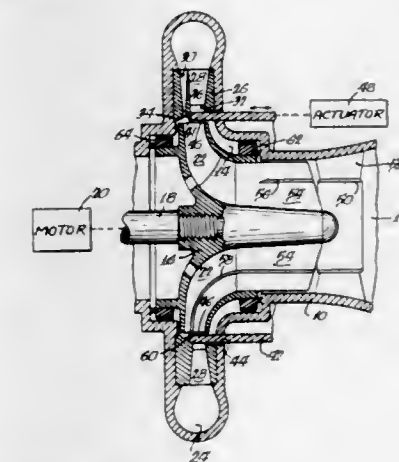
Gerard H. Caine, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 24, 1984, Ser. No. 685,472

Int. Cl.⁴ F04D 29/46

U.S. Cl. 415-148

9 Claims



7. A centrifugal pump comprising:

a housing;

an inlet for said housing;

a radial or mixed flow discharge impeller rotatably mounted within said housing;

an outlet volute extending about said impeller and spaced radially outwardly therefrom;

at least one first relatively large diffusion passage establishing fluid communication between the periphery of said impeller and said volute and having an end adjacent said impeller;

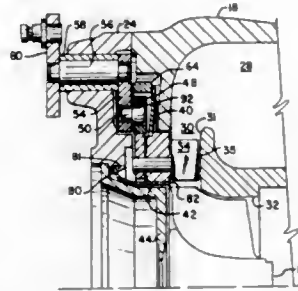
at least one second relatively small diffusion passage axially spaced from said first passage and establishing fluid communication between the periphery of said impeller and said volute; and

valve means between said impeller and said first passage(s) for selectively opening or closing said end(s) of said first passage(s).

4,643,640
GAS SEAL VANES OF VARIABLE NOZZLE TURBINE
 Fred E. Burdette, Torrance; Jean-Luc Fleury, and Manfred Rössler, both of Manhattan Beach, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.
 Division of Ser. No. 602,644, Apr. 20, 1984. This application Dec. 13, 1985, Ser. No. 808,906
 Int. Cl.⁴ F01D 17/16

U.S. Cl. 415—164

22 Claims



1. A turbocharger comprising:

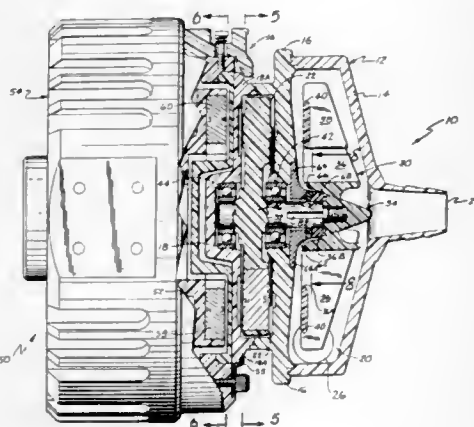
an exhaust gas driven turbine mounted to a rotatable shaft having a compressor impeller thereon;
 a turbine housing forming a volute therein for directing exhaust gas from an engine through an annular passage, formed in part by said turbine housing, to said turbine;
 means for varying the gas flow area of said annular passage including a spring loaded annular nozzle ring defining one boundary of said annular passage and having a plurality of vanes mounted thereto circumferentially about the axis of the turbine;
 means for pivoting the plurality of vanes; and
 at least three equally spaced spacer pins mounted to the nozzle ring circumferentially about the axis of the turbine, each of said spacer pins having an extension which is matable within a bore formed in the turbine housing which defines the annular passage.

4,643,641
METHOD AND APPARATUS FOR STERILIZATION OF A CENTRIFUGAL PUMP
 Earl W. Clausen, Wayzata, and Lloyd C. Hubbard, Minnetonka, both of Minn., assignors to MICI Limited Partnership IV, Minneapolis, Minn.

Filed Sep. 10, 1984, Ser. No. 648,498
 Int. Cl.⁴ F04D 29/12

U.S. Cl. 415—170 A

23 Claims



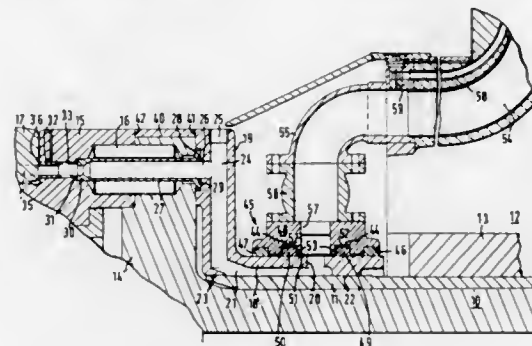
1. A method of-forming a gas permeable seal about an opening through a wall and converting that seal into a gas imperme-

able seal after a desired gas passage through the seal, the method comprising the steps of;
 providing a first seal face fixed with respect to a wall about an opening therethrough;
 covering the opening with a rotatable member having a second seal face in abutment with the first seal face, the first and second seal faces being generally planar with one of said seal faces being smooth and the other seal face being uneven to form a gas permeable seal about the opening through the unevenness of the uneven seal face; and
 rotating the rotatable member and second seal face thereon with respect to the first seal face, after said desired gas passage, to burnish the unevenness of the uneven seal face and create a gas impermeable seal between the first and second seal faces about the opening.

4,643,642
MULTI-BLADED PROPELLER AND SHAFT ASSEMBLY
 Eric R. May, Altrincham, United Kingdom, assignor to Vickers Public Limited Company, Millbank, London, England
 Filed Apr. 30, 1985, Ser. No. 729,174
 Claims priority, application United Kingdom, Sep. 17, 1984, 8423433

Int. Cl.⁴ F01D 1/36; F03B 5/00
 U.S. Cl. 416—90 A

8 Claims



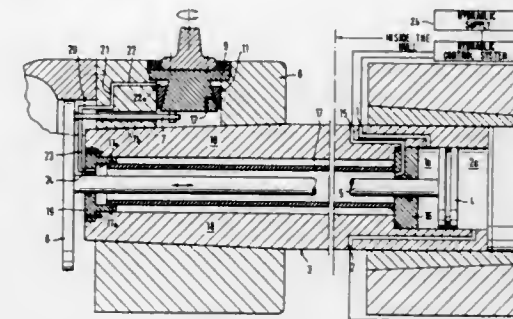
1. A multi-bladed propeller and shaft assembly for a hull structure in which air can be fed to the propeller blades to suppress the effects of cavitation characterized by:
 a shaft leading to the multi-bladed propeller;
 a sleeve on the shaft formed with passages leading to the respective blades and with inlets to the passages;
 slip ring means supported in an anti-rotation device and having a housing;
 axially spaced bearing in the slip ring means within which the shaft sleeve rotates;
 axially spaced air seals in the slip ring means together defining with the housing of said slip ring means an annular space within which inlets to said passages rotate, said seals being formed as a multiplicity of arcuate segments resiliently biased towards the sleeve and having movably sealed end face portions to maintain pressure-tightness;
 a radial flow passage defined by portions of the housing of the slip ring means for admission of air under pressure to said annular space;
 a flexible fluid connector connecting the radial flow passage to an air supply line leading from the hull structure; and
 means for supplying water to the seals and bearings at at least the air supply pressure for cooling and/or lubrication thereof.

4,643,643
APPARATUS FOR ADJUSTING AND LOCKING PITCH OF A VARIABLE PITCH PROPELLER ON A SHIP
 Wilhelm Otto, Sevetal, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany
 Filed May 14, 1985, Ser. No. 733,869

Claims priority, application Fed. Rep. of Germany, May 14, 1984, 3417853

Int. Cl.⁴ B63H 3/08, 3/12
 U.S. Cl. 416—154

12 Claims



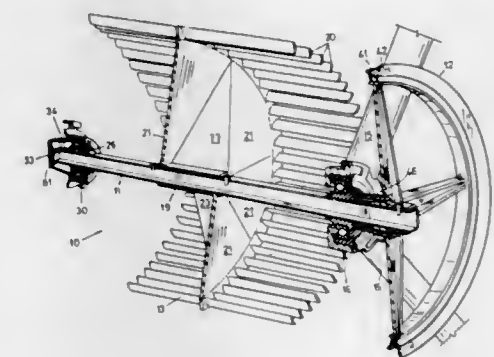
1. Apparatus for optimizing pitch of a propeller by adjusting and substantially permanently locking the pitch of a propeller when said propeller is installed on a ship and said propeller is substantially stopped, said apparatus comprising:

a plurality of variable pitch propeller blade assemblies rotatably mounted in a propeller blade hub, said propeller blade hub for being mounted on a propeller shaft of a ship;
 means for rotating said plurality of rotatable propeller blade assemblies in said propeller blade hub only when said propeller and its propeller shaft are substantially stopped;
 each said propeller blade assembly having a longitudinal axis, said longitudinal axis extending from said propeller hub outwardly therefrom to a tip portion of its corresponding propeller blade;
 each of said propeller blade assemblies having a conical portion disposed in said propeller blade hub;
 means for being disposed within said ship for controlling said rotating means, said controlling means for controlling said rotating means during adjustment of said pitch of said propeller blade assemblies;
 means for locking said plurality of propeller blade assemblies only when said propeller and its propeller shaft are substantially stopped in said propeller blade hub and for substantially permanently locking said blade assemblies in said hub,
 said locking means comprising: on each said propeller blade assembly, a ring having an inner, annular conical surface, each said propeller blade assembly having a propeller blade root with a conical portion, said conical surface of said conical ring being disposed about said conical portion of the corresponding propeller blade assembly, said conical surface of said conical ring being disposed adjacent to said conical portion of its corresponding propeller blade root, said conical portion of the corresponding propeller blade assembly having a substantially similar conical pitch as, and substantially mating with, said conical surface of its corresponding conical ring;
 each said ring having an outer, annular surface opposite said inner annular surface, said outer surface having means to be engaged with said hub, said hub having means to be engaged with said means to be engaged of said outer annular surface of each said ring;
 means for pressing into engagement and locking said inner conical surface with its corresponding conical portion of its corresponding propeller blade assembly and said means to be engaged of said outer surface of each said conical ring with its means to be engaged of said hub, whereby

each of said propeller blade assemblies is firmly, non-rotatably engaged and locked in said propeller blade hub;
 said means for rotating said propeller blade assemblies comprising means for rotating said propeller blade assemblies over a portion of a blade rotation substantially less than a complete blade rotation;
 each said propeller blade having its root disposed in said propeller blade hub;
 said means for rotating said propeller blade comprising: a journal protruding, at a peripheral portion, from each said propeller blade root, said journal rotating with its corresponding propeller blade root about a corresponding longitudinal axis of its corresponding blade, each said journal rotating with its root at a substantially constant distance from its corresponding propeller blade longitudinal axis;
 elongated rod means connected to each said journal for rotating each said propeller blade;
 a plurality of elongated orifices in said propeller hub for receiving its corresponding elongated rod means, each said elongated rod means having a longitudinal axis;
 means for moving each said elongated rod means along its longitudinal axis and through its corresponding orifice;
 each said orifice having a given play between an inner surface thereof and an outer surface of its corresponding elongated rod means extending therethrough, thereby providing only limited play, of each said lever in each said corresponding orifice, substantially at right angles to each said longitudinal axis of each said elongated rod means whereby only a limited longitudinal movement of each said elongated rod means is provided for optimizing said propeller pitch over its range of rotation; and
 said means for pressing each said ring into engagement and locking comprising:
 hydraulic means for providing hydraulic oil under pressure; an end surface on said ring being disposed to be acted upon by said oil under pressure provided by said hydraulic means for substantially permanently locking said ring against said propeller blade assembly and said hub only when said propeller and its propeller shaft are substantially stopped.

4,643,644
SHAFT AND PULLEY ASSEMBLY
 Anthony D. Colliver, and Robert W. Wrightson, both of St. Marys, Australia, assignors to F.F. Seeley Nominees Pty., Ltd., St. Marys, Australia
 Filed Oct. 23, 1984, Ser. No. 663,856
 Claims priority, application Australia, Oct. 26, 1983, PG2056
 Int. Cl.⁴ F04D 29/20; F16C 19/04
 U.S. Cl. 416—174

9 Claims



1. A shaft and pulley assembly for a blower having a scroll housing containing an impeller,
 a square section shaft, a pulley, and means retaining the pulley on the shaft, said impeller having a hub with inner

surfaces lying in face-to-face contiguity with surfaces of the shaft,

- a pair of adaptors carried on the shaft near respective ends thereof, each adaptor having four bearing lands of resilient plastics material, inner surfaces of the bearing lands lying in face-to-face contiguity with surfaces of the shaft, each bearing land having a curved external surface,
- a pair of bearings carried on respective said adaptors supported by said curved external surfaces thereof, and latches on at least one of said adaptors retaining its said bearing against relative displacement in an axial direction, and
- a pair of bearing housings each fixed with respect to said scroll housing, and each carrying a respective said bearing.

4,643,645

STAGE FOR A STEAM TURBINE

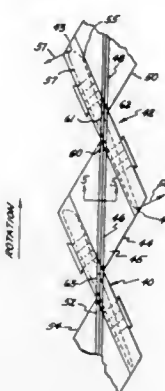
Kenneth E. Robbins, Saratoga; Stephen G. Ruggles, Scotia; Dan Duncan; John C. Williams, both of Schenectady; Stephen K. Tung, Clifton Park; William J. Sumner, Mechanicville, and Cuong V. Dinh, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,859

Int. Cl.⁴ F01D 5/22

U.S. Cl. 416—190

12 Claims



1. A stage of an axial flow turbine for converting at least a portion of energy available from an elastic fluid into mechanical energy, comprising:

- a plurality of buckets affixed to and circumferentially aligned around a rotor of said turbine, each bucket including an aerodynamic region intermediate an outer tip section and an inner root section, wherein the turbine includes a shell having an inner surface for circumferentially surrounding said plurality of buckets;
- a plurality of bucket covers, each of said plurality of covers respectively connecting the tip section of adjacent buckets and each of said plurality of covers including an outer surface, wherein each of said plurality of covers permits untwisting of each respective bucket of said plurality of buckets during turbine operation;
- one rib respectively extending radially outward from the outer surface of each of said plurality of covers, respectively, each said rib tangentially aligned with respect to the ribs on adjacent covers, the radially extensive edge of said rib in close proximity to yet spaced from the inner surface of the shell to form a radial clearance gap between the inner surface of the shell and said rib, said rib being the only impediment to flow of the elastic fluid between the tips of said plurality of buckets and said inner surface of the shell; and
- a diaphragm axially spaced from said plurality of buckets and circumferentially disposed around the rotor for directing the elastic fluid into the plurality of buckets, said diaphragm including a plurality of spaced apart nozzle

partitions having a root proximate the rotor, said nozzle partitions forming a respective plurality of channels therebetween and an inner ring for fixedly securing at the root said plurality of nozzle partitions including a leading edge and a trailing edge and disposed to include both an axial lean and a tangential lean, each of said axial lean and said tangential lean with respect to a radial reference from the axis of rotation of the rotor, said inner ring including a greater outward radial extent adjacent the leading edge of said nozzle partitions than the outward radial extent adjacent the trailing edge of said nozzle partitions, each of said plurality of nozzle partitions spaced from an adjacent nozzle partition such that the channel therebetween includes a maximum throat and a trailing edge throat, wherein the minimum throat is disposed between the leading edge of the nozzle partition and the trailing edge throat at the root of the nozzle partition and the minimum throat is disposed monotonically more proximate the trailing edge throat at increasing radial distance from the root of said nozzle partition, whereby the margins of the channel define a converging-diverging passageway at least over a portion of the radial extent of the nozzle partition.

4,643,646

LARGE AIRFOIL STRUCTURE AND METHOD FOR ITS MANUFACTURE

Michael Hahn, Ottobrunn, and Franz Sperber, Kolbermoor, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 361,840, Mar. 25, 1982, abandoned.

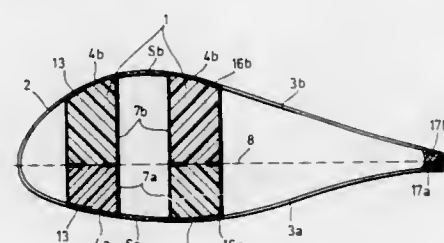
This application Feb. 12, 1985, Ser. No. 700,335

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113079

Int. Cl.⁴ B64C 11/26

U.S. Cl. 416—226

8 Claims



1. A large wind-driven power plant having a rotor blade with an airfoil structure having an upper airfoil surface and a lower airfoil surface comprising:

- three modular sections consisting essentially of a leading section defining a leading edge of said airfoil, a trailing section defining a trailing edge of said airfoil, and a spar section intermediate said leading and trailing sections;
- said modular sections being separately formed and subsequently assembled together to form said airfoil structure;
- said spar section being formed to consist essentially of an upper segment defining a part of said upper airfoil surface and a lower segment defining a part of said lower airfoil surface, said parts of said upper and lower airfoil surfaces extending along the section of said airfoil structure defined by said spar section;
- each of said upper and lower segments of said spar sections being formed to comprise a plurality of laminate shells with at least one foam bar unit supporting said laminated shells;
- said upper and lower segments being joined together along planar surfaces thereof which are parallel to an imaginary plane extending between said leading and said trailing edges of said airfoil structure;

said laminate shells being formed to include two flange laminates with an interposed thrust transmission laminate therebetween wherein said foam bar unit supports only said flange laminates.

4,643,647

ROTOR AEROFOIL BLADE CONTAINMENT

Derick A. Perry, Derby, England, assignor to Rolls-Royce plc, London, England

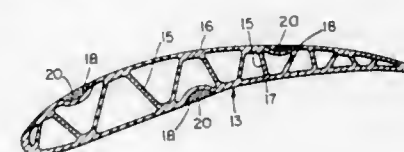
Filed Oct. 22, 1985, Ser. No. 790,201

Claims priority, application United Kingdom, Dec. 8, 1984, 8431058

Int. Cl.⁴ F01D 5/14

U.S. Cl. 416—230

11 Claims



1. A rotor aerofoil blade comprising an aerofoil cross-section portion having concave and convex flanks, a tip portion and a root portion at the opposite end thereof to said tip portion which root portion is configured for attachment of said blade to a rotatable hub member, said aerofoil cross-section portion having at least one groove in each of said concave and convex flanks, each said groove extending spanwise between said tip portion and said root portion and containing a plurality of spanwise extending filaments, means anchoring said spanwise extending filaments to said tip portion and said root portion, a matrix enclosing said spanwise extending filaments in each said groove and having a flush surface with said flanks, and said spanwise extending filaments in said matrix being essentially passive in performing a load-bearing function during normal operation but having sufficient strength to contain any of said aerofoil cross-section portion in the event of any structural failure of said aerofoil cross-section portion.

4,643,648

CONNECTION OF A CERAMIC ROTARY COMPONENT TO A METALLIC ROTARY COMPONENT FOR TURBOMACHINES, PARTICULARLY GAS TURBINE ENGINES

Josef Hüller, Munich, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

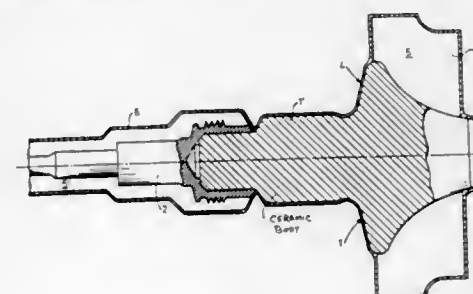
Filed Oct. 28, 1983, Ser. No. 546,503

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1982, 3241926

Int. Cl.⁴ F04F 7/00

U.S. Cl. 416—241 B

5 Claims



1. The combination of a ceramic rotor wheel connected to a metallic shaft of a turbomachine such as a gas turbine engine, said ceramic rotor wheel comprising a pre-formed element including a rotor disk of a material selected from the group

consisting of reaction-bonded silicon nitride (RBSN) and silicon carbide sintered under no pressure and a solid shaft extension integral with said disk, said metallic shaft comprising a sleeve surrounding said shaft extension of said wheel and formed concurrently with the connection to said shaft extension by a hot isostatic pressing of a metallic powder intimately bonded to said shaft extension to form a secure connection therebetween, said metallic powder having a coefficient of thermal expansion substantially equal to that of said ceramic rotor wheel.

4,643,649

DIGITAL CONTROL FOR RAPID REFILL OF A LIQUID CHROMATOGRAPH PUMP

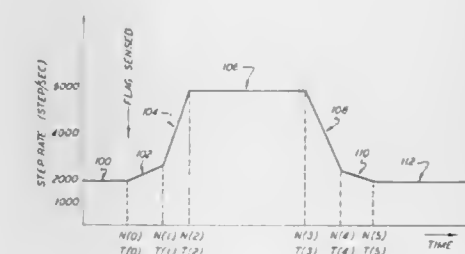
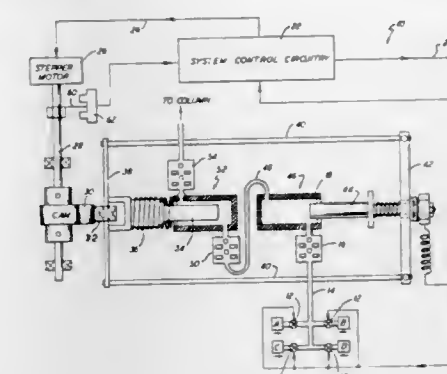
Carl E. Schmid, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 632,758, Jul. 20, 1984, Pat. No. 4,556,367, and a continuation-in-part of Ser. No. 343,807, Jul. 29, 1982, abandoned. This application Feb. 11, 1985, Ser. No. 700,785

Int. Cl.⁴ F04B 49/06

U.S. Cl. 417—45

22 Claims



1. A liquid pump motor control for use in a liquid chromatograph comprising, in combination:

- a piston pump;
- a stepping motor having a drive shaft for driving said piston pump;
- an adjustable frequency pulse source coupled to said stepping motor to turn said stepping motor with the pulses from said pulse source;
- a position scanning circuit coupled to the drive shaft of the stepping motor to sense when said drive shaft is at a position indicating that said pump should be refilled;
- control means responsive to said position sensing circuit when the pump needs to be refilled to gradually accelerate at a first acceleration rate the pulses from said pulse source for the time required to produce N_1 pulses where N_1 is an integer, said control means after said N_1 pulses have been produced being operative to more rapidly accelerate, at a second rate greater than said first rate, the pulses from said pulse source until said pulses are at a maximum selected rate, said control means being further operative thereafter

to maintain the pulses from said pulse source at said maximum selected rate for a selected number of pulses, said control means thereafter being operative to decelerate at a first deceleration rate the pulses from said pulse source until the pulses are at a selected rate, said control means thereafter being operative to decelerate the pulses from said pulse source at a second and lower deceleration rate than said first deceleration rate for a given number of pulses N_5 , where N_5 is an integer, said pulse source reaching and remaining at said desired pulse rate until said position scanning circuit indicates said pump should be refilled, the number of pulses occurring between the start of pulse rate acceleration and the end of pulse rate deceleration being selectable and constant regardless of the pulse rate at the time said pump must be refilled or the final pulse rate after the second deceleration is complete.

17. A method for controlling the stepping motor which drives a liquid chromatograph pump during the refill of the pump comprising the steps of:

- selecting a selected speed for the stepping motor to be used during pumping;
- detecting the beginning of the pump refill cycle;
- increasing the pulse rate to the stepping motor from said selected speed at a first acceleration rate for N_1 pulses where N_1 is an integer;
- increasing the pulse rate to the stepping motor at a second acceleration rate greater than said first acceleration rate until a maximum desired pulse rate is obtained after N_2 pulses where N_2 is an integer;
- maintaining the pulse rate to the stepping motor at said maximum pulse rate for N_3 pulses where N_3 is an integer;
- decelerating at a first deceleration rate the pulses to the stepping motor for N_4 pulses, where N_4 is an integer, whereat the speed of the stepping motor is close to said selected speed;
- decelerating at a second deceleration rate lower than said first deceleration rate for N_5 pulses, where N_5 is an integer, whereat the speed of the stepping motor is said selected speed;
- maintaining the stepping motor at said selected speed until the beginning of the next refill cycle is detected;
- the sum of $N_1 + N_2 + N_3 + N_4 + N_5$ being a constant regardless of said selected speed.

4,643,650

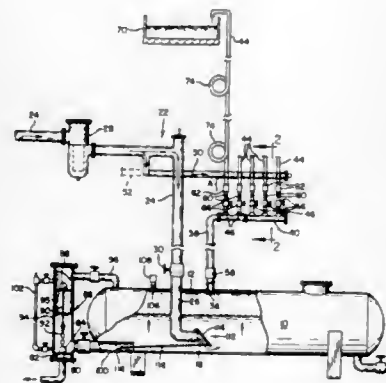
FLUID-RAISING APPARATUS DRIVEN BY LOW HYDRAULIC HEAD

Abdol-Hossein Khakzad-Ghoml, No. 122, Ekhtiarieh Ave., Sbemiran, Tehran, Iran

Filed Nov. 25, 1985, Ser. No. 801,236
Int. Cl.⁴ F04B 23/14; F04F 11/00, 1/18

U.S. Cl. 417—90

22 Claims



1. A fluid-raising apparatus comprising:
a tank which defines an airtight chamber, a liquid inlet for admitting a flow of liquid from an elevated source, a gas

outlet to allow gas, displaced by entering liquid, to escape from the chamber, a liquid outlet to allow liquid to drain out of the chamber, and a gas inlet to allow gas to refill the chamber as the liquid drains;

an upwardly-extending fluid lift conduit communicating with the gas outlet, at a junction located below the top of the conduit, such that gas escaping from the chamber is injected into the conduit;

fluid supply means communicating with the conduit to repeatedly provide fluid therein in a region between the junction and the top of the conduit such that the fluid is carried upwardly in the conduit by the injected gas which rises in the conduit;

regulator valve means, between the gas outlet and the region, to cause gas to enter the region is pulsed injections so that, between injections, fluid from the fluid supply means can refill the region; and

drain control means to open the liquid outlet when a predetermined maximum amount of liquid is present in the chamber and to close the outlet after liquid has drained from the chamber.

4,643,651

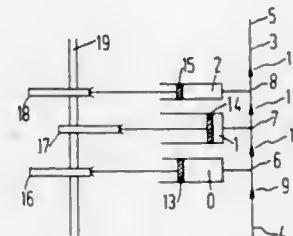
CONSTANT FLOW RATE LIQUID PUMPING SYSTEM

Francois Couillard, Pau, France, assignor to Groupe Industriel de Realisation et d'Application Gira S.A., Morlaas, France
Continuation-in-part of Ser. No. 645,611, Aug. 29, 1984, abandoned. This application Sep. 3, 1985, Ser. No. 771,843

Claims priority, application France, Aug. 31, 1983, 83 13995
Int. Cl.⁴ F04B 11/00, 9/04

U.S. Cl. 417—265

3 Claims



1. A pumping system comprising at least one first unit including cylinder means and reciprocating piston means therein and defining a first pumping capacity (V_1), at least one second pumping unit including cylinder means and reciprocating piston means therein and defining a second pumping capacity (V_2), at least one complementary pumping unit including cylinder means and reciprocating piston means therein and defining a complementary pumping capacity (V_0), driving means for actuating said piston means synchronously but in phase opposition between the piston means of said first unit, on the one hand, and said second and complementary units, on the other hand, in such a manner that each piston performs alternating suction and discharge strokes, a feed line having an upstream end connected to a liquid source and a downstream end connected to the apparatus to be fed with said liquid, said first pumping unit being connected to said feed line at a first connecting point located between said upstream and downstream ends thereof, said second pumping unit being connected to said feed line at a second connecting point located between said first connecting point and said feed line downstream end, said complementary pumping unit being connected to said feed line at a third connecting point located between said first connecting point and said feed line upstream end, a first check valve mounted in said feed line at a location between said first and complementary connecting points and adapted to allow liquid to flow through said feed line only in the direction toward said downstream point, a second check valve mounted in said feed line at a location between said first and second connecting points and adapted to allow liquid to flow through

said feed line only in the direction toward said downstream point, optional third and fourth check valves mounted on said feed line at respective locations upstream from said complementary connecting point and downstream from said second connecting point and adapted to allow liquid to flow through said feed line only in the direction toward said downstream point, characterized in that said first, second and complementary pumping units define pumping capacities V_1 , V_2 and V_0 , respectively, which are different from one another; that said driving means comprise a rotatively driven shaft provided with a cam which is drivingly connected through follower means to said piston and which is provided with a profile having the shape of an arithmetical spiral on three-quarters of its angular displacement; and that the respective pumping capacities of said three units and said driving means and so selected and arranged that the ratio of said complementary pumping capacity (V_0) to the suction stroke time (t_{R1}) of said first unit equals the ratio of said first pumping capacity (V_1) to the sum of the suction and discharge stroke times (t_{A1} and t_{R1}) of said first unit and equals the ratio of said second pumping capacity (V_2) to the suction stroke time (t_{A1}) of said first unit, as expressed by:

$$(V_0/t_{R1}) = (V_1/t_{A1} + t_{R1}) = (V_2/t_{A1})$$

whereby said pumping capacities are such that said first pumping capacity V_1 equals the sum of said second and complementary capacity (V_0) as expressed by: $V_1 = V_2 + V_0$.

4,643,652

PORTABLE ENGINE-PUMP ASSEMBLY

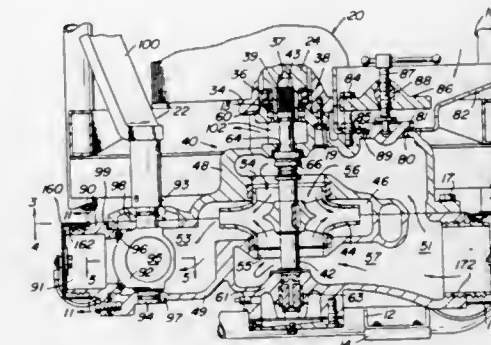
H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed Mar. 4, 1985, Ser. No. 707,736

Int. Cl.⁴ F04B 17/00, 21/00

U.S. Cl. 417—364

14 Claims



1. A portable engine-pump assembly that is compact and light in weight comprising:

- an internal combustion engine mounted with its crankshaft extending vertically,
- a centrifugal pump having an impeller mounted for rotation on a pump shaft within a volute chamber,
- means mounting said pump on and immediately beneath said engine with said pump shaft extending vertically in accurate alignment and concentricity with said engine crankshaft,
- means coupling said engine crankshaft and said pump shaft together so that said engine crankshaft drives said pump shaft,
- said pump comprising a pump body defining said volute chamber and providing a pump inlet passage and a pump discharge passage oriented in generally horizontal directions,
- said pump body defining an inlet chamber providing passages for the flow of liquid from the pump inlet passage into the impeller from both above and below same and

including an upper body portion and a lower body portion,

an exhaust system for said engine including an exhaust passage contained in said upper body portion, a muffler having an inlet, and means providing flow communication between said exhaust passage and the inlet of said muffler, means for injecting water into the exhaust gas flowing through said exhaust passage in said upper pump body and means for draining water from said exhaust gas flow.

13. A portable engine-pump assembly that is compact and light in weight comprising:

an internal combustion engine mounted with its crankshaft extending vertically,

a centrifugal pump having an impeller mounted for rotation on a pump shaft within a volute chamber,

means mounting said pump on and immediately beneath said engine with said pump shaft extending vertically in accurate alignment and concentricity with said engine crankshaft,

means coupling said engine crankshaft and said pump shaft together so that said engine crankshaft drives said pump shaft,

said pump comprising a pump body defining said volute chamber and providing a pump inlet passage and a pump discharge passage oriented in generally horizontal directions,

said pump body defining an inlet chamber providing passages for the flow of liquid from the pump inlet passage into the impeller from both above and below same and including an upper body portion and a lower body portion,

said upper body portion defining an upper inlet port at one inlet to the volute chamber and an upper passage leading from said inlet chamber to the upper inlet port,

said lower body portion defining a lower inlet port at the other inlet to the volute chamber and a lower passage leading from said inlet chamber to the lower inlet port,

a discharge fitting providing a horizontally extending discharge conduit in communication with said pump discharge passage,

means mounting said discharge fitting on said lower pump body,

a ball valve for controlling flow through said discharge conduit including a ball valve member having an upper stem portion extending upwardly therefrom and a lower stem portion extending downwardly therefrom,

said ball valve member having a ball portion cooperating with a valve seat mounted on the upstream end of said fitting,

said lower pump body being adapted to support the lower stem portion in a vertically extending position,

said upper pump body being adapted to support the upper stem in a vertically extending position.

4,643,653

ELECTROMAGNETIC PUMP

Mitsunaka Masaka; Takatoshi Arai; Hideo Iwabuchi, and Michio Idei, all of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 782,285

Claims priority, application Japan, Oct. 15, 1984, 59-154318[U]; Oct. 15, 1984, 59-154319[U]; Oct. 15, 1984, 59-154321[U]; Oct. 25, 1984, 59-160335[U]

Int. Cl.⁴ F04B 17/04

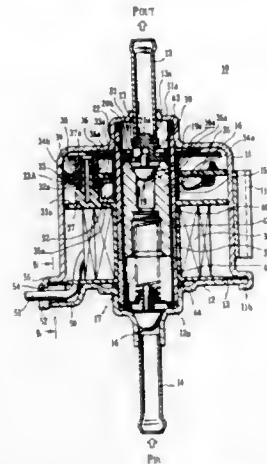
U.S. Cl. 417—417

5 Claims

1. An electromagnetic pump comprising:

- a cup-like housing body having an outlet cylindrical portion at a center thereof;
- a lid member having an inlet cylindrical portion at a center thereof and fixed to said cup-like housing body to constitute a pump housing;
- a nonmagnetic sleeve member extending between said outlet cylindrical portion and said inlet cylindrical portion;

a magnetic plunger slidably fitted in said nonmagnetic sleeve member and having a central through hole;
 a return spring, arranged between said inlet cylindrical portion and a portion corresponding to said central through hole, for biasing said plunger to a delivery side;
 inlet and outlet pipes extending through said inlet and outlet cylindrical portions, respectively;
 a coil bobbin arranged around said sleeve member and wound with an excitation coil having flanges at two ends along an axial direction of said plunger;
 a transistor assembly consisting of a transistor and a heat sink which are mounted on an outer side surface of one of said flanges of said coil bobbin;



a printed circuit board mounted on said transistor assembly and having electronic components cooperating with said transistor and said excitation coil thereon;
 a holder mounted above said printed circuit board and spaced apart therefrom by a predetermined distance; and
 a leaf spring arranged between said housing body and said holder;
 wherein a plurality of studs extend on an outer side surface of said flange of said coil bobbin which has said transistor assembly of said coil bobbin thereon and an inner side surface of said holder, and said transistor assembly, said printed circuit board and said holder are sequentially stacked through said studs with respect to said coil bobbin and are biased by said leaf spring toward said lid member.

4,643,654

SCREW ROTOR PROFILE AND METHOD FOR GENERATING

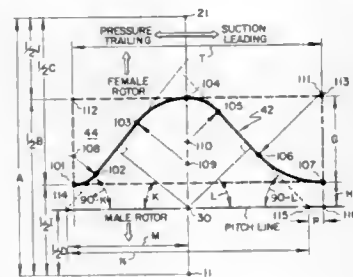
Laurenz Rinder, Vienna, Austria, assignor to American Standard Inc., New York, N.Y.

Filed Sep. 12, 1985, Ser. No. 775,186

Int. Cl.⁴ F04C 18/16

U.S. Cl. 718—201

19 Claims



1. A screw rotor having a plurality of lobes with convex

flanks, where the profile of an individual lobe of the rotor in a plane transverse to the axis of the rotor comprises:

- a leading flank having a discrete involute portion disposed between discrete portions of trochoidal fillet; and
- a trailing flank having a discrete involute portion disposed between discrete portions of trochoidal fillet.

4,643,655

BACKFLOW PASSAGE FOR ROTARY POSITIVE DISPLACEMENT BLOWER

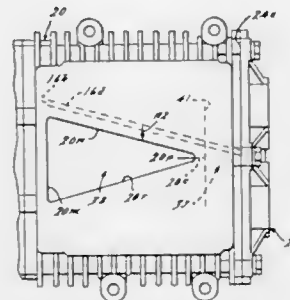
Loren H. Uthoff, Jr., Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 5, 1985, Ser. No. 805,022

Int. Cl.⁴ F04C 18/16

U.S. Cl. 418—201

12 Claims



1. In a rotary blower of the backflow type including:
 - a housing defining two parallel, transversely overlapping, cylindrical chambers having internal cylindrical and end wall surfaces, the axes of the cylindrical chambers defining a longitudinal direction and the end walls defining a transverse direction, and each intersection of the cylindrical wall surfaces defining a cusp extending in the longitudinal direction between the end walls;
 - an inlet port and an outlet port having longitudinal and transverse boundaries defined on opposite sides of the chambers with the transverse boundaries of each port disposed on opposite sides of a plane extending longitudinally through the cusps;
 - meshed, lobed rotors rotatably disposed in the chambers, the ends of the rotors and lobes sealing cooperating with the end wall surfaces, each lobe of each rotor having a top land sealingly cooperating with the cylindrical wall surface of the associated chamber and operative to transverse the port boundaries disposed on the associated side of the plane for effecting transfer of volumes of compressible inlet port fluid to the outlet port via spaces between adjacent unmeshed lobes and each rotor, the lobes being formed with a helical twist such that each lobe has a leading end and a trailing end in the direction of rotor rotation, and the positioning of the lobes being such that traversal of a portion of the plane associated with the outlet port cusp by the lobe lead end of one rotor communicates a transfer volume of one rotor with a transfer volume of the other rotor independent of the outlet port; the improvement comprising:
 - skewing the outlet port toward the trailing ends of the lobes with the boundaries of the outlet port being disposed such that the lead ends of the lobes transverse said plane portion prior to traversal of the outlet port boundaries by the lobe top lands; and
 - a backflow passage extending transversely through the cusp associated with said outlet port, said backflow passage being disposed at the longitudinal end of the outlet port cusp associated with the lead ends of the lobes for intercommunicating transfer volumes of one rotor with transfer volumes of the other rotor prior to the lobe lead ends of the one rotor traversing said plane portion.

4,643,656

TAKE-AWAY DEVICE FOR PLASTIC TUBING

Velt-Holger Karl, Bobingen, Fed. Rep. of Germany, assignor to Alpine Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

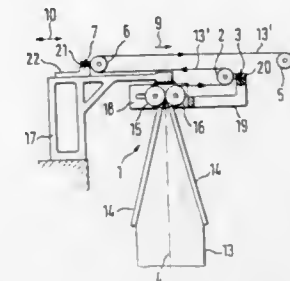
Filed Jan. 9, 1986, Ser. No. 817,508

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1985, 8501177[U]

Int. Cl.⁴ B29C 53/20

U.S. Cl. 425—72 R

11 Claims



1. A take-away device for plastic tubing produced by an extruder having a stationary tubing blow head used in a blowing process comprising a pair of squeeze rollers for flattening the plastic tubing therebetween, said pair being swivelled about a vertical axis of rotation, and further including take-away rollers having horizontal axes of rotation about at least two turning rods having longitudinal axes, which are arranged in sequence between the squeeze rollers and a stationary wind-up device, which longitudinal axes can be pivoted relative to the squeeze rollers, the first turning rod following the squeeze rollers being pivoted about a first vertical axis, which is located at a distance from the vertical axis of rotation of the pair of squeeze rollers and turns together with the pair of squeeze rollers about their vertical axis of rotation, the last one of a plurality of turning rods following the squeeze rollers and prior to the wind-up device being swivelled about a second vertical axis which also extends at a distance from the vertical axis of rotation of the pair of squeeze rollers, whereby a plane defined by the axis of rotation of the pair of squeeze rollers and the second vertical axis always extends parallel to the direction of travel of the tubing from the second turning rod to the wind-up device.

4,643,657

APPARATUS FOR COOLING TUBULAR PLASTIC FILMS EXTRUDED FROM A FILM BLOWING HEAD

Fritz Achelpohl, and Hartmut Upmeyer, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 27, 1985, Ser. No. 780,954

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1984, 3436881

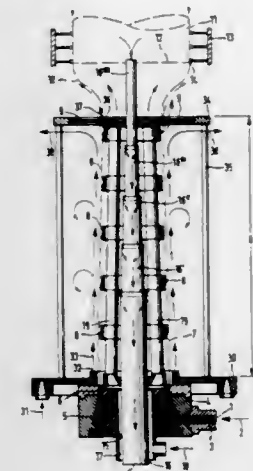
Int. Cl.⁴ B29C 55/28

U.S. Cl. 425—72 R

2 Claims

1. Apparatus for cooling tubular plastic films extruded from a film blowing head, comprising: a film blowing head having an annular extrusion die orifice; air cooling means including a plurality of pipes extending from the film blowing head to supply cooling and inflating air for cooling and inflating the film, and a pipe extending from the film blowing head and within the tubular film to withdraw the air from an inflated tubular film; a plurality of vertically spaced apart inner cooling rings disposed substantially concentrically to the axis of and downstream of the annular extrusion die orifice of the blowing head, wherein the inner cooling rings include annular members that define inner nozzle gaps and that have air guiding surfaces which face the inner surface of the film and are convexly curved in a longitudinal section of the inner cooling rings, and which surfaces during the operation of the apparatus are swept by cooling air blown out of said nozzle gaps, said cooling air blown out of said nozzle gaps flows approximately parallel to

the direction of travel of the film; said cooling means also including outer cooling means, which concentrically surround the extrusion die and include an outer cooling ring defining an annular outer nozzle gap, which is adjacent to and downstream of the annular extrusion die orifice and serves to direct air along the inner surface of the film and in a direction which is approximately parallel to the direction of travel of the film; an apertured baffle plate spaced downstream from the film blowing head and surrounding the film below a radially outwardly expanded portion adjacent to a downstream end of the cooling path defined by the inner cooling rings, wherein said baffle plate in an axial projection on the axial projection of the expanded portion of the inflated tubular film covers at least the



outer portion of the expanded portion of the film, and said baffle plate has a substantially circular inner edge which together with the wall of the film defines an annular gap; wherein the inner cooling rings are concentrically enclosed within the tubular film and surround the pipe serving to withdraw the cooling and inflating air, the outside diameter of the lowermost internal cooling ring is substantially as large as the inner diameter of the annular extrusion die orifice, and the diameters of the inner cooling rings above said lowermost inner cooling ring progressively decrease in a downstream direction relative to the blowing head so that the tubular film will assume an upwardly and inwardly tapering, frustoconical shape having a small included angle before it is inflated to its radially outwardly expanded condition downstream of the baffle plate.

4,643,658

EXPANDING MANDREL

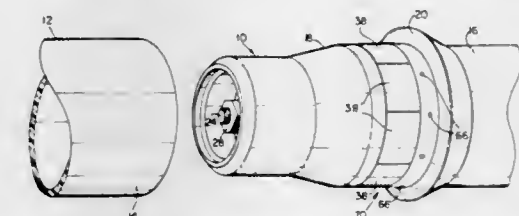
John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335

Filed Sep. 26, 1984, Ser. No. 654,849

Int. Cl.⁴ B29C 51/30, 51/10

U.S. Cl. 425—110

5 Claims



1. In a pipe belling mandrel, of the type comprising a cylindrical body adapted to receive thereon a circular gasket having an outer diameter, a shaped profile axially secured to the body to impress a bell-shaped configuration in a preheated end of a length of plastic pipe, a plurality of movable segments posi-

tioned intermediate the body and the profile, the segments being movable between a contracted position wherein the outer peripheries of the segments form a portion of the outer periphery of the body and an expanded position wherein the outer peripheries of the segments define an outer diameter that is greater than the outer diameter of the body, and forces other than atmospheric are applied to the mandrel to force the preheated pipe end against the profile and against the gasket, the improvement comprising

- a stop ring secured to the mandrel rearwardly of the segments, the stop ring having an outer diameter that is greater than said outer periphery defined by the segments when the segments are moved to their said expanded positions,
- the gasket being positioned on the body intermediate the stop ring and the said segments;
- a plurality of guide dowels secured within the mandrel interiorly of the shaped profile,
- the guide dowels being equally spaced about a central guide rod, the guide dowels each being radially outwardly and rearwardly inclined;
- each segment being simultaneously longitudinally and radially movable along a respective guide dowel between its said contracted position and its expanded position,
- each segment comprising
- an inclined forward surface and an arcuate outer surface, the outer surface of each segment extending rearwardly from the outer edge of the forward surface, the combined outer surfaces of the segments defining an outer periphery when the segments are moved to their said expanded positions of diameter greater than the outer periphery of the said gasket,
- the combined outer surfaces of the segments defining an outer periphery when the segments are moved to their said contracted positions of diameter equal to the outer diameter of the cylindrical body;
- the combined outer surfaces of the segments defining an outer periphery when the segments are moved to their said expanded positions of diameter greater than the outer diameter of the gasket;

whereby the preheated end of the pipe will contact the inclined forward surfaces of the segments during bellling and will be expanded to a diameter sufficient to allow the preheated pipe end to slide over the gasket when the pipe is applied to the mandrel and wherein the gasket will be removed from the mandrel and encapsulated in the belled pipe end upon completion of the pipe bellling operation.

4,643,659

APPARATUS FOR PRODUCING, BY EXTRUSION, FLAT PROFILED ARTICLES OF PLASTIC MIXTURES OF VARIOUS COMPOSITION

Helmut Paul, Sarreguemines, France, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

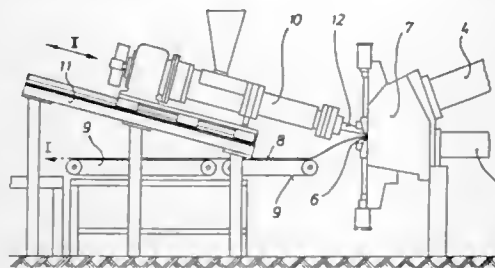
Filed Mar. 19, 1985, Ser. No. 713,773

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410535

Int. Cl.⁴ B29C 47/06

U.S. Cl. 425—131.1

5 Claims



1. An apparatus for producing, by extrusion, flat profiled

articles of highly viscous plastic mixtures of various compositions of rubber or synthetic material employed for vehicle pneumatic vehicle tire tread strip configuration; said apparatus having two first extruders, said two first extruders are disposed at an acute angle from one another and convey said material to a common extrusion nozzle, and a third extruder is placed on a side of said common extrusion nozzle remote from said two extruders and said third extruder conveys said material to said common extrusion nozzle counter to a withdrawal direction of said profiled articles of said apparatus; the improvement therewith which comprises:

- said third extruder being movably displaceable in a longitudinal direction relative to said two first extruders, and being tightly placed on said common extrusion nozzle in only a frictionally connecting manner, said third extruder being provided with an extrusion nozzle for placing of said third extruder on said common extrusion nozzle; said side of said common extrusion nozzle remote from said two first extruders being provided with at least one nipple-like contact part, which forms at least one limit stop for said extrusion nozzle of said third extruder; said contact part having a through-bore which is open toward said extrusion nozzle of said third extruder, and, via a change of direction within said common extrusion nozzle, opens towards a shape-providing region of said common extrusion nozzle, said contact part being provided with a spherically curved abutment surface for receiving said extrusion nozzle of said third extruder sealingly in complementary relationship thereagainst, said extrusion nozzle of said third extruder being provided with at least one outlet opening for communicating with said through-bore of said contact part, with said outlet opening being a conically expanding abutment surface, said spherically curved abutment surface exclusively in engagement with said conically expanding abutment surface for overcoming seal problems of said third extruder to achieve a higher specific surface pressure favorable for a sealing tight contact.

4,643,660

SCREW EXTRUSION PRESS HAVING BARREL TEMPERATURE CONTROL MEANS

Gerd Capelle, Langenhagen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

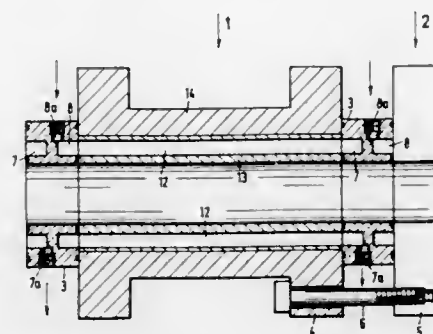
Filed Jul. 12, 1985, Ser. No. 754,126

Claims priority, application Fed. Rep. of Germany, May 25, 1985, 3518997

Int. Cl.⁴ B29B 7/82

U.S. Cl. 425—190

3 Claims



1. A screw extrusion press for processing thermoplastic plastics materials and rubber, comprising:

- (a) a plurality of interconnected and axially aligned barrel portions, each said barrel portion including a solid outer jacket having an inner cylindrical surface and an inner hollow cylinder positioned therewithin, a small gap existing between the outer periphery of said hollow cylinder

and the inner cylindrical surface of said jacket so as to permit longitudinal sliding movement of said cylinder relative to said jacket for removing said cylinder, said cylinder having an inner cylindrical surface and being adapted to receive a screw for rotation therein,

- (b) a plurality of circumferentially spaced bores extending longitudinally through said cylinder for receiving a temperature control medium, said spaced bores being arranged in sets, each of which comprise a plurality of adjacent bores,
 - (c) intermediate rings positioned between adjacent said barrel portions, said rings having an inner cylindrical surface equal in diameter to the diameter of said inner cylindrical surfaces of adjacent said hollow cylinders so as to form a continuous throughbore for receiving a screw, and means for removably securing adjacent said barrel portions to each other with said intermediate rings positioned and aligned therebetween,
 - (d) each said intermediate ring being formed with separate internal annular medium supply and discharge passages through which said temperature control medium passes, and
 - (e) guide means associated with said supply and discharge passages, said guide means communicating with said sets of said bores formed in said cylinder and being constructed and arranged so that said temperature control medium delivered to said supply passage is guided into and sequentially through each said bore in each said set in a meandering manner,
- whereby when wear occurs on the inner cylindrical surfaces of said cylinders, the barrel portions and the intermediate rings can be disassembled, the cylinders removed and replacement cylinders installed without requiring replacement of said intermediate rings.

4,643,661

TWIN-SCREW EXTRUSION DEVICE

Siegfried Chszaniecke, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

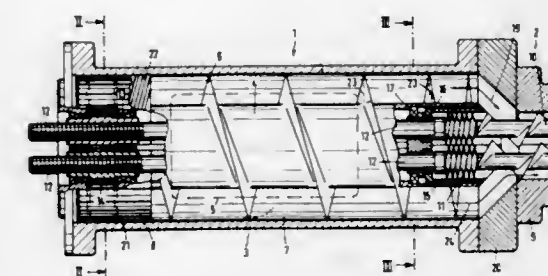
Filed Nov. 7, 1984, Ser. No. 668,901

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341282

Int. Cl.⁴ B29B 7/20

U.S. Cl. 425—204

6 Claims



1. A twin screw extruder adapted to be fed by a single screw, comprising:

- (a) a first hollow screw cylinder;
- (b) a first single hollow feed screw having an axis of rotation and delivery flights formed thereon, and means for mounting said feed screw in said first cylinder;
- (c) a feed aperture formed in said first cylinder for supplying to the cylinder feed material to be extruded, said screw flights conveying said feed to a discharge outlet at a first end of said first cylinder;
- (d) a second, extruding cylinder axially aligned with and mounted to said first cylinder and having a cylindrical hollow interior, one end of which is in direct communication with said discharge outlet of said first cylinder;
- (e) a pair of extruding screws mounted in said second cylinder

der on axes parallel to the axis of said feed screw, said extruding screws having extruding flights formed thereon, the diameter of said feed screw being at least twice the diameter of each of said extruding screws;

- (f) drive shafts for each of said pair of extruding screws, said shafts extending rearwardly through the hollow interior of said hollow feed screw, and means for mounting said extruding screws for rotation without axial movement, and
- (g) drive means for rotating said feed screw and said extruding screws simultaneously at different speeds, whereby material fed to said feed screw is compressed in said first cylinder and therefore extruded by said extruding screws in said extruding cylinder.

4,643,662

PELLETIZING APPARATUS

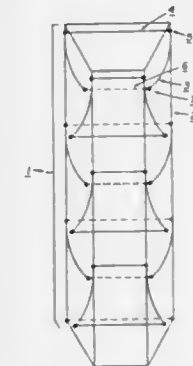
Lawrence F. Rakestraw, Chesterfield, and Harry M. Stevens, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 618,627, Jun. 8, 1984, abandoned. This application Apr. 23, 1985, Ser. No. 726,293

Int. Cl.⁴ B01J 2/00; B29B 9/08; B29C 67/02

U.S. Cl. 425—222

5 Claims



1. An apparatus for pelletizing finely divided particulate materials which comprises in combination:

- (a) a housing having an inlet at the upper end and an outlet at the lower end, and
- (b) a plurality of half catenary-shaped baffles fixedly mounted in the housing along the vertical axis thereof at spaced-apart successively lower elevations, the baffles being spaced apart in a direction transverse to the vertical axis of the apparatus and arranged such that (i) the concave surface of the baffles alternately face in opposing directions toward the center of the housing, and (ii) the exit lip of each succeeding baffle extends beyond the vertical plane of the exit lip of the preceding baffle to define a cascading and alternately reversing flow path along the vertical axis of the apparatus means for mounting said housing vertically such that particulate materials can flow downward through the housing from baffle to baffle, and means for introducing particulate material into said inlet.

4,643,663

MOLDING APPARATUS

Patrick J. Bowles; Lloyd W. Garrett; John V. Howard, and Robert F. Heil, Sr., all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 13, 1985, Ser. No. 797,686

Int. Cl.⁴ B29C 3/00

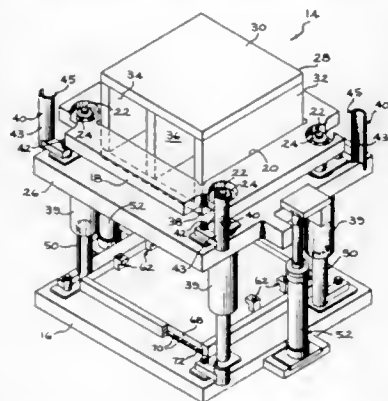
U.S. Cl. 425—406

6 Claims

1. Apparatus for molding articles of hardenable material which requires each article to be subjected to force applied by

a press and then maintained under heat and pressure for a cure interval outside the press comprising:

- a base platen supporting a die half,
- a travel platen movable relative to the base platen and supporting a die half,
- a stationary rigid top plate located above the travel platen and having a large central opening,
- a push down rigid box movable relative to the stationary rigid top plate and having a top portion above the stationary rigid top plate, a bottom portion in contact with the

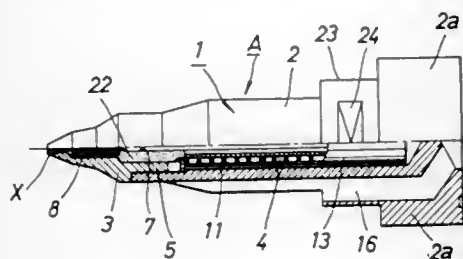


travel platen and an intermediate portion passing through the large central opening of the stationary rigid top plate, a resilient pressure pad located between the base platen and the die half it supports, locking and unlocking means for locking the travel platen to the base platen in a first position leaving a venting gap between the die halves and subsequently locking the die halves in a fully closed position, and heating means in the apparatus for heating the hardenable material being molded into an article during its curing interval.

4,643,664
POINTED HEAT-GENERATING DEVICE FOR MOLDS OF INJECTION MOLDING MACHINES
Yoshiichi Yoshida, Yonezawa, Japan, assignor to Shigeru Tsutsumi and Seiko Engineering and Research Co. Ltd., both of Yamagata, Japan
Continuation of Ser. No. 275,230, Jun. 19, 1981, Pat. No. 4,516,927. This application Nov. 30, 1984, Ser. No. 676,582
Claims priority, application Japan, Jun. 25, 1980, 55-88001
Int. Cl.⁴ B29C 45/20

U.S. Cl. 425-549

5 Claims



1. A pointed heat-generating device for molds of injection molding machines, comprising
a heat-generating body having an axis, and a front end and a rear end;
a conical portion formed at said front end of said body;
a disc-shaped flange arranged at said rear end of said body;
a cylindrical metal casing extending between said conical portion and said disc-shaped flange of said body;
a plurality of first passages extending axially inside said

cylindrical metal casing for passing a fused resin therethrough; and
a plurality of second passages extending inside said disc-shaped flange and communicating with said first passages.
4. A pointed heat-generating device for molds of injection molding machines, comprising
a heat-generating body having an axis, and a front end and a rear end;
a conical portion formed at said front end of said body;
a disc-shaped flange arranged at said rear end of said body;
a cylindrical metal casing extending between said conical portion and said disc-shaped flange of said body;
a plurality of first passages extending inside said cylindrical metal casing for passing a fused resin therethrough, said first passages being concave and extending in an axial direction; and
a plurality of second passages extending inside said disc-shaped flange and communicating with said first passages, said second passages extending inclinedly relative to said axis.

4,643,665
CHECK VALVE ASSEMBLY FOR INJECTION MOLDING MACHINE

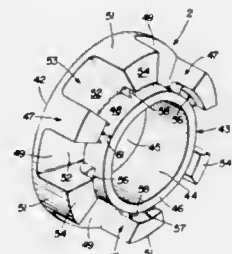
Donald J. Zeiger, Malvern, Ohio, assignor to Mallard Machine Company, Canton, Ohio

Filed Sep. 5, 1985, Ser. No. 772,925

Int. Cl.⁴ B29C 47/60

U.S. Cl. 425-563

14 Claims



1. An improved check valve assembly for an injection molding machine, said mold machine having a heated cylindrical barrel containing a rotating and reciprocating feedscrew therein for feeding heated thermoplastic material therethrough past the check valve assembly toward a discharge chamber at a forward end of the heated cylindrical barrel, wherein the check valve assembly includes front and rear valve seats, and a check ring slidably guided by an outer periphery thereof on the interior surface of the barrel cylinder and forming an annular-shaped flow gap along an inner periphery thereof for feeding a cylindrical-shaped sleeve of material therethrough; the improvement including a continuous unrestricted annular-shaped groove formed in a front face of the front valve seat in axial alignment with the annular-shaped flow gap and having an average depth at least equal to the thickness of the sleeve of material moving through said flow gap to eliminate blockage of the sleeve of material moving through the front valve seat; and a plurality of flutes formed in the front seat and communicating with the annular-shaped groove to enable the sleeve of material to flow unrestricted through the front seat of the valve assembly and into the discharge chamber by passing from the flow gap and into the flutes through the annular-shaped groove without blockage.

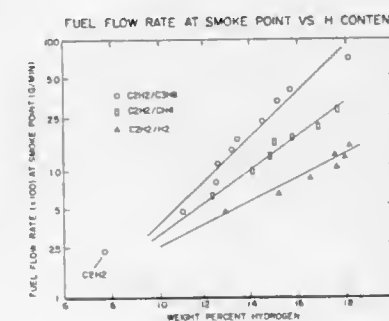
4,643,666
METHOD OF BURNING HYDROGEN DEFICIENT FUELS
Gary J. Green, Yardley, Pa.; Harry A. McVeigh, Moorestown; Joe E. Penick, Princeton, both of N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 9, 1984, Ser. No. 659,123

Int. Cl.⁴ F23C 1/00

U.S. Cl. 431-4

19 Claims



1. A process for reducing the sooting tendencies of a relatively hydrogen-deficient heavy liquid hydrocarbon fuel comprising physically mixing said fuel with a hydrogen-rich gas selected from the group of hydrogen, methane, ethane, ethylene, propane, propylene, butane, isobutane, isobutylene, and mixtures thereof, at conditions wherein a majority of said hydrogen-rich gas remains in vapor phase, and the resulting mixture of fuel and gas are burned.

12. A process for improving the burning characteristics of a fuel which is relatively deficient in hydrogen and has a tendency to form soot upon combustion, comprising physically admixing methane with said hydrogen deficient fuel prior to combustion, wherein a majority of said methane is not dissolved in said hydrogen deficient fuel.

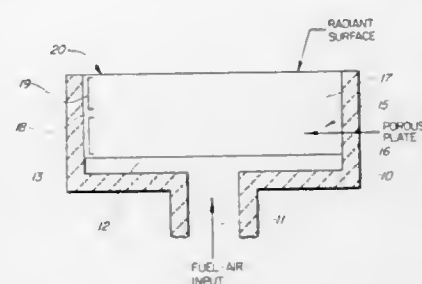
4,643,667
NON-CATALYTIC POROUS-PHASE COMBUSTOR
Donald K. Fleming, Park Ridge, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 21, 1985, Ser. No. 800,406

Int. Cl.⁴ F23D 13/12

U.S. Cl. 431-7

20 Claims



1. A non-catalytic porous phase combustor comprising: housing means for retaining a porous plate across one open end and confining a combustible mixture in a distribution chamber across the opposite end; input means for introducing a combustible mixture into said distribution chamber; and a multilayer porous plate comprising at least two discrete and contiguous porous layers, a first layer adjacent said distribution chamber comprising a material having a low inherent thermal conductivity, and a second layer adjacent said open end comprising a material having a high inherent thermal conductivity and having a radiating outer surface for emitting heat energy as

radiant energy, said first and second layers having pores of substantially the same size.

13. An improved process for generating radiant energy comprising the sequential steps of:
introducing a combustible mixture through an inlet means and distributing said combustible mixture within a distribution chamber;
passing said combustible mixture through and preheating said combustible mixture in pores of a first discrete layer of a multilayer porous plate, said first layer comprising a material having a low inherent thermal conductivity;
passing said combustible mixture through and combusting said combustible mixture in pores of a second discrete layer of said multilayer porous plate, said pores of said second layer being of substantially the same size as said pores of said first layer, said second layer comprising a material having a high inherent thermal conductivity; and converting heat energy produced by said combustion to radiant energy at a radiating surface on said second layer and emitting said radiant energy from said radiating surface.

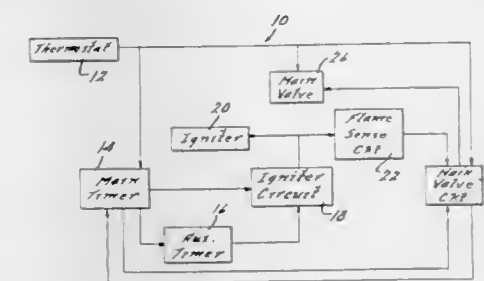
4,643,668
HOT SURFACE DIRECT IGNITION SYSTEM FOR GAS FURNACES
Frederick J. Geary, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 25, 1984, Ser. No. 624,014

Int. Cl.⁴ F23N 5/00

U.S. Cl. 431-70

21 Claims



1. A hot surface direct ignition system for gas furnaces and the like, said system comprising, in combination, a high voltage circuit adapted to be connected to a source of high voltage AC current, said high voltage circuit including hot surface igniter means disposed in the path of incoming gas and being subjected to the heat of the gas flame when gas ignition is obtained whereby flame rectification is effected by said igniter means, a low voltage circuit adapted to be connected to a source of low voltage AC current, said low voltage circuit including thermostatic switch means controlling the energization of said low voltage circuit, an electrically operable gas valve, first relay means having contacts in said high voltage circuit controlling the energization of said igniter means, second relay means controlling the energization of said gas valve, said low voltage circuit also including first timing means controlling the energization of said first relay means, second timing means controlling the energization of said second relay means, and third timing means operable upon the energization of said second relay means for maintaining the energization of said first relay means and said igniter means for a predetermined period of time, flame sensing means including a first capacitor connected always in parallel across said first relay contacts and always in series with said igniter means and effective to maintain energization of said second relay means when gas ignition is obtained, said second relay means also having contacts in said low voltage circuit controlling the energization of said first, second and third timing means.

4,643,669

SMOKELESS FLARE GAS BURNER

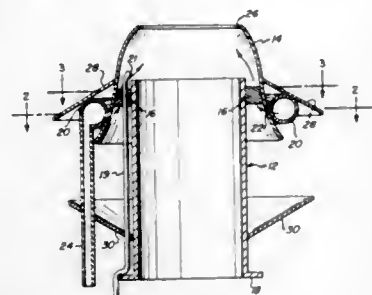
Mohammed Z. Bozal, Nyack, N.Y., assignor to Peabody Engineering Corporation, Stamford, Conn.

Filed Aug. 26, 1985, Ser. No. 769,455

Int. Cl.⁴ F23D 21/00

U.S. Cl. 431—202

18 Claims



1. A flare gas burner for combustible waste gas comprising: a waste gas delivery pipe; deflector means disposed externally about the upper end of said waste gas delivery pipe said deflector means approximating the shape of a half Venturi with the throat uppermost; an annular manifold disposed on the exterior of the lower end of said deflector means; means for supporting said deflector in fixed spaced apart relationship with said upper end of said waste gas delivery pipe; means for supplying high pressure motive fluid to said manifold; and means for discharging said motive fluid from said manifold into the passage defined by the interior of said deflector means and the exterior of said waste gas delivery pipe.

4,643,670

BURNER

David M. Edwards, Wokingham, and Kenneth H. Haywood, Wootton Bridge, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jul. 19, 1984, Ser. No. 632,248

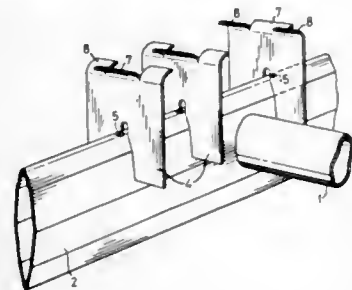
Claims priority, application United Kingdom, Jul. 20, 1983, 8319620

The portion of the term of this patent subsequent to Jan. 15, 2001, has been disclaimed.

Int. Cl.⁴ F23D 13/20

U.S. Cl. 431—202

11 Claims



1. A burner comprising a fuel gas supply pipe having a low resistance to upward air flow, the pipe having at least two outlet means for passing gas upwardly through the outlets, a plate adjacent to and above the outlet so that fuel gas emerging from the outlet spreads over the surface of the plate and mixes with the upward air flow and means formed by the plate for retaining the flame resulting from the combustion of the fuel gas and air, the flame retaining means comprising a central portion of the upper edge of the plate being inclined towards

an associated outlet adjacent to the plate and the outer portions of the upper edge of the plate being inclined away from the outlet adjacent to the plate and towards a further outlet adjacent to a neighboring plate, such that said central portion of one plate and the outer portions of an adjacent plate are directed towards one another for providing turbulent mixing of the air and gas.

4,643,671

BURNER DEVICE

Sadao Yoshinaga, Ichikawa, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan

Division of Ser. No. 751,373, Jul. 2, 1985, Pat. No. 4,597,732.

This application Feb. 26, 1986, Ser. No. 833,919

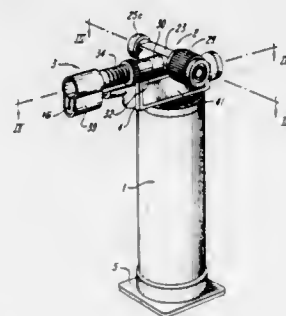
Claims priority, application Japan, Jul. 7, 1984, 59-102553

The portion of the term of this patent subsequent to Jul. 1, 2003, has been disclaimed.

Int. Cl.⁴ F23Q 7/12

U.S. Cl. 431—255

7 Claims



1. A burner device comprising a fuel tank and body having a size capable of being gripped by hand, and a valve device, a combustion device and an ignition device which are connected to an upper portion of said body; said valve device having a passage to which fuel is supplied from said body, said passage being provided with a valve means; said combustion device comprising a nozzle supporting member connected to the valve device and in communication with the passage, a nozzle pipe whose rear end is connected to said nozzle supporting member and bored with an air intake hole opened and closed by an air control cylinder biased by a coiled spring, connected to said nozzle pipe and said air control cylinder, over said air intake hole, and a nozzle head at the extreme end of said nozzle pipe; and said ignition device comprising a piezo electronic unit within a casing connected to the body, said ignition device being electrically connected to a discharge electrode provided at the end of the combustion device and being directed at said nozzle head.

4,643,672

FLAME RETENTION HEAD ASSEMBLY FOR FUEL BURNERS

Denis Lefebvre, Blainville, Canada, assignor to Loudenco Ltd, Montreal, Canada

Filed Dec. 2, 1985, Ser. No. 803,802

Claims priority, application Canada, Mar. 28, 1985, 477754

Int. Cl.⁴ F23Q 3/00

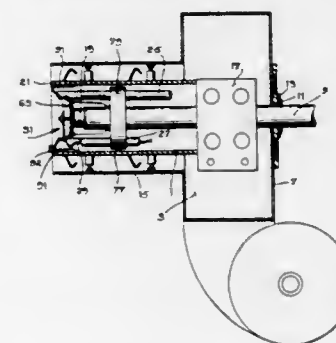
U.S. Cl. 431—265

22 Claims

1. A flame retention head assembly for use in a fuel burner having a fuel nozzle mounted coaxially within an air pipe, said head assembly comprising:

- (a) a continuously contoured, outwardly diverging retention head adapted to be mounted concentrically within the air pipe in front of the fuel nozzle, said retention head comprising: a substantially cylindrical section having a diameter greater than the diameter of the fuel nozzle, and an inlet end intended to be located at a short distance ahead of

- a fuel nozzle, said cylindrical section defining an air-and-fuel mixture chamber;
 - a first outwardly flaring section continuously extending the cylindrical section, said outwardly flaring section defining a first expansion chamber;
 - an inwardly flaring section continuously extending the first outwardly flaring section, said inwardly flaring section defining a throttle with a diameter greater than the diameter of the cylindrical section, downstream the first expansion chamber, and
 - a second outwardly flaring section continuously extending the inwardly flaring section, said second outwardly flaring section defining a second expansion chamber;
- (b) a spinner plate mounted transversally across the inlet end of the cylindrical section of the retention head, said spinner plate defining a primary air inlet and comprising: a central ring provided with a central hole, said central hole having a diameter substantially identical to the diameter of the fuel nozzle; and a plurality of blades regularly distributed around said ring to cause air to enter and swirl into the mixture chamber through the annular space defined between the periph-



- eries of said fuel nozzle and the cylindrical section of the retention head respectively, said swirling air mixing within said mixture chamber with the fuel discharged therein by the fuel nozzle through the central hole of the spinner plate;
- (c) a plurality of circumferentially-spaced, air apertures provided exclusively through the second outwardly flaring section of the retention head, said apertures being intended to be in communication with the air pipe to allow air to pass into the second expansion chamber to sustain combustion therein; and
- (d) a round-shaped deflector having a flat planar surface mounted concentrically within the retention head, said deflector extending transversally across said retention head to cause the air and fuel entering said head through the inlet end of the cylindrical section to stay longer within the first expansion chamber and to induce a controlled recirculation of the mixture downstream the deflector into the second expansion chamber, wherein said round-shaped deflector is a disc having a diameter equal to or greater than the diameter of the central hole of the spinner plate.

4,643,673

BURNER SYSTEM AT HEATING UNIT

Holger G. Bäckström, Trosalundsgatan 11A, S-150 13 Trosa, Sweden

PCT No. PCT/SE83/00096, § 371 Date Nov. 17, 1983, § 102(e) Date Nov. 17, 1983, PCT Pub. No. WO83/03459, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 17, 1983, Ser. No. 557,187

Claims priority, application Sweden, Mar. 30, 1982, 8202043

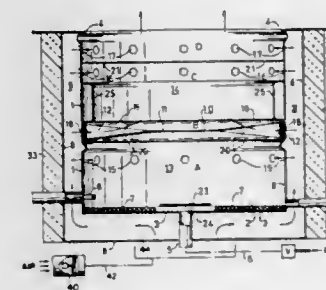
Int. Cl.⁴ F23D 5/02

U.S. Cl. 431—340

12 Claims

1. A burner assembly comprising a burner of evaporation

type for liquid fuel, said assembly comprising a substantially cylindrical combustion chamber having a cylindrical wall and a bottom, and having a fuel inlet at its lower end and being open at the opposite end; the assembly also including: an ignition member for initial ignition of evaporated fuel; a turbulator for generating turbulence, said turbulator being located at an intermediate region of the combustion chamber, thereby dividing the combustion chamber space into a lower space and an upper space, said turbulator extending substantially perpendicular to the axis of the combustion chamber and comprising a central member having a plurality of circumferentially arranged radially projecting surfaces and being constructed and arranged so that intimate mixing of air and fuel vapour is effected by passage past said projecting surfaces of said turbulator from the lower to the upper space; and two annular discs



which extend in the circumferential direction of the combustion space and project from the wall; which discs extend adjacent to and substantially parallel with the turbulator, one on either axial side thereof; the wall of the combustion chamber has at least four circumferential rings of apertures arranged to supply air into, respectively, the lower space, the upper space, and the region of the turbulator between the annular discs so that the air thus supplied into said region is conveyed radially towards the center of the turbulator and thereby mixed intimately with a mixture of fuel vapour and air passing the turbulator; and at least a third annular disc in the upper space, arranged similarly to said first two discs and spaced above and apart from the upper one thereof; the wall of the combustion chamber having a circumferential ring of apertures at either axial side of the third disc.

4,643,674

HOLDING ARRANGEMENT FOR DENTAL HAND INSTRUMENTS

Eduard Zdarsky, Munich, Fed. Rep. of Germany, assignor to Vereinigte Dentalwerke Antaeos-Beutelrock Zipperer Zdarsky Ehr-GmbH & Co. KG, Munich, Fed. Rep. of Germany

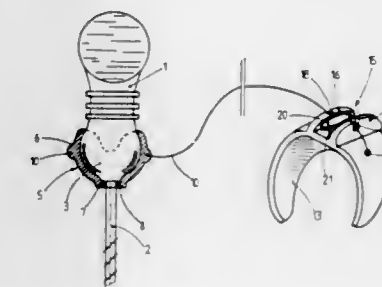
Filed Aug. 23, 1985, Ser. No. 769,008

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431598

Int. Cl.⁴ A61C 5/02

U.S. Cl. 433—102

14 Claims



1. A retainer for manually operated medical and particularly

dental instruments such as root-canal instruments, comprising: an instrument having a handle with an end and a working shaft end; a ring for mounted on a finger of an operating dentist; a security cord attached at one end to said handle end and at the other end to said ring; a mounting shell for attaching said security cord to said handle end, said mounting shell having means for snapping the mounting shell onto and seated against said handle, and having means for allowing the mounting shell to pass over said shaft end, whereby said mounting shell can be attached to said handle from the shaft end of the instrument.

4,643,675

DENTAL HANDPIECE

Bernhard Kuhn, Schemmerhofen, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

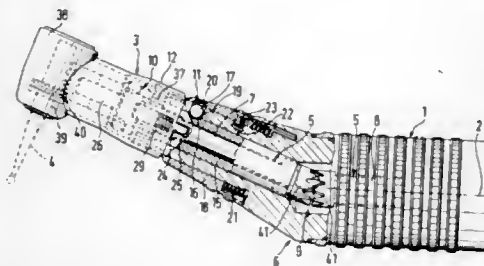
Filed Jul. 19, 1985, Ser. No. 757,090

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433877

Int. Cl.⁴ A61C 1/08

U.S. Cl. 433—126

14 Claims



1. In a dental handpiece, including a gripping sleeve and a head sleeve bent relative to the longitudinal axis of said gripping sleeve; a head for a treating implement in said head sleeve; a drive shaft for driving a treating implement being arranged within said head at the free end of the head piece and supported in the handpiece, said drive shaft being transversely divided in the region of the bend between said sleeves, follower means for engaging the two parts of the drive shaft with each other; and a planetary ball gear drive being interposed in the driven drive shaft part in the region of the free end of the head sleeve, the improvement comprising: a quick-connect coupling for connecting said head sleeve with said gripping sleeve, including engaging means on the head sleeve and complementary engaging means on the gripping sleeve, said planetary ball gear drive being located in a reinforced section of the head piece having a through-opening for a stop plate towards the gripping sleeve on the driven drive shaft part, a thinner head sleeve section for receiving the driven drive shaft part extending from said stop plate and being axially insertable into the gripping sleeve, the exterior of said thinner head sleeve section including engaging means forming a part of the quick-connect coupling which is engageable with complementary engaging means on the gripping sleeve forming a further part of said quick-connect coupling, the end of one shaft section of the driven drive shaft part towards the planetary ball gear drive including an open cage in the shape of a circular forked member, the fork tines of said cage engaging between the balls of the planetary ball gear drive, wherein the balls are supported under frictional engagement between the circumference of the end of the other shaft section of the driven drive shaft part and a non-rotatable annular track, one of the two shaft sections including positioning means acting on the balls of the planetary ball gear drive, said positioning means being arranged on the shaft section towards the gripping sleeve, and the cage fork tines on the shaft section remote from the gripping sleeve, said shaft section being transversely divided to form said positioning means, and the facing ends of the resulting shaft section parts are located opposite each other through cooperating positioning cam surfaces.

4,643,676
DENTAL TOOL FOR PERSONAL ORAL HYGIENE
John E. Jansheski, Tiburon, Calif., assignor to U.S. DenTek Corporation, Mill Valley, Calif.

Continuation-in-part of Ser. No. 747,989, Jun. 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 612,738, May 21, 1984, abandoned. This application Feb. 26, 1986, Ser. No. 833,855

Int. Cl.⁴ A61C 15/00

U.S. Cl. 433—143

1 Claim



1. A dental tool for self-application to the interproximal spaces of the mouth to remove food accumulations, hardened plaque and tartar which comprises:

- (a) a conically-based stainless steel pick which tapers upward to a J-shaped, curved substantially flat tip and which forms two edges on the inside of said J-shaped tip useful for scraping tartar from tooth enamel surfaces, said tip, constructed from stainless steel softer than said tooth enamel surfaces, having a radius of curvature selected to compliment self-application towards interproximal spaces of the mouth and a small gauge to permit insertion into said interproximal spaces and the altitude of such conical base selected to minimize the magnitude of leverage obtainable with said pick;
- (b) a blunted end for said tip to prevent damage to buccal tissues of the applicant; and,
- (c) an elongated, substantially cylindrical handle, which at one end is fastened to and is subtended from said conically based pick, said handle containing an indentation at the end closest the pick which indentation is positioned completely and radially about the longitudinal axis of the handle to permit more accurate and effective manipulation of the pick in the mouth and to identify to the user the optimum location to grasp the handle.

4,643,677

DENTAL INSTRUMENT

Daniel S. Y. Kim, 411 NE. 87th Ave., Vancouver, Wash. 98664

Filed Jul. 8, 1985, Ser. No. 752,559

Int. Cl.⁴ A61C 3/08

U.S. Cl. 433—164

1 Claim



1. A dental instrument comprising a straight handle having a plugger on each opposite end thereof, each of said pluggers comprising a cylindrical extension on the handle having a proximal portion bent at approximately 45° to the axis of the handle and a distal portion bent at approximately 90° to said proximal portion and extending away from the adjacent end of the handle, a ball-shaped burnisher projecting outwardly from the apex of said 90° angle in one of said extensions, and a

cone-shaped burnisher projecting outwardly from the apex of the 90° angle in the other extension.

4,643,678

DENTAL APPLICATION FLUID FOR THE INSPECTION OF TOOTH CONTACTS AND PROSTHETIC WORKS

Jens M. Hansen, Bonn, Fed. Rep. of Germany, assignor to Prodent Ges. Fuer Zahnmed. Bedarfsartikel mbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1985, Ser. No. 696,509

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 3403118

Int. Cl.⁴ A61K 6/00, 6/02, 6/12

U.S. Cl. 433—217.1

15 Claims

1. A directly applicable, nonviscous, fast drying dental application fluid for the inspection of tooth contacts and prosthetic works, comprising:

- (a) an organic, polymeric adhesive,
- (b) a massive component, and
- (c) a colored pigment distinct from component (b), said components (a), (b) and (c) being dissolved or dispersed, respectively, in an alcoholic solvent (d), wherein said dental application fluid contains 0.5 to 10 weight fractions of component (a), 0.01 to 10 weight fractions of component (c), and 30 to 70 weight fractions of component (d); and wherein 30 to 70 weight percent of the total application fluid are solids having a granularity of less than 10 microns.

4,643,679

EDUCATIONAL AID FOR SPELLING

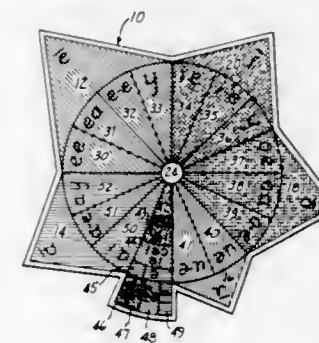
John A. Tatum, 1045 Atascadero Rd., Morro Bay, Calif. 93442

Filed Nov. 25, 1985, Ser. No. 801,409

Int. Cl.⁴ G09B 17/00

U.S. Cl. 434—167

3 Claims



1. An educational aid for the teaching of different spellings for each of at least two vowel sounds, comprising: a board having common symbols for each of the at least two vowel sounds marked thereon, each common symbol being within a separate area of the board; a means for making each separate area of the board visually distinctive; at least two pieces for each of the at least two vowel sounds, each piece having two substantially parallel level surfaces, each surface of each of the at least two pieces for each vowel sound being marked with a possible spelling of its vowel sound; and, a means for making one of the surfaces of each of the at least two pieces for each vowel sound visually distinctive, the visual distinctiveness being substantially the same as the visual distinctiveness of the separate area of the board which is symbolically marked with its vowel sound.

4,643,680

VOWEL SOUND TEACHING DEVICE

John Hill, 2099 Lawrence Avenue West, Apartment 908, Weston, Ontario, Canada M9N 1H9

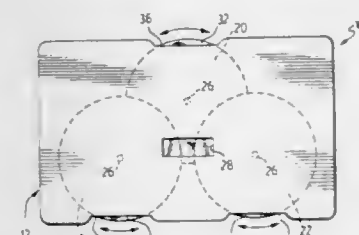
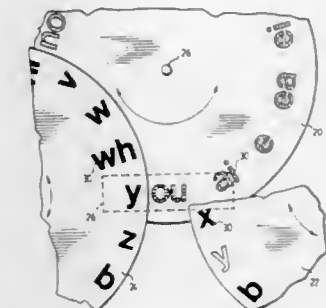
Filed Sep. 16, 1985, Ser. No. 776,494

Claims priority, application United Kingdom, Oct. 30, 1984, 8427365

Int. Cl.⁴ G09B 1/22

U.S. Cl. 434—170

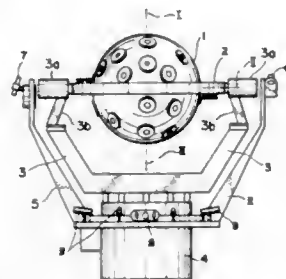
15 Claims



1. An educational device provided in planar generally rectangular form, comprising: a first planar support member having a front face and a back face; a display window constituted by a rectangular cut-away in the front face of the planar support member; a plurality of different visually-recognizable vowel symbols provided adjacent the periphery of a first rotatable member mounted to said support member, one of which vowel symbols may be displayed at the display window by rotation of said first rotatable member, each different vowel symbol comprising single vowel letter/or multiple vowel letters for a word to be displayed in the display window and being coloured or displayed on a coloured background in a colour the pronunciation of the vowel of which has a phonetic relationship with the desired pronunciation of the respective vowel symbol; and a plurality of additional alphabetical symbols provided adjacent the periphery of at least second and third rotatable members mounted to said support member, which additional alphabetical symbols may be displayed at the display window by rotation of said second and/or third rotatable members to form a word with the displayed vowel symbol at the display window; said rotatable members being mounted to said support member with their axes forming a triangle with a peripheral portion of said first rotatable member protruding from one longitudinal edge of said support member and with a peripheral portion of each of said second and third rotatable members protruding from another longitudinal edge of said support member to enable rotation of said rotatable members to be effected by manual manipulation of said protruding peripheral portions of said rotatable members.

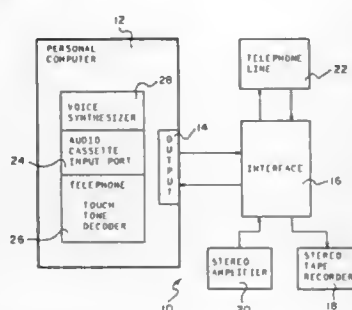
4,643,681
PLANETARIUM HAVING AN AUXILIARY PROJECTOR
INDEPENDENTLY ROTATABLE ABOUT A STAR FIELD
PROJECTOR

Takao Suzuki, Toyokawa, and Kenji Shiba, Toyohashi, both of Japan, assignors to Minolta Camera K.K., Osaka, Japan
 Filed Apr. 22, 1985, Ser. No. 726,198
 Claims priority, application Japan, Apr. 24, 1984, 59-83314
 Int. Cl.⁴ G09B 27/00
 U.S. Cl. 434—286 11 Claims



1. A planetarium comprising:
 a star field projecting globe for projecting a star field,
 a supporting means for supporting said star field projecting globe rotatably about a first axis,
 a first rotating means for supporting said supporting means rotatably about a second axis which orthogonally crosses said first axis,
 auxiliary projecting means for projecting coordinates,
 a second rotating means for supporting said auxiliary projecting means, and
 a base means for supporting said first rotating means and said second rotating means for independent rotation about a third axis which orthogonally crosses said second axis.

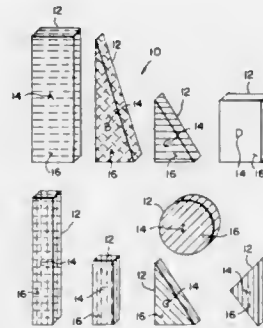
4,643,682
TEACHING MACHINE
 Bernard Migler, 1405 Autumn La., Cherry Hill, N.J. 08003
 Filed May 13, 1985, Ser. No. 732,938
 Int. Cl.⁴ G09B 7/06
 U.S. Cl. 434—321 5 Claims



1. A teaching machine comprising:
 a two-channel tape player;
 a magnetic tape arranged to be played by said tape player, said tape having a plurality of distinct tone signals prerecorded on a first track thereof, said tape also having a plurality of questions and a plurality of answers alternately prerecorded on a second track thereof;
 means connecting said tape player to a telephone line for playing the questions and answers from said second track onto said telephone line;
 means for automatically stopping said tape player after a question is played;

means for sensing when an audible spoken response from a student is completed;
 means responsive to said audible response sensing means for starting said tape player to thereby play the answer to said question onto said telephone line;
 means for sensing a correct answer signal from the student and for then continuing subsequent questions and answers from said tape;
 means for sensing an incorrect answer signal from the student and for subsequently repeating the incorrectly answered question and its answer.

4,643,683
ECO SET DIDACTIC BLOCKS/CUBES
 Milagros C. Orsini, and George Spector, both of 233 Broadway Rm 3615, New York, N.Y. 10007
 Filed May 15, 1985, Ser. No. 734,457
 Int. Cl.⁴ G09B 1/24
 U.S. Cl. 434—403 2 Claims

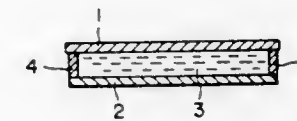


1. A set of didactic blocks to be used by children which comprises:
 (a) a plurality of geometric solid blocks each said geometric solid block having a different shape to stimulate artistic creativity of said children when said blocks are manipulated in play; and
 (b) a plurality of indicia, each said indicia having different information and associated with each said geometric solid to teach said children mathematics, science, language and the like when said blocks are manipulated in play, wherein each said geometric block having a track within, and a window in alignment with said track in combination with a moveable elongated band having said indicia printed thereon, said elongated band positioned on said track so that said indicia can be viewed through said window wherein said band includes spaced indicia with means for expansion through said window to expose said indicia and seal said window.

4,643,684
MAGNETIC DISPLAY PANEL
 Yasuzo Murata, and Hiroshi Sato, both of Kanagawa, Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan
 Filed Feb. 27, 1981, Ser. No. 238,794
 Claims priority, application Japan, Feb. 28, 1980, 55-24486
 Int. Cl.⁴ B43L 1/12
 U.S. Cl. 434—409 16 Claims

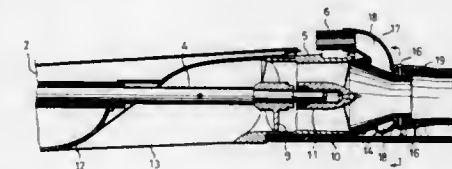
1. A magnetic display panel comprising:
 a liquid containing panel having a front substrate formed of a material selected from the group consisting of transparent and translucent materials and a rear substrate disposed opposite to said substrate and bonded thereto by an adhesive, a liquid sealing space being formed between said substrate; and
 a dispersing liquid having a yield value of at least 5 dyne/cm² sealed in said space, said dispersing liquid com-

prising at least one organic thickener selected from the group consisting of olefinic polymer, olefinic copolymer, wax, metal soap and dextrin fatty acid ester, at least one inorganic thickener selected from the group consisting of



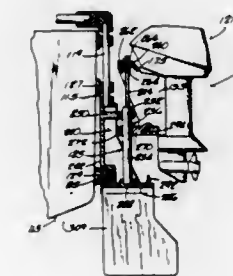
fine powder silicic acid and fine powder silicate, fine magnetic particles having a low coercive force, a colorant and a dispersion medium, an image being recordable on said panel by a movable marking device having an oriented magnetic field.

4,643,685
WATER JET PROPELLED CRAFT
 Hiroshi Nishida, Miki, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
 Filed Jun. 26, 1985, Ser. No. 748,823
 Claims priority, application Japan, Jun. 29, 1984, 59-135585
 Int. Cl.⁴ B63H 11/04, 11/113
 U.S. Cl. 440—42 4 Claims



1. A water jet propelled craft having a hull and a water jet pump driven by an engine at the rear section of the hull, comprising a steering nozzle extending backwards around the rear end of a pump outlet nozzle of said water jet pump capable of rotation about a perpendicular axis passing through the center of the rear end of said pump nozzle, an exhaust gas outlet opening backwards between the outer periphery of said pump outlet nozzle and the inner surface of said steering nozzle, and a resilient exhaust tube surrounding said pump nozzle and connected to an exhaust pipe from the engine, the rear end of said resilient exhaust tube being fixed to the front end of said steering nozzle.

4,643,686
STEERING POST MOUNTED PROPULSION ASSEMBLY
 Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
 Division of Ser. No. 211,642, Dec. 1, 1980, Pat. No. 4,563,155.
 This application Jul. 8, 1985, Ser. No. 752,842
 Int. Cl.⁴ B63H 25/42
 U.S. Cl. 440—51 3 Claims



1. A marine propulsion device for a boat hull having a trans-

som, said device comprising a steering post having a longitudinal axis and adapted to be connected to the boat transom for rotation about said longitudinal axis, a propulsion assembly including a rotatably mounted propelling element, and means connecting said propulsion assembly and said steering post for common pivotal movement about said longitudinal axis and for movement of said propulsion assembly relative to said steering post between a running position and a second position elevated from the running position and against steering movement of said propulsion unit assembly relative to said steering post, said means connecting said propulsion assembly and said steering post including means for selectively and rectilinearly displacing said propulsion unit assembly relative to said steering post between said running position and said second position, said means for selectively and rectilinearly displacing said propulsion assembly comprising a hydraulic cylinder having an axis and a piston moveable in and relative to said cylinder along said cylinder axis, means connecting said cylinder to said steering post with said cylinder axis in fixed relation to said steering post, and means connecting said propulsion assembly to said piston for common movement therewith and for connecting said propulsion assembly to said cylinder for propulsion assembly movement axially of said cylinder.

4,643,687
MARINE PROPULSION UNIT
 Kazuhiko Yano, Toyonaka; Kazuhiko Ohtsuki, Takarazuka; Takao Awaya, Iwakuni, and Gen Yoshii, Amagasaki, all of Japan, assignors to Kanzako Kokyukoki Mfg. Co., Ltd., Inadera, Japan
 Filed Feb. 15, 1985, Ser. No. 702,262
 Claims priority, application Japan, Mar. 8, 1984, 59-44682
 Int. Cl.⁴ B63H 23/06
 U.S. Cl. 440—75 8 Claims

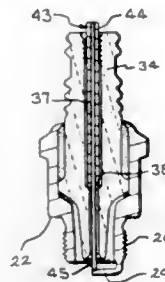


1. A marine propulsion unit comprising an engine mounted in the hull of a boat at a stern portion with the output end directed towards the stern, an inclined propeller shaft arranged to extend downwardly and backwardly from the hull and carrying at its terminal end a propeller, and a reversing clutch mechanism disposed between said engine and propeller shaft and having an input shaft drivenly connected to said engine and an output shaft drivenly connected to said propeller shaft, wherein an intermediate shaft (32) is mounted in the transmission path and has its fore end coupled to the aft end of said output shaft (21), the coupled shaft ends being at substantially the same level and coupled together by a pair of meshing external bevel gears (38, 39) fixedly mounted face to face on said shaft ends such that said intermediate shaft is inclined relative to said output shaft downwardly and backwardly, said propeller shaft (15) being aligned coaxially with said intermediate shaft and fixedly connected to the aft end of the said shaft.

4,643,688
METHOD FOR ASSEMBLING A SPARK PLUG
 Dale L. Byerly, Toledo; Richard L. Black, Perrysburg, and Richard S. Podiak, Maumee, all of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio
 Filed Nov. 1, 1984, Ser. No. 667,193
 Int. Cl.⁴ H01T 21/02

U.S. Cl. 445—3

5 Claims



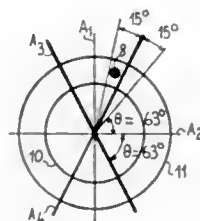
1. A method for assembling a spark plug including a shell, an insulator mounted in said shell and a center electrode mounted in a stepped bore through said insulator comprising the steps of:

- providing a ground electrode on said shell having a predetermined final configuration and position;
- mounting said insulator in said shell with said stepped bore aligned with said ground electrode;
- measuring the distance from said insulator bore step to said ground electrode;
- adjusting the distance between a shoulder and a spark tip on said center electrode in response to the measured insulator bore step to ground electrode distance to produce a desired spark gap dimension between said tip and said ground electrode when said center electrode is mounted in said insulator bore with said shoulder seated on said step; and
- mounting said center electrode in said insulator bore with said shoulder seated on said insulator bore step.

4,643,689
PICTURE TAKING TUBE WITH PYROELECTRIC TARGET AND A PROCESS FOR DETERMINING THE AXES OF LEAST EXPANSION OF THE TARGET
 Jean Fraleux; Christine Hennion; Marie H. Mora, all of St. Egreve, and Jean L. Ploix, Meylan, all of France, assignors to Thomson-CSF, Paris, France

Filed Aug. 1, 1984, Ser. No. 636,544
 Claims priority, application France, Aug. 5, 1983, 83 12992
 Int. Cl.⁴ F23Q 23/08; H01J 31/26
 U.S. Cl. 445—3

5 Claims



1. A process for determining the axes of least expansion of a pyroelectric target for a picture taking tube, comprising the following steps:

- placing the target under a hot source;
- identifying at least one of the mutually perpendicular axes along which it deforms successively and which form its axes of high expansion;
- determining the angle between the axis of high positive

expansion, which is determined from its crystalline axes, and each of the axes of least expansion.

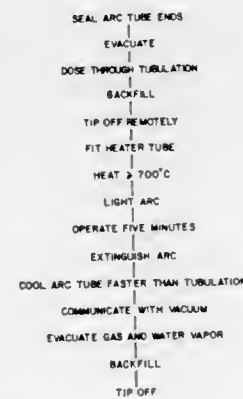
4,643,690
METHOD OF MANUFACTURING METAL HALIDE LAMP

Nancy J. Caruso, Livingston, and Michael H. Masto, Bloomfield, both of N.J., assignors to North American Philips Electric Corporation, New York, N.Y.

Continuation of Ser. No. 493,176, May 10, 1983, abandoned.
 This application Sep. 3, 1985, Ser. No. 771,483
 Int. Cl.⁴ H01J 9/00, 9/38

U.S. Cl. 445—6

15 Claims

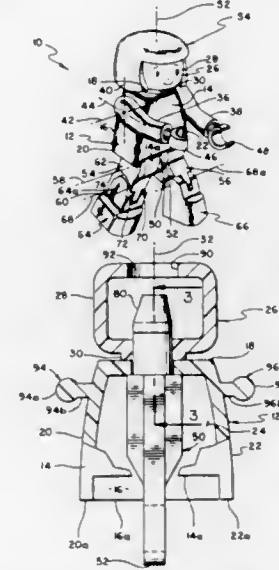


10. A method of manufacturing an arc tube for a metal halide high intensity discharge lamp containing hygroscopic metal halide materials including at least a calcium compound, comprising the steps of

- providing an arc tube having sealed ends and at least two electrodes extending into a space within the arc tube, means for making electrical connection to said electrodes, and an exhaust tubulation communicating with said space, evacuating the arc tube, and
- dosing the arc tube with additive materials, including at least one hygroscopic metal halide containing calcium, through the tubulation,
- characterized by the sequential steps of backfilling the arc tube through the tubulation with a quantity of ionizable gas,
- tipping off the tubulation at a location spaced from the arc tube,
- placing a heater tube closely fitted around and along the entire length of the tubulation, and heating said tubulation to an elevated temperature of at least approximately 700° C.
- after said elevated temperature has stabilized, lighting an arc between the electrodes of the arc tube and maintaining said arc for at least approximately 5 minutes at a wattage between approximately 100% rating and 150% rating,
- extinguishing said arc and permitting said heater tube to cool at a rate much slower than the rate of cooling of the arc tube,
- establishing communication between said tubulation and a vacuum source; and then evacuating the arc tube, thereby removing the ionizable gas and water vapor originating with the hygroscopic additive material and not re-condensed with the halide,
- filling the arc tube with a desired final quantity of ionizable material, and
- tipping off the tubulation adjacent to the arc tube.

4,643,691
ARTICULATED DOLL ARRANGEMENT
 Iwabuchi Keiji, Tokyo, Japan, assignor to Kawada Co., Ltd., Tokyo, Japan
 Continuation-in-part of Ser. No. 532,781, Sep. 16, 1983, Pat. No. Des. 280,649. This application May 31, 1985, Ser. No. 740,020
 Claims priority, application Japan, Jul. 6, 1984, 59-27763
 Int. Cl.⁴ A63H 3/16, 3/46, 3/36
 U.S. Cl. 446—97

19 Claims



1. Miniature articulated doll arrangement comprising, in combination:

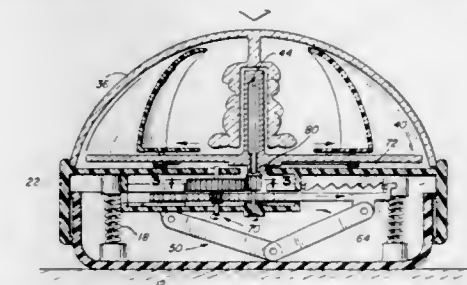
- a body means, having a front wall, a back wall spaced from said front wall, a top wall and spaced apart side walls defining an open bottom body cavity, and said top wall having walls defining an aperture therethrough, shoulder joint connecting portion on each of said side walls in regions adjacent said top wall, and each of said front wall, back wall and side walls having lower edges spaced from said top wall, and said lower edge of said back wall and said side walls spaced a first preselected distance from said top wall, and said lower edge of said front wall spaced a second preselected distance from said top wall;
- central connector means in said body cavity of said body means and having a neck connecting portion extending through said aperture in said top wall and an upper leg connecting portion having a pair of spaced apart side surfaces and extending a third preselected distance from said top wall of said body means and spaced from said neck connecting portion, and said upper leg connecting portion of said central connector means extending from said open bottom body cavity;
- a head means pivotally mounted for pivotal movement about the neck axis on said neck connecting portion of said central connecting means adjacent said top wall of said body means and having a head simulating portion and a neck simulating portion extending from said head simulating portion, said neck simulating portion having walls defining a neck connecting portion receiving aperture therein for receiving said neck connecting portion of said central connecting member, and said head simulating portion having a head covering connecting portion receiving aperture therein;
- a pair of arm means, one of said arm means movably mounted on each of said shoulder joint connecting portions of said body means for pivotal motion thereon, said arm means having a shoulder end for pivotal connection to said shoulder joint connecting portions to define a simulated shoulder joint therebetween and a wrist end spaced from said shoulder end, said wrist end having walls

defining a hand connecting portion receiving aperture therein;

- a pair of hand means, one of said hand means pivotally mounted on said wrist ends of each of said arm means, and said hand means having a hand simulating portion and a hand connecting portion extending therefrom, said hand portion receiving aperture of arm said means for providing said pivotal motion of said hand means;
- a pair of spaced apart upper leg means movably mounted on said upper leg connecting portion of said central connecting means for limited pivotal motion thereon about a fourth axis and having a hip end connecting portion for mounting on said upper leg connecting portion of said central connecting means to define a simulated hip joint therebetween, and a lower leg connecting portion spaced from said hip end connecting portion, a first of said pair of upper leg means pivotally mounted adjacent one of said pair of spaced apart side surfaces of said central connecting member and having a rod portion extending through said upper leg connecting portion of said central connecting member and in pivotal engagement therewith, and said rod portion having a tab section on the remote end thereof, and the second of said pair of upper leg means pivotally mounted adjacent the other of said pair of side surfaces of said central connecting member and pivotally engaging said tab section of said rod portion of said first of said pair of upper leg means and restrained adjacent said upper leg connecting portion of said central connecting member thereby;
- a pair of lower leg means, one of said lower leg means movably mounted on each of said lower leg connecting portions of said upper leg means at a knee end portion thereof for limited pivotal motion about a fifth axis to simulate a knee joint therebetween, and having a foot simulating portion spaced from said knee end portion.

4,643,692
DOMED SPINNING TOP
 Ronald G. Magers, 79 Eastern Ave., Essex, Mass. 01929
 Filed Sep. 20, 1985, Ser. No. 778,528
 Int. Cl.⁴ A63H 1/06, 1/00, 13/20
 U.S. Cl. 446—259

9 Claims

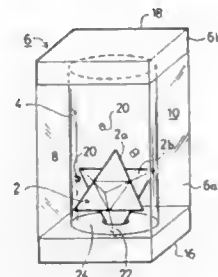


1. A spinning top for a generally horizontal support surface comprising:

- base means adapted to rest on the surface;
- housing means movable relative to said base means, said housing means having diaphanous dome means attached to an upper portion thereof to define a chamber;
- resilient compressive means for urging said housing means away from said base means;
- rotatable means axially mounted on said housing means within said chamber;
- drive means for engaging said rotatable means to impart rotation thereto; and
- actuating means operatively connected to said drive means, said actuating means acting upon said drive means to engage said drive means with said rotatable means to rotate said rotatable means during movement of said housing means toward said base means, and said actuating

means acting upon said drive means to disengage said drive means from said rotatable means to permit said rotatable means to rotate freely in the absence of movement of said housing means toward said base means.

4,643,693
ORNAMENTAL OR AMUSEMENT DEVICE
 Edna Rubinstein, 25 Hahistadrut Street, Givatayim, Israel
 Filed Feb. 14, 1985, Ser. No. 701,862
 Claims priority, application Israel, Mar. 2, 1984, 71130
 Int. Cl.⁴ A47G 33/00
 U.S. Cl. 446—267 6 Claims

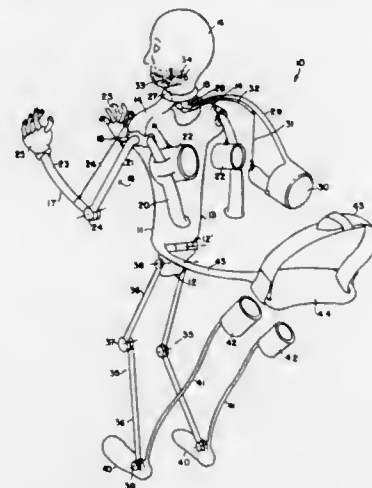


1. An ornamental or amusement device, comprising: a housing formed with a closed internal chamber adapted to extend in the vertical direction when the housing is supported in an upright position; at least one side of said housing being transparent to permit viewing said chamber; said chamber being filled with a transparent liquid; a body disposed within said chamber and having the geometrical configuration of two inter-penetrating tetrahedra including eight apices and presenting the appearance of a six-pointed star when viewed along the axis of any one of said eight apices; the housing at one end of said chamber being formed with a recess corresponding to the shape of said apices; said body having a density different from that of said liquid such that inverting the housing from its upright position causes the body to move through said liquid away from said one end of the chamber to the opposite end, and then returning the housing to its upright position causes the body to move through said liquid back towards said one end of the chamber until one of the apices of said body is received within said recess formed in said one end of the chamber for orienting the body with respect to the transparent side of said housing; said chamber being of larger cross-sectional dimensions and height than the largest dimension of the geometric body so as to permit the geometric body to tumble when moving away from said one end of the chamber towards the opposite end.

4,643,694
HAND CONTROLLED PUPPET
 Hugh C. Phibbs, 872 Kentucky St., Arlington, Va. 22205
 Filed Sep. 9, 1985, Ser. No. 773,880
 Int. Cl.⁴ A63H 3/14
 U.S. Cl. 446—327 4 Claims

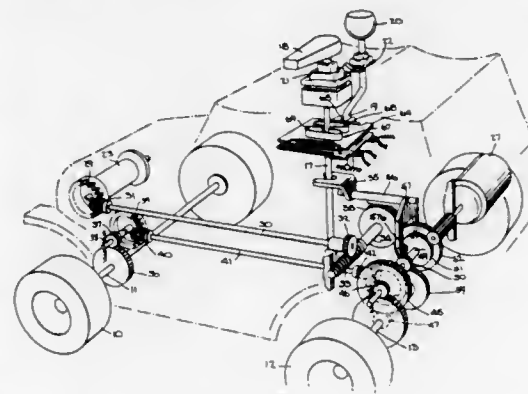
1. A puppet having a body, a pair of arms and a pair of legs disposed at the extremities thereof, means movably supporting each of the arms and legs with respect to the body, an actuator for each arm and leg for controlling movement of the same, each of said arms being comprised of a V-shaped member with the apex of the V being pivotally disposed on the body with one leg thereof supporting a forearm and a hand at one end thereof and the other supporting said actuator for imparting movement thereto, a head movably disposed on the body and including an actuator for controlling movement of the same,

and a single means extending from said body and adapted to be engaged by the hand of a user with each finger thereof being



positioned to engage one of the actuators for controlling movement of the arms, legs or head, respectively.

4,643,695
TOY WORK VEHICLE HAVING POWER TAKE-OFF
 Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Abraham A. Arad, Westport, Conn., assignors to Buddy L Corporation, New York, N.Y.
 Division of Ser. No. 651,714, Sep. 18, 1984, Pat. No. 4,565,438.
 This application Aug. 12, 1985, Ser. No. 764,735
 Int. Cl.⁴ A63H 17/12
 U.S. Cl. 446—427 4 Claims

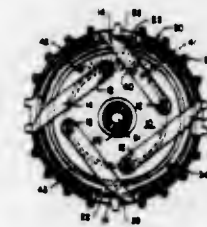
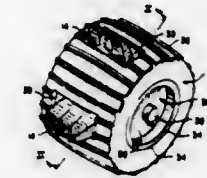


1. A toy vehicle provided with front and rear wheel axles, said vehicle comprising:

- A a bi-directional d-c motor mounted on said vehicle powered by a battery through a polarity-reversing switch, said switch including means whereby in one position of the switch the motor is caused to turn in one direction and in another position, it is caused to turn in the reverse direction;
- B a power take-off device mounted on said vehicle independent of said front and rear wheel axles to perform a work function, said device including means for active in two directions on objects discrete from said vehicle; and
- C means mounted on said vehicle operative in one mode to couple said motor to at least one of said axles whereby said vehicle is driven thereby in the forward direction when the switch is in the one position, and in the reverse direction when the switch is in the other position, said means being operative in a second mode in which said motor is

coupled to said power take-off device whereby said device is caused to operate in one direction when the switch is in the one position and to operate in the reverse direction when the switch is in the other position.

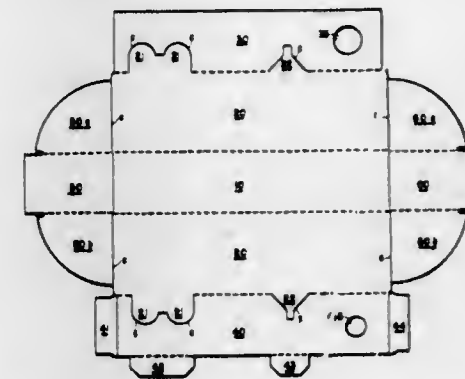
4,643,696
VEHICLE WHEEL WITH CLUTCH MECHANISM AND SELF ACTUATED EXTENDING CLAWS
 N. Y. Law, Kowloon, Hong Kong, assignor to Soma International Ltd., East Kowloon, Hong Kong
 Filed Jan. 27, 1986, Ser. No. 822,837
 Int. Cl.⁴ A63H 17/00
 U.S. Cl. 446—465 4 Claims



1. A vehicle wheel having self actuated claws which may extend therefrom comprising:
 - (a) a wheel shaft adapted to be driven by a drive train of a vehicle;
 - (b) a spindle positioned in line with the wheel shaft said spindle comprised of:
 - (i) a generally circular body having a front face, a back face, and an aperture through which the wheel shaft may pass;
 - (ii) at least one post attached to the front face of the body;
 - (iii) a series of teeth attached to the back face of the body and positioned to encircle the aperture through which the wheel shaft may pass;
 - (c) a clutch mechanism comprised of:
 - (i) a hub which is attached to the wheel shaft, and
 - (ii) at least one arm attached to and radially extending from the hub and having a tooth at its distal end, said arm sized and positioned so that its tooth engages the tooth on the back face of the spindle;
 - (d) at least one claw pivotally attached to the post on the spindle, sized and positioned so that the claw may be positioned within an outer circumference of a wheel body and then be pivoted to extend beyond the outer circumference of the wheel body;
 - (e) a wheel body sized to fit over the spindle, having one aperture for each claw attached to the spindle, and positioned over the spindle so that each claw may pass through a body aperture when the spindle is rotated relative to the body;
 - (f) a spring connected between the body and the spindle so that:
 - (i) when the spindle turns and no restraining force is acting on the body, the body will also turn, both the body and the spindle will rotate at a single speed, and the claws will be positioned within an outer circumference of the wheel body;
 - (ii) when a force is applied to the wheel body restraining the body from turning, the spindle may rotate a distance

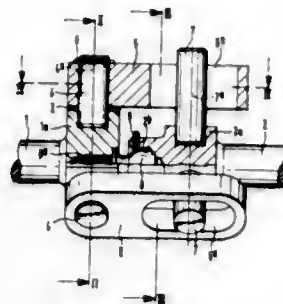
sufficient to allow each claw to extend through an aperture in the wheel body; and
 (iii) when the force is removed from the body, the spring will cause wheel body to rotate faster than the spindle thereby retracting the extended claws.

4,643,697
PROMOTIONAL FULL TRAILER ASSEMBLY
 Phil B. Sheffer, New Oxford, Pa., assignor to Merchandising Innovations Co., Inc., Hanover, Pa.
 Filed Mar. 3, 1986, Ser. No. 836,296
 Int. Cl.⁴ A63H 33/16
 U.S. Cl. 446—488 1 Claim



1. A full trailer display assembly means which may be shipped in a flat position and easily assembled by the user thereof comprising:
 - a single sheet of foldable material having a rectangular central section (10) formed thereon by means of factory applied score lines;
 - a first trailer side wall panel (20) attached to a first lateral edge of said central section (10);
 - a second trailer side wall panel (20) attached to a second lateral edge of said central section (10);
 - wherein both of said trailer side wall panels (20) have wheel sections (21) and trailer stand means (22) formed thereon by means of factory applied cut through portions (C);
 - a first end panel section means (30) attached to said first trailer side wall panel (20);
 - a second end panel section means (40) attached to said second trailer side wall panel (20);
 - means whereby said second end panel section (40) is folded so as to overlie said first end panel section means (30) so as to form a bottom wall of the full trailer assembly;
 - tab means (42, 43) formed on said second end panel section means (40) for retaining the full trailer in an assembled position;
 - rear trailer panel means (50) attached to said rectangular central section (10) at a first end thereof;
 - front trailer wall means (60) attached to said rectangular central section (10) at a second end thereof;
 - wherein said rear trailer panel means (50) has flap means (50a, 50b) attached thereto;
 - wherein said front trailer wall means (60) has flap means (60a, 60b) attached thereto;
 - wherein said first and second end panel section means (30, 40) have apertures (38, 48) formed therein so as to be in alignment upon assembly to be used as a means for attaching the trailer to a display truck;
 - wherein said second end panel section means (40) has flap means (41, 44) formed on opposite ends thereof.

4,643,698
CONSTANT VELOCITY JOINT
 Klaus Ehrlenspiel; Thomas John, both of Munich, and Andreas Schulerer, Krallring, all of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft, Fed. Rep. of Germany
 Filed Dec. 26, 1984, Ser. No. 686,215
 Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347262
 Int. Cl.⁴ F16D 3/30
 U.S. Cl. 464—111

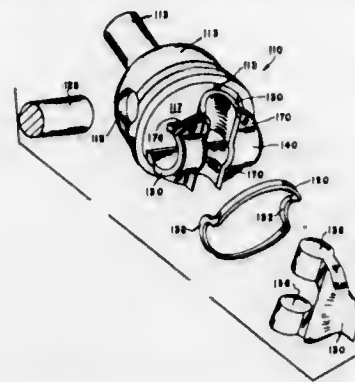


1. A constant velocity joint for effecting an angularly movable torque transmitting connection comprising: a driving member and a driven member; at least three coupling members; means attaching said at least three coupling members to one of said driving and driven members for pivotal motion relative thereto about three circumferentially spaced pivot axes extending radially relative to said one member; a ball and socket joint interposed between said driving and driven members; at least three circumferentially spaced pins on the other of said driving and driven members each having an axis extending radially therefrom; and articulation means interposed between said pins and said coupling members connecting said driving and driven members in torque transmitting engagement while allowing angular displacement therebetween; said articulation means comprising longitudinal slots formed in said coupling members within which said circumferentially spaced pins engage for longitudinal movement relative thereto; said ball and socket joint comprising a centering ball attached to one of said driving and driven members and a socket formed in the other of said driving and driven members within which said centering ball engages; said centering ball having a center which is equidistant between a plane passing through said pivot axes of said coupling members and a plane passing through said axes of said three pins.

4,643,699
UNIVERSAL JOINT HAVING A BEARING BLOCK WITH CYLINDRICAL RECEPTACLES
 Alistair G. Taig, South Bend, Ind., assignor to Allied Corp., Morristown, N.J.
 Filed Sep. 13, 1985, Ser. No. 775,967
 Int. Cl.⁴ F16D 3/26

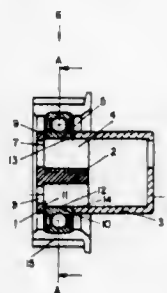
U.S. Cl. 464—112 7 Claims
 1. A universal joint comprising first and second rotatable members capable of being rotated with their axes angularly disposed with respect to one another, the first rotatable member including a head having an opening communicating with an interior cavity, the head having a pair of openings extending transversely through said head and communicating with said interior cavity, the second rotatable member having a pair of spaced-apart arms located at an end and each spaced-apart arm including a cylindrical member lying along a common axis, characterized in that the joint includes a bearing block comprising a plastic member having a pair of cylindrically shaped receptacles disposed approximately perpendicularly relative to one another, each cylindrical receptacle having a cylindrical opening therein extending the length of the cylindrical receptacle and having one portion of the receptacle open so that each cylindrical receptacle is generally C-shaped, perimeter por-

tions of each cylindrical receptacle being connected with perimeter portions of the perpendicularly disposed cylindrical receptacle by means of a circumferential wall terminating in a groove extending from perimeter to perimeter of the cylindrical receptacles, the bearing block being received within the interior cavity and secured therein by pin means which extends through said pair of openings and one of the cylindrical receptacles in order to rotatably secure the bearing block within said interior cavity, the cylindrical members of the second rotatable



member being received within the other cylindrical receptacle, and a securement ring received securely within the grooves and extending over ends of the other cylindrical receptacle in order to secure the cylindrical members of the second rotatable member within the bearing block, and said securement ring including a pair of oppositely disposed curved portions which extend around portions of the circumference of said pin means, to provide for lash-free movement of the joint in any direction of movement.

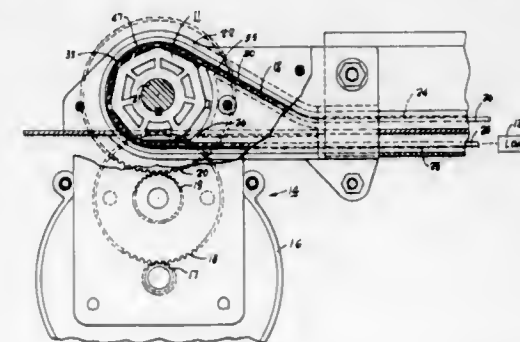
4,643,700
TENSION ROLLER
 Manfred Brandenstein, Eussenheim; Ludwig Edelmann, Sulzthal; Roland Haas, Hofheim; Gerhard Herrmann, Schweinfurt, and Rudiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany
 Filed May 3, 1985, Ser. No. 730,377
 Claims priority, application Fed. Rep. of Germany, May 5, 1984, 3416686
 Int. Cl.⁴ F16H 7/10
 U.S. Cl. 474—112 8 Claims



1. In a tension roller, including a rolling bearing having an outer ring on which a rolling sleeve is arranged and an inner ring with a bore and with oppositely directed side surfaces, and including a multipart support body which is swivelable about an eccentrically arranged mounting bolt and which has first and second side parts with surfaces which respectively abut said side surfaces of said inner ring for preventing axial movement of said inner ring; the improvement comprising a central body which extends through said bore along its entire length

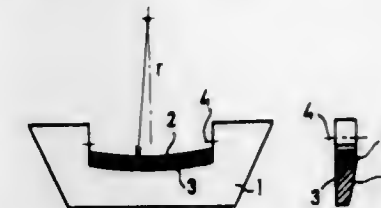
and has seating surfaces circumferentially distributed at angular intervals for supporting said inner ring, said side parts being fixedly arranged with respect to said central body, said central body having a stellate cross section and comprising a plurality of substantially radial projections each having an end portion, said end portions forming said seating surfaces for said inner ring, whereby said mounting bolt can be arranged in the interstitial space between two of said radial projections of said central body.

4,643,701
SPROCKET AND TAPE COMBINATION
 Lawrence L. Mayer, Canton, and Donald H. Bradbeck, Louisville, both of Ohio, assignors to Phillips Home Products, Akron, Ohio
 Filed Sep. 4, 1985, Ser. No. 772,567
 Int. Cl.⁴ F16H 7/02
 U.S. Cl. 474—153 15 Claims



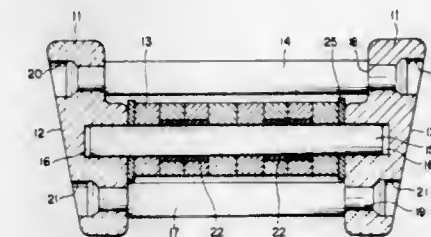
1. A sprocket and flexible tape combination, comprising: said tape having a series of apertures into the thickness thereof from the inner surface thereof and aligned along the length thereof; said tape having web areas between longitudinally adjacent apertures and having at least one connecting area laterally adjacent each aperture connecting longitudinally adjacent web areas; said sprocket having a given plurality of engagement shoulders around the periphery adapted to engage said tape connecting areas; sprocket surfaces equal in number to said plurality of engagement shoulders and alternating in a longitudinal direction with said engagement shoulders around the periphery of said sprocket; said sprocket having a given radius from the axis thereof to said given plurality of engagement shoulders; a generally radially extending tooth mounted on each engagement shoulder and adapted to engage respective apertures in the flexible tape; said tape adapted to wrap around a part of the periphery of the sprocket to engage a plurality of said teeth; said given plurality of sprocket surfaces established in a position radially inwardly from the circular arc of said engagement shoulders from said axis to establish said tape as bent more at said connecting areas than at said web areas; and the inner surface of said tape being spaced from said sprocket surfaces.

4,643,702
DRIVING BELT
 Martinus H. Cuypers, Eindhoven, Netherlands, assignor to Gaylens Investments Limited, Great Britain
 Filed Aug. 30, 1985, Ser. No. 770,963
 Claims priority, application Netherlands, Sep. 5, 1984, 8402716
 Int. Cl.⁴ F16G 1/24
 U.S. Cl. 474—242 6 Claims



1. A driving belt, comprising at least one endless, flat, metal, carrying band for a plurality of transverse members which can move with respect to said band and wherein the supporting surface of the transverse members which are in contact with the carrying band has a crosswise radially outward concave curvature.

4,643,703
FRICTIONAL TRANSMISSION CHAIN
 Tadao Yasuda, Tokorozawa; Toru Kamio, Suita, and Yoshiaki Sugimoto, Tokorozawa, all of Japan, assignors to Teubakimoto Chain Co., Japan
 Filed Jun. 17, 1985, Ser. No. 745,666
 Claims priority, application Japan, Jun. 22, 1984, 59-127284; Jun. 22, 1984, 59-127285
 Int. Cl.⁴ F16G 1/24, 5/18
 U.S. Cl. 474—242 10 Claims



1. A frictional transmission chain, comprising: a plurality of chain link plates having holes; connecting pins disposed in the holes in the chain link plates, the connecting pins connecting successive chain link plates to form a chain, the connecting pins projecting laterally from the chain link plate; and, frictional transmission block pieces, each having holes into which projecting ends of one of the connecting pins of the chain link plates are inserted, and the block pieces also having through-holes through which each opposite end of a holding pin is passed, the through-holes being above and below the holes carrying the projecting ends of said one of the connecting pins, outer surfaces of said block pieces defining V-shaped frictional transmission slanting surfaces, and the holding pins being inserted and fixed at ends of said holding pins in said through-holes arranged above and below said one connecting pin, the holding pins having transverse shoulders bearing outwardly against the block pieces at the frictional transmission slanting surfaces.

4,643,704

POWER TRANSMISSION CHAIN

Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Daido Kogyo Kabushiki Kaisha, Ishikawa, both of Japan

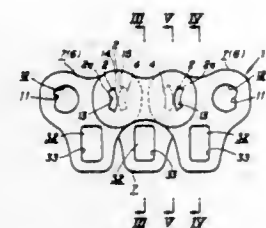
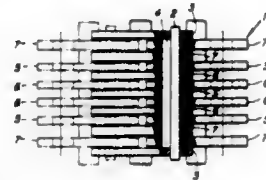
Filed Aug. 21, 1985, Ser. No. 767,761

Claims priority, application Japan, Aug. 21, 1984, 59-173893; Aug. 21, 1984, 59-173894

Int. Cl.⁴ F16G 1/24

U.S. Cl. 474-245

10 Claims



1. A power transmission chain comprising:
 - a plurality of link plate units each composed of a pair of outer link plates and a plurality of inner link plates disposed inwardly of said outer link plates;
 - a plurality of joint pins connecting said outer link plates and said inner link plates and coupling said link plate units in an endless loop pattern; and
 - a plurality of power transmission blocks extending transversely through said inner link plates only so as to be supported therein.

4,643,705

POSITIVE DRIVE KNIFE FOLDER

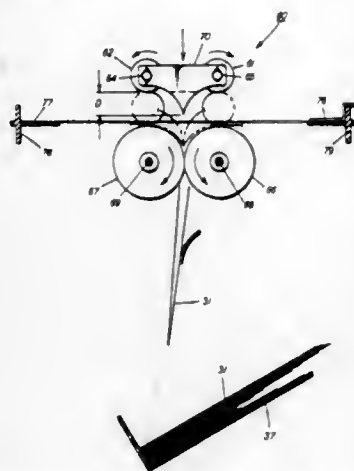
Henry T. Bober, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 29, 1985, Ser. No. 759,707

Int. Cl.⁴ B65H 45/18

U.S. Cl. 493-444

11 Claims



1. A knife folder adapted to fold a sheet after it exits a previous working station, said folder having a pair of folding cylinders that place final folds in sheets and a blade that guides sheets toward said cylinders, the improvement comprising:
 - nip means positioned adjacent to said folding cylinders and for non-relative movement with respect to said blade; and
 - support means for supporting said blade and said nip means,

said support means being adapted for movement through a predetermined distance such that as said support means is moved said blade contacts the sheet and causes it to collapse toward said folding cylinders and continued movement of said support means brings said nip means into engagement with said folding cylinders and the sheet, whereby the sheet is driven into a nip formed between said folding cylinders by said nip means and folded.

4,643,706

ONE-SIDED CORRUGATED CARDBOARD MACHINE

Walter Pohl, and Uwe Wetterling, both of Hamburg, Fed. Rep. of Germany, assignors to Werner H. K. Peters Maschinenfabrik GmbH, Hamburg, Fed. Rep. of Germany

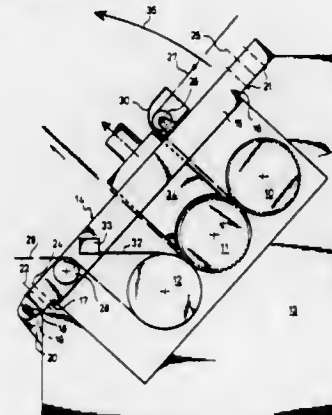
Filed Oct. 15, 1984, Ser. No. 660,910

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 8331821[U]

Int. Cl.⁴ B31F 1/20

U.S. Cl. 493-463

12 Claims



1. A one-sided corrugated cardboard machine comprising a machine stand defining an internal cavity and an opening at a portion of said cavity for affording access to said cavity, a roller pack comprised of two fluted rollers in meshing engagement with each other and a pressure roller rotatably supported within said machine stand internal cavity beneath and accessible through said opening, the axes of said rollers being disposed substantially in a common plane beneath said opening, and web processing members cooperating with said roller pack for forming a web into corrugated cardboard supported on the other side of the plane, characterized in that the cooperating web processing members are carried by a rigid frame comprising a pair of spaced apart side members rigidly interconnected by means of at least one transversely extending member spanning said roller pack and detachably connected by means of removable fasteners to said machine stand and extending across said opening and in proximate to said machine frame for reinforcing said machine frame.

4,643,707

TAPING UNIT POSITIONING SYSTEM FOR CARDBOARD BOX CLOSING MACHINE

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Filed Feb. 20, 1986, Ser. No. 831,436

Claims priority, application Italy, Feb. 22, 1985, 20889/85[U]

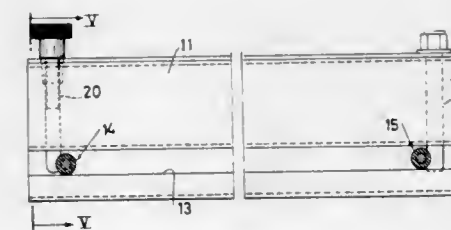
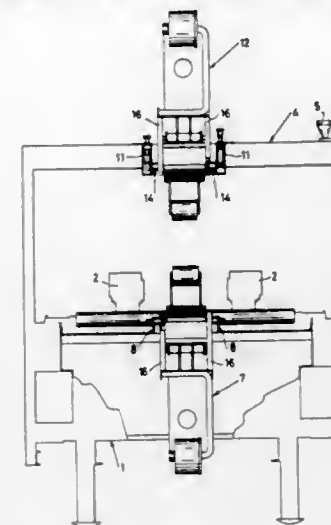
Int. Cl.⁴ B31B 1/72

U.S. Cl. 493-117

3 Claims

1. Taping unit positioning system for cardboard box closing machine of the type having a supporting base for the boxes and a raised head structure with supporting arms for the top taping unit characterized in that the taping unit comprises a pair of positioning pins protruding outward from opposite sides of the taping unit and said supporting arms have longitudinal guides designed to accommodate and allow to slide said pins of the

taping unit for the sliding insertion of said unit in said head structure, there being associated with said arms locking pins



which engage with said pins of the taping unit to stop and lock longitudinally said unit.

4,643,708

CENTRIFUGE OPERATING SYSTEM

Klaus Stroucken, and Bengt-Olof Gustafsson, both of Rönninge, Sweden, assignors to Alfa-Laval Separation AB, Tumba, Sweden

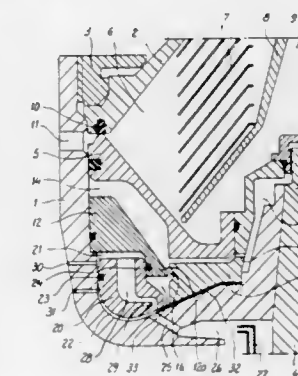
Filed Aug. 27, 1985, Ser. No. 769,675

Claims priority, application Sweden, Sep. 6, 1984, 8404474

Int. Cl.⁴ B04B 3/08

U.S. Cl. 494-40

4 Claims



1. In combination with a centrifugal separator including a rotor having an axis and forming a separating chamber provided with a peripheral outlet port, an axially movable annular primary slide in the rotor for closing and opening said port, said primary slide forming with the rotor a first closing chamber having an inlet and an outlet for a closing liquid, an axially

movable annular secondary slide in the rotor having an open position and a closed position for allowing and preventing, respectively, flow of closing liquid through said outlet from said first closing chamber, said secondary slide coacting with the rotor to define on one axially directed side of the secondary slide an opening chamber with an inlet for an opening liquid and a throttled drainage outlet, and to define on the other axially directed side of the secondary slide a second closing chamber with a throttled drainage outlet, means for supplying closing liquid to said first closing chamber, means acting on said secondary slide constantly to urge it toward its closed position during operation of the rotor, and means for supplying opening liquid to said opening chamber for initiating movement of the secondary slide toward its said open position, said opening chamber having an overflow outlet leading to said second closing chamber, said opening chamber being positioned to receive closing liquid leaving said first closing chamber upon movement of the secondary slide to its open position, said opening chamber being dimensioned to hold less than the amount of said closing liquid leaving said first closing chamber, the improvement comprising an axially immovable part of the rotor located radially outside said outlet of the first closing chamber and forming a partition between said first closing chamber and said second closing chamber, and an annular seal arranged between said partition and the secondary slide and acting to seal said second closing chamber radially inward thereof, the secondary slide being operable upon movement toward its open position to uncover an annular opening for passage of closing liquid from said first closing chamber to said opening chamber.

4,643,709

METHOD OF OPERATING NOZZLE CENTRIFUGES

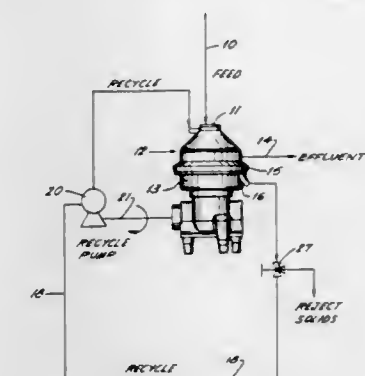
Chie-Ying Lee, Pleasant Valley; James D. West, and Gerald F. Cole, both of Poughkeepsie, all of N.Y., assignors to Alfa-Laval, Inc., Poughkeepsie, N.Y.

Filed May 1, 1985, Ser. No. 729,241

Int. Cl.⁴ B04B 5/00

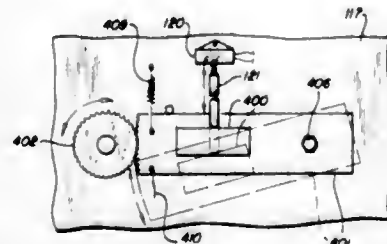
U.S. Cl. 494-37

11 Claims



1. In the operation of a nozzle-type centrifuge for the separation of a slurry into a concentrated solids component and an effluent component, the centrifuge including a centrifugal rotor, the method which comprises feeding said slurry to the rotor while driving the rotor through a drive train to effect said separation, separately discharging said components from the rotor, said concentrated solids component being discharged through nozzles at the peripheral portion of the rotor, recycling a stream of concentrated solids through the rotor from said nozzles by way of a return line including pumping means, and driving said pumping means from said drive train, whereby the rate of driving said pumping means is maintained directly proportional to the rate at which the rotor is driven.

4,643,710
VALVE APPARATUS FOR PHOTOACTIVATION
PATIENT TREATMENT SYSTEM
 Vernon H. Troutner, St. Petersburg, Fla., assignor to McNeillab, Inc., Fort Washington, Pa.
 Division of Ser. No. 668,827, Oct. 29, 1984, Pat. No. 4,596,847.
 This application Dec. 23, 1985, Ser. No. 812,698
 Int. Cl.⁴ B04B 7/02
 U.S. Cl. 494—60



1. Centrifuge cover locking apparatus for use in a treatment system including a centrifuge with a cover, for treating cells with a photoactivatable reagent comprising:
 rotatable lock means having at a first end thereof protruding means adapted for engaging said centrifuge cover, whereby said lock means, when in a first position allows the centrifuge cover to be opened and when rotated to a second position prevents said cover from being opened;
 said lock means further including at the second end thereof first gear means;
 motion translator means having second gear means for engaging said first gear means whereby, in response to a force, said motion translator rotates said first gear means to thereby cause rotation of said lock means;
 actuator means for supplying force in response to a signal;
 an actuator bar having a first end connected to said actuator means and a second end adapted to engage the motion translator means whereby force from said actuation may be translated to said motion translator means; and
 resilient means attached to said motion translator means for biasing said motion translator means against said second end of said actuator bar whereby said rotatable lock means is maintained in said first or second position in the absence of force from said actuator means.

4,643,711
TWO LUMEN HEMODIALYSIS CATHETER
 Brian L. Bates, Bloomington, Ind., assignor to Cook, Inc., Bloomington, Ind.
 Filed May 25, 1984, Ser. No. 613,805
 Int. Cl.⁴ A61M 3/00
 U.S. Cl. 604—4



1. A catheter comprising a tube having a circular external cross section, a fitting rotatably mounted on said tube so as to surround said cross section, said tube being rotatable about its axis relative to said fitting, said fitting having a projection adapted to be attached to the skin of a patient whose blood vessel is percutaneously catheterized by said catheter, and stop means fixed to said tube on opposite sides of said fitting and preventing said tube from moving longitudinally relative to said fitting, whereby said catheter can be rotated relative to said fitting in order to readjust the rotational position of said tube inside the blood vessel without longitudinal movement of the tube and without separating the attachment of the projection to the skin, wherein said catheter is a two lumen hemodial-

2 Claims

ysis catheter, wherein said lumens are side-by-side, said catheter having a distal end, one of said lumens extending all the way to the distal end of said catheter, said catheter being cut off at said distal end perpendicularly to the length of said tube to define the mouth of said one lumen, said tube being tapered from said cut off distal end to a point proximal of said distal end, said point being approximately three centimeters from said distal end, said taper of said tube defining at least a portion of the mouth of said second lumen.

4,643,712
AORTIC CANNULA
 Yaroslav P. Kulik, Blagoveschensk; Ivan I. Shmyrin, Vladivostok; Rustam I. Utyamyshev, and Marina N. Vyrzhikovskaya, both of Moscow, all of U.S.S.R., assignors to Blagoveschensky Gosudarstvenny Meditsinsky Institut, Blagoveschensk, U.S.S.R.

Filed Oct. 18, 1985, Ser. No. 789,144
 Int. Cl.⁴ A61M 1/03, 25/00

U.S. Cl. 604—4

2 Claims



1. An aortic cannula for return of blood to a patient during extracorporeal circulation, said cannula comprising:
 a head shaped as an oblate cone and including a front end adapted to be inserted into an aorta and being elliptical in cross-section and further including a base being circular in cross-section, said head flaring outwardly in a direction from said front end towards said base, a ratio between the lengths of a greater axis and a lesser axis of said elliptical front end decreases in a direction from said front end towards said base;
 a blood flow divider mounted on said base and having a pointed shape, a pointed end of said divider facing opposite to the direction of blood flow in said cannula;
 a tube communicating with said base and adapted for blood supply to said base, said tube having perforations staggered along a portion immediately adjacent to said base and including some perforations located opposite to said blood flow divider; and
 a sleeve slidably fitted on said tube, the length of said sleeve being greater than said portion of said tube which includes said perforations so that said sleeve moved between a first position covering said perforations and a second position uncovering said perforations.

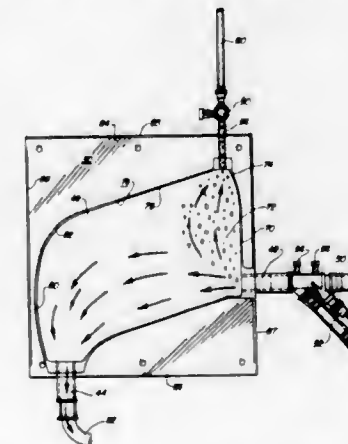
4,643,713
VENOUS RESERVOIR
 Daniel W. Viltala, Round Lake Beach, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
 Filed Nov. 5, 1984, Ser. No. 667,985
 Int. Cl.⁴ A61M 3/00

U.S. Cl. 604—4

4 Claims

1. A venous reservoir which comprises:
 two sheets of flexible material sealed together about the edges to define a bag having a venous blood inlet, a ve-

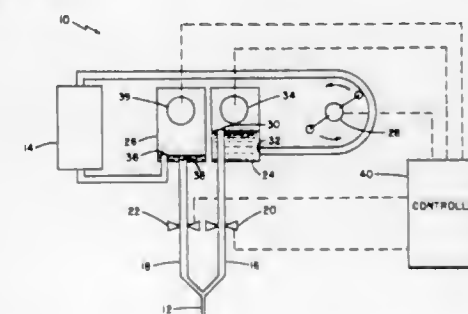
nous blood outlet and a vent outlet, the inlet being located at the lowermost portion of a generally vertical inlet wall of the container to allow the blood entering the inlet to immediately enter a large volume in the bag to cause the blood to expand rapidly, the top of said inlet wall communicating with said vent outlet whereby a sharp decrease in the velocity of the blood flow resulting from its rapid expansion provides buoyancy to air in the blood causing air bubbles to rise to the top of the bag and be vented through said vent opening, said bag having a top wall extending from the vent opening and toward the outlet that is curved in a manner to prevent the velocity of the blood from increasing until the blood is substantially at the blood outlet, the top wall extending forwardly and down-



wardly with a curved portion opposite to the inlet whereby the air bubbles that have not been discharged immediately upon entering the reservoir may flow back up the top wall to the vent opening, said inlet wall lying within a plane that is at an angle which approaches ninety degrees with respect to the inlet axis; said inlet being located at the bottom of said inlet wall and the vent opening being located at the top thereof, the vent opening and the blood outlet being diagonally spaced from each other at opposite ends of said container; said inlet being located in a horizontal plane that is higher than the horizontal plane in which the blood outlet is located, the inlet axis being perpendicular to the blood outlet axis and the vent opening axis being parallel to the blood outlet axis.

4,643,714
SINGLE NEEDLE APPARATUS
 Tom L. Brose, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.
 Filed Aug. 5, 1985, Ser. No. 762,562
 Int. Cl.⁴ A61M 1/03
 U.S. Cl. 604—4

14 Claims



1. Single needle blood treating apparatus comprising a single venipuncture needle for alternately removing un-

treated blood from and returning treated blood to a patient,
 an arterial line connected to said needle for removal of blood therefrom,
 a venous line connected to said needle for return of blood thereto,
 a fluid flow transfer device connected to said venous and arterial lines,
 venous and arterial clamps on said venous and arterial lines for blocking flow through said lines,
 a pump between said arterial and venous clamps for transporting blood through said arterial and venous lines,
 an arterial pressure sensor connected to sense the pressure between said arterial clamp and said pump,
 a chamber on said arterial line between said arterial clamp and said pump,
 control means for alternately maintaining said arterial clamp open and said venous clamp closed during an arterial phase and maintaining said arterial clamp closed and said venous clamp open during a venous phase,
 said control means including means responsive to said arterial pressure sensor for switching from said venous phase to said arterial phase when said pressure sensed by the arterial pressure sensor reaches a predetermined minimum value, and
 means for automatically monitoring the volume of blood removed from said patient during said arterial phase and for causing said control means to switch to said venous phase after a predetermined volume of blood has been removed from said patient,
 said means for monitoring including means for determining the amount of blood pumped by said pump since the beginning of the arterial phase and the amount of blood caused to flow into said chamber owing to pressure recovery in said chamber.

4,643,715
ARTIFICIAL ORGAN AND METHOD FOR MANUFACTURE THEREOF
 Keinosuke Isono, Kawaguchi, and Keiji Naol, Tokyo, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
 Division of Ser. No. 818,878, Jan. 14, 1986, which is a division of Ser. No. 530,023, Sep. 7, 1983, Pat. No. 4,588,407. This application Jun. 24, 1986, Ser. No. 878,059
 Claims priority, application Japan, Sep. 9, 1982, 57-155842; Oct. 6, 1982, 57-174478; Oct. 6, 1982, 57-174479; Oct. 6, 1982, 57-174480
 Int. Cl.⁴ A61F 2/02; B01D 13/00
 U.S. Cl. 604—4

13 Claims

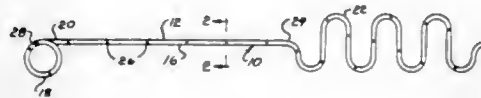


1. Medical permeating membranes at least portions of which are adopted to be in a zone through which a body fluid flows, said membranes having lateral surfaces adopted to be in said zone, comprising permeable membranes of regenerated cellulose and a film of a fat-soluble vitamin and glycerin on said lateral surfaces of said membranes.

4,643,716
MULTI-SIZE URETERAL STENT
 George W. Drach, Tucson, Ariz., assignor to The Kendall Company, Boston, Mass.
 Continuation of Ser. No. 654,358, Sep. 26, 1984, abandoned. This application May 15, 1986, Ser. No. 863,668
 Int. Cl.⁴ A61M 25/00

U.S. Cl. 604—8

3 Claims

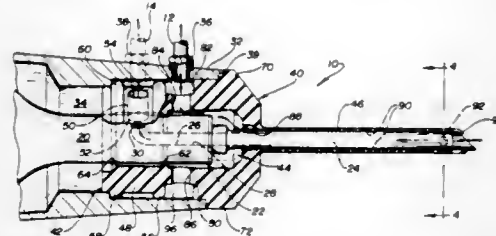


1. A ureteral stent, comprising:
 a catheter having a hollow elongated generally straight body portion, means for retaining the catheter in the kidney of a patient adjacent a distal end of the body portion, and a proximal end portion extending proximally from the body portion, said end portion being formed in a serpentine configuration disposed in a plane which may be cut to length depending upon the length of the patient's ureter, and a distal part of the remaining end portion may be straightened for alignment with the body portion and placement in the ureter while a part of the serpentine configuration proximal the straightened portion is maintained in the stent for placement in the bladder.

4,643,717
ASPIRATION FITTING ADAPTOR
 Kenneth P. Cook, Whitpain Township, Montgomery County, and Robert M. Bross, Ivyland, both of Pa., assignors to Site Microsurgical Systems, Inc., Horsham, Pa.
 Filed Sep. 16, 1985, Ser. No. 776,260
 Int. Cl.⁴ A61B 17/20

U.S. Cl. 604—22

12 Claims



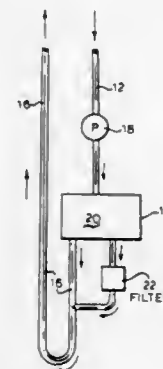
1. An adaptor for a surgical device, said surgical device comprising: an elongated instrument having a proximal end and a distal end; a probe extending axially from said distal end; and a shroud surrounding, but spaced away from, the distal portion of said instrument;
 said adaptor having means adapted for insertion into said device between said shroud and the distal portion of said instrument, and permitting fluid to flow through said device; said adaptor comprising:
 a generally annular housing wall having an outer wall surface and an inner wall surface, said inner wall surface surrounding a lumen, said lumen extending longitudinally through said adaptor for receiving the distal portion of the instrument with the probe extending distally from the adaptor;
 a fluid bore extending through the housing wall and terminating at an inner port in the inner wall surface and an outer port in the outer wall surface;
 said inner port adapted for alignment with a first fluid port in said instrument and said outer port adapted for alignment with a first fluid port in said shroud;
 adaptor alignment means on said adaptor for cooperating with device alignment means on said device for so align-

ing said inner and outer ports with said first and second fluid ports;
 inner sealing means depending from said inner wall surface for fluidly isolating said inner port and for forming a seal with the confronting surface of the instrument and prohibiting leakage of fluid along said lumen; and outer sealing means projecting from said outer wall surface for fluidly isolating said outer port and for forming a seal with a confronting surface of said shroud and prohibiting leakage of fluid along said outer wall surface of said adaptor.

4,643,718
THERAPEUTIC APHERESIS
 James F. Marten, Cohasset, Mass., assignor to Applied Immunoscience, Inc., Menlo Park, Calif.
 Continuation of Ser. No. 468,158, Feb. 22, 1983, Pat. No. 4,540,401. This application Jul. 23, 1985, Ser. No. 758,065
 Int. Cl.⁴ A61M 3/00

U.S. Cl. 604—28

7 Claims



1. A method of removing an immunologically reactive compound from the blood of a living mammal, which comprises:
 removing the whole blood from a living mammal in an extra corporeal, closed circuit;
 separating a portion of the blood plasma from the whole blood within the extra corporeal circuit, by passage of the portion through an ultrafilter, said ultrafilter permitting the passage of plasma with dissolved immunologically reactive compounds, but not permitting the passage of solids within said blood;
 reacting the separated immunologically reactive compound with its homolog bound to the surface of a lipid vesicle;
 separating the resulting lipid vesicle complex from the plasma;
 passing the blood plasma minus lipid vesicle bound immunologically reactive compound to the whole blood in the extra corporeal stream; and
 passing the whole blood back to the mammal's circulatory system.

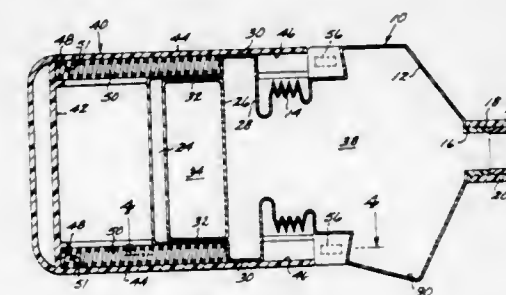
4,643,719
MANUALLY OPERABLE ASPIRATOR
 Geoffrey C. Garth, 334 Colorado Pl., Long Beach, Calif. 90814, and Charles A. Patterson, 314 C Monte Vista, Costa Mesa, Calif. 92627
 Filed Jul. 19, 1984, Ser. No. 632,306
 Int. Cl.⁴ A61M 1/06

U.S. Cl. 604—73

8 Claims

1. An aspirator for removing vomit and like matter from the mouth and throat, said aspirator comprising:
 collection means including a bias means and a substantially closed reservoir having a horizontally disposed longitudinal axis and an interior defining a proximal end and a distal end for receiving vomit, and further including a vacuum

control portion manually reciprocable to decrease and increase, respectively, the volume of said interior, said vacuum control means being movable against the bias of said bias means to increase said volume, said collection means further including an inlet to said interior and a one-way exhaust valve located in the upper portion of said interior transversely displaced from said longitudinal axis and above said inlet, substantially adjacent said proximal end, whereby said exhaust valve is out of the path of vomit entering said interior through said inlet, and whereby vomit cannot pass out of said exhaust valve until said interior is filled to near capacity, said exhaust valve being operative to vent air to atmosphere from said interior upon said decrease of said volume, said exhaust valve being located on a wall of said reservoir, said interior being otherwise closed to atmosphere to prevent escape of collected vomit;

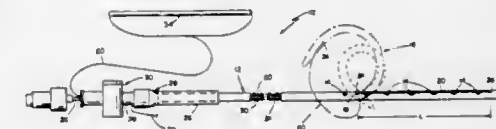


an elongated catheter in communication at its proximal extremity with said inlet, the distal extremity of said catheter having an internal diameter sufficiently large to pass vomit freely toward said inlet upon said increase of said volume; and
 one-way valve means operative upon said increase of said volume to define passage means into said catheter in the immediate region of said distal extremity to pass vomit freely through said passage means and toward said inlet and operative upon said decrease of said volume to close said passage means and prevent vomit in said catheter from passing back into the throat, said inlet and said passage means constituting the only openings into said catheter, said inlet valve having an internal diameter no greater than said internal diameter of said catheter to facilitate passage of vomit through said catheter toward said inlet.

4,643,720
DRAINAGE CATHETER
 Andrew P. Lanciano, Wareham, Mass., assignor to Medi-Tech, Watertown, Mass.
 Filed Feb. 14, 1986, Ser. No. 829,764
 Int. Cl.⁴ A61M 25/00

U.S. Cl. 604—95

5 Claims



1. A catheter comprising a hollow flexible tube having proximal and distal ends, and defining an opening near but spaced from said distal end, a flexible tension member passing from the outside, through said opening and along within said catheter toward said proximal end, said flexible member being connected to the distal end of said catheter in a manner whereby, when said flexible tension member is tensioned, the distal end of said catheter will be drawn toward said opening and a loop will be formed in the distal end portion of said catheter, and locking means associated with the proximal end of said catheter

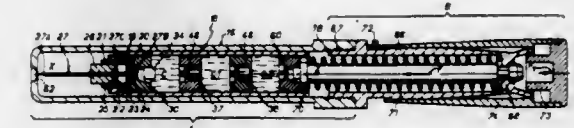
to secure said flexible member under tension to maintain said loop in said catheter member, the improvement wherein

said locking means comprises a pair of locking members disposed in close association with each other at a predetermined point along the proximal portion of said flexible tension member, one said locking member being movable relative to the other said locking member in motion laterally across the path of said tension member under tension to a locking position in which the tension member is bent and secured between said cooperating locking members, in said locking position said members being in a non-obstructing relationship to the fluid passage through said catheter.

4,643,721
MULTIPLE COMPARTMENT AMPULE FOR AUTOMATIC HYPODERMIC SYRINGES
 Patrice Brunet, Neuilly-sur-Seine, France, assignor to Poutrair-Morin, Aubervilliers, France
 Filed Nov. 15, 1985, Ser. No. 798,439
 Claims priority, application France, Nov. 20, 1984, 84 17672
 Int. Cl.⁴ A61M 5/08

U.S. Cl. 604—191

12 Claims



1. An ampule for an automatic hypodermic syringe comprising at least two axially aligned and hermetically separated compartments adapted to contain respective medicated substances, a nipple member disposed at one end of the ampule, a needle holder mounted in said nipple member and supporting a hollow needle, said needle holder being displaceable between a standby position and an operative or injecting position, an intermediate partition normally hermetically separating said two compartments, said intermediate partition having a valve member, actuating means cooperable with said valve member after a first of said compartments is substantially emptied of its medicated substance to open a path of flow through said intermediate partition to bring the second of said compartments into communication with said hollow needle.

4,643,722
CLOSURE SYSTEM FOR STORAGE, TRANSPORT AND DISPOSAL OF HYPODERMIC NEEDLES
 William I. Smith, Jr., 1061 Lindendale Rd., Pittsburgh, Pa. 15243
 Continuation-in-part of Ser. No. 482,145, Apr. 5, 1983, abandoned. This application Jun. 20, 1985, Ser. No. 747,027
 Int. Cl.⁴ A61M 5/32

U.S. Cl. 604—192

28 Claims

1. A hypodermic needle assembly comprising a hypodermic needle, said needle having a tubular portion and a radially enlarged hub portion, elongated needle closure means for facilitating safe storage, transport and disposal of said needle, said closure being of generally tubular configuration having an open end generally adjacent said hub portion and a closed end, an elongated slot in said closure of predetermined generally fixed width and length and of sufficient size to permit relative lateral reinsection of said needle into said closure, closure strip means secured to said closure over said slot, said closure strip means being in nonobstructing position with respect to said slot when in an open position,

said slot originating in spaced relationship with respect to said closed end and extending to said open end, and said slot having a width less than about one-half the average external diameter of said closure, whereby relative lateral



movement of said needle with respect to said closure will permit either reintroduction of said needle into said closure or removal of said needle therefrom, and engagement or disengagement of said enlarged hub portion by said closure.

4,643,723

DEVICE FOR ADMINISTERING A LIQUID IN A NUMBER OF DOSES

Cornelis Smit, Heussenstraat 70, 2023 JG Haarlem, Netherlands

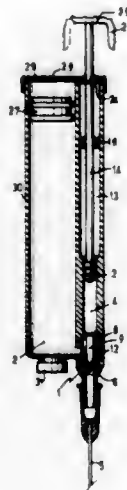
Filed Dec. 19, 1985, Ser. No. 811,804

Claims priority, application Netherlands, Dec. 24, 1984, 8403937

Int. Cl.⁴ A61M 5/00

U.S. Cl. 604—207

17 Claims



1. A device for administering a liquid in a number of doses, such as insulin to a patient, said device comprising a piston being reciprocally disposed in a pump chamber, a cannula being connectible to the pump chamber and a piston rod connected to the piston and having an operating button characterized by a valve (1) and a reservoir (2) wherein by retracting the piston (3), at the same time the reservoir is connected to the pump chamber (4) through the valve in order to fill the pump chamber and the valve is moved into the position for closing the connecting element (6) between the pump chamber and the cannula (5) and wherein, by moving the piston forward, at the same time the connecting element between the pump chamber and the cannula is connected through the valve to the pump chamber and the valve is moved into the position for closing the passage (7) between the reservoir and the pump chamber, and the valve consists of a sleeve (10) about a body (8), a channel (9) extending through the body, between the pump

chamber and the connecting element (6) for the cannula and the passage in the body branching off from the channel and communicating with the reservoir and in that the sleeve is of elastic material and in unburdened condition closes off both the outlet (12) of the channel to the cannula and the outlet (11) of the reservoir to the passage, whereas the sleeve portion of the outlet of the channel can only be pushed aside elastically by piston pressure exerted in the pump chamber and the upper rim of the sleeve reaches exactly up to the upper side of the passage of the reservoir, so that under subatmospheric pressure created by retracting the piston in the pump chamber, the sleeve contracts elastically so that the passage is open, whereas the sleeve near the passage completely covers the outlet of the reservoir during superatmospheric pressure in the passage.

4,643,724

SYRINGE HOLDER

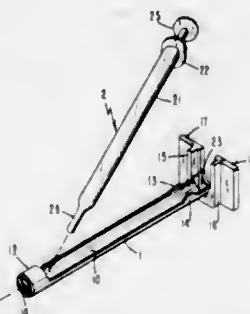
Michael J. Jobe, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 16, 1985, Ser. No. 809,668

Int. Cl.⁴ A61M 5/245

U.S. Cl. 604—232

9 Claims



1. A holder for securing a syringe to a needle assembly, comprising a body for receiving said syringe having frontal and distal ends, said frontal end having means for securing an ear portion of said syringe to prevent axial movement between said syringe and said body, said distal end having an opening with a luer lok mechanism through which the forward portion of said syringe is disposed whereby the luer lock secures the forward portion of the syringe; wherein the body comprises an elongate semicircular channel adapted to receive a syringe, a circular distal end, and a frontal member attached to the frontal end of the semicircular channel; said circular distal end forming a closed barrel along the distal end of the body; said frontal member including a pair of flanges, said flanges spaced slightly away from the end of the semicircular channel and supported by a pair of supports with a recess defined between the flanges and channel by the width of the support, said recess accepting a flange of the syringe, and both flange and support defining a U-shaped area through which a head of said syringe can be placed.

4,643,725

COMBINATION PACKAGE AND APPLICATOR

Marilyn Schlessor, 42-11 NE. 23 Terr., Lighthouse Point, Fla. 33064, and Marie Bernard, 6451 Park View Dr., Boca Raton, Fla. 33433

Filed Jul. 1, 1985, Ser. No. 750,020

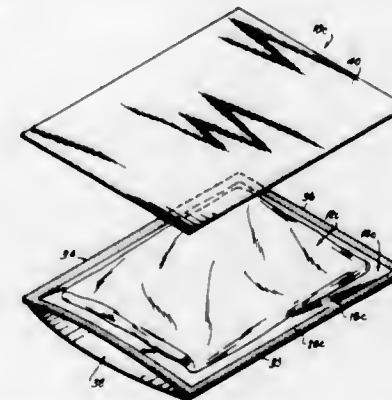
Int. Cl.⁴ A61F 13/00

U.S. Cl. 604—306

9 Claims

1. A combination package and applicator for moist and/or greasy substances, comprising:
a flexible backing member formed of a material that is impermeable to moisture and grease;
a carrier impregnated with said substance substantially permanently affixed to a surface of said backing member;
said carrier being sealed within an enclosed space defined at

least in part by said backing member when said combination package and applicator is closed; and grasping means associated with said backing member by which said combination package and applicator can be firmly gripped by the user and the substance applied without coming into contact with said substance impregnated carrier;



wherein said grasping means comprise said backing member formed by a pair of opposed sheet portions; and wherein said opposed sheet portions are connected to each other along peripheral side regions to define an open end into which at least several fingers of a user's hand can be inserted.

4,643,726

INCONTINENCE INSERT

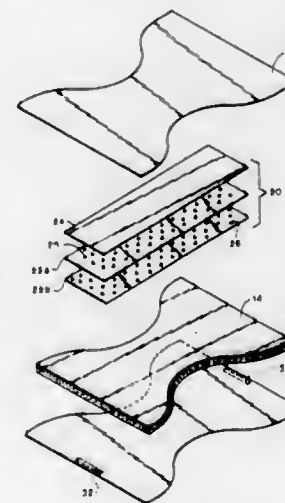
Anthony A. Gegelya, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 514,520, Jul. 18, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,175

Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—368

9 Claims



1. An insert for use by incontinent individuals adapted to be situated in a conventional undergarment, the insert consisting of a substantially hourglass-shaped body with cut-out sections to accommodate the legs of the individual, said body consisting of an inner layer of non-woven moisture permeable polyester or rayon fiber, an outer layer of moisture impermeable polyethylene film, and a single layer of moisture absorbent fluffed wood pulp core material, said inner layer and said outer layer being joined along the periphery of said body to enclose said absorbent core material, a centrally located portion situated

between said cut-out sections and interposed between said inner layer and said absorbent material, said portion consisting of a uni-directional barrier layer of substantially uniform thickness and a moisture permeable wicking layer of tissue material situated between said barrier layer and said inner layer, said barrier layer comprising a laminate containing a polymer that expands when wetted, said barrier layer having a plurality of apertures therethrough, said apertures having a given diameter prior to the expansion of said polymer to facilitate the passage of liquid through said barrier layer to said absorbent core material, the diameter of said apertures decreasing as said polymer expands so as to restrict the passage of liquid back through said barrier layer towards said permeable inner layer.

4,643,727

ABSORBANT PAD

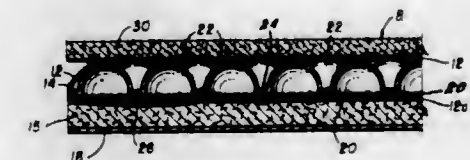
Richard J. Rosenbaum, 3246 E. Easter Place, Littleton, Colo. 80122

Filed Jan. 7, 1985, Ser. No. 689,481

Int. Cl.⁴ A61F 13/00

U.S. Cl. 604—369

4 Claims



1. An absorbant diaper construction comprising:
a plurality of layers and including at least a pneumatic liquid impervious cellular layer having a top with cells, a bottom and edge;
a wicking layer positioned at least above the top of the cellular layer and having portions wrapped around the edges thereof positioned adjacent the bottom of the cellular layer;
a bottom liquid impervious layer coextensive with said cellular layer; and,
a liquid absorbant layer between said cellular layer and said bottom layer thereof with said pneumatic cellular layer comprising a pair of plastic sheets having a plurality of air cells formed therebetween with unobstructed fluid directing passageways between the air cells, with the cells almost entirely formed in the top plastic sheet and said cellular layer forming a liquid tight barrier against a liquid passing therethrough.

4,643,728

ELASTICIZED DIAPER WITH WATERPROOF CROTCH SEALS

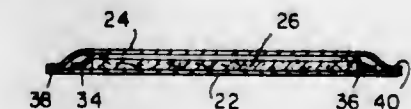
Hamseh Karami, Tilff, Belgium, assignor to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,293

Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—385 A

3 Claims



1. A disposable diaper comprising a flat backing sheet, an absorbent pad on said backing sheet, said absorbent pad being of an hour-glass shape defining ears spaced from a crotch area, a top sheet overlying said absorbent body, said top sheet being secured to said backing sheet on at least two opposite peripheral edges thereof, opposed elasticized waterproof strips partially overlying and bonded to said pad in said crotch area and

having outer portions extending downwardly toward said backing sheet with said outer portions being bonded to said backing sheet to form narrow elasticized crotch seals in the central crotch area portions of said two opposite peripheral edges to define narrow elasticized waterproof seals along the side edges of the crotch portion of said pad, said strips overlying said ears and being bonded to said ears of said pad so that no pleats extend transversely of said crotch area of said pad.

4,643,729

ELASTIC FASTENERS FOR A DIAPER

Pierre Laplanche, Turckheim, France, assignor to Beghla-Say S.A., Thumeries, France

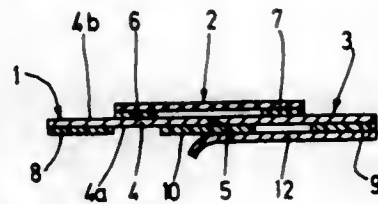
Continuation of Ser. No. 355,570, filed as PCT FR81/00067, Jun. 2, 1981, published as WO81/03601, Dec. 24, 1981, abandoned.

This application May 16, 1985, Ser. No. 734,609

Claims priority, application France, Jun. 19, 1980, 80 13577
Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—389

9 Claims



1. An elastic fastener adapted to be used for fastening the front and rear faces of a diaper comprising three parts, namely: a first lateral side part fixed on one face of the said diaper, an extensible central part, and a second lateral side part intended to be fastened at the time of use to the other face of said diaper by means of a pressure-sensitive adhesive, characterized in that, before use, the two side parts of the fastener form part of a single piece composed of a support band provided with a transverse precut line, and said lateral parts being separated at the time of use along said precut line by pulling on the said second lateral part with said lateral parts remaining joined together elastically by said extensible central part fastened to each of the said lateral parts by means of two bands of adhesive disposed on one and the same first face of the support band on each side of the precut line, the second face of the support band being coated with adhesive for the fastening of the two side parts of the fastener to the front and rear faces of said diaper, respectively.

4,643,730

RADIATION CURING FORMULATIONS FOR POLYETHYLENE FILM REINFORCEMENT TO PROVIDE REFASTENABLE PRESSURE-SENSITIVE TAPE CLOSURE SYSTEM FOR DISPOSABLE DIAPERS
Franklin M. C. Chen, and William R. Van Bommel, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 26, 1985, Ser. No. 781,089

Int. Cl.⁴ B05D 3/06

U.S. Cl. 604—390

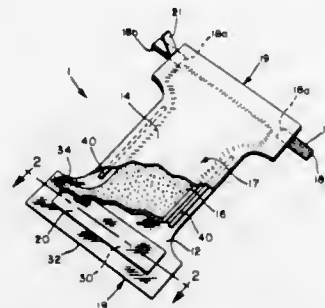
26 Claims

1. A method for reinforcing a substrate to provide an attachment zone for a pressure-sensitive adhesive tape, comprising the steps of:

- coating at least a portion of the surface of said substrate with a layer of material which is capable of being polymerized by a high-energy-radiation; and
- polymerizing said coating material with a source of said high-energy-radiation to form a reinforcement layer affixed to said substrate, thereby providing an attachment zone against which said tape can be refastenably adhered, wherein said attachment zone has a peel tear strength greater than a peel adhesion value of said pressure-sensitive adhesive tape.

26. A disposable garment, comprising:

- a fluid permeable facing sheet;
- a backing sheet which includes a fluid impermeable layer and is attached to selected areas of said facing sheet;
- an absorbent pad disposed between said facing sheet and said backing sheet; and
- one or more pressure-sensitive tape strips which has attached portions affixed to selected portions of said garment and which have unattached portions configured to



adhesively engage predetermined attachment zones located on other selected portions of said garment; wherein said backing sheet has a peel tear strength less than a peel adhesion value of said tape strips; said attachment zones include a reinforcement layer, which is composed of a polymerized urethane acrylate acrylic oligomer and is affixed to said backing sheet; and said reinforced attachment zones have a peel tear strength which is greater than the peel adhesion value of said tape strips.

4,643,731

MEANS FOR PROVIDING INSTANT AGENT FROM AGENT DISPENSING SYSTEM

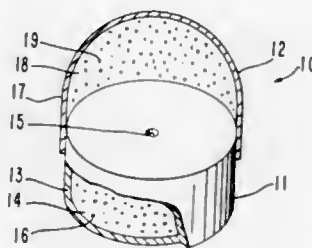
James B. Eckenhoff, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Filed Aug. 16, 1985, Ser. No. 766,454

Int. Cl.⁴ A61K 9/22

U.S. Cl. 604—892

12 Claims



1. A dispensing system for delivering a beneficial agent formulation to an environment of use, the dispensing system comprising:

- a first means for delivering continuously a beneficial agent formulation to an environment of use, said first means comprising:
 - a first wall that maintains its physical and chemical integrity in the environment of use and comprising in at least a part a polymeric composition permeable to the passage of fluid present in the environment of use, which wall surrounds and defines;
 - a compartment;
 - a beneficial agent in the compartment; and,
 - exit means in the wall for continuously delivering the beneficial agent formulation from the first means to the

environment of use over a prolonged period of time; and,

- a second means for making a beneficial agent formulation instantly available to the environment of use, said second means comprising:

- a second wall comprising a composition that loses its physical and chemical integrity in the environment of use for instantly making a beneficial agent formulation available to the environment of use, which wall telescopically caps, surrounds and encloses a portion of the first means and forms;
- a lumen between the first means and the second means formed by the telescopically capped arrangement; and,
- a beneficial agent formulation in the lumen available by the telescopically capped second wall losing its physical and chemical integrity in the environment of use for instant delivery of said beneficial agent by the second means to the environment of use.

4,643,732

HEART VALVE PROSTHESIS

Hanns Pietach; Holger Kartheus, both of Hamburg, and Helmut Reul, Duren, all of Fed. Rep. of Germany, assignors to Belersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

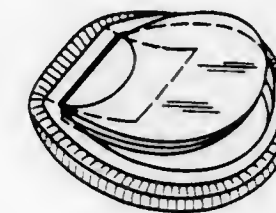
Filed Oct. 21, 1985, Ser. No. 789,587

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442088

Int. Cl.⁴ A61F 2/24

U.S. Cl. 623—2

9 Claims



1. A heart valve prosthesis consisting of a valve housing in the form of a ring and a curved valve which is mounted within the housing and which is hinged to the valve ring by means of a flat flexible small lug, is characterized in that the valve and the ring each consist of two rigidly joined halves fitting respectively onto or into each other and the end portions of the small lug in the form of a short strip are embedded "sandwich"-like between the valve halves on one side and between the ring halves on the other side.

4,643,733

PERMANENT RECONSTRUCTION IMPLANT AND METHOD OF PERFORMING HUMAN TISSUE EXPANSION

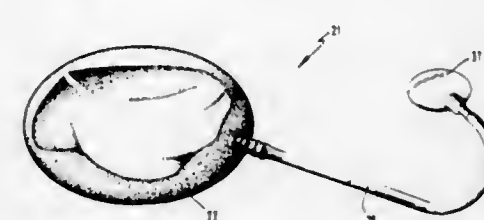
Hilton Becker, 818 Lakeside Dr., North Palm Beach, Fla. 33408

Filed Apr. 4, 1983, Ser. No. 481,912

Int. Cl.⁴ A61F 2/12, 2/02; A61B 19/00

U.S. Cl. 623—8

8 Claims



1. A delayed filling permanent reconstruction implant comprising an inflatable flexible plastic prosthesis constructed substantially entirely of a relatively soft and flexible material adapted to be implanted beneath human tissue, said prosthesis

having an inlet opening, a normally closed valve in said opening, a filling tube having one end detachably connected to said prosthesis at said inlet opening and operable when in said opening to open said valve, and a reservoir connected to the other end of said filling tube, whereby said prosthesis can be controllably expanded after implantation by percutaneously injecting fluid into said reservoir which fluid passes through said filling tube into said prosthesis, said filling tube and reservoir both readily detachable from the prosthesis upon achieving the desired expansion thereof and said opening forming a relatively smooth exterior surface upon detachment of said filling tube therefrom whereupon said valve closes and said prosthesis remains permanently implanted.

8. A method of performing human tissue expansion and providing a permanent reconstruction implant comprising the steps of providing a permanent prosthesis having an inlet opening, a normally closed valve in said opening, providing a filling tube having one end adapted for insertion into said inlet opening to open said valve and having a self-sealing reservoir at its other end, surgically placing the prosthesis in the area to be reconstructed and placing the filling tube and reservoir beneath the skin adjacent the prosthesis with the tube one end in the inlet opening, gradually expanding the prosthesis by percutaneous fluid injections into the reservoir, and detaching the reservoir and filling tube from the prosthesis and allowing the prosthesis to remain permanently in position.

4,643,734

LACTIDE/CAPROLACTONE POLYMER, METHOD OF MAKING THE SAME, COMPOSITES THEREOF, AND PROSTHESES PRODUCED THEREFROM

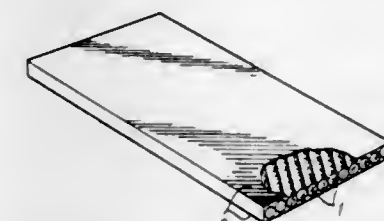
Steve Lin, Dublin, Calif., assignor to Hexcel Corporation, San Francisco, Calif.

Filed May 5, 1983, Ser. No. 491,927

Int. Cl.⁴ A61F 2/28

U.S. Cl. 623—16

23 Claims



1. A bio-absorbable copolymer consisting essentially of lactide and epsilon caprolactone, wherein said epsilon caprolactone is present in amounts of 60-95% by weight and said lactide is present in amounts of 5-40% by weight, and wherein said copolymer is tough, elastic, has good tensile strength and elongation to failure in excess of 2000%, and is non-brittle and non-rigid.

4,643,735

REPAIR MATERIAL FOR USE WITH BONES

William V. Hayes, Bandera, and Albert H. Turner, Houston, both of Tex., assignors to Hayes Separation, Inc., Houston, Tex.

Filed Feb. 27, 1985, Ser. No. 706,138

Int. Cl.⁴ A61F 2/28

U.S. Cl. 623—16

3 Claims

1. A method of repairing an injured bone in a body comprising the steps of: preparing for implantation particles of substantially pure, randomly cross linked polydivinyl benzene, essentially free of monomer and catalyst; reassembling broken pieces of bone in an aligned fashion; and filling the gaps therein with the particulate polydivinyl benzene which does not trigger the bodies rejection system and which particulate material enables bone knitting such that the particulate material is inte-

grated into the healed bone upon completion of the healing process wherein the material has a surface area of 150 square meters per gram or more and a weight of about 0.3 to 0.45 gm/cc to define a porous particulate material and is an essen-

tially pure linked monomer or polymer having sufficient cross linking to form an irregular shape with pores, the porous particulate material defining an inert matrix enabling bone growth therewith.

CHEMICAL

(iii) recovering said reaction product.

4,643,736

**DESIZING AND BLEACHING WOVEN FABRICS IN A
SINGLE OPERATION IN A BATH BASED ON SODIUM
CHLORITE**

Jean-Marie Cholley, Paris, France, assignor to Produits Chimiques Ugine Kuhlmann, France
Continuation of Ser. No. 552,861, Nov. 17, 1983, abandoned, which is a continuation of Ser. No. 336,883, Jan. 4, 1982, abandoned. This application May 6, 1985, Ser. No. 731,591
Claims priority, application France, Jan. 23, 1981, 81 01201
Int. Cl. A D06L 3/06

U.S. Cl. 8—108.1 **7 Claims**
1. A process for desizing and bleaching cellulosic fabrics in a single operation, which process comprises impregnating cellulosic cloth with a aqueous desizing-bleaching composition having a pH of at least 9.2 and containing alkali-metal chlorite, a surface active agent, an activator, an amolytic enzyme, and a strong alkali-metal hydroxide base.

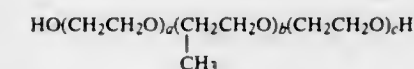
4,643,737

POLYOL-ACID ANHYDRIDE-N-ALKYL-ALKYLENE
DIAMINE REACTION PRODUCT AND MOTOR FUEL
COMPOSITION CONTAINING SAME

Rodney L. Sung, Fishkill, and Robert H. Jenkins, Jr., Walden,
both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Oct. 25, 1985, Ser. No. 791,638
Int. Cl.⁴ C10L 1/22

U.S. Cl. 44-63 10 Claims
1. A fuel composition for an internal combustion engine comprising:

- (a) a major portion of a liquid hydrocarbon fuel and
- (b) a minor amount, as a deposit inhibitor additive, of a reaction product of a process comprising:
 - (i) reacting a dibasic acid anhydride with a polyol of the formula



where $a + c$ is about 10 to about 80 and b is about 5 to about 70; thereby forming an ester of maleic acid;

(ii) reacting said ester of maleic acid with an N-alkyl-alkylene diamine, thereby forming the reaction product; and

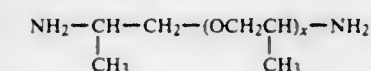
(iii) recovering said reaction product.

4,643,738
POLYOXYISOPROPYLENEDIAMINE-ACID
ANHYDRIDE-N-ALKYL-ALKYLENE DIAMINE
REACTION PRODUCT AND MOTOR FUEL
COMPOSITION CONTAINING SAME

Rodney L. Sung, Fishkill, and Robert H. Jenkins, Jr., Walden,
both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Sep. 27, 1985, Ser. No. 780,141
Int. Cl.⁴ C10L 1/22

U.S. Cl. 44-63 9 Claims
1. A fuel composition for an internal combustion engine comprising:

- (a) a major portion of normally liquid hydrocarbon fuel and
- (b) a minor amount, as a deposit inhibitor additive, of a reaction product of the process comprising:
 - (i) reacting a disbasic acid anhydride with a polyoxyisopropylene diamine



where x is a numeral of about 2 to about 68, thereby forming a maleamic acid;

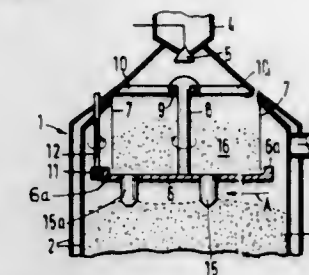
(ii) reacting said maleamic acid with a N-alkyl-alkylene diamine, thereby forming a reaction product and;

4,643,739
FUEL DISTRIBUTOR IN A REACTOR FOR GASIFYING
SOLID GRANULAR FUELS

Gert Schuster, Neus Anspach; Helmut Vierrath, Neu-Isenburg; Hans K pfer, Frankfurt am Main, and Heinz Wolf, Bad Nauheim, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 30, 1985, Ser. No. 792,811
Claims priority, application Fed. Rep. of Germany, Nov. 7,
1984. 3440618

U.S. Cl. 48—86 R Int. Cl.⁴ C10J 3/30 4 Claims



1. In a reactor for gasifying solid granular fuels having particle sizes in the range from about 2 to about 80 mm under a pressure of 5 to 150 bars by a treatment with gasifying agents containing oxygen, water vapor and/or carbon dioxide, wherein the fuels constitute in the reactor a slowly descending fixed bed, into which the gasifying agents are introduced from below and from the lower end of which the incombustible mineral constituents of the fuels are withdrawn, which reactor comprises a rotary distributor disposed above the fixed bed and has at least one fuel outlet structure that is directed toward the fixed bed, and which reactor also comprises a lock chamber disposed above the distributor and serves to deliver fuel to the distributor, the improvement wherein the fuel outlet structure consists of a tube having an outlet end portion that is provided on opposite sides with respective arcuate cutouts spaced apart at a right angle to the direction of rotation of the tube and permitting the fuel to flow through said cutouts approximately at a right angle to the direction of movement of the tube, and the outlet end of the tube has approximately the same elevation on its leading and trailing sides and the outlet end portion is approximately symmetrical to a vertical median plane of the tube at a right angle to the direction of movement of the tube.

4,643,740
METHOD FOR APPLYING MATERIAL TO A
SUBSTRATE

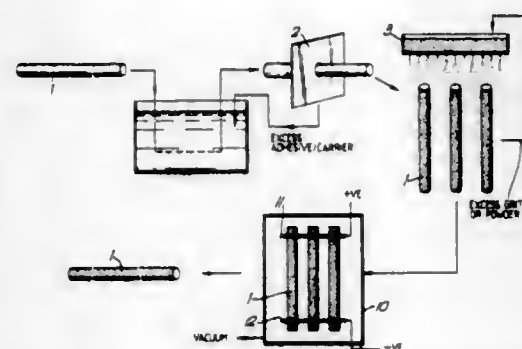
**Peter J. Nicolson, St Neots, England, assignor to C4 Carbides
plc, Cambridge, England**

Filed Oct. 15, 1985, Ser. No. 787,377
Claims priority, application United Kingdom, Oct. 15, 1984,
8426036

Int. Cl.⁴ B24D 3/00

U.S. Cl. 51-293 12 Claims
1. A process for brazing refractory particles onto a substrate, which process comprises applying to the substrate a brazing material, a particulate refractory material to be brazed onto the

substrate and a binder composition; and connecting the substrate to a source of an electric current to cause the current to



flow through the substrate whereby the substrate is heated to sufficient temperature to cause the brazing material to fuse.

4,643,741
THERMOSTABLE POLYCRYSTALLINE DIAMOND BODY, METHOD AND MOLD FOR PRODUCING SAME
Hongchang Yu; Zhen Yang; Chaodong Wang, and Zhongqing Zai, all of Research Institute for Abrasives & Grinding, Ministry of Machine Building Industry, Huashan Road, Zhengzhou, Henan, China

Filed Dec. 14, 1984, Ser. No. 681,549
Int. Cl.⁴ B24B 1/00

U.S. Cl. 51—295

50 Claims



1. A thermostable polycrystalline diamond body comprising about 70% to 99% by weight of diamond crystals with a grit size in the range of about 1 to about 150 microns uniformly distributed therein, the surface of said diamond crystals being covered with β -silicon carbide, and chemically and adherently bonded therewith to form an uninterrupted framework, the interstices of which are filled with elemental silicon which is chemically and adherently bonded to said β -silicon carbide.

4,643,742
METHOD FOR COOLING GASES AND REMOVING DUST FROM THEM
Björn Hammarskog, Sala, Sweden, assignor to SKF Steel Engineering AB, Hofers, Sweden

Filed Mar. 28, 1985, Ser. No. 717,311
Claims priority, application Sweden, Oct. 17, 1984, 8405185
Int. Cl.⁴ B01D 47/12

U.S. Cl. 55—20

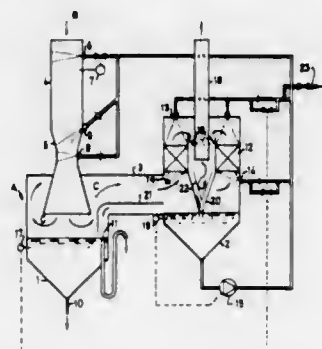
5 Claims

1. A method of cooling and cleaning a gas which contains dust particles comprising:

- saturation of the gas with water vapor;
- accelerating the gas that has been saturated with water vapor while injecting water into the gas to achieve a high relative velocity between the dust particles and the water, the temperature of the water injected into the gas being lower than the temperature of the gas such that water

vapor in the gas condenses and causes separation of submicron dust particles;

- passing the gas from step (b) over the surface of water in a first sedimentation zone having a water sump and a temperature regulator in said sump to cause a major portion of the dust particles to be removed from the gas and collected in said first sedimentation zone;
- further cleaning and cooling the gas from step (c) by contacting the gas directly with water;



- recirculating at least a portion of the water used in step (d) through a second sedimentation zone to steps (a) and (b) while supplying water externally to said second sedimentation zone; and
- controlling the water withdrawn from the surface of said first sedimentation zone, the water recirculated in said second sedimentation zone and the water supplied externally to the second sedimentation zone with said temperature regulator.

4,643,743
PRESSURE SWING ADSORPTION PROCESS FOR SUPPLYING OXYGEN UNDER VARIABLE DEMAND CONDITIONS

Ronald J. Grader, East Amherst, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 10, 1983, Ser. No. 465,434
Int. Cl.⁴ B01D 53/04

U.S. Cl. 55—26

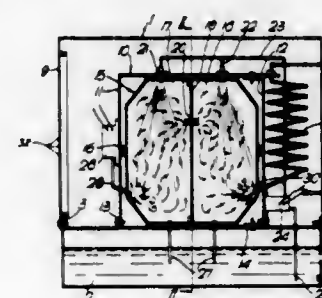
22 Claims

1. In a pressure swing adsorption process for the production of oxygen for delivery to a variable oxygen demand wastewater treatment system, said oxygen being produced by a pressure swing adsorption system capable of selectively adsorbing nitrogen, said system having at least two adsorbent beds, each of which undergoes, on a cyclic basis, cocurrent depressurization from a higher adsorption pressure to one or more intermediate pressures with release of an enriched oxygen stream from the product end of the bed; counter-current depressurization to a lower desorption pressure and/or purge with release of selectively adsorbed nitrogen from the feed end of the bed; and repressurization to said higher adsorption pressure, with at least a portion of the gas released from one bed during said cocurrent depressurization step(s) being passed to one or more other beds initially at lower pressures for pressure equalization and/or purge purposes, said pressure swing adsorption process being carried out in said system such that an adsorption front of the selectively adsorbed nitrogen is formed in each bed and advances toward the product end thereof during said cocurrent depressurization step, the improvement comprising:

- maintaining an oxygen product/feed air ratio in each bed in the system, during periods of maximum oxygen demand for said wastewater treatment system, such that the enriched oxygen product released from said bed is essentially at a design oxygen purity level corresponding to the maximum design oxygen demand in said wastewater treat-

- ment system, said adsorption front of said selectively adsorbed nitrogen advancing toward but not reaching the product end of the bed during the cocurrent depressurization of the bed to said intermediate pressure(s);
- increasing said oxygen product/feed air ratio in each bed, during periods of reduced oxygen demand in said wastewater treatment system, such that the enriched oxygen product released from said bed is at a lower oxygen purity level than the design level, said adsorption front of selectively adsorbed nitrogen breaking through at the product end of the bed during said cocurrent depressurization of the bed, the amount of enriched oxygen product released from said bed under the lower purity conditions corresponding essentially to the reduced oxygen demand for said wastewater treatment system; and
- adjusting the product/feed ratio between the conditions of step (a) for maximum oxygen demand, wherein oxygen product is released essentially at said design oxygen purity level, and the higher product/feed ratios of step (b) for lower, variable oxygen demand conditions, wherein oxygen product is released at a lower oxygen purity level than said design level, thereby decreasing oxygen product purity in response to lower oxygen demand, whereby oxygen recovery is enhanced and power requirements are reduced in the operation of said pressure swing adsorption system in conjunction with said variable oxygen demand wastewater treatment system.

4,643,744
APPARATUS FOR IONIZING AIR
Douglas M. Brooks, Corby, England, assignor to Triactor Holdings Limited, Castletown, England
Filed Feb. 12, 1985, Ser. No. 700,977
Claims priority, application United Kingdom, Feb. 13, 1984, 8403735
Int. Cl.⁴ B03C 9/00; H05F 3/00; F23L 1/00; B05B 5/00
U.S. Cl. 55—107

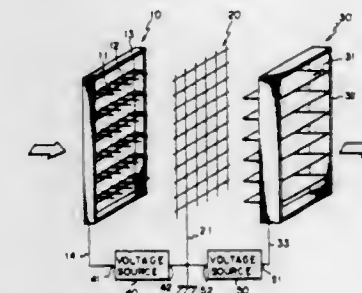


1. Ion-generation and delivery apparatus, comprising a closed container made of insulating antistatic material to define a charge-transferring region therein, the container having gas inlet means and gas outlet means; water-spraying means to produce, in said charge-transferring region of said container, a water mist which includes discrete negative and positive ions, said water-spraying means consisting of at least one atomizing jet and means to deliver water to said at least one atomizing jet, the insulating antistatic construction of the container being such as to limit recombination of said negative and positive ions within said charge-transferring region; means to cause gas to enter said container via said inlet means and to pass through said mist in said charge-transferring region, whereby negative ionization is imparted to said gas by said water mist; and demister means made of insulating antistatic material connected to said gas outlet to permit delivery of the negatively ionized gas to a location at which said negative ionization is to be used and for substantially drying the ionized gas.

4,643,745
AIR CLEANER USING IONIC WIND
Nobuyoshi Sakakibara, Hekinan; Tadashi Hattori, Okazaki; Kazuhiko Miura, Aichi; Hiroki Noguchi, Nishio; Akira Fukami, and Teiichi Nabeta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Dec. 17, 1984, Ser. No. 682,753
Claims priority, application Japan, Dec. 20, 1984, 58-241431
Int. Cl.⁴ B03C 3/00

U.S. Cl. 55—137

14 Claims



- An air cleaner using ionic wind comprising: a case having an air passage therethrough; discharge electrode means arranged in said air passage, said discharge electrode means including a plurality of electrode members having sharpened portions, respectively, said sharpened portions being distributed in a plane across said air passage; intermediate electrode means arranged in said air passage at a predetermined distance from said discharge electrode means along said air passage, said intermediate electrode means including electrode members which extend in parallel to each other in a plane across said air passage and which have diametrical dimensions considerably larger than those of said sharpened portions of said discharge electrode means so that corona discharge occurs on or adjacent to said sharpened portions of said discharge electrode means upon the application of voltage between said discharge and intermediate electrode means; counter electrode means for collecting dust arranged in said air passage at a predetermined distance from said intermediate electrode means along said air passage on a side remote from said discharge electrode means, said counter electrode means including a plurality of plate electrodes arranged parallel to each other and generally perpendicular to said air passage;
- a first electric source for applying voltage between said discharge electrode means and said intermediate electrode means to cause ionization on or adjacent to said discharge electrode means to generate ionic wind said discharge electrode means through said intermediate electrode means; and
- a second electric source for applying voltage between said intermediate electrode means and said counter electrode means, the gradient direction of the electric field by said second electric source being identical to that by said first electric source with said intermediate electrode means grounded, the electric field of said second electric source applied between said intermediate electrode means and said counter electrode means causing the generated ionic wind to be accelerated.

4,643,746

APPARATUS FOR SEPARATING GAS FROM FLUID
Ryoshi Suzuki, and Joji Yamaga, both of Tokyo, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

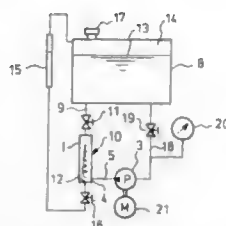
Filed Sep. 6, 1985, Ser. No. 773,115

Claims priority, application Japan, Sep. 11, 1984, 59-137337[U]

Int. Cl.⁴ B01D 19/00

U.S. Cl. 55—204

7 Claims



1. An apparatus for removing gases from a fluid comprising a bubble collecting device in the form of a cylinder having a cylindrical space therein, an inflow port at one end of said device disposed so that fluid is received therethrough and tangentially in said space to cause the fluid to form a swirling flow in the cylindrical space in such pressure distribution that pressure along the axis of the cylinder is lowest in the vicinity of the inflow port and rises gradually toward the downstream side to become a maximum and then decreases, thereby collecting the bubbles in a zone at the cylinder axis in the vicinity of the inflow port, a fluid discharge port on an axis of said bubble collecting device at the other end thereof, a fluid container having a fluid level therein, a first restriction means through which said fluid discharge port is communicated with a portion below the fluid level of said fluid container, a gas discharge port on the axis of said bubble collecting device at said one end thereof for removing collected bubbles from said bubble collecting zone irrespective of buoyancy, and a gas discharge pipe having one end communicated with said gas discharge port and the other end connected to an upper portion above the fluid level in the fluid container for discharging the collected bubbles through the discharge port by a back pressure provided by said first restriction means overcoming a negative pressure of the bubble collecting zone.

4,643,747

REACTION GAS COOLER FOR LOW-ENERGY PLANTS
Jürgen Becker, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steilmüller GmbH, Gummersbach, Fed. Rep. of Germany

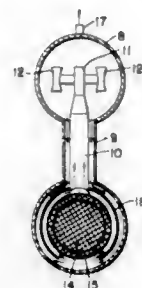
Filed Aug. 5, 1985, Ser. No. 762,703

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1984, 3429366

Int. Cl.⁴ B01D 53/26

U.S. Cl. 55—269

7 Claims



1. A reaction gas cooler primarily for low-energy plants, for example in an ammonia-producing plant, with which heat of

the reaction gas is utilized to greater extent possible for producing saturated steam or vapor, which includes, successively arranged, a refractory lined gas inlet, a first stage in the form of a tube bundle heat exchanger through which the gas flows, an intermediate chamber having a periphery, and a second stage in the form of a tube heat exchanger through which the gas flows;

the improvement wherein said second stage has a double flow design, so that for all practical purposes a three-stage cooler is provided, to permit heat transfer surface to be optimized in addition to elimination of by-pass tubes as well as elimination of refractory lining of the intermediate chamber because cooled gas flows back and is withdrawn at the periphery of the intermediate chamber.

4,643,748

CLEANING APPARATUS

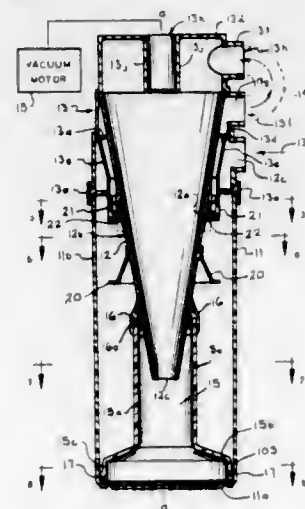
James Dyson, Bathford, England, assignor to Notetory Limited, Bristol, England

Filed Feb. 24, 1986, Ser. No. 832,370

Int. Cl.⁴ B01D 45/12

U.S. Cl. 55—338

18 Claims



15. In a cleaning apparatus including an outer container comprising a bottom and a sidewall extending to and meeting the bottom, the sidewall having an interior surface, a dirty air inlet at an upper portion of the outer container spaced from the bottom which is oriented for supplying dirt laden air into the container tangentially to the interior surface of the outer container which has a circular cross-section and an air outlet from the container at the upper portion of the container; a circular cross-sectioned cyclone having a longitudinal axis and mounted inside the container, the cyclone comprising a cyclone air inlet at an upper end having a first diameter of the cyclone in air communication with the air outlet of the container, an interior dirt rotational surface of frusto-conical shape for receiving an air flow from the air inlet and for maintaining its velocity to a cone opening smaller in diameter than the diameter of the upper end of the cyclone, the air inlet being oriented for supplying air tangentially to the surface, an outer surface of frusto-conical shape, and a cyclone air outlet communicating with the interior of the cyclone adjacent the upper end of the cyclone; a dirt receiving and collecting chamber extending from the cone opening; and means for generating an air flow which passes sequentially through the dirty air inlet, the container, the cyclone air inlet, the cyclone, the receiving chamber and the cyclone air outlet, the air flow rotating around the frusto-conical interior surface of the cyclone and depositing the dirt in the receiving chamber the improvement which comprises:

a disc means provided on the outside of the cyclone intermediate the receiving chamber and the air outlet of the con-

tainer and around to the longitudinal axis of the cyclone with a space between the interior surface of the container and the disc means for passage of air wherein the disc means retards long strands in the dirt from clogging the air outlet and retains the strands in the container.

4,643,749

CERAMIC FILTERS

Yasunao Miura, Kasugai, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

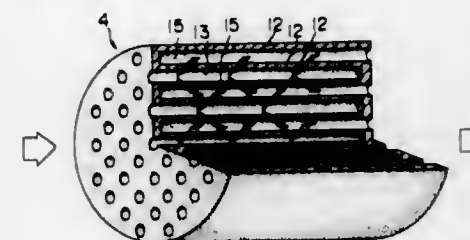
Filed Jun. 7, 1985, Ser. No. 742,391

Claims priority, application Japan, Jun. 12, 1984, 59-121231

Int. Cl.⁴ B01D 39/20

U.S. Cl. 55—523

3 Claims



1. A filter element comprising a ceramic monolith honeycomb structure having inlet and outlet end walls and a plurality of interlaced porous internal walls defining a plurality of substantially parallel inlet passages extending between said end walls and adjacent to a plurality of substantially parallel outlet passages extending between said end walls, said inlet passages being open in said inlet end wall and closed by said outlet end wall, said outlet passages being closed by said inlet end wall and open in said outlet end wall, each of said internal walls having pores therein to permit gases to flow from an inlet passage through the pores in said internal walls to an adjacent outlet passage, wherein each of said internal walls has a thickness which varies widthwise of each of the internal walls, each of the internal walls including a central zone disposed substantially centrally of the width of each of the internal walls, the thickness of each of the internal walls being minimum in the central zone and increasing toward the lateral sides of the width of each of the internal walls.

4,643,750

METHOD AND APPARATUS FOR PRODUCING GLASS FIBERS

Hellmut I. Glaser, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Continuation of Ser. No. 523,400, Nov. 13, 1974, abandoned, which is a continuation of Ser. No. 203,797, Dec. 10, 1971, abandoned, which is a continuation of Ser. No. 851,790, Aug. 21, 1969, abandoned. This application Jan. 16, 1976, Ser. No. 649,955

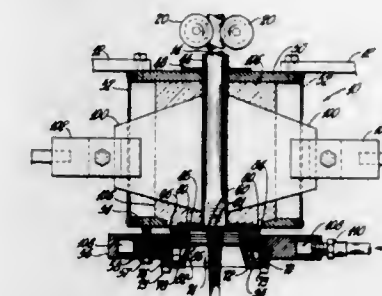
Int. Cl.⁴ C03B 37/09

U.S. Cl. 65—2

13 Claims

13. A method of forming glass fibers which comprises:
 - a. passing separate streams of molten glass through an orifice plate heated by orifice plate heating means, said orifice plate having at least four rows of orifices therein, with orifices being spaced in flooding relationship;
 - b. drawing fibers from cones of molten glass formed at each said orifice; and
 - c. directing a bulk flow of rapidly moving gas upwardly to the orifice area in said plate, said bulk flow being directed at the cone and plate area, in an amount, velocity and angle sufficient:
 - i. to cool said cones to provide a stable cone formation and to maintain separation of cones thus preventing flooding;
 - ii. to impinge on said plate essentially to eliminate stagnant

gas adjacent said plate and to cause gas to move along said plate in all directions; and



iii. to supply a source of gas sucked downwardly by the fibers and substantially eliminate ambient gas drawn into the region of the fiber cones.

4,643,751

METHOD FOR MANUFACTURING OPTICAL WAVEGUIDE

Koichi Abe, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

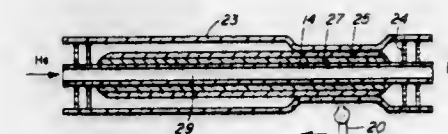
Filed Jun. 17, 1985, Ser. No. 745,043

Claims priority, application Canada, Mar. 19, 1985, 476843

Int. Cl.⁴ C03B 37/018

U.S. Cl. 65—3,12

12 Claims



1. A method of manufacturing optical waveguide comprising depositing a layer of particulate silica on a cylindrical silica substrate, positioning said silica substrate covered with particulate silica into a protective fused silica tube, heating the protective silica tube and the substrate contained therein and passing a fluorine containing gas through the tube to dry and diffuse fluorine into the particulate silica, consolidating the particulate silica on said substrate and collapsing said protective silica tube onto the consolidated particulate silica to form a fused silica rod, heating the rod to a drawing temperature, and drawing optical waveguide from the rod preform, such waveguide having a fluorine doped silica cladding part derived from the deposited silica layer, a core part derived from the substrate silica, and an outer jacket part derived from the protective silica tube.

4,643,752

FRESNEL LENS FABRICATION

Richard E. Howard, Holmdel; Paul F. Liao, Fair Haven, and Rogers H. Stolen, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 671,039, Nov. 15, 1984, abandoned, which is a continuation of Ser. No. 490,328, May 2, 1983, abandoned.

This application May 28, 1985, Ser. No. 737,912

Int. Cl.⁴ G02B 3/08

U.S. Cl. 65—3,15

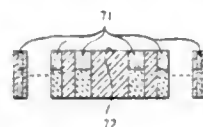
8 Claims

1. A method of fabricating a Fresnel lens, said lens having an electromagnetic radiation focusing cross-sectional geometry, comprising a plurality of concentric zones and wherein each of said zones has a predetermined width with the width of each

zone decreasing with increasing radius, said method comprising the steps of

providing a first material and a second material different from the first, at least one of said materials propagating electromagnetic radiation impinging thereon, forming alternating layers of said first material and layers of said second material on a substrate, all of said first and said second material layers being concentric and each of said second material layers being formed over an immediately preceding one of said first material layers, each of said first and second material layers having a predetermined thickness in a direction substantially perpendicular to a longitudinal axis of said substrate,

drawing the substrate and said first and second material layers down until the thickness of each of said first and second material layers is substantially equal to the width of a different one of said zones, where each layer corre-



sponds to each zone, taken in the radially outward direction, said drawing providing a Fresnel lens preform of predetermined diameter having said radiation focusing cross-sectional geometry upon subsequent cutting, etching and depositing,

cutting a predetermined length of said preform to define two planar end faces, etching alternate ones of said layers, the unetched layers being material which propagates the electromagnetic radiation propagating therethrough, and depositing a third material into said etched layers, said third material being different from said first and second materials and said third material either absorbing or phase-shifting the electromagnetic radiation impinging thereon so that said third material and the unetched material provide focusing of electromagnetic radiation propagating through said two end faces and thereby form said Fresnel lens.

4,643,753

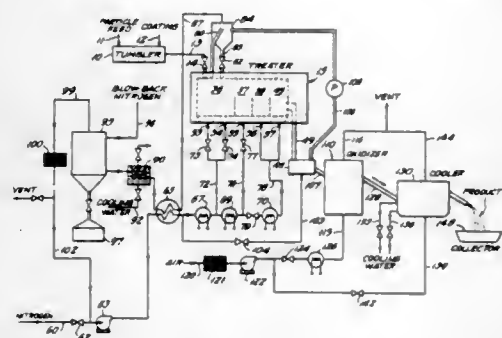
METHOD FOR MAKING SPHERICAL PARTICLES
Rudolf K. Braun, Wharton, N.J., assignor to Potters Industries, Inc., N.J.

Filed Aug. 7, 1985, Ser. No. 763,293

Int. Cl.⁴ C03B 19/10; C03C 25/02

U.S. Cl. 65—21.3

15 Claims



1. A process for making spheres from a multiplicity of minute particles, the process comprising, in combination:

introducing a multiplicity of the particles into a fluidizing bed;

directing a fluidizing material into the bed to suspend the particles therein and thereby fluidize the same, the fluidized particles moving substantially randomly within said bed but without appreciable vertical movement of the mass of particles;

heating the particles to an elevated temperature sufficiently high to allow surface tension to shape the particles into spherical form while in a fluidized condition in said bed; and

thereafter cooling the spherical particles while maintaining the particles in a fluidized condition for a period of time sufficient to cause the setting of the spheres.

4,643,754

ADDITIVE FOR INHIBITING RESPIRATION OF AND PROMOTING DESICCATION OF CROPS

Kenneth H. Nance, Bromley, England, assignor to BP Chemicals Limited, London, England

Filed May 13, 1986, Ser. No. 862,671

Claims priority, application United Kingdom, May 18, 1985, 8512634

Int. Cl.⁴ A01N 59/00

U.S. Cl. 71—1

7 Claims

1. A process for drying and inhibiting the respiration of crops by applying to the crops an aqueous solution comprising formate anions and a cation selected from potassium, sodium and calcium ions in a chemical equivalent ratio greater than 4:1.

4,643,755

METHOD FOR THE CONTROL OF STEM GROWTH AND STEM STIFFNESS OF GRAMINEACEOUS CROPS

Thomas D. O'Neal, Princeton; Prithvi R. Bhalla, Hightstown, and Barrington Cross, Rocky Hill, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 122,641, Feb. 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 970,881, Dec. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 897,336, Feb. 21, 1978, abandoned. This application Sep. 21, 1981, Ser. No. 303,794

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.⁴ A01N 33/06

U.S. Cl. 71—76

1 Claim

1. A method for reducing relative stem growth and increasing the stiffness of stems of wheat, barley or rice comprising: applying to the locus thereof, an effective stem-growth-reducing-and-stem-stiffness-increasing amount of the compound 2, 4, 6-tribromo-N-nitroaniline.

4,643,756

BIOHERBICIDE FOR FLORIDA BEGGARWEED

John Cardina; Robert H. Littrell, both of Tifton, Ga., and Larry J. Stowell, San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.; Univ. of Georgia Research Foundation, Inc., Athens, Ga. and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 22, 1985, Ser. No. 715,229

Int. Cl.⁴ A01N 63/00

U.S. Cl. 71—79

6 Claims

1. A composition for agricultural application for controlling Florida beggarweed comprising an isolate of the fungus *Colletotrichum truncatum* (Schw.) Andrus & Moore having the identifying characteristics of culture deposit NRRL 15933, which isolate controls Florida beggarweed without adversely affecting peanuts or soybeans, in association with an inert agricultural carrier.

4,643,757

HERBICIDAL

4-BENZOYL-1-METHYL-5-HYDROXYPIRAZOLES

Masatoshi Baba; Norio Tanaka, both of Funabashi; Takasi Ikai; Tsutomu Nawamaki, both of Shiraoka, and Masaji Matsunaga, Tokyo, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

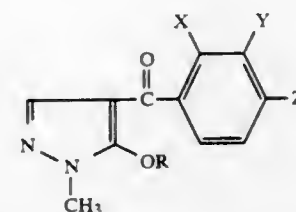
Filed May 20, 1985, Ser. No. 735,656

Int. Cl.⁴ A01N 43/56, 57/16; C07D 231/20; C07F 9/65

U.S. Cl. 71—86

12 Claims

1. A compound of the formula:



wherein,

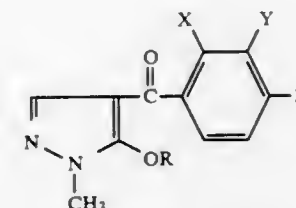
X denotes a halogen, nitro or methanesulfonyl,

Y denotes hydrogen, a lower alkyl or a halogen,

Z denotes methanesulfonyl, and

R denotes hydrogen; an organic acid residue selected from the group consisting of methanesulfonyl, p-toluenesulfonyl, benzoyl, tert-butoxycarbonyl, acetyl, cyclohexylcarbonyl, cinnamoyl, acryloyl, phenoxyacetyl, ethoxycarbonyl, N,N-dimethylcarbamoyl, N,N-dimethylsulfamoyl, benzenesulfonyl, trifluoromethanesulfonyl, diethylphosphoryl and diethylthiophosphoryl; a lower alkynyl; a lower alkyl or a lower alkenyl which may be substituted by a halogen, hydroxy, cyano or an alkoxycarbonyl; or a benzyl which may be substituted by a halogen, nitro or a lower alkyl.

12. A method of damaging and controlling weeds in a corn field or sorghum field which comprises applying to the field a selective herbicidal composition containing as an active ingredient one or more of the compounds of claim 1 of the formula I:



wherein,

X denotes a halogen, nitro or methanesulfonyl,

Y denotes hydrogen, a lower alkyl or a halogen,

Z denotes methanesulfonyl, and

R denotes hydrogen; an organic acid residue selected from the group consisting of methanesulfonyl, p-toluenesulfonyl, benzoyl, tert-butoxycarbonyl, acetyl, cyclohexylcarbonyl, cinnamoyl, acryloyl, phenoxyacetyl, ethoxycarbonyl, N,N-dimethylcarbamoyl, N,N-dimethylsulfamoyl, benzenesulfonyl, trifluoromethanesulfonyl, diethylphosphoryl and diethylthiophosphoryl; a lower alkynyl; a lower alkyl or a lower alkenyl which may be substituted by a halogen, hydroxy, cyano or an alkoxycarbonyl; or a benzyl which may be substituted by a halogen, nitro or a lower alkyl; together with an inert carrier therefor in an amount of 0.025 to 10 kg per hectare (ha) of the active ingredient.

4,643,758

HERBICIDAL FURYL-, THIENYL- AND PYRROLYL-2-PYRROLIDINONES

Kenneth W. Barrow, Jr., and James C. Williams, Jr., both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

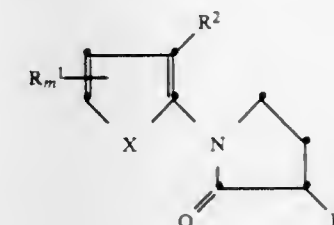
Division of Ser. No. 431,877, Sep. 30, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,396

Int. Cl.⁴ C07D 403/04, 405/04, 409/04; A01N 43/10

U.S. Cl. 71—90

20 Claims

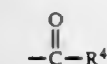
1. A compound of the formula



wherein:

R¹ is C₁-C₁₀ alkyl or C₃-C₈ cycloalkyl;

R² is cyano or



R³ is C₁-C₆ alkyl;

R⁴ is hydroxy, C₁-C₆ alkoxy or NH₂;

m is 1 or 2; and

X is O, S or NH.

4,643,759

HERBICIDAL SULFONAMIDES

Mark E. Thompson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

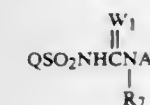
Continuation-in-part of Ser. No. 630,895, Jul. 13, 1984, abandoned. This application Jun. 13, 1985, Ser. No. 743,303

Int. Cl.⁴ A01N 47/36; C07D 403/12, 413/12, 417/12

U.S. Cl. 71—90

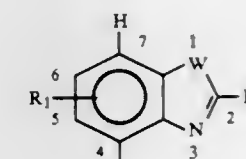
31 Claims

1. A compound of the formula

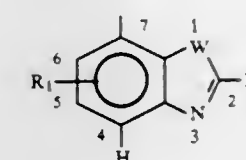


wherein

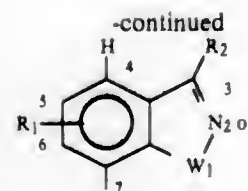
Q is



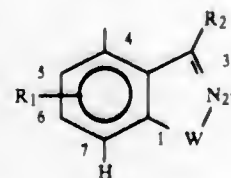
Q-1



Q-2

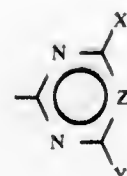


Q-3

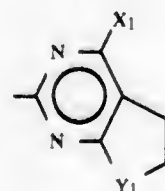


Q-4

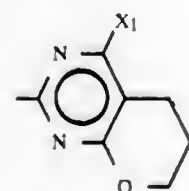
W₁ is O or S;
R₁ is H or CH₃;
R is H, C₁-C₄ alkyl optionally substituted with 0-3 halogen atoms selected from 1-3 F, 1-2 Cl or 1 Br, C₁-C₄ alkylthio, C₁-C₄ alkoxy, CH₂OCH₃, CH₂CH₂OCH₃ or CH₂SCH₃;
R₁ is H, halogen, C₁-C₃ alkyl, C₁-C₃ haloalkyl, nitro, C₁-C₃ alkoxy, di(C₁-C₂)alkylaminosulfamoyl, C₁-C₃ alkylthio, C₁-C₃ haloalkoxy, C₁-C₃ haloalkylthio, cyano, C₁-C₃ alkylsulfinyl, C₁-C₃ alkylsulfonyl, C₂-C₃ alkoxy carbonyl, CH₂OCH₃, CH₂SCH₃ or CH₂CN;
R₂ is H or CH₃;
W is O, S or NR₃;
R₃ is H or CH₃;
A is



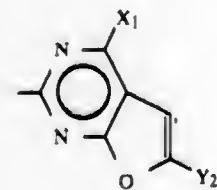
A-1



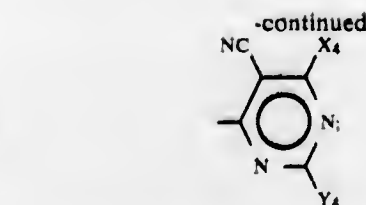
A-2



A-3

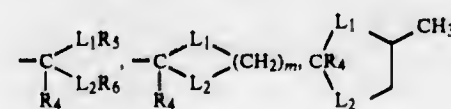


A-4

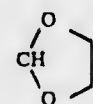


A-7

X is H, C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, C₁-C₃ haloalkyl, C₁-C₃ haloalkylthio, C₁-C₃ alkylthio, halogen, C₂-C₃ alkoxyalkyl, C₂-C₃ alkoxyalkoxy, amino, C₁-C₃ alkylamino or di(C₁-C₃)alkylamino;
Y is H, C₁-C₃ alkyl, C₁-C₃ alkoxy, C₁-C₃ haloalkoxy, C₁-C₃ haloalkylthio, C₁-C₃ alkylthio, halogen, C₂-C₃ alkoxyalkyl, C₂-C₃ alkoxyalkoxy, amino, C₁-C₃ alkylamino, di(C₁-C₃)alkylamino, C₃ alkenyloxy, C₃ alkynyloxy, C₂-C₃ alkynyl, C₂-C₃ alkylthioalkyl, C₂-C₃ alkylsulfinylalkyl, C₂-C₃ alkylsulfonylalkyl, C₁-C₃ haloalkyl, cyclopropyl, C(O)R₄.



or N(OCH₃)CH₃;
m is 2 or 3;
L₁ and L₂ are independently O or S;
R₄ is H or CH₃;
R₅ and R₆ are independently C₁-C₂ alkyl;
Z is CH;
Y₁ is O or CH₂;
X₁ is CH₃, OCH₃, OC₂H₅ or OCF₂H;
Y₂ is H or CH₃;
X₄ is CH₃, OCH₃, OC₂H₅, CH₂OCH₃ or Cl; and
Y₄ is CH₃, OCH₃, OC₂H₅ or Cl;
and their agriculturally suitable salts; provided that
a) when W₁ is S, then R₇ is H, A is A-1 and Y is CH₃, OCH₃, OC₂H₅, CH₂OCH₃, C₂H₅, CF₃, SCH₃, OCH₂CH=CH₂, OCH₂C=CH, OCH₂CH₂OCH₃, CH(OCH₃)₂ or



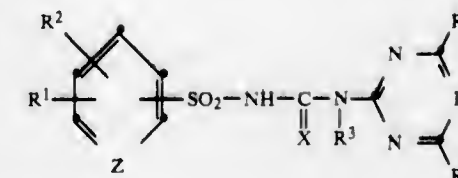
A-7

b when X is F, Cl, Br or I, then Y is OCH₃, OC₂H₅, OCF₂H, NH₂, NHCH₃, N(OCH₃)CH₃ or N(CH₃)₂;
c when R₁ is di(C₁-C₂)alkylaminosulfamoyl or C₂-C₃ alkoxy carbonyl, then Q is Q-1 and R₁ is in the 3-position or Q is Q-2 and R₁ is in the 6-position; and
d when the total number of carbon atoms of X and Y is greater than four, then the number of carbon atoms of R is less than or equal to two, and the number of carbon atoms of R₁ is less than or equal to two.

A-3

A-4

4,643,760
HERBICIDAL SULFONYLUREAS
Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Nov. 30, 1984, Ser. No. 676,908
Claims priority, application Switzerland, Dec. 8, 1983, 6874/83
Int. Cl.⁴ C07D 401/12, 239/46; A01N 47/36
U.S. Cl. 71-92
1. A N-arylsulfonyl-N'-pyrimidinylurea of the formula I

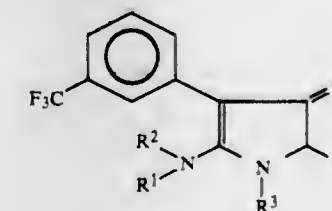


wherein
R¹ is a



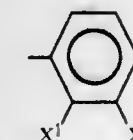
R² is hydrogen, halogen, nitro, C₁-C₃ alkyl, C₁-C₃ alkoxy or -COOR⁹;
R³ is hydrogen, C₁-C₃ alkyl or C₁-C₃ alkoxy,
R⁴ and R⁵ are each independently of the other hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylthio, C₁-C₄ haloalkylthio, C₂-C₄ alkoxyalkyl, C₃-C₆ cycloalkyl or -NR¹⁰R¹¹,
R⁶ is hydrogen or C₁-C₃ alkyl,
R⁷ is hydrogen or methyl,
R⁸ is C₄-C₆ cycloalkyl which is unsubstituted or substituted by C₁-C₃ alkyl or halogen; C₃-C₆ cycloalkyl which is unsubstituted or substituted by one or more identical or different members selected from the group consisting of C₁-C₃ alkyl, C₁-C₃ alkoxy, halogen or cyano; or is C₃-C₆ cycloalkenyl which is unsubstituted or substituted by C₁-C₃ alkyl, halogen or cyano,
R⁹ is C₁-C₃ alkyl or allyl,
R¹⁰ and R¹¹ are each independently of the other hydrogen or C₁-C₄ alkyl,
n is 0 or 1,
X is sulfur or oxygen, and
E is methane and Z is nitrogen or the methine bridge, with the proviso that R⁸ is only unsubstituted or substituted C₃-C₆ cycloalkyl if at the same time Z is nitrogen, or a salt thereof.

4,643,762
HERBICIDAL
5-AMINO-3-OXO-4-(3-SUBSTITUTED-PHENYL)-4-PYR-
ROLINE AND DERIVATIVES THEREOF
Carl E. Ward, San Jose, Calif., assignor to Chevron Research
Company, San Francisco, Calif.
Filed Aug. 27, 1984, Ser. No. 643,452
Int. Cl.⁴ A01N 43/36; C07D 207/36
U.S. Cl. 71-95
1. A compound having the formula:



(I)

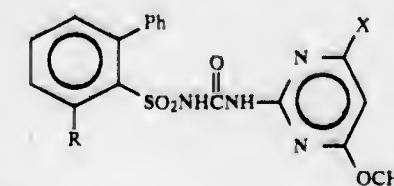
wherein
R is phenyl or monosubstituted phenyl having the formula:



wherein one of X¹ or X² is lower alkyl, lower alkoxy, halo, nitro, or haloalkyl having 1 through 3 carbon atoms and 1 through 3 halo atoms independently selected from the group of fluoro, chloro, bromo or iodo; and the other is hydrogen; and
R¹, R² and R³ are independently hydrogen, methyl, or ethyl with the proviso that if one of R¹, R² or R³ is ethyl, then the other two are each hydrogen; and compatible salts thereof.

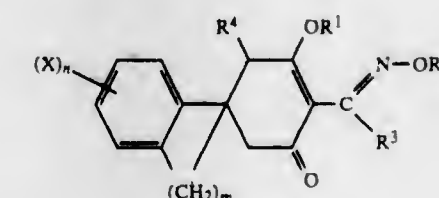
18. A method for destroying plants which comprises applying a herbicidally effective amount of the compound of claim 1, or mixtures thereof, to the foliage or growth medium of said plants or their seeds.
19. A method for destroying plants which comprises applying a pre-emergent herbicidally effective amount of the compound of claim 1, or mixtures thereof, to the growth medium of said plants or their seeds.

4,643,761
HERBICIDAL SULFONAMIDES
William T. Zimmerman, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 28, 1985, Ser. No. 695,605
Int. Cl.⁴ C07D 239/47; A01N 47/36
U.S. Cl. 71-92
1. A compound of the formula



wherein
R is F, Cl or Br; and
X is CH₃ or OCH₃.

4,643,763
HERBICIDAL CYCLOHEXANE-1,3-DIONE
DERIVATIVES
Graeme J. Farquharson, Carlton; Keith G. Watson, Blackburn North, and Graham J. Bird, Ascot Vale, all of Australia, assignors to ICI Australia Limited, Victoria, Australia
Filed Sep. 10, 1985, Ser. No. 774,527
Claims priority, application Australia, Sep. 28, 1984, PG7377
Int. Cl.⁴ A01N 31/08, 33/04; C07C 131/00
U.S. Cl. 71-98
1. A compound of formula I



wherein:

m is an integer selected from 1 to 4;
n is zero or an integer selected from 1 to 4;
X, which may be the same or different, are independently selected from the group consisting of: halogen; nitro; cyano; C₁ to C₆ alkyl; C₁ to C₆ alkyl substituted with halogen or cyano; hydroxy; C₁ to C₆ alkoxy; C₁ to C₆ alkylthio; sulfamoyl; N-(C₁ to C₆ alkyl)sulfamoyl; N,N-di(C₁ to C₆ alkyl)sulfamoyl; the group $-(CH_2)_pC(=A)Z$ wherein p is zero or one, A is selected from oxygen and sulfur, and Z is selected from the group consisting of hydrogen, hydroxy, C₁ to C₆ alkoxy, C₁ to C₆ alkylthio, amino, N-(C₁ to C₆ alkyl)amino, N,N-di(C₁ to C₆ alkyl)amino, N-(C₁ to C₆ alkanoyl)amino, C₁ to C₆ alkyl, and C₁ to C₆ haloalkyl; the group $-NR^5R^6$ wherein R⁵ and R⁶ are independently selected from the group consisting of hydrogen, C₁ to C₆ alkyl, C₂ to C₆ alkanoyl, C₂ to C₆ haloalkenyl, C₁ to C₆ alkylsulfonyl, and benzoyl; the group $-NHC(=B)NR^7R^8$ wherein B is selected from oxygen and sulfur and R⁷ and R⁸ are independently selected from hydrogen and C₁ to C₆ alkyl; and the group $-(CH_2)_q-$ which bridged two adjacent carbon atoms of the benzene ring and wherein q is an integer selected from 3 or 4;

R¹ is selected from the group consisting of: hydrogen; C₂ to C₆ alkanoyl; benzoyl and substituted benzoyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, C₁ to C₆ alkyl and C₁ to C₆ alkoxy;

benzenesulfonyl and substituted benzenesulfonyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, nitro, C₁ to C₆ alkyl and C₁ to C₆ alkoxy; and an inorganic or an organic cation selected from the alkali metals, the alkaline earth metals, the transition metals, the ammonium ion and the tri- and tetra(alkyl)ammonium ions wherein alkyl is selected from C₁ to C₆ alkyl and C₁ to C₆ hydroxyalkyl;

R² is selected from the group consisting of: C₁ to C₆ alkyl; C₂ to C₆ alkenyl; C₂ to C₆ haloalkenyl; C₂ to C₆ alkynyl; C₃ to C₆ haloalkynyl; and substituted C₁ to C₆ alkyl wherein the alkyl group is substituted with a substituent selected from the group consisting of halogen, C₁ to C₆ alkoxy, C₁ to C₆ alkylthio, phenyl and substituted phenyl wherein the benzene ring is substituted with from one to three substituents selected from the group consisting of halogen, C₁ to C₆ alkyl, C₁ to C₆ haloalkyl, C₁ to C₆ alkoxy, and C₁ to C₆ alkylthio;

R³ is selected from the group consisting of: C₁ to C₆ alkyl; C₁ to C₆ fluoroalkyl; C₂ to C₆ alkenyl; C₂ to C₆ alkynyl; and phenyl; and

R⁴ is selected from the group consisting of: hydrogen; halogen; cyano; C₁ to C₆ alkyl; and (C₁ to C₆ alkoxy)carbonyl.

9. A herbicidal composition comprising as active ingredient a herbicidally effective amount of a compound as defined according to claim 1 and an inert carrier therefor.

4,643,764

MULTIPLE TYPES OF MICROCAPSULES AND THEIR PRODUCTION

Herbert B. Scher, Moraga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 569,066, Jan. 9, 1984, abandoned. This application Jan. 31, 1985, Ser. No. 696,972
Int. Cl.⁴ A01N 43/00, 25/28; B01J 13/02

U.S. Cl. 71—100 12 Claims

1. In a process of encapsulating water-immiscible material within discrete capsules of polyurea without addition of a second reactant, whereby hydrolysis of an isocyanate monomer to form an amine takes place which in turn reacts with another isocyanate monomer to form polyurea, which comprises the steps

(a) providing at room temperature a dispersion of
(i) a water-immiscible phase comprising the water-immis-

cible material to be encapsulated and organic polyisocyanates in

(ii) an aqueous phase comprising a solution of water, a surfactant and a protective colloid; and

(b) heating and maintaining said dispersion in a temperature range of about 40° C. to about 90° C., whereupon said water-immiscible material is encapsulated within discrete polyurea capsular enclosures directly usable without further separation or purification, the improvement comprising providing a plurality of water-immiscible phases each comprising at least one individually distinct wall-forming organic polyisocyanate monomer, and a water-immiscible material to be encapsulated in a polyurea wall formed from said polyisocyanate monomer, and sequentially or simultaneously dispersing each of said water-immiscible phases in said aqueous phase.

9. The process of claim 1 wherein said water-immiscible phase contains a catalyst selected from the group consisting of (a) a basic organic tertiary amine catalyst in the amount of about 0.01 percent to about 10.0 percent by weight based on the organic phase and (b) an alkyl tin acetate catalyst in the amount of about 0.001 percent to about 1.0 percent by weight based on the organic phase.

10. Capsules capable of controlled release of encapsulated organic material comprising a thiocarbamate herbicide enclosed in a polyurea capsule produced by the process of claim 9.

4,643,765

TIN-CONTAINING FERROUS COMPOSITE POWDER AND METHOD OF PRODUCING SAME AND

TIN-CONTAINING SINTERED MAGNETIC MATERIAL
Shigeaki Takajo, Chiba, Japan, assignor to Kawasaki Steel Corporation, Chuo, Japan

Filed Jun. 11, 1985, Ser. No. 743,480

Claims priority, application Japan, Jun. 18, 1984, 59-124952
Int. Cl.⁴ C22C 33/00

U.S. Cl. 75—0.5 B 15 Claims

1. A tin-containing ferrous composite powder useful as the raw material of a ferrous sintered alloy, the composite powder comprising:

a primary powder of which the principal material is Fe and which is substantially free of Sn;

at least one secondary powder which comprises at least one alloying element selected from the group consisting of C, Co, Cr, Cu, Mn, Mo, Ni, P and Si; and

tin in such a form that the individual particles of said primary powder and at least a portion of the particles of said at least one secondary powder are at least partially coated with Sn such that particles of said at least one secondary powder are bonded to the individual particles of said primary powder via said Sn,

the content of Sn in the composite powder being in the range from 0.1 to 20 wt%, and the ratio of the total weight of said at least one alloying element in the composite powder to the weight of Sn in the composite powder being not greater than 50:1.

4,643,766

PROCESS FOR REFINING PHOSPHORIC PIG IRON

Roger Kieger, Metz, France, assignor to 501 Societe Lorraine de Laminage & Continu -Sollac- and 502 Unimetal, both of, France

Filed Mar. 18, 1986, Ser. No. 840,746

Claims priority, application France, Mar. 20, 1985, 85 04138
Int. Cl.⁴ C21C 7/00

U.S. Cl. 75—51.4 11 Claims

1. In a two phase basic steel refining process for phosphoric pig iron using a refining furnace lined with basic refractory and equipped with at least bottom blowing means and wherein in the first phase most of the oxygen used in the refining process is blown in the presence of a slag containing fresh lime and

recycled basic slag from a previous cycle and then deslagging the resulting slag before entering the second phase in which a fresh slag is formed with the addition of the remainder of the fresh lime followed by blowing the remainder of the oxygen, controlling the composition of the resulting steel, adjusting the temperature and tapping the steel and retaining at least part of the slag for recycling in the first phase of the process wherein the improvement comprises forming a steel having a phosphorus content of not greater than 0.025% by using a substantially stoichiometric amount of lime to neutralize silicon and phosphorus oxides formed during the refining process or contained in the mineral and metallic additions to form dicalcium silicate and tricalcium phosphate, adding all of the basic slag obtained at the end of the previous second phase in the first phase along with at most 25% of the fresh lime required, and blowing at least 80% of the total amount of oxygen required for refining during the first blowing phase followed by a thorough deslagging and entry into the second phase wherein at least 75% of the total quantity of lime is added and the remainder of the oxygen is blown, after blowing of the remaining oxygen, the hot molten slag containing bath is strongly stirred with a stirring gas and the resulting steel having a phosphorus content of not greater than 0.025% is tapped and the remaining slag is available for recycling.

4,643,767

NUCLEAR GRADE STEELS

Paul Crook, Kokomo, Ind., and Richard D. Zordan, Raleigh, N.C., assignors to Cabot Corporation, Boston, Mass.

Filed Nov. 19, 1984, Ser. No. 672,963

Int. Cl.⁴ C22C 38/46, 38/48

U.S. Cl. 420—12 7 Claims

1. A stainless steel suited for use as a component in nuclear installations consisting essentially of, in weight percent, 15 to less than 25 chromium, 5 to 15 nickel, 2.7 to 5.5 silicon, 1 to 3 carbon, niobium plus vanadium 5 to 15, up to 0.15 nitrogen, up to 1.5 cobalt and the balance iron plus impurities wherein niobium is at least 3.77.

4,643,768

INOCULANT ALLOY BASED ON FERROSILICON OR SILICON AND PROCESS FOR ITS PREPARATION

Heinz Bruckmann; Friedrich Wolfsgruber, both of Tacherting, and Ernst A. Weiser, Unterneukirchen, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Sep. 10, 1985, Ser. No. 774,323

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433610

Int. Cl.⁴ C22C 33/08

U.S. Cl. 420—578 6 Claims

1. In a ferrosilicon or silicon inoculant alloy of the type consisting essentially of ferrosilicon or silicon alloyed with secondary components, for the manufacture of cast iron with lamellar, compact or spheroidal graphite, the improvement wherein said secondary components consist essentially of

(a) between 0.1 and 10% of barium and/or zirconium in free or combined form or a mixture thereof,
(b) less than 2.0% of aluminum and
(c) less than 0.3% of calcium.

4,643,769

CORROSION INHIBITING COATING COMPOSITION

David G. Othen, Bracknell, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Mar. 18, 1986, Ser. No. 840,913

Claims priority, application United Kingdom, Mar. 29, 1985, 8508316

Int. Cl.⁴ C09D 5/08

U.S. Cl. 106—1.17 10 Claims

1. A composition suitable for the preparation of a surface

protective coating composition by admixture with a binder, said composition comprising

(i) elemental zinc in particulate form,
(ii) inorganic oxide particles having corrosion inhibiting cations chemically bound to the surface thereof by ion exchange.

4. A coating composition suitable for application to a metal surface to inhibit corrosion which composition comprises:

(i) a binder,
(ii) from 50 to 90% by weight of elemental zinc in particulate form based on the weight of the coating composition, and
(iii) an effective amount of inorganic oxide particles having corrosion inhibiting ions chemically bound to the surface thereof by ion exchange.

4,643,770

AMINE-FREE, EASILY DISPERSIBLE DIARYLIDE YELLOW PIGMENT COMPOSITIONS

Byron G. Hays, Verona, N.J., assignor to BASF Corporation, Inmont Division, Clifton, N.J.

Filed Apr. 12, 1985, Ser. No. 722,970

Int. Cl.⁴ C09D 11/02

U.S. Cl. 106—23 10 Claims

1. A diarylide yellow pigment composition manufactured by the method comprising forming a ketimine by reacting a primary amine with an acetoacetylde, reacting through a coupling reaction an acetoacetylde with an excess of a tetrazonium salt of 3,3'-dichlorobenzidine, and subsequently further coupling the excess tetrazonium salt with the ketimine; or reacting through a coupling reaction an excess of a tetrazonium salt of 3,3'-dichlorobenzidine, and the ketimine, and subsequently further coupling the excess tetrazonium salt with an acetoacetylde; or reacting through a coupling reaction a tetrazonium salt of 3,3'-dichlorobenzidine, an acetoacetylde, and the ketimine, substantially simultaneously; resulting in a diarylide yellow pigment composition comprising

(a) the tetrazonium salt of 3,3'-dichlorobenzidine coupled with the acetoacetylde; and
(b) the tetrazonium salt of 3,3'-dichlorobenzidine coupled with the ketimine; and,
(c) the tetrazonium salt of 3,3'-dichlorobenzidine coupled with the ketimine and the acetoacetylde,
said composition having easy dispersibility, improved color strength and essentially no free primary amine.

4,643,771

PRODUCTION OF WATER-REPELLENT MOLDINGS FROM PLASTER

Hans-Horst Steinbach, Gladbach, and Matthias Rieder, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,034

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1984, 3429311

Int. Cl.⁴ C04B 11/00, 24/00; B32B 31/12, 5/20

U.S. Cl. 106—111 8 Claims

1. A process for the production of a water-repellent porous plaster molding consisting essentially of producing a foam from water, an organosulphonate or organosulphate foaming agent and polymethyl-hydrogen-siloxane, adding this foam to a paste of plaster powder in water, and letting the mixture set, the surfactant and siloxane each being present in 0.1 to 0.5 part by weight per 100 parts by weight of the plaster.

4,643,772

PREPARATION OF A MIXED-PHASE PIGMENT BASED ON IRON OXIDE AND CHROMIUM OXIDE

Harald Gaedcke, Leonberg; Ruediger Braun, Roserath, and Roland Bauer, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 5, 1985, Ser. No. 762,204

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 3429678

Int. Cl.⁴ C09C 1/24

U.S. Cl. 106—304

20 Claims

1. A process for the preparation of a mixed-phase pigment based on iron oxide and chromium oxide, wherein a mixture of a transparent α -iron oxide having an orthorhombic bipyramidal crystal structure and a chromium(III) hydroxide, which is prepared by precipitation with an alkali onto the transparent iron oxide, is heated at from 600° to 1100° C. and then comminuted and then worked up.

4,643,773

CRYSTALLIZATION OF FRUCTOSE UTILIZING A MIXTURE OF ALCOHOLS

Gary A. Day, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Mar. 9, 1984, Ser. No. 588,479

Int. Cl.⁴ C13F 1/02

U.S. Cl. 127—30

13 Claims

1. A process for recovering crystalline fructose from an aqueous fructose containing dispersion comprising providing an aqueous fructose containing dispersion having a fructose content of at least 85 percent by weight dry solids basis, admixing with said dispersion ethanol and isopropanol in an amount sufficient to provide a fructose to total alcohol weight ratio of between about 4:1 and about 1:4, the weight ratio of ethanol to isopropanol being between about 80:20 and about 98:2, crystallizing fructose from the dispersion alcohol mixture, and recovering crystalline fructose.

4,643,774

METHOD OF WASHING AND DRYING SUBSTRATES

Yoshifumi Kishida, Nara, and Masayoshi Takeuchi, Akiashima, both of Japan, assignors to Sharp Corporation and Dainichi Shoji Co., Inc., both of Japan

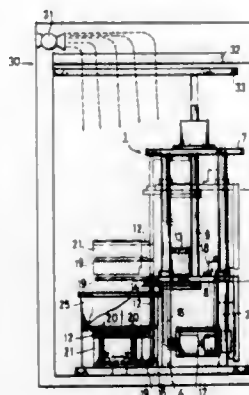
Filed Apr. 17, 1985, Ser. No. 724,029

Claims priority, application Japan, Apr. 19, 1984, 59-077516

Int. Cl.⁴ B08B 3/12, 1/02

U.S. Cl. 134—1

9 Claims



1. A method for washing and drying substrates, comprising the steps of:
immersing a carrier for carrying substrates therein into washing liquid, the substrates being substantially horizon-

tally aligned in upright positions and each substrate having upper and lower surface regions;
drawing up the carrier carrying the substrates in a substantially vertical direction from the washing liquid;
oscillating the substrates in a substantially horizontal direction by contacting the lower surface regions of the substrates with oscillating means during the drawing up of the carrier; and
feeding drying gas to the substrates during the drawing up of the carrier, to remove the washing liquid from the substrates.

4,643,775

FABRIC CONDITIONING AND CLEANING SYSTEM

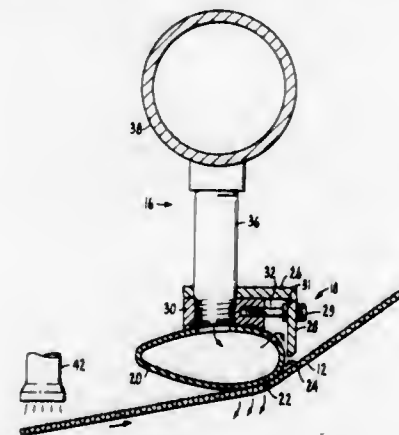
Imants Reba, Vancouver, Wash., and Rodney E. Pollock, Portland, Oreg., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 29, 1984, Ser. No. 626,072

Int. Cl.⁴ B08B 1/02

U.S. Cl. 134—15

17 Claims



1. A method of cleaning and conditioning a fabric with pressurized fluid from a Coanda nozzle comprising: positioning a generally smoothly curved Coanda fluid flow attachment foil surface adjacent to a slit defining element to form an elongated slit; directing said fluid in a predetermined direction under pressure through said slit whereby fluid attaches to said foil surface after passage through said slit and whereby said fluid deviates from the predetermined direction and flows along the curvature of said surface due to the Coanda effect away from said slit and ambient air is entrained with said fluid as the fluid flows along the curvature of the foil surface; disposing said fabric closely adjacent to said foil surface and in registry with at least a portion of said surface whereby said fabric and said surface define a restricted and diminishing passageway terminating at an extended nip between said fabric and said surface; moving said fabric relative to said surface and in a path of movement spaced away from said slit and generally at right angles thereto; directing the combined fluid and ambient air flow into said passageway along said foil surface toward said extended nip and thereby creating pressure differentials at said fabric in the vicinity of said nip and passageway with said fluid and ambient air; and utilizing the pressure differentials created by said fluid and ambient air to condition said fabric and remove foreign matter from said fabric.

11. In combination:
a fabric movable along a predetermined path of movement in a predetermined direction; and
a Coanda nozzle positioned along said predetermined path of movement and closely adjacent to said fabric, said Coanda nozzle extending generally at right angles to the direction of fabric movement and in at least partial registration with said fabric, said Coanda nozzle including a generally smoothly curved Coanda fluid flow attachment foil sur-

4,643,777

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING RESISTORS OF HIGH AND LOW RESISTANCES

Takeo Maeda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

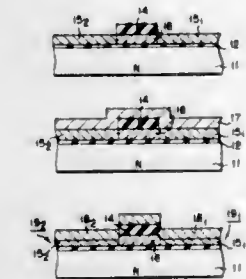
Filed Dec. 19, 1984, Ser. No. 683,479

Claims priority, application Japan, Dec. 20, 1983, 58-238805

Int. Cl.⁴ H01L 21/283

U.S. Cl. 148—1.5

12 Claims



1. A method of manufacturing a semiconductor device comprising:

a step of forming a film of a high resistance containing silicon on a semiconductor substrate;
a step of forming a mask of a predetermined pattern on said silicon containing film;
a step of forming a metal film on said silicon containing film; and
a step of silicifying said metal film so that a structure of said metal film and that region of said silicon containing film which is adjacent to said metal film has a low resistance, while that region of said silicon containing film which is adjacent to said mask has a high resistance.

4,643,778

COMPOSITION AND PROCESS FOR TREATING STEEL

John J. Donofrio, Ambler, Pa., assignor to Amchem Products, Ambler, Pa.

Division of Ser. No. 410,566, Aug. 26, 1982, Pat. No. 4,486,241, which is a continuation-in-part of Ser. No. 303,236, Sep. 17, 1981, abandoned. This application Nov. 13, 1984, Ser. No. 670,694

Int. Cl.⁴ C23C 22/80

U.S. Cl. 148—6.15 R

6 Claims

1. A process for activating clean steel or galvanized steel prior to the application of a phosphate conversion coating thereto comprising contacting the clean steel or galvanized steel with an aqueous colloidal solution comprising at least about 0.005 grams/liter of manganese ion and from about 0.005 to about 0.02 grams/liter of titanium ion.

4,643,779

METHOD OF MAKING ALUMINUM-LITHIUM ALLOYS WITH IMPROVED DUCTILITY

Gholamreza J. Abbaschian, Gainesville, Fla., and Stephen Abeln, Arvada, Colo., assignors to University of Florida, Gainesville, Fla.

Filed Oct. 17, 1984, Ser. No. 661,818

Int. Cl.⁴ C22F 1/04

U.S. Cl. 148—11.5 A

10 Claims

1. A method for improving the ductility of aluminum-based alloys containing lithium comprising reducing the temperature of said alloy to a cryogenic temperature, below about -50° C. and deforming said alloy so as to achieve a reduction in the cross-sectional area of said alloy of at least about 15%, said aluminum-lithium alloy containing:

face for defining an extended nip with said fabric and for further defining with said fabric a restricted and diminishing passageway terminating at said nip and communicating with ambient air, said Coanda nozzle additionally including a slit defining element defining an elongated slit with said generally smoothly curved Coanda fluid flow attachment foil surface generally at right angles to said fabric and spaced from said fabric, said slit defining element and said generally smoothly curved Coanda fluid flow attachment surface cooperable to direct pressurized fluid exiting from said slit and ambient air entrained thereby along said surface due to the Coanda effect whereby pressure differentials will be created at the fabric in the vicinity of said passageway and nip by the combined fluid and ambient air and at least a portion of said fluid will be forced through said fabric to expel foreign matter therefrom.

4,643,776

BATTERY POWERED VACUUM TRASH COLLECTOR

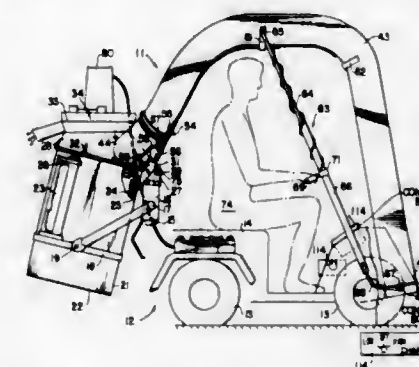
John R. Hollowell, 22179 Long Blvd., Dearborn, Mich. 48124, and John F. Hollowell, 6526 Sharon Dr., Garden City, Mich. 48135

Division of Ser. No. 515,341, Jul. 19, 1983, Pat. No. 4,535,501. This application Apr. 15, 1985, Ser. No. 723,443

Int. Cl.⁴ B08B 5/04

U.S. Cl. 134—21

9 Claims



1. A method of maximizing suction using available energy in a mobile vacuum trash collector of the type having a bin, a lid mounted on said bin which acts as a plenum chamber, a direct current motor driven vacuum blower disposed on said lid, a storage battery power source for energizing said blower, and a flexible hose having a first end communicating with said plenum chamber and a second end which defines a nozzle, said method comprising the steps of:

operating said vacuum blower at a steady state speed using a first quantity of energy supplied by said storage battery power source to produce a steady state inflow through said nozzle;
blocking said nozzle to substantially impede said steady state inflow;
maintaining said blocked nozzle condition until said vacuum blower attains a no load speed, substantially greater than said steady state speed;
during said blocked nozzle condition creating an increased vacuum within said plenum chamber and hose using a second quantity of energy supplied by said storage battery power source;
unblocking said nozzle to produce a rapid transient inflow through said nozzle, substantially greater than said steady state inflow.

ELEMENT	WEIGHT
lithium	max; 10
magnesium	0 to 10
zirconium	0 to 3
copper	0 to 10
iron	0 to 10
manganese	0 to 2
silicon	0 to 10
aluminum	balance

and/or minor amounts of other elements which combine with Al and Li to form a second phase compound therein, strengthen the aluminum matrix and/or grain refine the alloy.

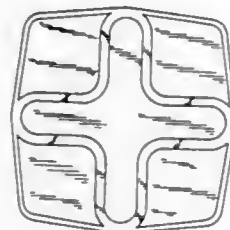
4,643,780 METHOD FOR PRODUCING DISPERSION STRENGTHENED ALUMINUM ALLOYS AND PRODUCT

Paul S. Gilman, Suffern, and Stephen J. Donachie, New Windsor, both of N.Y., assignors to INCO Alloys International, Inc., Huntington, W. Va.

Filed Oct. 23, 1984, Ser. No. 664,058
Int. Cl.⁴ C22F 1/04

U.S. Cl. 148—12.7 A

19 Claims



1. A method for obtaining a forged product composed of a dispersion strengthened, low density aluminum-base alloy comprised of aluminum, lithium and magnesium, said alloy being derived from a powder of said alloy prepared by a mechanical alloying process, said method being comprised of a sequence of steps comprising: degassing and compacting said powder under vacuum to obtain a compaction billet having a density sufficiently high to obtain an extruded billet of substantially full density; extruding the resultant compaction billet at a temperature in the range of above the incipient extrusion temperature up to about 400° C. (750° F.) said extrusion being carried out with lubrication through a conical die to provide an extruded billet of substantially full density; and forging the resultant extruded billet, said resultant billet being subjected to at least a first forging treatment at a temperature in the range of about 230° C. (450° F.) up to about 400° C. (750° F.), with the proviso that for maximizing strength the forging is carried out at the lower end of the forging temperature range when the extrusion is carried out at the higher end of the extrusion temperature range.

7. A method according to claim 1, wherein said forged alloy is subjected to an aging treatment.

4,643,781
METHOD OF HEAT TREATING VALVE INSERTS
Robert V. Vickers, Chagrin Falls, and Peter D. Sachtlein, South Russell, both of Ohio, assignors to Tocco, Inc., Boaz, Ala.
Filed May 10, 1985, Ser. No. 732,739
Int. Cl.⁴ C21D 1/42

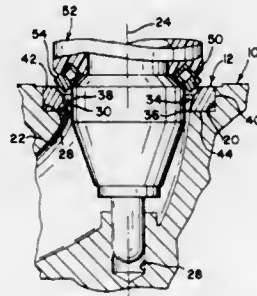
U.S. Cl. 148—127

1 Claim

1. A method of interlocking a valve seat insert within a cylindrical bore of an engine component comprising the steps of:

(a) providing a valve insert having an outer cylindrical

surface including radially outwardly extending projections, the outer diameter of said projections at ambient temperature being greater than the diameter of said cylindrical bore and said projections having an inner diameter at ambient temperature less than the diameter of said bore; (b) cooling said valve insert to thermally contract the insert radially such that said projections have at most a sliding fit with said bore; (c) inserting said cooled valve insert in said bore;

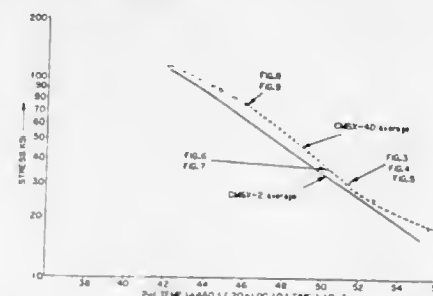


(d) returning said cooled insert to ambient temperature to radially expand said insert and establish an initial mechanical interlocking of said insert within said bore by partial penetration of said projections into said bore; (e) inductively heating said valve insert to cause thermal radial expansion of said insert and further radial penetration of said projections into said bore to establish a final mechanical interlocking of said valve insert axially in said bore; and, (f) cooling said valve insert to ambient temperature.

4,643,782
SINGLE CRYSTAL ALLOY TECHNOLOGY
Kenneth Harris, Spring Lake, and Gary L. Erickson, Muskegon, both of Mich., assignors to Cannon Muskegon Corporation, Muskegon, Mich.
Filed Mar. 19, 1984, Ser. No. 591,023
Int. Cl.⁴ C22C 19/05

U.S. Cl. 148—404

14 Claims



2. A single crystal casting to be used under high stress, high temperature conditions characterized by an increased resistance to creep under such conditions and a heat treat window of approximately 35° F. cast from an alloy consisting essentially of the following elements in the following proportions expressed as percentages of weight:

Co	9.3-10.0
Cr	6.4-6.8
Mo	0.5-0.7
W	6.2-6.6
Ta	6.3-6.7
Al	5.45-5.75
Ti	0.8-1.2
Hf	0.07-0.12

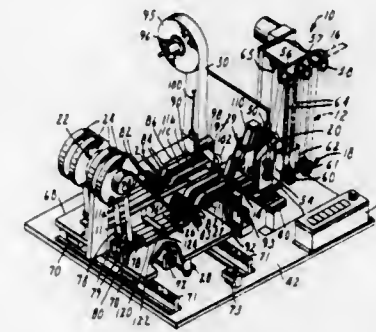
-continued

Re	2.8-3.2
Ni	Bal

4,643,783
AUTOMATIC TAPE SPLICING MACHINE
Raymond A. Hogenson, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Apr. 18, 1985, Ser. No. 724,618
Int. Cl.⁴ B65H 19/10

U.S. Cl. 156—64

6 Claims



1. A machine for splicing a new length of tape to a length of tape being pulled from the machine without interrupting the movement of tape out of the machine, which machine is adapted for use with pressure sensitive adhesive coated tape having a liner along one surface, said machine comprising:

outlet path means defining an outlet path guiding tape for movement from an inlet to an outlet of said outlet path, said outlet path means including path length changing means for changing the length of said outlet path from a normal length to shorter lengths, and clamping means along said outlet path between said inlet and said path length changing means for clamping a piece of the tape at a fixed position along said outlet path; tape supply means comprising tape roll support means for rotatably supporting supply rolls of said tape, and supply path means defining a separate supply path for guiding tape from each of said supply rolls to an end of said supply path; moving means mounting said tape supply means for movement to align any one of said supply paths with said outlet path; splicing means for applying a length of splicing tape to splice together the liners on end portions of tape adjacent the inlet of said outlet path and the end of the supply path aligned with said outlet path; cutting means for cutting a length of tape extending between said outlet path and the end of the supply path aligned with the outlet path; and control means (1) for sensing an end of tape being pulled along the supply path aligned with said tape outlet path, and, in response to sensing said tape end, (2) for activating said clamping means to stop tape movement at the inlet of said tape outlet path; (3) for activating said path length changing means to shorten said tape outlet path at a rate such that tape being pulled from said machine will be provided by the decrease in length in said tape outlet path; (4) for activating said cutting means to cut the length of tape being pulled from the machine between the inlet of the outlet path and the end of the aligned supply path; (5) for activating said moving means after the activation of said cutting means to align another of said supply paths with said outlet path; (6) for activating said splicing means to splice together the liners on the tape end portions adjacent the supply path inlet and the end of the newly aligned

supply path; (7) for releasing said clamping means after the operation of said splicing means and for returning said path length changing means to again provide said normal outlet path length.

6. A method for splicing a new length of tape to a length of tape being pulled from a machine without interrupting the movement of tape out of the machine, which method is adapted for use on pressure sensitive adhesive coated tape having a liner along one surface, said method comprising the steps of:

providing outlet path means defining an outlet path guiding tape for movement from an inlet to an outlet of the outlet path, the outlet path means including path length changing means for changing the length of the outlet path from a normal length to shorter lengths, and clamping means along the outlet path between the inlet and the path length changing means for clamping a piece of the tape at a fixed position along the outlet path; tape supply means comprising tape roll support means for rotatably supporting supply rolls of the tape, and supply path means defining a separate supply path for guiding tape from each of the supply rolls to an end of the supply path; moving means mounting the tape supply means for movement to align any one of the supply paths with the outlet path; splicing means for applying a length of splicing tape to splice together the liners on end portions of tape adjacent the inlet of the outlet path and the end of the supply path aligned with the outlet path; cutting means for cutting a length of tape extending between the outlet path and the end of the supply path aligned with the outlet path; sensing an end of tape being pulled along the supply path aligned with the outlet path; in response to sensing the end of tape, activating the clamping means to stop tape movement at the inlet of the outlet path; activating the path length changing means to shorten the outlet path at a rate such that tape being pulled from the machine will be provided by a decrease in length in the outlet path; activating the cutting means to cut the length of tape being pulled from the machine between the the tape outlet path and the aligned supply path; activating the moving means after the activation of the cutting means to align another of the supply paths with the outlet path; activating the splicing means to splice together the liners on the tape end portions adjacent the inlet of the supply path and the end of the newly aligned supply path; releasing the clamping means after the operation of the splicing means and returning the path length changing means to again provide the normal outlet path length.

4,643,784
APPLICATION AND REPAIR METHOD FOR VENEER
AND THE LIKE
Michel Germond, 78 Qual de l'Hôtel de Ville, 75004 Paris, France
Filed Nov. 21, 1985, Ser. No. 800,325
Claims priority, application France, Nov. 22, 1984, 84 17778
Int. Cl.⁴ B32B 35/00

U.S. Cl. 156—98

21 Claims

1. Method of restoring a plurality of elements constituting the partial or total covering of a support object, such as an object of art or item of furniture, comprising in combination the following principal operations: establishing continuous bonding of all or part of said elements by means of an adhesive transparent bonding sheet; separating said sheet supporting said elements from said support object; temporarily fixing said sheet to a transparent support plate; carrying out restoration of said support object; depositing an adhesive substance on at least the parts of said

support object corresponding to the positions of said elements;
replacing said elements temporarily secured on said support plate at their position on said support object;
definitively fixing said elements to said support object;
separating said temporary support from said elements.

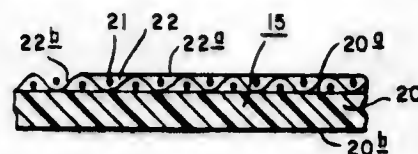
4,643,785

METHOD OF MANUFACTURING A FILTER

Richard D. Paynton, P.O. Box 889, Doylestown, Pa. 18901
Division of Ser. No. 442,633, Nov. 18, 1982, Pat. No. 4,514,585.
This application Mar. 1, 1985, Ser. No. 707,417
Int. Cl.⁴ H05K 9/00

U.S. Cl. 156—101

10 Claims



1. A method of manufacturing a filter adapted to transmit visible light while absorbing certain other forms of energy, said method comprising the steps of:
providing a platen having a topside,
depositing on said topside a layer of liquid bonding agent which, when cured, is releasable from said topside,
placing in said layer of bonding agent a mesh fabricated of electrically-conductive filaments to cause said bonding agent to impregnate said mesh,
laying on said impregnated mesh a translucent plastic substrate,
applying pressure between said substrate and said platen,
curing said bonding agent to cause the impregnated mesh to adhere only to said substrate and to form a laminate, and
separating said laminate from said platen topside.

4,643,786

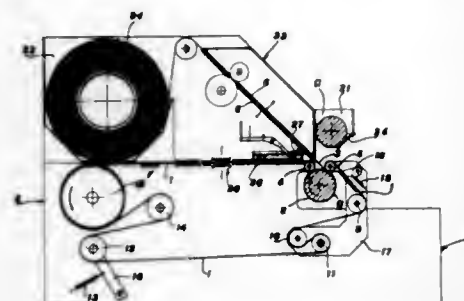
PROCESS AND APPARATUS FOR APPLYING LABELS

Gianfranco Cecchi, Via A. Ressi, 34/A, 20125 Milano, Italy
Filed May 7, 1985, Ser. No. 731,584

Claims priority, application Italy, May 9, 1984, 20846 A/84
Int. Cl.⁴ B65C 3/02, 3/12

U.S. Cl. 156—187

10 Claims



1. Process for automatically applying an identification label to objects of substantially cylindrical irregular shape, comprising forming an empty open loop in a conveyor belt, said loop being substantially larger than a said object to be labeled; introducing a said object into said loop, introducing only one end of a label into the loop; enveloping almost entirely said object with said belt, reducing the size of the loop; and causing the rotation of said object by moving said belt lengthwise, so as to wrap the label round the object and to overlap the label ends for the mutual securement thereof.

4. Apparatus for automatically applying an identification label to objects of substantially cylindrical irregular shape,

comprising a conveyor belt, means for forming an empty open loop in the belt of a size substantially larger than the object to be labeled, means for introducing into the loop a said object to be labeled, means for introducing into the loop only one end of a label to be applied to the object, means for enveloping almost entirely said object with said belt, and means for reducing the size of the loop and for causing rotation of said object by moving said belt lengthwise so as to wrap the label around the object and to overlap the label ends for the mutual securement thereof.

4,643,787

METHOD OF MAKING AN EMBOSSED PANEL DOOR

William Goodman, Troy, Mich., assignor to Versatube Corporation, Troy, Mich.
Filed May 3, 1985, Ser. No. 729,929
Int. Cl.⁴ B32B 31/04

U.S. Cl. 156—196

6 Claims



1. A method for making an embossed door including the steps of:
(A) providing a pair of relatively thin thermoplastic face sheets;
(B) heating the pair of thermoplastic face sheets;
(C) stretch embossing a preselected pattern on the heated thermoplastic face sheets in a platen press to form embossed door panel face sheets;
(D) burning the same preselected pattern into both major faces of a relatively rigid and relatively thick polystyrene core sheet with a hot die;
(E) mounting a wooden perimeter frame around the patterned core sheet;
(F) applying hot adhesive to the patterned faces of the core sheet and to the adjacent faces of the perimeter frame;
(G) aligning the embossed patterns on the plastic face sheets with the the corresponding burned patterns on the core sheet; and
(H) pressing the embossed-plastic face sheets in place on the top respective opposite major faces of the core sheet.

4,643,788

PROCESS FOR PRODUCING A TUBULAR CASING

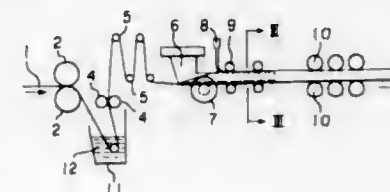
Tadashi Hashimoto, Nagahama, Japan, assignor to Mitsubishi Plastics Industries Limited, Tokyo, Japan
Filed Apr. 3, 1985, Ser. No. 719,512
Claims priority, application Japan, Apr. 26, 1984, 59-84979
Int. Cl.⁴ B31D 3/04

U.S. Cl. 156—203

7 Claims

1. A process for producing a tubular casing by folding a flat plastic sheet (1) into a tubular structure by a shaping former (6) as the sheet advances, and joining the meeting edges of the folded sheet to form the tubular casing, characterized by forming grooves (13) on one or both sides of the sheet along fold

lines, coating a surfactant (12) on the sheet surface at least at the fold line portions of the sheet surface which are to be



brought into contact with the shaping former, and then folding the sheet into a tubular structure by the shaping former.

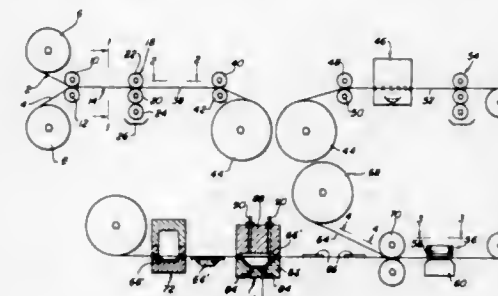
4,643,789

METHOD FOR PREPARING A DECORATED INSERT AND CONTINUOUS INSERT MOLDING OPERATION

Harry A. Parker, Murray Hill, and Joseph Greenman, Plainfield, both of N.J., assignors to Transfer Print Folds, East Brunswick, N.J.

Continuation-in-part of Ser. No. 401,275, Jul. 23, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,605
Int. Cl.⁴ B44C 1/16; B32B 31/00; B31F 1/00; B29C 45/00
U.S. Cl. 156—219

23 Claims



1. A method for continuously preparing decorated three-dimensional molded articles consisting essentially of:
A. forming a laminated composite from a thermoformable organic resinous carrier film used in hot-transfer decorating process and having a thickness of from 0.5 mil to 7 mil, and a printable thermoplastic transfer film, said transfer film having a thickness of from 0.5 mil to 3 mil;
B. printing at least one decorating indicia on said composite, on at least a portion of the free surface of said thermoplastic transfer film;
C. thermoforming said composite by applying deformation heat and pressure to form an insert bearing said decorating indicia defining at least a portion of the outer surface of the final three-dimensional molded article;
D. die-cutting said insert, wherein at least a portion of said die-cutting is performed in a controlled manner to fully penetrate the thickness of said transfer film without penetrating the adjacent surface of said carrier film;
E. indexing said insert into a molding chamber and forming the remainder of said molded article thereagainst, and
F. separating the decorated molded article from said carrier film.

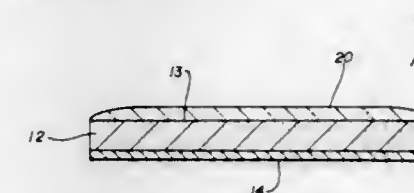
4,643,790

PLASTIC-CAPPED ADHESIVE ARTICLE AND METHOD FOR MAKING SAME

Robert E. Waugh, Sun City Center, Fla.; Urban R. Nannig, North Kingstown, R.I., and Clyde R. Rockwood, Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio
Continuation-in-part of Ser. No. 744,014, Jun. 12, 1985, Pat. No. 4,612,075, This application Jan. 21, 1986, Ser. No. 820,646
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl.⁴ B60R 13/04

U.S. Cl. 156—242

11 Claims



1. A method of making a plastic-capped adhesive article comprising the steps of:
(a) providing a layer of pressure sensitive adhesive,
(b) applying a curable liquid plastic resin onto a first surface of said layer of pressure sensitive adhesive, and
(c) curing said resin to harden it and form a plastic-capped article.

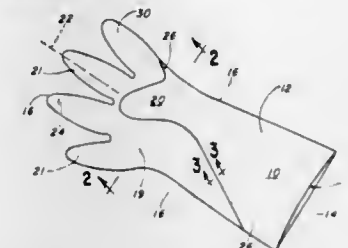
4,643,791

MANUFACTURE OF GLOVES AND THE LIKE

Eran J. P. Jurrius, Barrington, Ill.; Geri A. Russ, and Travis A. Russ, both of Laguna Hills, Calif., assignors to BodiGard Technologies, Inc., Buffalo Grove, Ill.
Continuation-in-part of Ser. No. 768,013, Aug. 21, 1985, abandoned. This application Dec. 27, 1985, Ser. No. 813,970
Int. Cl.⁴ B32B 31/18

U.S. Cl. 156—251

25 Claims



1. A process for manufacturing gloves, which comprises: passing a pair of thermoplastic sheets along a process line in adjacent, facing relation; pushing a portion of one of said sheets outwardly to form an outwardly projecting loop defining adjacent sides and an outer end; forming a thumb-shaped, thermobonded line between adjacent sides of said loop; advancing said loop and adjacent portions of said thermoplastic sheets to a finger and hand forming station; forming a thermobonded line of the shape of fingers and hand between said thermoplastic sheets, in registry with said thumb-shaped line, while retaining an open wrist portion; and cutting away the resulting glove of said wrist portion.

4,643,792
METHOD FOR CHEMICALLY STRUCTURALIZING
TELESCOPIC JOINTS

Edward Vesirian, 110 Firwood, Irvine, Calif. 92714
Filed Aug. 2, 1985, Ser. No. 761,826
Int. Cl.⁴ C09J 1/00

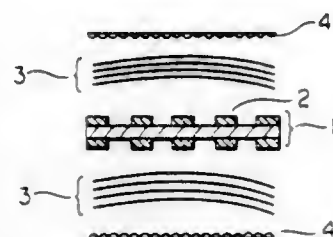
U.S. Cl. 156—294 10 Claims

1. The method of securing a rigid structural joint between a pair of mutually telescoping structural members comprising the steps of:
providing a pair of mutually telescoping structural members, said members being adapted for manual assembly,
coating mutually interfacing surfaces of at least one of said members with ferrous oxide,
assembling said pair of members, at least a portion of one member jointly entering into a complimentary opening formed by and within the second member,
providing temporary immobilizing support means for assembled said pair of members,
introducing a solution of at least 35% hydrogen peroxide between assembled said pair of members,
providing time for chemical conversion of ferrous oxide into more complex oxides of iron, and
removing said support means from assembled said pair of members.

4,643,793
PROCESS FOR TREATING METAL SURFACE
Akishi Nakaso, Oyama; Youichi Kaneko, Shimodate; Toshiro Okamura, Shimodate, and Kiyoshi Yamanol, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1985, Ser. No. 750,780
Claims priority, application Japan, Jun. 29, 1984, 59-135561; Jun. 29, 1984, 59-135562; Jan. 30, 1985, 60-15807
Int. Cl.⁴ H05K 3/46

U.S. Cl. 156—306.6 10 Claims



1. A process for treating a surface of a metal which comprises:
treating a metal surface with a liquid composition comprising (I) copper ions, a complexing agent for copper ions, a reducing agent for copper ions, a pH adjusting agent, water and (II) at least one nitrogen-containing organic compound selected from the group consisting of 2,4,6-tris(2-pyridyl)-s-triazine, α,α' -tripyridyl, 1,10-phenanthroline, 4,7-diphenyl-1,10-phenanthroline, 4,7-dimethyl-1,10-phenanthroline, 4,7-diphenyl-1,10-phenanthroline disulfonic acid disodium salt, 3-(2-pyridyl)-5,6-diphenyl-1,2,4-triazine, α,α' -dipyridyl, Phthalocyanine Green, 8-azaguanine, xanthopterin, 5-amino-indazole, 2-aminoperimidine.hydrochloride, 2-amino-perimidine.hydrobromide, benzoguanamine, acriflavine.hydrochloride, 5-amino-1H-tetrazole, 6-amino-2-phenyl-4-quinolinol, 2-amino-6,8-dihydroxypurine, 2-aminopyrimidine, 6-hydroxy-2,4,5-triaminopyrimidine.sulfate, 2,4-diamino-6-hydroxypyrimidine, 2-amino-4-hydroxy-6-methylpyrimidine, 4,6-dihydroxypyrimidine, nitroguanidine, 1-hydroxy-1H-benzotriazole.monohydrate, 2-hydroxybenzimidazole and 2-amino-3-hydroxypyridine,

forming an electroless copper deposition layer having an average absorption rate of 0.5 or more, and
bonding a resin to the electroless copper deposition layer.

4,643,794
PRIMER AND SEALANT FOR GLASS AND COATED METAL

Jeffrey W. Saracsen, Ashland, and Stephen M. Orwalt, Mansfield, both of Ohio, assignors to Ashland Oil, Inc., Russell, Ky.
Filed Mar. 4, 1986, Ser. No. 835,918
Int. Cl.⁴ B32B 7/00

U.S. Cl. 156—310 6 Claims

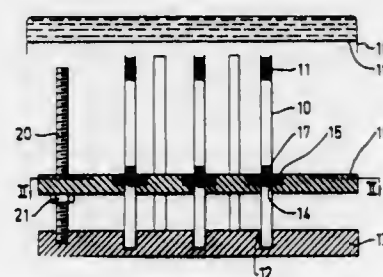
1. A method for joining and sealing a coated metal surface to a glass surface which comprises:
(a) applying a primer to said metal surface and said glass surface, said primer comprising a dispersion of 10 to 20 parts by weight of a linear polyester resin, 4 to 5 parts by weight of a polyisocyanate cross-linking agent, 3 to 9 parts by weight of carbon black, and 66 to 83 parts by weight of a volatile organic solvent;
(b) applying a sealant to either said primed glass surface or said primed coated metal surface, said sealant comprising a mixture of:
(1) a prepolymer comprising a polyethylene oxide polypropylene oxide ether diol and diphenyl methane diisocyanate which has 3 to 15 percent free isocyanate groups; and
(2) a curative comprising 20 to 40 parts by weight polyethylene oxide polypropylene oxide ether diol, 20 to 40 parts by weight polyethylene oxide polypropylene oxide ether triol, 15 to 60 parts by weight filler, 0.5 to 1.5 parts by weight diamine and catalytic amounts of an organotin catalyst, the weight ratio of said prepolymer to said curative ranging from 1:1 to 1:2, and
(c) joining the metal and glass prepared in steps (a) and (b).

4,643,795
METHOD AND DEVICE FOR APPLICATION OF OBJECTS ONTO A SURFACE

Magnus Ericsson, Stockholm, Sweden, assignor to AB Blodisk, Solna, Sweden

Filed May 15, 1985, Ser. No. 734,164
Claims priority, application Sweden, May 16, 1984, 8402646
Int. Cl.⁴ B65C 9/10

U.S. Cl. 156—562 4 Claims

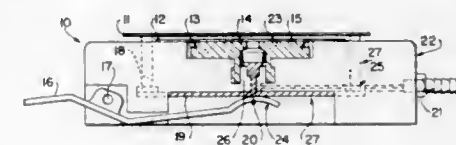


1. A device for applying an object such as an antibiotic patch or a test strip onto a receiving downwardly turned adhesive surface, e.g. an agar surface, said device comprising: at least one upwardly open storage container for containing a pile of objects, said storage container including an element on which the pile of objects can rest, said element being vertically displaceable in said storage container; and means for displacing the object pile upwards in order to press the uppermost object in the pile against the surface, said means including at least one magnet vertically displaceable relative to the storage container arranged outside and adjacent said storage container.

4,643,796
MOLY MASK REMOVAL TOOL
Richard W. Burns, Manassas, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1985, Ser. No. 776,184
Int. Cl.⁴ B32B 31/18

U.S. Cl. 156—584 14 Claims



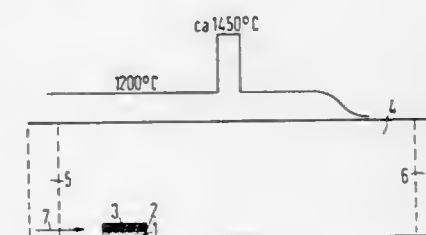
1. An apparatus for removing a mask which extends beyond the outer edges of a semiconductor wafer bonded thereto, comprising:
means for applying a holding force to said wafer for maintaining said wafer in a fixed position,
means for imparting a force in the opposite direction of said holding force including, a discharge facilitator having a horizontal plate, having a plurality of vertical pins attached thereto, said pins being spaced a distance from the center of said plate that is greater than the radius of said wafers and less than the radius of said masks, said pins extending upwardly toward said wafer; and an actuator for lifting said discharge facilitator so that the pins of said facilitator make upwardly forceful contact with said mask, both of said means having their respective forces applied simultaneously to effect separation of said mask from said semiconductor wafer.

4,643,797
METHOD FOR THE MANUFACTURE OF LARGE AREA SILICON CRYSTAL BODIES FOR SOLAR CELLS

Christa Grabmaier, Berg; Josef Kotschy, Unterhaching, and August Lerchenberger, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 26, 1985, Ser. No. 759,243
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431592

U.S. Cl. 156—603 12 Claims



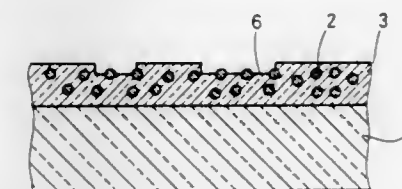
1. A method for the manufacture of large area silicon crystal bodies on an assembly line basis which comprises:
providing a carrier member which is not appreciably wet by molten silicon,
applying a parting agent consisting predominantly of very finely divided silicon powder on said carrier member,
placing a crystalline silicon source in solid form and of much larger grain size than said parting agent on said parting agent,
melting the crystalline source while supported on said parting agent and carrier,
cooling the molten silicon below its recrystallization temperature, and
removing the parting agent from the recrystallized silicon.

4,643,798
COMPOSITE AND CIRCUIT BOARD HAVING CONDUCTIVE LAYER ON RESIN LAYER AND METHOD OF MANUFACTURING

Mitsuyuki Takada; Yoshiyuki Morihoro, and Hayato Takasago, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1985, Ser. No. 721,460
Claims priority, application Japan, Aug. 7, 1984, 59-165410
Int. Cl.⁴ B44C 1/22; C03C 15/00

U.S. Cl. 156—630 14 Claims



1. A method of manufacturing a composite having a conductive layer on a surface of a resin layer, comprising the steps of:
preparing a substrate having a main surface, forming on said main surface of said substrate a resin layer comprising a mixture of a resin material and filler elements of fine geometry, said resin material being etchable with respect to said filler elements, said filler elements being etchable with respect to said resin material,
selectively etching said resin material of the surface of said resin layer with respect to said filler elements to expose a portion of said filler elements,
selectively etching said filler elements, as exposed on said selectively etched surface of said resin layer with respect to the resin material, to form unevenness including concavities formed as a result of etching of said exposed filler elements,
forming catalyst nuclei for electroless plating on said selectively etched surface having said unevenness of said resin layer, and
electroless plating a conductive metal layer on said selectively etched surface having said unevenness having said catalyst nuclei formed,
wherein said resin material comprises a thermo-setting material being thermo-settable at a predetermined thermo-setting temperature, said resin material being etched with respect to said filler elements prior to thermo-setting of said resin material, said filler elements being selectively etched with respect to said resin material after said resin material has been thermo-set, and which further comprises the step of
heating said resin material to said predetermined thermosetting temperature after said step of etching said resin material at the surface of said resin layer and before said step of selectively etching said filler elements, as exposed.
8. A method of manufacturing a circuit board having a conductive layer of a predetermined pattern on a surface of a resin layer, comprising the steps of:
preparing a substrate having a main surface,
forming on said main surface of said substrate a resin layer comprising a mixture of a resin material and filler elements of fine geometry, said resin material being selectively etchable with respect to said filler elements, said filler elements being selectively etchable with respect to said resin material,
selectively etching the surface of said resin material layer in an area of the surface according to a predetermined pattern to expose a portion of said filler elements in said area in said predetermined pattern of the surface of said resin layer,
selectively etching said filler elements, as exposed on said selectively etched surface of said area in said predetermined pattern of said resin layer, to form unevenness

therein including concavities formed as a result of etching of said exposed filler elements, forming catalyst nuclei for electroless plating on said selectively etched surface in said predetermined pattern of said resin layer having said unevenness of said resin layer, and electroless plating selectively a conductive metal layer on said selectively etched surface in said predetermined pattern having said unevenness having said catalyst nuclei formed, wherein said resin material comprises a thermo-setting material being thermo-settable at a predetermined thermo-setting temperature, said resin material being etched with respect to said filler elements prior to thermo-setting of said resin material, said filler elements being selectively etched with respect to said resin material following thermo-setting of said resin material, and which thereby further comprises the step of heating said resin material to said predetermined thermosetting temperature after said step of selectively etching said resin material on the surface of said resin layer and before said step of selectively etching said filler element, as exposed.

4,643,799

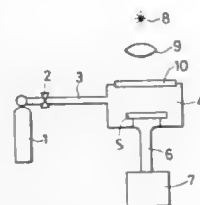
METHOD OF DRY ETCHING

Kanji Tsujii, Nishitama; Yusuke Yajima, Musashino, and Seiichi Murayama, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1985, Ser. No. 809,202

Claims priority, application Japan, Dec. 26, 1984, 59-272913; Jan. 25, 1985, 60-10843; Feb. 19, 1985, 60-29311; Feb. 19, 1985, 60-29312

Int. Cl.⁴ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—635 10 Claims



1. A dry etching method comprising the steps of: evacuating the reaction chamber in which a substrate to be etched is set; introducing etching gas into the reaction chamber; causing the substrate to adsorb the introduced etching gas and thereafter evacuate the etching gas remaining in the reaction chamber; and irradiating the surface of the substrate to be etched with photon energy through a light window provided in the reaction chamber.

4,643,800

METHODS OF DECONTAMINATING SECONDARY FIBER

James F. Maloney, Eagan; Richard E. Freis, Bloomington, and Thomas R. Oakes, Stillwater, all of Minn., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Continuation of Ser. No. 503,335, Jun. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 206,142, Nov. 12, 1980, abandoned, and a continuation-in-part of Ser. No. 458,432, Jan. 17, 1983, Pat. No. 4,518,459, which is a continuation of Ser. No. 93,744, Nov. 13, 1979, abandoned. This application Jun. 7, 1985, Ser. No. 742,138

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

Int. Cl.⁴ D21C 5/02

U.S. Cl. 162—5

16 Claims

1. A method of substantially removing and dispersing a contaminant from contaminant-containing secondary fiber during repulping and of preventing the deposition of said dispersed contaminants on paper processing equipment, which comprises:

(a) forming an aqueous repulping medium of contaminant-containing secondary fiber, an effective defoaming amount of a substituted oxyethylene glycol nonionic surfactant of the formula:



wherein R is a saturated aliphatic group of 6–24 carbon atoms, AR is an aromatic residue, n is about 6–15, m is about 12–48, n:m is less than one, and Y is selected from the group consisting of OH and benzyl ether; and an amount of a water soluble low molecular weight polyelectrolyte dispersant having a molecular weight of about 500–5000 effective to disperse the contaminants to prevent substantial deposition of the contaminants on the processing equipment, the medium having a temperature above the melting point of a contaminant to be removed from the secondary fiber, the contaminant comprising a thermoplastic organic resinous water-insoluble wax, adhesive, or resin;

(b) allowing dispersion of the contaminant from the secondary fiber into the aqueous repulping medium to obtain a substantially decontaminated fiber in a contaminant-containing repulping medium; and

(c) separating the substantially decontaminated fiber from the contaminant-containing aqueous repulping medium.

4,643,801

PAPERMAKING AID

Kerrie A. Johnson, Mount Prospect, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 24, 1986, Ser. No. 832,557

Int. Cl.⁴ D21H 3/28, 3/36

U.S. Cl. 162—164.1

13 Claims

1. In a paper-making process in which paper-making stock containing a sufficient amount of cellulosic pulp to give a finished paper containing at least 50% cellulosic fiber is formed and dried; and in which the stock, prior to formation of the sheet, is admixed with from 0.1 to 15% based on the weight of said pulp of a binder, the improvement which comprises using a coacervate binder comprising a cationic starch having a degree of substitution ranging between about 0.01 to about 0.20 in combination with an anionic combination of an anionic high molecular weight polymer having a molecular weight of at least 500,000 and a degree of anionic substitution of at least 0.01 and a dispersed silica having a particle size ranging from 1 to 50 nm; and wherein the weight ratio of anionic polymer to silica ranges between about 20:1 to about 1:10, and further, where the cationic starch to silica ratio is between about 100:1 to 1:1.

4,643,802

EXTENDED NIP PRESS WITH HEATING EFFECTS AVOIDANCE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

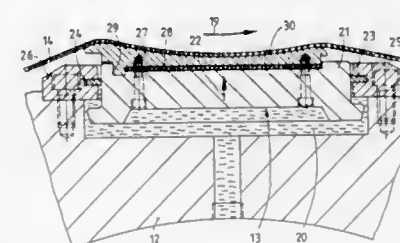
Filed Mar. 28, 1985, Ser. No. 717,858

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1985, 3503245

Int. Cl.⁴ D21F 3/02

U.S. Cl. 162—358

6 Claims



1. An extended nip press for removing water from a fiber web, the press comprising: a rotatable press roll which is rotatable around an axis of the press roll; a press shoe having a top surface that is opposed to the press roll; a stationary support member for carrying the press shoe and for urging the press shoe and the top surface thereof toward the press roll; an endless belt extending between the top surface of the press shoe and the press roll for defining a press nip between the belt and the press roll, and the belt being movable in a slide path through the nip by the rotation of the press roll; the press shoe being comprised of a supporting lower part which is supported on the support member and of an upper part which is supported on the lower part, and the upper part having the top surface of the press shoe which defines the slide path for the press belt; the lower and the upper parts of the press shoe having non-pivotable interlocking means; means defining a recess in said stationary support; the lower part of the press shoe being positioned in the recess of the stationary support; the recess defining means also maintaining the position of the press shoe against the friction exerted by the belt; and a continuous layer of heat insulating material between the upper part of the press shoe and the lower part of the press shoe for preventing heat flow from the upper part to the lower part, said continuous layer being disposed over substantially the whole area between the upper and lower parts of the press shoe.

4,643,803

METHOD OF MAKING COKE IN A COKE OVEN BATTERY

Nicolaas J. W. Thijssen, Santpoort Noord, and Timen Vander, Ursem, both of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands

Filed Nov. 26, 1984, Ser. No. 674,752

Claims priority, application Netherlands, Nov. 28, 1983, 8304066

Int. Cl.⁴ C10B 21/00, 21/10

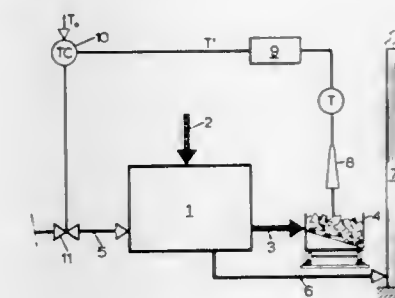
U.S. Cl. 201—1

5 Claims

1. In a method of making coke in coke-ovens of a coke oven battery wherein a combustion fuel gas is supplied to heat each of said coke-ovens, the improvement comprising the steps of: (a) measuring the coke temperature of each of a plurality of coke loads pushed from a series of said coke-ovens of the battery while the coke is in a quenching car and before quenching of the coke utilizing at least one infrared sensor; (b) determining for each of said plurality of coke loads, a

difference temperature value corresponding to the difference between the said measured pushed coke temperature and a predetermined pushed coke temperature reference value;

(c) determining the mean of said difference temperature values, and



(d) adjusting the total quantity of combustion fuel gas supplied to said series of coke-ovens of the battery in dependence on said mean of the difference temperature values to minimize temperature deviations between said each load of a plurality of coke loads pushed from said series of coke-ovens.

4,643,804

FORMING THICK DIELECTRIC AT THE BOTTOMS OF TRENCHES UTILIZED IN INTEGRATED-CIRCUIT DEVICES

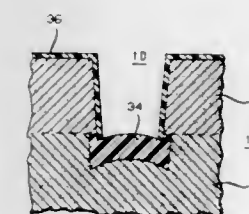
William T. Lynch, Summit, N.J., and Thomas E. Seidel, Carlsbad, Calif., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 25, 1985, Ser. No. 758,797

Int. Cl.⁴ C25D 11/02

U.S. Cl. 204—15

14 Claims



1. A method of fabricating an integrated-circuit device in a silicon body, comprising the steps of forming a trench in said body, forming a mask on the top surface of said body and on the sidewalls of said trench, and forming a dielectric layer only at the bottom of said trench in a fabrication procedure that includes anodization.

4,643,805

GALVANIC BATH FOR THE ELECTRODEPOSITION OF BRIGHT ZINC-COBALT ALLOY

Francine Popescu, 27, rue de Centre, 94490 Ormesson, France

Filed Mar. 6, 1986, Ser. No. 836,952

Int. Cl.⁴ C25D 3/56

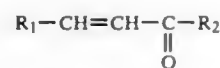
U.S. Cl. 204—44.2

12 Claims

1. A galvanic bath for electrodepositing a bright zinc-cobalt alloy comprising:

(a) an aqueous acidic solution of zinc and cobalt ions; (b) 0.1 to 30 grams per liter of a dispersing agent compatible with said bath;

(c) 0.05 to 2.0 grams per liter of a brightening agent of general formula:



wherein:

R₁ represents phenyl, pyridyl, naphthyl, thienyl or furyl radical which may be substituted by one or more substituents selected from chlorine and bromine atoms or a hydroxy, alkyl, alkoxy, carboxy, amino, amido or methylenedioxy group; and

R₂ is alkyl, hydroxyalkyl or pyridyl and
(d) 0.1 to 20 grams per liter of an aromatic monocarboxylic acid with the carboxy group directly linked to the aromatic nucleus, or a salt thereof.

4,643,806 ELECTROCATALYTIC ENERGY CONVERSION AND CHEMICALS PRODUCTION

Louis Hegedus, Rockville, Md.; Costas G. Vayenas, and James N. Michaels, both of Cambridge, Mass., assignors to W. R. Grace & Co., New York, N.Y. and Massachusetts Institute of Technology, Cambridge, Mass.

PCT No. PCT/US82/01603, § 371 Date Oct. 3, 1983, § 102(e) Date Oct. 3, 1983, PCT Pub. No. WO83/02605, PCT Pub. Date Aug. 4, 1983

Continuation-in-part of Ser. No. 345,146, Feb. 2, 1982, Pat. No. 4,463,065. This PCT application Nov. 15, 1982, Ser. No. 545,471 Int. Cl.⁴ C25G 19/00

U.S. Cl. 204—59 R

11 Claims

1. A method of electrocatalytic energy production and electrosynthesis of chemicals comprising reacting in a solid-state electrocatalytic cross flow monolith formed of an oxygen ion-conducting electrolyte and having a high ion transport surface area per reactor volume an electrochemical reaction selected from the group consisting of:

- A. oxidation reactions selected from the group consisting of sulfur to SO₂ or SO₃, hydrogen sulfide to SO₂ or SO₃, methanol to formaldehyde, alcohols having 2 or more carbon atoms to their oxidized products, paraffins to their oxidized products, olefins to their oxidized products, alkyl-aromatics to their oxidized products, naphthalene to phthalic anhydride, benzene to maleic anhydride, butane to maleic anhydride, and butene to maleic anhydride;

- B. addition reactions selected from the group consisting of NH₃+O₂+CH₄ to HCN, CO+H₂ to higher hydrocarbons, CO+H₂ to partially oxidized hydrocarbons, and CO+H₂+olefins to higher hydrocarbons;

- C. decomposition of NO to N₂ and O₂; and
D. manufacture of aluminum from Al₂O₃ in a eutectic solution.

4,643,807

PROCESS FOR ELECTROCHEMICALLY FORMING AN AROMATIC COMPOUND CONTAINING ONE OR MORE ALPHA-ACYLOXYLATED ALIPHATIC SUBSTITUENT(S)

Ming-Biann Liu, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 13, 1985, Ser. No. 808,777

Int. Cl.⁴ C25B 3/02

U.S. Cl. 204—78

22 Claims

1. A process for forming aromatic compounds containing one or more α-acyloxyated aliphatic substituent(s) comprising the step of contacting two electrodes with a solution contain-

ing an aromatic compound having one or more aliphatic substituent(s) in the presence of (1) a strong acid electrolyte and (2) an alkanolic acid under conditions sufficient to form an aromatic compound containing one or more α-acyloxyated aliphatic substituent(s).

4,643,808

METHOD FOR CONTROLLING CHLORATES

Yasushi Samejima, Kakogawa; Minoru Shiga, Himeji; Toshiji Kano, and Takamichi Kishi, both of Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

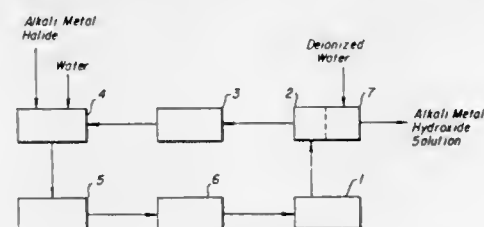
Filed Oct. 4, 1984, Ser. No. 657,545

Claims priority, application Japan, Oct. 4, 1983, 58-186255

Int. Cl.⁴ C25B 1/16, 1/34

U.S. Cl. 204—98

2 Claims



1. A method for controlling chlorates contained in an aqueous alkali metal hydroxide solution in the electrolysis of an aqueous alkali metal halide solution using an ion exchange membrane, which comprises carrying out electrolysis of an aqueous alkali metal halide solution using an ion exchange membrane to produce a depleted brine containing chlorates formed in the electrolysis, dechlorinating the depleted brine, and producing a dechlorinated brine having a pH of not more than three, adding a reducing agent to the dechlorinated brine to reduce the concentration of the chlorates, the amount of reducing agent added being not less than an equivalent of the chlorate produced during electrolysis, combining the brine having a reduced concentration of chlorates with other brine to produce a feed aqueous alkali metal halide solution having a concentration of chlorates of 10 g per liter or less and carrying out electrolysis of said feed aqueous alkali metal halide solution using an ion exchange membrane.

4,643,809

PROCESS FOR ELECTROCHEMICALLY GASIFYING COAL USING ELECTROMAGNETISM

Thomas E. Botts, Markham, Va., and James R. Powell, Shoreham, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1985, Ser. No. 791,236

Int. Cl.⁴ B01J 19/12

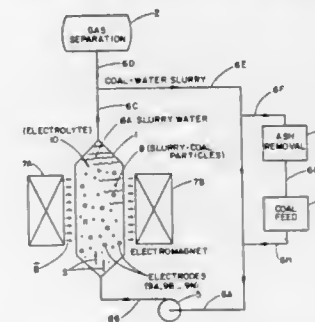
U.S. Cl. 204—155

13 Claims

1. A process for electrochemically gasifying coal, comprising the steps of:

- (a) establishing a flowing stream including a slurry of coal particulate and a liquid, a plurality of electrode members distributed in the slurry, and an electrolyte in electrically conducting relationship with said members and the slurry, (b) establishing a magnetic field of predetermined strength transversely through a portion of said stream, said field being effective to electrically polarize the electrode members as they flow through the field, thereby causing said members to operate with the electrolyte to electrochemi-

cally gasify the coal particulate and generate H₂ and CO₂ gases at opposite ends, respectively, of said members,



(c) providing gas collecting means operatively positioned to collect said gases as they rise from the slurry, and operating the gas collecting means to collect said gases.

4,643,810

PHOTOCHEMICAL PROCESS TO ELIMINATE LEAD IN GASOLINE WITH A HIGH OCTANE NUMBER

Carlo Randaccio, Bologna, Italy, assignor to Vittorio Spada, Madrid, Spain

Filed Apr. 4, 1985, Ser. No. 719,916

Claims priority, application Italy, Apr. 10, 1984, 3419 A/84

Int. Cl.⁴ B01J 19/12

U.S. Cl. 204—157.3

5 Claims

1. A process to eliminate lead in gasoline with a high octane number, wherein gasoline containing an organo-metallic lead compound selected from the group consisting of tetraethyl-lead, tetramethyl-lead and mixtures thereof and an organic halogen compound selected from the group consisting of ethylene dibromide, ethylene dichloride and mixtures thereof is subjected to radiation using ultraviolet rays, at room temperature and pressure, the rays having a wavelength between 2,000 and 5,000 Å, to provoke the formation of free radicals with reduction action on the gasoline, and the precipitation of the lead in the form of insoluble lead halogenates; and separating the resulting lead by filtration.

4,643,811

PHOTOCHEMICAL PROCESS FOR THE PREPARATION OF DICHLOROTRIFLUOROETHOXY- AND DICHLOROTRIFLUOROETHYLTHIOBENZENE DERIVATIVES

Bernard Langlois, Lyons, France, assignor to Rhone-Poulenc Specialites Chimiques, France

Filed Mar. 28, 1986, Ser. No. 845,185

Claims priority, application France, Mar. 29, 1985, 85 04757

Int. Cl.⁴ B01J 19/12

U.S. Cl. 204—157.8

11 Claims

1. A process for the preparation of a 1,1-dichloro-2,2,2-trifluoroethoxybenzene derivative or a 1,1-dichloro-2,2,2-trifluoroethylthiobenzene derivative, comprising the step of contacting a 2,2,2-trifluoroethoxybenzene derivative or a 2,2,2-trifluoroethylthiobenzene derivative with chlorine in the presence of radiation for a time sufficient to produce said 1,1-dichloro-2,2,2-trifluoroethoxybenzene derivative or said 1,1-dichloro-2,2,2-trifluoroethylthiobenzene derivative.

4,643,812

PHOTOCHEMICAL PROCESS FOR THE HYDROBROMINATION OF OLEFINIC DOUBLE BONDS

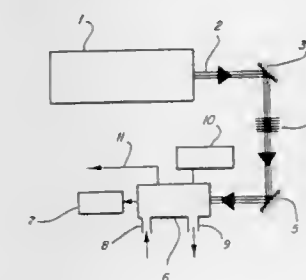
Joshua Zavelovich, Lincolnwood, and K. Virupaksha Reddy, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 24, 1985, Ser. No. 694,610

Int. Cl.⁴ B01J 19/12

U.S. Cl. 204—157.61

15 Claims



1. A method for the hydrobromination of an olefinic double bond in an organic compound which comprises irradiating a mixture of hydrogen bromide and said organic compound with coherent light of a wavelength in the range from about 335 to about 500 nm, wherein said organic compound is an alkene and the intensity of said light is effective to initiate said hydrobromination reaction.

4,643,813

PROCESS FOR PRODUCING ALKANESULFONIC ACIDS

Yasukazu Sato; Kenichi Matsuda; Hiromi Ozaki; Teruo Suzuki, and Mamoru Yamane, all of Saitama, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1985, Ser. No. 775,295

Claims priority, application Japan, Dec. 13, 1984, 59-261880;

Aug. 5, 1985, 60-171035

Int. Cl.⁴ C07C 3/24

U.S. Cl. 204—157.78

14 Claims

1. A process for producing an alkanesulfonic acid which comprises causing sulfur dioxide and oxygen to act on a saturated hydrocarbon under illumination with light in a substantially water-free reaction system, wherein photo-sulfoxidation of the saturated hydrocarbon is performed as a reaction mixture in the reaction system is held in contact with sodium sulfite.

4,643,814

STRUCTURE SELECTIVE FIBROUS SORBENTS AND METHOD AND APPARATUS FOR USING THE SAME

Arthur L. Goldstein, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of Ser. No. 703,581, Feb. 20, 1985, Pat. No. 4,594,135. This application Apr. 12, 1985, Ser. No. 722,968

The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.

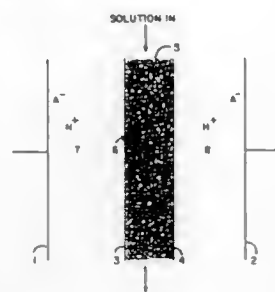
Int. Cl.⁴ B01D 13/02

U.S. Cl. 204—180.1

23 Claims

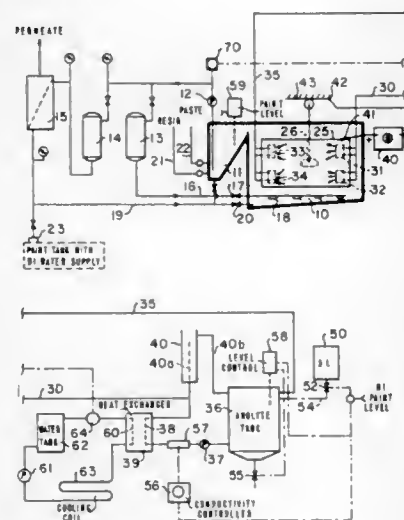
1. A method for recovering biospecifically, sorbable components previously sorbed on a body of filaments having biospecific sorbing properties for said components comprising:
(a) passing a direct electric current through said body of filaments in a direction substantially parallel to the smallest dimension of said body thereby facilitating the desorp-

tion of at least one of said biospecifically, sorbable components from said filaments;



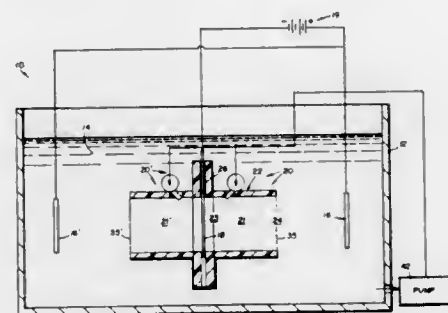
(b) removing said desorbed components from contact with said filaments.

4,643,815
ELECTROCOATING METHOD AND APPARATUS
Robert L. Blankemeyer, Fort Jennings, Ohio, assignor to Metokote Corporation, Lima, Ohio
Filed Nov. 30, 1984, Ser. No. 676,882
Int. Cl.⁴ C25D 13/00, 13/24
U.S. Cl. 204—180.2 15 Claims



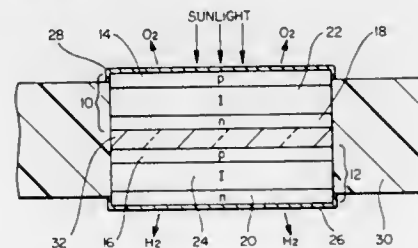
1. A method for electrocoating by electrodeposition of a coating on an electrically conductive article to be coated, comprising the steps of:
immersing the article in a coating tank containing a circulating electrolyzing liquid coating mixture and an electrode covered by a membrane also immersed in the coating mixture,
continuously circulating an electrolytic ion absorbing dialysis fluid between the membrane and electrode to modify the pH of the coating mixture,
establishing an electrical potential difference between the article and the electrode to cause a direct current to flow through the electrolytic dialysis fluid and the coating mixture to the article and thereby deposit a coating on the article, and
modifying the temperature of the dialysis fluid to thereby modify the temperature of the coating mixture while coating.

4,643,816
PLATING USING A NON-CONDUCTIVE SHROUD AND A FALSE BOTTOM
Daniel P. Geels, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed May 9, 1985, Ser. No. 732,259
Int. Cl.⁴ C25D 17/00
U.S. Cl. 204—228 13 Claims



1. Plating apparatus for uniform electrodeposition of material onto a workpiece, comprising:
a cell including a bath having material therein to be electrodeposited on the workpiece;
an anode disposed in said cell;
a source of electrical current operatively connected to said anode, and to a workpiece to be plated so that the workpiece acts as a cathode;
electrically insulating material shroud means operatively connected to the workpiece and defining an area between the anode and the workpiece for preventing bulging of current lines beyond the area defined thereby; and
conductive material means physically disposed between the anode and the cathode adjacent the area defined by such shroud means, unconnected to the source of electrical current except through the bath, and for defining an equipotential surface.

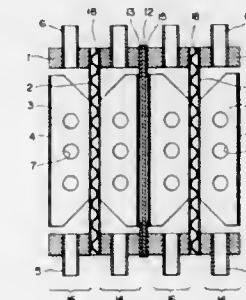
4,643,817
PHOTOCELL DEVICE FOR EVOLVING HYDROGEN AND OXYGEN FROM WATER
A. John Appleby, Mountain View, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Jun. 7, 1985, Ser. No. 742,476
Int. Cl.⁴ C25B 1/04, 9/00
U.S. Cl. 204—242 5 Claims



1. A photovoltaic assembly useful for splitting water into hydrogen and oxygen gases, comprising:
a p-I-n type photovoltaic cell having a p-type conductivity layer, an intrinsic semiconductor layer, and an n-type conductivity layer formed to provide a medium bandgap cell;
a high bandgap n-type layer disposed above said p type layer

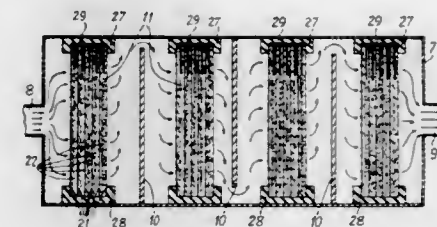
of said photovoltaic cell and adapted to contact an electrolyte including water;
a low bandgap p-type layer disposed below said n type layer of said photovoltaic cell and adapted to contact an electrolyte including water; and
transparent ohmic window layers formed between the p and n layers of said photovoltaic cell and the high bandgap and low bandgap layers.

4,643,818
MULTI-CELL ELECTROLYZER
Maomi Seko, Tokyo; Reiji Takemura, Hachioji, and Hideharu Miyamori, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jul. 31, 1985, Ser. No. 760,897
Claims priority, application Japan, Aug. 7, 1984, 59-164259; Jul. 4, 1985, 60-145821
Int. Cl.⁴ C25B 9/00, 15/08
U.S. Cl. 204—253 11 Claims



1. A multi-cell electrolyzer comprising:
a plurality of unit cells;
each unit cell comprising an anode chamber unit and a cathode chamber unit;
said anode chamber unit comprising a frame wall, a metallic side wall cooperating with said frame wall to make a pan form, and an anode welded with said side wall through a plurality of electrically conductive ribs;
said cathode chamber unit comprising a frame wall, a metallic side wall cooperating with said frame wall to make a pan form, and a cathode welded with said side wall through a plurality of electrically conductive ribs;
a cation exchange membrane disposed between the anode of the anode chamber unit and the cathode of the cathode chamber unit adjacent to said anode chamber unit so that said anode and said cathode face said cation exchange membrane on its opposite sides, respectively;
said plurality of unit cells being arranged in series and adapted to be energized through a plurality of current lead plates; and
rigid multi-contact electrically conductive means;
said rigid multi-contact electrically conductive means having such a rigidity that when the conductive means is held between a pair of plates and a pressure of 3 kgf/cm²G (0.294 MPa) or less is applied onto both sides of the pair of plates having the means held therebetween, the conductive means undergoes substantially no deformation or no change in thickness and being provided between the adjacent unit cells and/or between each current lead plate and the unit cell adjacent thereto, thereby establishing rigid firm contact therebetween at a plurality of points; and
wherein the electrolyzer is adapted to be operated while maintaining the internal pressure of each unit cell at a level higher than the atmospheric pressure.

4,643,819
DEVICES FOR THE GALVANIC RECOVERY OF METALS FROM DILUTED SOLUTIONS
Yves Herogue, 3 Place Toulouse Lautrec, 51100 Reims, France
Filed Jan. 9, 1985, Ser. No. 689,855
Claims priority, application France, Jan. 9, 1984, 84 00203; Dec. 13, 1984, 84 18992
Int. Cl.⁴ C25C 7/00; C25B 11/03, 11/04, 7/02
U.S. Cl. 204—269 14 Claims



9. A device for the galvanic recovery of metals from a diluted solution by means of permeable electrodes through which the diluted solution is caused to flow, characterized by the cathode being formed of very fine wire mesh offering no mechanical resistance of its own and being stiffened by an inert support made up of plastic netting, this cathode being crossed perpendicularly by the diluted solution flowing therethrough, the device further comprising a parallelepipedic tank in which are alternatively arranged a plurality of planar anodes and planar cathodes parallel to each other, said tank being provided on one end with a feed pipe and on the other end with a discharge pipe.

4,643,820
PROCESS FOR ENHANCING THE CETANE NUMBER OF DIESEL FUEL
Hossein Zarrineghal; James R. Kittrell, and Saeed T. Darian, all of Amherst, Mass., assignors to OxiProcessing, Concord, Mass.
Filed Feb. 24, 1986, Ser. No. 832,196
Int. Cl.⁴ C10G 29/02 38 Claims

1. A process for enhancement of the cetane number of a diesel fuel comprising:
(1) treating a diesel oil with a nitrogenous treating agent in a nitrogen amount, equivalent on a 100% nitric acid basis, of about 10 weight percent or less of the diesel oil feed;
(2) removing unreacted nitrogenous treating agent from the diesel oil of step (1) to produce a treated diesel oil; and
(3) blending the treated diesel oil of step (2) with an untreated diesel oil to produce a blended diesel fuel such that the added nitrogen content in the blended diesel fuel is
(a) about 300 ppm or less when the diesel oil treated in step (1) is obtained from virgin diesel oil stock; or
(b) about 450 ppm or less of nitrogen added when the diesel oil treated in step (1) is obtained from hydro-treated diesel oil stock.

4,643,821
INTEGRATED METHOD FOR EXTRACTING NICKEL AND VANADIUM COMPOUNDS FROM OILS
Robert E. Overfield, Washington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 755,089, Jul. 15, 1985. This application Oct. 2, 1985, Ser. No. 783,040
Int. Cl.⁴ C10G 17/00; C10C 3/00 20 Claims

1. A method for the extraction of vanadium or nickel metal-porphyrinic compounds from an oil containing such compounds comprising the step of contacting said oil with a sol-

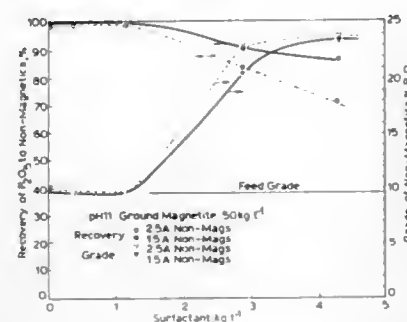
vent selected from the group of gammabutyrolactone, acetone, trile, phenol, furfural, 2-pyrrolidinones, dimethylsulfone, dimethylformamide, pyridine-water mixtures, ethylene carbonate, propylene carbonate, ethylene trithiocarbonate, and dimethyl sulfone to produce a solvent-metalloporphyrinic compound stream and a demetallated product oil stream, regenerating the solvent-metalloporphyrinic stream by contacting it with a highly aromatic oil stream.

4,643,822 METHOD OF SEPARATION OF MATERIAL FROM MATERIAL MIXTURES

Philip G. Parsonage, Stevenage, United Kingdom, assignor to The Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Feb. 28, 1985, Ser. No. 706,487
Int. Cl.⁴ B03O 1/00

U.S. Cl. 209—8

19 Claims



1. A method of separating the various constituent minerals of a mixture of mineral, comprising chemically adjusting the Zeta potential of the mixture of minerals and adding particles of magnetic material to the mixture, whereupon heterocoagulation of the magnetic particles occurs such that the product of the Zeta potentials of the individual mineral components and the Zeta potential of the magnetic material is effective to cause the magnetic particles to adhere to particles of one mineral component but not the other.

4,643,823 RECOVERING METAL SULFIDES BY FLOTATION USING MERCAPTOALCOHOLS

James B. Kimble, and Robert M. Parlman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1982, Ser. No. 416,757

Int. Cl.⁴ B03D 1/14

U.S. Cl. 209—166

3 Claims

1. A process for recovering a metallurgical concentrate containing metal sulfide minerals in the froth of a flotation process, said process comprising in a froth flotation process admixing a flotation slurry containing metal sulfide ore with 2-hydroxy-1-dodecanethiol in an amount sufficient to aid in the flotation of said metal sulfide minerals and recovering said floated minerals from the gangue.

4,643,824
EDIBLE OIL CLEANER
Hozumi Akazawa, and Kentaro Muto, both of Kobe, Japan, assignors to Chojoh Giken Kabushiki Kaisha, Hyogo, Japan
Filed Aug. 28, 1984, Ser. No. 644,959

Claims priority, application Japan, Sep. 14, 1983, 58-168218
Int. Cl.⁴ B01D 33/00

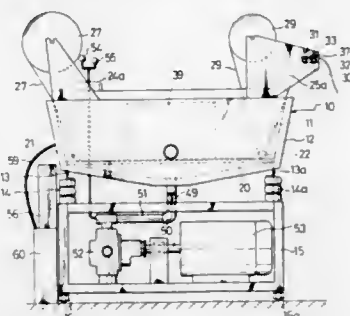
U.S. Cl. 210—167

6 Claims

1. In an apparatus comprising a cooking oil cleaner which

cleans cooking oil received from a cooking bath, said cooking oil cleaner comprising:

- a filter housing communicating with said cooking bath;
- a perforated plate disposed with said filter housing below an upper edge thereof for defining therein:
 - a filtering zone beneath said perforated plate, and
 - an oil receiving zone above said plate,
- an elongated filtering web disposed over said perforated plate,
- means for advancing said elongated filtering web along said perforated plate within said filter housing to periodically replace clogged portions of said web with unclogged portions thereof,



oil conducting means for continuously communicating oil in said bath with said oil receiving zone regardless of the height of oil in said bath and for continuously maintaining the level of the oil in said housing higher than the level of said filtering web, and wherein a perforated, box-shaped strainer is disposed above said oil conductive means

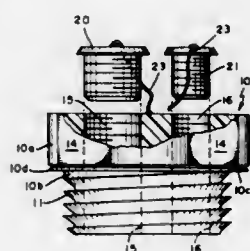
oil circulating means for communicating said filtering zone with said bath and for continuously producing a negative pressure in said filtering zone for circulating oil from said filtering zone to said bath, said filtering zone and said oil receiving zone arranged such that substantially all of said negative pressure is communicated to said filtering zone for forcefully drawing the oil through said filtering web and into said filtering zone.

4,643,825 BULK CONTAINER SYSTEM FOR HIGH PURITY LIQUIDS

Robert G. Weslowski, Boothwyn, Pa., assignor to General Chemical Corporation, Morristown, N.J.
Continuation-in-part of Ser. No. 446,937, Dec. 6, 1982, abandoned. This application Dec. 6, 1984, Ser. No. 678,749
Int. Cl.⁴ B01D 35/04

U.S. Cl. 210—188

5 Claims



1. A system for maintaining and upgrading the high purity of a liquid in a shipping container comprising:

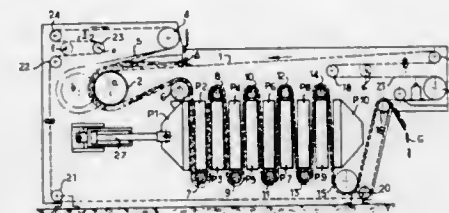
- (a) a shipping container;
- (b) a first bung positioned in a first opening in said container, said first bung being provided with at least two openings and a dip tube connected to a first opening in the first bung;

- (c) a second bung in position in a second opening in said container;
 - (d) a pump for withdrawing said liquid from the container;
 - (e) a liquid filter; and
 - (f) a vent filter which is secured to a second opening in the first bung;
- said pump functioning to withdraw the liquid from the container through said dip tube and to feed said liquid through the liquid filter and to return the filtered liquid to the container through the second opening in said container, said vent filter being connected to the interior of said container to prevent build up of pressure or vacuum in said container.

4,643,826
FILTRATION APPARATUS COMPRISING ENDLESS BELTS PASSING BETWEEN CLAMPING PLATES
Robert G. Prunier, Le Mele Sur Sarthe, France, assignor to Guinard de Separation, Saint-Cloud, France
Continuation-in-part of Ser. No. 668,199, Dec. 7, 1984, abandoned, which is a continuation of Ser. No. 545,866, Oct. 27, 1983, abandoned, which is a continuation of Ser. No. 362,592, Mar. 29, 1982, abandoned. This application Oct. 24, 1985, Ser. No. 790,984

Claims priority, application France, Apr. 13, 1981, 81 07372
Int. Cl.⁴ B01D 25/14, 33/04
U.S. Cl. 210—225

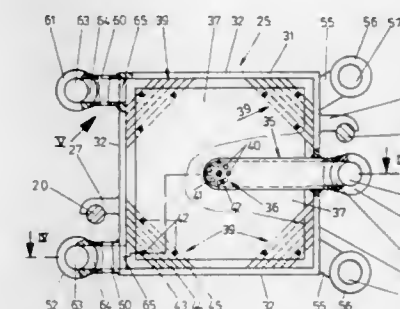
9 Claims



1. Filtration apparatus comprising two endless filter belts parallel to each other over a parallel strand and independent of each other over the remaining strand, and a fixed feed means positioned along the remaining strand for continuously depositing a mixture of liquid and solid onto a horizontal or slightly inclined portion of one of the filter belts, the other of said filter belts joining said one of said filter belts downstream of said feed means for forming a pair of belts parallel to each other with said feed mixture sandwiched therebetween, a pair of facing plates between which belts of the parallel strand pass and downstream of which said filter belts move away from each other, a mechanism for temporarily moving the plates towards each other until said belts of said parallel strand are clamped together for momentarily immobilizing said belts, a first means, which is common to both belts, for increasing the path of travel of both belts together between the feed means and the pair of plates, said first means operative at the moment when the mechanism immobilizes the belts of said parallel strand by clamping them, said first means comprising a first drum having a first axis and means for displacing said first axis to increase the path of travel of the belts, second means for reducing respectively the path of travel of each belt between the point where the belts move away from each other and a point upstream of the feed means, said second means operative at the moment when the mechanism immobilizes the belts of said parallel strand by clamping them, said second means comprising a second drum having a second axis, a third drum having a third axis and means for displacing said second and third axes to reduce the path of travel of the belts, the belts of said remaining strand continuing to run when said mechanism immobilizes the belts of said parallel strand, whereby said fixed feed means continuously feeds onto a continuously moving filter belt of said remaining strand.

4,643,827
FILTER PRESS FOR CAKE FILTRATION
Hans F. Becker, Gensingen, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany
Filed Jul. 5, 1985, Ser. No. 752,375
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425163
Int. Cl.⁴ B01D 25/12, 25/30
U.S. Cl. 210—228

13 Claims



1. A filter press, for cake or precoat filtration, including one or more filter units, each of which comprises slurry frames, filter plates, and support means; each filter plate being provided with at least one filtrate discharge, and each support means, a respective one of which is disposed on one side of a given filter plate, having associated therewith one of said slurry frames, which has a filling space which is directed toward a filter caking side of said support means, an upper and lower connection for venting and discharging, and a supply conduit for medium which is to be filtered; the improvement therewith which comprises:

press border means for providing a sealed state between each of said slurry frames and the associated support means; a respective distribution chamber being provided for each of said slurry frames; and

partitions, which respectively border one of said filling spaces and extend parallel to said support means; said partitions establish communication between said distribution chambers and said filling spaces via respective fluid openings disposed between said partitions and said slurry frames; each of said supply conduits being provided with an outlet into the center of a given distribution chamber, with said outlet being directed against an adjacent partition surface, from which it is spaced, said outlet being formed of a plurality of orifices uniformly spaced from one another over an at least partial circle; in order to provide for uniform formation of a cake layer on the filter caking side of said support means that assures a uniform fully-filtration-effective cake impermeable to undesired beverage-turbidity-causing materials respectively, beverage-damaging materials such as slurry impurities and residue, the cross-sectional area of each of said fluid openings being greater than the cross-sectional area of each of said outlets of said supply conduits.

4,643,828 FLUID FILTER SYSTEM AND A SUCTION NOZZLE THEREFOR

Ytzhak Barzuz, Petach Tikva, Israel, assignor to Filtration Water Filters for Agriculture and Industry Ltd., Tel Aviv, Israel

Filed May 14, 1985, Ser. No. 733,737

Claims priority, application Israel, Jun. 4, 1984, 71999

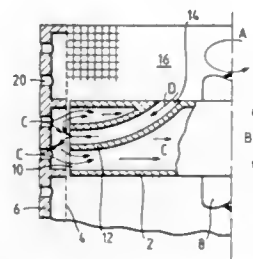
Int. Cl.⁴ B01D 29/38

U.S. Cl. 210—412

9 Claims

1. A fluid filter system cleanable by suction, comprising a filter element rigidly attached to a substantially rigid filter-element support mounted in a filter housing and provided with a

plurality of openings, at least one suction nozzle having an inlet opening located in close proximity to said filter element and adapted to move with its inlet opening past said filter element in such a way as to cover, in succession, at least some zones of said filter element while producing a suction flow, further comprising guide means for guiding, in a direction at least



partially substantially opposite to the general direction of said suction flow, a fluid stream from the high-pressure raw-fluid space of said filter housing to a low-pressure zone created by said suction nozzle between the inlet opening thereof and that portion of the filter-element support which faces said suction nozzle.

4,643,829

MULTILAYER REVERSE OSMOSIS MEMBRANE IN WHICH ONE LAYER IS POLY-META-PHENYLENE CYCLOHEXANE-1,3,5-TRICARBOXAMIDE

Sherman A. Sundet, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 30, 1984, Ser. No. 635,745

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.⁴ B01D 13/04

U.S. Cl. 210—500,33

3 Claims

1. A multilayer reverse osmosis membrane comprising a microporous support layer and superposed thereon a layer of poly-meta-phenylene cyclohexane-1,3,5-tricarboxamide.

4,643,830

PROCESS FOR OPERATING A TOTAL BARRIER OXIDATION DITCH

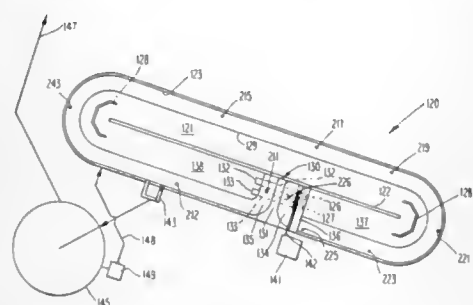
John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401
Continuation-in-part of Ser. No. 355,150, Mar. 5, 1982, Pat. No. 4,460,471, which is a continuation of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Jun. 18, 1984, Ser. No. 621,740

The portion of the term of this patent subsequent to Jul. 14, 1999, has been disclaimed.

Int. Cl.⁴ C02F 3/20

U.S. Cl. 210—629

22 Claims



1. A wastewater treatment process for operating a closed loop reactor, comprising an endless channel which has a bottom and sides and contains mixed liquor which is translation-

ally flowing in a downstream direction through a plurality of cycles throughout its length, to provide aerobic treatment to a continuous incoming stream of wastewater by the activated sludge process, said wastewater treatment process comprising the following steps which occur during each cycle of said mixed liquor through said endless channel:

A. at a depth above said bottom, continuously pumping all of said mixed liquor downwardly;

B. at a depth above said bottom, continuously mixing an independently controlled stream of dispersed air with said downwardly pumped mixed liquor to form a liquor-air mixture within which oxygen is transferred from said dispersed air to said liquor;

C. continuously guiding said pumped liquor-air mixture to a depth below said bottom in order to create concentrated power input per unit volume of said liquor-air mixture and to increase air dissolution pressure, oxygen solubility, and oxygen transfer rate at maximum contact depth and hydrostatic pressure under conditions of high mixing turbulence;

D. continuously returning said pumped liquor-air mixture to said channel at a location downstream of said pumping while discharging said mixture in said downstream direction, whereby:

(1) pumping capacity remains relatively constant while oxygen supply and dissolved oxygen content of said aerated mixed liquor can be varied at will and

(2) a completely mixed plug flow system is created in which solid suspension can be selectively increased and in which oxygen transfer efficiency is improved.

4,643,831

WATER PURIFICATION METHOD AND APPARATUS

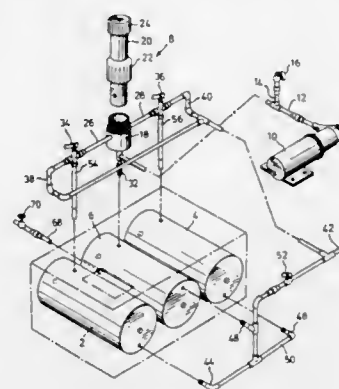
Brian Fletcher, London, Canada, assignor to EWS Water Treatment Inc., London, Canada

Filed Dec. 23, 1985, Ser. No. 812,304

Int. Cl.⁴ C02F 9/00

U.S. Cl. 210—668

12 Claims



1. A method of water treatment comprising superchlorinating the water to a level of 10-20 parts per million, passing the water through a sand filter in which the medium includes beads of magnesium hydroxide and subjecting different portions of the filtered water to differing degrees of filtration by an activated charcoal filter, whereby to remove a sufficient proportion of the chlorine added to the water to reduce the residual chlorine to a level sufficient to maintain the water sterile without substantially influencing the taste of the water.

4,643,832

PROCESS FOR WASTE WATER PURIFICATION

Nicolaos Iniotakis, Jülich; Werner Fröhling, Düren; Georg Kalawrytinis, Am Steinbruch 2, D-5190 Stolberg, and Claus-Benedict von der Decken, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich and Georg Kalawrytinis, Stolberg, both of, Fed. Rep. of Germany

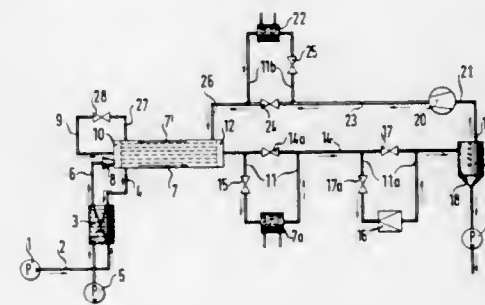
Filed Oct. 15, 1984, Ser. No. 660,942

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337360

Int. Cl.⁴ B01D 1/14; C02F 1/06

U.S. Cl. 210—712

19 Claims



1. A process for the purification of waste water comprising the steps of:

introducing finely-divided waste water with solid particles or dissolved substances therein into a current of inert entrainment gas to form a mixture of entrainment gas and waste water;

superheating said mixture through heat exchange; separating the solid particles from the superheated mixture, thereby rendering a purified mixture of entrainment gas and water vapor;

compressing the purified mixture thus cooling the purified mixture below the saturation or dew point temperature thereof; and

recovering heat from the cooled purified mixture for use in the superheating of said mixture through heat exchange.

4,643,833

METHOD FOR SEPARATING SOLID REACTION PRODUCTS FROM SILICON PRODUCED IN AN ARC FURNACE

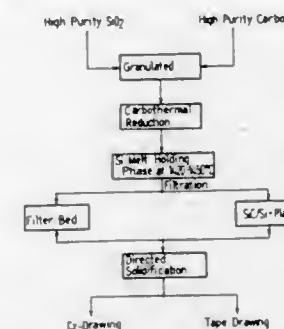
Hubert Anlich, Munich, and Friedrich-Wilhelm Schulze, Echting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Apr. 23, 1985, Ser. No. 726,492

Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416543

Int. Cl.⁴ B01D 37/00; C01B 33/02

U.S. Cl. 210—714

8 Claims



1. A method for separating solid reaction products including

SiO₂ and SiC from molten silicon produced in an arc furnace in the reduction of SiO₂ and carbon, comprising the steps of:

providing a holding phase during which the molten silicon is maintained at a temperature in a region above a melting point of silicon;

providing a graphite crucible having a floor formed of a plate of SiC/Si, and setting an SiC content in the SiC/Si plate such that channels having a diameter of equal to or less than 3 μm arise in the SiC/Si plate during the filtering;

filtering the molten silicon at a temperature above the melting point of silicon through the SiC/Si plate;

collecting the filtered molten silicon in high-purity graphite ingot molds; and

subjecting the collected molten silicon to a directional solidification.

4,643,834

SEPARATION SYSTEM USING COALESCING TECHNIQUES

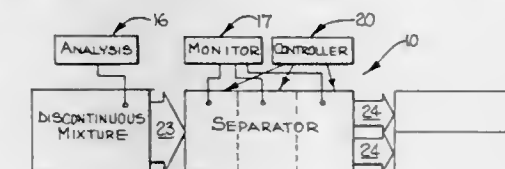
Edward F. Batutis, Phoenixville, Pa., assignor to Filter Plate Company, Gastonia, N.C.

Filed Feb. 3, 1986, Ser. No. 825,650

Int. Cl.⁴ B01D 21/10

U.S. Cl. 210—740

39 Claims



1. An apparatus for separating the components of a mixture of a continuous phase and a discontinuous phase in which the continuous phase comprises a liquid; said apparatus comprising:

(a) a laminar flow separator comprising a series of vertical stacks of fluid interrupting surfaces arranged in longitudinally spaced apart relation from one another forming gaps therebetween for accommodating changes in a discontinuous mixture as the mixture passes through the separator;

(b) inlet means positioned at one end of said series of stacks and outlet means positioned at the other end thereof, said inlet and outlet means defining a fluid flow path for directing a discontinuous mixture successively through each of the stacks of said series in a direction transverse to said fluid interrupting surfaces and transverse to said gaps between said vertical stacks and for progressively separating the components of the mixture from one another;

(c) each of said vertical stacks comprising a plurality of slats arranged generally parallel to one another in spaced apart relation and defining said fluid interrupting surfaces, each slat having its longitudinal dimension arranged generally perpendicular to the fluid flow path and with said stack oriented perpendicular to the fluid flow path; and

(d) wherein the spacings between adjacent slats of said stacks are progressively smaller in said series along said fluid flow path between said inlet means and said outlet means.

4,643,835

ASIATIC CLAM CONTROL CHEMICAL

Sandra Koeplin-Gall, and Ronald H. Schild, both of Naperville, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed Aug. 28, 1985, Ser. No. 770,124

Int. Cl.⁴ C02F 1/50

U.S. Cl. 210—754

2 Claims

1. A method for controlling Asiatic clams which are present in waters which comprises treating these waters with a composition comprising the combination of chlorine solution and a

bromide salt capable of releasing bromide ions to the chlorine solution, and from about 1 up to about 10 percent by weight of a water-soluble biodispersant chosen from the group consisting of ethylene oxide condensates with propylene oxide adducts or propylene glycol having an HLB between 4-10 and a molecular weight between 1,000-5,000, nonionic polyethoxylated straight chain alcohols, tris cyanoethylated cocodiamines, polyoxyethylene sorbitan ester/acids, nonionic N,N, dimethyl stearamides, nonionic amine polyglycol condensates, and non-ionic ethoxylated alcohols, and mixtures thereof.

4,643,836
RADIAL FLOW FILTER HAVING AIR FLUIDIZING BACKWASH MEANS

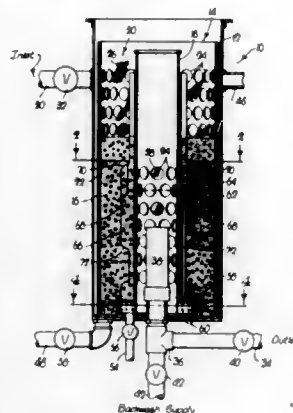
Lawrence A. Schmid, 5000 Coachmen Rd., Manhattan, Kans. 66502

Filed Oct. 1, 1985, Ser. No. 782,352

Int. Cl.⁴ B01D 27/12, 29/08, 29/38

U.S. Cl. 210-795

9 Claims



1. A filter, comprising:

a casing having walls defining an upright chamber for receiving a quantity of particulate filtering media such that the media presents an upright filtering surface;

respective fluid inlet and outlet means operatively coupled with said casing and communicating with said chamber for passage of fluid to be filtered into said chamber, through said media for entrapment of unwanted materials therein, and out of said chamber as filtered fluid; and

means for compensating for surge flows of said fluid and saturation of lower portions of said media with entrapped materials by adjusting the amount and portions of said filtering surface and media exposed to said fluid to be filtered during operation of the filter, said compensating means including

means coupled with said inlet and outlet means for non-pressurized, gravity flow of said fluid to be filtered from an elevated inlet point to a lower outlet point, said inlet and outlet means being laterally offset from each other with said upright filtering surface located between the inlet and outlet means, for gravitational flow of said fluid to be filtered in a direction transverse to and through said upright filtering surface, and for enabling, as lower portions of the media become saturated with entrapped material or the filter experiences a surge of fluid flow, the level of fluid in said chamber increase and additional or different portions of said filtering face and media to be exposed to said fluid.

5. A filter, comprising:

a casing having walls defining an upright chamber for receiving a quantity of particulate filtering media; respective fluid inlet and outlet means operatively coupled with said casing for passage of fluid to be filtered into said chamber and through said media to entrap unwanted

materials therein, and for passage of filtered fluid out of the casing; and

means for backwashing said filter to remove said entrapped materials from said media using only a minimum of backwashing liquid, and for substantially preventing the loss of said filter media from said chamber, said backwashing means including

means adjacent the bottom of said chamber and communicating with the interior thereof for selective introduction of pressurized air into the chamber in order to cause said air to pass upwardly through the voids between said media particles and to fluidize the media particles;

structure located above and separate from said air introduction means and communicating with the interior of said chamber, for selective introduction of pressurized backwashing liquid into said chamber at an angle relative to the upward passage of air through said media; means for simultaneous operation of said air introduction means and said liquid introduction means, for enhancing the fluidization of said particles without substantially contributing to vertical uplift of the particles, and for enabling said particles to be prevented from leaving said chamber; and

outlet means above said liquid introduction means for conveying material-laden backwashing fluid from said casing.

4,643,837
UTILIZATION OF WOOL GREASE AS WELL AS DRILLING, GRINDING, OR CUTTING EMULSIONS
Henry Zimzik, Kirchstrasse 7, 5419 Marienhausen, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 649,351

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332584

Int. Cl.⁴ C09K 7/00

U.S. Cl. 252-8,511

8 Claims

1. A method of reducing foaming in an aqueous emulsion for drilling, grinding, lubricating, cooling, or wetting while avoiding the introduction of poisonous or allergy-causing ingredients, said aqueous emulsion being made by emulsifying an animal or vegetable wax in a mixture of at least 50% water and 50% ethanolamine, said ethanolamine containing both diethanolamine and triethanolamine, comprising adding to said aqueous emulsion an effective amount of wool grease comprising at least 1% by weight of the total emulsion.

4,643,838
NORMALLY LIQUID C₁₈ TO C₂₄ MONOALKYL CATECHOLS

Thomas V. Liston, San Rafael; Warren Lowe, El Cerrito, and Vernon R. Small, Rodeo, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 18, 1985, Ser. No. 777,400

Int. Cl.⁴ C10M 129/14

U.S. Cl. 252-52 R

8 Claims

1. A normally liquid alkyl catechol which comprises a monoalkyl catechol wherein the alkyl substituent is a mixture of at least three of C₁₈-C₂₄ alkyl groups wherein said alkyl groups are derived from a C₁₈-C₂₄ olefin mixture and with the proviso that the olefin mixture contain at least 30 molar percent branched olefins.

5. A lubricating oil composition as defined in claim 4 which additionally contains:

- from about 1% to 20% by weight of an alkenyl succinimide or alkenyl succinate or mixture thereof;
- from about 0.1% to 4% by weight of a Group II metal salt of a dihydrocarbyl dithiophosphoric acid;
- from about 0.3% to 10% by weight of a neutral or over-based alkali or alkaline earth metal hydrocarbyl sulfonate or mixtures thereof;
- from about 0.2% to 27% by weight of a neutral or over-

based alkali or alkaline earth metal alkylated phenate or mixtures thereof.

4,643,839
SILICONE REACTION PRODUCTS AND GLYCOL COMPOSITIONS CONTAINING THE PRODUCTS
Richard A. Pierce, Lake Jackson, and David A. Wilson, Richmond, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1984, Ser. No. 600,933

Int. Cl.⁴ C09K 5/00; C07F 7/10

U.S. Cl. 252-75

9 Claims

- The silicone reaction product produced by
 - heating an acidic solution comprising water, phosphorous acid, and formaldehyde until a temperature greater than about 50° C. is reached wherein the molar ratio of formaldehyde to phosphorous acid is greater than one and,
 - reacting a member of the group consisting of (1) monomeric alkoxy silanes having one or more aminoalkylene groups (2) oligomers and polymers thereof, and (3) mixtures of (1) and (2) with said heated solution.

4,643,840
PAINT STRIPPER COMPOSITIONS
Peter Brocklehurst, Chapletown, N. Sheffield, and Angus S. Ferguson, Sheffield, both of England, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 212,079, Dec. 1, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,156
Claims priority, application United Kingdom, Feb. 12, 1981, 8104467

Int. Cl.⁴ C11D 3/14, 7/06; B08B 7/00

U.S. Cl. 252-160

24 Claims

1. An aqueous paint stripper composition intended to provide a peelable skin over a painted surface consisting essentially of (A) an alkaline material and (B) a combination of xanthan gum and hectorite clay in water.

4,643,841
LIQUID-CRYSTAL COMPOSITION
Yutaka Ishii, Nara; Fumiaki Funada, Yamatokoriyama, and Masataka Matsuura, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan and Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 21, 1984, Ser. No. 642,775

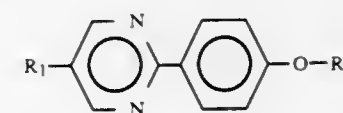
Claims priority, application Japan, Aug. 30, 1983, 58-158510

Int. Cl.⁴ C09K 3/34; G02F 1/13

U.S. Cl. 252-299.61

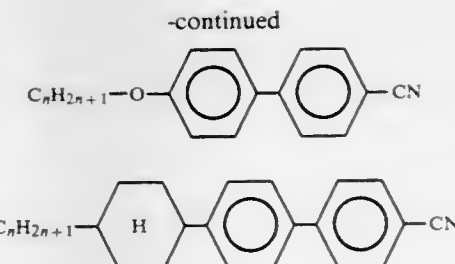
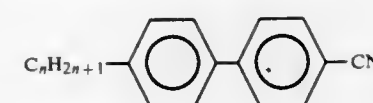
1 Claim

1. A mixed nematic liquid-crystal composition comprising: a 2-(4-alkoxyphenyl)-5-alkylpyrimidine compound of the formula:

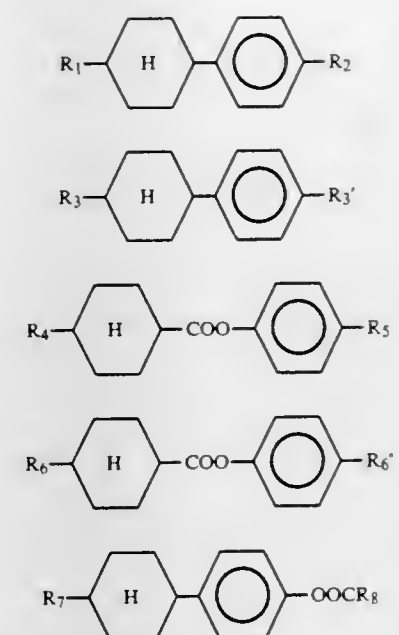


wherein $R_1 = C_nH_{2n+1}$, $R_2 = C_mH_{2m+1}$, $n = 1-12$, and $m = 1-12$;

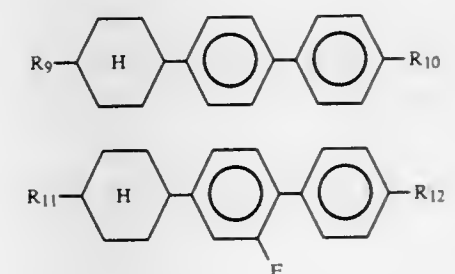
a cyanobiphenyl compound which is a member selected from the group consisting of:



wherein $n = 1$ through 7; at least one compound which is a member selected from the group consisting of:



wherein R_1 through R_8 represent a straight-chain alkyl group having 1 through 6 carbon atoms and R_3' and R_6' represent straight chain alkoxy groups having 1 to 6 carbon atoms; at least one compound which is a member selected from the group consisting of:



wherein R_9 through R_{14} represent a straight-chain alkyl group having 1 through 10 carbon atoms; and at least one compound which is a member selected from the group consisting of:

4,643,849

INTERMEDIATES FOR UREA AND THIOUREA DERIVATIVES

Shiro Hirai, Toyama; Hiroshi Hirano, Oyabe; Hiroshi Arai, Toyama; Yasuo Kiba, Toyama; Hisanari Shibata, Toyama; Yoshikazu Kusayanagi, Toyama; Minako Yotsuji, Toyama; Kazuhiko Hashiba, Toyama, and Kikuko Tanada, Takaoka, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

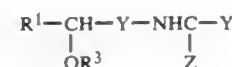
Filed Nov. 14, 1983, Ser. No. 550,933

Claims priority, application Japan, Nov. 12, 1982, 57-198434
Int. Cl.⁴ C07D 203/20

U.S. Cl. 540—955

10 Claims

1. A compound of the formula:



wherein R² is phenyl, indanyl, thienyl, furyl or pyridyl which may optionally be substituted by at least one substituent selected from the group consisting of halogen, hydroxyl, nitro, amino, hydroxy-C₁₋₄-alkyl, cyano, C₁₋₈-alkyl, C₁₋₄-alkoxy, C₁₋₄-alkylthio, C₁₋₄-alkylsulfinyl, C₁₋₄-alkylsulfonyl, halogeno-C₁₋₄-alkyl, di-C₁₋₄-alkylamino, carbamoyl, C₂₋₅-alkanoyl, or methylenedioxy in which the oxygen atoms are linked to the adjacent carbon atoms;

R³ is hydrogen or a hydroxyl protecting group selected from the group consisting of formyl, C₂₋₅-alkanoyl, C₅₋₈-cycloalkanecarbonyl, benzoyl, toluoyl, 2-naphthoyl, 2-thenoyl, 3-furoyl, nicotinoyl, 1,1-dimethylpropoxycarbonyl, t-butoxycarbonyl, isopropoxycarbonyl, 2,2,2-trichloroethoxycarbonyl, ethoxycarbonyl, 2,2,2-tribromoethoxycarbonyl, benzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, 4-bromobenzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 3,4-dimethoxybenzyloxycarbonyl, 4-(phenylazo)benzyloxycarbonyl, 4-(4-methoxyphenylazo)benzyloxycarbonyl, monochloroacetyl, trifluoroacetyl, 2-furfuryloxycarbonyl, 1-adamantylloxycarbonyl, 8-quinolyloxycarbonyl, benzyl, diphenylmethyl, tri-tyl, C₁₋₈-alkyl, methoxymethyl, tetrahydrofuryl, tetrahydropyranyl, 2-nitrophenylthio, 2,4-dinitrophenylthio, trimethylsilyl and t-butyltrimethylsilyl; Y is C₁₋₄-alkylene; Z is oxygen; sulfur; or NR⁴, wherein R⁴ is formyl, C₂₋₅-alkanoyl, C₅₋₈-cycloalkanecarbonyl, benzoyl, toluoyl, 2-naphthoyl, 2-thenoyl, 3-furoyl, nicotinoyl, phenyl, naphthyl, indanyl, benzenesulfonyl, naphthalenesulfonyl, phenyloxy, naphthyloxy, formylamino, C₂₋₅-alkanoylamino, C₅₋₈-cycloalkanecarbonylamino, benzoylamino, toluoylamino, 2-naphthoylamino, 2-thenoylamino, 3-furoylamino, nicotinoylamino, each of which may optionally be substituted by at least one substituent selected from the group consisting of C₁₋₈-alkyl, halogeno-C₁₋₄-alkyl, C₁₋₄-alkoxy and halogen; or hydrogen; cyano; hydroxyl; nitro; C₁₋₈-alkyl; C₂₋₄-alkenyl; C₁₋₄-alkoxy; carbamoyl; sulfamoyl; C₁₋₄-alkoxycarbonyl, C₁₋₄-alkylsulfonyl, C₁₋₄-alkoxycarbonylamino, or carboxy C₁₋₄-alkylamino; or CHR⁵, wherein R⁵ is formyl, C₂₋₅-alkanoyl, C₅₋₈-cycloalkanecarbonyl, benzoyl, toluoyl, 2-naphthoyl, 2-thenoyl, 3-furoyl, nicotinoyl, phenyl, naphthyl, indanyl, benzenesulfonyl, or naphthalenesulfonyl, which may optionally be substituted by at least one substituent selected from the group consisting of C₁₋₈-alkyl, halogeno-C₁₋₄-alkyl, C₁₋₄-alkoxy and halogen or C₁₋₄-alkylsulfonyl or nitro; and U is halogen, C₁₋₄-alkylthio, C₁₋₄-alkylsulfinyl, benzylthio, C₁₋₄-alkoxy, 1-imidazolyl, 3,5-dimethylpyrazolyl, or an ethyleneimino group.

10. 1-Aziridino-1-[[2-(tert-butyl)dimethylsiloxy-2-(3-methylphenyl)ethyl]amino]-2-nitroethene.

4,643,850

SILANE MODIFIED ESTER MIXTURES, A METHOD FOR THEIR PREPARATION, AND THEIR USE IN PHARMACEUTICAL AND COSMETIC PREPARATIONS

Hans L. Hülsmann, Wetter; Reinhard Pass, Witten, and Horst Hermsdorf, Bochum-Querenburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf Bez Koeln, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 682,777

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346641; Dec. 23, 1983, 3346642
Int. Cl.⁴ A61K 9/06, 7/00, 7/40, 7/42

U.S. Cl. 260—410.7

16 Claims

1. An ester mixture comprising a reaction product of a fatty acid polyol partial ester, or a mixture of such esters, with hydroxyl numbers of 5 to 150, preferably 10 to 80, and 2 to 45 wt.-%, preferably 4 to 30 wt.-%, with respect to the ester or their mixtures, of gamma-glycidoxypropyltrialkoxysilane with alkyl groups of 1 to 3 carbon atoms or their mixtures.

4,643,851

PROCESS FOR PREPARING TRIFLUOROACETYL CHLORIDE

Bernard Cheminal, Lyons; Henri Mathais, Saint-Dider-Au-Mont-D'or, and Marc Thomarat, Pierre-Benite, all of France, assignors to Atochem, Courbevoie, France

Filed Sep. 15, 1983, Ser. No. 532,483

Claims priority, application France, Nov. 5, 1982, 82 18567
Int. Cl.⁴ C07C 51/58

U.S. Cl. 260—544 Y

17 Claims

1. A continuous process for preparing trifluoroacetyl chloride which comprises reacting trifluoroacetaldehyde (fluoral) and chlorine in the vapor phase by passing a gaseous mixture of trifluoroacetaldehyde (fluoral), chlorine, and hydrochloric acid through a fluidized bed reactor containing an active carbon catalyst at a temperature range of between about 130° and 250° C. and at a delivery rate sufficient to assure fluidizing of the active carbon catalyst.

4,643,852

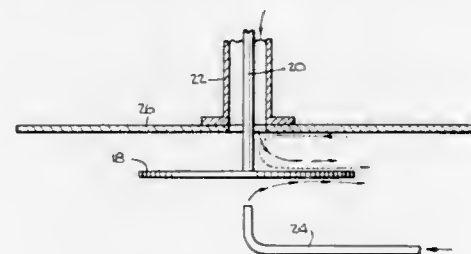
ENERGY EFFICIENT PHASE TRANSFER/DISPERSION SYSTEMS AND METHODS FOR USING THE SAME

Evan E. Koslow, 5 Town Crier La., Westport, Conn. 06880
Continuation-in-part of Ser. No. 253,594, Apr. 13, 1981, abandoned. This application Dec. 30, 1985, Ser. No. 814,657

Int. Cl.⁴ B01F 3/04

U.S. Cl. 261—93

12 Claims



1. An apparatus for generating high interfacial surface area in a first, liquid, fluid and for maximizing the dispersal therein of a second fluid comprising:

at least one rotatable member having generally smooth upper and lower surfaces immersable in said liquid and wettable by said liquid and thereby having a positive wetting adhesive force between the rotatable member and the liquid;

a relatively stationary member above, and substantially parallel to, the upper surface of said rotatable member to form a volumetric shear zone therebetween;

means for rotating the rotatable member in the liquid at an

edge velocity of at least 70 feet per second, whereby the rotation of the wetted surface of the rotatable member relative to the liquid pumps liquid into and out of the shear zone and creates high shear forces within the shear zone; and

means for injecting said second fluid into the shear zone whereby bubbles of the second fluid are fissioned by said high shear forces into smaller bubbles which are swept out of the shear zone by the pumped liquid.

11. A method of dispersing a fluid into a liquid which comprises:

creating a shear zone within said liquid between a substantially planar stationary member and a substantially planar circular rotatable member wettable by said liquid and parallel to said stationary member;

wetting the surface of said rotatable member with said liquid and thereby creating a positive wetting adhesive force between the rotatable member and the liquid;

rotating said rotatable member at an edge velocity of at least 70 feet per second whereby its wetted surface produces tangential and centrifugal forces on the adjacent liquid with resultant high shear forces and liquid pumping being established in said shear zone; and

injecting said fluid into said shear zone whereby said fluid is finely dispersed and transported into said liquid.

4,643,853

PACKING ELEMENT FOR USE IN MASS TRANSFER OR HEAT TRANSFER COLUMNS

Roland Braun, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to RASCHIG GmbH, Ludwigshafen am Rhein, Fed. Rep. of Germany

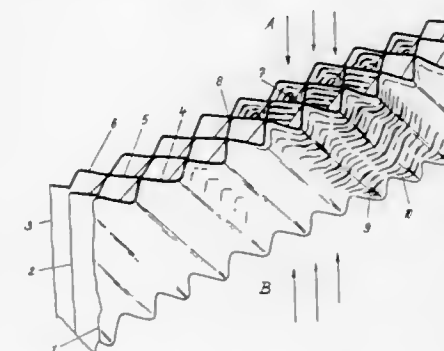
Filed Mar. 27, 1985, Ser. No. 716,485

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414267

Int. Cl.⁴ B01F 3/04

U.S. Cl. 261—112

8 Claims



1. In a packing element for use in a column for contacting flowing fluids with each other, which packing element comprises at least one plate extending in direction of flow of the fluids, having a longitudinal direction and a lateral direction at right angles to said longitudinal direction, said plate formed with corrugations extending at oblique angles to the direction of the flow and to both said longitudinal and lateral directions, the improvement which comprises said corrugations having rounded crests and troughs and said plate formed with a plurality of juxtaposed through narrow capillary slits which are parallel and staggered in length, each slit being narrow enough to cause a droplet of fluid to spread along the slit, and spaced apart throughout their length so that bridgelike lands are defined between laterally adjacent slits, said slits constituting capillaries which cause said fluids impinging on each of said slits to spread along said slits, each of said slits extending at an angle to said corrugations and on one side defining a louverlike portion of said plate and each of said louverlike portions protruding in an upset fashion from the opposite side of the associated corrugation.

4,643,854

SHELL FORMING SYSTEM

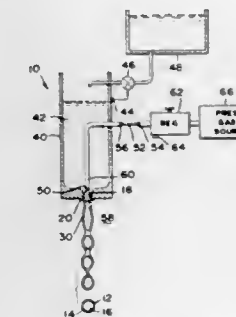
James M. Kendall, Jr., Pasadena; Taylor G. Wang, Glendale, and Daniel D. Elleman, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 371,662, Apr. 26, 1982, abandoned. This application Aug. 15, 1984, Ser. No. 640,928

Int. Cl.⁴ B29B 9/10; C03B 19/10; B67D 5/00

U.S. Cl. 264—12

9 Claims



1. A method for forming hollow shells, comprising: emitting gas through a nozzle; and emitting liquid through an annular area surrounding said nozzle to form a hollow extrusion; said steps of emitting including moving said gas out of said nozzle at a velocity which is between about 1.3 and 10 times greater than the velocity of emission of said liquid through said annular area, whereby to enable spontaneous pinch-off of said hollow extrusion into said hollow shells.

4,643,855

SEALING JOINTS AND LEAKS

Adrian S. Parkes, Burgess Hill; Gordon J. Corbett, Croydon; Peter S. Clough, Manchester, and Colin N. H. Barker, Stockport, all of England, assignors to British Gas Corporation, London, England

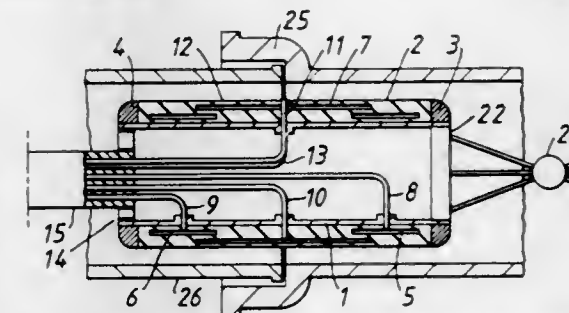
Filed May 22, 1984, Ser. No. 612,842

Claims priority, application United Kingdom, May 23, 1983, 8314209

Int. Cl.⁴ F16L 55/18

U.S. Cl. 264—36

3 Claims



1. A method for sealing a joint or leak in a fluid transporting pipeline or main, the method comprising the steps of: isolating from the fluid which flows along the pipeline or main an annular space about the joint and also causing the annular space to be substantially free of the fluid in the pipeline, the annular space communicating with the joint or leak while allowing the fluid to continuously flow inside the pipeline or main past the joint or leak and injecting into the joint or leak a sealant by way of the fluid-free space to seal the joint or leak while still allowing the fluid to flow.

fluid to continuously flow inside the pipeline or main past the joint or leak.

4,643,856

PROCESS OF MAKING GELLED CELLULOSE TRIACETATE PRODUCT

Larry D. Nichols, Arlington, Mass., assignor to Moleculon, Inc., Cambridge, Mass.

Filed Mar. 21, 1985, Ser. No. 714,482
Int. Cl.⁴ B29C 27/60

U.S. Cl. 264—41

12 Claims

1. A process of preparing a clear gelled cellulose triacetate product which comprises

providing a clear homogeneous liquid solution at a temperature of 20° to 60° C. comprising cellulose triacetate having an acetyl content greater than about 42%, and a major proportion of a liquid solvent therefor, mixing with said solution while maintaining its temperature at 20° to 60° C., a clear liquid gelling agent miscible with said solvent, said gelling agent being a nonsolvent for said cellulose triacetate and capable of causing said solution to gel,

the amount of said gelling agent being limited to an amount insufficient to cause gelation at said maintained temperature but sufficient to cause gelation when said mixture is chilled, and chilling said mixture to gel said mixture.

4,643,857

RACKET FRAME

Jean-Claude Cousin, 8 Rue Abbé Bonpain, F-59117 Wervicq-Sud, and Jacques A. Robin, 125 Boulevard Malesherbes, F-75017 Paris, both of France

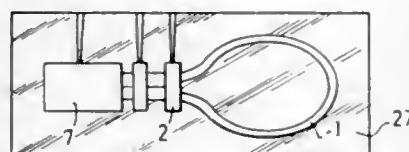
Filed Jun. 13, 1983, Ser. No. 503,906

Claims priority, application France, Jun. 14, 1982, 82 10292; Apr. 25, 1983, 83 06724

Int. Cl.⁴ B29C 67/22, 39/10, 47/00, 53/08

U.S. Cl. 264—46.6

5 Claims



1. A method of manufacturing a racket frame, comprising: forming a mixture of at least one thermoplastic material and a plurality of fibres; extruding said mixture to form an elongate element and simultaneously forming at least one elongate cavity in said elongate element; allowing said elongate element to cool; cutting said elongate element to a predetermined length and forming a plurality of holes along said elongate element; filling said at least one elongate cavity with foam; heating said elongate element to a temperature sufficient to render soft said elongate element; bending said heated elongate element to form a racket frame element having head and shaft portions; injection moulding at least one throat piece around a first shaft portion of said racket frame element; and forming a handle for such frame around a second shaft portion of said frame element.

4,643,858

PROCESS FOR PREPARATION OF SINTERED SILICON NITRIDE BODY

Michitaka Mizutani, Tsu, Japan, assignor to Kyocera Corporation, Japan

Filed Mar. 5, 1985, Ser. No. 708,087

Claims priority, application Japan, Jun. 3, 1984, 59-43577

Int. Cl.⁴ C04B 33/34, 35/58

U.S. Cl. 264—62

18 Claims

1. A process for the preparation of a sintered silicon nitride body, which comprises the steps of (i) molding a silicon nitride powder into a predetermined shape to obtain a green molded body, (ii) reacting by heating a mixture of silicon nitride and an oxide of an element of the group IIIa of the Periodic Table to prepare a compound of the N-melilite type crystal structure and dispersing said compound in a liquid medium to form a slurry, (iii) coating the slurry formed at the step (ii) on the surface of the green molded body obtained at the step (i), (iv) preliminarily sintering the coated molded body obtained at the step (iii) in an inert atmosphere, and (v) subjecting the preliminarily sintered body obtained at the step (iv) to hot isostatic pressing in an inert atmosphere.

4,643,859

PROCESS FOR THE PRODUCTION OF FINE NON-OXIDE POWDERS FROM ALKOXIDES

Mamoru Mitomo, Ibaraki, and Yuji Yoshioka, Higashikurume, both of Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Oct. 17, 1985, Ser. No. 788,577

Claims priority, application Japan, Jan. 26, 1985, 60-13139; Feb. 5, 1985, 60-20677; Feb. 9, 1985, 60-23978

Int. Cl.⁴ F27B 9/04

U.S. Cl. 264—65

13 Claims

1. A process for producing fine non-oxide powder from an alkoxide selected from the group consisting of a silicon alkoxide and an aluminum alkoxide, which comprises dispersing carbon powder in the alkoxide, hydrolyzing the dispersion, and heating the hydrolyzate mixture thereby obtained, in a nitrogen atmosphere at a temperature of from 1350° C. to 1650° C. for from 30 minutes to 30 hours.

4,643,860

PRESERVATIVE TREATED COMPOSITE WOOD PRODUCT

Robert M. Knudson, Coquitlam, and Hubert Ehrenfellner, Surrey, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Continuation of Ser. No. 708,531, Mar. 5, 1985, abandoned. This application May 16, 1986, Ser. No. 865,656

Int. Cl.⁴ B27N 3/00

U.S. Cl. 264—109

8 Claims

1. A process of producing a preservative treated composite wood product comprising the steps of: applying molten slack wax to wood particles having a moisture content not greater than about 10%, the slack wax applied representing up to about 2% by oven dry weight of the wood particles, spraying the wood particles, after applying the slack wax, with an ammoniacal copper arsenate solution having a concentration of at least about 11%, at least about 0.25 lbs. of the solution being uniformly distributed per cu. ft. of the composite wood product, blending the wood particles, without a further drying step after applying the slack wax and the solution, with an adhesive resin, forming the wood particles into a mat, and heating and compressing the mat for a time sufficient to form a composite wood product.

4,643,861

RECLAMATION OF SCRAP VINYLIDENE CHLORIDE POLYMER COATED FILM

Joseph F. Hager, 8809 Nottingham Pkwy., Louisville, Ky. 40222

Filed Jul. 2, 1985, Ser. No. 751,201

Int. Cl.⁴ B29B 17/00; B29C 47/00; C08J 11/04

U.S. Cl. 264—118

11 Claims

1. A process for treating scrap, vinylidene chloride polymer-coated, thermoplastic film so as to render the film useful for conventional molding and extrusion applications without damage to the surfaces of molding and extrusion equipment to which the film is exposed, which comprises densifying the film, with chopping, in the presence of a treatment medium which comprises about 95 to about 60 percent by weight of lime and about 5 to about 40 percent by weight of a metal carboxylate.

11. A process for treating scrap, vinylidene chloride polymer-coated thermoplastic film so as to render the film useful for conventional molding and extrusion applications without damage to the surface of mold and extrusion equipment to which the film is exposed which comprises (a) cutting the scrap film into a convenient size, (b) densifying the film with chopping in the presence of a treatment medium which comprises about 95 to about 60 percent by weight of lime and about 5 to about 40 percent by weight of a metal carboxylate and (c) extruding the densified film to form moldable or extrudable pellets.

4,643,862

REFRACTORY STOVE DAMPER WITH CATALYTIC EFFECT

Ernest J. Callahan, 2207 Sims Way, Port Townsend, Wash. 98368

Continuation-in-part of Ser. No. 577,388, Mar. 29, 1984. This application Jul. 16, 1985, Ser. No. 755,691

Claims priority, application Canada, Mar. 7, 1985, 476013

Int. Cl.⁴ C04B 41/00; F23L 3/00

U.S. Cl. 264—133

6 Claims



1. A method for producing a stove pipe damper, which comprises: mixing a plurality of castable refractory materials in a cool, humidified facility, adding a limited amount of ice water sufficient to restrain rapid hardening of the mixture, placing said damp mixture in a two piece mold having a top portion and a bottom portion set with a plurality of upright, tapering pins, compressing said damp mixture in the mold to shape and pierce a plurality of holes in a body formed of said mixture, removing the body from said mold, storing said body on a dampened fabric layered rack in a cool, environment to allow the process of curing and bonding to take place throughout said body, dipping said body in a latex bath to seal the exterior surface, and drying said body in room temperature to obtain a coherent, moisture free body.

4,643,863

PROCESS FOR MAKING REINFORCED SEALING GASKETS

Gino Martini, Biella, Italy, assignor to Tako S.p.A., Turin, Italy

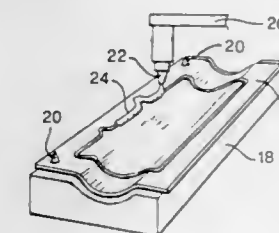
Filed Jan. 28, 1985, Ser. No. 695,831

Claims priority, application Italy, Oct. 22, 1984, 68041 A/84

Int. Cl.⁴ B29C 39/10

U.S. Cl. 264—219

7 Claims



1. A process for making reinforced sealing gaskets for use as replacements of directly deposited sealing members, comprising:

- preparing a support sheet so that its surface contains the outline of the gasket to be made;
- preparing a wirelike reinforcing element having an outline corresponding to the outline of the gasket to be manufactured and having an adhesive surface with respect to said fluid material;
- positioning the support and the reinforcing element with respect to a material-dispensing nozzle carried by a manipulator capable of being controlled to move the nozzle along a desired trajectory;
- depositing a thread of a fluid, curable material of a relatively high viscosity from the nozzle while displacing the nozzle at a fixed distance over and along the reinforcing element so that the fluid material, on subsequent curing, incorporates the reinforcing element and becomes bonded to it.

4,643,864

PROCESS FOR MAKING SEALING GASKETS

Gino Martini, Biella, Italy, assignor to Tako S.p.A., Turin, Italy

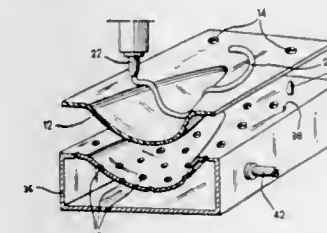
Filed Jan. 28, 1985, Ser. No. 695,830

Claims priority, application Italy, Oct. 1, 1984, 67974 A/84

Int. Cl.⁴ B29C 39/02

U.S. Cl. 264—220

7 Claims



1. A process for making sealing gaskets for use in replacement of directly deposited sealing members, comprising:

- preparing a support sheet by pressing sheet material into a tri-dimensional shape such that the sheet surface contains the non-planar outline of the gasket to be manufactured;
- positioning the shaped support with respect to a material-dispensing nozzle carried by a manipulator capable of being controlled to move the nozzle with respect to the support along three independent spatial coordinates;
- moving the nozzle along said non-planar outline while feeding the nozzle with a fluid, curable material of a relatively high viscosity, the speed of the nozzle and the flow

of material being controlled so that a desired gauge of the thread of material is obtained;
(d) curing the fluid material deposited on the support sheet.

4,643,865

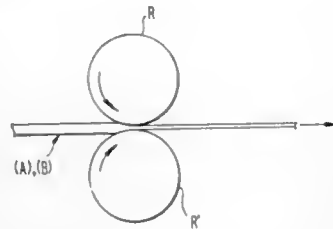
PROCESS FOR THE PRODUCTION OF A DRAWN PRODUCT OF CRYSTALLINE POLYMER HAVING HIGH TENACITY AND HIGH MODULUS

Fujio Okada, Shiga, and Toshihiko Ohta, Otsu, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan
Filed Nov. 8, 1984, Ser. No. 669,541

Claims priority, application Japan, Nov. 8, 1983, 58-210589
Int. Cl.⁴ B29C 55/00

U.S. Cl. 264—288.4

9 Claims



1. A process for producing a drawn product of a crystalline polymer having high tenacity and high modulus, which comprises compressing a gel-like material prepared from a solution of a crystalline polymer in a solvent at a temperature lower than the temperature at which the gel-like material is dissolved, thereby removing a part of the solvent contained in the gel-like material, and drawing the compressed material to obtain a product with high tenacity high modulus and large cross-section, said gel-like material prepared from a solution of a crystalline polymer in a solvent being a gel-like sheet material consisting of gel-like particles of a crystalline polymer and a solvent which is prepared by cooling the solution of a crystalline polymer in a solvent.

4,643,866

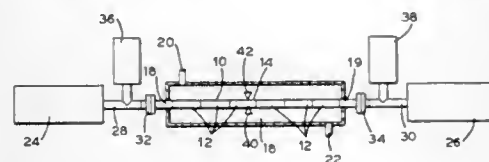
NUCLEAR FUEL PELLET-CLADDING INTERACTION TEST DEVICE AND METHOD MODELING IN-CORE REACTOR THERMAL CONDITIONS

Thomas A. Thornton, Lynchburg, and William G. Pettus, Monroe, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 24, 1983, Ser. No. 526,172
Int. Cl.⁴ G21C 17/00

U.S. Cl. 376—245

24 Claims



24. An apparatus for testing pellet-cladding interaction comprising:

- (1) a length of fuel rod cladding on the order of 3.5 inches to 12 inches long having an inside diameter on the order of from about 0.25 inches to about 0.55 inches;
- (2) a plurality of fuel pellets forming a fuel column inserted into said fuel rod cladding;
- (3) means for cooling said fuel rod cladding attached to said fuel rod cladding;
- (4) means for guiding microwave radiation into each end of

said fuel rod cladding, connected to each respective said end;

- (5) separate means for generating microwaves comprising gyrotrons each producing microwaves having a frequency greater than about 16 GHz with an output power of greater than about 18 KW, attached to said respective waveguides.

4,643,867

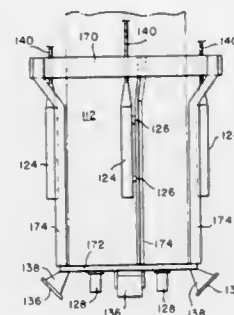
REFUELING MACHINE MOUNTED FUEL ASSEMBLY INSPECTION T.V. CAMERAS

Leonard P. Hornak, N. Huntingdon; Robert E. Meuschke, Pittsburgh, and James R. Marshall, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 21, 1983, Ser. No. 553,600
Int. Cl.⁴ G21C 17/08; H04N 7/18

U.S. Cl. 376—248

4 Claims



1. A refueling machine comprising a trolley, movable within a horizontal plane above fuel assemblies in a reactor core of a nuclear reactor facility, an outer, stationary mast fixedly mounted to said trolley and extending vertically downwardly therefrom, an inner mast coaxially mounted within said outer mast and telescopically movable therein and a gripper assembly fixedly secured to the lower end of said inner mast for attachment to said fuel assemblies for movement of said fuel assemblies into said outer mast and in and out of said reactor core, a basket-type framework surrounding the lower end of said stationary mast, a plurality of vertically mounted television cameras fixedly attached to said basket-type framework with their lenses oriented vertically downwardly, a plurality of light sources fixedly attached to said basket-type framework below said television cameras, and support cables secured to said basket-type framework for moving said basket-type framework vertically relative to said stationary mast.

4,643,868

SUPPORT ARRANGEMENT FOR CORE MODULES OF NUCLEAR REACTORS

Lawrence R. Bollinger, Schenectady, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1983, Ser. No. 548,279
Int. Cl.⁴ G21C 19/00

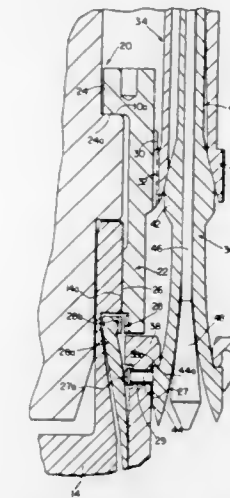
U.S. Cl. 376—262

15 Claims

1. A support arrangement in combination with a nuclear reactor, which comprises at least one fuel cell module, at least one control drive mechanism, and at least one pressure vessel head, wherein said support arrangement is located between said fuel cell module and said control drive mechanism and is supported by said pressure vessel head, said support arrangement comprising:

- a module support nut, engaged with said pressure vessel head and supported therefrom, including a downwardly depending screw threaded portion, and
- a shroud housing for said fuel cell module including a screw threaded portion engaged with said screw threaded portion of said support nut such that said shroud housing is

suspended from said support nut and thus from said pressure vessel head,



said module support nut and said shroud housing including a locking means for locking said nut and housing against relative rotation.

4,643,869

METHOD OF FILLING A METAL VESSEL WITH A GLASS MELT CONTAINING HIGHLY RADIOACTIVE FISSION PRODUCTS AND APPARATUS THEREFOR

Wilfried Heimerl, Mol, and Eckhart Ewest, Balen, both of Belgium, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

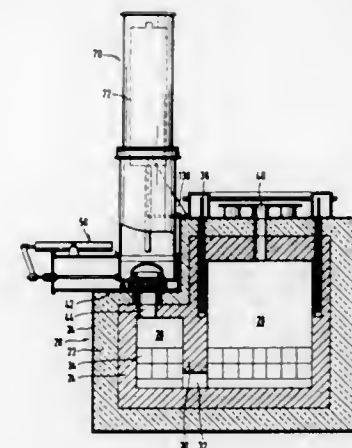
Filed Jul. 3, 1984, Ser. No. 627,473

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3324696

Int. Cl.⁴ C09K 3/00, 11/04; G21F 9/16

U.S. Cl. 376—272

14 Claims



1. Apparatus for filling a metal vessel with a radioactive glass melt from a glass-melt furnace disposed in a cell of a nuclear facility, the furnace having a suction port communicating with a chamber of the furnace containing the radioactive glass melt, the metal vessel being provided with a suction tube mounted on the base wall thereof so as to communicate with the interior of the vessel, the suction tube being adapted to break off from the base in response to a predetermined load applied thereto, the metal vessel being evacuated so as to have

a partial vacuum therein and the suction tube being sealed with a solid fused mass, the apparatus comprising:

portable holding means for accommodating the evacuated metal vessel therein for movement in the vertical direction with respect to the furnace between a first position whereat the suction tube is above the suction port and a second position whereat the suction tube is in the suction port and dipped into the glass melt thereby melting the solid fused mass and causing the metal vessel to be filled with glass melt;

retractable closure means for opening the suction port to permit movement of the suction tube into the suction port and the glass melt thereby permitting the metal vessel to become filled with glass melt and for closing the suction port after the suction tube has been withdrawn from the glass melt and the suction port;

said closure means including carrying means for accommodating a cover for the metal vessel and for positioning the cover directly beneath the metal vessel when the suction port is closed and said metal vessel is again in said first position above the suction port;

said cover being adapted to receive said suction tube thereagainst in response to a movement of said metal vessel toward said second position thereby causing the suction tube to break off and be pushed into the metal vessel and to cause said cover to thereafter engage the metal vessel for closing the same; and

sealing means for hermetically sealing off the suction port with respect to the atmosphere of the cell when said holding means is positioned above the suction port and during the entire time that the suction port is open thereby preventing contaminants emanating from the furnace from reaching the atmosphere of the cell.

4,643,870

HEAT DISSIPATING NUCLEAR REACTOR

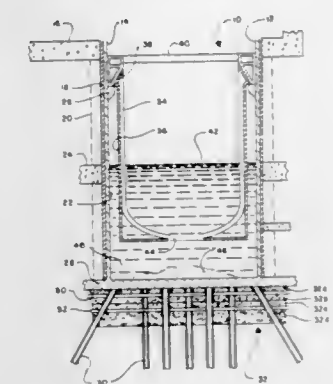
Anstein Hunsbedt, Los Gatos, and Jonathan D. Lazarus, Sunnyvale, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 21, 1985, Ser. No. 800,566

Int. Cl.⁴ G21C 9/00

U.S. Cl. 376—280

13 Claims



1. A nuclear reactor containment comprising: reactor vessel disposed in a metal cavity located partially or completely below the surface of the earth in a cavity, a guard vessel, said reactor vessel being positioned within said guard vessel, a thick metal basemat beneath the reactor vessel and guard vessel and at the bottom of the cavity, means located below the basemat but adjacent to it for feeding water to a porous media situated in a zone immediately underneath the basemat, said water being converted to

steam when the temperature of said zone exceeds the boiling point of water, means for venting the steam so formed to the atmosphere, and means in contact with said basemat for supporting same and for conducting heat therefrom.

4,643,871

EMERGENCY COOLING DEVICE FOR A PRESSURIZED WATER REACTOR CORE

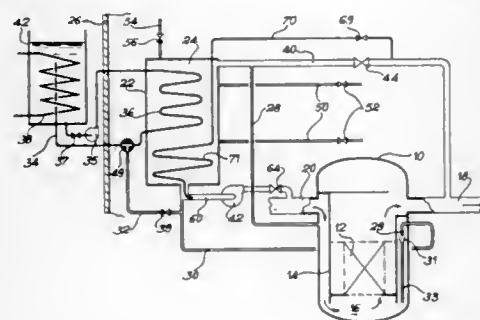
Maurice Fajean, Pertuis, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 17, 1980, Ser. No. 197,908

Claims priority, application France, Nov. 16, 1979, 79 28316 Int. Cl.⁴ G21C 9/00

U.S. Cl. 376—282

9 Claims



1. A device for the emergency cooling of the core of a pressurized water reactor in which the reactor core is located within a tightly sealed vessel connected by hot and cold branches of a primary cooling circuit with at least one steam generator, wherein said device comprises at least one water-filled, high pressure reservoir, the bottom of said reservoir being positioned above tubes by which the hot and cold branches of the primary circuit enter the vessel, a first pipe permanently connecting said reservoir to the reactor vessel and issuing into said vessel between the said tubes and a high level of the core, and a second pipe permanently connecting the bottom of said reservoir to the reactor vessel and issuing into said vessel below said first pipe, each of said pipes having a horizontal portion which is not fully thermally insulated.

4,643,872

PROCESS FOR THE CONSTRUCTION OF A NUCLEAR REACTOR WITH A REINFORCED CONCRETE PRESSURE VESSEL

Josef Schoening, Hambruecken, and Hans-Georg Schwiers, Ketsch, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 235,508, Feb. 18, 1981, abandoned. This application Mar. 20, 1984, Ser. No. 591,569

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012101

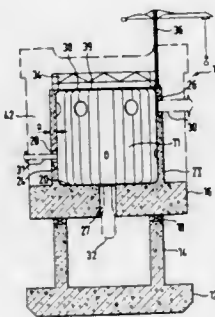
Int. Cl.⁴ G21C 9/00

U.S. Cl. 376—296

9 Claims

1. A process for constructing a gas cooled, high temperature nuclear reactor having a reinforced concrete pressure vessel with concrete walls comprising the steps of: constructing the bottom part of the vessel; erecting a corset frame for the vessel walls; anchoring to said corset frame a vessel cavity wall liner forming a vessel cavity; sealing the vessel cavity, maintaining the vessel cavity under clean conditions;

pouring the concrete walls of the reinforced concrete vessel; and mounting reactor components in said sealed vessel cavity;



wherein said steps of pouring and mounting are performed simultaneously.

4,643,873

FABRICATION OF NUCLEAR FUEL PELLETS

Michael R. Hayes, Preston, England, assignor to United Kingdom Atomic Energy Authority, England

Filed Feb. 25, 1985, Ser. No. 705,137

Claims priority, application United Kingdom, Mar. 9, 1984, 8406208

Int. Cl.⁴ B22F 1/00

U.S. Cl. 419—33

9 Claims

1. A method of fabricating nuclear fuel pellets in which uranium dioxide powder in a gas phase process by reacting uranium hexafluoride first with dry steam and then with steam and/or hydrogen at a higher temperature is subjected to intense mechanical attrition to increase its packing density, said intense mechanical attrition being for a time sufficient to break down the structure of the powder particles into their constituent crystallites, the treated powder is mixed with a limited quantity of binder to produce free flowing particles which are formed into pellets comprising uranium dioxide, and the pellets are sintered.

4,643,874

METHOD OF MAKING A TITANIUM-CONTAINING HYDROGEN STORAGE ALLOY

Rudolf Fichte, Nuremberg; Hans-Joachim Retelsdorf, Zirndorf, and Peter K. Künert, Oberasbach, all of Fed. Rep. of Germany, assignors to GfE Gesellschaft für Elektrometallurgie mbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 22, 1985, Ser. No. 715,188

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3411011

Int. Cl.⁴ C22C 1/00

U.S. Cl. 420—417

3 Claims

1. A method of making a titanium-containing hydrogen storage alloy of a Laves phase AB₂ composition wherein A represents a component selected from the group which consists of titanium and titanium with at least one further element from the beginning of the transition metal series of the Periodic Table and B represents at least one element different from those constituting component A and selected from the group of elements constituting the remainder of the transition metals of the Periodic Table and wherein the atomic radii ratio of the element of component A and r_B of an element of the component B is substantially

$$1.0 \leq r_A/r_B \leq 1.68,$$

which comprises the steps of:

(a) smelting a substantially titanium-free melt from at least most of the elements of the hydrogen storage alloy with the exception of titanium in a vacuum furnace or under

protective gas at a temperature of about 1400° C. and forming a titanium-free prealloy therefrom;

(b) comminuting the prealloy to provide a powdery solid; (c) thereafter combining the comminuted prealloy with titanium and amounts of remaining elements of the hydrogen storage alloy sufficient only to correct the composition to the desired proportions of the elements in said composition; (d) melting the resulting composition in a vacuum furnace at about 1300° C. in a vacuum furnace to form a melt; (e) deoxidizing the melt formed in step (d) with cerium mischmetal at the temperature at which the composition is melted in step (d); and (f) solidifying the melt deoxidized in step (e) to said Laves phase AB₂ composition.

4,643,875

FLUOROMETER

Norbert Opitz, Schwerte, and Dietrich W. Lübbers, Dortmund, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften, Goettingen, Fed. Rep. of Germany

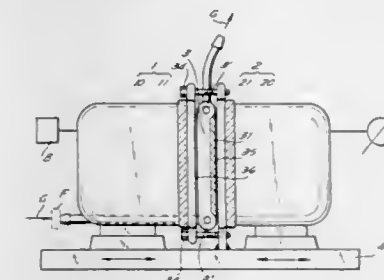
Filed Aug. 8, 1984, Ser. No. 638,883

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1983, 3329257

Int. Cl.⁴ G01N 21/64

U.S. Cl. 422—68

12 Claims



1. A fluorometer comprising a transmitter of a monochromatic light beam, the transmitter including a semi-conductive light emitting diode, a receiver of a monochromatic light beam, the receiver including a semiconductive photoelectric device, a measuring chamber enclosing an indicator space including fluorescent indicating means, and means for introducing an object of measurement in effective contact with the indicator space, the transmitter having a light output side and the receiver having a light input side, said light output and input sides being arranged opposite each other and the measuring chamber being arranged therebetween so that the distance between the transmitter and the receiver corresponds substantially to the thickness of the measuring chamber, and means for adjusting spacing between said transmitter, said measuring chamber and said receiver.

4,643,875

TIN BASED DUCTILE BRAZING ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 24, 1985, Ser. No. 758,914

Int. Cl.⁴ C22C 13/00

U.S. Cl. 420—502

9 Claims

1. A ductile brazing alloy, capable of wetting a ceramic of alumina or silicon nitride or zirconia and having sufficiently ductility to bond said ceramic with a metal, consisting essentially of 35 to 95% tin, 0.5 to 70% silver, 0.5 to 20% copper and 0.1 to 4% titanium, all percentages by weight.

4,643,876

HYDROGEN PEROXIDE PLASMA STERILIZATION SYSTEM

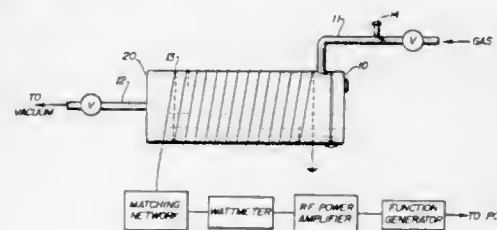
Paul T. Jacobs, and Szu-Min Lin, both of Arlington, Tex., assignors to Surgikos, Inc., Arlington, Tex.

Filed Jun. 21, 1985, Ser. No. 747,209

Int. Cl.⁴ A61L 2/14, 2/18

U.S. Cl. 422—23

9 Claims



1. A process of plasma sterilization using hydrogen peroxide as a precursor of the active species in the plasma comprising the steps of:

placing an item to be sterilized in a chamber, contacting the item with a hydrogen peroxide vapor for a pretreatment time period which is a sufficient time period to allow the hydrogen peroxide to come in close proximity with the item; generating a hydrogen peroxide plasma around the item, and maintaining the item in said hydrogen peroxide plasma for a time period sufficient to allow an active species generated from the hydrogen peroxide plasma to effect sterilization.

4,643,878

EXTRACTION CELL

George M. Seiter, Minneapolis; Loren J. Klitzke, Long Lake, and Iver L. Nelson, Minneapolis, all of Minn., assignors to Waldorf Corporation, St. Paul, Minn.

Filed Oct. 18, 1984, Ser. No. 662,639

Int. Cl.⁴ B01L 11/00; G01N 30/00

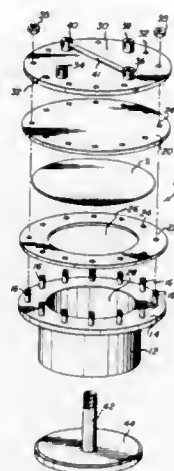
U.S. Cl. 422—101

7 Claims

1. An extraction cell for testing the toxicity in a specimen housed within the cell by enabling it to contact a suitable solvent adapted to dissolve any toxic substances in the specimen, comprising:

a housing adapted to receive a quantity of said solvent, said housing including a centrally located opening and a rigidly-affixed flange; a plurality of pins having at least one threaded end extending upwardly from the flange of said solvent housing; at least one gasket member having a centrally located specimen exposure opening adapted to be placed in registration with the centrally located opening in said solvent housing and including a plurality of pin openings extending about the circumference thereof adapted to receive the pins extending upwardly from said solvent housing flange therethrough; and a cover element adapted to clamp a specimen placed over the specimen exposure opening in said gasket to said solvent housing in liquid-tight sealed engagement against the flange of the housing, said cover including a plurality of pin openings extending about its circumference adapted to receive the upright pins on said solvent housing therethrough, means received on the threaded end of said pins for clamping

said cover, gasket and a specimen to be tested to said solvent housing in liquid-tight sealed engagement, and



support means on said cover element for supporting said extraction cell in an inverted position in which the solvent contacts the specimen.

4,643,879

TOWER FOR ANALYZING SYSTEM

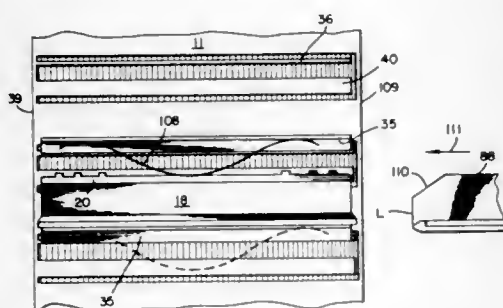
Richard W. Hanaway, Roseville, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 1, 1985, Ser. No. 750,793

Int. Cl.⁴ G01N 35/00; A97B 81/00

U.S. Cl. 422-104

4 Claims



1. A tower assembly for supporting a plurality of specimen trays for use in an automatic system for analyzing said specimens, with each specimen tray comprising a container tray for said specimens and a cover member having tab portions, said tower assembly comprising:

- a generally rectangular frame defining opposed first and second major sidewalls and first and second opposed open faces between said sidewalls;
- a plurality of first slots in each of said first and second sidewalls, said slots extending in a spaced or generally parallel manner from said first open space to said second open face, said slots being closed at an end adjacent said first open face;
- a corresponding plurality of shelf members, each of said shelf members being removably supported in one of said first slots in each of said first and second walls to provide a spaced apart, parallel and overlapping array of shelf members with the spaces between the shelf members being adapted to receive a specimen tray; and
- a corresponding plurality of second slots in each of said first and second sidewalls for receiving tray cover member tab portions, said second slots extending in a spaced general

parallel manner from said first open face to said second open face, said second slots being closed at an end adjacent said first open face, said second slots having a desired width to permit specimen tray tab portions to move width-wise of said second slots, each said second slot being interposed between adjacent first slots.

4,643,880

APPARATUS AND PROCESS FOR CARBON BLACK PRODUCTION

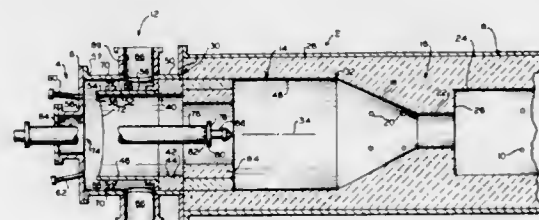
William R. King, and C. Jack Hart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 14, 1984, Ser. No. 681,969

Int. Cl.⁴ C09C 1/48

U.S. Cl. 422-156

8 Claims



1. A carbon black reactor having an upstream end, a downstream end, and a longitudinal axis extending between the upstream end and the downstream end, said reactor comprising, from the upstream end to the downstream end, a means defining an oxidant gas distributor section, a refractory means defining a generally cylindrical precombustion zone, and a refractory means defining a pyrolysis zone, all said means being serially connected and in axial alignment and together defining a flow path of generally circular cross section extending along the longitudinal axis of the carbon black reactor, and a means for introducing a fuel gas into the generally cylindrical precombustion zone;

wherein the means defining the oxidant gas distributor section comprises

a first tubular member having an upstream end which defines the upstream end of the flow path and a downstream end which connects to the refractory means defining the generally cylindrical precombustion zone;

a second tubular member coaxially positioned around the first tubular member to define an annulus between the first tubular member and the second tubular member; said second tubular member having a first end and a second end, the second end of the second tubular member being connected to the refractory means defining the generally cylindrical precombustion zone;

a means for defining at least one tunnel opening into the annulus generally radially inwardly toward the longitudinal axis of the carbon black reactor; and

a closure attached to the first end of the second tubular member and defining the upstream end of the carbon black reactor, said closure being spaced apart from the upstream end of the first tubular member to provide a flow path from the means defining the at least one tunnel to the pyrolysis zone;

wherein the refractory means defining the pyrolysis zone defines a generally frustoconical converging section having generally radially inwardly directed oil ports converging to a generally cylindrical reactor throat, and a generally cylindrical reaction section connected to the generally cylindrical reactor throat, said generally cylindrical reaction section having a diameter sufficiently large to define an abrupt expansion in the flow path.

4,643,881

SWIMMING POOL CHEMICAL DISPENSER

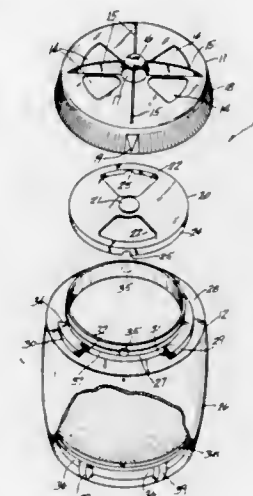
Roy P. Alexander, Killingworth; J. Philip Faust, and Alan H. Milford, both of Hamden, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Dec. 11, 1984, Ser. No. 680,626

Int. Cl.⁴ B01D 11/00

U.S. Cl. 422-265

27 Claims



1. A dispenser for dispensing a swimming pool chemical into surrounding water while the dispenser is immersed in the water, comprising in combination:

- (a) a container for holding the pool chemical, the container being open-topped with a closed bottom and formed of a material with a specific gravity of less than 1.0;
- (b) an adjustable top with openings therein moveably cooperative with the open-topped container to be moveable through a plurality of positions, the adjustable top also being formed of a material with a specific gravity of less than 1.0; and
- (c) ballast means cooperative with and connected to the adjustable top, the ballast means being cooperative with the openings in the adjustable top to form at least one opening in the dispenser to permit the pool chemical to be dispensed from the container at a selectively controlled rate, the ballast means further being formed of a material such that the combined specific gravity of the adjustable top and the ballast means is greater than the specific gravity of the container so that the dispenser becomes top heavy when less than about 10% of the pool chemical remains in the container and the dispenser inverts thereby dispensing the remainder of the pool chemical from the container and signaling that the dispenser is empty.

4,643,882

PROCESS FOR RECOVERY BY A SOLVENT OF THE URANIUM PRESENT IN PHOSPHORIC ACID

Antoine Floreancig, St. Genis Laval, France, assignor to Uranium Pechiney, France

Filed Mar. 5, 1984, Ser. No. 586,288

Claims priority, application France, Mar. 8, 1983, 83 04099

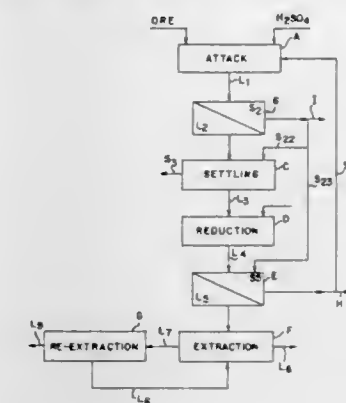
Int. Cl.⁴ C01G 43/00; C01B 25/234; C22B 60/02

U.S. Cl. 423-8

7 Claims

1. In a process for recovering uranium from a wet process phosphoric acid solution comprising the steps of filtering the phosphoric acid solution to remove gypsum precipitate, reducing uranium (VI) in the solution obtained from filtering to uranium (IV), and adding an organic extractant to the phosphoric acid solution containing the uranium (IV) to thereby extract the uranium (IV), the improvement comprising the addition of a filtering operation between said reduction step and said addition of the organic solvent, said filtering operation

including the steps of providing a filter, covering said filter with a layer of gypsum at least 2 millimeters thick, and then



filtering the solution obtained over said covered filter to remove solid materials in suspension originating from the phosphoric acid solution and the reduction step.

4,643,883

METHOD OF DECOLORIZING WET PROCESS PHOSPHORIC ACID

Earl E. Borchert; Robert J. Urban, and Ray E. Barker, all of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jan. 22, 1986, Ser. No. 821,470

Int. Cl.⁴ C01B 25/16

U.S. Cl. 423-321 S

20 Claims

1. A method of decolorizing solvent extraction purified wet process phosphoric acid containing organic color-imparting impurities, comprising:

- (a) treating solvent extraction purified wet process phosphoric acid having a P₂O₅ content in the range of about 40-55 wt. %, with a strong oxidant containing substantially no impurities at a temperature in the range of about 50° to about 150° C., by slowly adding said oxidant to said acid over a period of at least about 3 hours; and
- (b) contacting the treated acid with regenerable, substantially acid leachable metal-free activated carbon at a temperature in the range of about 40° to about 100° C. to adsorb oxidized color-imparting impurities by flowing said acid through a column of said activated carbon.

4,643,884

PURIFICATION OF MOLYBDENUM TRIOXIDE

Michael J. Cheresnowsky, Towanda; Timothy A. Brunelli, Wyalusing, and Robin W. Munn, Sayre, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 777,898, Sep. 19, 1985, which is a continuation-in-part of Ser. No. 699,699, Feb. 8, 1985. This application Mar. 31, 1986, Ser. No. 846,170

Int. Cl.⁴ C01G 39/02

U.S. Cl. 423-53

8 Claims

1. A process for removing potassium from relatively impure molybdenum trioxide, said process comprising:

- (a) contacting said impure molybdenum trioxide containing greater than about 600 weight parts potassium per million with a first acid leach which consists essentially of nitric acid and ammonium nitrate at a temperature of at least about 50° C. for a sufficient time and at above a 2 molar concentration of said nitric acid and an ammonium nitrate concentration of from about 1.5 to about 2 molar in said first acid leach to solubilize the major portion of the potassium and form a once leached molybdenum trioxide containing the remaining portion of the potassium;

- (b) separating said once leached molybdenum trioxide from the resulting potassium containing first acid leach;
- (c) contacting the once leached molybdenum trioxide with a second acid leach solution substantially similar to said first acid leach solution at a temperature of at least about 50° C. for a sufficient time to solubilize essentially all of the remaining portion of the potassium and form a twice leached molybdenum trioxide;
- (d) separating said twice leached molybdenum trioxide from the resulting potassium containing second acid leach;
- (e) contacting said twice leached molybdenum trioxide with sufficient water to remove any residual impurities; and
- (f) separating the resulting twice leached washed molybdenum trioxide from the resulting wash water.

4,643,885

METHOD OF PROCESSING SODIUM OXALATE FORMED DURING THE DIGESTION OF BAUXITE
Hans-Werner Schmidt, Frankfurt am Main; Walter Koch, Mühlheim am Main; Martin Hirsch, Friedrichsdorf; Karlheinz Rosenthal, Neu-Isenburg, all of Fed. Rep. of Germany, and Yilmaz Yetmen, Corpus Christi, Tex., assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 19, 1985, Ser. No. 713,461

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411414

Int. Cl.⁴ C01F 7/04

U.S. Cl. 423—119

11 Claims

1. A method of processing contaminated sodium oxalate which becomes available in a separating stage succeeding the digestion of bauxite in accordance with the Bayer process, comprising drying the separated moist sodium oxalate with hot exhaust gases from a fluidized bed jointly with aluminum hydroxide or aluminum oxide hydrate and/or reactive alumina at a mole ratio of aluminum to sodium of at least 0.8 to form a dried product, and decomposing the dried product in said fluidized bed at a temperature of 780° to 1000° C. to form sodium aluminate.

4,643,886

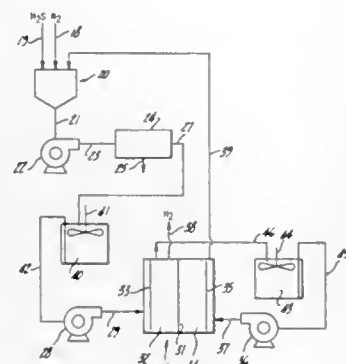
AUTOMATIC PH CONTROL IN A PROCESS FOR REMOVAL OF HYDROGEN SULFIDE FROM A GAS
Dane Chang, Houston, and Stephen A. Bedell, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1985, Ser. No. 805,672

Int. Cl.⁴ C01B 17/16, 31/20; C25B 1/02

U.S. Cl. 423—226

10 Claims



1. A continuous process for removing hydrogen sulfide from a sour gaseous stream comprising:

- (A) contacting said sour gaseous stream in a contact zone with a first aqueous alkaline solution at a temperature below the melting point of sulfur, said solution comprising at least one polyvalent metal chelate in a higher valence

state in an effective amount suitable for oxidizing substantially all the hydrogen sulfide removed from said gaseous stream to produce a sweet gaseous stream, a second aqueous alkaline solution comprising sulfur, and at least one polyvalent metal chelate in a lower valence state;

- (B) separating in a separation zone said sulfur from said second aqueous alkaline solution;
- (C) passing said second aqueous alkaline solution as an electrolyte from said separation zone to a cathode compartment of an electrochemical cell, said cell comprising an anode in an anode compartment and a cathode in said cathode compartment, said compartments separated by a cell membrane and said anode and cathode connected through an external electrical circuit;
- (D) producing said first aqueous alkaline solution by passing said second aqueous alkaline solution from said cathode compartment to said anode compartment and oxidizing at said anode said polyvalent metal chelate to a higher valence state while producing hydrogen at said cathode and hydroxide ions in said electrolyte; and
- (E) recycling said first aqueous alkaline solution from said electrochemical cell to said contact zone;
- whereby the pH of said first aqueous alkaline solution is maintained in said contact zone at about 7 to about 9.

4,643,887

PRODUCTION OF SULFUR TRIOXIDE, SULFURIC ACID AND OLEUM

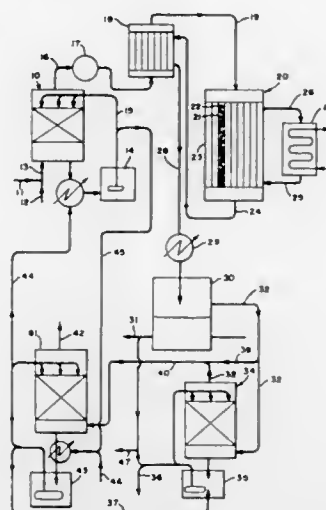
William D. Daley, Morristown, and James Jaffe, Lake Hopatcong, both of N.J., assignors to General Chemical Corporation, Morristown, N.J.

Filed Aug. 26, 1982, Ser. No. 412,051

Int. Cl.⁴ C01B 17/74, 17/48

U.S. Cl. 423—533

12 Claims



1. A process for the production of sulfur trioxide which comprises the steps:

- (a) feeding a gas mixture having a sulfur dioxide partial pressure of at least about 0.5 atmosphere, an oxygen partial pressure of at least about 0.37 atmosphere, an oxygen-sulfur dioxide mole ratio of between about 0.7:1 and about 1:1 and a total pressure between about 1 atmosphere and about 10 atmospheres in plug flow through a bed of a conversion catalyst selected from the group consisting of vanadium oxide conversion catalysts and platinum conversion catalysts;
- (b) cooling the catalyst bed to produce a first zone wherein the gas mixture increases in temperature from the inlet temperature to a temperature between about 475° C. and about 575° C., a second zone wherein the temperature is substantially constant at a temperature between about

4,643,889

SYSTEM FOR GENERATION OF SINGLET-DELTA OXYGEN

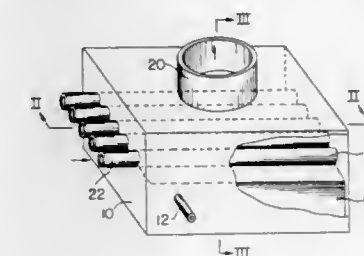
Taro Uchiyama, 2663-9, Naruse, Machida-shi, Tokyo; Kiwamu Takehisa, Yokohama, and Isao Ishizaki, Iruma, all of Japan, assignors to Mitsui Grinding Wheel Co., Ltd., Saitama and Taro Uchiyama, Tokyo, both of Japan

Filed Mar. 31, 1986, Ser. No. 846,254

Int. Cl.⁴ C01B 13/00

U.S. Cl. 423—579

18 Claims



450° C. and about 575° C. and a third zone wherein the temperature is declining from a temperature between about 450° C. and about 575° C. to a temperature between about 325° C. and about 400° C.,

- (c) passing said gas mixture successively through said first, second and third zones with sufficient contact times in said second and third zones to produce a product gas mixture with an sulfur trioxide to sulfur dioxide mole ratio of at least about 99:1,
- (d) cooling said product gas mixture to a temperature between about 35° C. and about 45° C. to produce liquid sulfur trioxide, and
- (e) separating said liquid sulfur trioxide from the remaining gas stream.

4,643,888

PROCESS AND APPARATUS FOR RECOVERY OF SULFUR FROM AMMONIA CONTAINING ACID GAS STREAMS

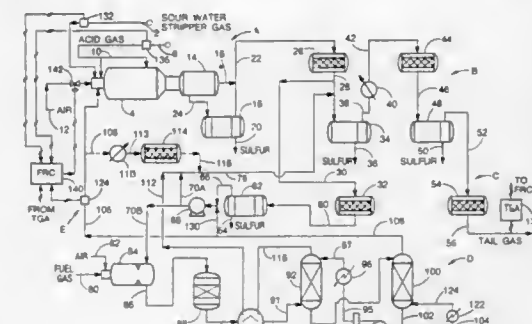
John W. Palm, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 21, 1985, Ser. No. 714,298

Int. Cl.⁴ C01B 17/04; B01D 53/34, 53/36

U.S. Cl. 423—574 R

16 Claims



1. In a Claus process for the recovery of sulfur, the steps comprising:

- passing a first stream containing hydrogen sulfide, sulfur dioxide, and ammonia through a low temperature Claus catalytic conversion zone and depositing elemental sulfur and ammonium compounds on catalyst therein;
- deriving a regeneration stream from the Claus process and regenerating the resulting laden catalyst therewith vaporizing sulfur and ammonia therefrom and producing a regeneration effluent stream comprising elemental sulfur and ammonia;
- cooling the regeneration effluent stream and condensing elemental sulfur therefrom and producing a sulfur lean regeneration effluent stream;
- introducing at least a portion of the sulfur lean regeneration effluent stream into a hydrogenation zone and converting substantially all sulfur compounds therein to hydrogen sulfide, and introducing the resulting hydrogen sulfide containing stream into an ammonia removal zone and contacting said resulting stream with a first aqueous stream and producing a second aqueous stream enriched in ammonia and producing a sulfur lean regeneration effluent stream reduced in ammonia content;
- removing ammonia from the second aqueous stream and producing an ammonia enriched stream;
- returning the sulfur lean regeneration effluent stream reduced in ammonia content to the Claus process adjacent and downstream of the point of derivation of the regeneration stream for the further recovery of sulfur therefrom; and
- introducing the ammonia enriched stream into an ammonia conversion zone and reducing the concentration of ammonia therein.

4,643,890

PERFORATED REACTOR TUBE FOR A FLUID WALL REACTOR AND METHOD OF FORMING A FLUID WALL

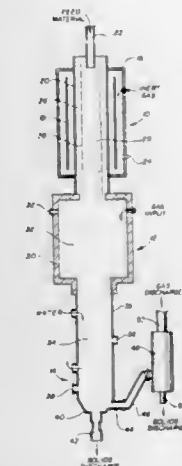
Dale E. Schramm, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Sep. 5, 1984, Ser. No. 647,958

Int. Cl.⁴ F27D 1/00; B01J 12/00

U.S. Cl. 423—659

23 Claims



1. In a high-temperature fluid-wall reactor including a cylindrical-shaped reactor tube having a central axis and formed from a refractory material, a reaction zone within said reactor tube for inputting reactants, means for heating said reaction tube to incandescence for emitting radiation radially inward to said reaction zone for maintaining a desired chemical reaction, and inlet means for providing an inert gas at a pressure differ-

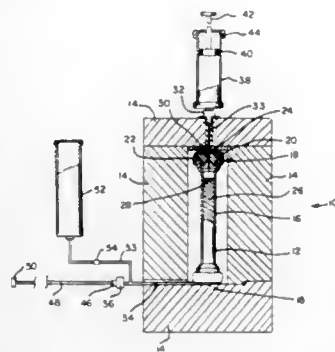
ential across said reactor tube so as to form a protective fluid wall for an inner surface of said reactor tube, the improvement comprising:

- said reactor tube material being substantially impervious to gas flow;
- said reactor tube including a first portion have a plurality of perforations throughout the length thereof and spaced substantially around the perimeter of said first portion for permitting flow of said inert gas radially inward through said tube and a second portion spaced downstream from said first portion and being substantially unperforated;
- said second portion of said reactor tube being in fluid communication with said means for heating said reactor tube; barrier means for restricting inert gas flow from an exterior surface of said second portion of said reactor tube to an exterior surface of said first portion of said reactor tube, and being positioned for at least substantially isolating said heating means from said plurality of perforations;
- each of said plurality of perforations through said reactor tube having an aperture axis passing substantially through said axis of said reactor tube for directing said inert gas in a jetstream commencing adjacent said inner surface of said reactor tube and directed radially inward toward said reaction zone;
- said plurality of perforations being selectively spaced about said reactor tube sufficient for said differential pressure across said reactor tube to cause each of said jetstreams to engage one or more other of said jetstreams for forming an integral protective fluid wall while maintaining a radially-directed momentum sufficient to repel said reactants; and the radially directed velocity of each of said jetstreams diminishes within said reactor tube without disturbing fluid flow within said reaction zone.

4,643,891 PREPARATION AND USE OF A ^{195}mAu -CONTAINING LIQUID

Karel J. Panek, Heilo, Netherlands, assignor to Mallinckrodt Diagnostica (Holland) B.V., Netherlands
Continuation-in-part of Ser. No. 140,781, Apr. 16, 1980, Pat. No. 4,414,145. This application Oct. 14, 1983, Ser. No. 542,171
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.⁴ A61K 43/00; A61N 5/12; C09K 11/00, 11/04
U.S. Cl. 424—1.1 13 Claims



1. A process for performing a radiodiagnostic examination in a living being comprising administering to the living being a non-toxic, pharmaceutically acceptable ^{195}mAu -containing liquid which is produced by
 - (a) adsorbing ^{195}mHg on a chemically and radiolytically stable adsorption agent comprising a mercury ion binding material having a significantly higher affinity for mercury ions than for gold ions, and
 - (b) eluting the daughter ^{195}mAu radioisotope with an eluant which selectively converts ^{195}mAu ions to an elutable form in the presence of the adsorbed parent ^{195}mHg radio-

isotope, and which is non-toxic and pharmaceutically acceptable, and monitoring the radioactivity emitted from the living being.

4,643,892 MAGNESIUM TRISILICATE SUITABLE FOR PREPARATION OF MEDICAMENT ADSORBATES OF ANALGESICS

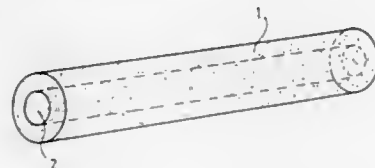
David Peters, Long Valley; John Denick, Jr., Newton, and Anil K. Talwar, Long Valley, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 516,002, Jul. 20, 1983, Pat. No. 4,581,232. This application Dec. 19, 1985, Ser. No. 811,082
Int. Cl.⁴ A61K 9/18, 47/00

- U.S. Cl. 424—15 7 Claims
1. A medicament adsorbate which comprises magnesium trisilicate having a surface area of at least $400\text{ m}^2/\text{g}$ and having a flake-like structure with multiple interstitial spaces, and containing adsorbed therein from about 1% to about 20% by weight of the adsorbate of a medicament drug wherein the medicament drug is selected from the group of analgesics consisting of acetaminophen, salicylamide, phenacetin and mixtures thereof.

4,643,893 PROGRAMMED RELEASE DEVICE AND METHOD OF USE THEREOF

Frédéric M. Ascher, Carros, and Jacques A. Cuvelier, St. Martin du Var, both of France, assignors to C.R.E. Virbac S.A., Carros, France
Filed Mar. 6, 1985, Ser. No. 708,377
Claims priority, application France, Mar. 7, 1984, 84 03520
Int. Cl.⁴ A61K 9/70; A61J 3/00

U.S. Cl. 424—16 19 Claims



1. A device for enabling release at regulated speed into a liquid medium of one or more substances active in veterinary medicine, said device being constituted by an insoluble macromolecular and thermoplastic solid polymeric matrix support based on insoluble polymer or copolymer comprising adjuvant and additive, enabling the progressive and programmed release of said one or more incorporated active substances, wherein the initial concentration of said one or more active substances on the one hand and the surface of the insoluble polymeric matrix support through which the diffusion is effected on the other hand are determined as a function of the duration of release and the desired daily released amount, said matrix support totally or almost totally enclosing one or more masses of dense material conferring to the whole device a density higher than 1.3 g/ml , said matrix support retaining its surface during use of the device.

4,643,894 MALTODEXTRIN COATING

Stuart C. Porter, Hatfield, and Edward J. Woznicki, Douglassville, both of Pa., assignors to Colorcon, Inc., West Point, Pa.
Filed Jul. 24, 1984, Ser. No. 633,954
Int. Cl.⁴ A61K 9/36

- U.S. Cl. 424—35 73 Claims
1. A method for preparing an easily-swallowed gastric-disintegrable and thinly-coated aspirin tablet which does not have the characteristic aspirin taste and does not produce the esophageal discomfort of an uncoated aspirin tablet and which does

not disintegrate in the stomach materially slower than the uncoated aspirin tablet comprising

- aqueous spray-coating maltodextrin onto all exterior surfaces of an aspirin tablet to form a coating of maltodextrin, the amount of maltodextrin being sufficient to completely coat the tablet and being effective to protect the aspirin from moisture and mask the characteristic aspirin taste and not produce the esophageal discomfort of an uncoated aspirin tablet and which does not disintegrate in the stomach materially slower than the uncoated aspirin tablet.

4,643,895 ANTI-CANCER DRUGS FOR THE TREATMENT OF LEUKAEMIAS I, CONSTITUTED BY THE CHAIN A OF RICIN AND A SPECIFIC MONOCLONAL ANTIBODY

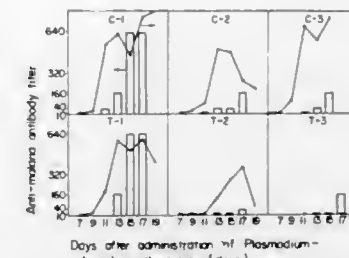
Pierre Casellas, Pierre Gros, both of Montpellier, and Franz Jansen, St. Mathieu de Treviers, all of France, assignors to Sanofi, Paris, France
Filed Nov. 1, 1982, Ser. No. 438,037
Claims priority, application France, Nov. 20, 1981, 81 21836
Int. Cl.⁴ A61K 39/00, 35/78

- U.S. Cl. 424—85 3 Claims
1. An anti-cancer composition comprising a conjugate of the chain A of ricin coupled by means of a disulfide bridge with at least one fraction of a monoclonal antibody T101 of human leukaemic anti-cell specificity.

4,643,896 MALARIA ASSOCIATED ANTIGEN AND PREPARING PROCESS THEREOF

Shoshiro Asakura, and Masakazu Adachi, both of Takasaki, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan
Filed Jun. 7, 1984, Ser. No. 618,380
Claims priority, application Japan, Jun. 10, 1983, 58-103901
Int. Cl.⁴ A61K 39/00; C07K 15/14

U.S. Cl. 424—88 15 Claims



1. A malaria antigen comprising a glycoprotein which is isolated from Plasmodium-infected erythrocytes, wherein said glycoprotein is capable of binding to a lectin that has a specific binding site for a terminal mannose-containing carbohydrate, said glycoprotein has a molecular weight of 60,000 to 70,000 as determined by SDS-polyacrylamide gel electrophoresis, and said glycoprotein is capable of inducing a cellular immune response in a host to which said glycoprotein is administered.
5. A method of producing a malaria antigen capable of inducing a cellular response in a host to which said antigen is administered, which comprises isolating a glycoprotein having a molecular weight of 60,000-70,000 as determined by SDS-polyacrylamide gel electrophoresis, said glycoprotein being capable of binding to a lectin having a specific binding site for a terminal mannose-containing carbohydrate from a supernatant component of a solution obtained by dissolving a precipitate of crushed and homogenized Plasmodium-infected erythrocytes by means of a solubilizing agent.

4,643,897 METHOD FOR THE TREATMENT OF AMOEBIASIS

Philippe G. Gayral, Villejuif, and Bernard M. Hublot, Paris, both of France, assignors to Laboratoires Biocodex, Montrouge, France
Filed Mar. 26, 1985, Ser. No. 716,193
Int. Cl.⁴ A61K 35/72; A01N 63/00

- U.S. Cl. 424—93 8 Claims
1. Method for the treatment of amoebiasis in humans, comprising administering to a human patient suffering from amoebiasis a therapeutically effective amount of yeasts of the genus *Saccharomyces*.

4,643,898 MAGNESIUM TRISILICATE SUITABLE FOR PREPARATION OF MEDICAMENT ADSORBATES OF NUTRITIONAL SUPPLEMENTS AND LAXATIVES

David Peters, Long Valley; John Denick, Jr., Newton, and Anil K. Talwar, Long Valley, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 516,002, Jul. 20, 1983, Pat. No. 4,581,232. This application Dec. 19, 1985, Ser. No. 811,046
Int. Cl.⁴ A61K 9/18

- U.S. Cl. 424—155 7 Claims
1. A medicament adsorbate which comprises magnesium trisilicate having a surface area of at least $400\text{ m}^2/\text{g}$ and having a flake-like structure with multiple interstitial spaces, and containing adsorbed therein from about 1% to about 20% by weight of the adsorbate of a medicament drug wherein the medicament drug is selected from the group of nutritional supplements and laxatives consisting of niacin, panthothenic acid, vitamin B6, thiamine hydrochloride, riboflavin, potassium iodide, potassium chloride, cupric sulfate, ferrous sulfate, phenolphthalein, danthron, bisocadyl, pamabrom and mixtures thereof.

4,643,899 MICROORGANISM HAVING CHARACTERISTICS OF AN ARTHROBACTER CAPABLE OF DEGRADING PEANUT HULL LIGNIN

Thomas J. Kerr, Athens, Ga., and Robert D. Kerr, Salem, Ala., assignors to Georgia Research Foundation, Athens, Ga.
Filed Nov. 14, 1983, Ser. No. 551,220
Int. Cl.⁴ D21C 1/00; C12R 1/06; A23C 9/12; A23L 1/28; C12N 1/20; C07G 17/00

- U.S. Cl. 426—2 19 Claims
1. A biologically pure culture of a microorganism having all the identifying characteristics of *Arthrobacter* KB-1 or a mutant thereof.

4,643,900 METHOD FOR MAKING BAKERY PRODUCTS

Roy W. Porter, Dixon, Calif., assignor to Basic American Foods, San Francisco, Calif.
Filed Oct. 17, 1984, Ser. No. 661,707
Int. Cl.⁴ A21D 2/36

- U.S. Cl. 426—21 12 Claims
1. The method for making dough products comprising: providing a dough formulation comprising substantially flavorless dehydrated garlic in an effective amount to function as a dough conditioner, flour, leavening agent, and water; and mixing said formulation for a time sufficient to develop a dough.

4,643,901

YEAST STRAINS, METHOD OF PRODUCTION AND USE IN BAKING

Gunnard K. Jacobson, Brown Deer, and Nayankumar B. Trivedi, Bayside, both of Wis., assignors to Universal Foods Corporation, Milwaukee, Wis.

Filed Jun. 10, 1983, Ser. No. 503,323

Int. Cl.⁴ A23L 1/28; C12N 15/00, 1/18; C12R 1/865

U.S. Cl. 426—62

10 Claims

1. The biologically pure man made bakers yeast *Saccharomyces cerevisiae* strain NRRL Y-15338.

4,643,902

METHOD OF PRODUCING STERILE AND CONCENTRATED JUICES WITH IMPROVED FLAVOR AND REDUCED ACID

James T. Lawhon, College Station, and Edmund W. Lusas, Bryan, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Sep. 7, 1984, Ser. No. 648,023

Int. Cl.⁴ A23L 2/36, 2/16

U.S. Cl. 426—271

43 Claims

1. A method of preparing a food juice suitable for storage comprising:

- providing from a juice-bearing fruit or vegetable a juice suitable for ultrafiltration;
- permeating said juice through an ultrafiltration (UF) stage which preferentially passes a UF permeate containing flavor and aroma components while retaining spoilage microorganisms in a UF retentate;
- treating said UF retentate to inactivate a sufficient number of spoilage microorganisms to inhibit spoilage of the juice under storage conditions; and
- recombining said treated UF retentate with said UF permeate containing flavor and aroma components.

4,643,903

ALKYL SUBSTITUTED AND UNSUBSTITUTED PARA-CARBOALKOXY CYCLOHEXANONES AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Wilhelmus J. Wieggers, Red Bank; Robert P. Belko, Woodbridge, and Richard M. Boden, Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 563,801, Dec. 21, 1983, Pat. No. 4,537,704.

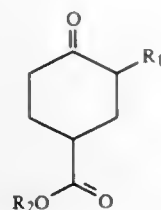
This application Jun. 21, 1985, Ser. No. 747,551

Int. Cl.⁴ A23L 2/26

U.S. Cl. 426—538

1 Claim

1. A process for augmenting or enhancing the flavor of a foodstuff comprising the step of adding to said foodstuff from 0.5 ppm up to about 100 ppm based on total foodstuff composition of at least one compound defined according to the structure:

wherein R₁ represents hydrogen of C₁–C₇ alkyl and R₂ represents methyl or ethyl.

4,643,904

METHOD OF INCREASING THE VISIBILITY OF DISCRETE MORSELS CONTAINED WITHIN A BAKED FOOD PRODUCT

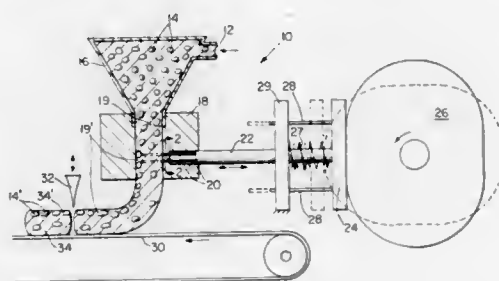
Richard A. Brewer, Cincinnati, Ohio; Robert H. Merk, Harrison, and Gary J. Orndorff, Sunman, both of Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 25, 1985, Ser. No. 748,517

Int. Cl.⁴ A21D 13/00; A23G 3/00

U.S. Cl. 426—549

28 Claims



1. A method of making individual dough preforms, each containing discrete morsels and having a pre-selected peripheral area wherein the concentration of said morsels is higher than the remainder of said preform, said method comprising the steps of:

- forming a continuously-moving dough rope containing randomly-distributed morsels, said dough rope having a pre-selected peripheral area and a remainder area;
- penetrating said continuously-moving dough rope with means that engage and transversely move a portion of said randomly-distributed morsels contained within said remainder area of said dough rope to said pre-selected peripheral area of said dough rope, whereby said pre-selected peripheral area of said continuously-moving dough rope has a higher concentration of said morsels than said remainder area of said dough rope; and
- cutting said continuously-moving dough rope into said individual dough preforms.

4,643,905

METHOD FOR PRODUCING FROZEN CONFECTIONS INCLUDING EDIBLE PARTICULATE MATERIAL

Harlan R. Getman, Toledo, Ohio, assignor to Vroman Foods, Inc., Toledo, Ohio

Filed May 10, 1984, Ser. No. 608,887

Int. Cl.⁴ A23G 9/00

U.S. Cl. 426—565

14 Claims

1. A method of producing frozen confections comprising the steps of:

- severing a flow of confectionary material into individual bodies;
- positioning said individual bodies of confectionary material on a moving conveyor,
- dispensing a measured individual amount of edible particulate matter,
- providing a chamber having an open end and a vent,
- translating said open end of said chamber over one of said individual bodies in substantially sealing contact with said one of said individual bodies,
- maintaining said chamber in said substantially sealing contact with said one of said individual bodies on said moving conveyor while providing a flow of fluid for moving said individual measured amount of particulate matter into said chamber and onto said one of said individual bodies,
- venting said fluid to the atmosphere through said vent, and
- translating said chamber out of said substantially sealing contact with said one of said individual bodies.

4,643,906

LACTOSE-FREE SYNTHETIC ICE CREAM

Doris E. Pitz, Cottonwood Creek Ranch, Star Rte., Worland, Wyo. 82401

Filed Sep. 27, 1985, Ser. No. 781,019

Int. Cl.⁴ A23G 9/00

U.S. Cl. 426—565

3 Claims

1. A frozen lactose-free synthetic ice cream product comprising from about 42% to 48% by weight of a liquid non-dairy emulsion comprised of approximately 20% by weight of vegetable fat, approximately 1% by weight of protein, approximately 0.7% by weight of emulsifier, approximately 0.3% by weight of stabilizer, and approximately 77% by weight of water, from about 20% to 28% by weight of a stable foamed non-dairy emulsion comprised of approximately 26% by weight of hydrogenated vegetable fat, approximately 1% by weight of protein, approximately 0.9% by weight of emulsifier, approximately 0.76% by weight of a stabilizer, approximately 22% by weight of a carbohydrate, and approximately 47% by weight of water, approximately 14% to 16% by weight of sucrose, and approximately 14% to 16% by weight of whole eggs.

4,643,907

SAVORY, FLAVORED BAKING CHIPS

Kenneth W. Player, Olmsted Falls, and Lonny L. Wilson, Brunswick, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Feb. 14, 1985, Ser. No. 701,468

Int. Cl.⁴ A23D 5/00; A23G 3/00

U.S. Cl. 426—580

8 Claims

1. A savory non-sweet baking chip which is brittle, has a hard texture and a recognizable non-chocolate, non-sweet flavor of a food group from meat, vegetable, cheese, fish, or a combination of such food groups, comprising

- about 10–35% hard butter having a Wiley Melting Point in the range of about 84°–120° F. and an approximate Solids Fat Index at 80° F. of more than about 40 and at 92° F. of less than about 35;
 - a flavoring material of at least one of said food groups;
 - the remainder being essentially an inert particulate bland base in said hard butter having a particle size sufficiently reduced to present a non-gritty texture;
 - said base being free of discoloring amounts of ingredients subject to browning or deterioration by the Maillard reaction at baking temperatures and selected from the group consisting of spray dried dairy derived solids, a particulate protein other than said dairy derived solids, maltodextrin and combinations thereof;
- wherein said chip is made by (a) mixing the hard butter, flavoring and base together at a temperature above the melting point of the hard butter to obtain a uniform composition, and (b) forming said composition into said baking chip; said base particles having an average particle size less than about fifty microns.

4,643,908

SOFT, MOIST PET FOOD

J. Wallace Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corp., Long Beach, Calif.

Filed Jun. 19, 1984, Ser. No. 622,277

Int. Cl.⁴ A23K 1/00

U.S. Cl. 426—630

26 Claims

1. A shelf-stable, soft, moist thermoplastic pet food consisting essentially of:

- water from 25 to about 50 weight percent;
- a proteinaceous meal selected from the class consisting of plant and animal meals containing at least about 25 weight percent protein and present in an amount from 12 to about 35 weight percent;
- a sugar selected from the group consisting essentially of dry sugar and aqueous syrups containing from 50 to 95 percent of sucrose, glucose, lactose, galactose, fructose or

mixtures thereof and present in an amount from 12 to about 35 weight percent;

(d) an alkaline earth metal, mixed with ingredients (a) (b) and (c) as the hydroxide in an amount from about 1 to about 5 weight percent, expressed as the oxide; and

(e) an acid selected from the group consisting of phosphoric and C₂ to about C₁₂ alkanic acids in an amount from about 2 to about 6 weight percent, sufficient to impart a pH value to said pet food from 3.5 to about 6; said pet food prepared by mixing said proteinaceous meal and sugar with the aqueous hydroxide of the alkaline earth metal sufficiently to form a viscous sol, neutralizing the viscous sol with said acid, and permitting it to solidify into a soft, moist thermoplastic gel.

4,643,909

REINFORCED CASTING MATERIAL

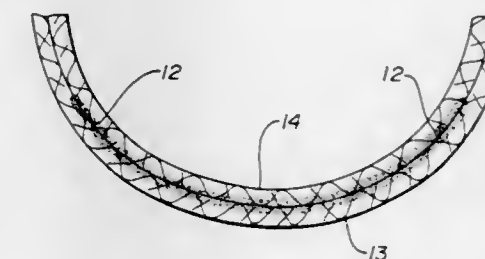
Gene W. Kammerer, East Brunswick, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Oct. 7, 1985, Ser. No. 784,297

Int. Cl.⁴ A61L 15/00; A61F 13/00

U.S. Cl. 427—2

9 Claims



1. A method of reinforcing a polyurethane cast comprising applying to the cast while the cast is wet with water a liquid composition comprising an aromatic polyisocyanate and a polyol in an equivalent ratio of from 2.1 to 15.1, a catalyst in an amount of from 0.1 to 10% based on the weight of the composition, an antifoam agent in an amount of from 0.7 to 7.5% based on the weight of the formulation and a thickening agent in an amount of from 2 to 5% by weight of the formulation, said composition having a viscosity of between 100,000 and 1,000,000.

4,643,910

PROCESS FOR CURING POLYIMIDE

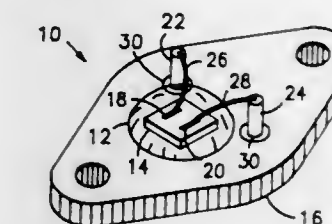
Eugene L. Foutz, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 1, 1985, Ser. No. 718,253

Int. Cl.⁴ B05D 3/02

U.S. Cl. 427—10

2 Claims



1. A process for curing a polyimide layer which comprises the steps of: applying a polyimide or polyimide precursor to a substrate to form a layer of predetermined thickness; heating said substrate and said layer to cause a continuous increase in temperature of said layer at a predetermined rate to a temperature between about 170 degrees Celsius and about 225 degrees

Celsius, wherein said predetermined rate is selected by measuring dissipation of a capacitor dielectric, said capacitor dielectric formed by applying said polyimide or said polyimide precursor to a surface having capacitor electrodes thereon to form a layer of said predetermined thickness, said predetermined rate being a rate at which dissipation measured between said electrodes declines to zero or near zero; and then terminating said heating.

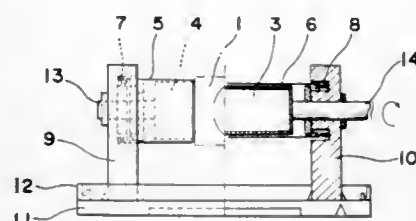
4,643,911
METHOD FOR FORMING LIGHT-SHIELD COAT ON LENSES

Takao Inoue, Takahiro Matsuo, both of Hirakata, and Youichi Nakamura, Katano, all of Japan, assignors to Matsushita Electric Ind. Co., Ltd., Osaka, Japan

Filed Sep. 26, 1984, Ser. No. 654,669
Claims priority, application Japan, Sep. 30, 1983, 58-183356
Int. Cl.⁴ B05D 3/06

U.S. Cl. 427—54.1

6 Claims



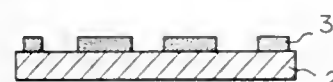
1. A method of forming a light-shield coating on the peripheral area of an optical lens comprising holding the optical lens between two spaced opposed chucks for rotation around the optical axis of the optical lens, dropping a quantity of ultra-violet-setting black colored paint sufficient to cover the peripheral area of the optical lens while rotating the lens, bringing the periphery of a rotating first roll-shaped brush having radially extending relatively stiff bristles into contact with the peripheral area of the optical lens for spreading the paint into a paint layer of substantially uniform thickness and having indentations therein from the bristles of the brush, irradiating the thus formed paint layer with ultra-violet light to harden the paint, repeating the dropping step, bringing the periphery of a second rotating roll-shaped brush having radially extending relatively flexible bristles into contact with the peripheral area of the optical lens for spreading paint into a relatively smooth substantially uniform thickness additional paint layer, and irradiating the thus formed additional paint layer with ultra-violet light to harden the additional paint layer.

4,643,912
METHOD FOR FORMING A METAL LAYER WITH PATTERN ON A SUBSTRATE

Shigeru Nakagawa, and Kiyotaka Uchikawa, both of Kanagawa, Japan, assignors to Marui Industry Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 546,304, Oct. 28, 1983, abandoned. This application Sep. 27, 1984, Ser. No. 655,099
Claims priority, application Japan, Oct. 29, 1982, 57-190161
Int. Cl.⁴ B05D 3/12, 5/00; C23C 14/04

U.S. Cl. 427—57

4 Claims



1. A method for forming a metal layer with a positive pattern on a plastic sheet or plate substrate selected from the group consisting of polycarbonate, ABS resin, polyacrylate resin, polyphenylene oxide epoxy resin, and polymethacrylate resin,

which comprises printing an oil-soluble, water-insoluble ink on a surface of said substrate to provide an ink layer of a negative pattern, forming a metal layer on the entire printed surface of said substrate, including said ink layer, by dry metal plating, immersing said substrate in kerosene, and removing said ink layer and that part of said metal layer which is on said ink layer by applying supersonic vibration to said substrate in said kerosene.

4,643,913
PROCESS FOR PRODUCING SOLAR CELLS

Masaaki Okunaka, Fujisawa; Mitsuo Nakatani, Yokohama; Haruhiko Matsuyama, Hiratsuka; Hltoshi Yokono, Fujisawa; Tokio Isogai, Katsuta; Tadashi Saitoh, Tokyo; Kunihiro Matsukuma; Sumiyuki Midorikawa, both of Hitachi, and Satoru Suzuki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

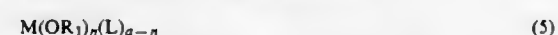
Filed Dec. 28, 1984, Ser. No. 687,162
Claims priority, application Japan, Dec. 28, 1983, 58-246949
Int. Cl.⁴ H01L 31/18

U.S. Cl. 427—75

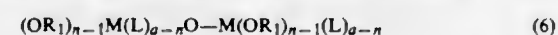
26 Claims



1. A process for producing solar cells, which comprises applying a composition for anti-reflection coating formation on one side of a silicon substrate which has a p-n junction therein, printing an Ag paste for contact formation or predetermined areas of the coating, and heat-treating the resulting plate at a temperature of 400° to 900° C. to complete an anti-reflection coating and a light-receiving side contact, the composition for anti-reflection coating formation containing as essential components, (a) at least one member selected from the group consisting of organic-ligand-containing metal complex compounds represented by the general formula



wherein M is a metal selected from Zn, Al, Ga, In, Ti, Zr, Sn, V, Nb, Ta, Mo and W; OR₁ is an alkoxyl group; R₁ is a C₁-C₁₈ alkyl group; L is an organic ligand which forms a non-hydrolyzable bond with the metal ion; a is the valency of the metal M; and n is an integer satisfying 1 ≤ n < a, and hydrolytic condensation products of the compounds of formula (5), said products being represented by the general formula



wherein M, OR₁, L, a, and n are as defined above, (b) at least one organotin compound, and (c) a solvent.

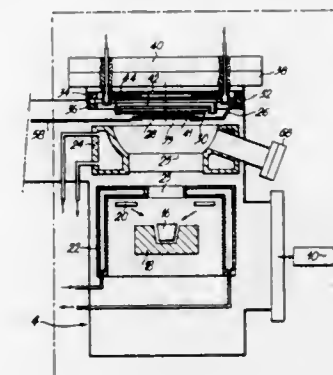
4,643,914
PROCESS AND APPARATUS FOR THE GROWTH OF FILMS OF SILICIDES OF REFRACTORY METALS AND FILMS OBTAINED BY THIS PROCESS

Francois Arnaud D'Avitaya, 17 Avenue du Vercors, 38240 Meylan; Yves Campidelli, 8, rue Bayard, 38000 Grenoble, and Roland Pantel, 2 rue Mouchette Poizat, 38320 Eybens, all of France

Filed Aug. 6, 1985, Ser. No. 763,124
Claims priority, application France, Aug. 6, 1984, 84 12409
Int. Cl.⁴ H01L 21/285

U.S. Cl. 427—93

5 Claims



1. A process for the growth of a silicide film of at least one refractory metal on a silicon substrate, wherein it comprises the successive stages of cleaning the substrate, thermally degassing the substrate under an ultra-high vacuum, whilst bringing the substrate to a given temperature between approximately 600° C. and approximately 800° C., evaporation of at least one refractory metal on the substrate at said given temperature and progressively lowering the temperature.

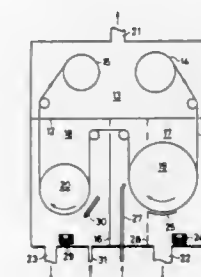
4,643,915
PROCESS FOR PRODUCING MAGNETIC RECORDING MEDIUM

Yoshihiro Arai, and Ryuji Shirahata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 27, 1985, Ser. No. 749,252

Claims priority, application Japan, Jun. 28, 1984, 59-133613
Int. Cl.⁴ B05D 5/12

U.S. Cl. 427—130

6 Claims



1. A process for producing a magnetic recording medium, which comprises forming a thin magnetic metal film on a nonmagnetic substrate by an oblique vapor deposition technique in a vacuum vessel, blowing an oxidizing gas against the surface of the thin magnetic metal film in the same vacuum vessel as used in the formation of the thin magnetic metal film, and thereafter forming a thin nonmagnetic metal film having a thickness of about 0.005 micrometer to 0.1 micrometer on the thin magnetic metal film.

4,643,916
METHOD FOR MANUFACTURING A PRESSURE BELT FOR USE WITH EXTENDED NIP PRESS IN PAPER MAKING MACHINE

Masao Kiuchi, Kamagaya, Japan, assignor to Ichikawa Woolen Textile Co., Ltd., Japan

Division of Ser. No. 537,575, Sep. 30, 1983, Pat. No. 4,559,258.
This application Sep. 5, 1985, Ser. No. 772,681

Claims priority, application Japan, Oct. 1, 1982, 57-147931
Int. Cl.⁴ B05D 3/02, 3/12, 5/00

U.S. Cl. 427—176

1 Claim

1. A method for manufacturing a pressure belt for an extended nip press in a paper making machine comprising the steps of:

training a base fabric, which is woven flat and joined at opposite ends thereof or woven endless, around a heating cylinder, guide rolls and stretching rolls;
coating an outer peripheral surface of said base fabric with a curable synthetic resin liquid while moving said base fabric, subsequently heating the synthetic resin layer by a heating means into a semi-cured state, said heating means including the heating cylinder, and repeatedly performing the aforesaid operation for the required number of times until a desired thickness of the layer is obtained;
pressing the surface of the semi-cured resin layer by means of an embossed roll to form drain channels having a desired pattern;
curing the layer by further heating;
subsequently grinding the layer so as to have a uniform thickness measured to the outermost surface of the layer to form an outer belt contact surface on the base fabric, while leaving said drain channels in said layer; and
repeatedly coating the fabric with the synthetic resin liquid on the inner peripheral surface for a required number of times until the desired thickness of the resin layer is obtained, and then heating, curing and grinding the layer so as to have a uniform thickness.

4,643,917
HEAT-SENSITIVE TRANSFER RECORDING MEDIUM
Kunihiro Koshizuka; Shigehiro Kitamura; Takao Abe; Masaki Nakamura; Fumio Ishii, and Yuji Hotta, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,386
Claims priority, application Japan, Nov. 2, 1983, 58-204709; Nov. 4, 1983, 58-205887; Dec. 2, 1983, 58-226761; Dec. 26, 1983, 58-244265; Dec. 27, 1983, 58-244648

Int. Cl.⁴ B41M 5/26

U.S. Cl. 427—256

12 Claims

1. A heat transfer recording method comprising a step of transferring a colorant onto a recording sheet from a heat-sensitive transfer recording medium by means of heat, said heat-sensitive transfer recording medium comprising a support and a colorant-containing layer provided thereon which contains the colorant and a heat-fusible material comprising a silicone wax which is solid or semi-solid at ambient temperature.

4,643,918
CONTINUOUS PROCESS FOR THE METAL COATING OF FIBERGLASS

Ralph F. Orban, Columbus, Ohio, assignor to Material Concepts, Inc., Columbus, Ohio

Filed May 3, 1985, Ser. No. 729,850
Int. Cl.⁴ C23C 18/30

U.S. Cl. 427—304

7 Claims

1. A method of continuously coating fiberglass filaments with metal comprising the steps of:
immersing said filaments in a wetter solution containing alcohol, a detergent and an ethylene oxide and propylene oxide copolymer surfactant,
rinsing said filaments with water,

treating said filaments with an activator selected from the group consisting of palladium chloride and tin chloride, treating said filaments with an acid accelerator, coating said filaments with a metal selected from the group



consisting of copper, gold, palladium, cobalt, nickel, and nickel alloys of phosphorus, boron, or tungsten, rinsing said filaments with water, rinsing said filaments with alcohol, drying said filaments.

4,643,919

TEXTILE TREATING COMPOSITIONS AND METHODS

Yi-Chang Fu, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 6, 1986, Ser. No. 827,131

Int. Cl.⁴ B05D 3/02; D06M 13/26, 13/34

U.S. Cl. 427—393.1 20 Claims

14. A method for treating textiles to impart fabric softening and conditioning benefits to textiles so treated, which method comprises contacting said textiles with a textile softening amount of a combination of:

- a substantially water-insoluble cationic fabric softening agent; and
- a substantially saturated, phosphoglyceride-containing lipid component comprising at least about 50% by weight of an acetone-insoluble lipid material, with said acetone-insoluble lipid material comprising at least about 50% by weight of one or more acetone-insoluble phosphoglycerides;

the weight ratio of said acetone-insoluble lipid material to said cationic fabric softening agent being in the range of from about 0.01:1 to about 5:1.

4,643,920

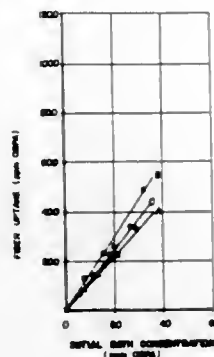
METHOD FOR INCORPORATING ANTIMICROBIALS INTO FIBERS

Thomas C. McEntee; Lawrence J. Guilbault, both of Topsfield; James F. Brophy, N. Reading, and Judith L. Koob, Danvers, all of Mass., assignors to Morton Thiokol Inc., Chicago, Ill.

Division of Ser. No. 657,117, Oct. 3, 1984, abandoned. This application Mar. 6, 1986, Ser. No. 836,911

Int. Cl.⁴ B32B 27/00; D02G 3/00

U.S. Cl. 427—434.6 23 Claims



1. A method for incorporating an antimicrobial agent into a fiber, comprising:
treating a fiber which does not contain an antimicrobial agent by passing said fiber into a liquid medium containing a solution of an antimicrobial agent in a concentration

sufficient to cause an effective amount of said agent to be exhausted into the fiber and to be incorporated in an essentially homogeneously cross-sectional distribution throughout said fiber; said effective amount being sufficient to provide protection against microbial attack of said fiber.

4,643,921

SIMULATED MARBLE ARTICLE

Seiji Terabe, Tokoname, and Kazuo Ito, Tokai, both of Japan, assignors to Inax Corporation, Aichi, Japan

Filed Jul. 26, 1985, Ser. No. 759,429

Claims priority, application Japan, Jul. 27, 1984, 59-158188; Aug. 24, 1984, 59-177141

Int. Cl.⁴ C08K 3/10, 3/34; B32B 33/00; C09D 5/29

U.S. Cl. 428—15 18 Claims

1. A simulated marble article, comprising a filler distributed in a resin matrix, wherein said filler comprises amorphous hydrated silicate particles having an average particle size of 1 μ m or less in an amount of 30% to 70% by weight of the total weight of said filler and said resin matrix, the difference between the refractive indexes of said filler and said resin matrix being in a range of 0.00 to 0.05.

4,643,922

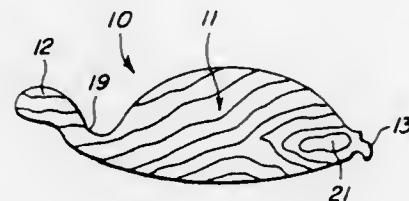
ROCKING TURTLE WITH NO LEGS

James M. Fujiwara, 1955 A Aupuni St., Honolulu, Hi. 96917

Filed Aug. 8, 1985, Ser. No. 763,834

Int. Cl.⁴ A63H 3/00

U.S. Cl. 428—16 3 Claims



1. A rocking turtle figurine, comprising, in combination, an elongated one piece member having a body portion, a large head portion longitudinally extending generally horizontally from one end thereof, and a smaller tail portion longitudinally extending generally horizontally from an opposite end thereof, said body portion having an arcuately curved surface on its underside along its longitudinal direction as well as along its transverse direction for rocking, said turtle including balancing means at its tail end for counter-balancing the larger head portion to permit said rocking, said one piece member being of wood material, and said balancing means being a wood knot integral of the wood and being at the tail end of the figurine.

4,643,923

PROFIED STRIP

Bernhard Bernitz; Richard Brodmann, both of Hanover, and Dietmar Hermann, Garbsen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 26, 1986, Ser. No. 833,902

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1985, 3506720

Int. Cl.⁴ E06B 7/16

U.S. Cl. 428—31 9 Claims

1. A profiled strip for sealingly bordering window or door openings in vehicles and buildings, with said openings being provided with panes or the like that are slidingly movable relative to said profiled strip, which comprises:

a profiled main strip made of elastomeric material selected

4,643,925

MULTI-LAYER POLYISOPHTHALATE AND POLYTETREPHTHALATE ARTICLES AND PROCESS THEREFOR

Richard R. Smith, Cuyaboga Falls, and Charles L. Kern, Jr., North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

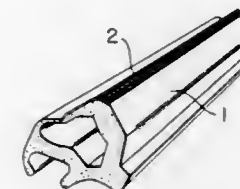
Continuation-in-part of Ser. No. 651,420, Sep. 17, 1984, Pat. No. 4,604,257, which is a division of Ser. No. 415,306, Sep. 7, 1982, Pat. No. 4,482,586. This application Apr. 1, 1985, Ser. No. 718,620

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.⁴ B65D 6/14

U.S. Cl. 428—35 7 Claims

1. A multi-layer packaging material, comprising:
(a) at least one layer made from polyethylene terephthalate; and
(b) at least one barrier layer made from a melt blend of polyethylene isophthalate with polyethylene terephthalate wherein said melt blend contains from 10 to 90 weight percent polyethylene isophthalate and from 10 to 90 weight percent polyethylene terephthalate; wherein said melt blend has an intrinsic viscosity of at least 0.4 dl/g in a 60/40 solution of phenol and tetrachloroethane at 30° C.; and wherein said melt blend has an oxygen permeability of less than 7 cc.mil/100.in² day.atm.



into contact with said pane or the like; said overlay strip is made of a friction-reducing material that differs from the material of said main strip; in addition, that surface of said overlay strip that is remote from said main strip is textured.

4,643,924

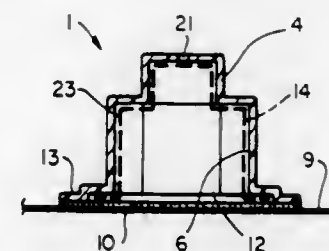
PROTECTIVE ARTICLE COMPRISING AN ELASTIC GEL

William D. Uken, Fremont, and Robert S. Dubrow, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 715,789, Mar. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 507,435, Jun. 23, 1983, abandoned. This application May 2, 1985, Ser. No. 730,699

Int. Cl.⁴ B32B 1/02, 1/04, 1/08

U.S. Cl. 428—35 50 Claims



1. An article for protecting a substrate, comprising:
a first preshaped member having an internal surface shape shaped similar to an outer surface shape of at least part of the substrate to be protected, the member having an open side; and
a thin layer of gel secured to the member for protecting the substrate when the member is disposed over the substrate, the gel being elastic and having a cone penetration between 150 and 350 (10⁻¹ mm) and an ultimate elongation in excess of 100%, a volume of the gel being substantially less than a volume enclosed by the internal surface shape and the open side of the member, the gel being cured prior to coming into contact with any part of the substrate.

2. The article as claimed in claim 1, the thin layer of gel being secured to the member so as to be disposed across the open side of the member so as to form an open cavity between the gel and the internal surface shape of the member.

4,643,926

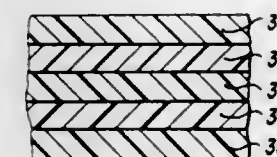
FLEXIBLE MEDICAL SOLUTION POUCHES

Walter B. Mueller, Inman, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Apr. 29, 1985, Ser. No. 728,114

Int. Cl.⁴ B65D 65/02; B32B 27/32, 27/36

U.S. Cl. 428—35 5 Claims



1. A flexible film comprising:
(a) a sealant layer comprising ethylene propylene copolymer; modified ethylene propylene copolymer or flexible copolyester;
(b) a second interior layer comprising
(i) a blend of ethylene propylene copolymer with a polymeric material selected from the group consisting of modified ethylene propylene copolymer, a blend of ethylene propylene monomer and ethylene vinyl acetate copolymer, ethylene propylene diene monomer, and very low density polyethylene, or
(ii) modified ethylene vinyl acetate copolymer; or
(iii) a blend of modified ethylene propylene copolymer and very low density polyethylene;
(c) a third interior layer comprising a polymeric material which imparts flexibility to the film;
(d) a fourth interior layer comprising
(i) a polymeric material or blend of materials substantially similar to the second layer, or
(ii) ethylene methacrylate copolymer; and
(e) a fifth outer layer comprising a flexible copolyester.

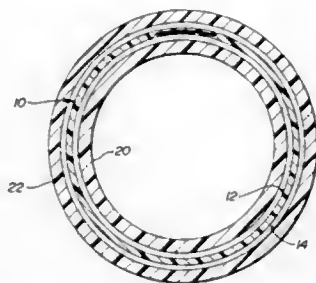
4,643,927
TUBULAR, MULTI-LAYER FILM AND METHOD OF MAKING

Robert A. Luecke, and Gordon E. Gould, both of Newark, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 18, 1985, Ser. No. 756,193
Int. Cl.⁴ B65D 65/02; B32B 27/08, 31/30

U.S. Cl. 428—36

16 Claims



I. A tubular film, comprising:
a central barrier layer of polyvinylidene chloride, said central barrier layer overlapping by a substantial distance along a weld line which extends longitudinally along said tubular film;
an inner adhesive layer and an outer adhesive layer positioned on opposite sides of said central barrier layer, said adhesive layers completely encapsulating said central barrier layer, and
inner and outer surface layers of polyethylene, said inner surface layer of polyethylene being positioned within said inner adhesive layer and said outer surface layer of polyethylene being positioned outside said outer adhesive layer.

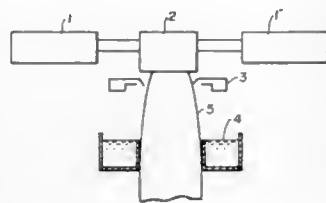
4,643,928
COEXTRUSION MULTI-LAYER TUBULAR FILM
Masakatsu Kimura, and Osamu Nakamura, both of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1984, Ser. No. 674,078

Claims priority, application Japan, Dec. 12, 1983, 58-232688
Int. Cl.⁴ B32B 27/32; B29D 9/00; B65D 65/40

U.S. Cl. 428—36

13 Claims



I. A coextrusion multi-layer tubular film comprising:
an outer layer comprising a linear ethylene α -olefin copolymer having a density of from 0.900 to 0.945 gram per cubic centimeter; and
an inner layer made of (i) a polypropylene-base resin or (ii) a resin composition comprising from 70 to 97% by weight of a polypropylene-base resin and from 30 to 3% of an ethylene α -olefin copolymer having a density of from 0.850 to 0.945 gram per cubic centimeter; and
the ratio of said outer layer to said inner layer being from 70:30 to 95:5.

4,643,929
STEEL MATERIALS FOR USE WITH PRESTRESSED CONCRETE

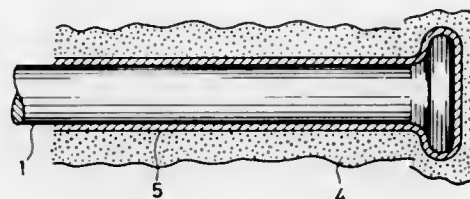
Kanji Watanabe; Mikio Mizoe, and Eiji Inoo, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 14, 1984, Ser. No. 681,773

Claims priority, application Japan, Dec. 16, 1983, 58-194474[U]

Int. Cl.⁴ B32B 13/02; E04C 3/10, 3/34, 5/08
U.S. Cl. 428—36

6 Claims



I. An elongated prestressing steel material embedded in prestressed concrete, wherein said prestressing steel material comprises a steel member and a heat-shrinkable synthetic resin tube surrounding the outer surfaces of said steel member, and in which the prestressing steel material is subjected to posttensioning in an unbounded state wherein the prestressing steel material is not bonded to and is free to move relative to the concrete, and wherein the steel member is bonded to and is not movable relative to the heat-shrinkable synthetic resin tube.

4,643,930
NOVEL CARPETS WITH YARNS COATED WITH FLUOROCARBON AND ADHESIVE CONTAINING FLUOROCARBON

Pompilio A. Ucci, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 642,021, Aug. 20, 1984, abandoned.

This application Jun. 3, 1985, Ser. No. 740,453

Int. Cl.⁴ B32B 3/02

U.S. Cl. 428—96

5 Claims

I. A carpet comprising a primary backing stitched with closely spaced loops or cut loops of nylon 6 or nylon 66 yarn which extend upwardly from the top surface of the primary backing to form a pile, wherein the underside of the primary backing is coated with a carpet backing adhesive composition, characterized in that said yarn is coated with a sufficient amount of a fluorochemical to improve the soil resistance of the carpet and said adhesive composition contains a fluorochemical in an amount sufficient to render said primary backing substantially impervious to water.

4,643,931
METHOD AND MATERIALS FOR MANUFACTURE OF ANTI-STATIC CARPET HAVING TUFTS CONTAINING ELECTROCONDUCTIVE CARBONIZED FILAMENTS OR FIBERS

Francis P. McCullough, Jr., Lake Jackson, Tex., and David M. Hall, Auburn, Ala., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 9, 1985, Ser. No. 773,961

Int. Cl.⁴ B32B 3/02

U.S. Cl. 428—97

5 Claims

I. A carpet having static discharge properties to 0% of original charge in less than about 1 second comprised of:
a yarn tufted into a scrim, said yarn consisting of at least a single ply of a yarn prepared by incorporating an amount from 0.25 to 0.5 weight percent of a carbonaceous material (a) as a staple fiber into staple yarns or (b) twisting and/or cabling continuous filaments into a continuous filament yarn, said carbonaceous material of (a) and (b)

derived from a stabilized coil-like heat set, 950°–1500° C. carbonized polyacrylonitrile, petroleum pitch or coal-tar pitch spun staple fibers or filaments, respectively distributed among the conventional staple fiber yarns or continuous filament yarns, respectively, during the carpet yarn conventional spinning process.

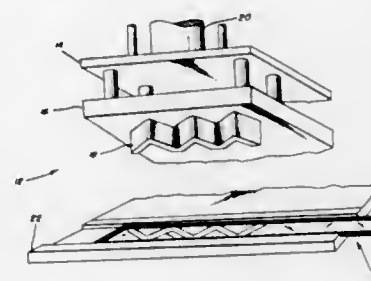
4,643,932
LAMINATED FASTENING STRAP
Jerry Daniels, 4308 Ooltewah-Ringgold Rd., Ooltewah, Tenn. 37363

Filed Dec. 2, 1985, Ser. No. 803,650

Int. Cl.⁴ A41F 9/00

U.S. Cl. 428—100

5 Claims



I. A laminated fastening strap for use with orthopedic appliances and the like for adjustably securing the appliance to the body of a user, said strap comprising an elongated laminate having first and second plies of material bonded together, said first ply comprising a plastic sheet having hook and loop fastener elements extending from a single surface thereof, the hooks extending from one end of the strap toward the other end and the loops extending from the other end toward the hooks, said second ply comprising a vinyl sheet of the same size as the first ply, said plies being joined together in a bond along common borders defining the edges of the strap and areas adjacent said edges.

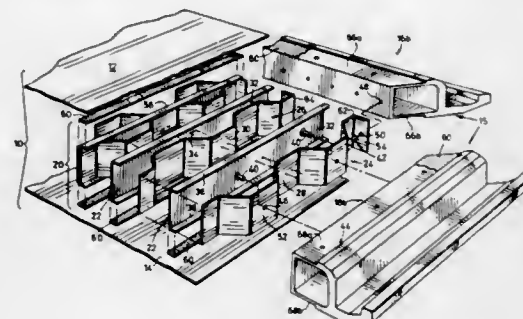
4,643,933
HOLLOW CORE SANDWICH STRUCTURES
Harry B. Picken, Ridgeway, Canada, assignor to Genaire Limited, St. Catharines, Canada

Filed May 30, 1985, Ser. No. 739,323

Int. Cl.⁴ B32B 3/12, 3/28

U.S. Cl. 428—116

20 Claims



I. In a core for composite structure wherein spaced apart opposed structural sheets are to be joined together against separation by a central core, said core including the combination of at least a pair of non-abutting spaced apart flanged elongated structural members interconnected therealong by a longitudinally extending corrugated strip formation extending intermediately therebetween each said structural members including a central web portion and opposed longitudinally extending flange formations for presentation and connection to

each of said spaced apart structural sheets, said corrugated strip formation including alternate ridge segments presented to said respective web portions of said spaced apart structural members at alternate spaced apart regions therealong and in abutment therewith and means securing said ridge segments to said respective web portions in said alternate spaced apart regions of abutment.

4,643,934
MAGNETIC RECORDING MEDIUM
Norifumi Kajimoto, Saku, and Hitoshi Azegami, Tobu, both of Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Feb. 7, 1985, Ser. No. 698,980
Claims priority, application Japan, Feb. 10, 1984, 59-21939
Int. Cl.⁴ G11B 5/72

U.S. Cl. 428—141

11 Claims

1. An improved back-coated magnetic recording medium which attains a desirably high video color S/N ratio and has a substantially even and uniform back coat, which comprises:

a non-magnetic base,
a magnetic recording coat formed on one side of the base, and
a back coat formed on the other side of the base;

said back coat being a substantially even and uniform coat formed of a substantially thorough or uniform dispersion of inorganic pigment particles in the form of a powder in a resinous binder, and providing improved running or operational properties to the magnetic recording medium and allowing the attainment of a desirably high video color S/N ratio and substantial freedom from cinching, back coat scraping, loading-unloading damage, and blocking of the back coat to the magnetic coat;

said inorganic pigment powder having an average particle diameter in the range of about 0.2 μ m to about 0.5 μ m and a particle hardness of not greater than about 6 on the Mohs scale;

said resinous binder being formed of a copolymer component, a rubbery binder component, and a polyisocyanate crosslinking component;

said copolymer component being formed of vinyl chloride, vinyl alkyl carboxylate, another monomer copolymerizable with vinyl chloride, and saponified vinyl alkyl carboxylate having an OH/CH absorption ratio in the range of about 0.2 to about 0.7 as determined from its infrared absorption spectrum.

7. An improved back-coated magnetic recording medium which attains a desirably high video color S/N ratio and has a substantially even and uniform back coat, which comprises:

a non-magnetic base,
a magnetic recording coat formed on one side of the base, and
a back coat formed on the other side of the base;

said back coat being a substantially even and uniform coat formed of a substantially thorough or uniform dispersion of inorganic pigment particles in the form of a powder in a resinous binder, and providing improved running or operational properties to the magnetic recording medium and allowing the attainment of a desirably high video color S/N ratio and substantial freedom from cinching, back coat scraping, loading-unloading damage, and blocking of the back coat to the magnetic coat;

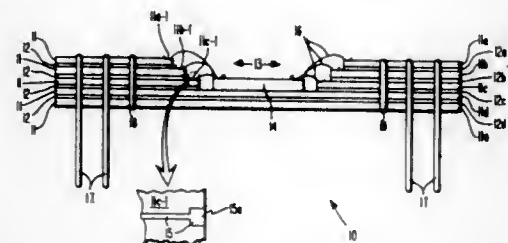
said inorganic pigment powder includes a member from the group consisting of finely-divided calcium carbonate and titanium oxide, and has an average particle diameter in the range of about 0.2 μ m to about 0.5 μ m and a particle hardness of not greater than about 6 on the Mohs scale; said resinous binder being formed of a copolymer component, a rubbery binder component, and a polyisocyanate crosslinking component;

said copolymer component being formed, on a weight basis, of about 50 to 90% of vinyl chloride, about 5 to 40% of vinyl alkyl carboxylate, about 1.5 to 5% of another monomer copolymerizable with vinyl chloride, and the remain-

der of said copolymer component is saponified vinyl alkyl carboxylate having an OH/CH absorption ratio in the range of about 0.2 to about 0.7 as determined from its infrared absorption spectrum; said rubbery binder component being formed of at least one member selected from the group consisting of polyester resins, polyurethane resins, and admixtures thereof.

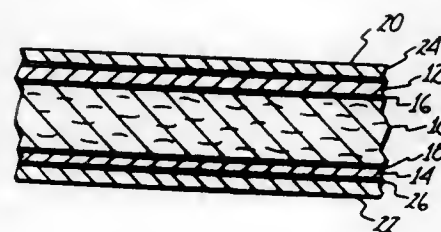
4,643,935
EPOXY-GLASS INTEGRATED CIRCUIT PACKAGE HAVING BONDING PADS IN A STEPPED CAVITY
Norman E. McNeal, Carlsbad; Richard A. Nagy, Lencadia, and Ronald A. Norell, Carlsbad, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 21, 1986, Ser. No. 819,995
Int. Cl.⁴ B32B 3/10, 27/38
U.S. Cl. 428—157



7. An integrated circuit package comprising: a stack of thin flat first type layers which are made of a fully cured thermosetting resin and are laminated together by second type layers that are made of an adhesive and lie between the first type layers; said stack having a cavity which extends from an outer first type layer through an internal first type layer and is shaped to expose a portion of the flat surface of said internal first type layer; and wire bonding pads on said exposed flat surface portion of said internal first type layer.

4,643,936
BACKUP MATERIAL FOR SMALL BORE DRILLING
Russell C. Eldal, Chippewa Falls, Wis., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Feb. 14, 1986, Ser. No. 829,638
Int. Cl.⁴ B32B 15/08, 15/10, 27/10
U.S. Cl. 428—214



1. In a backup sheet for backing a work sheet during a small bore drilling process, said work sheet containing at least one layer of hard crystalline material selected from the group comprising polyimide/glass, polyimide/kevlar and modified epoxy BT/glass, said backup sheet having a core, the improvement comprising an additional layer of hard crystalline material selected from the group comprising polyimides, fluorocarbons and high temperature polycarbonates fixed to opposite sides of said core.
2. A backup sheet according to claim 1 wherein said additional layer consists of a layer of polyimide of the order of

about 0.002 inches thick fixed to said core with a layer of acrylic adhesive of the order of 0.001 inches thick.

4,643,937
LAMINATE FORMED FROM A POLYARYLATE SHEET AND A POLYCARBONATE AND/OR POLYESTER SHEET

Barry L. Dickinson; Lloyd M. Robeson, both of Whitehouse Station, and Marvin E. Sauers, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 27, 1985, Ser. No. 706,289
Int. Cl.⁴ B32B 5/16, 27/36; C08G 63/22
U.S. Cl. 428—215

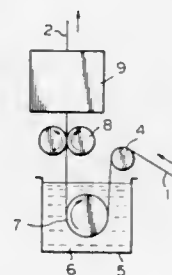
1. A laminate comprising a layer of a polyarylate sheet, said polyarylate derived from a dihydric phenol and an aromatic dicarboxylic acid, and a layer of a sheet of a thermoplastic aromatic polycarbonate, a thermoplastic polyester derived from an aliphatic or cycloaliphatic diol, or mixtures thereof, and at least one aromatic dicarboxylic acid, or mixtures of the polycarbonate and polyester, the sheets which form the layers being from about 1 mil to about 100 mils thick for the polyarylate and from about 2 mils to 1/4-inch thick for the polycarbonate and/or polyester.

4,643,938
BELT COMPRISING RUBBER AND FIBERS
Motofumi Oyama, Yokosuka; Yoichiro Kubo, Yokohama, and Toshiharu Honda, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1983, Ser. No. 526,344
Claims priority, application Japan, Aug. 27, 1982, 57-148656
Int. Cl.⁴ B32B 7/00

U.S. Cl. 428—268
1. A belt comprising a copolymer rubber and fibers, said copolymer rubber having in its polymer chain (1) 10 to 60% by weight of units derived from an unsaturated nitrile, (2) 0 to 30% by weight of units derived from a conjugated diene, and (3) 10 to 90% by weight of units derived from a monoethylenically unsaturated monomer other than unsaturated nitriles and/or units formed by hydrogenating units derived from a conjugated diene.

4,643,939
OIL ABSORBING COSMETIC TISSUE
Yasuo Sugiyama; Osamu Hiraoka, both of Osaka; Tamotsu Nakazawa, Tokyo, and Kenji Nakamura, Osaka, all of Japan, assignors to Shiseido Company Ltd., Tokyo and Nakamura Bussan Kabushiki Kaisha, Osaka, both of, Japan
Filed Mar. 4, 1986, Ser. No. 835,928
Int. Cl.⁴ B32B 5/16

U.S. Cl. 428—283



1. An oil absorbing cosmetic tissue comprised of a sheet having an oil absorbing property, wherein the sheet contains a bactericide.

4,643,940
LOW DENSITY FIBER-REINFORCED PLASTIC COMPOSITES

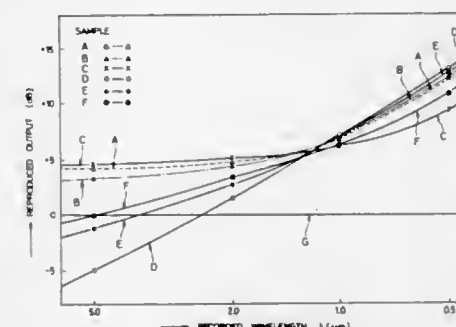
Ken M. Shaw, Baton Rouge, La.; Ritchie A. Wessling, Midland, Mich.; Larry D. Yats, Clare, Mich., and Selim Yalvac, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 6, 1984, Ser. No. 638,163
Int. Cl.⁴ B32B 27/04, 27/14
U.S. Cl. 428—308.4

15 Claims
1. A fiber-reinforced composite prepared by an aqueous slurry process and heat expanded in thickness to a void volume of from about 20 to about 90 percent by volume, said composite comprising a continuous matrix comprising a solid thermoplastic resin and, distributed throughout said matrix, from about 10 to 50 percent by weight of the composite of randomly oriented reinforcing fibers wherein said fibers have an average length from about 0.125 to 1.00 inch and an aspect ratio of at least about 40.

4,643,941
MAGNETIC RECORDING MEDIUM
Takahito Miyoshi, and Masaaki Fujiyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1985, Ser. No. 724,723
Claims priority, application Japan, Apr. 18, 1984, 59-77882
Int. Cl.⁴ G11B 5/70, 5/62
U.S. Cl. 428—323

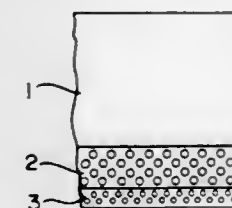


1. A magnetic recording medium comprising a non-magnetic support having provided thereon a magnetic layer, the magnetic layer comprising a first magnetic layer provided on the non-magnetic support containing ferromagnetic alloy particles having a specific surface area of 35 m²/g (S_{BET}) or more, and a second magnetic layer provided on the first magnetic layer containing hexagonal crystallized ferrite magnetic particles, wherein the second magnetic layer has a thickness of 0.5 μm or less, and the ratio of the thickness of said second magnetic layer to the thickness of said first magnetic layer is 1/10 or less.

4,643,942
PERPENDICULAR MAGNETIC RECORDING MEDIUM
Akio Ohtsubo, Miyagi, Japan, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jan. 9, 1985, Ser. No. 689,758
Claims priority, application Japan, Jan. 14, 1984, 59-5201; Nov. 6, 1984, 59-232289
Int. Cl.⁴ G11B 5/70

9 Claims
1. A two-layer coated recording medium for perpendicular magnetic recording, said medium being composed of (a) a coated non-oriented perpendicular recording layer containing single-domain particles having multiaxial crystalline anisotropy, and (b) a high permeability layer containing soft magnetic parti-

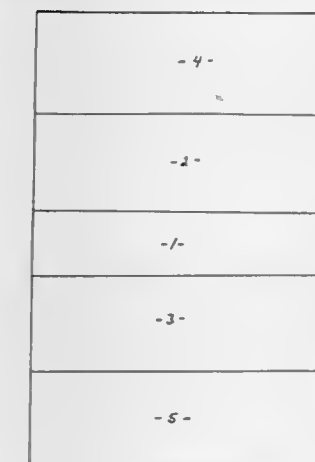
cles having a particle size in the range of 100 to 2000 Å with the proviso that the case where the layers (a) and (b)



both contain magnetic particles prepared by decomposition of metal carbonyls is excluded.

4,643,943
MULTI-LAYER POLYOLEFIN SHRINK FILM
Julian H. Schoenberg, Greenville, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.
Continuation-in-part of Ser. No. 615,418, May 30, 1984, Pat. No. 4,514,465. This application Jan. 24, 1985, Ser. No. 694,362
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.⁴ B32B 27/08

U.S. Cl. 428—339



1. An oriented multilayer film comprising: a cross-linked core layer comprising either (a) an ethylene vinyl acetate copolymer or (b) a three component blend of (1) a linear low density polyethylene, (2) a linear medium density polyethylene and (3) an ethylene vinyl acetate copolymer; two cross-linked interior layers each comprising a linear low density polyethylene; and two cross-linked surface layers each comprising a three component blend of (1) a linear low density polyethylene, (2) a linear medium density polyethylene, and (3) an ethylene vinyl acetate copolymer, said blend being free of ultraviolet light stabilizers.

4,643,944

GLAZING LAMINATES AND METHOD OF MAKING SAME

Heinrich Agethen; Paul Gesenhues, both of Herdecke; Helmer Rüdich, Aachen; Otto Jandeleit, Alsdorf, and Wolfgang Schäfer, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Paris, France
Continuation of Ser. No. 274,547, Jun. 17, 1981, abandoned, which is a continuation of Ser. No. 190,341, Sep. 24, 1980, abandoned, which is a continuation of Ser. No. 70,732, Aug. 29, 1979, abandoned, which is a continuation of Ser. No. 811,430, Jun. 29, 1977, abandoned. This application Oct. 9, 1984, Ser. No. 659,025

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629779

Int. Cl.⁴ B32B 27/00

U.S. Cl. 428—349

15 Claims



1. A process for preparing a pre-formed flexible transparent polymeric sheet having optical properties, and effective for use as a ply in a glazing laminate, one surface of said sheet comprising a thermoplastic polyurethane which is substantially non-tacky at room temperature, but which itself is adhesive under the influence of heat and pressure, and the other surface of said sheet comprising a self-healing thermoset polymeric material, comprising:

- (A) forming on a horizontal support a liquid film comprising a mixture of monomers from which said thermoset polymeric material is formed;
- (B) polymerizing said monomers to form a solid film of said thermoset polymeric material; and
- (C) forming on said solid thermoset film a solid film of said thermoplastic polyurethane.

4,643,945

HEAT SEALABLE BLEND OF POLYPROPYLENE TERPOLYMERS AND LINEAR LOW DENSITY POLYETHYLENE

Webster W. Kiang, Lisle, Ill., assignor to Enron Chemical Company, Rolling Meadows, Ill.

Filed Sep. 3, 1985, Ser. No. 771,702

Int. Cl.⁴ B32B 9/00

U.S. Cl. 428—349

5 Claims

1. A polymer blend useful for forming heat sealable plastic film, which comprises:

- (a) from about 60% to about 40% by weight of a first component selected from a group consisting of polypropylene terpolymers of ethylene, 1-butene, and propylene wherein the ethylene content is from about 0.1 to about 10.0 mole percent and the 1-butene content is from about 0.1 to about 10.0 mole percent; and
- (b) from about 40% to about 60% by weight of the total blend of a second component selected from the group consisting of copolymers of ethylene and alpha olefins containing four or more carbon atoms wherein the ethylene content of the copolymer is from about 90.0 to about 99.9 mole percent.

4,643,946

FILLER-CONTAINING ACRYLIC AND MODACRYLIC FIBRES AND A PROCESS FOR THE PRODUCTION THEREOF

Wolfgang Bräuer, Cologne; Bernd Willenberg, Bergisch-Gladbach; Siegfried Korte, Leverkusen, and Carlhans Siling, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 12, 1985, Ser. No. 797,100

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1984, 3443680

Int. Cl.⁴ D02G 3/00

U.S. Cl. 428—372

4 Claims

1. Acrylic and modacrylic fibers containing from 5 to 50% by weight, based on total solids of silica, wherein said silica is the reaction product of a silica sol and from 0.1 to 10% by weight, based on pure silica, of an organosilane, the silica being an amorphous silica which does not tend to aggregate and has a particle diameter distribution of from 10–50 nm.

4,643,947

MAGNETIC RECORDING MATERIAL

Yasuo Mukai, Yokohama, and Masanobu Shimizu, Ebina, both of Japan, assignors to Victor Company of Japan, Ltd., Japan
Filed Jun. 21, 1984, Ser. No. 624,405

Claims priority, application Japan, Jun. 22, 1983, 58-110937

Int. Cl.⁴ G11B 5/70

U.S. Cl. 428—413

5 Claims

1. A magnetic recording material of the magnetic hard disc type which comprises a non-magnetic substrate, and a magnetic layer formed on at least one surface of said substrate, said magnetic layer being made of a thermally cured product of a composition which comprises a uniform dispersion of a magnetic powder in a binder consisting essentially of a mixture of epoxy and urea resins used in an amount from 40 to 200 wt% of the magnetic powder, the mixing ratio of the epoxy to the urea resins being from 90:10 to 10:90.

4,643,948

COATINGS FOR INK JET NOZZLES

Arthur F. Diaz, and Richard A. Hernandez, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1985, Ser. No. 714,770

Int. Cl.⁴ B32B 27/00

U.S. Cl. 428—422

6 Claims

1. An ink jet nozzle plate characterized by having a coating of a film which comprises:

- a partially fluorinated alkyl silane and a perfluorinated alkane, with the silane compound being distributed within the coating at a very high concentration in that portion of the coating which touches the plate and at a lower concentration in that portion of the coating away from the plate, and the alkane compound being distributed in the coating at a low concentration in that portion of the coating which touches the plate and at a high concentration in that portion of the coating away from the plate.

4,643,949

MAGNETIC RECORDING TAPE

Edmond G. Kolycheck, Lorain, and Lawrence Ondercin, Brook Park, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Filed Apr. 8, 1983, Ser. No. 483,399

Int. Cl.⁴ G11B 5/70

U.S. Cl. 428—425.9

5 Claims

1. A magnetic recording medium having high tensile strength and improved hydrolytic stability comprising a substrate, magnetic particles, and a binder bonding said magnetic particles to said substrate, said binder consisting essentially of a reaction product of a diisocyanate and a blend of a hydroxyl terminated polycarbonate and a chain extender.

4,643,950

SEMICONDUCTOR DEVICE

Atsushi Ogura, and Koji Egami, both of Tokyo, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

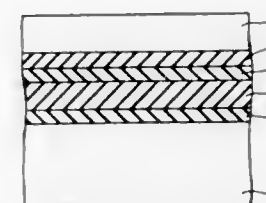
Filed Mar. 6, 1986, Ser. No. 837,005

Claims priority, application Japan, May 9, 1985, 60-96744

Int. Cl.⁴ B32B 9/04

U.S. Cl. 428—446

5 Claims



1. A semiconductor device comprising: a substrate, an insulating layer formed on said substrate, said insulating layer containing an AlN layer as an interlaid insulating film, and at least one active layer formed on said insulating layer.

4,643,951

MULTILAYER PROTECTIVE COATING AND METHOD

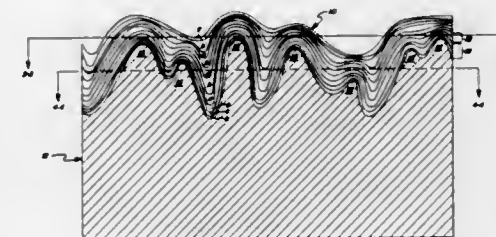
John E. Keem, Bloomfield Hills, and James D. Flasck, Rochester, both of Mich., assignors to Ovonic Synthetic Materials Company, Inc., Troy, Mich.

Filed Jul. 2, 1984, Ser. No. 626,663

Int. Cl.⁴ B32B 7/02, 15/18

U.S. Cl. 428—469

20 Claims



1. A coating applied over a rigid substrate, said coating comprising a plurality of superimposed multilayer units, each unit comprising at least three compositionally different thin layers and each layer having a thickness sufficient to obtain its bulk coating properties, one of said layers comprising material for providing lubricity and selected from the group consisting of germanium, disordered transition metal boride material and fluorocarbon polymers, another of said layers for providing oxidation resistance and consisting of a material selected from the group consisting of titanium, carbon, silicon, stainless steel, and aluminum and another of said layers comprising material for providing hardness and wear resistance, and selected from the group consisting of carbon, tungsten and carbon, carbon and aluminum, aluminum and oxygen, titanium and boron, tungsten and boron, silicon and nitrogen, boron and nitrogen, tantalum and carbon, titanium and nitrogen, and titanium and carbon, the properties of said coating being a combination of the individual properties of said layers.

4,643,952

COATING FILM BY ION PLATING

Ryo Kurakata, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

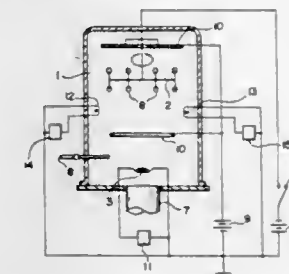
Filed Sep. 30, 1985, Ser. No. 781,500

Claims priority, application Japan, Feb. 8, 1985, 60-22831

Int. Cl.⁴ B32B 9/00

U.S. Cl. 428—472

2 Claims



1. A metal-made article coated with a coating film composed of titanium nitride and titanium carbide in such a proportion that the atomic ratios of titanium, nitrogen and carbon are in the ranges of from 15 to 40%, from 10 to 25% and from 40 to 65%, respectively, and wherein the coating film contains oxygen in an atomic ratio of oxygen to titanium not exceeding 40%; the coating film being formed by a method of ion plating comprising the steps of: (a) holding the metallic substrate article to face an evaporation source of titanium metal in an atmosphere of a gaseous mixture comprising argon, nitrogen and an aliphatic hydrocarbon compound under a pressure in the range from 8×10^{-4} to 5×10^{-3} Torr; (b) impressing a direct current voltage in the range from 20 to 200 volts between the evaporation source of titanium metal and the metallic substrate article; and (c) heating the titanium metal in the evaporation source to be evaporated in the form of metallic ions which deposit on the surface of the metallic substrate article as a mixture of titanium nitride and titanium carbide.

4,643,953

ELECTROMAGNETIC SHIELDED BODY

Arthur E. Gurgolo; Marvin E. Winquist, both of Lake Jackson; Thomas M. Knobel, Clute, all of Tex., and Dale C. Teeters, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 571,286, Jan. 16, 1984. This application

Mar. 31, 1986, Ser. No. 846,400

Int. Cl.⁴ B32B 27/08

U.S. Cl. 428—520

16 Claims

1. An electromagnetic shielded body comprising incorporating as an internal lamina of a multiple laminar body a layer of film or powder of an electroconductive material which consists of a dehydrohalogenated haloorganic polymer or copolymeric material prepared by dehydrohalogenating said haloorganic polymeric material in the presence of at least one-half mole of a liquid or solution of an amine per mole of halogen moiety in said polymeric material at from 15° C. to about 250° C. for from about 2 minutes to about 14 days.

4,643,954

DEVICE FOR EQUALIZING MOLTEN ELECTROLYTE CONTENT IN A FUEL CELL STACK

James L. Smith, Lemont, Ill., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 23, 1985, Ser. No. 812,575

Int. Cl.⁴ H01M 8/10

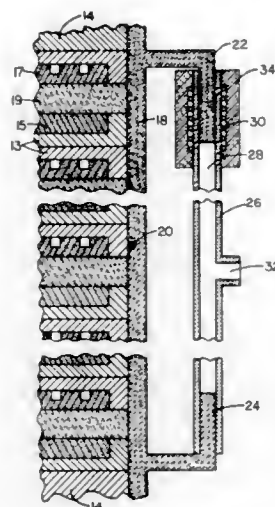
U.S. Cl. 429—26

9 Claims

1. A device for equalizing the molten carbonate electrolyte content along the height of a fuel cell stack, with a voltage

gradient of negative and positive polarity, said stack having a manifold for reactant gas communicating with a stack face and a porous sealing member in sealing relationship between edges of the manifold and the stack face, said device comprising:

- a passageway for electrolyte flow having a first end portion adjacent to the negative end and a second end portion adjacent to the positive end of the stack height;
- a first porous ceramic wick, wettable by molten carbonate electrolyte, extending from the porous sealing member into the first end portion of said passageway adjacent to the negative end of the stack;



- a second porous ceramic wick, wettable by electrolyte extending from the porous sealing member into the second end portion of said passageway adjacent to the positive end of the stack; and
- means for vaporizing molten carbonate electrolyte in the first end portion of the passageway, and means for condensing the carbonate electrolyte vapor in the second end portion of said passageway to return molten carbonate to the positive end of the cell stack.

4,643,955

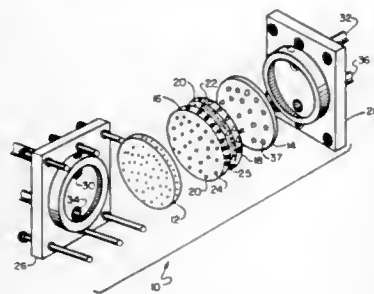
MOLTEN CARBONATE FUEL CELL REDUCTION OF NICKEL DEPOSITS

James L. Smith, Lemont, and Stanley A. Zwick, Darien, both of Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 485,528, Apr. 15, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 751,391 Int. Cl.⁴ H01M 2/00, 8/14

U.S. Cl. 429—34

9 Claims



1. A fuel cell comprising a porous anode,

a transition metal-based porous cathode separated from the anode, means for directing a hydrogen-affording fuel gas to the anode and an oxidant including oxygen gas to the cathode, and an electrolyte component between the anode and cathode including an alkali metal carbonate as an electrolyte, a first gas-imperious tile member adjacent the anode and a second gas-permeable tile member adjacent the cathode, both tile members having small pores containing the carbonate electrolyte with the second tile member having an interior and including interconnecting larger pores extending into said interior, the larger pores being arranged for receiving oxygen gas and providing an oxidizing environment within the second tile, the second tile member having an ionic resistance per unit thickness greater than that of the first tile member.

4,643,956

COKE FILLED SEPARATOR PLATE FOR ELECTROCHEMICAL CELLS

Gregory J. Sandelli, Newington, and William A. Taylor, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1984, Ser. No. 686,063

Int. Cl.⁴ H01M 2/16

U.S. Cl. 429—34

9 Claims

1. An electrochemical cell separator plate comprising the molded, carbonized and graphitized product formed from a composition comprising:

about 30 weight % to about 60 weight % of coke particles; said coke particles having a size less than 150 microns; and about 30 weight % to about 60 weight % of carbonizable resin;

wherein the separator plate has increased density, decreased open porosity and increased corrosion resistance over separator plate formed from graphite particles.

4,643,957

FUEL CELL

Seizi Takeuchi, Hitachi; Tomoichi Kamo, Ibaraki; Tatsuo Horiba, Hitachi; Kunko Kitami, Hitachi; Toshikatsu Mori, Hitachi; Toshiki Kahara, Ibaraki; Jinichi Imahashi; Akio Honji, both of Hitachi; Masato Takeuchi, Katsuta, and Kohki Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

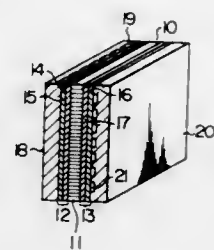
Filed Apr. 11, 1985, Ser. No. 722,157

Claims priority, application Japan, Apr. 11, 1984, 59-70876

Int. Cl.⁴ H01M 8/04, 4/86

U.S. Cl. 429—41

20 Claims



1. A fuel cell using phosphoric acid as an electrolyte, which comprises a pair of counterposed gas-diffusible electrodes each having a catalyst-supporting, electroconductive, porous particle layer containing a water-repellent binder by firing; a phosphoric acid-retaining, porous matrix provided between and in contact with the electrodes; a fuel chamber for feeding a hydrogen-containing gas to the anode of the pair of the electrodes and an oxidizing agent chamber for feeding an oxygen-containing gas to the cathode of the pair of the electrodes; the anode being made to have a larger phosphoric acid saturated absorp-

tion amount than that of the cathode by making the percentage by weight of the water-repellent binder in the catalyst-supporting layer of the cathode smaller than that of the water-repellent binder in the catalyst-supporting layer of the anode, and by changing the firing temperature of the anode to be lower than that of the cathode.

4,643,958

ELECTROLYTE ADDITIVE FOR LITHIUM-SULFUR DIOXIDE ELECTROCHEMICAL CELLS

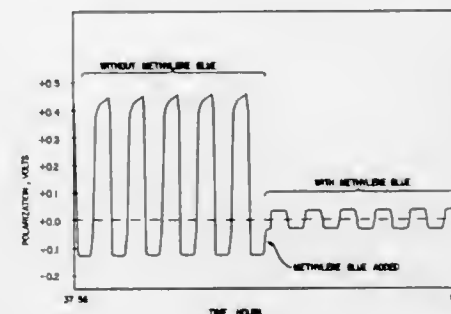
Robert J. Thrash, Carol Stream, and John F. Connolly, Glen Ellyn, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 12, 1985, Ser. No. 775,316

Int. Cl.⁴ H01M 6/14

U.S. Cl. 429—105

18 Claims



1. A nonaqueous conductive liquid which comprises a solution of at least one quinone imine dye and at least one lithium salt in liquid sulfur dioxide, wherein said dye is free of acidic hydrogen atoms.

4,643,959

PROCESS FOR PRODUCING A GAS-TIGHT, SEALED ALKALINE BATTERY

Karl Glötzl, Castrop-Rauxel; Wolfgang Knabenbauer, Hagen; Dietrich Sprengel, Halver, and Rudolf Tepel, Barsinghausen, all of Fed. Rep. of Germany, assignors to Varta Batterie A.G., Hanover, Fed. Rep. of Germany

Filed Apr. 26, 1985, Ser. No. 727,845

Claims priority, application Fed. Rep. of Germany, May 7, 1984, 3416817

Int. Cl.⁴ H01M 4/36

U.S. Cl. 429—222

11 Claims

1. A process for producing a gas-tight, sealed alkaline cell having a negative excess capacity which is subdivided into a charge reserve and a discharge reserve by pretreatment of electrodes outside of the cell, comprising the steps of:

providing a negative electrode produced by cathodic metal deposition from a cadmium salt solution; partially chemically oxidizing the negative electrode to achieve a predetermined charge reserve, using potassium peroxodisulfate ($K_2S_2O_8$) or hydrogen peroxide (H_2O_2) as the oxidation agent; installing the negative electrode in the cell in combination with a charged positive electrode; adding an electrolyte; and sealing the cell in gas-tight fashion.

4,643,960

DEVELOPING POWDER COMPOSITION CONTAINING A FATTY ACID AMIDE COMPONENT

Nancy N. Quan, Mounds View, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 155,308, Jun. 2, 1980, abandoned. This application Jun. 6, 1984, Ser. No. 617,695

Int. Cl.⁴ G03G 9/14

U.S. Cl. 430—106.6

15 Claims

1. A flowable, dry developing powder composition which consists essentially of a plurality of particles each comprising (i) preparticles containing a mixture of a thermoplastic binder and a magnetically responsive pigment, (ii) a layer of from 0.05 to 2% by weight of said preparticles of a fatty acid amide containing at least about 10 carbon atoms essentially permanently adhered to the surface of said preparticles, and (iii) a conductive non-magnetizable pigment embedded in the surface of said layer.

4,643,961

INFRARED CADMIUM SELENIDE PHOTOCONDUCTOR AND PROCESS OF MAKING SAME

Sixdeniel Faria, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,403

Int. Cl.⁴ G03G 5/082

U.S. Cl. 430—136

1 Claim

1. The process of making an infrared responsive cadmium selenide photoconductor comprising the steps of preparing a blend of cadmium selenide, copper-containing cadmium selenide mix and cadmium chloride, and firing the blend at a temperature of about 425° C.

4,643,962

DYING ETCHED-BLEACHED SILVER IMAGES USING DYE SOLUTIONS WITH GLYCOL ETHER

Yasuo Taubai; Koji Okazaki, and Akio Yoshida, all of Nagaoka-kyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Oct. 21, 1985, Ser. No. 789,953

Claims priority, application Japan, Oct. 25, 1984, 59-225273; Dec. 25, 1984, 59-277242; Mar. 13, 1985, 60-49640; May 13, 1985, 60-102404; May 13, 1985, 60-102405; Aug. 6, 1985, 60-173753; Aug. 12, 1985, 60-178362; Aug. 26, 1985, 60-188214 Int. Cl.⁴ G03C 5/54, 5/44; B41M 5/00

U.S. Cl. 430—205

16 Claims

1. A process for forming a colored photographic image, wherein a photographic material bearing a silver image present in a hydrophilic protein binder is subjected to an etching-bleach treatment and the unbleached areas are colored with a coloring solution to form a colored image, which comprises before or/and after said etching-bleach treatment coloring said photographic material with an aqueous coloring solution containing at least a water-soluble dye and a glycol ether and having a pH of about 6 or less.

10. A process according to claim 1, wherein the photographic material bearing a silver image is an image receptive material having a physical development nuclei layer which bears a silver image formed by the silver complex diffusion transfer process.

4,643,963

PHOTOPOLYMERIZABLE RECORDING MATERIALS CONTAINING CYCLIC PENTADIENES FOR THE PRODUCTION OF PRINTING PLATES USING THESE RECORDING MATERIALS

Heinrich Hartmann, Limburgerhof; Gerhard Hoffmann, Otterstadt; Hellmut Buensch, Norderstedt, and Reiner Hofmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Oct. 31, 1984, Ser. No. 666,906

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339815

Int. Cl.⁴ G03C 1/68, 5/16; G03F 1/02; C08F 8/00

U.S. Cl. 430—286 17 Claims

1. A photopolymerizable recording material for the production of printing plates possessing a photopolymerizable copying layer (L) which is applied on a dimensionally stable base, developable with an aqueous medium, said photopolymerizable copying layer (L) being formed of a mixture containing

- one or more copolymers of cyclopentadiene monomers which copolymers are soluble or dispersible in an aqueous alkaline media,
- one or more ethylenically unsaturated photopolymerizable low molecular weight compounds,
- one or more photopolymerizable initiators, and
- one or more dyes and/or pigments.

17. A process for the production of a printing plate, in which a photopolymerizable recording material possessing a photopolymerizable copying layer (L) applied on a dimensionally stable base is exposed imagewise to actinic light, washed out with an aqueous alkaline developer and then post-cured, wherein a recording material as claimed in claim 16 is used, and post-curing is effected by exposure to actinic light and/or by heating.

4,643,964

HEAT-DEVELOPABLE LIGHT-SENSITIVE MATERIAL WITH ELECTRICALLY CONDUCTIVE LAYER

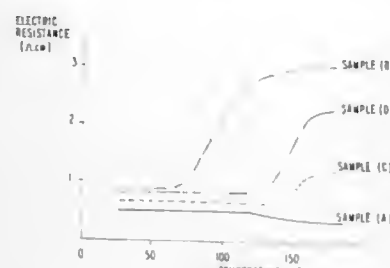
Satoru Sawada; Hideki Naito, and Hiroshi Kitaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 22, 1985, Ser. No. 757,556

Claims priority, application Japan, Jul. 20, 1984, 59-151815

Int. Cl.⁴ G03C 1/76, 1/49

U.S. Cl. 430—523 18 Claims



1. A heat-developable light-sensitive material comprising a support having thereon a heat-developable silver halide emulsion layer capable of being developed by heating and further comprising said same support or another support having thereon an electrically conductive layer, wherein the electrically conductive layer comprises at least (1) a compound imparting electrical conductivity, (2) a meltable compound having a melting point of from about 100° C. to 300° C., and (3) a hydrophilic binder.

4,643,965

DIRECT POSITIVE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Satosi Kubota; Tetsuo Yoshida, and Hideki Ohmatsu, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 24, 1984, Ser. No. 613,702

Claims priority, application Japan, May 24, 1983, 58-91040
Int. Cl.⁴ G03C 1/28

U.S. Cl. 430—567 11 Claims

1. A direct positive photographic light-sensitive material comprising a support and at least one internal latent image silver halide emulsion layer containing core/shell silver halide grains which are composed of a silver halide core containing lead ions, cadmium ions or Group VIII metal ions, and a silver halide shell covering at least sensitivity sites of said core, and a binder, wherein said core/shell silver halide grains consist of two or more kinds of grains in a same or in different emulsion layers, each said kind of grain having a different average grain size, and the core of each said kind of core/shell silver halide grains having larger average grain size is doped with lead ions, cadmium ions, or Group VIII metal ions in an amount of more than 10% higher than the amount of the smaller of said kind of grains is doped, the amount of metal ions doped is in a range of from 10^{-8} to 10^{-4} mols per mol of silver halide, and the difference in the average grain size between the larger grains and the smaller grains is at least 0.1 μ , or 20% or more of said difference.

4,643,966

EMULSIONS AND PHOTOGRAPHIC ELEMENTS CONTAINING RUFFLED SILVER HALIDE GRAINS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 3, 1985, Ser. No. 772,271

Int. Cl.⁴ G03C 1/02

U.S. Cl. 430—567 26 Claims



1. A radiation sensitive emulsion comprised of silver halide grains of a cubic crystal lattice structure having faces ruffled by protrusions which are silver halide crystal lattice extensions from a base plane of a first crystallographic form, silver halide adjacent said base plane, beneath said base plane and in said protrusions, favoring the formation of surfaces of the first crystallographic form, and said protrusions presenting surfaces of a second crystallographic form.

4,643,967

ANTIBODY METHOD FOR LOWERING RISK OF SUSCEPTIBILITY TO HLA-ASSOCIATED DISEASES IN FUTURE HUMAN GENERATIONS

Bernard J. Bryant, 509 Scripps Dr., Davis, Calif. 95616
Continuation of Ser. No. 511,898, Jul. 7, 1983, abandoned. This application Jul. 2, 1984, Ser. No. 626,903

Int. Cl.⁴ G01N 33/53

U.S. Cl. 435—7 30 Claims

1. A method for treating human sperm in order to reduce the probability of human offspring conceived therefrom contracting certain diseases which have genetically transmitted susceptibilities, comprising the steps of:

- decomplementing a sample of HLA antiserum to obtain a specific HLA antibody without complement;
- absorbing a sample of HLA antiserum to obtain complement without any of the specific HLA antibody;

- incubating a portion of sperm sample with the specific HLA antibody obtained from step (a);
 - fixing the sperm sample with complement without any of the specific HLA antibody obtained from step (b);
 - terminating incubation;
 - testing to determine the effectiveness of the specific antibody binding and specific complement fixation; and
 - treating the remainder of the sperm sample according to steps (a), (b), (c), (d), and (e);
- whereby a targeted population of spermatozoa having a specific HLA antigen expression is killed or eliminated from the sperm sample of a prospective father so that the remainder of the sample is left intact to be used in artificially inseminating a prospective mother thereby reducing likelihood of any offspring conceived therefrom of contracting diseases with genetically transferred susceptibilities associated with the specific target HLA antigen.

4,643,968

PROCESS FOR DETERMINING METABOLISM AND GROWTH OF CELLS UNDER VARIOUS CONDITIONS

James C. Weaver, Sudbury, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 229,483, Jan. 29, 1981, Pat. No. 4,401,755. This application Aug. 26, 1983, Ser. No. 527,436

Int. Cl.⁴ C12Q 1/18, 1/02, 1/06; C12N 11/02

U.S. Cl. 435—32 10 Claims

1. A process for determining the effects of at least one composition of matter upon a microbiologically active material selected from the group consisting of a macromolecule, a viroid, a virus, a bacterium, a yeast, a mold, a parasite, a plant cell and a mammalian cell in a sample comprising the steps of:

- forming a plurality of subsamples from the sample of microbiologically active material comprising at least one test subsample and at least one control subsample, each of said subsamples being made by:
 - forming a suspension of the microbiologically active material in a liquid diluent capable of forming a gel, each said suspension comprising a plurality of liquid micro-droplets, each of said liquid micro-droplets containing not substantially more than one microbiologically active entity;
 - converting said liquid micro-droplets of each said suspension into gel micro-droplets having a diameter between about 0.2 and 1000 microns;
- combining said test subsamples with a composition of interest while maintaining said control subsamples as uncombined suspensions of micro-droplets;
- measuring a characteristic product of microbiological activity for each of said combined subsamples and each of said uncombined subsamples; and
- comparing said measured characteristic product from said combined subsamples to said measured characteristic product from said uncombined subsamples to determine the effect of the composition of interest.

4,643,969

NOVEL CLONING VEHICLES FOR POLYPEPTIDE EXPRESSION IN MICROBIAL HOSTS

Masayori Inouye, Setauket, N.Y., and Yoshihiro Masui, Osaka, Japan, assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jul. 25, 1983, Ser. No. 494,040

Int. Cl.⁴ C12P 21/00; C12N 15/00, 1/00

U.S. Cl. 435—68 25 Claims

1. A recombinant plasmid suited for use as a cloning vehicle for expression of at least one polypeptide in a transformed bacterial host, said plasmid comprising a first DNA sequence comprising DNA coding for the promoter of the lipoprotein gene of *Escherichia coli*, linked in reading phase with (a) a second DNA sequence located downstream of said lipoprotein promoter and coding for the segment between positions -40 and +65 of the β -galactosidase promoter-operator of *Escherichia coli*, and (b) a third DNA sequence located downstream of said second DNA sequence and coding for the amino acid sequence of said at least one polypeptide, said plasmid also comprising a fourth DNA sequence coding for the lacI gene of *Escherichia coli*.

4,643,970

PRODUCTION OF HCG

Virginia Livingston-Wheeler, 8441 Whale Watch Way, LaJolla, Calif. 92037, and John J. Majnarich, 8541 Southeast 80th St., Mercer Island, Wash. 98040

Continuation of Ser. No. 171,280, Jul. 23, 1980, abandoned, which is a continuation of Ser. No. 27,516, Apr. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 957,206, Nov. 3, 1978, abandoned, Ser. No. 878,483, Feb. 16, 1978, abandoned, Ser. No. 686,896, May 17, 1976, abandoned, Ser. No. 672,965, Apr. 2, 1976, abandoned, and Ser. No. 295,720, Oct. 6, 1972, abandoned. This application Feb. 23, 1983, Ser. No. 469,004

Int. Cl.⁴ C12P 21/00; C12R 1/45

U.S. Cl. 435—68 9 Claims

1. Method for the production of chorionic gonadotropin (CG), from the microorganism Progenitor cryptocides ATCC No. 31874 isolated by natural or hybridization procedure from the body or body extract carrier of a tumor having the capacity to synthesize the polypeptide hormone known as chorionic gonadotropin in its total form or in its subunits (α & β), which comprises:

- culturing said Progenitor cryptocides in a culture media which contains galactose
- incubating said culture of said Progenitor cryptocides, whereby said Progenitor cryptocides in vivo produces a crude material containing chorionic gonadotropin and/or its subunits (α & β); and
- separating said crude material containing chorionic gonadotropin and/or its subunits (α & β), from said culture media and said Progenitor cryptocides.

4,643,971

MONOCLONAL ANTIBODIES TO HUMAN BLADDER AND URETER CANCERS AND METHOD

Yves Fradet, Saint-Foy, Canada; Carlos Cordon-Carbo; Willet F. Whitmore, Jr., both of New York, N.Y.; Myron R. Melamed, Scarsdale, N.Y.; Lloyd J. Old, New York, N.Y., and Kenneth O. Lloyd, Bronx, N.Y., assignors to Sloan-Kettering Institute, New York, N.Y.

Continuation-in-part of Ser. No. 474,229, Mar. 11, 1983, abandoned. This application Dec. 30, 1983, Ser. No. 567,066

Int. Cl.⁴ C12N 5/00, 15/00; C12R 1/91; A61K 39/395

U.S. Cl. 435—240 10 Claims

1. Method for differentiating between normal and malignant human transitional bladder cells and between invasive and non-invasive bladder transitional cell carcinoma as which comprises contacting a shed or intact human bladder transitional cell specimen with at least two of the monoclonal antibodies selected from the group consisting of T16, T23, T43, J233, JP165, T101, Om5, Om37, J143, T87, T138 and T110 and detecting malignant transitional bladder cells and distinguishing between invasive and non-invasive malignant transitional bladder cells reacting with said antibodies.

4,643,972

METHOD AND APPARATUS FOR MULTIPHASE CONTACTING BETWEEN GAS, SOLID AND LIQUID PHASES

Murray M. Young, Waterloo, Canada, assignor to University of Waterloo, Waterloo, Canada

Continuation of Ser. No. 386,052, Jun. 7, 1982, abandoned. This application Aug. 5, 1985, Ser. No. 762,686

Claims priority, application United Kingdom, Jun. 5, 1982, 8117287

Int. Cl.⁴ C12M 1/22, 1/08, 1/06

U.S. Cl. 435—252

5 Claims

1. Apparatus for effecting multiphase contacting between gas, solid and liquid phases, comprising:

an upright cylindrical vessel having a wall, a lower end and an upper end, said vessel having a height-to-diameter ratio of about 1:1 to about 4:1 and being adapted to hold a continuous liquid phase in which particulate solid phase is suspended,

gas sparger means at said lower end of said vessel and adjacent said wall thereof for admitting at least one gas in bubble form into said liquid phase at circumferentially-spaced locations around the lower end of the vessel adjacent said wall thereof,

said gas sparger means comprising a plurality of orifices formed through a lower closure to said vessel adjacent said vessel wall, said orifices having a diameter of about 0.05 to about 1 cm and are equally circumferentially spaced apart a distance of about 1 to about 10 cm,

conical means having an apex extending upwardly within said vessel from the lower end thereof and having a perimeter spaced inwardly from said vessel wall to define therewith a narrow gap wherein said plurality of orifices is located, said conical means having a solid angle of about 30° to about 90°,

an upright cylindrical draft tube located within said vessel coaxial therewith and having a lower end and an upper end, the ratio of the diameter of the vessel to the diameter of the draft tube being about 2:1 to about 5:1, the lower end of the draft tube being spaced upwardly a distance of about 5 to about 10 cm from the apex of the conical means and the upper end of the draft tube being spaced downwardly a distance of about 5 to about 10 cm from the intended liquid level in the vessel,

liquid downflow impeller means located within and adjacent the upper end of said draft tube, and

auxiliary gas sparger means surrounding said draft tube and constructed to inject gas in bubble form radially outwardly thereof into the liquid phase.

4,643,973

GAS GENERATOR/INDICATOR UNIT

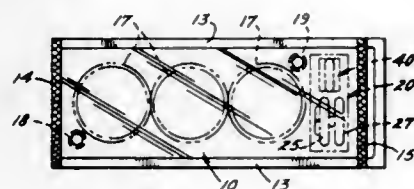
Carl F. Avery, Overland Park, Kans., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Filed Jun. 3, 1985, Ser. No. 740,642

Int. Cl.⁴ C12M 1/00

U.S. Cl. 435—287

29 Claims



1. A generator unit for creating a predetermined gaseous atmosphere in a sealed container, said unit comprising a bubble pack sized to fit within the container, a bubble projecting from one side of the pack, said bubble being made of a yieldable material capable of undergoing substantial flexing when the bubble is squeezed, a gas generating material disposed in said bubble, a sealed ampoule disposed in said bubble and contain-

ing an activating liquid, said ampoule being made of a material capable of being broken to release said liquid into said bubble when said bubble is manually flexed and squeezed against said ampoule, the released liquid reacting with said gas generating material to cause a gas to be generated in said bubble, and means in said bubble pack permitting said gas to escape from said bubble and into said container.

15. An indicator unit for visually signaling the presence or absence of a predetermined atmosphere in a closed container, said indicator unit comprising a bubble pack sized to fit within the container, a bubble projecting from one side of the pack and defining a compartment, said bubble being made of a yieldable material capable of undergoing substantial flexing when the bubble is squeezed, a sealed ampoule disposed within said compartment and containing a liquid, said ampoule being made of frangible material and adapted to be broken to release said liquid into said compartment when said bubble is manually flexed and squeezed against said ampoule, opening means permitting the atmosphere in said container to enter said compartment, absorbent means in said compartment and positioned to be moistened with the released liquid, the moistened absorbent means being one color when said predetermined atmosphere is present in said compartment and being a different color when said predetermined atmosphere is absent from said compartment.

4,643,974

DEVICE FOR IDENTIFYING MICROORGANISMS

Rodolfo Berretti, Prato; Paolo Tatti, Monteriggioni, and Brunilde Berti, San Gimignano, all of Italy, assignors to Sclavo, S.p.A., Siena, Italy

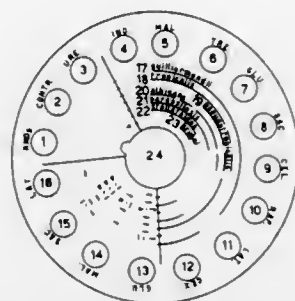
Filed Jan. 31, 1984, Ser. No. 575,334

Claims priority, application Italy, Feb. 8, 1983, 19463 A/83; Jan. 5, 1984, 19031 A/84

Int. Cl.⁴ C12M 1/00

U.S. Cl. 435—287

11 Claims



1. A device for the identification of microorganisms based on biomedical tests and consisting of a plurality of containers assembled on a single supporting member, each container holding the reagents necessary to perform an individual biochemical test on a microorganism-containing sample introduced therein, said supporting member exhibiting on its surface one or more series of marks adjacent the containers corresponding to a particular microorganism and indicating, for each biochemical test for which reagents are held in the adjacent containers, the characteristic performance of said particular microorganism in each of said tests, which series of marks is sufficient for identifying a specific microorganism.

4,643,975

NOVEL CLONING VECTORS FOR USE IN STREPTOMYCES, ESCHERICHIA COLI AND RELATED ORGANISMS

Jeffrey T. Fayerman, Indianapolis, Ind., and Nancy E. Malin, Mountain View, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 5, 1984, Ser. No. 568,179

Int. Cl.⁴ C12N 1/00, 15/00; C12P 21/00

U.S. Cl. 435—317

34 Claims

1. In a recombinant DNA cloning vector comprising:

(a) a functional Streptomyces origin of replication-containing restriction fragment, and

(b) one or more DNA segment that convey resistance to at least one antibiotic when transformed into a sensitive restrictionless host cell that is susceptible to transformation, cell division, and culture and that is selected from the group consisting of *E. coli* and Streptomyces; the improvement which consists of the Streptomyces origin of replication-containing fragment which lies with an ~2.23 kb XbaI-Bell restriction fragment of plasmid pFJ258.

4,643,976

LIQUID CLINICAL CONTROL, STANDARD, AND REAGENT PRODUCTS

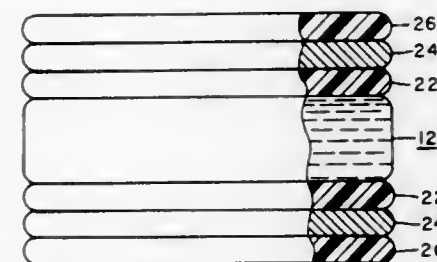
Michael K. Hoskins, Orange, Calif., assignor to Ciba Corning Diagnostics Corp., Medfield, Mass.

Filed Jun. 3, 1985, Ser. No. 740,861

Int. Cl.⁴ G01N 31/00

U.S. Cl. 436—15

19 Claims



14. A stable liquid clinical chemistry reagent comprising:

(a) a storage pouch having a reservoir and connected to the reservoir, at least one heat-sealed filling inlet and at least one heat-sealed dispensing outlet;

(b) the pouch material surrounding the reservoir being made of a water and oxygen impermeable material; and

(c) the reservoir containing a clinical chemistry reagent liquid having a protein and an inert gas.

4,643,977

PROCESS FOR ASSESSING COKE MICRO-REACTIVITY
Joseph Goleczka; Edmund P. Mills, both of Cheltenham; Edward K. Harrison, Retford, and Roy Nichols, Rowlands Gill, all of England, assignors to Coal Industry (Patents) Limited, England

Filed Mar. 11, 1985, Ser. No. 710,217

Int. Cl.⁴ G01N 33/00

U.S. Cl. 436—34

6 Claims

1. A method for assessing the micro-reactivity of a solid carbonized residue which does not exhibit significant agglomeration, formed from a coal or coal blend, comprising the steps of:

(a) carbonizing a small, finely divided representative sample of the coal or coal blend under an inert gas by heating until a constant weight is obtained at a desired reactivity test temperature and to form the solid carbonized residue which does not exhibit significant agglomeration; and

(b) passing carbon dioxide over the carbonized residue at the desired test temperature and measuring a weight loss in a given time whereby the weight loss is a measure of the

micro-reactivity of coke formed from the same coal or coal blend.

4,643,978

METHOD FOR DETECTING PHOSPHORUS SEGREGATES IN METALLIC MATERIAL

Yoshiko Funahashi; Yoshikazu Kamino; Yasuharu Matsumura, and Senichi Harimaya, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 13, 1984, Ser. No. 670,923

Claims priority, application Japan, Jul. 24, 1984, 59-153799 Int. Cl.⁴ G01N 33/20

U.S. Cl. 436—78

5 Claims



1. A method for detecting phosphorus segregates in a metallic material, comprising the steps of

(a) attaching a test sheet onto a surface of a said metallic material to be tested,

(b) maintaining the sheet in contact with the metallic material surface in the presence of an aqueous solution comprising 0.1 to 80% by weight of silver nitrate for a sufficient time, and

(c) removing the sheet from the metallic material surface, whereby the said test sheet will display a pattern of reduced silver ions corresponding to the phosphorus segregates on said surface.

4,643,979

METHOD FOR DETECTING PHOSPHORUS SEGREGATES IN STEEL

Yoshiko Funahashi; Yasuharu Matsumura; Senichi Harimaya; Yoshikazu Kamino, and Hidenari Kitaoka, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Nov. 13, 1984, Ser. No. 670,924

Claims priority, application Japan, Nov. 14, 1983, 58-213497 Int. Cl.⁴ G01N 33/20

U.S. Cl. 436—78

11 Claims



1. A method for detecting phosphorus segregates in solidified steel, comprising the steps of

applying a metal etching reagent to a surface area of the solidified steel to be examined, said metal etching reagent causing the eventual formation of phosphine, and

applying a test sheet bearing a solution of a heavy metal salt against said surface area, thereby detecting phosphorus segregates as stains on the sheet.

4,643,980

GLUTARALDEHYDE INDICATOR

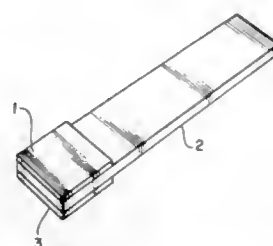
Robert J. Witonsky, Princeton, and Raymond P. Larsson, Den-
ville, both of N.J., assignors to Info-Chem, Inc., Fairfield,
N.J.

Division of Ser. No. 503,892, Jun. 13, 1983, Pat. No. 4,521,376.
This application Feb. 14, 1985, Ser. No. 701,388

The portion of the term of this patent subsequent to Jun. 4, 2002,
has been disclaimed.

Int. Cl.⁴ G01N 21/78, 31/22

U.S. Cl. 436—128



1. A glutaraldehyde indicator solution comprising a solution
of a sulfite compound and an amine compound wherein the
amine compound is (1) an amino acid where the amino acid is
lysine or glycine or (2) an ammonium compound; said sulfite
and amine compounds being present in an amount effective to
distinguish between glutaraldehyde solutions of different glu-
taraldehyde concentrations.

4,643,981

PRESSURE FILTRATION SYSTEM

Benjamin D. Card, Arlington, Tex., assignor to Akzo N.V.,
Arnhem, Netherlands

Filed Nov. 9, 1983, Ser. No. 550,170

Int. Cl.⁴ B01D 25/02

U.S. Cl. 436—500



1. A method of filtration for immunoassay purposes compris-
ing the steps of:
providing a receptacle having an open end and a closed end,
placing a quantity of filterable liquid material into the recep-
tacle,
inserting a unitary filter assembly comprising a first and
second support disc of porous, relatively rigid material
into the receptacle, with said disc closely fitting the inside
wall of the receptacle; and a fibrous filter material having
a predetermined pore size disposed between said first
support disc, and said second support disc;
moving said filter assembly toward and through the liquid in
said receptacle thereby to cause said liquid and compo-
nents thereof of a size less than said pore size to pass
through said discs to provide a filtrate at a location there-
above while components of size greater than pore size are

compacted toward the closed end of the receptacle,
wherein the pore size of the first and second support discs
is at least equal to the pore size of the fibrous filter mate-
rial.

4,643,982

HIGH-STRENGTH GLASS-CERAMIC CONTAINING
ANORTHITE CRYSTALS AND PROCESS FOR
PRODUCING THE SAME

16 Claims Toshihiro Kasuga, Akishimashi, and Kenji Nakagawa,
Tokorozawa, both of Japan, assignors to Hoya Corporation,
Tokyo, Japan

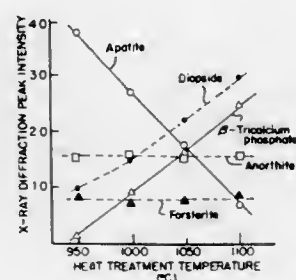
Filed Dec. 4, 1985, Ser. No. 804,517

Claims priority, application Japan, Dec. 5, 1984, 59-255848;
Dec. 11, 1984, 59-260037

Int. Cl.⁴ C03C 10/06, 10/04, 10/02

U.S. Cl. 501—8

5 Claims



1. A high-strength glass-ceramic having a composition con-
sisting essentially of anorthite crystals and consisting essen-
tially of, in % by weight,

8 to 26% MgO;
18 to 43% CaO;
25 to 40% SiO₂;
10 to 25% P₂O₅;
10.1 to 25% Al₂O₃;
0 to 3% F₂;
0 to 10% Li₂O;
0 to 10% Na₂O;
0 to 10% K₂O;
0 to 10% B₂O₃;
0 to 10% TiO₂;
0 to 10% SrO;
0 to 10% Nb₂O₅;
0 to 10% Ta₂O₅; and
0 to 10% ZrO₂;

the total amounts of MgO, CaO, SiO₂, P₂O₅, Al₂O₃ and F₂
being at least 90%.

4,643,983

METHOD OF PRODUCING A GRINDING MEDIUM

Hans Zeiringer, Passering, Neubau, A 9321 Kappel/Krappfeld,
Austria

Filed Jul. 23, 1985, Ser. No. 757,899

Claims priority, application Austria, Aug. 1, 1984, 2477/84

Int. Cl.⁴ C04B 35/56; C09C 1/68

U.S. Cl. 501—87

13 Claims

1. A method of producing a grinding medium consisting
essentially of alpha-alumina, Al₂OC and Al₄O₄C, which com-
prises the steps of

(a) melting a mixture of a raw material selected from the
group consisting of alumina and a material rich in alumina
with a carbon-containing reducing agent to obtain a melt,
(b) cooling the melt at a speed of more than 100° C. per
minute to obtain a solidified body,
(c) breaking the solidified body into abrasive grains, and
(d) subjecting the abrasive grains to a heat treatment at a
temperature of between 500° C. and 1500° C. for a period

of three minutes to 24 hours until their Al₄C₃-content is less than 5%, by weight, said heat treatment being limited to a maximum period of ten minutes when said tempera-
ture is 1500° C.

4,643,984

PROCESS FOR PRODUCING A COMPOSITION WHICH
INCLUDES PEROVSKITE COMPOUNDS

Kazunobu Abe, Izumi; Masashi Aoki, Takatsuki; Hiroaki
Rikimaru, Sangocho; Takeshi Ito, Sakai; Kazuhisa Hidaka,
Takaishi, and Kayoko Segawa, Ikoma, all of Japan, assignors
to Sakai Chemical Industry Co., Ltd., Osaka, Japan

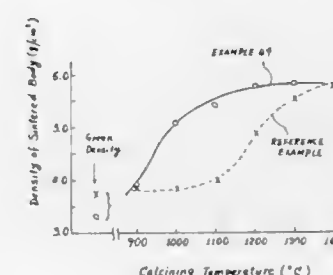
Filed Jul. 23, 1985, Ser. No. 758,072

Claims priority, application Japan, Jul. 25, 1984, 59-154289

Int. Cl.⁴ C01G 23/00; C04B 35/46

U.S. Cl. 501—134

6 Claims



1. A process for producing a composition, which includes a
perovskite compound, the process comprising:

- subjecting a mixture of a hydroxide of at least one A
group element selected from the group consisting of Mg,
Ca, Sr, Ba, Pb and rare earth elements and a hydroxide of
at least one B group element selected from the group
consisting of Ti, Zr, Hf and Sn, to the hydrothermal reac-
tion in an aqueous reaction medium;
- adding an insolubilizing agent to the resultant reaction
mixture to insolubilize water-soluble compounds of the
unreacted A group element dissolved in the aqueous me-
dium so as to adjust the ratio of the group A element to the
group B element in a resulting composition to a desired
A/B ratio; or
- filtering, washing with water and drying the resultant
reaction mixture to provide a solid reaction product,
dispersing the reaction product in an aqueous medium to
form a slurry, adding to the slurry a water-soluble com-
pound of the A group element, and then adding to the
slurry an insolubilizing agent to insolubilize the water-sol-
uble compound of the A group element so as to adjust the
ratio of the group A element to the group B element in a
resulting composition to a desired A/B ratio; and
- filtering, washing and drying the resultant mixture to
provide the composition which includes the perovskite
compound having the desired A/B ratio.

4,643,985

DIELECTRIC PORCELAIN MATERIAL

Minato Ando; Masaaki Ito, and Fumio Mizuno, all of Aichi,
Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jul. 19, 1985, Ser. No. 756,948

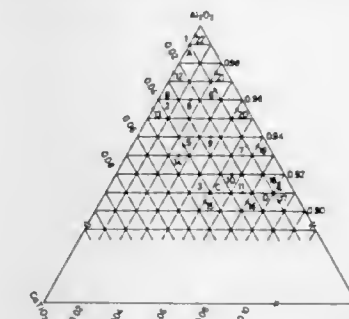
Claims priority, application Japan, Jul. 20, 1984, 59-151589

Int. Cl.⁴ C04B 35/10, 35/46

U.S. Cl. 501—136

9 Claims

1. A dielectric porcelain material having a composition
falling in the quadrilateral area defined by connecting points A,
B, C and D in the ternary diagram of components Al₂O₃,



	Al ₂ O ₃	CaTiO ₃	SrTiO ₃
A	0.99	0.01	0
B	0.96	0.035	0.005
C	0.91	0.04	0.05
D	0.91	0.01	0.08

4,643,986

PROCESS FOR PREPARING A CATALYST FOR
POLYMERIZATION OR COPOLYMERIZATION OF
ETHYLENE

Hiroshi Morinaga, Yotsukaido; Sakae Kamiyama, and Yuza
Sato, both of Ichihara, all of Japan, assignors to Nissan Chem-
ical Industries Ltd., Tokyo, Japan

Filed Apr. 3, 1986, Ser. No. 847,473

Claims priority, application Japan, Apr. 12, 1985, 60-77963

Int. Cl.⁴ C08F 4/64

U.S. Cl. 502—104

4 Claims

1. A process for preparing a catalyst for polymerization or
copolymerization of ethylene, which comprises reacting a
silicone compound (I) and an organomagnesium compound
(II) to obtain a product (A), reacting the product (A) with a
titanium compound (III) and a silicone halide compound (IV)
to obtain a product (B), reacting the product (B) with an or-
ganooaluminum halide compound (V) to obtain a solid compo-
nent (C), and bringing the solid component (C) in contact with
an organooaluminum compound (VI), wherein:

- said silicone compound (I) is at least one member selected
from the group consisting of a hydropolysiloxane com-
pound of the formula $R^4_aH_bSiO_{(4-a-b)/2}$ where R^4 is a
monovalent organic group selected from the group con-
sisting of an alkyl group, an aryl group, an aralkyl group,
an alkoxy group and an aryloxy group, a is an integer of
from 0 to 2, and b is an integer of from 1 to 3, provided
that $a+b \leq 3$, a compound of the formula $R^5_nSi(OH)_{4-n}$
wherein R^5 is a monovalent hydrocarbon group having
from 1 to 18 carbon atoms and n is an integer of from 1 to
3, and a condensate thereof;
- said organomagnesium compound (II) is a compound of
the formula $(MgR^6)_p(R^6MgX)_q$ wherein R^6 is a hydro-
carbon group, X is a halogen atom, and each of p and q is
a number of from 0 to 1, provided that $p+q=1$;
- said titanium compound (III) is a compound of the for-
mula $Ti(OR^2)_mX_{4-m}$ wherein R^2 is a hydrocarbon group
having from 1 to 12 carbon atoms, X is a halogen atom,
and m is a number of from 0 to 4;
- said silicone halide compound (IV) is a compound of the
formula $R^1_LSiX_{4-L}$ wherein R^1 is a hydrogen atom or a
hydrocarbon group having from 1 to 8 carbon atoms, X is
a halogen atom and L is a number of from 0 to 3;
- said organooaluminum halide compound (V) is a com-
pound of the formula $R^3_cAlX_{3-c}$ wherein R^3 is a hydro-
carbon group having from 1 to 12 carbon atoms, X is a
halogen atom, and c is a number of from 1 to 2; and

(6) the organoaluminum compound (VI) is a compound of the formula R_dAlY_3 wherein R is a monovalent hydrocarbon group, Y is a hydrogen atom, a halogen atom or an alkoxy group, and d is a number of from 1 to 3.

4,643,987

MODIFIED GLYCOPEPTIDES

Ramakrishnan Nagarajan, and Amelia A. Schabel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

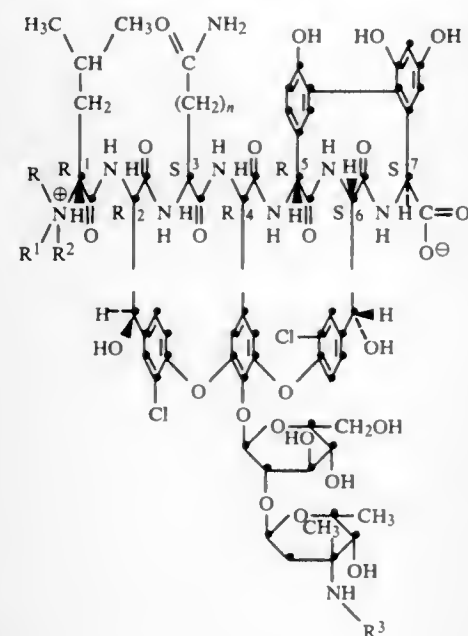
Filed Aug. 14, 1985, Ser. No. 765,422

Int. Cl.⁴ A61K 37/00; C07K 9/00

U.S. Cl. 514—8

24 Claims

1. A compound of the formula:

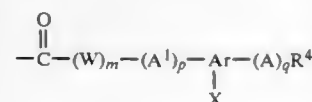


wherein

R and R¹ are hydrogen or methyl;

R² is methyl or R³;

R³ is hydrogen or an acyl group of the formula



wherein

Ar is a group selected from phenyl, cyclohexadienyl, cyclohexenyl, naphthyl, thienyl, furyl, thiazolyl or pyridinyl;

A is divalent oxygen, sulfur, sulfinyl, or sulfonyl;

A¹ is A or —NH—;

X is hydrogen, chloro, bromo, iodo, nitro, C₁–C₃-alkyl,

hydroxy, C₁–C₃-alkoxy, mercapto, C₁–C₃-alkylthio, carbamoyl, C₁–C₃-alkylcarbamoyl, C₁–C₄-alkoxycarbonyl,

C₁–C₄-alkanoyl, carboxy, or R₅R₆N—;

R⁴ is hydrogen, C₁–C₁₈-alkyl or C₂–C₁₈-alkenyl;

R⁵ and R⁶ independently are hydrogen or C₁–C₄-alkyl, or

R⁵ is hydrogen and R⁶ is an amino-protecting group;

W is C₁–C₁₀-alkylene or C₂–C₁₀-alkenylene;

n is 1 or 2; and

m, p and q are 0 or 1,

provided that: (1) the sum of the carbon atoms in the R⁴ and W groups cannot exceed 21; (2) when X is mercapto, A and A¹ cannot be sulfinyl or sulfonyl; (3) when A and A¹ are sulfinyl or sulfonyl, they must be in equal oxidation states; (4) at least one of R² and R³ must be other than hydrogen; (5) if m=0, p

must=0; and (6) when n is 2, R and R¹ must be hydrogen; and its salts.

4,643,988

AMPHIPATHIC PEPTIDES

Jere P. Segrest, and Gattadahalli M. Anantharamaiah, both of Birmingham, Ala., assignors to Research Corporation, New York, N.Y.

Filed May 15, 1984, Ser. No. 610,444

Int. Cl.⁴ A61K 37/43; C07K 7/08, 7/10

U.S. Cl. 514—12

7 Claims

1. A peptide capable of forming an amphipathic helix, said peptide having the sequence Asp-Trp-αNal-Lys-Ala-Phe-αNal-Asp-Lys-αNal-Ala-Glu-Lys-αNal-Lys-Glu-Ala-Phe.

4,643,989

INHIBITION OF ALDOSTERONE SECRETION

J. Andrew Baird, San Diego, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

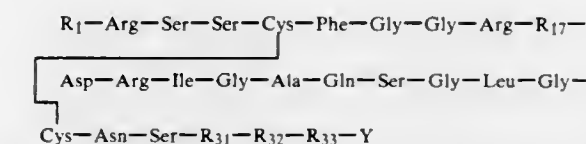
Filed Aug. 17, 1984, Ser. No. 642,131

Int. Cl.⁴ A61K 37/00

U.S. Cl. 514—12

18 Claims

1. A method of decreasing the secretion of aldosterone in a human in need thereof which method comprises administering intravenously, subcutaneously, intramuscularly, intranasally or orally to such human an effective amount of a peptide having the formula:



wherein R₁ is Arg, Leu-Arg, Ser-Leu-Arg, Arg-Ser-Leu-Arg, Pro-Arg-Ser-Leu-Arg, Gly-Pro-Arg-Ser-Leu-Arg, Ala-Gly-Pro-Arg-Ser-Leu-Arg or Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg; R₁₇ is Met of Ile, R₃₁ is Phe or desR₃₁; R₃₂ is Arg or desR₃₂; R₃₃ is Tyr or desR₃₃; and Y is OH or NH₂; or a nontoxic addition salt thereof.

4,643,990

N-ACYL PEPTIDE, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS THEREOF

Kazuyoshi Umehara, Ashiya; Keizo Yoshida, Suita; Hirokazu Tanaka, Takarazuka; Itsuo Uchida, Kyoto; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Mishima, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 23, 1982, Ser. No. 452,827

Claims priority, application United Kingdom, Jan. 5, 1982, 8200212; Jun. 1, 1982, 8215910

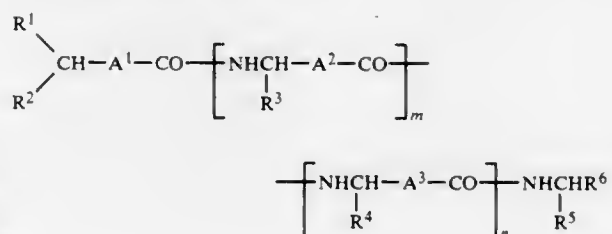
The portion of the term of this patent subsequent to Mar. 18, 2001, has been disclaimed.

Int. Cl.⁴ A61K 37/43; C07K 5/06, 5/08; C07C 143/12, 69/52, 67/02, 101/26, 101/30

U.S. Cl. 514—18

12 Claims

1. A compound of the formula:



wherein

R¹ is alkanoyloxy or alkenoyloxy;

R² is alkyl or alkenyl;

R³ and R⁴ are each hydrogen, lower alkyl, hydroxy(lower)alkyl, ar(lower)alkyl, esterified carboxy(lower)alkyl, carboxy(lower)alkyl, protected amino(lower)alkyl or amino(lower)alkyl;

R⁵ is hydrogen, hydroxy(lower)alkyl, protected amino(lower)alkyl, amino(lower)alkyl, carboxy(lower)alkyl or esterified carboxy(lower)alkyl;

R⁶ is carboxy, esterified carboxy or sulfo(lower)alkyl;

A¹, A² and A³ are each bond or lower alkylene; and

m and n are each an integer of 0 or 1;

or its pharmaceutically acceptable salt.

4,643,993

SUBSTITUTED HETEROCYCLYL-PHENYL-(SULFONYL-OR PHOSPHONYL)-AMIDINES

Enzo Cereda, Tortona; Arturo Donetti; Antonio Giachetti, both of Milano, and Piero del Soldato, Monza, all of Italy, assignors to Istituto de Angeli S.p.A., Milan, Italy

Filed May 18, 1983, Ser. No. 495,717

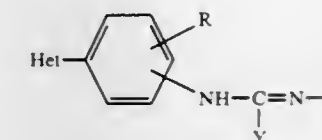
Claims priority, application Italy, Jul. 29, 1982, 22637 A/82

Int. Cl.⁴ A61K 31/41, 31/675; C07D 249/08; C07F 9/65

U.S. Cl. 514—93

9 Claims

1. A compound of the formula



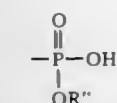
wherein

Het is imidazolyl, triazolyl or pyrazolyl;

R is hydrogen, lower alkyl, alkoxy of 1 to 3 carbon atoms or

halogen;

Y is —SO₃H or



R'' is alkyl of 1 to 3 carbon atoms; and

R' is straight or branched alkyl which may contain a sulfur, oxygen or nitrogen heteroatom; straight or branched alkenyl; cycloalkyl; alkyl-cycloalkyl; aryl optionally substituted by lower alkyl, alkoxy of 1 to 3 carbon atoms or halogen; or aralkyl optionally substituted by lower alkyl, alkoxy of 1 to 3 carbon atoms or halogen; a tautomer thereof, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

9. The method of treating gastric ulcers and inhibiting gastric acid secretion in a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective anti-ulcerogenic and gastric acid secretion inhibiting amount of a compound of claim 1.

4,643,994

NOVEL ORGANIC TRITHIO OXIDES AND METHOD FOR THE PREPARATION THEREOF

Eric Block, Delmar, and Saleem Ahmad, Albany, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

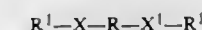
Filed Dec. 17, 1984, Ser. No. 682,435

Int. Cl.⁴ A61K 31/60; C07C 149/12

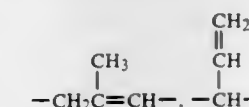
U.S. Cl. 514—165

58 Claims

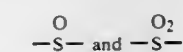
1. A compound of the formula:



wherein R is selected from —CH₂CH=CH—,



and CH₂; X is selected from



4,643,991

PEPTIDE ELASTASE INHIBITORS AND METHODS

George A. Digenis; Bushra J. Agha, both of Lexington, Ky., and Kiyoshi Tsuji, Osaka, Japan, assignors to The University of Kentucky Research Foundation, Lexington, Ky.

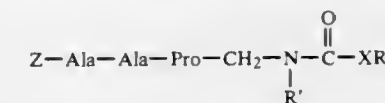
Filed Dec. 18, 1984, Ser. No. 683,316

Int. Cl.⁴ A61K 37/64; C07K 5/08

U.S. Cl. 514—18

30 Claims

1. A compound of the following general formula:



wherein Z is selected from the group consisting of R''O—Suc— where R'' is lower alkyl of 1 to 3 carbon atoms and CF₃CO—; X is oxygen or sulfur; R' is selected from the group consisting of straight or secondary branch-chained alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 3 carbon atoms, alkynyl of 2 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, and benzyl, and R is selected from the group consisting of substituted or unsubstituted phenyl wherein the substituents are selected from the group consisting of nitro, and pentafluoro; benzyl, CH₂CF₂CF₂CF₃, 1-lower alkyl tetrazolyl, 1-phenyl-tetrazolyl, 2-thioxo-3-thiazolidinyl-, pyridyl and benzothiazolyl, provided that when R is paranitrophenyl, R' is other than tertiary-butyl, benzyl or cyclohexyl, and when X is sulfur, R is other than benzyl.

4,643,992

MODULATION OF ANIMAL CELLULAR RESPONSES WITH COMPOSITIONS CONTAINING 8-SUBSTITUTED GUANINE DERIVATIVES

Michael G. Goodman, Carlsbad, and William O. Weigle, Del Mar, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 439,846, Nov. 9, 1982, Pat. No. 4,539,205. This application Nov. 1, 1983, Ser. No. 546,679

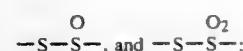
Int. Cl.⁴ A61K 31/70; C12N 5/00

U.S. Cl. 514—45

4 Claims

1. A method of modulating an immune response comprising contacting leukocytes with an immune response modulating composition including as an active ingredient an amount of 8-oxoguanosine effective to enhance an antigen-specific immune response, said guanosine being free of electrically charges functionality, together with a diluent amount of a physiologically tolerable carrier.

X¹ is selected from —S—S—,



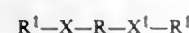
and, each R¹ is independently selected from substituted and unsubstituted lower alkyl, lower alkenyl, lower alkynyl, phenyl and lower alkylphenyl wherein the substituents are independently selected from carboxyalkyl, alkoxy, alkylthio, amine, alkylamino and acyl; provided when R is —CH₂CH=CH—, X is



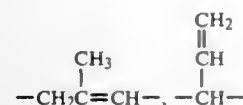
and X¹ is —S—S—, then R¹ is not in both instances —CH₂CH=CH₂, and further provided that the total number of carbon atoms of said R¹ group when substituted with carboxyalkyl does not exceed ten and that the carboxy of said carboxyalkyl includes the esters or alkali metal salts thereof.

50. A pharmaceutical composition comprising an effective amount of the compound of claim 1 in combination with a pharmaceutically acceptable diluent, extender, or stabilizer.

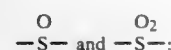
52. A method of inhibiting the aggregation of blood platelets, comprising applying thereto a blood platelet aggregation inhibiting amount of at least one compound of the formula:



wherein R is selected from —CH₂CH=CH—,



and CH₂; X is selected from



X¹ is selected from —S—S—,



and, each R¹ is independently selected from substituted and unsubstituted lower alkyl, lower alkenyl, lower alkynyl, phenyl and lower alkylphenyl wherein the substituents are independently selected from carboxyalkyl, alkoxy, alkylthio, amine, alkylamino and acyl; provided when R is —CH₂CH=CH—, X is



and X¹ is —S—S—, then R¹ is not in both instances —CH₂CH=CH₂, and further provided that the total number of carbon atoms of said R¹ group when substituted with carboxyalkyl does not exceed ten and that the carboxy of said carboxyalkyl includes the esters or alkali metal salts thereof.

4,643,995
ANALGESIC PYRIDINE-2-ETHERS OR
PYRIDINE-2-THIOETHERS HAVING A
NITROGEN-CONTAINING CYCLOALIPHATIC RING
Jurgen Engel, Alzenau; Vladimir Jakovlev, Maintal; Bernd Nickel, Muhtal; Klaus Thieme, and Gerhard Scheffler, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,773

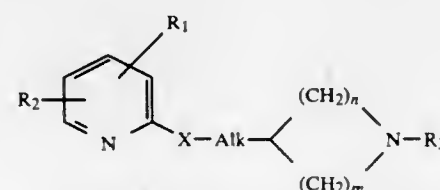
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347276

Int. Cl.⁴ A61K 31/55; C07D 401/12

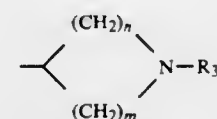
U.S. Cl. 514—210

13 Claims

8. A method of relieving pain comprising administering to a mammal in need of analgesic treatment an analgesically effective amount of a compound corresponding to the formula



wherein the radicals R₁ and R₂ represent hydrogen, halogen atoms, a trifluoromethyl group, a cyano group, a nitro group, an amino group, a mono-C₁-C₆-alkylamino group, a di-C₁-C₆-alkylamino group, an amino group which is substituted by a phenyl radical, a mono- or di-halophenyl radical or a phenyl-C₁-C₄-alkyl radical, a C₁-C₆ alkanoyl amino group, a C₁-C₆ alkoxy-carbonylamino group, a C₁-C₆ alkyl group, a C₁-C₆ alkyl group substituted by a phenyl radical, a phenyl group, a hydroxy group, a C₁-C₆ alkoxy group, a phenoxy group, a carboxy group, a carb-C₁-C₆-alkoxy group, a carbamoyl group, or a carbamoyl group which is optionally substituted by one or two C₁-C₆ alkyl groups, the radical R₃ represents hydrogen, a C₁-C₆ alkyl group, a C₃-C₆ alkenyl group, a C₃-C₆ alkynyl group, a C₃-C₇-cycloalkyl group, a C₅-C₇-cycloalkenyl group, a phenyl-C₁-C₄-alkyl group, a carb-C₁-C₆-alkoxy group, a C₂-C₆-alkanoyl group, a C₂-C₆-alkanoyl group substituted by a C₃-C₆-cycloalkyl radical or a C₁-C₄ alkyl group which contains on the same carbon atom two C₁-C₆ alkoxy groups or C₂-C₄ alkylene dioxy group, or wherein R₃ represents a C₁-C₆ alkyl group which is mono- or di-substituted by C₃-C₇ cycloalkyl group, hydroxy group, C₁-C₆ alkoxy group, halogen atom, sulfo group (—SO₃H), amino group, C₁-C₆ alkylamino group, di-C₁-C₆-dialkylamino group, C₁-C₆ alkyl-carbonyl group, C₃-C₇ cycloalkylcarbonyl group, carb-C₁-C₆-alkoxy group or benzoyl group, X represents oxygen, sulphur, SO or SO₂, Alk represents a direct bond or alkylene having from 1 to 4 carbon atoms and n and m are integers from 1 to 3, n can also be 0 if Alk is alkylene having at least one carbon atom and in this case m is from 2 to 6; and the group



which is always cyclic can also be a quinuclidyl radical or a tropanyl radical, the pyridine-N-oxide, amine oxide or mixed pyridine-n-oxide amine oxide thereof or a pharmaceutically acceptable salt thereof.

4,643,996
5-PHENYL-2-FUROIC ACID HYDRAZIDES
Stanford S. Pelosi, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jan. 18, 1982, Ser. No. 389,627

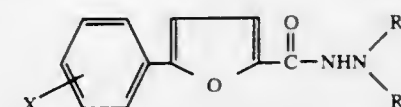
Int. Cl.⁴ A61K 31/34, 31/44; C07D 307/52, 307/54

U.S. Cl. 514—336

3 Claims

1. The compound 5-(p-chlorophenyl)-2-furoic acid isopropylidenehydrazide.

3. A method of treating inflammation which comprises orally administering to a host in need thereof an anti-inflammatory amount of a compound of the formula:



wherein X represents 4-chloro, 4-fluoro, 3-trifluoromethyl or hydrogen, R₁ represents hydrogen or methyl, R₂ represents acetyl, isopropyl or methyl, and R₁ and R₂ taken together represent isopropylidene or 4-pyridinylmethylene in acceptable pharmaceutical dosage form.

4,643,997
3-CARBAMOYL- AND
3-THIOCARBAMOYL-TETRAHYDRO-1,3-THIAZINE-2-
THIONES AND SKIN TREATING COMPOSITIONS
CONTAINING THE SAME

Wolfgang Hanefeld, Marburg, Fed. Rep. of Germany; Rudi Röhlsberger, Marly, and Friedrich Noser, Bonnefontaine, both of Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Jan. 24, 1985, Ser. No. 694,643

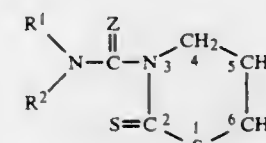
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403147

Int. Cl.⁴ A01N 1/02; C07D 279/06; A61K 7/48, 7/42

U.S. Cl. 514—226

16 Claims

9. A skin treatment composition comprising, in a physiologically compatible carrier, a content of at least, one tetrahydro-1,3-thiazine-2-thione derivative of the formula:



in which Z signifies a member of the group of oxygen and sulfur; R¹ and R² are the same or different and are each a member independently selected from the group consisting of a lower alkyl, a lower hydroxyalkyl, a lower carboxyalkyl, a lower halogenalkyl, a lower cycloalkyl, a lower alkenyl, a lower alkynyl, a lower cyanoalkyl, a phenylalkyl with a lower alkyl, an alkoxyalkyl with a lower alkyl, a phenyl-, alkyl-, halogen-, nitro-, alkoxy-, phenyloxy- and cyano-substituted phenylalkyl with a lower alkyl, a phenyl or an aromatic heterocyclic compound selected from the group consisting of thiazolyl, thienyl, benzothiazolyl, thiadiazolyl, oxazolyl, benzoxazolyl, oxadiazolyl, pyrazolyl, triazolyl, benzimidazolyl, pyridinyl, pyrimidinyl, purinyl, pyridazinyl, triazinyl, benzotriazinyl, quinolyl, isoquinolyl, cinnolinyl, phthalazolyl, pteridinyl, quinoxalinyl and acridinyl, or R¹ and R² together with the nitrogen atom to which they are bound are part of a non-aromatic heterocyclic ring containing the segment —(CH₂)_n—X—(CH₂)_m—, in which X is a member selected from the group consisting of CH₂, O, S and NR' wherein R' is a member selected from the group consisting of an alkyl, a phenylalkyl and a phenyl, and m is an integer of 1 to 3 and n is 0 or an

integer of 1 to 3, with the proviso that n is only 0 when X is CH₂.

4,643,998
IMIDAZOLYLALKYLTHIENYL
TETRAHYDROPYRIDAZINES AND PROCESSES FOR
THEIR USE

Gerd Hilboll, Cologne; Gerrit Prop, Pulheim; Harald Borbe, Cologne; Josef P. Löhr, Hilden, and Ille-Stephanie Doppel-feld, Glessen, all of Fed. Rep. of Germany, assignors to A. Natterman & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,623

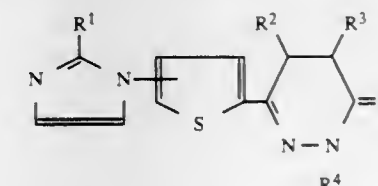
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241102

Int. Cl.⁴ C07D 237/06; A61K 31/50

U.S. Cl. 514—252

7 Claims

1. Imidazolylthien-2-yl-tetrahydropyridazines of the formula



wherein R¹, R², R³ and R⁴ can be same or different and independently of each other denote hydrogen, C₁₋₄ lower alkyl, or phenyl and its pharmaceutically acceptable salts.

4,643,999
2-SUBSTITUTED IMIDAZO[1,2-c]PYRIMIDINES
HAVING ANXIOLYTIC PROPERTIES

Wilfred R. Tully, 5 Saint Peter's Rd., Cirencester, Gloucestershire, Great Britain

Filed Dec. 14, 1984, Ser. No. 681,948

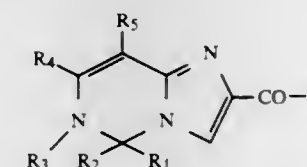
Claims priority, application United Kingdom, Dec. 22, 1983, 8334210

Int. Cl.⁴ A61K 31/505; C07D 471/02

U.S. Cl. 514—258

32 Claims

1. A compound selected from the group consisting of imidazo[1,2-c]pyrimidines of the formula



wherein R is phenyl or naphthyl, R₁ is selected from the group consisting of hydrogen and alkyl, alkoxy and alkylthio of 1 to 5 carbon atoms when R₂ and R₃ together form a carbon nitrogen bond or R₁ and R₂ together are —O— when R₃ is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and alkenyl of 2 to 5 carbon atoms, R₄ is selected from the group consisting of alkoxy and alkylthio of 1 to 5 carbon atoms, R₅ is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

20. A method of inducing anxiolytic activity in warm-blooded animals comprising administering to warm-blooded animals an anxiolytically effective amount of at least one compound of claim 1.

4,644,000

MICROBICIDAL AGENTS CONTAINING 2-(1H-PYRAZOL-1-YL)-4-(3H)-QUINAZOLINONES
Walter Güss, Cologne; Hans-Joachim Kabbe, Leverkusen; Wilfried Paulus, Krefeld; Hans-Jürgen Rosslenbroich, Monheim, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

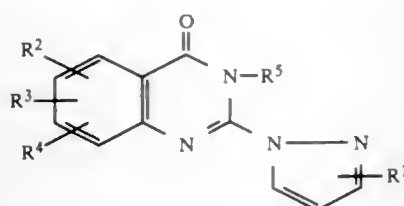
Filed Mar. 25, 1985, Ser. No. 715,564
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1984, 3412080

Int. Cl.⁴ A61K 31/505

U.S. Cl. 514-260

16 Claims

1. A process for protecting a plant or an industrial material against microbial attack which comprises applying to said plant or industrial material or their habitat a microbicidal effective amount of a 2-(1H-pyrazol-1-yl)-4-(3H)-quinazolinone of the formula



wherein

R¹, R², R³ and R⁴ are identical or different and denote hydrogen, halogen, C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, hydroxyl or amino and

R represents hydrogen or a cation selected from alkali metal ions alkaline earth metal ions and ammonium ion.

4,644,001

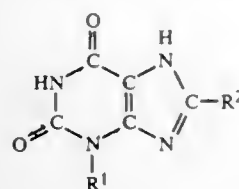
3-ALKYLXANTHINES, COMPOSITION AND METHODS FOR THE TREATMENT OF CHRONIC OBSTRUCTIVE-AIRWAY DISEASE AND CARDIAC DISEASE

Per G. Kjellin, Lund, and Carl G. A. Persson, Löberöd, both of Sweden, assignors to Aktiebolaget Draco, Sweden
Division of Ser. No. 323,955, Nov. 23, 1981, which is a continuation-in-part of Ser. No. 84,440, Feb. 11, 1980, abandoned. This application Jul. 25, 1984, Ser. No. 634,650
Claims priority, application Sweden, Oct. 20, 1978, 7810947
Int. Cl.⁴ C07D 473/08; A61K 31/52

U.S. Cl. 514-263

6 Claims

1. A compound of the formula



or a physiologically acceptable salt thereof, in which formula R¹ is n-propyl, n-butyl, isobutyl, n-pentyl, 2-methylbutyl, 3-methylbutyl, 2,2-dimethylpropyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclohexylmethyl and R² is hydrogen or methyl, provided that R² is methyl when R¹ is n-propyl, n-butyl or isobutyl.

4,644,002

IMIDAZO[2,1-C]QUINOLINES, USEFUL AS ANTIALLERGIC AGENTS

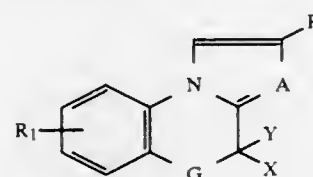
Alan C. Barnes, Cirencester, and David A. Rowlands, Gloucestershire, both of Great Britain, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 631,609, Jul. 17, 1984, abandoned, which is a division of Ser. No. 353,052, Mar. 1, 1982, Pat. No. 4,474,784, which is a division of Ser. No. 118,445, Feb. 4, 1980, Pat. No. 4,333,934. This application Oct. 23, 1985, Ser. No. 774,653
Int. Cl.⁴ A61K 31/41; C07D 471/04

U.S. Cl. 514-292

6 Claims

1. A compound selected from the group consisting of compounds of the formula



they are attached, may be pyrrolidino, methylpyrrolidino, piperidino, methylpiperidino, homopiperidino or heptamethyleneimino, and a nontoxic pharmaceutically acceptable salt thereof.

4,644,007

3-CHLORO-4-(4,5-DIHYDRO-1H-IMIDAZO-2-YL)-AMINO-5-ALKYLBENZOIC ACIDS, ESTERS, SALTS, COMPOSITIONS AND METHODS

Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 590,464, Mar. 16, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,791, Aug. 3, 1983, Pat. No. 4,517,199, and Ser. No. 520,071, Aug. 3, 1983, Pat. No. 4,515,800, which is a continuation-in-part of Ser. No. 323,369, Nov. 20, 1981, abandoned. This application Jul. 15, 1985, Ser. No. 755,373

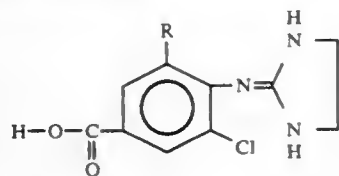
The portion of the term of this patent subsequent to May 14, 2002, has been disclaimed.

Int. Cl.⁴ A61K 31/415

U.S. Cl. 514—392

14 Claims

1. An ophthalmic pharmaceutical composition comprising an intraocular pressure lowering amount of a compound of the following general formula:



wherein R is methyl or ethyl, and the pharmaceutically acceptable salts and esters thereof, and a pharmaceutically acceptable vehicle therefor.

4,644,008

PERHYDROINDOLE-2-CARBOXYLIC ACIDS AS ANTIHYPERTENSIVES

Michel Vincent, Bagneux; Georges Rémond, Versailles, and Michel Lauble, Vaucresson, all of France, assignors to Adir, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Oct. 10, 1984, Ser. No. 659,274

Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

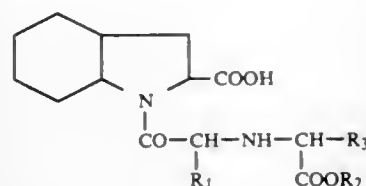
The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.⁴ A61K 31/40; C07D 209/42

U.S. Cl. 514—412

7 Claims

1. A compound selected from the group consisting of iminodiacid compounds having the formula:



wherein

R₁ represents lower-alkyl having 1 to 4 carbon atoms, inclusive,

R₂ represents hydrogen or lower-alkyl having 1 to 4 carbon atoms, inclusive,

R₃ is —(CH₂)₃—CH₃,

in racemic form or as an optical isomer, a salt thereof with a pharmaceutically-acceptable inorganic or organic base, and an addition salt thereof with a pharmaceutically-acceptable inorganic or organic acid.

4,644,009

ARYL-ALKYL HETEROCYCLIC COMPOUNDS

Fu-chih Huang, Leonia, N.J., and Joseph Auerbach, Brooklyn, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

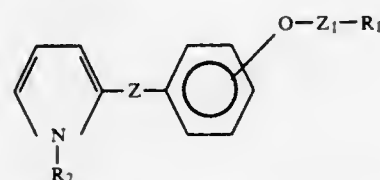
Filed Oct. 29, 1984, Ser. No. 665,428

Int. Cl.⁴ A61K 31/40; C07D 207/323

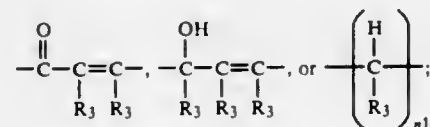
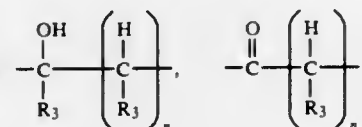
U.S. Cl. 514—423

8 Claims

1. A compound having anti-inflammatory and anti-allergic properties of the formula



and pharmaceutically acceptable salts thereof, wherein Z is



R₁ is phenyl or naphthyl;

R₂ is H or lower alkyl;

R₃ is H or CH₃;

n is 0, 1, 2, or 3; and

n¹ is 1, 2, or 3.

8. A therapeutic composition comprising as an active ingredient 50 to 300 mg of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,644,010

CERTAIN

β-OXO-α-CARBAMOYLPIRROLEPROPIONITRILES

Gordon N. Walker, Morristown, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 658,739, Oct. 9, 1984, abandoned, and a continuation-in-part of Ser. No. 426,425, Sep. 28, 1982, abandoned. This application Feb. 5, 1986, Ser. No. 827,482

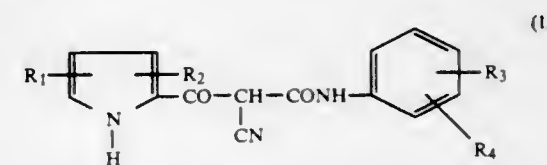
Claims priority, application South Africa, Mar. 27, 1984, 84/2238

Int. Cl.⁴ A61K 31/40; C07D 207/323

U.S. Cl. 514—423

17 Claims

10. A method of treating pain in a mammal which comprises administering to a mammal in need thereof an effective analgesic amount of a compound of the formula



or an enol tautomer thereof wherein each of R₁ and R₂ is independently hydrogen or lower alkyl of 1 to 4 carbon atoms; and each of R₃ and R₄ is independently hydrogen, lower alkyl of 1 to 4 carbon atoms, halogen or trifluoromethyl; or of a pharmaceutically acceptable alkali metal, alkaline earth metal, copper, zinc, ammonium, or a mono-, di- or tri-C₁-C₄-(alkyl or hydroxyalkyl)-ammonium salt thereof; or of a pharmaceutical composition comprising a said compound or a said salt thereof in combination with one or more pharmaceutically acceptable carriers.

4,644,011

PHARMACEUTICAL PREPARATIONS CONTAINING (+)-CYANIDAN-3-OL DERIVATIVES, THE USE THEREOF, NOVEL SUBSTITUTED (+)-CYANIDAN-3-OL DERIVATIVES, AND PROCESSES FOR PRODUCING THEM

Marc E. Ballenegger, Gimel; Christian G. Rimbault, Grand-Lancy; Alban I. Albert, Grand-Saconnex; André J. Weith, Signy; Pierre Courbat, Nyon, all of Switzerland; Robert G. Tyson, Clwyd, England; Derek R. Palmer, Wirral, England, and David G. Thompson, Clwyd, England, assignors to Zyma SA, Nyon, Switzerland

Continuation of Ser. No. 499,647, May 31, 1983, abandoned.

This application Jul. 9, 1985, Ser. No. 754,181

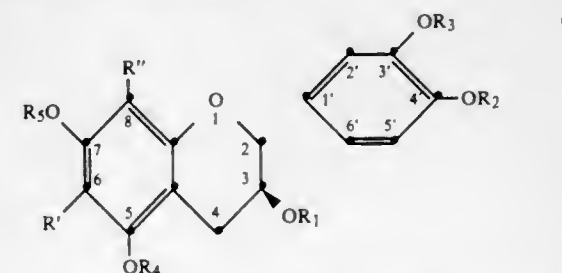
Claims priority, application United Kingdom, Jun. 1, 1982, 8215867

Int. Cl.⁴ A61K 31/35

U.S. Cl. 514—456

14 Claims

1. A pharmaceutical preparation for the treatment of a liver disease comprising a therapeutically effective amount of a compound of the formula



wherein R' is hydrogen, halogen, or C₁-C₇ alkylbenzyl; R'' is C₁-C₇ alkyl which is substituted by hydroxy-imino; C₂-C₇ alkenyl substituted by acetoxymethylthio; C₁-C₇ alkylbenzyl; formyl; or trifluoroacetyl; and R₁, R₂, R₃, R₄, and R₅ are each hydrogen, C₁-C₇ alkyl or phenyl-C₁-C₇ alkyl, and R₁ can also be C₈-C₁₆ alkanoyl; and a pharmaceutically acceptable carrier.

4,644,012

TREATMENT FOR OSTEOPOROSIS

Masao Tsuda, Hyogo; Yoichi Sawa, Sengokuhigashi, and Iwao Yamazaki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 20, 1984, Ser. No. 684,144

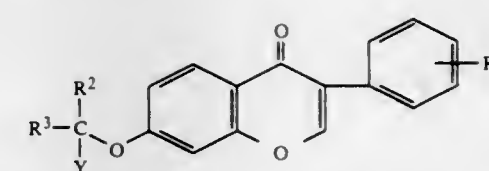
Claims priority, application Japan, Dec. 21, 1983, 58-242779; Dec. 21, 1983, 58-242780

Int. Cl.⁴ A61K 31/35

U.S. Cl. 514—456

10 Claims

1. A method for prevention or treatment of osteoporosis, which comprises administering to a patient in need of such prevention or treatment, as an active ingredient, an effective amount of a compound of the formula



wherein R¹ is hydrogen or hydroxy, R² and R³ are independently hydrogen or lower alkyl and Y is carboxyl, (C₁-C₄-alkoxy)carbonyl, benzyloxy-carbonyl, phenyloxycarbonyl, carbamoyl, N-methylcarbamoyl, N-ethylcarbamoyl, N,N-dimethylcarbamoyl, N,N-diethylcarbamoyl, N-morpholinocarbonyl, N-piperidinocarbonyl or N-piperazinocarbonyl.

4,644,013

PREPARATION OF FOAM PARTICLES OF ETHYLENIC RESIN AND FOAM MOLDINGS PREPARED THEREFROM

Akira Fujie, and Tsukasa Yamagishi, both of Suzuka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

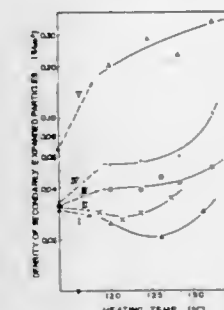
Filed Apr. 6, 1984, Ser. No. 597,714

Claims priority, application Japan, Apr. 8, 1983, 58-61582; Apr. 11, 1983, 58-63299; Jul. 14, 1983, 58-126940

Int. Cl.⁴ C08J 9/16, 9/18

U.S. Cl. 521—60

9 Claims



1. Foam particles of a linear, uncrosslinked ethylenic resin which can be expansion molded by heating in its uncrosslinked state, said ethylenic resin having a molecular weight distribution of at least 15, as defined by the ratio \bar{M}_w/\bar{M}_n , wherein \bar{M}_w is the weight average molecular weight and \bar{M}_n is the number average molecular weight, as measured by gel permeation chromatography, said ethylenic resin also having a bimodal wave form in the curve of molecular weight distribution, said weight average molecular weight being at least 2×10^5 and the density of said resin being at least 0.920 g/cm³, wherein said linear ethylenic resin is selected from the group consisting of a high density polyethylene, a linear low density polyethylene produced by low and medium pressure methods and a linear crystalline copolymer containing at least 50 mol % of ethylenic units.

4,644,014

FOAMED INSULATION AND PROCESS FOR PRODUCING THE SAME

Donald W. Thomson, 1215 Lakeview Dr., Inverness, Fla. 32650, and R. Keene Christopher, 2705 VanBuren St., Weedsport, N.Y. 13166

PCT No. PCT/US83/01335, § 371 Date Apr. 26, 1984, § 102(e) Date Apr. 26, 1984, PCT Pub. No. WO84/00921, PCT Pub. Date Mar. 15, 1984

Continuation-in-part of Ser. No. 414,953, Sep. 3, 1982, abandoned. This PCT application Aug. 29, 1983, Ser. No. 604,645

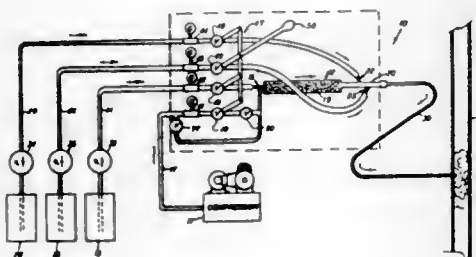
Int. Cl.⁴ C08J 9/30, 9/32; B29C 39/10; E04B 2/34

U.S. Cl. 521—68

27 Claims

1. A process for producing insulating foam comprising:

- (a) mechanically foaming with air a foamable first component comprising an alkyl sulfate and a half ester of maleic anhydride;
- (b) adding to said foamed first component a second component comprising an aqueous solution of magnesium oxide at least one of perlite and calcium carbonate, and a dispersant; and



- (c) adding to said first component a third component comprising an aqueous solution of at least one of aluminum chloride, magnesium sulfate, magnesium chloride, zinc chloride, sulfamic acid, sulfonic acid, citric acid, resorcinol, sodium silicate, zinc oxide, barium metaborate, vinyl alcohol, magnesium carborate, calcium chloride and vinyl acetate.

4,644,015

STABLE POLYOL-MELAMINE BLEND FOR USE IN THE MANUFACTURE OF FIRE RETARDANT FLEXIBLE URETHANE FOAM

Carl Scaccia, Worthington; Dennis H. Fisher, Westerville, and Peter E. Throckmorton, Plain City, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 8, 1986, Ser. No. 860,952

Int. Cl.⁴ C08G 18/14

U.S. Cl. 521—129 12 Claims

1. A storage stable suspension of a polyol, melamine and an amine compound for use in the synthesis of flame retardant polyurethane foams which suspension comprises: polyol, melamine and an effective stabilizing amount of an amine compound selected from the group consisting of diethanolamine, ethanolamine, trihexylamine, or mixtures thereof.

4,644,016

PROCESS FOR THE PRODUCTION OF POLYURETHANES

Werner Raschhofer, Cologne, Fed. Rep. of Germany, and Hans-Albrecht Freitag, Coraopolis, Pa., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

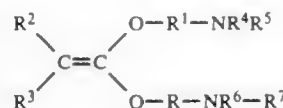
Filed Aug. 1, 1985, Ser. No. 761,278

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1984, 3429503

Int. Cl.⁴ C08G 18/14, 18/18, 18/20

U.S. Cl. 521—129 4 Claims

1. A process for the production of polyurethanes by reacting a polyisocyanate with a compound containing at least two isocyanate-reactive hydrogen atoms having a molecular weight of from 400 to 10,000 in the presence of a catalyst containing tertiary amino groups which catalyst corresponds to the formula



in which

R and R¹ (which may be the same or different) each represents a difunctional C₂-C₆ alkyl radical which may be branched and/or may contain ether or thioether or amino groups NR⁸ or together form an ethylene or n-propylene radical which radical may be methyl- or ethyl-substituted

R² and R³ (which may be the same or different) each represents hydrogen, an optionally branched C₁-C₆ alkyl radical, alkenyl or alkynyl or cycloalkyl or aryl or heteroaromatic radicals which may be alkyl-substituted or halogen substituted, or a halogen atom,

R⁴, R⁵, R⁶ and R⁷ (which may be the same or different) each represent a C₁-C₁₆ alkyl radical or two of the radicals together form a heterocyclic ring containing from 5 to 7 carbon atoms, and

R⁸ represents hydrogen, a C₁-C₆ alkyl radical or a C₅-C₇ cycloalkyl radical.

4,644,017

PROCESS FOR THE PRODUCTION OF POLYISOCYANATE ADDITION PRODUCTS AND COMPOSITE POLYISOCYANATE ADDITION PRODUCTS

Peter Haas, Haan, Fed. Rep. of Germany; Hans-Albrecht Freitag, Coraopolis, Pa.; Geza Avar, Leverkusen, Fed. Rep. of Germany; Claus-Dieter Sommerfeld, Much, Fed. Rep. of Germany, and Hans-Walter Illger, Roesrath, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

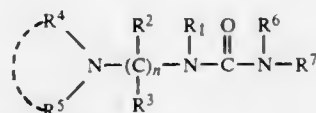
Filed Sep. 12, 1985, Ser. No. 775,274

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1984, 3435070

Int. Cl.⁴ C08G 18/14

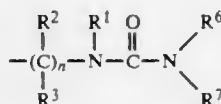
U.S. Cl. 521—129 23 Claims

1. A process for the production of a composite polyisocyanate addition product in which a compound having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from 400 to 10,000 is reacted with a polyisocyanate in the presence of a catalyst which is a diffusion stable amino alkyl urea having tertiary amino groups and corresponds to the formula



in which

R¹ represents hydrogen, R² and R³ each represent hydrogen or a C₁-C₆ alkyl group, R⁴ and R⁵ each represent a C₁-C₆ alkyl group or together represent a C₂-C₆ alkylene group which may contain heteroatoms or the group NR in which R represents an alkyl group or the group



R⁶ and R⁷ each represent hydrogen and n represents an integer from 2 to 6, to form a polyisocyanate addition product which addition product is combined with, coated with or applied to another different material.

4,644,018

HYDROPHILIC FOAM

W. Raymond Bowditch, West Chester, and Borys Rybalka, Philadelphia, both of Pa., assignors to Norwood Industries, Inc., Malvern, Pa.

Division of Ser. No. 707,955, Mar. 4, 1985, Pat. No. 4,603,076. This application Jan. 2, 1986, Ser. No. 815,517

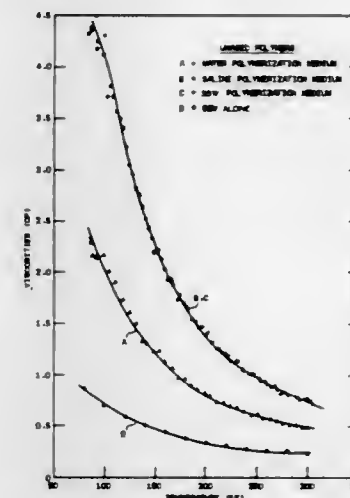
Int. Cl.⁴ C08G 18/14

U.S. Cl. 521—130 18 Claims

1. A method of preparing a flexible hydrophilic foam having good drape, stretch and recovery, comprising:

- (a) mixing a prepolymer, derived from a diphenylmethane diisocyanate-containing isocyanate product with a functionality of greater than 2.0 and a polyol having at least about 50% by weight oxyethylene groups, with a polyol having at least two hydroxyl equivalents per mole and having at least about 50% by weight oxyethylene groups, yielding a prepolymer/polyol system wherein the ratio of the isocyanate equivalents to the total hydroxyl equivalents is about 1:1;
- (b) blowing said prepolymer/polyol system with a substantially nonaqueous blowing agent; and
- (c) curing said prepolymer/polyol system.

wherein divalent cations constitute 10 to 50 weight percent of total cations, and wherein the resulting polymer has a K value of 150 or greater.



4,644,019

MODIFIED TEREPHTHALIC ESTER POLYOLS AND RIGID FOAMS THEREFROM

Kenneth G. McDaniel, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 28, 1985, Ser. No. 791,679

Int. Cl.⁴ C08G 18/14, 18/16, 18/32, 18/34

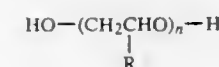
U.S. Cl. 521—173 17 Claims

1. A terephthalic ester polyol produced by reacting recycled polyethylene terephthalate with a 1 to 20 molar ethoxylate of an alkylphenol wherein the alkyl comprises from 8 to 18 carbon atoms.

4. A rigid foam obtained by reacting in the presence of a blowing agent and a catalyst of polyisocyanurate or polyurethane formation, an organic polyisocyanate and polyol component comprising the terephthalic ester polyol of claim 1.

8. A mixture of modified terephthalic ester polyols produced by reacting:

- a. recycled polyethylene terephthalate;
- b. an oxyalkylene glycol of the formula:



wherein R is hydrogen or alkyl of 1 to 4 carbon atoms and n ranges from 2 to 10;

- c. and about 5 to 50 wt % of a 1 to 20 molar ethoxylate of an alkylphenol wherein the alkyl is from 8 to 16 carbon atoms to form a mixture of modified terephthalic ester polyols.

10. A rigid foam obtained by reacting in the presence of a blowing agent and a catalyst of polyisocyanurate or polyurethane formation, an organic polyisocyanate and polyol component comprising the mixture of modified terephthalic ester polyols of claim 8.

4,644,020

PRODUCTION OF HIGH MOLECULAR WEIGHT VINYL LACTAM POLYMERS AND COPOLYMERS

G. Allan Stahl, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1983, Ser. No. 461,707

Int. Cl.⁴ C08F 4/04, 4/08, 26/10; C09K 7/00

U.S. Cl. 522—79 53 Claims

1. A method comprising polymerizing an N-vinyl lactam by free radical initiation employing an aqueous polymerization medium comprising at least one alkali metal salt electrolyte and at least one alkaline earth metal salt electrolyte in a concentration sufficient to give an Ionic Strength of 0.4 to 0.8 and

39. A method comprising polymerizing an N-vinyl lactam in a medium consisting of tertiary butanol by free radical initiation.

4,644,021

SUSTAINED RELEASE ANTIMICROBIAL AGENTS AND METHODS OF FOULING CONTROL USING THE SAME

Fumio Toda, Ehime; Masaru Okamoto, Yamato, and Fujiaki Mochizuki, Atsugi, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

Filed Aug. 16, 1985, Ser. No. 766,845

Claims priority, application Japan, Aug. 21, 1984, 59-173771

Int. Cl.⁴ C09D 5/14; C02F 1/68

U.S. Cl. 523—122 12 Claims

1. A sustained release antimicrobial agent comprising a clathrate compound composed of a water-soluble antimicrobial agent, and 1,1,6,6-tetraphenyl-2,4-hexadiyne-1,6-diol or 1,1-di(2,4-dimethylphenyl)-2-propyne-1-ol.

4,644,022

COLD-SETTING COMPOSITIONS FOR FOUNDRY SAND CORES AND MOLDS

Raja Iyer, Hazelcrest, Ill., assignor to Acme Resin Corporation, Westchester, Ill.

Filed Nov. 27, 1985, Ser. No. 802,280

Int. Cl.⁴ C08K 3/34; B22C 11/22

U.S. Cl. 523—144 14 Claims

1. A cold-setting foundry composition useful for foundry cores and molds comprising:

- (a) a particulate refractory material;
- (b) between about 0.5 and about 6 parts by weight per 100 parts of particulate refractory material of a resin binder;
- (c) between about 10 parts and about 70 parts by weight per 100 parts of resin binder of an acidic curing catalyst; and
- (d) between about 2 parts and about 30 parts by weight per 100 parts of resin binder of an accelerator selected from the group: dihydroxybenzenes, monoalkyl, monoaryl, and aralkyl derivatives of dihydroxybenzenes, trihydroxybenzenes, and mixtures thereof.

4,644,023
HEAT CURABLE EPOXY ADHESIVE COMPOSITION
 Richard K. Gray, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 9, 1985, Ser. No. 732,183

Int. Cl.⁴ C09J 5/02

U.S. Cl. 523—176

1 Claim

1. A heat curable adhesive composition which is substantially insoluble with cold hydraulic fluid before it is cured and resistant to degradation in hot hydraulic fluid after it is heat cured consisting essentially of an epoxy novolac resin, about three to four weight parts of a diglycidyl ether of bisphenol-A for each weight part said novolac resin, and about three to six weight parts 2-ethyl-4-methyl imidazole curing agent per 100 parts total resin.

4,644,024
PENTADIENYL CHLORIDE DERIVED POLYMERS
 John Burleigh, and Carl A. Ura-neck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 22, 1982, Ser. No. 443,721

Int. Cl.⁴ C08F 126/06; C08L 27/00; C08K 5/34

U.S. Cl. 524—99

23 Claims

1. A pentadienyl chloride polymer containing repeat units derived from 1-chloro-2,4-pentadiene.

4,644,025
LENS MATERIALS OF HIGH REFRACTIVE INDEXES
 Teruo Sakagami, Yasufumi Fujii, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kaishiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1985, Ser. No. 746,567

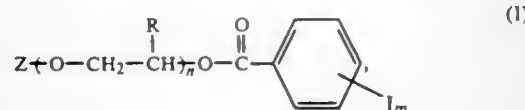
Claims priority, application Japan, Jun. 20, 1984, 59-125327

Int. Cl.⁴ C08F 214/16

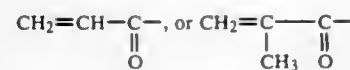
U.S. Cl. 526—261

5 Claims

1. A highly refractive lens material having a refractive index n_D^{20} of at least 1.58 and an Abbe's number of at least 28, said lens material being a copolymer comprising from 20% to 85% by weight of a monomer (I) represented by the following formula (I)



wherein: R represents H or CH₃; n is an integer of from 0 to 4; m is an integer of from 1 to 5; and Z represents a CH₂=CH—CH₂—,



group, and from 15 to 80% by weight of a monomer (II) copolymerizable with the monomer (I), said monomer (II) comprising a monomer selected from the group consisting of (a) esters of a monohydric or polyhydric alcohol and acrylic acid or methacrylic acid, (b) styrene, divinylbenzene, or vinyltoluene (c) diallyl phthalate or diethylene glycol bis (allyl carbonate), and (d) triallyl cyanurate or triallyl isocyanurate.

4,644,026
READHERING AND REMOVABLE ADHESIVE
 Ralph J. Shuman, Needham, and Barbara Burns, Auburn, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 756,870, Jul. 18, 1985. This application Jan. 27, 1986, Ser. No. 822,505

Int. Cl.⁴ C08L 7/00

U.S. Cl. 524—270

23 Claims

1. A gelled adhesive product in solid form comprising: a natural rubber latex component; a water soluble or water dispersible tackifying agent selected from the group consisting of the hydrogenated ester of rosin and the ester of hydrogenated rosin; and a gelling agent; said gelled adhesive product having the combination of properties resulting in an adhesive coatable onto a substrate surface area by gliding the adhesive product over the substrate surface, the adhesive having sufficient tack permitting the adhesive coated area on said substrate to immediately adhere to a solid contact surface as said adhesive coated substrate is pressed against the contact surface, the adhesive also having sufficient release property permitting removal of said adhesive coated substrate from said contact surface upon lifting the coated substrate from the contact surface, said adhesive having the additional property permitting said same adhesive coated substrate to readhere to a solid contact surface upon pressing said same coated substrate thereto without applying additional adhesive.

4,644,027
SELF-COMPATIBILIZING PHTHALATE-BASED POLYESTER POLYOLS
 George Magnus, Arlington Heights; Melvin Loeb, Northbrook, and Robert J. Wood, Round Lake Park, all of Ill., assignors to Stepan Company, Northfield, Ill.

Filed Jul. 15, 1985, Ser. No. 755,414

Int. Cl.⁴ C08L 67/02

U.S. Cl. 524—375

15 Claims

1. A process for preparing a high aromatic content low acid number self-compatible phthalate polyester polyol blend comprising the steps of:

(1) heating at a temperature ranging from about 180° to 240° C. a starting mixture which comprises on a 100 mole percent total basis:

(A) from about 15 to 40 mole percent of at least one phthalic acid material selected from the group consisting of phthalic anhydride, phthalic acid, isophthalic acid, terephthalic acid, and mixtures thereof,

(B) from about 40 to 75 mole percent of at least one aliphatic diol of the formula:



Where: R¹ is a divalent radical selected from the group consisting of:

(a) alkylene radicals each containing from 2 through 6 carbon atoms

(b) radicals of the formula:



where: R³ is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3, and

(C) from about 0.4 to 28.0 mole percent of at least one hydrophobic compound which is characterized by:

(a) having an equivalent weight of from about 130 to 900,

(b) containing from about 8 to 60 carbon atoms per molecule, and

(c) containing at least one and not more than four radicals per molecule, which are each selected from the group consisting of carboxyl, hydroxyl, and mixtures thereof,

said heating being continued until a liquid reaction product is produced which is characterized by having:

(A) an hydroxyl number ranging from about 200 to 500, (B) an acid number ranging from about 0.1 to 7, (C) a saponification value ranging from about 215 to 300, and (D) a viscosity ranging from about 200 to 50,000 centipoises at 25° C. measuring using a Brookfield viscometer, and thereafter

(2) admixing with said liquid reaction product from greater than 0 to about 30 weight percent of at least one nonionic propoxylate ethoxylate compound having a molecular weight ranging from about 1200 to 13,000.

4,644,028
PREPARATION OF AQUEOUS KETONE RESIN OR KETONE/ALDEHYDE RESIN DISPERSIONS, AND PRODUCTION OF SURFACE-COATING BINDERS
 Kurt Fischer, Ludwigshafen; Harro Petersen, Frankenthal; Hellmuth Kasch, Ludwigshafen, and Eckehardt Wistuba, Bad Dürkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,098

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406474

Int. Cl.⁴ C08K 5/06; C08L 61/02

U.S. Cl. 524—376

6 Claims

1. A process for the preparation of a stable aqueous dispersion of a ketone resin, wherein a melt or an about 75 to 95% strength solution of the ketone resin, which ketone resin is an alkali-catalyzed self-condensate of cyclohexanone or its derivatives, is dispersed in water by agitating the resin-water mixture in the presence of at least one copolymer selected from the group consisting of a copolymer of a vinyl lactam and a vinyl ester, and a carboxyl-containing (meth)acrylate copolymer, some or all of whose carboxyl groups are neutralized, with or without the addition of a non-ionic emulsifier.

2. The process of claim 1, wherein an oxyethylated fatty alcohol containing from 5 to 50 ethylene oxide units per fatty alcohol molecule is added to the dispersion as a non-ionic emulsifier and wherein the ketone resin is a self-condensate of cyclohexanone.

4,644,029
CHROMATE COATINGS FOR METALS
 Jane Cable, Slough, and George Higgins, Windsor, both of England, assignors to Pyrene Chemical Services Limited, Buckinghamshire, England

Filed Sep. 9, 1985, Ser. No. 773,483

Claims priority, application United Kingdom, Sep. 25, 1984, 8424159

Int. Cl.⁴ C08K 3/22

U.S. Cl. 524—407

11 Claims

1. A brushable acidic aqueous composition containing dissolved or uniformly dispersed hexavalent chromium, trivalent chromium and at least 5 g/l silica and/or silicate, which is substantially free of reducing material and includes a nonionic surfactant, N-methyl-2-pyrrolidone, and organic thickener that render the composition brushable and that are stable in the composition.

4,644,030
AQUEOUS POLYURETHANE - POLYOLEFIN COMPOSITIONS
 Peter Loewigkeit, Wyckoff, N.J., and Kenneth A. Van Dyk, Howell, N.J., assignors to Witco Corporation, New York, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,523

Int. Cl.⁴ C08F 2/24, 283/00

U.S. Cl. 524—457

19 Claims

1. A method of preparing a stable aqueous dispersion of polymeric material comprising:

(A) producing an NCO-terminated polyurethane prepoly-

mer in admixture with inert liquid polymerizable ethylenically unsaturated monomer material,

(B) dispersing the product from A in water,

(C) chain-extending to fully react the prepolymer in the resulting aqueous dispersion from B, and

(D) subjecting the aqueous dispersion from C to vinyl addition polymerization conditions to polymerize said monomer material in situ, the weight ratio of fully reacted chain extended polyurethane to said monomer material being about 9:1 to about 1:9.

4,644,031
COATING FOR PHARMACEUTICAL DOSAGE FORMS
 Klaus Lehmann, Rosdorf; Dieter Dreher, Darmstadt, and Harry Goetz, Alsbach-Haehnlein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

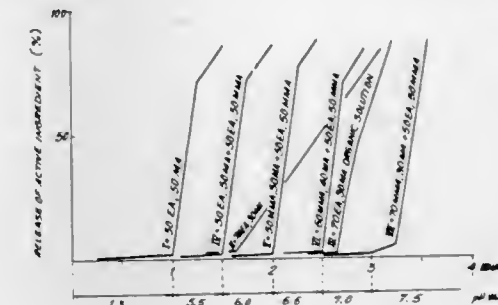
Filed Feb. 1, 1985, Ser. No. 697,288

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405378

Int. Cl.⁴ A61K 9/32; A01N 25/10; C08L 33/00

U.S. Cl. 524—501

12 Claims



1. An aqueous dispersion adaptable to use for coating pharmaceutical dosage forms, said dispersion having a pH below 6 and comprising

(A) dispersed latex particles of a polymer containing carboxyl groups which is water insoluble at a pH below 5 but becomes water soluble at least in a portion of the pH range between pH 5 and pH 8, and

(B) dispersed latex particles of a water insoluble film forming polymer.

4,644,032
NON-GHOSTING PRESSURE SENSITIVE ADHESIVES
 William H. Keskey, James E. Schuetz, and Andrew D. Hickman, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1984, Ser. No. 647,288

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.⁴ C08L 37/00

U.S. Cl. 524—549

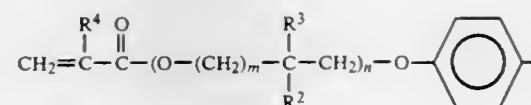
7 Claims

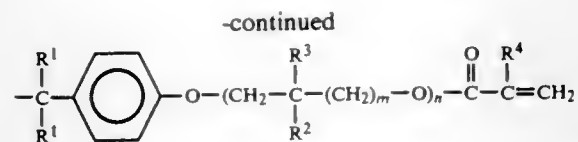
1. A pressure-sensitive adhesive composition having non-ghosting characteristics comprising:

(A) a latex composition prepared from addition polymerizable monomers comprising:

(i) monomer containing pendent coreactive groups capable of reacting with an oxazoline group to form a covalent bond thereto,

(ii) monomer containing pendent oxazoline groups as represented by the general structure:

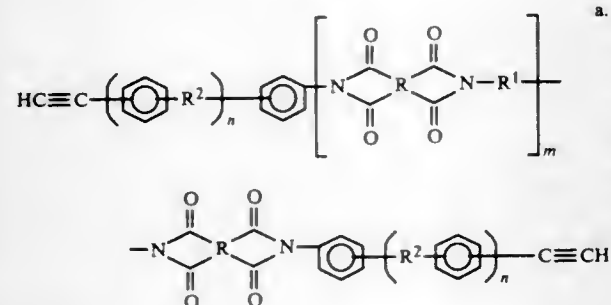




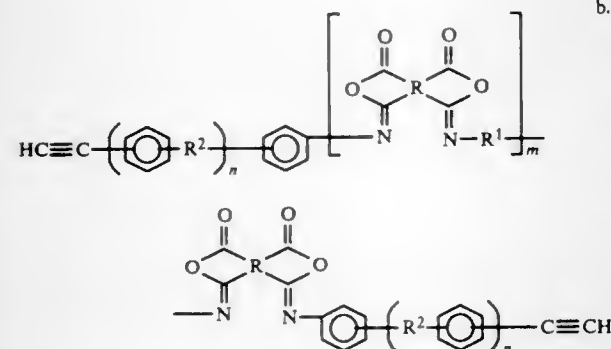
wherein

R¹ is methyl, ethyl, carboxyl or hydrogen;
R² is hydrogen, methyl or ethyl;
R³ is hydrogen, methyl or hydroxyl;
R⁴ is hydrogen, chlorine, methyl or ethyl;
n is an integer having a value of 0 to 8; and
m is 0 or 1;

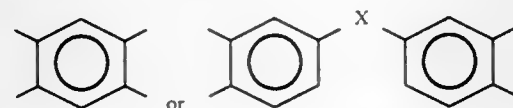
and mixtures thereof; and (B) about 1 to 50% by weight of the total composition of an additive selected from the group consisting of a polyimide having a structure



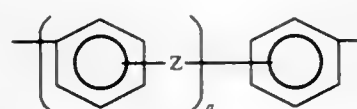
a polyisoimide having a structure



and mixtures thereof;
wherein R is



with X being O, CH₂, S, CO, SO₂, CHOH, $\text{---}(\text{CF}_2)_p\text{---}$, $\text{---CF}_2\text{---O---CF}_2\text{---}$, $\text{---C}(\text{CF}_3)_2\text{---}$, or a bond; R¹ is



with Z being O, CH₂, S, CO, SO₂, CHOH, $\text{---}(\text{CF}_2)_p\text{---}$, $\text{---CF}_2\text{---O---CF}_2\text{---}$, $\text{---C}(\text{CF}_3)_2\text{---}$; and q being 0-5;
R² is O, CH₂, S, CO, SO₂, $\text{---}(\text{CF}_2)_p\text{---}$, $\text{---CF}_2\text{---O---CF}_2\text{---}$, $\text{---C}(\text{CF}_3)_2\text{---}$; with

p being 1-5;
n is 0 to 10; and
m is 0 or above.

4,644,041

PREPARATION OF POLY(METHYLMETHACRYLATE) POLYMER PARTICLES

Mitchell A. Winnik, and Brett Williamson, both of Toronto, Canada, assignors to The University of Toronto Innovations Foundation, Toronto, Canada

Filed Jul. 8, 1985, Ser. No. 752,568

Int. Cl.⁴ C08F 120/14

U.S. Cl. 526-201

7 Claims

1. A process for preparing poly(methylmethacrylate) particles, which comprises polymerizing methylmethacrylate monomer by free radical polymerization in a reaction medium in which the monomer is soluble but in which the poly(methylmethacrylate) polymer particles are substantially insoluble and in the presence of a steric stabilizer, said reaction medium comprising a mixture of a straight chain, branched chain or cyclic liquid alkane of 5-20 carbon atoms and an alkane compatible liquid halogenated hydrocarbon, the halogenated hydrocarbon having a density greater than that of the alkane, the ratio of alkane to halogenated hydrocarbon being such as to attain a reaction medium density approximating or exceeding that of the poly(methylmethacrylate) particles formed, said halogenated hydrocarbon being one which will dissolve methylmethacrylate monomer but will not significantly dissolve the resultant poly(methylmethacrylate) particles.

4,644,042

POLYMERS OF N-SUBSTITUTED SECONDARY MONOALLYLAMINES AND THEIR SALTS AND PROCESS FOR PRODUCING THE SAME

Toshio Ueda; Kenji Kageno; Kiyoshi Shimizu, all of Koriyama; Sakuro Hasegawa, Fujisawa, and Susumu Harada, Tokyo, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

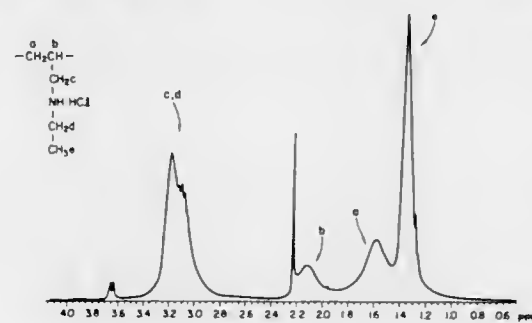
Filed Aug. 27, 1985, Ser. No. 770,297

Claims priority, application Japan, Sep. 1, 1984, 59-183602

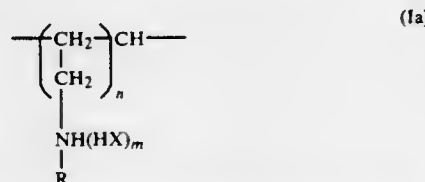
Int. Cl.⁴ C08F 2/00, 12/28, 26/04, 4/04

U.S. Cl. 526-204

6 Claims



1. Polymers of N-substituted secondary monoallylamines and their salts represented by the general formula:



wherein R represents a radical selected from the group consisting of alkyl having 2 or more carbon atoms, substituted alkyl and cycloalkyl radicals; X represents a monovalent anionic

radical; n represents an integer from 10 to 100,000; and m represents an integer from 0 to 100,000.

4,644,043

FLUORINE-CONTAINING POLYMER FOR GAS SEPARATING MEMBRANE

Akira Ohmori, Ibaraki; Takashi Yasuhara, Settsu; Naoaki Izutani, Takatsuki, and Yasufumi Ueda, Sakai, all of Japan, assignors to Daikin Industries Ltd., Japan

Filed Oct. 29, 1985, Ser. No. 792,570

Claims priority, application Japan, Nov. 2, 1984, 59-232192

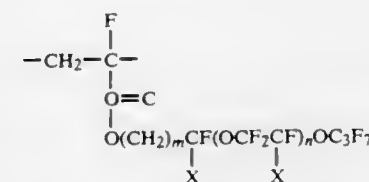
Int. Cl.⁴ C08F 14/18

U.S. Cl. 526-246

4 Claims

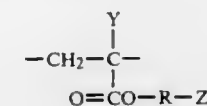
1. An α -fluoroacrylate polymer comprising:

(1) 50 to 100% by weight of a structural unit represented by the formula

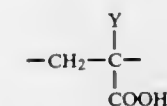


wherein X is fluorine or fluoroalkyl having 1 to 3 carbon atoms, m is an integer of 1 to 3 and n is an integer of 0 to 5, and

(2) up to 50% by weight of at least one of (i) a structural unit represented by the formula



wherein Y is hydrogen, fluorine or methyl, R is alkylene having 1 to 5 carbon atoms or fluoroalkylene and Z is hydroxyl, glycidyl or carboxyl, and (ii) a structural unit represented by the formula



wherein Y is as defined above.

4,644,044

PROCESS FOR MANUFACTURING ETHYLENE TERPOLYMERS AND ETHYLENE COPOLYMERS

Pierre Gloriod, Lillebonne; Joel Andureau, Noeux les Mines, and Maurice Pellegrini, Lievin, all of France, assignors to Societe Chimique des Charbonnages, S.A., France

Filed Aug. 22, 1985, Ser. No. 768,444

Claims priority, application France, Aug. 23, 1984, 84 13138

Int. Cl.⁴ C08F 20/08

U.S. Cl. 526-272

4 Claims

1. A process for the manufacture of radical ethylene terpolymers comprising 50 to 99.2% by weight of moieties derived from ethylene, 0.5 to 40% by weight of moieties derived from an alkyl (meth)acrylate and 0.3 to 10% by weight of moieties derived from maleic anhydride by copolymerizing, in the presence of at least one free-radical initiator, a mixture of ethylene, an alkyl (meth)acrylate and maleic anhydride, in a device comprising a primary compressor, the delivery pressure of which is between 200 and 300 bars, connected to a secondary compressor which is connected directly to a polymerization reactor, fresh ethylene being fed at the intake of the said primary compressor and said copolymerization being carried out in the said polymerization reactor under a pressure of

between 1,000 and 2,500 bars and at a temperature of between 140° and 280° C., wherein the feeding of the alkyl (meth)acrylate and maleic anhydride into the said polymerization reactor is effected by introducing a solution of maleic anhydride in the alkyl (meth)acrylate at the intake of the said secondary compressor.

4,644,045

METHOD OF MAKING SPUNBONDED WEBS FROM LINEAR LOW DENSITY POLYETHYLENE

R. William Fowells, Washougal, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Mar. 14, 1986, Ser. No. 839,655

Int. Cl.⁴ C08F 210/00

U.S. Cl. 526-348

11 Claims

1. In the method of forming a spunbonded nonwoven web of continuous polyolefin filaments by extruding the polyolefin at a temperature above its melting point through a spinneret to form filaments of the polyolefin, drawing the filaments with an air gun, and depositing the filaments on a web-forming surface to form the nonwoven web, the improvement wherein the polyolefin is a linear copolymer of ethylene and an ethylenically unsaturated alpha-olefin having 4 to 8 carbon atoms, the copolymer having a percent crystallinity of at least 33 percent, a cone die melt flow of between about 65 and 85 grams/ten minutes, and a ratio of the natural logarithm of die swell to melt index of between about 0.014 and 0.020, and wherein the copolymer is extruded at a temperature between about 185° and 215° C.

4,644,046

ULTRATHIN FILM, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF FOR CONCENTRATING A SPECIFIC GAS FROM A GAS MIXTURE

Takeyoshi Yamada, Iwakuni, Japan, assignor to Teljin Limited, Osaka, Japan

Filed Jun. 19, 1985, Ser. No. 746,568

Claims priority, application Japan, Jun. 20, 1984, 59-125046;

Sep. 21, 1984, 59-196521

Int. Cl.⁴ C08G 77/04

U.S. Cl. 528-28

28 Claims

1. An ultrathin film composed substantially of a polyaddition polymer comprising bonded units derived from
(A) at least one silicon-containing polyamine containing in the molecule at least two primary and/or secondary amino groups not directly bonded to the silicon atom,
(B) at least one polysiloxane having at least two silanol-functional hydroxyl groups in the molecule, and
(C) at least one polyisocyanate having at least two isocyanate groups in the molecule.

4,644,047

SELF-COMPATIBILIZING PHTHALATE-BASED POLYESTER POLYOLS

Robert J. Wood, Round Lake Park, Ill., assignor to Stepan Company, Northfield, Ill.

Continuation-in-part of Ser. No. 622,670, Jun. 20, 1984, Pat. No.

4,529,744, and a continuation-in-part of Ser. No. 725,394, Apr.

22, 1985, Pat. No. 4,595,711, which is a continuation-in-part of

Ser. No. 622,670, which is a continuation-in-part of Ser. No.

436,551, Oct. 25, 1982, abandoned. This application Jul. 15,

1985, Ser. No. 755,678

Int. Cl.⁴ C08L 67/02

U.S. Cl. 528-176

21 Claims

1. A process for preparing a high aromatic content low acid number self-compatibilized phthalate polyester polyol blend comprising the step of heating at a temperature ranging from about 180° to 240° C. a starting mixture which comprises on a 100 mole percent total basis:

(A) from about 15 to 40 mole percent of at least one phthalic acidic material selected from the group consisting of

phthalic anhydride, phthalic acid, isophthalic acid, terephthalic acid, and mixtures thereof,
(B) from about 40 to 75 mole percent of at least one aliphatic diol of the formula:



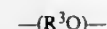
where: R^1 is a divalent radical selected from the group consisting of:

- (a) alkylene radicals each containing from 2 through 6 carbon atoms
(b) radicals of the formula:



where: R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3, and

- (C) from about 0.4 to 28 mole percent of at least one non-ionic surfactant compound which is characterized by:
(a) containing from about 10 to 600 carbon atoms per molecule, and
(b) containing at least one and not more than four hydroxyl radicals per molecule,
(c) containing from about 4 to 240 radicals per molecule of the formula:



where R^3 is as above defined,
said heating being continued until a liquid reaction product is produced which is characterized by having:

- (i) an hydroxyl number ranging from about 200 to 500,
(ii) an acid number ranging from about 0.1 to 7,
(iii) a sap number ranging from about 130 to 400, and
(iv) a viscosity ranging from about 200 to 50,000 centipoises at 25° C. measuring using a Brookfield viscometer.

4,644,048

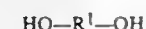
SELF-COMPATIBILIZING PHTHALATE-BASED POLYESTER POLYOLS

George Magnus, Arlington Heights; Melvin Loeb, Northbrook, and Robert J. Wood, Round Lake Park, all of Ill., assignors to Stepan Company, Northfield, Ill.

Filed Jul. 12, 1985, Ser. No. 754,832
Int. Cl.⁴ C08G 63/18

U.S. Cl. 528—176 25 Claims
1. A process for preparing a high aromatic content low acid number self-compatible phthalate polyester polyol blend comprising the step of heating at a temperature ranging from about 180° to 240° C. a starting mixture which comprises on a 100 mole percent total basis:

- (A) from about 15 to 40 mole percent of at least one phthalic acid material selected from the group consisting of phthalic anhydride, phthalic acid, isophthalic acid, terephthalic acid, and mixtures thereof,
(B) from about 40 to 75 mole percent of at least one low molecular weight aliphatic diol characterized by the generic formula:



where: R^1 is a divalent radical selected from the group consisting of

- (a) alkylene radicals each containing from 2 through 6 carbon atoms, and
(b) radicals of the formula:



where: R^3 is an alkylene radical containing from 2 through 3 carbon atoms, and n is an integer of from 1 through 3, and

- (c) mixtures thereof, and

- (C) from about 0.4 to 28 mole percent of a mixture of:
(a) least one hydrophobic compound which is characterized by:

- (1) having an equivalent weight of from about 130 to 900,
(2) containing from about 8 to 60 carbon atoms per molecule, and
(3) containing at least one and not more than four radicals per molecule, said radicals being selected from the group consisting of carboxyl, hydroxyl, and mixtures thereof, and

- (b) at least one nonionic surfactant compound which is characterized by:

- (1) containing from about 10 to 600 carbon atoms per molecule,
(2) containing at least one and not more than four hydroxyl radicals per molecule,
(3) containing from about 4 to 240 radicals per molecule of the formula



where:

R^3 is as above defined,

the weight ratio in such mixture of said hydrophobic compound to said nonionic surfactant compound being in the range from about 1 to 10 to about 10 to 1 said heating being continued until a liquid reaction product is produced which is characterized by having:

- (A) an hydroxyl number ranging from about 200 to 500,
(B) an acid number ranging from about 0.1 to 7,
(C) a saponification value ranging from about 130 to 400, and
(D) a viscosity ranging from about 200 to 50,000 centipoises at 25° C. measured using a Brookfield viscometer.

4,644,049

SOLID STATE POLYMERIZATION

William C. T. Tung, Tallmadge; Paul R. Wendling, Akron, both of Ohio, and James W. Brent, Jr., Huntington, W. Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 5, 1986, Ser. No. 836,284
Int. Cl.⁴ C08G 63/02

U.S. Cl. 528—272 14 Claims
1. An improved process for solid state polymerizing a polyester prepolymer into a high molecular weight resin comprising

- (1) crystallizing said polyester prepolymer in the presence of the vapor of at least one member selected from the group consisting of volatile chlorinated hydrocarbons, volatile ketones, tetrahydrofuran, ethylene oxide, and propylene oxide; and
(2) subsequently heating the crystallized polyester prepolymer to a temperature of from about 1° C. to about 50° C. below its sticking temperature for a period of time sufficient to produce a high molecular weight polyester resin.

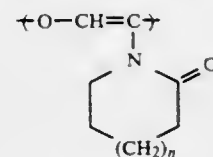
4,644,050

POLY(1-OXY-3-LACTAM VINYLENE)

Lon J. Mathias, and Douglas R. Moore, both of Hattiesburg, Miss., assignors to University of Southern Mississippi, Hattiesburg, Miss.

Filed Sep. 13, 1985, Ser. No. 775,768
Int. Cl.⁴ C08G 69/14

U.S. Cl. 528—323 8 Claims
1. A polymer having repeating units of the formula



wherein n is 1, 2, or 3.

4,644,051

CATALYTIC REACTION OF POLYOL WITH BIS-ACYLLACTAM

Albert A. Van Geenen, Brunssum, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Dec. 26, 1984, Ser. No. 686,411

Claims priority, application Netherlands, Jan. 3, 1984, 8400006

Int. Cl.⁴ C08G 69/20

U.S. Cl. 528—323 16 Claims

1. A process for preparing an activator selected from the group consisting of an ester acyllactam, an esteramide acyllactam, or mixtures thereof by the catalytic condensation of an imide and an alcohol comprising:

reacting a polyol and a bis-acyllactam compound in the liquid state in the presence of a Lewis acid catalyst, said Lewis acid catalyst being a halide, carboxylate or acetylacetate of a metal compound wherein the metal component of said metal compound is selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, boron, aluminum, zinc and cadmium.

4,644,052

REACTION OF BIS-OXAZOLINE WITH POLYCARBOXYLIC ACID CATALYZED BY ALKALI OR ALKALINE EARTH METAL CATIONIC COMPLEX

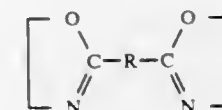
Anil B. Goel, Worthington, and Teresa A. DeLong, West Mansfield, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 15, 1985, Ser. No. 765,636

Int. Cl.⁴ C08G 69/44

U.S. Cl. 528—363 7 Claims

1. The process for preparing thermoset polymers comprising heating a mixture of a bis-oxazoline, a poly carboxylic acid and an alkali or alkaline earth metal cationic catalyst at a temperature in the range of from about 100° C. to about 250° C. and at a pressure in the range of from about atmospheric up to about 50 atmospheres wherein the bis-oxazoline is one conforming to the formula



wherein R represents an alkylene group having from 1 to 20 carbon atoms, an arylene group having from 6 to 12 carbon atoms, or an alkarylene group having from 7 to 20 carbon atoms and wherein the catalyst conforms to the formula $\text{M}(\text{X})_n$ wherein M represents an alkali metal or an alkaline earth metal, X represents BF_4 , PF_6 , SbF_6 , AsF_6 or ClO_4 , and n represents 1 or 2.

4,644,053

CYCLIC POLYCARBONATE OLIGOMERS AND METHODS FOR THEIR PREPARATION AND USE

Daniel J. Brunelle, Scotia; Thomas L. Evans, Clifton Park; Thomas G. Shannon, Schenectady, and David A. Williams, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 609,407, May 11, 1984, abandoned. This application Feb. 22, 1985, Ser. No. 704,122

Int. Cl.⁴ C08G 63/62

U.S. Cl. 528—371 13 Claims

1. A composition consisting essentially of a mixture of cyclic oligomers having varying degrees of polymerization from 2 to about 30, the structural units in said oligomers having the formula



at least about 60% of the total number of R values in said composition being aromatic and the balance of the R values being aliphatic, alicyclic or aromatic.

4,644,054

CALCITONIN ANALOGS WITH AMINO ACID SUBSTITUENTS AT POSITION 31

Tomas G. Kempe, 16604 Windermere Pl., Minnetonka, Minn. 55345

Filed Oct. 1, 1985, Ser. No. 782,494

Int. Cl.⁴ C07K 7/36; A61K 37/24

U.S. Cl. 530—307 11 Claims

1. A biologically active calcitonin having 32 amino acid residues with a C-terminal prolinamide and a N-terminal disulfide linked ring from position 1 through 7 and having at position 31 an amino acid substituent which is Ser, Asp, Asn, Glu, Ile, Pro, Met, Lys, Arg, Leu, Phe or Gly.

4,644,055

METHOD FOR PREPARING SPECIFIC INHIBITORS OF VIRUS-SPECIFIED PROTEASES

Charles A. Kettner, and Bruce D. Korant, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1984, Ser. No. 682,296

Int. Cl.⁴ C07K 5/10

U.S. Cl. 530—330 9 Claims

1. A process for preparing a specific inhibitor of proteases which cleave virus-specified polypeptide precursors to form virus-associated proteins, wherein the proteases to be inhibited are specified by a virus selected from the group consisting of picornaviruses, togaviruses, RNA tumor viruses, adenoviruses, comoviruses, and other viruses which encode a viral protease, comprising:

- (a) isolating viral protein, RNA, DNA, mRNA, or DNA complementary to viral RNA;
(b) analyzing the protein, RNA, DNA, mRNA, or cDNA to provide an amino acid sequence of a polypeptide precursor of virus-specified proteins;
(c) locating within the amino acid sequence a cleavage recognition site for the virus-specified protease; and
(d) preparing a specific peptide inhibitor of the virus-specified protease wherein the inhibitor comprises a C-terminal inhibitor moiety selected from the group consisting of halomethyl ketones, covalently linked to a peptide sequence of three to four amino acids or amino acid analogs which substantially corresponds to the amino acid sequence located immediately adjacent to and upstream of the cleavage recognition site of the polypeptide precursor.

4,644,056

METHOD OF PREPARING A SOLUTION OF LACTIC OR COLOSTRIC IMMUNOGLOBULINS OR BOTH AND USE THEREOF

Norbert Kothe, Kronberg; Herbert Dichtelmüller, Sulzbach; Wolfgang Stephan, Dreieich, and Bertram Eichentopf, Bad Soden, all of Fed. Rep. of Germany, assignors to Biotest Pharma GmbH, Frankfurt, Fed. Rep. of Germany

Filed Sep. 3, 1985, Ser. No. 772,070

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 3432718

Int. Cl.⁴ C07K 3/26, 3/28, 35/20

U.S. Cl. 530—387 12 Claims

1. In the preparation of a solution of lactic or colostric immunoglobulins by processing a lactic and/or colostric milk and precipitating the caseins, the improvement which comprises

acidifying the milk to a pH of 4.0-5.5, subjecting the milk to cross-flow filtration in a filtration unit with a mean pore size of 0.1-1.2 μm , and subjecting the filtrate to a further cross-flow filtration in another filtration unit with a limit of separation of 5,000-80,000 daltons, thereby to separate the low-molecular components therefrom.

4,644,057

PROCESS FOR THE CLEAVAGE OF PEPTIDES AND PROTEINS AT THE METHIONYL BOND USING CYANOGEN CHLORIDE

Richard Bicker, Liederbach, and Gerhard Seipke, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 7, 1985, Ser. No. 795,920

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 3440988

Int. Cl.⁴ C07K 17/00; C12N 9/99, 11/02

U.S. Cl. 530-409

10 Claims

1. A process for the cleavage of peptides and proteins at the methionyl bond, which comprises carrying out the cleavage with cyanogen chloride.

4,644,058

REACTIVE PYRIDONE AZO DYES HAVING BOTH MONOCHLOROTRIAZINYL AND VINYL SULFONE TYPE REACTIVE GROUPS

Yasutaka Shimidzu, Osaka; Naoki Harada, Ibaraki, and Yasuo Tezuka, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 18, 1982, Ser. No. 442,590

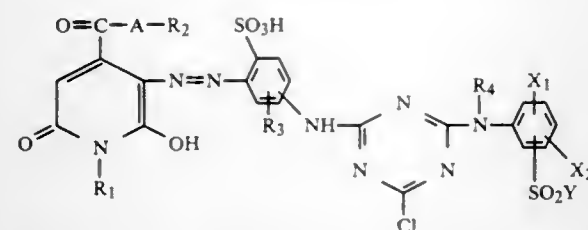
Claims priority, application Japan, Nov. 25, 1981, 56-189755

Int. Cl.⁴ C09B 62/028, 62/45, 62/51, 1/382

U.S. Cl. 534-635

6 Claims

1. A monoazo compound represented by a free acid of the formula,



wherein R₁ and R₂ independently represent hydrogen, alkyl unsubstituted or substituted with hydroxy or alkoxy, aralkyl unsubstituted or substituted with alkyl, alkoxy or alkylamine, or cyclohexyl; R₃ represents hydrogen, methyl or sulfonic acid; R₄ represents hydrogen or alkyl unsubstituted or substituted with hydroxy, alkoxy, chloro, carboxy, alkoxy carbonyl or sulfo; A represents oxygen; X₁ and X₂ independently represent hydrogen, chlorine, methyl, methoxy, carboxyl or sulfonic acid; and Y represents -CH=CH₂ or -CH₂CH₂Z in which Z represents halogen, -OSO₃H or -OPO₃H₂.

4,644,059

HAEMOPHILUS INFLUENZAE B POLYSACCHARIDE-DIPHTHERIA TOXOID CONJUGATE VACCINE

Lance K. Gordon, Mount Pocono, Pa., assignor to Connaught Laboratories, Inc., Swiftwater, Pa.

Continuation of Ser. No. 395,743, Jul. 6, 1982, Pat. No.

4,496,538. This application Jan. 16, 1985, Ser. No. 691,895

Int. Cl.⁴ C08B 37/00; A61K 39/102

U.S. Cl. 536-1.1

1 Claim

1. A hapten prepared from capsular *Haemophilus influenzae* b polysaccharide, consisting of approximately equal parts of ribose, ribitol and phosphate, by heating until less than 20% is

of a molecular size is below 200,000 dalton and less than 20% is of molecular size greater than 2,000,000 dalton.

4,644,060

SUPERCritical AMMONIA TREATMENT OF LIGNOCELLULOSIC MATERIALS

Yu-Chia T. Chou, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1985, Ser. No. 736,386

Int. Cl.⁴ A23K 1/22; C08B 1/00

U.S. Cl. 536-30

20 Claims

1. A process for improving the bioavailability of polysaccharides in lignocellulosic materials, comprising contacting the lignocellulosic materials with ammonia at a temperature from about 100° C. to about 200° C., at a pressure from about 6.9 MPa to about 35 MPa, and at an ammonia density from about 0.10 g per mL to about 0.45 g per mL.

4,644,061

CARBAPENEM ANTIBIOTICS

Choung U. Kim, Manlius, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

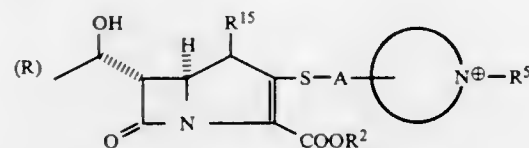
Continuation-in-part of Ser. No. 530,011, Sep. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 425,755, Sep. 28, 1982, abandoned. This application Feb. 22, 1985, Ser. No. 705,780

Int. Cl.⁴ C07D 487/04; A61K 31/40

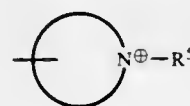
U.S. Cl. 540-350

58 Claims

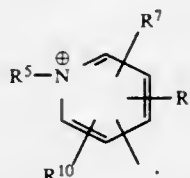
1. A compound of the formula



wherein R¹⁵ is hydrogen or methyl; A is C₁-C₆ straight or branched chain alkylene; R² is hydrogen, an anionic charge or a conventional readily removable carboxyl protecting group, providing that when R² is hydrogen or a protecting group, there is also present a counter ion; and



represents a radical of the formula



wherein R⁵ is C₁-C₄ alkyl and R⁶, R⁷ and R¹⁰ are independently selected from hydrogen; C₁-C₄ alkyl; C₁-C₄ alkyl substituted by hydroxy; C₁-C₄ alkoxy; C₁-C₄ alkylthio; halo; carboxy; carbamoyl or sulfo; or a pharmaceutically acceptable salt thereof.

4,644,062

PROCESS FOR THE PRODUCTION OF β -CARBOLINES BY DEHYDROGENATION

Gregor Haffer, Helmut Börner, and Andreas Huth, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Feb. 3, 1986, Ser. No. 825,718

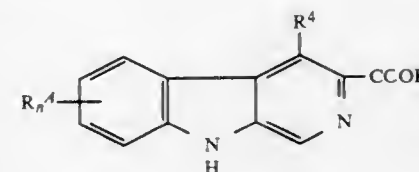
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1985, 3504045

Int. Cl.⁴ C07D 471/04

U.S. Cl. 546-85

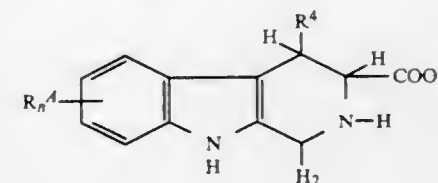
9 Claims

1. A process for the production of a β -carboline of the general formula



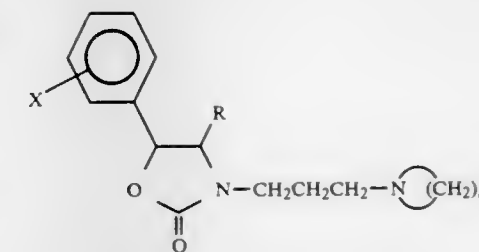
wherein

R⁴ is H, C₁-5-alkyl or -(CH₂)_n-OR, each R⁴ independently is H, R, (CHR)_n-OR, OCH₂Ph, OPh, OPh and OCH₂Ph substituted by Cl, Br or both Cl and Br, OR, NRR, Cl or Br, each R independently is C₁-5 alkyl, each n independently is 1 or 2 comprising dehydrogenating the corresponding tetrahydrocarboline of the formula



wherein

R⁴, R⁵, n and R are as defined above, at a reaction temperature below ambient temperature, in a reaction compatible inert solvent, with amounts of tert-butyl hypochlorite and a tertiary amine effective to produce said β -carboline.



wherein R is a straight or branched alkyl group having 3 to 8 carbon atoms, X is a hydrogen or halogen atom or a lower alkyl or lower alkoxy group and n is an integer of 4 to 6, or an acid addition salt thereof.

3. (4S, 5R)-4-(2-Methylpropyl)-5-phenyl-3-(3-piperidino-propyl)-1,3-oxazolidine-2-one.

4,644,064

1,2-BENZISOXAZOLOXYETHYLAMINES AND INTERMEDIATES FOR THE PREPARATION THEREOF

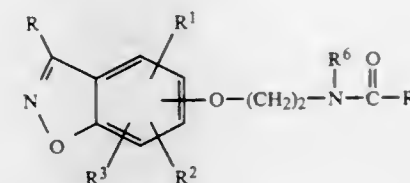
Gregory M. Shutske, Naubelm, Fed. Rep. of Germany, assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J. Division of Ser. No. 238,276, Feb. 25, 1981, Pat. No. 4,427,691. This application Oct. 14, 1983, Ser. No. 541,838

Int. Cl.⁴ C07D 261/20

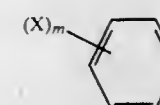
U.S. Cl. 548-241

4 Claims

1. A compound of the formula



wherein R is



wherein X is hydrogen, halogen, loweralkyl, loweralkoxy, loweralkylthio or trifluoromethyl; R¹, R² and R³ are each independently hydrogen or methyl; R⁶ is hydrogen or loweralkyl; R⁷ is hydrogen or loweralkyl; and m is 1, 2 or 3.

4,644,065

PROCESS FOR THE PREPARATION OF 4(3H)-QUINAZOLINONES

Anna P. Vinogradoff, Concord, Calif., assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

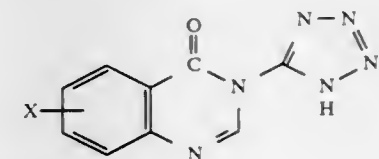
Filed May 15, 1984, Ser. No. 610,456

Int. Cl.⁴ C07D 403/04, 491/04, 257/04

U.S. Cl. 548-251

11 Claims

1. A process for the preparation of a quinazolinone compound of the formula



4,644,063

1,3-OXAZOLIDINE-2-ONE DERIVATIVES

Mituo Masaki, Chiba; Haruhiko Shinozaki, Omiya; Masaru Satoh, Koshigaya; Naoya Moritoh, Kuki; Koichi Hashimoto, and Toshiro Kamishiro, both of Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed May 29, 1985, Ser. No. 739,059

Claims priority, application Japan, Sep. 28, 1984, 59-203624

Int. Cl.⁴ C07D 413/06

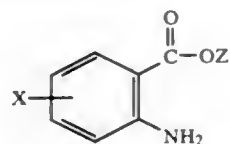
U.S. Cl. 546-209

4 Claims

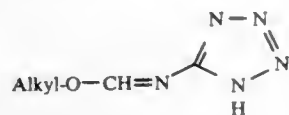
1. A 1,3-oxazolidine-2-one represented by the following formula:

wherein X represents hydrogen or one or two methyl, halogen or methoxy groups or a methylenedioxy group, and the alkali metal, ammonium and amine salts thereof, which comprises:

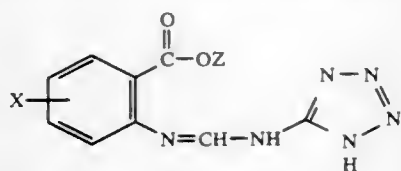
(a) reacting an anthranilic acid derivative of the formula



wherein X is defined as above and Z is alkyl of 1-4 carbon atoms or ammonium or OZ is NH₂, with a 5-(alkoxymethyleneamino)tetrazole which has the structural formula



wherein the Alkyl group contains 1 to 4 carbon atoms, in an inert solvent to give a formamidine of the formula



- (b) cyclizing said formamidine to the quinazolinone product directly when Z or OZ contains nitrogen or, when Z is alkyl of 1-4 carbon atoms, by the use of an alkali metal base, ammonium hydroxide or an amine and,
- (c) when the cyclization product is obtained in the form of a salt and the free tetrazole is desired, acidifying said cyclization product with a mineral acid to give the desired quinazolinone.

4,644,066

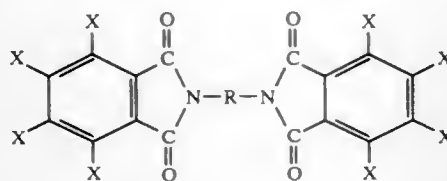
FLAME RETARDANTS AND COMPOSITIONS CONTAINING THEM

Joseph Sonnenberg, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Division of Ser. No. 77,494, Sep. 21, 1979, Pat. No. 4,535,170, which is a division of Ser. No. 760,664, Sep. 18, 1968, Pat. No. 4,581,396. This application May 15, 1985, Ser. No. 734,628
The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

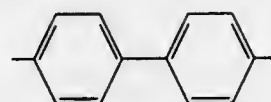
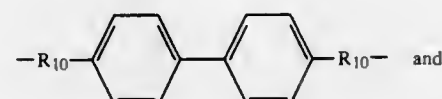
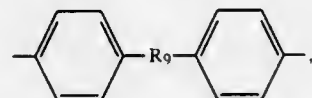
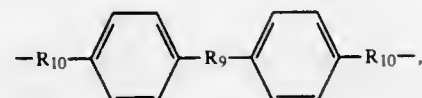
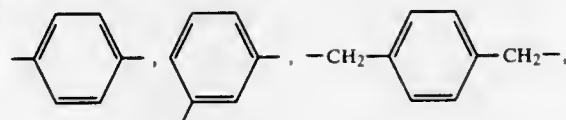
Int. Cl.⁴ C07D 209/48

U.S. Cl. 548-462

1. A bisimide compound of the formula



wherein each X is independently bromine or hydrogen with the proviso that at least 4 of said X's are bromine, and wherein R represents a divalent organic radical selected from the group consisting of



wherein R₉ represents oxygen or an alkylene radical containing from 1 to 4 carbon atoms and R₁₀ represents an alkylene radical containing from 1 to 4 carbon atoms.

4,644,067

PROCESS FOR THE EXTRACTION OF AMINO ACIDS FROM AN AQUEOUS PHASE

Alfred Weber; Detlef Wilke; Johannes Kurzdin, and Mario Kennecke, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 413,582, Aug. 31, 1982, abandoned.

This application Jan. 11, 1985, Ser. No. 690,546

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1981, 3134901

Int. Cl.⁴ C07D 209/20; C07C 101/08

U.S. Cl. 548-497

15 Claims

1. A process for selectively extracting a naturally occurring phenyl-substituted or benz-ring-fused-pyrrolo-containing amino acid or 5-hydroxytryptophan from an aqueous phase containing the same comprising combining the aqueous phase with an alkali metal alkyl sulfate having 10-18 carbon atoms in the alkyl residue;

acidifying the combination to a pH value of 2.0-2.5; and extracting the combination with an extractant which is an aliphatic alcohol, ketone, or carboxylic acid alkyl ester, each containing 4-6 carbon atoms, to produce an extract containing an increased concentration of the naturally occurring phenyl-substituted benz-ring-fused-pyrrolo-containing amino acid or 5-Hydroxytryptophan.

4,644,068

BICYCLO[3.3.0]OCTENYLALDEHYDE DERIVATIVES

Masakatsu Shibasaki, Tokyo; Mikiko Sodeoka, and Yuji Ogawa, both of Sagami, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Aug. 17, 1984, Ser. No. 641,780

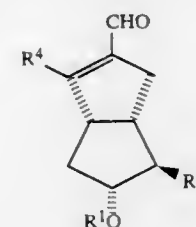
Claims priority, application Japan, Aug. 19, 1983, 58-150225; Sep. 27, 1983, 58-177128; Oct. 31, 1983, 58-202731; Feb. 24, 1984, 59-32514; Mar. 28, 1984, 59-58457

Int. Cl.⁴ C07C 47/46, 49/258; C07D 315/00; C07F 7/18

U.S. Cl. 549-214

2 Claims

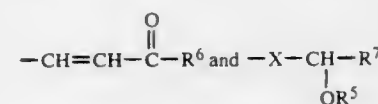
1. A bicyclo[3.3.0]octenylaldehyde derivative represented by the formula:



wherein

R¹ is a substituent selected from the group consisting of a hydrogen atom and a protective group of a hydroxy group;

R² is a substituent selected from the group consisting of -CH₂OR⁵,



where

R⁵ is a substituent selected from the group consisting of a hydrogen atom and a protective group of a hydroxy group,

R⁶ is a substituent selected from the group consisting of an alkyl group, an alkenyl group and an alkynyl group, said substituent being straight, branched or cyclic and having 5 to 10 carbon atoms,

X is a substituent selected from the group consisting of a vinylene group and an acetylene group, and

R⁷ is a substituent selected from the group consisting of an alkyl group, an alkenyl group, and an alkynyl group said substituent being straight, branched or cyclic and having 5 to 10 carbon atoms; and

R⁴ is a hydrogen atom.

4,644,069

PROCESS FOR THE PREPARATION OF DIMETHYLMALEIC ANHYDRIDE

Marcus Baumann, and Werner Breitenstein, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 6, 1985, Ser. No. 762,755

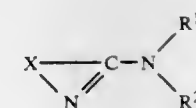
Claims priority, application Switzerland, Aug. 15, 1984, 3909/84

Int. Cl.⁴ C07D 307/60

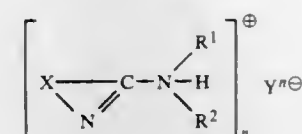
U.S. Cl. 549-261

14 Claims

1. A process for the preparation of dimethylmaleic anhydride by reacting 2 equivalents of maleic acid, fumaric acid and/or maleic anhydride in the presence of an amidine, an amidine salt or a mixture thereof and at a temperature of at least 90° C., in which process the amidine is of formula I and the amidine salt of formula II

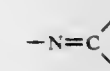


(I)



(II)

in which formulae R¹ is acyl and R² is a hydrogen atom, an aliphatic or aromatic hydrocarbon radical or acyl or R¹ and R² together are the diacyl radical of a 1,2-dicarboxylic acid, Y is the anion of an inorganic or organic protonic acid and n is an integer from 1 to 3, and X, together with the group



forms the radical of a substituted or unsubstituted 5- or 6-membered heterocyclic ring which may contain further hetero atoms.

4,644,070

CHROMAN-3-OL COMPOUNDS

John M. Evans, Roydon; Robin E. Buckingham, Welwyn Garden City, and Kenneth Willcocks, Harlow, all of England, assignors to Beecham Group p.l.c., England

Division of Ser. No. 482,628, Apr. 6, 1983, Pat. No. 4,542,149.

This application Dec. 18, 1984, Ser. No. 683,018

Claims priority, application United Kingdom, Apr. 8, 1982, 8210490

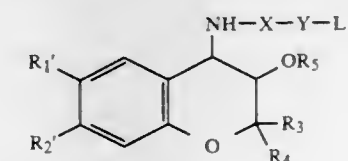
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

Int. Cl.⁴ C07D 311/68

U.S. Cl. 549-399

3 Claims

1. A compound of the formula:



(II)

wherein:

one of R₁' and R₂' is nitro, cyano, C₁₋₃ alkylcarbonyl, hydrogen or α-hydroxymethyl, and the other is methoxy, amino optionally substituted by one of two C₁₋₆ alkyl or by C₂₋₇ alkanoyl, or hydroxy or halo;

one of R₃ and R₄ is hydrogen or C₁₋₄ alkyl and the other is C₁₋₄ alkyl, or R₃ and R₄ together with the carbon atom to which they are attached are C₃₋₆ spiroalkyl;

R₅ is hydrogen, C₁₋₃ alkyl or C₁₋₈ alkanoyl or benzoyl;

one of X and Y is CO and the other is (CH)_{n+2};

n is 1 or 2;

L₁ is chloro when X is CO and is hydroxy or C₁₋₄ alkoxy

when Y is CO; and

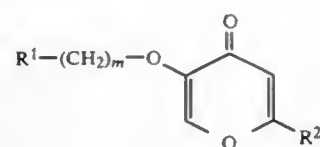
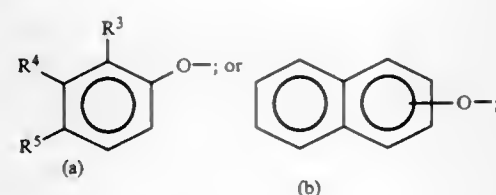
the substituted amino group is trans to the OR₅ group.

4,644,071
ARALKOXY AND ARYLOXYALKOXY KOJIC ACID
DERIVATIVES
Miyano Masateru, Northbrook, and Robert L. Shone, Palatine,
both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.
Filed Jul. 11, 1984, Ser. No. 629,916
Int. Cl.⁴ C07D 315/00

U.S. Cl. 549—417

20 Claims

1. A compound of the formula:

wherein R¹ is:wherein R² is:

- (a) CH₂OH;
- (b) CH=O; or
- (c) COOR⁶;

wherein R³ is:

- (a) hydrogen;
- (b) alkyl of 1 to 6 carbon atoms, inclusive; or
- (c) alkenyl of 2 to 6 carbon atoms, inclusive;

wherein R⁴ is:

- (a) hydrogen; or
- (b) hydroxy;

wherein R⁵ is:

- (a) hydrogen; or
- (b) alkanoyl of 2 to 6 carbon atoms, inclusive;

wherein R⁶ is:

- (a) hydrogen;
- (b) alkyl of 1 to 6 carbon atoms, inclusive;
- (c) alkali metal ion; or
- (d) R⁷R⁸R⁹R¹⁰N⁺;

wherein R⁷, R⁸, R⁹, and R¹⁰, each being the same or different, are:

- (a) hydrogen; or
- (b) alkyl of 1 to 6 carbon atoms, inclusive;

wherein m is an integer from 1 to 10, inclusive.

4,644,072
INTERMEDIATES FOR THE PRODUCTION OF
EPIPODOPHYLLOTOXIN AND RELATED
COMPOUNDS AND PROCESSES FOR THE
PREPARATION AND USE THEREOF
Dolatrai M. Vyas, Fayetteville, and Paul M. Skonezny, Clay,
both of N.Y., assignors to Bristol-Myers Company, New
York, N.Y.

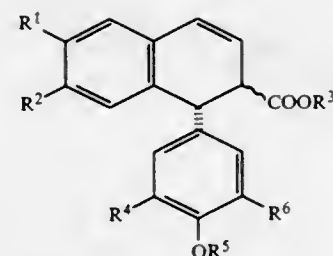
Filed Apr. 12, 1985, Ser. No. 722,932

Int. Cl.⁴ C07D 317/44; C07C 69/76

U.S. Cl. 549—433

1. A compound of the formula

7 Claims



wherein

R¹ and R² each are independently hydrogen or (lower)al-
koxy, or R¹ and R², taken together, is methylenedioxy;
R³ is hydrogen or a carboxyl-protecting group;
R⁴ and R⁶ each are independently hydrogen or (lower)al-
koxy; and
R⁵ is hydrogen or a phenol-protecting group;
or an acid addition salt thereof.

4,644,073
PERMEABILITY CONTRAST CORRECTION
EMPLOYING A SULFATE-FREE
PROPIONATE-SEQUESTERED CHROMIUM (III)
SOLUTION

Naim A. Mumallah, and Tod K. Shioyama, both of Bartlesville,
Okla., assignors to Phillips Petroleum Company, Bartlesville,
Okla.

Filed Mar. 11, 1985, Ser. No. 710,754

Int. Cl.⁴ C07F 11/00

U.S. Cl. 556—2

20 Claims

1. A method of producing a two phase liquid system wherein
one phase is a stabilized chromium(III) propionate solution and
the other phase is a sulfate-containing solution which com-
prises the steps of:

- (a) admixing a propionic acid source selected from propionic
acid and propionic anhydride with water thereby forming
an aqueous solution of propionic acid containing about 9
to 55 weight percent propionic acid;
- (b) adding to said aqueous propionic acid a chromium(VI)
source selected from the group consisting of chromi-
um(VI) oxide and alkali metal and ammonium dichro-
mates and chromates thereby forming a solution of said
chromium(VI) source in said aqueous propionic acid
employing a molar ratio of at least about 4:1 propionic
acid:chromium;
- (c) adding to said solution of chromium(VI) source in aque-
ous propionic acid, an inorganic sulfur-based compound
as reducing agent wherein the valence of the sulfur is less
than six, employing sufficient reducing agent, time and
temperature to effectively reduce chromium(VI) to
chromium(III) and simultaneously oxidize the reducing
agent to sulfate and
- (d) separating said two phase liquid system into a sulfate-
containing phase and a chromium(III) propionate-contain-
ing phase.

4,644,074
STABILIZED ORGANOPOLYSILOXANES AND A
PROCESS FOR STABILIZING THE SAME
Paul A. Manis, Allentown, Pa.; Eugene R. Martin, Onsted, and
Ronald L. Muntz, Adrian, both of Mich., assignors to SWS
Silicones Corporation, Adrian, Mich.

Filed Apr. 10, 1985, Ser. No. 721,746

Int. Cl.⁴ C07F 7/08, 7/10

U.S. Cl. 556—401

23 Claims

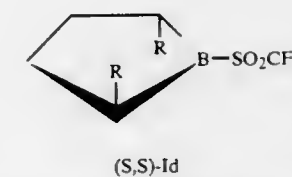
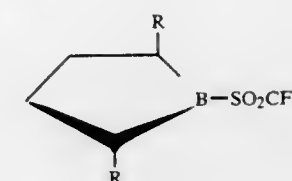
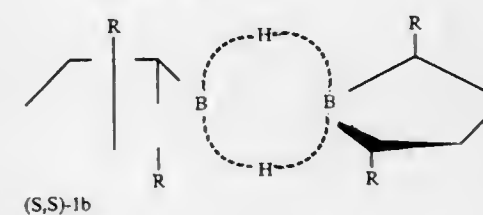
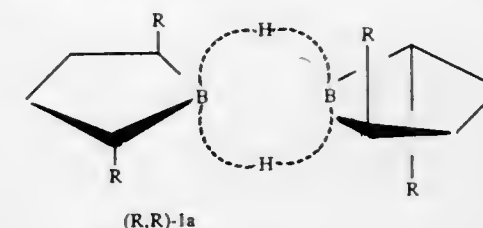
1. A composition containing an organopolysiloxane fluid,
kaolin clay and from 0.001 up to 5 percent by weight of an
amine containing compound based on the weight of the or-
ganopolysiloxane fluid and the amine containing compound.

4,644,075
CHIRAL BORANE REAGENTS
Satoru Masamune, Newton, Mass., assignor to Massachusetts
Institute of Technology, Cambridge, Mass.
Filed Dec. 9, 1985, Ser. No. 807,096
Int. Cl.⁴ C07F 7/08, 5/02

U.S. Cl. 556—403

17 Claims

1. A compound of the formula:



wherein R is a primary or secondary alkyl or trimethylsilyl group.

4,644,076
CONTINUOUS PROCESS FOR THE SYNTHESIS OF
HEXAMETHYLDISILAZANE
Roland S. Foster, Melbourne Beach, and Craig A. Ellis, Palm
Bay, both of Fla., assignors to FAR Research, Inc., Mel-
bourne, Fla.

Filed Apr. 11, 1985, Ser. No. 722,276

Int. Cl.⁴ C07F 7/10

U.S. Cl. 556—412

7 Claims

1. A continuous process for the production of hexamethyldi-
silazane consisting of the concurrent actions of continuously
introducing predetermined quantities per time unit of trimeth-
ylchlorosilane and gaseous ammonia to form a mixture of
hexamethyldisilazane and ammonium chloride in a first reactor
while simultaneously subjecting said mixture to continuous
high shear agitation, for a time period related to the volume of
the reactor and the quantities of trimethylchlorosilane and
ammonia introduced, to form a slurry; and simultaneously
separating the ammonium chloride from said slurry to provide
a solution principally comprising hexamethyldisilazane, while
continuing to introduce a continuous flow of further quantities
of trimethylchlorosilane and ammonia as the hexamethyldisila-
zane is removed.

4,644,077
PROCESS FOR PRODUCING ORGANOPHILIC SILICA
Goutam Gupta, Homewood, Ill., assignor to The Sherwin-Wil-
liams Company, Cleveland, Ohio
Continuation of Ser. No. 629,644, Jul. 11, 1984, abandoned. This
application Sep. 18, 1985, Ser. No. 777,461
Int. Cl.⁴ C07F 7/08, 7/18

U.S. Cl. 556—457

9 Claims

1. In a silica organosol consisting of silica dispersed in a
water-miscible organic solvent, a process for treating the silica
with a trialkoxysilane to make the silica more organophilic
while minimizing the self condensation of the trialkoxysilane,
which process comprises:

- (a) admixing water and a catalytic amount of acid with the
silica organosol; and
 - (b) gradually adding a trialkoxysilane to the admixture under
reactive conditions; and
 - (c) removing substantially all of the water;
- wherein the trialkoxysilane is present at a level up to about
30% by weight based upon the weight of the silica and the
water is added at an amount up to about 15% by weight based
upon the weight of the water-miscible organic solvent.

4,644,078
PROCESS FOR THE COPRODUCTION OF DIALKYL
CARBONATE AND TERTIARY BUTANOL
George E. Morris, Egham, and Gillian Wainhouse, Byfleet, both
of England, assignors to The British Petroleum Company
p.l.c., London, England
Filed Jun. 4, 1985, Ser. No. 741,250
Claims priority, application United Kingdom, Jun. 14, 1984,
8415150

Int. Cl.⁴ C07C 68/00, 69/96

U.S. Cl. 558—277

10 Claims

1. A process for the coproduction of a dialkyl carbonate and
tertiary butanol from butane, oxygen, a C₁-C₆ alkyl alcohol and
carbon monoxide by an integrated series of steps which pro-
cess comprises:

- (1) in an isomerisation step isomerising the butane feed to a
product rich in isobutane,
- (2) in an oxidation step, oxidising the isobutane with oxygen
to a mixture of tertiary butanol and tertiary butyl hydro-
peroxide,
- (3) in a dehydration step, dehydrating the mixture of tertiary
butanol and tertiary butyl hydroperoxide to produce di-
tertiary butyl peroxide,
- (4) in a carbonylation step reacting the di-tertiary butyl
peroxide with the C₁-C₆ alkyl alcohol and carbon monox-
ide in the presence of a copper catalyst to produce a
C₁-C₆ dialkyl carbonate and as co-product tertiary buta-
nol,
- (5) in one or more separation steps, separating the products
of step (4) from each other, any unreacted starting materi-
als and the catalyst.

4,644,079
PRECURSORS AND SYNTHESIS OF
D1-(METHYL)-16,16-(DIMETHYL)-11-ALPHA, 15-ALPHA,
BETA-DIHYDROXY-9-OXO-2,13-TRANS,
TRANS-PROSTADIENOATES
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American
Cyanamid Company, Stamford, Conn.
Division of Ser. No. 424,692, Sep. 27, 1982, Pat. No. 4,474,979,
which is a division of Ser. No. 266,004, May 21, 1982, Pat. No.
4,360,688. This application Jul. 23, 1984, Ser. No. 633,240
Int. Cl.⁴ C07C 177/00

U.S. Cl. 560—121

8 Claims

1. A process of preparing d1-(methyl)-16, 16-(dimethyl)-11
alpha, 15-alpha-dihydroxy-9-oxo-2,13-trans, trans-prostadieno-
ate and its congeners, which comprises

- (i) reacting (i) a 2-Halo-alkanedioate diester of the formula

4,644,082

PHOTOCONDUCTIVE DEVICES CONTAINING NOVEL BENZYL FLUORINATED SQUARINE COMPOSITIONS
Kock-Yee Law, Fairport, and Frank C. Bailey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 558,248, Dec. 5, 1983, Pat. No. 4,508,803.
This application Dec. 17, 1984, Ser. No. 682,716
Int. Cl.⁴ C07C 87/50, 87/52

U.S. Cl. 564—307

5 Claims

1. Squaraine compositions selected from the group consisting of bis(2-fluoro-4-methylbenzylaminophenyl)squaraine, bis(2-fluoro-4-methyl-p-chlorobenzylaminophenyl)squaraine, bis(2-fluoro-4-methyl-p-fluorobenzylaminophenyl)squaraine, and bis(2-fluoro-4-methyl-m-chlorobenzylaminophenyl)squaraine.

4,644,083

PROCESS FOR THE PRODUCTION OF N-SUBSTITUTED α,β -UNSATURATED CARBOXYLIC ACID AMIDES
Kurt Dahmen, Monchen-Gladbach; Erich Küster, Krefeld; Richard Mertens, Krefeld, and Helmut Brehm, Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Fed. Rep. of Germany
Filed Jan. 25, 1985, Ser. No. 695,125
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1984, 3402599
Int. Cl.⁴ C07C 103/133; C07D 265/30, 241/04, 295/00

U.S. Cl. 564—205

16 Claims

1. A process for the production of N-substituted α,β -unsaturated carboxylic acid amides by the conversion of an unsaturated carboxylic acid amide that is unsubstituted at the amido nitrogen, during basic catalysis in accordance with the Michael addition with an alcohol, transamidation of the resulting Michael adduct with a primary or secondary amine during elimination of the ammonia to form N-substituted carboxylic acid amide with a protected double bond, and with subsequent pyrolytic separation of the alcohol, characterized in that the Michael addition is completed with an organic polyhydroxy compound containing at least two alcoholic OH-groups, this having a boiling point of $>/=150^\circ\text{C}$. at 1010 hPa in a molar ratio of 0.75:1 to 2:1, relative to the α,β -unsaturated carboxylic acid amide.

4,644,084

PREPARATION OF TETRAHYDROISOHUMULONES
John M. Cowles, Whitefish Bay; Henry Goldstein, Brookfield; Etzer Chicoye, Milwaukee, and Patrick L. Ting, Brookfield, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.
Division of Ser. No. 573,801, Jan. 25, 1984, Pat. No. 4,590,298.
This application Feb. 3, 1986, Ser. No. 825,573
Int. Cl.⁴ C07C 45/51

U.S. Cl. 568—341

5 Claims

1. A method of preparing tetrahydroisohumulones directly from desoxytetrahydrohumulones without isolating the intermediate tetrahydrohumulones which comprises dissolving desoxytetrahydrohumulones in an aqueous caustic ethanol solution having a pH of about 8 to about 12, said solution containing an effective amount of a metallic isomerization catalyst to immediately catalyze the isomerization of any tetrahydrohumulones formed to tetrahydroisohumulones, said solution and said catalyst being free of lead ions; bubbling an oxygen-containing gas through the solution while heating the solution to about 40°C . to about 65°C . to oxidize the desoxytetrahydrohumulones to tetrahydrohumulones which are immediately and selectively isomerized to tetrahydroisohumulones before the tetrahydrohumulones can be further oxidized.

4,644,085

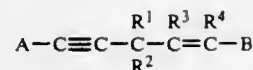
ROOPEROL AND ITS DERIVATES

Siegfried Drewes, Pietermaritzburg, and Roelof W. Liebenberg, Johannesburg, both of South Africa, assignors to Rooperol (NA) NV, Bonaire, Netherlands
Continuation-in-part of Ser. No. 624,717, Jun. 23, 1984, abandoned. This application Jun. 4, 1985, Ser. No. 740,969
Int. Cl.⁴ C07C 39/21, 33/04, 43/20, 59/76

U.S. Cl. 568—729

14 Claims

1. A compound of the general formula:



R^1 is a hydrogen or taken together with R^2 is a keto group, R^2 is a hydrogen or a hydroxyl group, R^3 is a hydrogen or an acyl group, R^4 is a hydrogen or a halogen,

A and B are the same or different in that A represents phenyl, substituted phenyl or CH_2OR group (in which R is H, lower alkyl, aralkyl or acyl) and B represents H, phenyl, substituted phenyl, furyl- $(\text{CH}_2)_n\text{COOH}$ ($n=0-5$), or alkyl

the aforesaid subject to the proviso that if:

- $\text{R}^1=\text{R}^2=\text{R}^3=\text{R}^4=\text{H}$ then (a) A is not C_6H_5 when B is H or CH_3
- $\text{R}^2=\text{OH}$, $\text{R}^1=\text{R}^3=\text{R}^4=\text{H}$ and $\text{A}=\text{C}_6\text{H}_5$ —, then B is not CH_3 , C_6H_5 — or m-chlorophenyl,
- R^1 and $\text{R}^2=0$ and $\text{R}^3=\text{R}^4=\text{H}$, then
 - both A and B simultaneously are not phenyl-, furyl-, thienyl-, pyridyl- or norbornyl groups,
 - A is not C_6H_5 — and B is not H.

4,644,086

PROCESS AND CATALYST FOR THE ORTHOMETHYLATION OF PHENOLS

Heinz-Werner Voges, Dorsten, and Arno Siegmund Schmidt, Münster, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany
Filed Aug. 19, 1985, Ser. No. 767,014
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 3430222

Int. Cl.⁴ C07C 37/16

U.S. Cl. 568—804

22 Claims

1. In a process for the orthomethylation of a phenol having at least one free ortho position, said process comprising the step of reacting said phenol with methanol in the gaseous phase in the presence of a catalyst, the improvement which comprises conducting the reaction in contact with a catalyst consisting essentially of a combination of

- iron oxide,
 - molybdenum oxide and/or tungsten oxide and
 - at least one oxide of magnesium, calcium, barium, lanthanum, cerium, or manganese
- said oxide being in a metal-atomic ratio of (a):(b):(c) of 100:0.2–10:0.2–10.

4,644,087

DERIVATIVE OF (–)-6,6-DIMETHYLBICYCLO [3.1.1]HEPT-2-ENE-2-ETHANOL HAVING MUCOSECRETOLYTIC ACTIVITY, A PROCESS FOR ITS PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Camillo C. Mora, Piacenza, Italy, assignor to Camillo Corvi S.p.A., Italy

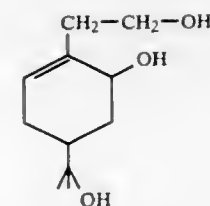
Filed Jun. 7, 1985, Ser. No. 742,575

Claims priority, application Italy, Aug. 8, 1984, 22259 A/84
Int. Cl.⁴ C07C 35/18

U.S. Cl. 568—823

3 Claims

1. 4-(2-hydroxyethyl)- α,α -dimethyl-5-hydroxy-3-cyclohexene-1-methanol of the formula:



4,644,088

ACETYLENE REMOVAL PROCESS

Cecil G. McFarland, League City, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
Division of Ser. No. 84,295, Oct. 12, 1979, Pat. No. 4,513,159, which is a continuation of Ser. No. 540,336, Jan. 13, 1975, abandoned, which is a division of Ser. No. 443,752, Feb. 19, 1974, abandoned. This application Jun. 15, 1981, Ser. No. 273,578
Int. Cl.⁴ C07C 5/327

U.S. Cl. 585—658

3 Claims

1. In a vapor phase process for the preparation of unsaturated hydrocarbon monoolefins and diolefins comprising oxidative dehydrogenation of stream of C_3 to C_9 hydrocarbon compounds to produce a product stream comprising 3.5 to 80 mol percent of unsaturated hydrocarbon product and of about or from 0.0001 to 2.5 mol percent acetylenic compound impurity, about or from 0.0005 to 2.5 mol percent carbonyl compounds and 5 to 93 mol percent non-condensable gases, wherein the improvement comprises contacting said product stream in vapor phase at a temperature in the range of 250° to 900°C . and containing less than 5 mol percent free oxygen with a solid catalyst for reducing said acetylenic compounds in said product stream, said catalyst consisting essentially of a mixture of oxides, carbonates or hydroxides of Fe and Ni, Fe being present as the major metal component and Ni being present in the range of about 0.25 to 20 weight percent based on total catalyst, an alkaline earth metal oxide, carbonate or hydroxide of Mg, Ca, Sr or Ba, and about 0.5 to 30 weight percent of an alkali metal oxide, carbonate or hydroxide of Li, Na, K or Rb determined as metal and based on the other metallic elements, and recovering said stream having the amount of acetylenic compounds therein reduced.

4,644,089

CATALYTIC REFORMING OF HYDROCARBONS
Fu Ming Lee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 10, 1986, Ser. No. 884,327
Int. Cl.⁴ C07C 5/42

U.S. Cl. 585—407

20 Claims

1. A process comprising the step of contacting a hydrocarbon feed stream comprising at least one hydrocarbon selected from the group consisting of alkanes containing from 2 to 20 carbon atoms per molecule and cycloalkanes containing from 5 to 20 carbon atoms per molecule with a catalyst composition comprising (a) at least one oxide of vanadium and (b) aluminum phosphate, in the substantial absence of free oxygen, steam and sulfur compounds and under such reaction conditions as to convert at least a portion of said hydrocarbon feed stream to a product comprising hydrogen gas and at least one hydrocarbon selected from the group consisting of alkenes containing from 2 to 20 carbon atoms, alkadiene, containing from 4 to 20 carbon atoms, cycloalkenes containing from 5 to 20 carbon atoms, cycloalkadienes containing from 5 to 20 carbon atoms and aromatic hydrocarbons containing from 6 to 20 carbon atoms per molecule.

4,644,090

UPGRADING OF SPENT BUTANE ISOMERIZATION CATALYST TO PENTANE ISOMERIZATION CATALYST
Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 781,079, Sep. 27, 1985. This application Mar. 6, 1986, Ser. No. 836,892
Int. Cl.⁴ C07C 5/13

U.S. Cl. 585—749

9 Claims

1. A process for the isomerization of pentane to isopentane which comprises contacting a feed comprising normal-pentane under isomerization conditions with a catalyst prepared by

- washing a chloride-containing platinum on alumina support isomerization catalyst with wash medium under conditions suitable to remove substantially all chloride ions;
- treating the product of (a) with at least one aqueous fluorinating agent under conditions suitable to provide intimate contact between said alumina support and said fluorinating agent; and
- drying the product of (b) under conditions suitable to produce a substantially water-free fluoride-containing platinum on alumina support isomerization catalyst.

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UMI

ELECTRICAL

4,644,091

PHOTOELECTRIC TRANSDUCER

Yutaka Hayashi, Sakuramura; Hideyo Iida, Takasaki, and Toshio Mishuku, Yoshimachi, all of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

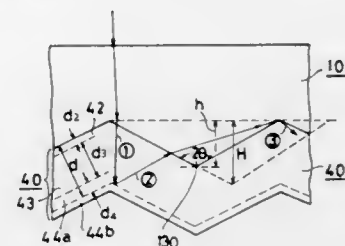
Filed Aug. 28, 1984, Ser. No. 645,059

Claims priority, application Japan, Aug. 29, 1983, 58-157489

Int. Cl.⁴ H01L 31/06

U.S. Cl. 136—259

5 Claims



1. A photoelectric transducer which comprises at least a light-transmissive substrate having a substantially flat surface provided on its light-receiving side, an uneven surface provided on its side opposite to said light-receiving side and a photoelectric transducing layer provided on the uneven surface of said substrate, wherein said photoelectric transducing layer comprises at least a first light-transmissive conductive layer formed on said uneven surface of said substrate, a semiconductor layer formed on said first light-transmissive conductive layer and a back conductive layer formed on said semiconductor layer, said back conductive layer in turn comprising a second light-transmissive conductive layer formed on said semiconductor layer and a conductive layer formed on said second light-transmissive conductive layer, and said uneven surface includes a large number of projections, each of said projections having a triangular section an apex angle of which is greater than 90 degrees and a height h of which is less than

$$\frac{(x-y)\cos\theta}{2} + \left[(x-y)\cos\theta + \frac{y}{\cos\theta} \right] \frac{\tan(180^\circ - 2\theta)}{2\tan\theta}$$

where

$$x = (d_2 + d_3 + \dots + d_i)/\tan\theta,$$

$$y = d_2 \frac{(n_1/n_2)\cos\theta [1 - (n_1/n_2)^2(\cos\theta)^2]^{-1/2} + d_3 \frac{(n_1/n_3)\cos\theta [1 - (n_1/n_3)^2(\cos\theta)^2]^{-1/2} + \dots + d_i \frac{(n_1/n_i)\cos\theta [1 - (n_1/n_i)^2(\cos\theta)^2]^{-1/2}}{d_i (n_1/n_i)\cos\theta [1 - (n_1/n_i)^2(\cos\theta)^2]^{-1/2}}$$

n_2, n_3, \dots, n_i are the refractive indices of the respective layers of said photoelectric transducing layer except said conductive layer; d_2, d_3, \dots, d_i are the thicknesses of the respective layers of said photoelectric transducing layer except said conductive layer; and n_1 is the refractive index of the transparent substrate; such that reflected light from said back conductive layer re-enters said semiconductor layer through said projections on said transducing layer, resulting in increase in the amount of light in said photoelectric transducing layer.

4,644,092

SHIELDED FLEXIBLE CABLE

William G. Gentry, Winston Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 18, 1985, Ser. No. 755,748

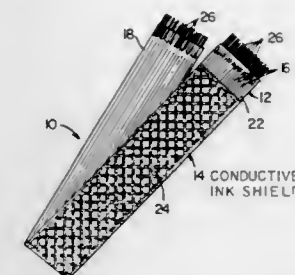
Int. Cl.⁴ H01B 7/34, 7/08

U.S. Cl. 174—36

18 Claims

1. A shielded multi-conductor flat flexible cable comprising:

a plurality of conductors disposed on a first insulating substrate;
a second insulating substrate disposed on said disposed conductors; and



a graphic pattern disposed on the second insulating substrate over at least a portion of the length of the cable, the graphic pattern being of conductive ink and comprising means for establishing an interference shield.

4,644,093

CIRCUIT BOARD

Kunio Yoshihara; Toshio Sudo, both of Kawasaki; Atsuko Iida, Tokyo; Takeshi Miyagi, Kawasaki; Tamio Saito, and Shigeyuki Oe, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

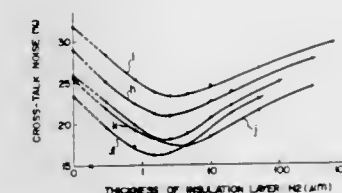
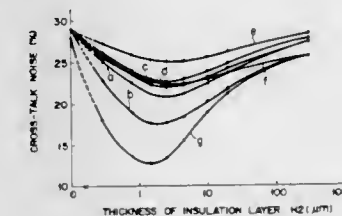
Filed Oct. 17, 1985, Ser. No. 788,571

Claims priority, application Japan, Dec. 26, 1984, 59-273401

Int. Cl.⁴ H05K 1/03

U.S. Cl. 174—36

10 Claims



1. A circuit board on which an integrated circuit is fabricated, comprising:
a substrate made of one of semi-insulating and insulating materials, and having a predetermined dielectric constant;
an insulating layer formed on said substrate and made of an insulating material having a lower dielectric constant than the dielectric constant of said substrate; and
a plurality of parallel wiring conductors formed at predetermined intervals on said insulating layer;
said insulating layer having a thickness equal to 0.5 to 2.5 times the distance between adjacent wiring conductors to reduce cross-talk noise.

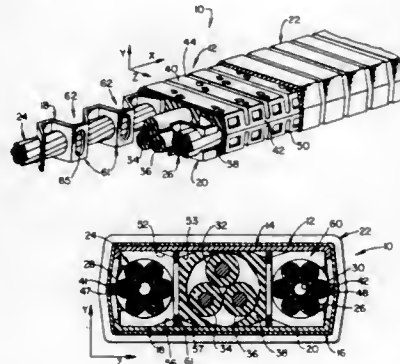
4,644,094
CABLE HAVING HAULING, ELECTRICAL AND
HYDRAULIC LINES

Ernest G. Hoffman, Middlefield, Conn., assignor to Harvey
Hubbell Incorporated, Orange, Conn.

Filed Mar. 21, 1985, Ser. No. 714,272
Int. Cl.⁴ H01B 7/18

U.S. Cl. 174—47

37 Claims



3. A cable having a longitudinal axis and comprising:
a pair of spaced apart wire ropes extending along said longitudinal axis, each wire rope comprising a plurality of helically wound strands and having an outer diameter D;
a power line located between said pair of wire ropes, extending along said longitudinal axis, and having an outer diameter at least equal to D; and
means, coupled to and enclosing said wire ropes and said power line, for maintaining said wire ropes a fixed distance apart, resisting external compressive forces directed transversely of said longitudinal axis and said power line along substantially the entire length of said power line, and resisting radial outward displacement of said wire rope strands, along substantially the entire length of said wire ropes, during longitudinal compression of said wire ropes,
said means extending along said longitudinal axis and being bendable about an axis transverse thereto,
said means comprising a pair of engaging channels.

4,644,095
ENCLOSURE FOR OUTDOOR, GROUND LEVEL
MOUNTED COMMUNICATION EQUIPMENT

William L. Bright, and Michael L. Cheatham, both of Hood
River, Oreg., assignors to Western Power Products, Inc.,
Hood River, Oreg.

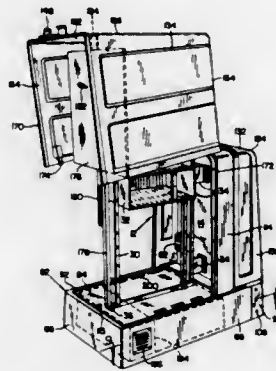
Filed Feb. 14, 1985, Ser. No. 701,752
Int. Cl.⁴ H05K 5/04

U.S. Cl. 174—50

14 Claims

1. An enclosure for outdoor, ground level mounted communication equipment comprising
a ground mounted pad with an opening therein for receiving underground wire therethrough,
securing and support means on said pad arranged to secure and support upstanding communication equipment thereon,
a base member supported on said pad having front, rear, top and side portions, and
a housing integral with said base member enclosing communication equipment on said pad,

said housing including door means providing access to the communication equipment in said housing,



and releasable securing means on said pad overlying a portion of said base member and clamping said base member detachably onto said pad.

4,644,096
SURFACE MOUNTING PACKAGE

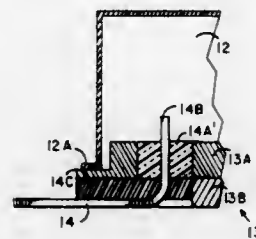
Romulo Gutierrez, Flemington; Albert W. Bauer, Belle Mead, both of N.J., and Thomas L. McDonald, Harleysville, Pa., assignors to Alpha Industries, Inc., Woburn, Mass.

Filed Mar. 18, 1985, Ser. No. 713,312

Int. Cl.⁴ H05K 5/06

U.S. Cl. 174—52 H

13 Claims



1. A hermetically sealed surface mounting package comprising,
base means for supporting an electrical circuit,
said base means being formed with a plurality of openings for accommodating conducting leads and having a planar outer conducting surface,
cover means for covering an electrical circuit seated on said base means hermetically sealed to said base means,
a plurality of conducting leads each seated in a respective one of said openings and having an upstanding portion extending above said base means for providing an electrical connection to said electrical circuit and a depending portion substantially flush with said outer conducting surface and having a bottom surface uncovered by insulating material for establishing conductive contact with external conducting leads in a circuit board,
and hermetically sealing insulating means filling said openings around said leads for insulatedly separating said leads from said base means and each other and coacting with said base means and said cover means to hermetically seal the region between said base means and said cover means.

4,644,097
ARMORED SUBMARINE POWER CABLE

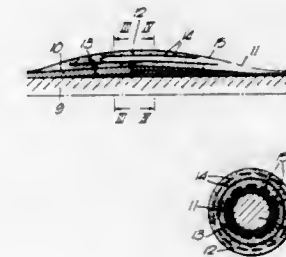
John N. Johnsen, Oslo, and Georg E. Balog, Tranby, both of Norway, assignors to Standard Telefon og Kabelfabrik A/S, Oslo, Norway

Filed Aug. 29, 1985, Ser. No. 770,830

Claims priority, application Norway, Aug. 31, 1984, 843459
Int. Cl.⁴ H01B 7/22

U.S. Cl. 174—102 R

11 Claims



1. An armored submarine cable having varying mechanical strength comprising:
a core containing a conductor;
at least one section of heavy armor surrounding and extending longitudinally along said core and including at least one layer of heavy metal wires having ends such that the cable may withstand mechanical forces applied thereto,
at least one section of lightweight armor having ends surrounding and extending longitudinally along said core adjacent said heavy armor section; and
a transition region in which said heavy armor section and said lightweight armor section are joined in a manner such that a gradual and controlled change in the stiffness and flexibility of the cable is obtained.

4,644,098
LONGITUDINALLY WRAPPED CABLE

Daniel A. Norris, Dallas, Ga.; James O. Lowery, Ranburne, Ala., and Robert F. Armstrong, Marietta, Ga., assignors to Southwire Company, Carrollton, Ga.

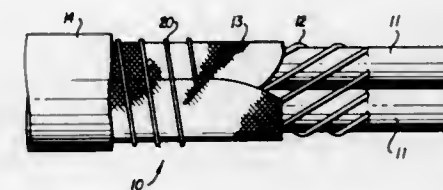
Continuation of Ser. No. 151,506, May 19, 1980, abandoned.

This application Jan. 18, 1985, Ser. No. 692,592

Int. Cl.⁴ H01B 7/02

U.S. Cl. 174—115

11 Claims



1. An improved electric service entrance cable of the type conforming to the requirements of the Standard For Service-Entrance Cable UL854 and having parallel insulated conductors helically wrapped by a multiplicity of evenly distributed uninsulated conductors and covered by a layer of tape and an outer jacket the improvement comprising:
an overlapping layer of reinforcing tape longitudinally applied over said uninsulated conductors;
a high strength binder strand a fiberglass helically wrapped over said layer of tape to bind said tape;
wherein said longitudinally applied layer of tape overlaps from approximately one quarter of an inch to approximately one half of an inch;
wherein said longitudinally applied layer of tape is adapted

to the orientation of said insulated and uninsulated conductors regardless of changes in said orientation; and wherein said longitudinally applied tape is a glass-backed polyester tape.

4,644,099
UNDERCARPET CABLE

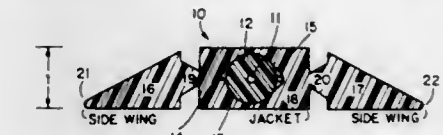
Paul D. Basconi, Hamden, Conn., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 11, 1985, Ser. No. 722,048

Int. Cl.⁴ H01B 7/08

U.S. Cl. 174—117 F

8 Claims



1. An electrical cable for undercarpet use comprising:
(a) an elongated electrically conductive core surrounded by an electrically insulating jacket having a rectangular cross section including a top and a bottom, and
(b) two elongated side members disposed on opposite sides of the jacketed core, each side member having a generally triangular cross section, including
(i) a substantially flat bottom, substantially colinear with the bottom of the jacket and the substantially flat bottom of the other side member,
(ii) a side, normal to its substantially flat bottom, which side is generally adjacent to the jacket and joined to the jacket by a longitudinal section that is adapted to be easily severed to separate the side member from the jacket, and
(iii) a generally tapered top, which extends from the top of the side to the substantially flat bottom.

4,644,100
SURFACE ACOUSTIC WAVE TOUCH PANEL SYSTEM

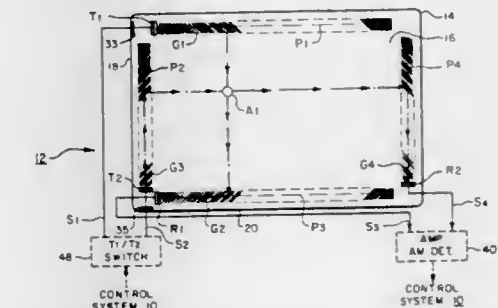
Michael C. Brenner, Oak Park, and James J. Fitzgibbon, Streamwood, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 22, 1985, Ser. No. 715,134

Int. Cl.⁴ G08C 21/00; G06K 11/06

U.S. Cl. 178—18

10 Claims



1. A touch panel system, comprising:
a substrate having an acoustic surface wave propagating touch surface;
means for generating and receiving surface acoustic waves on said touch surface;
means responsive to a surface wave absorbing touch on said touch surface for developing an output signal representative of the degree of absorption of said surface acoustic waves by said touch, said signal having a first characteristic indicative of the position of the touch on said touch

surface and a second characteristic indicative of the touch pressure; and
means for receiving said output signal and responsive to said first characteristic for identifying a predetermined controllable function and responsive to said second characteristic for controlling said controllable function.

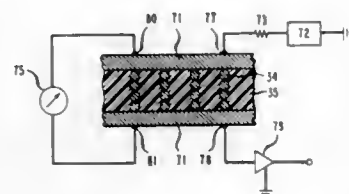
4,644,101

PRESSURE-RESPONSIVE POSITION SENSOR
Sungho Jin, Millington; John J. Mottine, Jr., West Keansburg; Richard C. Sherwood, New Providence, and Thomas H. Tiesel, Piscataway, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 11, 1985, Ser. No. 807,807
Int. Cl.⁴ G08C 21/00

U.S. Cl. 178—18

15 Claims



14. Composite sheet medium comprising magnetically aligned conductive magnetic particles in a relatively nonconductive matrix material,
said aligned particles forming a plurality of paths spaced one from the other by a region of relatively nonconductive matter,
each path including at least two particles and having direction from one surface of said sheet medium to the other, and
said paths comprising conductive particles and at least one region of relatively nonconductive matter.

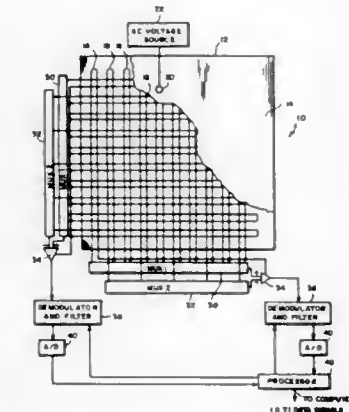
4,644,102

DIGITIZING TABLET SYSTEM
Barry A. Blesser, Raymond, N.H., and Thomas C. Prentice, Milford, Mass., assignors to Pencept, Inc., Waltham, Mass.

Filed Mar. 29, 1985, Ser. No. 717,534
Int. Cl.⁴ G08C 21/00

U.S. Cl. 178—19

13 Claims



10. A digitizing tablet for use with a position indicating structure having a field generating element said tablet comprising:

a housing having a two-dimensional work surface;
a grid structure in the housing, said grid structure including a first plurality of spaced parallel conductive loop elements equal in size disposed in a plane parallel to said

work surface and defining a first coordinate axis and a second plurality of spaced parallel conductive loop elements equal in size disposed in a plane parallel to said work surface and defining a second coordinate axis;
a plurality of grounded copper strips located in the space formed within said conductive loops to shield said loops from capacitive interference; and
processing means for processing signals induced in said conductive loops to produce data signals corresponding to the position of the position indicating structure relative to the grid structure.

4,644,103

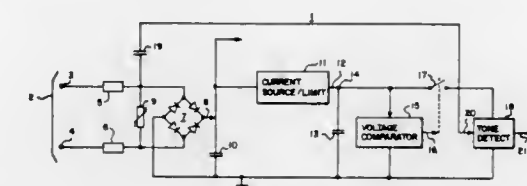
TONE-RESPONSIVE CIRCUIT FOR ACTIVATING AN INSTRUMENTALITY INTERFACING SYSTEM

Yechiel Rosenfeld, Yardley, Pa., assignor to Base Ten Systems, Inc., Trenton, N.J.

Filed Jun. 4, 1985, Ser. No. 740,972
Int. Cl.⁴ H04M 1/00

U.S. Cl. 379—42

20 Claims



1. For use in connection with a system for interrogating a remote instrumentality over a telephone line, responsive to an activation signal, an activation circuit comprising:
input means communicating with said telephone line and adapted to receive operating currents and said activation signal from said telephone line;
signal detecting means, for detecting the presence of said activation signal on said telephone line, and for causing the activation of said interrogating system in response to said detection;
means for storing current received from said telephone line; means for limiting said received current to less than that required to operate said signal detecting means, operatively connecting said input means and said storage means; storage detecting means associated with said storage means, for detecting the storage of a selected amount of current, and for providing a triggering signal upon said detection; and
switching means operatively connecting said storage means and said signal detecting means, for operating said signal detecting means responsive to said triggering signal.

4,644,104

SECURITY SYSTEM INCLUDING A PLURALITY OF CENTRALLY PROGRAMMABLE LOCKING ASSEMBLIES

William Middlemiss, 3935 N.W. 38 Ave., Ft. Lauderdale, Fla. 33309

Filed Apr. 7, 1986, Ser. No. 849,205
Int. Cl.⁴ H04M 11/00

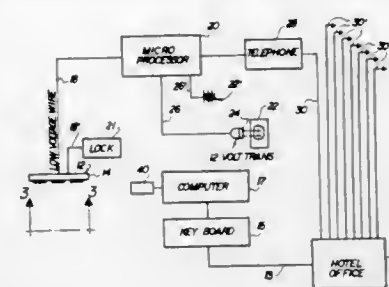
U.S. Cl. 179—2 A

9 Claims

1. A security system for a hotel or like facility of the type primarily designed for the central programming and control of a plurality of locking assemblies each associated with a separate closure, said system comprising:

(a) activating means included in each of said plurality of locking assemblies and structured for positioning said locking assemblies between a locked position and an unlocked position,
(b) each of said actuating means electrically powered and interconnected to respective ones of said locking assem-

blies and including an actuating board comprising a plurality of finger operating switches sufficient in number to represent at least a minimal number of digits,
(c) a central control facility connected to each of said activating means by telephone lines within the hotel or like facility,
(d) a processing means connected to the telephone lines and interconnected between each of said activating means and said central control facilities,
(e) each of said activating means structured for operation upon a preset code being fed thereto through operation of said respective actuating board and said switches thereon,



(f) said central control facility structured to selectively change said preset code in each of said activating means and said preset code defined by a preset sequence of numerals represented to said actuating means by actuation of a preset sequence of said switches,
(g) whereby authorized access to any closure is accomplished by feeding said respective actuating means with said respective preset code and wherein the changing of said preset code can be accomplished centrally at said central control facility.

4,644,105

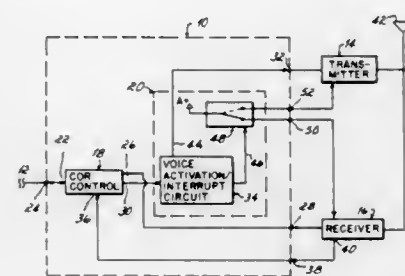
MOBILE TELEPHONE CONTROLLER SWITCH
Joseph Cameron, Fort Thomas, Ky., assignor to P.T.I., Inc., Fort Thomas, Ky.

Continuation of Ser. No. 714,278, Mar. 25, 1985. This application Jul. 2, 1985, Ser. No. 751,364

Int. Cl.⁴ H04Q 7/04

U.S. Cl. 379—56

30 Claims



1. A communication switch circuit adapted to permit selective coupling of a telephone line to (i) a transmitter for transmission of signals from the telephone line to a mobile unit and (ii) a receiver for reception at the telephone line of signals from a mobile unit, the communication switch circuit comprising:
a telephone port couplable to a telephone line;
a transmitter port couplable to a transmitter;
a receiver port couplable to a receiver;
first means for coupling said telephone port to said transmitter port when signals are absent from said receiver port, to define a transmission state;
keying means for permitting, in a transmitter-on state, transmission of signals by a transmitter couplable to said transmitter port, signals being present at said telephone port

and said first means being in said transmission state defining said transmitter-on state, said keying means further for preventing, in a transmitter-off state, transmission of signals by a transmitter couplable to said transmitter port, said first means further for coupling said telephone port to said receiver port when signals are present at said receiver port and said keying means is in said transmitter-off state to define a receiver state; and
interrupt means, operable when said keying means is in said transmitter-on state, for intermittently, temporarily placing said keying means in said transmitter-off state, whereby the presence of signals at said receiver port while said keying means is temporarily in said transmitter-off state places said first means in said receiving state thereby interrupting transmission of a transmitter couplable to said transmitter port and coupling said telephone port to said receiver port.

4,644,106

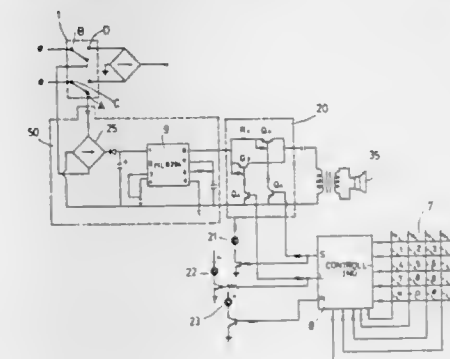
APPARATUS FOR TIMELY CONTROLLING THE SOUND CHARACTERISTIC OF A SIGNALING MEANS OF A VOICE COMMUNICATION DEVICE

Kou-I Yeh, Taipei, Taiwan, assignor to Inventa electronics Co., Ltd., Taipei, Taiwan

Filed Jan. 10, 1985, Ser. No. 690,720
Int. Cl.⁴ H04M 1/21

U.S. Cl. 379—375

10 Claims



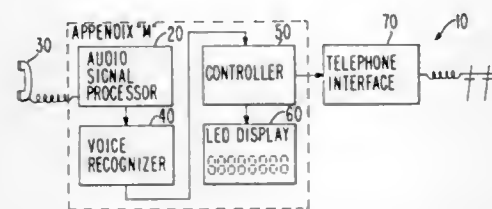
1. An apparatus for timely controlling a sound characteristic of a signaling means of a voice communication device having an input section comprising:

a signaling circuit coupled to said input section and said signaling means;
a setting means capable of generating at least two sets of time setting signals and sound characteristic setting signals;
a controlling means coupled to said setting means and said signaling circuit for receiving and storing said sets of time setting signals and sound characteristic setting signals from said setting means, so that when a calling signal is transmitted to said signaling circuit through said input section, said controlling means actuates said signaling means to produce a signaling sound having a desired sound characteristic, the desired sound characteristic of the signaling sound being predetermined by said sets of time setting signals and sound characteristic setting signals stored in said controlling means;

wherein said signaling circuit comprises at least two sets of switching circuits coupled to said input section, said controlling means, and said signaling means, said controlling means respectively controlling said switching circuits and turning one of said switching circuits on in accordance with said stored sets of time and sound characteristic setting signals, each of said switching circuits being connected with a respectively different resistance for attenuating said calling signal from said input section in different degrees, so that said signaling means will be actuated by

an attenuated signal from said turned-on switching circuit to produce a signaling sound having the desired sound characteristic.

4,644,107
VOICE-CONTROLLED TELEPHONE USING VISUAL DISPLAY
 Garth A. Clowes, Palo Verdes Estates, and James P. Collas, Los Angeles, both of Calif., assignors to TTC, Carson, Calif.
 Filed Oct. 26, 1984, Ser. No. 665,264
 Int. Cl.⁴ H04M 1/46
 U.S. Cl. 379—354
8 Claims
MICROFICHE APPENDIX INCLUDED
 (2 Microfiche, 44 Pages)



1. In a spoken word controlled repertory dialing apparatus capable of operating in either a programming mode or a normal mode including voice recognition means for recognizing predetermined input words communicated thereto and visual display means responsive to said voice recognition means for displaying prompt and subscriber phone number information to the user, the method of establishing a telephonic connection comprising the steps of:

- manually selecting said programming mode of operation;
- displaying on said visual display means a first predetermined prompt word followed by a predetermined repetition numeral;
- uttering said prompt word a number of times equal to said repetition numeral and decrementing said numeral after each recognized utterance of said first prompt word, until said numeral has been decremented to zero;
- repeating steps (b) and (c) a predetermined number of times;
- entering said normal mode of operation;
- uttering the digits of the subscriber phone number to be called digit-by-digit, and displaying on said visual display each of said digits; and
- uttering a predetermined word which when recognized causes said displayed subscriber phone number to be dialed and a telephonic connection to be established between said dialing apparatus and an external telephone subscriber line.

4,644,108
ADAPTIVE SUB-BAND ECHO SUPPRESSOR
 William G. Crouse, and David R. Irvin, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

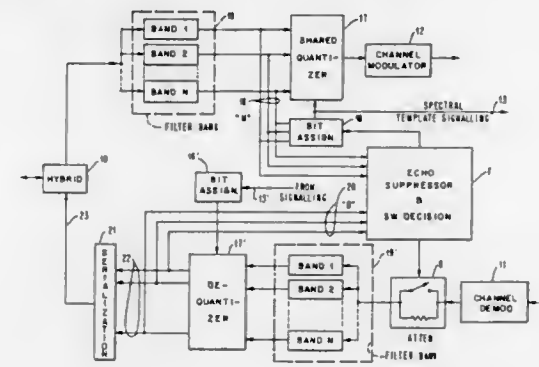
Filed Oct. 27, 1982, Ser. No. 437,093
 Int. Cl.⁴ H04B 3/20
 U.S. Cl. 379—406
2 Claims

2. An improved method of operating an adaptive sub-band echo suppressor operating on an input spectrum comprising a plurality of contiguous frequency sub-bands, comprising steps of:

estimating initial expected echo return loss level factors for each frequency sub-band by measuring signal energy level in each frequency sub-band and multiplying said measured signal energy level in each frequency sub-band by a presently existing echo loss level factor for each frequency sub-band; and

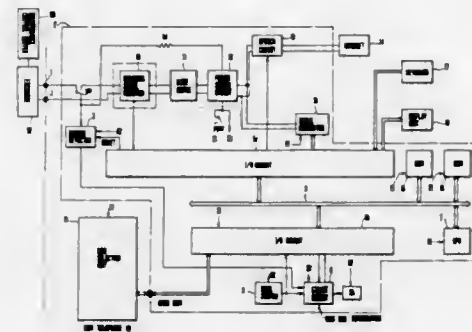
selecting a final expected echo return loss level factor for

each frequency sub-band as the largest initial expected echo return loss level factor from a group of said echo return loss level factors corresponding to that of each frequency sub-band and its immediately adjacent frequency sub-bands; and



estimating the final expected echo return loss level for each said frequency sub-band by multiplying the measured energy level of each said frequency sub-band by its final expected echo return loss level factor.

4,644,109
ALARM INFORMATION TRANSMISSION SYSTEM FOR COIN TELEPHONE
 Yoshiaki Takeda; Toshiharu Kinoshita, both of Kanagawa, and Osamu Kai, Tokyo, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan
 Filed Oct. 7, 1985, Ser. No. 785,346
 Claims priority, application Japan, Oct. 12, 1984, 59-212653
 Int. Cl.⁴ H04M 1/24
 U.S. Cl. 379—27
10 Claims

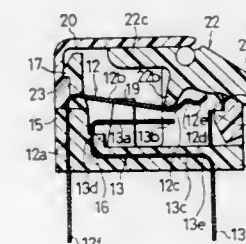
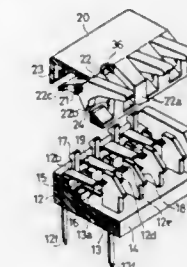


1. A coin telephone having a self diagnosis function, comprising:

- ringing detecting means, connected to station line terminals, for detecting a ringing signal;
- DC loop forming means for forming a DC loop upon detection of the ringing signal;
- self diagnosis means for starting a self diagnosis operation upon formation of the DC loop; and
- alarm transmission means for transmitting through said station line terminals alarm information corresponding to a content of a failure and a predetermined self control number assigned to said coin telephone when the failure is detected by the self diagnosis operation.

4,644,110
DIP SWITCH HAVING SINGLE TERMINAL-CONTACT SUPPORT WAFER
 Hironobu Watanabe, Furukawa, and Akira Sakai, Miyagi, both of Japan, assignors to Alpine Electronics Inc., Japan
 Filed Jul. 31, 1985, Ser. No. 761,045
 Claims priority, application Japan, Aug. 1, 1984, 59-117154[U]

Int. Cl.⁴ H01H 19/08
 U.S. Cl. 200—5 R
3 Claims

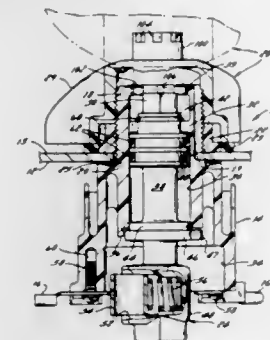


1. A DIP switch comprising: a single wafer body molded as one piece having a row of movable terminals spaced apart from a row of fixed terminals with both rows molded fixedly in a bottom portion of said single wafer body, said movable and fixed terminals each having integrally an external portion, an intermediate portion, and a contact portion, said external portion extending externally from the bottom portion of said wafer, said intermediate portion fixedly molded in said wafer, and said contact portion extending into an internal space defined in said wafer on one side of said wafer, wherein the respective free ends of said contact portions of said movable terminals and of said fixed terminals extend substantially parallel to each other in the same direction toward an opposite side of said wafer and terminate in proximity to said opposite side, said contact portions of said movable terminals being spaced a given distance apart from respective contact portions of said fixed terminals so as to be movable into or out of contact therewith; a casing mounted to said wafer enclosing said internal space of said wafer; and means for individually actuating each of said contact portions of said movable terminals into or out of contact with a respective fixed terminal, said means being mounted in said casing and having respective operable ends thereof extending from said casing.

4,644,111
TRANSFORMER SWITCH
 Robert G. Hammond, Sussex, Wis., assignor to RTE Corporation, Waukesha, Wis.
 Filed Dec. 11, 1985, Ser. No. 808,445
 Int. Cl.⁴ H01H 19/54, 27/00
 U.S. Cl. 200—8 A
15 Claims

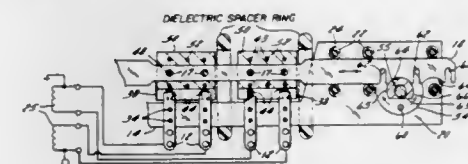
15. A housing for a multi-position rotary dual voltage or tap changer transformer switch including a shaft assembly with

moveable contact means, said housing comprising a molded plastic member having a bore forming a bearing surface for said shaft assembly, an interrupted mounting flange located intermediate the end of the bore for retaining said shaft assembly in the bore of the housing and an interrupted key flange at one end of the bore for providing a rotary lock release for said



shaft assembly, said flanges each including slots, the slots in one flange being offset from the slots in the other flange and a number of fixed contacts mounted on the other end of said housing in an equally spaced relation to said bore, whereby said shaft assembly can be positioned in said bore for selectively electrically connecting said fixed contacts.

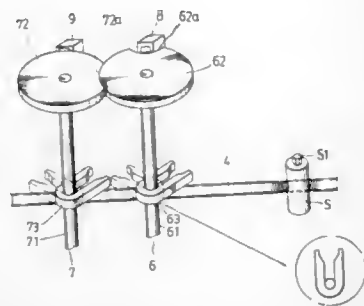
4,644,112
LINEAR TRANSFORMER SWITCH
 Neil J. Kranich, II, West Allis, Wis., assignor to ASEA Electric, Inc., Waukesha, Wis.
 Filed Jan. 3, 1986, Ser. No. 815,895
 Int. Cl.⁴ H01H 15/06
 U.S. Cl. 200—16 F
6 Claims



1. A linear series-parallel transformer switch comprising a pair of dielectric plates mounted in a parallel spaced relation, a number of sets of fixed contacts supported in the space between said dielectric plates, each set of fixed contacts, including four contacts mounted in an equally spaced relation, a bar supported for reciprocal motion between said ribs, a number of sets of current-carrying contact assemblies mounted on said bar, each set of assemblies including two pair of sliding contacts for each set of fixed contacts, each pair including two conductive plates spaced apart a distance less than the thickness of said fixed contacts and having a length sufficient to interconnect two fixed contacts, louvered contact means mounted on each of said contact plates in an opposing relation and being spaced apart a distance less than the thickness of said fixed contacts, and means for moving said bar between a first position wherein each pair of plates interconnects two fixed contacts and a second position wherein one pair of plates interconnects two fixed contacts and the other pair is connected to one fixed contact.

4,644,113
ELECTRIC SAFETY DEVICE
 L. D. Huang, No. 105, San Ho Road, Sec. 4, Sanchung City,
 Taipei Hsien, Taiwan
 Filed Oct. 9, 1985, Ser. No. 785,697
 Int. Cl.⁴ H01H 3/00
 U.S. Cl. 200—17 R

6 Claims

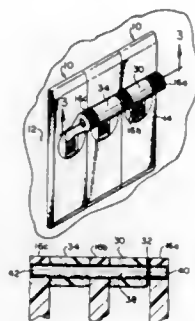


1. An improved electric safety device for sequentially controlling a power switch (8) and a grounding switch (9) of a high voltage electric device, comprising:

- (a) a motor (10);
- (b) a threaded shaft (4) driven by said motor;
- (c) a movable sleeve threaded on said shaft to be driven by said motor to and fro along said shaft;
- (d) a pair of rotary members (6, 7) each including a wheel (62, 72) having a recess (62a, 72a) on its periphery, a rod (61, 71) axially extending from a center of the wheel, and a guide piece (63, 73) radially extending from said rod, and
- (e) a power switch and a grounding switch individually mounted proximate and associated with the respective rotary member wheels,
- (f) said rods being parallel to one another and disposed near said shaft perpendicularly, each of said guide pieces being individually and independently rotatably movable one after the other within a predetermined angular range when engaged and pushed by said sleeve to cause said rods and said wheels to rotate, the periphery of one of said wheels actuating the power switch and the periphery of the other wheel actuating the grounding switch as they rotate.

4,644,114
ASSEMBLY FOR COUPLING SWITCH HANDLES
 Albert Strobel, Cherry Hill, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.
 Filed Dec. 20, 1985, Ser. No. 811,534
 Int. Cl.⁴ H01H 9/20
 U.S. Cl. 200—50 C

17 Claims



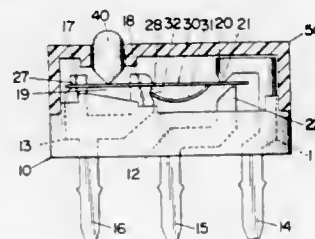
1. A switch coupling assembly comprising:
 (A) at least a pair of switch means held together in side by side arrangement, each switch means having a switch handle movable relative to the switch means for actuating

the respective switch means, the switch means being oriented so that the switch handles may move in spaced apart essentially similar parallel paths of movement, the switch handles having respective openings therethrough alignable along an axis generally perpendicular to the parallel paths of movement when the handles are moved to essentially similar positions along the respective parallel paths of movement;

- (B) generally tubular spacers dimensioned to fit between each pair of spaced apart switch handles, one of the spacers dimensioned to fit between a pair of said handles with predetermined clearance between said spacer and an adjacent one of said switch handles;
- (C) a tie rod dimensioned to extend through the spacers and the openings in said switch handles, said tie rod having a groove located for alignment in the clearance between said spacer and said adjacent switch handle; and
- (D) a retainer dimensioned to snugly fit in the predetermined clearance to snugly hold the retainer and spacer in position between said pair of switch handles and to engage said groove on the tie rod to hold the tie rod in position so that the switch handles are coupled together for simultaneous movement.

4,644,115
COMPACT SNAP ACTION SWITCH
 Sboji Nishimori, Mle, and Takeshi Nishii, Matsusaka, both of Japan, assignors to Matsushita Electric Works, Ltd., Japan
 Filed Jul. 26, 1985, Ser. No. 759,290
 Claims priority, application Japan, Aug. 24, 1984, 59-176931
 Int. Cl.⁴ H01H 5/20
 U.S. Cl. 200—67 D

2 Claims



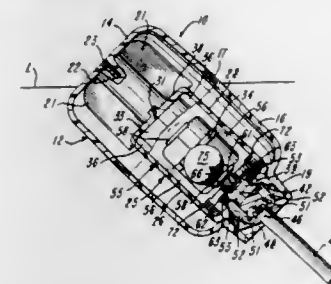
1. In a dimensionally compact miniature snap-action switch having a base, a common contact carrier and a pair of fixed contact carriers projecting from said base in spaced relation in a first planar zone defined by said carriers, and a spring sheet supported from and in electrical contact with said common carrier, said spring sheet having a movable flat free end portion of uniform material thickness lying in a second planar zone normal to said first planar zone, the combination of:

- a first fixed contact face on one of said fixed contact carriers, said first contact face lying in said second planar zone;
- said movable spring sheet end portion having a longitudinal axis, said flat end portion having oppositely directed contact areas and being normally biased into contact with said first contact face in parallel relation thereto;
- a second fixed contact face on the other of said fixed contact carriers, said second contact face being spaced in one dimension from said first contact face in said first planar zone and in a second dimension in said first planar zone in the direction of the longitudinal axis of the moveable end portion to position the second contact face opposite a contact area of said moveable sheet end portion longitudinally spaced from said first contact face;
- said common and fixed contact carriers having a selected uniform material thickness in said first planar zone;
- the spacing of said fixed contact faces in said first planar zone and in said one dimension thereof being smaller than the material thickness of said common and fixed contact carrier;

said sheet end portion having a material thickness smaller than the material thickness of said contact carriers; said contact areas on said moveable flat sheet end portion and said fixed contact faces being plated with conductive precious metal whereby the space in said first planar zone in said one dimension occupied by said fixed contact faces and contact areas of said moveable end portion is minimized and the height of the switch is reducible; said first contact face being spaced in said first planar zone and in said second dimension from said second contact face in said longitudinal direction of the axis of said spring sheet moveable end portion to provide a gap greater than the space between said fixed contact faces in said one dimension and said first planar zone to facilitate maintenance of a selected minute space in said first dimension between said first and second contact faces; each of said fixed contact carriers including a bevelled surface lying in a plane transverse to said first planar zone for collection of plating material while maintaining a selected minimum gap in said one dimension between said fixed contact faces.

4,644,117
FLOAT SWITCH ASSEMBLY
 Richard V. Grimes, P.O. Box 304, and John W. Good, 10010 N 25A, both of Piqua, Ohio 45356
 Filed Sep. 26, 1985, Ser. No. 780,320
 Int. Cl.⁴ H01H 35/18
 U.S. Cl. 200—84 R

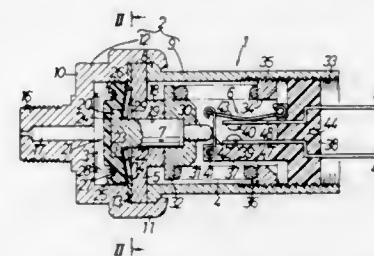
18 Claims



1. A float switch assembly adapted to float on a liquid surface and to sense changes in the level of the surface for controlling a pump, said assembly comprising a housing defining a chamber, means connected to said housing and forming a barrier projecting into said chamber, a set of electrical conductors extending to said housing, a shuttle supported within said housing for linear movement, switch means within said housing and including an electrical conducting element movable by said shuttle between a closed position connecting said conductors and an open position, a weight member disposed within said chamber for movement over said barrier, means for moving said shuttle and operating said switch means conducting element between said open and closed positions in response to tilting movement of said housing and movement of said weight member over said barrier, and means for floating said housing on the liquid surface.

4,644,116
PRESSURE SWITCH INCLUDING A SPECIAL SEAL MEMBER
 Yoshitaka Miyakawa, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Jun. 5, 1985, Ser. No. 741,641
 Claims priority, application Japan, Jun. 14, 1984, 59-122592
 Int. Cl.⁴ H01H 35/34
 U.S. Cl. 200—83 R

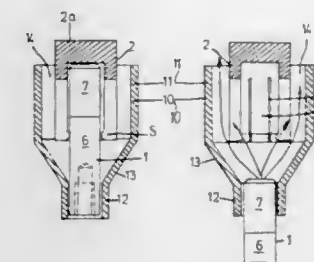
14 Claims



1. A pressure operated switch with a seal member comprising a casing having an interior, a partition dividing the interior into a fluid chamber fed with a fluid, the pressure of which is to be detected, and a working chamber, a switch mechanism housed in the working chamber, a rod with opposite ends thereof extending through the partition in an axially slidable manner and having one of the ends formed with a pressure-receiving portion located in the fluid chamber and the other end projecting into the working chamber and engaging a portion of the switch mechanism to change the switching mode of the switch mechanism in accordance with the axial displacement of the rod, a flexible pressure-receiving seal member inserted within the fluid chamber with the outer circumferential portion thereof freely and non-fixedly contacting and sealing the inner cylindrical surface of the casing defining said fluid chamber, and first and second spring means urging the rod towards the fluid chamber against the fluid pressure in the fluid chamber, wherein the first spring means is an annular plate spring positioned in the fluid chamber which supports the pressure-receiving portion of the rod and contacts a free side portion of the flexible pressure-receiving seal member and the second spring means has a resilient force which is only a portion of the desired force for urging the rod.

4,644,118
ELECTRIC POWER CIRCUIT BREAKER
 Bruno Gengenbach, Roland Michal, and Jens Radbruch, all of Pforzheim, Fed. Rep. of Germany, assignors to Dodo KG Dr. Eugen Durrwachter, Pforzheim, Fed. Rep. of Germany
 Filed Apr. 1, 1985, Ser. No. 718,524
 Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412824
 Int. Cl.⁴ H01H 33/04
 U.S. Cl. 200—144 R

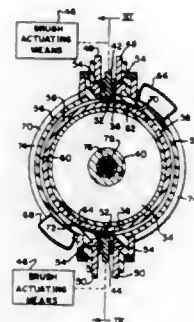
18 Claims



1. In an electric power circuit breaker comprising a contact pin having a longitudinal axis and a contact socket, which is coaxial to and adapted to receive said pin, wherein said pin is axially movable relative to said socket between forward and rear end positions in which the breaker is closed and open, respectively, said socket has a forward position which terminates in a socket tip and which is disposed adjacent to said pin in said rear end position and formed with a plurality of axial

ally extending, resilient segments and with axially extending slots separating said segments, and each of said segments is formed at said socket tip with a convex portion, which protrudes radially inwardly and is arranged to resiliently bear on said pin in said forward end position, said pin is adapted to extend into said socket in a predetermined length beyond said convex portions in said forward end position, the improvement residing in that said pin comprises a forward position which comprises a pin tip and which in said rear end position is adjacent to said socket and which consists at least on its outside surface of a composite material comprising an electrically conductive metal and a gas-releasing material adapted to release quenching gases under the action of an electric arc so that said gases are adapted to cool said electric arc, said forward portion of said pin has a length that is smaller than said predetermined length, and a sleeve is provided, which is coaxial to said pin and said socket and arranged to surround said pin in said forward end position, said sleeve being electrically insulated from said socket, said sleeve having tapered walls adjacent said resilient segments for channeling outwardly the quenching gases through said slotted socket and about said socket.

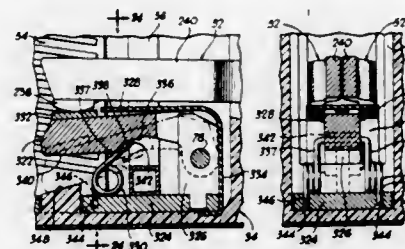
4,644,119
REPETITIVE SWITCH FOR INDUCTIVELY DRIVEN ELECTROMAGNETIC LAUNCHERS
Jing-Liang Wu, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 19, 1984, Ser. No. 590,666
Int. Cl.⁴ H01H 33/04, 33/06
U.S. Cl. 200—144 R 9 Claims



1. A switch for switching direct currents comprising: a cylindrical rotor having first and second electrically connected conducting elements extending arcuately over two angularly displaced portions of the cylindrical surface of the rotor and axially therealong; at least two angularly spaced retractable brush members extending radially inward toward and axially along the cylindrical surface of the rotor for making sliding electrical contact with the surface of the rotor when said brush members are in a first position; fixed insulating members extending between the brush members for electrically isolating the brush members from each other; and means for rotating said rotor; said brush members and said conducting elements being so dimensioned and angularly positioned such that with said rotor in a first position, applied current flows from one of said brush members through said conducting elements to a second one of said brush members, and with said rotor rotated to a second position, said conducting elements no longer make contact with both of said brush members, thereby interrupting the flow of current from said one

brush member to the other through said conducting elements, with said fixed insulating member and said rotor surface defining an internal arc chamber for an arc which is drawn upon the interruption of current flow, said arc chamber extending angularly around said rotor from one of said brush members in the direction that said rotor rotates in going from said first to said second positions.

4,644,120
MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE LOWER ELECTRICAL CONTACT POSITIONED BY A TORSION SPRING
Robert J. Tedesco, Coraopolis, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 18, 1985, Ser. No. 756,485
Int. Cl.⁴ H01N 1/24
U.S. Cl. 200—153 G 13 Claims

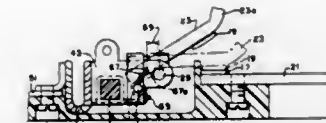
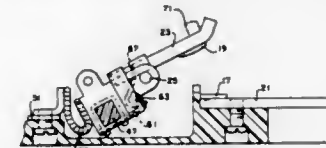


1. An electrical circuit breaker comprising: a first electrical contact assembly having a first contact, and a second movable electrical contact assembly having a second contact, said first and second electrical contact assemblies being movable into a CLOSED position and into an OPEN position, said second movable electrical contact assembly comprising a stationary conductor member having a first longitudinal end forming an external electrical terminal of said circuit breaker and a second longitudinal end configured as an upstanding contacting portion disposed within said circuit breaker, said second movable contact assembly further comprising (a) a movable contact arm having said second contact fixedly secured thereto at one longitudinal end thereof and (b) means fixedly secured to said movable contact arm and remotely disposed from said second contact for rotatably engaging the upstanding contacting portion of said stationary conductor member, said movable contact arm including an elongated cam surface formed along a portion thereof, said second movable electrical contact assembly further comprising biasing means for biasing said second contact on said movable contact arm into engagement with said first electrical contact when said first and second contact assemblies are in CLOSED position, said biasing means comprising a torsion spring disposed to engage the cam surface of said movable contact arm.

4,644,121
CIRCUIT BREAKER CONTACT ARM WITH VARIABLE FORCE PIVOT
Jere L. McKee, Scott Township, Lawrence County; John P. Majcher, Chippewa Township, Beaver County; William E. Smith, New Brighton, and Donald E. Schlosser, Beaver Falls, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 5, 1985, Ser. No. 741,406
Int. Cl.⁴ H01H 3/46
U.S. Cl. 200—153 G 5 Claims

1. A circuit breaker comprising:
(a) an insulating housing;

(b) a stationary contact within the housing;
(c) a movable contact within the housing and operable between open and closed contact positions with respect to the stationary contact;
(d) a contact arm stop within the housing;
(e) a contact arm for supporting the movable contact and pivotally mounted for movement between said positions;
(f) a circuit breaker operating mechanism to effect opening and closing of the contacts and including a pivotally movable bracket mounted at a first pivot;
(g) the contact arm being pivotally mounted on a second pivot to the bracket at a location between said first pivot and the movable contact;

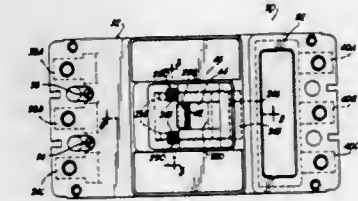


(h) spring means mounted between the pivots for applying a closed-contact pressure on the arm at a distance from the second pivot which pressure is a product of a predetermined spring force and of said distance, the pressure being less than a repulsion force generated between the contacts due to a short circuit of a predetermined rating to effect opening of the contacts;
(i) the spring means being movable upon opening of the arm to a location on the arm nearer the second pivot to produce a resulting pressure insufficient to reclose the arm; and
(j) the mechanism including manual means for rotating the bracket about the first pivot to move the contact arm to the contact arm stop to cause the contact arm to rotate to a reset position for subsequent closing of the contacts.

4,644,122
MOLDED CASE CIRCUIT BREAKER WITH COMBINED POSITION INDICATOR AND HANDLE BARRIER
James R. Farley, Plum Boro, and Robert H. Flick, Brighton Township, Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 18, 1985, Ser. No. 756,489
Int. Cl.⁴ H01H 9/16
U.S. Cl. 200—304 21 Claims

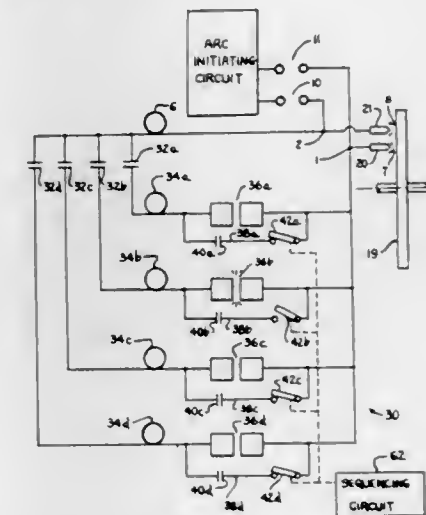
1. An electrical circuit breaker comprising: a first electrical contact, a second electrical contact, operating means for moving said first and second electrical contacts into engagement and out of engagement, said operating means having an OPEN position, a CLOSED position and a TRIPPED position, said operating means including a manually engageable handle, a case for housing the internal components of said circuit breaker, said case including an opening through which said handle extends exteriorly of said circuit breaker and within which said handle moves when said operating means is actuated, and means for externally visually indicating the position of said operating means, said indicating means comprising (a) a first elongated electrically insulating strip disposed within

said case and about said handle for movement in unison with said handle and covering at least a portion of said opening in said case, (b) a second elongated electrically insulating strip disposed within said case and about said handle by means of a lost motion connection with said handle such that said second strip is movable relative to said handle, said second strip being disposed in underlying



relationship with said first strip and covering at least an elongated portion of said opening in said case, said first and second strips also being movable relative to each other, and (c) means for externally viewing predetermined portions of said first and second strips when said operating means is disposed in OPEN, CLOSED and TRIPPED position.

4,644,123
ROTARY BALANCING APPARATUS
Jack H. Kerlin, 1722 Sanford Pl., Ann Arbor, Mich. 48103
Filed Sep. 18, 1984, Ser. No. 651,745
Int. Cl.⁴ B23K 9/00
U.S. Cl. 219—68 21 Claims



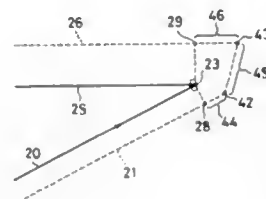
1. Balancing apparatus for balancing a rotary mass comprising means for rotating the mass and means for removing material from the mass while it is rotating to correct for unbalance comprising electrode structure defining a gap within which a portion of the unbalanced mass is disposed and via which an electric arc conducted to remove material from the mass, a power supply, coupling circuit means operatively coupling said power supply with said electrode structure for supplying electric current via said electrode structure across the gap to remove material from the mass, said power supply being inca-

pable by itself of initiating electric arc discharge across the gap but being capable of sustaining and augmenting electric arc discharge across the gap once initiated, an arc discharge initiation circuit operatively coupled with said coupling circuit means for producing a high voltage, high frequency pulse which is effective to initiate electric arc discharge across the gap so that said power supply can become effective to sustain and augment the electric arc discharge thereby removing material from the mass, said coupling circuit means including means effective to prevent said power supply from impairing the effectiveness of said arc discharge initiation circuit in initiating the electric arc discharge yet allowing said power supply to sustain and augment the electric arc discharge without any substantial impediment of current flow from the Power supply once the electric arc discharge has been initiated, in which said power supply comprises one or more capacitor banks each of which discharges via said coupling circuit means to sustain and augment the electric arc discharge initiated by the high voltage, high frequency pulse and is rechargeable from a source of electric power after it discharges, said coupling circuit means comprising a control circuit operatively associated with each capacitor bank comprising a main conduction path from the corresponding capacitor bank to said electrode structure, said main conduction path including a pair of contacts separated by a gap and a control circuit branch comprising a reactive circuit element and a switch so organized and arranged that the switch selectively allows and disallows discharge of the corresponding capacitor bank through the corresponding pair of contacts to said electrode structure.

4,644,124
WIRE ELECTRODE TYPE ELECTRICAL DISCHARGE MACHINING METHOD

Toshimitsu Hori, and Mitsutaka Sumita, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1985, Ser. No. 691,592
Claims priority, application Japan, Jan. 17, 1984, 59-4880
Int. Cl.⁴ B23H 7/06; G06F 15/46
U.S. Cl. 219—69 M 5 Claims

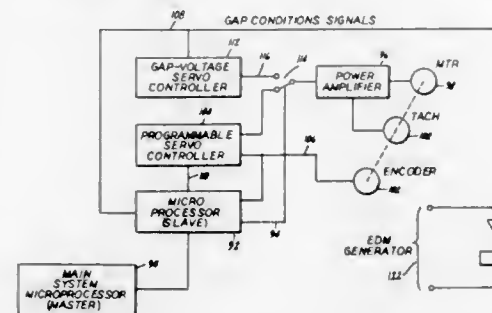


1. A wire electrode type electrical discharge machining method in which a wire electrode is controlled by an NC device to automatically move along predetermined loci while forming an angle with a workpiece, which method comprises the steps of:

- inputting wire electrode movement instruction codes and wire electrode inclination instruction codes into said NC device;
- determining whether or not, with respect to said wire electrode inclination codes, a wire electrode inclination before a corner is different from a wire electrode inclination after said corner;
- calculating, when said wire electrode inclinations are different, a plurality of movement instructions to be inserted between movement instructions forming said corner, by calculating movement instructions including a plurality of linear blocks to be inserted between an end point of a taper offset locus according to a wire electrode inclination immediately before said corner and a start point of a taper offset locus according to a wire electrode inclination immediately after said corner;
- said taper offset locus located immediately before said cor-

ner being extended from the end point thereof by a taper offset value thereof to obtain a first linear block with a first extended end, and said taper offset locus located immediately after said corner being extended from the start point thereof by a taper offset value thereof to obtain a second linear block with a second extended end, and said first extended end being connected to said second extended end to form a third linear block; and moving said wire electrode at said corner according to said plurality of movement instructions thus calculated.

4,644,125
D.C. MOTOR DRIVEN EDM HEAD
John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.
Filed Sep. 23, 1985, Ser. No. 778,824
Int. Cl.⁴ B23P 1/00
U.S. Cl. 219—69 G 4 Claims

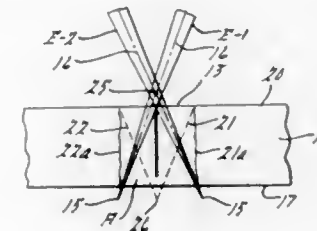


1. An EDM machine combining workpiece machining by spark erosion and wire erosion compensation comprising: a base, a stationary supply of wire disconnected from said motor for supplying predetermined lengths of electrode wire, and a wire guide on said base, said electrode wire being moveable to and from said supply and relative to said wire guide, a drive roller engageable with said wire for moving it with respect to said wire guide and with respect to a workpiece outboard of said wire guide, a servo-controlled electric motor, drive gear means for coupling said servo-controlled electric motor to said drive roller, said servo-controlled electric motor constituting the sole means in said machine for advancing said electrode with respect to the workpiece wherein the electrode is advanced only when said motor is energized either during spark erosion machining of a workpiece or during a wire erosion compensation of the length of said electrode, means for controlling said motor to drive said drive roller so as to feed said electrode wire from said supply and through said guide during spark erosion thereby to maintain a predetermined gap between said electrode wire and a workpiece during spark erosion machining of the workpiece, and means including encoder means coupled to said servo-controlled electric motor for indicating wear of said electrode wire during such spark erosion machining; and means responsive to said encoder means to control said motor to modify the drive of said drive roller to regulate wire feed to and from said supply so as to compensate for such wire erosion.

4,644,126
METHOD FOR PRODUCING PARALLEL-SIDED MELT ZONE WITH HIGH ENERGY BEAM
Berthold W. Schumacher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 14, 1984, Ser. No. 681,721
Int. Cl.⁴ B23K 15/00
U.S. Cl. 219—121 ED 8 Claims

1. A method of providing a parallel-sided melt zone in a metal workpiece having an entrance and an exit surface, said

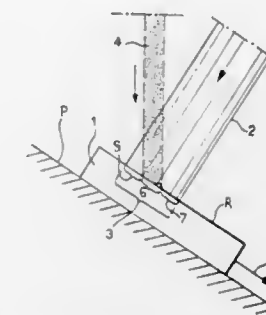
entrance surface being subjected to a high energy radiation beam focused during the period of said directing at a predetermined fixed location along the beam's axis at or adjacent said exit surface, comprising (i) translating the axis of said beam laterally along a path on said surface while (ii) controlling the



relationship between the workpiece and beam so that said beam axis oscillates through an angle to the normal of said surface at a selected minimum frequency, the extremities of said oscillation being limited to define sides of the melt zone which assume a substantially perpendicular position relative said surface.

4,644,127
METHOD OF CARRYING OUT A TREATMENT ON METAL PIECES WITH THE ADDITION OF AN ADDED MATERIAL AND WITH THE USE OF A POWER LASER
Aldo V. La Rocca, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Italy

Filed Aug. 20, 1985, Ser. No. 767,540
Claims priority, application Italy, Aug. 20, 1984, 67832 A/84
Int. Cl.⁴ B23K 27/00
U.S. Cl. 219—121 FS 2 Claims

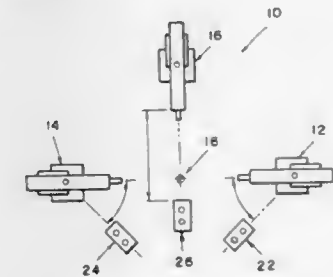


1. A method for applying a powdered material to a metal piece by means of a power laser and gas stream assembly comprising:

- irradiating a first area on a surface of a metal piece with a laser beam from said power laser;
- conveying said powdered material through a portion of said laser beam by means of said gas stream to a second area on said surface smaller than and completely within said first area to bring said powdered material to a plastic or liquid state prior to contacting said surface; and
- moving said power laser and gas stream assembly and said metal piece relative to each other whereby the surface of the metal piece is preheated by said laser beam prior to the application of the powdered material in the plastic or liquid state to the surface and is postheated by said laser means after the application of the powdered material in the plastic or liquid state to the surface of said metal piece.

4,644,128
LASER CONTOUR CUT MANIFOLDS
Gunther H. Palentyn, Grand Blanc; James R. Dehlinger, Ada, and Donald R. Rigsby, Jenison, all of Mich., assignors to Benteler Corporation, Grand Rapids, Mich.

Filed Jan. 21, 1986, Ser. No. 820,238
Int. Cl.⁴ B23K 26/00
U.S. Cl. 219—121 LG 8 Claims



1. Apparatus for laser cutting a configured opening in the wall of a tubular manifold member having an open end, comprising:

- at least one fixture having exterior body clamping means for clamping the exterior of a tubular manifold member in a predetermined position and predetermined orientation in said fixture;
- at least one multi-dimensionally-active robot spaced from said fixture;
- elongated circumferentially expansible tube gripping means on said robot for expanding within the tubular member to grip it;
- said robot being movable in a manner to cause axial alignment of said elongated tube gripping means with the open end of a tubular member clamped in said fixture, and movable axially toward said fixture to insert said expansible tube gripping means into the tubular member through the open end thereof, for expansion thereof to grip the inside wall of the tubular member;
- a laser beam source for directing a cutting laser beam toward a focal point;
- said robot being movable toward said focal point to transfer the tubular member to said focal point; and
- said robot being movable to advance through a programmed 360 degree pattern around said focal point in a manner to cause a configured opening to be laser cut into the wall of the tubular manifold member.

4,644,129
APPARATUS AND METHOD FOR EDGE WELDING SHEET METAL

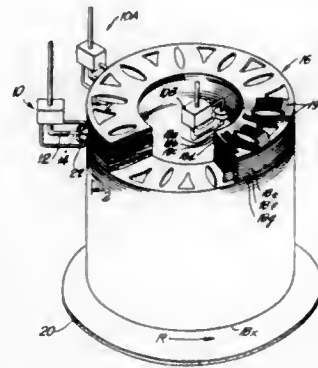
Jule A. Miller, Derby, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 25, 1985, Ser. No. 801,421
Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 LC 8 Claims

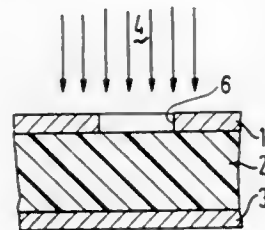
- 1. An apparatus for edge welding the plates of a stacked plate heat exchanger, said apparatus comprising:
- a first laser source in proximity to the edges to be welded and operative to direct a laser beam toward said edges, said first laser source including a rotating lens which is operative to deflect the laser beam alternately between the respective edges to be welded;
- means for aligning the edges of the plate to the beam of the first laser source;
- a second laser source in proximity to the edges of the plate, said second laser source being operative to direct a laser beam toward said edges; and
- means for effecting relative movement between the plates and the first and second laser sources such that the edges of said plates are first subjected to the beam of said first

laser source, whereby the first laser source eliminates discontinuities on the edges of the plates and provides an



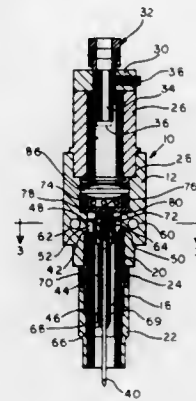
initial fusing of said edges, and whereby the second laser source is operative to provide a more complete fusing of said edges.

4,644,130
METHOD FOR CREATING BLIND HOLES IN A LAMINATED STRUCTURE
Friedrich Bachmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 17, 1985, Ser. No. 735,276
Claims priority, application Fed. Rep. of Germany, May 18, 1984, 3418593
Int. Cl.⁴ B23K 26/00
U.S. Cl. 219—121 LJ 9 Claims



1. A method of forming at least one blind hole in a laminated structure having a pair of metal layers separated by a synthetic layer with the blind hole being through one metal layer, the synthetic layer and terminating at the other metal layer of the pair, said blind hole providing space to form an electrical connection between the pair of metal layers, said method comprising the steps of providing an excimer laser and a laminated structure with a synthetic layer separating a pair of metal layers which are resistant to the laser radiation of the excimer laser with the synthetic layer being bonded to each of the pair of metal layers, one of the pair of metal layers being provided with an aperture at a location of each blind hole to be formed and the remaining portion of the one layer being a radiation mask; and then forming the blind hole by directing the laser radiation from the excimer laser at each aperture to remove the material of the synthetic layer exposed by each aperture and to form a blind hole with the other layer of the pair terminating the forming step.

4,644,131
ELECTRODE SUPPORT FOR GAS ARC WELDING TORCH HAVING COAXIAL VISION
Richard W. Richardson, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio
Filed Apr. 22, 1986, Ser. No. 854,510
Int. Cl.⁴ B23K 9/10
U.S. Cl. 219—124.34 10 Claims



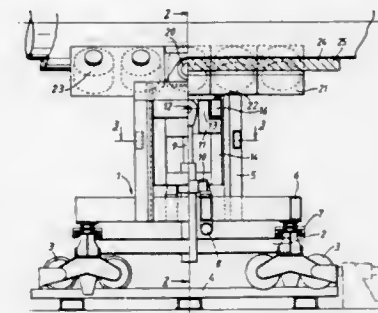
1. An improved gas tungsten arc welding torch of the type having a tubular jacket, a centrally mounted electrode projecting from an open end of the tubular jacket and an internal, coaxial imaging vision system for attachment to a weld control means, wherein the improvement is an electrode mounting structure comprising:

- a support having a central hub and a plurality of spokes which extend from the hub generally radially with respect to the axis of said tubular jacket into supporting engagement with the interior walls of said jacket and having optical passages between the spokes;
- a tubular collet holder mounted at one end to the hub and extending toward the open end of the tubular jacket, the collet holder having an inwardly extending constriction;
- an electrode-retaining, tubular collet within the collet holder and having a longitudinally split end seating against said constriction; and
- means in said collet holder spaced from said constriction and seating against the end of said collet opposite the split end for applying an axial force upon the collet to force the split end against the constriction and apply a radially inward gripping force against the electrode contained within the collet.

4,644,132
APPARATUS FOR HORIZONTALLY SUPPORTING PIPES TO BE BUTT WELDED
Xavier Puisais, Levallois Perret; Jean-Pierre Hamon, Cergy; Michel Jegousse, Saint-Herblain, and Michel Kaluszynski, Vitry-Su-Seine, all of France, assignors to Total Compagnie Francaise des Petroles, Paris, France
Filed Oct. 9, 1985, Ser. No. 785,698
Claims priority, application France, Oct. 22, 1984, 84 16113
Int. Cl.⁴ B21J 13/08; H05B 1/00
U.S. Cl. 219—158 7 Claims

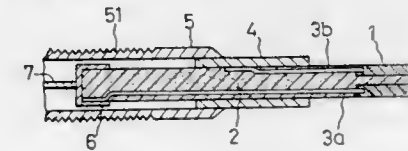
1. Apparatus for circumferentially butt welding a substantially horizontal tubular element (24) at one end thereof to a tubular structure (27), comprising: a welding machine (26) located near said one end for butting said one end against the tubular structure and welding such element and structure together, and support means (1) for supporting the tubular element at a position horizontally remote from said one end, said support means comprising thrust means (9) for exerting an

upwardly directed thrust on the tubular element of sufficient force to at least partly compensate for the weight of the tubular



element and thus alleviate the force to be exerted by said welding machine.

4,644,133
CERAMIC HEATER
Morihiro Atsumi, Okazaki; Naohiko Nunogaki, Kariya; Novuei Ito, Okazaki, and Naohito Mizuno, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan
Filed Feb. 25, 1986, Ser. No. 832,767
Claims priority, application Japan, Feb. 28, 1985, 60-39646
Int. Cl.⁴ F23Q 7/22; F02N 17/00
U.S. Cl. 219—270 5 Claims

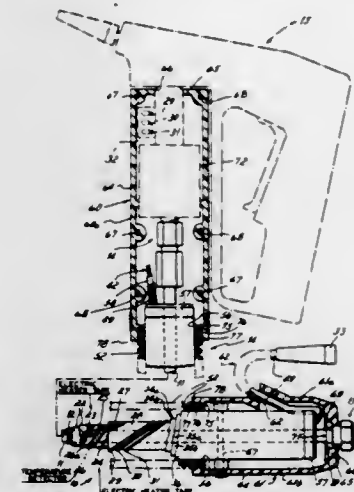


1. A ceramic heater comprising:
a heater element made of a ceramic sintered body which generates heat upon receiving an electric current;
a heater support member made of an electrically insulating ceramic sintered body, said heater element being affixed to one end of said heater support member; and
an electric current supply means for supplying an electric current to said heater element;
said heater element being a sintered body of a mixture including MoSi_2 and Si_3N_4 powder as a main ingredient and SiO_2 powder as an additive; said sintered body being composed of MoSi_2 , Si_3N_4 and siliconoxinitride converted from part of Si_3N_4 ;
said mixture having a composition expressed by the formula: $0.035 \leq B/A < 0.35$ where A is the amount of Si_3N_4 powder expressed by mol percent of the total amount of said main ingredient and B is the amount of SiO_2 powder expressed by mol percent of the total amount of said main ingredient.

4,644,134
ELECTRICALLY HEATED HOSE HAVING CORRUGATED PLASTIC COVER
Robert G. Baker, Buford, Ga., assignor to Nordson Corporation, Amberst, Ohio
Filed Sep. 25, 1985, Ser. No. 779,883
Int. Cl.⁴ H05B 3/58; F16L 11/12, 53/00; B67D 5/62
U.S. Cl. 219—301 3 Claims

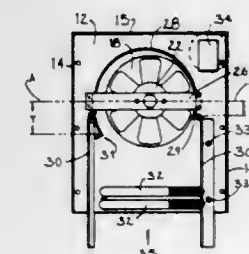
1. A flexible heated hose of substantially uniform construction throughout its length for transmitting hot liquid material comprising
a flexible polymeric tube contained within a braided metal

covering, said tube having hydraulic fittings sealingly attached to opposite ends of the tube,
multiple plies of heat and electrical insulative material helically wrapped around said braided covering,
at least one electrical heating line helically wrapped around and embedded within said multiple plies of heat and electrically insulative material,
electrical leads for supplying electrical power to said at least one electrical heating line,
a pair of molded plastic cuffs, one of said cuffs being secured over each end of said hose,



means for preventing the hose from being kinked and broken at the intersection of the hose cuff with the hose when subjected to a severe bending force of sharp radii at that location, said prevention means comprising,
an exterior ply of polymeric corrugated tubing surrounding said hose, said corrugated tubing having annular ribs separated by annular recesses on the periphery thereof, and
each of said hose cuffs having at least one inwardly extending annular rib formed on the interior surface thereof and engaged with an annular recess formed on the periphery of said corrugated tubing of said hose to secure said cuff to said corrugated tubing.

4,644,135
WALL MOUNTED FORCED AIR ELECTRIC HEATER
Terrill A. Daily, Richardson, Tex., assignor to The Marley Company, Mission Woods, Kans.
Filed Aug. 29, 1983, Ser. No. 527,534
Int. Cl.⁴ F24H 3/04; F04D 1/14
U.S. Cl. 219—370 8 Claims



1. A heating apparatus comprising a housing defining an air passageway and having a fan rotatably mounted therein for axially drawing air into said passageway, said housing having a scroll mounted therein, said scroll surrounding a portion of the fan and forming a part of the air passageway, said scroll being of an archimedic design; said scroll having two ends, one said end closely adjacent the fan and the other said end re-

moved from the fan, said ends positioned with respect to a line drawn through the center of the fan and normal to the projected air flow of the fan, such that both ends are on the same side of the line in the direction of the projected air flow and the removed end is a substantially greater distance from said line than the adjacent end; each said scroll end immediately adjacent and connected to an interior wall of the passageway such that the distance between the scroll ends substantially equals the width of the passageway, means for heating air disposed adjacent said scroll in said passageway, motor means mounted in said housing for rotating said fan about its axis and cover means for covering the air passageway and for directing heated air out of the apparatus, means for preventing the heated air from recirculating through the heating elements comprising a lip formed on said housing between the fan and the means for directing heated air out of the apparatus, adjacent said air direction means and a front cover plate mounted to the housing over the lip.

4,644,136

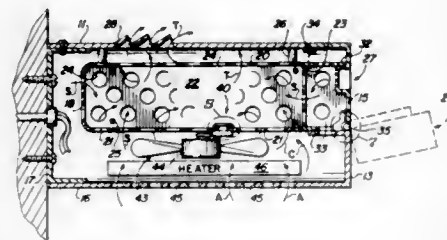
TOWEL WARMER

Kenneth C. Watchman, 2621 N. Jay St., Chandler, Ariz. 85224
Filed Feb. 19, 1985, Ser. No. 702,791

Int. Cl.⁴ F27D 7/04

U.S. Cl. 219—400

4 Claims



1. Apparatus for warming a towel, said apparatus comprising

- (a) a housing including
 - (i) a plurality of interconnected generally continuous retaining walls enclosing and defining an inner space, and
 - (ii) a plurality of perforated inner walls connected to said housing and spaced away from said retaining walls to bound air flow passages between said inner and outer walls, and an inner towel storage area;
- said perforated inner walls including
- a base wall for receiving and supporting a towel,
- an outer wall spaced away from, opposed to, and generally parallel to said base wall,
- a plurality of peripheral side walls extending between and circumscribing said base and outer walls,
- one of said retaining walls being opposed and generally parallel to said outer wall to bound with said outer wall said air flow passage between said outer wall and said one of said retaining walls,
- (b) a vent formed in said one of said retaining walls, said vent being opposed to said outer wall;
- (c) means for producing heat;
- (d) a fan for causing air to flow
 - (i) over said heat producing means toward said inner towel storage area,
 - (ii) through said base wall against the bottom surface of a towel in said inner storage area resting on said base wall,
 - (iii) through
- said perforations in said base wall,
- said inner storage area,
- said perforations in said outer wall, and
- said vent

(iv) through said side walls into said inner storage area toward and against a towel placed therein,

to contact all outer exposed surfaces of said towel with warm flowing air;

said base wall, outer wall and vent being positioned with respect to one another such that at least a portion of air flowing through said base wall into said inner storage area when a towel is not positioned in said storage area can blow in a generally fixed direction of travel through said storage area, through said outer wall and into said vent; another of said outer walls comprising a door which is opened to place a towel in said inner storage area; one of said side walls being opposed to and spaced apart from said door to form one of said air flow passages between said one of said side walls and said door.

4,644,137

CIRCUIT FOR CONTROLLING A RICE COOKER WITH POWER INTERRUPTION CONTROL

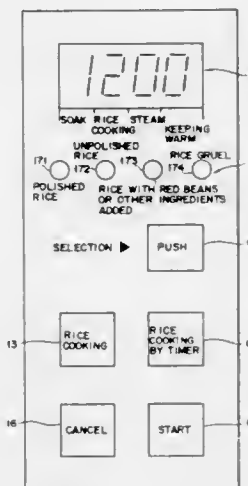
Morio Asahi, Gifu; Terutaka Aoshima, Toyohashi; Ryuuho Narita, and Masahiro Imai, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 30, 1985, Ser. No. 781,635

Claims priority, application Japan, Oct. 5, 1984, 59-210135

Int. Cl.⁴ H05B 1/02

U.S. Cl. 219—497

7 Claims



1. A circuit for controlling a rice cooker having at least one heater used for cooking rice, comprising:

- rice cooking mode setting means for selectively setting one of at least three different rice cooking modes having high, medium and low heater heating calories, respectively;
- main control means for fetching preset mode data responsive to said mode set by said rice cooking mode setting means, and for supplying a predetermined energize/deenergize control signal corresponding to the preset mode data, to said heater;
- power failure detecting means for detecting a temporary interruption of a drive power voltage to said said main control means after the preset mode data has been fetched in said main control means, and for maintaining the detected state for a predetermined period of time;
- power interrupt recovery operation control means for fetching a detection signal from said power failure detecting means when supply of the drive voltage to said main control means is recovered, and for controlling said main control means to supply an energize/deenergize control signal corresponding to a specific rice cooking mode of a medium heating calorie to said heater;
- preset mode display means including at least three display elements which correspond to the preset mode data; and
- mode display control means for controlling all the display elements of said preset mode display means by fetching the

detection signal from said power failure detecting means when supply of the drive voltage to said main control means is recovered.

4,644,138

TEMPERATURE CONTROL SYSTEM WITH SIMPLIFIED CONTROLLER AND POWER SUPPLY

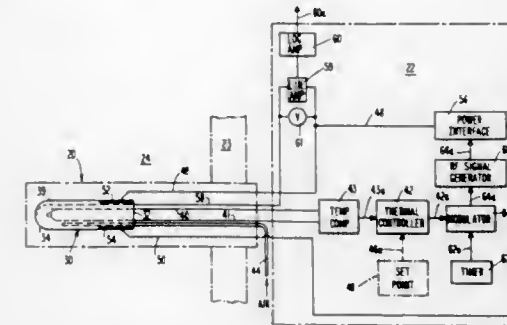
Paul L. Walsh, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,371

Int. Cl.⁴ H05B 1/02

U.S. Cl. 219—501

14 Claims



1. A temperature control system for resistively heating an electrochemical cell comprising:

- current source means for generating an alternating electric current used to resistively heat an electrochemical cell;
- heater circuit means for connecting said current source means in an electric circuit across at least a portion of an electrochemical cell;
- a control amplifier generating at an output terminal a control signal having a varying magnitude for varying the power of said alternating electric current generated by said current source means and circuited through said heater circuit means when said heater circuit means is connected across at least a portion of an electrochemical cell and receiving at an input terminal a compound signal formed from a first component signal related to the difference between an actual temperature of the cell and a desired temperature of the cell and a second component signal related to the control signal outputted by said control amplifier means; and
- a feedback circuit coupled directly between said output terminal and said input terminal containing at least two circuit legs connected in parallel, one parallel circuit leg containing only a resistance and the second parallel circuit leg containing only a capacitance and a resistance in series.

4,644,139

LAMINATED OBSCURATION BANDED WINDOWS FOR VEHICLES

Peter J. Harrison, Solihull, and Derek C. Castle, Halesowen, both of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

Filed Dec. 11, 1985, Ser. No. 807,673

Claims priority, application United Kingdom, Dec. 18, 1984, 8431894

Int. Cl.⁴ H05B 3/06; B32B 31/00; H01C 1/012

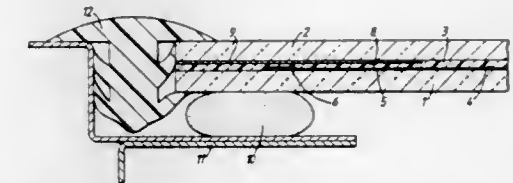
U.S. Cl. 219—522

5 Claims

1. A laminated window for a vehicle comprising inner and outer glass sheets laminated together with a plastics interlayer, wherein:

- the inner surface of the outer glass sheet has a marginal obscuration band which has been fired on said inner surface during sag bending of said inner and outer glass sheets with said outer glass sheet resting on said inner glass sheet, said inner surface uppermost and a printed obscuration

band around said inner surface, the order of the said inner and outer glass sheets then having been reversed for lamination so that said obscuration band is in contact with said plastics interlayer;



electrical conductors are incorporated in the laminate in contact with said plastics interlayer, said electrical conductors including conductive strips near to edges of said window; and

said obscuration band is of sufficient extent to obscure said conductive strips when viewed from the outside.

4,644,140

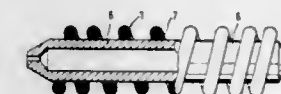
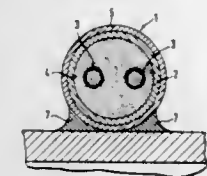
ELECTRIC HEATING ARRANGEMENT FOR SPRAY NOZZLES

Erich Hillinger, Tuttlingen, Fed. Rep. of Germany, assignor to Turk & Hillinger GmbH, Tuttlingen, Fed. Rep. of Germany
Filed Aug. 30, 1984, Ser. No. 646,314

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1983, 3347160

Int. Cl.⁴ H05B 3/00; B29F 1/03; B29C 35/00; H01C 1/032
U.S. Cl. 219—535

8 Claims



3. An electrically heated spray nozzle for spraying plastics and the like, comprising:

- a highly compressed tubular heating body coiled around a spray nozzle as a plurality of coil windings along the length of the nozzle, said heating body comprising:
- a steel inner jacket provided on said heating body and containing a heating line including a pair of spaced electric heating elements imbedded in a highly compressed powdered insulating material,
- a copper outer jacket encasing said inner jacket, said outer jacket also resisting melting; and
- a hard solder connection joint connecting said outer jacket, and hence said heating body to said spray nozzle, said connection joint being at least as broad as the diameter of said outer jacket.

4,644,141

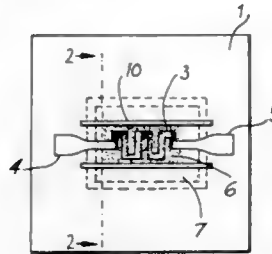
INFRARED RADIATOR

Werner Hagen, Bad Schwartau; Johannes Lagois, Lübeck, and Dieter Pruss, Hamburg, all of Fed. Rep. of Germany, assignors to Drägerwerk AG, Fed. Rep. of Germany
Filed Oct. 4, 1985, Ser. No. 784,516

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1984, 3437397

Int. Cl.⁴ H05B 3/16, 3/10; H01C 1/012
U.S. Cl. 219—543

10 Claims



1. A radiation source for infrared radiation comprising a support substrate made of material of high thermal conductivity and having top and bottom surfaces, said support substrate having a recess in at least one of said top and bottom surfaces forming a thin bridge region spanning said recess, an insulating layer on one of said top and bottom surfaces of said substrate, said insulating layer extending over said bridge region, and an electrically conductive track disposed on said insulating layer and extending over said bridge region, said track having opposite terminal contacts which are connectible to a source of pulsed current for heating said track to emit infrared radiation, said track being relatively easily heatable due to the relatively easily heatable thin bridge region compared to a remainder of said substrate.

4,644,142

MODULAR UNIVERSAL POSTAGE METER

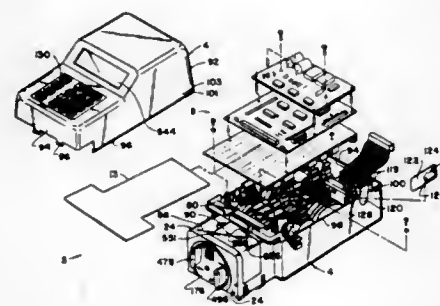
Ward J. Payn, Pacheco, Calif., assignor to f.m.e. Corporation, Hayward, Calif.

Filed Nov. 6, 1985, Ser. No. 795,673

Int. Cl.⁴ G06F 1/00

U.S. Cl. 235—101

11 Claims



1. A modular universal postage meter comprising:
a base;
a stepper motor module, including a stepper motor;
means for registering the stepper motor module to a chosen stepper motor position with respect to the base;
means for securing the stepper motor module to the base in the chosen stepper motor position;
a shaft assembly including a main shaft and a value rod;
means for registering the shaft assembly at a chosen shaft assembly position with respect to the base;
means for securing the shaft assembly to the base at the chosen shaft assembly position;

a printhead secured to an outer end of the main shaft for rotation therewith;
said printhead including value print elements operably coupled to the value rod; and
means for operably coupling the stepper motor and the value rod so to select a chosen value print element through the actuation of the stepper motor.

4,644,143

STATIC BAR CODE READER

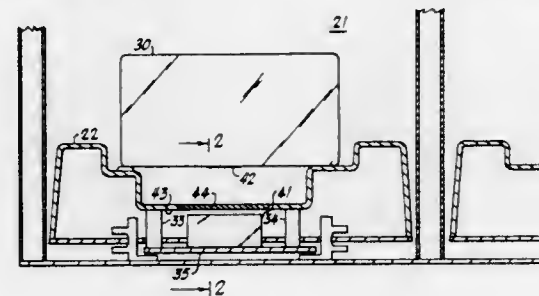
Robert B. McJohnson, Pilot Point; Adrian B. Currin, Dallas, and Robert R. Nelson, Richardson, all of Tex., assignors to Veeco Integrated Automation, Inc., Dallas, Tex.

Filed Dec. 13, 1984, Ser. No. 681,116

Int. Cl.⁴ G06K 7/10

U.S. Cl. 235—462

20 Claims



1. A static bar code reader for reading a stationary bar code affixed to a container used in an inventory system, comprising:
a light sensitive charge coupled device which is affixed to a bin for receiving said container, said charge coupled device being stationarily disposed relative to the stationary bar code;
means for imaging the contrasting segments of the stationary bar code on to the light sensitive elements of said charge coupled device;
means for illuminating said stationary bar code; and
circuit means for converting the output of said light sensitive elements to an electrical signal that is representative of the information included in the stationary bar code.

4,644,144

DOCUMENT CARRIER ENVELOPE

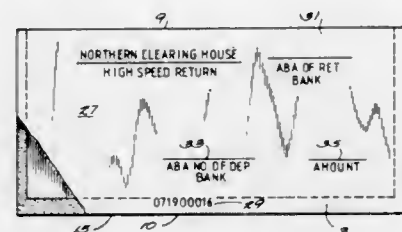
Anthony R. Chandek, S87 W25075 Edgewood Ave., Mukwonago, Wis. 53149; Leon J. Weistroffer, 1815 High St., Aurora, Ill. 60505; Donald E. Cooper, 720 Merritt Ct., Naperville, Ill. 60540, and Daniel A. Bates, 4710 W. Bluemound Rd., Milwaukee, Wis. 53208

Filed May 13, 1985, Ser. No. 733,984

Int. Cl.⁴ G06K 19/06

U.S. Cl. 235—487

14 Claims



1. A document carrier envelope for protectively transporting a document through high speed processing equipment comprising:
a. a front panel having an outside face imprinted with predetermined financial indicia readable by the high speed processing equipment and an unprinted inside face;

b. a back panel joined to the front panel along a first fold line and having opposed transverse edges and a free longitudinal edge, the back panel having first fastening means applied to the margins thereof along the transverse edges and second fastening means applied thereto adjacent the first fold line, both fastening means being applied to the same panel face, the back panel being folded over along the first fold line into facing contact with the front panel inside face to join the front and back panels along the first and second fastening means; and
c. a flap having a pair of opposed transverse edges and joined to the front panel along a second fold line, the flap being adapted to fold over onto the back panel along the second fold line, the second fold line being perforated, the flap having fastening means applied longitudinally thereto at a spaced distance from the second fold line, the flap defining a notch in at least one transverse edge thereof generally in the space between the second fold line and the flap fastening means, so that when the flap is folded over onto the back panel, the document carrier envelope is sealed along the four edges thereof and the notch provides an entry for receiving a tool for rapidly opening the document carrier envelope.

4,644,145

OPTICAL RECEIVER WITH ELECTRICALLY VARIABLE ATTENUATOR

Hans M. Gündner, Benningen, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

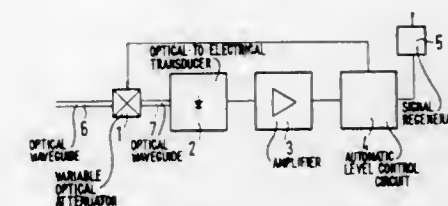
Filed Apr. 30, 1985, Ser. No. 728,999

Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416493

Int. Cl.⁴ G01J 1/20; H01J 5/16

U.S. Cl. 250—201

6 Claims



1. Optical receiver consisting of an optical attenuator (1), an optical-to-electrical transducer (2), an amplifier (3), and an automatic level control circuit (4), for controlling the level of a signal provided from said amplifier characterized in that the attenuation introduced by the optical attenuator (1) is electrically variable by an electronic control voltage provided to said optical attenuator from said automatic level control circuit which includes a peak detector for producing said electronic control voltage.

4,644,146

ROBOTIC VEHICLE OPTICAL GUIDANCE SYSTEM

Walter H. Wurster, Orchard Park, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Division of Ser. No. 509,109, Jun. 29, 1983, Pat. No. 4,568,825.

This application Sep. 20, 1985, Ser. No. 778,593

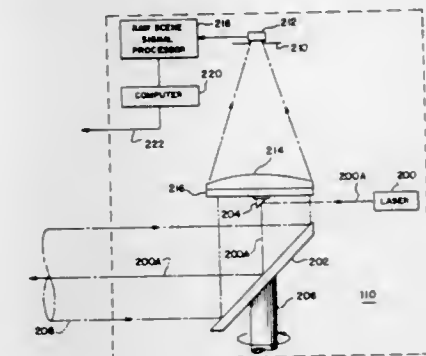
Int. Cl.⁴ G05B 1/00

U.S. Cl. 250—202

4 Claims

1. A method of optically guiding a robotic vehicle comprising the steps of:
generating a light beam;
scanning said light beam at least through an area extending before the vehicle along a path to be traversed by said vehicle;

receiving return signals comprising reflections of said light beam from the area scanned by said light beam;
detecting said return signals to generate a raw scene signal;



processing said raw scene signal to generate a series of pulse signals corresponding to scene discontinuities within the area scanned by said light beam; and
comparing said series of pulses to stored pulse series to determine the position of said robotic vehicle.

4,644,147

METHOD FOR DEFLECTION OF OPTICAL RAYS AND AN OPTICAL ARRANGEMENT THEREFOR

Marcel Züblin, Tachlisbrunnerstr. 28, 8400 Winterthur, Switzerland

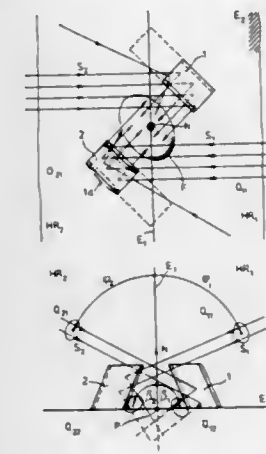
Continuation of Ser. No. 568,485, Jan. 5, 1984, abandoned. This application Jul. 11, 1986, Ser. No. 883,863

Claims priority, application Switzerland, Jan. 5, 1983, 43/83; Oct. 21, 1983, 5727/83

Int. Cl.⁴ G01D 21/04; G01J 1/04

U.S. Cl. 250—221

29 Claims



1. In an optical arrangement for the detection of optical rays received from a wide spatial angle which rays are caused to impinge upon the surface of a detector having an optical detection capability which undesirably decreases in sensitivity as the angle of optical rays impinging upon said detector surface increases, the improvement therewith of apparatus for confining said rays within a predetermined area indicative of a high sensitivity for said detector, said apparatus comprising:

- carrier means defining a generally planar surface;
- at least two separate, spaced-apart reflectors projecting from said generally planar surface of said carrier means on opposite sides of a line perpendicular to said generally planar surface, each of said reflectors having a reflecting surface, said reflecting surfaces being tilted towards said

perpendicular line so that said reflecting surfaces face towards said perpendicular line and face towards said generally planar surface, said reflectors defining openings therebetween at the margins of said reflectors extending to said generally planar surface so that radiant energy rays directed adjacent said generally planar surface can pass into said openings alongside one of said reflectors so as to impinge on the reflecting surface of the other one of said reflectors; and

(c) means for mounting said detector so that said detector surface is disposed at said generally planar surface of said carrier means in a predetermined area adjacent the intersection of said perpendicular line with said generally planar surface and so that said detector surface faces towards said reflectors,

whereby optical rays passing adjacent said generally planar surface will impinge upon said reflecting surfaces and will be reflected onto said detector surface to enable said detector to respond to said rays with a substantial increase in efficiency.

4,644,148

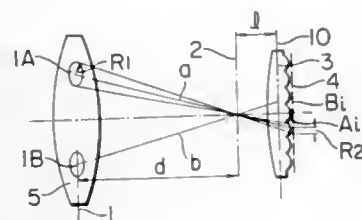
FOCUS DETECTING APPARATUS

Yosuke Kusaka, Kawasaki, and Jun Shimomura, Chofu, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Continuation of Ser. No. 440,327, Nov. 9, 1982, abandoned. This application Apr. 29, 1986, Ser. No. 858,538

Claims priority, application Japan, Nov. 19, 1981, 56-185724
Int. Cl.⁴ G01J 1/20

U.S. Cl. 250—201

3 Claims



1. In a focus detecting apparatus for detecting an image position of an object through an imaging optical system that forms an image of light from the object on a predetermined plane, said apparatus including detection means for detecting intensity of light from the object through said imaging optical system, said detection means having a plurality of photoelectric conversion elements arranged in a single dimensional direction, the improvement comprising:

a focus detection optical system leading a part of the light from the object through said imaging optical system to said plurality of photoelectric conversion elements and having a detection plane arranged between said imaging optical system and said detection means, said detection means detecting distribution of the intensity of light on said detection plane at predetermined intervals, said focus detection optical system including a lenslet array component, said detection plane being at least a predetermined distance away from said predetermined plane in an optical axial direction of said imaging optical system, said predetermined distance being substantially defined by the following expression:

$$\frac{3.83 \cdot \Delta X \cdot d}{\pi \cdot R}$$

where R is a radius of the circular area approximated to the area covered by the imate of one of said plurality of photoelectric conversion elements projected on the exit pupil of said imaging optical system by said lenslet array component, d is a distance between the plane of said exit

pupil and said predetermined plane, and ΔX is said predetermined interval.

4,644,149

PHOTOELECTRIC TRANSDUCER ELEMENT

Tokuichi Tsunekawa, Takashi Kawabata, Yuichi Sato, and Susumu Matsumura, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Japan

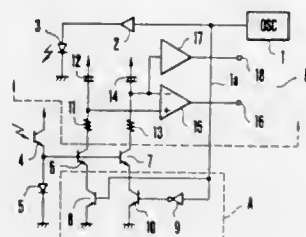
Filed Apr. 16, 1984, Ser. No. 601,055

Claims priority, application Japan, Apr. 18, 1983, 58-68642

Int. Cl.⁴ H01J 40/14

U.S. Cl. 250—214 A

8 Claims



1. A photoelectric transducer device comprising:

(a) light sensitive means for receiving the reflected light from an object to produce an electrical signal corresponding to the reflected light from the object, said light sensitive means having an output to produce the electrical signal;

(b) first memory means for memorizing an amplified electrical signal;

(c) second memory means for memorizing an amplified electrical signal;

(d) first amplifying transistor means for amplifying the electrical signal and transmitting the amplified electrical signal to the first memory means, the first amplifying transistor means having a control electrode;

(e) second amplifying transistor means for amplifying the electrical signal and transmitting the amplified electrical signal therefrom to the second memory means, the second amplifying transistor means having a control electrode;

(f) means for connecting both control electrodes of the first and second amplifying transistor means to the output of the light sensitive means;

(g) first control means connected to the first amplifying transistor means for permitting the energization of the first amplifying transistor means in synchronism with energization of a light emitting means;

(h) second control means connected to the second amplifying transistor means for permitting the energization of the second amplifying transistor means in synchronism with de-energization of the light emitting means; and

(i) output means connected to the first and second memory means for producing an output signal corresponding to the difference between the electrical signal memorized in the first memory means and the electrical signal memorized in the second memory means.

4,644,150

APPARATUS FOR INSPECTING CIGARETTE BUNDLES

Hisashi Kuga, Nagareyama, and Chikara Sasaki, Tokyo, both of Japan, assignors to Tokyo Automatic Machinery Works, Ltd. and Japan Tobacco Inc., both of Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,345

Claims priority, application Japan, Aug. 31, 1983, 58-160941

Int. Cl.⁴ G01N 21/55; B07C 5/342

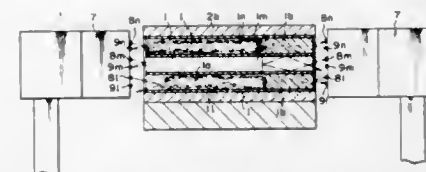
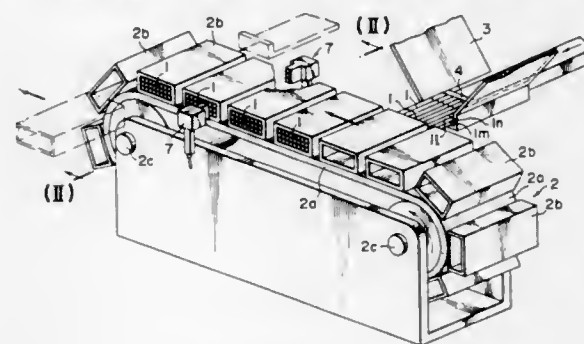
U.S. Cl. 250—223 R

9 Claims

1. An apparatus for inspecting cigarette bundles, comprising: gate time measuring means for measuring the passing time of the internal width of buckets fixed to a belt conveyor in

which a predetermined number of cigarettes are layered in rows, and for issuing a gate signal representative of said width;

dark time measuring means including photoelectric means facing each said row of cigarettes, and which measures the dark time representing the passing time of defective cigarette parts and of spaces between neighboring cigarettes, and issues a defective output signal in response thereto;



computing means responsive to said defect output signals for selecting the maximum value of dark times for each said row of cigarettes, and computing a ratio of said gate time and maximum value and issuing the computed value as a detection signal; and

comparison means for comparing said computed value with a predetermined reference value so as to determine a defect in any one of said rows of cigarettes, and for issuing an output signal representative thereof.

4,644,151

IDENTIFICATION OF A MOLDED CONTAINER WITH ITS MOLD OF ORIGIN

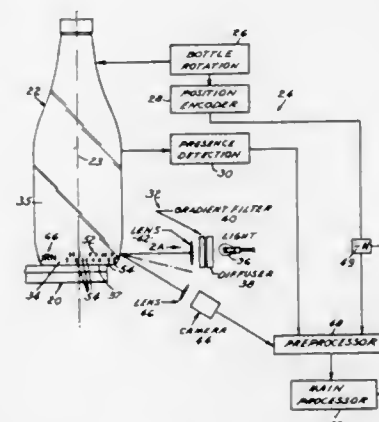
John W. Juvinall, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 5, 1985, Ser. No. 720,336

Int. Cl.⁴ G01D 5/36

U.S. Cl. 250—223 B

16 Claims



1. A molded container having a body and a central axis extending longitudinally therethrough, said body being formed in a mold and having a sidewall, a bottom load-bearing surface, a heel portion of the sidewall contiguous with the bottom, and integral indicia for identifying the mold in which the said

container was formed, said integral indicia comprising a plurality of generally radially oriented surface irregularities extending in an array generally perpendicular to the central axis at a series of circumferential positions on the heel, said circumferential positions being uniformly spaced from each other along said heel and disposed in sets of two circumferentially adjacent positions, there being at least one of said irregularities in each of said sets of two circumferentially adjacent positions, said sets being in mutually unique pairs of adjacent circumferential positions, each of said sets being readable as a unique bit of binary information which depends upon the positional sequence of said irregularities within said set, and said sets collectively identifying the mold in which said container was formed.

4,644,152

CHECKING DEVICE FOR CIGARETTE GROUPS
Pasquino Gurioli, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

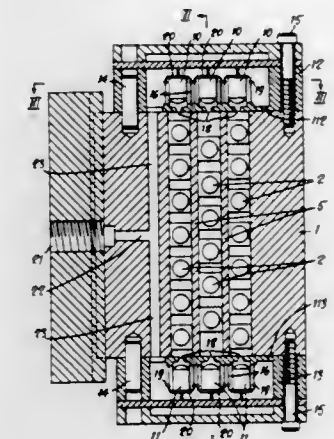
Filed Dec. 3, 1984, Ser. No. 677,353

Claims priority, application Italy, Dec. 6, 1983, 12686 A/83

Int. Cl.⁴ G01N 9/04

U.S. Cl. 250—223 R

15 Claims



1. An optoelectronic device for checking the number of rod-like articles making up an orderly group of articles to be packed, comprising:

a plurality of feeler pins having axes;

a box-like article checking head having a front wall and having first and second spaced-apart partition walls with respective first and second apertures therein, the head having a hollow space between the partition walls and the front wall having feeler pin guide bores which communicate with the hollow space, the feeler pins being mounted on the head and extending through the guide bores, the guide bores being disposed so that the feeler pins are mounted parallel to one another in an arrangement matching the arrangement of the articles in the group, the pins being axially slidable with respect to the head and the head being movable with respect to the group of articles; means for resiliently biasing the pins toward the group of articles;

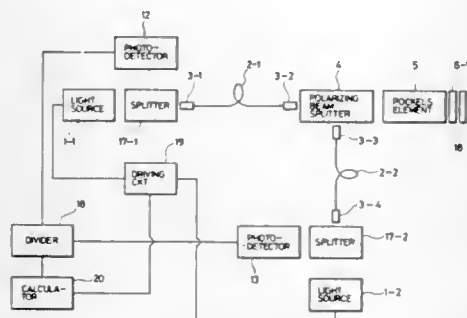
means for checking the articles of the group when the head is slightly pressed in a direction parallel to the feeler pin axes to cause the pins to abut against the ends of the articles, the means for checking including

a light emitting element mounted on the head, the light emitting element being disposed outside the hollow space but communicating with the hollow space through the aperture in one of the partition walls,

a light sensitive element mounted on the head to receive light from the emitting element, the light sensitive ele-

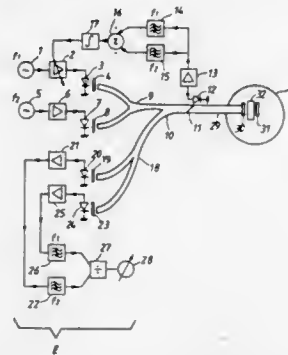
ment being disposed outside the hollow space but communicating with the hollow space through the aperture in the other partition wall, and screen means mounted on the feeler pins for preventing light from reaching the light sensitive element unless all the feeler pins abut against respective article ends and are thereby resiliently shifted with respect to the head; means mounted on the head for defining a chamber around one of the light emitting and light sensitive elements, the chamber communicating with the hollow space through the aperture in the respective partition wall; and means for feeding air under pressure into the chamber so that air sweeps the element in the chamber as the air flows through the respective aperture into the hollow space, the sweep of air preventing dust from settling on the element in the chamber, at least some of the air thereafter flowing out of the hollow space through the guide bores to prevent dust from being deposited in the guide bores.

4,644,153
OPTICAL SENSING EQUIPMENT
Yoshiaki Ida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 18, 1985, Ser. No. 777,135
Claims priority, application Japan, Sep. 18, 1984, 59-197249; Sep. 18, 1984, 59-197250
Int. Cl.⁴ G02F 1/01
U.S. Cl. 250—225 12 Claims



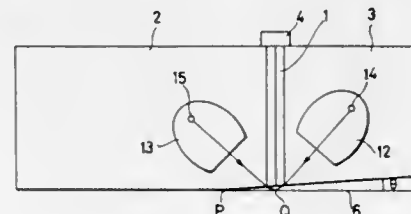
1. An optical sensing equipment comprising: a first light source; a first splitter receiving light from said first light source; a first photodetector arranged at one output of said first splitter; a first optical fiber; a second light source; a second splitter receiving light from said second light source; a second photodetector arranged at one output of said second splitter; a second optical fiber; an optical sensor coupled to the other outputs of said first and second splitters through said first and second optical fibers, respectively, said optical sensor comprising a polarizer, a modulator element, and fully reflecting mirror arranged in the stated order from said first and second optical fibers; a driving circuit for alternately driving said first and second light sources; a divider for determining a first ratio of outputs of said first and second photodetectors when said first light source is turned on and a second ratio of outputs of said first and second photodetectors when said second light source is turned on; and means for calculating a ratio between said first and second ratios to thereby provide an output proportional to a quantity being measured.

4,644,154
FIBER-OPTIC LUMINESCENCE MEASURING SYSTEM FOR MEASURING LIGHT TRANSMISSION IN AN OPTIC SENSOR
Torgny Brogårdh, Bertil Hök, and Christer Övren, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden
Filed Mar. 23, 1984, Ser. No. 592,814
Claims priority, application Sweden, Mar. 24, 1983, 8301629
Int. Cl.⁴ H01J 5/16
U.S. Cl. 250—227 22 Claims



1. A fiber-optic measuring device for measuring a physical quantity, comprising:
a transducer unit,
an electronic unit, and at least one optical fiber interconnecting the transducer and electronic units,
the transducer unit comprises at least a first and a second photo-luminescent sensor element, of which at least the first element is placed in the ray path of light from the fiber, at least partially behind the second element,
means adapted to influence the light transmission between said first and second elements and is influenced by said physical quantity,
the electronic unit comprises at least two light sources having separate emission spectra, said emission spectra being so chosen relative to absorption and transmission spectra of said first and second elements that said one light source substantially excites one of said photoluminescent elements whereas said other light source at least substantially excites said other photo-luminescent element.

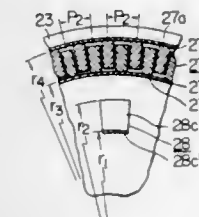
4,644,155
READING OPTICAL SYSTEM
Noritaka Mochizuki, Yokohama; Chikara Jin, Tokyo, and Toshie Kaneko, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 26, 1984, Ser. No. 593,489
Claims priority, application Japan, Mar. 30, 1983, 58-54874
Int. Cl.⁴ H01J 5/16
U.S. Cl. 250—227 5 Claims



1. A reading optical system comprising:
a transparent block having an upper surface and a bottom surface, a part of said bottom surface being an inclined surface forming an angle with respect to a horizontal plane;

light-guide means embedded in said block, said light-guide means having one end disposed on an intermediate portion of said inclined surface spaced apart by a predetermined distance from a lower end of said inclined surface and the other end of said light-guide means being disposed on the upper surface of said block, and said angle of said inclined surface being small enough to make a distance between the surface of an original document and said one end of said light-guide means sufficiently small to maintain a predetermined degree of resolution of reading the surface of the original document;
a light sensor installed on said upper surface of said block in opposed relationship with said other end of said light-guide means; and
an illuminating system for illuminating the vicinity of the surface of the original document opposed to said one end of said light-guide means, through said block.

4,644,157
OPTICAL ROTATION DETECTING APPARATUS
Kuniichi Ozawa, Hirakata; Yasuhiro Goto, Kadoma; Hiromi Nakase, Nara, and Shinya Yukino, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 3, 1983, Ser. No. 471,708
Claims priority, application Japan, Mar. 8, 1982, 57-36042; May 21, 1982, 57-86742; Jul. 15, 1982, 57-123808
Int. Cl.⁴ G01D 5/34
U.S. Cl. 250—231 SE 8 Claims



1. An optical rotation detecting apparatus, comprising:
a rotary shaft;
a rotary disk fixed on said rotary shaft, and having a first slit group of n slits, n being an integer, disposed along a periphery thereof and a second slit group of m slits, m being an integer, disposed radially inwardly of said first slit group;
a light source facing one surface of said rotary disk for emitting light to all of the slits of said first slit group and a part of the slits of said second slit group; and
a planar photoelectric conversion means facing another surface of said rotary disk, said photoelectric conversion means including an amorphous silicon film having a P-i-N junction and transparent electrodes dispersed on said amorphous silicon film which are supported on a same base, said transparent electrodes including first and second electrodes, said first electrodes comprising $n \times 2$ electrodes, the positions of said first and second electrodes corresponding to positions of the slits of said first slit group and said second slit group, respectively, and, said planar photoelectric conversion means further comprising a first conductive member connecting alternate ones of said first electrodes and a second conductive member connecting the remaining ones of said first electrodes.

4,644,156
CODE WHEEL FOR REFLECTIVE OPTICAL ROTARY ENCODERS
Yoshihiro Takahashi; Hiraku Abe, and Yasuhiro Mamiya, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Jan. 17, 1985, Ser. No. 692,392
Claims priority, application Japan, Jan. 18, 1984, 59-4175[U]
Int. Cl.⁴ G01D 5/34
U.S. Cl. 250—231 SE 6 Claims

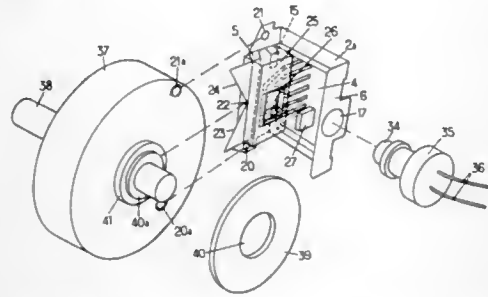


1. In a reflective optical rotary encoder of the type having a code wheel with a surface provided with alternating reflective and non-reflective sectorial areas spaced at predetermined angular intervals, and a photodetector for radiating light onto said areas and detecting light reflected from the reflective areas, whereby the speed and direction of rotation of the code wheel can be determined,
the improvement wherein a code wheel body of said code wheel including said surface is formed of a light-reflective material and has directly coated on said surface a non-reflective photosensitive layer having alternating sectorial areas etched away by exposure to light to expose said light-reflecting surface beneath, so as to provide said alternating reflective and non-reflective sectorial areas.

4,644,158
DEVICE FOR OPTICAL CODE READING, BY DIASCOPY, AND A PROCESS FOR MANUFACTURING SAME
Jacques A. J. Taillebois, Plaisir, France, assignor to M.C.B., Courbevoie, France
Continuation-in-part of Ser. No. 600,452, Apr. 16, 1984. This application Oct. 17, 1984, Ser. No. 661,971
Claims priority, application France, Apr. 20, 1983, 83 06482
Int. Cl.⁴ G01D 5/34 16 Claims

U.S. Cl. 250—231 SE
1. A device for reading an optical code affixed to a rotating mechanical member by a diascopy comprising:
light source means for supplying a light beam of parallel rays;
light source support means for holding said light source means;
integrated circuit means for photodetection of said light beam;
enclosure means for enclosing said integrated circuit means;
transparent means for covering said enclosure means to allow said light beam to pass therethrough to strike said integrated circuit;
a chassis having a U-shape and a recessed area and two lateral portions said light source support means being

disposed on one of the lateral portions of the U-shaped chassis and, on the other lateral portion of the U-shaped chassis a support for said enclosure means, and connections for connecting the integrated circuit, and fixing lugs; and



an indented lateral flange for ensuring a correct optical superimposition of the reading device with said at least one optically coded track;
said reading device adapted to be fixed, by means of said fixing lugs to a mechanical member with an element having at least one optically coded track.

4,644,159

IMAGE READING DEVICE

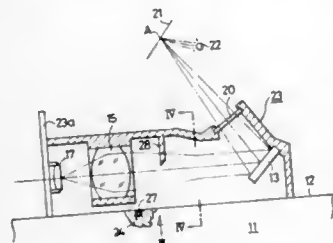
Masaaki Miura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,535

Claims priority, application Japan, Feb. 24, 1983, 58-29858
Int. Cl.⁴ H01J 3/16

U.S. Cl. 250—239

4 Claims



1. In an image reading device in which an image of an object is applied through an optical system, having at least a reflective optical element and an image forming lens defining therebetween an optical axis, said optical axis lying in a first plane, to a photoelectric conversion means, and said photoelectric conversion means produces an electrical signal representing the image of said object, the improvement comprising: said optical system and said photoelectric conversion means being fixedly secured to a single supporting frame in a predetermined positional relationship, and said supporting frame being detachably mounted on a mounting surface of an image reading device body; and

wherein said supporting frame further comprises a light-shielding plate having a first end attached to said frame and a free second end with an arcuate edge extending toward and being proximate to said optical axis, said arcuate edge of said plate being closest to said optical axis at a central portion of said edge and gradually curving away from said optical axis towards both ends of said edge, said plate being disposed between said image forming lens and said reflective optical element whereby quantities of light are blocked more at said central portion than at said end portions and said quantity of light at said photoelectric conversion means is made substantially uniform.

4,644,160 SYSTEM FOR HOLDING PLURAL LIGHT BEAMS IN PREDETERMINED RELATIVE POSITIONS

Akira Arimoto, Musashimurayama; Susumu Saito, Hachioji; Kimlo Tatsuno, Kokubunji, and Keiji Kataoka, Kawagoe, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

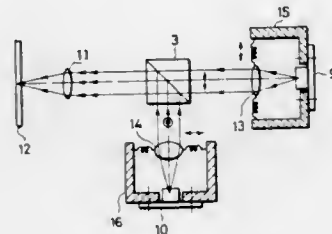
Filed Dec. 11, 1984, Ser. No. 680,497

Claims priority, application Japan, Dec. 14, 1983, 58-234245;
Feb. 10, 1984, 59-21812

Int. Cl.⁴ G01J 1/20; H01J 40/14

U.S. Cl. 250—201

12 Claims



1. A system for holding a plurality of light beams in predetermined relative positions, comprising:
a plurality of diode lasers;
a plurality of lenses corresponding to said diode lasers, respectively, for focusing the light beams coming from said diode lasers, respectively;
a plurality of actuators supporting either said diode lasers or said lenses, respectively;
at least one detector means for optically detecting the displacement of the plural light beams, which are emitted from said diode lasers, respectively, and focused by said lenses, respectively, from a predetermined position; and
control circuit means for controlling said actuators in response to a detection signal from said detector means so that the displacement of said light beams from said predetermined position may be reduced.

4,644,161

MASS SPECTROGRAPH

Robert Evrard, Nesles la Vallee, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

PCT No. PCT/FR85/00038, § 371 Date Nov. 1, 1985, § 102(e)
Date Nov. 1, 1985

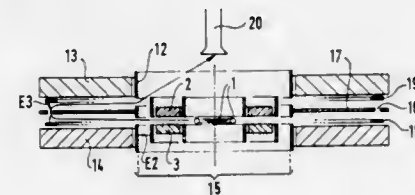
PCT Filed Mar. 1, 1985, Ser. No. 800,640

Claims priority, application France, Mar. 2, 1984, 84 03322;
Dec. 19, 1984, 84 19410

Int. Cl.⁴ H01J 49/28

U.S. Cl. 250—296

8 Claims



1. A mass spectrograph combining one or more magnetic deflections with the action of electrostatic fields, said mass spectrograph comprising a circularly symmetrical analyzer system including a heated circular filament forming a source of ions, a pair of small ring-shaped magnets for injecting ions radially from said source, and which confine the ionizing electrons to the interior periphery or to the exterior periphery of the analyzer system; a first pair of deflection magnets of ring

shape forming a first magnetic induction field; and means for effecting selective action of other electrostatic fields due to prior dispersion obtained by the first magnetic induction field.

4,644,162

COOLING HOLE INSPECTION

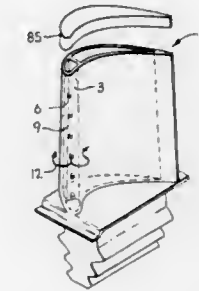
Thomas E. Bantel, Cincinnati, Ohio, and David C. Mack, Waukesha, Wis., assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 20, 1984, Ser. No. 652,245

Int. Cl.⁴ G01N 21/71

U.S. Cl. 250—340

3 Claims



1. A method of inspecting a channel, comprising the following steps:
(a) causing the temperature of the channel to change;
(b) measuring the transient of the infrared signature of the channel; and
(c) comparing the measured transient with a reference.

4,644,163

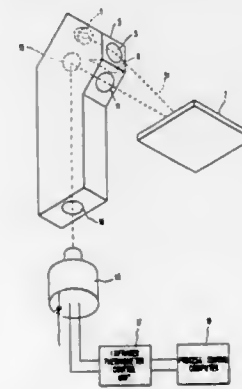
MATERIAL IDENTIFICATION USING INFRARED THERMOMETRY

Raymond K. Selander, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 404,008, Aug. 2, 1982, abandoned. This application Oct. 16, 1985, Ser. No. 787,866

Int. Cl.⁴ B07C 5/34; G01N 21/47

U.S. Cl. 250—341

13 Claims



1. A method for identifying paper or plastic sheet material from green ceramic material comprising the steps of:
focusing a beam of infrared energy upon the surface of the materials to be identified from a preselected angle of incidence;
sensing the radiant heat energy scattered from said surface at infrared wavelengths between 2.0 and 2.6 microns, said sensing of heat energy accomplished with a sensor positioned away from the angle of reflectance relative to said angle of incidence;
determining the amount of scattered energy received from said surface through said step of sensing with the amount

of energy sensed being a function of the product of the amount of energy radiated by said beam and a constant representative of the physical characteristics of said material; and

using the amount of energy scattered from said surface as an indication of the type of material upon which said beam is focused by comparing said amount of energy with known amounts of energy predetermined for similarly scattered energy, which amounts respectively correlate to given material types.

4,644,164

COMPACT PASSIVE INFRARED INTRUSION SENSOR

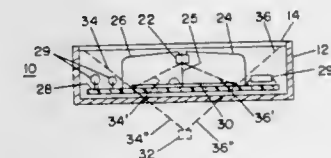
Philip H. Mudge, Brookfield, Conn., assignor to Cerberus AG, Mannedorf, Switzerland

Filed Jan. 4, 1985, Ser. No. 688,920

Int. Cl.⁴ G08B 13/18; G01J 1/04

U.S. Cl. 250—353

5 Claims



1. A compact infrared intrusion sensor comprising:
an enclosure having an opening for receiving infrared radiation;
a lens including a plurality of lens segments arranged in said opening for focusing infrared radiation;
a single plane reflector arranged in said enclosure opposite said opening and substantially parallel to said lens for reflecting infrared radiation received through said opening;
and an infrared detector arranged between said lens and said reflector and facing said reflector, the spacing of said lens and said detector from said reflector being selected to cause said lens to focus infrared radiation onto said detector, said reflector having dimensions selected to provide a reflected optical path between the periphery of said lens and said infrared detector.

4,644,165

INTEGRATING PHOTOMETER

Malcolm G. Ross, Plymouth, Minn.; Joe T. May, Leesburg, and Steven D. Hale, Lovettsville, both of Va., assignors to Colight, Inc., Minneapolis, Minn.

Filed Feb. 22, 1983, Ser. No. 468,279

Int. Cl.⁴ G01J 1/46

U.S. Cl. 250—372

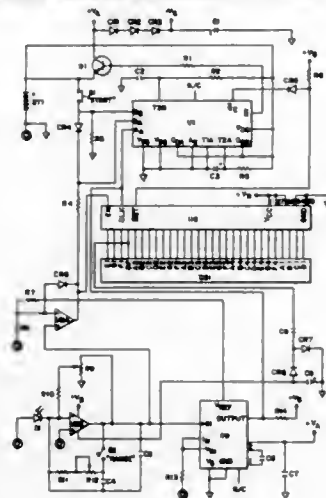
5 Claims

1. A compact, self-contained integrating ultraviolet photometer, comprising in combination:
a case;

a photodiode detector means mounted in said case for providing an output current directly proportional to the intensity of ultraviolet electromagnetic radiation impinging upon said photometer;

operational amplifier and current to voltage conversion means having an input port connected to receive the output current of the photodiode detector means and constructed and arranged for presenting essentially short circuit impedance to the photodiode detector means mounted in said case for converting the output current from said photodiode detector means to an alternating current output signal having a period inversely propor-

tional to the magnitude of said output signal of said photodiode detector means; threshold means coupled to receive a signal proportional to the output current of the photodiode detector means and constructed and arranged for providing an output command when the output current of the photodiode detector means is below a predetermined threshold level indicative of exposure to ambient illumination levels only; and



display means mounted in said case and coupled to said operational amplifier and current to voltage conversion means to receive the output current therefrom and to the threshold means to receive the disable command therefrom and for providing a continuous digital output display indicating the total number of alternations undergone by the alternating output signal of the operational amplifier and current to voltage conversion means over a selected time interval only when the disable command is not received.

4,644,166

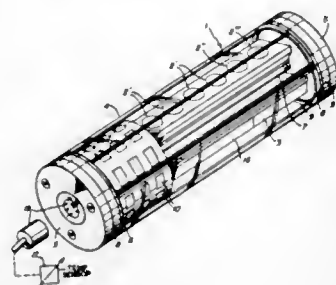
SENSOR FOR TESTING LIGHT AND WEATHER RESISTANCE OF SAMPLES

Walter Sturm, Hanau; Helmut Becker, Limesbain; Jürgen Witt, Hainburg; Werner Fritz, Steinau-Sarrod, and Ursula Eysholt, Hanau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
Continuation of Ser. No. 587,826, Mar. 9, 1984, abandoned. This application May 12, 1986, Ser. No. 862,206
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 8308709[U]

Int. Cl.⁴ G01N 17/00

U.S. Cl. 250—372

14 Claims



1. A compact, revolvable, self-contained and electrically self-sufficient simulated-solar-radiation and temperature measuring sensor adapted for use in a weather resistance testing chamber, comprising, in accordance with the invention,

a sealed housing (1) transparent to the simulated solar radiation to be measured,
a plurality of receptor cells (2', 2'', 2''') disposed in said housing, said receptor cells each comprising an interference filter (12) and at least one diffusing lens (13) in front of a photocell (11) and being responsive to differing wavelength ranges of incident radiation and generating signals representing radiation received,
a multiplexer (15) connected to said receptor cells and sequencing said signals for serial transmission,
a plurality of solar cells (10) disposed in said housing and generating, entirely from incident simulated solar radiation, sufficient electrical power for generation and transmission of said signals, and
a single radio transmitter (3) connected to said multiplexer (15) for radio transmission of said signals, during revolution of said sensor, to a stationary receiver.

4,644,167

RADIATION DOSE RATE MEASURING DEVICE

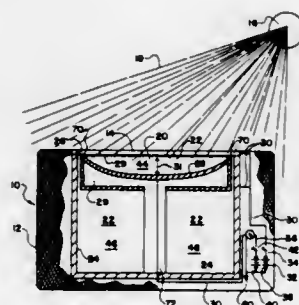
Robert Sorber, Charlotte, N.C., assignor to Duke Power Company, Charlotte, N.C.

Filed Feb. 22, 1985, Ser. No. 706,285

Int. Cl.⁴ G01T 1/185; H01J 47/02

U.S. Cl. 250—374

31 Claims



1. A portable device for in-field usage for measuring the dose rate of an ambient beta radiation field, comprising:
a housing, substantially impervious to beta radiation, defining an ionization chamber and having an opening into the ionization chamber;
beta radiation pervious electrically-conductive window means covering said opening and entrapping, within said ionization chamber, a quantity of gaseous molecules adapted to ionize upon impact with beta radiation particles;
electrode means disposed within the ionization chamber and having a generally shallow concave surface terminating in a generally annular rim disposed at a substantially close spacing to said window means and configured to substantially conform to said window means to define a known beta radiation sensitive volume generally between the window means and the concave surface of the electrode means, said concave surface being effective to substantially fully expose said beta radiation sensitive volume to said radiation field over substantially the full ambient area faced by said window means;
electrical potential means, including a circuit electrically connecting said electrically conductive window means to said electrode means, for establishing an electrical potential between said electrode means and said window means and adapted, upon creation of ions within the beta radiation sensitive volume of the ionization chamber by impact of beta radiation particles from said field with said ionizable molecules within said beta radiation sensitive volume, to cause a measurable electric current of a value substantially directly related to the dose rate of said radiation field to flow within said circuit between the window means and the electrode means; and

means for detecting and measuring electric current flowing within said circuit between said window means and said electrode means to permit calculation of the directly-related dose rate of said radiation field.

4,644,168

ELECTRON BEAM DEFLECTING MAGNET ASSEMBLY FOR A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER

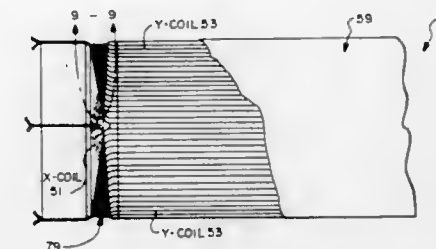
Roy E. Rand, and Dan Y. Wang, both of Palo Alto, Calif., assignors to Imatron Inc., So. San Francisco, Calif.

Filed May 14, 1984, Ser. No. 610,102

Int. Cl.⁴ H01J 3/34

U.S. Cl. 250—398

10 Claims



1. A magnet coil assembly for controllably deflecting an incident electron beam in an electron beam system such as a computed tomography scanner, comprising a pair of x- and y-coils and a generally cylindrical support form supporting the x-coil and the y-coil at physically different radii a_x and a_y , the coils being at angular positions $\pi/2$ relative to one another and defining a generally cylindrical configuration about the axis thereof such that an angle ϕ defines the plane of deflection relative to a fixed plane containing the magnetic coil axis and polar coordinates (r, θ) define the location in a plane defined by mutually orthogonal coordinate axes (x, y) normal to the magnetic coil axis; each coil comprising a selected number of continuous turns comprising a pair of generally axially-extending sections joined by end connecting sections; the direction and configuration of the coils being selected such that for currents I_x proportional to $-\sin \phi$ and I_y proportional to $\cos \phi$ producing magnetic fields B_x equal to $-B_x \sin \phi$ and B_y equal to $B_y \cos \phi$ then, to a selected accuracy, the magnitude of the resultant magnetic field approximates

$$B_0 = (B_x^2 + B_y^2)^{1/2},$$

which is a constant independent of R , θ and ϕ , and the field direction B_x/B_y approximates

$$B_x/B_y = -\tan \phi,$$

independent of r and θ ;
wherein the selected accuracy is described by the following RMS errors for the case of a non-rotating field and for the case of a rotating field in the plane of deflection, the RMS error in the non-rotating case being

(a) the square root of the mean square deviation of the magnetic field in any transverse plane from its value on axis, the average being taken over all polar angles (θ) and over all radii (r') up to a selected radius (r) , for each pair of coils separately,
and the RMS error in the rotating case being
(b) the square root of the mean square deviation of the magnetic field at any transverse plane, in the plane of deflection, from its value on axis, the average being taken over all values of the angle (ϕ) defining the plane of deflection and over all radii (r') up to a selected radius (r) for the two pairs of coils acting together;
the angular positions θ_i of the axial sections of each coil being selected according to the formula

$$\sin \theta_i = \frac{(2i-1)}{2T} + \delta,$$

where

 $i=1, 2, 3 \dots T,$ T =the number of coil turns, and

in which for a given value of T the parameter δ is selected to provide a minimum value to at least one of (a) the root mean square error for the non-rotating case and (b) the root mean square error for the rotating case; or in which the parameters δ and T are selected to provide a value for at least one of said root mean square errors which is less than or equal to a predetermined percentage of the value of the magnetic field on the magnet axis; and further comprising a magnetic shield of high permeability material of radius $R > a_x$ and a_y so that image currents of the coil currents are located at about R^2/a for providing substantially equal effective radii for the x-coil and y-coil.

4,644,169

LASER ENERGY TRANSDUCER

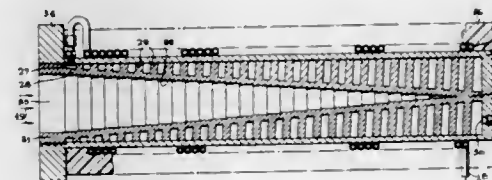
Stanley E. Hunt, 934 Junipero, Duarte, Calif. 91010

Filed Jul. 8, 1985, Ser. No. 752,805

Int. Cl.⁴ H05B 1/00; G21D 5/00

U.S. Cl. 250—432 R

10 Claims



1. A laser energy transducer for converting infrared radiant energy into thermal energy comprising the combination of:
an elongated housing having an open end leading into a hollow interior;
a conical collector having a sloping wall surface coaxially disposed with respect to said housing and said open end within said hollow interior;
fluid circulating means coaxially disposed about said housing in fixed heat transference relationship; and
a source of high intensity parallel laser beams or rays in alignment with said conical collector for transmitting said beams or rays through said housing opening to impinge against said conical collector sloping wall.

4,644,170

METHOD OF ELECTRON BEAM EXPOSURE

Fumio Komatsu, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 509,029, Jun. 29, 1983, abandoned.

This application Dec. 20, 1985, Ser. No. 810,848

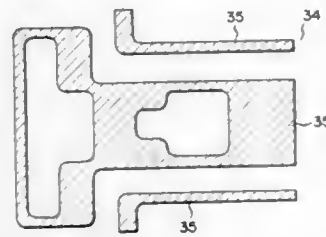
Claims priority, application Japan, Jun. 30, 1982, 57-112986 Int. Cl.⁴ H01J 37/302

U.S. Cl. 250—492.2

9 Claims

1. A method of forming a pattern on a resist film disposed on a substrate, comprising the steps of:
exposing the portions of said resist film containing said pattern with an electron beam of a reduced dose that is a fraction of a desired dose while refraining from exposing the portions of said resist film not containing said pattern, said desired dose being sufficient to produce a difference in molecular weight between said patterned portions of said resist film and the nonexposed portions of said resist film; and said fraction having 1 as a numerator and a whole number as a denominator; and

performing said exposing step a number of times equal to said denominator of said fraction to expose said portions



to a cumulative electron beam dose substantially equal to said desired dose.

4,644,171

NEUTRON ABSORBING PANEL

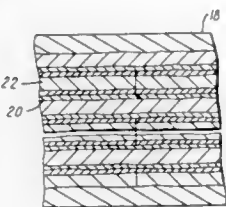
Leslie Mollon, Southfield, Mich., assignor to AAR Corporation, Elk Grove Village, Ill.

Filed Apr. 1, 1985, Ser. No. 720,498

Int. Cl.⁴ G21C 11/06; G21F 1/12; B22F 3/18, 7/02

U.S. Cl. 250-518.1

19 Claims



1. A neutron absorbing panel comprising thin continuous external aluminum sheathing at opposite sides, and a core comprising a multiplicity of alternate plies of substantially continuous, very thin strata of aluminum and neutron absorbing material, in which the neutron absorbing material is metalurgically bonded to the aluminum strata and to the aluminum sheathing.

4,644,172

ELECTRONIC CONTROL OF AN AUTOMATIC WAFER INSPECTION SYSTEM

Paul Sandland, Gilroy; Kenneth Levy, Saratoga; Russell M. Singleton, Sunnyvale; Michael L. Hodgson, San Jose, and Gerald R. Cutler, Santa Clara, all of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Feb. 22, 1984, Ser. No. 582,583

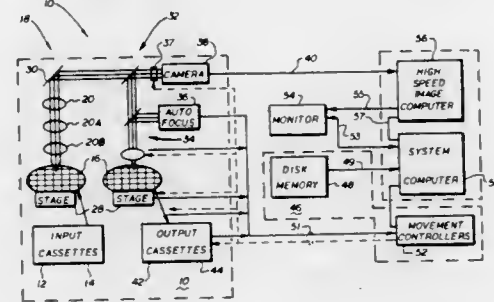
Int. Cl.⁴ G01N 21/86; G01V 9/04

U.S. Cl. 250-548

8 Claims

1. A system for automatic micro and macro inspection of patterned wafers, comprising:
X-Y stage means for supporting wafer at a macro inspection station and a micro inspection station;
means for storing a plurality of patterned wafers before and after inspection;
means for transferring a wafer from said storing means to a predetermined location on said X-Y stage means;
means for centering said wafer in said macro inspection station;
means for aligning said wafer to obtain a preselected orientation for macro inspection;
means for effecting macro inspection of said wafer;
means for grabbing a unique image following macro inspection and storing said unique image;
means for moving said wafer to said micro inspection station

so that the area of said wafer correspondence to said stored unique image is in a micro optical path;
means for automatically focusing the lowest magnification objective lens on said area of said wafer to derive a real time image;
means for comparing said stored unique image to said real time image;



means responsive to the comparison of said stored unique image and said real time image and operative to more precisely position said wafer in said micro optical path;
means for using areas of said wafer, displaced one from the other, to obtain a more precise alignment;
means for performing a preestablished micro inspection on selected areas of said wafer; and
means for transporting said wafer to said storage means.

4,644,173

FLAME QUALITY ANALYZER WITH FIBER OPTIC ARRAY

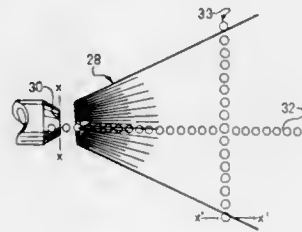
Larry A. Jeffers, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 9, 1984, Ser. No. 629,159

Int. Cl.⁴ G06K 7/10; H01J 5/16

U.S. Cl. 250-554

15 Claims



1. A flame quality analyzer for analyzing the quality of a flame from a burner, comprising:
a fiber optic array including a plurality of optic fibers each having a light-receiving end for facing the flame, and lying on a line in a selected direction with respect to an axis of the burner wherein said fiber optic array transmits light from the flame corresponding to said selected direction; and
light-processing means connected to said fiber optic array for processing light from the flame comprising a monochromator for receiving the light from the flame and spreading the light from the flame to its component wave length, said light processing means further including a detector having a first and a second detector array of light sensors extending in a line for receiving a portion of the light from the flame at two discrete wave lengths to generate two sets of signals, each set of signals including an output of each light sensor.

4,644,174

APPARATUS FOR ANALYZING THE FORMATION OF A PAPER WEB

Roland J. Ouellette; Peter W. Hodgson, both of Hawkesbury, and Roland J. Trepanier, L'Orignal, all of Canada, assignors to CIP Inc., Canada

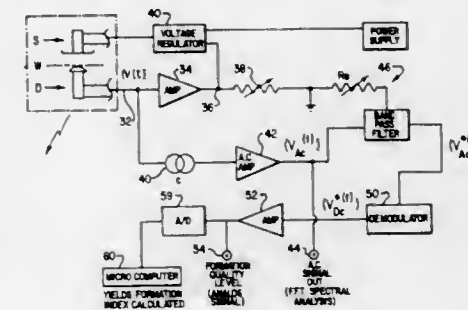
Filed Sep. 13, 1985, Ser. No. 775,973

Claims priority, application Canada, May 16, 1985, 481705

Int. Cl.⁴ G01N 21/89

U.S. Cl. 250-559

2 Claims



1. On-line apparatus for analysing the relative uniformity of fiber distribution of a moving web of paper comprising:
(a) a source of light which in operation directs a narrow beam of light onto the moving web,
(b) a detector positioned so as to receive the beam of light after it has passed through the web and having photodetector means,
(c) a circuit connected to the photodetector means and having amplifier means connected to receive decoupled A.C. signals from the photodetector means, a tunable band pass filter connected to the output from said amplifier means, a demodulator connected to receive signals from the tunable band pass filter and indicator means connected to the output from the demodulator, said tunable band pass filter being tuned, in relation to the web speed, to give a maximum response at a floc wavelength of around 3 cm. and being arranged to attenuate floc wavelengths of less than 2.3 cm. or more than 3.7 cm. to about 10% of said maximum response, wherein said indicator means includes an analog to digital converter circuit, means for averaging the signal received from said converter circuit, means for computing the standard deviation of said digitized signal, and means for continually computing a formation index which is the sum of said time averaged digitized signal and the absolute value of said standard deviation.

4,644,175

DEVICE FOR THE AUTOMATIC CONTROL OF THE FEED OF A TUBULAR WIRE, IN PARTICULAR MADE OF PRECIOUS MATERIAL IN THE GOLDSMITH INDUSTRY

Massimo Bucefari, and Roberto Rubecchini, both of Arezzo, Italy, assignors to I.C.M. S.p.A. Italiana Costruzioni Metalmeccaniche and T.E.M. s.r.l. Tecnologie Elettroniche e Meccaniche, both of Arezzo, Italy

Filed Apr. 5, 1985, Ser. No. 720,306

Claims priority, application Italy, Apr. 19, 1984, 9377 A/84

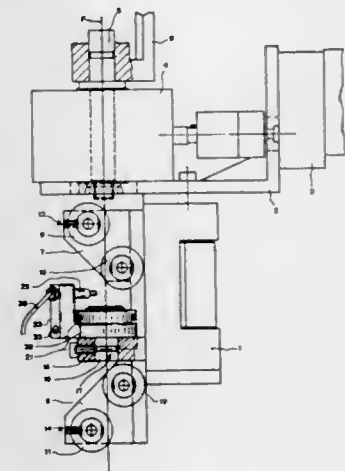
Int. Cl.⁴ G01N 21/84

U.S. Cl. 250-561

7 Claims

1. A device for the automatic control of the feed of a tubular wire, in particular made of precious metal, in goldsmith industry machine tools, said wire having a continuous longitudinal groove and being continuously unwound in a running direction from a take-up coil for the action of transport means of said machine, characterized in that sensing means are provided for sensing the displacement of said groove with respect to an operative band defined by said sensing means on the surface of the wire containing said groove, said band having a predetermined

width not smaller than the width of said groove, there being further provided means, servoed to said sensing means



for rotating said wire around its longitudinal axis in one direction or another in correspondence with displacements of said groove with respect to said operative band.

4,644,176

METHOD AND APPARATUS FOR SCANNING THE EXTERIOR OF ROD-SHAPED ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

Uwe Heitmann; Peter Pinck, and Berthold Maiwald, all of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany

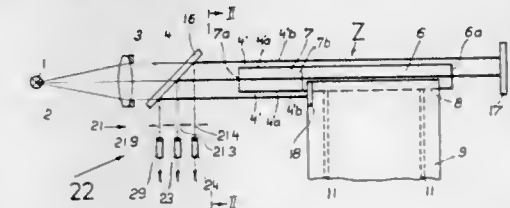
Filed Jun. 4, 1984, Ser. No. 616,952

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320199; Dec. 31, 1983, 3347702

Int. Cl.⁴ G01N 21/88

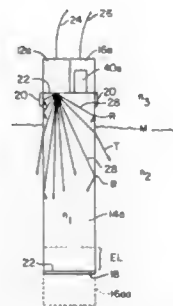
U.S. Cl. 250-572

27 Claims



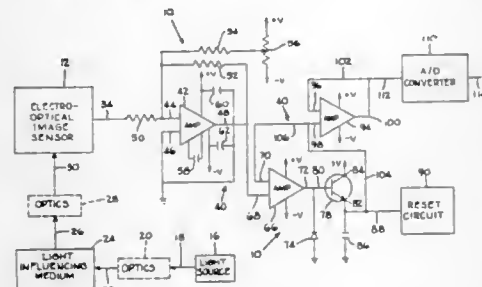
1. A method of testing a cigarette or an analogous rod-shaped article of the tobacco processing industry for the presence of defective portions at the exterior thereof, comprising the steps of moving the article to be tested along a predetermined path at least substantially at right angles to its axis; directing at least one beam of radiation closely adjacent to the exterior, in at least substantial parallelism with the axis and along the full length of the article whereby the characteristics of such radiation change under the influence of defective portions, if any, which enter the radiation; monitoring the characteristics of the radiation; and generating signals denoting the monitored characteristics of the radiation.

4,644,177
FLUID LEVEL AND CONDITION DETECTOR SYSTEM
 William A. Barabino, North Reading, Mass., assignor to Technical Research Associates, North Reading, Mass.
 Filed Dec. 31, 1984, Ser. No. 687,738
 Int. Cl.⁴ G01F 23/28
 U.S. Cl. 250—577



18. A fluid condition detector system comprising:
 a multimode optical waveguide for insertion into a medium including a fluid whose condition is to be monitored;
 a source of radiation for introducing into one end of said waveguide radiation in a plurality of modes; and
 means for detecting a change in radiation flux transmitted by said waveguide due to combined effects of mode stripping resulting from a change in index of refraction and of evanescent losses resulting from a change in optical absorption coefficient of the fluid covering at least a portion of said waveguide to determine a change in fluid condition.

4,644,178
SIGNAL PROCESSING FOR OPTICAL IMAGE SENSOR
 John K. Michalik, Sloan, N.Y., assignor to Warner Lambert Technologies, Inc., Morris Plains, N.J.
 Filed Dec. 6, 1984, Ser. No. 678,622
 Int. Cl.⁴ H01J 40/14
 U.S. Cl. 250—578

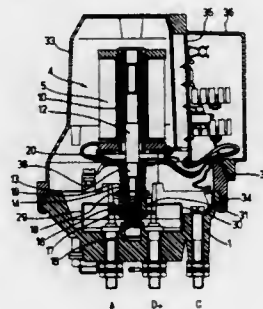


1. In an electro-optical system having an image sensor including a plurality of photoelectric elements and means for directing light onto said sensor at a location influenced by a medium in the path of the light, said sensor providing signals having amplitude determined by the manner in which light is incident on the sensor, the improvement comprising:

- peak detector circuit means operatively connected to said sensor for detecting the peak amplitudes of signals obtained from said sensor, said peak detector circuit comprising means responsive to the rise of each sensor signal to a peak amplitude and means for holding a signal level corresponding to the peak level of each said sensor signal as said sensor signal falls in amplitude for a time at least equal to the acquisition time of said converter means; and
- analog to digital converter means operatively connected to said peak detector circuit means for providing digital

signals containing information as to peak amplitudes of said sensor signals.

4,644,179
ELECTRONICALLY CONTROLLED ELECTROMAGNETIC SAFETY BATTERY CUT-OUT FOR TRANSPORT OF DANGEROUS OR OTHER MATERIALS
 Philippe Pointout, and Jacques Pointout, both of Montluçon, France, assignors to Etudes et Commercialisation d'Appareils Nouveaux Speciaux, ECANS, France
 Filed Mar. 21, 1985, Ser. No. 714,305
 Claims priority, application France, Mar. 30, 1984, 84 05093
 Int. Cl.⁴ H02H 7/18
 U.S. Cl. 307—10 BP

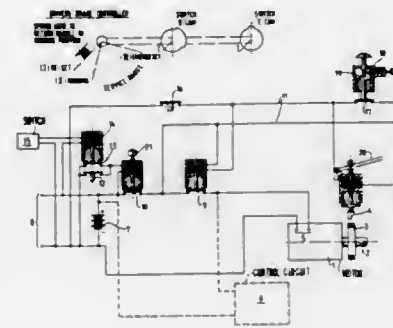


1. An electronically controlled battery electromagnetic cut-out unit for breaking a main electrical circuit and an auxiliary electrical circuit and being intrinsically safe, comprising a driving electromagnet having a pull winding, a hold winding, and a plunger core with a drive shaft; means for energizing the electromagnet to move the drive shaft in a first direction; an insulating intermediate member carried by the drive shaft; a central connecting member carried by the drive shaft for breaking the auxiliary circuit; a cross piece mounted on the drive shaft; a spring for urging the cross piece toward the intermediate member; a pair of lateral connecting bars; insulating means coupling the connecting bars to the cross piece; return springs for urging the connecting bars and the cross piece against the first direction movement of the drive shaft; means defining four terminal locations; the connecting bars in the energized state of the electromagnet being applied against the four terminal locations and in the deenergized state being urged away from the four terminal locations to provide main single to two-pole break control of the circuitry of the four terminal locations; control electronics including a voltage regulator, a control line for supplying voltage to the voltage regulator, a monostable multivibrator connected to the voltage regulator to be supplied therefrom, a first amplifier coupling a first output of the multivibrator to the pull winding, and a second amplifier coupling a second output of the multivibrator to the hold winding; and a sealed case enclosing the unit.

4,644,180
ACTUATOR EMERGENCY OPERATION
 David J. Wickham, Chippenham, United Kingdom, assignor to Westinghouse Brake and Signal Company, Ltd., Wiltshire, England
 Filed Nov. 1, 1985, Ser. No. 793,857
 Claims priority, application United Kingdom, Nov. 8, 1984, 8428289
 Int. Cl.⁴ H02J 7/00; F16D 65/36
 U.S. Cl. 307—66

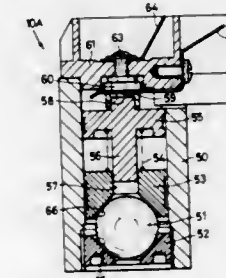
1. An actuator emergency operation circuit for an electric actuator having an electric motor normally operable to produce an output which controls an output force exerted by an actuator output member in accordance with a control signal input to a control means for controlling normal operation of the motor, the emergency operation circuit comprising an

emergency power circuit connected between the motor and a source of stored electrical energy sufficient for the motor to drive the output member to a predetermined position, the emergency power circuit including means responsive to an emergency input for connecting the stored energy source to the motor so as to drive the actuator output member to the predetermined position thereof, said emergency power circuit further including first means, operative after the output member has been driven to the said predetermined position, for disconnecting the source of stored electrical energy from the motor, and second, electrically energizable means for latching the output member in said predetermined position and for,



responsive to being electrically energized, releasing latching of the output member, said second means including an electric current energizing path over which said second means is electrically energized and said emergency power circuit further comprising switch means, connected in said electric current energizing path and responsive to the amount of electrical energy stored by the stored electrical energy source, for preventing energization of said second means and thus preventing release of the latching of said output member when the amount of electrical energy stored by said source is insufficient to energize the motor to drive the actuator output member to said predetermined position for a further emergency operation.

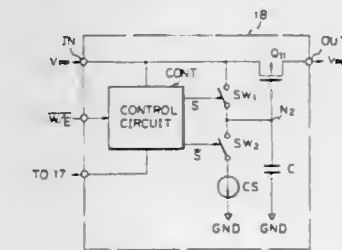
4,644,181
AUTOMATIC LOCKING DEVICE FOR LINKAGES SUBJECTED TO UNDESIRABLE MECHANICAL STRESSES, APPLICABLE IN PARTICULAR TO ELECTRICAL SWITCHES
 Pierbattista Mosconi, and Renato Dosmo, both of Bergamo, Italy, assignors to SACE S.p.A. Costruzioni Elettromeccaniche, Bergamo, Italy
 Filed Feb. 27, 1984, Ser. No. 584,150
 Claims priority, application Italy, Mar. 10, 1983, 20010 A/83
 Int. Cl.⁴ H01L 41/04; H01H 35/14
 U.S. Cl. 361—119



1. An automatic locking device including a linkage subjected to undesirable mechanical stresses comprising a transducer rigid with a mechanical structure on which the linkage is disposed, said transducer including piezoelectric means emitting an electrical signal which is a function of the mechanical stresses, a coil fed by said electrical signal for generating an

electromagnetic field for locking said linkage, said transducer including a casing housing a ball between a support element rigid with said casing a first piston slidable in said casing in opposed relationship to a second piston slidable in said casing, said second piston being coaxial to said first piston and pressing against said piezoelectric means; and means for elastically biasing said first and second pistons away from each other.

4,644,182
DELAY CIRCUIT HAVING DELAY TIME PERIOD DETERMINED BY DISCHARGING OPERATION
 Hiromi Kawashima, Kawasaki, and Hideki Arakawa, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
 Filed Nov. 8, 1985, Ser. No. 796,452
 Claims priority, application Japan, Nov. 13, 1984, 59-237432
 Int. Cl.⁴ H03K 17/56, 17/687
 U.S. Cl. 307—246



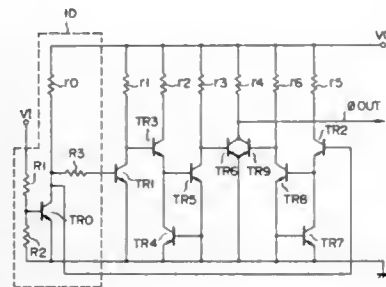
1. A delay circuit comprising:
 an input terminal means (IN);
 an output terminal means (OUT);
 a power supply means (GND);
 a transistor (Q₁) having a gate, a source and a drain, said source and drain being connected between said input terminal means (IN) and said output terminal means (OUT);
 a capacitor (C), connected between the gate of said transistor (Q₁) and said power supply means (GND);
 a charging switch (SW₁), connected between said input terminal means (IN) and the gate of said transistor (Q₁), for charging said capacitor (C);
 a discharging switch (SW₂), connected to the gate of said transistor (Q₁), for discharging said capacitor (C);
 a constant current source (CS), connected between said discharging switch (SW₂) and said power supply means (GND); and
 control means (CONT), connected to said charging switch (SW₁) and to said discharging switch (SW₂), for complementarily controlling said charging switch (SW₁) and said discharging switch (SW₂).

4,644,183
PULSE GENERATOR CIRCUIT
 Hideharu Tezuka, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Jun. 27, 1984, Ser. No. 625,125
 Claims priority, application Japan, Jun. 29, 1983, 58-117465
 Int. Cl.⁴ H03K 3/00, 5/01
 U.S. Cl. 307—268

1. A pulse generator circuit comprising:
 input terminal means for receiving an input signal having first and second levels and for supplying from said input signal the inverse of said input signal wherein said first and second levels of the input signal are shifted to the second and first levels, respectively;
 an output terminal;
 first and second power source terminals;
 load means;
 first and second switching means, each having two terminals and each of said switching means being connected at one

terminal thereof both to said output terminal and to said first power source terminal through said load means and at the other terminal thereof to said second power source terminal, for selectively connecting said output terminal to either said first power source terminal through said load means or to said second power source terminal;

first and second capacitive means;
first switch circuit means, including a first switch connected between said first power source terminal and said first capacitive means and having a control terminal coupled to said input terminal means to receive said input signal, said first switch having conductive and nonconductive states set in response to said first and second levels of said input signal, respectively, for permitting said first capacitive means to be charged when said first switch is set in said conductive state, and further including a first transistor connected at the base and the emitter thereof across said first capacitive means, and at the collector thereof to both said first switching means and said first power source terminal, for permitting said first capacitive means to be discharged through the base-emitter path of said first transistor when said first switch is set nonconductive;



second switch circuit means, including a second switch connected between said first power source terminal and said second capacitive means and having a control terminal coupled to said input terminal means to receive said inverse of said input signal, said second switch having conductive and nonconductive states set in response to said first and second levels of said input signal, respectively, for permitting said second capacitive means to be charged when said second switch circuit is set in said conductive state, and further including a second transistor connected at the base and the emitter thereof across said second capacitive means, and at the collector thereof to both said second switching means and said first power source terminal, for permitting said second capacitive means to be discharged through the base-emitter path of said second transistor when said second switch is set nonconductive; and

wherein each of said first and second switching means is set to conductive and nonconductive states, when the voltage across each of said first and second capacitive means is higher and lower than a predetermined level, respectively.

4,644,184
MEMORY CLOCK PULSE GENERATING CIRCUIT WITH REDUCED PEAK CURRENT REQUIREMENTS
Naokazu Miyawaki, and Mitsugi Ogura, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 4, 1983, Ser. No. 548,730
Claims priority, application Japan, Nov. 11, 1982, 57/198192
Int. Cl.⁴ H03K 5/135, 17/28, 17/687; G11C 19/00

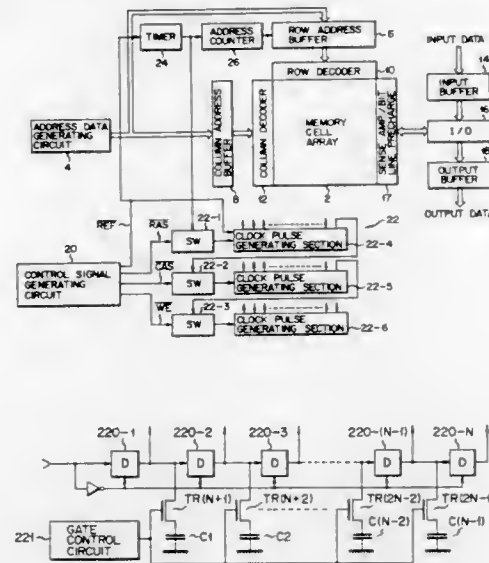
U.S. Cl. 307—269 1 Claim

1. A clock pulse generating circuit comprising:
input means for receiving a pulse signal;
a plurality of cascade-connected delay circuits each having an input terminal and an output terminal, a first one of said delay circuits being connected to said input means to receive the pulse signal, and each of said delay circuits

delaying an input signal supplied thereto by a fixed delay amount without changing the waveshape of the input signal;

at least one delay element selectively connected to at least one output terminal of said delay circuits and whose delay amount is variable; and

a control circuit for selectively supplying first and second control signals to said at least one delay element so as to change the delay amount of said at least one delay element;

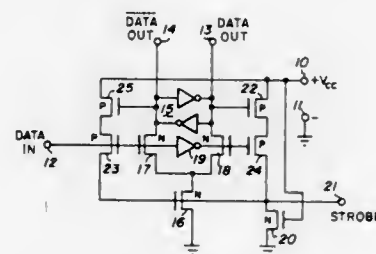


said delay element comprising a MOS transistor having a gate connected to said control circuit and a current path connected at one end to the output and input terminals of corresponding first and second delay circuits, respectively, said delay element further comprising a capacitive element connected between the other end of the current path of said MOS transistor and a reference potential terminal, said MOS transistor being rendered nonconductive in response to said second control signal.

4,644,185
SELF CLOCKING CMOS LATCH
Ronald C. Todd, Riverton, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 3, 1985, Ser. No. 730,130
Int. Cl.⁴ H03K 3/26, 19/096; G11C 7/00

U.S. Cl. 307—279 6 Claims



1. A self clocking latch circuit comprising:
a latch having DATA and DATA output terminals;
differentially conducting driver means coupled to said DATA and DATA output terminals for forcing said latch to one of two states;
differentially conducting sense means coupled to respond to the state of said latch and to a DATA input signal to form

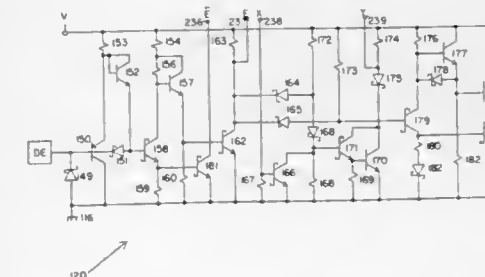
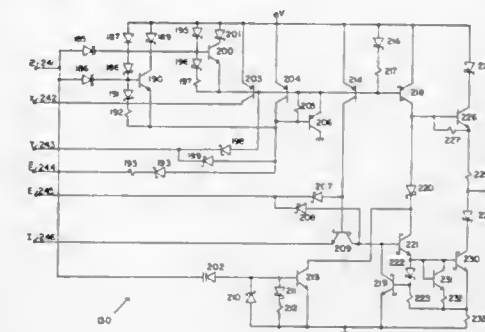
a comparator that compares said latch state and said DATA input and produces an output strobe signal when said latch state and said DATA input are in disagreement; and
means responsive to said output strobe signal for rendering said differentially conducting driver means operative to force said latch to the state represented by said DATA input.

4,644,186
FAST SWITCHING CIRCUIT FOR LATERAL PNP TRANSISTORS

Sivakumar Sivasothy, Mountain View, and Ramanatha V. Balakrishnan, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 20, 1984, Ser. No. 642,615
Int. Cl.⁴ H03K 19/092, 19/01

U.S. Cl. 307—300 6 Claims



1. An output buffer having a data input terminal, an enable input terminal and an output terminal, comprising:

a first bipolar transistor of a first doping configuration having a collector, an emitter connected to a first potential and a base;

a high current source having a high current output lead connected to said base of said first bipolar transistor and having a first control input lead, said high current source providing a high current in response to signals provided on said first control input lead;

a low current source having a low current output lead connected to said base of said first bipolar transistor, and having a second control input lead, said low current source providing current in response to signals provided on said second control input lead;

current sensing means for sensing the collector current in said first bipolar transistor, said current sensing means having a first control output lead connected to said first control input lead, a second control output lead connected to said second control input lead, and a master control input lead connected to said enable input terminal, said current sensing means providing a first set of output signals on said first and second control output leads in response to a first input signal provided on said master control input terminal and a first selected current in said

first bipolar transistor thereby causing said high current source and said current source to provide current, thereby causing said first bipolar transistor to turn on quickly, said current sensing means providing a second set of output signals on said first and second control output leads in response to said first input signal on said master control input lead and a second selected current in said first bipolar transistor thereby causing said high current source to not provide current and said low current source to provide current thereby causing said first bipolar transistor to remain on, and said current sensing means providing a third set of output signals on said first and second control output leads in response to a second input signal on said master control input lead thereby causing said high current source and said low current source to not provide current and causing said first bipolar transistor to turn off;

a second bipolar transistor of a second doping configuration opposite to said first doping configuration having a collector connected to said first potential, a base connected to said collector of said first bipolar transistor and an emitter connected to said output terminal;

a third bipolar transistor of said second doping configuration having a collector connected to said collector of said first bipolar transistor, a base connected to said data input terminal, and having an emitter;

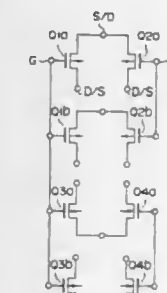
a fourth bipolar transistor of said second doping configuration having a collector connected to said output terminal, a base connected to said emitter of said third bipolar transistor, and an emitter connected to a reference potential;

first switching means having a first current handling terminal connected to said base of said first bipolar transistor, a second current handling terminal connected to said emitter of said first bipolar transistor, and having a control terminal; and
first bias pulse means having an input lead connected to said enable input terminal, and a pulse output lead connected to said control terminal of said first switch means for providing a bias pulse to said control terminal of said first switch means in response to said second input signal of said enable input terminal thereby causing said first bipolar transistor to turn off quickly.

4,644,187
GATE ARRAY BASIC CELL
Yasutaka Haji, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 14, 1984, Ser. No. 681,634
Claims priority, application Japan, Dec. 17, 1983, 58-238656

Int. Cl.⁴ H01L 27/10, 27/12
U.S. Cl. 307—303 3 Claims



1. A semiconductor integrated circuit device having gate array structure comprising a plurality of basic cells arranged in a predetermined pattern, each of the basic cells comprising first, second, third and fourth MOSFET series paths, wherein each of the first and second MOSFET series paths comprises

a plurality of MOSFET channels of a first channel type connected in series;
each of the third and fourth MOSFET series paths comprises a plurality of MOSFET channels of a second channel type connected in series;
a gate of each of the MOSFETs of the first MOSFET series path is connected to the gate of a corresponding one of the MOSFETs of the second MOSFET series path; and
a gate of each of the MOSFETs of the third MOSFET series path is connected to the gate of a corresponding one of the MOSFETs of the fourth MOSFET series path.

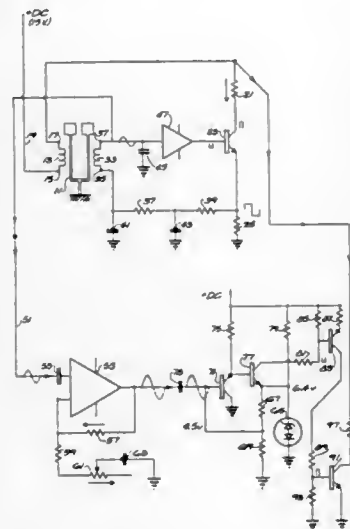
4,644,188 VOLTAGE COMPARISON CIRCUITS FOR MOTION AMPLITUDE REGULATORS OR THE LIKE

Boris F. Grib, Huntington, N.Y., assignor to Philamon, Inc., Farmingdale, N.Y.

Division of Ser. No. 16,160, Mar. 1, 1979. This application Oct. 4, 1984, Ser. No. 657,807
Int. Cl.⁴ H03K 5/153

U.S. Cl. 307—363

14 Claims



1. A voltage comparison circuit comprising, an amplifier producing a fluctuating voltage DC signal, means for isolating the AC component of said signal, a semiconductor switch circuit having an input connected to receive said AC component of said signal, said switch circuit being adapted to operate from a fixed voltage DC power supply, means for establishing a DC level of said AC component including a voltage reference element with a reference voltage substantially less than the voltage of said power supply and a voltage dividing circuit in parallel therewith having its divided voltage point connected to said input of said semiconductor switch circuit, and means for connecting the undivided voltage of said voltage reference element to bias said semiconductor switch circuit, whereby the output of said semiconductor switch circuit provides an instantaneous AC voltage level-detecting, internally-referenced voltage comparison circuit.

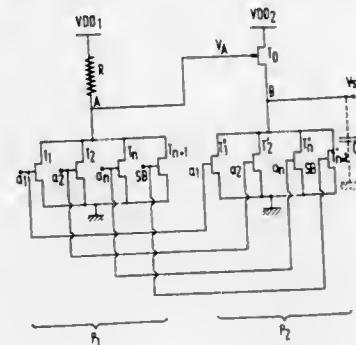
4,644,189 DECODER CIRCUIT FOR A STATIC RANDOM ACCESS MEMORY

Bertrand Gabillard, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 11, 1984, Ser. No. 649,453

Claims priority, application France, Sep. 16, 1983, 83 14774
Int. Cl.⁴ H03K 19/094, 19/017; G11C 8/00
U.S. Cl. 307—449

8 Claims



1. A decoder circuit for an integrated monolithic static random access memory, which circuit comprises a first logic NOR-gate (P1) formed by a first row of field effect transistors whose gate electrodes receive "n" coded memory address signals; the sources of said first row of transistors being connected to ground and the drains thereof being connected in common to an output terminal of the first NOR-gate (P1), such output terminal being connected by a load to a source of supply voltage V_{DD1} and being further connected to the gate electrode of a transistor of an output inverter stage; the source of the inverter stage transistor constituting the output terminal of the decoder circuit and being connected to the common drains of a second row of transistors which form a second NOR-gate (P2); the drain of the inverter stage transistor being connected to a source of supply voltage V_{DD2} ; the sources of the transistors of the second row being connected to ground and the gate electrodes thereof receiving the "n" coded address signals; each of said first and second rows of transistors comprising a selection transistor being parallel-connected to the respective rows of transistors and having a gate electrode for receiving a common chip-enable selection signal (SB), whereby said chip-enable selection signal (SB) being applied to the selection transistors after the coded memory address signals are applied to each of the two NOR-gates (P1, P2), thereby achieving reduced access time for the random access memory.

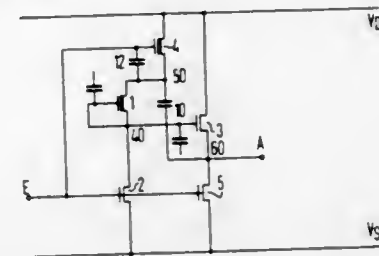
4,644,190 DYNAMIC MOS CIRCUIT

Guenther Eberhard, Eichenau, and Joachim Krause, Vaterstetten, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 20, 1984, Ser. No. 632,660

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329093

Int. Cl.⁴ H03K 19/094, 19/20, 19/017, 5/12
U.S. Cl. 307—450

3 Claims



1. A dynamic MOS circuit, comprising:
an operating potential and a reference potential connected to operate the dynamic MOS circuit;
an input terminal for the MOS circuit;
a first enhancement type control MOS-FET having its gate connected to the input terminal, a first end of its channel connected to the reference potential, and a second end of its channel connecting to a first end of a channel of a discharge MOS-FET connected as a current source;
said discharge MOS-FET having its gate connected to said first end of its channel and having a second end of its channel connecting to a first end of a channel of a depletion type first switching MOS-FET;
said first switching MOS-FET having its gate directly connecting to said input terminal and a second end of its channel connecting to said operating potential;
a second enhancement type control MOS-FET having a first end of its channel connecting to the reference potential, a second end of its channel connecting to an output terminal, and its gate connecting to said input terminal;
a second enhancement type switching MOS-FET having a first end of its channel connecting to said output terminal, a second end of its channel connecting to said operating potential, and its gate connecting to the first end of the channel of the discharge MOS-FET;
a boot strap capacitor having a first end connecting to the first end of the channel of the first switching MOS-FET and its second end connecting to the output terminal; and
a capacitor connected between the gate of the first switching MOS-FET and the first end of the channel of the first switching MOS-FET, a capacitance of the capacitor being selected for a desired edge delay of an input signal at the input terminal.

4,644,191 PROGRAMMABLE ARRAY LOGIC WITH SHARED PRODUCT TERMS

Barbara J. Fisher, Palm Bay, and Ian E. Harvey, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

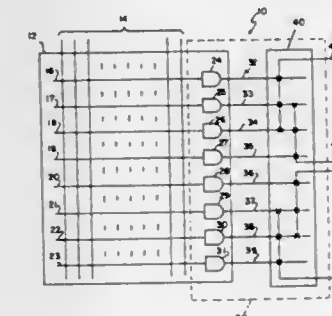
Filed Sep. 19, 1985, Ser. No. 777,685

Int. Cl.⁴ H03K 19/086
U.S. Cl. 307—465

11 Claims

1. A programmable logic circuit, comprising:
an array having a plurality of inputs and plurality of outputs and means for combining selected ones of said inputs at each of said outputs;
logic means for selectively connecting a first set of said array outputs to a first one of a plurality of programmable logic circuit outputs;
logic means for selectively connecting a second set of said

array outputs to a second programmable logic circuit output;



wherein, said first set of array outputs includes less than all of said array outputs and, wherein said first set of array outputs includes at least one array output in common with said second set of array outputs.

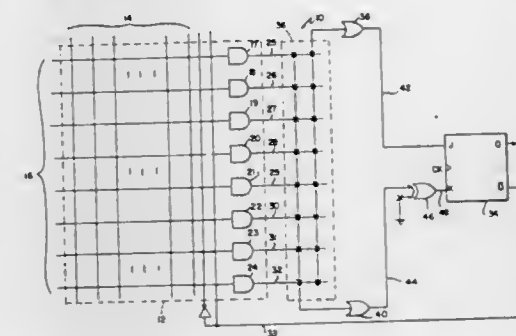
4,644,192 PROGRAMMABLE ARRAY LOGIC WITH SHARED PRODUCT TERMS AND J-K REGISTERED OUTPUTS

Barbara J. Fisher, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 19, 1985, Ser. No. 777,686

Int. Cl.⁴ H03K 19/177, 19/20
U.S. Cl. 307—465

9 Claims



1. A programmable logic circuit, comprising:
an array having a plurality of inputs for receiving input terms and a plurality of outputs and means for combining selected ones of said input terms to form product terms at each of said array outputs;
a J-K register having J and K inputs and at least one output; and
logic means having inputs connected to the array outputs, and having first and second logic outputs connected to the J and K inputs respectively, for selectively connecting certain ones of said array outputs to either or both of the J and K inputs of said J-K register.

4,644,193 ANALOG CIRCUIT FOR SIMULATING A DIGITALLY CONTROLLED RHEOSTAT

William E. Ott, San Pedro, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 4, 1984, Ser. No. 596,863

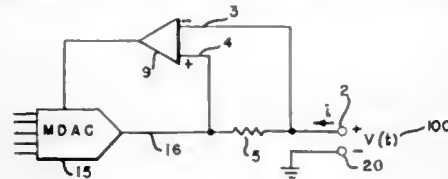
Int. Cl.⁴ H03K 5/02
U.S. Cl. 307—490

7 Claims

1. An analog output circuit simulating a rheostat whose value is digitally controlled which comprises:

a first input resistor receiving an input current; amplifier means receiving said input current from said first input resistor, said amplifier means producing the amplifier output signal proportionate to the value of the product of said input current multiplied by the resistance of said first input resistor;

a controller means receiving digital instructions sent to said analog output circuit, said controller means receiving said amplifier output signal from said amplifier means, and producing a controller output signal equaling the product



of the controller gain value multiplied by said amplifier output signal, said gain value being varied by said digital instructions;

first and second interface terminals, said first interface terminal receiving said input current from an external source, said first interface terminal conducting said input current to said first input resistor, said first and second interface terminals providing the rheostat output voltage potential, said rheostat output voltage potential equaling said controller output signal plus the voltage produced by said input current as it is conducted through said input resistor.

4,644,194

ECL TO TTL VOLTAGE LEVEL TRANSLATOR

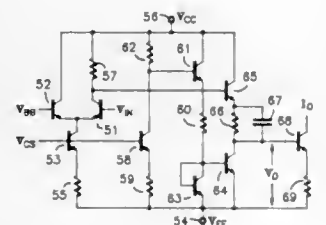
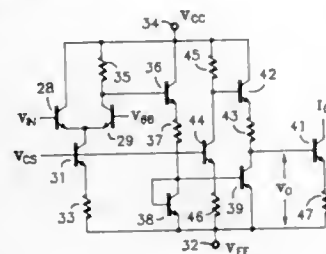
Mark S. Birrittella; Robert R. Marley, both of Phoenix, and Walter C. Seelbach, Fountain Hills, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1985, Ser. No. 748,362

Int. Cl.⁴ H03K 19/003, 19/092, 17/10, 17/14

U.S. Cl. 307—475

2 Claims



1. A voltage level translator circuit having a first supply voltage terminal and a second supply voltage terminal, comprising:

first means coupled between said first and second supply voltage terminals and coupled to receive a data input signal, for providing a signal referenced to said first supply voltage terminal;

second means coupled between said first and second supply

voltage terminals for providing an output signal referenced to said second supply voltage terminal;

a first resistor;

a second resistor;

a third resistor;

a fourth resistor;

a diode;

a first transistor having a base coupled to said first supply voltage terminal by said first resistor, a collector coupled to said first supply voltage terminal, and an emitter coupled to said second means by said second resistor;

a second transistor having a collector coupled to said second means, an emitter coupled to said second supply voltage terminal, and a base coupled to said second supply voltage terminal by said diode;

a third transistor having a base coupled to said first means for receiving said signal, a collector coupled to aid first supply voltage terminal, and an emitter coupled to said base of said second transistor by said third resistor; and

a fourth transistor having a base coupled for receiving a reference voltage, a collector coupled to said base of said first transistor, and an emitter coupled to said second supply voltage terminal by said fourth resistor.

4,644,195

QUAD MULTI-CHANNEL SYNTHESIZER

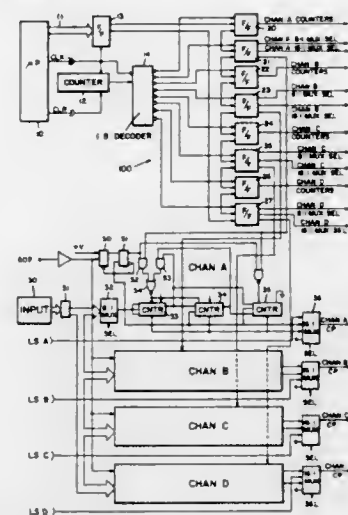
Larry J. Miller, South Jordan; Richard K. Wells, Salt Lake City, and Ronald B. Tippetts, Kaysville, all of Utah, assignors to Sperry Corporation, Blue Bell, Pa.

Filed Jul. 20, 1984, Ser. No. 632,637

Int. Cl.⁴ H03K 3/80, 3/01

U.S. Cl. 307—518

15 Claims



1. A synthesizer circuit comprising, holding means (100) for holding a plurality of signals, source mean for supplying signals to said holding means, counter means (31-35) for receiving signals from said holding means to selectively alter the state of said counter means in response to changes in the plurality signals held by said holding means,

frequency signal supplying means (30) connected to supply frequency signals to said counter means such that the frequency of the signals supplied by said frequency signal supplying means is selectively divided by said counter means as a function of the signals supplied to said counter means by said holding means,

synchronizer means (E.O.F.) connected to said counter means in order to selectively synchronize said synthesizer circuit to an external means, and

multiplexer means (36) connected to receive a selection signal from said holding means and to receive a plurality of signals from said counter means and operative to deter-

mine which output signal is to be produced by said multiplexer means in response to said selection signal from said holding means.

4,644,196

TRI-STATE DIFFERENTIAL AMPLIFIER

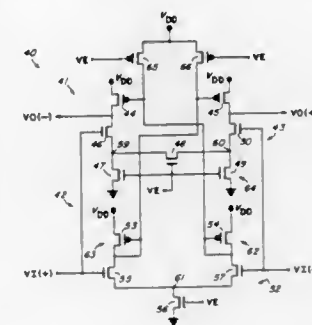
Stephen T. Flannagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1985, Ser. No. 695,643

Int. Cl.⁴ H03K 5/24; G11C 7/06

U.S. Cl. 307—530

8 Claims



1. A differential amplifier having an amplify mode and a tri-state mode, comprising:

a first transistor having a control electrode for receiving a first input signal, a first current electrode coupled to a load node, and a second current electrode;

a second transistor having a control electrode for receiving a second input signal, a first current electrode coupled to a second load node, and a second current electrode;

a third transistor having a control electrode for receiving an enable signal, a first current electrode coupled to the second current electrode of the first transistor, and a second current electrode coupled to the second current electrode of the second transistor;

a fourth transistor having a control electrode for receiving the enable signal, a first current electrode coupled to the second current electrode of the first transistor, and a second current electrode coupled to the first power supply terminal;

a fifth transistor having a control electrode for receiving the enable signal, a first current electrode coupled to the second current electrode of the second transistor, and a second current electrode coupled to the first power supply terminal;

a first switchable load coupled between a second power supply terminal and the first load node;

a second switchable load coupled between the second power supply terminal and the second load node; and

load control means for switching off the first and second switchable loads in the tri-state mode.

4,644,197

REDUCED POWER SENSE AMPLIFIER

Stephen T. Flannagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1985, Ser. No. 695,642

Int. Cl.⁴ H03K 5/24; G11C 7/06

U.S. Cl. 307—530

17 Claims

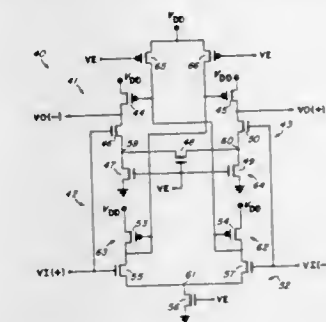
1. An amplifier, comprising:

a first differential amplifier for providing first and second control signals in response to a pair of input signals;

a second differential amplifier for receiving the pair of input signals and for providing output signals in response thereto;

first variable load means, coupled to a first power supply terminal and the second differential amplifier, for provid-

ing a load capable of carrying a current proportional to and in response to the first control signal; and



second variable load means, coupled to the first power supply terminal and the second differential amplifier, for providing a load capable of carrying a current proportional to and in response to the second control signal.

4,644,198

SIGNAL CLAMP

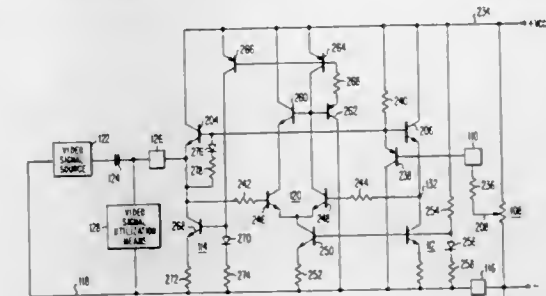
Syed M. Ahmed, Hillsborough, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1984, Ser. No. 666,860

Int. Cl.⁴ H03K 5/08

U.S. Cl. 307—549

7 Claims



1. A clamp circuit for clamping an information signal to a predetermined potential level, comprising:

a signal connection for receiving said information signal;

source means for providing a reference potential level;

semiconductor junction means coupled between said source means and said signal connection;

comparator means having first and second inputs coupled to said signal connection and to said source means, respectively, for sensing the potential difference therebetween and having an output for providing an output signal indicative of said potential difference; and

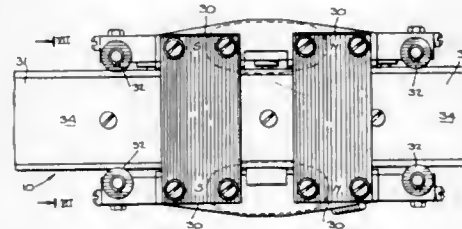
controllable bias current supply means having an output coupled to said signal connection and having a control input coupled to said output of said comparator means, said controllable bias current supply means being responsive to said comparator output signal for selectively applying a first bias current in a polarity sense to forward bias said semiconductor junction means when said information signal is of a polarity sense tending to forward bias said semiconductor junction means for clamping said information signal substantially at said predetermined potential level.

4,644,199

LINEAR DC PERMANENT MAGNET MOTOR
Lawrence W. Langley, Christiansburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.
Continuation of Ser. No. 413,391, Aug. 31, 1982, abandoned, which is a division of Ser. No. 72,772, Sep. 5, 1979, Pat. No. 4,369,383. This application Mar. 22, 1985, Ser. No. 715,047
Int. Cl.⁴ H02K 41/00

U.S. Cl. 310—12

10 Claims



1. In a linear, continuous force, DC motor the combination of:

- a slotted magnetic structure, said slots being substantially in a linear array with each slot being substantially perpendicular to the linear movement of the motor;
- a plurality of windings located in said slots of said slotted magnetic structure, said windings being selectively energizable;
- a pair of field members located on opposite sides of said slotted magnetic structure and each including at least one permanent magnet, and a magnetic structure completing a magnetic path via said permanent magnet and said slotted magnetic structure with magnetic pole faces spanning at least a plurality of said slots;
- a linearly movable support structure for permitting linear movement of said field members relative to said slotted magnetic structure while maintaining a fixed air gap there between; and
- linear commutation means for energizing selected ones of said windings in said slots in accordance with the position of said field member to progressively energize said windings to produce a force proportional to the current in said windings independent of the relative position of said field member.

4,644,200

ROTATIONAL ACTUATOR FOR VEHICLE SUSPENSION DAMPER

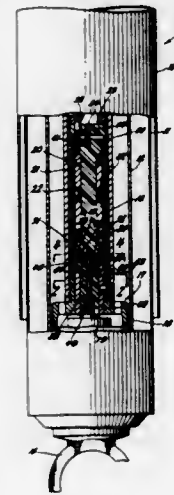
William C. Kruckemeyer, Xenia; Harry C. Buchanan, Jr., Spring Valley, and Wayne V. Fannin, Xenia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 12, 1985, Ser. No. 764,349
Int. Cl.⁴ H02K 1/04

U.S. Cl. 310—43

4 Claims

1. A rotational actuator for the interior of an adjustable vehicle suspension damper device comprising, in combination:
- a cylindrical permanent magnet stator;
 - a cylindrical armature coaxial with the stator, the armature comprising a shaftless winding on a non-magnetic armature frame, the armature frame having a first axial end extending axially slightly beyond the winding at one axial end thereof and a second axial end extending beyond the winding at the other axial end thereof, the second axial end including output engaging means at the free end thereof and having an opening projecting radially inward across the axis of the armature;
 - a first shaft coaxial with the armature and having one end anchored in the first axial end of the armature frame;
 - first axial support means in the stator adjacent the first axial end of the armature frame and adapted to receive the other end of the first shaft for rotation therein;
 - second axial support means in the stator adapted to project

into the opening of the second axial end of the armature frame across the armature axis;
a second shaft in the second axial end of the armature frame, the second shaft being coaxial with the armature, extend-



ing across the opening of the second axial end of the armature frame and being therein for rotation by the second axial support means, whereby the armature is supported at each axial end close to the winding while the radial size of the actuator is minimized.

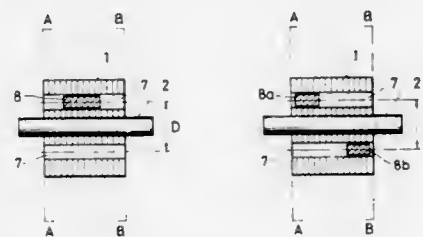
4,644,201

ARMATURE FOR DIRECT CURRENT MOTOR WITH IMBALANCE CORRECTION

Tatsuhiko Tani; Hiroyuki Nagasawa; Tosio Tomlte; Kiyomasa Tsubota, all of Katsuta, and Akira Takahashi, Toukai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 15, 1985, Ser. No. 754,926
Claims priority, application Japan, Jul. 13, 1984, 59-146545
Int. Cl.⁴ F16F 15/22

U.S. Cl. 310—51

24 Claims



1. An armature for a DC motor having an armature core with a shaft press-fitted therein, characterized in that two or more imbalance correcting openings are provided in said armature core in parallel to said shaft such as to be on a circumference which is concentric with said shaft, and members serving as weights respectively inserted in adjacent ones of said openings, the number of said adjacent openings being selected to be $(n-1)/2 + 1$ or less when the number n of said openings is odd and to be $n/2$ or less when said number n is even, whereby any imbalance is corrected.

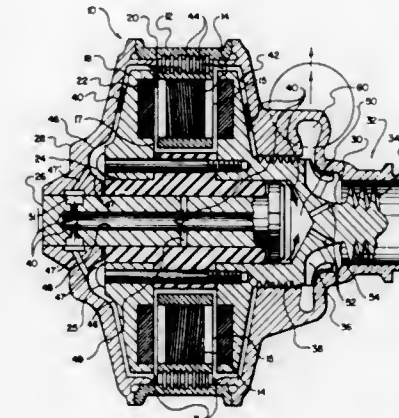
4,644,202

SEALED AND BALANCED MOTOR AND FLUID PUMP SYSTEM

Ralph E. Kroy, Tranada Hills, and Fritz C. Catterfeld, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 15, 1985, Ser. No. 722,915
Int. Cl.⁴ H02K 9/00

U.S. Cl. 310—58

10 Claims



1. A unitary electric magnetic-thrust balanced motor and fluid pump system for use in a reaction engine comprising:
- a hermetically-sealed motor casing having an exterior and interior;
 - a stationary shaft supported wholly within and bonded to the casing interior;
 - an internal sleeve bearing supported rotatably by the stationary shaft;
 - an internal rotor having two opposing faces and including a peripheral annular recess formed in the center of the rotor;
 - opposing rotor faces positioned on opposite sides of the recess;
 - means for coupling the sleeve bearing rotatably with the rotor;
 - an internal annular stator, having at least two stator coils and poles, housed inside the rotor peripheral annular recess;
 - an internal rotating shaft having a proximal end and a distal end integrally coupled to the rotor at the proximal end thereof;
 - a central bore within the stationary shaft passing from the proximal end to the distal end thereof;
 - radial holes formed in the shaft at the proximal end and at the distal end in communication with the bore;
 - permanent magnets set into the rotor faces in opposing relationship to the stator coils;
 - labyrinthine seals formed on the rotating shaft near the distal end thereof;
 - an impeller integrally associated with the distal portion of the rotor;
 - means for introducing a fluid into the impeller;
 - a fluid collector volute recess formed within the casing in functional association with the impeller; and
 - means for introducing and channeling a motor coolant and lubricant fluid into the motor and fluid pump system.

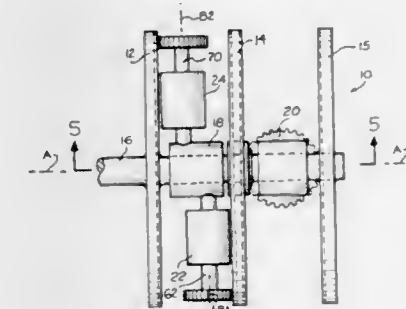
4,644,203

GENERATOR ASSEMBLY WITH TORQUE BALANCING GENERATION

Stephen E. Thomas, 4015 Heron Pl., Fremont, Calif. 94536, and Mark S. Thomas, 3770 Flora Vista, Santa Clara, Calif. 95051
Filed Jan. 31, 1986, Ser. No. 824,594
Int. Cl.⁴ H02K 7/02; F03B 13/12

U.S. Cl. 310—67 A

15 Claims



1. A generator assembly comprising:
- three rotatable plates including a first plate, a second plate, and a third plate, said three rotatable plates having a common axis of rotation, said three plates being spaced apart with said second plate located between said first plate and said third plate;
 - drive means coupling said three plates together such that said first plate and said third plate rotate in a first direction and said second plate rotates in a second direction opposite said first direction;
 - a generator support means disposed between said first plate and said second plate; and
 - a pair of generators attached to said generator support means, where a first rotatable member of a first generator is coupled to said first plate, and where a second rotatable member of a second generator is coupled to said second plate.

4,644,204

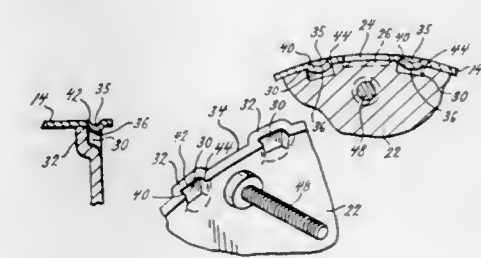
MOTOR HOUSING AND END SHIELD MOUNT
Bryan L. Lakin, Springfield, Mo., assignor to Fasco Industries, Inc., Boca Raton, Fla.

Filed Dec. 6, 1985, Ser. No. 805,877

Int. Cl.⁴ H02K 5/04

U.S. Cl. 310—89

13 Claims



1. A housing for an electric motor or the like, the housing comprising a cylindrical sleeve and an end shield, said end shield being in the form of a circular disk that fits within the sleeve at an end thereof, said sleeve having means extending inwardly and defining stops to locate the end shield in one axial direction, and position the end shield perpendicular to the longitudinal axis of the sleeve, said end shield having circumferentially spaced recesses at the outer edge and in the outer surface thereof, and said sleeve having protrusions extending into the end shield recesses and engaging the sides thereof with

the end shield against said stops, the protrusions and recesses cooperating to locate the end shield in the other axial direction and positively secure it against rotational movement relative to the sleeve, whereby the end shield is firmly secured perpendicular to the longitudinal axis of the sleeve against both axial and rotational movement relative thereto.

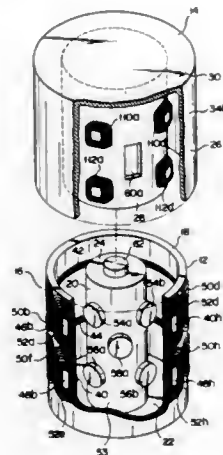
4,644,205
POSITIONING DEVICE OF MAGNETIC SUSPENSION TYPE

Hajime Sudo, Kawasaki, and Hiroshi Takahashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1985, Ser. No. 780,599
Claims priority, application Japan, Sep. 29, 1984, 59-204850
Int. Cl.⁴ F16C 39/06

U.S. Cl. 310—90.5

12 Claims



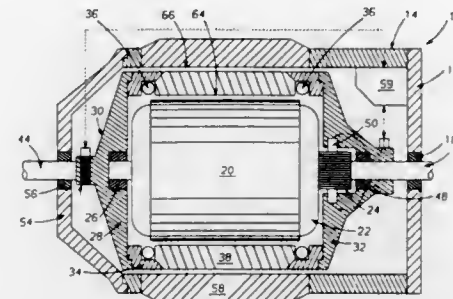
1. A magnetic suspension positioning device comprising: a stationary member made of a non-magnetic material and made in the form of an outer cylinder and an inner cylinder provided coaxially within said outer cylinder; a movable member formed of a high magnetically permeable material and formed in the shape of an inner and outer cylinder wherein said inner cylinder is hollow and positioned in a non-contacting manner between the inner and outer cylinder of said stationary member and wherein said outer cylinder of said movable member is positioned coaxially with said inner cylinder of said movable member and is surrounding the outer cylinder of said stationary member; detecting means for detecting the relative position of said movable member with respect to said stationary member and for producing a signal representative of detected relative position; magnetic force generating means for generating magnetic forces comprising: a plurality of ferro-magnetic elements arranged at a uniform circumferential spacing on outer periphery of the inner cylinder of said movable member; a plurality of second ferro-magnetic elements provided at a uniform circumferential spacing on the outer periphery of the inner cylinder of said movable member and at predetermined distance from and with the same circumferential phase as first ferro-magnetic elements; wherein said first and second ferro-magnetic elements support said movable member in a non-contact state with said stationary member; and driving means secured to said stationary member for generating a drive force for moving and positioning said movable member relative to said stationary member comprising: at least one conductive member having a pair of first direction position control coils provided on the inner

periphery of the outer cylinder of said stationary member and facing said first and second ferro-magnetic elements of said magnetic force generating means; applying means for applying an electromagnetic force to said conductive member by flowing current to said conductive member in accordance with a signal from said detecting means.

4,644,206
CONTINUOUSLY VARIABLE TORQUE CONVERTER
Christopher D. Smith, 43 Hasbrouck Pl., Rutherford, N.J. 07070
Filed Oct. 26, 1984, Ser. No. 665,318
Int. Cl.⁴ H02K 23/60

U.S. Cl. 310—115

9 Claims



1. An electromagnetic transmission comprising three generally cylindrical structures concentrically disposed about a common longitudinal axis; the inner structure being a rotatably mounted primary armature having an input shaft extending along said axis for connection to a prime mover capable of rotating said primary armature about said axis; the intermediate structure being a rotatably mounted field member having an output shaft extending along said axis for connection to a mechanical load, and having an even number of pole shoes surrounded by main and auxiliary windings, the main windings being connected in parallel with the primary and secondary armature windings and the auxiliary windings, connected in series with said armature windings, being associated with a variable shunt resistor whose resistance at any time is determined by the controller as one of two controlled variables; and the outer structure being a stationary secondary armature the windings of which are arranged to be controlled in their configuration by a system of electrical relays capable of continuously adjusting the number of secondary armature conductors connected in series.

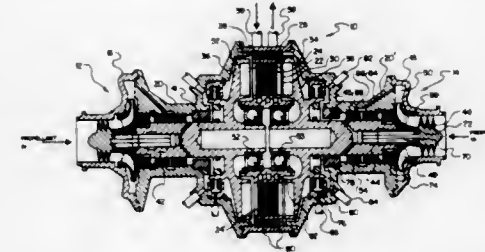
4,644,207
INTEGRATED DUAL PUMP SYSTEM
Fritz C. Catterfeld, Canoga Park, and Ralph E. Kroy, Granada Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 15, 1985, Ser. No. 722,914
Int. Cl.⁴ H02K 21/10

U.S. Cl. 310—126

15 Claims

1. An integrated dual pump system for pumping a fluid having counterrotating and varying speed capabilities and utilizing only a single brushless electric motor comprising: an axially aligned, centrally located, annular stator; independently functioning dual electromagnetic coils associated with the stator; opposing annular rotors including rotor faces positioned on each side of the stator so that one rotor face opposes the other rotor face; motor shafts for each rotor being fixedly attached thereto for independent variable rotation of each shaft; magnets selectively positioned and retained in each rotor face opposite the electromagnetic coils;

pumps including functioning means positioned and integrally retained within the dual pump system; pump shafts integrally connected to the pumps and to the motor shafts; means for selectively functioning the dual electromagnetic

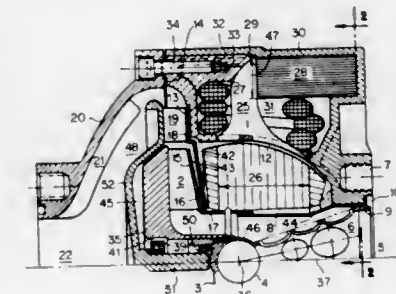


coils and rotors to vary the speed of the rotors and to rotate the rotors and therefore the motor shafts in opposite directions; cooling and lubricating means, including a cooling and lubricating fluid, associated with the dual pump system; and means for introducing a fluid into the system.

4,644,208
STATOR HAVING A SPIRAL YOKE
Nikolaus Laing, 632 Marsat Ct., Chula Vista, Calif. 92011
Filed Nov. 2, 1984, Ser. No. 668,772
Int. Cl.⁴ H02K 17/00

U.S. Cl. 310—166

11 Claims



1. An induction motor, in particular a motor-centrifugal pump unit having a stator the airgap of which runs along a spherical surface and the winding of which is arranged between teeth which take over the conduction of the magnetic flux between the rotor and the stator yoke, characterized in that the teeth (25) extend radially from the spherical surface and exhibit, lying in a plane of rotation adjacent the axial extent of the rotor regions (27) against which fits a stator yoke (28) which is built up from a strip of magnetic lamination running along a spiral line.

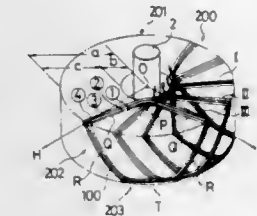
4,644,209
CUP-SHAPED WINDING AND METHOD OF FABRICATING SAME
Yoshikuni Nozawa, Nagano, Japan, assignor to Entac Co., Ltd., Nagano, Japan
Filed Oct. 15, 1984, Ser. No. 660,835
Claims priority, application Japan, Oct. 15, 1983, 58-193040
Int. Cl.⁴ H02K 3/00

U.S. Cl. 310—198

13 Claims

1. A cup-shaped winding comprising: a plurality of wire bands, each of which consists of a plurality of turns of wire, each of said wire bands being successively shifted a given angle from each other about a central axis extending axially through a rotating shaft of the winding, two sides, a third side, and intermediate portions of the wire

bands being formed on a bottom portion, an opening portion, and a curved surface, respectively, of the winding, a portion of each wire band which is on the bottom portion not surrounding the central axis and forming said two sides that are spaced at a given angle with respect to each

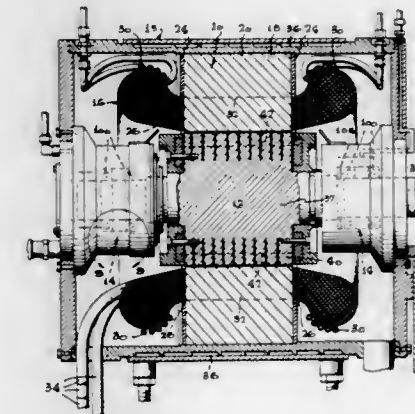


other, and which meet at a vertex lying at a predetermined radial distance from said central axis, said intermediate portions lying between said two sides and said third side to form the overall cup shape of the winding.

4,644,210
HIGH SPEED INDUCTION MOTOR WITH SQUIRREL CAGE ROTOR
John W. Meisner, Newbury Park, and Lynn E. Donelan, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 12, 1985, Ser. No. 808,195
Int. Cl.⁴ H02K 17/16

U.S. Cl. 310—211

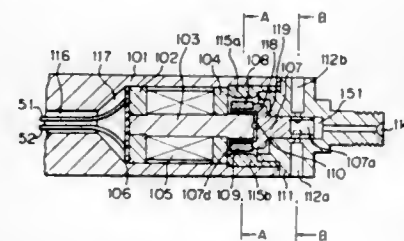
24 Claims



1. In an induction motor comprising a stator including a laminated iron core, and a multiphase winding on said core; and a rotor including a one piece rotor core and shaft coaxially mounted within the stator; the improvement wherein said rotor comprises a plurality of elongated slots in the periphery of the rotor core, said slots having a reduced outer radial end portion adjacent to the core periphery and partially enclosing said slots, a plurality of elongated conductor bars received in said slots and having reduced outer radial end portions received in the reduced outer radial end portions of said slots, and providing outer radial restraint of said conductor bars in the rotor core, said conductor bars having end portions extending outwardly beyond the ends of said rotor core, conductor end rings at opposite axial ends of the rotor core, said end rings having a plurality of slots in the periphery thereof, said end portions of said conductor bars received in said last mentioned slots, and non-magnetic metal spacers mounted between the ends of the rotor core and the conductor end rings for reducing

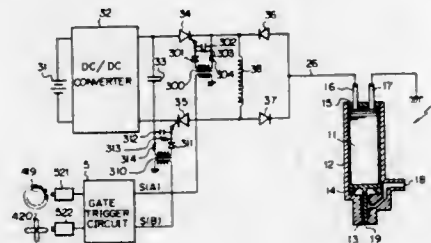
the self-induced magnetic field around the end rings thereby reducing the electrical reactance of the end rings.

4,644,211
ELECTRIC ROTARY DRIVE APPARATUS OPERABLE IN A MAGNETIC CYLINDER
Takaharu Idogaki, Okazaki; Hisasi Kawai, Toyohashi, and Ikuo Hayashi, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Aug. 19, 1985, Ser. No. 766,785
Claims priority, application Japan, Sep. 21, 1984, 59-196550
Int. Cl.⁴ H02K 33/12
U.S. Cl. 310—266 5 Claims



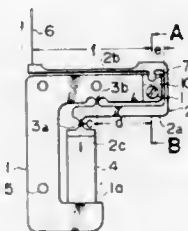
1. A rotary drive apparatus comprising:
 - a bar yoke member having an outer surface;
 - coil means, mounted on said bar yoke member so that at least one portion of said bar yoke member projects beyond a peripheral extent of said coil means, for generating magnetic flux when energized by an electric current;
 - a cylindrical case member, formed of a material having a magnetic property, for receiving said coil means at a first area therein and said bar yoke member therein, said cylindrical case member having at least a pair of salient-pole portions formed on an inside surface thereof in the vicinity of said first area where said coil means is received, said salient-pole portions facing each other through said one portion of said bar yoke member; and
 - rotary means, provided between an inside of said salient-pole portions and said outer surface of said bar yoke member, and facing said salient-pole portions and spaced from said bar yoke member and said salient-pole portions by a predetermined gap, said rotary means for rotating between said bar yoke member and said salient-pole portions, and being provided with at least one magnet means having at least two pairs of outer-pole portions rigidly coupled to said rotary means and arranged along an outer circumference of said rotary means, each said outer-pole portion being magnetized to have an opposite polarity to an adjacent outer-pole portion, one of said outer-pole portions facing one of said salient-pole portions respectively, said one magnet means having at least two pairs of inner-pole portions arranged along an inner circumference thereof, and at inside portions corresponding to said outer-pole portions, said inner-pole portions being magnetized to have opposite polarities to a corresponding outer-pole portion, and said inner pole portions facing said bar yoke; wherein said salient-pole portions in said cylindrical case member, said magnet means arranged on said rotary member and said one portion of said bar yoke member form a magnetic circuit, and wherein said rotary means is also for rotating in response to said magnetic flux generated at said one portion of said bar yoke member when an electric current is supplied to said coil means mounted on said bar yoke member, and said rotary member has at least three stopped positions.

4,644,212
POWER SUPPLY FOR PIEZOELECTRIC-ELEMENT DRIVING DEVICE
Mitiyasu Moritugu, Nishio; Hisasi Kawai, Toyohashi, and Norihito Tokura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed May 6, 1985, Ser. No. 730,580
Claims priority, application Japan, May 11, 1984, 59-94918
Int. Cl.⁴ H01L 41/08
U.S. Cl. 310—317 5 Claims



1. A piezoelectric element driving device comprising:
 - a power supply circuit having a power source;
 - a first switching element connected to said power supply circuit for operating to generate a first set voltage in response to a first signal transmitted at predetermined intervals;
 - a second switching element connected to said power supply circuit for operating to generate a second set voltage in response to a second signal transmitted after a predetermined period of time upon completion of the operation of said first switching element;
 - a piezoelectric element connected to said first and second switching elements through rectifying devices for receiving the application of said first and second set voltages; means for regulating said first and second set voltages by means of said rectifying devices provided between said first and second switching elements and said piezoelectric element; and
 - a resonance coil connected between connecting points of said first and second switching elements and said rectifying devices for effecting LC resonance in association with said piezoelectric element.

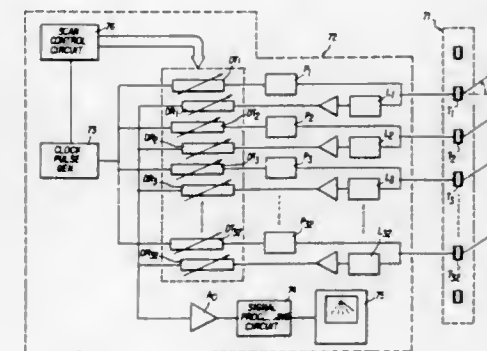
4,644,213
PIEZOELECTRIC ACTUATOR
Tsuyoshi Shibuya, Chofu, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Chofu, Japan
Filed Jan. 28, 1986, Ser. No. 823,478
Claims priority, application Japan, Jan. 29, 1985, 60-15073
Int. Cl.⁴ H01L 41/08
U.S. Cl. 310—328 3 Claims



1. A piezoelectric actuator comprising:
 - a piezoelectric element having one end fixed to a frame;
 - a mechanical amplifying portion connected to the other end of said piezoelectric element; and
 - a displacement transmitting arm connected in series to a tip portion of said mechanical amplifying portion, said me-

chanical amplifying portion comprising a lever portion and a plurality of fulcrum portions; wherein the last amplifying fulcrum of said mechanical amplifying portion is coupled to a fulcrum fixing means for strengthening said last amplifying fulcrum and is rotatably inserted into a major segmental groove of said fulcrum means.

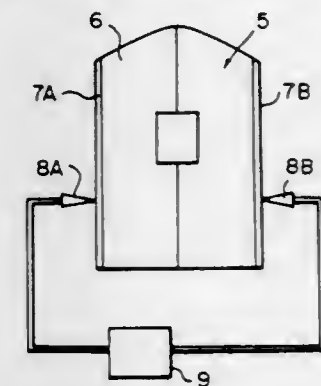
4,644,214
PROBE FOR ELECTRONIC SCANNING TYPE ULTRASONIC DIAGNOSTIC APPARATUS
Kinya Takamizawa, and Isao Uchlumi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation of Ser. No. 285,451, Jul. 21, 1981, abandoned, which is a continuation of Ser. No. 32,774, Apr. 24, 1979, abandoned. This application Jun. 26, 1986, Ser. No. 880,353
Claims priority, application Japan, Apr. 25, 1978, 53-48343
Int. Cl.⁴ H01L 41/08
U.S. Cl. 310—334 7 Claims



1. A probe for an electric scanning type ultrasonic diagnostic apparatus comprising:
 - a supporting plate;
 - a linear array of electro-acoustic transducers arranged in a row on said supporting plate and having equal intervals between consecutive transducers, each transducer having electrical connections for transmitting and receiving ultrasonic waves;
 - a pair of electrically passive pseudo-transducers arranged on the supporting plate, with one pseudo-transducer at each end of the row of transducers, said pseudo-transducers being made of the same material and being of the same shape and dimensions as the transducers, the interval between the pseudo-transducer and the end transducer in the row being the same interval as between consecutive transducers in the row;
 - whereby the ultrasonic directivity characteristics of the end transducers are made similar to those of the other transducers.

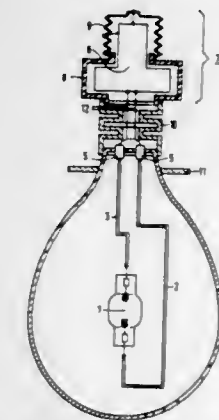
4,644,215
PIEZOELECTRIC VIBRATION MEASUREMENT HEAD
Takashi Iwasaki, and Keiji Mori, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Sep. 11, 1985, Ser. No. 775,319
Claims priority, application Japan, Oct. 17, 1984, 59-217946
Int. Cl.⁴ H01L 41/08
U.S. Cl. 310—367 1 Claim

1. A vibration measurement head for simulated measurement of vibration produced by the sliding contact between a mag-



netic head and magnetic recording media comprising a piezoelectric element formed in a shape that is virtually identical to that of said magnetic head and a pair of electrodes provided on said piezoelectric element.

4,644,216
HIGH-PRESSURE DISCHARGE LAMP
Ralf Schäfer, Büchel 34, 5100 Aachen, and Hans P. Stormberg, Weissdornweg 52, 5190 Stolberg, both of Fed. Rep. of Germany
Filed Apr. 22, 1985, Ser. No. 725,980
Claims priority, application Fed. Rep. of Germany, May 5, 1984, 3416714
Int. Cl.⁴ H01J 61/52; H01K 1/58
U.S. Cl. 313—25 6 Claims

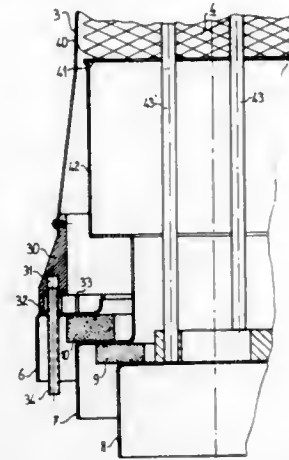


1. A high-pressure discharge lamp with a longitudinal axis comprising an outer bulb containing a discharge tube, a lamp base containing an electronics unit for driving the discharge tube, and a tubular intermediate part made of a material of poor thermal conduction and arranged between the outer bulb and the lamp base, characterized in that the intermediate part is folded as a bellows having a comparatively small overall length along the lamp axis, but a large length for thermal conduction, so that it provides a substantial heat resistance between the heated outer bulb and the electronics unit in the lamp base.

4,644,217
ELECTRON TUBE WITH A DEVICE FOR COOLING THE GRID BASE
Roger Hoët, and Pierre Gerlach, both of Thonon Les Bains, France, assignors to Thomson-CSF, Paris, France
Filed May 7, 1985, Ser. No. 731,553
Claims priority, application France, May 9, 1984, 84 07105
Int. Cl.⁴ H01J 7/26
U.S. Cl. 313—35 4 Claims

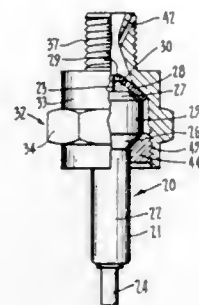
1. An electron tube comprising coaxial electrodes including an anode, a cathode, and at least a control grid having a base portion,

means forming with said electrodes a tube envelope, a separate electrical connection for each electrode extending outside the tube envelope, and means inside the tube envelope for interconnecting the base



portion of the control grid and its electrical connection and including means for circulating cooling fluid there-through for cooling the junction between the base of the control grid and its electrical connection.

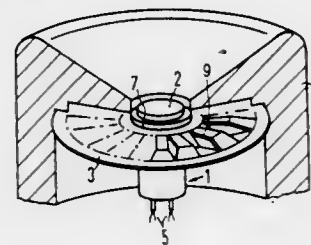
4,644,218
SPARK PLUG WITH PRE-COMBUSTION CHAMBER AND VENTURI PASSAGE
Henry A. Kirkhouse, Torquay, Australia, assignor to Kirkhouse Jet Plug Pty. Ltd., Victoria, Australia
PCT No. PCT/AU81/00073, § 371 Date Feb. 16, 1983, § 102(e) Date Feb. 16, 1983, PCT Pub. No. WO82/04504, PCT Pub. Date Dec. 23, 1982
Continuation of Ser. No. 474,589, Feb. 16, 1983, abandoned.
This PCT application Jun. 16, 1981, Ser. No. 774,880
Int. Cl.⁴ H01T 13/32
U.S. Cl. 313—120 7 Claims



1. A spark plug system incorporating a spark plug and an associated axial venturi passage, said spark plug including; an insulator member having an electrode disposed centrally thereof and projecting outwardly from one end thereof; and an electrode member at said one end of said insulator member surrounding and spaced from said centrally disposed electrode; wherein said electrode member is so shaped to define, with the insulator member a pre-combustion chamber surrounding the centrally disposed electrode, said electrode member having an aperture to receive the extreme end of said centrally disposed electrode of said insulator member, said electrode member further including a plurality of additional separate apertures adjacent said central aperture, said additional apertures adapted to allow for fluid communication between the pre-combustion chamber and said associated axial venturi passage, and wherein at least one transfer port is provided to allow communication between the cylinder chamber of an associated

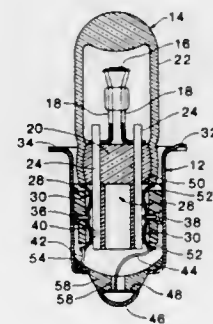
engine and said venturi passage on the upstream side of the throat thereof.

4,644,219
BEAM GENERATING SYSTEM FOR ELECTRON TUBES, PARTICULARLY TRAVELLING WAVE TUBES
Erwin Huebner, Grafting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Nov. 2, 1984, Ser. No. 667,753
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1984, 3407434
Int. Cl.⁴ H01J 1/14
U.S. Cl. 313—270 12 Claims



1. In a beam generating system for electron tubes formed of a beam shaping electrode, an emission disk with a dispenser cathode directly below the emission disk and which is supported on the beam shaping electrode, and the emission disk being at an end face of the cathode, wherein the improvement comprises:
said dispenser cathode being directly connected to said beam shaping electrode directly below said emission disk by means of a radial cathode support; and
said radial cathode support having means for preventing movement of the emission disk in a direction causing beam defocusing given temperature changes of the beam generating system.

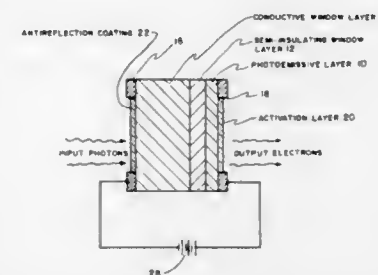
4,644,220
FILAMENT-CENTERING MOUNTING FOR FLASHLIGHT BULBS
James A. Carley, Rolling Hills, Calif., assignor to Carley, Torrance, Calif.
Filed Dec. 6, 1984, Ser. No. 678,790
Int. Cl.⁴ H01J 5/48, 5/50
U.S. Cl. 313—318 7 Claims



1. Apparatus for accurately indexing and mounting a flashlight bulb in a generally cylindrical cup-shaped base having a closed end and an open end and having a flange extending radially outwardly from the open end, said flange including an axial indexing surface, said apparatus comprising in combination:

a bead;
a filament accurately located with respect to said bead;
at least one pin that extends from said bead on the opposite side of said bead from said filament;
stiffener means connected to said bead and extending from said bead substantially the entire length of said at least one pin to prevent the pin from being bent in normal use, and including a radial indexing surface;
insert means composed of a rigid material and including an axial indexing surface, affixed within the base with its axial indexing surface a prescribed distance from the axial indexing surface of the base, and including a first radial indexing surface for contacting the inside of said cup-shaped base to center said insert within the base, and including a second radial indexing surface for receiving and contacting the radial indexing surface of said stiffener means to center said stiffener means within said insert means,
whereby when said stiffener means are coupled to said insert means with the bead of the flashlight bulb abutting the axial indexing surface of said insert means, said filament will be accurately indexed and mounted in both the radial and axial directions with respect to the base.

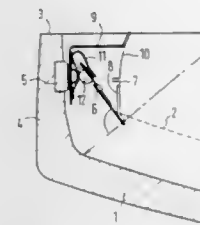
4,644,221
VARIABLE SENSITIVITY TRANSMISSION MODE NEGATIVE ELECTRON AFFINITY PHOTOCATHODE
William A. Gutierrez, and Herbert L. Wilson, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 6, 1981, Ser. No. 260,959
Int. Cl.⁴ H01J 31/00, 31/26
U.S. Cl. 313—373 3 Claims



1. A variable sensitivity negative electron affinity photocathode having means for varying the transmission mode photosensitivity to white or monochromatic light; said photocathode comprising:
a photoemitter layer made of p-doped photoemissive single crystalline material from Group III-V including GaAs, GaInAs, InAsP, GaInAsP, or ternary or quaternary alloys with said photoemitter layer having an activation layer of cesium and oxygen on the order of monolayers of thickness on the output side thereof to provide a condition of negative electron affinity;
a single crystal transparent window seed crystal substrate comprised of a conductor window acting as a field plate and made of low resistivity p- or n-doped material from Group III-V material including GaAlAs, GaP, GaInP, or GaAsP and a dielectric material insulator layer made of high resistivity material consisting of chromium or oxygen doped Group III-V material including GaAlAs, GaP, GaInP, or GaAsP wherein said insulator layer is contiguous with said photoemitter layer and with said conductor window to form a conductor-insulator combination in which the bandgap of said conductor window and insulator layer combination determined by the material composition of said seed crystal substrate is larger than the bandgap of said photoemitter layer and wherein said conductor window has an antireflection coating on the input side

thereof to reduce the amount of reflected light from the photon receiving side of said photocathode;
electrical contact rings applied to the outer peripheries of said conductor window and said photoemitter layer; and
a bias supply connected across said electrical contact rings to modulate said transparent field plate conductor window by applying negative and positive voltage with respect to said photoemitter layer for creating field effect across said insulator layer and bending the bands up at the interface of said photoemitter layer and said conductor-insulator combination for lowering the backsurface recombination velocity and increase the photosensitivity of said photoemitter layer.

4,644,222
COLOR PICTURE TUBE WITH MOUNTING STRUCTURE FOR A SHADOW MASK
Otto Bruno, Wernau, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany
Filed Mar. 27, 1985, Ser. No. 716,449
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411330
Int. Cl.⁴ H01J 29/07
U.S. Cl. 313—406 10 Claims



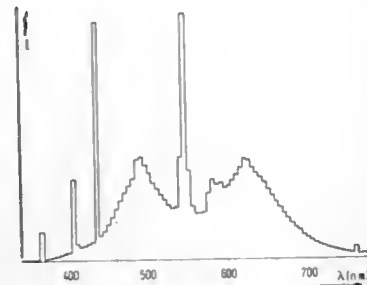
1. A color picture tube comprising:
a faceplate;
a shadow mask including a rim portion;
a magnetic shield adjacent said rim portion;
a plurality of mounting structures for mounting said shadow mask in proximity to said faceplate, each of said plurality of mounting structures comprising:
a support pin having one end portion fused in said faceplate, an intermediate portion which is generally conical in shape, and a generally spherical other end portion;
a support angle having a first and a second end wherein said first end is attached to said magnetic shield and said second end is carried by said support pin;
a generally trapezoidal shaped, flat hold member attached to said rim portion of said shadow mask, said flat hold member having its narrow end pointing toward said support pin and having a hole in said narrow end adapted to receive said support pin;
a "V"-shaped locking spring having one end mounted on said support angle and abutting said intermediate portion and having its other end pressing said hold member toward the center of said spherical shaped other end portion; and
wherein the longitudinal axis of said support pin is perpendicular to the axis of symmetry of said picture tube.

4,644,223
LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Johannes T. W. de Hair, Johannes T. C. van Kemenade, both of Eindhoven, and Everhardus G. Berns, Geldrop, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 19, 1983, Ser. No. 562,608

Claims priority, application Netherlands, Dec. 30, 1982, 8205044

Int. Cl.⁴ H01J 61/44
U.S. Cl. 313—487 13 Claims



1. A low pressure mercury vapour discharge lamp having a very satisfactory color rendition with both R(a,8) and R(a,94) being at least 85, having a color temperature of the emitted white light of at least 3200 K. and having a color point (X_L, Y_L) on or near the Planckian locus, which lamp is provided with a gas-tight radiation-transparent envelope containing mercury and rare gas and with a luminescent layer containing a luminescent halophosphate and a luminescent material activated by bivalent europium, characterized in that the luminescent layer comprises:

- at least one luminescent alkaline earth metal halophosphate activated by trivalent antimony or by trivalent antimony and by bivalent manganese,
- at least one luminescent material activated by bivalent europium and having an emission maximum in the range from 470 to 500 nm and a half-width value of the emission band of at most 90 nm, and
- a luminescent rare earth metal metaborate activated by trivalent cerium and by bivalent manganese and having a monoclinic crystal structure and whose fundamental lattice corresponds to the formula Ln(Mg,Zn,Cd)B₅O₁₀ in which formula Ln is at least one of the elements yttrium, lanthanum and gadolinium and in which up to 20 mol.% of the B can be replaced by Al and/or Ga and which metaborate exhibits red Mn²⁺ emission.

4,644,224
COMPACT FLUORESCENT LAMP HAVING BULB BASE
Shigeaki Saita, Ome; Hiroshi Takada, Iruma, and Seichi Tairaku, Akishima, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

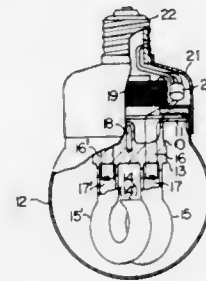
Continuation of Ser. No. 501,153, Jun. 6, 1983, abandoned. This application Oct. 30, 1985, Ser. No. 792,985

Claims priority, application Japan, Jun. 11, 1982, 57-99222
Int. Cl.⁴ H01J 61/34 8 Claims

U.S. Cl. 313—634
1. A low-pressure mercury vapor discharge lamp comprising:

- a stem through which two pairs of lead wires extend; first and second filament coils connected respectively to said pairs of lead wires on one side of said stem;
- two inner tubes each having the shape of a question mark including a part circular body portion and an extending leg portion, the leg portion of each inner tube having an end which is sealed to said stem with a respective one of

said filament coils extending therein and said part circular body portion having an open end; and



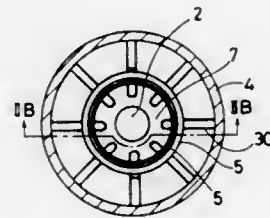
a glass lamp envelope sealed to said stem to form an air-tight space while enclosing said inner tubes therein.

4,644,225
MAGNETRON

Masayuki Aiga, Hyogo, and Tetsuji Hashiguchi, Kasai, both of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Nov. 19, 1984, Ser. No. 673,115

Claims priority, application Japan, Dec. 13, 1983, 58-235675
Int. Cl.⁴ H01J 23/22 10 Claims

U.S. Cl. 315—39.51



- A magnetron which comprises: a cathode extending in a given direction; a plurality of panel-shaped vanes radially arranged along the circumference of said cathode so that respective forward end surfaces thereof are opposed to said cathode, said forward end surfaces of the vanes and the lateral side surfaces thereof extending along the upright direction of the cathode being chamfered at corners along said given direction; an anode cylinder encircling the outer circumferences of said plurality of radially arranged vanes, outer peripheral end surfaces of said vanes being fixed to the inner wall of said anode cylinder; and magnets provided in an interaction space defined between said cathode and said forward end surfaces of said vanes for applying a magnetic field in said given direction, an interval between opposed forward end portions of the respective adjacent vanes being selected to be smaller than 2.3 times as long as the width of said forward end surface of each said vane.

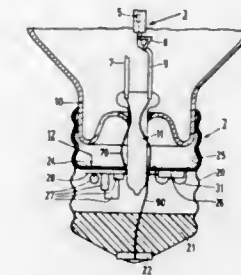
4,644,226
DISCHARGE LAMP CIRCUIT HEAT-SINKED TO THE LAMP CAP

Marinus G. Vernooij, and John A. J. Daniels, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 705,769, Feb. 26, 1985, abandoned. This application May 13, 1986, Ser. No. 863,824

Claims priority, application Netherlands, Feb. 29, 1984, 8400631

Int. Cl.⁴ H01J 17/28
U.S. Cl. 315—50 16 Claims

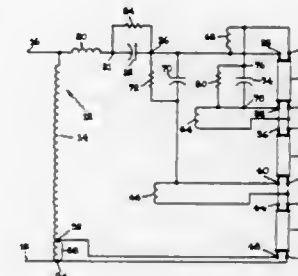


- A discharge lamp comprising means for defining a discharge current path in the operating condition of the lamp; and a lamp cap having a sleeve defining a longitudinal axis, said cap supporting and providing electrical connections to said means, characterized by comprising an electronic circuit including at least one semiconductor switching element for controlling the discharge current in the operating condition of the lamp, disposed within said lamp cap, and means for transferring heat from said element to said sleeve by thermal conduction, said means for transferring comprising a body which is a cooling member.

4,644,227
THREE LAMP BALLAST
Edward E. Hammer, Mayfield Village; Eugene Lemmers, Cleveland Heights, both of Ohio, and Dail L. Swanson, Danville, Ill., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 573,991, Jan. 26, 1984. This application Dec. 20, 1984, Ser. No. 684,311

Int. Cl.⁴ H05B 39/00, 41/14
U.S. Cl. 315—96 39 Claims



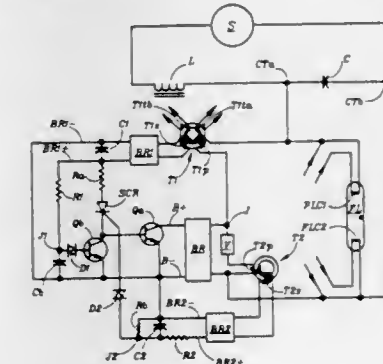
- A ballast circuit for operating three low energy, rapid start gas discharge lamps comprising: autotransformer means comprising primary winding means having a pair of input terminal means for connection to a source of a.c. power and having a first secondary circuit output terminal connected thereto and secondary winding means connected to said primary winding means and having a second secondary circuit output terminal connected thereto for converting an input electrical a.c. power signal of a first predetermined voltage received at said pair of input terminal means to an output secondary

circuit electrical a.c. signal of a second predetermined open circuit voltage output at said first and second secondary circuit output terminals; power capacitor means for controlling the power factor and current level of said output signal; a plurality of sets of lamp terminal means for connecting respective ones of said three low energy, gas discharge lamps each having a predetermined operating voltage in electrical series with said power capacitor means; first starting capacitor means connected to respective ones of said terminal means for bypassing a combination of a first one of said sets of lamp terminal means and a second one of said sets of lamp terminal means; second starting capacitor means connected to respective ones of said terminal means for bypassing one of said first or said second sets of lamp terminal means; and wherein the ratio of said second predetermined open circuit voltage to the sum of the lamp operative voltages of said three low energy, gas discharge lamps is less than 1.25.

4,644,228
SERIES-RESONANT PARALLEL-LOADED FLUORESCENT LAMP BALLAST

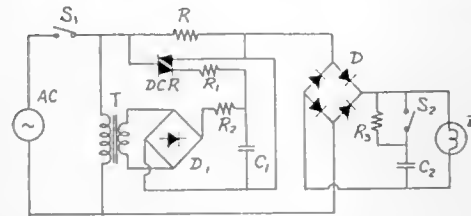
Ole K. Nilssen, Caesar Dr. Rte. 5, Barrington, Ill. 60010
Filed Jan. 14, 1985, Ser. No. 691,171

Int. Cl.⁴ H05B 37/00, 39/00, 41/14
U.S. Cl. 315—242 15 Claims



- A ballast for a gas discharge lamp, said ballast being adapted to operate from a source of periodic AC voltage and comprising: an L-C circuit series-connected across said source, said L-C circuit being resonant at or near the frequency of said AC voltage and having at least one inductive and one capacitive reactance means; voltage-limiting means connected in parallel-circuit with one of said reactance means; connect means operable to connect said lamp in parallel-circuit with one of said reactance means, thereby to provide for proper lamp starting and operating voltage; and shorting means effectively connected in circuit with said one of said reactance means and operative, but only after current has been flowing through said voltage-limiting means for a pre-determined first period, to cause a short circuit effectively to be provided across said one of said reactance means.

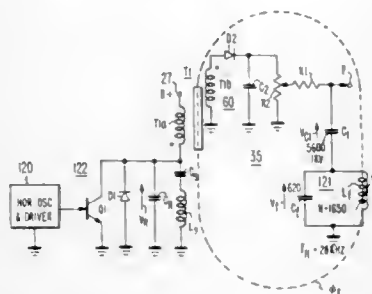
4,644,229
POWER SUPPLY FOR LIGHTING INCANDESCENT LAMP WITH HIGH-BRIGHTNESS
 Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan
 Filed May 14, 1984, Ser. No. 610,254
 Claims priority, application Japan, May 21, 1983, 58-89837
 Int. Cl.⁴ H05B 37/02; G05F 1/00
 U.S. Cl. 315—310 4 Claims



1. An electric circuit for supplying rectified single-phase alternating current to an incandescent lamp having a low cold filament resistance that increases when energized, said circuit comprising:

- first and second terminals for receiving an AC source;
- a three electrode, bidirectional triode thyristor having a conduction mode and a non-conduction mode, and having a first electrode connected to the first terminal;
- an RC time constant circuit energized from the AC source, and connected for controlling the third electrode of said bidirectional triode thyristor;
- an impedance, having a higher impedance than said cold filament resistance of said incandescent lamp, connected in parallel with said bidirectional triode thyristor, said impedance being short circuited when said bidirectional triode is in said conduction mode;
- means including rectifying means, connected in series with said impedance and said incandescent lamp between said second electrode and said second terminal, for obtaining a DC current for the lamp; and
- an RC charge circuit connected across said lamp to prevent sparking when switching.

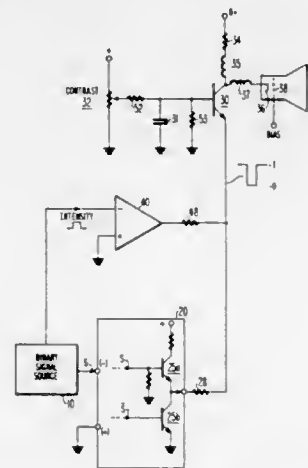
4,644,230
FOCUS VOLTAGE CIRCUIT FOR TELEVISION APPARATUS
 Steven P. Federle, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
 Filed Mar. 25, 1985, Ser. No. 715,640
 Int. Cl.⁴ H01J 29/58, 29/70
 U.S. Cl. 315—382 7 Claims



1. A focus voltage circuit with deflection frequency modulation of the focus voltage, comprising:
 - a source of deflection frequency alternating polarity voltage providing deflection frequency energy to a focus electrode;
 - a transformer having a winding coupled to said source for

generating an alternating polarity leakage flux in a space outside of said transformer; an inductance that is located in said outside space, wherein said alternating polarity leakage flux induces a corresponding voltage in said inductance; and means for generating from the voltage that is induced in said inductance, a deflection frequency focus voltage for said focus electrode, wherein the transfer of said deflection frequency energy to said focus electrode from said source is substantially accomplished via said alternating polarity leakage flux.

4,644,231
VIDEO DATA DISPLAY DRIVER STAGE
 James H. Wharton, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.
 Filed Nov. 29, 1984, Ser. No. 674,989
 Int. Cl.⁴ H01J 29/52
 U.S. Cl. 315—383 6 Claims

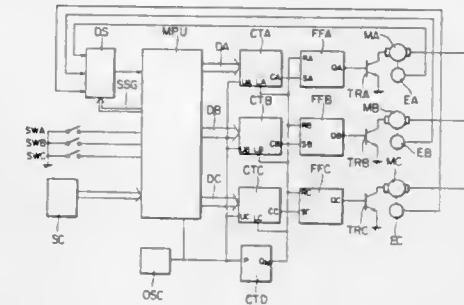


1. In a video signal processing and display system including an image display device responsive to video signals applied to a signal input thereof, apparatus comprising:
 - a display driver amplifier having a first input terminal, a second input terminal, and a third output terminal for providing to said signal input of said display device video signals of a magnitude suitable for directly driving said display device, said first and third terminals defining a main current conduction path of said display driver amplifier;
 - a source of binary video signals representative of information to be displayed coupled to said first input terminal of said driver amplifier; and
 - a source of image contrast control signal coupled to said second terminal of said driver amplifier for controlling the magnitude of the current conducted by said driver amplifier.

4,644,232
METHOD OF AND AN APPARATUS FOR CONTROLLING A PLURALITY OF DC MOTORS
 Yuukou Nojiri, Kosho Ishizaki, Giichi Ishida, and Junshiro Inamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Oct. 18, 1984, Ser. No. 662,012
 Claims priority, application Japan, Oct. 19, 1983, 58-194166; Oct. 19, 1983, 58-194167; Jan. 25, 1984, 59-10145; Feb. 16, 1984, 59-26057
 Int. Cl.⁴ H02P 7/68 7 Claims

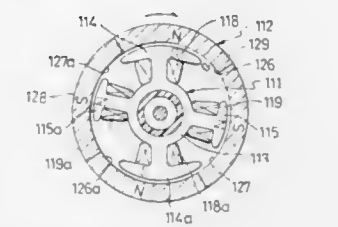
4. A method of controlling rotational speed of a plurality of DC motors in a speed controlling apparatus having a whole

control unit comprising: a plurality of DC motors; speed detecting apparatuses each of which is connected to each of said DC motors so as to output a pulse signal representative to the rotation of each of said motors; a data selector which selects one of said pulse signals from said speed detecting apparatuses and outputs an interruption signal, wherein the pulse signal of each of said speed detecting apparatuses is only supplied to the



whole control unit via said data selector; a plurality of driving apparatuses, the method including calculating in the whole control unit a duty corresponding to a current supplying time to said DC motor while measuring the speed of said DC motor on the basis of the period of said pulse signal from said speed detecting apparatus, and controlling the rotating speed of said DC motor in accordance therewith.

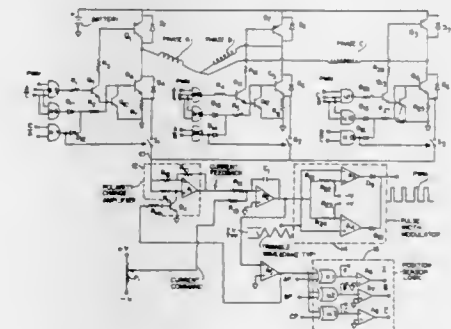
4,644,233
D.C. BRUSHLESS MOTOR HAVING WIDER AND NARROWER POLE PARTS
 Yasuo Suzuki, Shijonawate, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan
 Filed Aug. 9, 1985, Ser. No. 763,995
 Claims priority, application Japan, Aug. 25, 1984, 59-177016; Sep. 25, 1984, 59-199917
 Int. Cl.⁴ H02K 29/08
 U.S. Cl. 318—254 1 Claim



1. A DC brushless motor comprising:
 - a rotor including a permanent magnet magnetized to have a plurality of at least four poles arranged to be of circumferentially alternately opposite polarities;
 - a stator provided with a plurality of projected pole parts corresponding in number to said at least four poles of said rotor, said pole parts including circumferentially alternating wider and narrower pole parts, each of said narrower pole parts having a center line which is non-equidistantly spaced in the circumferential directions with respect to a center line of each of said wider pole parts,
 - first coils wound on said wider pole parts and second coils wound on said narrower pole parts for exciting the wider pole parts to be mutually of the same polarity and opposite the polarity of the narrower pole parts;
 - said coils being adapted to reverse the polarity of the pole parts,
 - a single Hall effect element disposed opposite said rotor for detecting the polarity of a rotor pole disposed at a prede-

termined location relative to said stator and for providing a control signal dependent upon a detected polarity; and means responsive to said control signal for supplying a direct current in one direction to said first and second coils when one type of polarity is detected by said single Hall effect element and in a reverse direction to said first and second coils when the opposite type of polarity is detected by said single Hall effect element, for reversing the polarity of said poles.

4,644,234
FOUR QUADRANT CONTROL CIRCUIT FOR A BRUSHLESS THREE-PHASE D.C. MOTOR
 Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
 Filed Sep. 13, 1985, Ser. No. 775,548
 Int. Cl.⁴ H02P 6/02
 U.S. Cl. 318—254 14 Claims



1. A control circuit for providing four quadrant control of a three-phase brushless d.c. motor-generator including a rotor, said control circuit comprising a bridge circuit including a pair of control transistors connected to each of the three-phase windings of the motor-generator, switching control means for receiving input signals related to the rotational position of the rotor of the motor-generator and for controlling switching of said transistors in accordance therewith such that each of said transistors, during normal operation of the motor-generator as a motor, is switched on for a 120° period of each cycle and is switched off for the remainder of the cycle and one of the transistors of each transistor pair is switched off when the other transistor of that pair is switched on, said switching control means comprising means for sampling the current in each leg of the bridge circuit and including an electronic switch connected to each of said transistor pairs and means for providing selectively closing of electronic switches during the on period of a predetermined transistor of the corresponding transistor pair, and further including switching means for alternately switching the transistors of each transistor pair on and off a plurality of times during a further operational period of 120° during each cycle wherein said motor-generator operates as a generator, said circuit including current command signal generating means for providing a bi-polar current command signal, for controlling switching of said transistors, which transistors control the amount of current commanded and the polarity of which current command signal controls whether the motor-generator operates as a motor or generator.

4,644,235

CONTROL APPARATUS FOR AUTOMOTIVE POWER-OPERATED CONVERTIBLE ROOF

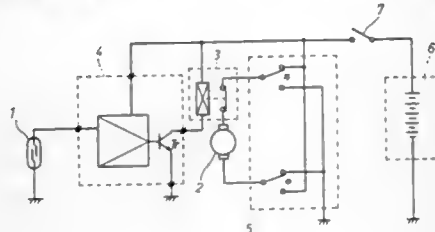
Hisatoshi Ohta, Kariya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Nov. 29, 1984, Ser. No. 676,291

Claims priority, application Japan, Dec. 1, 1983, 58-227137
Int. Cl.⁴ B60J 7/08; H02P 1/22

U.S. Cl. 318—282

4 Claims



1. Control apparatus for preventing damage by wind pressure to the power-operated convertible roof of a vehicle comprising:

detecting means including a vehicle speed sensor for generating a signal indicative of vehicle velocity which is not lower than a predetermined speed level;

driving means for opening and closing said convertible roof comprising an electric motor and a change-over switch for switching power to said electric motor and opening and closing said roof;

means connected to the output of said detecting means for providing a control signal in response to the generation of a signal indicative of vehicle movement not lower than the predetermined speed level; and

means responsive to the output of said control signal providing means for inhibiting said driving means by removing power therefrom and preventing the opening or closing of said convertible roof by said driving means when said vehicle movement is not lower than said predetermined speed level, thereby preventing damage by wind pressure to said roof.

4,644,236

DRIVE RESTART CONTROL FOR RING SPINNING OR TWISTING MACHINE

Helmut Junginger, Kuchen; Horst Wolf, Albershausen, and Wolfgang Jäger, Udingen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

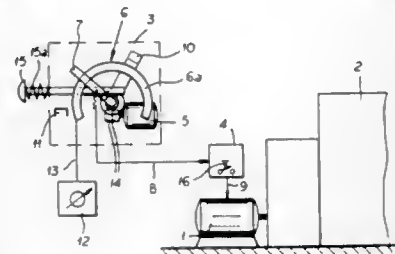
Filed Jan. 18, 1985, Ser. No. 692,901

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402225

Int. Cl.⁴ H02P 5/00

U.S. Cl. 318—309

14 Claims



1. The combination with a ring spinning a ring twisting machine of a device for the controlled restarting of a drive motor for said ring spinning machine or ring twisting machine having a speed at a normal operating level comprising:

a speed setter providing an output signal for actuating the

motor so that the latter runs at a speed corresponding to said output signal; and
control means operatively connected with said speed setter and providing a further output signal which acts on said speed setter, said control means including a control unit for initially bringing the speed of said motor immediately to a predetermined value of between 50% and 75% of the normal operating level and a speeding-up unit for automatically increasing the speed progressively and continuously over a selected period having a lower limit of two hours from said predetermined value to said normal operating level.

4,644,237

COLLISION AVOIDANCE SYSTEM

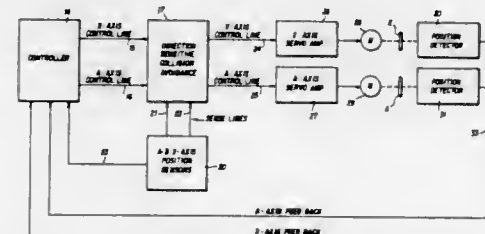
James E. Frushour, Endwell; Michael L. Mahar, Newark Valley; Christopher J. Majka, Endicott, and John E. Swenson, Greene, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 17, 1985, Ser. No. 788,262

Int. Cl.⁴ G05D 1/02

U.S. Cl. 318—313

13 Claims



1. A system for preventing a collision between a first object and a second object comprising:

first drive means for driving said first object along a path; second drive means for driving a second object along said path, said second object trailing said first object;

sensing means for sensing the distance between said first object and said second object, said sensing means generating a "slow" signal when said distance between said first object and said second object is equal to or less than a predetermined distance; and

control means responsive to said "slow" signal for reducing the speed of said second object to a first slow speed, said control means comprising a controller generating a drive signal for said second drive means and means inserting an impedance between said controller and said second drive means in response to said "slow" signal.

4,644,238

AIRFLOW CONTROL APPARATUS

Yoshihiko Hirotsuki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1984, Ser. No. 657,404

Claims priority, application Japan, Nov. 16, 1983, 58-21709; Apr. 2, 1984, 59-65422; Apr. 2, 1984, 59-65423

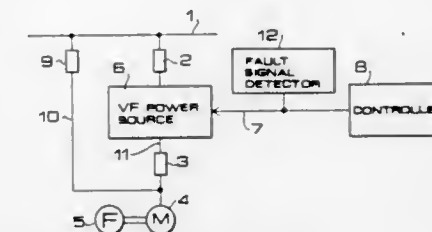
Int. Cl.⁴ H02P 3/00

U.S. Cl. 318—332

7 Claims

1. In an airflow control apparatus having a ventilator-actuating motor driven at a rotational speed corresponding to a power supply frequency, a VF (variable frequency) power supply connected to a commercial power line for supplying an electric power to said motor, and a controller for feeding a control signal to said VF power supply so as to determine the output frequency thereof, the improvement comprising a fault signal detector including: means for detecting an abnormality relative to the control signal fed to said VF power supply and producing an output; and means actuated in response to the output of said detecting means and serving to actuate switch

means for switching the input terminal of said motor from said VF power supply to said commercial power line; and level control means which is actuated in response to the output of said detecting means, said level control means raising the level



of the control signal fed to said VF power supply to the upper limit of a predetermined variation range and subsequently actuating said switch means to connect said motor to said commercial power line.

4,644,239

MOTOR ACTUATOR WITH CONTROL MEANS RESPONSIVE TO INTERNAL AND EXTERNAL CONDITIONS

Shinichi Yoshikawa; Shigeru Nishiwaki, and Toshiro Shimodaira, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Japan

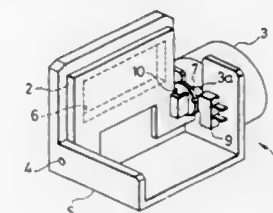
Filed Jun. 7, 1985, Ser. No. 742,482

Claims priority, application Japan, Jun. 7, 1984, 59-85125[U]; Jun. 7, 1984, 59-85126[U]; Jul. 5, 1984, 59-101828[U]; Jul. 16, 1984, 59-106427[U]; Jul. 31, 1984, 59-160726; Dec. 14, 1984, 59-188899[U]

Int. Cl.⁴ G05D 23/00

U.S. Cl. 318—641

12 Claims



1. A motor actuator comprising a motor, articulating means rotatable by rotational operation of said motor, position detecting means for detecting a rotational position of said motor, sensor means for detecting an external condition such as temperature, and control circuit means for operating said motor in accordance with first outputs from said sensor means and said position detecting means, said control circuit means stopping said motor in accordance with second outputs both from said position detecting means and from said sensor means.

4,644,240

METHOD AND APPARATUS FOR CONTROLLING REVERSE-CONDUCTING GTO THYRISTOR

Akira Horie, and Takashi Tsuboi, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 25, 1984, Ser. No. 624,372

Claims priority, application Japan, Jun. 27, 1983, 58-115484

Int. Cl.⁴ H03K 17/51

U.S. Cl. 318—768

9 Claims

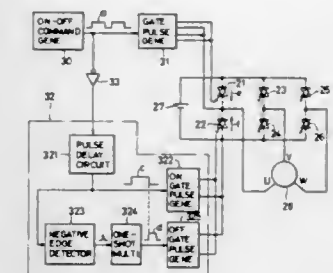
8. A control device for a reverse-conducting GTO thyristor comprising:

a direct current power supply;

a 3-phase DC-AC converter which is connected to said said

direct current power supply and is provided with three pairs of reverse-conducting GTO thyristors; a 3-phase induction motor supplied with an AC output from said converter;

control means which includes means adapted to apply an ON gate pulse to one thyristor of each of said pairs of reverse-conducting GTO thyristors after a lapse of time



after starting to supply an OFF gate pulse to the other thyristor of said pair of thyristors necessary for said other thyristor of said pair of thyristors to turn off, and turn on and off each of said pairs of reverse-conducting GTO thyristors in opposite phases; and means for continuing said OFF gate pulse until after the generation of said ON gate pulse applied to said one thyristor of each of said pairs of thyristors.

4,644,241

SINGLE PHASE TO THREE PHASE SIGNAL CONVERTER

Naoyuki Maeda, Aichi, Japan, assignor to Tokai TRW & Co., Ltd., Kasugai, Japan

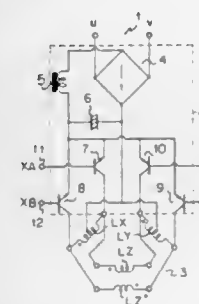
Filed Jun. 7, 1985, Ser. No. 742,202

Claims priority, application Japan, Jun. 8, 1984, 59-118009

Int. Cl.⁴ H02P 7/292; H02M 5/458

U.S. Cl. 318—768

5 Claims



1. A single phase to three phase converter comprising: phase shifting converter means including rectifier means connected to a single-phase A.C. power source, first semiconductor switching means connected to a first pair of input terminals which receive a first pair of phase-shifting signals and connected to one terminal of the rectifier means, and second semiconductor switching means connected to a second pair of input terminals which receive a second pair of phase-shifting signals and connected to said one terminal of the rectifier; first center-tapped phase load means connected to said first semiconductor switching means, the center tap being connected to the other terminal of said rectifier; second center-tapped phase load means connected to said second semiconductor switching means, the center tap being connected to said other terminal of said rectifier; third and fourth phase load means each connected to said first and second semiconductor switching means, the third

and fourth phase load means being formed by dividing single phase load means, whereby first and second phase-shifted signals having a 120° phase difference therebetween and a signal composed by said first and second phase-shifted signals are respectively provided for said first, second, and third plus fourth phase load means, as three-phase power outputs.

4,644,242 CONTROLLING SYSTEM FOR A POLE CHANGE ELECTRIC MOTOR

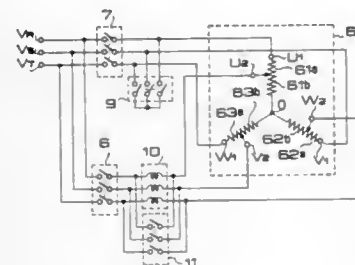
Nobuharu Takata, and Kohji Kurita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1984, Ser. No. 635,344

Claims priority, application Japan, Jul. 30, 1983, 58-139572
Int. Cl. H02P 7/48

U.S. Cl. 318—771

1 Claim



1. In combination with a pole change electric motor system including a pair of stator windings, first switch means for connecting the pair of stator windings in series with each other across a power source with orientation so as to form four poles for low speed operation, and second switch means for connecting the pair of stator windings in parallel with each other across the power source with orientation so as to form two poles for high speed operation; an improvement comprising a reactor connected in series with the second switch means and the power source so that an impedance is provided in a circuit supplying power to the motor when the operation of the motor is switched from low speed to high speed operation in order to control acceleration of the motor during transition from low speed to high speed, and third switch means connected in parallel with said reactor for shunting the reactor after a predetermined period of time to allow said motor to operate at full power at said high speed.

4,644,243 STATIC SWITCHES FIRING SYSTEM

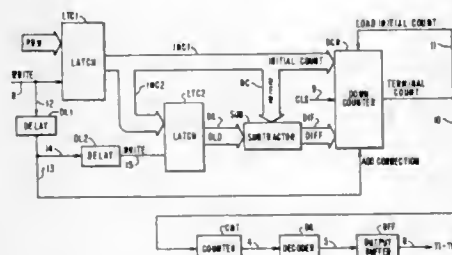
Edward J. Bialek, Buffalo, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1985, Ser. No. 774,125

Int. Cl. H02P 5/40

U.S. Cl. 318—807

6 Claims



1. A gating control system for firing sequentially a plurality of static switches by applying and distributing in successive

order among said static switches gating pulses at regular time intervals characteristic of the firing frequency, comprising: means responsive to a firing frequency representative reference signal for generating a time signal characteristic of the pulse spacing, counting means recurrently responsive to said time signal for assuming an initial count representative of said pulse spacing and for down-counting from said initial count to a terminal count, gating means responsive to said terminal count for firing at least one static switch which is "next" in said plurality, means responsive to said time signal for detecting a change therein in relation to a change in said reference signal, and means for modifying the operation of said counting means during said down-counting to alter said terminal count in accordance with said reference signal change, whereby the occurrence of firing of said "next" static switch is concurrently modified, and sequential firing is established at a corresponding new frequency.

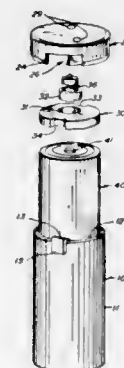
4,644,244 BATTERY CONDITIONER

Clifford E. Kittelson, Rte. 3, Box 130, Watertown, S. Dak. 57201
Filed Aug. 30, 1985, Ser. No. 771,415

Int. Cl. H02J 7/00

U.S. Cl. 320—4

8 Claims



1. A conditioner for depolarizing miniature batteries comprising in combination; a hollow cylindrical housing having an open upper end and comprised of insulating material for receiving a storage battery source of current; first electrical contact means of conductive material extending over the sides of said housing at the open upper end thereof forming a catch and interiorly extending to the bottom of said housing and including conductive spring biasing means to engage one end of said storage battery; carrier means comprised of insulating material for receiving a miniature battery to be depolarized, said means dimensioned to be slidably received in the open end of said housing and including a central aperture for receiving said battery to be depolarized; and cover means comprised of insulating material and having an open lower end, dimensioned to be slidably received over the open end of said housing and, including second electrical contact means extending thereacross for engagement with said miniature battery to be depolarized at its center, said second means including a latch adapted to conductively, latchably engage the catch of the first contact means in said housing.

4,644,245 NICKEL-CADMIUM BATTERY STATE-OF-CHARGE MEASURING METHOD

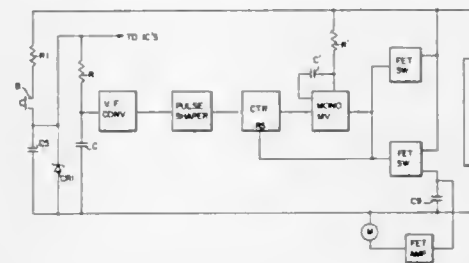
Harry B. Brown, Falls Church, Va., assignor to Applied Electro Mechanics, Inc., Alexandria, Va.

Filed Jan. 28, 1985, Ser. No. 692,982

Int. Cl. G01N 27/46; H02J 7/00

U.S. Cl. 320—13

2 Claims



1. A method of determining the state of charge of a nickel-cadmium battery, which comprises discharging the battery through a low impedance path at the rate of about 50 to 80 amperes for a pulse discharge period of about one millisecond, measuring the highest battery terminal voltage sustained during the major portion of the discharge period, wherein the battery terminal voltage is stored in a capacitor which is connected across a battery current path concurrently with the pulse discharge period, and wherein the charge remaining in the capacitor is measured subsequent to the termination of the discharge period, wherein the low impedance path includes a resistor of relatively low impedance and wherein the high impedance path includes a resistor of relatively high impedance, wherein said resistors are in parallel to the battery throughout the pulse discharge period and for time intervals preceding the pulse discharge period, further including the step of shorting out the high impedance resistor throughout the pulse discharge period.

4,644,246 ELECTRIC POWER SUPPLY SYSTEM FOR PORTABLE MINIATURE SIZE POWER CONSUMING DEVICES

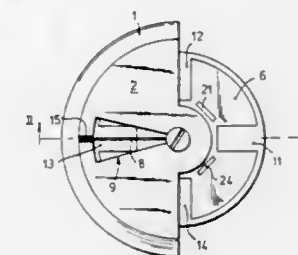
Petrus M. J. Knapen, Tilburg, Netherlands, assignor to Kinetron B. V., Tilburg, Netherlands

Filed Jun. 18, 1985, Ser. No. 746,179

Claims priority, application Netherlands, Jul. 3, 1984, 8402113
Int. Cl. H01M 10/46; G04C 10/00; H02K 21/14

U.S. Cl. 320—21

12 Claims



1. An electric power supply system for portable miniature size power consuming devices, comprising an AC generator, a rechargeable battery and a charging device to be fed from the AC generator and maintaining the battery charging level, the AC generator comprising a multi-polar rotor wheel having permanently magnetized poles, a stator having one or more windings providing an AC current and an eccentric mass driving the permanently magnetized rotor wheel; the rotor

wheel, the stator and the eccentric mass being mounted coaxially, a transmission being arranged between the eccentric mass and the rotor wheel characterized in that the transmission is a loose coupling means that selectively engages the rotor wheel by overcoming magnetic fields interacting between the poles of the rotor wheel and the respective poles of the stator, wherein the loose coupling means comprises a spring member, one terminal portion thereof being attached to the rotor wheel, the eccentric mass comprising means for engaging the opposite terminal portion of the spring member.

4,644,247 SERIES PASS REGULATED BATTERY CHARGER WITH REDUCED POWER DISSIPATION

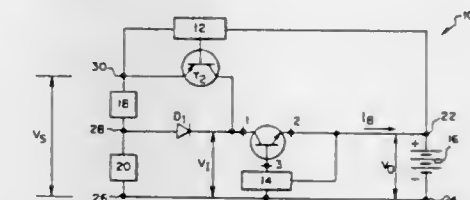
Mark Burmenko, Fairlawn, N.J., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 9, 1984, Ser. No. 587,951

Int. Cl. H02J 7/04; G05F 1/58

U.S. Cl. 320—39

14 Claims



1. A series pass battery charger, comprising: a plurality of input voltage sources; a pair of DC output terminals adapted to be connected to a battery to be charged; a series pass control means for regulating the voltage at said DC output terminals at a relatively constant DC voltage independent of voltage fluctuations in said input voltage sources and fluctuations in the charging current flowing through said DC output terminals; and a power dissipation control means for controlling the magnitude of input voltage applied to said series pass control means in response to the voltage difference between said DC voltage output terminals and the sum of the voltage of said first and second input voltage sources such that the power dissipated through said series pass control means is decreased when the voltage difference exceeds a preselected value.

4,644,248 LINE FAULT TOLERANT SYNCHRONOUS TIMING REFERENCE GENERATOR FOR STATIC VAR GENERATORS

Michael B. Brennen, Pittsburgh, and Alberto Abbondanti, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1985, Ser. No. 790,681

Int. Cl. H02J 3/18; H03K 5/05

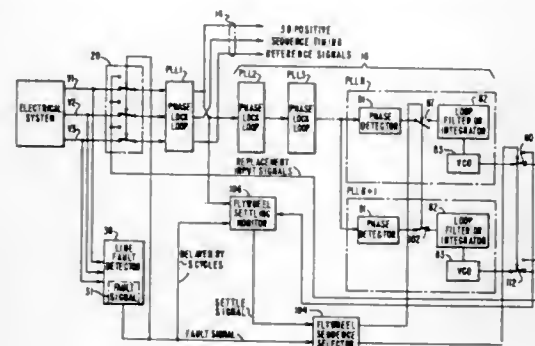
U.S. Cl. 323—205

8 Claims

1. A timing reference generator producing a multiphase timing reference signal substantially in synchronism with a multiphase source signal, comprising: primary phase locked loop (PLL) circuit means for locking on and tracking an input signal representative of the multiphase source signal when at least one phase thereof is present and producing the multiphase timing reference output signal based on the positive sequence component of the input signal, the primary PLL circuit means maintaining a predetermined phase relationship between the input signal and the timing reference output signal and including at least one harmonic band reject notch filter to substantially eliminate phase errors in the timing reference output

signal caused by input signal phase unbalance and harmonics;

PLL circuit array means having N PLL stages connected in series for providing a delayed timing reference signal, each PLL stage having an input and output and comprising a zero phase error type PLL circuit operable in a tracking mode in which the phase error between the input and output thereof is sampled on a predetermined cyclic basis with the output thereof being inverted and delayed with respect to the input with at least the Nth stage also being operable in a flywheel mode in which the PLL stage is open circuited with the output thereof becoming independent of the input and remaining essentially unchanged from its tracking mode stage existing just prior to entering the flywheel mode, the initial stage of the PLL array means having as the input thereto at least one phase of the timing reference output signal with each subsequent stage receiving the output of the preceding stage, the output of



the Nth stage being in phase with the input to the primary PLL circuit means and having a propagation delay D determined by the sum of the delays provided by each of the stages in the array means;

fault detector means having a response time that is less than the propagation delay D for determining the presence of a fault condition in the multiphase source signal and providing a fault signal as an output thereof;

switching means responsive to the fault signal for opening circuiting at least the Nth stage of the PLL array means during the fault condition to place the Nth stage in the flywheel mode thereby preserving the pre-fault phase conditions of the source signal as represented by the output of the Nth stage; and

feedback means responsive to the fault signal for supplying the output of the Nth stage of the PLL array to the input of the primary PLL circuit means during the fault condition.

4,644,249 COMPENSATED BIAS GENERATOR VOLTAGE SOURCE FOR ECL CIRCUITS

Benny Chang, South Portland, Me., assignor to Quadric Systems, Inc., South Portland, Me.

Filed Jul. 25, 1985, Ser. No. 758,956

Int. Cl.⁴ G05F 1/652

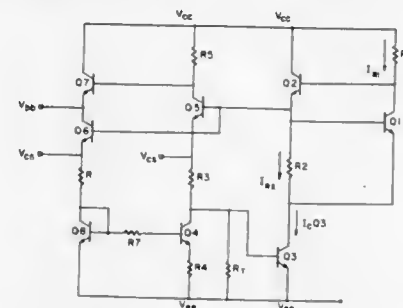
U.S. Cl. 323—223

16 Claims

1. In a voltage compensated bias generator having a shunt regulator transistor (Q3) with an active collector load circuit to compensate for variations in line voltage V_{cc} , said bias generator and shunt regulator transistor providing a compensated voltage source at an output transistor of the bias generator for the current source voltage V_{cs} for ECL circuits, the improvement comprising:

an all NPN active collector load circuit operatively coupled between the line voltage V_{cc} and the collector of the shunt regulator transistor, said active collector load circuit comprising NPN first and second transistors with the base

of the first transistor (Q1) coupled to the emitter of the second transistor (Q2) and with the base of the second transistor coupled to the collector of the first transistor, said active collector load circuit being operatively coupled to provide a first relatively smaller changing current (I_1) from the emitter of the first transistor which may vary with changes in the line voltage V_{cc} , and a relatively



larger second substantially unvarying standing current (I_2) from the emitter of the second transistor, said changing current and standing current being combined to provide the collector current (I_{CQ3}) to the shunt regulator transistor (Q3) thereby substantially logarithmically reducing variation in collector current from the active collector load circuit to the shunt regulator transistor upon variations in the line voltage V_{cc} .

4,644,250 CIRCUIT FOR CONTROLLING RISE TIME OF EPROM PROGRAMMING VOLTAGE

Cornelis D. Hartgring, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

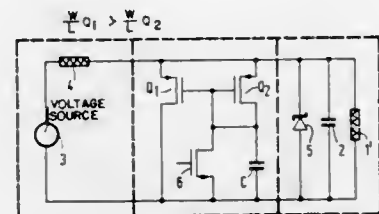
Filed Jan. 17, 1985, Ser. No. 692,153

Claims priority, application Netherlands, Jan. 25, 1984, 8400225

Int. Cl.⁴ G05F 1/618

U.S. Cl. 323—225

13 Claims



1. A circuit for generating a programming voltage for an erasable programmable read-only memory having a memory section bridged by a capacitance comprising: a voltage source connected via a charging resistor to the memory section to be programmed, a first transistor connected in parallel circuit with the memory section bridged by the capacitance, a capacitor and a second transistor connected in a series circuit that is in turn connected in parallel with the capacitance of the memory section, said first and second transistors being connected as a current mirror which amplifies current from the second to the first transistor, and means coupling the capacitor to a control electrode of the first transistor so that the first transistor is controlled by a voltage on the capacitor.

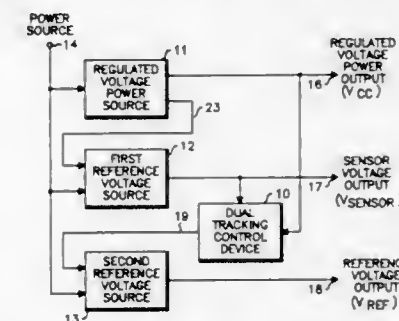
4,644,251 DUAL VOLTAGE TRACKING CONTROL DEVICE William M. Rathke, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1985, Ser. No. 718,263

Int. Cl.⁴ G05F 1/577

U.S. Cl. 323—267

16 Claims



1. A dual tracking control device for use with a multiple voltage source system having at least an input for receiving a substantially unregulated DC voltage, a regulated voltage power source for providing a first voltage, a first reference voltage source for providing a second voltage, and a second reference voltage source for providing a third voltage, said dual tracking control device comprising:

(a) tracking control means being responsive to said first voltage and said second voltage and further having an output for providing a reference signal to said second reference voltage source to control said third voltage, such that:

- said third voltage will substantially track said second voltage when said second voltage substantially maintains a predetermined relationship with respect to said first voltage; and
- said third voltage will substantially track said first voltage when said second voltage and said first voltage do not substantially maintain said predetermined relationship.

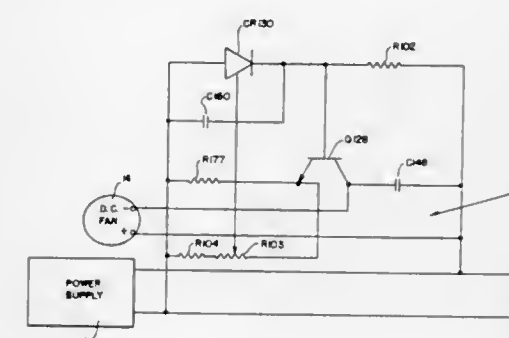
4,644,252 NOISE ISOLATOR CIRCUIT FOR POWER SUPPLY FAN Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Dec. 16, 1985, Ser. No. 809,033

Int. Cl.⁴ G05F 1/40

U.S. Cl. 323—273

4 Claims



1. In combination: a power supply having first and second terminals for establishing a direct current output voltage across a direct current bus; a direct current electric fan having first and second terminals for cooling the power supply with the first terminal of the fan being connected to the first terminal of

the power supply; and a regulator circuit connecting the second terminal of the power supply to the second terminal of the fan for energizing the fan and establishing an essentially constant current drain from the power supply in the presence of periodic surges in the current drawn by the fan to prevent the creation of noise signals across the direction current bus, said regulator circuit including a capacitor connected across the first and second terminals of said fan to form a low impedance circulating path for said periodic surges, and said regulator circuit further including a network connected to the parallel combination of said fan and said capacitor and forming a constant current providing a constant current to said parallel combination.

4,644,253 VOLTAGE REFERENCE SOURCE WITH TRUE GROUND SENSING AND FORCE-SENSE OUTPUTS REFERRED THERE TO

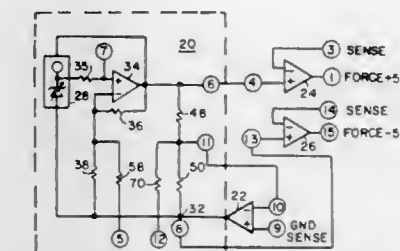
Robert J. Libert, Rowley, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Feb. 13, 1986, Ser. No. 829,432

Int. Cl.⁴ G05F 1/10

U.S. Cl. 323—275

5 Claims



1. A reference voltage source for driving a load circuit in which voltages are referred to a ground node, such source comprising:

- a floating reference cell for establishing a stable reference voltage between first and second nodes, the first node being referred to as a floating high output node and the second node being referred to as a floating ground node;
- means for sensing the voltage of the load circuit ground node; and
- means for forcing one of the first and second nodes to substantially the same voltage as the load circuit ground node.

4,644,254 SWITCH CONTROLLER HAVING A REGULATING PATH AND AN AUXILIARY REGULATING PATH PARALLEL THERETO

Hubert Panse, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 22, 1985, Ser. No. 757,443

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1984, 3431613

Int. Cl.⁴ G05F 1/40

U.S. Cl. 323—282

6 Claims

1. A switch controller for regulating a DC output voltage, comprising:

- switching means including a switching transistor feeding a regulating path formed of an inductance and smoothing capacitor;
- a DC potential at the smoothing capacitor being connected to one input of an amplifier means for amplifying a difference between said DC potential and a prescribed reference voltage at another input;
- pulse-width modulator means connected to an output of the

amplifier means having an output connected to control the switching transistor; an auxiliary regulating path connected in parallel to said



regulating path and which has both a low pass filter and a high pass filter; and said auxiliary regulating path having means for effecting a maximum phase rotation of -90° in its phase response.

4,644,255 FREE WHEELING DIODE CONTROL CIRCUIT FOR MOTOR SPEED CONTROL WITH REVERSE VOLTAGE PROTECTION

William P. Freymuth, Tulsa, Okla., assignor to Airborne Electronics, Inc., Plano, Tex.
Continuation of Ser. No. 677,758, Dec. 4, 1984, abandoned. This application Mar. 7, 1986, Ser. No. 838,424
Int. Cl.⁴ G05F 1/44
U.S. Cl. 323—282

5 Claims



1. In an apparatus for controlling the current through a load means having first and second terminals by means of an electronic switch means having first and second terminals, said first switch terminal being in series with said second load terminal across a power supply, the improvement comprising: an electronic circuit means connected to a terminal A which is the high voltage power terminal connected to said first load terminal, a terminal C which is the low voltage power terminal connected to said second switch terminal at ground potential, and a terminal B which is the junction of said second load terminal and said first electronic switch terminal, said electronic circuit means further comprising:

- diode means connected with its cathode to terminal A, and its anode connected to the emitter of an NPN transistor, the collector of said NPN transistor connected to terminal B, and
- the base of said NPN transistor connected to the collector of a PNP transistor; the emitter of said PNP transistor connected to terminal B, the base of said PNP transistor is connected through a first selected resistor to said terminal C whereby when terminal B is at a higher potential than terminal C, said PNP transistor will conduct, causing said NPN transistor to conduct, passing current from terminal B through said NPN transistor means and through said diode to terminal A only if terminal B is at a higher potential than terminal A due to inductive energy stored in the load means.

4,644,256 SYSTEM DRIVEN BY SOLAR ENERGY FOR PUMPING LIQUIDS

Paulo D. Farias; Francisco A. F. Mazzei, both of Porto Alegre; Ubirajara do E. Santo, Sao Paulo, and Paulo Werle, Porto Alegre, all of Brazil, assignors to Icotron S.A. Industria de Componentes Electronicos, Gravatai, Brazil
Filed Jul. 15, 1983, Ser. No. 514,187
Claims priority, application Brazil, Jul. 16, 1982, 8204205
Int. Cl.⁴ G05F 5/00
U.S. Cl. 323—299

3 Claims



1. Process for converting solar energy into electric power for driving an electro-mechanical pump to pump liquid by processing electric power furnished by solar cell exposed to a variable level of solarization, which comprises converting the solar energy into succeeding pulses of constant electric power, the pulses being spaced from one another as a function of the level of solarization.

4,644,257 BAND GAP CIRCUIT

Rolf Böhme, Bad Friedrichshall; Heinz Rinderle, Heilbronn, and Martin Siegle, Weinstadt, all of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Jun. 14, 1984, Ser. No. 620,492
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321556
Int. Cl.⁴ G05F 3/16
U.S. Cl. 323—313

5 Claims



1. A band gap circuit for providing an integral multiplication of an elementary band gap voltage comprising a first transistor, and a first and second resistor, said first transistor having its base connected to one end of said first resistor and to one end of said second resistor, a second transistor which is connected at its base to the collector of said first transistor and to the other end of said second resistor, a third transistor and a

third resistor, said third transistor being connected at its base to the collector of said second transistor and to one end of said third resistor, wherein the emitters of all three transistors are connected to one pole of a supply source and the other end of said first resistor is connected to the other end of said third resistor at a connection point, a fourth transistor connected as emitter follower and whose base is connected to the collector of the third transistor and to a current source, a circuit output provided at the emitter of said fourth transistor, and a series connection connected between the emitter of said fourth transistor and the connection point of said first and third resistors, said series connection comprising at least one resistor and at least one diode.

4,644,258 ELECTRONIC SWITCH

Giancarlo Vettari, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Apr. 22, 1985, Ser. No. 725,669
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1984, 3416046
Int. Cl.⁴ G05F 1/455; G08B 5/00
U.S. Cl. 323—324

2 Claims



1. In an electronic switch, especially including a triac with CSE (carrier storage effect) wiring and having a load connected in series with the triac to an a-c voltage network, a switch position indicator and a control circuit for the electronic switch, a rectifier bridge circuit having a-c and d-c terminals, the a-c terminals connected in the control circuit, the d-c terminals of the bridge circuit having a light emitting diode connected in the forward conducting direction therebetween, said electronic switch being placed in a conductive condition when voltage on the a-c voltage network is conducted to a control input of the electronic switch by the control circuit, said voltage on the a-c voltage network further being conducted through said light emitting diode in order to place the electronic switch into a conductive condition.

4,644,259 NONDESTRUCTIVE TESTING OF MULTILAYER CERAMIC CAPACITORS

Otmar H. Boser, Scarsdale, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed Oct. 31, 1984, Ser. No. 666,804
Int. Cl.⁴ G01R 31/02
U.S. Cl. 324—51

2 Claims

1. A method for non-destructive testing of multilayer ceramic capacitors exhibiting piezoelectric effects only during poling by a bias voltage to determine the presence of delamination of the layers and non-visible cracks in said capacitors comprising the steps of:

- determining the resonance frequency and the impedance at resonance for a specific size and type of capacitor;
- inserting sequentially a number of capacitors of said specific type and size in an impedance bridge;
- applying a bias voltage to each of said capacitors sequentially, said voltage being between 1 and 2.5 times the rated voltage of said capacitors;

measuring sequentially the impedance of each of said capacitors as a function of frequency;



comparing said impedances to an expected impedance, such that capacitors having shifts to lower than expected impedance values at resonance frequencies are rejected as defective.

4,644,260 COUPLER WITH COUPLED LINE USED TO CANCEL FINITE DIRECTIVITY

Philip C. Warder, Ft. Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1985, Ser. No. 762,185
Int. Cl.⁴ H03H 7/38; G01R 27/04
U.S. Cl. 324—58 B

4 Claims



1. A method for reducing an undesired signal's magnitude at a coupled port of a directional coupler, said undesired signal resulting from finite directivity associated with said directional coupler, said method comprising the steps of:

- providing a directional coupler having a main line and a coupled line, wherein said coupled line has a first port and a second port;
- operably connecting an error correcting impedance to said first port of said coupled line;
- selectively varying said error correcting impedance to cause a mismatch between coupled line impedance and said error correcting impedance at said first port to thereby cause a reflection of voltage to appear at said second port that is substantially equal in magnitude and opposite in polarity to an undesired signal that appears at said second port due to finite directivity associated with said directional coupler, such that said reflection of voltage and said undesired signal substantially cancel one another at said second port.

4,644,261 METHOD OF DETERMINING CYLINDRICITY AND SQUARENESS

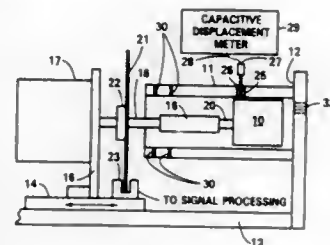
Donald L. Carter, 2316 Donna Dr., Vestal, N.Y. 13850
Filed Feb. 28, 1985, Ser. No. 706,878
Int. Cl.⁴ G01R 27/26
U.S. Cl. 324—61 R

8 Claims

1. The method of determining cylindricity of a conductive rotating member comprising the steps of:

- rotating said member at a desired velocity relative to a conductive mating bearing element with said member supported on a stable axis of rotation by a fluid film between said member and said element;
- mounting transducer means in said bearing element adjacent

to the surface of said member for issuing a signal representing the distance between said transducer means and said surface as it moves; and



sensing said transducer signal at successive increments of rotary displacement of said member to determine the magnitude of said distance at various positions of said member.

4,644,262

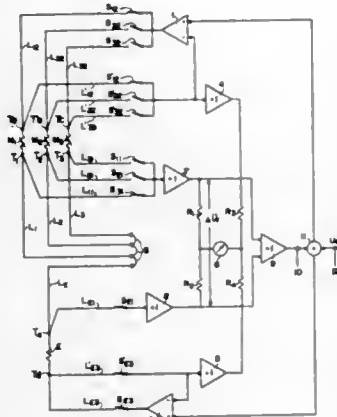
ELECTRICAL MULTI-POSITION MEASURING DEVICE
Manfred Kreuzer, Weiterstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Continuation-in-part of Ser. No. 540,031, Oct. 7, 1983, abandoned. This application Feb. 14, 1986, Ser. No. 829,850
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1982, 3238482

Int. Cl.⁴ G01R 27/02

U.S. Cl. 324—62

4 Claims



1. An electrical bridge circuit arrangement for multi-position measuring, comprising supply voltage means (1, 2), measuring bridge branches, and an auxiliary half bridge (R₃, R₄), individual measuring means in a respective measuring bridge branch of said measuring bridge branches, said individual measuring means including measuring resistances (M₁; M₂; M₃) each arranged in a respective measuring bridge branch, and a standard resistance (E) arranged in common to all measuring branches, first switching means (S₁₂, . . . S_{E3}) for selectively connecting said individual measuring resistances to said supply voltage means (1, 2), a first voltage tap (Ta, Tb, Tc) provided between measuring resistance and said supply voltage means, first switching means (S₁₂, . . . S_{E3}) between the respective measuring resistance (M₁; M₂; M₃) and said voltage supply means, a second voltage tap (Td) between said standard resistance (E) and a respective supply voltage conductor (L_{E3}), closed loop control means operatively connected to said first and second voltage taps (Ta, Tb, Tc, and Td), said closed loop control means comprising a voltage summing circuit (9, 11), reference voltage supply means (12) connected to one input of said voltage summing circuit for supplying a reference voltage value (U_{REF}) to said one input of said voltage summing circuit, said

voltage summing circuit providing a voltage sum to said supply voltage means (1, 2) for readjustment of said supply voltage means (1, 2), said bridge circuit arrangement further comprising third voltage taps (T₁, T₂, T₃) between said measuring resistances (M₁, M₂, and M₃) and respective conductors (L₁, L₂, and L₃) connecting said measuring resistances (M₁, M₂, M₃) to said standard resistance (E), and a fourth voltage tap (T₄) between said standard resistance (E) and a connecting conductor (L_E) connecting said measuring resistances (M₁, M₂, M₃) to said standard resistance (E), voltage follower means (7, 8) connected to said third and fourth voltage taps (T₁, T₂, T₃, and T₄) for measuring a voltage drop (ΔU₁) appearing across outputs of said follower means, means connecting said voltage drop (ΔU₁) to other input means of said voltage summing circuit (9, 11), whereby one half of said voltage drop (ΔU₁) is supplied to the respective measuring bridge branch of the bridge circuit arrangement and the other half of said voltage drop (ΔU₁) is supplied to the standard resistance in said auxiliary half bridge branch, said voltage summing circuit (9, 11) being connected between said voltage follower means (7, 8) and said reference voltage supply means for increasing the bridge supply voltage by said voltage drop (ΔU₁).

4,644,263

METHOD AND APPARATUS FOR MEASURING WATER IN CRUDE OIL

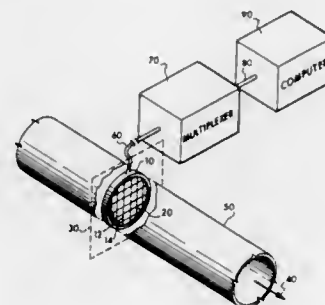
Irvin D. Johnson, Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 13, 1984, Ser. No. 681,178

Int. Cl.⁴ G01N 27/07

U.S. Cl. 324—65 P

20 Claims



1. A method for measuring the percentage of fluids in a two-fluid mixture flowing in a conduit, wherein the two fluids have different electrical conductivities, said method comprising the steps of:

in a given predetermined time period, measuring the instantaneous conductivity of the fluid located between a pair of electrical points spaced a predetermined distance apart at each one of a plurality of nodes arranged in a grid, each of said nodes being comprised of said pair of electrical points, said grid being located in a plane oriented at a substantially vertical angle to the flow of said two-fluid mixture in said conduit, repeating the aforesaid step of each successive predetermined period of time, and statistically determining the percentage of each fluid in said mixture over said successive periods of time.

4,644,264

PHOTON ASSISTED TUNNELING TESTING OF PASSIVATED INTEGRATED CIRCUITS

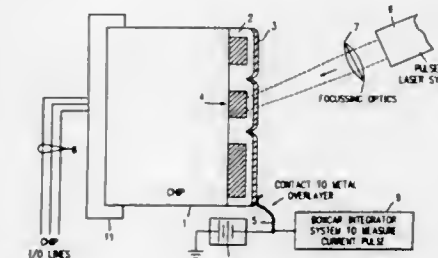
Johannes G. Beha, Wädenswil, Switzerland; Russell W. Dreyfus, Mt. Kisco; Allan M. Hartstein, Chappaqua, and Gary W. Rubloff, Katonah, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,409

Int. Cl.⁴ G01R 15/12, 31/22, 31/26

U.S. Cl. 324—73 R

1 Claim



1. A testing method for dynamic testing of an integrated circuit chip-to-test after passivation, said chip-to-test having a number of circuits and input/output connections, having a plurality of test points connected to the circuits, having a passivation layer and having a conductive overlayer covering the test points comprising the following steps:

- placing the chip-to-test in a mounting having electrical connections complementary to the input/output connections of the chip-to-test, and supporting the chip-to-test for accessibility by laser photons from a pulsed laser accessing means to the plurality of test points, one of which may be designated as a selected test point;
- connecting input/output exercise means to the chip-to-test, so as to exercise the circuits on the chip-to-test in a predetermined pattern, to cause electronic activity in the chip-to-test, appropriate to the desired test, so as to provide at a selected test point a voltage potential related to circuit exercise, whereby said selected test point accessed by said pulsed laser accessing means provides via photon assisted tunneling through the passivating layer to the conductive layer differing values of electron currents as a function of voltage potential differences at said selected test point;
- operating pulsed laser accessing means so as to excite photoemission from said selected test point, which photoemission occurs as electron currents at values related to instantaneous voltages at the said selected test point; and
- connecting current measurement means to the thin conductive overlayer of the chip-to-test, for taking readings of the photoemission which is a composite function of laser light excitation and of the voltage of the test points, via the passivation layers, to the conductive overlayer.

4,644,265

NOISE REDUCTION DURING TESTING OF INTEGRATED CIRCUIT CHIPS

Evan E. Davidson, Hopewell Junction, and David A. Kiesling, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,928

Int. Cl.⁴ G01R 15/12, 31/28

U.S. Cl. 324—73 R

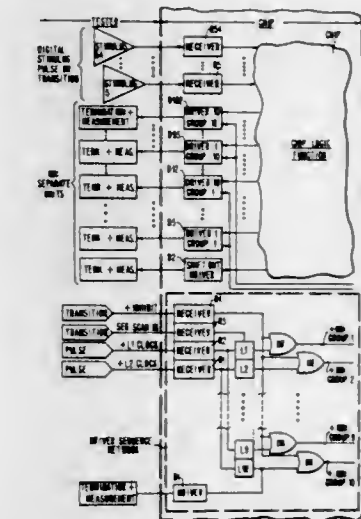
7 Claims

1. An integrated circuit chip for performing a logical function, said integrated circuit chip including:

- a plurality of chip input terminals for receiving a binary input;
- a plurality of chip output terminals for providing a binary output;
- a plurality of off-chip driver circuits, each of said off-chip driver circuits having a first input, an inhibit input and an

output, said outputs of said plurality off-chip driver circuits connected to said plurality of chip output terminals, each of said off-chip driver circuits capable of assuming a first binary state, a second binary state or a switching inhibited state;

logical circuit means connected between said plurality of chip input terminals and said first inputs of said plurality of off-chip driver circuits, said logical circuit means receiving said binary input from said chip input terminals and providing to said first inputs of said off-chip driver circuits a binary input which is a predetermined logical function of said binary input to said plurality of chip input terminals;



said integrated circuit chip being characterized by the inclusion of a driver sequencing network for aiding in the testing of the integrated circuit chip, said driver sequencing network coupled to said inhibit inputs of said plurality of off-chip drivers, said driver sequencing network including shift register circuit means for receiving binary bit patterns from a tester, said binary bit patterns contained in said shift register circuit means controlling the switching inhibited state of said plurality of OFF chip drivers whereby delta I noise caused by driver switching during testing is reduced under tester control by said driver sequencing network.

4,644,266

METHOD AND APPARATUS FOR RECOGNIZING MALFUNCTION IN A HEATER OPERATED WITH LIQUID FUEL

Fritz Reuter, Esslingen, Fed. Rep. of Germany, assignor to J. Eberspachge, Fed. Rep. of Germany

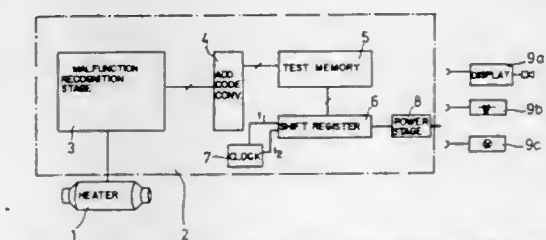
Filed Jun. 21, 1985, Ser. No. 747,668

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1985, 3423466

Int. Cl.⁴ G01R 31/28; F23N 5/24

U.S. Cl. 324—73 R

4 Claims



1. A method for recognizing each of a plurality of possible

malfunctions in a heater operated with heating fuel using a control unit connected to the heater for controlling the operating cycles of the heater, a display for indicating the operating state of the heater, sensing means for comparing a desired electrical voltage to an actual electrical voltage for each type of malfunction, and polling means for sequentially and successively determining the results of the comparison for each type of function to produce signals indicative of the occurrence or non-occurrence of each type of malfunction, comprising supplying the signals to a coder which produces a different input code for each signal, supplying each input code to a read-only memory which converts each input code to a selected output code, supplying each output code to a shift register, operating the shift register using transfer clock pulses to read through each output code of the read-only memory corresponding to each input code of the coder, the shift register producing successive shift register outputs for each output code of the read-only memory, amplifying each successive shift register output and applying each amplified shift register output to the display for producing a perceivable display corresponding to each signal of the polling means whereby an observer may learn which of the possible malfunctions has occurred.

4,644,267

SIGNAL ANALYSIS RECEIVER WITH ACOUSTO-OPTIC DELAY LINES

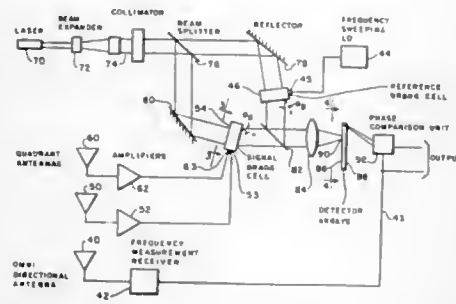
James B. Y. Tsui, Centerville, and Robert L. Davis, Englewood, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 10, 1985, Ser. No. 742,825

Int. Cl.⁴ G01R 23/16

U.S. Cl. 324—77 K

1 Claim



1. An apparatus for measuring the angle of arrival of a signal in a system having at least two quadrant antenna elements which receive the signal with a phase difference which is a function of the angle of arrival, and a frequency measurement receiver with antenna means for cueing the frequency of the signal to a phase comparison unit, comprising:

- a signal cell which is an acousto-optical device having two transducers at one end coupled respectively to said two quadrant antenna elements for launching two parallel acoustic waves in said signal cell in response to a received signal;
- a reference cell which is an acousto-optical device having a transducer at one end, a frequency sweeping local oscillator producing a reference signal coupled to said transducer of the reference cell for launching an acoustic wave in said reference cell;
- a source of coherent light, means for splitting light from said source into two beams and directing them respectively into the signal cell and the reference cell, diffracted light beams being provided in response to interaction of the light beams with the acoustic waves, the diffracted light beams being modulated in accordance with the frequency and phase of the respective signals, the diffracted light from the signal cell having two components modulated with the same frequency and different phases of the received signal at the quadrant antenna elements, the dif-

fracted light from the reference cell being modulated with the frequency sweeping of the reference signal; photo detector means having two adjacent one-dimensional arrays of detector elements, each array having an output line coupled to said phase comparison unit; means for combining the light beams from the signal cell and the reference cell and focusing them onto said photo detector means, the two components from the signal cell being heterodyned respectively in the two arrays with the beam from the reference cell to produce IF signals in a pair of detector elements, one in each array, for use in measuring the phase difference in the phase comparison unit to determine the angle of arrival of said signal.

4,644,268

APPARATUS AND METHOD FOR DETERMINING THE MAGNITUDE AND PHASE OF THE FUNDAMENTAL COMPONENT OF A COMPLEX WAVESHAPE

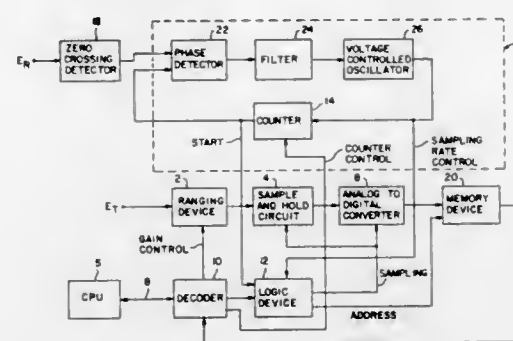
Jacob H. Malka, Fair Lawn, and Joseph P. Hartmann, Ridge-wood, both of N.J., assignors to Allied-Signal Corporation, Morris Township, Morris County, N.J.

Filed Apr. 8, 1985, Ser. No. 721,101

Int. Cl.⁴ G01R 25/00

U.S. Cl. 324—83 R

11 Claims



1. Apparatus for determining the magnitude and phase of the fundamental component of a complex waveshape signal relative to a reference signal, characterized by:

- processing means for providing a plurality of commands;
- means for adjusting the gain of the complex waveshape signal so that the said signal has a peak amplitude within a predetermined range;
- means for decoding the plurality of commands and for providing a corresponding plurality of signals, and the gain adjusting means being connected to the decoding means and controlled by a first of the plurality of signals therefrom for adjusting the gain of the complex waveshape signal;
- means for sampling and holding the gain adjusted complex waveshape signal, whereby a predetermined number of samples are taken over a measurement cycle of said signal;
- means for digitizing said samples to provide digital data;
- means for establishing a timing relationship between the reference signal and the digital data;
- means for storing the digital data; and
- means for reading out the stored digital data and for determining the magnitude and phase of the fundamental component of the complex waveshape signal relative to the reference signal from said read-out data and in accordance with said timing relationship, including the decoding means connected to the storing means for decoding the digital data stored thereby, and the processing means reading out the decoded digital data and determining the Fourier coefficients of the complex waveshape signal therefrom, and determining the magnitude and phase of the fundamental component from said coefficients.

4,644,269 TEST FIXTURE HAVING FULL SURFACE CONTACT HINGED LID

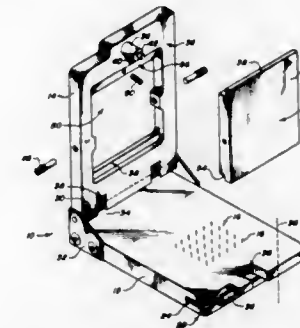
Willis E. Golder, Holliston; Joseph A. Ierardi, Norwood, and Carl Beety, Jr., North Attleboro, all of Mass., assignors to Pylon Company, North Attleboro, Mass.

Filed May 31, 1983, Ser. No. 499,279

Int. Cl.⁴ G01R 31/02

U.S. Cl. 324—158 F

4 Claims



1. An automatic test fixture, comprising: a test bed for receiving an electronic circuit device to be tested;
- a generally planar cover panel defining a first planar surface and having four side portions cooperative to define an opening formed centrally therethrough;
- means for pivotally mounting said generally planar cover panel to said test bed about a first axis defined along confronting ends thereof;
- a generally planar cover panel-inset defining a second planar surface and dimensioned to be at least partially received in said opening of said cover panel; first means connected to said cover panel and to said cover panel-inset for mounting said cover panel-inset for rotary motion about a second axis different from and generally parallel to said first axis that is defined in said opening of said cover panel;
- second means cooperative with said first means for angularly limiting the rotary motion of said cover panel-inset between a first preselected rotary position selected such that the normal to said first planar surface defines a preselected non-zero acute angle with the normal to said second planar surface, and a second preselected rotary position selected such that the normals are generally parallel;
- said second means includes first and second flanges provided on opposite ends of said cover panel-inset that are cooperative with confronting shoulders provided on opposite side portions defining said opening provided in said cover panel to define said first and said second preselected rotary positions.

4,644,270

APPARATUS FOR MONITORING HOUSED TURBINE BLADING TO OBTAIN BLADING-TO-HOUSING DISTANCE

Robert M. Oates, Murrysville; Carlo F. Petronio, Ross Township, and Mark G. Kraus, Churchill Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 413,638, Aug. 31, 1982, Pat. No. 4,518,917.

This application Mar. 6, 1985, Ser. No. 709,241

Int. Cl.⁴ G01B 7/14; G01H 11/00; G01R 19/04

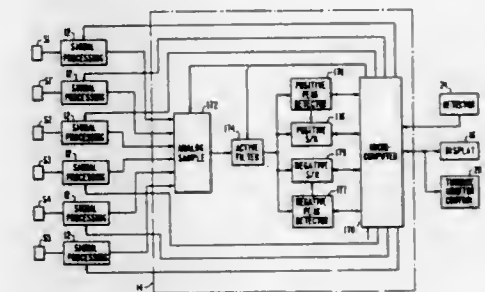
U.S. Cl. 324—207

5 Claims

1. Apparatus for measuring the distance between a blade in a rotating row of blades and a reference position comprising: (A) sensor means located at said reference position and operable to provide an output signal indicative of blade proximity;
- (B) said output signal including positive and negative peak

portions as a result of the passage of said blade past said sensor;

(C) means responsive to said output signal for obtaining an indication of the positive to negative peak-to-peak value of said output signal;



(D) means responsive to said indication for obtaining a signal indicative of said peak-to-peak value; and

(E) means responsive to said signal indicative of said peak-to-peak value for providing an indication of said distance.

4,644,271

METHOD AND APPARATUS FOR EXAMINING A WORKPIECE

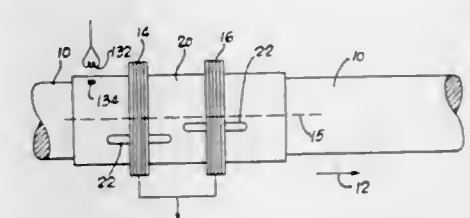
James M. Toth, Lyndhurst, and Richard M. Harris, North Royalton, both of Ohio, assignors to LTV Steel Company, Inc., Cleveland, Ohio

Filed Feb. 25, 1985, Ser. No. 705,149

Int. Cl.⁴ G01N 27/82

U.S. Cl. 324—238

17 Claims



1. Apparatus for testing a metallic workpiece comprising: a test coil mounted in proximity to a workpiece and coupled to means for cyclically energizing said coil;
- field modifying means comprising an electrically conductive sleeve defining at least one aperture for selectively modifying a magnetic field created by said coil;
- means coupled to said coil for creating a shape indicating signal related to a distance between an outer workpiece surface and said coil as said magnetic field is modified, and means coordinated with said field modifying means for scaling the shape signal to provide an indicating signal which varies with changes in workpiece shape.

4,644,272

HOT ANNEALED WELD INSPECTION

Wilbert J. Janos, North Ridgeville, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Jul. 31, 1984, Ser. No. 636,301

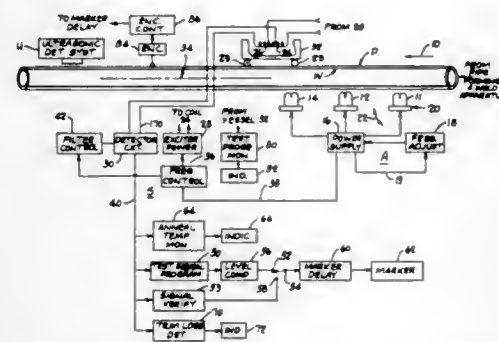
Int. Cl.⁴ G01N 27/82

U.S. Cl. 324—240

38 Claims

1. A weld flaw detection system for use in connection with welded workpiece manufacturing apparatus incorporating circuitry and apparatus for induction annealing of welds by the production of strong alternating electromagnetic annealing fields in a region of the weld, said flaw detection system comprising:

- (a) exciter circuitry capable of generating alternating test eddy currents in a workpiece at a carrier frequency;
 (b) detection circuitry including a demodulator for detecting variation in eddy currents to produce a flaw signal modulated on the carrier frequency indicating presence of a workpiece weld defect;



- (c) control circuitry for varying the frequency of the induction annealing electromagnetic field, and
 (d) regulation circuitry for adjusting the alternating carrier frequency of said test eddy currents as a function of the induction annealing field frequency.

4,644,273

FIVE-AXIS OPTICAL FIBER GRADIOMETER

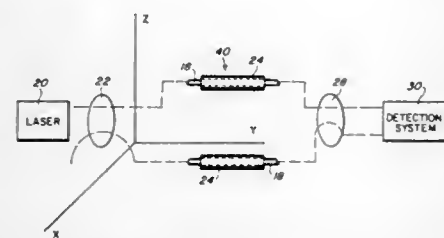
Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1985, Ser. No. 750,970

Int. Cl.⁴ G01R 33/02

U.S. Cl. 324-244

4 Claims



1. A five-axis magnetic field gradiometer, comprising:
 a single-frequency laser;
 a first plurality of three interferometers, each of said first plurality including two single-mode optical fibers operatively connected to receive light from said laser and a first pair of magnetostrictive elements, each element connected to respective ones of said fibers for changing the length of said fibers in accordance with their respective magnetic field components, each of said first pairs positioned in a different plane mutually perpendicular to the other planes and the elements of each of said first pairs spaced apart a predetermined distance and positioned parallel to each other and to one of the planes and equidistant from the other plane;
 a second plurality of two interferometers, each of said second plurality including two single-mode optical fibers that are operatively connected to receive light from said laser and a second pair of magnetostrictive elements, each element connected to respective ones of said fibers for changing the length of said fibers in accordance with their respective magnetic field components, the elements of each of said second pairs positioned collinearly and spaced apart a predetermined distance and each of said second pairs positioned parallel to respective pairs of planes;
 first converter means operatively connected to said first and

second pluralities for converting the light output from said pluralities to electrical signals indicative thereof; and
 second converter means connected to receive the electrical signals and convert the signals to magnetic field gradient component values.

4,644,274

APPARATUS FOR SUPPORTING AN EDDY CURRENT PROBE USED TO SCAN AN IRREGULAR SURFACE

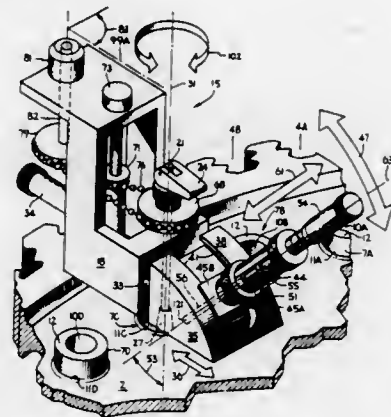
Dominick A. Casarcia, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 1, 1983, Ser. No. 481,138

Int. Cl.⁴ G01N 27/90; F16H 29/00

U.S. Cl. 324-262

2 Claims



1. Apparatus for scanning the surface of a bolt hole boss in a gas turbine engine rotor, using an eddy current probe, comprising:

- (a) support means fastened to, and rotatable about, the boss for carrying the eddy current probe along a predetermined arc, having
 (i) a pin for insertion into the bolt hole for providing a center of rotation of the support,
 (ii) a bracket
 (A) for positioning the eddy current probe generally coplanar with the pin and at a selectable angle with respect to the pin and
 (B) including means for advancing the eddy current probe into contact with the surface of the boss and then retracting the probe a predetermined distance from the surface, and
 (iii) an arm for positioning the bracket of (a)(ii) at a selectable distance from the pin,
 (b) motive means for rotating the support means of (a) at a substantially constant speed about the center of rotation of (a)(i), and
 (c) limiting means for establishing the length of the arc of (a).

4,644,275

NUCLEAR MAGNETIC RESONANCE APPARATUS

Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Middlesex, England

Filed Jan. 15, 1985, Ser. No. 691,669

Claims priority, application United Kingdom, Jan. 20, 1984, 8401550

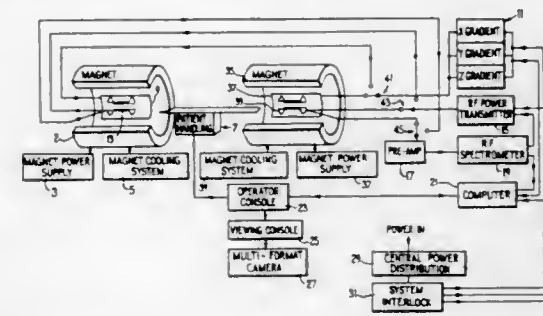
Int. Cl.⁴ G01R 33/20

U.S. Cl. 324-307

8 Claims

1. A nuclear magnetic resonance apparatus including at least two systems, each capable of independently providing a homogeneous magnetic field capable of defining an equilibrium axis of magnetic alignment for nuclei within a body to be examined by nuclear magnetic resonance techniques throughout the examination procedure, the strengths of the magnetic fields

produced by the systems in operation being different; and control means for operating the apparatus to examine a body



using either one of the magnet systems without the other to define a said equilibrium axis within the body.

4,644,276

THREE-DIMENSIONAL NUCLEAR MAGNETIC RESONANCE PHANTOM

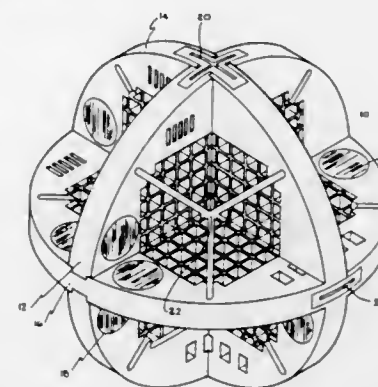
Thomas J. Sierocuk, Waukesha, and Robert W. Newman, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 17, 1984, Ser. No. 650,956

Int. Cl.⁴ G01R 33/24

U.S. Cl. 324-307

17 Claims



1. A phantom for testing the performance of an NMR scanner having the capability of acquiring NMR data from nuclei situated in a plurality of planes within a test object, said phantom comprising:

at least first and second test-plate means each including means for testing at least one performance parameter of the NMR scanner, said test-plate means lying in first and second planes and being arranged relative to one another so as to have at least a common center point positionable in use at the isocenter of the NMR scanner to enable NMR scanner performance tests to be performed in each of the planes containing said test plates without repositioning the phantom.

4,644,277

NMR TOMOGRAPHY APPARATUS

Dietmar Kunz, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1985, Ser. No. 689,543

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1984, 3400861

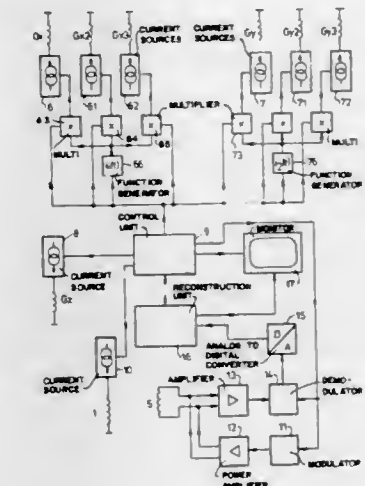
Int. Cl.⁴ G01R 33/20

U.S. Cl. 324-309

6 Claims

1. An NMR tomography apparatus comprising means for generating a homogeneous, steady, main magnetic field in an

examination space, three gradient coil systems, first means for supplying a time varying current to each of said gradient coil system so that said gradient coil systems generate, in the examination space, additional magnetic fields which extend in the direction of the main, steady magnetic field and which vary linearly in space in three mutually perpendicular directions, means for generating, in the examination space, an RF magnetic field perpendicularly to the direction of the steady, main



field, at least one further coil system for generating, in the examination space, a further magnetic field which also extends in the direction of the main field and which varies non-linearly in space, and second means for supplying to the further coil system a current, i , which satisfies the condition:

$$i = ai_1 + bi_2 + ci_3$$

wherein a , b and c are constants and i_1 , i_2 , i_3 are the currents supplied to the three gradient coil systems.

4,644,278

NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS

Koichi Sano, Yokohama; Tetsuo Yokoyama, Tokyo; Shimbu Yamagata, and Koichi Haruna, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

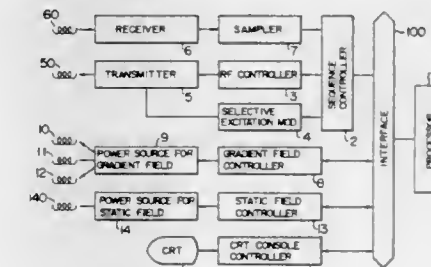
Filed Jan. 25, 1985, Ser. No. 694,743

Claims priority, application Japan, Jan. 27, 1984, 59-13111

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324-309

10 Claims



1. A nuclear magnetic resonance (NMR) imaging apparatus comprising:

first imaging means for imaging a cross section of an object to be inspected according to a first imaging method of magnetic resonance integrated with a measurement operation and for reconstructing an image of said cross section;

means for selecting a region of interest in the image of the cross section reconstructed by said first imaging means; coil means for establishing a gradient magnetic field; gradient magnetic field control means for controlling a gradient of the magnetic field to be larger at the selected region of interest than that at the other regions; and second imaging means for imaging the cross section of the object including said selected region of interest according to a second imaging method of a different class of imaging than that of the first imaging method when the gradient of the magnetic field is controlled by said gradient magnetic field control means and reconstructing an image thus obtained.

4,644,279

DIAGNOSTIC APPARATUS EMPLOYING NUCLEAR MAGNETIC RESONANCE

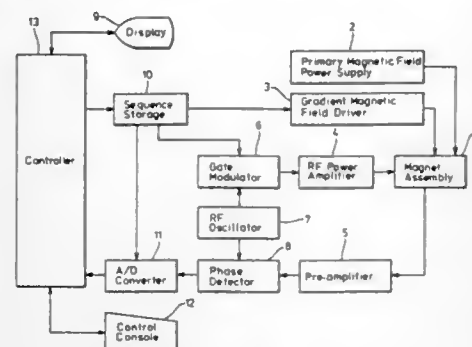
Kazuya Hoshino, Noriaki Yamada, Eiji Yoshitome, Tadashi Sugiyama, and Hiroyuki Matsuura, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation and Yokogawa Medical Systems, Ltd., both of Tokyo, Japan

Filed Mar. 29, 1985, Ser. No. 717,523

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—309

5 Claims



1. An NMR diagnostic apparatus comprising means for applying a primary magnetic field to a subject; means for applying RF pulses to the subject to give nuclear magnetic resonance to the nuclei of atoms in the subject; means for applying gradient magnetic fields to project an NMR signal of the nuclei at least in one direction; means for observing the NMR signal projected by said gradient magnetic fields applying means; and arithmetic means for constructing a distribution of information on resonance energy as an image from an output signal from said observing means; wherein said gradient magnetic fields applying means comprises means for applying the gradient magnetic fields at a predetermined time and for not applying the gradient magnetic fields at another predetermined time, during the time period of one view; and wherein said gradient magnetic fields applying means further comprises means for measuring the NMR signal during said predetermined time when said gradient magnetic fields are applied, and means for measuring the intensity of said primary magnetic field during said other predetermined time when no gradient magnetic fields are applied.

4,644,280

MAGNETIC RESONANCE IMAGE ZOOMING

Zvi Paltiel, Rehovot, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Sep. 20, 1984, Ser. No. 652,462

Int. Cl.⁴ G01R 33/20

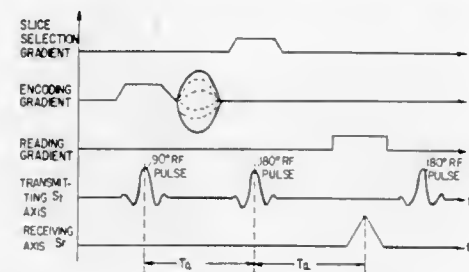
U.S. Cl. 324—309

23 Claims

1. An improved magnetic resonant imaging (MRI) method

using a pseudo spin-echo technique, said method comprising the steps of:

- applying a large static magnetic field to a subject to align the spins in said (object) subject;
- nutating the aligned spins in a first slice with 90 degree RF pulses applied during the applications of first gradient pulses;
- applying encoding gradient pulses subsequent to the application of the 90 degree RF pulses;
- controllably dephasing said nutated aligned spins;



- rephasing at least certain of the dephased nutated aligned spins in a second slice with 180 degree RF pulses applied during the application of second gradient pulses orthogonal to said first gradient pulses at times T_0 after the application of the 90 degree RF pulses; and
- applying read gradient pulses orthogonal to both said first and said second gradients at times T_0 after the application of the 180 degree RF pulses to enable receipt of location determined echo signals from rephased ones of said dephased nutated spins whereby images are obtained from said signals in desired sections of the subject that are smaller than the subject size.

4,644,281

COIL ARRANGEMENT FOR PRODUCING A HOMOGENEOUS MAGNETIC FIELD

Matti Savolainen, Espoo, Finland, assignor to Instrumentation Corp., Finland

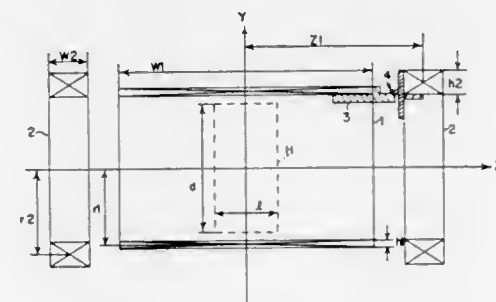
Filed May 14, 1984, Ser. No. 609,635

Claims priority, application Finland, May 20, 1983, 831817

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—320

5 Claims



1. A coil arrangement for producing a homogeneous magnetic field especially for application to the so called NMR (nuclear magnetic resonance)-imaging, characterized in, that the coil arrangement includes three solenoids having a common axis, of which the axial winding width (W_1) of the middlemost solenoid (1) is 2.75 . . . 2.95 times the mean winding radius (r_1) of the middlemost solenoid (1), and the mean winding radius (r_2) of the outermost solenoids (2) is 1.05 . . . 1.07 times the mean winding radius (r_1) of the middlemost solenoid (1) and the axial winding width (W_2) thereof is 0.32 . . . 0.38 times the mean winding radius (r_1) of the middlemost solenoid (1),

that additionally the distance (Z_1) from the center point of the outermost solenoids (2) to the center point of the middlemost solenoid (1) is 1.80 . . . 1.95 times the mean winding radius (r_1) of the middlemost solenoid (1) and that the electric current density of the middlemost solenoid (1) per unit length in the direction of the axial winding width is 0.250 . . . 0.275 times the electric current density of the outermost solenoids (2) in a corresponding manner.

4,644,282

APPARATUS FOR THE FORMATION OF IMAGES OF AN EXAMINATION SUBJECT WITH NUCLEAR MAGNETIC RESONANCE

Joachim Kestler, Pretzfeld, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

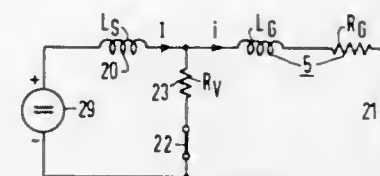
Filed May 23, 1984, Ser. No. 613,355

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3335286

Int. Cl.⁴ G01R 33/20; H03K 3/53

U.S. Cl. 324—322

2 Claims



1. In an apparatus for forming images of an examination subject by nuclear magnetic resonance having means for generating a fundamental magnetic field and means including at least one gradient coil for generating a linear magnetic field gradient in which said examination subject is disposed, means for applying a high frequency magnetic excitation pulse to the examination subject, and means for detecting deflection of the atomic nuclei of the examination subject from their equilibrium state as a result of said high frequency magnetic excitation pulse, the improvement comprising:

- a dc current source having first and second poles;
- an additional inductance having a first lead connected to said first pole of said current source;
- a first switch connected in series with said gradient coil forming a series circuit, said series circuit being connected between a second lead of said additional inductance and said second pole of said current source; and
- a second switch connected in parallel with said series circuit, said second switch being opened substantially simultaneously with the closing of said first switch for initiating rapid current increase in said gradient coil.

4,644,283

IN-SITU METHOD FOR DETERMINING PORE SIZE DISTRIBUTION, CAPILLARY PRESSURE AND PERMEABILITY

Harold J. Vinegar, and Monroe H. Waxman, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 19, 1984, Ser. No. 591,140

Int. Cl.⁴ E21B 49/02; G01V 3/02

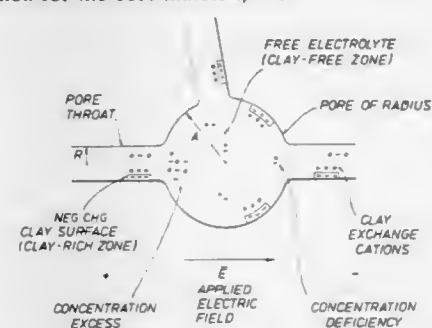
U.S. Cl. 324—376

3 Claims

1. A method for determining the pore sizes entered by the oil phase in an oil-bearing formation, comprising: logging the formation of interest with an induced polarization logging tool having at least one source electrode; computing from the induced polarization measurements obtained by said logging tool a normalized induced polarization response function;

obtaining core material from the formation of interest;

extracting the water and hydrocarbons from the core material; resaturating the core material with formation brine; measuring the normalized induced polarization response function for the core material; and



determining the pore sizes containing oil in the formation by comparing the normalized induced polarization response function from the formation with the normalized induced polarization response function of the core.

4,644,284

DISTRIBUTORLESS IGNITION SYSTEM INTERFACE FOR ENGINE DIAGNOSTIC TESTERS

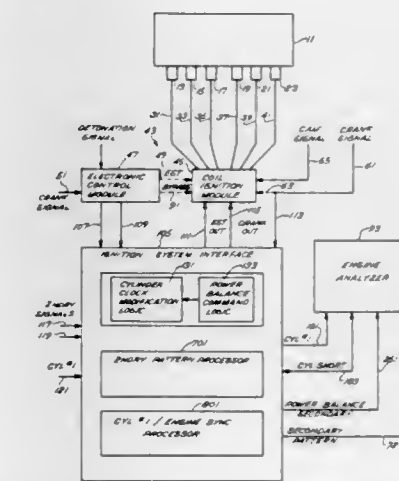
James G. Friedline, 2606 Sexton, Howell, Mich. 48843, and Leo G. Rich, 53233 Woodbridge, Rochester, both of Mich. 48063

Filed Dec. 26, 1984, Ser. No. 686,203

Int. Cl.⁴ G01L 3/26

U.S. Cl. 324—397

19 Claims



1. For use with a test engine analyzer to analyze a computer controlled automotive engine having an electronic control module which develops timing signals to a coil ignition module which fires the spark plugs of the engine, the timing signals carrying dwell information, an interface, comprising:

- input means for receiving timing signals from the electronic control module;
- output means for transmitting timing signals to the coil ignition module;
- cylinder clock modification circuitry for receiving said timing signals from said input means and for passing timing signals to said output means, said cylinder clock modification circuitry generating a modified timing signal in response to an inhibit command signal for transmission to said coil ignition module, said modified timing signal carrying dwell information of a dwell period insufficient to fire a spark plug; and

power balance command circuitry for receiving a cylinder inhibit command from said engine analyzer and responsively generating a said inhibit command signal, whereby a cylinder of the engine is inhibited from firing.

4,644,285

METHOD AND APPARATUS FOR DIRECT MEASUREMENT OF CURRENT DENSITY

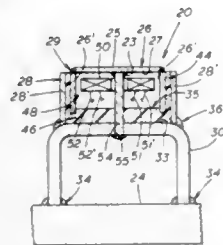
James N. Britton, Houston, Tex., assignor to Wayne Graham & Associates International, Inc., Houston, Tex.

Filed Oct. 9, 1984, Ser. No. 658,612

Int. Cl.⁴ G01N 27/42

U.S. Cl. 324-425

57 Claims



1. Apparatus for directly measuring current density at the surface of a metal structure in contact with a surrounding electrolytic medium and protected by a cathodic protection system, comprising:

- sample cathode means constructed of a like material as the metal structure and having a predetermined surface area exposed to the electrolytic medium and located adjacent the surface of the metal structure;
- connecting means that is substantially IR free for completing a direct electrical path between said sample cathode means exposed surface and the metal structure;
- housing means cooperating with at least said connecting means for forming a chamber sealed and insulated from the surrounding electrolytic medium and disposed between said sample cathode means and the metal structure with at least a portion of said connecting means passing through said sealed chamber; and
- current sensing means disposed within said sealed chamber and cooperating with at least a portion of said connection means passing therethrough for detecting the magnetic flux field associated with the current flow through said sample cathode means and said connecting means impressed by the cathodic protection system, said current sensing means generating an output voltage signal directly proportional to the detected current flow through said sample cathode means.

4,644,286

ARTICLE SURVEILLANCE SYSTEM RECEIVER USING SYNCHRONOUS DEMODULATION AND SIGNAL INTEGRATION

John J. Torre, Monroe, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 17, 1985, Ser. No. 777,060

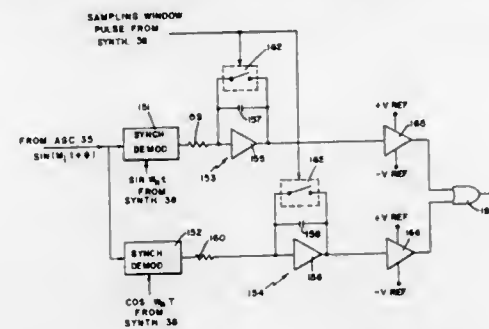
Int. Cl.⁴ G08B 13/24; H03D 13/00

U.S. Cl. 329-50

22 Claims

1. Apparatus for detecting a pulse wave having a predetermined carrier frequency, variable unpredictable phase and predetermined time position, said wave being derived in the possible presence of background energy having the same frequency as the wave, the background energy subsisting at the predetermined frequency for an interval much less than the duration of pulses of the wave carrier frequency, the apparatus comprising means for generating a reference wave having a reference phase at the carrier frequency, and means for synchronously detecting first and second orthogonal components of the carrier frequency to derive first and second responses respectively indicative of the phases of the first and second

orthogonal components relative to said reference wave, said responses being independent of the amplitude of the carrier frequency components in the pulse wave, means synchronized into operation with the occurrence time of each pulsed wave for separately integrating the first and second responses over a



predetermined interval, and means for indicating the presence of the pulsed wave having the predetermined carrier frequency in response to either of the first and second integrated responses having an absolute value in excess of a predetermined value during the predetermined interval.

4,644,287

LOW NOISE SYNCHRONOUS DETECTION FOR A CHARGE TRANSFER DEVICE

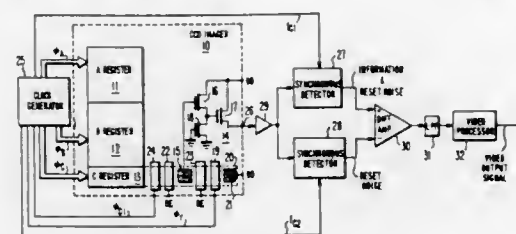
Peter A. Levine, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 10, 1986, Ser. No. 837,955

Int. Cl.⁴ H03D 3/18

U.S. Cl. 329-50

10 Claims



1. In combination with a charge transfer device, apparatus for recovering a charge transfer device output signal including an information component contaminated with a noise component, comprising:

- first and second synchronous detectors each responsive to said device output signal;
- said first synchronous detector being responsive to a first reference carrier signal for detecting said information component contaminated with noise and said second synchronous detector being responsive to a second reference carrier for detecting substantially only said noise component; and
- means for differentially combining the outputs of said first and second detectors for reducing said noise component from said contaminated information component.

4,644,288

METHOD OF FAULT SENSING FOR POWER AMPLIFIERS HAVING COUPLED POWER STAGES WITH NORMALLY ALTERNATE CURRENT FLOW

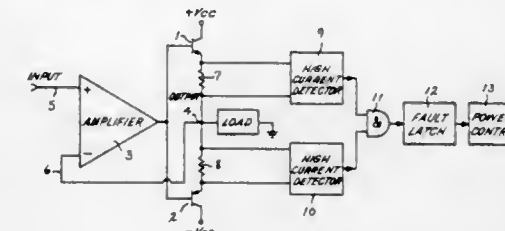
Gerald R. Stanley, Mishawaka, Ind., assignor to Crown International, Inc., Elkhart, Ind.

Filed Jan. 9, 1985, Ser. No. 689,922

Int. Cl.⁴ H03F 3/04

U.S. Cl. 330-2

10 Claims



1. A method of fault sensing for a power amplifier having directly coupled power stages with normally alternate current flow output comprising the steps of:

- a. Sensing simultaneously the individual output currents of each of said stages; and
- b. Detecting a fault when all said simultaneously sensed output currents exceed a specific maximum.

4,644,289

VARIABLE POWER AMPLIFIER FOR AUDIO FREQUENCY SIGNALS AND METHOD

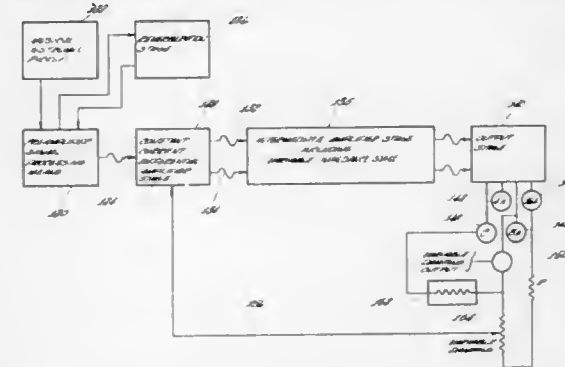
Bruce L. Kennedy, Joseph K. Beller, and Roger A. Modjeski, all of Santa Barbara, Calif., assignors to Carter-Duncan Corporation, Santa Barbara, Calif.

Filed Dec. 3, 1984, Ser. No. 677,228

Int. Cl.⁴ H03G 3/22; H03F 3/28, 3/68

U.S. Cl. 330-145

25 Claims



- 1. A variable power amplifier comprising
- a constant current differential amplifying means adapted to receive preprocessed audio frequency electrical signals and for producing discrete electrical current signals having an out-of-phase relationship therebetween which is representative of said audio frequency electrical signals;
- a variable power amplifying means including a cascaded driving amplifying means for receiving and amplifying the out-of-phase electrical current signals and a variable impedance means electrically connected to said cascaded driving amplifying means, said cascaded driving amplifying means producing in response to electrical current signals selectively amplified output signals wherein the output driving power of said variable power amplifying means is determined by the cascaded driving amplifying means and the out-of-phase electrical current signals;
- a push-pull amplifying means including an output transformer operatively coupled to said variable power amplifying means and to an amplifier output terminal to amplify

and apply to said amplifier output terminal said selectively amplified output signals; and

a variable damping means including a sensing means for sensing the loading on said output transformer and means defining a feedback loop for producing a feedback signal having a magnitude determined by said sensing means, said variable damping means including means for applying the feedback signal as an input to the constant current differential amplifying means to control the current level of said electrical current signals as a function of the loading sensed by said sensing means on said output transformer.

4,644,290

METAL DETECTOR AUDIO AMPLIFIER

David S. Bernzweig, 24 Raleigh Rd., Framingham, Mass. 01701

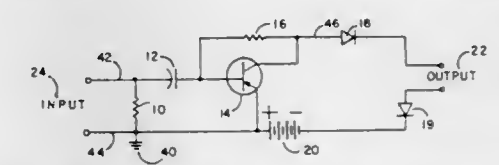
Continuation-in-part of Ser. No. 531,295, Sep. 12, 1983, Pat. No. 4,594,559. This application Feb. 14, 1986, Ser. No. 829,237

The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.

Int. Cl.⁴ H03F 1/26; G01V 3/11

U.S. Cl. 330-149

5 Claims



- 1. An accessory device for use with a metal detector of the type using earphones, said device being connected to the audio output of said metal detector comprising:
- means to amplify low audio signals from said audio output to easily audible levels;
- means to dampen loud signals causing those signals to be softer including:
- a first cable means to attach to said audio output and carry said signal to said device;
- an electronic circuit within said device including:
- an input having a first input line and second input line extending therefrom, said input line being interconnected by said first cable means to said audio output;
- a transistor having a base, emitter and collector;
- said first input line extending to the base of said transistor;
- said second input line extending to the emitter of said transistor;
- a capacitor on said first input line between said input and the base of said transistor;
- a first resistor, one end of which is attached to said first input line between said capacitor and said input and the second end of which is attached to said second input line between said transistor's emitter and said input;
- a feedback loop with a second resistor thereon extending from said transistor's collector and said first input line between said capacitor and the base of said transistor;
- a power source such as a 1.5 volt battery on said second input line;
- a ground between said power source and said first resistor on said second input line;
- a line interconnecting said transistor's emitter to said ground;
- a first output line extending from said transistor's collector;
- a second output line extending from said power source; said means for dampening loud signals including:
- a first diode on said first output line directed to conduct electricity away from said transistor's collector;

a second diode on said second output line directed to conduct electricity toward said power source; and a second cable means attaching said first and second output lines to said earphones.

4,644,291

OPERATIONAL AMPLIFIER

Shinji Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

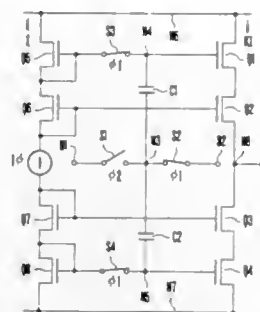
Filed Jul. 19, 1984, Ser. No. 632,231

Claims priority, application Japan, Nov. 8, 1983, 58-209302

Int. Cl.⁴ H03F 3/45

U.S. Cl. 330—261

9 Claims



1. An operational amplifier, comprising: bias circuit means connected between positive and negative power supply lines for supplying bias voltages; differential circuit means having a sampled input and connected with said bias circuit means, and including an inverting input terminal for receiving an input signal and a non-inverting input terminal set at a predetermined potential level, said differential circuit means selectively sampling the signal on said inverting input terminal and the potential level at said non-inverting input terminal, and operable in response to said bias voltages from said bias circuit means, said input signal and said predetermined potential level to generate output control voltages; and

output circuit means having an output terminal and connected between said positive and negative power supply lines, said output circuit means operable as a cascode push-pull stage and responsive to said bias voltages from the bias circuit means and said output control voltages from the differential circuit means thereby to provide an amplified signal representative of said input signal on said inverting input terminal, said amplified signal appearing on said output terminal.

4,644,292

AUTOMATIC GAIN AND FREQUENCY CHARACTERISTIC CONTROL UNIT IN AUDIO DEVICE

Yoshiro Kunugi; Makoto Odaka; Takeshi Sato; Yoshio Sasaki, and Akio Tokumo, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 31, 1985, Ser. No. 739,953

Claims priority, application Japan, May 31, 1984, 59-111837; Jul. 13, 1984, 59-145591; Dec. 28, 1984, 59-202034[U]

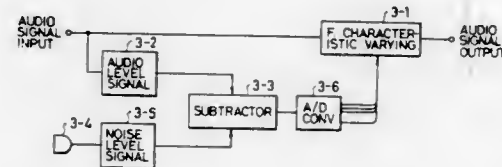
Int. Cl.⁴ H03G 3/18

U.S. Cl. 330—279

11 Claims

1. An automatic gain and frequency characteristic control unit, comprising: noise detecting means for detecting ambient noise around an audio device to provide a noise detection signal; signal detecting means for detecting an audio signal in said audio device to provide a signal detection signal corresponding to the level of said audio signal thus detected; subtracting means for detecting a level difference between

said noise detecting signal and said signal detection signal; and gain and frequency characteristic varying means inserted in an audio signal path of said audio device to vary gain and



a frequency characteristic of selected components of said audio signal according to an output signal of said subtracting means, different ones of said selected components having their frequency characteristics varied to different degrees.

4,644,293

RF PULSE MODULATED AMPLIFIER HAVING CONDUCTION ANGLE CONTROL

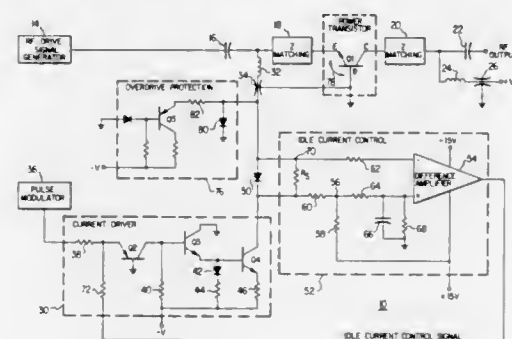
Scott W. Kennett, West Jordan, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed Nov. 6, 1985, Ser. No. 795,485

Int. Cl.⁴ H03F 3/19; G01S 9/56

U.S. Cl. 330—296

14 Claims



1. A pulse modulated amplifier, comprising: a power transistor for receiving a drive signal and generating high frequency pulses, the power transistor operating over a conduction angle during which the drive signal is amplified; means for generating a modulation drive voltage; means responsive to the modulation drive voltage and generating a control signal applied to the power transistor for controlling the conduction angle of the power transistor in a manner proportional to the control signal and inversely proportional to the drive signal, such that an instantaneous conduction angle of the power transistor self-adjusts throughout the generation of each high frequency pulse; and means for maintaining the power transistor in a predetermined operating condition between generation of each high frequency pulse.

4,644,294

DEVICE FOR PROTECTING A PUSH-PULL OUTPUT STAGE AGAINST A SHORT-CIRCUIT BETWEEN THE OUTPUT TERMINAL AND THE POSITIVE POLE OF THE SUPPLY

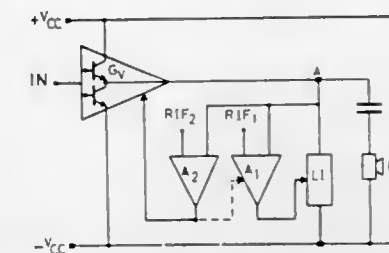
Sergio Palara, Bareggio, and Aldo Torazzina, Monza, both of Italy, assignors to SGS Componenti Elettronici S.p.A., Agrate, Italy

Filed Jan. 23, 1985, Ser. No. 693,777

Claims priority, application Italy, Jan. 23, 1984, 19271 A/84 Int. Cl.⁴ H03F 1/52

U.S. Cl. 330—298

5 Claims



5. Apparatus for use with output power transistors coupled in a push-pull amplifier circuit configuration comprising: first comparator means for providing an output signal in response to an output signal of said push-pull circuit configuration exceeding a first reference voltage; impedance means coupled to one of said power transistors for enabling a low impedance circuit in parallel with said one of said output power transistors in response to said first comparator means output signal; second comparator means for providing a second output signal in response to an output signal of said push-pull circuit configuration exceeding a second reference voltage, said first reference voltage being lower than said second reference voltage, said second signal disabling said output power transistors, said second comparator means includes a p-n-p type transistor coupled to said second reference voltage and to an output terminal of said push-pull circuit, wherein said output power transistors are disabled when a voltage at said output terminal exceeds a predetermined value.

4,644,295

BALANCED DIFFERENTIAL LOAD AND METHOD

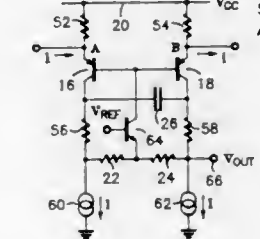
W. Eric Main, Mesa, Ark., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1986, Ser. No. 826,034

Int. Cl.⁴ H03F 3/45

U.S. Cl. 330—301

4 Claims



1. A balanced differential load which receives a differential input signal applied to a pair of inputs thereof for providing an output signal at an output while filtering unwanted frequency signals from the input signal, comprising: first and second transistors each having an emitter, a collector and a base, said bases being coupled together and the differential input signal being applied across the respective emitters; circuit means for coupling said emitters of said first and

second transistors to a power supply conductor to which is supplied a direct current operating potential; capacitive means coupled between said collectors of said first and second transistors for filtering the undesired frequency signals without producing ground currents therethrough; first and second resistors coupled at their distal ends between said collectors of said first and second transistors and being series connected, the output of the circuit being coupled to said distal end of said first resistor; current supply means coupled to said distal ends of said first and second resistors for sinking first and second substantially equal direct currents; and a third transistor the collector-emitter conduction path of which is coupled between said interconnected bases of said first and second transistors and the interconnection of said series connected first and second resistors, the base of said third transistor receiving a reference potential supplied thereto which sets the direct current voltage level at the output of the load.

4,644,296

CONTROLLING OSCILLATOR

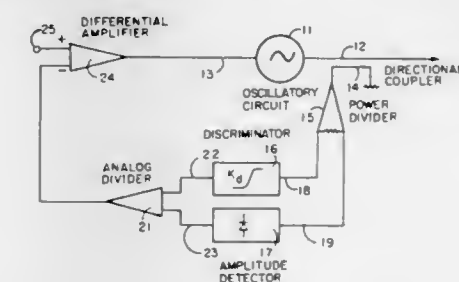
Ian Crossley, Andover; Daniel Donoghue, Tewksbury; Robert Goldswasser, Andover, all of Mass.; John Miley, Hollis, N.H., and Frank Spooner, Concord, Mass., assignors to Charles Hieken, Woburn, Mass.

Filed Apr. 23, 1985, Ser. No. 726,091

Int. Cl.⁴ H03L 7/00, 7/02

U.S. Cl. 331—1 R

6 Claims

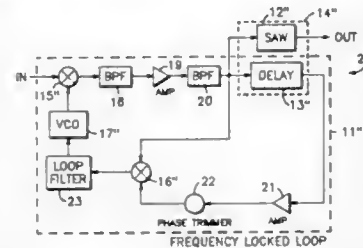


1. Frequency controlling apparatus comprising, oscillatory circuit means having an output for providing a signal of controlled frequency and an input for receiving a frequency controlling signal and means responsive to said frequency controlling signal for establishing the frequency of the signal on said output, means coupled to said output for providing a feedback signal of frequency corresponding to and amplitude proportional to that of the signal on said output, discriminating means responsive to said feedback signal for providing a first signal of amplitude representative of both the frequency and amplitude of said feedback signal, amplitude detecting means responsive to said feedback signal for providing a second signal of amplitude representative of the amplitude of said feedback signal independently of the frequency thereof, dividing means having first and second inputs for receiving said first and second signals respectively and providing a ratio signal representative of the ratio of said first signal to said second signal and of the frequency of said feedback signal independently of its amplitude, and means for coupling said ratio signal to said frequency controlling input to establish said frequency at a predetermined value.

4,644,297
FREQUENCY LOCKED LOOP FOR THE
TEMPERATURE COMPENSATION OF PHASE CODED
SURFACE ACOUSTIC WAVE DEVICES
 Keith A. Olds, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1986, Ser. No. 835,682
 Int. Cl.⁴ H03H 9/145; H03L 7/08
 U.S. Cl. 331-17

5 Claims



1. A temperature compensating circuit having an input and an output, for phase coded surface acoustic wave devices said circuit comprising:

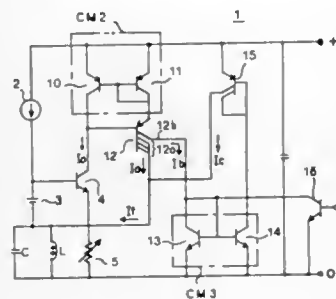
- a phase coded surface acoustic wave device being defined on a first substrate, said phase coded surface acoustic wave device having an input and an output coupled to said output of said circuit; and
- frequency locked loop means having an input coupled to said input of said circuit, and an output coupled to said input of said phase coded surface acoustic wave device, and a first time delay surface acoustic wave device having an input and an output and being defined on said first substrate and connected in circuit for maintaining a constant frequency output from said temperature compensating circuit relative to signals applied to the input of said temperature compensating circuit.

4,644,298
PROXIMITY SWITCH
 Fumio Kamiya, Nagaokakyo; Hisatoshi Nodera, Kusatsu; Kenji Ueda, Otsu; Keinosuke Imazu, Takatsuki, and Hidehiro Tomioka, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jul. 29, 1985, Ser. No. 759,988
 Claims priority, application Japan, Jul. 27, 1984, 59-157913
 Int. Cl.⁴ H03B 5/12

U.S. Cl. 331-65

3 Claims



1. A proximity switch of high frequency oscillation type having a current feedback type oscillation circuit in which part of the oscillation current is fed back, and a detector circuit which detects an object from reduction in oscillation output, characterized in that:

- then current feedback type oscillation circuit comprises an LC resonance circuit; a current mirror circuit consisting of a first transistor producing an oscillation current and a second transistor; a multi-collector transistor having a base connected to a collector of the first transistor, and an

emitter receiving a mirror current from the second transistor; collectors of the multi-collector transistor dividing the mirror current into two portions, the first portion feeding back to the LC resonance circuit; a second current mirror circuit receiving the second portion; a third transistor which feeds back to the LC resonance circuit the output current of the second current mirror circuit along with the feedback current of the multi-collector transistor; and a switching device for suppressing the output of the second current mirror circuit;

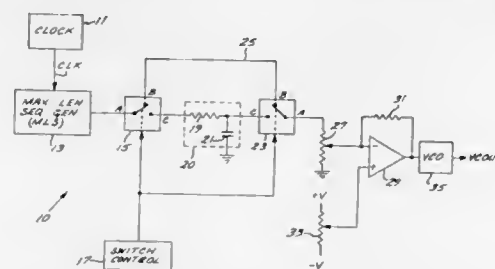
the proximity switch further comprising a first comparison means for producing an object detection signal when the oscillation output of the oscillation circuit has declined below a first level, and a second comparison circuit which deactivates the switching device when the oscillation output of the oscillation circuit has declined below a second level which is lower than the first level.

4,644,299
MULTIMODE NOISE GENERATOR USING DIGITAL FM
 Frank Amoroso, Santa Ana, and John S. Cullings, Laguna Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 14, 1986, Ser. No. 830,309
 Int. Cl.⁴ H03B 29/00

U.S. Cl. 331-78

20 Claims



11. A noise generator comprising: means for providing a digital signal having a pseudorandom sequence at a selected clock rate; and a voltage controlled oscillator (VCO); and control means responsive to said digital signal for selectively controlling the mode of operation of the noise generator and for modulating said VCO to provide a VCO output which has a relatively constant output spectrum and high spectral containment for each mode of operation.

4,644,300
VOLTAGE-CONTROLLED VARIABLE-FREQUENCY
PULSE OSCILLATOR
 Hiroyuki Ibe, Yokohama, and Taro Shibagaki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

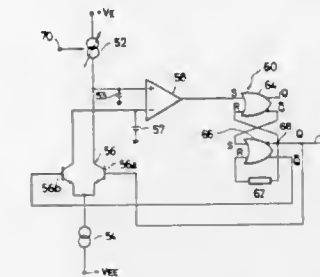
Filed Dec. 21, 1984, Ser. No. 685,165
 Claims priority, application Japan, Dec. 26, 1983, 58-243724
 Int. Cl.⁴ H03K 3/26

U.S. Cl. 331-111

13 Claims

1. A voltage-controlled variable-frequency pulse oscillator comprising:
 an integrating capacitor;
 a variable current source for supplying a charging current to said capacitor, which varies with a control voltage of said current source;
 a fixed current source for supplying a discharging current to said capacitor;
 a comparator for comparing said charge voltage of said capacitor with a reference voltage and for producing an output signal;
 monostable multivibrator means having first and second gate

means, said first gate means having first and second input terminals and an output terminal, said second gate means having first and second input terminals and first and second output terminals, the first input terminal of said first gate means being connected to the output of said comparator, the second input of said first gate means being connected to the first output terminal of the second gate means, the output terminal of said first gate means being connected to the first input terminal of said second gate

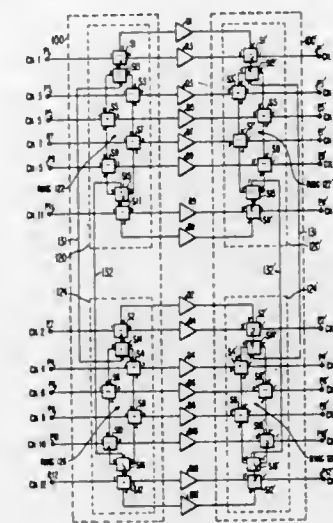


means, the first output terminal of said second gate means being connected to the second input terminal of said second gate means through a delay circuit, an oscillation output signal with predetermined frequency being supplied from the first and second output terminals of said second gate means; and
 switching means connected between said integrating capacitor and said fixed current source for controlling the discharge of said capacitor in response to output signals from said second gate means of said multivibrator means.

4,644,301
REDUNDANCY SYSTEM AND SWITCHING NETWORK
 Martin A. Hecht, East Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1985, Ser. No. 793,146
 Int. Cl.⁴ H01P 1/10; H03F 3/68
 U.S. Cl. 333-101

12 Claims



1. A redundancy system comprising:
 N input ports, where $8 \leq N \leq 12$;
 N+4 devices;
 N+4 switches connected as an input switching network for connecting each of said N input ports to a different one of said N+4 devices, each of said switches having a port 1, a port 2, a port 3, and a port 4 and having a through position in which its port 1 is connected to its port 3, and two transfer positions in one of which its port 1 is con-

nected to its port 2 and its port 3 is connected to its port 4 and in the other of which its port 1 is connected to its port 4 and its port 3 is connected to its port 2;
 said switching network having first and second interconnected sections, each including at least six and not more than eight of said switches;
 each of said sections having all but two of its switches connected together, even-numbered port to even-numbered port, to form a ring,
 said two switches in each section which are not connected in its ring being referred to as appendage switches;
 two of said switches in each of said rings being referred to as interconnection switches, each of said interconnection switches having a first one of its odd-numbered ports connected to a first one of the odd-numbered ports of a corresponding one of said interconnection switches in said other section;
 in each of said rings those switches which are not interconnection switches being referred to as intermediate switches and each being connected to at least one of said interconnection switches in its own ring;
 each of said interconnection switches being connected to two of said intermediate switches in its own ring;
 each of said appendage switches having a first one of its even-numbered ports connected to the second odd-numbered port of a different one of said interconnection switches in its section;
 each of said appendage and intermediate switches in said input switching network having a first one of its odd-numbered ports connected as one of said N input ports of said redundancy system; and
 the second odd-numbered port of each of said intermediate switches, the second even-numbered port and the second odd-numbered port of each of said appendage switches each being connected to the input port of a different one of said N+4 devices.

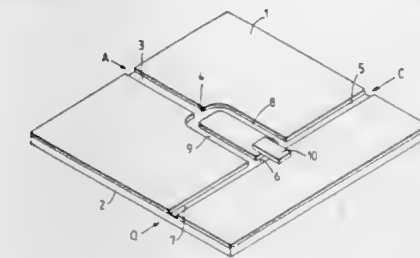
4,644,302
MICROWAVE POWER DIVIDER
 Ian R. Harris, and Ewan W. Shepherd, both of Lethian, Scotland, assignors to Ferranti, plc, Cheshire, England
 Filed Jan. 29, 1986, Ser. No. 823,628

Claims priority, application United Kingdom, Feb. 1, 1985, 8502614

Int. Cl.⁴ H01P 5/19

U.S. Cl. 333-125

3 Claims



1. A microwave power divider which includes a layer of conducting material carried on one surface of an insulating support, a first slotline formed in said conducting layer and having one end connected to a first input port, a second slotline formed in the conducting layer substantially at right-angles to and spaced from the other end of said first slotline and connected at its ends to first and second output ports, third and fourth slotlines formed in the conducting layer each substantially an odd multiple of quarter-wavelengths long and extending from said other end of the first slotline to spaced points on the second slotline separated by a distance which is electrically small compared with one-quarter of a wavelength, and a resistor connected across said second slotline substantially midway between said spaced points and having a resistance such that

each of the first and second output ports is correctly terminated.

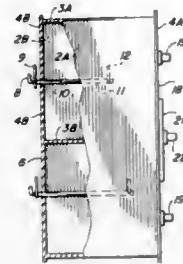
4,644,303
MULTIPLE CAVITY SQUARE PRISM FILTER TRANSMITTER COMBINER WITH SHARED SQUARE WALLS AND TUNING CONTROLS MOUNTED ON RECTANGULAR END WALLS

Ronald E. Jachowski, Paradise Valley, and Donald C. Dickson, Phoenix, both of Ariz., assignors to Orion Industries, Inc., Cleveland, Ohio

Filed Mar. 13, 1984, Ser. No. 589,132
Int. Cl.⁴ H01P 1/213, 7/06

U.S. Cl. 333—134

28 Claims

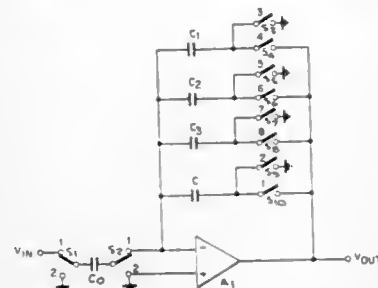


21. A transmitter combiner comprising:
a plurality of independently tunable filters, each said filter including,
(a) a housing defining a cavity, said housing having first and second square, spaced-apart, conducting walls joined by rectangular conducting walls to form a parallelepiped;
(b) input means, affixed to one of said walls, for providing electromagnetic input signals to said filter;
(c) independent adjustment means, rotatably affixed to one of said rectangular walls, including a rotatable tuning element centrally and rotatably located within said cavity, in a region of high electric field, for independently tuning said filter; and including
conductive means for combining, in parallel, at a common output terminal, electromagnetic output signals from each said filter with each said filter positioned adjacent to at least a second, essentially identical filter.

4,644,304
SWITCHED-CAPACITOR PSEUDO-N-PATH FILTER
Gabor C. Temes, Los Angeles, Calif., assignor to The Regents of the University of Calif., Calif.

Filed Aug. 17, 1981, Ser. No. 293,469
Int. Cl.⁴ H03H 11/12, 17/06, 19/00; H03K 5/135
U.S. Cl. 333—173

2 Claims



1. In an active filter of the type including an operational amplifier having an input and output, a plurality of storage capacitors, and a feedback capacitor, with all of said capacitors having a first end coupled to said amplifier input and a second end switchable between said amplifier output and electrical

ground, and an input capacitor having two ends switchable to connect said input capacitor either between an input signal and said amplifier input or across said ground, the improvement comprising:

switching means for switching said ends of capacitors in a sequence such that:

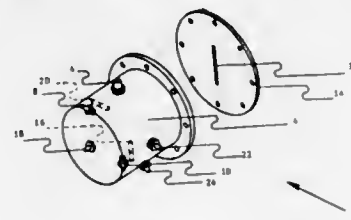
- (1) said input capacitor alternately charges from said input signal and discharges to ground,
 - (2) said storage capacitors are sequentially connected to said ground coincident with said charging of said input capacitor, and said input capacitor is connected to said feedback capacitor during said charging, thereby transferring the total charge upon said connected one of said storage capacitor and on said input capacitor to said feedback capacitor and discharging said storage capacitor, and
 - (3) said storage capacitors are sequentially connected across said feedback capacitor coincident with said discharging of said input capacitor and said feedback capacitor is simultaneously connected to ground, thereby transferring the charge on said feedback capacitor to the connected one of said storage capacitors,
- whereby said filter integrates an analog signal in a manner dependent only on the values of said capacitors and the rate at which said switching means switches said capacitors.

4,644,305
ODD ORDER ELLIPTIC WAVEGUIDE CAVITY FILTERS
Wai-Cheung Tang, Kitchener; Joseph Frenna, Willowdale, and David Siu, Hamilton, all of Canada, assignors to Com Dev. Ltd., Cambridge, Canada

Filed Dec. 3, 1985, Ser. No. 804,079
Claims priority, application Canada, Jun. 18, 1985, 484,402
Int. Cl.⁴ H01P 1/207, 1/208, 7/06

U.S. Cl. 333—208

29 Claims



1. An odd order bandpass filter comprising at least one cavity, said cavity having tuning screws and coupling screws arranged therein so that it resonates at its resonant frequency in three independent orthogonal modes, said filter having at least one feedback coupling that is made to resonate and changes sign at a centre frequency, said filter having an input and output for electromagnetic energy, said filter being of the order $m+2$, where m is an odd positive integer.

4,644,306
PROGRAMMABLE ELECTRONIC SYNTHESIZED CAPACITANCE
Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the administrator of the National Aeronautics and Space Administration, Washington, D.C.

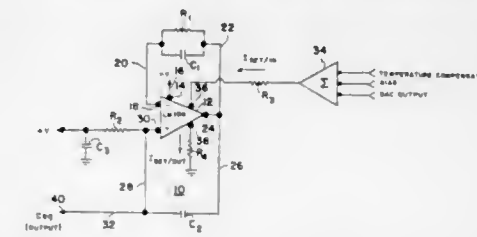
Filed Jul. 15, 1985, Ser. No. 754,707
Int. Cl.⁴ H03H 11/48, 11/52

U.S. Cl. 333—214

19 Claims

1. A variable electronic capacitance comprising:
a programmable operational amplifier with inverting and non-inverting inputs, an output, and an input for input set current;

a low impedance network connected between said output and said inverting input in a follower configuration;



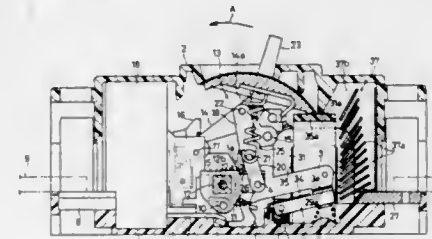
a capacitance connected between said output and said non-inverting input; and
means to vary said input set current.

4,644,307
CURRENT LIMITING TYPE CIRCUIT BREAKER
Akira Tanimoto, Mie, Japan, assignor to Kabushiki Kaisha Toshiha, Kawasaki, Japan

Filed Mar. 13, 1986, Ser. No. 839,191
Claims priority, application Japan, Jun. 12, 1985, 60-128851
Int. Cl.⁴ H01H 77/10

U.S. Cl. 335—16

4 Claims



1. In a current limiting type circuit breaker including:
(a) a first contact arm supported at one end for pivotal movement and having a contact secured to a free end thereof;
(b) a second contact arm supported at one end for pivotal movement so as to be placed opposite to said first contact arm in the elongated direction thereof and having a contact secured to a free end thereof so that it cooperates with said contact secured to the free end of said first contact arm, said first and second contact arms being normally urged by suitable spring means in the direction of the closed position, said first and second contact arms being pivotally moved by an electromagnetic repulsive force induced by an over current flowing therethrough;
(c) magnetic substances placed in proximity to the lateral sides of said first and second contact arms so as to be substantially parallel with a plane along which said contact arms are moved, whereby magnetic fluxes induced around said contact arms by the over current pass through said magnetic substances; and
(d) a trip mechanism responsive to an output from a means for detecting abnormal current such as an over current flowing through said contact arms to thereby drive the second contact arm so that the contacts are opened,
the improvement comprising:
an attracting stationary conductor disposed between each of said magnetic substances and the plane along which said first and second contact arms are driven and spaced from the first contact arm in the direction of movement of the second contact arm to the open position, said attracting stationary conductor having an operative portion extending in the elongated direction of the second contact arm,
said attracting stationary conductor being connected in series with the first contact arm so that the current flows in the same direction through said operative

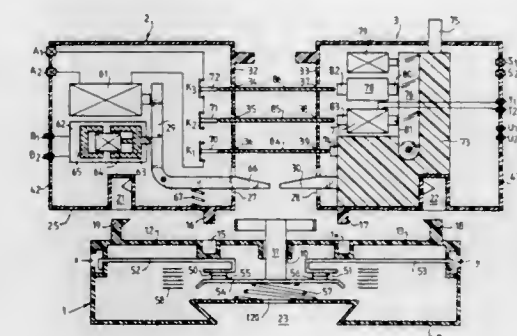
portion thereof and the second contact arm, thereby providing an electromagnetic attractive force therebetween.

4,644,308
VARIABLE COMPOSITION SWITCHING DEVICE REALIZABLE BY THE ASSEMBLING OF MODULAR ELEMENTS
Jean-Pierre Guery, Bezons; Gérald Gashet, Puteaux; Jacques Olifant, Nanterre, and Raymond Plumeret, Asnières, all of France, assignors to La Telemecanique Electrique, France

Filed Sep. 27, 1985, Ser. No. 780,745
Claims priority, application France, Sep. 27, 1984, 84 14827
Int. Cl.⁴ H01H 67/02

U.S. Cl. 335—128

11 Claims



1. Variable composition switching device realizable by the assembly of modular elements and in particular of at least one switch module comprising a switching device controllable by switch gear on which can be exerted an external control force, and at least one control and/or protection module comprising suitable means of operation to apply to the said switch gear a control force, characterized in that

the switch module comprises a housing having at least:
two opposing junction faces against each of which can be assembled, by juxtaposition, the junction face of another identical switch module,
an assembly face comprising an orifice for passage or access to the said switch gear and, on both sides of this orifice, two assembly areas each fitted with fixing devices of a control and/or protection module, and
the control and/or protection modules each comprising a housing with at least one assembly face supplied with fixing devices suitable for cooperating with the fixing devices of one of the assembly areas so that in the fixed position of a control module on an assembly area, the said operating devices are situated in line with the said switch gear.

4,644,309
HIGH SPEED CONTACT DRIVER FOR CIRCUIT INTERRUPTION DEVICE
Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

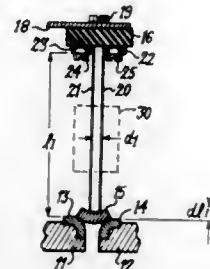
Continuation-in-part of Ser. No. 814,865, Dec. 30, 1985. This application Mar. 14, 1986, Ser. No. 839,678
Int. Cl.⁴ H01H 77/10

U.S. Cl. 335—195

6 Claims

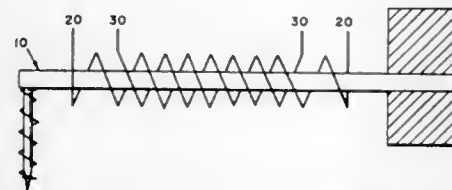
1. A high speed contact driver for electric circuit interruption comprising:
a pair of first and second electrical conductors each fixedly attached at one end to an insulated support and arranged side by side, and extending proximate each other;
a bridging contact carried by said electrical conductors at an opposite end thereof to electrically connect said conduc-

tors in series, said bridging contact being electrically connected between a pair of fixed contacts; terminal means for supplying a predetermined current pulse to said conductors at said one end for electrodynamic repulsion of said conductors away from each other to separate said bridging contact from said fixed contacts upon command; and



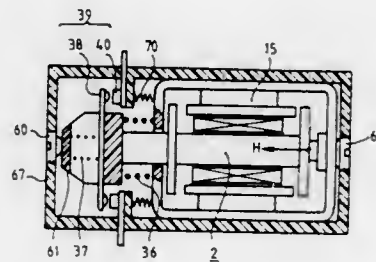
magnetic means arranged intermediate said ends of said conductors for enhancing said electromagnetic repulsion of said conductors, said magnetic means comprising a plurality of metal plates defining a slot and wherein said first and second electrical conductors are arranged within said slot.

4,644,310
**ACTUATOR SYSTEM HAVING
 MAGNETOMECHANICAL CANTILEVER BEAM
 FORMED OF FERROMAGNETIC AMORPHOUS
 MATERIAL**
 Philip M. Anderson, III, Chatham, and Jeffrey C. Urhanski,
 Sparta, both of N.J., assignors to Allied Corporation, Morris
 Township, Morris County, N.J.
 Filed Mar. 22, 1984, Ser. No. 592,199
 Int. Cl.⁴ H01F 7/06
 U.S. Cl. 335—215 11 Claims



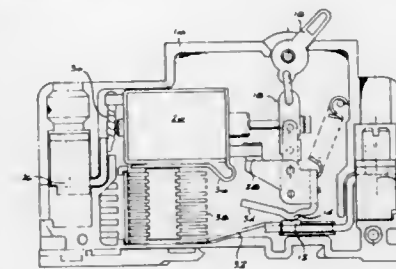
1. For use in a magnetomechanical actuator system, a magnetomechanical cantilever beam adapted to be responsive to magnetic fields of varying magnitudes to produce precise and rapid repositioning of the free end of the magnetomechanical cantilever beam corresponding to the magnitude of the applied magnetic field, said magnetomechanical beam comprising magnetostrictive ferromagnetic amorphous material having a magnetomechanical coupling factor, k , greater than zero where $k = (1 - fr^2/fa^2)^{1/2}$, fr and fa being the resonant and antiresonant frequencies respectively.

4,644,311
**POLARIZED ELECTROMAGNET WITH SYMMETRICAL
 ARRANGEMENT**
 Jean-Pierre Guery, Bezons, and Jacques Olifant, Nanterre, both
 of France, assignors to La Telemechanique Electrique, France
 Filed Aug. 19, 1985, Ser. No. 767,386
 Claims priority, application France, Aug. 20, 1984, 84 12975;
 Nov. 19, 1984, 84 17829
 Int. Cl.⁴ H01F 7/08 22 Claims
 U.S. Cl. 335—230



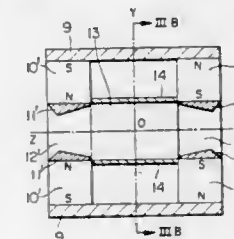
1. In a polarized electromagnet comprising:
 on the one hand, a first magnetizable structure formed by a core placed longitudinally in the axis of symmetry of a coil adapted for receiving DC current and by two integral widened pole portions which extend transversely outside the coil;
 on the other hand, a second permanent magnetic structure formed by a second longitudinal magnetizable piece which has two transverse extensions directed towards the axis and which is parallel to a third magnetizable piece closer to the axis and to which it is connected by a permanent magnet with transverse magnetic axis;
 opposite ends of this third piece and regions of these extensions which are adjacent thereto being separated by two air gaps placed substantially along a longitudinal direction so that attraction, respectively repulsion forces in the same longitudinal direction, are developed between each of the widened pole portions placed respectively in each of the air gaps and the second structure, or in one direction when the coil is in a first state or in the reverse direction when the coil assumes a second state;
 the improvement is such that:
 in the rest position of a first mobile magnetizable structure symmetrical with respect to the axis of the coil, the widened pole portions do not come into contact with the second symmetrical magnetic structure,
 the partial reluctance established between a first widened pole portion and the third pieces is greater than the partial reluctance established between the second widened pole portion and the second piece of the second structure so as to form an overall reluctance at rest,
 these two partial reluctances are adjusted simultaneously by means of a member for adjusting the air gaps which defines, through a small relative movement of the two structures, the effective rest position in which movement of the mobile structure takes place, when the coil is supplied with the rising voltage.

4,644,312
CIRCUIT BREAKER
 Alfred H. P. Baines, deceased, late of Johannesburg, South
 Africa (by Dennis James Ridley, executor); Gianfranco Cam-
 petti; Walter A. Baumgartl, both of Kempton Park, South
 Africa, and Klaus J. R. Nüsse, Randburg, South Africa, as-
 signors to Heinemann Electric (South Africa) Limited, Johan-
 nesburg, South Africa
 Filed Oct. 22, 1985, Ser. No. 790,192
 Claims priority, application South Africa, Nov. 2, 1984,
 84/8585
 Int. Cl.⁴ H01F 3/12, 7/08 11 Claims
 U.S. Cl. 335—236



1. A circuit breaker including a tripping device comprising a magnetic frame, a coil arranged to generate a flux in the magnetic frame when a load current exists in the coil; a movable magnetic core disposed within the magnetic frame, the core being movably contained in a vessel filled with a viscous fluid; and a magnetic armature disposed in proximity to the core and the frame and arranged to form a magnetic circuit with the core and the frame and to be influenced by flux passing between the armature and the core and the frame, the armature being attached to a contact breaker mechanism, the armature and the core being arranged to be mutually attracted by flux passing substantially between the core and the armature when an over-current below a predetermined magnitude exists in the coil, so that the core initially moves towards the armature and the armature subsequently is pulled in towards the core as the separation between the core and the armature decreases, the armature additionally being arranged to be strongly pulled in towards the frame by flux passing substantially between the armature and the frame when an overcurrent above the predetermined magnitude exists in the coil without a significant influence being exerted by the core.

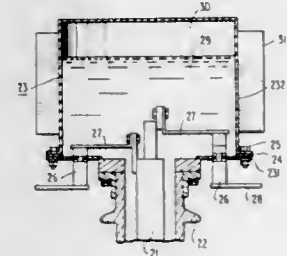
4,644,313
CYLINDRICAL MAGNET APPARATUS
 Goh Miyajima, Katsuta, Japan, assignor to Hitachi, Ltd., To-
 kyō, Japan
 Filed Apr. 4, 1985, Ser. No. 719,889
 Claims priority, application Japan, Apr. 4, 1984, 59-65758
 Int. Cl.⁴ H01F 7/00 17 Claims
 U.S. Cl. 335—296



1. A cylindrical magnet apparatus comprising a cylindrical magnetic yoke of a ferromagnetic material arranged around a predetermined axis (Z axis), magnetic field sources disposed at the ends of the cylindrical magnetic yoke, and a cylindrical

magnetic flux guide interposed between said magnetic field sources, wherein an object to be inspected is inserted in said magnetic flux guide.

4,644,314
PORCELAIN CLAD CURRENT TRANSFORMER
 Takeo Fukatsu, Amagasaki, Japan, assignor to Mitsubishi Denki
 Kabushiki Kaisha, Tokyo, Japan
 Filed May 29, 1986, Ser. No. 868,384
 Claims priority, application Japan, Jun. 4, 1985, 60-83408[U]
 Int. Cl.⁴ H01F 27/14 5 Claims
 U.S. Cl. 336—58

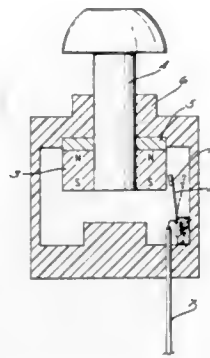


1. A porcelain clad current transformer, comprising:
 (a) a vertically oriented insulating tube (22),
 (b) a primary coil (21) disposed within the tube,
 (c) a centrally apertured, generally planar base plate (231) sealingly mounted to an upper end of the tube such that electrical connection terminals for the coil extend upwardly through the aperture,
 (d) a unitary envelope (232) sealingly mounted to an outer upper periphery of the base plate and defining therewith a closed expansion chamber (23),
 (e) a charge of insulating oil (29) filling the tube and a lower portion of the chamber,
 (f) a charge of insulating gas (30) filling an upper portion of the chamber above the oil,
 (g) at least one primary terminal (26) sealingly mounted to and extending upwardly through the base plate, and
 (h) conductor means (27) disposed within the chamber connecting a coil terminal to the primary terminal.

4,644,315
PUSH-BUTTON SWITCH
 Robert J. Hodges, Cheshunt, England, assignor to International
 Standard Electric Corporation, New York, N.Y.
 Filed Nov. 15, 1984, Ser. No. 671,544
 Claims priority, application United Kingdom, Nov. 18, 1983,
 8330848
 Int. Cl.⁴ G01L 1/22 7 Claims
 U.S. Cl. 338—2

1. An electrical switching device, in which the switch element is a strain gauge made of thin silicon so mounted that when deflected it produces an electrical output representative of that deflection, in which the switch element carries a perma-

ment magnet, and in which the deflection of said switch element to produce the electrical output is effected by the relative

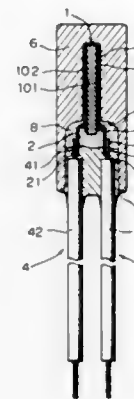


movement of the switch element and of a source of permanent magnetism.

4,644,316 POSITIVE TEMPERATURE COEFFICIENT THERMISTOR DEVICE

Michikazu Takeuchi, and Yoshiaki Ishizu, both of Yuri, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Sep. 24, 1985, Ser. No. 779,687
Claims priority, application Japan, Sep. 25, 1984, 59-144904[U]

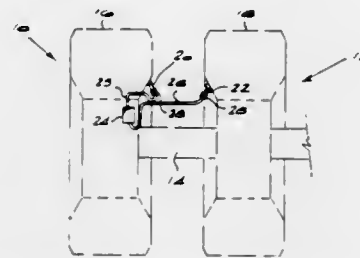
Int. Cl.⁴ H01C 7/10
U.S. Cl. 338—22 R



1. A PTC thermistor device, comprising:
 - a heat conductive, ceramic case having an aperture at one end and a groove recessed from the aperture;
 - a plate-like PTC thermistor body having electrodes thereon, with a first major portion mounted in the groove in such a manner that a clearance is formed between an outer peripheral surface of the plate-like PTC thermistor body and the groove, and having a second minor portion extending outwardly from the groove;
 - a heat resisting binding agent filled in said clearance, for conducting heat from the plate-like PTC thermistor body to the heat conductive, ceramic case and for bonding the electrodes with the heat conductive, ceramic case;
 - a means for connecting a power source to the plate-like PTC thermistor body and having a portion comprising electrodes extending into the aperture of the heat conductive, ceramic case; and
 - a heat resisting binding agent for sealing a space formed between said extended electrodes portion and the aperture of the heat conductive, ceramic case.

4,644,317 LOW TIRE PRESSURE WARNING DEVICES Richard S. Aingworth, 4 Timber Ct. Main Rd., Strand, Cape Province, South Africa Filed Mar. 12, 1985, Ser. No. 711,032 Claims priority, application South Africa, Mar. 14, 1984, 84/1936

Int. Cl.⁴ B60C 23/00
U.S. Cl. 340—58 9 Claims



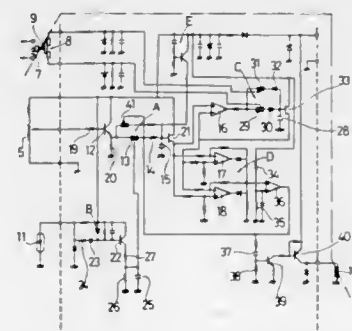
1. A low tire pressure warning device for monitoring the air pressure in two tires mounted on adjacent wheels of a vehicle, each tire having a valve, the device comprising a body mounted on one of the wheels; means for connecting the valves of the tires formed partially by a passage in the body, the passage normally allowing air to flow freely between the two tires such that the passage contains air at the common pressure of the two tires; a first electrical contact in the passage; a piston in the passage having a second electrical contact thereon arranged to be urged away from the first electrical contact by the pressure of air in the passage, the piston being biased toward the first electrical contact; and a battery powered radio transmitter supported by the body which produces a warning output signal when the electrical contacts are closed, the air pressure in the passage normally being sufficient to hold the piston away from the first electrical contact, the piston moving to close the contacts and to seal the passage between the two tires when the air pressure in the passage falls below a predetermined value.

4,644,318 AUTOMATIC DIRECTION INDICATOR CANCELLING APPARATUS

Yukio Miyamaru, Tokyo; Shigeo Kawada, Saitama; Kaoru Hatanaka, Saitama, and Yasuo Shibata, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 384,347, Jun. 2, 1982, abandoned. This application Sep. 30, 1985, Ser. No. 782,602

Claims priority, application Japan, Jun. 2, 1981, 56-84563
Int. Cl.⁴ B60Q 1/34
U.S. Cl. 340—73 1 Claim



1. An automatic cancelling apparatus for a direction indicator of a vehicle, comprising:

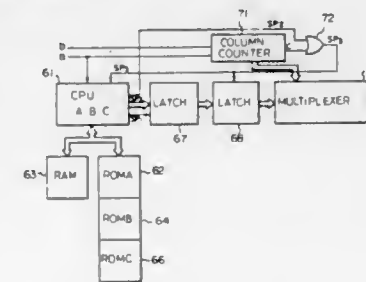
- a sensor which provides a signal representing the turning angle of a handlebar of said vehicle;
- speed detecting means for detecting the speed of said vehicle;
- a noise eliminating circuit which receives the output of said sensor and eliminates high-frequency components from the output of said sensor to thereby provide a signal representing a current turning angle of said handlebar;
- said noise eliminating circuit including a first switching means connected to said sensor and a time constant circuit connected to said first switching means and adapted to output said signal representing the current turning angle of said handlebar, said first switching means being adapted to become conductive less frequently at a relatively low speed of said vehicle and more frequently at a relatively high speed of said vehicle in response to the output of said speed detecting means so that said time constant circuit provides a relatively large time constant at the relatively low speed of said vehicle and the time constant of said time constant circuit approaches an inherent time constant thereof as the vehicle speed increases;
- second switching means for connecting said turning angle sensor to said noise eliminating circuit, said second switching means being normally nonconductive;
- a position lamp circuit for indicating an intended turning direction;
- a peak holding circuit which receives the output of said noise eliminating circuit and the output of said position lamp circuit and holds a peak value of said output signal of said noise eliminating circuit;
- a comparison circuit which receives said output of said noise eliminating circuit and the output of said peak holding circuit to provide the difference to said outputs and provides a cancelling signal when said difference exceeds a predetermined value;
- cancelling means which receives said cancelling signal and thereby resets said direction indicator; and
- said cancelling signal also being supplied to said second switching means to render it conductive so that a turning angle value to be held by said noise eliminating circuit is set at a value of current turning angle of said handlebar.

4,644,319 ADDRESSER DESIGNATION CHARACTER PATTERN GENERATION APPARATUS FOR FACSIMILE TRANSMISSION

Shingo Yamaguchi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 185,062
Claims priority, application Japan, Sep. 17, 1979, 54-118000; Oct. 8, 1979, 54-128904

Int. Cl.⁴ G09G 1/00
U.S. Cl. 340—731 5 Claims



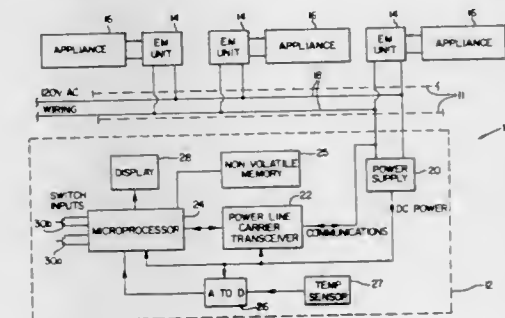
1. A video pattern generation apparatus comprising:
 - a read-only memory means for storing a plurality of characters which are decomposed on a bit-by-bit basis in the horizontal and vertical directions; and
 - microprocessor means for sequentially reading the character

bits out of the memory means and expanding the characters to a predetermined extent for transmission.

4,644,320 HOME ENERGY MONITORING AND CONTROL SYSTEM

R. Stephen Carr, 18527 Rose Ct., West Linn, Ore. 97068; Julius N. Dalzell, 1532 SE. Jacquelin Dr., Hillsboro, Ore. 97123; J. Fred Holmes, 9345 NW. Kaiser Rd., Portland, Ore. 97231, and John M. Hunt, 13360 NW. Northrup, Portland, Ore. 97229

Filed Sep. 14, 1984, Ser. No. 651,223
Int. Cl.⁴ G08C 19/00
U.S. Cl. 340—310 A 12 Claims

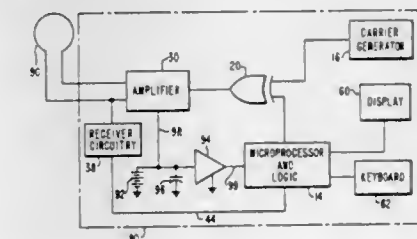


1. An energy monitoring system for use with standard 120/240-volt AC wiring for a plurality of appliance loads adapted to be connected to said wiring comprising:
 - (a) a plurality of energy monitor means connected between each of said appliance loads and a source of electrical power carried by said wiring for measuring the total amount of electrical energy used by said appliance loads over a predetermined period of time and including first transceiver means connected between each of said monitor means and an input to said wiring for communicating with a master control station; and
 - (b) a master control station including second transceiver means connected to said wiring for communicating with each of said first transceiver means, and display means for selectively displaying the electrical energy use measured by each of said monitor means.

4,644,321 WIRELESS POWER LINE COMMUNICATION APPARATUS

Jerry M. Kennon, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1984, Ser. No. 663,252
Int. Cl.⁴ H04M 11/04; G08B 23/00
U.S. Cl. 340—310 A 6 Claims



1. Power line carrier communications apparatus, comprising:
 - means for modulating a first carrier signal with a baseband message;
 - means for amplifying said first modulated carrier signal, said

amplifying means having an input connected to an output of said modulating means;
means for inductively coupling said first modulated carrier signal to a power line communications device having a receiver;
said coupling means being configured to induce said first modulated carrier signal within conductive components of said power line communications device when said coupling means is disposed proximate said power line communications device and said first modulated signal is amplified by said amplifying means even when said coupling means is physically and electrically disconnected from said conductive components, said coupling means being removably locatable proximate said power line communications device; and
said amplifying means being electrically connected to said coupling means and configured to transmit said first modulated carrier signal to said coupling means.

4,644,322

ANALOG-TO-DIGITAL CONVERTER

Tsuneo Fujita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

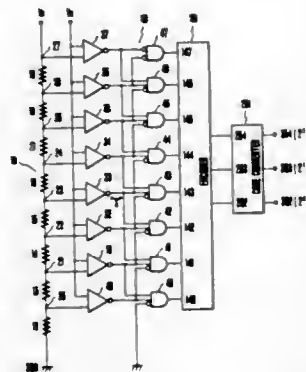
Filed Oct. 22, 1982, Ser. No. 435,965

Claims priority, application Japan, Oct. 26, 1981, 56-171146

Int. Cl.⁴ H03M 1/00, 7/16

U.S. Cl. 340—347 AD

6 Claims



1. An analog-to-digital converter comprising means for receiving an analog input voltage, means for generating a plurality of reference voltages, a plurality of comparators, each for comparing the analog input voltage with one of the reference voltages, each of said comparators being of the type which produces a first binary level output when said analog input voltage is at a first predetermined amount above the comparison voltage applied thereto, a second binary level output when said analog input voltage is at a second predetermined amount below the comparison voltage applied thereto, and an intermediate level output when said analog input voltage is between said comparison voltage plus said first predetermined amount and said comparison voltage minus said second predetermined amount, detection means responsive to outputs from said plurality of comparators to detect the boundary for an output of a comparator corresponding to the value of the analog input voltage, said detection means including a plurality of logic gates, each having a first logic input terminal receiving an output signal from the comparator of the same order and a second logic input terminal receiving an output signal from the comparator preceding by one gate in the order, among the outputs of said plurality of logic gates only one being rendered active when all of said comparators produce binary logic levels and at least two being rendered active when at least one of said comparators produces an intermediate level output which is not at a predetermined binary logic level, and means for converting the outputs of said logic gates into a Gray code, and

means for converting the Gray code output into a binary code output.

4,644,323

ANALOG-TO-DIGITAL CONVERTER HAVING PROGRAMMABLE DYNAMIC RANGE

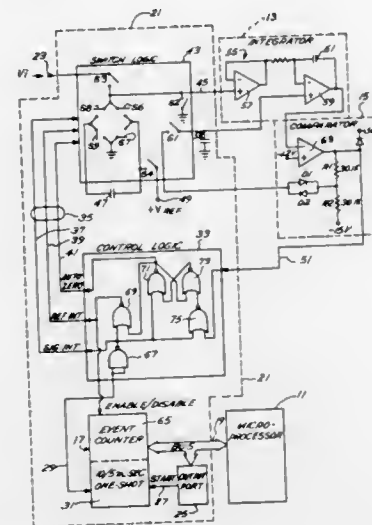
Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex., and Paul B. Williams, Lombard, Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 26, 1980, Ser. No. 181,528

Int. Cl.⁴ H03M 1/52

U.S. Cl. 340—347 NT

18 Claims



1. An analog-to-digital converter comprising:
integrator means for integrating an analog signal with respect to time and generating an output signal having an amplitude representative of the integral of the analog signal;
comparator means for monitoring said output signal of said integrator means for generating a completion signal when said output signal reaches a predetermined amplitude;
input means for receiving input of an unknown analog signal for integration by said integrator means;
reference signal means for generating a reference signal having a predetermined amplitude, for integration by said integrator means; and
control means including programmable timer means for establishing the time of integration of said analog signal to a preset time,
microprocessor means for initiating said timed cycle;
said control means being responsive to timer command for passing said analog signal to said integrator means for integration over said preset time and for passing said reference signal to said integrator means for integration and generation of a said completion signal by said comparator means,
said control means being also responsive continuously to the completion signal from the comparator on terminating integration of said reference signal, and
said timer means timing the integration of said reference signal and generating a digital output signal representative of the time of the timed integration, whereby an analog signal is converted to a digital signal for use by the microprocessor,
said microprocessor means arithmetically modifying said digital output signal in accordance with the value of said preset time, and
said microprocessor means programming said timer means to said preset time responsive to said digital output signal for subsequent operations.

4,644,324

DIGITAL TO ANALOG CONVERSION SYSTEM WITH THE ADDITION OF DITHER TO THE DIGITAL INPUT

Tetsuro Araki, Hachioji, and Hiroyuki Onda, Hoya, both of Japan, assignors to Teac Corporation, Tokyo, Japan

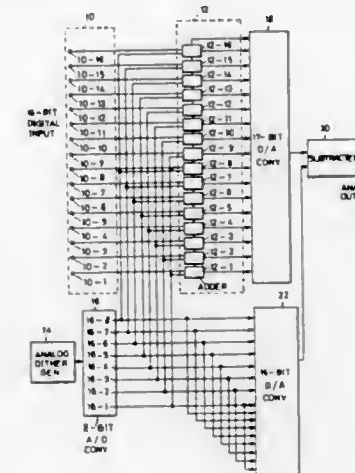
Filed Dec. 19, 1985, Ser. No. 810,974

Claims priority, application Japan, Dec. 31, 1984, 59-277691

Int. Cl.⁴ H03M 1/20

U.S. Cl. 340—347 DA

5 Claims



1. A system for converting an n bit coded audio or like data signal, where n is a positive integer, from digital to analog form, comprising:

- input means for receiving the n bit digital data signal;
- a dither generator for generating an analog dither signal;
- an analog to digital converter for converting the analog dither signal into an m bit coded digital dither signal, where m is a positive integer less than n;
- an adder network for adding in bit parallel form the digital data signal and the digital dither signal, the adder network being coupled to the analog to digital converter in such a way that at least some of the m bits of the digital dither signal are each added to more than one of the n bits of the digital data signal, thereby making possible the use of the analog to digital converter having a smaller number of bits than that of the bits of the digital data signal; and
- a digital to analog converter for converting the bit parallel addition of the digital data signal and the digital dither signal into analog form.

4,644,325

LOW VOLTAGE, SINGLE POWER SUPPLY OPERATED DIGITAL ANALOG CONVERTER

Ira Miller, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 21, 1985, Ser. No. 789,604

Int. Cl.⁴ H03M 1/68

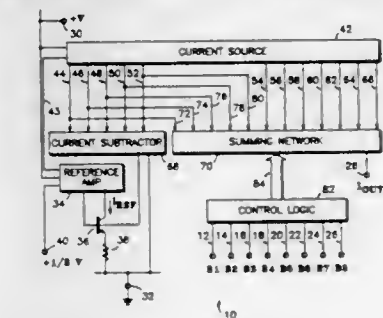
U.S. Cl. 340—347 DA

15 Claims

5. A single power supply digital to analog converter (DAC), comprising:

- first and second power supply conductors to which a source of single polarity operating potential is applied;
- current supply means coupled to said first power supply conductor for providing a plurality of equal segment currents at respective outputs;
- subtractor circuit means coupled between selected outputs of said current supply means and said second power supply conductor for sinking portions of particular ones of said segment currents from said selected outputs to provide decremented binary weighted currents at said selected outputs of said current supply means; and
- summing circuit means responsive to an applied digital signal and being coupled between said outputs of said current

supply means and an output of the DAC for selectively summing said decremented binary weighted currents and



said segment currents to provide a representative analog signal at said output.

4,644,326

UNITARY KEY PANEL

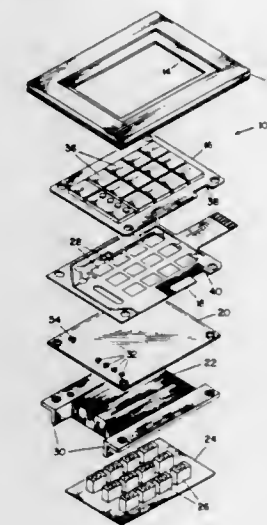
Luis Villalobos, Santa Monica; Steven B. Hirsch, Beverly Hills; Steven G. Hauser, Tarzana, and John Von Buelow, Woodland Hills, all of Calif., assignors to Secure Keyboards Limited, Costa Mesa, Calif.

Filed Jun. 3, 1983, Ser. No. 500,862

Int. Cl.⁴ H04L 1/00

U.S. Cl. 340—365 R

16 Claims



1. An environmentally protected secure keyboard display and input device, comprising:

- means for providing a variable visual display of alphanumeric characters in an array;
- means for restricting the view of said display means to the user of said device;
- means for inputting data including a plurality of input actuation sites overlying said display means;
- unitary flexible keyboard means having rows and columns of keys for separately and independently activating each of said actuation sites, said keyboard means being formed of transparent flexible material and including a peripheral environmental seal and thickened portions forming input keys overlying each of said actuation sites, said unitary keyboard means having its central area including the spaces between keys being open and free of overlying members including said thickened portions, said unitary keyboard being formed of a material having a hardness of in the order of substantially 80 on the Shore round tool

"A" scale to have high impact and abuse resistance and some limited flexibility; said unitary keyboard means being continuous in the central area including the rows and columns of keys; and means including an exterior frame or bezel means for clamping the entire peripheral edges of said keyboard means to underlying portions of said assembly to form a waterproof gasket completely sealing said keyboard means around the entire periphery thereof.

4,644,327

METHODS FOR GENERATING AUDITORY INDICATORS

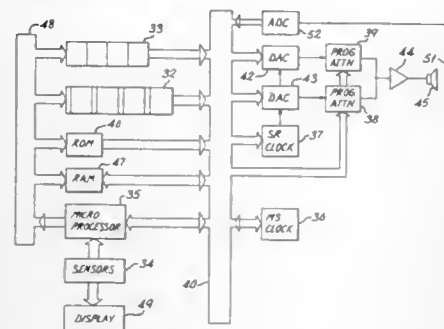
Roy D. Patterson, Great Shelford, England, assignor to National Research Development Corp., London, England
Filed Jul. 20, 1983, Ser. No. 515,501

Claims priority, application United Kingdom, Jul. 30, 1982, 8222029

Int. Cl.⁴ G08B 3/00

U.S. Cl. 340—384 E

4 Claims



1. A method for producing an audible warning, comprising the steps of:

(1) storing, in a memory, information representing plural distinctive sounds respectively associated with plural different predetermined conditions, said information representing each sound including:

(a) data representing at least four frequency components each of which is a frequency in the range of plus or minus 10 percent of an integer multiple of a common fundamental frequency within the range of 150 Hz and 1000 Hz; and

(b) data representing a maximum power level for each component within a power level range of 15 to 30 decibels above an expected background noise threshold level and below 110 dB standard pressure level;

(2) sensing whenever one of said plural predetermined conditions exists;

(3) fetching the information from said memory representing the one of said sounds associated with a predetermined condition sensed by said sensing step; and

(4) generating sound in response to the information fetched by said fetching step, including simultaneously producing four frequency components of sound at frequencies represented by said component-representing data and at power levels represented by said power-level representing data.

4,644,328

BUOYANT ALARM DEVICE

Edward Szymansky, Fairfield; Richard J. Wegrzyn, Stratford, and Richard I. Baker, Newtown, all of Conn., assignors to Remington Products, Inc., Bridgeport, Conn.

Filed Oct. 29, 1982, Ser. No. 437,846

Int. Cl.⁴ G08B 1/08; G01F 23/06

U.S. Cl. 340—539

9 Claims

1. A buoyant alarm device for indicating a disturbance to the

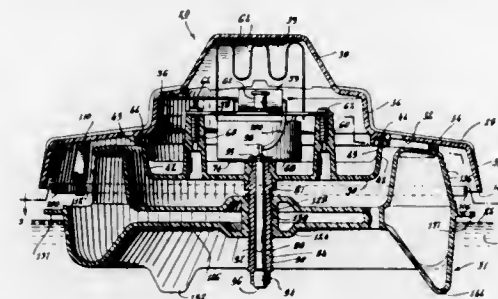
quiescent level of a body of water in which the device is placed comprising:

a. a cover assembly including a cover member having a lower surface thereof and a support member;

b. said cover and support members forming a water-tight chamber therebetween;

c. an annular shaped bouyant body formed of a polymer plastic and adapted to float in a body of water in which it is placed and to support said cover assembly above a quiescent level of said body of water;

d. screw engaging means comprising an internally-threaded aperture formed in said bouyant body and an elongated, externally-threaded, electrically-insulative, polymer-plastic post rigidly mounted to and depending from said support member, said post adapted to engage said threaded aperture and to support said cover assembly on said bouyant



ant body in adjustable spaced relationship for adjusting the position of said cover assembly above said body of water;

e. a first electrode supported by said cover member and extending about said bouyant body;

f. a second electrode comprising a conductive means positioned in said post and having a distal segment thereof positioned adjacent a distal segment of said post for providing continuous electrical contact with said body of water when said device is placed in said body of water; and

g. control circuit means positioned in said water-tight chamber;

h. said circuit means and said first and second electrodes inter-coupled for initiating an alarm indication when an electrically conductive path is established by said body of water between said electrodes.

4,644,329

EDGE OF ROOF PERIMETER WORKMAN SAFETY LIGHT DEVICE

Ralph H. Brueske, Kansas City, Mo., assignor to Butler Manufacturing Company, Kansas city, Mo.

Filed Mar. 27, 1984, Ser. No. 593,842

Int. Cl.⁴ G08B 13/18

U.S. Cl. 340—556

18 Claims

1. A safety device for protecting workmen while construction and/or repairing a roof comprising:

a base support means;

a beam generating/transmitting means;

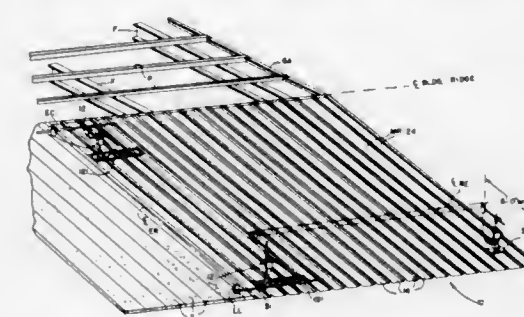
a light beam receiving/control means;

audible warning means connected to said receiving/control means for actuation thereby;

adjustable means for supporting both said light beam generating/transmitting means and said receiving/control means on said base support means, wherein said adjustable means for securely attaching said light beam transmitting/receiving means to said support means includes a plurality of elongated pipes, each of said pipes being mounted in a clamp fixture which permits slidability thereof, and adjustable clamp means for fixing said pipe at a desired position in said clamp structure,

roof clamping means for removably attaching said base

support means on a roof, said clamping means including a C-clamp having one fixed edge and one adjustable mem-



ber for clamping said structure to a locking seam between adjacent roof panels.

4,644,330

ANTI-SNORING DEVICE

Anthony R. Dowling, 7 Wentworth Road, Vaucluse, New South Wales 2030, Australia

Filed Oct. 9, 1984, Ser. No. 658,492

Claims priority, application Australia, Oct. 11, 1983, PG1776

Int. Cl.⁴ G08B 23/00

U.S. Cl. 340—575

9 Claims



1. A compact self-contained electronic anti-snoring device adapted to be worn in or mounted on the outer ear of the user, said device comprising receiving means adapted to fit in the ear and detect snoring sounds via vibrations in the head and the auditory canal of the ear, signal generating means connected to the output of said receiving means and responsive to detection of the snoring sounds for generating an aversive audio signal, and speaker means connected to said signal generating means and adapted to be worn in the outer ear of the user.

4,644,331

FIRE ALARM SYSTEM

Eige Matsushita, Kanagawa, and Tetsuya Nagashima, Tokyo, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Jun. 18, 1985, Ser. No. 746,116

Claims priority, application Japan, Jun. 29, 1984, 59-134830

Int. Cl.⁴ G08B 17/06

U.S. Cl. 340—587

6 Claims

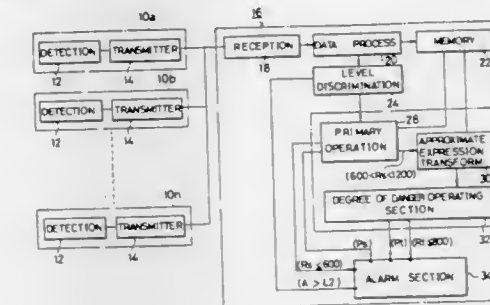
1. A fire alarm system comprising:

a detecting section for detecting and outputting an analog value corresponding to a change in a physical phenomenon of the ambient circumstances;

sampling means for sampling at a predetermined period the analog detection signal outputted from said detecting section;

data processing means for sequentially storing sampled data from said sampling means and for performing an averag-

ing process of a plurality of said data stored as one group; and



an alarm means for discriminating a fire on the basis of averaged data from said data processing means and then generating a fire alarm.

4,644,332

DRY LUBE LEVEL SENSOR

Randall C. Graham, Nashville, Tenn., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 18, 1985, Ser. No. 788,904

Int. Cl.⁴ G08B 21/00; H01H 35/18

U.S. Cl. 340—624

2 Claims



1. A level sensor (34), comprising:
a polypropylene bottle float (40);
a magnet (42), attached to said bottle float (40);
a vertically disposed PVC float tube (44) for floating said bottle float;
a mounting base (54);
an adapter (52), having a cavity therein for connecting said float tube (44) to said mounting base (54);
a tubing connector (50) for communicating fluid to and from said float tube;
a magnetic reed switch (56) sealed within said cavity for closing off said tube's (44) bottom and for actuation by proximity to said floating magnet according to the level in said float tube;
a cap (46), having a vent for closing off said tube's (44) top; and
a vertically disposed adjustable bracket (60) having an elongated vertical slot and having a horizontal platform attached to said mounting base, said bracket for being mounted on a permanent fixture (62) for providing level adjustability for the level which causes actuation of said reed switch.

4,644,333

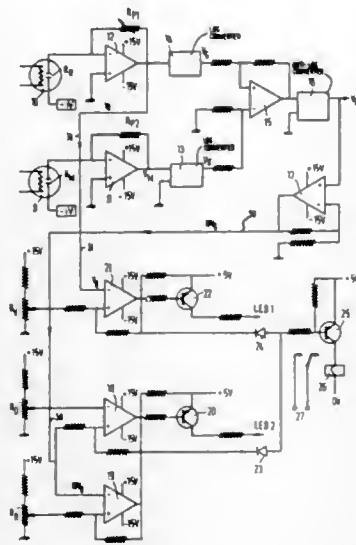
GAS SENSOR AND DETECTION SYSTEM COMPRISING SUCH A SENSOR

Antoon W. Barendsz, Katwijk Aan Zee; Cornelis A. van Beest, Leiderdorp, and Robert Leur, Leidschendam, all of Netherlands, assignors to Staat der Nederlanden (Staatsbedrijf der Rosterijen, Telegrafie en Telefonie), The Hague, Netherlands
Filed Oct. 4, 1984, Ser. No. 657,798

Claims priority, application Netherlands, Oct. 14, 1983, 8303544

Int. Cl.⁴ G08B 17/10
U.S. Cl. 340—634

6 Claims



1. Apparatus for monitoring a gas flow containing sensor-affecting components for determining the content of target gas components among said sensor-affecting components of said gas flow, comprising:

first semi-conductor gas sensing means located in a first chamber for obtaining a first signal indicative of the response of said gas sensing means to all of the sensor-affecting components contained in a gas flow passing through said first chamber;

filter means connected to said first chamber for receiving said gas flow sensed by said first semi-conductor gas sensing means and including absorption means for absorbing the full amount of target gas components among said sensor-affecting components contained in said gas flow while passing the full amount of non-target gas components contained in said gas flow, and

second semi-conductor gas sensing means disposed in a second chamber for receiving directly from said filter means said gas flow passed by said filter means, for producing a second signal indicative of sensor response to non-target sensor-affecting gas components contained in the gas flow received from said filter means, said first and second semi-conductor gas sensing means being sufficiently similar for enabling comparative processing of said first and second signals for determining the content of target gas components in the monitored gas flow as sensed by said first semi-conductor sensing means.

4,644,334

MONITORING APPARATUS FOR A CONSTRUCTION MACHINE

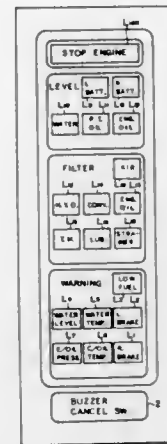
Tokuhiro Yato, Yawata, and Yoshio Tsutsumi, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 420,823, Sep. 21, 1982, abandoned. This application Jan. 31, 1986, Ser. No. 824,927

Claims priority, application Japan, Sep. 25, 1981, 56-151595
Int. Cl.⁴ G08B 21/00

U.S. Cl. 340—679

9 Claims



1. A monitoring apparatus for a construction machine essentially comprising:

engine operation/stop detecting means for detecting if an engine is in a stopped or operating state to issue a signal of one level when the engine is in the stopped state and a signal of the other level when the engine is in its operating state;

a plurality of sensors for detecting abnormality states in said engine other than stop and operation, and in auxiliary equipments of the construction machine;

a plurality of display means; and

a plurality of control circuits, each associated with a respective one of said plurality of sensors, and each receiving an output of said engine operation/stop detecting means, for flickering said display means beginning after an individually selectable lapse of time after an abnormality occurs and is detected by the associated sensor; and means for immediately causing said engine to idle upon said detection of abnormality occurrence and before said lapse of time.

4,644,335

APPARATUS AND METHOD FOR MONITORING DRILL BIT CONDITION AND DEPTH OF DRILLING

Sheree H. Wen, Mohegan Lake, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 5, 1985, Ser. No. 720,340
Int. Cl.⁴ G08B 21/00

U.S. Cl. 340—683

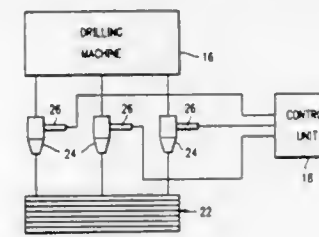
12 Claims

1. A apparatus for drilling to a predetermined depth of a multilayered workpiece, the drilling of said workpiece causing vibrations having a particular acoustic signature dependent upon the medium being drilled, said apparatus comprising:

an acoustic detector means for producing an output signal in response to the vibrations caused by drilling through the layers of said workpiece, said output signal having a sequence of waveforms representing the acoustic signatures of the layers;

control means for comparing the output signal to a reference signal for each type of layer, and for counting the number

of occurrences of the waveform representing the acoustic signature for each type of layer; and



means for stopping the drilling operation upon reaching a predetermined count of waveform occurrences for a particular layer type.

4,644,336

COLOR DISPLAY OF RELATED PARAMETERS

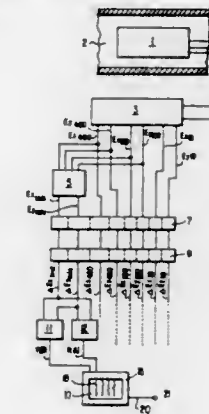
Richard H. Mark, Jr., Pittsfield, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1984, Ser. No. 621,003

Int. Cl.⁴ A09A 1/28

U.S. Cl. 340—701

12 Claims



1. A method for producing a color display of eddy current test data from a signal produced by an eddy current detector and which varies in amplitude and in phase relative to a reference signal as the detector is displaced relative to a test body, comprising:

producing a signal representative of the relative displacement of the detector, a signal representative of the amplitude of the detector signal, and a signal representative of the relative phase of the detector signal; and

supplying the representative signals to a color display device for producing a trace which varies with respect to a base line, wherein the trace passes through a line that is perpendicular to the base line at a point on the base line that is determined by the signal representative of the relative displacement of the detector, wherein the trace has an amplitude, along the line perpendicular to the base line, that is a function of the signal representative of the amplitude of the detector signal, and wherein at least one colored point is displayed along the line that is perpendicular to the base line, the at least one colored point having a hue that is a function of the signal representative of the relative phase of the detector signal.

171-153 O.G.—87-17

4,644,337

METHOD AND APPARATUS FOR CONTROLLING OSCILLOSCOPE DISPLAYED MENU SELECTION

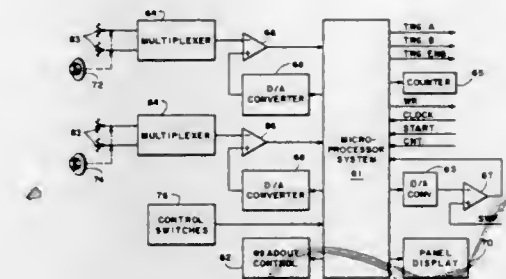
Gordon W. Shank, Portland; Lloyd R. Bristol, Tigard; David H. Eby, Aloha, all of Oreg., and Jeffrey A. Kleck, Vancouver, Wash., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 29, 1984, Ser. No. 665,692

Int. Cl.⁴ G01R 13/22

U.S. Cl. 340—709

9 Claims



1. A method for modifying the operating configuration of an oscilloscope, the method comprising the steps of:

(a) displaying a menu on a screen of said oscilloscope, the menu comprising a set of field codes along with one set of configuration codes associated with each displayed field code, each field code representing a variable oscilloscope operating parameter and each configuration code representing an alternately selectable operating mode within the operating parameter;

(b) rotating a first control knob to select a field code from among said set of displayed field codes, such selected field code being visibly distinguished from all others on the screen as having been selected; and

(c) rotating a second control knob to select one configuration code of the set of configuration codes associated with the selected field code, such selected configuration code being visibly distinguished from all other configuration codes associated with the selected field code as having been selected.

4,644,338

DOT-MATRIX LIQUID CRYSTAL DISPLAY

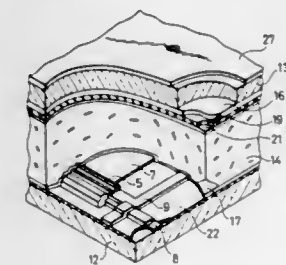
Shigeo Aoki, Habikino; Junichi Tamamura, and Yasuhiro Ukai, both of Yao, all of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jul. 1, 1983, Ser. No. 510,481

Claims priority, application Japan, Jul. 12, 1982, 57-120808
Int. Cl.⁴ G09G 3/36

U.S. Cl. 340—719

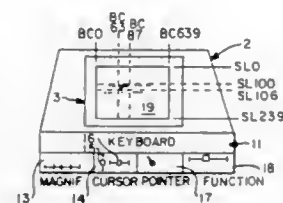
12 Claims



1. A dot-matrix liquid crystal display comprising:
a first transparent substrate fabricated of an insulating material;
a second transparent substrate fabricated of an insulating material disposed closely adjacent and parallel to said first

substrate and having marginal edges sealed to said first substrate to form a cell;
 a liquid crystal sealed in said cell;
 a common electrode deposited substantially entirely on an inner surface of said second substrate to define a display area of said liquid crystal display;
 a plurality of transparent matrix element electrodes formed in rows and columns directly on said first substrate to define display elements of a dot-matrix within said display area;
 a plurality of transparent row electrode lines formed in rows directly on said first substrate to extend along the respective rows of said matrix element electrodes;
 element drive thin-film transistors arranged in rows and columns on said first substrate within said display area, each of said thin-film transistors having a transparent source electrode formed directly on said first substrate integrally with a corresponding one of said row electrode lines, a transparent drain electrode formed directly on said first substrate integrally with a corresponding one of said matrix element electrodes, said source and drain electrodes being closely adjacent to one another, an amorphous silicon semiconductor layer formed on said first substrate to extend between and overlap said closely adjacent source and drain electrodes, a gate insulation film formed to cover said semiconductor layer, and a gate electrode formed on said gate insulation film in spaced facing relation to said semiconductor layer, said gate insulation film substantially entirely covering said display area; and
 column electrode lines formed integrally with the corresponding columns of said gate electrodes on said gate insulation film in a direction perpendicular to said row electrode lines.

4,644,339
LOW VISION ADAPTER FOR DISPLAY TERMINALS
 Donald J. Ruder, 1 Fenwood Dr., Atherton, Calif. 94025
 Filed Mar. 2, 1983, Ser. No. 471,286
 Int. Cl.⁴ G09G 1/00
 U.S. Cl. 340—731 14 Claims

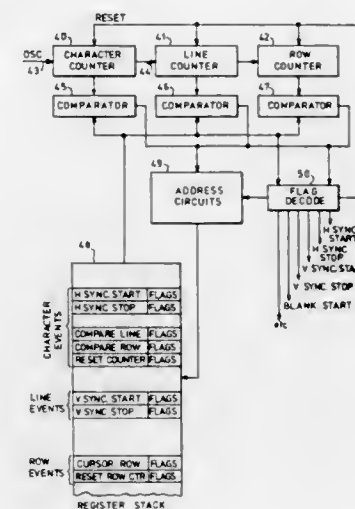


1. An adapter to enable a visually impaired viewer to view a raster scan displayed image in an output device where the display apparatus includes a generator for forming generated image signals in the form of generated video display signals representing an unmodified image and includes a display device for forming the displayed image in response to the generated video display signals, said display device operative upon receipt of said generated video display signals to display said unmodified image, said generated video display signals including a generated video data signal having bit scanlines defined by an output horizontal sync signal and an output vertical sync signal, each of said bit scanlines having a fixed duration measured by said horizontal sync signal, each of said bit scanlines defining the generated video data signal for one horizontal scanline where each bit in each scanline of the generated video data signal is represented in an unlocked form, said displayed image having a size determined by said video data signal, said adapter comprising:

bit clock generator means connected to receive said horizon-

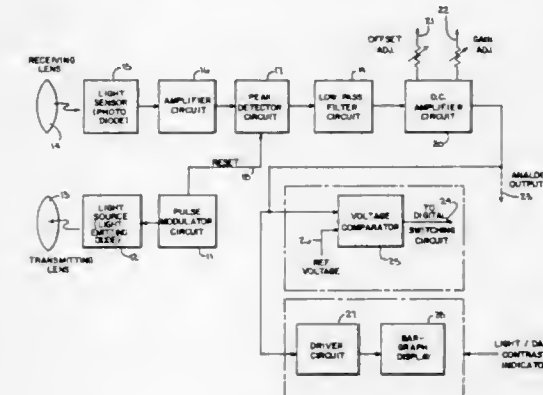
tal sync signal for generating a bit clock signal synchronized by the horizontal sync signal,
 input register means, connected to receive the generated video data signal and the bit clock signal, for storing bits for each scanline of the generated video data signal in clocked form thereby providing intercepted video data signals representing the generated image,
 means connected in response to a signal from a viewer to prevent said unmodified image from being displayed,
 storage means, connected to said input register means, for storing said intercepted image, said storage means including random access memory means,
 control means including means for controlling the accessing of signals from and to said memory means, including means controlling the storage of said intercepted video data signals into said memory means, and including means controlling the modification of a portion of said intercepted video data signals to form stored signals in said memory means,
 means for transforming at least a portion of the stored signals to form display signals representing a modified image,
 means for transferring said display signals to said display device whereby said displayed image corresponds to said modified image.

4,644,340
PROGRAMMABLE TIMING CIRCUIT FOR CATHODE RAY TUBE
 Brian L. Holloway, and Roger J. Llewellyn, both of Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Dec. 19, 1983, Ser. No. 562,949
 Claims priority, application European Pat. Off., Jun. 30, 1983, 83303792.2
 Int. Cl.⁴ G09G 1/16
 U.S. Cl. 340—749 6 Claims



1. A programmable timing circuit for a cathode ray tube display comprising in combination a plurality of counters containing counts indicative of the position of the electron beam as it scans across the face of said cathode ray tube, means for comparing the count in each of said counters with a stored value indicative of when a specified event is to occur, means for generating a control signal when a match is detected by said comparator means and a plurality of values representative of programmed events stored in a register stack in such a manner as to be presented to said comparator means in the sequence in which events are to occur, said control signal generating means being operable to decode a flag indicative of the event when said match is detected.

4,644,341
CONTRAST INDICATING ARRANGEMENT IN PHOTOELECTRIC SENSING SYSTEMS
 Robert A. Warner, Clearwater, Fla., assignor to Tri-Tronics Company, Inc., Tampa, Fla.
 Filed Jul. 5, 1984, Ser. No. 627,853
 Int. Cl.⁴ G09G 3/00
 U.S. Cl. 340—753 10 Claims



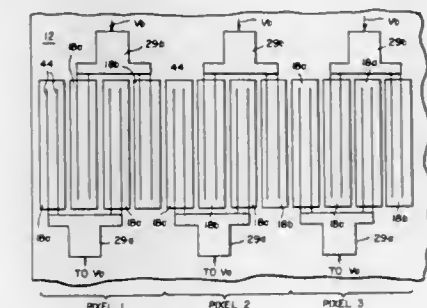
1. In a photoelectric sensing system of the type which has a light transmitting device and a photoelectric light receiving device providing an electrical output; in which the intensity of the light received by said light receiving device undergoes variations in accordance with the presence or condition of an object or object or objects in the light path between said light transmitting device and said light receiving device; and in which an electronic processing circuit is connected to said output, producing from said output an electric analog signal which is a function of said light variations and hence permits the presence or condition of said object or objects in said light path to be detected,

a contrast indicating arrangement including a control circuit connected to said electronic processing circuit and a bargraph display in the form of an array of light emitting diodes connected to said control circuit,
 said control circuit successively illuminating said light emitting diodes in instantaneous response to the strength of said analog signal,
 so that both the maximum light intensity and the minimum light intensity detected by said photoelectric light receiving device, which between them determine the available range of light variation, can be read off said bargraph display during the photoelectric sensing operation.

4,644,342
ARRAY OF LIGHT EMITTING DIODES FOR PRODUCING GRAY SCALE LIGHT IMAGES
 Daniel C. Abbas, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
 Filed Mar. 29, 1984, Ser. No. 594,510
 Int. Cl.⁴ G05G 3/14 7 Claims

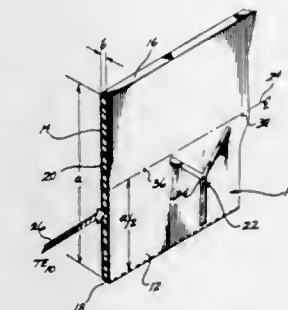
1. A monolithic device for producing gray scale light images at pixels of an image zone, comprising:
 an array of selectively addressable LEDs arranged so that discrete regions of the array constitute respective pixels of the array, each array pixel having first and second LEDs addressed by a single common lead, and a third separately addressable LED interleaved between said first and second LEDs, each such array pixel LED when addressed being responsive to a forward bias voltage to emit light which forms a light image at a corresponding pixel of the

image zone, whereby the selective addressing of the LEDs of the array pixels causes the addressed LEDs to



emit light and produce desired gray scale light images at corresponding image zone pixels.

4,644,343
Y-SLOT WAVEGUIDE ANTENNA ELEMENT
 Wayne A. Schneider, Kent; Margaret S. Morse, Renton, and John Tjoelker, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
 Filed Sep. 30, 1985, Ser. No. 781,943
 Int. Cl.⁴ H01Q 13/10
 U.S. Cl. 343—767 16 Claims



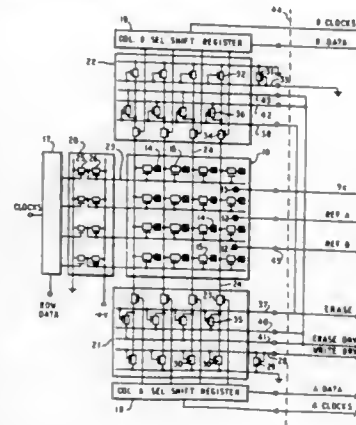
1. An antenna element for radiating circularly polarized electromagnetic energy comprising:
 a length of dielectrically-filled waveguide, said dielectrically-filled waveguide being rectangular in cross-sectional geometry, having two oppositely disposed parallel conductive broad faces of width a and two oppositely disposed parallel conductive sidewalls of height b ; and
 a substantially Y-shaped slot formed in and extending through one of said conductive broad faces of said dielectrically-filled waveguide, said substantially Y-shaped slot being positioned to place substantially all of said substantially Y-shaped slot to one side of the axial centerline of the conductive broad face of said dielectrically-filled waveguide that contains said substantially Y-shaped slot.

4,644,344
ELECTROCHROMIC MATRIX DISPLAY
 Thor A. Larsen, Woodstock, N.Y.; David H. Martin, Winchester, and Frank T. Moth, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Dec. 12, 1984, Ser. No. 681,351
 Claims priority, application United Kingdom, Dec. 29, 1983, 8334587; European Pat. Off., Nov. 15, 1984, 84307919.5
 Int. Cl.⁴ G09G 3/34 6 Claims

1. An electrochromic matrix display having an electrochromic cell enclosing a matrix of display electrodes, an electro-

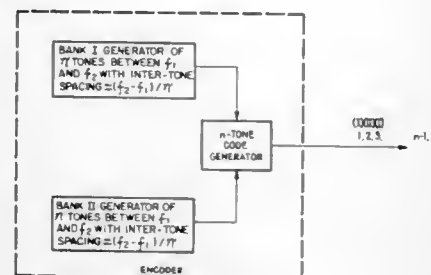
lyte, a counter electrode and a reference electrode for sensing the potential of the electrolyte, the display electrodes being supported on a substrate above a corresponding matrix of transistor switches located at the intersections of a plurality of gate lines and a plurality of drive lines;

the display further comprising gate selection means for defining a selection of gate lines and drive selection means for defining a selection of drive lines, the gate and drive selection means being operable to define a selection of transistor/display electrode pairs, each transistor having a control electrode and being switchable by a signal applied to its control electrode on the respective gate line to pass electric current on the respective drive line to its corresponding display electrode, a write current source,



means for selectively applying write current from the source to the defined selection of drive lines to write the display electrodes selected by the gate and drive selection means, an erase voltage source arranged to develop an erase voltage which is fixed with respect to the reference electrode potential, means for selectively applying the erase voltage to selected drive lines whereby display electrodes selected by the gate and drive selection means are driven potentiostatically to the erase voltage potential by flow of erase current on the selected drive lines, the display being characterized in that the means for selectively applying the erase voltage is arranged to apply the erase voltage to both ends of the selected drive lines simultaneously.

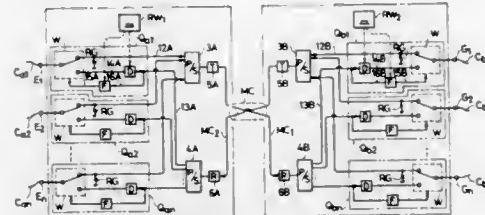
4,644,345
INTERLEAVED DUAL BANK ENCODER
Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850
Filed Jul. 29, 1983, Ser. No. 518,417
Int. Cl.⁴ H04Q 9/12
U.S. Cl. 340—825.48



1. An encoder comprising means for generating a plurality of signals of predetermined frequencies selected alternately from two different banks of frequencies, each bank including a number n' of frequencies lying in a frequency spectrum be-

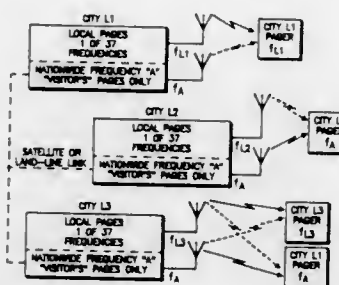
tween a first frequency f_1 and a second frequency f_2 with the frequency difference between adjacent frequencies in each bank being substantially $(f_2 - f_1)/n'$.

4,644,346
MULTIPLEX TRANSMISSION SYSTEM
Tetsuo Ito, and Setsuo Arita, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 5, 1984, Ser. No. 658,022
Claims priority, application Japan, Oct. 5, 1983, 58-185065
Int. Cl.⁴ G08B 5/22, 5/00; G01J 1/34
U.S. Cl. 340—825.03



1. A multiplex transmission system having a transmission unit comprising a transmitter, a receiver, a serializer which is connected to said transmitter and which produces a serial information signal wherein a plurality of received information signals are arrayed in series, a deserializer which is connected to said receiver and which separates a received serial information signal into a plurality of information signals, a plurality of change-over means connected to a plurality of signal transmission cables respectively and for connecting the corresponding signal transmission cables to either said serializer or said deserializer, and change-over control means provided for each said change-over means and for receiving the information signal separated by said deserializer and for controlling a connection status of the corresponding change-over means on the basis of the received information signal, including delay means connected to said deserializer and said corresponding change-over means and for receiving the information signal delivered from said deserializer, and memory means connected to said deserializer and said corresponding change-over means and for receiving the information signal delivered from said deserializer without being passed through said delay means.

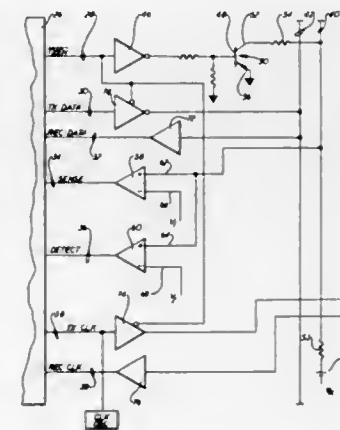
4,644,347
MULTIPLE FREQUENCY MESSAGE SYSTEM
Alfred R. Lucas, Coral Springs, and Jerome C. Leonard, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 10, 1983, Ser. No. 522,066
Int. Cl.⁴ H01H 67/00; G08B 5/22; H04Q 7/00; H04B 7/00
U.S. Cl. 340—825.04



1. A multiple frequency message system, comprising: transmitter means for transmitting coded message signals on at least two channels in a plurality of geographic areas,

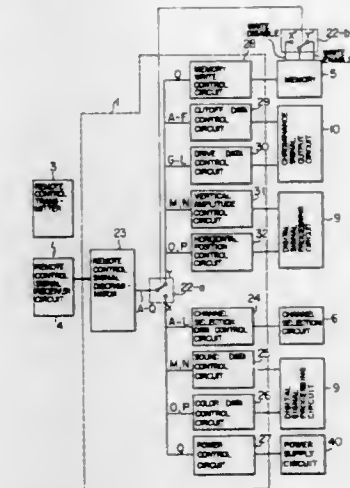
said coded message signals including channel identification information, said transmitter means further transmitting said channel identification information at least once during a periodic transmitter time interval; and receiver means, capable of receiving transmitted coded message signals on said two channels, said receiver means including channel selecting means responsive to said channel identification information, said channel selecting means maintaining said receiver operation on the first channel when said channel identification information detected during a periodic receiver time interval is the same as predetermined channel identification information.

4,644,348
APPARATUS FOR PROVIDING MASTERLESS COLLISION DETECTION
Eugene P. Gerety, Wolcott, Conn., assignor to ITT Corporation, New York, N.Y.
Filed Nov. 13, 1984, Ser. No. 670,682
The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.
Int. Cl.⁴ H04H 1/00
U.S. Cl. 340—825.06



1. An apparatus for providing masterless collision detection in a communication network having a plurality of elements capable of transmitting data; said apparatus comprising: a data transmission bus common to said plurality of elements; a collision detection reference bus common to said plurality of elements, said collision detection reference bus being distinct from said data transmission bus; means, for establishing a voltage level on said collision detection reference bus; means, associated with each said element, for changing said voltage level on said collision detection reference bus; means, associated with each said element, for monitoring the voltage on said collision detection reference bus said monitoring means providing a signal indicative of said voltage, said voltage monitoring means including a comparator having one input thereto connected to said collision detection reference bus and the other input connected to a preselected reference, said comparator generating a signal only when at least two of said voltage level changing means are operative; and means, associated with each transmission element, and responsive to said signal, for providing a signal useful for controlling the injection of data onto said data transmission bus.

4,644,349
CONTROL UNIT INCLUDING A CIRCUIT FOR CONTROLLING AND SETTING CONTROL DATA FOR A DIGITAL PROCESSING CIRCUIT OF A COLOR TELEVISION RECEIVER
Masaaki Fujita, Takatsuki; Mikio Sasaki, Ibaraki; Teruo Goto, and Namio Yamaguchi, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 20, 1984, Ser. No. 642,263
Claims priority, application Japan, Aug. 25, 1983, 58-155468; Jun. 4, 1984, 59-114977; Jul. 19, 1984, 59-149985
Int. Cl.⁴ H04Q 7/00; H04B 1/16
U.S. Cl. 340—825.25

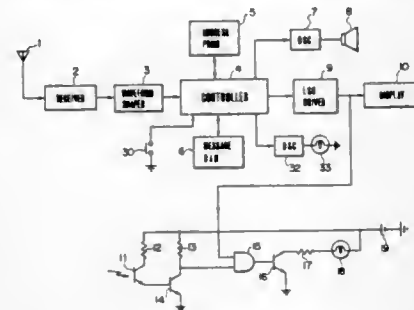


1. A control unit comprising: a signal processing circuit for converting a television signal into a digital signal, and for digitally processing the converted signal; a memory for storing control data including initial values required for the digital signal processing of said signal processing circuit; a control circuit including a control microcomputer for controlling said signal processing circuit and said memory; transmitter and receiver circuits for transmitting and receiving respectively at least one remote control signal; a first switch for setting said control circuit in a first mode or a second mode, said control circuit when set in said first mode controlling the digital processing including sound-volume adjustment of said signal processing circuit in accordance with said at least one remote control signal, and said control circuit when set in said second mode controlling the signal processing of said signal processing circuit to update the control data stored in said memory by adjustably setting said control data in accordance with said at least one remote control signal; and a second switch selectively operable for inhibiting in said first mode the updating of the control data stored in said memory and for allowing in said second mode the updating of the data stored in said memory.

4,644,350
PAGER WITH AUTOMATICALLY ILLUMINATED DISPLAY
Daisuke Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 25, 1984, Ser. No. 654,082
Claims priority, application Japan, Sep. 26, 1983, 58-178683
Int. Cl.⁴ G09G 3/18
U.S. Cl. 340—825.44

1. A pager comprising:

a receiver for receiving a paging signal bearing an address of said pager and a message;
means for detecting said address in the received signal;
means for displaying said message in response to the detection of said address;
a light sensor for generating a second signal indicating that



ambient light has a luminance lower than a predetermined value;
means for detecting a coincidence between the presence of said message on said display means and the generation of said second signal; and
a light source for illuminating said display means in response to the detection of said coincidence.

4,644,351

TWO WAY PERSONAL MESSAGE SYSTEM WITH EXTENDED COVERAGE

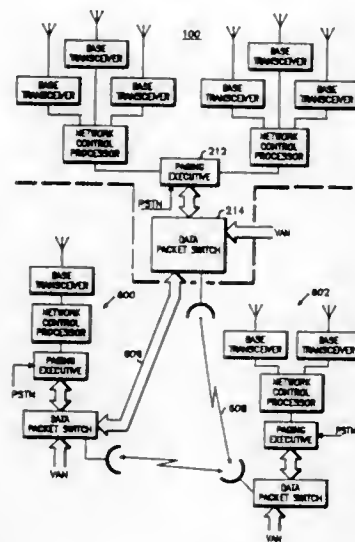
Alan P. Zabarsky, Coral Springs, Fla.; Suzette D. Steiger, Lincolnwood; Edward F. Staiano, Rolling Meadows, both of Ill., and Jerry L. Sandvos, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1984, Ser. No. 608,334

Int. Cl.⁴ H04Q 7/00; G08B 5/22; H04B 1/00

U.S. Cl. 340—825.44

29 Claims



1. A communications system for carrying messages via a radio channel between one central site of a plurality of central sites, each central site having at least one essentially distinct radio coverage area, and a plurality of two-way remote units, each remote unit having a unique address and an association with one of the central sites, comprising:

means for accepting messages in a first central site, each of said messages having an address identifying at least one remote unit;
means for maintaining a file of remote unit addresses, their

central site associations, and location information for those remote units associated with said first central site but located in a second central site;
means for storing an accepted message and address at said first central site for later communication to an addressed selected remote unit if said selected remote unit is associated with said first central site;
means for routing any of said accepted messages and addresses from said first central site to said second central site when an addressed remote unit is determined to be in said second central site location;
means for selecting the radio coverage area of said first central site which is most likely to contain said addressed remote unit and for transmitting said stored message to said addressed remote unit;
means for receiving and storing said transmitted message at said addressed remote unit and for transmitting a message received acknowledgement signal in response thereto;
means for deleting said stored message and address at said first central site upon receipt of said acknowledgement signal; and
means at each remote unit associated with said first central site for transmitting its unique address to said second central site when located in the radio coverage area of said second central site thereby logging in to said second central site and causing location information to be added to said maintained file.

4,644,352

RADIO WAVE DATA TRANSMISSION WATCH DEVICE

Hiroshi Fujii, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

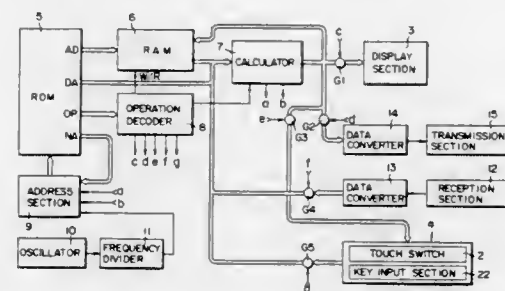
Filed Mar. 18, 1985, Ser. No. 713,231

Claims priority, application Japan, Mar. 30, 1984, 59-62696; Nov. 13, 1984, 59-240302; Nov. 13, 1984, 59-172827[U]; Dec. 14, 1984, 59-262848

Int. Cl.⁴ H04Q 7/00; H04B

U.S. Cl. 340—825.440

13 Claims



1. A radio wave data transmission watch apparatus, comprising:
switching means, including a plurality of switches, for generating switching signals when said switches are activated by a finger;
electronic circuit means including trace position data generating means for generating trace position data from the switching signals of said switching means when tracing on said switches with the finger, and recognizing means for recognizing a traced character from said traced position data and generating corresponding recognition data;
selecting means for selecting a type of data among said recognition data and said trace position data;
converting means for converting the data selected by said selecting means, and identifying data indicative of the selected type of data, into a radio signal; and
transmitting means for transmitting the radio wave signal produced by said converting means.

4,644,353

PROGRAMMABLE INTERFACE

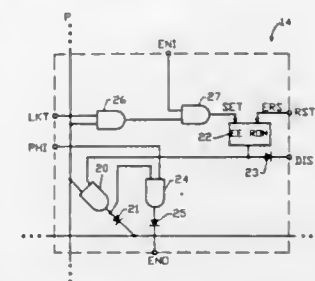
James Y. Wei, Santa Clara, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Jun. 17, 1985, Ser. No. 745,580

Int. Cl.⁴ H04Q 1/00

U.S. Cl. 340—825.83

11 Claims



1. A programmable interface for coupling an electronic system to a source of control signals, said interface comprising:
input means for connecting to said source of control signals;
output means for connecting to said electronic system; and
crossbar switching means for selectively establishing at least one signal path from said input means to said output means when said interface is in a first operating mode, said crossbar switching means including electrically erasable read-only memory means for being set to determine said signal path, said signal path being programmable in a second operating mode of said interface in response to a pulse signal provided through said input means and coupled to said electrically erasable read-only memory means.

4,644,354

FLUID DETECTOR

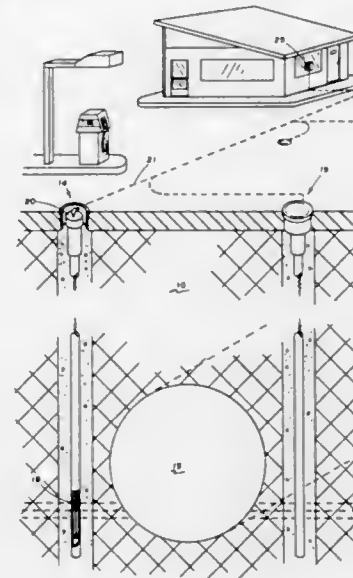
Roy E. Kidd, Clayton, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 24, 1985, Ser. No. 747,843

Int. Cl.⁴ G08C 15/08

U.S. Cl. 340—870.27

6 Claims



1. An apparatus for detecting the presence of fluids, comprising
sensing means for sensing the presence of a polar liquid, a non-polar liquid, and a dry condition and for producing a polar liquid signal, a non-polar liquid signal, and a dry condition signal, each of said signals capable of assuming at least two levels, a first level indicative of the absence of the fluid or condition and a second level indicative of the presence of the fluid or condition;

reference means for setting said second level of said polar liquid signal to a first predetermined value, for setting said second level of said non-polar liquid signal to a second predetermined value, and for setting said second level of said dry condition signal to a third predetermined value;
clock means for producing a timing signal; and
output means responsive to said timing signal for sequencing said polar liquid signal, said non-polar liquid signal, and said dry condition signal on a single output line.

4,644,355

DISPLACEMENT MEASUREMENT DEVICES

Alexander Russell, Glasgow, Scotland, assignor to Sacol Power-line Limited, Totton, England

Filed Nov. 6, 1984, Ser. No. 668,749

Claims priority, application United Kingdom, Nov. 11, 1983, 8330211; May 21, 1984, 8412937; Jul. 23, 1984, 8418742

Int. Cl.⁴ G08C 19/08

U.S. Cl. 340—870.36

17 Claims



1. A displacement measurement device which is operable to measure relative displacement between two parts, the device comprising a pair of electrically similar drive coils and an output induction coil arrangement for mounting on one of the two parts, the drive coils and the output induction coil arrangement being substantially coaxial with the latter being located between the two drive coils which are spaced apart axially, and an intermediate induction coil arrangement for mounting on the other of the two parts substantially coaxially with the drive coils and the output induction coil arrangement mounted on said one part, the ends of the intermediate induction coil arrangement being short circuited, the device being arranged such that, in operation of it, the two drive coils are energized simultaneously by an applied alternating current signal so that alternating current flow is induced through the intermediate induction coil arrangement and through the output induction coil arrangement by the applied alternating current flow through the drive coils and by the induced current flow through the intermediate induction coil arrangement respectively, the current flow induced through the output induction coil arrangement serving as an output signal which is indicative of measured relative displacement between the two parts.

4,644,356

BISTATIC COHERENT RADAR RECEIVING SYSTEM

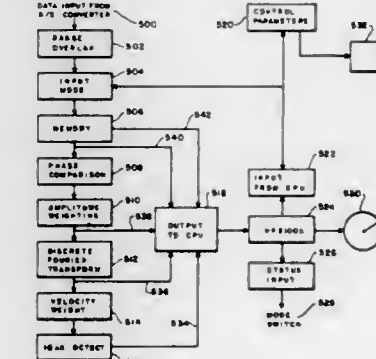
Larry C. Yamano, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 31, 1984, Ser. No. 666,841

Int. Cl.⁴ G01S 13/52

U.S. Cl. 342—160

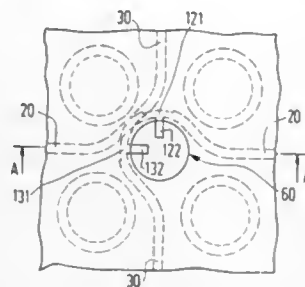
20 Claims



1. A method for coherently processing MTI radar receiver

- (a) a microstrip antenna portion having a ground plane conductor, a radiation plane conductor dielectrically spaced from said ground plane conductor, and a conductive member connecting said radiation plane conductor to said ground plane conductor;
- (b) a unipole antenna portion coupled to said radiation plane conductor; and
- (c) means for connecting said combination antenna to an external circuit.

4,644,362
WAVEGUIDE ANTENNA OUTPUT FOR A HIGH-FREQUENCY PLANAR ANTENNA ARRAY OF RADIATING OR RECEIVING ELEMENTS
 Emmanuel Rammos, Creteil, France, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Aug. 9, 1984, Ser. No. 639,284
 Claims priority, application France, Aug. 19, 1983, 83 13478
 Int. Cl.⁴ H01Q 13/02
 U.S. Cl. 343—778 2 Claims



1. An antenna system including a planar antenna having an array of radiating elements coupled to a waveguide, said antenna system comprising:

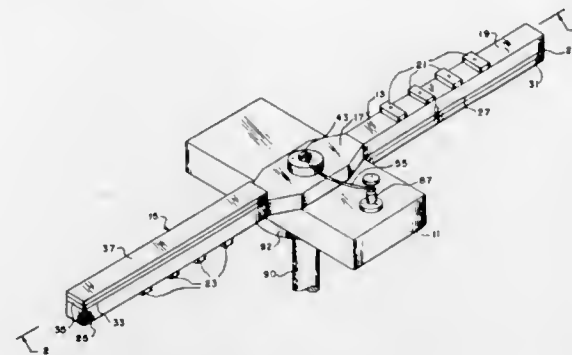
- (a) a first layer including a plurality of radiating-element-defining cavities and a waveguide-defining cavity, said cavities having conductive inner surfaces;
- (b) a second layer disposed on one side of the first layer and including a plurality of radiating-element-defining cavities and a waveguide-defining cavity aligned with corresponding ones of the cavities in the first layer, said cavities in the second layer having conductive inner surfaces, said waveguide-defining cavity extending into the second layer from a side facing the first layer to a predetermined depth, which is smaller than the second layer thickness, and ending at a short-circuit termination formed by a portion of the conductive inner surface of said cavity which is substantially parallel to said one side of the first layer;
- (c) a third layer disposed on an opposite side of the first layer and including a plurality of radiating-element-defining cavities and a waveguide-defining cavity aligned with corresponding ones of the cavities in the first layer, said cavities in the third layer having conductive inner surfaces, said radiating-element-defining cavities each extending into the third layer from a side facing the first layer to said predetermined depth, which is also smaller than the third layer thickness, and ending at a short-circuit termination formed by a portion of the conductive inner surface of said cavity which is substantially parallel to said opposite side of the first layer;
- (d) a first conductive strip, disposed between the first and second layers, forming a first transmission line network having portions forming respective exciting probes which extend into the waveguide and the radiating elements in a first direction, said network effecting coupling of the radiating elements to the waveguide for radiated energy of a first polarity; and
- (e) a second conductive strip, disposed between the first and second layers, forming a second transmission line network having portions forming respective exciting probes which extend into the waveguide and the radiating elements in a

second direction orthogonal to the first direction, said network effecting coupling of the radiating elements to the waveguide for radiated energy of a second polarity orthogonal to the first polarity.

4,644,363
INTEGRATED DUAL BEAM LINE SCANNING ANTENNA AND NEGATIVE RESISTANCE DIODE OSCILLATOR

Robert E. Horn, Middletown; Harold Jacobs, deceased, late of West Long Branch (by Lydia S. Jacobs, executrix), and Felix Schwering, Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 14, 1985, Ser. No. 733,836
 Int. Cl.⁴ H01Q 13/00, 15/14, 3/02; H03B 7/14
 U.S. Cl. 343—785 16 Claims



1. A dual beam antenna comprising:
 a housing;

first and second longitudinally disposed dielectric waveguides mounted on and extending from opposite ends of said housing and adapted to propagate electromagnetic waves along the length of said waveguides;

a first plurality of transverse perturbations evenly spaced along a top wave radiating surface of said first waveguide; a second plurality of transverse perturbations evenly spaced along a bottom wave radiating surface of said second waveguide;

a resonant cavity within said housing between said waveguides; adjustable oscillator means disposed within said resonant cavity for generating variable electromagnetic waves along said waveguides and radiating said waves outwardly from said top and bottom surfaces; and means for controlling the frequency of said oscillator and angle of radiation of said waves from said waveguide surfaces.

4,644,364
METHOD OF AND MEANS FOR COUPLING A TWO CONDUCTOR TRANSMISSION LINE TO AN ANTENNA
 Malcolm G. Parks, 224 Poplar Ave., San Bruno, Calif. 94066
 Filed Dec. 7, 1984, Ser. No. 679,442
 Int. Cl.⁴ H01Q 9/04
 U.S. Cl. 343—825 12 Claims

1. The method of coupling a two conductor transmission line to a "J"-antenna designed for operation in a given frequency range, said "J"-antenna comprising a substantially rectilinear conductive antenna element having an effective length of at least one quarter wave length at the middle of said given frequency range and a substantially zero impedance point at one end thereof, and of making an optimum impedance match between the transmission line and the "J"-antenna, comprising the steps of:

- (a) placing a substantially rectilinear coupling conductor

- having an effective length of about one quarter wave length at the middle of such given frequency range in close spaced co-planar relation to said antenna element with one end of said coupling conductor adjacent said one end of said antenna element;
- (b) galvanically connecting said one end of said coupling conductor to said one end of said antenna element;
- (c) electrically coupling one conductor of said two conductor transmission line to said antenna element in spaced relation to said one end thereof;

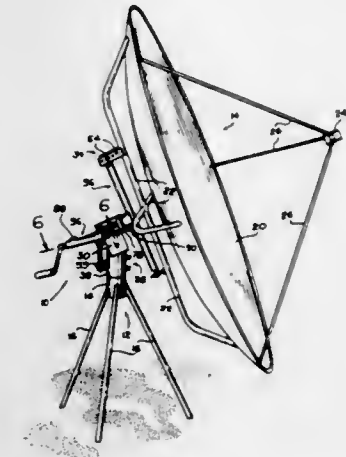


- (d) electrically coupling the other conductor of said two conductor transmission line to said coupling conductor in spaced relation to said one end thereof; and
- (e) selectively adjusting the spacing between said coupling conductor and said antenna element along the coextensive lengths thereof to cause the impedance of said antenna to approach the impedance of said transmission line at a selected frequency in said given frequency range, using a mechanical coupling means extending from the "J"-antenna to a remote location where an operator can make the adjustment while monitoring the impedance match from the remote location to optimize the match.

4,644,365
ADJUSTABLE ANTENNA MOUNT FOR PARABOLIC ANTENNAS
 Leonard A. Horning, 1799 N. River Dr., Kamloops, B.C., Canada V2B 7N4
 Filed Feb. 8, 1985, Ser. No. 699,577
 Int. Cl.⁴ H01Q 3/08
 U.S. Cl. 343—882 16 Claims

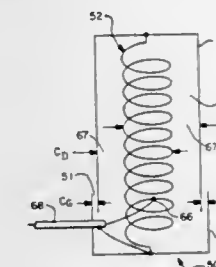
1. An adjustable antenna mount for attaching a directional antenna to a support, said antenna mount comprising:
 a post defining a first axis and having opposed ends including a mounting end and a free end,
 a base assembly rotatable around the first axis and connected to the free end of the post,
 means for coupling said base assembly to said post, said means for coupling including a first sleeve-and-bearing arrangement with a sleeve rotatably fit about a bearing surface;
 an elevation adjustment assembly rotatably coupled to said base assembly by a second sleeve-and-bearing arrangement and rotatable around a second axis substantially perpendicular to said first axis;
 an antenna vertical orientation adjustment assembly rotatable coupled to said elevation adjustment assembly by a third sleeve-and-bearing arrangement and capable of rota-

tion around a third-axis which is substantially perpendicular to said second axis;
 a tracking adjustment assembly rotatably coupled to said vertical orientation adjustment assembly and antenna frame means for coupling said tracking adjustment assembly to said directional antenna, said tracking adjustment assembly coupled to the vertical orientation adjustment assembly by a fourth sleeve-and-bearing arrangement; and



a sweep assembly coupled to said vertical orientation adjustment assembly, said sweep assembly having a means for rotating said tracking adjustment assembly around a fourth axis which is substantially perpendicular to said third axis, said tracking adjustment assembly having a means for adjusting the angle of said antenna frame means relative to said fourth axis.

4,644,366
MINIATURE RADIO TRANSCEIVER ANTENNA
 Frederick J. Scholz, Fremont, Calif., assignor to Amitec, Inc., San Carlos, Calif.
 Filed Sep. 26, 1984, Ser. No. 655,046
 Int. Cl.⁴ H01Q 1/12, 1/36
 U.S. Cl. 343—895 4 Claims



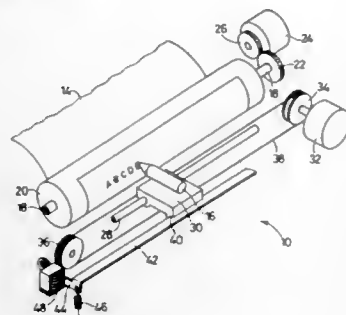
1. An antenna comprising: a dielectric sheet; a first conductor pattern formed on a first side of the sheet; a second conductor pattern formed on the second, opposite side of the sheet and aligned with and connected to corresponding conductors of the first pattern to thereby define a coil having first and second ends, the second end being for connection to ground; a first peripheral conductor formed on the first side of the sheet about a selected length of the periphery of the sheet and connected to the first end of the coil for defining a distributed capacitance with respect to the adjacent conductor pattern; and, a second peripheral conductor formed on the second side of the sheet

about a selected length of the periphery of the sheet and being connected to the second, ground end of the coil for defining a capacitance with respect to the first peripheral conductor to provide a capacitance to ground.

4,644,367

RECORDING PEN APPARATUS

Hiroshi Onoda, and Kenji Mizuno, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Nov. 28, 1984, Ser. No. 675,654
Claims priority, application Japan, Nov. 30, 1983, 58-226481
Int. Cl.⁴ G01D 9/38; B43I 11/00; B41J 5/30; G05B 19/19
U.S. Cl. 346—33 R 6 Claims



1. A recording apparatus having a paper support for supporting a recording sheet of paper, a paper feed unit for feeding the sheet of paper in opposite directions, a carriage supporting a writing instrument and movable in a direction perpendicular to a line of feed of said sheet of paper, a carriage drive unit for moving said carriage in said direction, a writing-instrument drive unit for moving the writing instrument between a recording position in which the writing instrument is in contact with the surface of said sheet of paper, and a non-recording position in which the writing instrument is spaced away from said surface of the paper, and a control unit for drawing a graphical representation by means of relative movements of said carriage and said sheet of paper with the writing instrument held in said recording position, based on input recording data representative of said graphical representation, wherein the improvement comprises:

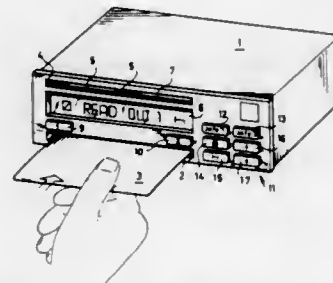
said control unit including memory means for storing said input recording data, means for preparing non-recording data representative of paths of relative non-recording movements between the writing instrument and the sheet of paper, and control means for activating said paper feed unit and said carriage drive unit, according to said non-recording data, to effect said relative non-recording movements with said writing instrument held in said non-recording position,

said preparing means preparing said non-recording data based on said input recording data such that said paths indicate a recording area in which said graphical representation is drawn by said writing instrument, said recording data area indicated by said paths being larger than said graphical representation, whereby an operator can check dimensions and location of said recording area before the graphical representation is actually drawn on said sheet of paper.

4,644,368
TACHOGRAPH FOR MOTOR VEHICLES
Gerhard Mutz, Waldstr. 23, D-7734 Brigachtal, Fed. Rep. of Germany

Filed Feb. 14, 1986, Ser. No. 830,517
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1985, 3505068

Int. Cl.⁴ G01D 9/28
U.S. Cl. 346—33 D 9 Claims



1. Tachograph for motor vehicles with a microprocessor system comprising a time-and-date generator and which supplies a driver's work-time data including driving time, ready time, and rest time, determines the "distance" and speed drive data with signals from the generator, characterized in that said tachograph is equipped with a printing device, in that a semiconductor memory on a data card directed to the driver serves as a data memory in that the work-time data and drive data are entered into defined memory areas of said data memory in addition to already imprinted data specific to said driver when the data card is introduced into said tachograph and in that readout of said data memory and a print out of a tubular drive record are triggered by feeding a print carrier in sheet form into a front feed slot on a front surface of said tachograph.

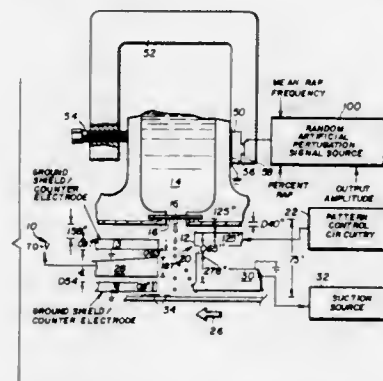
4,644,369

RANDOM ARTIFICIALLY PERTURBED LIQUID JET APPLICATOR APPARATUS AND METHOD

Rodger L. Gamblin, Dayton, and Rodger C. Burchett, Miamisburg, both of Ohio, assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 428,490, Sep. 28, 1982, Pat. No. 4,523,202, which is a continuation-in-part of Ser. No. 231,326, Feb. 4, 1981, abandoned. This application May 9, 1985, Ser. No. 732,278

Int. Cl.⁴ G01D 15/18
U.S. Cl. 346—75 26 Claims



1. An electrostatic fluid jet applicator comprising: means for selectively passing fluid droplets onto a substrate surface by (a) electrostatically charging selected droplets as they are formed from an array of fluid filaments and (b) thereafter electrostatically deflecting the charged droplets into a catcher and away from a trajectory which other-

wise passes the uncharged droplets onto said substrate surface; and
artificial perturbation means acoustically coupled to said fluid for assisting in the formation of said droplets;
said artificial perturbation means including frequency deviation means for generating acoustic vibrations at a frequency which continually and automatically changes sufficiently to obscure the effect of standing waves on a printed substrate.

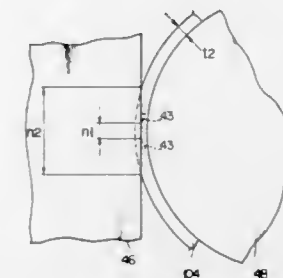
4,644,370

IMAGE-FORMING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 22, 1985, Ser. No. 693,049
Claims priority, application Japan, Jan. 25, 1984, 59-11169
Int. Cl.⁴ G01D 15/10

U.S. Cl. 346—76 PH 12 Claims



1. A thermal transfer type line printer apparatus in which a recording head transfers a color agent from a transfer member in accordance with a latent image so as to form an image on a sheet, said apparatus including a cleaning device for cleaning the recording head, said cleaning device having:
a cassette case which is detachable at a position opposing the recording head; and
a cleaning member which is provided in said cassette case and, at a time of cleaning said recording head, is opposed thereto so as to clean contamination of said recording head;
said cleaning member having a thickness greater than that of said transfer member and being formed of a material having elasticity, said cassette case including means for elastically conforming said cleaning member to said recording head and thereby forming a contact region, said contact region having an area greater than an area of contact between said transfer member and said recording head.

4,644,371

THERMAL PRINTER

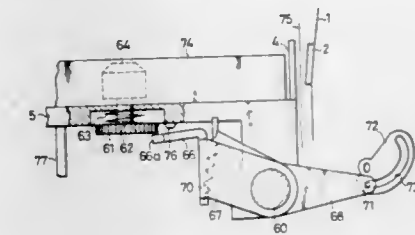
Takanobu Matsuura, Takizawa, and Toshiyuki Yamamoto, Tamayama, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 31, 1985, Ser. No. 793,684
Claims priority, application Japan, Oct. 31, 1984, 59-163747
Int. Cl.⁴ G01D 15/10

U.S. Cl. 346—76 PH 8 Claims

1. A thermal printer comprising:
a platen extending longitudinally for supporting a recording paper thereon;
a shaft extending longitudinally in parallel with said platen;
a print head which is supported on said shaft to be reciprocally movable longitudinally along said platen and angularly movable toward said platen for printing and away from said platen for non-printing;
first driving means rotatably supported on said shaft and extending longitudinally along said platen for angularly moving said print head toward the platen for printing and away from the platen for non-printing;
second driving means rotatably supported on said shaft at

one end of said platen for rotating said first driving means to angularly move said print head, and further having a cam engaging part;
a cam body engaged with said cam engaging part of said second driving means for rotating said second driving means; and



a tension spring applied between said first driving means and said second driving means for applying a tensile force to move said first driving means in the direction of movement of said second driving means.

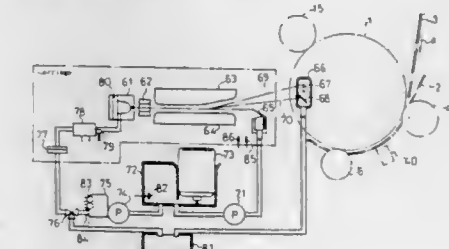
4,644,372

INK JET PRINTER

Tetsuro Hirota, Zama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 15, 1985, Ser. No. 755,174
Claims priority, application Japan, Jul. 16, 1984, 59-147088; Jul. 16, 1984, 59-147089

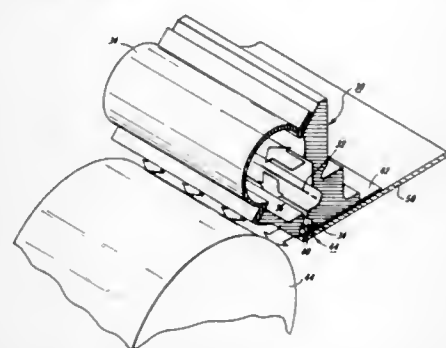
Int. Cl.⁴ G01D 15/28
U.S. Cl. 346—138 22 Claims



1. A printer comprising:
a platen having a peripheral surface;
print means disposed opposite to part of said peripheral surface of said platen;
guide means for guiding a sheet of paper from a region of said peripheral surface of said platen which is located diametrically opposite to said print means to a region of said peripheral surface which is opposed by said print means, said guide means including a paper inlet;
a first roller disposed in abutment against said peripheral surface of said platen in a region which is generally diametrically opposite to said print means;
a second roller disposed for abutment against said platen in a region between said first roller and the region of said peripheral surface of said platen which is opposed by said print means;
a paper bail roller for holding a part of the sheet of paper passing said second roller and the front of said print means;
drive means for driving at least one of said platen, said first roller, and said second roller for rotation in response to a signal;
paper sensor means disposed intermediate said paper inlet of said guide means and said second roller for detecting the presence or absence of a sheet of paper; and
a print controller including means for energizing said drive means until the leading edge of the sheet of paper reaches said paper bail roller in response to a paper load command

signal at the time the paper sensor means detects no paper, means for calculating a first amount of paper feed which occurs after said paper sensor means changes from detecting the absence to detecting the presence of a sheet of paper, for calculating a second amount of paper feed which occurs after said paper sensor means changes from detecting the presence to detecting the absence of a sheet of paper, and means for controlling a printing operation and the energizing of said drive means in accordance with data to be printed and a control command commencing from a time when the first amount of paper feed has reached a first given value until the second amount of paper feed has reached a second given value.

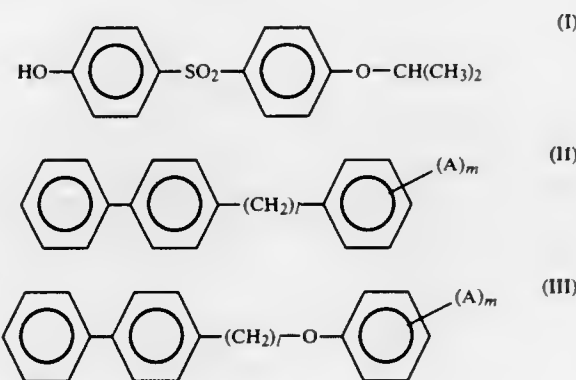
4,644,373
FLUID ASSISTED ION PROJECTION PRINTING HEAD
 Nicholas K. Sheridan, Saratoga, and Gerhard K. Sander, Los Altos Hills, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
 Filed Dec. 9, 1985, Ser. No. 806,876
 Int. Cl.⁴ G01D 15/6
 U.S. Cl. 346—159 6 Claims



1. An improved fluid flow assisted ion projection printing head characterized by comprising
 a body defining an elongated cavity therein,
 a conductive wire supported on said body and extending in the direction of said elongated cavity, said wire being enclosed on three sides by the walls of said elongated cavity, a first one of said walls being electrically conductive,
 an entrance channel defined in said body, through one of said walls, for introducing a transport fluid into said cavity,
 a substantially planar, electrically conductive plate forming a closure for the major portion of the open side of said cavity, thereby forming a first portion of an exit channel between the end of said plate and said first one of said walls for providing a path for the removal of transport fluid from said cavity,
 a substantially planar member supporting electronic control elements, said planar member being held against said planar conductive plate and separated therefrom by an intermediate dielectric member, said planar member including a cantilevered portion spaced from said body for defining an extension of said exit channel, and
 wherein said wire is located closer to said first one of said walls and to said planar conductive plate than to any of the other walls of said cavity.

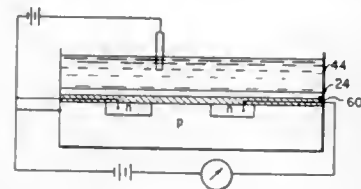
4,644,374
HEAT-SENSITIVE RECORDING MATERIAL
 Shigetoshi Hiraishi; Kazuyoshi Kondo, both of Tokyo, and Takashi Banba, Kyoto, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
 Filed Aug. 7, 1985, Ser. No. 763,410
 Claims priority, application Japan, Aug. 10, 1984, 59-167388
 Int. Cl.⁴ B41M 5/18
 U.S. Cl. 346—209 8 Claims
 1. A heat-sensitive recording material comprising a substrate and a heat-sensitive recording layer provided on at least one surface of said substrate and containing an ordinarily colorless or light-colored dye precursor and a color developer capable of allowing the dye precursor to develop a color by reacting with the dye precursor when heated, the heat-sensitive recording layer further containing 1,2,3-tris(3-t-butyl-4-hydroxy-6-methylphenyl)butane.

4,644,375
HEAT-SENSITIVE RECORDING SHEET
 Toshimi Satake; Toshiaki Minami; Kazuo Maruyama, and Fumio Fujimura, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan
 Filed Aug. 6, 1985, Ser. No. 763,045
 Claims priority, application Japan, Aug. 23, 1984, 59-175374
 Int. Cl.⁴ B41M 5/18
 U.S. Cl. 346—209 3 Claims
 1. A heat-sensitive recording sheet comprising a substrate and a heat-sensitive color forming layer formed on at least one surface of said substrate, and said heat-sensitive color forming layer comprising a colorless basic dyestuff and an organic developer as the essential ingredient, wherein 4-isopropoxy-4'-hydroxydiphenyl sulfone represented by the following general formula (I) is contained as said organic developer, and said heat sensitive color forming layer contains as a sensitizer at least one of the compounds represented by the following general formula (II) or (III):



and/or concentration of a substance in a test medium, said structure comprising:

- structure means, responsive to change in a dielectric constant, for indicating the concentration of said substance in said test medium as determined by said change in said dielectric constant; and
- a substance-sensitive layer for separating said structure means from said test medium and for changing dielectric constant in response to the concentration of said substance in said test medium, said layer comprised of substance-sensitive photoresist material including a photoactivator.



8. A substance-sensitive structure for sensing the presence and/or concentration of a substance in a test medium, said structure comprising:

- means for changing dielectric constant in response to changes in concentration of said substance in said test medium; and
- means, responsive to changes in said dielectric constant, for indicating the concentration of said substance in said test medium, said indicating means including means for detecting the effect of said changes in dielectric constant on a time varying electrical signal.

4,644,381

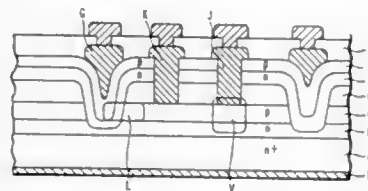
I²L HETEROSTRUCTURE BIPOLAR TRANSISTORS AND METHOD OF MAKING THE SAME
Chan-Long Shieh, Plainsboro, N.J., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Apr. 8, 1985, Ser. No. 721,257

Int. Cl.⁴ H03K 19/091; H01L 27/04, 29/72, 29/225

U.S. Cl. 357—35

4 Claims



1. An integrated injection logic semiconductor structure comprising:

- a substrate having a first conductivity type and comprising a group III-V compound of semiconductor material;
- an epitaxial first layer of said first conductivity type disposed on one side of said substrate;
- an epitaxial second layer of a second opposite conductivity type disposed on said first layer;
- an insulating third layer disposed on said second layer;
- an epitaxial fourth layer of said first conductivity type disposed in a first opening in said second and third layers to the depth of said first layer;
- an epitaxial fifth layer of said second conductivity type disposed on said fourth layer in said first opening;
- an ohmic first contact disposed on said fifth layer over said first opening, forming the emitter contact of a lateral transistor;
- an ohmic second contact disposed on said second layer through a second opening in said third, fourth and fifth

- layers, forming the collector contact of said lateral transistor;
- an ohmic third contact disposed on the opposite side of said substrate, forming the base contact of said lateral transistor; and
- said third layer having a graded bandgap.

4,644,382

PREDIFFUSED INTEGRATED CIRCUIT AND A METHOD OF INTERCONNECTION OF THE CELLS OF SAID CIRCUIT

Pierre Charransol; Jean C. Audrix, and Claude Athenes, all of Colombes, France, assignors to Thomson-CSF Telephone, Colombes, France

Continuation of Ser. No. 477,850, Mar. 22, 1983, abandoned.

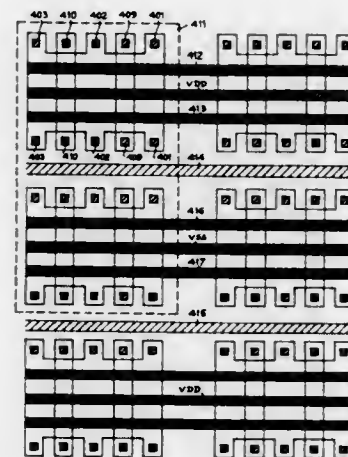
This application Jan. 17, 1986, Ser. No. 820,895

Claims priority, application France, Mar. 26, 1982, 82 05245

Int. Cl.⁴ H01L 29/78, 27/04

U.S. Cl. 357—42

5 Claims



1. A prediffused integrated circuit, comprising a plurality of basic cells arranged in a plurality of rows on a substrate, each basic cell including two MOS transistors connected in series through a common drain/source, each transistor having a separate gate, each row having basic cells of the same type while adjacent rows alternate between p-type and N-type, each gate and drain/source for said two MOS transistors having connection points arranged in first and second horizontal rows of connection points, each horizontal row including first connection points corresponding to said drain/sources, and second connection points corresponding to said gates, said drain/sources having excrescences upon which are mounted said first connection points to cause said first connection points to be substantially aligned with said second connection points.

4,644,383

SUBCOLLECTOR FOR OXIDE AND JUNCTION ISOLATED IC'S

Osman E. Akcasu, Puyallup, Wash., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 8, 1985, Ser. No. 720,679

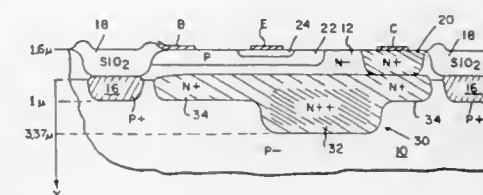
Int. Cl.⁴ H01L 27/04

U.S. Cl. 357—50

10 Claims

1. A bipolar vertical transistor comprising:
 - a substrate of a first conductivity type;
 - a collector region of a second conductivity type on said substrate and having a buried junction with said substrate; lateral isolation extending from a surface of said collector region to said substrate;
 - a base region of said first conductivity type in a surface of said collector region;

- an emitter region of said second conductivity type in a surface of said base region;
- a subcollector region of said second conductivity type having a greater impurity concentration than said collector region at said junction between said collector region and said substrate;
- a collector contact region of said second conductivity type extending from said surface to said subcollector region; and



- said subcollector region having a thick portion extending laterally between the projection of said emitter region onto said junction and said collector contact region and extending vertical into said substrate a first depth and having a thin portion extending lateral from said thick portion toward but spaced from said lateral isolation and extending vertically into said substrate a second depth substantially less than said first depth.

4,644,384

APPARATUS AND METHOD FOR PACKAGING EPROM INTEGRATED CIRCUITS

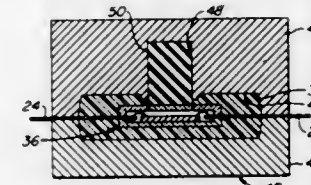
Chamras Charoensakvirochana, Sunnyvale, and Wing K. Boey, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 2, 1984, Ser. No. 576,300

Int. Cl.⁴ H01L 23/02, 23/12

U.S. Cl. 357—74

2 Claims



1. An apparatus for molding a protective package around a subassembly, wherein the subassembly includes an integrated circuit chip and a protective cover disposed over the chip, and wherein the cover has a radiation transparent window positioned proximate the chip, said apparatus comprising:
 - a mold defining a cavity, said cavity is operable for receiving said subassembly and for defining the outer shape of said protective package upon the injection of a moldable material into said cavity; and
 - a silicone rubber plug having a hardness approximately equal to a durometer number of eighty disposed within said cavity and positioned adjacent to and contacting the window of said subassembly, said plug being compressed against said window by the closure of said mold for sealing off the outer surface of the window from said cavity to provide an opening in said protective package.

4,644,385
COOLING MODULE FOR INTEGRATED CIRCUIT CHIPS

Keiichiro Nakanishi, Kokubunji; Minoru Yamada, Iruma; Akira Masaki, Meguro; Kuninori Imai, Shiroyama, and Katuaki Chiba, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

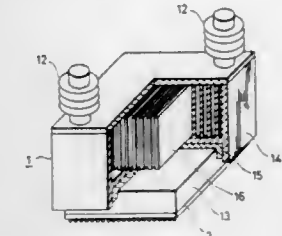
Filed Oct. 26, 1984, Ser. No. 665,548

Claims priority, application Japan, Oct. 28, 1983, 58-200945

Int. Cl.⁴ H01L 25/04

U.S. Cl. 357—82

19 Claims



1. A cooling module for integrated circuit chips, comprising a plurality of integrated circuit chips mounted on a wiring substrate, a plurality of cooling members which are placed on each of said integrated circuit chips and which are provided with internal spaces through which a coolant circulates, first pipe means connected to each of said cooling members so as to introduce said coolant thereto, second pipe means connected to each of said cooling members so as to withdraw coolant therefrom, wherein said first and second pipe means have resilient bellows expandable in a direction perpendicular to a surface of said wiring substrate so that said pipe means can expand and contract in the direction perpendicular to the surface of said wiring substrate, and a coolant channel connected to said first and second pipe means so as to introduce and withdraw said coolant thereto and therefrom

4,644,386

INTEGRATED CIRCUIT EMPLOYING INSULATED GATE ELECTROSTATIC INDUCTION TRANSISTOR

Junichi Nishizawa, and Tadahiro Ohmi, both of Miyagi, Japan, assignors to Handotai Kenkyu Shinkokai, Japan

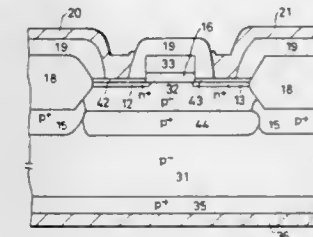
Filed Jun. 29, 1983, Ser. No. 509,008

Claims priority, application Japan, Jun. 29, 1982, 57-113709

Int. Cl.⁴ H01L 29/78, 27/02

U.S. Cl. 357—23.3

27 Claims



1. An insulated gate electrostatic induction transistor comprising:
 - a semiconductor substrate;
 - a high resistivity channel region;
 - a highly doped source region formed adjacent said high resistivity channel region;
 - a gate electrode disposed adjacent said high resistivity channel region with a thin insulating layer separating said gate electrode from a major surface of said channel region, said gate electrode being made of a material providing a high diffusion potential with respect to said source region, the depth of said highly doped source region being less than the depth of said high resistivity channel region;

that of a distribution of carriers in an inversion layer formed under said gate electrode; and
a drain region formed adjacent said high resistivity channel region; said source and drain regions being formed as relatively thin layers disposed out of contact with said semiconductor substrate, the depth of said source region being between approximately seventy and several hundred angstroms, and the length of said channel region being on the order of or less than 1.0μ ; and wherein the ratio of the length of said high resistivity channel region to a depth of said channel region is at least greater than 1.3.

4,644,387

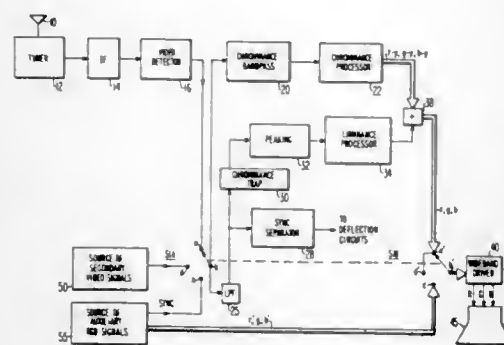
PLURAL INPUT TELEVISION RECEIVER HAVING PEAKING CIRCUIT AND CHROMINANCE BAND REJECT FILTER IN A VIDEO SIGNAL CHANNEL

Isaac M. Bell, Indianapolis, and David E. Hollinden, Bloomington, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 25, 1985, Ser. No. 727,091
Int. Cl.⁴ H04N 5/445

U.S. Cl. 358—21 R

9 Claims



1. A video signal processing and display system including a video signal processing channel and an image display device responsive to video signals applied thereto, said system comprising:

- a first input for receiving a first video signal, comprising luminance and chrominance components, containing image information to be displayed;
- peaking means included in said video channel for accentuating high frequency video signal components;
- filter means, having a cut-off frequency below a band of frequencies occupied by said chrominance component, included in said video channel for attenuating high frequency components of a video signal subject to processing by said video channel, thereby causing said video channel to exhibit a restricted signal bandwidth;
- display driver amplifier means for providing an amplified video signal to a signal input of said display device, said driver means exhibiting a signal bandwidth wider than said restricted bandwidth of said video channel;
- a second input for receiving a second, auxiliary, video signal containing information to be displayed; and
- switch means for (a) enabling said first video signal from said first input to be coupled to said display device via said filter means, said peaking means and said driver means in a normal operating mode of said system; and (b) enabling said auxiliary video signal from said second input to be coupled to said display device via said driver means exclusive of said filter means and said peaking means in auxiliary operating mode of said system.

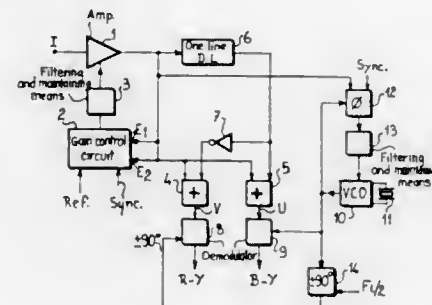
4,644,388 PROCESS AND CIRCUIT FOR THE DEMODULATION OF CHROMINANCE SIGNALS

Patrick Dooziech, Rives sur Fures, and Michel Imbert, Seyssin, both of France, assignors to Thomson-CSF, Paris, France
Filed Dec. 6, 1984, Ser. No. 679,112

Claims priority, application France, Dec. 9, 1983, 83 19761
Int. Cl.⁴ H04N 5/455, 9/66

U.S. Cl. 358—23

3 Claims



1. A process for the demodulation of each of chrominance signals B-Y and R-Y, comprising, for each of said chrominance signals, the steps of:

- demodulating a modulated chrominance signal by itself and providing a first output;
- filtering said first output so as to retain the square of said chrominance signal;
- extracting the square root of said retained square of said chrominance value in order to obtain the absolute value of said chrominance signal; and
- multiplying said absolute value by the sign of the chrominance signal obtained by said step of demodulating in order to obtain a final chrominance signal.

4,644,389

DIGITAL TELEVISION SIGNAL PROCESSING CIRCUIT

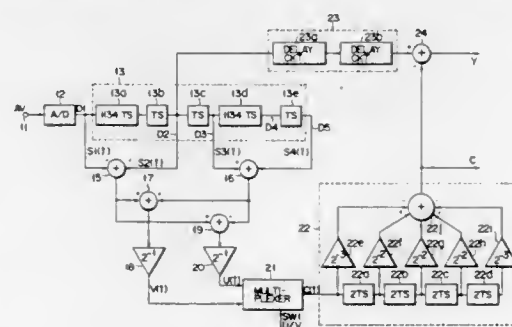
Masaki Nakagawa, Yokohama, and Susumu Suzuki, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 27, 1985, Ser. No. 706,390

Claims priority, application Japan, Feb. 29, 1984, 59-35936
Int. Cl.⁴ H04N 9/78

U.S. Cl. 358—28

11 Claims



1. A digital television signal processing circuit comprising: an analog/digital converter for converting an analog video signal into a digital video signal, said analog/digital converter sampling the analog video signal at a predetermined period (Ts) and at a timing in synchronism with $\pm U$ and $\pm V$ phrases so as to convert the analog video signal into the digital video signal when an analog signal of a PAL system is supplied thereto;

a delay device for delaying the digital video signal, said

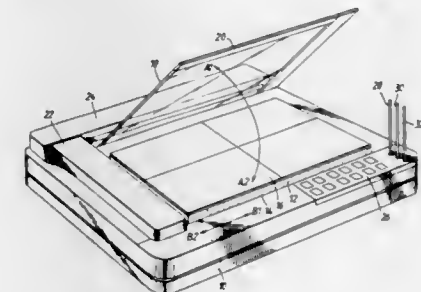
4,644,391 IMAGE INFORMATION INPUT APPARATUS FOR INPUTTING SUPPLEMENTAL INFORMATION TO A COPYING MACHINE

Kunihiko Shibuya, Yokohama, and Kunio Hara, Chiba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 18, 1985, Ser. No. 745,950
Claims priority, application Japan, Jun. 29, 1984, 59-134799
Int. Cl.⁴ H04N 1/46

U.S. Cl. 358—75

31 Claims



1. An image information input apparatus comprising: means for supporting an original thereon with a recording surface of the original up; means for covering the original supported on said supporting means such that said covering means faces the recording surface of the original, said covering means having a surface for erasably recording an additional image; and means for simultaneously reading out the image on the original and the additional image recorded on said covering means.

4,644,392

METHOD FOR SIMULTANEOUSLY RECORDING A HALFTONE PICTURE PORTION, A LINE DRAWING PORTION WITH A DESIRED SCREEN TINT, AND A BOUNDARY PORTION BETWEEN THEM ON A PLURALITY OF COLOR SEPARATIONS

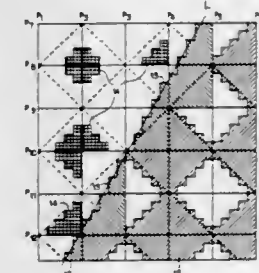
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 532,737, Sep. 15, 1983, abandoned. This application May 2, 1986, Ser. No. 859,214

Claims priority, application Japan, Oct. 5, 1982, 57-175901
Int. Cl.⁴ H04N 1/46, 1/23, 1/32, 1/40

U.S. Cl. 358—75

4 Claims



1. A method for simultaneously recording a line drawing portion and a picture portion in a reproduced image of an original image containing both a line drawing portion and a continuous-tone picture portion, comprising the steps of: separately generating a picture signal and a line drawing signal from the original image; converting said picture signal and said line drawing signal into a digital picture signal and a digital line drawing

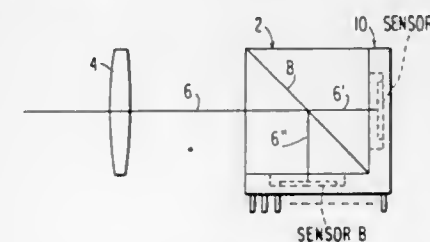
4,644,390 PHOTOELECTRIC SENSOR ARRAY SUPPORT PACKAGE

Shigeharu Ochi, San Jose, Calif., assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Nov. 19, 1984, Ser. No. 672,641
Int. Cl.⁴ H04N 9/09

U.S. Cl. 358—50

5 Claims



1. A photoelectric sensor array support package comprising: a base portion, a leg portion, rigidly connected to the base portion at a selected angle, means in said base portion to fixedly attach a photoelectric sensor array in said base portion, means in said leg portion to fixedly attach a photoelectric sensor array in said leg portion and; a beam splitting prism means attached to said base and leg portions whereby said prism means is a cover glass in addition to being a beam splitting mechanism.

signal, respectively, each said digital signal representing one pixel of the reproduced image with an equal number of bits;

assigning at least one bit of each said digital signal to be a discrimination bit indicating whether each said digital signal is a digital picture signal or a digital line drawing signal;

assigning more than one bit of said digital line drawing signal to be a boundary signal representing the line drawing portion of said reproduced image in a boundary portion of said line drawing portion adjacent said picture portion of said reproduced image;

assigning more than one bit of said digital line drawing signal to be a screen tint signal representing a screen tint to be recorded in said line drawing portion;

performing a first decoding operation on said at least one discrimination bit of said digital picture signal and said digital line drawing signal to distinguish between said digital picture signal and said digital line drawing signal;

performing a second decoding operation on said boundary signal of said digital line drawing signal when said digital line drawing signal is distinguished in said first decoding operation to distinguish between a digital signal for said boundary portion of said reproduced image and a digital signal for said line drawing portion of said reproduced image;

recording a dot in said picture portion of said reproduced image in accordance with picture information of said continuous-tone picture portion of said original image when said digital picture signal is distinguished in said first decoding operation;

recording line drawing information in said boundary portion of said reproduced image in accordance with line drawing information of said line drawing portion of said original image when said digital signal for said boundary portion is distinguished in said second decoding operation; and

recording a dot in said line drawing portion of said reproduced image in accordance with said screen tint signal when said digital signal for said line drawing portion of said reproduced image is distinguished in said second decoding operation.

4,644,393

MEANS FOR MONITORING PEOPLE WHO ARE WATCHING A TELEVISION SET

Peter E. Smith, Reading, and Raymond Laxton, Maidenhead, United Kingdom, assignors to AGB Research PLC, London, England

Continuation of Ser. No. 614,324, May 24, 1984, abandoned.

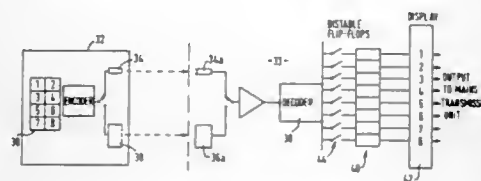
This application Mar. 13, 1986, Ser. No. 840,465

Claims priority, application United Kingdom, May 25, 1983, 8314468

Int. Cl.⁴ H04H 9/00

U.S. Cl. 358—84

7 Claims



1. People monitoring means comprising:
 - a first unit having switch means operable by people who are watching a television set to provide data related to the number of such people, a first transmitter for transmitting said data by way of infra-red radiation and a second transmitter for transmitting said data by way of ultra-sonic radiation;
 - a second unit, remote from the first unit, having a first detector adapted to detect infra-red radiation, a second detector adapted to detect ultra-sonic radiation and means for

accepting and storing said data transmitted from said first unit to said second unit by means of such radiation; and switch means operable to select transmission of said data alternatively by either ultra-sonic radiation or by infra-red radiation.

4,644,394

APPARATUS FOR INSPECTING AN EXTERNALLY THREADED SURFACE OF AN OBJECT

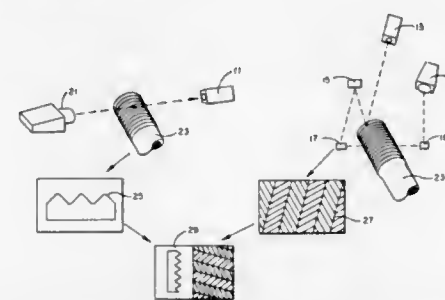
Dale Reeves, 821 Pinegrove, Longview, Tex. 75604

Filed Dec. 31, 1985, Ser. No. 815,376

Int. Cl.⁴ H04N 7/18

U.S. Cl. 358—101

11 Claims



1. An apparatus for inspecting the externally threaded surface of an object, comprising:

a studio section including a light source for illuminating the threaded surface to be inspected, a mirror system for directing the light from the light source, and a video camera for receiving the directed light, for forming an optical image of the illuminated threaded surface, and for converting the optical image into electrical video signals;

positioning means including a translational frame on which the studio section is mounted for moving the studio section in x,y,z planes in order to position the studio section about the object to be inspected at a starting point and for moving the studio section linearly along the longitudinal axis of the object during the inspection process;

A rotational assembly for spinning the translational frame and studio section circumferentially about the object exterior as the translational frame moves the studio section linearly along the longitudinal axis of the object;

encoding means for converting the video signals from the video camera into digitized information representative of special information in the optical images viewed by the video camera; and

processing means for receiving and interpreting the digitized information provided by the encoding means, the processing means including a position controller for controlling the movement of the translational frame in response to the digitized information, and an image processor for comparing the digitized information to a programmed standard for detecting defects in the threaded surface being inspected.

4,644,395

X-RAY DIAGNOSTIC APPARATUS

Shouichi Itou, Tochigi; Makoto Kaneko, and Hiroshi Yasuhara, both of Ootawara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 528,102, Aug. 31, 1983, abandoned.

This application Oct. 4, 1985, Ser. No. 783,809

Claims priority, application Japan, Sep. 7, 1982, 57-156069

Int. Cl.⁴ H04N 7/01

U.S. Cl. 358—111

3 Claims

1. An X-ray diagnostic apparatus comprising:
 - X-ray radiation means for irradiating X-rays toward an object under examination to produce X-ray images;
 - X-ray TV camera means for producing, in response to the

X-ray images, analog video signals processed under a predetermined aspect ratio;

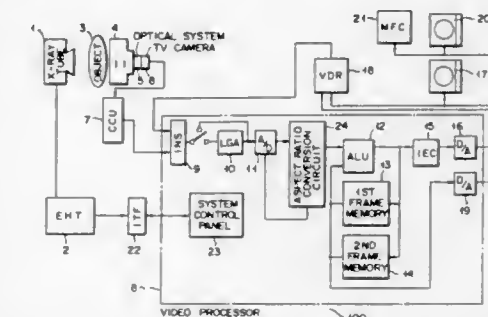
video processing means including:

an analog/digital converter for converting the analog video signals into corresponding digital video data; arithmetic means including an arithmetic logic unit and a frame memory for processing the digital video data under the control of a clock signal having a predetermined frequency, and for storing the processed video data in the frame memory; and

an aspect ratio conversion circuit, including:

at least a memory circuit;

a write-in control circuit for varying the write-in rate of the memory circuit, depending upon the predetermined aspect ratio of said X-ray TV camera means; and



a read-out control circuit for varying the read-out rate of the memory circuit under the control of said clock signal, said aspect ratio conversion circuit varying said predetermined aspect ratio of the digital video data by controlling the analog/digital conversion rate of the analog/digital converter and the read-out/write-in rates of the read-out/write-in control circuits so as to access the memory circuit;

a digital/analog converter connected to the frame memory, for converting the digital video data signal derived therefrom into corresponding analog signals; and

TV monitor means connected to the digital/analog converter for displaying X-ray images derived from the digital/analog converter, the aspect ratio of said analog video signal being fitted to display the X-ray images on the TV monitor means.

4,644,396

GATE CIRCUIT FOR CENTRAL CONTROL OF CATV SYSTEM

Satoshi Iwasaki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Japan

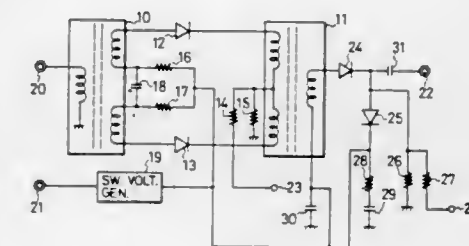
Filed May 24, 1985, Ser. No. 737,643

Claims priority, application Japan, May 24, 1984, 59-106162

Int. Cl.⁴ H04N 7/167, 7/16

U.S. Cl. 380—6

3 Claims



1. A gate circuit for an interference signal in a CATV system comprising: input and output transformers, an interference signal being applied to a primary of said input transformer and a secondary of said output transformer being coupled to one

input of a coupler receiving as another input an unjammed television signal; first switching means for controlling a signal path between a secondary of said input transformer and a primary of said output transformer in response to an interference control signal; an impedance element having an impedance equal to a characteristic impedance of transmission lines of said CATV system; and second switching means operating in response to said interference control signal for coupling said impedance element across said secondary of said output transformer when said signal path between said secondary of said input transformer and said primary of said output transformer is open.

4,644,397

METHOD OF PROCESSING A VIDEO IMAGE TO TRACK A BRIGHT SPOT AND TO PROTECT SAID TRACKING FROM INTERFERENCE FROM OTHER BRIGHT SPOTS

Jean-Claude Roy, Bagneux, and Bernard Cerutti, Verrières-le-Buisson, both of France, assignors to Societe de Fabrication d'Instruments de Mesure, Massy, France

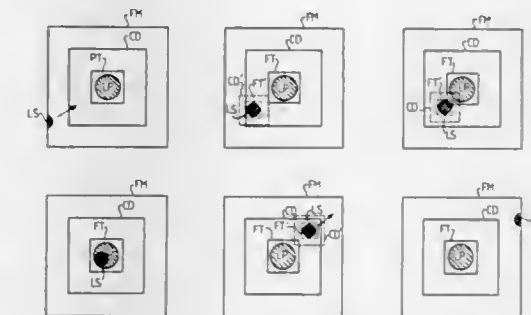
Filed Jun. 10, 1985, Ser. No. 743,078

Claims priority, application France, Jun. 15, 1984, 84 09389

Int. Cl.⁴ H04N 7/18

U.S. Cl. 358—126

10 Claims



1. A method of processing a video image to track a bright spot and to protect said tracking from interference from other bright spots, wherein the method comprises the following steps:

defining a main processing window centered on the image of the bright spot and constituted by a portion of the video image which fully contains the envelope of the bright spot, the size and the position of said window being periodically redefined in such a manner as to match the movement and the change in size of the bright spot on the video image;

defining a main detection ring which is concentric with the main processing window and which completely surrounds said window, said main detection ring following the variations in size and position of the main processing window; and

detecting the appearance of a decoy in the main detection ring and, for each decoy thus detected:

defining a secondary processing window centered on the image of the decoy and constituted by a portion of the video image which completely contains the envelope of the decoy, the size and the position of said window being periodically redefined in such a manner as to match the movement and the change in size of the decoy on the video image;

defining a secondary detection ring concentric with the secondary processing window and completely surrounding said window, said secondary detection ring following the variations in size and position of the secondary processing window; and

detecting when the said bright spot and the decoy come into contact, and thereafter:

storing the ballistic parameters and the size of each of the

two spots constituted by the said bright spot and the said detected decoy;
freezing one of said spots by interrupting the periodic redefinition of the corresponding processing window;
detecting in the detection ring of the non-frozen spot the appearance of the other spot, said detection indicating that said two spots are moving out of contact;
analyzing the ballistic parameters and the size of said other spot;
recognizing the nature of said spot, i.e. whether it constitutes the said bright spot or the said decoy; and
continuing or restarting periodic redefinition of the main processing window so as to track said bright spot.

4,644,398

SUPERINTERLACING IMAGING SYSTEMS

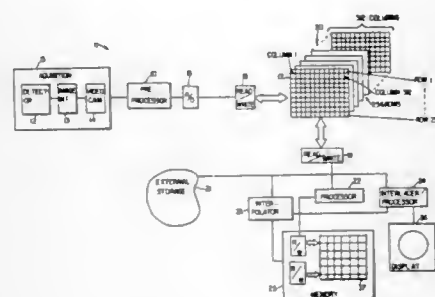
Yair Shimon, Jerusalem, Israel, assignor to Elscint, Ltd., Haifa, Israel

Filed Nov. 14, 1983, Ser. No. 551,698

Int. Cl.⁴ H04N 7/01

U.S. Cl. 358—140

30 Claims



1. An imaging system for medical diagnostic purposes, said system comprising:

- means for acquiring data for constructing images having n lines of m pixels, wherein the distance between each of the n lines is smaller than the resolution of the image in the same direction;
- means for selecting the acquired data along lines having a larger space therebetween than the space between n lines of the image, whereby substantially $n/2$ lines of data are selected;
- means for storing the substantially $n/2$ lines of data in memory means; and
- means for operating on the selected stored lines to obtain the n lines of the m pixels for the image.

4,644,399

VIDEO/DIGITAL DATA MULTIPLEXER

Marion McCord, Encinitas; Arturo Arriola, San Ysidro, and Steven J. Cowen, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1983, Ser. No. 490,706

Int. Cl.⁴ H04N 7/08

U.S. Cl. 358—142

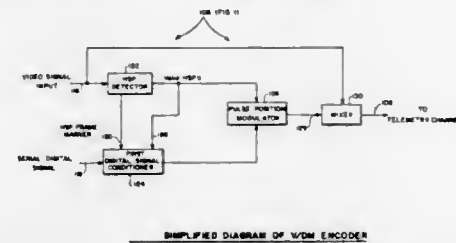
4 Claims

3. An apparatus, including a transmitter, for communicating a time-modulated, binary, information-bearing signal multiplexed onto a composite video signal wherein the transmitter comprises:

- a first detector connected to receive said composite video signal, said first detector detecting the horizontal and vertical synchronizing pulses in the composite video signal and generating first and second timing signals in response to the detected pulses;
- a first digital signal conditioner connected to receive a digital information-bearing signal, and connected to receive the first and second timing signals from the first detector,

for providing a conditioned digital signal representing binary information;

a pulse position modulator connected to receive the first timing signals from the first detector and the conditioned digital signal to produce pulse signals which are time-positioned in reference to leading edges of the horizontal



synchronizing pulses in the composite video signal to represent said binary information;

a mixer connected to receive the composite video signal and connected to the output of the pulse position modulator whereby the time-positioned pulse signals are inserted onto the horizontal synchronizing pulses of the composite video signal to produce a composite digital/video signal.

4,644,400

DIGITAL AUDIO SYNCHRONIZING SYSTEM WITH CROSS-FADE MEANS

Toshitake Kouyama, and Ryoji Katsube, both of Tokyo, Japan, assignors to NEC Corporation, Japan

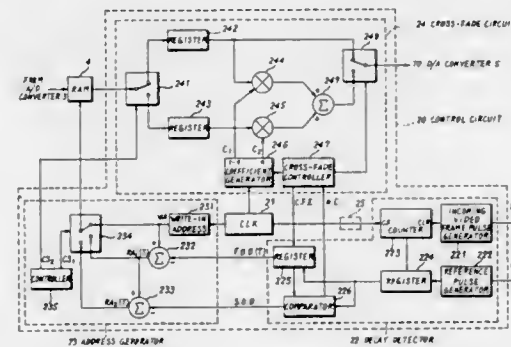
Filed Apr. 8, 1985, Ser. No. 720,813

Claims priority, application Japan, Apr. 9, 1984, 59-70599

Int. Cl.⁴ H04N 5/04

U.S. Cl. 358—149

19 Claims



1. A circuit for synchronizing an audio signal to a reference video signal, said audio signal being associated with an input composite video signal, wherein a time difference between said audio signal and said reference video signal changes from time to time to unsynchronize said audio signal and said reference video signal, said circuit comprising:

means for measuring repetitively a video time difference between said reference video signal and said composite video signal associated with said audio signal, said measuring means producing a control signal whenever a change is detected between a previous value of said video time difference and a present value of said video time difference which change unsynchronizes said audio signal from said reference video signal;

means for variably delaying said audio signal to produce a delayed audio signal, said delaying means including means for storing said audio signal in a memory and retrieving said audio signal from said memory after the lapse of a delay period following the storing thereof; and
cross-fading means, responsive to said video time difference and said control signal from said measuring means, for

- causing said delaying means to delay said audio signal by a first time delay period corresponding to said previous video time difference and a second time delay period corresponding to said present video time difference, thereby generating first and second delayed audio signals, respectively; and
- cross-fading said two delayed audio signals over a predetermined fading time period, such that after said predetermined fading time period said audio signal is resynchronized to said reference video signal.

4,644,401

APPARATUS FOR COMBINING GRAPHICS AND VIDEO IMAGES IN MULTIPLE DISPLAY FORMATS

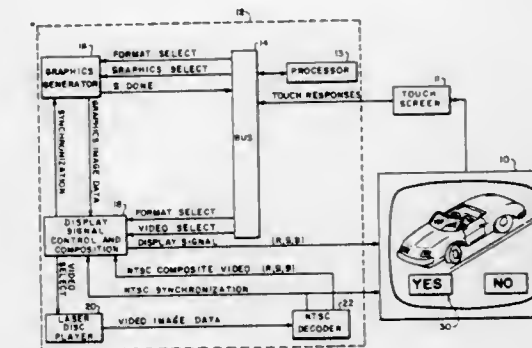
Arthur L. Gaskins, La Mesa, Calif., assignor to Morris K. Mirkin, Beverly Hills, Calif.

Filed Oct. 29, 1984, Ser. No. 666,118

Int. Cl.⁴ H04N 5/272

U.S. Cl. 358—183

10 Claims



- An apparatus for providing a display signal capable of operating a display device to display images in plural, selectable scene formats, comprising:
video means for providing a video image signal representative of a video image;
graphics means for providing a graphics image signal representative of a graphics image;
format selection means for selecting a scene format from a plurality of scene formats, each of said scene formats defining a display image including at least a video image or a monochromatic background in combination with said graphics image, and for providing a format signal in a condition indicative of said selected scene format;
level means for providing a plurality of display level signals, each of said display level signals defining a predetermined display intensity level; and
display signal means coupled to said video, graphics, format selection, and level means and conditioned by various combinations of said graphics image and format signals for selectively combining said video image signal with said display level signals to produce a display signal corresponding to said selected scene format and capable of actuating a display device to produce said selected scene format.

4,644,402

SOLID STATE IMAGE SENSOR

Hidetoshi Yamada, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed May 20, 1985, Ser. No. 736,073

Claims priority, application Japan, May 31, 1984, 59-109615

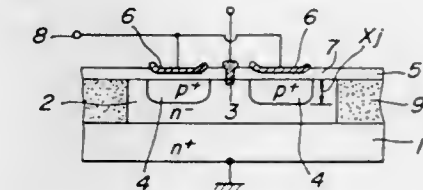
Int. Cl.⁴ H04N 3/14

U.S. Cl. 358—213

11 Claims

- A solid state image sensor comprising a plurality of row lines;

a vertical scanning means for successively supplying row selection signals to said plurality of row lines;
a plurality of column lines;
a horizontal scanning means for successively supplying column selection signals to said plurality of column lines;
a plurality of pixels connected at cross points between the row and column lines, each of said pixels including a static induction transistor having a first main electrode connected to a column line, a second main electrode connected commonly to second main electrodes of other static induction transistors, a channel region arranged



between the first and second main electrodes, and a gate region, a capacitor connected between the gate region of the respective static induction transistor and a row line, and a photoconductive film connected to the gate region of the respective static induction transistor, said capacitor comprising a gate electrode connected to the gate region, said photoconductive film applied on the gate electrode and a transparent electrode applied on the photoconductive film; and

a video line connected selectively to the column lines to readout a video signal from the pixels.

4,644,403

IMAGE PICKUP APPARATUS

Shinji Sakai, and Seiji Hashimoto, both c/o Canon Kabushiki Kaisha (Tamagawa-Jigyosho) 770, Shimonoge, Takatsu-Ku, Kawasaki-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 602,731, Apr. 23, 1984, abandoned.

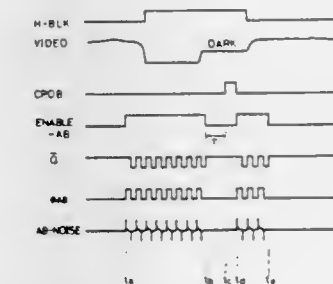
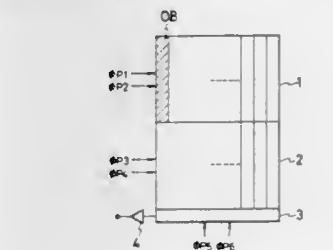
This application May 12, 1986, Ser. No. 861,715

Claims priority, application Japan, Apr. 28, 1983, 58-75838

Int. Cl.⁴ H04N 3/14

U.S. Cl. 358—213

48 Claims

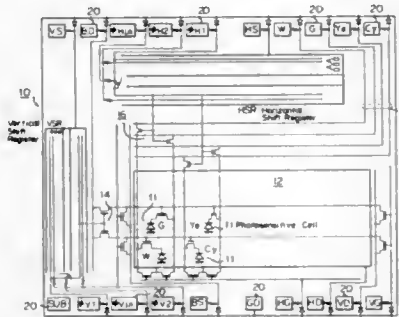


- An image pickup apparatus comprising:

- (a) a photosensing part for converting an object into electrical information and storing said information;
 (b) storage control means for storing said electrical information into said photosensing part for a predetermined interval and controlling a storage state in this storage interval;
 (c) clamping means for clamping a part of the electrical information read out from said photosensing part; and
 (d) inhibiting means for inhibiting a change in an output signal of said control means at least during the clamping operation by said clamping means,

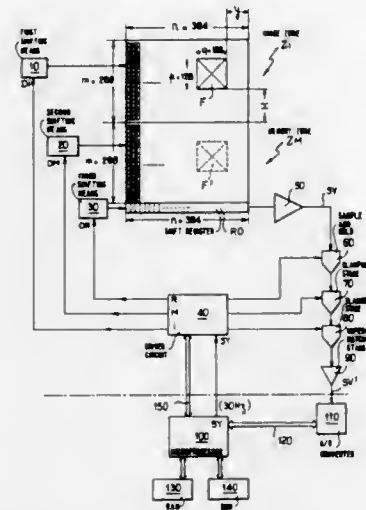
wherein said storage control means controls the storage state by erasing at least a part of the electrical information in said photosensing part during the storage interval.

4,644,404
SOLID-STATE IMAGE PICKUP DEVICE AND MANUFACTURING METHOD THEREOF
 Masatoshi Tabei, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Dec. 19, 1984, Ser. No. 683,610
 Claims priority, application Japan, Dec. 23, 1983, 58-242186
 Int. Cl.⁴ H04N 3/14
 U.S. Cl. 358—213 4 Claims



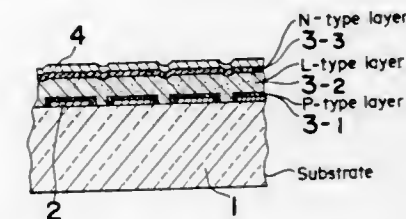
1. A solid-state image pickup device comprising:
 a semiconductor structure;
 a photosensitive cell array formed on said semiconductor structure and having a plurality of photosensitive cells; and
 shift register means formed on said semiconductor structure for selectively driving a plurality of photosensitive cells of said cell array to cause pixel signals to be produced therefrom;
 said shift register means comprising:
 a plurality of register stages associated with said photosensitive cell array; and
 two sets of an initiator circuit and a terminator circuit, each set being arranged at an end of said plurality of register stages;
 said plurality of register stages other than first and last stages thereof each having a connector terminal for establishing a selected interconnection with the connector terminal of an adjacent one of said plurality of register stages in accordance with a direction in which said shift register means is to be driven in a shifting operation;
 the first and last stages of said plurality of register stages each having a connector terminal for establishing a selected connection with the connector terminal on one of said initiator and terminator circuits of one of said two sets of initiator and terminator circuits in accordance with the direction in which said shift register means is to be driven in a shifting operation;
 said initiator and terminator circuits each having a connector terminal for establishing a selected connection with the connector terminal of one of the first and last stages of said plurality of register stages in accordance with the direction in which said shift register means is to be driven in shifting operation.

4,644,405
METHOD AND APPARATUS FOR SCANNING A WINDOW IN THE IMAGE ZONE OF A CHARGE TRANSFER DEVICE OF THE FRAME TRANSFER TYPE
 Jean-Claude Roy, Fresnes, and Patrick Seugnet, Sceaux, both of France, assignors to Societe de Fabrication d'Instruments de Mesure, Massy, France
 Filed Jun. 10, 1985, Ser. No. 743,077
 Claims priority, application France, Jun. 15, 1984, 84 09390
 Int. Cl.⁴ H04N 3/14, 7/00
 U.S. Cl. 358—213 12 Claims



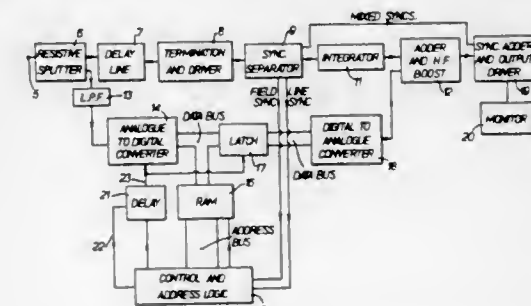
1. A method of scanning a window of p lines of q pixels in a charge transfer device of the frame transfer type, the charge transfer device comprising:
 an image zone disposed in the focal plane of optical image-producing means, and constituted by a matrix of m lines of n photosensitive sites;
 an adjacent, blind, memory zone constituted by a matrix of m lines of n memory positions; and
 an n position shift register;
 scanning circuits, said scanning circuits comprising:
 first shifting means for transferring charges lineby-line and in parallel along each column of the image zone towards the memory zone;
 second shifting means for transferring charges lineby-line in parallel along each column of the memory zone towards the shift register; and
 third shifting means for reading the shift register serially at a given sampling frequency in order to reconstitute an output video signal,
 the method including the improvement whereby it comprises the following successive steps:
 integrating a light flux striking the photosensitive sites in the image zone;
 shifting the image and memory zones by (m+x) lines, where x is the number of lines between the first line of the window and a boundary between the image zone and the memory zone, in such a manner as to cause said first line of the window to be adjacent to the boundary between the memory zone and the shift register, prior to commencement of scanning;
 sequentially scanning the window by repeating the following steps p times at a given line frequency;
 actuating the second shifting means in such a manner as to shift the memory zone by one line; and
 actuating the third shifting means in such a manner as to read the contents of the shift register serially.

4,644,406
LARGE SCALE CONTACT TYPE IMAGE READING UNIT USING TWO-DIMENSIONAL SENSOR ARRAY
 Satoshi Nishigaki, Nara; Masataka Itoh, Tenri, and Shobichi Katoh, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
 Filed Jan. 29, 1985, Ser. No. 696,089
 Claims priority, application Japan, Feb. 1, 1984, 59-17885
 Int. Cl.⁴ H04P 3/14
 U.S. Cl. 358—213 8 Claims



1. A two-dimensional image reading unit comprising:
 a two-dimensional array of photosensitive semiconductor elements having first and second faces, said photosensitive semiconductor elements being formed in a first semiconductor layer of amorphous silicon having a PIN structure including,
 a p-type layer,
 an n-type layer, and
 an i-type layer disposed between said p-type layer and n-type layer;
 a plurality of first electrodes aligned in parallel to each other and being provided on the first face of said two dimensional array of photosensitive semiconductor elements, each said photosensitive semiconductor element being covered by and electrically connected to a said first electrode, said first electrodes being made of a transparent material; and
 a plurality of second electrodes aligned in parallel to each other and orthogonal to said first electrodes and being provided on said second face of said two-dimensional array of photosensitive semiconductor elements, each said photosensitive semiconductor element being covered by and electrically connected to a said second electrode.

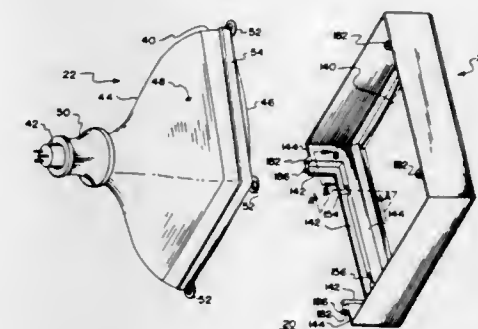
4,644,407
DISPLAY SYSTEMS
 Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England
 Filed Nov. 6, 1984, Ser. No. 668,852
 Claims priority, application United Kingdom, Nov. 22, 1983, 8331113
 Int. Cl.⁴ H04N 7/18
 U.S. Cl. 358—242 4 Claims



1. A display system including means for receiving a video signal which is in a frame and line format and which incorporates an unwanted signal component recurring at the frame frequency; digital processing means for digitally processing the

video signal so as to remove the unwanted signal component; and means for producing relative shifts in the timing signals of said digital processing means so as to suppress the display of unwanted vertical stripe patterns originating with the digital processing.

4,644,408
TELEVISION RECEIVER HAVING MULTI-PURPOSE CHASSIS FRAME
 Clyde F. Coleman, Crawfordsville, Ind., assignor to RCA Corporation, Princeton, N.J.
 Filed Dec. 16, 1985, Ser. No. 809,807
 Int. Cl.⁴ H04N 5/64
 U.S. Cl. 358—254 16 Claims



16. A display device cabinet for use with a picture tube and a printed circuit board comprising:
 a bottom member for supporting said printed circuit board; said bottom member being provided with a pair of tracks;
 a front member for supporting said picture tube; said front member having an opening for framing the faceplate of said picture tube; said front member being equipped with a pair of rails which engage said tracks in said bottom member for guiding said bottom member along a path as it is assembled to said front member; and
 a back member having disposed thereon a pair of rails which engage said tracks in said bottom member for guiding said back member parallel to said path when it is assembled to said bottom member; and
 means for securing said back member to said front member with said bottom member interposed therebetween for defining said cabinet in order to house said picture tube and said printed circuit board upon assembly of said members to each other; wherein the outer surfaces of said front, back and bottom members define the respective outer walls of said cabinet upon said assembly; wherein the location of said rails in said front and back members is such that said bottom member is spaced inwardly from the leg portions of said front and back members supporting said cabinet.

4,644,409
DOCUMENT RESOLUTION-ADAPTION METHOD AND APPARATUS
 Peter M. Fuchs, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
 Filed Feb. 26, 1985, Ser. No. 705,600
 Int. Cl.⁴ H04N 1/00
 U.S. Cl. 358—256 6 Claims

1. A method of adapting two-dimensional information represented as a first plurality of scan-lines along a first dimension having a first resolution scale along a second dimension so that said information is represented as a second plurality of scan-lines along said first dimension having a second resolution scale along said second dimension comprising the steps of:
 (a) representing said information as a third plurality of scan-lines along said first dimension wherein each said scan-line

travel in said high-speed reproduction mode at a speed approximate to a value $\{2n \pm (1/m)\}$ times the travelling speed in said recording mode (n being a positive integer and m being a positive integer excluding 1),

level detecting means (34) for detecting a level of an information signal reproduced by said rotating magnetic heads, storage means (35) for storing for a predetermined period said information signal reproduced in said high-speed reproduction mode, in response to said level detecting means detecting a level of said information signal higher than a predetermined level, and

selection means for providing said information signal reproduced in said high-speed reproduction mode in response to said level detecting means detecting a level of said information signal higher than said predetermined level and for providing said information signal stored in said storage means in response to said level detecting means detecting a level of said information signal lower than said predetermined level.

4,644,416

METHOD FOR RECORDING SERVO CONTROL SIGNALS ON A MAGNETIC DISC

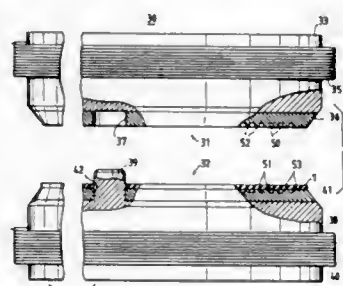
Yasuhiro Yamada, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Sep. 5, 1985, Ser. No. 772,936

Claims priority, application Japan, Sep. 10, 1984, 59-189164
Int. Cl.⁴ G11B 5/86

U.S. Cl. 360—17

11 Claims



1. A method for recording servo control signals on a magnetic disc record medium, comprising the steps of:
 - (a) subjecting said record medium to a first magnetic field simultaneously penetrating the entire area of a recording surface of said medium for uniformly magnetizing the medium in a direction of the thickness thereof;
 - (b) contacting the uniformly magnetized record medium in a face-to-face relationship with a surface of a ferromagnetic member on which a predetermined pattern of spaced geometrical varying regions is arranged in track turns; and
 - (c) generating a second magnetic field simultaneously penetrating said geometrical varying regions in a direction opposite to the direction of said first magnetic field for causing said second magnetic field to be spatially modulated by said regions and subjecting said record medium to said spatially modulated magnetic field to produce in said medium a plurality of spaced regions magnetized in a direction opposite to the direction of magnetization by the first magnetic field.

4,644,417

DIGITAL SIGNAL REPRODUCING APPARATUS

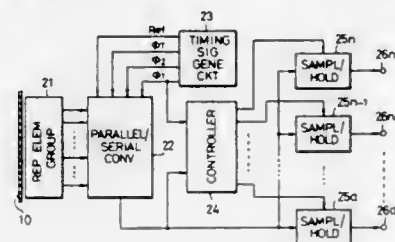
Masaru Moriyama, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Mar. 12, 1985, Ser. No. 710,863

Claims priority, application Japan, Mar. 16, 1984, 59-50558
Int. Cl.⁴ G11B 20/20; G06K 5/04

U.S. Cl. 360—26

6 Claims



1. A digital signal reproducing apparatus comprising:
 - reproducing element means for reproducing from a magnetic tape digital signals which are magnetically recorded on n tracks of the magnetic tape, where n is a natural number greater than one, said magnetic tape having a guard band separating each of the two adjacent tracks among the n tracks, said reproducing element means comprising z reproducing elements arranged equidistant from each other along the tape width direction over a range which includes said n tracks and the guard bands on both sides of each of the z tracks, where z is a natural number greater than n ;

parallel-to-serial converter means supplied in parallel with outputs of each of said reproducing elements of said reproducing element means for subjecting the outputs of each of said reproducing elements to a parallel to serial conversion and for producing a serial reproduced signal so that the outputs reproduced by a pair of the reproducing elements which are distant from each other by the track pitch are outputted from the converter means at a predetermined time interval;

controller means supplied with the serial reproduced signal from said parallel-to-serial converter means for detecting a signal reproduced from a first track out of signals reproduced from said n tracks and for producing one sampling pulse which is in correspondence with the first track during a time period in which the outputs of those reproducing elements confronting a part of the first track where a magnetic field intensity distribution is substantially uniform are obtained, said part excluding both sides of the first track, said controller means time-sequentially producing sampling pulses, inclusive of said one sampling pulse, every said predetermined time interval; and

output circuit means responsive to the sampling pulses, inclusive of said one sampling pulse, for obtaining from said serial reproduced signal the only outputs which have been reproduced by the reproducing elements confronting said n tracks, respectively, and for independently producing the signals reproduced from each of said n tracks.

4,644,418

FLOPPY DISK CONTROL APPARATUS

Haruhiko Banno, and Koichi Dewa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 14, 1984, Ser. No. 620,622

Claims priority, application Japan, Jun. 28, 1983, 58-115097
Int. Cl.⁴ G11B 5/09

U.S. Cl. 360—39

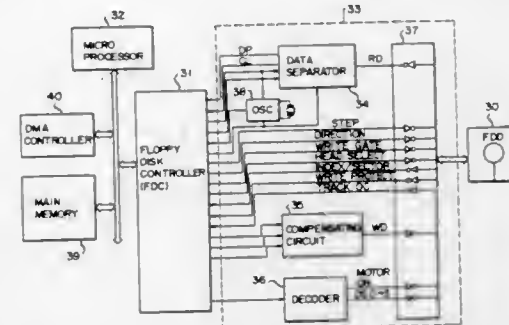
1 Claim

1. A floppy disk control apparatus comprising:
 - FORMAT COMMAND executing means for executing, on the basis of a program stored in a memory, a FORMAT COMMAND for formatting a floppy disk and designating

a particular data storage region thereof for receiving track density data;

disk writing means for writing track density data to said particular data storage region of said floppy disk when the FORMAT COMMAND is executed;

memory control means for reading track density data from said particular data storage region, producing flag byte data of a floppy disk format which includes flag bit data corresponding to the track density data, and writing the flag byte data into a file allocation table of said memory; seeking operation executing means for executing such a seeking operation that a floppy disk head is to be moved to



a desired track of said floppy disk upon reading/writing operations of data for said floppy disk; and

head traveling control means for outputting a step pulse signal according to the travelling distance of said head as specified by said seeking operation executing means when using a floppy disk having tracks of a first high density, and outputting, when using a floppy disk having tracks of a second density, lower than said first density, a step pulse signal suitable for the travelling distance of said head for said high-density tracks, said step pulse signals being output in accordance with the flag bit data written in said file allocation table of said memory when the seeking operation is executed.

4,644,419

FLOPPY DISK UNIT

Hiroshi Inuma, Yokohama; Shuichi Sakaguchi, Yamato, and Takashi Suzuki, Yokohama, all of Japan, assignors to Panafacom Limited and Matsushita Electric Industrial Co., Ltd., both of Kodomo, Japan

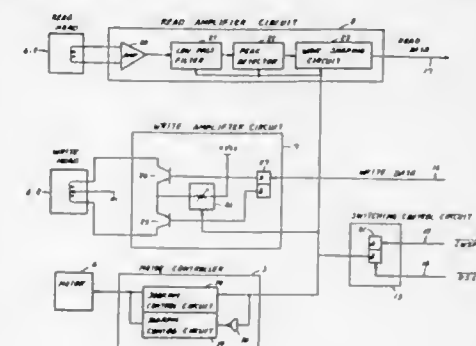
Continuation of Ser. No. 605,374, Apr. 27, 1984, abandoned.

This application Apr. 30, 1986, Ser. No. 860,681

Claims priority, application Japan, May 10, 1983, 58-81340
Int. Cl.⁴ G11B 5/09

U.S. Cl. 360—46

10 Claims



1. A floppy disk unit comprising:
 - a motor drive mechanism,
 - a data read/write circuit,
 - a control means for changing the speed of rotation of the

motor drive mechanism and the electrical characteristics of the data read/write circuit in accordance with the characteristic of the disk used,

drive device and a floppy disk control means comprising respective parts of said data read/write circuit and said control means,

wherein said drive device includes a write amplifier circuit which writes data from said disk, a read amplifier circuit which reads data from said disk, a motor controller which controls the speed of rotation of the motor and a first switching control circuit which controls respective characteristics of said write amplifier circuit, read amplifier circuit and motor controller, and

said floppy disk control means includes a basic clock generating circuit for providing a basic clock signal, a write data generating circuit which generates the data to be sent to said write amplifier circuit according to said basic clock signal, a phase comparator which receives at a first input terminal the data read by said read amplifier circuit, a voltage controlled oscillator which receives an output of said phase comparator and provides a first output of a second input terminal of said phase comparator and a second output as the read data, and a switching control circuit which controls the period of the clock generated by said basic clock signal generating circuit and a characteristic of said voltage controlled oscillator.

4,644,420

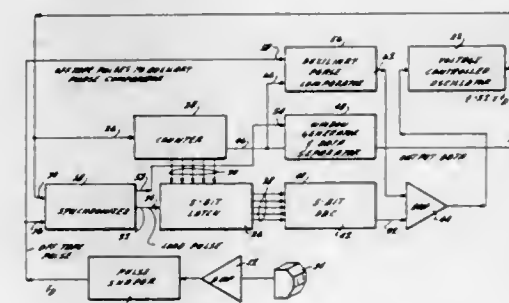
CIRCUIT AND METHODOLOGY FOR READING AND TRACKING BINARY DATA FROM MAGNETIC TAPE INDEPENDENTLY OF THE DATA PATTERN ON THE TAPE

William A. Buchan, Newport Beach, Calif., assignor to Archive Corporation, Costa Mesa, Calif.

Filed Mar. 29, 1984, Ser. No. 594,940

Int. Cl.⁴ G11B 5/09, 5/102; H03D 3/24
U.S. Cl. 360—51

20 Claims



1. An improvement in a circuit for reading binary information from a magnetic media, said information recorded thereon in a predetermined code with a variable data bit pattern, said improvement comprising:
 - a variable oscillator having an output frequency controlled by input to said oscillator;
 - TDE detection means for generating an output independent of said data bit pattern responsive to total time displacement error (TDE) between said binary information read from said magnetic tape input to said TDE detection means and the output of said variable oscillator, the output of said variable oscillator being coupled to one input of said TDE detection means for generating said output responsive to the total time displacement error, TDE; and
 - an amplifier having its input coupled to the output of said TDE detection means for generating an output proportional to TDE, the output of said amplifier being coupled to the input of said variable oscillator,
- whereby reading of said pulses on said magnetic media is unaffected by said bit pattern on said media.

4,644,421

METHOD AND APPARATUS FOR RECORDING INFORMATION ON MAGNETIC DISK

Takahiro Miwa, Konan, and Yoshihiko Hibino, Gifu, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

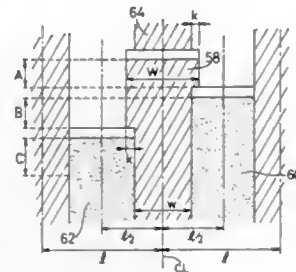
Filed Jun. 13, 1985, Ser. No. 744,153

Claims priority, application Japan, Jun. 23, 1984, 59-129675

Int. Cl.⁴ G11B 5/03, 21/02

U.S. Cl. 360—66

3 Claims



1. A method for writing information on a magnetic disk by means of a single-gap magnetic head, comprising the steps of: selecting a track of the magnetic disk from a plurality of tracks, each track being divided into a plurality of sectors, each sector including recorded sector identification data; positioning said magnetic head on a centerline of the selected track of the magnetic disk, and writing information on the selected track over a first record width; moving said magnetic head to first and second predetermined positions in succession on opposite sides of said centerline of the selected track such that a width of the magnetic head overlaps corresponding opposite end portions of said first record width of the written information by first and second predetermined distances from opposite ends of the first record width, respectively; and erasing said opposite end portions of the first record width of the written information while said magnetic head is located in said first and second predetermined positions, respectively, whereby the written information is left over a second record width which is smaller than said first record width; wherein said first and second predetermined distances are small enough to avoid erasing said recorded sector identification data, and are large enough to accommodate variations in relative position between said magnetic head and said selected track.

4,644,422

ANTI-COPY SYSTEM

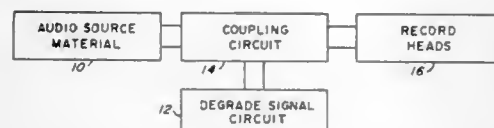
John C. Bedini, Sylmar, Calif., assignor to TVI Systems, Ltd., Los Angeles, Calif.

Continuation-in-part of Ser. No. 400,630, Jul. 22, 1982. This application Jun. 24, 1983, Ser. No. 506,658

Int. Cl.⁴ G11B 15/04, 5/86, 5/02

U.S. Cl. 360—60

43 Claims



1. A system for preventing the copying of original recordings comprising:
means for generating a source material signal;
means for creating a degrade signal which will degrade any

source material recorded from an original recording thereof, including a pair of oscillating means and mixing means connected to said oscillating means for mixing the outputs of said oscillating means;
means for combining the degrade signal with the source material signal to produce a combined signal; and
means for recording said combined signal on said original recording.

4,644,423

AUTOMATIC PROGRAM SOURCE SELECTION METHOD AND APPARATUS

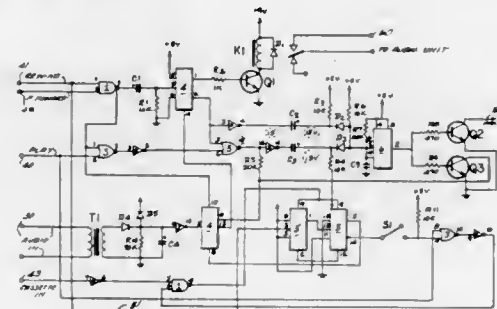
Frank Buntsis, 702 Raintree Garden, No. 5, Louisville, Ky. 40218, and Christopher Reifsteck, Louisville, Ky., assignors to Frank Buntsis, Louisville, Ky.

Filed Oct. 30, 1984, Ser. No. 666,320

Int. Cl.⁴ G11B 15/12, 15/18

U.S. Cl. 360—61

10 Claims



1. An automatic program source selection apparatus for interfacing at least first and second controllable program sources comprising:
logic means for determining commanded search and play operations of the first program source;
second-source input means for indicating the presence of a signal input thereto from the second program source;
control means for responding, during an operation mode thereof, to determinations of said logic means and indications of said input means to control said first and second program sources to cause playback operation of said second program source during commanded search operation of said first program source, and to permit play operation of said first source whenever such is commanded and said input means does not indicate the presence of a signal input thereto.

4,644,424

EQUALIZER USED FOR MAGNETIC STORAGE DEVICE

Nobumasa Nishiyama, Hachioji; Hajime Aoi, Tachikawa; Takashi Tamura; Yasuhide Ouchi, both of Kokubunji, and Makoto Saitou, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

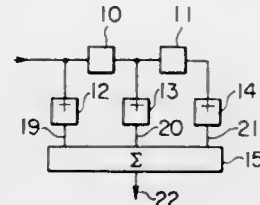
Filed Dec. 21, 1984, Ser. No. 685,118

Claims priority, application Japan, Dec. 26, 1983, 58-243839

Int. Cl.⁴ G11B 5/02; H04B 3/14; H03H 11/06

U.S. Cl. 360—65

14 Claims



1. An equalizer for use in a magnetic storage device which

reproduces by a thin film magnetic head a reproduced signal waveform of information magnetically recorded on a medium, said equalizer comprising:

first means for attenuating said reproduced signal waveform by a predetermined amount;
second means for delaying said reproduced signal waveform by a predetermined time;
third means for attenuating an output signal of said second means by a predetermined amount;
fourth means for delaying the output signal of said second means by a predetermined time;
fifth means for attenuating an output signal of said fourth means by a predetermined amount;
sixth means for delaying the output signal of said fourth means by a predetermined time;
seventh means for attenuating an output signal of said sixth means by a predetermined amount;
eighth means for delaying the output signal of said sixth means by a predetermined time;
ninth means for attenuating an output signal of said eighth means by a predetermined amount; and
tenth means for summing outputs of said first, fifth and ninth means and for subtracting outputs of said third and seventh means, to thereby eliminate undershot portions of said reproduced signal waveform and at the same time to narrow the width of said waveform.

4,644,425

CONTROL APPARATUS FOR CONTROLLING

Isao Tamaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

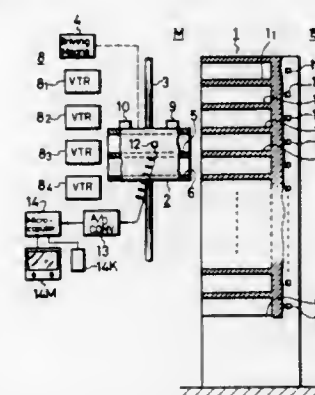
Filed Apr. 2, 1985, Ser. No. 719,066

Claims priority, application Japan, Apr. 3, 1984, 59-66155

Int. Cl.⁴ G11B 15/68, 31/00

U.S. Cl. 360—69

2 Claims



1. An apparatus for automatically supplying and selectively reproducing a tape cassette having a plurality of cassette accommodating racks into which a plurality of tape cassettes are accommodated, a plurality of reproducing apparatus for reproducing said plurality of tape cassettes, a tape cassette transporting apparatus for transporting said plurality of tape cassettes from said tape cassette accommodating racks to said plurality of reproducing apparatus and for transporting said plurality of tape cassettes from said plurality of reproducing apparatus to said tape cassette accommodating racks and a control apparatus for controlling at least a sequential order of reproducing said plurality of tape cassettes and a sequential order of a playback operation of said plurality of reproducing apparatus and assigning a respective transmission number thereto, said apparatus comprising:

(a) switching means having a plurality of reproduced signal input terminals to which reproduced output signals of said plurality of reproducing apparatus are respectively supplied and a plurality of output terminals being controlled

by said control apparatus so as to supply said plurality of reproduced signals to predetermined transmission lines;
(b) reproducing apparatus control means having control keys corresponding to said plurality of output terminals and for controlling an operation of said reproducing apparatus, which supply reproduced signals through said switching means to said plurality of output terminals, by operating said control keys; and
(c) in which said control apparatus includes means for placing blank periods of predetermined lengths between selected ones of the plurality of tape cassettes in said sequential order and memory means for storing data representing the transmission number and blank periods and upon read out therefrom to a blank period detecting means, the data representing the transmission number next preceding each blank period is placed back in said memory for supply to a tape cassette number calculating means for forming groups of said tape cassettes, whereby tape cassettes can be efficiently distributed to the plurality of reproducing apparatus in said groups.

4,644,426

FLOPPY DISK DRIVE APPARATUS

Shunji Saito, Numazu, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

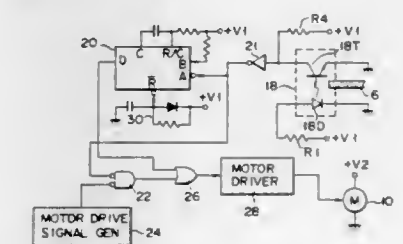
Filed Apr. 19, 1984, Ser. No. 602,179

Claims priority, application Japan, Apr. 27, 1983, 58-74780; Apr. 27, 1983, 58-74781

Int. Cl.⁴ G11B 19/10

U.S. Cl. 360—71

24 Claims



1. A floppy disk drive apparatus comprising:
a disk holding member for holding a floppy disk;
drive signal generating means for generating a drive signal irrespective of the insertion state of the floppy disk to rotate said disk holding member when effecting read/write operation with respect to said floppy disk;
disk drive means driven in response to the drive signal from said drive signal generating means for thereby rotating said disk holding member;
first control means for inhibiting said drive signal which is generated by said drive signals generating means from being supplied to said disk drive means when it is detected that the floppy disk is not held on said disk holding member.

4,644,427

DISKETTE LOADING APPARATUS

Harrel D. Ashby, Rte. 2, Box 274A, Hinton, Okla. 73047

Filed Mar. 13, 1984, Ser. No. 588,936

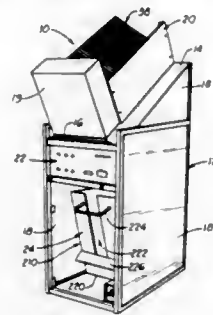
Int. Cl.⁴ G11B 17/12; B65G 59/00

U.S. Cl. 360—98

14 Claims

1. An improved diskette loading apparatus, comprising:
rack means for holding a plurality of the jacketed diskettes;
guide means for guiding a jacketed diskette in a selected dropping path, the guide means having a drop chute through which the diskette is selectively permitted to drop;
pick means for sequentially pulling the diskette into dropping engagement with the drop chute; and
disk drive means for sequentially receiving and interacting

with the diskette media of each jacketed diskette, the guide means comprising guide rail means associated with



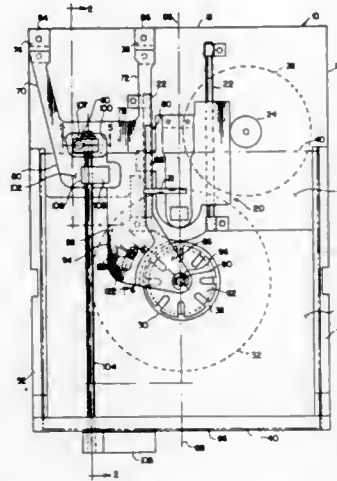
the disk drive means for guiding the diskette selectively in the disk drive means as it is permitted to drop from the disk drive following interaction therewith.

4,644,428

ADJUSTABLE MECHANISM FOR RELEASABLY COUPLING FLOPPY DISK TO DRIVE SPINDLE
Philip Tomasi, P.O. Box 1186, Canoga Park, Calif. 91304
Filed Sep. 17, 1984, Ser. No. 651,431
Int. Cl.⁴ G11B 5/016, 17/02

U.S. Cl. 360-99

18 Claims



1. An adjustable loading mechanism for the positioning and clamping cone in a floppy disk drive having a front panel and side and rear edges in a rectangular configuration defined by a base frame, and a spindle for driving a floppy disk, said mechanism comprising:

a pivot arm including spring hinge means along the rear edge of the frame biasing the pivot arm in a direction away from the upper side of an inserted floppy disk, the pivot arm further including a free end intercepting the rotational axis of the floppy disk and carrying a spring-loaded positioning and clamping cone thereon for entering a central aperture of the floppy disk; and

control means including a control shaft accessible from the front panel and positioned to intercept a portion of the mid region of the pivot arm, the control means including a cam surface engageable with the mid region of the pivot arm, an interior bearing block receiving the shaft and means for adjusting the height of the bearing block relative to the base frame, rotation of the control shaft engaging the cam surface against the pivot arm to lower the arm, the clamping force exerted by the positioning and clamping cone on

the disk being determined by adjustment of the height of the bearing block relative to the base frame.

4,644,429

TRAVERSING APPARATUS FOR LOADING A MAGNETIC HEAD-LOADING ARM ASSEMBLY ONTO ROTATABLE DISCS

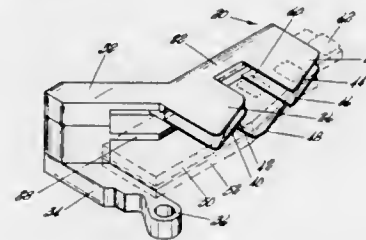
Craig L. Boe, Buellton, Calif., assignor to Applied Magnetics Corp., Goleta, Calif.

Filed May 26, 1983, Ser. No. 498,178

Int. Cl.⁴ G11B 21/22, 21/20

U.S. Cl. 360-105

10 Claims



1. Apparatus for traversing a magnetic head-loading arm assembly onto a pair of spaced rotating discs wherein the magnetic head-loading arm assembly includes two parallel loading arms, one of which has two pairs of spaced gimbal spring magnetic recording and reproducing head assemblies resiliently supported from the loading arm surface and with each upper and lower magnetic recording and reproducing head assemblies in alignment with each other, said traversing apparatus comprising

a comb assembly including a pivotally mounted first canted sweep arm having first and second fixed cam guides wherein each of said fixed cam guides have a pair of opposed, spaced cam blade assemblies, said first cam guides being located at the end of said first canted sweep arm and the second fixed cam guide being located at a predetermined location along said arm intermediate said first cam guide and the pivot point of said first canted sweep arm, each of said pairs of opposed, spaced cam blade assemblies including means for defining upper and lower contoured blades having a thin section at the edge thereof nearest said pivot point and a capture gap therebetween and wherein each of the thin sections extend into a thick section at the opposite edge thereof away from said pivot point defining a clamping throat between the thick section of said contoured blades, said spaced cam blade assembly also including means defining a ramp between said thick and thin sections; and

means operatively coupled to said first canted sweep arm to rotate the same from a disengage position in which the parallel loading arms are permitted to move towards the surface of a rotating disc into a loading position in which the parallel loading arms are held away from the surface of a rotating disc having the spaced, gimbal spring magnetic recording and reproducing head assemblies located on the upper and lower side thereof wherein said spaced fixed cam guide spaced cam blade assemblies slideably engage and capture one gimbal spring magnetic recording and reproducing head assembly in the capture gaps and in response to continued rotation thereof urges the captured gimbal spring magnetic recording and reproducing head assembly into the clamping throat, urging the upper and lower gimbal spring supporting supporting said magnetic head assemblies towards each other and moving the magnetic recording and reproducing head assemblies near the surface of the loading arm to permit the traversing apparatus to transport the same into the space between said pair of rotating discs and upon rotation of the first canted sweep arm away from the loading position into a said disengage position enabling the gimbal spring to slideably

travel from the clamping throat back into the capture gap and out of the cam blade assemblies permitting the magnetic recording and reproducing heads to fly over a surface of each of the rotating discs.

4,644,430

SLOTTED SENSOR IN YOKE-TYPE MAGNETO-RESISTIVE HEAD

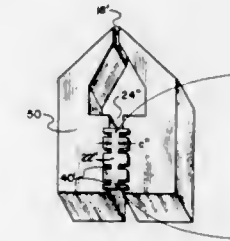
William French, Cardiff-by-the-Sea, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,894

Int. Cl.⁴ G11B 5/127

U.S. Cl. 360-113

20 Claims



1. In a yoke-type magneto-resistive head having (a) a transducer gap, formed by a structure having spaced apart non-comblike edges (b) a back gap in said structure remote from said transducer gap, and (c) thin magneto-resistive film means bonded to said structure and disposed across the back gap of said head, said film means being adapted to convey a sense current there-through in a direction that is perpendicular to the cross-wise dimension of said back gap,

the improvement comprising means for preventing sense current flow through said magneto-resistive film means except in the region thereof that is responsive to magnetic flux in the back gap of said head said means for preventing being means extending from where said film means is bonded to said structure to a point disposed within said back gap, whereby sense current flow through said film means is minimized with attendant decrease in power consumption and increase in head sensitivity to magnetic flux sensed by said head.

4,644,431

MAGNETIC HEAD FOR A PERPENDICULAR MAGNETIC RECORDING SYSTEM

Nobuyuki Kishine; Tetsuya Imamura, both of Utsunomiya; Hideyuki Minami, Tochigi, and Michihide Yamauchi, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

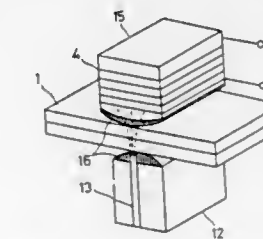
Filed Nov. 30, 1984, Ser. No. 677,059

Claims priority, application Japan, Nov. 30, 1983, 58-227728

Int. Cl.⁴ G11B 5/22

U.S. Cl. 360-122

5 Claims



1. A magnetic head for use in a perpendicular magnetic recording system which records with a vertical magnetic field component onto a magnetic recording medium with a plane surface and having a receiving circuit axis for easy magnetization which is vertical to the plane, said magnetic head compris-

ing a main pole including soft magnetic thin film having a high magnetic permeability and a high saturated magnetic flux density, and an auxiliary pole which is disposed opposite said main pole so as to be separated via said magnetic recording medium, said magnetic head having at least the portion of said auxiliary pole confronting said magnetic recording medium covered with a non-magnetic film surface comprising a glass-like carbon material.

4,644,432

THREE POLE SINGLE ELEMENT MAGNETIC READ/WRITE HEAD

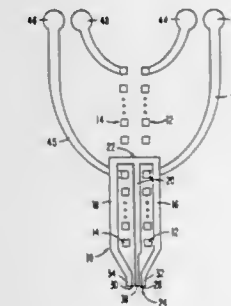
David E. Heim, Menlo Park, Calif., assignor to International Business Machines, Armonk, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,647

Int. Cl.⁴ G11B 5/17, 5/147, 15/12

U.S. Cl. 360-123

10 Claims



1. A magnetic head structure for recording and reading magnetic transitions on a selectable one of a plurality of tracks on a magnetic recording medium comprising:

a magnetic structure having three spaced pole pieces, said pole pieces comprising outside pole pieces each spaced from a central pole piece to form a transducing gap between each of said outside pole pieces and said central pole piece;

first and second coils each wound on said magnetic structure between an outside and the center pole of said pole pieces; first control circuit means for connecting said coils in a first configuration for a write operation whereby the flux in said magnetic pole pieces is additive for writing; and second control circuit means for connecting said coils in a second configuration for a read operation so that a previously recorded magnetic transition in the magnetic recording medium adjacent to said transducing gaps is sensed additively in said coils.

4,644,433

MAGNETIC TAPE CASSETTE HAVING INTEGRATED OPTICAL ELEMENTS

Kenichi Horikawa, Tokyo; Yoshinori Yamamoto, and Kenji Kawakami, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1984, Ser. No. 673,730

Claims priority, application Japan, Nov. 25, 1983, 58-181669[U]

Int. Cl.⁴ G11B 23/08

U.S. Cl. 360-132

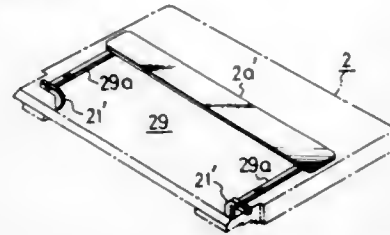
2 Claims

1. A magnetic tape cassette including a magnetic tape, comprising:

(a) a cassette casing having an upper surface and side walls and having incorporated therein a pair of reel hubs around which the magnetic tape is wound;

(b) a transparent window plate formed on the upper surface of said cassette casing to see therethrough said pair of reel hubs;

- (c) a tape running path carrying the tape from one hub to the other and along at least one side wall;
 (d) an optical guide provided in the tape running path within the one side wall of said cassette casing for detecting a tape end; and



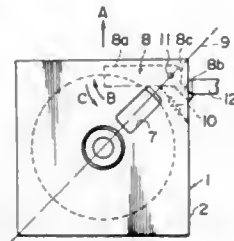
- (e) a coupling member for coupling said transparent window plate and said optical guide, wherein said transparent window plate, said optical guide and said coupling member are formed integrally of transparent synthetic resin.

4,644,434

SHUTTER MEMBER FOR A MAGNETIC DISK CARTRIDGE

Kengo Oishi, and Teyoshi Ono, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
 Filed Aug. 29, 1983, Ser. No. 527,287
 Claims priority, application Japan, Sep. 6, 1982, 57-135025[U]
 Int. Cl.⁴ G11B 23/03; B65D 85/30
 U.S. Cl. 360-133

5 Claims



1. A magnetic disk cartridge comprising a magnetic disk for conducting image recording and reproducing through high-speed rotation, said disk including a flexible, disk-like recording medium having a central portion, and a hub at said central portion, said cartridge also comprising an approximately square sheet-like case having upper and lower halves for containing said magnetic disk therebetween, one of said halves having a magnetic head receiving hole for insertion of a magnetic head for image recording and reproducing and being located in the vicinity of a diagonal line of said case, wherein the improvement comprises a unitary shutter member rotatably mounted within said case between said halves, said shutter member including a main body portion which is generally rectangular and has a rotation center at a corner portion of said case nearest to said magnetic head receiving hole, said shutter member also including a smaller rectangular arm defining a protrusion extending outwardly from the main body portion at an obtuse angle therefrom so that a corner of that arm projects out of the case to a position for engagement with an exterior shutter opening contact member of a recording device when inserted therein whereby said shutter member will rotate to open said magnetic head receiving hole.

4,644,435

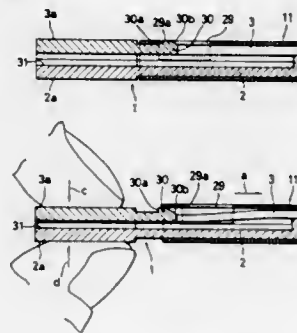
MICRO FLOPPY DISC CASSETTE

Tsuneo Nemoto, Sendai, and Tetsuo Sawa, Tagajo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
 Filed Jun. 28, 1983, Ser. No. 508,878
 Claims priority, application Japan, Jul. 1, 1982, 57-114718
 Int. Cl.⁴ G11B 23/03, 5/012
 U.S. Cl. 360-133

6 Claims

1. A recording and/or reproducing disc cassette comprising:

a cassette case having upper and lower halves, at least one of said upper and lower halves being provided with a recording head insertion hole,
 a disc type recording medium rotatably contained within said cassette case,
 a shutter movably mounted on said cassette case for opening and closing said head insertion hole, characterized by:
 a spring for biasing said shutter from a position wherein said head insertion hole is open to position wherein it is closed by said shutter,



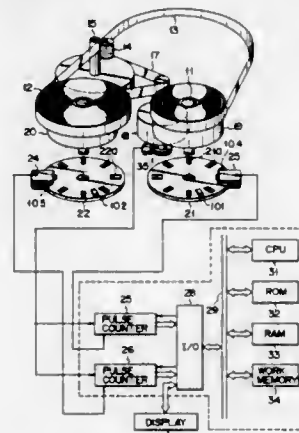
an engagement abutment portion disposed on said shutter; and a locking pawl disposed on one of said upper and lower halves and adapted to engage and latch said abutment portion when said shutter is moved to said open position;
 said one half with said pawl having resiliency;
 said locking pawl being transversely disengaged from said abutment portion when said upper and lower halves are pinched toward each other against said resiliency whereby said shutter is moved from said locked open position to said closed position by means of said spring.

4,644,436

APPARATUS FOR DETERMINING THE TYPE AND REMAINING CAPACITY OF A TAPE

Hiroaki Unno, Ichikawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
 Filed May 13, 1983, Ser. No. 494,316
 Claims priority, application Japan, May 19, 1982, 57-84312; May 19, 1982, 57-84313; Oct. 25, 1982, 57-186938
 Int. Cl.⁴ G11B 15/48, 15/18, 17/00, 19/02
 U.S. Cl. 360-137

13 Claims



1. An apparatus for determining the type of tape assembly being used, said tape assembly having a supply reel, take-up reel, and tape, comprising:
 first reel-rotation detection means for generating pulses having a frequency corresponding to the rotational velocity

ity of said take-up reel adapted to detect the rotation of said take-up reel;
 second reel rotation detection means for generating pulses having a frequency corresponding to the rotation of said supply reel adapted to detect the rotation of said supply reel;
 pulse generation means for generating pulses having characteristics related to the amount of travel of said tape transported between said take-up reel and said supply reel;
 pulse counter means for counting said pulses from said pulse generation means during predetermined rotational periods of said take-up reel and of said supply reel and producing values indicative thereof;
 calculating means for determining a sum of the squares of said values counted by said pulse counter means;
 memory means for storing a plurality of predetermined values related to standard tape characteristics; and
 discriminating means for comparing the value of said sum of squares obtained by said calculating means with a plurality of said predetermined values in said memory means, thereby determining a particular predetermined value nearest to said value of said sum of squares, whereby the type of said tape is determined to be the type corresponding to said particular predetermined value determined by said discriminating means.

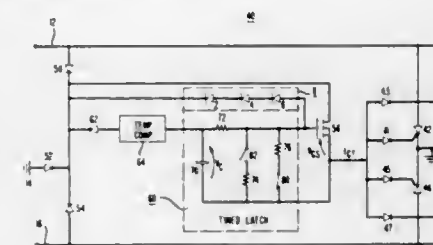
4,644,437

TELEPHONE SUBSCRIBER LOOP OVERVOLTAGE PROTECTION INTEGRATED CIRCUIT

Thomas J. Robe, Basking Ridge, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Nov. 1, 1985, Ser. No. 794,166
 Int. Cl.⁴ H02H 9/04

U.S. Cl. 361-56

9 Claims



1. In combination with a three-wire communication equipment including a first and a second input terminal and a ground plane terminal, a circuit for protecting said equipment from both positive and negative polarity overvoltages occurring between any combination of said first and second input terminals and said ground plane, said protection circuit comprising a plurality of steering diodes (50, 52, 54) each comprising an anode and a cathode, connected between said first and second inputs and said ground plane such that the cathodes of said diodes are connected together at a common terminal;
 a plurality of silicon-controlled rectifiers (SCRs) (42, 44, 46, 48), each SCR comprising an anode, a cathode, and a gate terminal, said plurality of SCRs interconnected between said first and second inputs and said ground plane so as to provide a circuit path for overvoltage-induced currents of positive and negative polarity between any two terminals; switching means (56) connected between the diode common terminal and the gate terminals of each SCR of said plurality of SCRs for providing a means for activating separate ones of said plurality of SCRs, wherein selected ones are activated on the basis of the polarity the overvoltage experienced between any pair of the first and second input and ground terminals;
 overvoltage threshold sensing means (62, 64) coupled to said common terminal for providing an activation output signal (12) when a voltage applied between any pair of terminals

reaches a predetermined overvoltage threshold level; and
 times latching means (60) connected to said switching means and responsive to the activation output signal from said overvoltage threshold sensing means for turning on said switching means when said activation output signal generates in said times latching means a predetermined switching voltage level (V_C), thereby allowing an overvoltage-induced current to flow through an SCR circuit path of appropriate polarity.

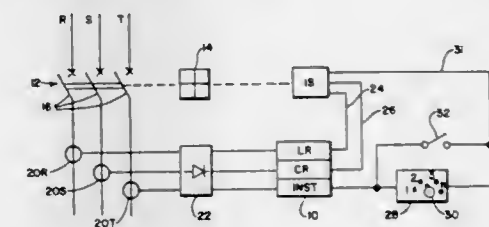
4,644,438

CURRENT-LIMITING CIRCUIT BREAKER HAVING A SELECTIVE SOLID STATE TRIP UNIT

Robert Puccinelli, and Didier Fraisse, both of St. Martin d'Heres, France, assignors to Merlin Gerin, Grenoble Cedex, France
 Filed May 24, 1984, Ser. No. 613,623
 Claims priority, application France, Jun. 3, 1983, 83 09383
 Int. Cl.⁴ H02H 3/07

U.S. Cl. 361-75

4 Claims



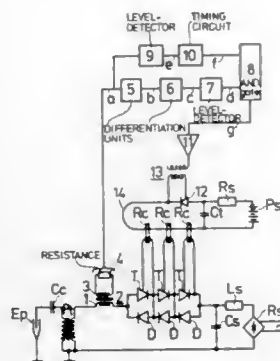
1. A current-limiting circuit breaker having a pair of separable stationary and movable contacts for interconnecting an electrical circuit thereto, an operating latch mechanism for opening and closing said separable contacts, a selective trip unit cooperating with an actuator of said mechanism for actuating said contacts in a definitive open position upon occurrence of an overcurrent condition, and additional electrodynamic or electromagnetic means responsive to the value of the current in said circuit for independently actuating said movable contact which is automatically urged towards the open position when the fault current exceeds a first predetermined threshold, and further to the closed position when the fault current falls below said first threshold, so as to define an opening and closing cycle of said contacts, said selective trip unit comprising:

a tripping control device including a cycle counter which counts successive said opening and closing cycle effected by said additional means;
 counter setting means cooperating with said cycle counter for incrementing the latter and for supplying a tripping order to said actuator so as to trip said mechanism such that the latter causes a positive opening of the circuit breaker after a selected number of cycles;
 zero resetting means for clearing said cycle counter when said succession of cycles is interrupted after supplying of said tripping order;
 a first, time-delay solid state tripping circuit connected to said actuator;
 a second, instantaneous solid state tripping circuit having an operating time lower than that of said first tripping circuit, and cooperating with said cycle counter so as to ensure instantaneous tripping of said mechanism as soon as the value of the current exceeds a second instantaneous tripping threshold, as well as tripping of said mechanism after counting the selected number of cycles by the counter setting device;
 a current sensor including a current transformer; and
 wherein said counter includes an analog solid state circuit having a delayed action detector circuit which inhibits the operation of the counter from the moment the first fault wave is detected, the time delay being variable depending

on the shape of a measurement signal delivered to the detector circuit by said sensor system.

4,644,439
FAST-ACTING SPARK-OVER DETECTOR
 Claus E. Taarning, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark
 Filed Nov. 2, 1984, Ser. No. 667,545
 Claims priority, application United Kingdom, Nov. 9, 1983, 8329845

Int. Cl.⁴ H02H 3/093
 U.S. Cl. 361—87 3 Claims



1. A spark-over detector for detection of spark-overs in an electrostatic precipitator, said detector comprising: a pulse circuit;

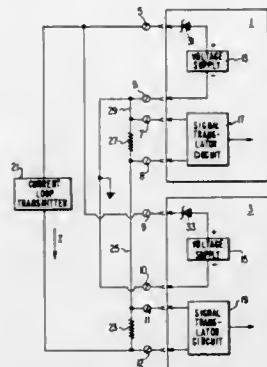
- a current sensor, said sensor providing a current-representing voltage signal proportional with the current in said pulse circuit;
- a first differentiation unit receiving said current-representing voltage signal, to differentiate said voltage signal and to provide a first output signal;
- a second differentiation unit receiving said first output signal from said first differentiation unit, to differentiate said first output signal and provide a second output signal;
- a first level-detecting circuit providing a third output signal when said second output signal is above a preset level;
- and AND-gate, said AND-gate having a first and second inputs, said first input receiving said third output signal;
- a second level-detecting circuit providing a fourth output signal as long as said current-representing voltage is above a preset level;
- and a timing circuit receiving said fourth output signal and transmit a fifth signal to said second input of said AND-gate throughout a period starting at a first preset time after said fourth output signal has been received from said second level-detecting circuit and ending at a second preset time after said fourth signal has been received or after said fourth signal has ceased;
- the said AND-gate outputting a signal when there are simultaneous signals on its said first and second inputs, thereby to indicate that a spark-over is developing.

4,644,440
REDUNDANT POWER SUPPLY ARRANGEMENT WITH SURGE PROTECTION
 Thomas J. Kenny, Pittsburgh, and James F. Sutherland, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 8, 1985, Ser. No. 689,691
 Int. Cl.⁴ H02H 3/20
 U.S. Cl. 361—111 5 Claims

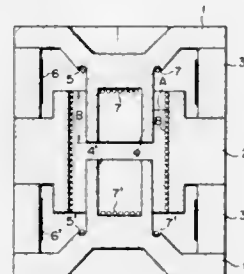
1. A redundant d.c. power supply arrangement for supplying power to a load circuit which emits voltage transients of high frequency and magnitude, the power supply arrangement being subjected to such voltage transients and comprising:
- at least first and second power supply branches each having

terminals arranged for connection of said branches in electrical parallel with a load circuit, each said power supply branch including a d.c. voltage supply and a Zener diode connected in electrical series with said voltage supply, said Zener diodes being selected and arranged for causing at least one of said voltage supplies to deliver



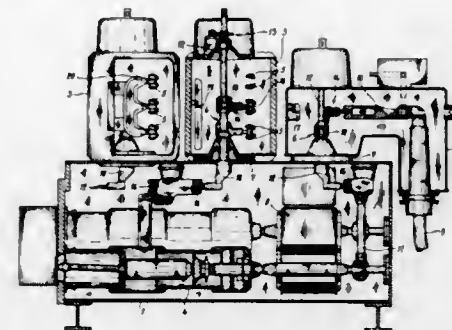
power to a load circuit wherein each said Zener diode has a reverse breakdown voltage for clamping a voltage transient emanating from such a load circuit to that reverse breakdown voltage and provides a low impedance path for a resulting current surge associated with the voltage transient.

4,644,441
DISCHARGE-TYPE ARRESTER
 Yoshio Igarashi, Tokyo, Japan, assignor to Kabushiki Kaisha Sankosha, Tokyo, Japan
 Filed Aug. 3, 1984, Ser. No. 637,139
 Claims priority, application Japan, Sep. 22, 1983, 58-145925
 Int. Cl.⁴ H02H 9/06
 U.S. Cl. 361—120 5 Claims



1. A discharge-type arrester comprising:
- an insulating cylinder; p1 a pair of cylindrical main electrodes airtightly attached to corresponding openings of the insulating cylinder so that the inner end faces of the main electrodes are opposed to each other to form discharge surfaces which define a discharge gap in the insulating cylinder;
 - an intermediate electrode having a discharge surface coaxially surrounding the space between the discharge surfaces of the main electrodes and facing the lateral faces of the main electrodes to define additional discharge gaps; and
 - electrode activators arranged over the whole discharge surface of the intermediate electrode so as to be isolated from the discharge surfaces of the main electrodes.

4,644,442
THREE-PHASE ISOLATING DISCONNECTOR FOR USE IN A HIGH-VOLTAGE SWITCHGEAR ARRANGEMENT
 Ysbrand P. J. M. Ponsioen, Alphen A/D Rijn, and Johannes A. Kemper, Nieuwegein, both of Netherlands, assignors to Holec Systemen & Componenten B.V., Hengelo, Netherlands
 Filed Nov. 8, 1985, Ser. No. 796,225
 Int. Cl.⁴ H02B 1/20, 1/16
 U.S. Cl. 361—341 6 Claims



1. A three-phase isolating disconnect for use in a high-voltage switchgear arrangement in two gas-filled chambers, separated by a wall, in said arrangement, comprising for each phase a disconnecter member extending through the wall and fastened and movable therein, this disconnecter member being provided with a disconnecter contact in each chamber, and comprising two fixed counter disconnecter contacts which are connected to other parts of the switchgear arrangement and of which one is disposed in one chamber and the other in the other chamber, the movable disconnecter member being brought by rotation from a first position, in which it conductively connects together the two fixed counter disconnecter contacts, to a second position in which the conductive connection is broken and in which at least one disconnecter contact of the movable disconnecter member is connected to an earth contact, and vice versa, characterized in that the three disconnecter members are embodied in the form of rotating shafts which are disposed in one plane and which can be rotated from the outside, each of them being housed in a separate bushing insulator in the wall, and that the two disconnecter contacts of each disconnecter member are each fastened to a contact holder around the rotating shaft, each of them extending, transversely in relation thereto, in a plane parallel to the wall and, on rotation from the first to the second position of the disconnecter member, moving over a circle sector of 180°.

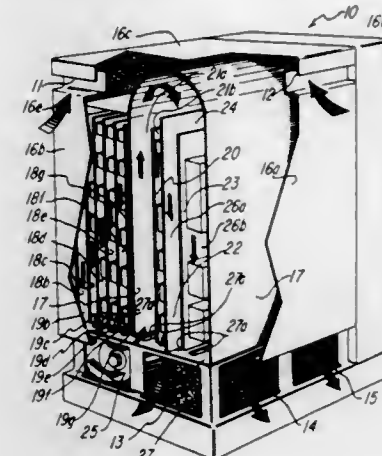
4,644,443
COMPUTER COOLING SYSTEM USING RECYCLED COOLANT
 Michael W. Swensen, William C. Martin, and Henry H. Kight, all of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 27, 1985, Ser. No. 781,064
 Int. Cl.⁴ H05K 7/20
 U.S. Cl. 361—384 6 Claims

1. An enclosed computer cabinet having at least one chassis, first and second end enclosures, and intake and exhaust air vents, comprising:
- (a) a plurality of lower power-dissipating electronic components mounted adjacent each other on the chassis forming low volume air ducts between each other and between the first end enclosure and one side of the adjacent lower power-dissipating electronic components;
 - (b) at least one higher power-dissipating electronic component mounted on the chassis, adjacent the second end enclosure, to form a high volume duct with one side of the higher power-dissipating electronic component;
 - (c) deflector means, positioned between the lower power-

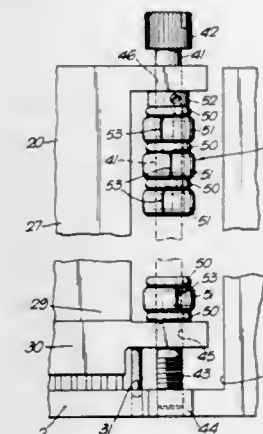
dissipating electronic component furthest from the first end enclosure, to form a low volume air duct with one side of the furthest lower power-dissipating electronic component, and to form a high volume air duct with the other side of the higher power-dissipating electronic component; and

(d) tangential fan means positioned to cause air to be drawn into the low volume ducts over both sides of each of the



lower power-dissipating electronic components, and to exhaust through the high volume ducts over both sides of the higher power-dissipating electronic component, the rate of air flow in the high volume ducts being a minimum of one half of that required to cool the higher power-dissipating electronic component, and the rate of air flow in the low volume ducts being at least one half of that required to cool each of the lower power-dissipating electronic components.

4,644,444
CLAMPING MEANS, AND MODULES AND UNITS INCLUDING CLAMPING MEANS
 Derek A. Rush, London, England, assignor to Smiths Industries Public Limited Company, London, England
 Filed Aug. 15, 1985, Ser. No. 765,775
 Claims priority, application United Kingdom, Aug. 17, 1984, 8420938
 Int. Cl.⁴ H05K 7/20
 U.S. Cl. 361—388 12 Claims



1. An electronic unit comprising: a housing having a wall with a channel therein extending along the wall, and an electronic module located in said housing, said electronic module including electronic circuit elements and having an edge mem-

ber that projects into said channel, and a clamping assembly that extends within the channel along the length of the edge member intermediate one face of the edge member and a surface of the channel, said clamping assembly including an elongate shaft, a plurality of inexpandible ring members that embrace and are spaced apart along the shaft, a plurality of radially-expandible ring members each interposed between a successive pair of said inexpandible ring members; and the clamping assembly being configured to urge said ring members together along the length of the shaft such that said expandible ring members expand radially within said channel around their circumference thereby to engage both the surface of the channel on one side and the face of the edge member on the opposite side thereby to urge said edge member into thermal contact with said housing.

4,644,445

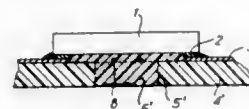
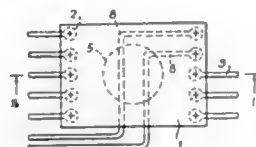
RESIN MOUNTING STRUCTURE FOR AN INTEGRATED CIRCUIT

Kunio Sakuma, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 832,498, Feb. 20, 1986, abandoned, which is a continuation of Ser. No. 565,259, Dec. 23, 1983, abandoned. This application Jul. 31, 1986, Ser. No. 891,084
Claims priority, application Japan, Dec. 27, 1982, 57-228953; Sep. 23, 1983, 58-179845

Int. Cl.⁴ H05K 1/18

U.S. Cl. 361—398

11 Claims



1. A mounting structure and an integrated circuit chip mounted thereon having conductive contact pads located in peripheral regions of said chip comprising a circuit substrate formed with a hole therethrough in registration with the integrated circuit chip and having an area less than the facing area of the chip; circuit pattern means carried on said substrate and positioned for operative engagement by said chip contact pads, the portions of said circuit pattern means extending in the region of the substrate beneath the chip and intermediate the pads being routed to extend across said hole; and resin material injected through said hole into the space between said chip and substrate, whereby the resin essentially occupies at least the portion of said space intermediate said pads and including the area of the hole, the height of the space between said chip and said substrate being selected so that said resin does not flow out beyond the adjacent periphery of said chip through the use of surface tension.

4,644,446

ELECTROLYTIC CAPACITOR

Junji Nakamura, Joyo; Norikazu Iida, Uji, and Nobukuni Ogino, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP84/00441, § 371 Date May 9, 1985, § 102(e) Date May 9, 1985, PCT Pub. No. WO85/01388, PCT Pub. Date Mar. 28, 1985

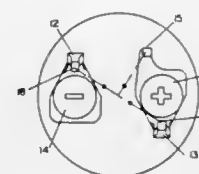
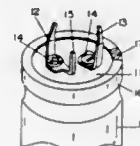
PCT Filed Sep. 11, 1984, Ser. No. 734,273

Claims priority, application Japan, Sep. 12, 1983, 58-167740

Int. Cl.⁴ H01G 9/00, 1/14

U.S. Cl. 361—433

5 Claims



1. An electrolytic capacitor wherein a capacitor element is enclosed in a case, an open end of said case is sealed by a terminal plate, and said terminal plate has thereon an anode terminal pin and a cathode terminal pin, characterized in that a third pin is provided on one of said anode terminal pin and said cathode terminal pin integral therewith, and said anode terminal pin, said cathode terminal pin and said third pin are disposed in a manner so that an end tip of said third pin is positioned substantially on a straight line which intersects the center of and is perpendicular to a straight line connecting an end tip of said anode terminal pin and an end tip of said cathode terminal pin.

4,644,447

LAMP UNIT FOR VEHICLES

Günter Stürtz, Weil im Schönbuch; Reiner Jocher, Aidlingen, and Hartmut Baitinger, Jettingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

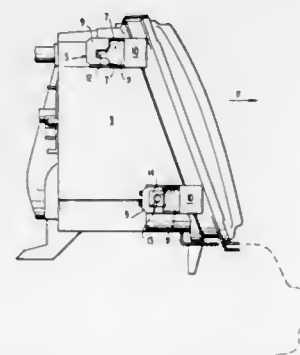
Filed Nov. 22, 1985, Ser. No. 800,723

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1984, 3442902

Int. Cl.⁴ B60Q 1/00

U.S. Cl. 362—61

21 Claims



1. A lamp unit for vehicles which exhibits a lamp housing

covered by a light-diffusing glass on the front side and is retained relative to the vehicle body via a bracing means yielding to the effect of force, particularly to the effect of shock, in the longitudinal direction of the vehicle, which bracing means comprises mounting means with parts arranged on the vehicle body and on the lamp housing, characterized in that the mounting parts are formed on the one hand by guide elements with guide tracks extending in the longitudinal direction of the vehicle, and on the other hand by tensioning elements tensionable relative to the guide elements and guided via their guide tracks.

4,644,448

HEADLIGHT

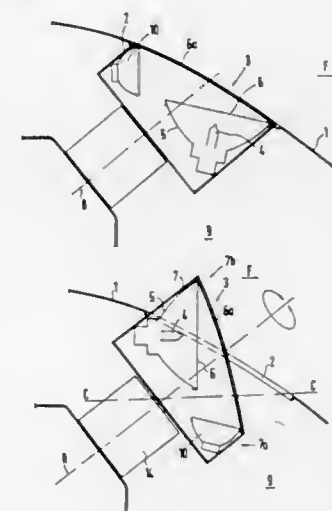
Roland Heiler, Leonberg, Fed. Rep. of Germany, assignor to Dr. Ing. H.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 5, 1986, Ser. No. 836,484

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1985, 3507928

Int. Cl.⁴ B60Q 1/06; F21V 3/18

U.S. Cl. 362—66

23 Claims



1. A headlight for vehicles, comprising housing means in which the headlight together with its optically effective parts is retained, transparent cover means for closing off said housing means, and means for rotating said housing means about an axis extending essentially in the longitudinal direction of the vehicle into an extended use position and into a nonuse position, the rotating axis being inclined with respect to the transparent cover means at an acute angle, and at least one of headlight and housing means being rotatable in the vehicle transverse direction about the thus-positioned axis into the two end positions of the headlight by means of a rotary movement.

4,644,449

LIGHT BRACKET

Margie M. Smith-Williams, 7929 Stewart & Gray, #10, Downey, Calif. 90241

Filed Jan. 22, 1985, Ser. No. 693,292

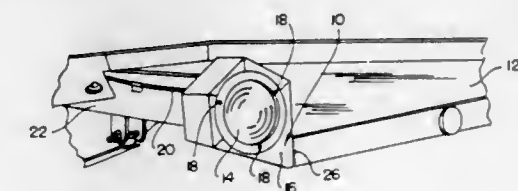
Int. Cl.⁴ B60Q 1/00

U.S. Cl. 362—80

6 Claims

1. A light bracket for mounting a tail light, on a vehicle comprising: a flat-sided housing including a multiple-component front member, the front member being formed of a first plurality of co-planar flange members which surround an opening therein and which are engaged by the tail light and serve to mount the tail light in position to be visible through the opening, and said front member further having a second

plurality of flange members integral with said first plurality and extending perpendicularly rearwardly with respect to the



flange members of said first plurality at the top and bottom and one side respectively of the front member.

4,644,450

LIGHTING UNIT FOR LIQUIDS

Roger W. G. Caplin, Bognor Regis; Roderic G. Southern; Gerald L. Fry, both of Waterlooville, and David Hunt, Catherington, all of England, assignors to Novetta Limited, Waterlooville, England

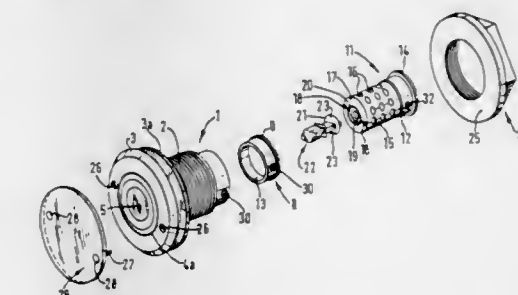
Filed Jan. 15, 1986, Ser. No. 819,114

Claims priority, application United Kingdom, Jan. 18, 1985, 8501278

Int. Cl.⁴ F21S 1/02

U.S. Cl. 362—147

12 Claims



1. A lighting unit for liquids to be secured and sealed in a wall of a vessel to contain liquid, comprising:
a tubular member having a front end, a rearward portion, an outwardly extending flange adjacent said front end, and a screw thread on the outer diameter of said rearward portion;
a nut threadable on the screw thread of the rearward portion of said tubular member during assembly to pull the screw threaded portion outwardly with respect to the wall of the vessel to press said flange against the inner face of the wall of the vessel with the interposition of a sealing gasket for sealing the interior of the front end of the tubular member; means for mounting a light source into the rear end of said tubular member;
means for mounting a lens in the front end of said tubular member in front of said light source;
means sealing the interior of the front end of the tubular member;
means including said light source and said lens, when the front of said lens is submersed in a liquid of the vessel, to provide an angle of illumination of the liquid in excess of 100 degrees; and
means for withdrawal of said light source from the rearward portion of said tubular member to change the bulb with said lens being mounted, said nut being assembled, the front face of the lens being submersed and the front end of the tubular member being sealed.

4,644,451

MINIATURE FLASHLIGHT WITH SOLDERLESS CONNECTIONS

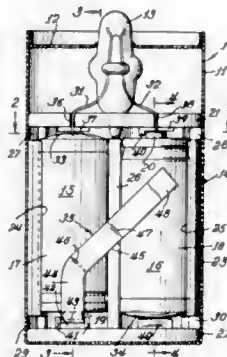
Paul R. Chabria, West Chicago, Ill., assignor to Press-A-Lite Corporation, West Chicago, Ill.

Filed Aug. 14, 1985, Ser. No. 765,548

Int. Cl.⁴ F21L 7/00

U.S. Cl. 362—189

7 Claims



1. A pocket flashlight having solderless electrical connections comprising:

- a lamp having a pair of lead wires;
- a pair of batteries, each having a centerpost positive terminal end and a negative terminal, one lead wire being in electrical communication with the negative terminal of a first battery and the other lead wire being in electrical communication with the positive terminal of the second battery;
- a cartridge holding said batteries in side-by-side relationship and supporting said lamp and lead wires;
- a spring switch arm supported by said cartridge having a lower portion thereof in continuous electrical communication with the positive terminal of said first battery and an extending portion capable of selectively establishing electrical communication with the negative terminal of the second battery to complete the electrical circuit and illuminate the lamp, said lower portion of the spring switch arm is movable against said positive terminal of the first battery upon depression of said spring switch arm whereby to rub against said positive terminal and provide a self-cleaning action therewith;

said cartridge having a battery-holding section including a pair of cradles to arrange said batteries to be spaced one from the other, opposing flexible end walls integrally formed with opposite ends of said holding section and capable of resiliently engaging said batteries therebetween to reside in said cradles, one said end wall including means for holding said lamp whereby said lead wires extend through said end wall to be retained between the end wall and said batteries, the other end wall including means for holding said lower portion of the spring switch arm in continuous communication with the positive terminal of said first battery, whereby said spring switch arm extends therefrom to have said extending portion thereof arranged over the first battery;

said spring switch arm being flexible whereby upon receiving a force at said extending portion is capable of being depressed to establish electrical communication between the positive terminal of said first battery and the negative terminal of said second battery without said extending portion contacting said first battery;

said cartridge, lamp, batteries, and spring switch arm being assembled together as a unit without solder connections whereby to be capable of being inserted into a flexible casing and whereby upon squeezing said flexible casing, said spring switch arm is depressed to establish said electrical communication between said batteries.

VEHICLE HEADLAMP WITH FOG PENETRATING CAPABILITY

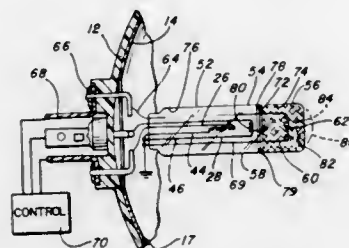
George C. Kasboske, 2820 N. Whipple, Chicago, Ill. 60618

Filed Oct. 25, 1985, Ser. No. 791,417

Int. Cl.⁴ F21M 2/14

U.S. Cl. 362—214

17 Claims



1. In a vehicle headlamp with a source of illumination, structure for mounting the illumination source and a reflector for directing light from the illumination source in a desired pattern in front of a forwardly travelling vehicle, the improvement comprising:

- said illumination source having first and second filaments respectively with first and second illuminating portions;
- a bulb through which light can be transmitted, containing at least a portion of said first and second filaments and having a first portion for causing light transmitted therethrough to have a first color and a second portion for causing light transmitted therethrough to have a second color;
- means mounting the first and second filaments so that light from the first and second filaments is directed rearwardly through said bulb toward said reflector;
- a baffle member disposed within said bulb and defining first and second bulb chambers within which the first and second illuminating portions respectively reside; and
- means for selectively controlling illumination of the first and second filaments, whereby with the first filament illuminated the headlamp projects primarily light of said first color and with the second filament illuminated the headlamp projects principally light of said second color,
- said baffle blocking transmission of light between the first and second chambers to prevent mixing of first color light and second color light from the bulb.

4,644,453

PORTABLE FLUORESCENT LIGHT UNIT

Gary W. Vest, 4483 Broadview Rd., Cleveland, Ohio 44109

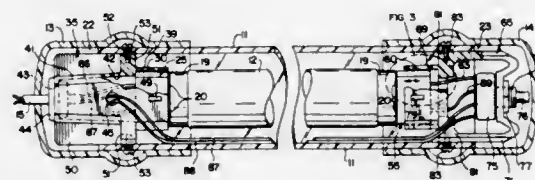
Filed Jan. 14, 1980, Ser. No. 111,786

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.⁴ F21V 21/32

U.S. Cl. 362—223

29 Claims



1. An improved fluorescent light of the type having an elongated tubular housing, a fluorescent lamp positioned within said housing, said lamp having a pair of pins extending from each end, electrical circuit means for energizing said lamp, and four electrical connectors adapted to be connected

4,644,455

VEHICLE LAMP ASSEMBLY

Peter J. Inglis, Halesowen, and Nicholas W. Tysoe, Worcester, both of England, assignors to Britax Vega Limited, Droitwich, England

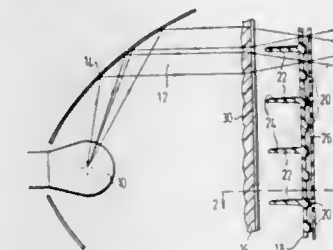
Filed Dec. 17, 1984, Ser. No. 682,437

Claims priority, application United Kingdom, Dec. 20, 1983, 8333924

Int. Cl.⁴ F21V 7/00

U.S. Cl. 362—309

7 Claims



to said pins for connecting said lamp to said circuit means, wherein the improvement comprises:

- a pair of electrically insulating lamp supports at each end of said lamp within said housing, each of said supports comprising
- an inner socket element fitting against an end of said lamp, said socket element having a pair of apertures extending therethrough into which said pins extend and in which said connectors are mounted and connected to said pins, and
- an outer supporting element attached to said housing and fitting snugly within said housing, said supporting element having a central opening into which said inner socket element is inserted at one end and supported thereby.

4,644,454

LENSED INDIRECT LUMINAIRE HAVING IMPROVED LIGHT DISTRIBUTION CONTROL

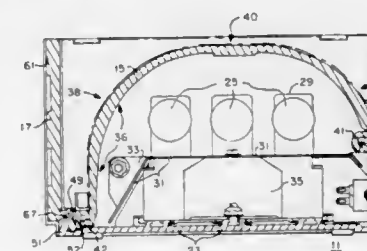
Douglas J. Herst, Ross, and Peter Y. Y. Ngai, Danville, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.

Filed Dec. 28, 1984, Ser. No. 687,474

Int. Cl.⁴ F21V 5/00

U.S. Cl. 362—224

9 Claims



1. A lensed indirect luminaire having improved light distribution control comprising

- a light source,
- a housing for supporting said light source, said housing extending in a horizontal plane of the luminaire and being open generally upwardly and laterally of the luminaire to allow light from said light source to be directed generally upwardly from said luminaire and laterally near and above the horizontal plane of the luminaire,
- a light transmitting primary lens means having along at least one of its sides a prismatic lens portion, said primary lens means being supported by said housing in spaced relation to said light source so as to receive at least a portion of said laterally directed light, and
- an elongated light transmitting secondary lens means positioned substantially normal to said plane, and having a prismatic lens portion, said secondary lens means being supported by said housing outwardly of and in lateral spaced relation to said primary lens means on the side of said prismatic lens portion of said primary lens, the linear prismatic surface portion of said primary lens means being formed to transmit therethrough and redirect substantially all light received from said light source in a direction towards said secondary lens means and the linear prismatic surface portion of said secondary lens means being formed to transmit therethrough and further redirect substantially all light from said primary lens means and whereby said first and second lens means effect directing the source light transmitted therethrough generally laterally of said luminaire to increasingly focus the source light as it passes through each of said lens means for controlling source light directionality near the plane of the housing.

4,644,456

PORTABLE UTILITY LAMP

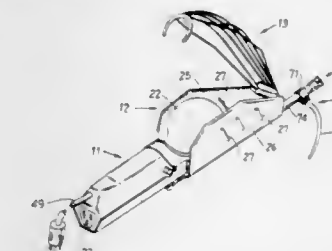
Stig G. Lydell, 17 Mansfield Rd., New Haven, Conn. 06473

Filed Nov. 27, 1985, Ser. No. 802,314

Int. Cl.⁴ F21V 15/00

U.S. Cl. 362—376

9 Claims



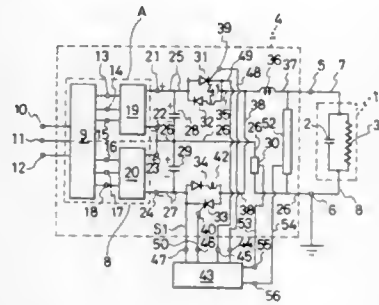
1. A lamp device, having particular utility to facilitate placement in a resting position upon a generally flat surface, comprising:

- handle means having an electrical outlet member mounted at a bottom end portion of said handle means;
- an electrical cord means having one end extending into said bottom end portion and having a second end with an electrical connector plug means affixed thereto;
- reflector means mounted to said handle means and having a first wall and a second wall, with each of said first and second walls having a plurality of back-light slits, each of said first and second walls having a generally flat exterior surface;
- tube means having a plunger actuator at a first end and a gripper means at a second end, said gripper means being actuatable with manual actuation of said plunger actuator;
- hook means rotatably and slidably mounted to a portion of said tube means;

protective cage means having a plurality of grill members;
and
a bulb receptacle mounted in said handle means.

4,644,457
HIGH-FREQUENCY HIGH-VOLTAGE POWER SUPPLY
Senichi Masuda, Tokyo, Japan, assignor to NGK Sparkplug Co.,
Ltd., Japan

Filed May 30, 1985, Ser. No. 739,169
Claims priority, application Japan, Jun. 4, 1984, 59-114350
Int. Cl.⁴ H02M 5/45
U.S. Cl. 363—37 20 Claims



1. A high-frequency high-voltage power supply comprising:
 - a pair of high-frequency high-voltage output terminals;
 - first and second D.C. high-voltage power supplies each having positive and negative output terminals, the negative output terminal of said first D.C. high-voltage power supply and the positive output terminal of said second D.C. high-voltage power supply being connected to each other and to one of said high-frequency high-voltage output terminals;
 - first and second tank capacitors each having a sufficiently large electrostatic capacitance C_0 as compared to an electrostatic capacitance C_L of a load connected between the positive and negative output terminals of said first and second D.C. high-voltage power supplies;
 - a first combination of a first thyristor and a first rectifier connected in anti-parallel relationship, a first end of said first combination being connected to the positive output terminal of said first D.C. high-voltage power supply with the anode of said first thyristor connected to the positive output terminal;
 - a second combination of a second thyristor and a second rectifier connected in anti-parallel relationship, a first end of said second combination being connected to the negative output terminal of said second D.C. high-voltage power supply with the cathode of said second thyristor connected to the negative output terminal, the second end of each of said first combination and said second combination being connected to each other and to the other of said high-frequency high-voltage output terminals through a resonant inductance; and
 - a control device for feeding high-frequency current pulses alternately to the gates of said first and second thyristors to turn on said first and second thyristors alternately, whereby when a capacitive load is connected between said high-frequency high-voltage output terminals, each time said first and second thyristors are turned on, said respective tank capacitors are alternately conductively connected to the capacitive load through said resonant inductance, and each time after the capacitance of the capacitive load has been charged alternately up to a positive or negative high voltage with the aid of L-C oscillation, the charge on the load is discharged alternately to said tank capacitors through said rectifiers and said resonant inductance again with the aid of L-C oscillation, said thyristors being turned off simultaneously with com-

mencement of this discharge, and thus a high-frequency high voltage is applied to the load.

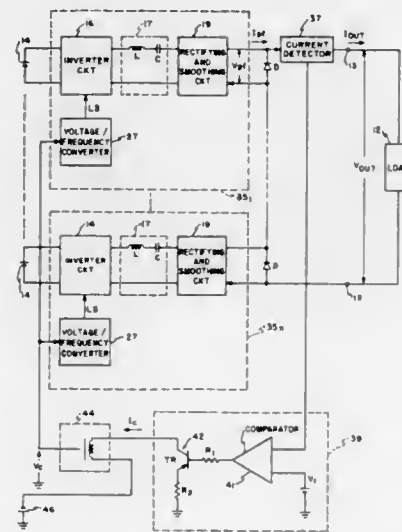
4,644,458

**ELECTRIC POWER SUPPLY CIRCUIT CAPABLE OF
REDUCING A LOSS OF ELECTRIC POWER**

Yoshihiko Harafuji; Hideki Yamamoto, and Katsuhiko Yamamoto, all of Tokyo, Japan, assignors to NEC Corporation and Nippon Telegraph & Telephone Public Corporation, both of, Japan

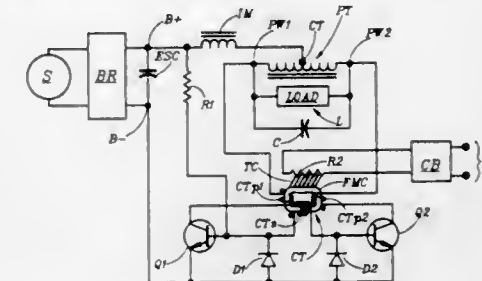
Filed Mar. 18, 1985, Ser. No. 712,990
Claims priority, application Japan, Mar. 19, 1984, 59-53169;
Mar. 30, 1984, 59-62428; Mar. 30, 1984, 59-62429
Int. Cl.⁴ H02M 3/28

U.S. Cl. 363—65 9 Claims



1. An electric power supply circuit including a plurality of constant current units connected in series to a pair of terminals for supplying an electric current to a current path which is shared by said constant current units as a load, current detecting means coupled to said current path for detecting said electric current to produce a detection signal having a detection voltage, and control means responsive to said detection signal for producing a control current, each of said constant current units being controllable by a control voltage corresponding to said control current to share said load with the respective constant current units as partial loads of a predetermined distribution, wherein the improvement comprises:
- single current to voltage converting means coupled to said control means and responsive to said control current for converting said control current into a converted voltage;
 - voltage supply means coupled to said current to voltage converting means for supplying said converted voltage to said constant current units in common as said control voltage to control said partial loads in compliance with said predetermined distribution;
 - said current detecting means comprises:
 - a plurality of current detectors coupled to said current path for detecting said electric current to produce a plurality of partial detection signals as said detection signal; and
 - said control means comprising:
 - a plurality of control circuits coupled to the respective current detectors for supplying a plurality of partial control currents to said single current to voltage converting means as said control current.

4,644,459
ELECTRONIC INVERTER HAVING
MAGNITUDE-CONTROLLABLE OUTPUT
Ole K. Nilssen, Caesar Dr., Barrington Hills, Ill. 60010
Filed Feb. 4, 1985, Ser. No. 697,716
Int. Cl. 4 H02M 7/538
U.S. Cl. 363-133



1. An arrangement comprising:
source of inductively current-limited DC voltage;
inverter means connected with the source of DC voltage and operative to provide an AC voltage at an inverter output, the inverter means: (i) having electronic switching means that is electrically controllable by way of control input terminals, and (ii) being self-oscillating at an inversion frequency by way of positive feedback provided from the inverter output to the control input terminals; and
a parallel-combination of an inductor means and a capacitor means connected with the inverter output, this parallel-combination having: (i) a natural resonance frequency determined by the product of the inductance of the inductor means and the capacitance of the capacitor means, and (ii) an AC voltage present across it, the fundamental frequency of this AC voltage being equal to the inversion frequency, the inversion frequency being lower than said natural resonance frequency.

4,644,460

**CUTTING DIRECTION INPUT METHOD IN
AUTOMATIC PROGRAMMING**

Hajimu Kishi; Kunio Tanaka, and Takashi Takegahara, all of
Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP84/00135, § 371 Date Nov. 28, 1984, § 102(e)
Date Nov. 28, 1984, PCT Pub. No. WO84/03957, PCT Pub.
Date Oct. 11, 1984

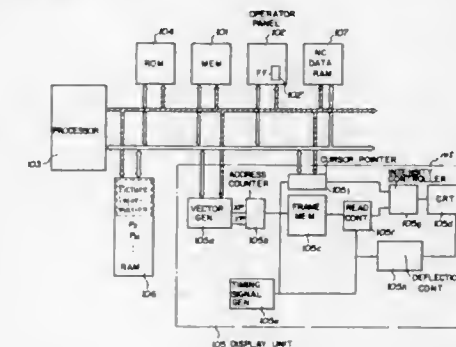
PCT Filed Mar. 27, 1984, Ser. No. 682,008

Claims priority, application Japan, Mar. 28, 1983, 58-052017

Int. Cl.⁴ G06F 15/46

U.S. Cl. 364—171

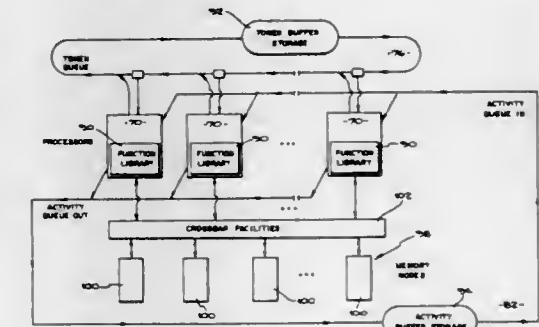
7 Claims



1. A cutting direction input method for determining a path cutting direction in an automatic programming system, comprising steps of:

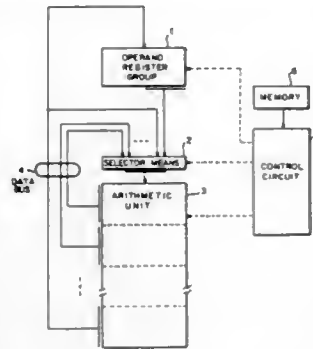
- (a) displaying a path trajectory comprising a number of path blocks on a display screen based on path data;
- (b) indicating one of a path starting point side and a path end point side using a cursor;
- (c) entering cutting direction information by operating a cutting direction input switch when the path starting point side is being indicated by the cursor, in a case where cutting is to be performed from the path starting point toward the path end point; and
- (d) entering cutting direction information by operating the cutting direction input switch when the path end point side is being indicated by the cursor, in a case where cutting is to be performed from the path end point toward the path starting point.

4,644,461
**DYNAMIC ACTIVITY-CREATING DATA-DRIVEN
 COMPUTER ARCHITECTURE**
 Glenn A. Jennings, Riverside, Calif., assignor to The Regents of
 the University of California, Berkeley, Calif.
 Filed Apr. 29, 1983, Ser. No. 490,154
 Int. Cl.⁴ G06F 15/16, 15/347
 U.S. Cl. 364—200 5 Claims



1. In a computer architecture of the Petri Net type wherein a plurality of pre-established sub-functions, defining a total function, process portions of the common input data asynchronously to generate a single combined output reflecting the total function as applied to input data, an improvement comprising:
- (a) a plurality of data processors;
 - (b) means for subdividing said total function when said total function is beyond the capability of an individual one of said data processors.
 - (c) function library means coupled to said data processors for storing each unique sub-function in a storage area as a replicator which can be copied and used by said data processors as needed on a dynamic basis;
 - (d) data queue means for recirculating data to be processed by said data processors continuously past said data processors until data is removed from said data queue means by one of said data processors, and for supplying said data to selected data processors;
 - (e) activity queue means for storing a plurality of sets of instructions for operating on selected corresponding data by said data processors, and for recirculating said instructions past said data processors until one of said instructions is taken from said queue by one of said data processors, said activity queue means including means for supplying to all of said data processors, instruction codes, for causing said data processors, (1) to remove particular labeled data from the data queue means, (2) to perform a computational function on said data (3) to introduce output labelled data into said data queue means, (4) to retrieve from the function library stored generalized instruction sequences, and (5) to introduce additional instruction codes into the activity queue means;
 - (f) means for associating one of said sets of instructions from said activity queue with an idle one of said processors;

- a circuit for transmitting and circulating a register number given for said operand register whose renewal is specified by a given instruction and a command to renew the operand register corresponding to said stage of the arithmetic unit; and
- a control circuit responsive to at least said register number and said operand determination signal for controlling said selector so as to select at least one of said operand registers

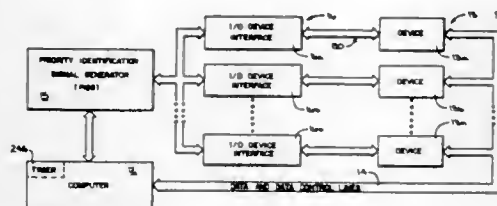


when at least one operand for the instruction is held in said at least one operand register, to select said arithmetic unit when said operand for the instruction has already been determined in said arithmetic unit, and to select said arithmetic unit after said operand for the instruction has been determined unless said operand for the instruction is determined, so that said operand for the instruction is supplied to the arithmetic unit.

4,644,467
MULTI-LEVEL DYNAMIC PRIORITY SELECTOR
GROUPS OF DATA ELEMENTS
 John M. McCarthy, 405 W. Apple Tree Rd., Glendale, Wis. 53217

Filed Dec. 29, 1982, Ser. No. 454,456
 Int. Cl.⁴ G06F 13/18
 U.S. Cl. 364—200

14 Claims



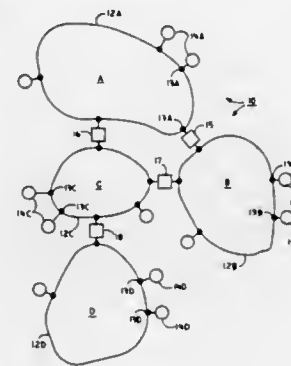
1. A priority selector for a plurality of data elements selectively seeking priority recognition, comprising
- a plurality of groups including at least a pair of lines for each data element arranged in a predefined order of priority importance from a first group of high priority importance to a last group of low priority importance with each group electrically connected to corresponding groups for other data elements,
- means for each of said data elements operatively connected to said plurality of groups of lines for assigning a priority code for said data elements to each of said plurality of groups of lines in response to said data elements seeking priority recognition, and
- means for each of said data elements operatively connected to said plurality of groups of lines for sensing the priority code at each of said groups of lines for prohibiting said assigning means from assigning a priority code to said plurality of groups of lines of lower priority importance in response to a group of lines containing a sensed code of greater priority importance than the priority code as-

signed by said assigning means for establishing a code on said plurality of groups of lines which designates the highest priority data element seeking priority recognition.

4,644,468
NAME USAGE SUPPORT THROUGH DISTRIBUTED PROCESSING NETWORKS LINKED BY BRIDGES AND/OR GATEWAYS
 William A. Doster, Bellevue, Wash., and Robert Sachsenmaier, Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 20, 1984, Ser. No. 631,567
 Int. Cl.⁴ G06F 15/16
 U.S. Cl. 364—200

16 Claims



1. In a data communication network having plural sub-networks linked by bridging facilities, each sub-network linking plural data processing stations for exchanging messages containing information entities stored in record files at said stations, said stations being adapted to initiate communications representing requests for access to remotely stored entities by means of messages directed to logical names assigned to the entities rather than to addresses representing specific physical locations at which respective entities are stored, said messages not requiring special handling at stations intermediate the originating stations and the stations at which respective entities are filed for translating respective names to addresses, a method for facilitating handling of said request communications comprising:

at any one of said stations, originating a first said request and transmitting said request as a first communication message over a first sub-network to which said station is directly linked; said first message containing a logical name of a record file entity not stored at said one station and having a predetermined first form which restricts its handling so that the information therein is not transferrable beyond bridging facilities directly linked to said first network to other sub-networks;

monitoring said first sub-network at said one station for response communication messages representing responses to said first message;

if no response to said first message is received at said one station, transmitting a second request message from said one station over said first sub-network; said second request message corresponding to said first request message but having a predetermined second form different from said first form; said second form permitting responsive handling of the information contained in said message only at bridging facilities directly coupled to said first sub-network;

monitoring said first sub-network at said one station for responses to said second message;

at each bridging facility receiving said second message, generating a third message conditionally depending on the information content of said second message, said third

message corresponding to the second message but having a distinctive third predetermined form;

transmitting said third messages from respective bridging facilities to other sub-networks which are linked by respective facilities to said first sub-network;

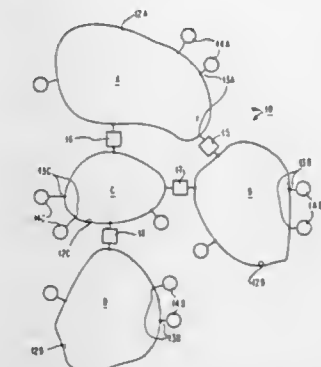
monitoring said other sub-networks at respective facilities for responses to respectively forwarded third messages; and

forwarding responses to said third messages directly to said one station via said first sub-network, for handling as responses to said second message.

4,644,470
NON-UNIQUE NAMES FOR BROADCAST MESSAGES
 Barry A. Feigenbaum, Deerfield Beach; Robert Sachsenmaier, and James W. Skowbo, both of Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
 Filed Jul. 20, 1984, Ser. No. 631,566
 Int. Cl.⁴ G06F 1/00

U.S. Cl. 364—200

5 Claims

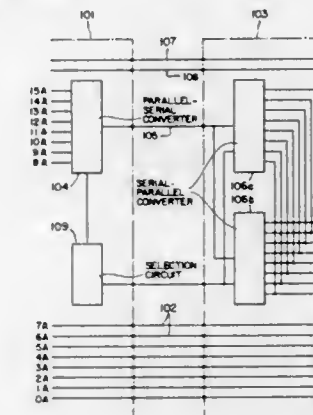


4,644,469
ADDRESSING SYSTEM FOR ELECTRONIC COMPUTER
 Masahiko Sumi, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1983, Ser. No. 510,357
 Claims priority, application Japan, Jul. 2, 1982, 57-115206
 Int. Cl.⁴ G06F 13/00

U.S. Cl. 364—200

1 Claim



1. An addressing system in which an address having upper and lower address bits is transmitted from memory accessing means to memory means comprising:
- address bus means for outputting said lower address bits of said address as parallel signals and upper address bits of said address as serial signals;
- a parallel-serial converter connected to said memory accessing means and through which the upper address bits of said address transmitted from said memory accessing means are converted into said serial signals;
- at least two serial-parallel converters connected to said address bus for receiving said upper address bits as serial signal inputs thereto, each of said converters converting said series signals to parallel signals at outputs thereof;
- means for connecting said parallel signals from said outputs of each of said serial-parallel converters to said memory means; and
- a selection circuit for storing current serial signals inputted into said serial-parallel converters and for comparing stored serial signals with current serial signals outputted from said parallel-serial converter means, said selection circuit means transmitting a selection signal to one of said serial-parallel converters to which the serial signals identical with those outputted from said parallel-serial converter means is inputted.

1. In a data communication system comprising plural data processing stations linked through communication media for exchanging formatted messages containing data signals, each station directly serving plural entities and containing a Name Table designating logical names currently adopted for representing respective entities, said names being adopted by broadcasting a Name Check request type message from the adopting station to all other stations, over the network formed by said media, and adopting the name if the request message is unacknowledged by said other stations, said stations using said names to share access to entities served by other stations and to establish communication links with such shared entities by respective names adopted at their serving stations (rather than by addresses having location context), a method for adapting said stations to be able to multicast information to various selected groups of said entities comprising:

providing a tagging space in each of said Name Tables for distinguishing each adopted name entry in the respective table as having either unique or non-unique status relative to the network formed by said media; and

conditioning acknowledgement of any remotely originated Name Check request received at any one of said stations on the coincident existence of a name match, between a name communicated in said request and a name entry in the one station's Name Table, and an indication of unique status in the tagging space allotted to said name entry.

4,644,471
METHOD FOR PROCESSING A DATA BASE
 Keiji Kojima, Kokubunji, and Shunichi Torii, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Dec. 21, 1984, Ser. No. 684,789
 Claims priority, application Japan, Dec. 23, 1983, 58-242024
 Int. Cl.⁴ G06F 9/38

U.S. Cl. 364—300

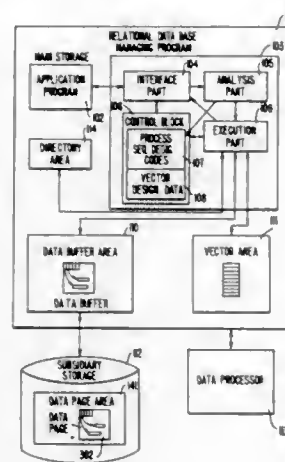
3 Claims

1. A method for processing a data base in a computer, which data base comprises a plurality of data tables to be processed, each comprised of a plurality of columns and rows, a plurality of data elements belonging to respective rows of the same column being assigned storage locations within a data storage device whose addresses are not uniformly separated from those for respective data elements in the neighboring rows, the method comprising the steps of:

generating a command requesting processing of data elements belonging to selected columns within selected tables;

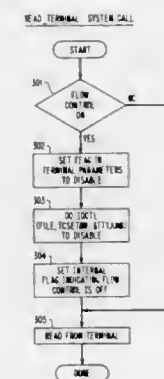
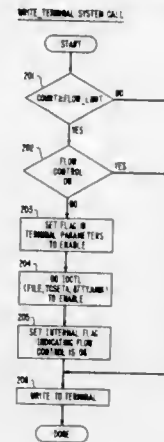
accessing the data elements within the storage device which

belong to the selected columns within the selected tables, in response to said command, to fetch and store the accessed data elements so that data elements belonging to each selected columns within each selected table are stored as vector data at locations within said storage device whose addresses are separated by a uniform increment from those for respective rows in the selected table; storing vector designating data for each vector data including at least the first element address and an address increment for each vector data;



executing a program routine which can perform the processing requested by the command, and which includes vector instructions each designating at least one vector data to be executed and the kind of processing to be carried out, said program routine being executed in such a manner that elements of vector data designated by a vector instruction are successively accessed, based upon the vector designating data for the designated vector data and are sent from the storage device to a pipelined arithmetic or logical operation unit in order to effect operation thereon successively.

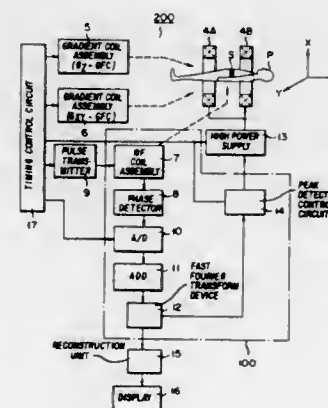
determining that said terminal can no longer receive information; and



enabling the use of said sets of information bits for flow control upon their receipt from said terminal.

4,644,473
CORRECTION CIRCUIT FOR A STATIC MAGNETIC FIELD OF AN NMR APPARATUS AND NMR APPARATUS FOR UTILIZING THE SAME
Fumitoshi Kojima, and Masahiko Hatanaka, both of Ootawara, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1984, Ser. No. 603,726
Claims priority, application Japan, Apr. 30, 1983, 58-76424
Int. Cl.⁴ G01N 27/00; G01R 33/08
U.S. Cl. 364—414 13 Claims



1. A correction circuit for a nuclear magnetic resonance

4,644,472
FLOW CONTROL BETWEEN A DATA TERMINAL AND A HOST COMPUTER SYSTEM
Warren A. Montgomery, DeKalb, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 19, 1984, Ser. No. 672,819
Int. Cl.⁴ G06F 1/00

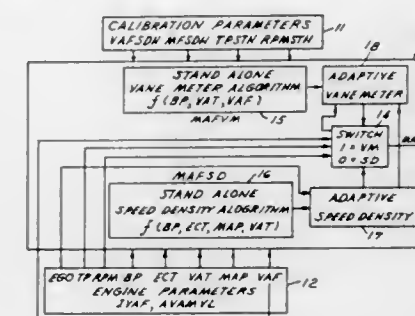
U.S. Cl. 364—300 10 Claims
1. A method allowing the utilization of sets of information bits for both flow control and data during communication between a terminal and a computer system comprising the steps of:
disabling the use of said sets of information bits for flow control;
transferring information from said computer system to said terminal;

apparatus in which a static magnetic field having an anticipated magnetic field H_0 is uniformly applied to a slice of an object under investigation, a first gradient magnetic field is applied to the object in a direction perpendicular to the slice of the object, a second gradient magnetic field is applied to the object in a direction parallel to the slice of the object, and first and second exciting pulses are selectively applied to excite the slice of the object in conjunction with the static and first and second gradient magnetic fields to excite nucleus in said slice having a proton gyromagnetic ratio γ , whereby an echo signal is produced in the excited slice of the object, comprising:

means for activating only said static magnetic field and first gradient magnetic field, without activation of said second gradient magnetic field;
A/D converting means for converting the resultant echo signal into a corresponding digital echo signal;
means for performing a Fourier Transform on the digital echo signal to obtain a resultant projection data signal;
means for detecting the frequency of the maximum peak value of the projection data signal;
means for detecting the frequency difference $\Delta\omega$ between the frequency of said maximum peak value of said projection data signal and the expected angular frequency ω_0 of said nucleus having said proton gyromagnetic ratio γ ; means for multiplying the frequency difference $\Delta\omega$ by a given value so as to obtain a signal representing the deviation of the static magnetic field from said anticipated magnetic field H_0 ;
means for maintaining said static magnetic field constant in response to said deviation signal; and
means for subsequently activating the resultant static magnetic field and the first and second gradient magnetic fields and for thereafter obtaining a subsequent projection data signal from which an image of said slice of said object may be obtained.

4,644,474
HYBRID AIRFLOW MEASUREMENT
Alexander Aposchanski, Canton; Arthur J. Buglione, Garden City; James M. Coats, Dearborn, all of Mich., and Brian S. Edelman, Hiroshima, Japan, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 14, 1985, Ser. No. 691,259
Int. Cl.⁴ G01F 1/32; F02M 51/00
U.S. Cl. 364—431.05 2 Claims



1. An engine control system for determining airflow by selecting between a calculated airflow using engine speed and air density and a measured airflow using an air meter, comprising:
a first hysteresis flip-flop circuit having a set input of "1" when engine speed is less than or equal to a first threshold engine speed for switching to using a calculated airflow from a measured airflow and having a set input of "0" when engine speed is greater than the first threshold engine speed;
said first hysteresis flip-flop having a clear input of "1" when engine speed is greater than the sum of the first threshold

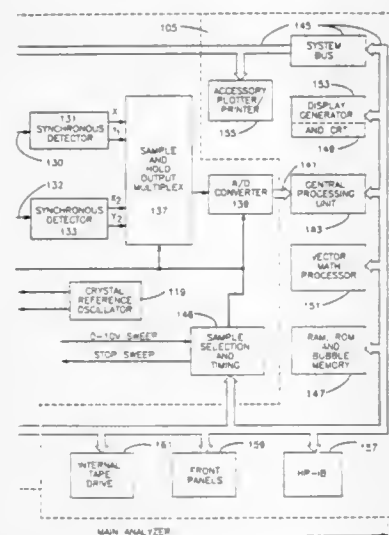
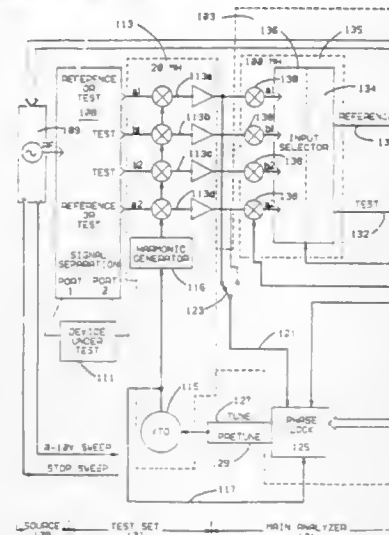
engine speed and a second threshold engine speed for switching to a measured airflow and having otherwise, when the engine speed is less than or equal, a clear input of "0";
a second hysteresis flip-flop having a set input of "1" when the average measured airflow is less than a threshold airflow for switching to using a calculated airflow and having otherwise, when measured airflow is greater than or equal, a set input of "0";
said second hysteresis flip-flop having a clear input of "1" when the average measured airflow is greater than the sum of the threshold airflow plus an additional hysteresis airflow for switching to using measured airflow, and having otherwise, when measured airflow is less than or equal, a clear input of "0";
a third hysteresis flip-flop having a set input of "1" when an air meter correction factor is less than or equal to a threshold calculated airflow for switching to using a calculated airflow and having otherwise, when the air meter correction factor is greater than, a set input of "0";
said third hysteresis flip-flop having a clear input when the air meter correction factor is greater than the sum of the threshold calculated airflow plus an additional hysteresis airflow for switching to using measured airflow and otherwise, when the air meter correction factor is less than or equal to, a clear input of "0";
a fourth hysteresis flip-flop circuit having a set input of "1" when throttle position is less than or equal to a first threshold throttle position for switching to using a calculated airflow from a measured airflow and having a set input of "0" when engine speed is greater than the first threshold throttle position;
said fourth hysteresis flip-flop having a clear input of "1" when the throttle position is greater than the sum of the first threshold throttle position and a second threshold throttle position for switching to a measured airflow and having otherwise, when throttle position is less than or equal, a clear input of "0";
a first AND gate having a first input of "1" when airflow is being determined by calculated airflow and "0" when air is being determined by measured airflow;
said first AND gate having a second input of "1" when engine speed is less than or equal to a minimum engine speed to allow transition from calculated to measured airflow, and otherwise, when engine speed is greater than a second input of "0";
a second AND gate having as four inputs the four outputs of said first, second, third and fourth hysteresis flip-flops; an OR gate having as two inputs the output of, said first and second AND gates; and
said OR gate having an output indicating a selection of using calculated airflow when the OR output is "1" and using measured airflow when the OR output is "0".

4,644,475
METHOD OF CONTROLLING ACTUATOR BY APPLYING DRIVING PULSE
Yuzo Koyanagi, Warabi, Japan, assignor to Sanwa Seiki Mfg. Co., Ltd., Yono, Japan

Continuation-in-part of Ser. No. 317,603, Nov. 3, 1981, abandoned. This application Jan. 4, 1985, Ser. No. 688,871
Int. Cl.⁴ F02D 35/00, 41/02, 41/26
U.S. Cl. 364—431.07 13 Claims

1. A method for controlling an actuator by using a digital controller, comprising the steps of:
(a) obtaining a command value and a feed-back value;
(b) determining a deviation between said command value and said feedback value;
(c) comparing the absolute value of said deviation with a predetermined minimum reference deviation;
(d) determining whether said absolute value of said deviation

rations as a heirarchal tree, said measurement configurations having any of a plurality of first configuration elements and a plurality of second configuration elements as branches in said heirarchal extending from each of said first configuration elements;



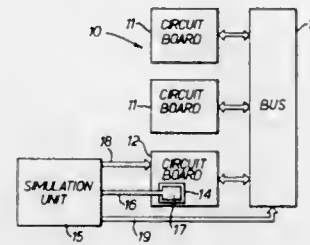
said processor means, in response to entry of one of said first configuration elements from said input means, for selecting one of said branches of said heirarchal tree as an initial second configuration element based upon a previously stored measurement configuration.

4,644,487
METHOD AND APPARATUS FOR VERIFYING THE DESIGN OF DIGITAL ELECTRONIC COMPONENTS
Edward Smith, Wilmslow, England, assignor to International Computers Limited, London, England
Filed Mar. 22, 1984, Ser. No. 592,029
Claims priority, application United Kingdom, Apr. 9, 1983, 8309692

Int. Cl.⁴ G06F 15/20, 11/00; G06G 7/48
U.S. Cl. 364-578
6 Claims
3. A method for verifying the design of a digital electronic component wherein the component is simulated by calculating

simulated responses from the component, wherein the improvement comprises the steps:

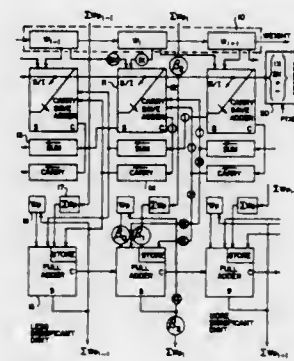
- operating a host system to perform a predetermined sequence of operations in which it produces stimuli for the component and is required to receive responses from the component,
- detecting stimuli from the host system and, for each detected stimulus, examining a memory to determine whether it holds a response to that stimulus,



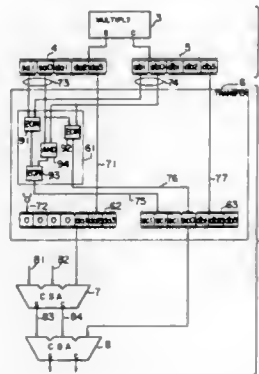
- if a response to the stimulus is held in the memory, returning that response to the host system directly from the memory, and
- if a response to stimulus is not held in the memory, storing one of the calculated simulated responses in the memory, and then restarting the operation of the host system from a predetermined starting point.

4,644,488
PIPELINE ACTIVE FILTER UTILIZING A BOOTH TYPE MULTIPLIER

Robert Nathan, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Oct. 12, 1983, Ser. No. 541,124
Int. Cl.⁴ G06F 7/38, 7/52
U.S. Cl. 364-724
8 Claims



means for providing a constant as a sign field of either one of said intermediate carry or sum, and



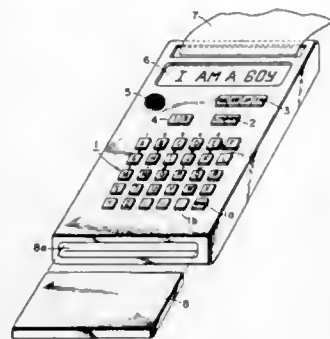
means for providing said lowest two-bit sign modified with constants to said next carry save adders as a sign field of the other of said intermediate carry or sum.

4,644,492
PLURAL MODE LANGUAGE TRANSLATOR HAVING
FORMATTING CIRCUITRY FOR ARRANGING
TRANSLATED WORDS IN DIFFERENT ORDERS

Hiroshi Murata, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 594,407, Mar. 28, 1984, abandoned, which is a continuation of Ser. No. 192,220, Sep. 30, 1980, abandoned. This application Mar. 24, 1986, Ser. No. 844,232
Claims priority, application Japan, Oct. 5, 1979, 54-129045
Int. Cl.⁷ G06F 15/38

U.S. Cl. 364—900

13 Claims



9. An electronic translator, comprising:
input means for entering words of a first language;
a plurality of selecting keys for designating translation of the
first language to a second language;
converting means connected to said plurality of selecting
keys and said input means for converting the words of the
first language entered from said input means into words of
the second language; and
arranging means, operable in a first mode and in a second
mode, connected to said converting means for arranging
the words of the second language obtained from said
converting means in a first order in the first mode, and for
arranging the words of the second language obtained from
said converting means in a second order obtained from
said converting means in the second mode.

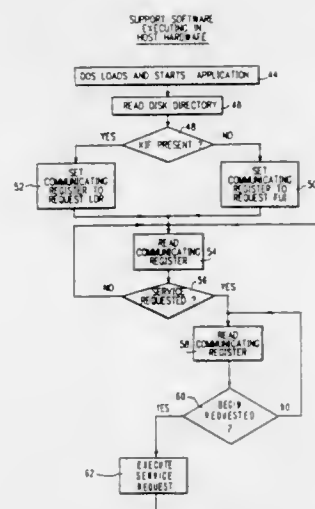
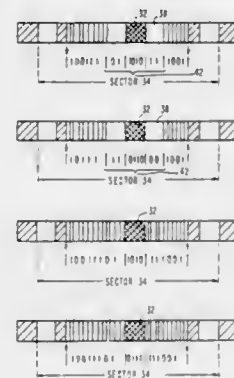
4,644,493

**IMPLEMENTING A SHARED HIGHER LEVEL OF
PRIVILEGE ON PERSONAL COMPUTERS FOR COPY
PROTECTION OF SOFTWARE**

Akhileshwari N. Chandra, Mahopac; Liam D. Comerford, Carmel, and Steve R. White, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1984, Ser. No. 651,184
Int. Cl.⁴ G06F 9/00

U.S. Cl. 364—900

8 Claims



1. A software copy-protection apparatus, which is operable with a host computer system, comprising:

- a magnetic medium having tracks formed thereon which are divided into sectors, with each sector being comprised of a plurality of bit storage locations, with indicia being formed in at least one portion of at least one sector, with said indicia not being modifiable by the medium write process;
- a product program stored on said medium, at least a portion of which is in an encrypted form, and at least a portion of which may be in an unencrypted form;
- a support computing system operable with said host computer system, including a decryption key for use in executing said product programs on said host computer system;

means for ascertaining said indicia are present on said medium;

means included in said support computing system for utilizing said decryption key to decrypt said encrypted portion of said program; and

means responsive to the ascertaining that said indicia is on said medium, and said encrypted portion of said program has been decrypted, to permit said support computing

system to execute the encrypted portion of said program product and said host computer system to execute said unencrypted portion of said program product, if any.

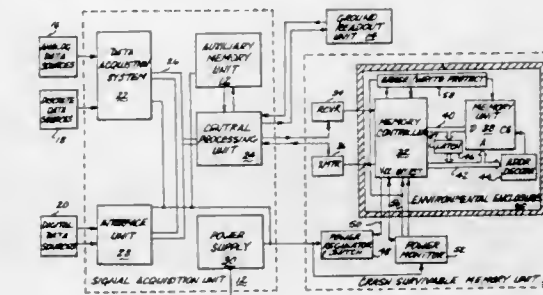
4,644,494
SOLID STATE MEMORY FOR AIRCRAFT FLIGHT DATA
RECORDER SYSTEMS

Hans R. Muller, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 6, 1984, Ser. No. 577,215

U.S. Cl. 364-900

61 Claims



1. A solid state memory for storing digitally encoded flight data comprising:

memory means having a power input terminal for applying an operating potential to said memory means and having a plurality of storage locations that are selectively accessed by supplying a digitally encoded address signal to said memory means, said memory means being responsive to a control signal for storing supplied digitally encoded data at storage locations corresponding to said address signal supplied to said memory means when said operating potential is supplied to said power input terminal and said control signal is supplied to said memory means;

switch means having an input terminal, an output terminal and a control terminal, said output terminal of said switch means being coupled to said power input terminal of said memory means, said switch means being responsive to a switch control signal for coupling an electrical potential supplied to said input terminal of said switch means to said switch means output terminal only when said switch control signal is supplied to said control terminal of said switch means; and

memory controller means for supplying said switch control signal to said switch means and for supplying said address signals and said control signal to said memory means, said memory controller means including means for executing an operational sequence wherein said address and control signals are periodically supplied to said memory means and wherein said switch control signal is supplied to said switch means only during periods of time in which said address and control signal is supplied to said memory means.

4,644,495
VIDEO MEMORY SYSTEM

David P. Crane, Menlo Park, Calif., assignor to Activision, Inc., Mountain View, Calif.

Int. Cl.⁴ G06F 3/14; G09G 1/02

U.S. Cl. 364-900

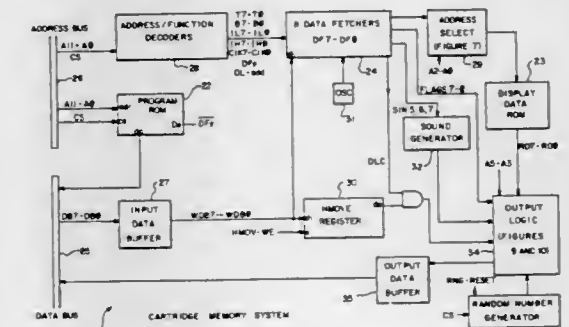
20 Claims

1. In a computer system having a raster scan video display, a central processing unit (CPU), and data and address buses coupled to said CPU for transmitting and receiving data to and from specified address locations in said computer system, said address bus including a multiplicity of binary address lines, memory apparatus comprising:

(1) first memory means, coupled to said address and data

busses, for storing program instructions for controlling the operation of said computer system;

- (2) second memory means having a data output port, and a multiplicity of addressable memory locations for storing video display data for display on said video display; and
- (3) video data acquisition means, coupling said second memory means to said address and data buses, for responding to each of a multiplicity of predefined address signal values asserted on said address bus by said CPU by transmitting corresponding selected portions of the video data in said second memory means to said data bus, including
 - (a) decoder means coupled to said address bus for generating a multiplicity of distinct control signals when said CPU asserts corresponding address signal values on said address bus;
 - (b) a multiplicity of data fetcher means, each for generating a sequence of address signal values usable for addressing said second memory means, each including
 - (1) video data selection means coupled to said data bus, responsive to predefined ones of said control signals, for selecting a sequence of video address signal values in accordance with data signal values asserted on said



data bus by said CPU at the time said control signals are generated; and

- (b) video address generating means for generating the next address signal from said sequence of video address signal values each time said video decoder means generates a predefined one of said control signals;
- (c) video memory address multiplexer means, responsive to the address signal value on a first predefined subset of said binary address lines, for addressing said second memory means using the address signal value generated by the data fetcher means corresponding to the address signal value on said first predefined subset of said binary address lines; and
- (d) output logic, coupling said data output port of said second memory means to said data bus, responsive to the address signal on a second predefined subset of said binary address lines, for transmitting the data on said data output port of said second memory means to said data bus in one of multiplicity of predefined formats selected in accordance with the address signal value on said second predefined subset of said binary address lines.

4,644,496
APPARATUS, METHODS, AND SYSTEMS FOR
COMPUTER INFORMATION TRANSFER

Barry A. Andrews, Auburn, Wash., assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jan. 11, 1983, Ser. No. 457,197

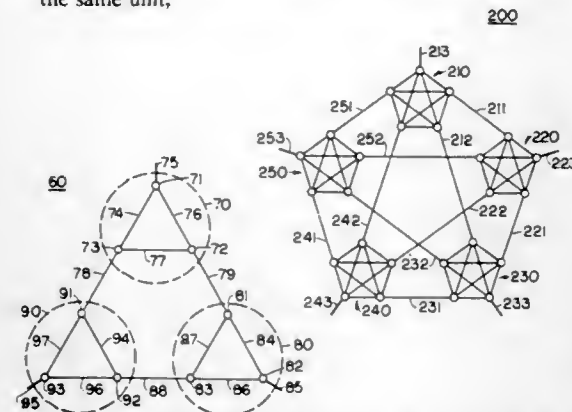
Int. Cl.⁴ G06F 9/00

U.S. Cl. 364—900

9 Claims

I. A network of computing nodes interconnected by a plurality of communication channels, said network being CHARACTERIZED IN THAT

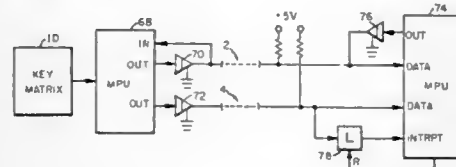
said network of computing nodes is organized by said communication channels into units, each unit having at least three computing nodes, each computing node in each unit being directly connected to every other computing node in the same unit by said communication channels from each computing node to every other computing node in the same unit,



said network further being organized by said communication channels into at least one group of units, each unit having only one direct connection to each other unit in the same group by way of said communication channels, each group having at least three units, and any one computing node in any one unit in the network having a direct connection to a node in at most one other unit in the network.

4,644,497
SERIAL KEYBOARD INTERFACE SYSTEM WITH FRAME RETRANSMISSION AFTER NON-TIMELY ACKNOWLEDGEMENTS FROM DATA PROCESSOR
Satoshi Tajima, and Shinpei Watanabe, both of Kanagawa, Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,559
Claims priority, application Japan, Dec. 28, 1982, 57-227846
Int. Cl.⁴ G06F 15/02, 3/02, 3/023, 11/00
U.S. Cl. 364-900 1 Claim



1. In a data processing system wherein a keyboard and a data processing unit are connected through a clock line for transmitting keyboard clock signals and a data line for transmitting a serial scan code identifying a depressed key, said scan code being transmitted in a frame including a predetermined number of bits transmitted in series and each bit in synchronism with one of said clock signals, a serial keyboard interface system, comprising:

- a data processing unit including:
 - counting means responsive to said clock signal received from said clock line to advance its count,
 - first means responsive to said counting means reaching a predetermined count for applying to said data line a status signal indicating the receipt of the bits of a frame,
- a keyboard including:
 - second means for generating and applying a negative response signal to said data line when said status signal is received before all the bits of a frame have been transmitted from said keyboard via said data line, and
 - third means responsive to said negative response signal to

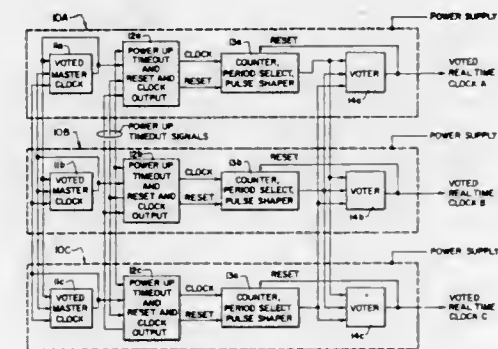
effect retransmission of the same scan code which caused the negative response signal.

4,644,498
FAULT-TOLERANT REAL TIME CLOCK
James F. Bedard, Schenectady, and Vijay C. Jaswa, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 481,958, Apr. 4, 1983, abandoned. This application Sep. 26, 1985, Ser. No. 780,539
Int. Cl.⁴ G06F 1/04

U.S. Cl. 364-900

6 Claims

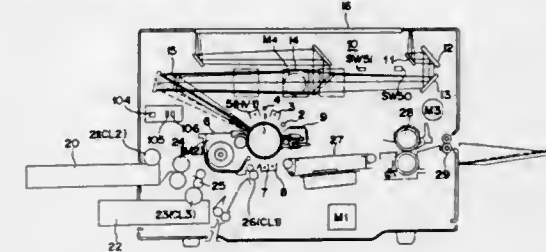


4. A fault-tolerant real time clock for modular redundant computer systems comprising:

- n substantially identical subcircuits, where $n=3, 5, 7$, etc., that have separate power supplies and are interconnected to assure outputting of voted real time clock pulses from all and continued operation with the failure of $(n-1)/2$ subcircuits, each subcircuit including
 - a voted master clock which generates voted high frequency master clock pulses and has, as inputs, its own output signal and the other subcircuit master clock output signals;
 - counter means to which said voted master clock pulses are gated and which generates sets of real time clock pulses with different time periods;
 - power up timeout means having inputs from all of said subcircuits and that temporarily inhibits gating of said voted master clock pulses to said counter means and to reset means for said counter means until each subcircuit produces a power up timeout signal and an output signal is generated indicating that all of said power supplies are turned on and stabilized, and means for latching said last-mentioned output signal so that loss of a subcircuit power supply other than its own will not disable said counter means;
 - means for selecting one of said sets of real time clock pulses; and
 - a real time clock majority voter to generate said voted real time clock pulses that are outputted to a processor and which has as inputs its own selected real time clock pulses and those outputted by the other subcircuits.

4,644,499
COPYING MAGNIFICATION SETTING DEVICE FOR AN ELECTROPHOTOGRAPHIC COPYING APPARATUS
Kenji Shibasaki, Aichi; Yutaka Irie, Tokokawa; Masazumi Ito, Toyokawa, and Tomoji Murata, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan Division of Ser. No. 498,885, May 27, 1983, Pat. No. 4,543,643.

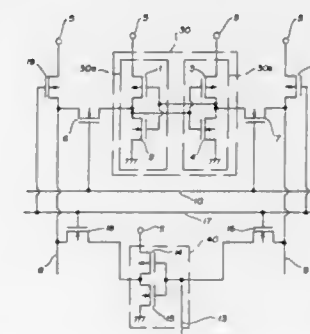
This application Aug. 2, 1985, Ser. No. 762,122
Claims priority, application Japan, May 28, 1982, 57-91877; Nov. 25, 1982, 57-206444; Nov. 29, 1982, 57-209845; Feb. 10, 1983, 58-20833; Mar. 8, 1983, 58-38743
Int. Cl.⁴ G06F 1/00; G03B 27/52
U.S. Cl. 364-900 31 Claims



1. A device for setting a copying magnification in an electrophotographic apparatus, said device comprising: means for manually inputting a numerical value; data storage means for storing numerical data, connected to the inputting means; operation means, connected to the data storage means, for instructing to store the numerical value data entered by said inputting means; and control means, connected to the data storage means, for producing a control signal for adjusting the projecting magnification of an optical system of the copying machine with accompanying mechanical movement of the optical system based on the magnification data stored on the data storage means simultaneously with the operation of storing said entered numerical value data in the data storage means.

4,644,500
SEMICONDUCTOR MEMORY DEVICE WITH A CONTROLLED PRECHARGING ARRANGEMENT
Ryo Yonezu, and Kazuhiro Sakashita, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

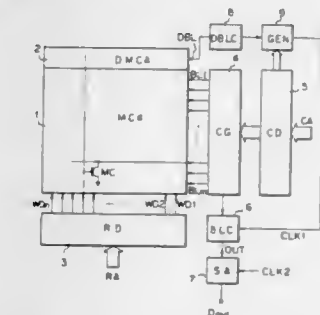
Filed Aug. 8, 1984, Ser. No. 638,677
Claims priority, application Japan, Aug. 17, 1983, 58-151262
Int. Cl.⁴ G11C 13/00
U.S. Cl. 365-189 8 Claims



1. A semiconductor memory device which comprises: a memory cell constituted by MOSFETs; a bit line for transmitting writing and reading information to or from the memory cell therethrough; a writing-in control signal line for controlling the writing

operation into the memory cell in response to a write-in signal; a first conductive type MOSFET with a source thereof being connected to a power supply terminal, a gate thereof being connected to the writing-in control signal line, and a drain thereof being connected to the bit line; the first conductive type MOSFET being responsive to the write-in signal and charging the bit line when said signal indicates that no writing is to be performed in the memory cell; writing means for writing data into said memory cell in response to the presence of a signal on said writing-in control line indicating that writing is to be performed, said writing means having an output terminal with the data to be written into said cell present thereon; a second conductive type MOSFET having a first controlled terminal thereof being connected to the bit line, a gate thereof being connected to the writing-in control signal line, and having a second controlled terminal thereof being connected to the output terminal of the writing circuit for writing information to the memory cell; and the second conductive type MOSFET transmitting the output of said writing means to said bit line.

4,644,501
SEMICONDUCTOR MEMORY DEVICE WITH CHARGING CIRCUIT
Masanori Nagasawa, Kamakura, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 10, 1984, Ser. No. 680,125
Claims priority, application Japan, Dec. 12, 1983, 58-234014
Int. Cl.⁴ G11C 7/00
U.S. Cl. 365-203 13 Claims



1. A semiconductor memory device comprising: a plurality of bit lines; a gate circuit for selecting a desired bit line; a dummy bit line having a chargeup characteristic equivalent to that of each of said bit lines; a dummy bit line chargeup circuit for charging said dummy bit line; a chargeup circuit for charging up a selected bit line; and means responsive to selection of a desired bit line for starting operation of both said dummy bit line chargeup circuit and said selected bit line chargeup circuit, and for detecting a predetermined charge potential of said dummy bit line, said means comprising a clock generating circuit for generating a clock signal which becomes active from the time said bit line is selected to the time chargeup of said dummy bit line reaches said predetermined charge potential wherein said clock generating circuit comprises a first gate circuit for generating an output signal indicating that any bit line is selected and a second gate circuit which generates said clock signal based on said output signal from said first gate circuit and said predetermined charge potential level of said dummy bit line, to stop operation of both said chargeup circuits, thereby completing a pre-charge period for the selected bit line.

4,644,502

SEMICONDUCTOR MEMORY DEVICE TYPICALLY USED AS A VIDEO RAM

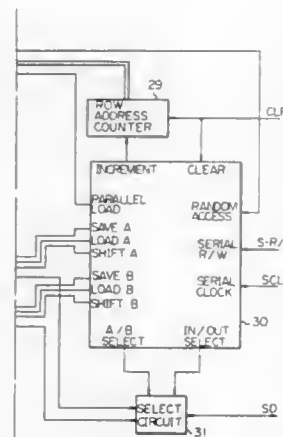
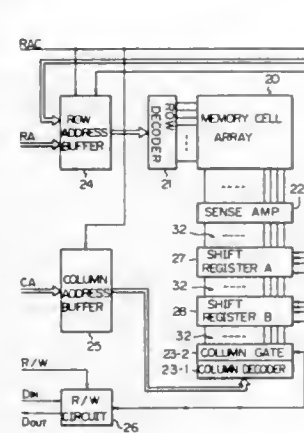
Syoichiro Kawasaki, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 26, 1984, Ser. No. 593,294

Claims priority, application Japan, Mar. 31, 1983, 58-053632
Int. Cl.⁴ G11C 19/28; G09G 1/02

U.S. Cl. 365—219

9 Claims



1. A semiconductor memory device operatively connectable to receive an external address and operatively connectable to an external circuit, comprising:

- a memory cell array accessible by the external circuit;
- an addressing circuit, operatively connected to said memory cell array and operatively connectable to receive the external address, for effecting an access operation to each bit of said memory cell array in accordance with the external address;
- an internal address generating circuit for sequentially generating row address outputs including a plurality of bit data;
- an address switching circuit, operatively connected to said internal address generating circuit and operatively connectable to receive the external address, for switching between the row address outputs from said internal address generating circuit and the external address;
- a plurality of shift registers, operatively connected to said memory cell array and said internal address generating circuit, each of said plurality of shift registers storing a plurality of bit data read out in parallel from said memory cell array in accordance with said row address outputs; and
- a serial control circuit, operatively connected to said plurality of shift registers, for controlling each of said plurality of shift registers so that each of said plurality of shift registers effects a shift operation to serially and continu-

ously output data, and when said memory cell array is not accessed by the external circuit during a time period in which a plurality of bit data corresponding to one of said row address outputs is serially output from one of said plurality of shift registers, said serial control circuit effects a parallel readout operation of a plurality of bit data corresponding to a next one of said row address outputs from said memory cell array and loads the data thus read out to another one of said plurality of shift registers.

4,644,503

COMPUTER MEMORY SYSTEM WITH INTEGRATED PARALLEL SHIFT CIRCUITS

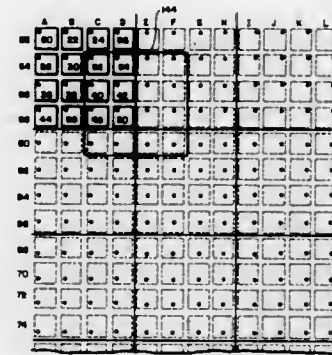
David F. Bantz, Chappaqua; Satish Gupta, Croton-on-Hudson, both of N.Y., and Bruce D. Lucas, Pittsburgh, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,215

Int. Cl.⁴ G11C 13/00

U.S. Cl. 365—230

15 Claims



1. A memory system for machine storage of digital information comprising a plurality of memory units, each operable for storage of a plurality of independently addressable binary bits of information, each of said memory units including a random access memory having a data input port and a data output port, and each of said memory units including a latch for storage of one binary bit of information for that unit for update purposes, said units being connected together to form a bit array in which each unit supplies one bit to provide a data word array of bits for each of a plurality of discrete sections of a larger array which is useful for graphical display, all of said units being addressable concurrently in response to the same bit address for each unit to provide for concurrent read or write operations for all bits within one section array of bits, a shifting means comprising a plurality of common interconnection buses extending between said units for shifting of data bits between said units and arranged to receive new data input word bits in parallel, each of said units including a plurality of data gates for controlling the transfer of binary bits selectively through said interconnection buses between said units to provide for selective shifting of bits between units to change and thus update the bit array.

4,644,504

PROGRAMMABLE CMOS CIRCUIT FOR USER DEFINED CHIP ENABLE AND OUTPUT ENABLE

Qazi A. S. M. Mahmood, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 25, 1984, Ser. No. 664,822

Int. Cl.⁴ G11C 8/00

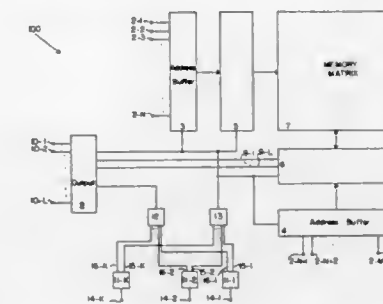
U.S. Cl. 365—230

6 Claims

1. A programmable enable buffer having an input terminal for receiving an input enable signal, a first output terminal for providing a chip enable output signal, and a second output

terminal for providing an output enable output signal, comprising:

- an input enable lead connected to said input terminal for receiving an input enable signal;
- programming means for selectively providing a plurality of programmed output states of a chip enable output signal to said first output terminal or of an output enable output



signal to said second output terminal in response to said input enable signal;

a chip enable lead connected to said first output terminal for carrying said chip enable output signal;

an output enable lead connected to said second output terminal for carrying said output enable output signal.

4,644,505

BROADBAND MATCHING NETWORK

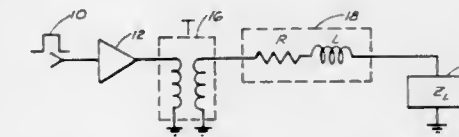
Stephen E. Spychalski, Gulfport, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 11, 1984, Ser. No. 619,436

Int. Cl.⁴ H03H 5/00

U.S. Cl. 367—15

2 Claims



1. A broadband matching network for a Helmholtz resonator transducer comprising a series RL circuit between an isolation transformer and said Helmholtz resonator transducer, said series RL circuit being capable of resisting high power levels and of shaping the output frequency response curve of said Helmholtz resonator transducer to provide an essentially flat response over the frequency range of said Helmholtz resonator transducer.

4,644,506

DEVICE FOR DETERMINING THE POSITION IN THE WATER OF AN ELONGATE ELEMENT TOWED WHILE SUBMERGED

Jacques Cretin, Le Chesnay; Jean Rudaz, Noisy sur Ecoles, and Pierre Gonzalez, Rueil Malmaison, all of France, assignors to Institut Francais du Pétrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Filed Mar. 26, 1984, Ser. No. 593,262

Claims priority, application France, Mar. 24, 1983, 83 05020

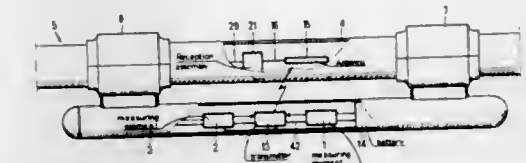
Int. Cl.⁴ G01V 1/38

U.S. Cl. 367—19

10 Claims

2. A device for determining the position of a seismic streamer of the digital type towed when submerged by a ship, said digital seismic streamer including a plurality of acquisition devices each having means for digitizing the signals received by a plurality of seismic sensors disposed inside the streamer and multiplexing means for transmitting the digitized signals sequentially to a central recording and processing system over

one or more lines, said position determining device comprising: a plurality of housings spaced apart along the elongate member and disposed outside thereof; means in each of said housings for measuring the position of the elongate member and for producing position signals indicative of said position; radio transmitting means in each of said housings for transmitting



radio waves modulated by said position signals; radio receiving means in said elongate member for receiving radio waves propagated through water from said transmitting means; and connecting means including line means for transferring position data indicated by the signals received by said radio receiving means to an acquisition device, from which said received position data is transmitted to said central data recording and processing system in addition to said seismic data.

4,644,507

SCALING OF SOUND SOURCE SIGNATURES IN UNDERWATER SEISMIC EXPLORATION

Antoni M. Ziolkowski, Noorindeinde 12, 2611, KH Delft, Netherlands

PCT No. PCT/GB83/00159, § 371

Date Feb. 28, 1984, § 102(e) Feb. 28, 1984, PCT Pub. No. WO84/00215, PCT Pub. Date, Jan. 19, 1984

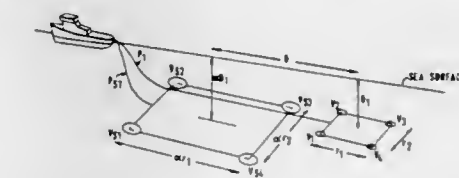
PCT filed Feb. 28, 1984, Ser. No. 589,105

Claims priority, application United Kingdom, Jun. 28, 1982, 8218691

Int. Cl.⁴ G01V 1/13, 1/40

U.S. Cl. 367—23

14 Claims



1. A method of determining the location in the earth of sub-surface boundaries and/or the acoustic properties of sub-surface features in the earth, which method includes

- (a) employing at a predetermined depth in water below selected surface coordinates a first sound source to generate a first sound wave having elastic radiation of predetermined energy and at a predetermined initial pressure, and, subsequently, employing a second sound source of the same type as said first sound source at a second and different predetermined depth in water below said selected surface coordinates to generate a second sound wave having elastic radiation of a second and different predetermined energy and at a second and different predetermined initial pressure, the depths, energies and initial pressures being selected such that

the energy of the elastic radiation emitted by the second source is greater by a factor $\alpha^3 \beta^{3/2}$ than that emitted by

the first source and that the frequency spectra of the respective sound waves overlap, that the depth D_2 of the second source is greater by a factor α than the depth D_1 of the first source, and that the initial pressure P_2 of the sound wave emitted by the second source is related to that P_1 of the sound wave emitted by the first source by the equation:

$$P_2 = \beta^2 [P_1 + P_{H1}(\beta^2 - 1)],$$

wherein P_{H1} represents the hydrostatic pressure at the first source, P_{H2} represents hydrostatic pressure at the second source, and

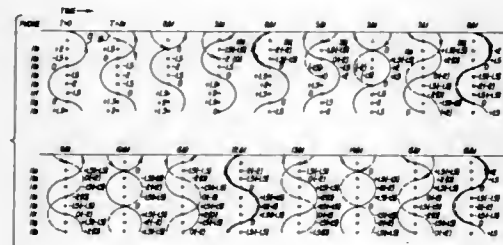
$$\beta = \frac{P_{H2}}{P_{H1}}$$

- (b) detecting by means of one or more receivers, reflections from within the earth of the sound waves to generate respective first and second seismic signals and
(c) subjecting these signals to analysis and comparison to derive the impulse response of the earth substantially in the absence of the far field source wavelet and noise and with errors due to reflections of the sound wave from the water surface being substantially compensated for.

4,644,508
METHOD AND APPARATUS FOR SELECTIVELY REINFORCING DETECTED SEISMIC WAVES
Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 28, 1983, Ser. No. 566,375
Int. Cl.⁴ G01V 1/38, 1/00

U.S. Cl. 367—24

5 Claims



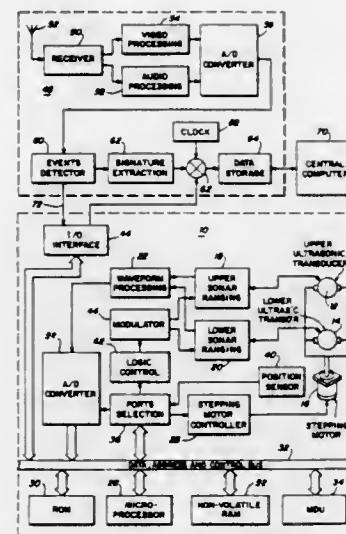
1. A method of detecting an acoustic seismic wave traveling in a first predetermined direction in a body of water by means of receivers located beneath the surface of said body of water, comprising the steps of:
providing a plurality of seismic wave receivers $R_0 \dots R_n$ beneath said surface, said receivers being spaced at predetermined vertical separations, each of said receivers detecting said acoustic seismic wave and providing a respective output signal representative thereof;
time shifting the output signals of at least two of said receivers by predetermined respective amounts so that a predetermined amplitude point on said acoustic seismic wave traveling in said first predetermined direction is substantially phase aligned in the time shifted output signals of said receivers;
combining the phase aligned output signals of said receivers to produce a wave representing said acoustic seismic wave;
detecting output signals which are produced by said receivers when no deviation of said array from said predetermined vertical separations exists; and
determining the deviation of said receivers from said predetermined vertical separations, wherein said time shifting step time shifts the output signal of a successive vertical receiver relative to a preceding vertical receiver by an amount corresponding to the time it

takes said acoustic seismic wave to travel vertically from said preceding to said successive receiver and wherein said time shifting step also time shifts the output signals of said receivers to replicate said output signals which are produced by said receivers of said array when no such deviation from said predetermined vertical separations occurs.

4,644,509
ULTRASONIC AUDIENCE MEASUREMENT SYSTEM AND METHOD
David A. Kiewit, Palm Harbor, and Daozheng Lu, Dunedin, both of Fla., assignors to A. C. Nielsen Company, Northbrook, Ill.
Filed Jan. 23, 1986, Ser. No. 821,824
Int. Cl.⁴ G01S 15/88

U.S. Cl. 367—87

22 Claims

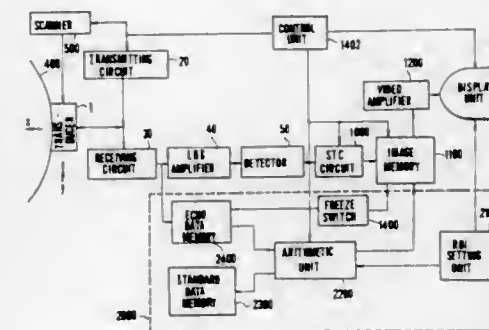


17. A system for determining the viewing/listening habits of the public by simultaneously identifying a signal being received by a receiver and the composition of the audience of the receiver comprising:
means for detecting predetermined functional operational modes of the receiver;
means for detecting a predetermined event;
means for identifying the signal being received by the receiver responsive to said detected predetermined event;
means for collecting a first reflected ultrasonic wave map of background objects in a monitored area of the receiver responsive to a predetermined operational mode of the receiver;
means for collecting a second reflected ultrasonic wave map of the monitored area responsive to said identified received signal;
means for subtracting the first map from the second map to obtain a resulting map;
means for processing the resulting map to identify a number of clusters having both a minimum intensity and a minimum weight coefficient; and
means for storing the identified received signal, the number of the identified clusters, and the time of the second map collection.

4,644,510
ULTRASONIC MEASUREMENT METHOD, AND APPARATUS THEREFOR
Tadashi Fujii, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 14, 1985, Ser. No. 711,954
Claims priority, application Japan, Mar. 17, 1984, 59-50193
Int. Cl.⁴ G01N 29/00

U.S. Cl. 367—87

8 Claims



1. An ultrasonic measurement method for measuring acoustic characteristics of an object under examination by transmitting an ultrasonic pulse into the object and detecting an ultrasonic echo signal reflected from within the object, said method comprising steps of:
preparing a plurality of standard media having attenuation coefficients that differ from one another;
transmitting an ultrasonic pulse into each standard medium and then finding and storing in memory a first attenuation rate for each of a number of positions over a range of depths in each standard medium based on an ultrasonic echo signal from each depth;
transmitting an ultrasonic pulse having a plurality of substantially different frequency components into each standard medium and then finding and storing in memory an attenuation coefficient based on an ultrasonic signal which has passed through each standard medium;
transmitting an ultrasonic pulse having a plurality of different frequency components into the object;
measuring a second attenuation rate which corresponds to a desired depth range in the object based on an ultrasonic echo signal received from within the object;
calculating a difference between the second attenuation rate obtained for the desired depth range in the object and the first attenuation rate at the depth corresponding to the desired depth range for each of the standard media;
finding the standard medium having a first attenuation rate that gives the minimum value of said difference; and
finding the attenuation coefficient corresponding to said standard medium;
wherein said attenuation coefficient corresponding to said standard medium is adopted as an attenuation coefficient over the desired depth range of the object.

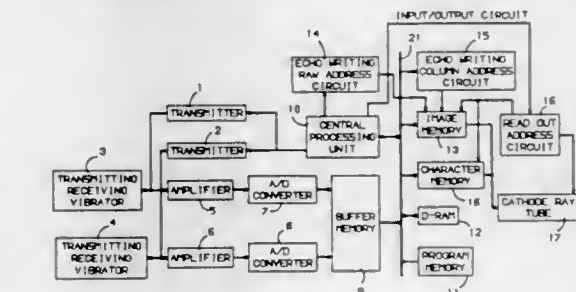
4,644,511
DISPLAY SYSTEM FOR FISH SONAR
Kunio Asakura, Aichi, Japan, assignor to Keisuke Honda, Aichi, Japan
Filed Jun. 14, 1985, Ser. No. 745,263
Int. Cl.⁴ G01S 7/56, 15/96

U.S. Cl. 367—101

3 Claims

1. A display system for fish sonar apparatus, comprising:
CPU means for producing trigger signals;
two transmitters for transmitting first and second output pulse signals of different frequencies in response to said trigger signals;
transmitting-receiving vibrators for transmitting first and second ultrasonic waves of different frequencies in re-

sponse to the first and second output pulse signals from the transmitters and for receiving first and second echo signals from said first and second ultrasonic waves;
amplifiers for amplifying said first and second echo signals received from the transmitting-receiving vibrators;
A/D converters for converting the first and second echo signals amplified by the amplifiers to first and second digital echo signals;
a buffer memory for storing the first and second digital echo signals from the A/D converters;
a D-RAM for storing the first and second digital echo signals from the buffer memory in response to a group of at least one trigger signal from the CPU means;
an echo writing raw address circuit for designating a raw address to the first and second digital echo signals stored in the D-RAM;
an echo writing column address circuit for designating a column address to the first and second digital echo signals;



an image memory for storing the first and second digital echo signals by the address signals from the echo writing raw address circuit and the echo writing column address circuit;
a cathode ray tube for horizontally scanning a raster on a screen thereof and connected to the image memory; and
a read out address circuit for reading out the first and second digital echo signals stored in the image memory in synchronism with lines of the raster of the cathode ray tube being scanned according to the raw address of said signals, for reading out the first digital echo signals in accordance with the columns from the column of the raster being scanned from one side to the center column of the screen of the cathode ray tube and for reading out the second digital echo signals in accordance with the columns of the raster being scanned from the center column of the screen to a column on the other side of the screen.

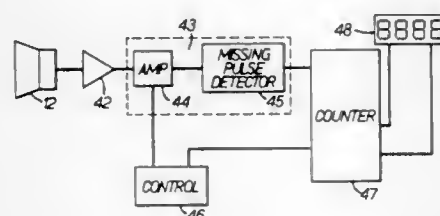
4,644,512
SONAR DEPTH FINDER WITH RELATIVE DEPTH LCD DISPLAY
Henry G. Griik, West Milford, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Feb. 16, 1984, Ser. No. 580,914
Int. Cl.⁴ G01S 15/96, 7/56

U.S. Cl. 367—108

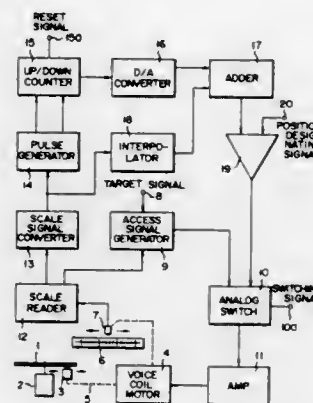
13 Claims

1. A method for finding and displaying the depth and depth related values of an object in an aquatic environment including a device having a transmitter for transmitting pulses, a receiver for receiving said pulses echoed from said object, processing means for programming and computing the transit time of said pulses in terms of a given range of depth and for addressing an LCD display having a segmented scale for visualizing said depth, comprising the steps of
programming each segment of said segmented scale to represent (1) a fraction of a total range of depth and (2) a corresponding fraction of a time-scan for the transmission of said pulses within said range of depth,
updating said LCD display at a given rate and period to effect N number of scans of the transit time of said pulses between update periods,

10 Claims

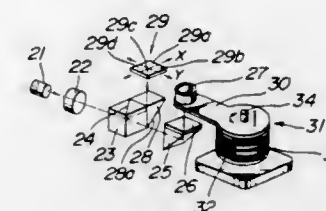


6 Claims



8 Claims

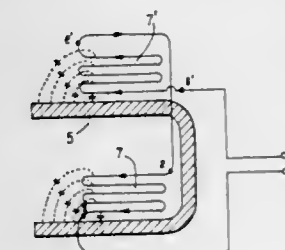
11 Claims



5 Claims



5 Claims



1. In an electromagnetic pickup cartridge having a pair of output terminals and a U-shaped yoke with only a pair of arms and a pair of generator coils respectively wound on said arms where the winding direction of the first of said coils with respect to its associated arm is the reverse of the winding direction of the second of said coils with respect to its associated arm and where the first of said coils has a start terminal s where the coil winding begins and an end terminal e where the winding ends and the second of said coils has a start terminal s' and an end terminal e' to thus provide a first pair of terminals s and s' and a second pair of terminals e and e', the first and second coils being so wound on their respective associated arms that there is a first distributed capacitance between said first coil and its associated arm and a second distributed capacitance between said second coil and its associated arm where said first and second distributed capacitances respectively change in magnitude from the s and s' terminals to the e and e' terminals, the improvement comprising means for connecting one of said pairs of terminals to each other; and

means for connecting the other of said pair of terminals respectively to said output terminals to thus form one channel of the pickup cartridge output where said first and second distributed capacitances tend to balance one another as viewed from said output terminals.

4,644,519

OPTICAL RECORDING PROVIDED WITH A CHALCOGENIDE RECORDING LAYER

Jan A. Markvoort, and Wilhelmus G. V. M. Rippens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

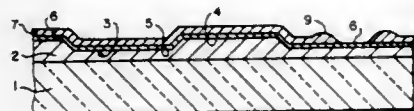
Filed May 31, 1984, Ser. No. 615,854

Claims priority, application Netherlands, Jun. 2, 1983, 8301956

Int. Cl.⁴ G11B 7/24

U.S. Cl. 369—275

4 Claims



1. An optical recording element having a transparent supporting plate, at least one side of the surface of which is formed of a synthetic resin or is provided with a layer of a synthetic resin and a recording layer of a chalcogenide provided on said synthetic resin, which recording layer is capable upon exposure by means of pulsed laser light focused through said supporting layer to form therein information bits readable by means of continuous laser light, characterized in that a thermally conductive layer of chromium is present on at least one surface of said recording layer thereby preventing said continuous laser light from causing a noticeable change in said recording layer or in said synthetic resin.

4,644,520

PROTECTED OPTICAL DISK OF WELDED CONSTRUCTION

Francois Lange, Antony, France, assignor to Alcatel Thomson Gigadisc, SA, Paris, France

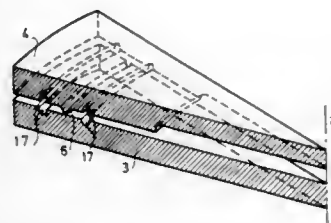
Filed Jul. 10, 1985, Ser. No. 753,536

Claims priority, application France, Jul. 10, 1984, 84 10941

Int. Cl.⁴ H04N 5/76; G01D 15/34; G11B 7/26

U.S. Cl. 369—284

10 Claims



1. A protected optical disk of welded construction comprising:
a housing the diameter of which is its largest dimension and which consists of at least first and second thermoplastic parts, said parts being joined together to form said housing by at least one circular weld in a planar annular joining area perpendicular to the axis of rotation of the disk, said housing defining a chamber bordered radially by said joining area;
an information carrying layer in said chamber;
at least a pair of grooves being provided on each of said parts that are welded to form said housing, the grooves of each

said pair being defined on opposite sides of the portion of its respective part which is included in said weld; and at least one circularly disposed sharp edged projection between said grooves of at least one pair, whereby said grooves and said at least one projection constitute a weld preform on at least one joining surface of said parts and when said parts are welded to form said housing the grooves of each said pair are disposed on opposite sides of a respective circular weld.

4,644,521

OPTICAL MEMORY CARTRIDGE AND DRIVE APPARATUS

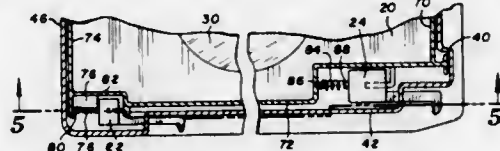
Marvin B. Davis; Michael V. Konshak, both of Colorado Springs, and Christopher A. Pollard, Monument, all of Colo., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Filed Aug. 14, 1985, Ser. No. 765,426

Int. Cl.⁴ G11B 23/02, 17/04; B65D 85/02

U.S. Cl. 369—291

26 Claims



1. A memory cartridge assembly including: a rotatable disk; a cartridge having first and second cartridge sections which, when engaged, enclose said disk within said cartridge; a means for maintaining said first and second sections releasably engaged with one another, including:
a plurality of first locking jamps intergral with said first cartridge section;
a plurality of second locking jamps intergral with said second cartridge section, each second jamb being positioned proximate and associated one of said first jamps when said cartridge sections are engaged;
a locking detent associated with each pair of first and second jamps;
and a biasing means for urging each detent into a locking engagement with its associated pair of locking jamps;
movement of said detents out of said locking engagement against the force of said biasing means disengaging said first and second cartridge sections.

4,644,522

INFORMATION TRANSMISSION USING DISPERSIVE OPTICAL CHANNELS

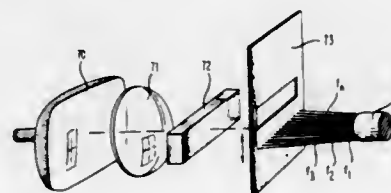
Brian G. Bagley, Watchung, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 543,231, Oct. 21, 1983, Pat. No. 4,478,488, which is a continuation of Ser. No. 203,356, Nov. 3, 1980. This application Aug. 6, 1984, Ser. No. 638,290

Int. Cl.⁴ H04B 9/00

U.S. Cl. 370—4

5 Claims



1. A system for transmitting optical information comprising:
a multiplicity of separate lightwave channels (f_1, \dots, f_n)

having different lightwave transit times and arranged so as to intercept light directed thereto from picture elements arranged along a first axis;
means (72) for scanning along a second axis that is vertical to said first axis so as to direct light to said channels from a second line of picture elements that are displaced with respect to said first line of picture elements;
and shutter means (73) for dividing the light into time frames at a desired sampling rate for transmission through said lightwave channels.

detectors for recovering data transmitted by said preselected transmitter.

4,644,524

SIMULTANEOUS COMMUNICATION SYSTEM USING TIME DELAYS

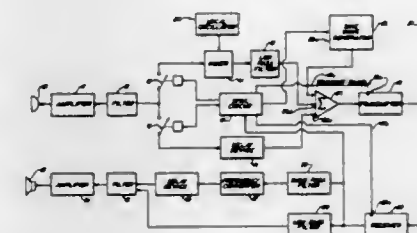
David L. Emery, 424 Clement Ave., Charlotte, N.C. 28204

Filed Jan. 22, 1985, Ser. No. 693,287

Int. Cl.⁴ H04J 3/00

U.S. Cl. 370—29

19 Claims



SYSTEM FOR IMPROVING SIGNAL-TO-NOISE RATIO IN A DIRECT SEQUENCE SPREAD SPECTRUM SIGNAL RECEIVER

Lawrence B. Horwitz, 216 Lowell Court, Danville, Calif. 94536, assignor to Sangamo Weston, Inc., Norcross, Ga.

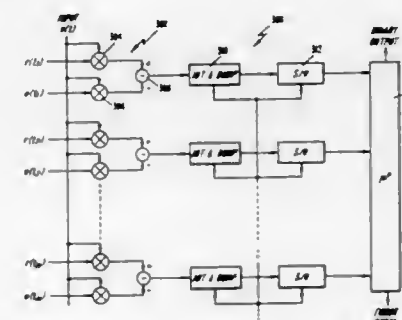
Filed Mar. 23, 1984, Ser. No. 592,674

The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.

Int. Cl.⁴ H04J 13/00; H04L 7/06

U.S. Cl. 370—18

3 Claims



1. In a direct sequence spread spectrum code division multiplex system, including a plurality of transmitters synchronized to a common timing signal and each transmitting a data signal spread by a bipolar pseudo-random code which is a different assigned shift of a common bipolar sequence:
a receiver synchronized to said timing signal for receiving said transmitted signal spread by a bipolar pseudo-random code having a predetermined assigned code sequence shift, said receiver including a plurality of correlation detectors and means for applying to each of the correlation detectors (1) a first reference bipolar pseudo-random sequence that is a replica of the common bipolar pseudo-random sequence and has a code shift that is within one code chip of the assigned shift of a predetermined transmitter and is displaced from the common bipolar pseudo-random code sequence applied to the other correlation detectors by a fraction of a code chip less than unity, and (2) a second reference bipolar pseudo-random sequence that is a replica of the transmitted common bipolar pseudo-random sequence and has an unassigned code sequence shift, each of said correlation detectors including first means for obtaining the product of the transmitted sequences and the first reference bipolar pseudo-random sequence; second means for obtaining the product of the transmitted sequences and the second reference bipolar pseudo-random sequence and third means for obtaining a difference between the products obtained by the first and second means; synchronous integrator means for integrating the difference; means for synchronously sampling an output of the integrator means and signal processor means responsive to outputs of said correlation detectors to synchronize said receiver to said predetermined transmitter;
the improvement comprising:
means responsive to the output of each of the correlation

1. A system adapted to be disposed at one station for simultaneously transmitting and receiving information, with respect to a corresponding system disposed at another station, in a sequence having at least one predetermined transmit period followed by a predetermined receive period comprising:
means for providing an input signal to be transmitted;
means for converting said input signal to a signal having a different frequency;
means for delaying the passage of said input signal there-through for a predetermined time delay which corresponds to a portion of a receive period;
means for providing a clock signal to define the sequence of predetermined transmit periods and predetermined receive periods;
means connected to the input signal providing means and responsive to the clock signals for sequentially switching said input signal to the delaying means during each receive period and to the frequency converting means during each transmit period;
means for summing the switched output of the delaying means and the switched output of the frequency converting means to form a summed signal;
means responsive to the clock signal for transmitting the summed signal during each transmit period;
means responsive to the clock signal for receiving a summed signal transmitted from another station;
means for severing the delayed signal from the received summed signal;
means for separating said signal having a different frequency from the received summed signal;
means for reconverting said signal having a different frequency to the frequency of the input signal;
means for retarding the reconverted signal for a predetermined time of retardation corresponding to the predetermined time delay of the delaying means;
means connected to the retarding means and the severing means for reproducing the severed delayed signal during the receive period and the retarded reconverted signal during the subsequent transmit period,
whereby the input signal for each receive period and the transmit period subsequent thereto can be transmitted to the other station during each subsequent transmit period as the signal transmitted by the other station and received during a receive period is reproduced during both the receive period and the transmit period subsequent thereto to provide simultaneous transmitting of the input signal and reproducing of the received signal.

4,644,525

LINE TRANSMISSION SYSTEMS

Christopher W. H. Ellis, Warwickshire, and John A. Tritton, London, both of England, assignors to The General Electric Company, p.l.c., England

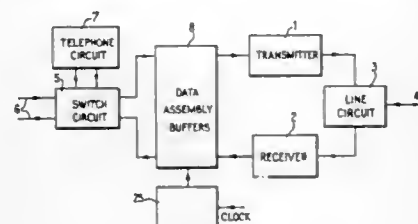
Filed Aug. 27, 1984, Ser. No. 644,532

Claims priority, application United Kingdom, Aug. 26, 1983, 8322992

Int. Cl.⁴ H04L 5/14

U.S. Cl. 370—29

2 Claims



1. A line transmission system for the transmission of signals in digitized form in burst mode between two stations of the system with each of said two stations in turn transmitting a sequence of signals in digitized form to the other of said two stations over a common transmission path during each of a succession of frame periods, comprising at each of said two stations buffer storage means for holding a plurality of signal bit values, means for transmitting and for receiving over said common path signals in digitized form representing signal bit values, means for applying sequences selectively of different numbers of signal bit values from said buffer storage means to said means for transmitting signals in digitized form, and means for applying sequences selectively of different numbers of signal bit values to said buffer storage means from said means for receiving signals in digitized form selectively to enable the transmission of longer sequences in one direction than the other between said two stations, the buffer storage means at least one of said two stations comprising three buffers which are utilized in turn in successive frame periods in the assembly of signal bit values for transmission, in the transmission and receipt of signal bit values over said common path and in the distribution of said signal bit values.

4,644,526

FULL DUPLEX FREQUENCY DIVISION MULTIPLEX COMMUNICATION SYSTEM

Chialin Wu, 970 Medford Rd., Pasadena, Calif. 91107

Filed Nov. 13, 1984, Ser. No. 671,124

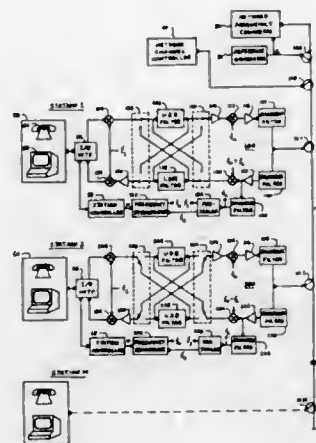
Int. Cl.⁴ H04B 1/50, 3/21

U.S. Cl. 370—30

8 Claims

1. A duplex frequency division multiplex communication system comprising: a plurality of user stations intercoupled by a common communication channel, a first frequency converting means coupled to said common channel for shifting the carrier frequencies of the signals introduced to the common channel by all of the user stations by a particular frequency differential for reception by the user stations, each of said stations comprising a transceiver and each transceiver comprising: a source of information signals; modulating means coupled to said source for modulating said information signals on a first carrier of a particular frequency; second frequency converting means; first means for applying the first modulated carrier from said modulating means to said second frequency converting means to shift the first carrier to a selected channel frequency; second means coupled to said second frequency converting means for introducing the output from said second frequency converting means to said common channel; third frequency converting means; third means for introducing signals from said common channel modulated on a second carrier of a particular channel frequency to said third frequency converting means, said second carrier having a frequency displaced from the frequency of said first carrier by said particu-

lar frequency differential; demodulating means; fourth means for applying output signals from said third frequency convert-



ing means to said demodulating means to recover the signals modulated on the second carrier; and information reproducing means coupled to said demodulator means.

4,644,527

INTERFACE UNIT FOR TRANSFERRING VOICE AND DATA SIGNALS

Thomas W. Anderson; Radha K. Avva, both of Naperville, Ill.; Bruce T. Forrest, Fairfax, Va.; Zbigniew A. Krawiec, Aurora, Ill., and William R. Starrett, Lincroft, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 29, 1985, Ser. No. 728,286

Int. Cl.⁴ H04Q 11/04; H04J 3/12

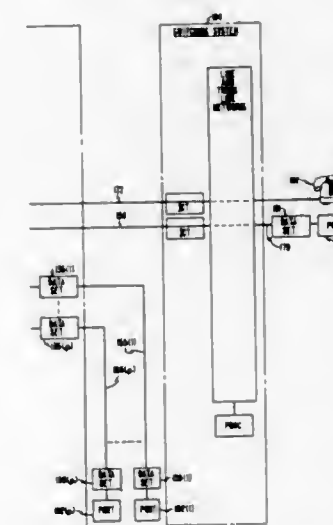
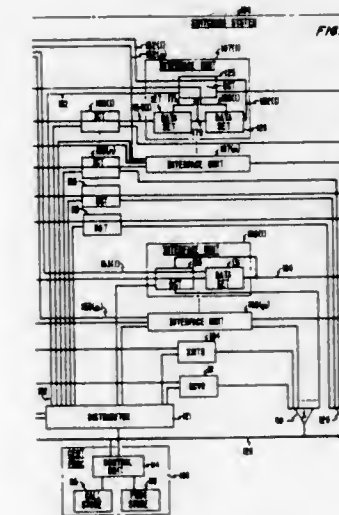
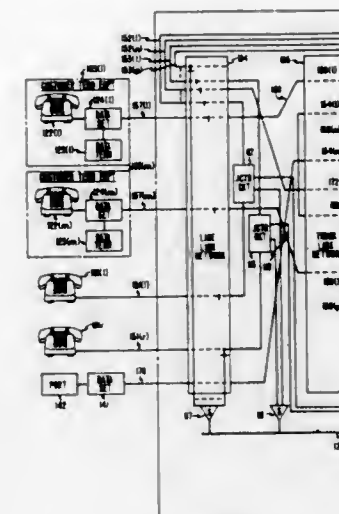
U.S. Cl. 370—58

22 Claims

1. For use with a first, a second, and a third plurality of communication lines and pairs of communication lines, each of said first plurality of lines for transferring a voice signal thereon, each of said second plurality of lines for transferring a data signal thereon, each of said third plurality of lines for simultaneously transferring a voice signal and a data signal thereon, each of said pairs of lines comprising a voice signal line in said first plurality of lines and a data signal line in said second plurality of lines, the number of simultaneous voice and data signals lines in said third plurality of lines being greater than the number of said pairs of lines, a switching system for pooling said pairs of individual voice and individual data signal lines to serve said third plurality of simultaneous voice and data signals lines, comprising:

- a plurality of interface units each for transferring a voice signal between the voice signal line in a pair of said pairs of lines coupled thereto and a simultaneous voice and data signals line in said third plurality of lines and a data signal between the data signal line in the pair of lines coupled thereto and the simultaneous voice and data signals line in said third plurality of lines, and
- a switching network for interconnecting an interface unit in said plurality of interface units and a simultaneous voice and data signals line in said third plurality of times request-

ing service and further interconnecting the voice signal line in the pair of lines coupled to said interconnected



interface unit and another voice signal line in said first plurality of lines.

4,644,528

TERMINATING PORT DETERMINATION IN A DISTRIBUTED CONTROL SWITCHING SYSTEM USING A DISTRIBUTED DATABASE

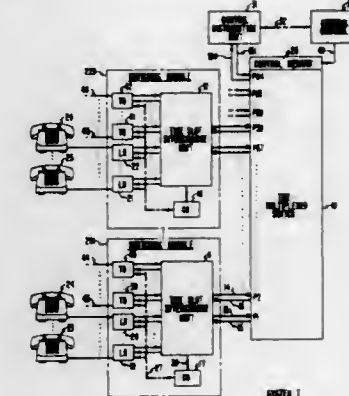
Mahmood Ahmad, Winfield, and Wayne L. Schreiner, Oswego, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 7, 1985, Ser. No. 699,420

Int. Cl.⁴ H04Q 11/04

U.S. Cl. 370—58

20 Claims



2. In a switching system having a plurality of ports, a control arrangement comprising a plurality of switching modules each associated with a corresponding subset of said ports, each of said switching modules comprising

- means for storing a plurality of database relations and a routing program defining the sequential access of said database relations to determine terminating one of said plurality of ports,
- means responsive to address signals each received at one port of the associated subset of said ports, for executing said routing program and
- means for transmitting a routing continuation request to one of the other ones of said switching modules when the data necessary to continue the execution of said routing program stored by said each switching module is not present in a given one of said database relations, said routing continuation request defining a point in said routing program prior to the access of said given database relation and also defining data necessary to initiate execution of said routing program at said defined point; and
- wherein said each switching module further comprises means responsive to a routing continuation request received from one other ones of said switching modules, for initiating execution of said routing program at the point defined by that routing continuation request.

4,644,529

HIGH-SPEED SWITCHING PROCESSOR FOR A BURST-SWITCHING COMMUNICATIONS SYSTEM

Stanford R. Amstutz, Andover, Mark Eliscu, Needham, and Pamdimukkala M. V. Rao, Boston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 2, 1985, Ser. No. 762,592

Int. Cl.⁴ H04J 6/00

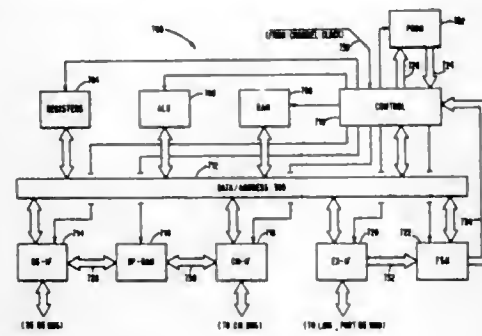
U.S. Cl. 370—60

17 Claims

1. A high-speed switching processor for use in a switch of a burst-switching communications system, a burst being a plurality of bytes, said system including a plurality of switches interconnected by time-division multiplexed communications links, each link having a plurality of frames within each second of time, each frame having a plurality of channels, each channel having communications capacity for the transmission of one byte, a byte being a predetermined number of bits, a bit being one binary digit, said system including a plurality of ports, each

port being a component of a switch, said switch including at least one switching processor, a queue sequencer, a character memory, and a channel clock, said character memory and queue sequencer each having a respective bus coupled therewith, said switching processor comprising:

- a data/address bus;
- control means coupled with said data/address bus for controlling said switching processor, said control means including stored-program memory and execution means, said control means having means for receiving and being responsive to a signal from said channel clock;
- jump-address means coupled with said data/address bus and said control means, for generating a jump address based on character-state and channel-state and for transmitting said jump address to said control means, said jump-address means operating substantially in parallel with and independently of said control means;
- external-interface means coupled with said data/address bus for providing an interface between said switching processor and said communications links and ports, said external-interface means having the ability to receive a byte in the current channel from a communication link or port, said external-interface means operating substantially in parallel with and independently of said control means;
- character-memory interface means coupled with said data/address bus for providing an interface between said switching processor and said character memory, said



character-memory interface means having the ability to read or write a byte from said character memory, said character-interface means operating substantially in parallel with and independently of said control means;

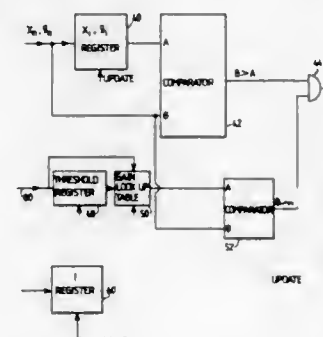
- queue-sequencer interface means coupled with said data/address bus for providing an interface between said switching processor and said queue sequencer, said queue-sequencer interface means having the ability to receive a buffer address from the queue sequencer, said queue-sequencer interface means operating substantially in parallel with and independently of said control means and said queue sequencer; and
- buffer-address means coupled between said queue-sequencer interface means and said character-memory interface means for generating a buffer address based on the channel number, said buffer-address means having the ability to receive said buffer address from said queue-sequencer interface means, said buffer address means operating substantially in parallel with and independently of said control means;
- said jump-address means being coupled with said external-interface means and having the ability to receive a byte of a burst from said external-interface means;
- said control means having the ability to receive said jump address from said jump-address means and to transfer processing control to the instruction in said stored-program memory located at the address indicated by said jump address.

4,644,530 INSTANT SPEAKER ALGORITHM FOR DIGITAL CONFERENCE BRIDGE

Do Q. Phlet, Mulgrave, Australia, assignor to Australian Telecommunications Commission, Melbourne, Australia
Filed Sep. 13, 1985, Ser. No. 775,549
Int. Cl.⁴ H04Q 11/04

U.S. Cl. 370—62

6 Claims



1. A digital conference bridge whereby output signals from a plurality of communications devices can be controlled whereby the output signal from a selected one of the devices is directed to the remainder, the signal for the time being so selected being determined by selection means incorporated into said bridge and receiving time spaced digitized samples at least representing said signals, characterized in that said selection means comprises first generating means for generating the products $x_n \cdot g_n$, $x_i \cdot g_i$ where x_n and x_i are instantaneous magnitudes of the samples of all of the signals, and of the selected signal respectively and g_n and g_i are predetermined gain factors for all of the signals and for the selected signals; first store means for storing a threshold value "T"; first comparator means for comparing the products $x_n \cdot g_n$ with the product $x_i \cdot g_i$; switch means for routing the selected signal to each non-selected communications device; and control means responsive to the conditions $x_n \cdot g_n > x_i \cdot g_i$ and $x_n \cdot g_n > T \cdot g_n$ to control said switch means to supplant a selection of an existing said signal with a newly selected signal in accordance with that one of the previously non-selected signals which meets said conditions.

4,644,531

TIME DIVISION COMMUNICATION SYSTEM

Susumu Sasaki, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP82/00094, § 371 Date Dec. 3, 1982, § 102(e)
Date Dec. 3, 1982, PCT Pub. No. WO82/03515, PCT Pub. Date Oct. 14, 1982

PCT Filed Apr. 1, 1982, Ser. No. 448,906

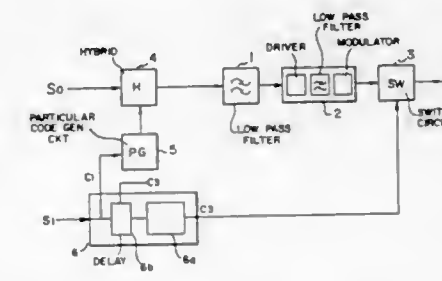
Claims priority, application Japan, Apr. 7, 1981, 56-52167; Jun. 22, 1981, 56-96313; Sep. 22, 1981, 56-14962; Nov. 16, 1981, 56-183367; Dec. 17, 1981, 56-204030; Dec. 28, 1981, 56-211151
Int. Cl.⁴ H04J 3/00, 3/06

U.S. Cl. 370—77

21 Claims

1. A time dividing communication system for transmitting modulation data that has been band limited, comprising:
modulation means, for modulating the modulation input data after the band limitation, where the modulation data is phase modulated or amplitude modulated and thereafter transmitted as a burst signal in an assigned time slot;
code adding means, operatively connected to receive the modulation input data and to said modulation means, for adding particular codes to the modulation input data so that the modulated wave becomes a waveform having received a 100% amplitude modulation corresponding to front and rear edges of the modulation input data;
switching means, operatively connected to said modulation means, for switching the modulated wave at a zero ampli-

tude modulation point and inserting the modulated wave in the assigned time slot; and
said modulation means comprising a driving modulator and when executing phase modulation or amplitude modulation of said modulation input data, an offset voltage of the



driving modulator is changed only during the period corresponding to the front and rear edges of the modulation input data including the particular codes and the switching by said switching means is carried out at the point where amplitude of said modulated wave becomes zero.

4,644,532

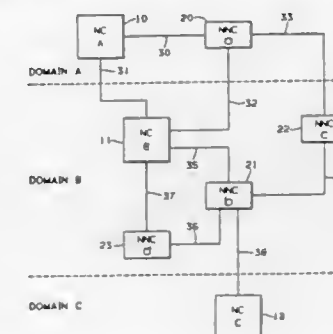
AUTOMATIC UPDATE OF TOPOLOGY IN A HYBRID NETWORK

Frederick D. George, Raleigh, N.C.; Jeffrey M. Jaffe, Monsey, N.Y., and Franklin H. Moss, Concord, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 10, 1985, Ser. No. 742,812

Int. Cl.⁴ H04J 3/26; H04Q 11/04

U.S. Cl. 370—94

16 Claims



1. A method of maintaining a topology data base which is available for message routing in a dynamic, hybrid mesh connected network including at least one control node and a plurality of ordinary nodes, said method comprising the steps of:

- maintaining in each of said ordinary nodes a link status data base identifying directly connected nodes, and
 - maintaining in each of said control nodes a topology data base, by:
 - establishing one or more domains of nodes, each such domain including only one control node,
 - communicating network status information from an ordinary node to the single control node of its domain in response to a change in network status sensed by said ordinary node, and
 - altering the topology data base at said control node in response to information transmitted by said ordinary node,
- whereby each said control node is informed of network status changes adjacent to any node in its domain.

4,644,533 PACKET SWITCH TRUNK CIRCUIT QUEUEING ARRANGEMENT

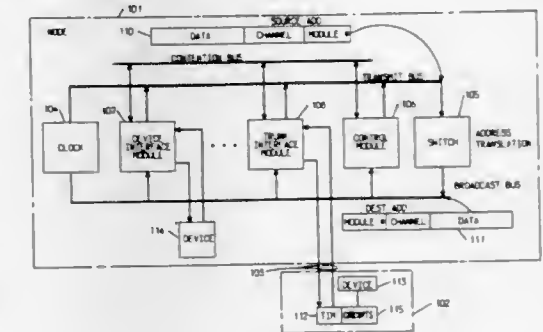
Martin Bruff, Aberdeen, and Michael G. Hluchyj, Little Silver, both of N.J., assignors to American Telephone & Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed May 6, 1985, Ser. No. 730,995

Int. Cl.⁴ H04J 3/24

U.S. Cl. 370—94

12 Claims



1. A data packet sorter for interfacing a received multichannel packet data stream to a communication line, said sorter comprising

means for sorting received multichannel data packets equal to or greater than a predetermined size for storage in a first memory and for sorting multichannel data packets less than said predetermined size for storage in said first memory in response to a signal from an associated channel counter indicating that the count is not zero; and
counter means including a channel counter associated with each channel of the received multichannel packet data stream for counting, for each channel, the number of data packets written into said first memory by incrementing said associated channel counter for each data packet written into said first memory and decrementing the associated channel counter for each data packet read from said first memory.

4,644,534

TDMA POINT-TO-MULTIPOINT COMMUNICATIONS SYSTEM AND ITS USE

Josef Sperlich, Backnang, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

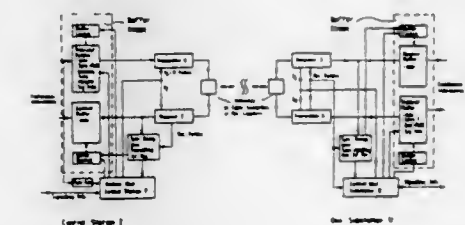
Filed Jul. 2, 1985, Ser. No. 751,241

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424369

Int. Cl.⁴ H04J 3/16

U.S. Cl. 370—95

6 Claims



1. A method for operating a TDMA point-to-multipoint communications system composed of a central station and a plurality of substations, with multiple utilization of a transmission band and with the transmission time between the central

station and the substations having a different value for each substation, said method comprising effecting transmission between the central station and the substations in a succession of time frames, said step of effecting transmission comprising, during each time frame:

transmitting from the central station, during a first time period, a succession of signal groups, each group being directed to a respective substation, in a sequence such that the first transmitted signal group is directed to the substation having the longest associated transmission time and the last transmitted signal group is directed to the substation having the shortest associated transmission time;

transmitting a respective signal group from each substation to the central station during a second time period following the first time period, the respective signal group being transmitted from each substation at a selected time after completion of transmission to that substation of a signal group from the central station during the first time period; and

providing, in each signal group transmitted from the central station during the first time period, an indication of the selected time for transmitting from each substation during the second time period, the selected times being such that transmission from the substations during the second time period is in a sequence inverse to the sequence in which signal groups are transmitted to the substations during the first time period, the selected times including the time required for each substation to switch from a receiving state to a transmitting state.

4,644,535

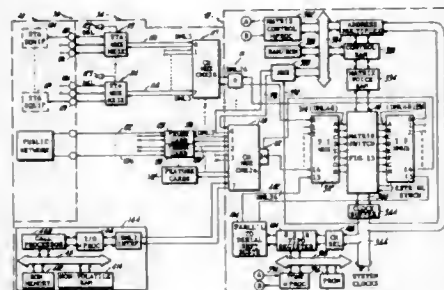
PCM CHANNEL MULTIPLEXER/DEMULTIPLEXER
Charles B. Johnson, Dallas, and Howard D. Gardener, Grapevine, both of Tex., assignors to Data General Corp., Westborough, Mass.

Filed Apr. 26, 1984, Ser. No. 604,095

Int. Cl.⁴ H04J 3/00

U.S. Cl. 370—99

6 Claims



1. Apparatus for multiplexing N number of sample frame signals received at a frame bit rate from N number of station devices of a communications system having a source of timing signals, each frame signal including pulse code modulated (PCM) samples of signal port voice, data, and control signal bits in an interleaved port group format, into a time slot interchange (TSI) PCM sample signal with voice, data, and control signal bits grouped in signal bit units of common signal type for presentation to the system TSI matrix at an N times greater frame bit rate, and for demultiplexing return TSI PCM signal samples into port grouped PCM signal samples for return to the station devices, the apparatus comprising:

memory means for storing signals;

station interface means, responsive to the sample frame signals at a station interface input and at a station interface output thereof, said station interface input storing the port grouped voice, data, and control signal bits received from each station device in a station portion of said memory means, said station interface output retrieving, in a first

retrieval sequence, common signal type bit units of each return TSI PCM sample signal stored in a TSI portion of said memory to provide the interleaved port group format of voice, data, and control signal bits for return to each station device; and

TSI I/O means, responsive to the TSI PCM signal at a TSI interface input and at a TSI interface output, said TSI interface input storing each return TSI PCM sample signal from the TSI matrix in signal bit units of common signal type in said TSI portion of said memory means, said TSI interface output retrieving, in a second retrieval sequence, said interleaved port groups of voice, data, and control signal bits stored in said station portion of said memory to provide the TSI PCM signal bit units of common signal type for presentation to the TSI matrix.

4,644,536

METHOD AND APPARATUS FOR MULTIPLEXING DIGITAL SIGNALS

Kuniaki Utsumi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

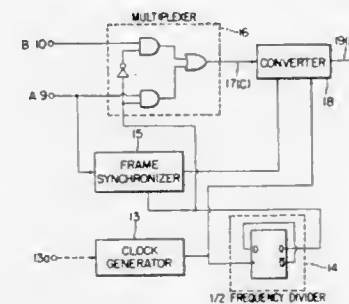
Filed Jul. 12, 1984, Ser. No. 630,015

Claims priority, application Japan, Jul. 13, 1983, 58-128338

Int. Cl.⁴ H04J 3/06

U.S. Cl. 370—100

3 Claims



1. A method of multiplexing digital signals, comprising the steps of:

multiplexing serial digital signals of a plurality of channels which have a given transmission rate and each of which has frame synchronizing signals to a single serial signal, converting signals excluding the frame synchronizing signals of one selected channel to a format which allows inverse-conversion and which does not allow detection of the frame synchronizing signals, and using the frame synchronizing signals of said one selected channel as frame synchronizing signals of the single serial signal.

4,644,537

INBAND CODING OF SECONDARY DATA

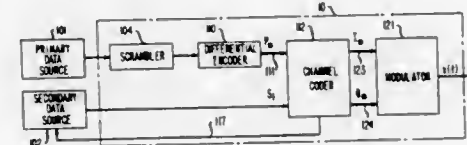
Richard D. Gittlin, Little Silver, and Jean-Jacques Werner, Holmdel, both of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Holmdel, N.J.

Filed Dec. 24, 1984, Ser. No. 685,445

Int. Cl.⁴ H04L 3/00

U.S. Cl. 370—119

24 Claims



1. Apparatus comprising

means for receiving a first stream of data words, means for receiving a second stream of data words, and means operative when an individual one of said first stream words has one of a predetermined plurality of values for applying to a communication channel an individual one of a predetermined plurality of channel symbols, said one channel symbol being uniquely associated with that one value, and operative when said individual one of said first stream words has at least one other value for applying to said channel a selected one of at least two other channel symbols associated with that one other value, said selected channel symbol being a function of the value of an individual one of said second stream words.

4,644,538

AUTOPILOT FLIGHT DIRECTOR SYSTEM

Michael G. Cooper, Renton; Elden M. Elliott, Coupeville, and Dean A. Hartzell, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

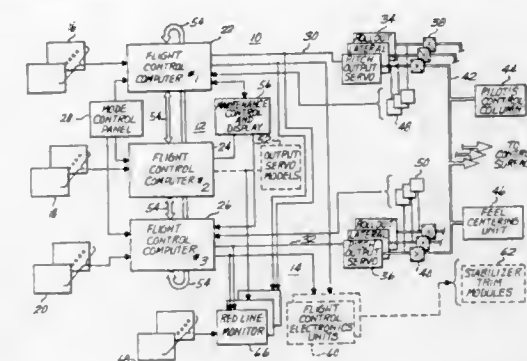
PCT No. PCT/US82/00825, § 371 Date Jun. 16, 1982, § 102(e) Date Jun. 16, 1982, PCT Pub. No. WO84/00071, PCT Pub. Date Jan. 5, 1984

PCT Filed Jun. 16, 1982, Ser. No. 432,894

Int. Cl.⁴ G06F 11/08

U.S. Cl. 371—9

32 Claims



1. An aircraft autopilot flight director system comprising: first, second and third redundant sensor sets, each sensor set producing predetermined output data signals related to the status of the aircraft;

first, second and third flight control computers, each computer including means for:

- (a) comparing the associated sensor signal set with the sensor signal sets of the other two flight control computers and identifying a failure in response to a predetermined discrepancy there between;
- (b) processing said first, second and third sensor set data signals and producing a reference sensor signal set;
- (c) processing said reference sensor signal set and producing command control signals;
- (d) comparing said produced command control signals with the command control signals produced by the other two flight control computers and identifying a self-failure in response to a predetermined discrepancy there between;

utilization means for utilizing the command control signals from at least two of the flight control computers as aircraft surface control commands; and

common mode fault detection means, utilizing apparatus and control laws unique from any of said first, second and third flight control computers, for independently producing command control signals, said common mode fault means including means for comparing each of said first, second and third flight control computer produced control signals with said independently produced control signals and identifying as a failure each of said computers which produces command controls which deviate from

said independently produced command control signal by a predetermined value.

4,644,539

CIRCUIT ARRANGEMENT CAPABLE OF PROHIBITING AN ACCESS TO A PART OF A CONTROL MEMORY ON OCCURRENCE OF AN ERROR IN THE PART

Masakazu Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

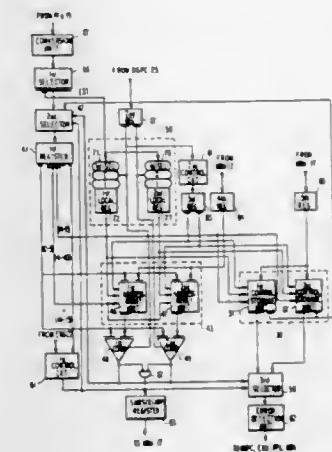
Filed May 21, 1984, Ser. No. 612,503

Claims priority, application Japan, May 20, 1983, 58-87635

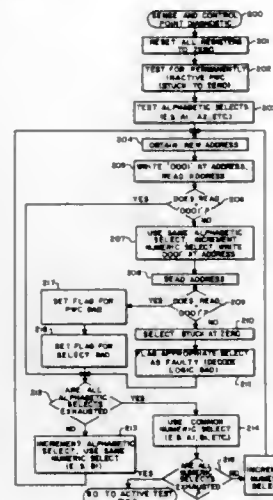
Int. Cl.⁴ G06F 11/16; G11C 29/00

U.S. Cl. 371—11

4 Claims



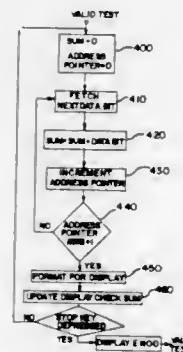
4,644,540
DIAGNOSTIC METHOD FOR ADDRESSING ARRANGEMENT VERIFICATION
 Antonio Rahimzad, Glendale, Ariz., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.
 Filed Oct. 15, 1984, Ser. No. 661,011
 The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.
 Int. Cl.⁴ G06F 11/00
 U.S. Cl. 371-16



1. In a processing system including a processor, a plurality of printed wiring cards (PWCs) having a plurality of sense points or control points, an addressing arrangement for selectively enabling said PWCs via a data bus connecting said processor to each said PWC, a diagnostic method for validating the integrity of said addressing arrangement comprising the steps of: first selecting a first address having first and second address components corresponding to a first particular PWC having a plurality of sense points; first testing a second PWC corresponding to a second address having a different first address component and an identical second address component as said first address and producing a first valid or a first invalid condition; second selecting a third PWC corresponding to a third address having an identical first address component and a second address component incremented by one as said first address in response to said invalid first condition; second testing a fourth PWC corresponding to a fourth address having an identical first address component and a second address component incremented by one as said second address in response to said invalid first condition to produce a second valid or a second invalid condition; first indicating a fault for said PWC corresponding to said second address and a fault for said second address component of said first address in response to said second invalid condition; first iterating said steps first and second selecting, first and second testing and first and second indicating with an address having said first address component incremented by one for each said step of first iterating for each of said first address components; third selecting a fifth address, having first and second address components, corresponding to a fifth PWC having a plurality of sense points; third testing a sixth PWC corresponding to a sixth address having an identical first address component and second address component incremented by one as said fifth address, said third testing producing a third valid or a third invalid condition; fourth selecting a seventh PWC corresponding to a seventh

address having a first address component incremented by one and a second address component identical to said fifth address in response to said third invalid condition; fourth testing an eighth address having an identical first address component and a second address incremented by one as said seventh address, said fourth testing producing a fourth invalid condition or a fourth valid condition in response to said third invalid condition; third indicating a fault for said PWC corresponding to said fifth address and a fault for said first address component of said fifth address in response to said fourth valid condition; fourth indicating a fault for said second address component of said fifth address in response to said fourth invalid condition; and second iterating said steps of first iterating, third and fourth selecting, third and fourth testing and third and fourth indicating with an address having said second address component incremented by one for each said step of second iterating for each of said second address components.

4,644,541
DIAGNOSTIC TEST FOR PROGRAMMABLE DEVICE IN A MAILING MACHINE
 William J. Linkowski, Poughquag, N.Y., assignor to Pitney Bowes Inc., Stamford, Conn.
 Filed Jan. 18, 1985, Ser. No. 692,752
 Int. Cl.⁴ G06F 15/20, 11/00
 U.S. Cl. 371-20



correction coding when data consisting of n symbols and m symbols having different kinds of information and 1 parity symbols is transmitted as a unit, said processing consisting of an encoding process with respect to a first error detection code or an error correction code for generating a redundancy code of k symbols regarding said n symbols, and an encoding process with respect to a second error correction code for generating a redundancy code of one symbol regarding $(n+k+m)$ symbols,

wherein said error correcting apparatus comprising:
a first decoder with respect to said first error detection code or said error correction code to which said redundancy code of $(n+k)$ symbols is supplied and which generates a first flag signal indicative of the error state by at least performing the error detection wherein said first flag signal is the signal indicating the number (including 0) of error symbols with respect to the $(n+k)$ symbols; and
a second decoder with respect to said second error correction code to which $(n+k)$ symbols corrected by said first decoder and $(m+1)$ symbols received are supplied and which generates a second flag signal representing the error state by performing the error detection, wherein said second flag signal is the signal representing the number (including 0) of error symbols before the error correction by said second decoder with respect to the $(n+k+m+1)$ symbols, and performs the error correction by comparing said first and second flag signals and the error correction processing by said second decoder is controlled in accordance with the result of said comparison.

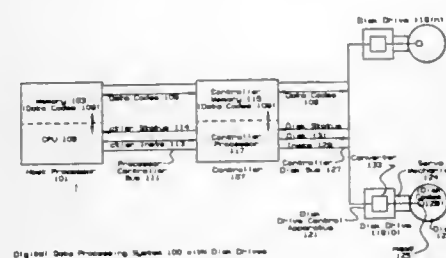
4,644,545
DIGITAL ENCODING AND DECODING APPARATUS
Edward Gershenson, Worcester, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed May 16, 1983, Ser. No. 495,364

Int. Cl.⁴ G06F 11/00

U.S. Cl. 371—38

18 Claims



1. Digital input code decoding apparatus for decoding conforming input codes and non-conforming input codes, said apparatus comprising:

- (1) means for receiving input codes; and
- (2) decoding means, connected to said receiving means, said decoding means including
first means, responsive to a received conforming input code, for producing an output code corresponding to said received input code, and
second means, responsive to a received non-conforming input code, for producing an output code corresponding to a selected one of said conforming input codes.

4,644,546
METHOD OF DIGITAL SIGNAL TRANSMISSION
Toshitada Doi, Kanagawa, Japan; Claudia Brandes, Ruemlang, and Roger Lagadec, Zurich, both of Switzerland, assignors to Sony Corporation, Tokyo, Japan and Willi Studer AG, Regensdorf, Switzerland

PCT No. PCT/JP83/00461, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO84/02817, PCT Pub. Date Jul. 19, 1984

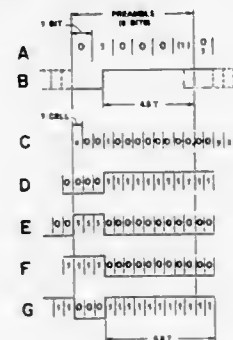
PCT Filed Dec. 28, 1983, Ser. No. 642,688

Claims priority, application Japan, Dec. 30, 1982, 57-232899

Int. Cl.⁴ H04Q 7/00

U.S. Cl. 371—49

6 Claims



1. A method of digital signal transmission wherein N ($N=K \times M$) channels of digital data modulated by a digital modulating system having a predetermined rule for bit and cell level transitions are transmitted serially, where N , K and M are positive integers, the method comprising the steps of forming M groups each consisting of K channels, forming a preamble having a bit and cell pattern violating the rule of the modulating system, adding only one formed preamble to each said group, adding a data validity evaluation bit to the data of each channel of the group, adding parity data relating to the totality of the bits of one said group to said group, and repeatedly and successively transmitting said M groups of data.

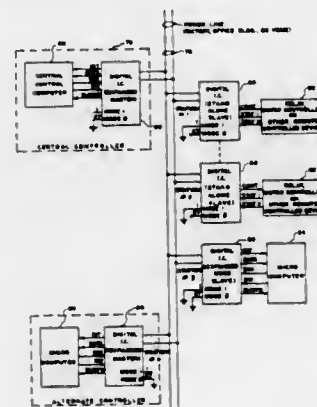
4,644,547
DIGITAL MESSAGE FORMAT FOR TWO-WAY COMMUNICATION AND CONTROL NETWORK
Leonard C. Vercellotti, Oakmont; William R. Verbanets, Jr., Plum Borough, both of Pa., and Theodore H. York, Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1984, Ser. No. 625,864

Int. Cl.⁴ G06F 15/06, 3/04

U.S. Cl. 371—69

17 Claims



1. In a communication and control system of the type employing a common network line, means for developing a plural

bit binary message signal which includes a message start signal having a high value extending for a duration of two bit intervals and at least one message control bit having one logic value which designates a plurality of message bits as instruction bits to enable an interface to be set up between said common network line and a microcomputer, the other logic value of said control bit designating a plurality of message bits as data bits for the microcomputer after said interface has been enabled, central controller means for supplying said developed plural bit binary message signal to said common network line, a plurality of digital integrated circuit devices each of which is connected in parallel to said common network line and is adapted to receive messages from said central controller means, and means in each of said devices for setting up an interface to an associated microcomputer when said control bit has said one logic value and said instruction bits comprise an enable interface instruction.

4,644,548
FREE ELECTRON LASER WITH TAPERED AXIAL MAGNETIC FIELD

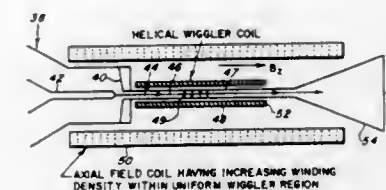
Steven H. Gold, New Carrollton, and Henry P. Freund, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1984, Ser. No. 573,751

Int. Cl.⁴ H01S 3/00

U.S. Cl. 372—2

12 Claims



1. A free electron laser comprising:
electron source means for injecting a beam of relativistic electrons in a predetermined direction into a drift region, each of said electrons while in said drift region having an axial velocity component parallel to said predetermined direction, the axial velocity component being a fraction of electron total velocity in the predetermined direction;
wiggler magnet means for generating a spatially periodic transverse magnetic field in said drift region, said periodic magnetic field being of uniform and constant magnitude in a uniform wiggler region, wherein said periodic magnetic field interacts with the beam of electrons to generate an electron transverse velocity v_w which is related to electron axial velocity v_z by the magnitudes of the wiggler magnetic field and the axial magnetic field as defined by the formula $v_z^2 + v_w^2 = (1 - \gamma^{-2})c^2$ where $\gamma^{-2} = (1 - v_z^2/c^2)^{-2}$ and where v is the electron total velocity and where c is the speed of light and to cause the generation of coherent radiation, and wherein as a result of said interaction the axial velocity v_z of each electron continuously changes in magnitude due to the change in total electron velocity v as each electron travels through said uniform wiggler region;

axial magnet means for generating an axial magnetic field having an axial magnetic field strength within said drift region, said axial magnetic field being in a direction parallel to said predetermined direction, and wherein said axial magnetic field strength is tapered within said uniform wiggler region such that said axial magnetic field acts to change electron axial velocity v_z so as to oppose said continuous change of axial velocity v_z of each electron by changing the ratio of axial velocity v_z to total velocity v .

4,644,549
GAS LASER DEVICE
Yuji Oisbi, Kanagawa, Japan, assignor to Amada Company, Limited, Japan

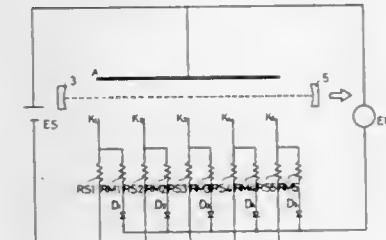
Filed May 24, 1985, Ser. No. 737,468

Claims priority, application Japan, May 29, 1984, 59-107574

Int. Cl.⁴ H01S 3/00

U.S. Cl. 372—38

6 Claims



1. A gas laser device, in which a laser medium in a discharge space, is excited by means of a discharge, comprising:
a positive electrode and a plurality of negative electrodes in opposition, connected to a simmer power source and a main discharge power source;
a plurality of first stabilized resistances, which restrict the current of the simmer power source, each of which is connected to one of the negative electrodes; and
a plurality of first reverse current prevention elements, each of which is connected to the main discharge power source and connected in parallel with one of the first stabilized resistances.

4,644,550
LIQUID COOLED NEODYMIUM-PHOSPHATE GLASS-IMPULSE LASER PARTICULARLY FOR MEDICAL APPLICATIONS

Huba Cséry, Mihályfy E.n.26/B, H-1022 Budapest; Imre Czigany, Kardhegy u. 15., H-1116 Budapest; Zoltán Horváth, Gálóczy köz 7/A, H-1125 Budapest; Iván Kertész, Költőu.2-4., H-1121 Budapest; Norbert Kroó, Apáczai Cs.J.u.17., H-1052 Budapest, and György Schmidt, Ó u. 38., H-1066 Budapest, all of Hungary

PCT No. PCT/HU84/00022, § 371 Date Dec. 11, 1984, § 102(e) Date Dec. 11, 1984, PCT Pub. No. WO84/04211, PCT Pub. Date Oct. 25, 1984

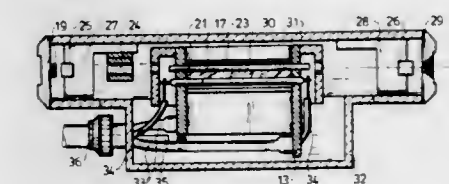
PCT Filed Apr. 10, 1984, Ser. No. 690,496

Claims priority, application Hungary, Apr. 11, 1983, 1242/83

Int. Cl.⁴ H01S 3/17

U.S. Cl. 372—40

6 Claims



1. A liquid cooled neodymium-phosphate glass pulsed laser, comprising a laser head (13) mounted on a base (32), said laser head (13) containing a flash lamp (17), a phosphate glass laser rod (21) and a cylindrical reflector (23) surrounding said flash lamp (17), the laser rod (21) is immersed in a cooling liquid flowing through said reflector (23), said laser rod (21) having a diameter of less than about 4 mm and a Nd-ion concentration of higher than about 1.2×10^{21} ion/cm³; a highly reflective rear mirror (25) and a partially reflective exit mirror (26) of about 60% transmission forming a laser resonator;

a passive Q-switch (24) comprising an F_2^- color center doped LiF crystal disposed between said mirrors (25,26), said Q-switch (24) being thicker than 1 mm and having an initial transmission of about 60%;
said resonator with said mirrors (25,26) and said Q-switch (24) being placed in a resonator housing (31) which can be dismounted from the base (32) without adjustment of the mirrors (25,26); a flexible conduit group (14) connected to the laser (11) wherein said flexible conduit group (14) includes pipes (33) for supplying the laser (11) with the cooling liquid from a cooling system and cables (34) for supplying the laser (11) with current from a power supply unit (15).

4,644,551

BURIED-TYPE SEMICONDUCTOR LASER

Hideo Kawano, and Isamu Sakuma, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

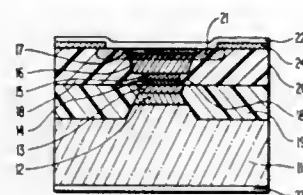
Filed Oct. 16, 1984, Ser. No. 661,477

Claims priority, application Japan, Oct. 17, 1983, 58-193804

Int. Cl.⁴ H01S 3/19

U.S. Cl. 372-45

7 Claims



1. In a buried semiconductor laser diode having a resonant cavity for oscillation and a pair of electrodes for injecting current to said laser diode for excitation, said laser diode comprising: a mesa stripe having a multi-layer structure which successively includes over a semiconductor substrate of a first conductivity type, at least, a first semiconductor layer of the first conductivity type, a second semiconductor layer of the first conductivity type having a refractive index greater than that of the first semiconductor layer, an active layer having a refractive index greater than that of the second semiconductor layer, and a third semiconductor layer of a second conductivity type having a refractive index smaller than that of said first semiconductor layer and a fourth semiconductor layer of the second conductivity type having a refractive index substantially identical with that of the first semiconductor layer, the lateral width of the active layer and the third semiconductor layer being smaller than the width of the other layers of the multi-layer structure in the mesa stripe; a semiconductor layer, provided on the sides of the second semiconductor layer, of the second conductivity type having a refractive index identical with or smaller than that of the second semiconductor layer; and a semiconductor layer, provided on the sides of the active, the third and the fourth semiconductor layers, of the first conductivity type having a refractive index smaller than that of the active layer.

4,644,552

SEMICONDUCTOR LASER

Masaaki Ohshima, Yokohama, and Michio Matsuki, Kanagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1984, Ser. No. 612,642

Claims priority, application Japan, May 24, 1983, 58-91828

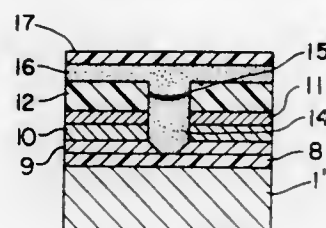
Int. Cl.⁴ H01S 3/19

U.S. Cl. 372-45

6 Claims

1. In a semiconductor laser, the combination comprising a substrate;
a current blocking layer deposited on said substrate;
a first InGaAsP layer deposited on said current blocking

layer, said current blocking and first InGaAsP layers having a groove therein, the current blocking and first InGaAsP layers constituting side walls of said groove;
a first InP layer deposited in said groove;
a second InGaAsP active layer formed in said groove on said first InP layer opposite said first InGaAsP layer, said



second InGaAsP layer having a peripheral portion which is thinner than the center region thereof, the refractive index of said first InGaAsP layer being less than that of said second InGaAsP layer; and
a second InP layer formed on said first and second InGaAsP layers.

4,644,553

SEMICONDUCTOR LASER WITH LATERAL INJECTION

Lodewijk J. Van Ruyven, Eindhoven, Netherlands, and Ferd E. Williams, deceased, late of Newark, Del. (by Anne L. Williams, executrix), assignors to U.S. Philips Corporation, New York, N.Y.

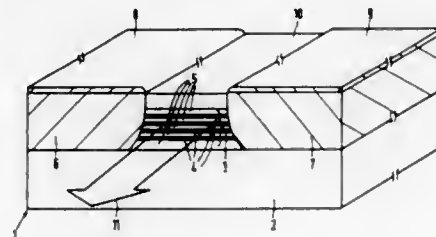
Filed Nov. 14, 1984, Ser. No. 671,390

Claims priority, application Netherlands, Nov. 22, 1983, 8304008

Int. Cl.⁴ H01S 3/19

U.S. Cl. 372-45

8 Claims



1. In a semiconductor device for producing electromagnetic radiation and comprising an active layer-shaped semiconductor region in which the electromagnetic energy is produced, said active region comprising at least one active layer of a first semiconductor material and barrier layers of a second semiconductor material, said active layer being located between said barrier layers, the radiation recombination efficiency of the first semiconductor material being higher than that of the second semiconductor material, said device further comprising two semiconductor regions of the second semiconductor material having, respectively, a first conductivity type and a second conductivity type opposite to the first conductivity type, said active region being bounded laterally on two sides by said two semiconductor regions.

4,644,554

CAPILLARY BORE SUSPENSION

Shinan-Chur Sheng, Sunnyvale, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.

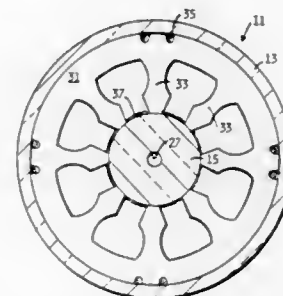
Continuation of Ser. No. 560,722, Dec. 12, 1983. This application

Apr. 29, 1986, Ser. No. 857,226

Int. Cl.⁴ H01S 3/03

U.S. Cl. 372-61

4 Claims



1. A capillary bore laser tube of the kind in which an outer generally cylindrically shaped envelope has an anode at one end and a cathode at the other end and a cavity within the outer envelope and wherein a capillary bore tube is positioned in the cavity for confining the discharge within the bore tube and has a fixed end attached rigidly to one end of the envelope and has a projecting end projecting into the cavity toward the other end of the envelope, and wherein the improvement comprises,

mounting means for supporting the projecting end of the bore in a substantially rigid manner against transverse movement of the projecting end with respect to the envelope and effective to hold the projecting end in radial alignment within the envelope even when the laser tube is subjected to relatively high shock loads while permitting sufficient longitudinal movement of the projecting end with respect to the outer envelope to accommodate differential thermal expansion of the bore tube with respect to the envelope resulting from difference in temperatures between the bore tube and an outer envelope when the laser tube is energized for operation,

said mounting means comprising a spoked structure having an outer periphery rigidly and immovably attached to the inside of the envelope by glass frit, an inner periphery rigidly and immovably attached to the outside of the bore tube by glass frit, and a plurality of spokes which extend radially from said outer periphery to said inner periphery, said spokes being rigid in a transverse direction but having sufficient bending flexibility to allow the spokes to bend enough longitudinally to accommodate the required differential thermal expansion between the bore tube and the envelope and the resulting longitudinal shifting of the projecting end of the bore tube, whereby the capillary bore tube is supported substantially rigidly so that the laser tube has little or no power loss when subjected to relatively high shock loads during operation.

4,644,555

SOLID-STATE LASER DEVICE COMPRISING A FLASH LAMP USED IN OSCILLATION AND AMPLIFICATION IN COMMON

Satoru Amano, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 782,064

Claims priority, application Japan, Sep. 29, 1984, 59-203001

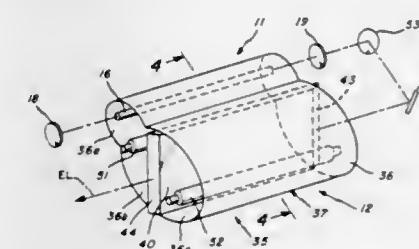
Int. Cl.⁴ H01S 3/093

U.S. Cl. 372-72

18 Claims

1. A solid-state laser device comprising:

a rod-type laser oscillation medium having a first optical axis;
a slab-type laser amplification medium having a pair of principal surfaces substantially parallel to each other and to said first optical axis;
an exciting lamp intermediate between said laser oscillation



medium and said laser amplification medium for activating both of said laser oscillation and said laser amplification media in common; and
a reflector member having a pair of ends opened and an internal wall surface surrounding said laser oscillation medium, said laser amplification medium, and said exciting lamp.

4,644,556

EXTENDED LASER SENSOR

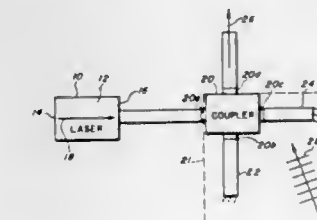
Samuel J. Petuchowski, Bethesda, Md., and Thomas G. Giallorenzi, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1984, Ser. No. 573,752

Int. Cl.⁴ H01S 3/082

U.S. Cl. 372-97

10 Claims



1. An optical sensor sensing various kinds of physical fields, comprising:

a semiconductor diode lasing medium, with a first and a second end facet oriented perpendicularly to the optical axis of said medium, producing coherent optical energy at a lasing frequency, said first facet being highly reflective at the lasing frequency and said second facet being highly nonreflective at the lasing frequency;
a fiber optic coupler with first, second, third and fourth ports for distributing optical energy incident on any one of said ports in predetermined ratios between the remainder of said ports
a first optical fiber or first optical waveguide with a first end optically coupled to the second facet of said lasing medium and with a second end optically coupled to the first port of said coupler, said first optical fiber or said first optical waveguide transmitting optical energy between said lasing medium and said coupler;
a resonant cavity having a response curve, said cavity including said fiber optic coupler a reference optical fiber or a reference optical waveguide with a first end optically coupled to the second port of said coupler, and a second highly reflective end; said cavity also including a sensing arm optical fiber or a sensing arm optical waveguide with a first end optically coupled to said third port of said

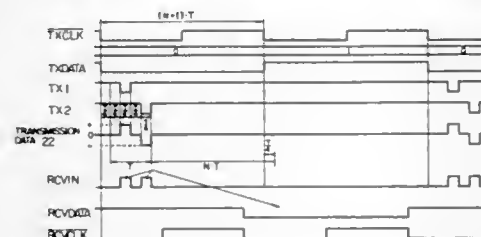
- (e) comparing each of said detected signals with an expected signal for obtaining the first error signals;
- (f) feeding back said first error signals for each of said channels for adaptively and selectively adjusting said first set of transversal filters;
- (g) canceling the interference in said samples by selectively feeding back said first error signals and said output signals to a second set of transversal filters associated with each channel, said first error signals adaptively adjusting said second set of transversal filters, the output from said second set of transversal filters being subtracted from the output of said decoupled signals, the delay taps of said equalizer and the delay taps of said canceler being taken at selected intervals which do not overlap one another.
5. A method for combined cross polarization interference and intersymbol interference equalization and cancellation of a dual polarized signal, said method comprising the steps of equalizing said signal by way of a first set of transversal filters which are adaptively adjusted by first error signals, deriving said first error signals by comparing said equalized signals with expected signals, canceling the interference in said signal by way of a second set of transversal filters which receive as its input said output signals, said second set of transversal filters being adaptively adjusted by the first error signals, said second set of transversal filters generating second error signals, said first and second sets of transversal filters having taps at selected intervals which are different from one another, and subtracting the second error signals from the equalized signals.

4,644,563

DATA TRANSMISSION METHOD AND SYSTEM
Shiro Ohishi, and Masatsugu Shinozaki, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 16, 1982, Ser. No. 389,073
Claims priority, application Japan, Jun. 19, 1981, 56-94930
Int. Cl.⁴ H04L 25/49

U.S. Cl. 375-17

16 Claims



1. A data transmission method of transmitting data represented by respective binary states in series during successive bit data times using a coded signal having a certain recognizable waveform, comprising the steps of:
- on a transmitting side,
 - generating said coded signal in response to one of the binary states of the data to be transmitted;
 - sending said coded signal during a first period of predetermined fixed duration, which forms part of a one bit data time in response to said one of the binary states of the data to be transmitted;
 - not sending any signal during a second remaining period of said one bit data time, said second period having a duration which is variable with transmission speed, while said first period is unchanged regardless of a change of the transmission speed;
 - not sending a signal during the whole duration of said one bit data time in response to the other of the binary states of said data to be transmitted; and
 - on a receiving side,
 - determining the binary state of the received data by the

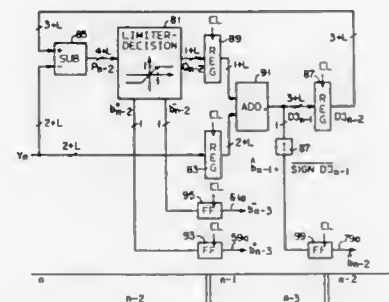
presence or absence of said coded signal sent from the transmitting side.

4,644,564

DECODING THE OUTPUT SIGNAL OF A PARTIAL-RESPONSE CLASS-IV COMMUNICATION OR RECORDING DEVICE CHANNEL
Francols B. Dollvo, Wädenswil; Gottfried Ungerboeck, Langnau, both of Switzerland, and Thomas D. Howell, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 520,666, Aug. 5, 1983, Pat. No. 4,571,734. This application Oct. 15, 1985, Ser. No. 787,277
Int. Cl.⁴ H04L 3/00

U.S. Cl. 375-18

3 Claims



1. An apparatus for maximum-likelihood sequence decoding of sample sequences with intersymbol interference of the partial-response class-IV type, said apparatus forming a decoder processing path responsive to received signals x_n , said path typically including a whitened-matched filter (13), sampling means (15), metric value determining circuitry (19), and storage updating means (21) for survivor sequences, characterized in that:
- the metric value determining circuitry (FIG. 6) comprises:
 - a subtractor (85) having as a first input thereto a sample value y_n ;
 - a unit (81) for limiting the output of the subtractor to a range between +1 and -1;
 - means (91) for combining the output of the limiting unit and the sample value and for providing binary sign magnitude indication of said combined output b_{n-1} ;
 - and
 - a path (87) applying the combining means output DJ_{n-1} as a second input DJ_{n-2} to the subtractor;
- said metric determining circuitry being further characterized in that:
- said combining means output DJ_{n-1} representing a recursive difference survivor metric formed from the range limited difference between the sample value y_{n-1} ; and
 - said subtractor output representing the difference between combining means output DJ_{n-1} and the sample value y_n .

4,644,565

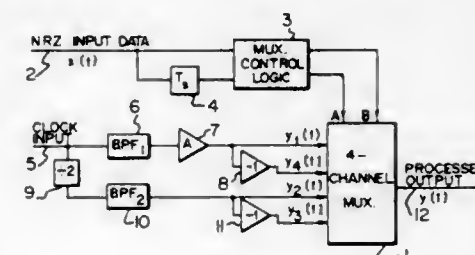
SUPERPOSED QUADRATURE MODULATED BASEBAND SIGNAL PROCESSOR
Jongsoo Seo, and Kamilo Feher, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada
Filed Jun. 12, 1984, Ser. No. 619,740
Int. Cl.⁴ H04B 15/00

U.S. Cl. 375-60

20 Claims

17. A signal processor comprising:
- (a) means for detecting the binary values of each pair of consecutive bits of a digital signal,
 - (b) means for generating a continuous output signal having a

waveshape dependent on the binary values of each pair of said bits, in which said continuous output signal is formed of wave-shapes according to the functions $Y_1 = -A - (1-A) \cos$



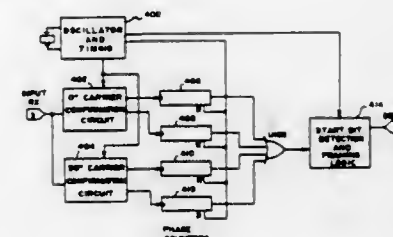
$(2\pi t/T)$, $Y_2 = -\cos(\pi t/T)$, $Y_3 = \cos(\pi t/T)$ and $Y_4 = A + (1-A) \cos(2\pi t/T)$ where T is the input signal symbol duration, and A is an amplitude parameter, which follow in smooth sequence according to the following table:

1st NRZ bit	Following NRZ bit	Output Signal
-1	-1	Y_1
1	-1	Y_2
-1	1	Y_3
1	1	Y_4

4,644,566

LOW ERROR RATE DIGITAL DEMODULATOR
Leonard C. Vercellotti, Oakmont, and William R. Verbanets, Jr., Lum Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 625,862, Jun. 28, 1984. This application Nov. 19, 1985, Ser. No. 799,714
Int. Cl.⁴ H03K 9/00; H04L 7/00
U.S. Cl. 375-94

17 Claims



1. In a digital demodulator for demodulating a carrier input signal on which data is modulated at a predetermined baud rate, the combination of, a signal source of substantially the same frequency as said carrier but asynchronous therewith, means controlled by said signal source for sampling said modulated carrier signal at twice carrier rate, means for continuously storing the last three samples of said sampling means, means operating at carrier rate for producing a first output pulse when the pattern of said last three samples is one-zero-one and producing a second output pulse when the pattern of said last three samples is zero-one-zero, and means for separately counting said first and second output pulses and producing an output signal of predetermined logic value when either the number of first pulses or the number of second pulses counted during a predetermined interval exceeds a predetermined percentage of the number of carrier cycles in said interval.

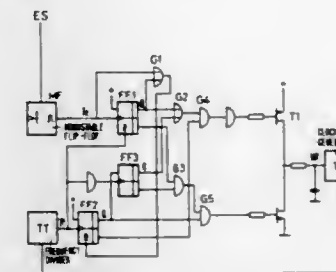
4,644,567

CIRCUIT ARRANGEMENT FOR SYNCHRONIZING OF CLOCK-SIGNAL GENERATED AT A RECEIVING STATION WITH CLOCK-SIGNALS RECEIVED IN TELECOMMUNICATIONS SYSTEMS WITH DIGITAL TRANSMISSION OF INFORMATION
Berkan Artun, Landwehrstrasse 6, D 6100 Darmstadt, and Helmut Goy, Am Lindenbaum 13, D 6969 Nidderau 1, both of Fed. Rep. of Germany
Filed Aug. 20, 1985, Ser. No. 767,478
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1985, 3431419

Int. Cl.⁴ H04L 7/00

U.S. Cl. 375-108

6 Claims



1. In a digital data telecommunication system, a circuit arrangement for synchronizing the clock pulse signal generated at a receiving station with the received data signal, comprising:
- a first (FF1) and a second (FF2) bistable flip-flop each having a set input and a reset (R) input responsive to an edge of a pulse signal and each having a respectively corresponding set output (Q) and reset output;
 - a monostable flip-flop (MF) for producing a fixed width output pulse (Te) in response to the leading edge of a received clock and data pulse signal (ES);
 - a clock pulse generator (TG) for generating a clock pulse signal;
 - means for feeding in part a clock pulse signal (Tj) from said clock pulse generator to the set input of said second bistable flip-flop and to the reset input of said first bistable flip-flop;
 - first logical circuit means coupled to the set output (FF1Q) of said first flip-flop for changing the clock pulse generator control voltage to increase the frequency of said clock pulse generator signal;
 - second logical circuit means coupled to the set output (FF2Q) of said second flip-flop for changing the clock pulse generator control voltage to decrease the frequency of said clock pulse generator signal;
 - third logical circuit means coupled to the output of said monostable flip-flop for setting said first flip-flop and for preventing the generated clock pulse signal from setting said second flip-flop when the received clock and data pulse signal is earlier in phase relationship to the generated clock pulse signal and for preventing the setting of said first flip-flop and permitting the generated clock signal to set the second flip-flop when the received clock and data pulse signal is later in phase relationship to the generated clock pulse signal;
 - a third bistable flip-flop (FF3) having a set and a reset input responsive to an edge of a pulse signal and having a respectively corresponding set output (FF3Q) and a reset output;
 - fourth logical circuit means coupled to the outputs of said third flip-flop for preventing said first and second logical circuit means from changing the clock pulse generator control voltage to thereby prevent change in the frequency of said clock pulse generator signal when said third flip-flop is in the set condition; and
 - fifth circuit means coupled to the set and reset inputs of said

third flip-flop for setting said third flip-flop and holding it set during a prolonged gap in the received signal (ES).

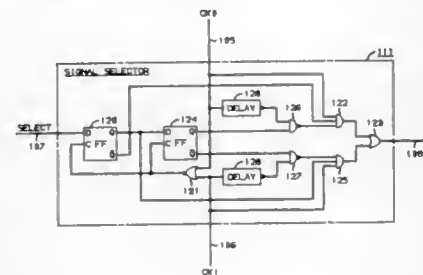
4,644,568

TIMING SIGNAL DISTRIBUTION ARRANGEMENT
Ronald J. Canniff, Naperville, and Mike A. Derrenberger, Aurora, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 28, 1985, Ser. No. 717,282
Int. Cl.⁴ H03K 17/00

U.S. Cl. 375-108

10 Claims



1. In combination, a source of first and second timing signals, said timing signals comprising alternating logic levels, wherein said first and said second timing signals are frequency synchronous; means for generating a first selection signal defining said first timing signal; means responsive to said first selection signal and said first timing signal for alternating the logic level of an outgoing timing signal; means for generating a delayed timing signal by delaying said second timing signal; means for changing said first selection signal to a second selection signal defining said second timing signal; and means responsive to said second selection signal for changing the logic level of said outgoing timing signal when the delayed timing signal changes, for one logic level change.

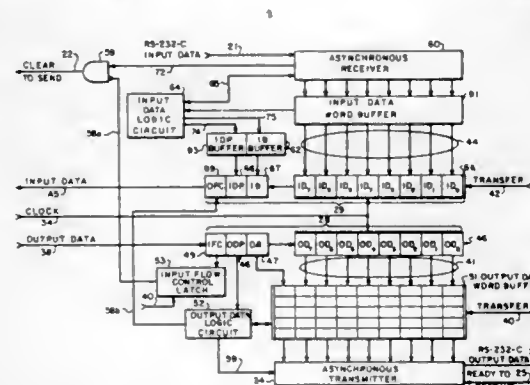
4,644,569

COHERENT DATA WORD TRANSFER BY AN ASYNCHRONOUS GATEWAY DATA PORT
Jeffery H. Brown, San Diego, and Roger Phillips, Cardiff by the Sea, both of Calif., assignors to Teleplex Corporation, San Diego, Calif.

Filed Aug. 6, 1984, Ser. No. 637,872
Int. Cl.⁴ G06F 5/00; H04L 7/00

U.S. Cl. 375-118

15 Claims



1. A gateway data port for coherently transferring multiple-bit input data words in series as part of an input data chain onto an input data line that serially connects the gateway data port and other data ports to a receiver, wherein the data words are

provided to the gateway data port asynchronously with said transfer, said gateway data port comprising

- a serial block of adjacent input data register stages defining a plurality of data word bit positions in said input data chain;
- a "data present" bit register stage in series with the data word register stages and defining a data present bit position in said input data chain;
- an input data word buffer having a corresponding plurality of bit buffer cells connected to the input data word register stages for buffering the loading of said data word into the data register stages;
- a data present bit buffer connected to the data present register stage for buffering the loading of a said data present bit into the data present bit register stage;
- an asynchronous receiver for receiving said data word from an input data source and connected to the input data word buffer for loading said input data word bits into the data word bit buffer cells upon command;
- a logic circuit connected to the asynchronous receiver, to the input data word buffer and to the data present bit buffer for commanding the loading of said data word from the asynchronous receiver into the data word buffer when a complete data word is received from said data word source and the data word bit buffer cells are empty, and for commanding the loading of a data present bit into the data present bit buffer when a said input data word is loaded into the input data word buffer;
- means for loading the contents of the input data word buffer and the data present bit buffer into the data register stages and the data present bit register stages respectively in response to a transfer signal; and
- means for serially shifting the contents of the register stages onto said input data line.

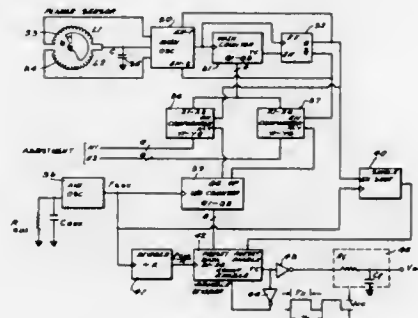
4,644,570

SENSOR AMPLIFICATION AND ENHANCEMENT APPARATUS USING DIGITAL TECHNIQUES
Amnon Brosh, Montvale, and Wolf S. Landmann, Fairlawn, both of N.J., assignors to Bitronics, Inc., Montvale, N.J.

Filed Sep. 20, 1985, Ser. No. 778,230
Int. Cl.⁴ G01M 3/00

U.S. Cl. 377-17

20 Claims



19. A digital sensor interface apparatus, for operation in conjunction with sensors, consisting of at least two sensing elements, which lend themselves to a complementary variable frequency operation, whereby the frequency of one sensing element is increased by a given amount while the other decreases by the same amount as a result of a change in the sensor input parameter,
- digital logic means for generating an output signal consisting of a series of pulses with a duty cycle representing the ratio between the difference of the frequencies of the two sensing elements to their sum,

digital logic means for increasing said duty cycle of said output pulses to provide an apparent output amplification.

4,644,571

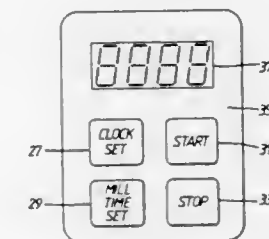
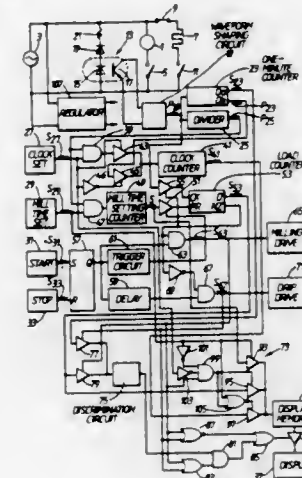
TIMER

Ryuho Narita, and Masahiro Imai, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 28, 1985, Ser. No. 770,091

Claims priority, application Japan, Sep. 14, 1984, 59-193083
Int. Cl.⁴ H01H 43/02; A47J 31/52

U.S. Cl. 377-56

7 Claims



1. A timer device for controlling a load comprising: clock counter means for counting clock pulses having a predetermined period;
- load counter means for counting load pulses having a predetermined period;
- means, responsive to said load counter means, for operating said load;
- means for displaying a count value of said load counter means when said load counter means is counting and for displaying a count value of said clock counter means otherwise; and
- control means for making the display of the count value of said load counter means in said displaying means flash in step with the changing of the count value of said load counter means while said load counter means is counting.

4,644,572

FILL AND SPILL FOR CHARGE INPUT TO A CCD
David N. Lambeth, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1985, Ser. No. 797,093
Int. Cl.⁴ G11C 19/28; H01L 29/78

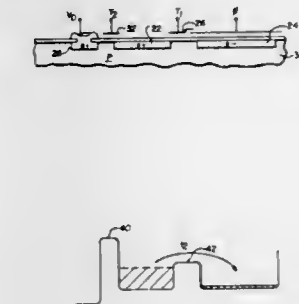
U.S. Cl. 377-60

6 Claims

1. A method for introducing a controlled signal charge into the potential well of a CCD, the CCD including an input diode, means for defining a metering well, a first transfer gate for forming a potential barrier between the input diode and the

metering well and a second transfer gate for forming a potential barrier between the metering well and the potential well of the CCD; comprising the steps of:

- a. charge coupling the metering well to the input diode by applying a voltage to the first transfer gate to lower the potential barrier thereunder and applying a voltage to the second transfer gate to raise the potential barrier thereunder;
- b. filling the metering well by pulsing the input diode;
- c. allowing a subthreshold current of thermally activated charge to transfer out of the metering well back into the input diode over the potential barrier formed by the first transfer gate for a time t_1 ;



- d. charge coupling the metering well to the potential well of the CCD by applying a voltage to the first transfer gate to raise the potential barrier thereunder and a voltage to the second transfer gate to lower the potential barrier thereunder to the same level that the potential barrier under the first electrode was lowered in step a; and
- e. allowing a subthreshold current of thermally activated charge to transfer out of the metering well over the potential barrier formed by the second transfer gate into the potential well of the CCD for a time t_2 , whereby the amount of charge transferred to the potential well of the CCD is approximately proportional to the log of the ratio t_2/t_1 .

4,644,573

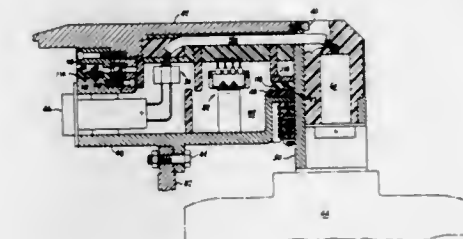
COMPUTED TOMOGRAPHY METHOD AND APPARATUS

Anthony Palermo, South Euclid, and Anton Z. Zupancic, Kirtland, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Continuation of Ser. No. 76,193, Sep. 17, 1979. This application
Jan. 19, 1981, Ser. No. 226,203
Int. Cl.⁴ G03B 41/16

U.S. Cl. 378-15

9 Claims



1. CT scanner apparatus comprising: (a) a gantry arrangement;
- (b) a rotatable assembly mounted on the gantry and defining

- a through patient aperture, said assembly including an x-radiation source;
- (c) a slip ring assembly around the aperture and having certain portions connected to the gantry and other portions forming a part of the rotating assembly for rotation relative to the certain portions, the slip ring assembly including at least one slip ring;
- (d) said other portions being electrically connected to the x-radiation source;
- (e) input means connected to the certain portions for receiving a high voltage electrical input and for transferring the electrical input to the source via the slip ring assembly;
- (f) drive means for rotating the rotatable assembly relative to the gantry;
- (g) said slip ring assembly being configured to provide a cavity for maintaining an insulating fluid in contact with substantially the entire slip ring as the slip ring portions rotate relatively; and,
- (h) further brushes and slip rings for low voltage connections to said rotatable assembly, said further brushes and slip rings being external of the cavity for insulating fluid and said further slip rings are concentrically disposed with respect to one another.

4,644,574

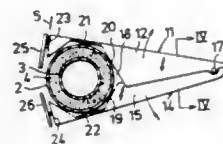
METHOD AND APPARATUS FOR DETECTING HETEROGENEITIES IN PIPE INSULATION WITH X-RAYS

Stig Dahn, S. Skogsrundan 47, S-184 00 Akersberga, Sweden
Filed Jul. 10, 1985, Ser. No. 753,486

Claims priority, application Sweden, Aug. 27, 1984, 84042480
Int. Cl.⁴ G01B 15/06

U.S. Cl. 378—58

7 Claims



1. A method of detecting heterogeneities in foamed plastic insulation material (4) surrounding a tubular steel pipe (3) or in joints between adjacent and abutting sections of such insulation material, said insulation material in turn being surrounded by and encased within a tubular plastic jacket (2) radially spaced from the pipe, comprising the steps of:

- (a) disposing a source (1) of low energy X-ray radiation at a position on one side of the jacket and radially outwardly spaced therefrom such that an axis (6) of a conical beam of radiation emitted by said source lies in a plane substantially perpendicular to a longitudinal axis (7) of the pipe,
- (b) disposing a sheet of X-ray sensitive material (5) on another, opposite side of the jacket and substantially perpendicular to said beam axis such that radiation from the source passes through at least one chordal section (9, 10) of insulation and jacket material tangent to the pipe to expose the sheet with an image thereof, with radiation from the source impinging on the pipe being blocked and absorbed thereby, and
- (c) disposing both the source and a fresh sheet of X-ray sensitive material in respective rotationally displaced positions on opposite sides of the pipe to expose the fresh sheet with an image of at least one different chordal section of insulation and jacket material, such that successive, rotationally advanced images are obtained to enable the detection of heterogeneities in the full circumference of the insulation material.

4,644,575

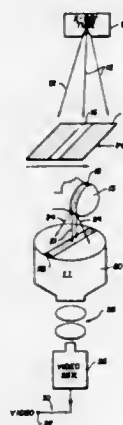
ELECTRONIC SLIT COLLIMATION

Robert A. Kruger, Sandy, and James A. Sorenson, Salt Lake City, both of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Nov. 21, 1984, Ser. No. 673,844
Int. Cl.⁴ H05G 1/64

U.S. Cl. 378—99

15 Claims



9. Electronic slit collimation apparatus for discriminating between primary and scattered radiation emerging from an object during an imaging procedure where a source of radiation directs a beam of radiation towards the object and interposed radiation absorption means, including a slit type aperture oriented transversely across the object which moves between the source and object permitting a narrow beam of radiation to pass through said object to a detector which detects both primary and scattered radiation emerging from the object, comprising:

- means for scanning said radiation absorption means over said object;
- means for generating a video image of the detected radiation including means for generating a sequence of frames of video signals wherein each frame includes an array of pixels providing respective pixel signals;
- means for retaining pixel signals of the primary radiation which forms a shadow of said slit type aperture while rejecting scattered radiation pixel signal existing outside of said shadow, said means for retaining further comprising digital storage means connected in a recursive loop and being operable to store a frame of digital pixel signals therein, said recursive loop including a first digital multiplier coupled to the output of said digital storage means and being operable to weight the pixel signals of said stored frame by a first multiplication factor, a pixel signal adder having an output coupled to the input of said storage means, said pixel signal adder further having an input coupled to the output of said first signal multiplier, a second digital signal multiplier having an input coupled to the digital pixel signals of a successive frame and being operable to weight incoming pixel signals of said successive frame by a second multiplication factor and provide an output thereof to another input of said adder, respective weighted pixels of said stored frame and said successive frame being summed together by said pixel signal adder and coupled to the input of said storage means, and logic means responsive to the respective pixel signal levels of said stored frame and said successive frame and operating in accordance with a predetermined logic expression to control the value of said first and second multiplication factors of said first and second signal multipliers such that when the amplitudes of said successive frame pixel signals are greater than the amplitudes of the stored frame pixel

signals, the first multiplication factor is made less than said second multiplication factor, and vice-versa.

bearing so that the axial weight distribution on the axial median plane of the rotary anode system coincides sub-

4,644,576

METHOD AND APPARATUS FOR PRODUCING X-RAY PULSES

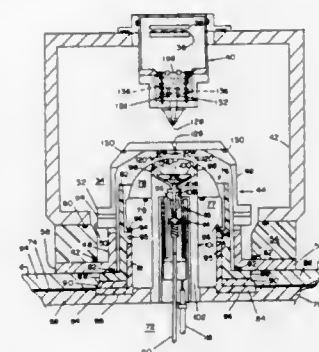
Birol Kuyel, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Apr. 26, 1985, Ser. No. 727,470

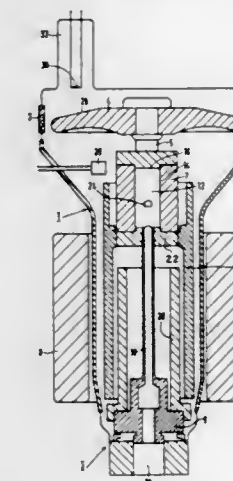
Int. Cl.⁴ H05H 1/34

U.S. Cl. 378—119

13 Claims



6. An apparatus for producing x-rays comprising: means for discharging a gas through each of a plurality of inclined passageways to produce a plurality of inclined gas streams which form a shell whose surface is traversed by each of the inclined streams at a predefined angle relative to a longitudinal path along the surface which is parallel to the axis of the shell; and means for ionizing the shell to yield a dense volume of plasma which radiates x-rays.



4,644,578

DETECTION ARRANGEMENTS FOR X-RAY SECURITY SYSTEMS

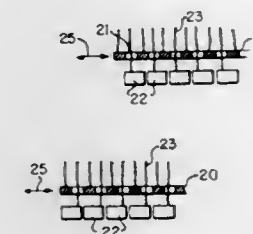
Francis R. Paolini, Stamford, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,421

Int. Cl.⁴ G03B 41/16

U.S. Cl. 378—146

8 Claims



1. In an object sensing device comprising a fan-beam of radiation, means for continually passing different objects through said fan-beam, a linear array of detector elements arranged to pick-up changes in intensity of said fan-beam caused by said objects, circuit means for sampling said detector elements, and electronic means for imaging said objects, the improvement comprising an oscillating mask between said objects and said detector elements, said mask being adjacent said detector elements, said mask having openings in registration with at most one-half of each of said detector elements, and said mask oscillating and moving within the area of each of said detector elements to expose alternate half portions of each of said detector elements.

4,644,577

X-RAY TUBE COMPRISING AN ANODE DISC ROTATABLY JOURNALLED ON A HELICAL-GROOVE BEARING

Jan Gerkema; Johannes L. M. Hagen, and Johan A. Rietdijk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1985, Ser. No. 689,888

Claims priority, application Netherlands, Jan. 10, 1984, 8400072

Int. Cl.⁴ H01J 35/10

U.S. Cl. 378—133

9 Claims

1. In an X-ray tube comprising
- (a) a rotary anode system comprising an anode disc, a rotary shaft, the anode disc being mounted on the shaft, a bearing sleeve arranged about the rotary shaft, and a rotor connected to the bearing sleeve; and
- (b) a metal-lubricated helical-groove bearing; the improvement wherein the rotary anode system is journalled at one side only by means of the helical-groove

4,644,579

SHUNT REGULATOR FOR HANDS-FREE TELEPHONE

Edward J. W. Whittaker, Bishops Cleeve, United Kingdom, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 18, 1985, Ser. No. 746,151

Claims priority, application United Kingdom, Jun. 28, 1984, 8416413

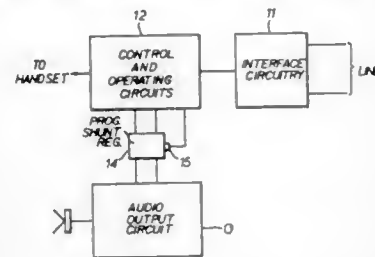
Int. Cl.⁴ H04M 1/60

U.S. Cl. 379—388

4 Claims

1. A shunt regulator circuit for a telephone instrument con-

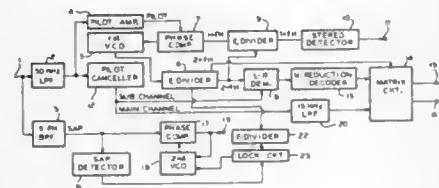
ected to a telephone line for controlling a current supply to a loudspeaker amplifier in said telephone instrument, the circuit including said amplifier which is responsive to an input signal representative of the magnitude of current on the line, and a



voltage regulator coupled in parallel with said current supply, such that, when the line current is less than a predetermined value, the output voltage of said regulator is progressively reduced with diminishing line current so as to disable said amplifier.

4,644,580
SOUND-MULTIPLEXED TV SIGNAL DEMODULATOR HAVING ELECTRICALLY INDEPENDENT STEREO AND SAP DEMODULATION MEANS
Masashi Akabane, Tokyo, Japan, assignor to NEC Corporation, Japan

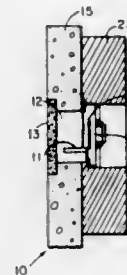
Filed Jul. 12, 1985, Ser. No. 754,817
Claims priority, application Japan, Jul. 12, 1984, 59-144681
Int. Cl.⁴ H04H 5/00
U.S. Cl. 381-4 13 Claims



1. A demodulator for demodulating a sound-multiplexed TV signal including a main channel signal of an L+R signal, a stereo pilot signal, a sub-channel signal of a modulated L-R signal and a SAP signal, comprising:
a carrier generator producing a carrier signal in synchronism with said stereo pilot signal, said carrier generator including a first closed loop of a first voltage controlled oscillator, a first frequency divider and a first phase comparator;
an L-R demodulator demodulating said sub-channel signal by use of said carrier signal to produce an L-R signal;
a matrix circuit mixing said L+R and L-R signals to separate L and R signals;
a SAP demodulator for demodulating said SAP signal, said SAP demodulator including a second closed loop of a second phase comparator and a second voltage controlled oscillator;
a SAP detector for detecting a reception of said SAP signal, said SAP detector producing a detection signal when said SAP signal is not received; and
a means for fixing the oscillation frequency of said second voltage controlled oscillator at a reference frequency which is an integer times as high as a frequency of said stereo pilot signal in response to said detection signal.

4,644,581
HEADPHONE WITH SOUND PRESSURE SENSING MEANS
Roman Sapiejewski, Boston, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Jun. 27, 1985, Ser. No. 749,575
Int. Cl.⁴ H04R 1/10; H04M 1/05, 3/00
U.S. Cl. 381-74 6 Claims



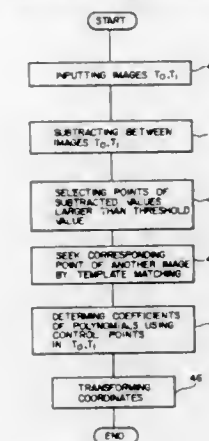
1. In a headphone apparatus comprising driver means for converting an input electrical signal into an acoustical output signal, said driver means having a vibratable diaphragm on one side thereof, headphone cup means, cushion means having a central opening defining an acoustic cavity, said cushion means and said diaphragm having a common axis, said cushion means, when mounted at a user's outer ear, forming a seal which inhibits air flow between said acoustic cavity and a region outside said headphone apparatus to attenuate spectral components through the middle frequency range, a baffle for supporting said driver means, an electroacoustical transducing means separate from said driver means for transducing an acoustical pressure signal in said acoustic cavity to a corresponding transduced electrical signal, said electroacoustical transducing means being adjacent to said diaphragm on a side opposite the driver means but sufficiently close to the acoustic cavity so that said transducing means is responsive to the pressure in said acoustic cavity near the ear, the improvement comprising, said electroacoustical transducing means being displaced from said common axis in a plane generally parallel to said common axis and generally perpendicular to the plane of the driver means vibratable diaphragm.

4,644,582
IMAGE REGISTRATION METHOD
Koichi Morishita, Kawasaki; Shinji Omori, Kodaira; Shimbu Yamagata, Kawasaki; Tetsuo Yokoyama, Nakano; Koichi Sano, Yokohama, and Akira Ogushi, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,323
Claims priority, application Japan, Jan. 28, 1983, 58-12167
Int. Cl.⁴ G06K 9/00
U.S. Cl. 382-6 4 Claims

1. For use in a digital subtraction method of extracting vascular tracks by conducting subtractions between a first X-ray image before injection of a contrast medium and second X-ray image subsequent to the injection of the contrast medium, an image registration method comprising the steps of:
(a) dividing said first and second X-ray images into a plurality of blocks;
(b) from each of said blocks extracting a standard point for registration;
(c) adjusting positional discrepancies between corresponding blocks of said first and second X-ray images by transforming the coordinates thereof on the basis of the extracted standard point; and
(d) modifying the transformed coordinates in prescribed portions of said blocks along respective interfaces thereof with adjacent blocks so as to effect a smoothing of image features connected through said interfaces;
wherein said standard point extracting step (b) includes the

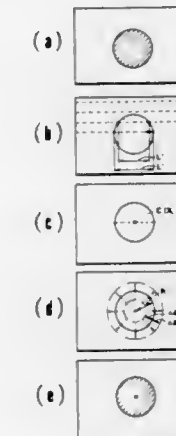
sub-steps of: determining the difference between said first and second X-ray images; for each of plural picture elements of which said images are comprised comparing the



determined difference in each picture element with a predetermined threshold value; and selecting as said standard point the point which remains as a result of the threshold comparison.

4,644,583
METHOD OF IDENTIFYING CONTOUR LINES
Yuji Watanabe, and Kozo Kato, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Selsakusho, Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 691,016
Claims priority, application Japan, Jan. 13, 1984, 59-4451;
Feb. 15, 1984, 59-26580
Int. Cl.⁴ G06K 9/48 6 Claims

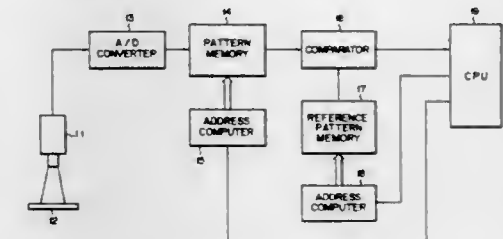


1. A method of identifying a contour line comprising the steps of:
searching a center position candidate point of a substantially circular contour line among input picture images in a pre-determined field of view in which said substantially circular contour line is present;
defining a region bounded by a circle having a center at said center position candidate point and a minimum permissible radius which is determined based on said searched center position candidate point and the radial distance from said point to the contour line, and a circle having a maximum permissible radius larger than said radial distance;
scanning picture images in said region in a plurality of radial directions extending from said center position candidate point;
detecting presence and absence of contour candidate points

at which brightness changes abruptly during the scanning; and
identifying that said substantially circular contour line is present in the picture images of said region when the number of said contour candidate points exceeds a predetermined set number.

4,644,584
PATTERN POSITION DETECTING APPARATUS
Sumio Nagashima, 2-114-7, Ushioda-cho, Tsurumi-ku; Etsuji Suzuki, 2580-10, Nakano-cho, Totsuka-ku, both of Yokohama-shi; Kiyomu Chiyoda, 1-1-3, Teraokita, Ayase-shi, Kanagawa-ken, and Masahiro Kodama, 1-25-4-405, Deiki, Kanazawa-ku, Yokohama-shi, all of Japan

Filed May 16, 1983, Ser. No. 495,128
Claims priority, application Japan, May 19, 1982, 57-84316
Int. Cl.⁴ G06K 9/62 4 Claims



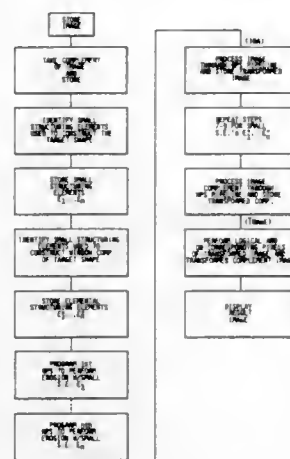
1. A pattern position detecting apparatus comprising:
image pick-up means for receiving an image of a pattern to be examined and outputting an image signal corresponding to the pattern;
memory means connected to said image pick-up means for storing all image signal components of said image signal, which are required for a pattern position detection, as examination pattern information constructed by pattern data bits corresponding to a picture element matrix;
addressing means connected to said memory means for designating addresses of said memory means such that a pattern section including the bits of a specified number less than the number of the bits constituting said pattern information, is shifted at least two bits in any one of horizontal and vertical directions at a time and at least one bit in the other direction at a time, and reading out, for each shifting operation, said pattern data bits from said pattern section;
reference pattern data outputting means for producing a reference pattern data corresponding to a target pattern and having the bits corresponding in number to the bits of said pattern section; and
comparator means connected to said memory means and said reference pattern data outputting means for comparing the pattern data of said pattern section with said reference pattern data and for detecting the position of the target pattern from the degree of coincidence there between.

4,644,585
METHOD AND APPARATUS FOR AUTOMATIC SHAPE RECOGNITION
Thomas R. Crimmins, and William M. Brown, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 11, 1985, Ser. No. 700,050
Int. Cl.⁴ G06H 9/20 5 Claims

1. A machine implementable method for detecting shapes in a first image represented by a matrix of digital data signals including the following steps:

- (a) storing the first image matrix;
 (b) computing the complement of the first image matrix and storing the complement image matrix;
 (c) creating a first structuring element representative of the shape to be recognized, the first structuring element being represented by a matrix of digital data signals slightly larger in dimension than the shape;
 (d) creating a second structuring element equal to the window complement of the first structuring element;
 (e) electronically eroding the first image matrix with the first structuring element to form a first transformation matrix;



- (f) storing the first transformation matrix;
 (g) electronically eroding the complement image matrix with the second structuring element to form a second transformation matrix;
 (h) storing the second transformation matrix; and
 (i) combining the corresponding points of the first and second transformation matrices to form a result matrix wherein each non-zero point represents the location of the desired shape in the first image.

4,644,586

COMBINATION STERILIZATION AND INFECTIOUS WASTE DISPOSAL CONTAINER

Lonnie W. Padgett, Acworth, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 25, 1984, Ser. No. 664,463

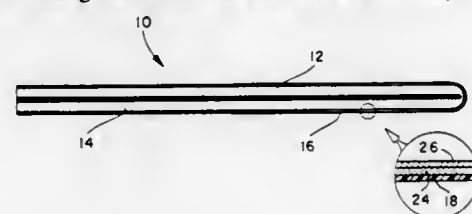
Int. Cl.⁴ B65D 33/01

U.S. Cl. 383-102

5 Claims

1. Container adapted to enclose material contents alternatively under conditions permitting sterilization or under sealed substantially gas and liquid impervious conditions comprising, first and second sections comprising a nonwoven thermoplastic flexible web that is pervious to sterilants but substantially impervious to bacteria,

each of said first and second sections capable of completely enclosing said contents,
 a substantially vapor and liquid impermeable barrier film layer substantially completely covering the nonwoven web forming one of said first and second sections,



said container being adapted to permit transfer of said contents from one of said first and second sections to the other and to seal between said first and second sections.

4,644,587

OPTICAL DATA COMMUNICATION SYSTEM

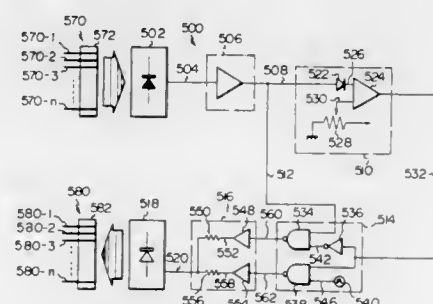
Yoshifusa Takahashi, Ayase; Hiroshi Kadonaga; Satoshi Ishikawa, both of Yokohama, and Junichi Kikuchi, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
 Filed Nov. 22, 1982, Ser. No. 443,719

Claims priority, application Japan, Dec. 3, 1981, 56-194913

Int. Cl.⁴ H04B 9/00

U.S. Cl. 455-601

6 Claims



6. An optical data communication system comprising a plurality of terminals operatively interconnected by optical fibers and an optical star repeater, the system being characterized in that the star repeater comprises collision detector means for detecting a collision condition in which signals are received by the star repeater from at least two of the terminals simultaneously;

the collision detector means comprising means for inhibiting transmission of signals from the star repeater to the terminals for the duration of the collision condition;

the collision detector means further comprising means for controlling the star repeater to transmit a collision signal to the terminals upon detection of the collision condition.

DESIGN PATENTS

GRANTED FEB. 17, 1987

ERRATA

For	See
CLASS	PATENT NO.
D34-021	288,331
D24-001	288,368

VOL
1075

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DESIGNS

FEBRUARY 17, 1987

288,260

DISPOSABLE BABY BIB

Belinda H. Anderson, and Thomas E. Anderson, both of 3147 S.
2850 East, Salt Lake City, Utah 84109

Filed Nov. 26, 1984, Ser. No. 675,080

Term of patent 14 years

U.S. Cl. D2—229



288,261

SHOE

Jorge E. M. Palacio, Col. del Valle, Mexico, assignor to Calzado
Puma, S.A. de C.V., Edo. de Mexico, Mexico

Filed Oct. 21, 1983, Ser. No. 544,354

Term of patent 14 years

U.S. Cl. D2—309



288,262

SHOE CLEAT

Hiroshi Yokoishi, Kobe, Japan, assignor to ASICS Corporation,
Kobe, Japan

Filed Sep. 24, 1984, Ser. No. 654,181

Claims priority, application Japan, Jun. 12, 1984, 59-24181

Term of patent 14 years

U.S. Cl. D2—317



288,263

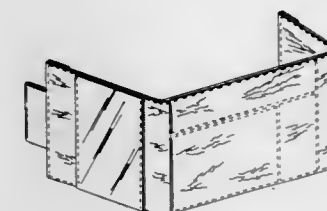
COMBINED BILLFOLD, CARD CASE AND MEMO PAD HOLDER

Guy S. Pagano, 973 Krehl Ave., Girard, Ohio 44420

Filed May 18, 1984, Ser. No. 611,904

Term of patent 14 years

U.S. Cl. D3—56



288,264

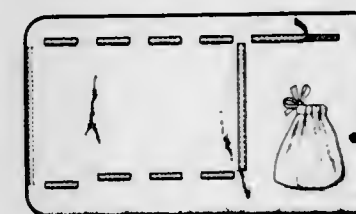
ROLL TYPE CASE OR SIMILAR ARTICLE

Lorraine M. Courtwright, Apt. H-11 Churchill Gardens Apts.,
Port Jervis, N.Y. 12771, and Roberta A. Freeland, R.D. #1,
Spencer, N.Y. 14883

Filed Mar. 19, 1984, Ser. No. 591,317

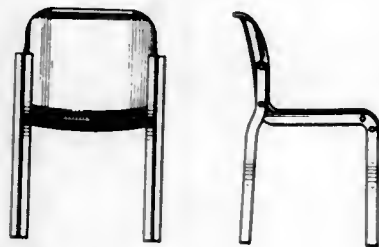
Term of patent 14 years

U.S. Cl. D3—75



288,265
CHAIR

Just B. Meyer, Rhenen, Netherlands, assignor to Kembo B.V., Veenendaal, Netherlands
Filed Mar. 13, 1984, Ser. No. 588,978
Term of patent 14 years
U.S. Cl. D6—375

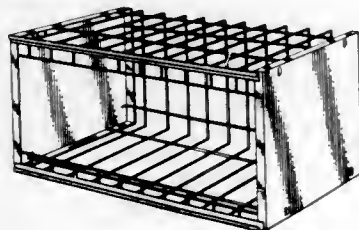


288,268
FOOTBALL BED COVERING

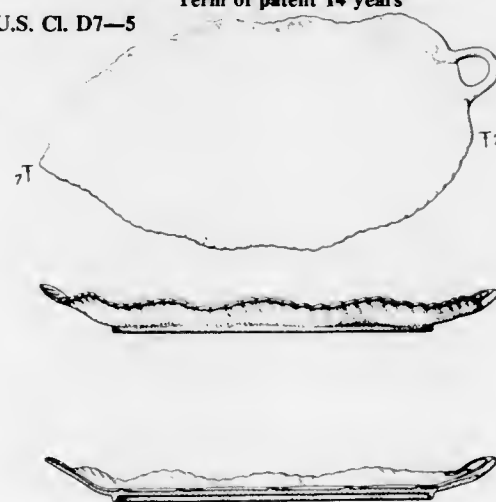
Bobbie Durham, 12721 Greenriver Dr., Houston, Tex. 77044
Filed Oct. 1, 1984, Ser. No. 656,243
Term of patent 14 years
U.S. Cl. D6—603



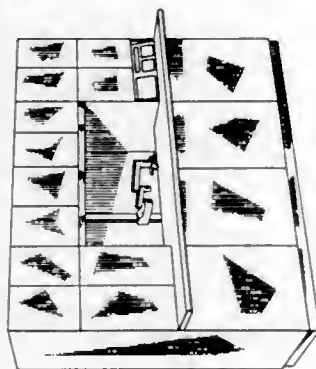
288,266
MERCHANDIZING RACK MODULE
Duncan F. Campbell, Toronto, Canada, assignor to Reed Inc., Toronto, Canada
Filed Oct. 29, 1984, Ser. No. 666,285
Term of patent 14 years
U.S. Cl. D6—462



288,269
HORS D'OEUVRE PLATTER
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jun. 4, 1984, Ser. No. 616,935
Term of patent 14 years
U.S. Cl. D7—5

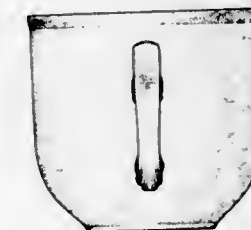


288,267
AUTOMATED BARTENDER WALL UNIT
Ronald K. Meyer, 617 Seventh St., San Francisco, Calif. 94103
Filed Feb. 3, 1984, Ser. No. 576,543
Term of patent 14 years
U.S. Cl. D6—481



288,270
CUP

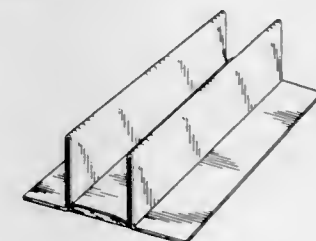
Alfred Winterling, Rehau, Fed. Rep. of Germany, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jan. 16, 1984, Ser. No. 570,742
Term of patent 14 years
U.S. Cl. D7—9



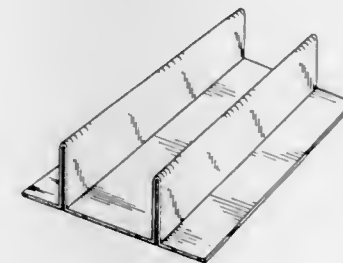
288,272
CULINARY PRESS FOR GARLIC AND SIMILAR MATERIALS
Willi Steinko, Nassau, Fed. Rep. of Germany, assignor to Mike & Kremmel Limited, Kowloon, Cambodia
Filed Jan. 11, 1984, Ser. No. 569,947
Claims priority, application United Kingdom, Jul. 14, 1983, 1014986
Term of patent 14 years
U.S. Cl. D7—47



288,273
FOOD SUPPORT
Gertrude R. Gould, 2334 Cherokee La., Winston-Salem, N.C. 27103
Filed Apr. 2, 1984, Ser. No. 595,942
Term of patent 14 years
U.S. Cl. D7—76



288,271
GOBLET OR SIMILAR ARTICLE
Ralph R. Becker, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 19, 1984, Ser. No. 662,939
Term of patent 14 years
U.S. Cl. D7—13



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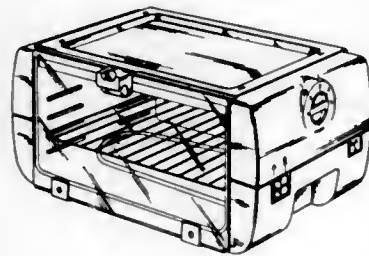
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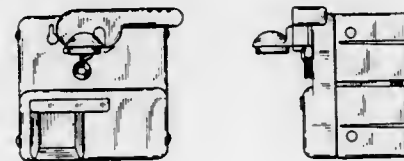
288,274
ELECTRIC OVEN
Jacques Mayeur, Seynod, France, assignor to Tefal S.A.,
Rumilly, France
Filed Jul. 27, 1984, Ser. No. 635,436
Claims priority, application France, Feb. 6, 1984, 840488
Term of patent 14 years
U.S. Cl. D7—348



288,276
CARRIER FOR LARGE FLAT SHEETS OF BUILDING MATERIALS
Eugene U. Harney, 501 Galena St., Aurora, Colo. 80010
Filed Aug. 20, 1984, Ser. No. 642,387
Term of patent 14 years
U.S. Cl. D8—14



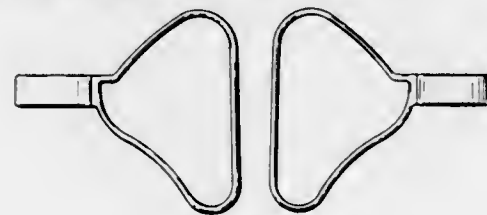
288,277
ELECTRIC CAN OPENER
Davin Stowell; Tucker Viemeister, both of New York, N.Y., and
Thomas Dair, Hoboken, N.J., assignors to Sanyei Corpora-
tion, Japan
Filed Jan. 30, 1984, Ser. No. 574,925
Term of patent 14 years
U.S. Cl. D8—36



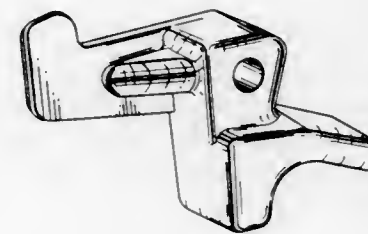
288,275
GARDEN SHEAR
Christopher R. B. Harrison, High Wycombe, England, and Alan
K. Pittaway, Portcawl, Wales, assignors to Wilkinson Sword
Limited, High Wycombe, England
Filed Nov. 30, 1984, Ser. No. 676,682
Claims priority, application United Kingdom, Jun. 16, 1984,
1020343
Term of patent 14 years
U.S. Cl. D8—5



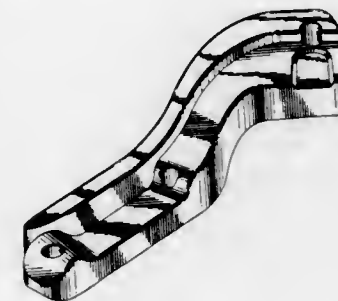
288,278
HANDLE OR SIMILAR ARTICLE
Stephen A. Bright, 636 Gateshead Rd., Troy, Ohio 45373
Filed Aug. 24, 1984, Ser. No. 644,061
Term of patent 14 years
U.S. Cl. D8—107



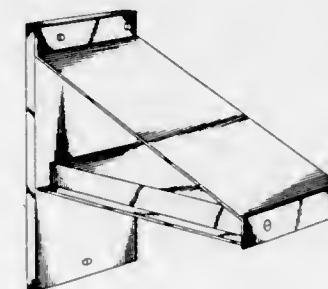
288,279
FIREARM MAGAZINE RELEASE MECHANISM
M. Gaines Chesnut, 17219 W. 57th Pl., Golden, Colo. 80401
Filed May 31, 1984, Ser. No. 615,825
Term of patent 14 years
U.S. Cl. D8—349



288,280
TRANSMISSION ADAPTOR BRACKET
Robert E. Schnable, Box 533, Huron, S. Dak. 57350
Filed Sep. 17, 1984, Ser. No. 650,788
Term of patent 14 years
U.S. Cl. D8—354



288,281
WALL RACK
Victor R. Spicer, Auckland, New Zealand, assignor to Planhorse
International (NZ) Limited, Auckland, New Zealand
Filed Aug. 13, 1984, Ser. No. 640,362
Claims priority, application New Zealand, Feb. 13, 1984,
18920
Term of patent 14 years
U.S. Cl. D8—373



288,282
HANGER BRACKET FOR A FLOWER POT OR SIMILAR ARTICLE
Gerald C. Sheets, P.O. Box 700386, Tulsa, Okla. 74170
Filed Dec. 13, 1984, Ser. No. 681,092
Term of patent 14 years
U.S. Cl. D8—373



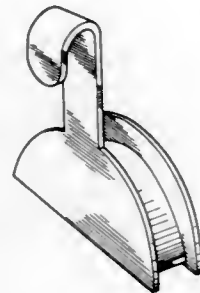
288,283
OIL FILTER MOUNTING BRACKET
Fred P. Mattson, Box 207, Elmwood, Wis. 54740
Filed Jun. 1, 1984, Ser. No. 616,197
Term of patent 14 years
U.S. Cl. D8—373



288,284
**HOOK IMPLEMENT FOR HOLDING DISPOSABLE
 RECEPTACLE LINERS**
 Richard Courtemanche, 5129 Kenside Ct., Annandale, Va.
 22003, and Timothy D. McCormack, 4026 Poplar St., Fairfax,
 Va. 22030

Filed Jul. 30, 1985, Ser. No. 760,471
 Term of patent 14 years

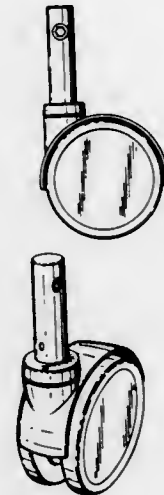
U.S. Cl. D8—373



288,286
CASTOR
 Stafford T. Screen, Stourbridge, England, assignor to Colson
 Castors (Europe) Limited, West Bromwich, England
 Filed Sep. 13, 1984, Ser. No. 650,001
 Claims priority, application United Kingdom, Mar. 27, 1984,
 1018744

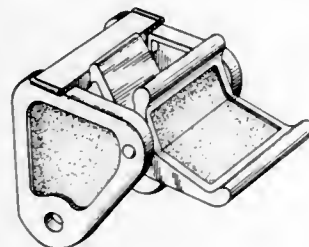
Term of patent 14 years

U.S. Cl. D8—375



288,285
CASTER BRAKING DEVICE
 Jimmie D. Simmons, 1417 Overhill, Jonesboro, Ark. 72401
 Filed May 2, 1985, Ser. No. 730,665
 Term of patent 14 years

U.S. Cl. D8—375



288,287
CASTOR
 Stafford T. Screen, Stourbridge, England, assignor to Colson
 Castors (Europe) Limited, West Bromwich, England
 Filed Sep. 13, 1984, Ser. No. 649,999
 Claims priority, application United Kingdom, Mar. 15, 1984,
 10118522

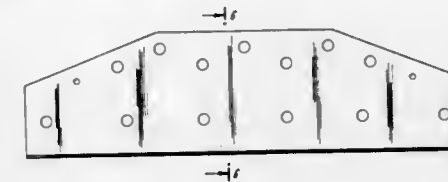
Term of patent 14 years

U.S. Cl. D8—375



288,288
STEP SUPPORT BRACKET
 Walter G. Hentzschel, Damascus; James E. Brock, Gaithers-
 burg, and David R. Norcross, Bethesda, all of Md., assignors
 to TECO Products & Testing Corporation, Chevy Chase, Md.
 Filed Apr. 18, 1984, Ser. No. 601,683
 Term of patent 14 years

U.S. Cl. D8—380



288,289
MOUNTING BRACKET FOR AN ELECTRICAL FIXTURE
 Kenneth H. Reiker, 22 Lake Shore Dr., Shalimar, Fla. 32579
 Filed Apr. 18, 1984, Ser. No. 601,693
 Term of patent 14 years

U.S. Cl. D8—380



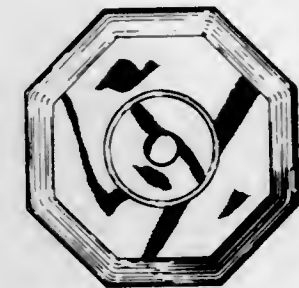
288,290
**COMBINED PATCH FOR DAMAGED WALLS AND
 DOOR BUMPER**
 Steve R. Angle, 5824 S. Jordan Canal Rd., Sandy, Utah 84118
 Filed Nov. 14, 1984, Ser. No. 670,816
 Term of patent 14 years

U.S. Cl. D8—400



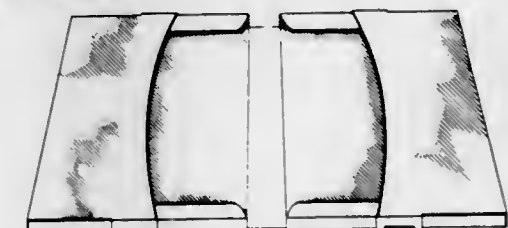
288,291
**COMBINED PATCH FOR DAMAGED WALLS AND
 DOOR BUMPER**
 Steve R. Angle, 5824 S. Jordan Canal Rd., Salt Lake City, Utah
 84118
 Filed Nov. 14, 1984, Ser. No. 670,770
 Term of patent 14 years

U.S. Cl. D8—400



288,292
DUAL COMPARTMENT CARTON
 Salvatore A. Aquino, 337 Trevor Ln., Bala Cynwyd, Pa. 19004
 Continuation-in-part of Ser. No. 574,912, Jan. 30, 1984,
 abandoned. This application Jun. 7, 1984, Ser. No. 618,204
 Term of patent 14 years

U.S. Cl. D9—346

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288,293

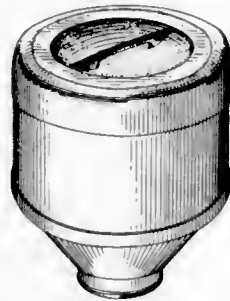
HANDLED DISPENSING CONTAINER

Robert S. Arvans, Blue Island, Ill., assignor to Polycon Industries, Inc., Chicago, Ill.

Filed Aug. 10, 1984, Ser. No. 639,502

Term of patent 14 years

U.S. Cl. D9—370



288,296

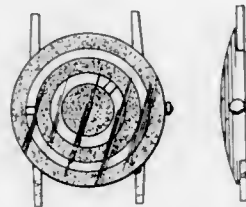
WRIST WATCH

Jeffrey Maron, 248 Lafayette St., New York, N.Y. 10012

Filed Mar. 2, 1984, Ser. No. 585,506

Term of patent 14 years

U.S. Cl. D10—30



288,297

STOPWATCH

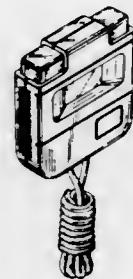
Raymond Chan, Kowloon, Hong Kong, assignor to Integrated Display Technology Limited, Kowloon, Hong Kong

Filed Jul. 20, 1984, Ser. No. 632,882

Claims priority, application United Kingdom, May 15, 1984, 1019660

Term of patent 14 years

U.S. Cl. D10—30



288,294

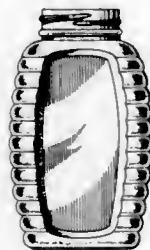
BOTTLE

Larry M. Taylor, Stonington, and Richard B. Wetherell, Jr., Gales Ferry, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1984, Ser. No. 653,636

Term of patent 14 years

U.S. Cl. D9—408



288,298

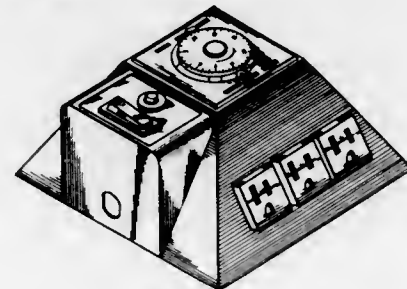
TIMER

Tai-Her Yang, 5-1, Tai-Pin Street, Si-Hu Town, Dzan-Hwa, Taiwan

Filed Sep. 12, 1984, Ser. No. 649,651

Term of patent 14 years

U.S. Cl. D10—40



288,295

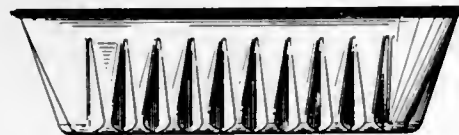
PACKAGING TRAY

M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 17, 1984, Ser. No. 651,126

Term of patent 14 years

U.S. Cl. D9—425



288,299

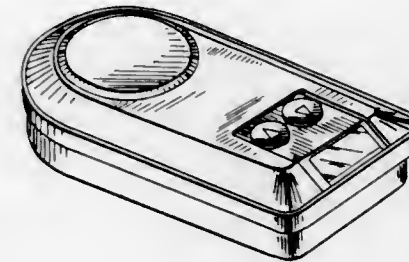
TIMER

Andrew Mark, 82 Sea Beach Dr., Stamford, Conn. 06902

Filed Oct. 3, 1984, Ser. No. 657,385

Term of patent 14 years

U.S. Cl. D10—40



288,302

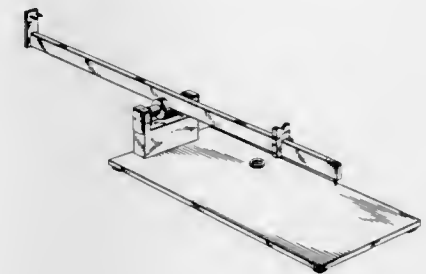
GOLF CLUB SWINGWEIGHT SCALE FIXTURE

Earl D. Myers, Scotch Plains, N.J., assignor to Ohaus Scale Corporation, Florham Park, N.J.

Filed Sep. 28, 1984, Ser. No. 655,633

Term of patent 14 years

U.S. Cl. D10—90



288,300

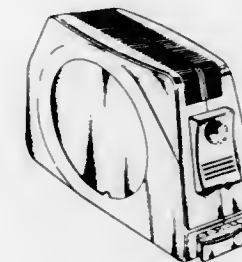
TAPE MEASURE

Eui C. Kang, 575 Janglim-Dong, Suh-ku, Busan, Rep. of Korea

Filed May 11, 1984, Ser. No. 609,341

Term of patent 14 years

U.S. Cl. D10—72



288,303

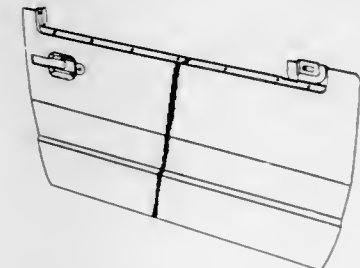
EXTERIOR DOOR PANEL FOR AN AUTOMOBILE

Björn E. A. Envall, Vänersborg, and Dick O. Ohlsson, Trollhättan, both of Sweden, assignors to Saab-Scania Aktiebolag, Trollhättan, Sweden

Filed May 31, 1984, Ser. No. 615,764

Term of patent 14 years

U.S. Cl. D12—196



288,301

CLAMP-ON CURRENT PROBE

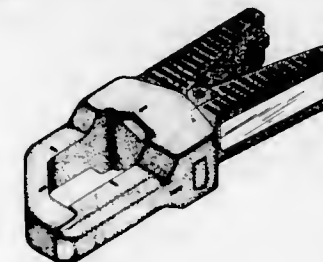
Daniel Arnoux, St. Germain en Laye; Christian Anton, Taverny, and Claude Genter, Paris, all of France, assignors to Construction d'Appareillage, Paris, France

Filed Jun. 15, 1984, Ser. No. 620,891

Claims priority, application France, Dec. 21, 1983, 834792

Term of patent 14 years

U.S. Cl. D10—79



288,304

BOTANICAL SCULPTURE OR SIMILAR ARTICLE

Otto Grun, 44 Coconut Row, Palm Beach, Fla. 33480
Filed Oct. 31, 1983, Ser. No. 547,076

Term of patent 14 years

U.S. Cl. D11-131



288,305

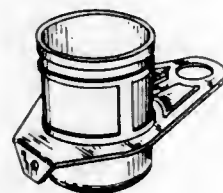
BEVERAGE CAN HOLDER FOR CYCLES OR THE LIKE

David M. Latchman, 4404 Kane St., San Diego, Calif. 92110

Filed May 25, 1984, Ser. No. 614,126

Term of patent 14 years

U.S. Cl. D12-114



288,306

STROLLER

Alan R. Brewster, Coventry, England, assignor to Andrews
Maclaren Limited, United Kingdom

Filed Dec. 17, 1984, Ser. No. 682,147

Claims priority, application United Kingdom, Jun. 18, 1984,
841020348

Term of patent 14 years

U.S. Cl. D12-129



288,307

AUTOMOBILE TIRE

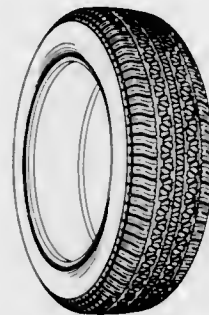
Masaharu Ono, Hyogo, Japan, assignor to Sumitomo Rubber
Industries, Ltd, Kobe, Japan

Filed May 16, 1984, Ser. No. 610,792

Claims priority, application Japan, Dec. 9, 1983, 58-53384

Term of patent 14 years

U.S. Cl. D12-146



288,308

AUTOMOBILE TIRE

Masato Takenoya, and Hideaki Nishio, both of Saitama, Japan,
assignors to Bridgestone Corporation, Tokyo, Japan

Filed Sep. 17, 1984, Ser. No. 651,128

Claims priority, application Japan, Mar. 29, 1984, 59-11929

Term of patent 14 years

U.S. Cl. D12-146



288,309

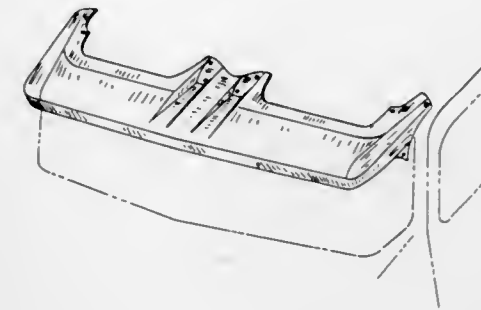
WINDSHIELD VISOR FOR TRUCKS

Allan W. Lund, 2641 - 118th Ave. NW., Minneapolis, Minn.
55433 assignor to Allan W. Lund, Minneapolis, Minn.

Filed Sep. 2, 1983, Ser. No. 528,979

Term of patent 14 years

U.S. Cl. D12-191



288,310

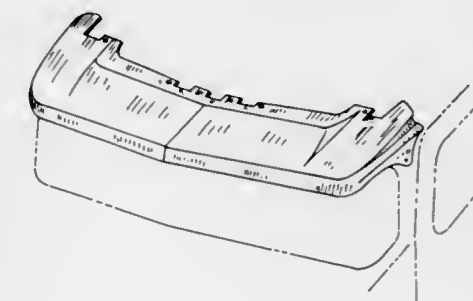
WINDSHIELD VISOR FOR TRUCKS

Allan W. Lund, 2641 - 118th Ave. NW., Minneapolis, Minn.
55433, assignor to Allan W. Lund, Minneapolis, Minn.

Filed Sep. 2, 1983, Ser. No. 528,980

Term of patent 14 years

U.S. Cl. D12-191



288,311

CENTRAL MUFFLER

Juan M. Garcia, Trollhättan, Sweden, assignor to Saab-Scania
Aktiebolag, Trollhättan, Sweden

Filed Jul. 31, 1984, Ser. No. 636,315

Claims priority, application Sweden, Feb. 27, 1984, 84-0624

Term of patent 14 years

U.S. Cl. D12-194



288,312

WHEEL COVER

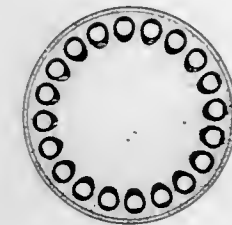
Bjorn E. A. Envall, Vanersborg, Sweden, assignor to Saab-
Scania Aktiebolag, Trollhättan, Sweden

Filed Nov. 21, 1984, Ser. No. 673,892

Claims priority, application Sweden, May 21, 1984, 84-1570

Term of patent 14 years

U.S. Cl. D12-210



288,313

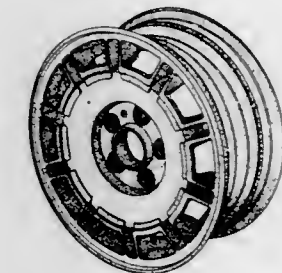
WHEEL

Ulf A. Sandberg, Kungsbacka, Sweden, assignor to Aktiebolaget
Volvo, Gothenburg, Sweden

Filed Jun. 19, 1984, Ser. No. 622,284

Term of patent 14 years

U.S. Cl. D12-211



288,314

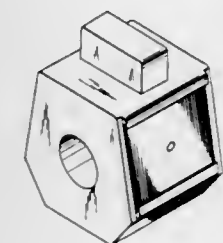
CURRENT TRANSFORMER

David N. Makinson, Franklin, N.C., and Karl W. Struck, Clay-
ton, Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

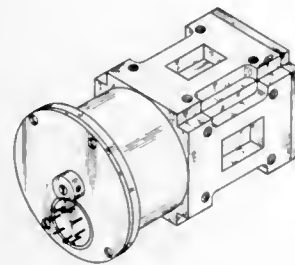
Filed Mar. 30, 1984, Ser. No. 595,178

Term of patent 14 years

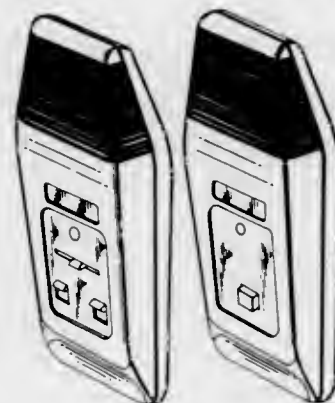
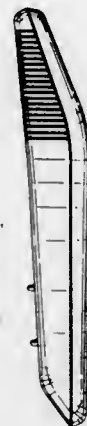
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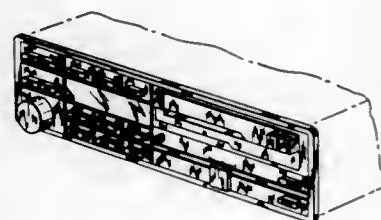
288,315
MICROWAVE SWITCH HOUSING
Victor H. Nelson, 10 Redwood Dr., Dix Hills, N.Y. 11746
Filed May 10, 1984, Ser. No. 608,953
Term of patent 14 years
U.S. Cl. D13—32



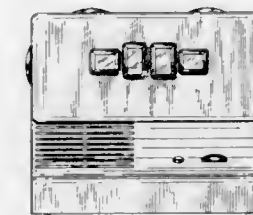
288,317
COMBINATION MASTER UNIT AND REMOTE UNIT
COMMUNICATION SET
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 23, 1984, Ser. No. 643,555
Claims priority, application United Kingdom, Apr. 4, 1984, 1018905
Term of patent 14 years
U.S. Cl. D14—52



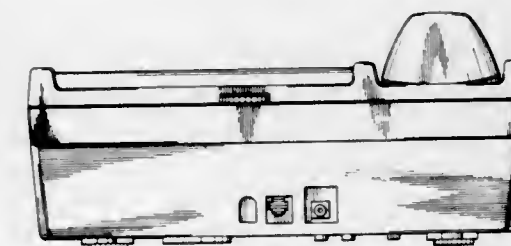
288,316
COMBINED RADIO AND CASSETTE PLAYER
John Stoddard, and Clive Grinyer, both of London, England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 30, 1984, Ser. No. 636,048
Term of patent 14 years
U.S. Cl. D14—5



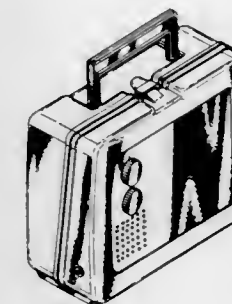
288,318
COMBINATION TELEPHONE AMPLIFIER, LIGHT
EMITTING DIODE LAMP, CALENDER, PEN HOLDER
AND MEMO HOLDER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 1, 1984, Ser. No. 605,816
Claims priority, application United Kingdom, Dec. 9, 1983, 1016780
Term of patent 14 years
U.S. Cl. D14—57



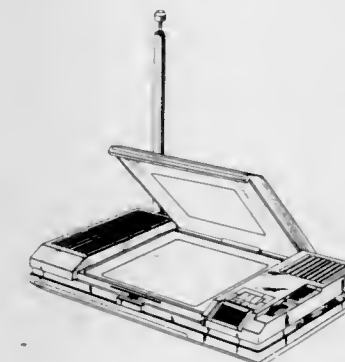
288,319
TELEPHONE STATION SET
Masanori Suzuki, Tokyo, Japan, assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Nov. 15, 1984, Ser. No. 671,610
Term of patent 14 years
U.S. Cl. D14—58



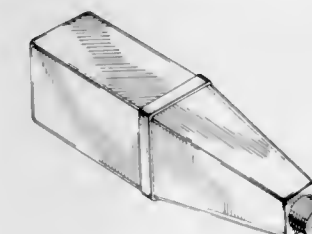
288,320
COMBINED RADIO AND LUNCHBOX
Donna J. Roth, and Henry M. Roth, both of R.D. #1, 496-16 Walnut Ave., Pleasantville, N.J. 08232
Filed Feb. 6, 1986, Ser. No. 826,825
Term of patent 14 years
U.S. Cl. D14—72



288,321
PORTABLE TELEVISION SET
Yutaka Ohtsu, Kanagawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1984, Ser. No. 617,481
Claims priority, application Japan, Mar. 22, 1984, 59-11100
Term of patent 14 years
U.S. Cl. D14—77



288,322
MICROWAVE DOWN CONVERTER
C. Richard Goodman, Glendale, and Yancey D. Sexton, Phoenix, both of Ariz., assignors to Daystar, Inc., Glendale, Ariz.
Filed Apr. 9, 1984, Ser. No. 598,425
Term of patent 14 years
U.S. Cl. D14—90



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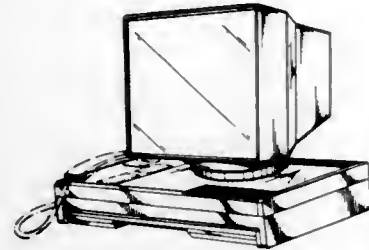
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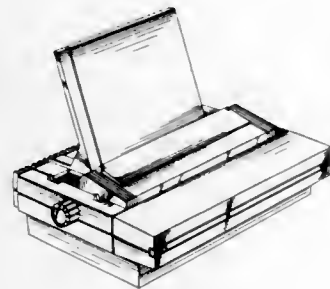
1987

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288,323
DISPLAY TERMINAL
Desmond J. Ryan, Ottawa, Canada; Donald L. Bumgardner, South Lyon, and Jurgen A. Juziuk, Livonia, both of Mich., assignors to Northern Telecom Limited, Montreal, Canada
Filed May 18, 1984, Ser. No. 611,990
Term of patent 14 years
U.S. Cl. D14—106



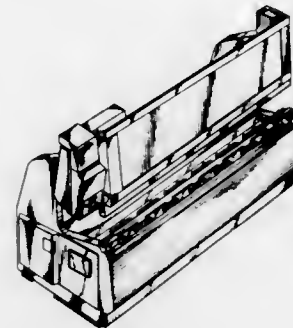
288,324
PRINTER HOUSING
William G. Moggridge, Palo Alto, Calif., assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jul. 5, 1984, Ser. No. 627,880
Term of patent 14 years
U.S. Cl. D14—111



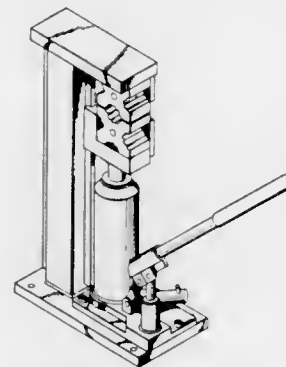
288,325
VERTICAL PUMP
Lee W. Davis, 10901 Rowlett, Oklahoma City, Okla. 73110; Kenneth L. Doughty, 8712 Hillcrest Dr., Oklahoma City, Okla. 73159, and James S. Hollingsworth, III, 2821 Chaucer Dr., Oklahoma City, Okla. 73120
Filed May 2, 1984, Ser. No. 606,367
Term of patent 14 years
U.S. Cl. D15—7



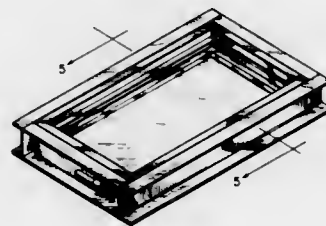
288,326
PRESS BRAKE
Kenji Mano, Hatano, Japan, assignor to Amada Company, Limited, Japan
Filed Aug. 1, 1984, Ser. No. 636,854
Term of patent 14 years
U.S. Cl. D15—123



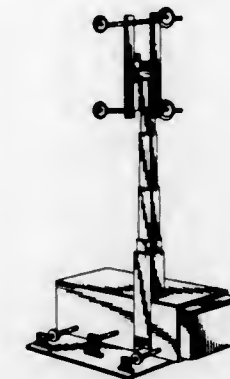
288,327
APPARATUS FOR CRIMPING A FERRULE ON A HOSE
Robert H. Proctor, Cockeysville, and Robert G. Cooper, Maryland Line, both of Md., assignors to Murray Corporation, Cockeysville, Md.
Filed Dec. 14, 1984, Ser. No. 681,797
Term of patent 14 years
U.S. Cl. D15—123



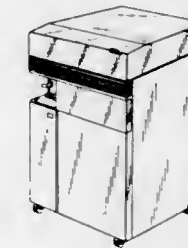
288,328
SURROUND CONCRETE PANEL MOLD
Samuel C. Scott, 4575 Joliet St., Denver, Colo. 80239
Filed Mar. 12, 1984, Ser. No. 588,448
Term of patent 14 years
U.S. Cl. D15—136



288,329
PARTS MANIPULATOR
Kelth Barrett, Langwarrin, Australia, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jan. 9, 1984, Ser. No. 569,129
Term of patent 14 years
U.S. Cl. D15—199



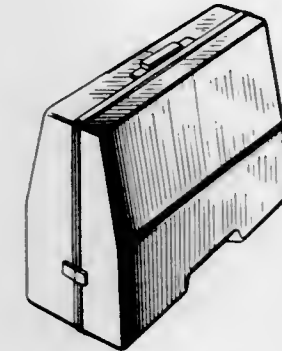
288,330
MICROFILM READER
Tatsuo Kojima, Asaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 9, 1984, Ser. No. 598,169
Claims priority, application Japan, Oct. 13, 1983, 58-44334
Term of patent 14 years
U.S. Cl. D16—11



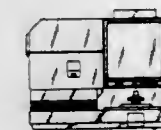
288,331
CART
Johan Hultdt, Stockholm, Sweden, assignor to Innovator Design AB, Stockholm, Sweden
Filed Oct. 28, 1983, Ser. No. 546,473
Claims priority, application Sweden, May 3, 1983, 831267
Term of patent 14 years
U.S. Cl. D34—21



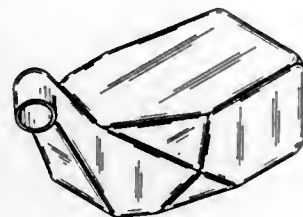
288,332
CASING FOR PORTABLE VIEWER
Frederic McCurdy, Newburgh, N.Y., assignor to GTI Graphic Technology, Inc., Newburgh, N.Y.
Filed Jan. 8, 1984, Ser. No. 618,601
Term of patent 14 years
U.S. Cl. D16—26



288,333
MICROFILM READER PRINTER
Tatsuo Kojima, Asaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 26, 1984, Ser. No. 654,740
Claims priority, application Japan, Apr. 3, 1984, 59-13039
Term of patent 14 years
U.S. Cl. D16—28



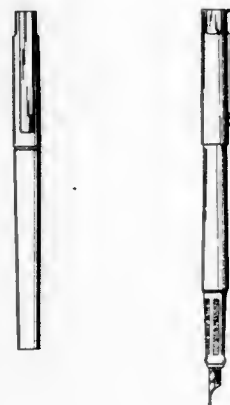
288,334
TONER CARTRIDGE FOR COPY MACHINES
 Peter B. Simons, Los Altos Hills, Calif., assignor to TBS Simons, Inc., Mountain View, Calif.
 Filed Mar. 30, 1984, Ser. No. 595,053
 Term of patent 14 years
 U.S. Cl. D16—32



288,337
ELECTRONIC DETECTION UNIT FOR AN EDUCATIONAL INSTRUMENT
 Lawrence L. Sloan, Los Angeles, Calif., assignor to Price/Stern/Sloan/Publishers, Inc., Los Angeles, Calif.
 Filed Mar. 29, 1984, Ser. No. 594,725
 Term of patent 14 years
 U.S. Cl. D19—59



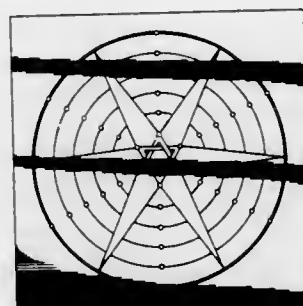
288,335
WRITING INSTRUMENT
 Pierre Regnault, Valence, France, assignor to Etablissements Regnault, Valence, France
 Filed Nov. 9, 1984, Ser. No. 669,869
 Term of patent 14 years
 U.S. Cl. D19—49



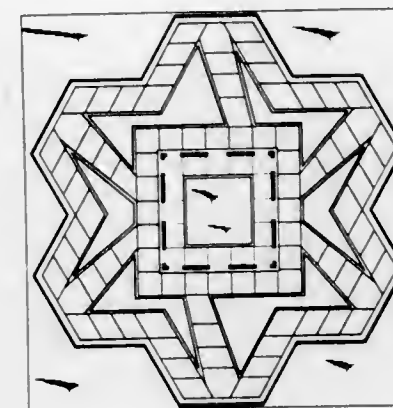
288,336
TECHNICAL PEN ADAPTER
 J. Frank Carroll, 16806 NE, 31st, Bellevue, Wash. 98008, and Edward M. Williamson, 10650 Exeter Ave. NE., Seattle, Wash. 98125
 Filed Jun. 27, 1984, Ser. No. 625,219
 Term of patent 14 years
 U.S. Cl. D19—54



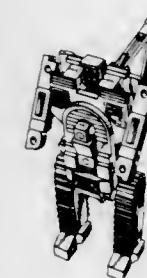
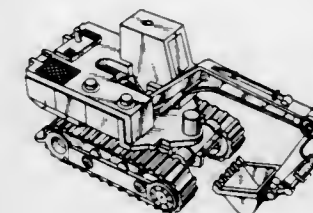
288,338
GAME BOARD
 Steve Baldwin, E. 913 Overbluff Rd., Spokane, Wash. 99203, assignor to Steve Baldwin, Spokane, Wash.
 Filed Sep. 27, 1984, Ser. No. 655,071
 Term of patent 14 years
 U.S. Cl. D21—20



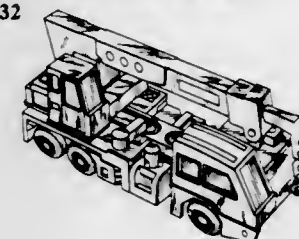
288,339
GAME BOARD
 Douglas Auld, 47 Berkley St., Waltham, Mass. 02154
 Filed Jul. 23, 1984, Ser. No. 633,537
 Term of patent 14 years
 U.S. Cl. D21—34



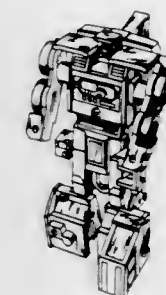
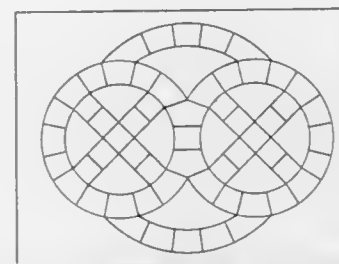
288,341
RECONFIGURABLE TOY POWER SHOVEL
 Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
 Filed Sep. 4, 1984, Ser. No. 647,233
 Claims priority, application Japan, Mar. 28, 1984, 59-12034
 Term of patent 14 years
 U.S. Cl. D21—131



288,342
RECONFIGURABLE TOY CRANE TRUCK
 Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
 Filed Sep. 4, 1984, Ser. No. 647,231
 Claims priority, application Japan, Mar. 28, 1984, 59-12036
 Term of patent 14 years
 U.S. Cl. D21—132



288,340
GAME BOARD
 John B. Herring, and Valerie P. Herring, both of 48-B Cascade Blvd., Belleville, Quebec K8P 4W1, Canada
 Filed Nov. 16, 1984, Ser. No. 672,150
 Claims priority, application Canada, May 30, 1984, 30-05-84-8
 Term of patent 14 years
 U.S. Cl. D21—35



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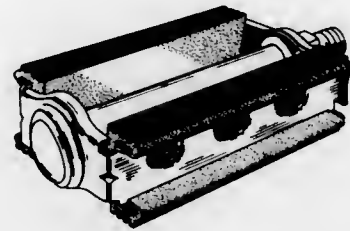
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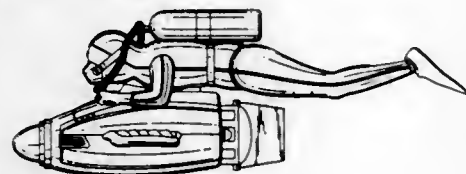
- 288,343**
RECONFIGURABLE TOY WATCH
 Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
 Filed Aug. 16, 1984, Ser. No. 641,511
 Term of patent 14 years
 U.S. Cl. D21-144
- 288,345**
EXERCISE CYCLE PEDAL
 David K. McMurtrey, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.
 Filed Jun. 18, 1984, Ser. No. 621,747
 Term of patent 14 years
 U.S. Cl. D21-191



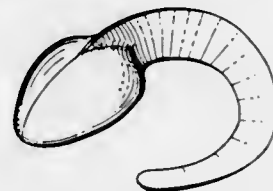
- 288,346**
SNORKEL
 Mark L. Walsh, Chicago, Ill., assignor to Dacor Corporation, Northfield, Ill.
 Filed Feb. 3, 1984, Ser. No. 576,747
 Term of patent 14 years
 U.S. Cl. D21-238



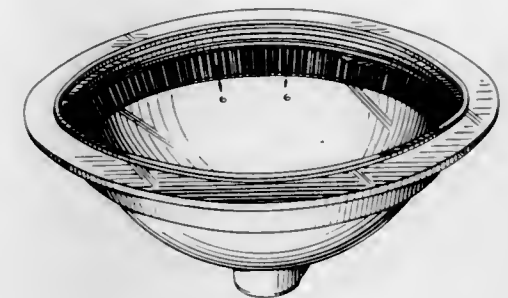
- 288,344**
COMBINED TOY FROGMAN WITH PROPULSION UNIT
 Yuk F. Lau, Kowloon, Hong Kong, assignor to Tai Way (Shing Kee) Toys Co. Ltd., Kowloon, Hong Kong
 Filed Jul. 31, 1984, Ser. No. 636,230
 Claims priority, application United Kingdom, Jan. 31, 1984, 1017600
 Term of patent 14 years
 U.S. Cl. D21-150



- 288,347**
FISHING LURE
 Jeffrey D. Lumsden, 11901 Silver Way, Everett, Wash. 98204
 Filed Feb. 15, 1984, Ser. No. 580,412
 Term of patent 14 years
 U.S. Cl. D22-132



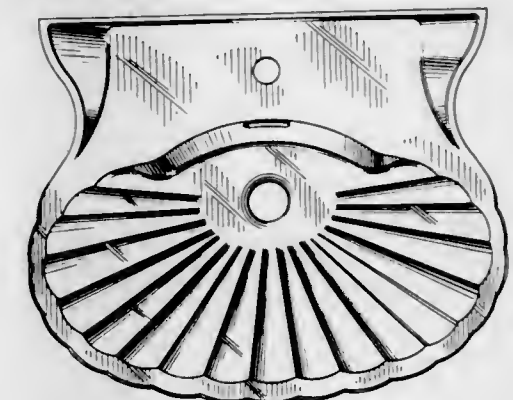
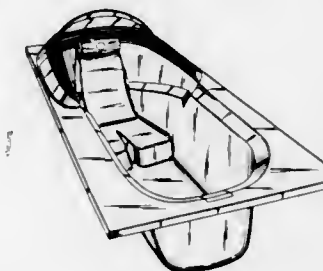
- 288,348**
CHLORINATOR HOUSING
 Robert E. Maddock, 2252 Grand Ave., Phoenix, Ariz. 85009
 Filed Sep. 24, 1984, Ser. No. 653,578
 Term of patent 14 years
 U.S. Cl. D23-3
- 288,351**
LAVATORY
 Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
 Filed Jun. 27, 1984, Ser. No. 625,211
 Term of patent 14 years
 U.S. Cl. D23-58



- 288,349**
FLOAT VENT VALVE
 Leon Howlett, Melbourne, Australia, assignor to Kiwong Pty. Limited, Prahran, Australia
 Filed Jun. 13, 1984, Ser. No. 620,374
 Claims priority, application Australia, Apr. 5, 1984, 7080/84
 Term of patent 14 years
 U.S. Cl. D23-19



- 288,352**
LAVATORY
 Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
 Filed Jun. 27, 1984, Ser. No. 625,210
 Term of patent 14 years
 U.S. Cl. D23-58
- 288,350**
BATHTUB
 Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604
 Filed Jan. 20, 1984, Ser. No. 572,627
 Term of patent 14 years
 U.S. Cl. D23-55



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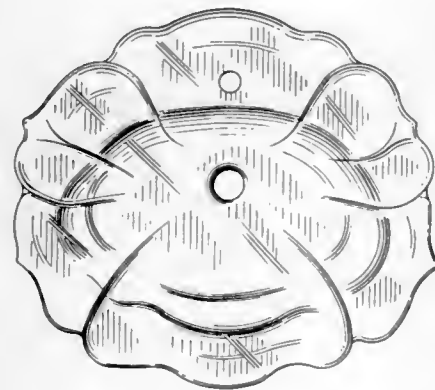
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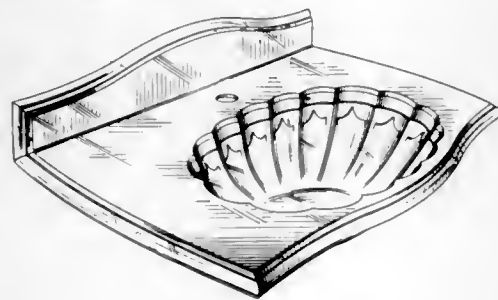
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LAVATORY
Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
Filed Jun. 27, 1984, Ser. No. 625,133
Term of patent 14 years
U.S. Cl. D23—58



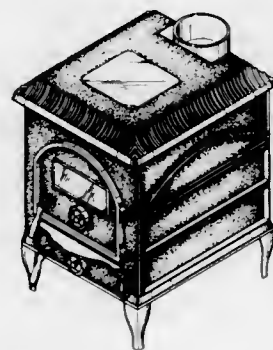
288,355
PEDESTAL
Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
Filed Jun. 27, 1984, Ser. No. 625,208
Term of patent 14 years
U.S. Cl. D23—70



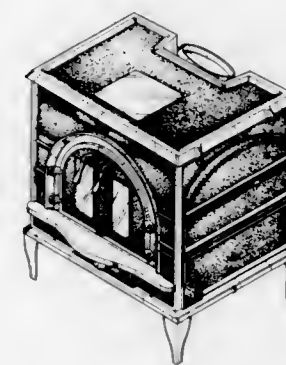
288,354
LAVATORY
Vance Smith, Brookfield, Vt., assignor to Crane Co., New York, N.Y.
Filed Jun. 27, 1984, Ser. No. 625,209
Term of patent 14 years
U.S. Cl. D23—58



288,356
AIRTIGHT WOOD AND COAL BOX HEATER
Jenny T. McKinney, 5th Fl., No. 109, Kuang Fu North Road, Taipei City 106, Taiwan
Filed Nov. 8, 1984, Ser. No. 605,253
Term of patent 14 years
U.S. Cl. D23—97



288,357
AIRTIGHT CONVECTION HEATER
Jenny T. McKinney, 5th Fl., No. 109, Kuang Fu North Road, Taipei City 106, Taiwan
Filed Apr. 30, 1984, Ser. No. 605,254
Term of patent 14 years
U.S. Cl. D23—97



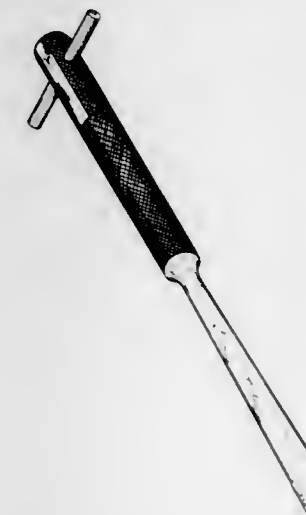
288,359
MONOPOLAR ELECTROSURGICAL DEVICE WITH DUAL 360° HAND SWITCH
Patrick E. Hoff, 7555 S. Boulder Rd., Boulder, Colo. 80303
Filed Mar. 27, 1984, Ser. No. 593,849
Term of patent 14 years
U.S. Cl. D24—28



288,358
STOVE
Hideo Nishikawa; Kenzo Okamoto, and Koichi Sakai, all of Osaka, Japan, assignors to Imanishi Kinzoku Kogyo Kabushiki Kaisha, Japan
Filed Nov. 28, 1983, Ser. No. 555,353
Claims priority, application Japan, Oct. 3, 1983, 042954/1983
Term of patent 14 years
U.S. Cl. D23—122



288,360
SURGICAL REAMER
John S. Collis, Jr., 32055 Osgate La., Chagrin Falls, Ohio 44022
Filed Jun. 18, 1984, Ser. No. 621,606
Term of patent 14 years
U.S. Cl. D24—28

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288,361

HANDLE FOR SURGICAL INSTRUMENT

Philip R. Lichtman, Newton, Mass., assignor to Acufex Micro-surgical, Inc., Norwood, Mass.

Filed Jan. 27, 1983, Ser. No. 461,539

Term of patent 14 years

U.S. Cl. D24—30



288,364

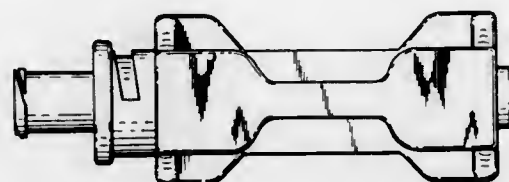
PROTECTOR HOUSING FOR SQUEEZABLE VALVE

Kenneth R. McCord, Menlo Park, Calif., assignor to American Hospital Supply Corporation, Deerfield, Ill.

Filed Nov. 26, 1982, Ser. No. 659,134

Term of patent 14 years

U.S. Cl. D24—53



288,365

COMBINED VIAL AND CLOSURE

Mark E. Larkin, Lindenhurst, and Edward S. Tripp, Park City, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 11, 1984, Ser. No. 619,662

Term of patent 14 years

U.S. Cl. D24—56



288,362

BABY BOTTLE OR SIMILAR ARTICLE

William Simmons, 8302 Gumwood Cir., Westminster, Calif. 92683

Filed Feb. 17, 1984, Ser. No. 581,307

Term of patent 14 years

U.S. Cl. D24—47



288,363

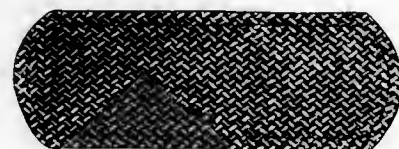
SANITARY TOWEL

Leif K. Wallstrom, Molnlycke, Sweden, assignor to Molnlycke Aktiebolag, Gothenburg, Fed. Rep. of Germany

Filed Jun. 4, 1984, Ser. No. 617,036

Term of patent 14 years

U.S. Cl. D24—51



288,366

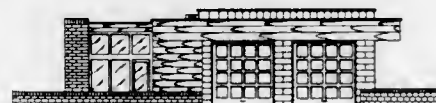
LUBRICATION SERVICE BUILDING

James M. Hug, 2139 NE. Coachman Rd., Suite 1, Clearwater, Fla. 33575

Filed Nov. 29, 1982, Ser. No. 445,080

Term of patent 14 years

U.S. Cl. D25—34



288,367

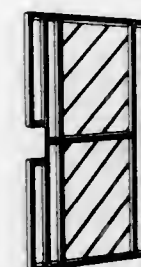
SECURITY DOOR GUARD

Irving V. Stollman, Oak Park, Mich., assignor to Armorgard Products Company, Detroit, Mich.

Filed Jul. 9, 1984, Ser. No. 628,791

Term of patent 14 years

U.S. Cl. D25—53



288,369

EXTRUDED SECTION

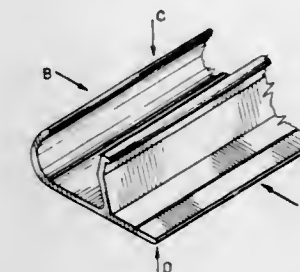
Gary M. Lynch, La Bella Vista Nursery, M.S. 861, Fernvale, Queensland, 4305, Australia

Filed Jan. 26, 1984, Ser. No. 574,023

Claims priority, application Australia, Jul. 27, 1983, 4543/83

Term of patent 14 years

U.S. Cl. D25—74



288,368

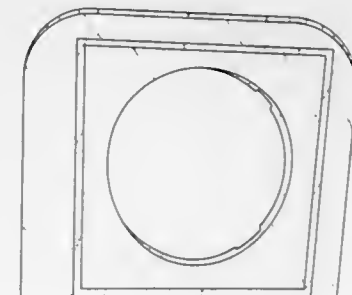
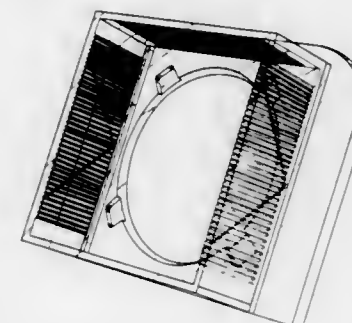
STEREOTAXIC GUIDE FOR BRAIN SURGERY AND RADIOTHERAPY

John M. Van Buren, Coral Gables; Pavel Houdek, and Murray Ginsberg, both of Miami, all of Fla., assignors to University of Miami, Coral Gables, Fla.

Filed Sep. 20, 1982, Ser. No. 420,371

Term of patent 14 years

U.S. Cl. D24—1.1



288,370

COBBLESTONE

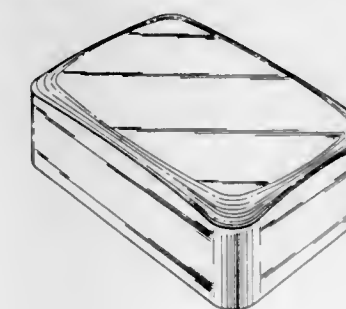
Hans J. Rinninger, Kisslegg, Fed. Rep. of Germany, assignor to Hans Rinninger u. Sohn GmbH u. Co., Kisslegg, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 565,782

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1983, MR 215-W

Term of patent 14 years

U.S. Cl. D25—80



288,371

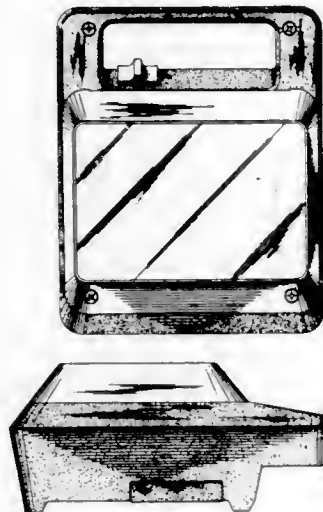
PORTABLE LIGHT

Vernon R. Lacher, Queenstown; Thornton H. Gogoll, Easton, and Don R. McCloskey, Trappe, all of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Feb. 21, 1984, Ser. No. 581,593

Term of patent 14 years

U.S. Cl. D26—50



288,373

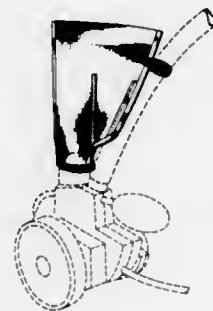
FILTER BAG

J. Jesus Alanis, San Marcos, Calif., assignor to Alopex Industries, Inc., San Marcos, Calif.

Filed Mar. 8, 1984, Ser. No. 587,548

Term of patent 14 years

U.S. Cl. D32—31



288,374

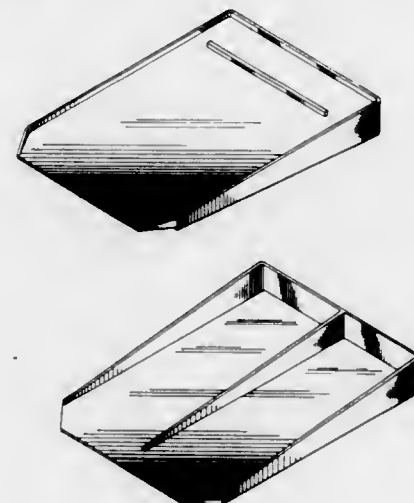
DRAINER TRAY

Gilbert N. Ikeda, 1750 Kalakana Ave., Apt. 2404, Honolulu, HI. 96826

Filed Sep. 17, 1984, Ser. No. 651,535

Term of patent 14 years

U.S. Cl. D32—56



288,372

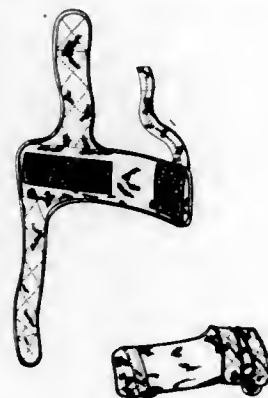
WRIST SUPPORT

Steven Adams, 13864 Putney Rd., Poway, Calif. 92064

Filed Nov. 29, 1984, Ser. No. 676,773

Term of patent 14 years

U.S. Cl. D29—20



288,375

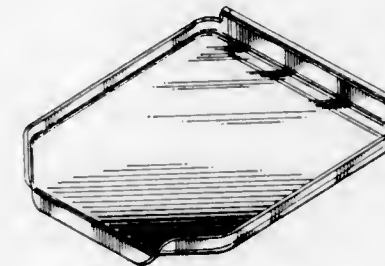
ONE-PIECE DISH DRAINER TRAY OR SIMILAR ARTICLE

Alvin S. Okami, 1915 Huina St., Honolulu, HI. 96817

Continuation-in-part of Ser. No. 388,447, Jun. 14, 1982, abandoned. This application Jul. 5, 1984, Ser. No. 628,048

Term of patent 14 years

U.S. Cl. D32—56



288,377

BILL VALIDATOR

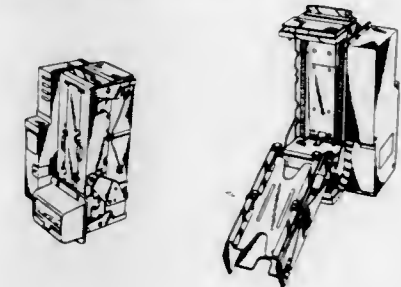
Osamu Kobayashi; Masaki Akagawa, and Hiroshi Hayashi, all of Sakado, Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,541

Claims priority, application Japan, Oct. 3, 1983, 58-42614

Term of patent 14 years

U.S. Cl. D99—28



288,378

BILL VALIDATOR

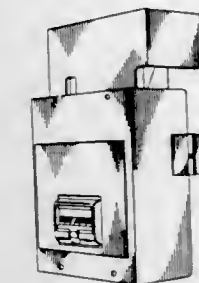
Osamu Kobayashi; Masaki Akagawa, and Hiroshi Hayashi, all of Sakado, Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Mar. 29, 1984, Ser. No. 594,540

Claims priority, application Japan, Oct. 3, 1983, 58-42615

Term of patent 14 years

U.S. Cl. D99—28



288,376

HOIST CAGE FOR USE IN DIVING

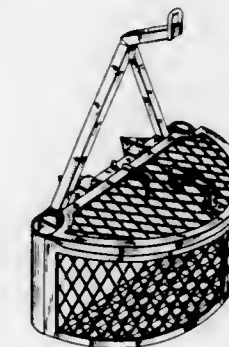
John R. Akerlund, Kariskrona, Sweden, assignor to Scand-Courier, Sweden

Filed May 9, 1984, Ser. No. 608,477

Claims priority, application Sweden, Nov. 10, 1983, 83-2952

Term of patent 14 years

U.S. Cl. D34—35



288,379

BANK

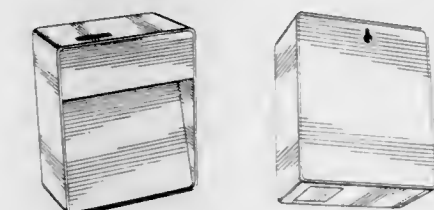
Bruno Kuhlmann, 91 Stormont Ave, Toronto, Ontario, Canada M5N 2C3

Filed Dec. 31, 1984, Ser. No. 687,901

Claims priority, application Canada, Jul. 30, 1984, 3007846

Term of patent 14 years

U.S. Cl. D99—35

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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF FEBRUARY, 1987

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A. C. Nielsen Company: *See—*
Kiewit, David A.; and Lu, Daozheng, 4,644,509, Cl. 367-87.000.
- A. E. Staley Manufacturing Company: *See—*
Day, Gary A., 4,643,773, Cl. 127-30.000.
- Protzman, Thomas F., 4,644,038, Cl. 525-412.000.
- A. Natterman & Cie GmbH: *See—*
Hilboll, Gerd; Prop. Gerrit; Borbe, Harald; Lohr, Josef P.; and Doppelfeld, Ille-Stephanie, 4,643,998, Cl. 514-252.000.
- A/S Raufoss Ammunisjonsfabrikker: *See—*
Gudbrandsen, Gunnar F.; Skjerven, Perkristian; and Bjerkvoll, Bjorn S., 4,643,098, Cl. 102-513.000.
- AAR Corporation: *See—*
Mollon, Leslie, 4,644,171, Cl. 250-518.100.
- AB Biodisk: *See—*
Ericsson, Magnus, 4,643,795, Cl. 156-562.000.
- Abbas, Daniel C., to Eastman Kodak Company, Array of light emitting diodes for producing gray scale light images, 4,644,342, Cl. 340-762.000.
- Abbaschian, Gholamreza J.; and Abeln, Stephen, to University of Florida, Method of making aluminum-lithium alloys with improved ductility, 4,643,779, Cl. 148-11.50A.
- Abbondanti, Alberto: *See—*
Brennen, Michael B.; and Abbondanti, Alberto, 4,644,248, Cl. 323-205.000.
- Abe, Hiraku: *See—*
Takahashi, Yoshihiro; Abe, Hiraku; and Mamiya, Yasuhiro, 4,644,156, Cl. 250-231.05E.
- Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, to Sakai Chemical Industry Co., Ltd. Process for producing a composition which includes perovskite compounds, 4,643,984, Cl. 501-134.000.
- Abe, Koichi, to Northern Telecom Limited, Method for manufacturing optical waveguide, 4,643,751, Cl. 65-3.120.
- Abe, Shigeo: *See—*
Kobayashi, Takao; Abe, Shigeo; Bandoh, Tadaaki; Takatoo, Masao; Matsumoto, Hidekazu; and Hara, Hideyuki, 4,644,490, Cl. 364-748.000.
- Abe, Takao: *See—*
Koshizuka, Kunihiro; Kitamura, Shigehiro; Abe, Takao; Nakamura, Masaki; Ishii, Fumio; and Hotta, Yuji, 4,643,917, Cl. 427-256.000.
- Abe, Tatsuhiro; and Takagi, Nobukazu, to Diesel Kiki Co., Ltd. Solenoid valve, 4,643,223, Cl. 137-554.000.
- Abeln, Stephen: *See—*
Abbaschian, Gholamreza J.; and Abeln, Stephen, 4,643,779, Cl. 148-11.50A.
- Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG: *See—*
Schmoede, Peter; Katryniok, Detlef, deceased; and Ruch, Jean P., 4,643,235, Cl. 141-1.100.
- Achelpohl, Fritz; and Upmeyer, Hartmut, to Windmoller & Holscher, Apparatus for cooling tubular plastic films extruded from a film blowing head, 4,643,657, Cl. 425-72.00R.
- Achleitner, Walter: *See—*
Ebeling, Joachim; Friedrich, Peter; Jekat, Herbert; Lugscheider, Walter; Riegler, Ernst; Zajicek, Ernst; Achleitner, Walter; and Jarema, Ferdinand, 4,644,557, Cl. 373-22.000.
- Ackermann, Max: *See—*
Weik, Guenter; and Ackermann, Max, 4,642,891, Cl. 29-879.000.
- Acme Resin Corporation: *See—*
Iyer, Raja, 4,644,022, Cl. 523-144.000.
- Acrison, Inc.: *See—*
Ricciardi, Ronald J., 4,643,582, Cl. 366-102.000.
- Activision, Inc.: *See—*
Crane, David P., 4,644,495, Cl. 364-900.000.
- Adachi, Masakazu: *See—*
Asakura, Shoshiro; and Adachi, Masakazu, 4,643,896, Cl. 424-88.000.
- Adam, Peter; and Knappe, Wolfram, to Siemens Aktiengesellschaft, Worm gear train arrangement and housing, 4,643,040, Cl. 74-425.000.
- Adams, Daniel, Game playing implement, 4,643,426, Cl. 273-148.00R.
- Adams, Guy E., to Honeywell Inc. Missile system for naval use, 4,643,373, Cl. 244-3.190.
- Adams, Phillip A.: *See—*
Browning, Michael R.; Cronk, Evelyn I.; and Adams, Phillip A., 4,642,945, Cl. 52-10.000.
- Adams Rite Manufacturing Co.: *See—*
Logas, Duane K., 4,643,005, Cl. 70-95.000.
- Adex, Inc.: *See—*
Koch, Charles P., 4,642,946, Cl. 52-38.000.
- Adir: *See—*
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,644,008, Cl. 514-412.000.
- Advanced Energy Concepts '81 Ltd.: *See—*
Distin, Robert; and Shaffer, James, 4,643,047, Cl. 74-804.000.
- Advanced Equipment Corporation: *See—*
Dickson, Wesley B., 4,642,947, Cl. 52-64.000.
- Advanced Micro Devices, Inc.: *See—*
Fuchs, Peter M., 4,644,409, Cl. 358-256.000.
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- Alaska Canning & Marine Equipment, Inc.: See—
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- Alcatel Thomson Gigadisc, SA: See—
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- Alcon Laboratories, Inc.: See—
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- York, Billie M., Jr., 4,644,007, Cl. 514-392.000.
- Alemanni, James C., to Alpha Modular Systems. Apparatus to straighten the leads of a pin grid array, 4,643,234, Cl. 140-147.000.
- Ales, Thomas M.; Strohbeen, David T.; and Damico, Joyce A., to Kimberly-Clark Corporation. Disposable garments with multiple strand elasticized openings, 4,642,819, Cl. 2-400.000.
- Alexander, Roy P.; Faust, J. Philip; and Milford, Alan H., to Olin Corporation. Swimming pool chemical dispenser, 4,643,881, Cl. 422-265.000.
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Lee, Chie-Ying; West, James D.; and Cole, Gerald F., 4,643,709, Cl. 494-37.000.
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Stroucken, Klaus; and Gustafsson, Bengt-Olof, 4,643,708, Cl. 494-40.000.
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- Belart, Juan; Weise, Lutz; and Seibert, Wolfram, 4,643,486, Cl. 303-114.000.
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- Allebest, Edward F.; Hansen, Parley E.; Walsh, George A.; and Maguire, Walter R., to Resolution Research, Inc. Interactive multi-user laser disc system, 4,644,515, Cl. 369-32.000.
- Allen, Robert E. Adjustable gun pad for a shooting garment, 4,642,815, Cl. 2-2.000.
- Allen, Sebrée J. Space living quarters having artificial gravity environment, 4,643,375, Cl. 244-159.000.
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Anderson, Philip M., III; and Urbanski, Jeffrey C., 4,644,310, Cl. 335-215.000.
- Basconi, Paul D., 4,644,099, Cl. 174-117.00F.
- Casey, Gary L., 4,643,359, Cl. 239-585.000.
- Margolin, Mark, 4,643,520, Cl. 350-96.200.
- Taig, Alistair G., 4,643,699, Cl. 464-112.000.
- Torre, John J., 4,644,286, Cl. 329-50.000.
- Zingler, Christian J.; and Bonner, James D., 4,643,058, Cl. 83-23.000.
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- Allocca, Peter T., to Koch Engineering Company, Inc. Motionless mixer, 4,643,584, Cl. 366-337.000.
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- Alpha Industries, Inc.: See—
Gutierrez, Romulo; Bauer, Albert W.; and McDonald, Thomas L., 4,644,096, Cl. 174-52.00H.
- Alpha Mail Systems: See—
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- Alpha Modular Systems: See—
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- Alpine Electronics Inc.: See—
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- Alps Electric Co., Ltd.: See—
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- Takahashi, Yoshihiro; Abe, Hiraku; and Mamiya, Yasuhiro, 4,644,156, Cl. 250-231.0SE.
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Baechler, Theodor; and Amann, Josef, 4,643,071, Cl. 89-1.701.
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- American Antigravity Co., Inc.: See—
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- American Can Company: See—
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- American Cast Iron Pipe Company: See—
Conner, Randall C.; and Walworth, Van T., 4,643,466, Cl. 285-321.000.
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Floyd, Middleton B., Jr., 4,644,079, Cl. 560-121.000.
- O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, 4,643,755, Cl. 71-76.000.
- American District Telegraph Company: See—
Flynn, Kevin; and Schultz, Eric V., 4,644,484, Cl. 364-569.000.
- American Home Products Corporation: See—
Buzby, George C., Jr.; Winkley, Michael W.; and McCaully, Ronald J., 4,644,081, Cl. 562-456.000.
- American Hospital Supply Corporation: See—
Elson, Edward E.; Bolwell, Farley W.; Maska, Wayne E.; and Shoffner, Stanley G., 4,643,879, Cl. 251-10.000.
- Hanaway, Richard W., 4,643,879, Cl. 422-104.000.
- American Machine & Science, Inc.: See—
Mudge, Dennis; Coskie, Joseph; Jacobs, Edward H.; and Harris, David R., 4,643,410, Cl. 269-64.000.
- American Microsystems, Inc.: See—
Mahmood, Qazi A. S. M., 4,644,504, Cl. 365-230.000.
- American Standard Inc.: See—
Rinder, Laurenz, 4,643,654, Cl. 718-201.000.
- American Telephone & Telegraph Company: See—
Bruff, Martin; and Hluchyj, Michael G., 4,644,533, Cl. 370-94.000.
- Gitlin, Richard D.; and Werner, Jean-Jacques, 4,644,537, Cl. 370-119.000.
- Amitec, Inc.: See—
Scholz, Frederick J., 4,644,366, Cl. 343-895.000.
- Ammar, Jesse I. Support and clamping assembly, 4,643,458, Cl. 285-62.000.
- Ammco Tools, Inc.: See—
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- Amoco Corporation: See—
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- Thrash, Robert J.; and Connolly, John F., 4,643,958, Cl. 429-105.000.
- Amoroso, Frank; and Cullings, John S., to Hughes Aircraft Company. Multimode noise generator using digital FM, 4,644,299, Cl. 331-78.000.
- Amour, Glenda K. Nail form for use in applying nail extension material, 4,643,208, Cl. 132-88.500.
- AMP Incorporated: See—
Coldren, Daniel R., 4,643,507, Cl. 339-97.00P.
- Gentry, William G., 4,644,092, Cl. 174-36.000.
- Grabbe, Dmitry G.; and Korsunsky, Iosif, 4,642,872, Cl. 29-564.600.
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- Hollyday, Robert D.; and Yeager, Patrick F., 4,643,509, Cl. 339-147.00R.
- Kobler, Robert J., 4,643,506, Cl. 339-94.00M.
- Litehizer, Melvin P., Jr., 4,642,874, Cl. 29-566.400.
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- Anantharamaiah, Gattadahalli M.: See—
Segrest, Jere P.; and Anantharamaiah, Gattadahalli M., 4,643,988, Cl. 514-12.000.
- Anderson, Philip M., III; and Urbanski, Jeffrey C., to Allied Corporation. Actuator system having magnetomechanical cantilever beam formed of ferromagnetic amorphous material, 4,644,310, Cl. 335-215.000.
- Anderson, Thomas W.; Avva, Radha K.; Forrest, Bruce T.; Krawiec, Zbigniew A.; and Starrett, William R., to AT&T Bell Laboratories. Interface unit for transferring voice and data signals, 4,644,527, Cl. 370-58.000.
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- Ando, Naotake: See—
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- Andrews, Barry A., to Iowa State University Research Foundation, Inc. Apparatus, methods, and systems for computer information transfer, 4,644,496, Cl. 364-900.000.
- Andureau, Joel: See—
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- Anelva Corporation: See—
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- Anemostat Products Division, Dynamics Corp.: See—
Harris, William J., 4,643,353, Cl. 236-49.000.
- Anritsu Electric Company, Limited: See—
Sonobe, Youji; Tamura, Youichi; and Umesaki, Kenichiro, 4,643,572, Cl. 356-334.000.
- ANT Nachrichtentechnik GmbH: See—
Sperlich, Josef, 4,644,534, Cl. 370-95.000.
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Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, 4,643,984, Cl. 501-134.000.
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- Aoki, Takashi: See—
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- Aoshima, Terutaka: See—
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- Appleby, A. John, to Electric Power Research Institute, Inc. Photocell device for evolving hydrogen and oxygen from water, 4,643,817, Cl. 204-242.000.
- Applied Electro Mechanics, Inc.: See—
Brown, Harry B., 4,644,245, Cl. 320-13.000.
- Applied Immunosciences, Inc.: See—
Marten, James F., 4,643,718, Cl. 604-28.000.
- Applied Magnetics Corp.: See—
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- Arad, Abraham A.: See—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,643,695, Cl. 446-427.000.
- Aragona, Joel. Safety lock device, 4,643,106, Cl. 109-6.000.
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- Arai, Yoshihiro; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. Process for producing magnetic recording medium, 4,643,915, Cl. 427-130.000.
- Arakawa, Hideki: See—
Kawashima, Hiromi; and Arakawa, Hideki, 4,644,182, Cl. 307-246.000.
- Araki, Hidemoto: See—
Ishiguro, Kazuyoshi; and Araki, Hidemoto, 4,642,858, Cl. 24-641.000.
- Araki, Tetsuro; and Onda, Hiroyuki, to Teac Corporation. Digital to analog conversion system with the addition of dither to the digital input, 4,644,324, Cl. 340-347.0DA.
- Archive Corporation: See—
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- Arciero, Carlo; and Mynuddin, Mohammed K., to Ford Motor Company. Power steering system for an automotive vehicle having a power steering pump cut out circuit, 4,643,269, Cl. 180-141.000.
- Archart, Theodore A.; and Carey, Donald O., to United States of America, Energy. Chip breaking system for automated machine tool, 4,643,056, Cl. 82-36.00A.
- Arendt, Gerhard; Brodbeck, Klaus-Peter; Engenhardt, Reinhold; Schmidt, Viktor; and Wedler, Klaus, to Croon & Lucke Maschinenfabrik GmbH & Co. KG. Device for automatically attaching an arrow label, 4,642,965, Cl. 53-118.000.
- Arimoto, Akira; Saito, Susumu; Tatsuno, Kimio; and Kataoka, Keiji, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. System for holding plural light beams in predetermined relative positions, 4,644,160, Cl. 250-201.000.
- Arita, Setsuo: See—
Ito, Tetsuo; and Arita, Setsuo, 4,644,346, Cl. 340-825.030.
- Armitage, David, to United States of America, Air Force. Differentiating spatial light modulator, 4,643,533, Cl. 350-350.00S.
- Armstrong, Robert F.: See—
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- Arnaud Manresa, Luis M., to Exin-Iber, S.A. Toy vehicle, 4,643,102, Cl. 104-305.000.
- Arnaud D'Avitaya, Francois; Campidelli, Yves; and Pantel, Roland. Process and apparatus for the growth of films of silicides of refractory metals and films obtained by this process, 4,643,914, Cl. 427-93.000.
- Arnel, Donald M., to Hallmark Cargo Services, Inc. Coding assembly, 4,643,064, Cl. 83-522.000.
- Arnmann, Gerhard, to Baas Technik GmbH. Apparatus for loading and unloading bulk materials and/or piece goods, 4,643,295, Cl. 198-594.000.
- Arneson Products, Inc.: See—
Frentzel, Herman E., 4,643,217, Cl. 137-112.000.
- Arnold, Michael. Duplex outlet protection device, 4,643,502, Cl. 339-36.000.
- Arp, Robert A.; Conroy, W. Patrick; Miller, Curtis H.; and Weinzel, James M., to Micromedics, Inc. Modular sterilizing system, 4,643,303, Cl. 206-370.000.
- Arriola, Arturo: See—
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- Arrow Fastener Company, Inc.: See—
Knispel, Barry; and Wingert, Rudolf, 4,643,345, Cl. 227-156.000.
- Artun, Berkan; and Goy, Helmut. Circuit arrangement for synchronizing of clock-signal generated at a receiving station with clock-signals received in telecommunications systems with digital transmission of information, 4,644,567, Cl. 375-108.000.
- Asagi, Yasuyoshi: See—
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- Seko, Maomi; Takemura, Keiji; and Miyamori, Hideharu, 4,643,818, Cl. 204-253.000.
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- Asakura, Kunio, to Keisuke Honda. Display system for fish sonar, 4,644,511, Cl. 367-101.000.
- Asakura, Shoshiro; and Adachi, Masakazu, to Otsuka Pharmaceutical Co., Ltd. Malaria associated antigen and preparing process thereof, 4,643,896, Cl. 424-88.000.
- Ascher, Frederic M.; and Cuvelier, Jacques A., to C.R.B. Virbac S.A. Programmed release device and method of use thereof, 4,643,893, Cl. 424-16.000.
- Asea AB: See—
Forslund, Karl-Erik, 4,643,036, Cl. 74-105.000.
- ASEA Aktiebolag: See—
Brogårdh, Torgny; Hok, Bertil; and Ovren, Christer, 4,644,154, Cl. 250-227.000.
- Hidman, Tomas; and Ovren, Christer, 4,644,379, Cl. 357-17.000.
- Lofgren, Folke; and Soderstrom, Sven E., 4,643,564, Cl. 356-5.000.
- ASEA Electric, Inc.: See—
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- Ashby, Harrel D. Diskette loading apparatus, 4,644,427, Cl. 360-98.000.
- Ashland Oil, Inc.: See—
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- Saracsan, Jeffrey W.; and Oswalt, Stephen M., 4,643,794, Cl. 156-310.000.
- Scaccia, Carl; Fisher, Dennis H.; and Throckmorton, Peter E., 4,644,015, Cl. 521-129.000.
- ASICS Corporation: See—
Hase, Yoshiaki; and Shigi, Toshio, 4,642,913, Cl. 36-50.000.
- ASMO Co., Ltd.: See—
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- Astra Lakemede AB: See—
Evers, Hans C. A., 4,643,309, Cl. 206-484.000.
- Astro-Med, Inc.: See—
Ondis, Albert W., 4,643,454, Cl. 283-74.000.
- AT&T Bell Laboratories: See—
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- Anderson, Thomas W.; Avva, Radha K.; Forrest, Bruce T.; Krawiec, Zbigniew A.; and Starrett, William R., 4,644,527, Cl. 370-58.000.
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- Canniff, Ronald J.; and Derrenberger, Mike A., 4,644,568, Cl. 375-108.000.
- Harstead, Edward E.; Klafter, Leon; and Shi, Yan-Chi, 4,643,521, Cl. 350-96.200.
- Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., 4,643,752, Cl. 65-3.150.
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- Kavehrad, Mohsen; and Salz, Jack, 4,644,562, Cl. 375-14.000.
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- Lynch, William T.; and Seidel, Thomas E., 4,643,804, Cl. 204-15.000.
- Mitchell, John P., 4,643,499, Cl. 339-17.0CF.
- Montgomery, Warren A., 4,644,472, Cl. 364-300.000.
- Robe, Thomas J., 4,644,437, Cl. 361-56.000.
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Harstead, Edward E.; Klafter, Leon; and Shi, Yan-Chi, 4,643,521, Cl. 350-96.200.
- Kavehrad, Mohsen; and Salz, Jack, 4,644,562, Cl. 375-14.000.
- AT&T Information Systems Inc.: See—
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- Gitlin, Richard D.; and Werner, Jean-Jacques, 4,644,537, Cl. 370-119.000.

- AT&T Technologies, Inc.: See—
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Hechtman, Charles D.; and Levine, Zachary H., 4,642,890, Cl. 29-846.000.
Kuyel, Birol, 4,644,576, Cl. 378-119.000.
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Atlantic Richfield Company: See—
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Kovarik, Frank S., 4,643,252, Cl. 166-263.000.
Mohr, Walter R.; and Roth, Peter A., 4,643,543, Cl. 350-609.000.
Atlas Copco Aktiebolag: See—
Karden, Karl G., 4,643,263, Cl. 173-168.000.
Atochem: See—
Cheminal, Bernard; Mathais, Henri; and Thomarai, Marc, 4,643,851, Cl. 260-544.00Y.
Atsumi, Morihoro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ceramic heater, 4,644,133, Cl. 219-270.000.
Audi AG: See—
Ruf, Max; Korostenski, Erwin; and Steinwart, Johannes, 4,643,138, Cl. 123-52.00M.
Audrix, Jean C.: See—
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Auerbach, David R., to Pitney Bowes Inc. Envelope moistening apparatus, 4,643,123, Cl. 118-32.000.
Auerbach, Joseph: See—
Huang, Fu-chih; and Auerbach, Joseph, 4,644,009, Cl. 514-423.000.
Aulich, Hubert; and Schulze, Friedrich-Wilhelm, to Siemens Aktiengesellschaft. Method for separating solid reaction products from silicon produced in an arc furnace, 4,643,833, Cl. 210-714.000.
Austin, Michael. Underwater icewalker, 4,642,932, Cl. 43-27.200.
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Phiet, Do Q., 4,644,530, Cl. 370-62.000.
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Miller, Jule A., 4,644,129, Cl. 219-121.0LC.
Sweet, Ervin J., 4,642,993, Cl. 60-752.000.
Avery, Carl F., to Marion Laboratories, Inc. Gas generator/indicator unit, 4,643,973, Cl. 435-287.000.
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Shapiro, Sanford S.; and Avishur, Mayroma, 4,643,453, Cl. 283-73.000.
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Werlberger, Peter; Killmann, Irolt; and Cartellieri, Wolfgang, 4,643,022, Cl. 73-117.300.
AVL Gesellschaft für Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof. Dr. Dr. h.c. Hans List: See—
Wunsche, Peter, 4,643,135, Cl. 123-41.440.
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Yano, Kazuhiko; Ohtsuki, Kazuhiko; Awaya, Takao; and Yoshii, Gen, 4,643,687, Cl. 440-75.000.
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Kajimoto, Norifumi; and Azegami, Hitoshi, 4,643,934, Cl. 428-141.000.
Baas Technik GmbH: See—
Artemann, Gerhard, 4,643,295, Cl. 198-594.000.
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Hosonuma, Sin; Fujio, Junichi; Tanaka, Kozo; Suzuki, Harue; and Baba, Kenichi, 4,643,529, Cl. 350-337.000.
Baba, Masatoshi; Tanaka, Norio; Ikai, Takasi; Nawamaki, Tsutomu; and Matsunaga, Masaji, to Nissan Chemical Industries, Ltd. Herbicidal 4-benzoyl-1-methyl-5-hydroxypyrazoles, 4,643,757, Cl. 71-86.000.
Babcock & Wilcox Company, The: See—
Jeffers, Larry A., 4,644,173, Cl. 250-554.000.
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Baccini, Giovanni. Scales, 4,643,266, Cl. 177-169.000.
Bachler, Werner; Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, to Leybold-Heraeus GmbH. Damped displacer refrigerating machine, 4,642,995, Cl. 62-6.000.
Bachmann, Friedrich, to Siemens Aktiengesellschaft. Method for creating blind holes in a laminated structure, 4,644,130, Cl. 219-121.0LJ.
Backstrom, Holger G. Burner system at heating unit, 4,643,673, Cl. 431-340.000.
Badiali, John A., to Custom Spec Engineering, Inc. Bevel gear driven offset screwdriver arrangement, 4,643,052, Cl. 81-57.280.
Baechler, Theodor; and Amann, Josef, to Messerschmitt-Bolkow-Blohm GmbH. Recoilless launching device, 4,643,071, Cl. 89-1.701.
Bagley, Brian G., to AT&T Bell Laboratories. Information transmission using dispersive optical channels, 4,644,522, Cl. 370-4.000.
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Law, Kock-Yee; and Bailey, Frank C., 4,644,082, Cl. 564-307.000.
Bailey, Peter, to Pex (Holdings) Limited. Transfer mechanism for transferring hosiery articles, 4,643,340, Cl. 223-40.000.
Baines, Alfred H. P., deceased (by Ridley, Dennis James, executor); Campetti, Gianfranco; Baumgartl, Walter A.; and Nusse, Klaus J. R., to Heinemann Electric (South Africa) Limited. Circuit breaker, 4,644,312, Cl. 335-236.000.
Baird, J. Andrew, to Salk Institute for Biological Studies. The. Inhibition of aldosterone secretion, 4,643,989, Cl. 514-12.000.
Baitinger, Hartmut: See—
Sturtz, Gunter; Jocher, Reiner; and Baitinger, Hartmut, 4,644,447, Cl. 362-61.000.
Baker, Gerald R.: See—
Murphy, Kenneth J.; Baker, Gerald R.; and Gard, Matthew F., 4,643,446, Cl. 280-648.000.
Baker, Richard I.: See—
Szymansky, Edward; Wegryn, Richard J.; and Baker, Richard I., 4,644,328, Cl. 340-539.000.
Baker, Robert G., to Nordson Corporation. Electrically heated hose having corrugated plastic cover, 4,644,134, Cl. 219-301.000.
Balakrishnan, Ramanatha V.: See—
Sivasothy, Sivakumar; and Balakrishnan, Ramanatha V., 4,644,186, Cl. 307-300.000.
Ballenegger, Marc E.; Rimbault, Christian G.; Albert, Alban I.; Weith, Andre J.; Courbat, Pierre; Tyson, Robert G.; Palmer, Derek R.; and Thompson, David G., to Zyma SA. Pharmaceutical preparations containing (+)-cyanidan-3-ol derivatives, the use thereof, novel substituted (+)-cyanidan-3-ol derivatives, and processes for producing them, 4,644,011, Cl. 514-456.000.
Ballies, Uwe. Cap for a tube for extracting blood, 4,643,198, Cl. 128-763.000.
Balog, Georg E.: See—
Johnsen, John N.; and Balog, Georg E., 4,644,097, Cl. 174-102.00R.
Balz, Jürgen, to Schubert & Salzer. Slide gate valve, 4,643,226, Cl. 137-625.330.
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Bracher, Bernhard; Baumann, Karl; and Staub, Hermann, 4,643,128, Cl. 118-503.000.
Ban, Keisuki, to Honda Giken Kogyo Kaisha. Fiber-reinforced lightweight alloy piston for an internal-combustion engine and associated method, 4,643,078, Cl. 92-212.000.
Banba, Takashi: See—
Hiraishi, Shigetoshi; Kondo, Kazuyoshi; and Banba, Takashi, 4,644,374, Cl. 346-209.000.
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Bane, William. Reusable insulated box and method of manufacture, 4,642,970, Cl. 53-433.000.
Bangert, Dieter, to Alfred Teves GmbH. Brake shoe arrangement and a method of manufacturing a brake shoe, 4,643,277, Cl. 188-1.110.
Banno, Haruhiko; and Dewa, Koichi, to Kabushiki Kaisha Toshiba. Floppy disk control apparatus, 4,644,418, Cl. 360-39.000.
Bantel, Thomas E.; and Mack, David C., to General Electric Company. Cooling hole inspection, 4,644,162, Cl. 250-340.000.
Bantz, David F.; Gupta, Satish; and Lucas, Bruce D., to International Business Machines Corporation. Computer memory system with integrated parallel shift circuits, 4,644,503, Cl. 365-230.000.
Barabino, William A., to Technical Research Associates. Fluid level and condition detector system, 4,644,177, Cl. 250-577.000.
Barber, Roy P.: See—
Postle, Stephen R.; and Barber, Roy P., 4,643,588, Cl. 374-160.000.
Barberine, Frank G.; and Flora, David D. Slat bending tool, 4,643,016, Cl. 72-387.000.
Barbosa, Luiz C. F.; Ribeiro, Adelman M.; Bonet, Euclides J.; and Branco, Celso C. M., to Petroleo Brasileiro S.A. - Petrobras. Process for the correction of oil well productivity and/or injectivity profiles, 4,643,254, Cl. 166-292.000.
Barclay, John A.; and Prenger, F. Coyne, Jr., to United States of America, Energy. Magnetic refrigeration apparatus with heat pipes, 4,642,994, Cl. 62-3.000.
Barendsz, Anton W.; van Beest, Cornelis A.; and Leur, Robert, to Staat der Nederlanden (Staatsbedrijf der Rosterijen, Telegrafie en Telefonie). Gas sensor and detection system comprising such a sensor, 4,644,333, Cl. 340-634.000.
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Barker, Ray E.: See—
Borchert, Earl E.; Urban, Robert J.; and Barker, Ray E., 4,643,883, Cl. 423-321.00S.
Barlebo, Lars M.; and Nickelsen, Joachim, to F. L. Smidth & Co. A/S. Heat exchanger, 4,642,905, Cl. 34-10.000.
Barlow, William A.; and Merrington, Graham, to Vickers Public Limited Company. Barriers, 4,643,125, Cl. 118-402.000.
Barnes, Alan C.; and Rowlands, David A., to Roussel Uclaf. Imidazo[2,1-c]quinolines, useful as antiallergic agents, 4,644,002, Cl. 514-292.000.
Barrett, Haentjens & Co.: See—
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- Bart, Gordon B., to Battle Creek Equipment Company. Exercise treadmill, 4,643,418, Cl. 272-69.000.
Barzuza, Yitzhak, to Filtration Water Filters for Agriculture and Industry Ltd. Fluid filter system and a suction nozzle therefor, 4,643,828, Cl. 210-412.000.
Basconi, Paul D., to Allied Corporation. Undercarpet cable, 4,644,099, Cl. 174-117.00F.
Base Ten Systems, Inc.: See—
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BASF Aktiengesellschaft: See—
Fischer, Kurt; Petersen, Harro; Kasch, Hellmuth; and Wistuba, Eckehardt, 4,644,028, Cl. 524-376.000.
Gaedcke, Harald; Braun, Ruediger; and Bauer, Roland, 4,643,772, Cl. 106-304.000.
Hartmann, Heinrich; Hoffmann, Gerhard; Buensch, Hellmut; and Hofmann, Reiner, 4,643,963, Cl. 430-286.000.
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Boyd, Jack D.; and Shimp, David A., 4,644,039, Cl. 525-422.000.
BASF Corporation, Inmont Division: See—
Hays, Byron G., 4,643,770, Cl. 106-23.000.
Basic American Foods: See—
Porter, Roy W., 4,643,900, Cl. 426-21.000.
Bassetti, Piero, to Bassetti S.p.A. Removable linings for snugly wrapping tridimensional articles, 4,642,826, Cl. 5-496.000.
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Bassetti, Piero, 4,642,826, Cl. 5-496.000.
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Bates, Daniel A.: See—
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Batistic, Ivica: See—
Belart, Juan; Fennel, Helmut; Seibert, Wolfram; and Batistic, Ivica, 4,643,492, Cl. 303-119.000.
Battle Creek Equipment Company: See—
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Batutis, Edward F., to Filter Plate Company. Separation system using coalescing techniques, 4,643,834, Cl. 210-740.000.
Bauer, Albert W.: See—
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Bauer, Roland: See—
Gaedcke, Harald; Braun, Ruediger; and Bauer, Roland, 4,643,772, Cl. 106-304.000.
Baum, Elliott W., to Berco Industries, Inc. Table top support, 4,643,105, Cl. 108-150.000.
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Baumann, Marcus; and Breitenstein, Werner, to Ciba-Geigy Corporation. Process for the preparation of dimethylmaleic anhydride, 4,644,069, Cl. 549-261.000.
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Baxter Travenol Laboratories, Inc.: See—
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Bayer Aktiengesellschaft: See—
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Gauss, Walter; Kabbe, Hans-Joachim; Paulus, Wilfried; Rosslenbroich, Hans-Jürgen; and Brandes, Wilhelm, 4,644,000, Cl. 514-260.000.
Haas, Peter; Freitag, Hans-Albrecht; Avar, Geza; Sommerfeld, Claus-Dieter; and Illger, Hans-Walter, 4,644,017, Cl. 521-129.000.
Ohtsubo, Akio, 4,643,942, Cl. 428-328.000.
Rasshofer, Werner; and Freitag, Hans-Albrecht, 4,644,016, Cl. 521-129.000.
Steinbach, Hans-Horst; and Rieder, Matthias, 4,643,771, Cl. 106-111.000.
Beals, Michael. Stand for motorized snow vehicle or the like, 4,643,396, Cl. 254-116.000.
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Mounier-Poulat, Francois; Beaupellet, Jean; and Gardier, Patrick, 4,643,406, Cl. 267-52.000.
Bechtel International Corporation: See—
Wallace, Norman R., 4,643,462, Cl. 285-119.000.
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Becker, Hans F., to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft. Filter press for cake filtration, 4,643,827, Cl. 210-228.000.
Becker, Helmut: See—
Sturm, Walter; Becker, Helmut; Witt, Jürgen; Fritz, Werner; and Eysholt, Ursula, 4,644,166, Cl. 250-372.000.
Becker, Hilton. Permanent reconstruction implant and method of performing human tissue expansion, 4,643,733, Cl. 623-8.000.
Becker, Jorgen, to L. & C. Steinmuller GmbH. Reaction gas cooler for low-energy plants, 4,643,747, Cl. 55-269.000.
Becker, Thomas P.; Grover, Donald D.; Stout, Christopher B.; Kaufman, Glenn A.; and Olson, Gene E., to Snap-On Tools Corporation. Torque measuring apparatus, 4,643,030, Cl. 73-862.230.
Bedard, James F.; and Jaswa, Vijay C., to General Electric Company. Fault-tolerant real time clock, 4,644,498, Cl. 364-900.000.
Bedell, Stephen A.: See—
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Bedini, John C., to TVI Systems, Ltd. Anti-copy system, 4,644,422, Cl. 360-60.000.
Bednorz, Johannes G.; Gueret, Pierre L.; Nievergelt, Hermann E.; Ott, Hanspeter; Pohl, Wolfgang D.; and Widmer, Daniel F., to International Business Machines Corporation. Vacuum transfer device, 4,643,627, Cl. 414-217.000.
Beecham Group p.l.c.: See—
Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,644,070, Cl. 549-399.000.
Beechey, Robert E.: See—
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Beer, Wilhelm, to General Motors Corporation. Motor vehicle drive unit support arrangement, 4,643,270, Cl. 180-299.000.
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Golder, Willis E.; Ierardi, Joseph A.; and Beety, Carl, Jr., 4,644,269, Cl. 324-158.00F.
Beghin-Say S.A.: See—
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Behlen Mfg. Co.: See—
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Beiersdorf Aktiengesellschaft: See—
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Belart, Juan, to ITT Industries, Inc. Hydraulic power booster, 4,642,989, Cl. 60-551.000.
Belart, Juan; Weise, Lutz; and Seibert, Wolfram, to Alfred Teves GmbH. Slip-controlled brake system for automotive vehicles with driven front and rear axle, 4,643,486, Cl. 303-114.000.
Belart, Juan, to Alfred Teves GmbH. Hydraulic servo vehicle brake, 4,643,490, Cl. 303-115.000.
Belart, Juan; Fennel, Helmut; Seibert, Wolfram; and Batistic, Ivica, to Alfred Teves GmbH. Brake system with slip control for automotive vehicles with front-wheel drive or all-wheel drive, 4,643,492, Cl. 303-119.000.
Belko, Robert P.: See—
Sprecker, Mark A.; Wieggers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,643,903, Cl. 426-538.000.
Bell, Isaac M.; and Hollinden, David E., to RCA Corporation. Plural input television receiver having peaking circuit and chrominance band reject filter in a video signal channel, 4,644,387, Cl. 358-21.00R.
Bell, James R., Jr., to Manchester R & D Partnership. Encapsulated liquid crystal and filler material, 4,643,528, Cl. 350-334.000.
Bell, John H.; and Spector, George. Heated traction belt, 4,643,173, Cl. 128-68.100.
Beller, Joseph K.: See—
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Bellows, James C.: See—
Kemper, Christian T.; Bellows, James C.; and Kleinosky, Pamela J., 4,644,479, Cl. 364-550.000.
Bellsouth Corporation: See—
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Benson, Glendon M., to New Process Industries, Inc. Solar powered free-piston Stirling engine, 4,642,988, Cl. 60-641.140.
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Palentyn, Gunther H.; Dehlinger, James R.; and Rigsby, Donald R., 4,644,128, Cl. 219-121.0LC.
Benton, Robert L., to General Motors Corporation. Preloaded ball nut and screw assembly and method of manufacture, 4,643,041, Cl. 74-441.000.
Berco Industries, Inc.: See—
Baum, Elliott W., 4,643,105, Cl. 108-150.000.
Berfield, Robert C.; and Fegan, Richard M., to Shop-Vac Corporation. Hand held vacuum cleaner, 4,642,841, Cl. 15-330.000.
Bergeron, Lawrence E., to Wang Laboratories, Inc. Dialing tone generation, 4,644,476, Cl. 364-513.500.
Bergeron, Robert P., to Shell Offshore Inc. Oil cleanup barge, 4,643,612, Cl. 405-60.000.
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Bernitz, Bernhard; Brodmann, Richard; and Hermann, Dietmar, to Continental Gummi-Werke Aktiengesellschaft. Profiled strip, 4,643,923, Cl. 428-31.000.
Berns, Everhardus G.: See—
de Hair, Johannes T. W.; van Kemenade, Johannes T. C.; and Berns, Everhardus G., 4,644,223, Cl. 313-487.000.
Bernzweig, David S. Metal detector audio amplifier, 4,644,290, Cl. 330-149.000.
Berretti, Rodolfo; Tarli, Paolo; and Berti, Brunilde, to Sclavo, S.p.A. Device for identifying microorganisms, 4,643,974, Cl. 435-287.000.
Berry, William J.; and McManigan, Michael H., to Berry, William J. Checker type game utilizing interfitting game pieces, 4,643,432, Cl. 273-260.000.
Berti, Brunilde: See—
Berretti, Rodolfo; Tarli, Paolo; and Berti, Brunilde, 4,643,974, Cl. 435-287.000.

Bertiller, Roland; Kellner, Gerd; and Reudelsterz, Helmut, to Mauser-Werke Oberndorf GmbH. Insert for reducing the caliber of a weapon. 4,642,928, Cl. 42-77.000.

Bertin & Cie: See—
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Bertocchi, Primo. Rotary machine for extraction of juice and puree from tomatoes, fruit and other produce. 4,643,085, Cl. 99-510.000.

Best, Richard A., to Whirlpool Corporation. Thermal bias and timer run-out for automatic dryer control. 4,642,907, Cl. 34-48.000.

Beta Engineering and Development Ltd.: See—
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Beta Phase, Inc.: See—
Krumme, John F., 4,643,500, Cl. 339-30.000.

Betterton, Joseph T.; and Glover, Alfred H., to Chrysler Motors Corporation. Composite fastening device. 4,643,026, Cl. 73-431.000.

Betts, Robert E.: See—
Melvin, William S.; Betts, Robert E.; and Thorn, Lawrence B., 4,642,983, Cl. 60-219.000.

Beyer, Hasso, to EKE Robotersysteme GmbH. Overload safety device. 4,643,632, Cl. 414-730.000.

Bezuda, Rao S.; Shalaby, Shalaby W.; Newman, Hugh, Jr.; and Kafrawy, Adel, to Ethicon, Inc. Crystalline copolymers of p-dioxanone and lactide and surgical devices made therefrom. 4,643,191, Cl. 128-353.500.

BF Goodrich Company, The: See—
Kolycheck, Edmond G.; and Ondercin, Lawrence, 4,643,949, Cl. 428-425.900.

Bhalla, Prithvi R.: See—
O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, 4,643,755, Cl. 71-76.000.

Bialek, Edward J., to Westinghouse Electric Corp. Static switches firing system. 4,644,243, Cl. 318-807.000.

Bias, David, to Cibeles International Inc. Gripping assembly for elongated objects such as cables or bars. 4,643,609, Cl. 403-369.000.

Bicker, Richard; and Seipke, Gerhard, to Hoechst Aktiengesellschaft. Process for the cleavage of peptides and proteins at the methionyl bond using cyanogen chloride. 4,644,057, Cl. 530-409.000.

Bien, Alfred A., to Chrysler Motors Corporation. Fastener mounting assembly. 4,643,610, Cl. 403-407.100.

Bimba, Charles W. Tie rod cylinder with gasketless seal. 4,643,332, Cl. 220-327.000.

Binks Manufacturing Company: See—
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Biotech Pharma GmbH: See—
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Bircsak, Garin S.: See—
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Bird, Graham J.: See—
Farquharson, Graeme J.; Watson, Keith G.; and Bird, Graham J., 4,643,763, Cl. 71-98.000.

Birritella, Mark S.; Marley, Robert R.; and Seelbach, Walter C., to Motorola, Inc. ECL to TTL voltage level translator. 4,644,194, Cl. 307-475.000.

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Bittar, Edward S.: See—
Sheppard, Joseph E.; Dell, Paul C.; Gearen, Peter F.; Bittar, Edward S.; and Miller, Gary J., 4,643,177, Cl. 128-84.000.

Bitton, Georges, to Rexroth-Sigma. Clamping of machine casings formed from at least two parts one of which is made from a metal of relatively low hardness. 4,643,044, Cl. 74-606.000.

Bjerkvoll, Bjorn S.: See—
Gudbrandsen, Gunnar F.; Skjerven, Per Kristian; and Bjerkvoll, Bjorn S., 4,643,098, Cl. 102-513.000.

Black, Richard L.: See—
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Otto, Wilhelm, 4,643,643, Cl. 416-154.000.

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Bo, Helge. Formwork system. 4,643,387, Cl. 249-193.000.

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Boden, Richard M.: See—
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Jurrius, Eran J. P.; Russ, Geri A.; and Russ, Travis A., 4,643,791, Cl. 156-251.000.

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Cooper, Michael G.; Elliott, Elden M.; and Hartzell, Dean A., 4,644,538, Cl. 371-9.000.

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Borchert, Earl E.; Urban, Robert J.; and Barker, Ray E., to International Minerals & Chemical Corp. Method of decolorizing wet process phosphoric acid. 4,643,883, Cl. 423-321.000.

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Borenstein, Charles, to Cryo-Genics, Inc. Shaving cooler. 4,642,893, Cl. 30-90.000.

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Lech, Thaddeus, Jr., 4,643,287, Cl. 192-106.200.

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Salant, Richard F.; Key, William E.; and Kay, Peter L., 4,643,437, Cl. 277-28.000.

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Boser, Otmar H., to North American Philips Corporation. Nondestructive testing of multilayer ceramic capacitors. 4,644,259, Cl. 324-51.000.

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Botts, Thomas E.; and Powell, James R., to United States of America, Energy. Process for electrochemically gasifying coal using electro-magnetism. 4,643,809, Cl. 204-155.000.

Boucher, Armand R., to Joseph E. Seagram & Sons, Inc. Alcohol-free wine and its manufacture. 4,643,083, Cl. 99-275.000.

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Langston, Mark C.; and Boutwell, David G., 4,643,119, Cl. 112-421.000.

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Bowles, Patrick J.; Garrett, Lloyd W.; Howard, John V.; and Heil, Robert F., Sr., to General Electric Company. Molding apparatus. 4,643,663, Cl. 425-406.000.

Boyd, Jack D.; and Shimp, David A., to BASF Corporation. Bis-maleimide resin systems and structural composites prepared therefrom. 4,644,039, Cl. 525-422.000.

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Bozai, Mohammed Z., to Peabody Engineering Corporation. Smokeless flare gas burner. 4,643,669, Cl. 431-202.000.

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Nance, Kenneth H., 4,643,754, Cl. 71-1.000.

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Brahmbhatt, Sudhir R., to MG Industries. System for producing a regulated atmosphere for a high-temperature process. 4,643,402, Cl. 266-82.000.

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Brauer, Wolfgang; Willenberg, Bernd; Korte, Siegfried; and Suling, Carlhans, to Bayer Aktiengesellschaft. Filler-containing acrylic and modacrylic fibres and a process for the production thereof. 4,643,946, Cl. 428-372.000.

Braun, Ernst: See—
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Braun, Roland, to RASCHIG GmbH. Packing element for use in mass transfer or heat transfer columns. 4,643,853, Cl. 261-112.000.

Braun, Rudolf K., to Potters Industries, Inc. Method for making spherical particles. 4,643,753, Cl. 65-21.300.

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Brennen, Michael B.; and Abbondanti, Alberto, to Westinghouse Electric Corp. Line fault tolerant synchronous timing reference generator for static VAR generators. 4,644,248, Cl. 323-205.000.

Brenner, Michael C.; and Fitzgibbon, James J., to Zenith Electronics Corporation. Surface acoustic wave touch panel system. 4,644,100, Cl. 178-18.000.

Brenner, Robert A., to Whirlpool Corporation. Additive dispenser for clothes dryer. 4,642,908, Cl. 34-60.000.

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Turner, Nicholas J.; Ogden, Geoffrey A.; and Bridge, Richard S., 4,642,852, Cl. 19-236.000.

Bright, William L.; and Cheatham, Michael L., to Western Power Products, Inc. Enclosure for outdoor, ground level mounted communication equipment. 4,644,095, Cl. 174-50.000.

Brignall, Nicolas L., to Ferranti, plc. Sightline stabilisation apparatus. 4,643,539, Cl. 350-500.000.

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Vyas, Dolatrai M.; and Skonezny, Paul M., 4,644,072, Cl. 549-433.000.

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Ingliis, Peter J.; and Tysoe, Nicholas W., 4,644,455, Cl. 362-309.000.

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Britton, James N., to Wayne Graham & Associates International, Inc. Method and apparatus for direct measurement of current density. 4,644,285, Cl. 324-425.000.

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Brocklehurst, Peter; and Ferguson, Angus S., to Sterling Drug Inc. Paint stripper compositions. 4,643,840, Cl. 252-160.000.

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Obman, Howard J.; and Brodbeck, Howard D., 4,643,401, Cl. 266-80.000.

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Broekhof, Nicolaas L. J. M.; van der Weerdt, Antonius J. A.; and Hofma, Jogchum, to 501 Naarden International N.V. Perfume compositions and perfumed articles containing dihydro- and/or tetrahydro-naphthols as fragrance material. 4,643,844, Cl. 252-522.000.

Brogårdh, Torgny; Hok, Bertil; and Ovren, Christer, to ASEA Aktiebolag. Fiber-optic luminescence measuring system for measuring light transmission in an optic sensor. 4,644,154, Cl. 250-227.000.

Bron, Jose, to Brondool, BV. Lock having an external bolt unlocking device. 4,643,006, Cl. 70-107.000.

Brondool, BV.: See—
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Bronnes, Robert L.; Sweet, Richard C.; and McKinlay, James K., to North American Philips Corporation. Mounting hard magnetic material permanent magnets. 4,643,347, Cl. 228-208.000.

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Brooks, Douglas M., to Triactor Holdings Limited. Apparatus for ionizing air. 4,643,744, Cl. 55-107.000.

Brophy, James F.: See—
McEntee, Thomas C.; Guilbault, Lawrence J.; Brophy, James F.; and Koob, Judith L., 4,643,920, Cl. 427-434.600.

Brose, Tom L., to Cobe Laboratories, Inc. Single needle apparatus. 4,643,714, Cl. 604-4.000.

Brosh, Amnon; and Landmann, Wolf S., to Bitronics, Inc. Sensor amplification and enhancement apparatus using digital techniques. 4,644,570, Cl. 377-17.000.

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Brown, Craig C., to Surgikos, Inc. Antimicrobial dressing or drape material. 4,643,181, Cl. 128-156.000.

Brown, Frank E. Fishing lure rigging system. 4,642,933, Cl. 43-42.360.

Brown, Harry B., to Applied Electro Mechanics, Inc. Nickel-cadmium battery state-of-charge measuring method. 4,644,245, Cl. 320-13.000.

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Brown, Ronald L.: See—
Fenner, Gordon H.; and Brown, Ronald L., 4,643,087, Cl. 100-35.000.

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- Browning, Michael R.; Cronk, Evelyn I.; and Adams, Phillip A., to Cineration Pty. Ltd. Entertainment structure. 4,642,945, Cl. 52-10.000.
- Bruckmann, Heinz; Wolfgruber, Friedrich; and Weiser, Ernst A., to SKW Trostberg Aktiengesellschaft. Inoculant alloy based on ferrosilicon or silicon and process for its preparation. 4,643,768, Cl. 420-578.000.
- Brueske, Ralph H., to Butler Manufacturing Company. Edge of roof perimeter workman safety light device. 4,644,329, Cl. 340-556.000.
- Brunelle, Daniel J.; Evans, Thomas L.; Shannon, Thomas G.; and Williams, David A., to General Electric Company. Cyclic polycarbonate oligomers and methods for their preparation and use. 4,644,053, Cl. 528-371.000.
- Brunelli, Timothy A.: See—Cheresnowsky, Michael J.; Brunelli, Timothy A.; and Munn, Robin W., 4,643,884, Cl. 423-53.000.
- Brunet, Patrice, to Poutrait-Morin. Multiple compartment ampule for automatic hypodermic syringes. 4,643,721, Cl. 604-191.000.
- Brunn, Otto, to Standard Elektrik Lorenz AG. Color picture tube with mounting structure for a shadow mask. 4,644,222, Cl. 313-406.000.
- Brunswick Corporation: See—Staerzl, Richard E., 4,643,147, Cl. 123-357.000.
- Bryant, Bernard J. Antibody method for lowering risk of susceptibility to HLA-associated diseases in future human generations. 4,643,967, Cl. 435-7.000.
- Bryson, Neil B., to Alcan International Limited. Device for collecting molten metal break-outs in casting of light metals. 4,643,242, Cl. 164-153.000.
- Bucefari, Massimo; and Rubecchini, Roberto, to I.C.M. S.p.A. Italiana Costruzioni Metalmeccaniche; and T.E.M. s.r.l. Tecnologie Eletttroniche e Meccaniche. Device for the automatic control of the feed of a tubular wire, in particular made of precious material in the goldsmith industry. 4,644,175, Cl. 250-561.000.
- Buchan, William A., to Archive Corporation. Circuit and methodology for reading and tracking binary data from magnetic tape independently of the data pattern on the tape. 4,644,420, Cl. 360-51.000.
- Buchanan, Harry C., Jr.: See—Krukemeyer, William C.; Buchanan, Harry C., Jr.; and Fannin, Wayne V., 4,644,200, Cl. 310-43.000.
- Buchner, Richard P., to General Electric Company. Locking fastener. 4,643,606, Cl. 403-24.000.
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- Buckingham, Robin E.: See—Evans, John M.; Buckingham, Robin E.; and Willcocks, Kenneth, 4,644,070, Cl. 549-399.000.
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- Buddy L Corporation: See—Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,643,695, Cl. 446-427.000.
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- Buglione, Arthur J.: See—Aposchanski, Alexander; Buglione, Arthur J.; Coats, James M.; and Edelman, Brian S., 4,644,474, Cl. 364-431.050.
- Buhrmann, Gerardus P.; and Kreijger, Pieter J., to Hoogovens Groep B.V. Liquid-cooled lance for blowing oxygen onto a steel bath and method of operating the lance. 4,643,403, Cl. 266-225.000.
- Bungert, Heinrich; Ulmen, Mathias; and Wenz, Herbert, to Pfaff Industriemaschinen GmbH. Sewing machine with step motor operated feed device. 4,643,118, Cl. 112-318.000.
- Bungert, Heinrich: See—Wentz, Klaus; and Bungert, Heinrich, 4,643,117, Cl. 112-315.000.
- Buntsis, Frank; and Reifsteck, Christopher, to Buntsis, Frank. Automatic program source selection method and apparatus. 4,644,423, Cl. 360-61.000.
- Burchett, Rodger C.: See—Gamblin, Rodger L.; and Burchett, Rodger C., 4,644,369, Cl. 346-75.000.
- Burdette, Fred E.; Fleury, Jean-Luc; and Rossler, Manfred, to Garrett Corporation. The Gas seal vanes of variable nozzle turbine. 4,643,640, Cl. 415-164.000.
- Burleigh, John; and Ura-neck, Carl A., to Phillips Petroleum Company. Pentadienyl chloride derived polymers. 4,644,024, Cl. 524-99.000.
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- Geels, Daniel P., 4,643,816, Cl. 204-228.000.
- Burmenko, Mark, to Cooper Industries, Inc. Series pass regulated battery charger with reduced power dissipation. 4,644,247, Cl. 320-39.000.
- Burns, Barbara: See—Shuman, Ralph J.; and Burns, Barbara, 4,644,026, Cl. 524-270.000.
- Burns, Richard W., to International Business Machines Corporation. Moly mask removal tool. 4,643,796, Cl. 156-584.000.
- Burow, Kenneth W., Jr.; and Williams, James C., Jr., to Eli Lilly and Company. Herbicidal furyl-, thienyl- and pyrrolyl-2-pyrrolidinones. 4,643,758, Cl. 71-90.000.
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- Logsdon, Gary L.; Scheevel, Mark R.; and Williams, Frank A., Jr., 4,644,464, Cl. 364-200.000.
- McNeal, Norman E.; Nagy, Richard A.; and Norell, Ronald A., 4,643,935, Cl. 428-157.000.
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- Butler, Barry L., to United States of America, Energy. Liquid cooled fiber thermal radiation receiver. 4,643,168, Cl. 126-449.000.
- Butler Manufacturing Company: See—Brueske, Ralph H., 4,644,329, Cl. 340-556.000.
- Buzby, George C., Jr.; Winkley, Michael W.; and McCaully, Ronald J., to American Home Products Corporation. Process for the asymmetric synthesis of chiral indoline-2-carboxylic acids. 4,644,081, Cl. 562-456.000.
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- Byram, Robert J., to General Motors Corporation. Electric motor servo for cruise control. 4,643,038, Cl. 74-397.000.
- C.K.D. Controls Co., Ltd.: See—Shimura, Katsumasa; and Nakamura, Tetsuro, 4,643,394, Cl. 251-129.080.
- C.R.B. Virbac S.A.: See—Ascher, Frederic M.; and Cuvelier, Jacques A., 4,643,893, Cl. 424-16.000.
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- Cable, Jane; and Higgins, George, to Pyrene Chemical Services Limited. Chromate coatings for metals. 4,644,029, Cl. 524-407.000.
- Cabot Corporation: See—Crook, Paul; and Zordan, Richard D., 4,643,767, Cl. 420-12.000.
- Cain, Michael: See—Collins, Ronald J.; and Cain, Michael, 4,643,547, Cl. 351-245.000.
- Caine, Gerard H., to Sundstrand Corporation. Adjustable centrifugal pump. 4,643,639, Cl. 415-148.000.
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- Nathan, Robert, 4,644,488, Cl. 364-724.000.
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- Callahan, Earnest J. Refractory stove damper with catalytic effect. 4,643,862, Cl. 264-133.000.
- Callies, Fritz A.: See—Counter, Louis F.; Callies, Fritz A.; and Lee, Phillip L., 4,643,291, Cl. 198-356.000.
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- Carswell, Edwin R.: See—McCann, Denis J.; and Carswell, Edwin R., 4,643,491, Cl. 303-118.000.
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- Casaccia, Dominick A., to General Electric Company. Apparatus for supporting an eddy current probe used to scan an irregular surface. 4,644,274, Cl. 324-262.000.
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- Cecchini, Valerio. Ice cream making machine incorporating a cold storage container. 4,643,583, Cl. 366-149.000.
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- Construction Forms, Inc.: See—
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- Danfoss A/S: See—
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- Edwards, Troy C. Interior wall trim system. 4,642,957, Cl. 52-242.000.
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Franklin, Dwaine R. Archery fish point. 4,642,929, Cl. 43-6.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—
Theurer, Josef, 4,643,101, Cl. 104-7.200.
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Fredriksson, Tommy, to Kanthal AB. Method of manufacturing loop-formed metal foil elements. 4,642,887, Cl. 29-611.000.
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Freitag, Hans-Albrecht: See—
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Fremion, Edwin A., to Westvaco Corporation. Air cooled slotter and slitter blade cutting edges. 4,643,060, Cl. 83-171.000.
French, William, to Eastman Kodak Company. Slotted sensor in yoke-type magneto-resistive head. 4,644,430, Cl. 360-113.000.
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Frentzel, Herman E., to Armeson Products, Inc. Automatic valve for use with pool cleaning devices. 4,643,217, Cl. 137-112.000.
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Sidler, Gregor; and Rickenbach, Jakob, 4,643,112, Cl. 112-185.000.
Ulmer, Christian; and Trondle, Georg, 4,643,116, Cl. 112-240.000.
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Sturm, Walter; Becker, Helmut; Witt, Jürgen; Fritz, Werner; and Eyscholt, Ursula, 4,644,166, Cl. 250-372.000.
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Fuchs, Peter M., to Advanced Micro Devices, Inc. Document resolution-adaption method and apparatus. 4,644,409, Cl. 358-256.000.
Fuji Electric Co., Ltd.: See—
Kurita, Masaya, 4,642,825, Cl. 5-453.000.
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Arai, Yoshihiro; and Shirahata, Ryuji, 4,643,915, Cl. 427-130.000.
Iwasaki, Takashi; and Mori, Keiji, 4,644,215, Cl. 310-367.000.
Kaneko, Rokusaburo; and Takenaka, Yuji, 4,643,562, Cl. 355-56.000.
Kubota, Satoshi; Yoshida, Tetsuo; and Ohmatsu, Hideki, 4,643,965, Cl. 430-567.000.
Miyoshi, Takahito; and Fujiyama, Masaaki, 4,643,941, Cl. 428-323.000.
Ochi, Shigeharu, 4,644,390, Cl. 358-50.000.
Oishi, Kengo; and Ono, Tuiyoshi, 4,644,434, Cl. 360-133.000.
Satomura, Masato; Igarashi, Akira; and Iwakura, Ken, 4,644,377, Cl. 346-221.000.
Sawada, Satoru; Naito, Hideki; and Kitaguchi, Hiroshi, 4,643,964, Cl. 430-523.000.
Tabei, Masatoshi, 4,644,404, Cl. 358-213.000.
Usami, Toshimasa; and Tanaka, Toshiharu, 4,644,376, Cl. 346-215.000.

Fuji Seiko Limited: See—
Kondo, Kunio; Haga, Katutoshi; Kurumiya, Tadashi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,643,623, Cl. 409-232.000.
Fujie, Akira; and Yamagishi, Tsukasa, to Asahi Kasei Kogyo Kabushiki Kaisha. Preparation of foam particles of ethylenic resin and foam moldings prepared therefrom. 4,644,013, Cl. 521-60.000.
Fujii, Hiroshi; Hara, Akio; Kobayashi, Mitsunori; and Mori, Yoshikatsu, to Sumitomo Electric Industries, Ltd. Coated hard metal tool. 4,643,620, Cl. 407-119.000.
Fujii, Hiroshi, to Casio Computer Co., Ltd. Radio wave data transmission watch device. 4,644,352, Cl. 340-825.440.
Fujii, Shinichiro: See—
Matsui, Tsutomu; Fujii, Shinichiro; and Kakishima, Mitsutoshi, 4,643,597, Cl. 400-124.000.
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Fujii, Yasufumi: See—
Sakagami, Teruo; Fujii, Yasufumi; and Murayama, Naohiro, 4,644,025, Cl. 526-261.000.
Fujimura, Fumio: See—
Satake, Toshimi; Minami, Toshiaki; Maruyama, Kazuo; and Fujimura, Fumio, 4,644,375, Cl. 346-209.000.
Fujino, Masahisa, to Canon Kabushiki Kaisha. Electro-magnetically driven shutter. 4,643,553, Cl. 354-234.100.
Fujio, Junichi: See—
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Ohashi, Ryota; Kawamura, Masahisa; and Fujisaki, Koichiro, 4,643,442, Cl. 280-461.00A.
Fujisawa Pharmaceutical Co., Ltd.: See—
Umehara, Kazuyoshi; Yoshida, Keizo; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,643,990, Cl. 514-18.000.
Fujita, Masaaki; Sasaki, Mikio; Goto, Teruo; and Yamaguchi, Namio, to Matsushita Electric Industrial Co., Ltd. Control unit including a circuit for controlling and setting control data for a digital processing circuit of a color television receiver. 4,644,349, Cl. 340-825.250.
Fujita, Tsuneo, to Nippon Electric Co., Ltd. Analog-to-digital converter. 4,644,322, Cl. 340-347.0AD.
Fujitsu Limited: See—
Hattori, Toshihiro; Uriuhara, Makoto; Kasai, Hitoshi; Asagi, Yasuyoshi; and Ogawa, Noriaki, 4,643,048, Cl. 74-866.000.
Kawashima, Hiromi; and Arakawa, Hideki, 4,644,182, Cl. 307-246.000.
Kawashima, Syoichiro, 4,644,502, Cl. 365-219.000.
Kawata, Haruo; and Nishi, Hidetoshi, 4,642,879, Cl. 29-576.00B.
Matsubara, Yoshiaki; and Tsuru, Masato, 4,644,462, Cl. 364-200.000.
Nagasawa, Masanori, 4,644,501, Cl. 365-203.000.
Sakurai, Junji; and Kamioka, Hajime, 4,642,883, Cl. 29-576.00B.
Sasaki, Susumu, 4,644,531, Cl. 370-77.000.
Fujiwara, Akihiro; and Tanaka, Kazuo, to Canon Kabushiki Kaisha. Automatic focusing adjustment device. 4,643,556, Cl. 354-406.000.
Fujiwara, James M. Rocking turtle with no legs. 4,643,922, Cl. 428-16.000.
Fujiyama, Masaaki: See—
Miyoshi, Takahito; and Fujiyama, Masaaki, 4,643,941, Cl. 428-323.000.
Fukamachi, Toshio; Matsuda, Kazuto; Noma, Kouichi; Kawada, Toshiaki; Sakurai, Toshio; and Osawa, Takeshi, to Tokyo Sanyo Electric Co. Ultrasonic humidifier. 4,643,351, Cl. 236-44.00E.
Fukami, Akira: See—
Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teichi, 4,643,745, Cl. 55-137.000.
Fukao, Masami: See—
Suzukamo, Gohfu; and Fukao, Masami, 4,644,080, Cl. 560-124.000.
Fukatsu, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Porcelain clad current transformer. 4,644,314, Cl. 336-58.000.
Fukuda, Yoshinobu: See—
Yoneda, Kazuhiko; Kitano, Seiichi; and Fukuda, Yoshinobu, 4,643,289, Cl. 192-106.200.
Fukunaga, Mitsuo; and Inoue, Yoshihisa, to Murata Kikai Kabushiki Kaisha. Tension device for use in two-for-one twister. 4,642,980, Cl. 57-58.860.
Fukuta, Kinsho; and Sasaki, Shiro, to Toyota Jidosha Kabushiki Kaisha. Manual seat adjuster. 4,643,383, Cl. 248-396.000.
Fuller, Robert L., Jr.; and Proff, Dwayne E., to Boeing Company, The. Quick-change system for power feed and positive feed drill motors. 4,643,621, Cl. 408-57.000.
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Funahashi, Yoshiko; Kamino, Yoshikazu; Matsumura, Yasuharu; and Harimaya, Senichi, to Kawasaki Steel Corporation. Method for detecting phosphorus segregates in metallic material. 4,643,978, Cl. 436-78.000.
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Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shimoizato, Yoshio; Yanagi,

Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.
Furuta, Yohichi; Yamasaki, Takeo; Tachino, Tomio; and Tanikawa, Masayoshi, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Stick type vehicle hand brake lever means. 4,643,043, Cl. 74-503.000.
Furuya, Tsuneo; and Hori, Katsuya, to Sony Corporation. Apparatus for correcting errors. 4,644,544, Cl. 371-37.000.
Fuzita, Kazuhiro; Nishizawa, Kazunori; and Imamura, Shinzi, to ASMO Co., Ltd. Bearing device of bending and stretching type windshield wiper. 4,642,838, Cl. 15-250.210.
G. D. Searle & Co.: See—
Masateru, Miyano; and Shone, Robert L., 4,644,071, Cl. 549-417.000.
Gaba, Rodolfo, to Iolab Corporation. Intraocular lens insertion guide. 4,643,185, Cl. 128-303.00R.
Gabilard, Bertrand, to U.S. Philips Corporation. Decoder circuit for a static random access memory. 4,644,189, Cl. 307-449.000.
Gach, Peter P., to Sunbeam Plastics Corporation. Tamper indicating band for threaded cap. 4,643,321, Cl. 215-252.000.
Gaedcke, Harald; Braun, Ruediger; and Bauer, Roland, to BASF Aktiengesellschaft. Preparation of a mixed-phase pigment based on iron oxide and chromium oxide. 4,643,772, Cl. 106-304.000.
Gaffal, Karl; and Etzold, Frank, to Klein, Schanzlin & Becker Aktiengesellschaft. Assembly for lubricating thrust bearings of machines. 4,643,593, Cl. 384-371.000.
Gaffrig, James W. Marine muffler for water-cooled internal combustion engines. 4,643,272, Cl. 181-260.000.
Gambin, Rodger L.; and Burchett, Rodger C., to Burlington Industries, Inc. Random artificially perturbed liquid jet applicator apparatus and method. 4,644,369, Cl. 346-75.000.
Garcia, Roy. Wall mounted hair dryer having adjustable outlet with multiple positions and directions. 4,642,909, Cl. 34-97.000.
Gard, Matthew F.: See—
Murphy, Kenneth J.; Baker, Gerald R.; and Gard, Matthew F., 4,643,446, Cl. 280-648.000.
Gardener, Howard D.: See—
Johnson, Charles B.; and Gardener, Howard D., 4,644,535, Cl. 370-99.000.
Gardier, Patrick: See—
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Garner, Ricky B.; Payne, Thomas H.; and Tranjan, Farid M., to Texas Instruments Incorporated. Method for making charge coupled device (CCD)-complementary metal oxide semiconductor (CMOS) devices. 4,642,877, Cl. 29-571.000.
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Burdette, Fred E.; Fleury, Jean-Luc; and Rossler, Manfred, 4,643,640, Cl. 415-164.000.
Hubele, Norman D.; and Johnson, Kim L., 4,643,166, Cl. 126-263.000.
Garrett, Lloyd W.: See—
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Garth, Geoffrey C.; and Patterson, Charles A. Manually operable aspirator. 4,643,719, Cl. 604-73.000.
Gashet, Gerald: See—
Guery, Jean-Pierre; Gashet, Gerald; Olifant, Jacques; and Plumet, Raymond, 4,644,308, Cl. 335-128.000.
Gaskins, Arthur L., to Mirkin, Morris K. Apparatus for combining graphics and video images in multiple display formats. 4,644,401, Cl. 358-183.000.
Gauss, Walter; Kabbe, Hans-Joachim; Paulus, Wilfried; Rosslenbroich, Hans-Jürgen; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Microbicide agents containing 2-(1H-pyrazol-1-yl)-4-(3H)-quinazolinones. 4,644,001, Cl. 514-260.000.
Gauvry, Glenn A. Scissors with adjustable thumb loop. 4,642,895, Cl. 30-341.000.
Gawlik, Robert F.; and Eccles, Timothy C., to System Material Handling Company. Auxiliary wire connections for side post batteries. 4,643,511, Cl. 339-231.000.
Gaylene Investments Limited: See—
Cuypers, Martinus H., 4,643,702, Cl. 474-242.000.
Gayral, Philippe G.; and Hublot, Bernard M., to Laboratoires Biocodex. Method for the treatment of amoebiasis. 4,643,897, Cl. 424-93.000.
Gearen, Peter F.: See—
Sheppard, Joseph E.; Dell, Paul C.; Gearen, Peter F.; Bittar, Edward S.; and Miller, Gary J., 4,643,177, Cl. 128-84.00C.
Geary, Frederick J., to Robertshaw Controls Company. Hot surface direct ignition system for gas furnaces. 4,643,668, Cl. 431-70.000.
Geels, Daniel P., to Burlington Industries, Inc. Plating using a non-conductive shroud and a false bottom. 4,643,816, Cl. 204-228.000.
Geerpes, Inc.: See—
Streit, Kenneth F., 4,643,325, Cl. 220-91.000.
Gegelys, Anthony A., to E. R. Squibb & Sons, Inc. Incontinence insert. 4,643,726, Cl. 604-368.000.
Geiling, Wolfgang: See—
Wosner, Felix; and Geiling, Wolfgang, 4,643,011, Cl. 72-113.000.
Gelinis, W. Robert: See—
McKrell, Richard L.; Gelinis, W. Robert; and Brovman, Yakov Z., 4,643,090, Cl. 101-218.000.
Genaire Limited: See—
Picken, Harry B., 4,643,933, Cl. 428-116.000.
General Chemical Corporation: See—
Daley, William D.; and Jaffe, James, 4,643,887, Cl. 423-533.000.

Weslowski, Robert G., 4,643,825, Cl. 210-188.000.
General Electric Company: See—
Bantel, Thomas E.; and Mack, David C., 4,644,162, Cl. 250-340.000.
Bedard, James F.; and Jaswa, Vijay C., 4,644,498, Cl. 364-900.000.
Bowles, Patrick J.; Garrett, Lloyd W.; Howard, John V.; and Heil, Robert F., Sr., 4,643,663, Cl. 425-406.000.
Brunelle, Daniel J.; Evans, Thomas L.; Shannon, Thomas G.; and Williams, David A., 4,644,053, Cl. 528-371.000.
Buchner, Richard P., 4,643,606, Cl. 403-24.000.
Casarcia, Dominick A., 4,644,274, Cl. 324-262.000.
Chastine, Gary L., 4,643,386, Cl. 248-632.000.
Chun, Myung K.; and Wang, Sujane C., 4,643,534, Cl. 350-403.000.
Haim, Elias S., 4,643,525, Cl. 350-331.00R.
Hammer, Edward E.; Lemmers, Eugene; and Swanson, Dail L., 4,644,227, Cl. 315-96.000.
Howell, Edward K., 4,644,309, Cl. 335-195.000.
King, James L., 4,642,885, Cl. 29-596.000.
Robbins, Kenneth E.; Ruggles, Stephen G.; Duncan, Dan; Williams, John C.; Tung, Stephen K.; Sumner, William J.; and Dinh, Cuong V., 4,643,645, Cl. 416-190.000.
Sierocuk, Thomas J.; and Newman, Robert W., 4,644,276, Cl. 324-307.000.
White, Robert W., 4,642,884, Cl. 29-596.000.
Wiedemann, Gustave F., 4,643,012, Cl. 72-134.000.
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General Motors Corporation: See—
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Benton, Robert L., 4,643,041, Cl. 74-441.000.
Brann, David E.; and Lindsay, James E., 4,643,079, Cl. 92-222.000.
Byram, Robert J., 4,643,038, Cl. 74-397.000.
Douglas, Barry D., 4,643,473, Cl. 294-111.000.
Gray, Richard K., 4,644,023, Cl. 523-176.000.
Klomp, Edward D., 4,643,142, Cl. 123-90.280.
Kruckemeyer, William C.; Buchanan, Harry C., Jr.; and Fannin, Wayne V., 4,644,200, Cl. 310-43.000.
Parker, Donald L., 4,643,221, Cl. 137-516.290.
Plesniarski, Edward J.; Loose, Richard D.; and Capo, Juan M., 4,642,853, Cl. 24-163.00R.
Wonn, Quinby E., 4,643,283, Cl. 192-3.330.
Gengenbach, Bruno; Michal, Roland; and Radbruch, Jens, to Doduco KG Dr. Eugen Durrwachter. Electric power circuit breaker. 4,644,118, Cl. 200-144.00R.
Gensini, Gianni: See—
Pittini, Andrea; and Gensini, Gianni, 4,644,559, Cl. 373-104.000.
Gentry, William G., to AMP Incorporated. Shielded flexible cable. 4,644,092, Cl. 174-36.000.
George, Frederick D.; Jaffe, Jeffrey M.; and Moss, Franklin H., to International Business Machines Corporation. Automatic update of topology in a hybrid network. 4,644,532, Cl. 370-94.000.
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Georgia Krolin Company, Inc.: See—
Smith, James M., Jr., 4,642,904, Cl. 34-9.000.
Georgia Research Foundation: See—
Kerr, Thomas J.; and Kerr, Robert D., 4,643,899, Cl. 426-2.000.
Gerber, Heinz J., to Gerber Scientific Inc. Rotary blade sheet material cutter with sharpener. 4,643,061, Cl. 83-174.100.
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Wise, Robert D.; and Justice, Steven W., 4,643,474, Cl. 254-250.000.
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Gerber, Heinz J., 4,643,061, Cl. 83-174.100.
Gerety, Eugene P., to ITT Corporation. Apparatus for providing masterless collision detection. 4,644,348, Cl. 340-825.060.
Gerkema, Jan; Hagen, Johannes L. M.; and Rietdijk, Johan A., to U.S. Philips Corporation. X-ray tube comprising an anode disc rotatably journaled on a helical-groove bearing. 4,644,577, Cl. 378-133.000.
Gerlach, Pierre: See—
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Germond, Michel. Application and repair method for veneer and the like. 4,643,784, Cl. 156-98.000.
Gershenson, Edward, to Data General Corporation. Digital encoding and decoding apparatus. 4,644,545, Cl. 371-38.000.
Gesellschaft zur Förderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen: See—
Kovari, Kalman; and Koppel, Jakob, 4,643,024, Cl. 73-151.000.
Gesenhues, Paul: See—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, 4,643,944, Cl. 428-349.000.
Getman, Harlan R., to Vroman Foods, Inc. Method for producing frozen confections including edible particulate material. 4,643,905, Cl. 426-565.000.
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Fichte, Rudolf; Retelsdorf, Hans-Joachim; and Kunert, Peter K., 4,643,874, Cl. 420-417.000.
Giachetti, Antonio: See—
Cereda, Enzo; Donetti, Arturo; Giachetti, Antonio; and del Soldato, Piero, 4,643,993, Cl. 514-93.000.
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Petuchowski, Samuel J.; and Giallorenzi, Thomas G., 4,644,556, Cl. 372-97.000.

- Giannotti, Hugo V. Vortex particle separator. 4,643,158, Cl. 123-591.000.
- Gibson, Dale E., to Leupold & Stevens. Telescopic sight with erector lens focus adjustment. 4,643,542, Cl. 350-562.000.
- Gibson, Raymond E.: See—
- Rzeszotarski, Wacław J.; Gibson, Raymond E.; Eckelman, William C.; and Reba, Richard C., 4,644,003, Cl. 514-304.000.
- Gilkey, Lance R., to Alaska Canning & Marine Equipment, Inc. Method and apparatus for trimming product from can flange area. 4,642,971, Cl. 53-435.000.
- Gillingham, Gary D.: See—
- Metcalf, Jeffrey D.; and Gillingham, Gary D., 4,643,290, Cl. 192-141.000.
- Gilman, Paul S.; and Donachie, Stephen J., to INCO Alloys International, Inc. Method for producing dispersion strengthened aluminum alloys and product. 4,643,780, Cl. 148-12.70A.
- Gilkin, Richard D.; and Werner, Jean-Jacques, to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Inband coding of secondary data. 4,644,537, Cl. 370-119.000.
- Giuliani, Marcello. Rotating cleaner for cotton and wool card in general. 4,642,850, Cl. 19-105.000.
- Glasdon Limited: See—
- Palmer, Eric, 4,643,324, Cl. 220-88.00R.
- Glaser, Hellmut L., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing glass fibers. 4,643,750, Cl. 65-2.000.
- Glond, Pierre; Andureau, Joel; and Pellegrini, Maurice, to Societe Chimique des Charbonnages, S.A. Process for manufacturing ethylene terpolymers and ethylene copolymers. 4,644,044, Cl. 526-272.000.
- Glotz, Karl; Knabenbauer, Wolfgang; Sprengel, Dietrich; and Tepel, Rudolf, to Varta Batterie A.G. Process for producing a gas-tight, sealed alkaline battery. 4,643,959, Cl. 429-222.000.
- Glover, Alfred H.: See—
- Betterton, Joseph T.; and Glover, Alfred H., 4,643,026, Cl. 73-431.000.
- Gnanou, Yves; and Hild, Gerard, to Essilor International. Polyurethane hydrogels and process for their manufacture. 4,644,033, Cl. 524-590.000.
- Goar, Richard T.; and Tholen, John H., to Minnesota Mining and Manufacturing Company. Double-creased lithoplate and method of mounting on a web press. 4,643,093, Cl. 101-401.100.
- Gobien, Eric W., to McKenica Inc. Tube cutoff machine. 4,643,063, Cl. 83-311.000.
- Godfrey, Jerry W. Athletic padding. 4,642,814, Cl. 2-2.000.
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Soma, Hiroshi; Hashimoto, Isao; Kinoshita, Tosuke; Uchida, Masahiro; and Uchiyama, Susumu, 4,643,366, Cl. 241-117.000.

Hashimoto, Koichi: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.

Hashimoto, Seiji: See—
Sakai, Shinji; and Hashimoto, Seiji, 4,644,403, Cl. 358-213.000.

Hashimoto, Tadashi, to Mitsubishi Plastics Industries Limited. Process for producing a tubular casing. 4,643,788, Cl. 156-203.000.

Hatanaka, Kaoru: See—
Miyamaru, Yukio; Kawada, Shigeo; Hatanaka, Kaoru; and Shibata, Yasuo, 4,644,318, Cl. 340-73.000.

Hatanaka, Masahiko: See—
Kojima, Fumitoshi; and Hatanaka, Masahiko, 4,644,473, Cl. 364-414.000.

Hattersley, Harold J., Jr., to Syncro Machine Co. Continuous spooler for and method of winding reels with selected length long ends. 4,643,368, Cl. 242-25.00A.

Hattori, Tadashi: See—
Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, 4,643,745, Cl. 55-137.000.

Hattori, Toshihiro; Urihara, Makoto; Kasai, Hitoshi; Asagi, Yasuyoshi; and Ogawa, Noriaki, to Isuzu Motors Limited; and Fujitsu Limited. Method of controlling automatic transmission in accordance with determination of optimum gear ratio. 4,643,048, Cl. 74-866.000.

Hauni-Werke Korber & Co. KG: See—
Deutsch, Reinhard; Pohl, Klaus Jürgen; and Masuch, Gerhard, 4,643,027, Cl. 73-432.100.

Heitmann, Uwe; Pinck, Peter; and Maiwald, Berthold, 4,644,176, Cl. 250-572.000.

Hauser, Steven G.: See—
Villalobos, Luis; Hirsch, Steven B.; Hauser, Steven G.; and Von Buelow, John, 4,644,326, Cl. 340-365.00R.

Hauslaib, Wolfgang, to Mannesmann Aktiengesellschaft. Printer feeder for edge-punched record carriers. 4,643,603, Cl. 400-616.100.

Havelka, Jilji; Jirasko, Petr; Koloc, Zdenek; and Vlacik, Miroslav, to Elitex, koncern textilního strojírenství. Grooved rotary yarn distributor for winding conical bobbins. 4,643,372, Cl. 242-43.200.

Hayakawa, Masaharu: See—
Serizawa, Yoshinori; and Hayakawa, Masaharu, 4,644,415, Cl. 360-10.300.

Hayashi, Ikuo: See—
Idogaki, Takaharu; Kawai, Hisasi; and Hayashi, Ikuo, 4,644,211, Cl. 310-266.000.

Hayashi, Yutaka; Iida, Hideyo; and Mishuku, Toshio, to Taiyo Yuden Kabushiki Kaisha. Photoelectric transducer. 4,644,091, Cl. 136-259.000.

Hayashibara, Ken: See—
Masaki, Kazumi, 4,644,229, Cl. 315-310.000.

Hayes, Michael R., to United Kingdom Atomic Energy Authority. Fabrication of nuclear fuel pellets. 4,643,873, Cl. 419-33.000.

Hayes, Robert B.: See—
Stephens, Lawrence K.; and Hayes, Robert B., 4,644,478, Cl. 364-550.000.

Hayes Separation, Inc.: See—
Hayes, William V.; and Turner, Albert H., 4,643,735, Cl. 623-16.000.

Hayes, William V.; and Turner, Albert H., to Hayes Separation, Inc. Repair material for use with bones. 4,643,735, Cl. 623-16.000.

Hays, Byron G., to BASF Corporation, Inmont Division. Amine-free, easily dispersible diarylide yellow pigment compositions. 4,643,770, Cl. 106-23.000.

Haywood, Kenneth H.: See—
Edwards, David M.; and Haywood, Kenneth H., 4,643,670, Cl. 431-202.000.

Hazeltine Corporation: See—
Torre, Frank M.; and Courtien, John F., 4,644,560, Cl. 375-1.000.

Hazeltine, Michael B.; and Lipchak, W. Michael, Jr., to Raytheon Company. Fizeau interferometer. 4,643,575, Cl. 356-351.000.

Hecht, Martin A., to RCA Corporation. Redundancy system and switching network. 4,644,301, Cl. 333-101.000.

Hechtman, Charles D.; and Levine, Zachary H., to AT&T Technologies, Inc. Method for routing circuit boards. 4,642,890, Cl. 29-846.000.

Heck, Paul; and Haffner, Eugene F., to Hex Plastics, Inc. Dispenser for viscous materials. 4,643,337, Cl. 222-214.000.

Hegedus, Louis; Vayenas, Costas G.; and Michaels, James N., to W. R. Grace & Co.; and Massachusetts Institute of Technology. Electrochemical energy conversion and chemicals production. 4,643,806, Cl. 204-59.00R.

Hehn, Bruce A.; and McInnes, Donald E., to Alpha Enterprises, Inc. Booklet pocket for video cassette storage containers. 4,643,301, Cl. 206-232.000.

Heidelberger Druckmaschinen AG: See—
Pfizenmaier, Wolfgang; and Beck, Hans-Jürgen, 4,643,095, Cl. 101-401.100.

Heil, Robert F., Sr.: See—
Bowles, Patrick J.; Garrett, Lloyd W.; Howard, John V.; and Heil, Robert F., Sr., 4,643,663, Cl. 425-406.000.

Heiler, Roland, to Dr. Ing. H.C.F. Porsche Aktiengesellschaft. Headlight. 4,644,448, Cl. 362-66.000.

Heim, David E., to International Business Machines. Three pole single element magnetic read/write head. 4,644,432, Cl. 360-123.000.

Heimberger, Rudolf, to Richard Wolf GmbH. Medical forceps. 4,643,190, Cl. 128-321.000.

Heimerl, Wilfried; and Ewest, Eckhart, to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH. Method of filling a metal vessel with a glass melt containing highly radioactive fission products and apparatus therefor. 4,643,869, Cl. 376-272.000.

Heina, Karl-Fritz; Hornung, Adolf; Wörner, Kurt; and Wolf, Klaus, to Maschinenbau Oppenweiler Binder GmbH & Co. Device to pick up sheets from a stack and transport the sheets away from the stack. 4,643,412, Cl. 271-94.000.

Heinemann Electric Company: See—
Strobel, Albert, 4,644,114, Cl. 200-50.00C.

Heinemann Electric (South Africa) Limited: See—
Baines, Alfred H. P., deceased; Campetti, Gianfranco; Baumgarl, Walter A.; and Nusse, Klaus J. R., 4,644,312, Cl. 335-236.000.

Heinz, Werner. Viscosimeter. 4,643,020, Cl. 73-59.000.

Heisig, Rolf: See—
Bachler, Werner; Heisig, Rolf; Klein, Hans-Hermann; and Volker, Karl-Heinz, 4,642,995, Cl. 62-6.000.

Heitmann, Uwe; Pinck, Peter; and Maiwald, Berthold, to Hauni-Werke Korber & Co. Kg. Method and apparatus for scanning the exterior of rod-shaped articles of the tobacco processing industry. 4,644,176, Cl. 250-572.000.

Hempelmann, Wilhelm: See—
Hohlein, Gunter; Hempelmann, Wilhelm; Waldenmeier, Gunter; Koster, Rainer; Meyer, Fritz; and Pfeifer, Ulrich, 4,643,311, Cl. 206-508.000.

Hennion, Christine: See—
Fraileux, Jean; Hennion, Christine; Mora, Marie H.; and Ploix, Jean L., 4,643,689, Cl. 445-3.000.

Hensley, Howard L. Portable desk and article carrying structure for use with shopping carts. 4,643,280, Cl. 190-11.000.

Hepworth, William J.: See—
Bolton, Albert E.; and Hepworth, William J., 4,643,145, Cl. 123-195.00R.

Hera, Georg, to Maschinenfabrik Rieter AG. Conveying arrangement for conveying textile cans. 4,642,851, Cl. 19-159.00A.

Hercules Incorporated: See—
Sanderson, Thomas F., 4,643,847, Cl. 260-97.700.

Herman Berstorff Maschinenbau GmbH: See—
Capelle, Gerd, 4,643,660, Cl. 425-190.000.

Hermann Berstorff Maschinenbau GmbH: See—
Chszaniecke, Siegfried, 4,643,661, Cl. 425-204.000.

Hermann, Dietmar: See—
Bernitz, Bernhard; Brodmann, Richard; and Hermann, Dietmar, 4,643,923, Cl. 428-31.000.

Hermesdorf, Horst: See—
Hulsmann, Hans L.; Pass, Reinhard; and Hermesdorf, Horst, 4,643,850, Cl. 260-410.700.

Hernandez, Richard A.: See—
Diaz, Arthur F.; and Hernandez, Richard A., 4,643,948, Cl. 428-422.000.

Herouelle, Yves. Devices for the galvanic recovery of metals from diluted solutions. 4,643,819, Cl. 204-269.000.

Herrmann, Gerhard: See—
Brandenstein, Manfred; Edelmann, Ludwig; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,643,700, Cl. 474-112.000.

Hershfield, Alan; and Danis, Gary P., to Superior Linen Company, Inc. Drapery track having a rod return extender. 4,642,843, Cl. 16-87.40R.

Herst, Douglas J.; and Ngai, Peter Y. Y., to Peerless Lighting Corporation. Lensed indirect luminaire having improved light distribution control. 4,644,454, Cl. 362-224.000.

Herzenberger, Mario. Microprocessor controlled roulette game including an optical encoder for sensing the position of the ball on the roulette wheel. 4,643,425, Cl. 273-142.00B.

Hess & Eisenhardt Armoring Company: See—
Kovatch, Stephen C., 4,643,477, Cl. 296-84.00K.

Hewlett-Packard Company: See—
Cannon, Wayne G.; and Neering, Michael J., 4,644,486, Cl. 364-570.000.

Hex Plastics, Inc.: See—
Heck, Paul; and Haffner, Eugene F., 4,643,337, Cl. 222-214.000.

Hexcel Corporation: See—
Lin, Steve, 4,643,734, Cl. 623-16.000.

Hiab Export A/S: See—
Larsen, Gunnar M., 4,643,320, Cl. 212-180.000.

Hibino, Yoshihiko: See—
Miwa, Takahiro; and Hibino, Yoshihiko, 4,644,421, Cl. 360-66.000.

Hickin, Ray. Sewage disposal hose. 4,643,229, Cl. 138-109.000.

Hickman, Andrew D.: See—
Keskey, William H.; Schuetz, James E.; and Hickman, Andrew D., 4,644,032, Cl. 524-549.000.

Hidaka, Kazuhisa: See—
Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, 4,643,984, Cl. 501-134.000.

Hidman, Tomas; and Ovren, Christer, to ASEA Aktiebolag. Semiconductor component for generation of optical radiation. 4,644,379, Cl. 357-17.000.

Hieken, Charles: See—
Crossley, Ian; Donoghue, Daniel; Goldwasser, Robert; Miley, John; and Spooner, Frank, 4,644,296, Cl. 331-1.00R.

Higgins, George: See—
Cable, Jane; and Higgins, George, 4,644,029, Cl. 524-407.000.

Highfield, James H.; and Pugh, Roy, to Kirby's Engineers, Ltd. Rotary die cutting machine. 4,643,062, Cl. 83-285.000.

Higuchi, Kazuo: See—
Sasaki, Kiichi; Tabata, Hiroshi; Okuhara, Hisakazu; and Higuchi, Kazuo, 4,643,449, Cl. 280-808.000.

Hilboll, Gerd; Prop, Gerrit; Borbe, Harald; Lohr, Josef P.; and Doppel-feld, Ille-Stephanie, to A. Natterman & Cie GmbH. Imidazolylalkyl-thienyl tetrahydropyridazines and processes for their use. 4,643,998, Cl. 514-252.000.

Hild, Gerard: See—
Gnanou, Yves; and Hild, Gerard, 4,644,033, Cl. 524-590.000.

Hilfiker, Arthur L.: See—
Hilfiker, William K.; and Hilfiker, Arthur L., 4,643,618, Cl. 405-287.000.

Hilfiker Pipe Co.: See—
Hilfiker, William K.; and Hilfiker, Arthur L., 4,643,618, Cl. 405-287.000.

Hilfiker, William K.; and Hilfiker, Arthur L., to Hilfiker Pipe Co. Soil reinforced cantilever wall. 4,643,618, Cl. 405-287.000.

Hilinsky, David. Blackjack board game. 4,643,431, Cl. 273-243.000.

Hill, John. Vowel sound teaching device. 4,643,680, Cl. 434-170.000.

Hillebrecht, Henry A., to United States of America, Navy. Submarine missile eject system. 4,643,072, Cl. 89-1.810.

Hillesland, Gene G. Light-flash starting system. 4,643,585, Cl. 368-9.000.

Hillinger, Erich, to Turk & Hillinger GmbH. Electric heating arrangement for spray nozzles. 4,644,140, Cl. 219-535.000.

Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroto; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, to Toyama Chemical Co., Ltd. Intermediates for urea and thiourea derivatives. 4,643,849, Cl. 540-955.000.

Hiraishi, Shigetoshi; Kondo, Kazuyoshi; and Banba, Takashi, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording material. 4,644,374, Cl. 346-209.000.

Hiramatsu, Akira: See—
Ishizaki, Akira; Akashi, Akira; Ohtaka, Keiji; Suda, Yasuo; and Hiramatsu, Akira, 4,643,557, Cl. 354-406.000.

Hirano, Hiroshi: See—
Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroto; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, 4,643,849, Cl. 540-955.000.

Hiraoka, Osamu: See—
Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, 4,643,939, Cl. 428-283.000.

Hiraoka, Shin: See—
Choushi, Masahiro; and Hiraoka, Shin, 4,643,137, Cl. 123-52.00MV.

Hirohara, Toshihide: See—
Watanabe, Haruo; Tajima, Eiichi; Matsunaga, Masaaki; Hirohara, Toshihide; Jinuma, Yoshio; Ando, Naotake; Takahashi, Shigeyuki; and Takahashi, Teruaki, 4,643,526, Cl. 350-332.000.

Hiromori, Kunio: See—
Noguchi, Masahiko; and Hiromori, Kunio, 4,643,626, Cl. 414-103.000.

Hirosaki, Yoshihiko, to Mitsubishi Denki Kabushiki Kaisha. Airflow control apparatus. 4,644,238, Cl. 318-332.000.

Hirota, Akira: See—
Nishimoto, Naomichi; Hirota, Akira; and Kosaka, Yoshiteru, 4,644,412, Cl. 358-335.000.

Hirota, Tetsuro, to Ricoh Company, Ltd. Ink jet printer. 4,644,372, Cl. 346-138.000.

Hirsch, Martin: See—
Schmidt, Hans-Werner; Koch, Walter; Martin, Rosenthal, Karlheinz; and Yetmen, Yilmaz, 4,643,885, Cl. 423-119.000.

Hirsch, Steven B.: See—
Villalobos, Luis; Hirsch, Steven B.; Hauser, Steven G.; and Von Buelow, John, 4,644,326, Cl. 340-365.00R.

Hisaka, Tsugio: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Muneaki; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.

Hitachi Chemical Company, Ltd.: See—
Nakaso, Akishi; Kaneko, Youichi; Okamura, Toshiro; and Yamanoi, Kiyoshi, 4,643,793, Cl. 156-306.600.

Hitachi Engineering Co., Ltd.: See—
Kobayashi, Takao; Abe, Shigeo; Bandoh, Tadaaki; Takatoo, Masao; Matsumoto, Hidekazu; and Hara, Hideyuki, 4,644,490, Cl. 364-748.000.

Hitachi Koki Co., Ltd.: See—
Arimoto, Akira; Saito, Susumu; Tatsuno, Kimio; and Kataoka, Keiji, 4,644,160, Cl. 250-201.000.

Hitachi, Ltd.: See—
Arimoto, Akira; Saito, Susumu; Tatsuno, Kimio; and Kataoka, Keiji, 4,644,160, Cl. 250-201.000.

Haruna, Koichi; Nakao, Kazuo; Nishiyama, Tamotsu; Tashiro, Tsutomu; Matsumoto, Kuniaki; and Saida, Nobuyuki, 4,644,480, Cl. 364-552.000.

Horie, Akira; and Tsuboi, Takashi, 4,644,240, Cl. 318-768.000.

Imamura, Jiro, 4,644,465, Cl. 364-200.000.

Ito, Tetsuo; and Arita, Setsuo, 4,644,346, Cl. 340-825.030.

Kaita, Hiroshi; Kojima, Tsuyoshi; and Kawai, Motoji, 4,643,344, Cl. 227-112.000.

- Kobayashi, Takao; Abe, Shigeo; Bandoh, Tadaaki; Takatoo, Masao; Matsumoto, Hidekazu; and Hara, Hideyuki, 4,644,490, Cl. 364-748.000.
- Kojima, Keiji; and Torii, Shunichi, 4,644,471, Cl. 364-300.000.
- Miyajima, Goh, 4,644,313, Cl. 335-296.000.
- Morishita, Koichi; Omori, Shinji; Yamagata, Shimbū; Yokoyama, Tetsuo; Sano, Koichi; and Ogushi, Akira, 4,644,582, Cl. 382-6.000.
- Nakanishi, Keiichirou; Yamada, Minoru; Masaki, Akira; Imai, Kuninori; and Chiba, Katuaki, 4,644,385, Cl. 357-82.000.
- Nishiyama, Nobumasa; Aoi, Hajime; Tamura, Takashi; Ouchi, Yasuhide; and Saitou, Makoto, 4,644,424, Cl. 360-65.000.
- Nojiri, Yuukou; Ishizaki, Kosho; Ishida, Giichi; and Inamura, Junshiro, 4,644,232, Cl. 318-66.000.
- Ohishi, Shiro; and Shinozaki, Masatsugu, 4,644,563, Cl. 375-17.000.
- Okunaka, Masaaki; Nakatani, Mitsuo; Matsuyama, Haruhiko; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; Matsukuma, Kunihiko; Midorikawa, Sumiyuki; and Suzuki, Satoru, 4,643,913, Cl. 427-75.000.
- Omote, Tatsuyuki; Yoshida, Tomiharu; Shimizu, Isamu; and Motoki, Kichinori, 4,643,845, Cl. 252-626.000.
- Ookawa, Tomoyuki; and Murayama, Hiroshi, 4,644,491, Cl. 364-784.000.
- Saita, Shigeaki; Takada, Hiroshi; and Tairaku, Seiichi, 4,644,224, Cl. 313-634.000.
- Sano, Koichi; Yokoyama, Tetsuo; Yamagata, Shimbū; and Haruna, Koichi, 4,644,278, Cl. 324-309.000.
- Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.
- Tani, Tatsuhiro; Nagasawa, Hiroyuki; Tomite, Tosio; Tsubota, Kiyomasa; and Takahashi, Akira, 4,644,201, Cl. 310-51.000.
- Tsujii, Kanji; Yajima, Yusuke; and Murayama, Seiichi, 4,643,799, Cl. 156-635.000.
- Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,643,151, Cl. 123-432.000.
- Hitachi Maxell, Ltd.: See—
Sumida, Takashi; Sasaki, Shigeo; and Ketori, Takao, 4,643,304, Cl. 206-387.000.
- Hitachi Medical Corporation: See—
Kondo, Toshio; and Kuroda, Masao, 4,643,028, Cl. 73-625.000.
- Hitachi Microcomputer Engineering, Ltd.: See—
Haruna, Koichi; Nakao, Kazuo; Nishiyama, Tamotsu; Tashiro, Tsutomu; Matsumoto, Kuniaki; and Saida, Nobuyuki, 4,644,480, Cl. 364-552.000.
- Ookawa, Tomoyuki; and Murayama, Hiroshi, 4,644,491, Cl. 364-784.000.
- Hitchcock, David: See—
Lisowsky, Bohdan; Hitchcock, David; and Epstein, Henry, 4,643,110, Cl. 110-229.000.
- Hluchyj, Michael G.: See—
Braff, Martin; and Hluchyj, Michael G., 4,644,533, Cl. 370-94.000.
- Hochiki Corporation: See—
Matsushita, Eige; and Nagashima, Tetsuya, 4,644,331, Cl. 340-587.000.
- Hochtemperatur-Reaktorbau GmbH: See—
Schoening, Josef; and Schwiens, Hans-Georg, 4,643,872, Cl. 376-296.000.
- Hodges, Robert J., to International Standard Electric Corporation. Push-button switch, 4,644,315, Cl. 338-2.000.
- Hodges, Ronald R. Bed access apparatus for invalids and handicapped, 4,642,824, Cl. 5-81.000.
- Hodges, William D.: See—
Sheath, Jeremy C.; and Hodges, William D., 4,643,130, Cl. 118-681.000.
- Hodgson, Michael L.: See—
Sandland, Paul; Levy, Kenneth; Singleton, Russell M.; Hodgson, Michael L.; and Cutler, Gerald R., 4,644,172, Cl. 250-548.000.
- Hodgson, Peter W.: See—
Ouellette, Roland J.; Hodgson, Peter W.; and Trepanier, Roland J., 4,644,174, Cl. 250-559.000.
- Hoechst Aktiengesellschaft: See—
Bicker, Richard; and Seipke, Gerhard, 4,644,057, Cl. 530-409.000.
- Gross, Jürgen; and Dinges, Reinhard, 4,643,580, Cl. 356-440.000.
- Kuehnert, Hans-Günter E., 4,643,415, Cl. 271-268.000.
- Walz, Gerd; and Theiling, Ernst-August, 4,644,036, Cl. 525-386.000.
- Hoechst-Roussel Pharmaceuticals Inc.: See—
Shutske, Gregory M., 4,644,064, Cl. 548-241.000.
- Hoet, Roger; and Gerlach, Pierre, to Thomson-CSF. Electron tube with a device for cooling the grid base, 4,644,217, Cl. 313-35.000.
- Hoffmann, Ernest G., to Harvey Hubbell Incorporated. Cable having hauling, electrical and hydraulic lines, 4,644,094, Cl. 174-47.000.
- Hoffmann, Gerhard: See—
Hartmann, Heinrich; Hoffmann, Gerhard; Buensch, Hellmut; and Hoffmann, Reiner, 4,643,963, Cl. 430-286.000.
- Hoffmann, Thomas M. Sorting tray, 4,643,316, Cl. 209-702.000.
- Hofma, Jogchum: See—
Broekhof, Nicolaas L. J. M.; van der Weerd, Antonius J. A.; and Hofma, Jogchum, 4,643,844, Cl. 252-522.000.
- Hofmann, Manfred; and Sciortino, Giacomo, to Metzeler Kautschuk GmbH. Two-chamber engine mount with hydraulic damping, 4,643,405, Cl. 267-8.000.
- Hofmann, Reiner: See—
Hartmann, Heinrich; Hoffmann, Gerhard; Buensch, Hellmut; and Hoffmann, Reiner, 4,643,963, Cl. 430-286.000.
- Hogenson, Raymond A., to Minnesota Mining and Manufacturing Company. Automatic tape splicing machine, 4,643,783, Cl. 156-64.000.
- Hohlein, Gunter; Hempelmann, Wilhelm; Waldenmeier, Gunter; Koster, Rainer; Meyer, Fritz; and Pfeifer, Ulrich, to Kernforschungszentrum Karlsruhe GmbH. Stackable long-term storage container, preferably for radioactive waste, 4,643,311, Cl. 206-508.000.
- Hok, Bertil: See—
Brogårdh, Torgny; Hok, Bertil; and Ovren, Christer, 4,644,154, Cl. 250-227.000.
- Holec Systemen & Componenten B.V.: See—
Ponsioen, Ysbrand P. J. M.; and Kemper, Johannes A., 4,644,442, Cl. 361-341.000.
- Holler, Richard P.; and McMath, Connie W., to United Technologies Corporation. Cooling liner for convergent-divergent exhaust nozzle, 4,643,356, Cl. 239-13.000.
- Hollinden, David E.: See—
Bell, Isaac M.; and Hollinden, David E., 4,644,387, Cl. 358-21.000.
- Holloway, Brian L.; and Llewellyn, Roger J., to International Business Machines Corporation. Programmable timing circuit for cathode ray tube, 4,644,340, Cl. 340-749.000.
- Hollowell, John F.: See—
Hollowell, John R.; and Hollowell, John F., 4,643,776, Cl. 134-21.000.
- Hollowell, John R.; and Hollowell, John F. Battery powered vacuum trash collector, 4,643,776, Cl. 134-21.000.
- Hollyday, Robert D.; and Yeager, Patrick F., to AMP Incorporated. Grounding clip for filtered electrical connector, 4,643,509, Cl. 339-147.000.
- Holm, Bjarne R.: See—
Luter, Charles H.; Lethin, Nils L.; Moeller, Johan; and Holm, Bjarne R., 4,643,484, Cl. 301-11.000.
- Holman, John P.: See—
Crandon, Peter D.; Crandon, Melody A.; Holman, William B.; and Holman, John P., 4,643,429, Cl. 273-251.000.
- Holman, William B.: See—
Crandon, Peter D.; Crandon, Melody A.; Holman, William B.; and Holman, John P., 4,643,429, Cl. 273-251.000.
- Holmes, J. Fred: See—
Carr, R. Stephen; Dalzell, Julius N.; Holmes, J. Fred; and Hunt, John M., 4,644,320, Cl. 340-310.00A.
- Holmes & Marchant Promotions, Limited: See—
Coates, Derek, 4,643,451, Cl. 283-56.000.
- Holmstrom, Hakan, to Tetra Pak International AB. Printing plate for offset printing, 4,643,094, Cl. 101-401.100.
- Honda Giken Kogyo Kabushiki Kaisha: See—
Ban, Keisuki, 4,643,078, Cl. 92-212.000.
- Honda, Shoichi, 4,643,704, Cl. 474-245.000.
- Kazuyuki, Ishii; Yoshio, Ebe; and Shuji, Fujieda, 4,643,470, Cl. 292-216.000.
- Miura, Nobuo; Ishii, Norihisa; and Ogawa, Sumitaka, 4,643,150, Cl. 123-418.000.
- Miyakawa, Yoshitaka, 4,644,116, Cl. 200-83.000.
- Miyamaru, Yukio; Kawada, Shigeo; Hatanaka, Kaoru; and Shibata, Yasuo, 4,644,318, Cl. 340-73.000.
- Mizusawa, Mitutoyo; and Horiuchi, Makoto, 4,642,990, Cl. 60-554.000.
- Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, 4,643,049, Cl. 74-868.000.
- Nishikawa, Masayasu; and Kimura, Kenji, 4,643,157, Cl. 123-568.000.
- Sasaki, Kiichi; Tabata, Hiroshi; Okuhara, Hisakazu; and Higuchi, Kazuo, 4,643,449, Cl. 280-808.000.
- Shiiba, Yoshio; Koshigaya, Akira; and Kimura, Kouichi, 4,643,630, Cl. 414-589.000.
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- Honda, Toshiharu: See—
Oyama, Motofumi; Kubo, Yoichi; and Honda, Toshiharu, 4,643,938, Cl. 428-268.000.
- Honeywell Inc.: See—
Adams, Guy E., 4,643,373, Cl. 244-3.190.
- Davis, David C., Jr., 4,644,543, Cl. 371-37.000.
- Honji, Akio: See—
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- Hoogovens Groep B.V.: See—
Buhrmann, Gerardus P.; and Kreijger, Pieter J., 4,643,403, Cl. 266-225.000.
- Thijssen, Nicolaas J. W.; and Vander, Timen, 4,643,803, Cl. 201-1.000.
- Hope, George P.: See—
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- Hopwood, Howard R.; Lewis, Sylvia A.; and Walker, Peter C., to Ciba-Geigy AG. Carton for film cassettes, 4,643,315, Cl. 206-620.000.
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- Horiuchi, Makoto: See—
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- Horiuchi, Tohru. Adjustable cervical spine corset and truck corset, 4,643,174, Cl. 128-76.00R.
- Horn, Robert E.; Jacobs, Harold, deceased (by Jacobs, Lydia S., executrix); and Schwering, Felix, to United States of America, Army. Integrated dual beam line scanning antenna and negative resistance diode oscillator, 4,644,363, Cl. 343-785.000.
- Hornak, Leonard P.; Meuschke, Robert E.; and Marshall, James R., to Westinghouse Electric Corp. Refueling machine mounted fuel assembly inspection T.V. cameras, 4,643,867, Cl. 376-248.000.
- Horner, Robert G. Hay-hauling trailer, 4,643,625, Cl. 414-24.500.
- Horning, Leonard A. Adjustable antenna mount for parabolic antennas, 4,644,365, Cl. 343-882.000.
- Hornung, Adolf: See—
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- Horsch, Joachim, to J.I. Case Company. Hydraulic control for a master clutch of a transmission, 4,643,285, Cl. 192-87.130.
- Horvath, Zoltan: See—
Csery, Huba; Czigan, Imre; Horvath, Zoltan; Kertesz, Ivan; Kroo, Norbert; and Schmidt, Gyorgy, 4,644,550, Cl. 372-40.000.
- Horvitz, Lawrence B., to Sangamo Weston, Inc. System for improving signal-to-noise ratio in a direct sequence spread spectrum signal receiver, 4,644,523, Cl. 370-18.000.
- Hoshino, Kazuya; Yamada, Noriaki; Yoshitome, Eiji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, to Yokogawa Hokushin Electric Corporation; and Yokogawa Medical Systems, Ltd. Diagnostic apparatus employing nuclear magnetic resonance, 4,644,279, Cl. 324-309.000.
- Hosiden Electronics Co., Ltd.: See—
Aoki, Shigeo; Tamamura, Junichi; and Ukai, Yasuhiro, 4,644,338, Cl. 340-719.000.
- Hoskins, Michael K., to Ciba Corning Diagnostics Corp. Liquid clinical control, standard, and reagent products, 4,643,976, Cl. 436-15.000.
- Hosoda, Yoshiro: See—
Makabe, Eiichi; Harada, Naoki; Imai, Kiyotaka; Hosoda, Yoshiro; and Kato, Akira, 4,643,587, Cl. 374-104.000.
- Hosonuma, Sin; Fujio, Junichi; Tanaka, Kozo; Suzuki, Harue; and Baba, Kenichi, to Mitsui Toatsu Chemicals, Incorporated. Polarizing film, 4,643,529, Cl. 350-337.000.
- Hostetter, Ruby M. Sewing thimble, 4,643,341, Cl. 223-101.000.
- Hotchkiss, Glenn T.; Mortensen, David J.; and Sheth, Jayesh V., to Burroughs Corporation. System for regulating data transfer operations, 4,644,463, Cl. 364-200.000.
- Hotta, Yuji: See—
Koshizuka, Kunihiko; Kitamura, Shigehiro; Abe, Takao; Nakamura, Masaki; Ishii, Fumio; and Hotta, Yuji, 4,643,917, Cl. 427-256.000.
- Hottinger Baldwin Measurements, Inc.: See—
Kreuzer, Manfred, 4,644,262, Cl. 324-62.000.
- Hough, Gerald W.; and Hunt, Ian A., to Rolls-Royce Limited. Brush seal manufacture, 4,642,867, Cl. 29-423.000.
- House, David N.; and Sauseda, Blas O., to Tri-Cities Tool & Die Clinic, Inc. Extension cord connector housing, 4,643,505, Cl. 339-75.00P.
- Howard, George M.: See—
Gray, Richard L.; and Howard, George M., 4,643,160, Cl. 124-87.000.
- Howard, John: See—
Nichols, Charles; and Howard, John, 4,642,837, Cl. 15-171.000.
- Howard, John V.: See—
Bowles, Patrick J.; Garrett, Lloyd W.; Howard, John V.; and Heil, Robert F., Sr., 4,643,663, Cl. 425-406.000.
- Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., to AT&T Bell Laboratories. Fresnel lens fabrication, 4,643,752, Cl. 65-3.150.
- Howell, Edward K., to General Electric Company. High speed contact driver for circuit interruption device, 4,644,309, Cl. 335-195.000.
- Howell, Thomas D.: See—
Dolivo, Francois B.; Ungerboeck, Gottfried; and Howell, Thomas D., 4,644,564, Cl. 375-18.000.
- Hoya Corporation: See—
Amano, Satoru, 4,644,555, Cl. 372-72.000.
- Kasuga, Toshihiro; and Nakagawa, Kenji, 4,643,982, Cl. 501-8.000.
- Huang, Fu-chih; and Auerbach, Joseph, to USV Pharmaceutical Corporation. Aryl-alkyl heterocyclic compounds, 4,644,009, Cl. 514-423.000.
- Huang, L. D. Electric safety device, 4,644,113, Cl. 200-17.00R.
- Hubbard, Lloyd C.: See—
Clausen, Earl W.; and Hubbard, Lloyd C., 4,643,641, Cl. 415-170.00A.
- Hubele, Norman D.; and Johnson, Kim L., to Garrett Corporation. The steam engine reaction chamber, fuel composition therefore, and method of making and operating same, 4,643,166, Cl. 126-263.000.
- Hublot, Bernard M.: See—
Gayral, Philippe G.; and Hublot, Bernard M., 4,643,897, Cl. 424-93.000.
- Huebner, Erwin, to Siemens Aktiengesellschaft. Beam generating system for electron tubes, particularly travelling wave tubes, 4,644,219, Cl. 313-270.000.
- Huels Aktiengesellschaft: See—
Voges, Heinz-Werner; and Schmidt, Arno Siegmund, 4,644,086, Cl. 568-804.000.
- Hughes Aircraft Company: See—
Amoroso, Frank; and Cullings, John S., 4,644,299, Cl. 331-78.000.
- Hughes, Robert R.; and Scott, Robert G., to Chemical Specialties Manufacturing Corporation. Rotary scrubber with inwardly retractable foam extractor ring mount, 4,642,842, Cl. 15-359.000.
- Hughes Tool Company-USA: See—
Simons, Robert W.; Scott, Danny E.; and Poland, John R., 4,643,051, Cl. 76-108.00A.
- Hull, Gerry G.: See—
Gunn, William L.; and Hull, Gerry G., 4,643,107, Cl. 109-48.000.
- Huller, Josef, to Motoren-und Turbinen-Union Munchen GmbH. Connection of a ceramic rotary component to a metallic rotary component for turbomachines, particularly gas turbine engines, 4,643,648, Cl. 416-241.00B.
- Hulsmann, Hans L.; Pass, Reinhard; and Hermsdorf, Horst, to Dynamit Nobel AG. Silane modified ester mixtures, a method for their preparation, and their use in pharmaceutical and cosmetic preparations, 4,643,850, Cl. 260-410.700.
- Hunsbedt, Anstein; and Lazarus, Jonathan D., to United States of America, Energy. Heat dissipating nuclear reactor, 4,643,870, Cl. 376-280.000.
- Hunt, David: See—
Caplin, Roger W. G.; Southern, Roderic G.; Fry, Gerald L.; and Hunt, David, 4,644,450, Cl. 362-147.000.
- Hunt, Ian A.: See—
Hough, Gerald W.; and Hunt, Ian A., 4,642,867, Cl. 29-423.000.
- Hunt, John M.: See—
Carr, R. Stephen; Dalzell, Julius N.; Holmes, J. Fred; and Hunt, John M., 4,644,320, Cl. 340-310.00A.
- Hunt, Stanley E. Laser energy transducer, 4,644,169, Cl. 250-432.00R.
- Hurst, Ralph: See—
Castiglione, Ralph M.; and Hurst, Ralph, 4,642,882, Cl. 29-596.000.
- Husa, Marlin V. Trailer hitch assembly and method, 4,643,443, Cl. 280-491.00R.
- Huth, Andreas: See—
Haffer, Gregor; Bornert, Helmut; and Huth, Andreas, 4,644,062, Cl. 546-85.000.
- Hutson, James H.: See—
O'Brien, John A., Jr.; and Hutson, James H., 4,643,236, Cl. 144-208.00E.
- Hyde Athletic Industries, Inc.: See—
Ungar, Marvin J., 4,642,917, Cl. 36-59.00C.
- Hyde, Henry D. Fixed exercise platform apparatus and method, 4,643,419, Cl. 272-73.000.
- I.C.A. S.p.A. Industria Componenti per l'Architettura: See—
Zanuso, Marco; and Fratti, Fabio, 4,642,821, Cl. 4-662.000.
- I.C.M. S.p.A. Italiana Costruzioni Metalmeccaniche: See—
Bucéfari, Massimo; and Rubecchini, Roberto, 4,644,175, Cl. 250-561.000.
- Iato, Michel: See—
Castel, Yvon; and Iato, Michel, 4,643,616, Cl. 405-191.000.
- Ibe, Hiroyuki; and Shibagaki, Taro, to Kabushiki Kaisha Toshiba. Voltage-controlled variable-frequency pulse oscillator, 4,644,300, Cl. 331-111.000.
- Ichikawa, Hiroyuki; Nishi, Hisami; and Toyama, Minoru, to Nippon Sheet Glass Co., Ltd. Optical information recording/reproducing element, 4,643,535, Cl. 350-413.000.
- Ichikawa Woolen Textile Co., Ltd.: See—
Kiuchi, Masao, 4,643,916, Cl. 427-176.000.
- ICI Australia Limited: See—
Farquharson, Graeme J.; Watson, Keith G.; and Bird, Graham J., 4,643,763, Cl. 71-98.000.
- Icking, Friedrich; and Willach, Eberhard, to Westfalia Separator AG. Pulsator for milking machines, 4,643,132, Cl. 119-14.410.
- Icotron S.A. Industria de Componentes Electronicos: See—
Farias, Paulo D.; Mazzei, Francisco A. F.; Santo, Ubirajara do E.; and Werle, Paulo, 4,644,256, Cl. 323-299.000.
- Ida, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Optical sensing equipment, 4,644,153, Cl. 250-225.000.
- Idei, Michio: See—
Masaka, Mitusuke; Arai, Takatoshi; Iwabuchi, Hideo; and Idei, Michio, 4,643,653, Cl. 417-417.000.
- Idemitsu Petrochemical Co., Ltd.: See—
Kimura, Masakatsu; and Nakamura, Osamu, 4,643,928, Cl. 428-36.000.
- Idogaki, Takaharu; Kawai, Hisasi; and Hayashi, Ikuro, to Nippon Soken, Inc. Electric rotary drive apparatus operable in a magnetic cylinder, 4,644,211, Cl. 310-266.000.
- Ierardi, Joseph A.: See—
Golder, Willis E.; Ierardi, Joseph A.; and Beety, Carl, Jr., 4,644,269, Cl. 324-158.00F.

Iesaka, Tsutomu: See—
Ikeda, Hiroshi; and Iesaka, Tsutomu, 4,643,602, Cl. 400-354.000.
Igarashi, Akira: See—
Satomura, Masato; Igarashi, Akira; and Iwakura, Ken, 4,644,377, Cl. 346-221.000.
Igarashi, Yoshio, to Kabushiki Kaisha Sankosha. Discharge-type arrester, 4,644,441, Cl. 361-120.000.
Iida, Atsuko: See—
Yoshihara, Kunio; Sudo, Toshio; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, 4,644,093, Cl. 174-36.000.
Iida, Hideyo: See—
Hayashi, Yutaka; Iida, Hideyo; and Mishuku, Toshio, 4,644,091, Cl. 136-259.000.
Iida, Norikazu: See—
Nakamura, Junji; Iida, Norikazu; and Ogino, Nobukuni, 4,644,446, Cl. 361-433.000.
Iinuma, Hiroshi; Sakaguchi, Shuichi; and Suzuki, Takashi, to Panafacom Limited; and Matsushita Electric Industrial Co., Ltd. Floppy disk unit, 4,644,419, Cl. 360-46.000.
Iinuma, Yoshio: See—
Watanabe, Haruo; Tajima, Eiichi; Matsunaga, Masaaki; Hirohara, Toshihide; Iinuma, Yoshio; Ando, Naotake; Takahashi, Shigeyuki; and Takahashi, Teruaki, 4,643,526, Cl. 350-332.000.
Iizuka, Shigeo, to Yoshino Kogyo Co., Ltd. Manual liquid dispenser, 4,643,338, Cl. 222-321.000.
Ikai, Takasi: See—
Baba, Masatoshi; Tanaka, Norio; Ikai, Takasi; Nawamaki, Tsutomu; and Matsunaga, Masaji, 4,643,757, Cl. 71-86.000.
Ikeda, Hiroshi; and Iesaka, Tsutomu, to Citizen Watch Co., Ltd. Carriage supporting device for a printer, 4,643,602, Cl. 400-354.000.
Ikemura, Akio; and Kajiki, Minoru, to Yoshida Kogyo K. K. Bay window with ventilator, 4,643,246, Cl. 165-54.000.
Ileo-Unican Corp.: See—
Fish, Aaron M.; and Dausseing, Jean-Paul, 4,643,007, Cl. 70-134.000.
Illger, Hans-Walter: See—
Haas, Peter; Freitag, Hans-Albrecht; Avar, Geza; Sommerfeld, Claus-Dieter; and Illger, Hans-Walter, 4,644,017, Cl. 521-129.000.
Illius, Herbert: See—
Schmitt, Manfred; and Illius, Herbert, 4,643,219, Cl. 137-454.600.
Im, Wha S.: See—
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Imahashi, Jinichi: See—
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Imai, Kiyotaka: See—
Makabe, Eiichi; Harada, Naoki; Imai, Kiyotaka; Hosoda, Yoshiro; and Kato, Akira, 4,643,587, Cl. 374-104.000.
Imai, Kuninori: See—
Nakanishi, Keiichiro; Yamada, Minoru; Masaki, Akira; Imai, Kuninori; and Chiba, Katuaki, 4,644,385, Cl. 357-82.000.
Imai, Masahiro: See—
Asahi, Morio; Aoshima, Terutaka; Narita, Ryuho; and Imai, Masahiro, 4,644,137, Cl. 219-497.000.
Narita, Ryuho; and Imai, Masahiro, 4,644,571, Cl. 377-56.000.
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Imamura, Shinzi: See—
Fuzita, Kazuhiro; Nishizawa, Kazunori; and Imamura, Shinzi, 4,642,838, Cl. 15-250.210.
Imamura, Tetsuya: See—
Kishine, Nobuyuki; Imamura, Tetsuya; Minami, Hideyuki; and Yamauchi, Michihide, 4,644,431, Cl. 360-122.000.
Imanaka, Hiroshi: See—
Umehara, Kazuyoshi; Yoshida, Keizo; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,643,990, Cl. 514-18.000.
Imatron Inc.: See—
Rand, Roy E.; and Wang, Dan Y., 4,644,168, Cl. 250-398.000.
Imazu, Keinosuke: See—
Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; Imazu, Keinosuke; and Tomioka, Hidehiro, 4,644,298, Cl. 331-65.000.
Imbert, Michel: See—
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Imhof, Rainer, to Mannesmann Rexroth GmbH. Pressure regulating valve, 4,643,225, Cl. 137-596.170.
Inada, Eiichi: See—
Kanai, Makoto; Aikawa, Hideaki; Inada, Eiichi; and Ohtsuka, Katsuyuki, 4,643,846, Cl. 252-626.000.
Inamura, Junshiro: See—
Nojiri, Yuukou; Ishizaki, Koshio; Ishida, Giichi; and Inamura, Junshiro, 4,644,232, Cl. 318-66.000.
Inax Corporation: See—
Terabe, Seiji; and Ito, Kazuo, 4,643,921, Cl. 428-15.000.
INCO Alloys International, Inc.: See—
Gilman, Paul S.; and Donachie, Stephen J., 4,643,780, Cl. 148-12.70A.
Incorvia, Samuel A.: See—
Cullen, John S.; Incorporia, Samuel A.; and Vogt, James A., 4,642,973, Cl. 53-546.000.

Info-Chem, Inc.: See—
Witonsky, Robert J.; and Larsson, Raymond P., 4,643,980, Cl. 436-128.000.
Ingersoll-Rand Company: See—
Hartshorn, Kevin, 4,643,220, Cl. 137-516.130.
Lewis, Frederick; and Munson, Robert W., 4,643,439, Cl. 277-95.000.
Ingliis, Peter J.; and Tysoe, Nicholas W., to Britax Vega Limited. Vehicle lamp assembly, 4,644,455, Cl. 362-309.000.
Iniatakis, Nicolaos; Frohling, Werner; Kalawrytinis, Georg; and von der Decken, Claus-Benedict, to Kernforschungsanlage Julich GmbH; and Kalawrytinis, Georg. Process for waste water purification, 4,643,832, Cl. 210-712.000.
Inoo, Eiji: See—
Watanabe, Kanji; Mizoe, Mikio; and Inoo, Eiji, 4,643,929, Cl. 428-36.000.
Inoue, Hiroshi, to Canon Kabushiki Kaisha. Liquid crystal panel having an organic indium and/or organic zirconium orientation film, 4,643,531, Cl. 350-341.000.
Inoue, Takao; Matsuo, Takahiro; and Nakamura, Youichi, to Matsushita Electric Ind. Co., Ltd. Method for forming light-shield coat on lenses, 4,643,911, Cl. 427-54.100.
Inoue, Yasuo: See—
Kitagawa, Hisao; and Inoue, Yasuo, 4,643,550, Cl. 354-79.000.
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Fukunaga, Mitsuo; and Inoue, Yoshihisa, 4,642,980, Cl. 57-58.860.
Inouye, Masayori; and Masui, Yoshihiro, to Research Foundation of State University of New York. The Novel cloning vehicles for polypeptide expression in microbial hosts, 4,643,969, Cl. 435-68.000.
Inovan-Stroobe GmbH & Co. K.G.: See—
Weik, Guenter; and Ackermann, Max, 4,642,891, Cl. 29-879.000.
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Institute of Gas Technology: See—
Fleming, Donald K., 4,643,667, Cl. 431-7.000.
Instrumentation Corp.: See—
Savelainen, Matti, 4,644,281, Cl. 324-320.000.
International Business Machines: See—
Heim, David E., 4,644,432, Cl. 360-123.000.
International Business Machines Corporation: See—
Aghili, Houtan; Cristian, Flavio I.; and Strong, Hovey R., 4,644,542, Cl. 371-22.000.
Bantz, David F.; Gupta, Satish; and Lucas, Bruce D., 4,644,503, Cl. 365-230.000.
Bednorz, Johannes G.; Gueret, Pierre L.; Nievergelt, Hermann E.; Ott, Hanspeter; Pohl, Wolfgang D.; and Widmer, Daniel F., 4,643,627, Cl. 414-217.000.
Beha, Johannes G.; Dreyfus, Russell W.; Hartstein, Allan M.; and Rubloff, Gary W., 4,644,264, Cl. 324-73.00R.
Burns, Richard W., 4,643,796, Cl. 156-584.000.
Chandra, Akhileshwari N.; Comerford, Liam D.; and White, Steve R., 4,644,493, Cl. 364-900.000.
Crouse, William G.; and Irvin, David R., 4,644,108, Cl. 379-406.000.
Davidson, Evan E.; and Kiesling, David A., 4,644,265, Cl. 324-73.00R.
Diaz, Arthur F.; and Hernandez, Richard A., 4,643,948, Cl. 428-422.000.
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Feigenbaum, Barry A.; Sachsenmaier, Robert; and Skowbo, James W., 4,644,470, Cl. 364-200.000.
Frushour, James E.; Mahar, Michael L.; Majka, Christopher J.; and Swenson, John E., 4,644,237, Cl. 318-313.000.
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Larsen, Thor A.; Martin, David H.; and Moth, Frank T., 4,644,344, Cl. 340-785.000.
Nash, Dennis P.; Rex, Donald K.; Siegl, Ludwig R.; and Wussow, Wendy, 4,643,601, Cl. 400-216.100.
Selander, Raymond K., 4,644,163, Cl. 250-341.000.
Stephens, Lawrence K.; and Hayes, Robert B., 4,644,478, Cl. 364-550.000.
Tajima, Satoshi; and Watanabe, Shinpei, 4,644,497, Cl. 364-900.000.
Wen, Sherec H., 4,644,335, Cl. 340-683.000.
International Computers Limited: See—
Martin, Sidney H., 4,643,333, Cl. 220-345.000.
Smith, Edward, 4,644,487, Cl. 364-578.000.
International Flavors & Fragrances Inc.: See—
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,643,903, Cl. 426-538.000.
International Minerals & Chemical Corp.: See—
Borchert, Earl E.; Urban, Robert J.; and Barker, Ray E., 4,643,883, Cl. 423-321.00S.
International Mobile Machines Corp.: See—
Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, 4,644,561, Cl. 375-9.000.
International Radiology Systems, Inc.: See—
Thompson, Greg J., 4,642,925, Cl. 40-158.00B.
International Standard Electric Corporation: See—
Hodges, Robert J., 4,644,315, Cl. 338-2.000.

Whittaker, Edward J. W., 4,644,579, Cl. 379-388.000.
International Telephone and Telegraph Corporation: See—
Bussard, Anne B.; and Pulfrey, Robert E., 4,643,519, Cl. 350-96.190.
Intersil, Inc.: See—
Wei, James Y., 4,644,353, Cl. 340-825.830.
Inventa electronics Co., Ltd.: See—
Yeh, Kou-I, 4,644,106, Cl. 379-375.000.
Iolab Corporation: See—
Gaba, Rodolfo, 4,643,185, Cl. 128-303.00R.
Ionics, Incorporated: See—
Goldstein, Arthur L., 4,643,814, Cl. 204-180.100.
Iowa State University Research Foundation, Inc.: See—
Andrews, Barry A., 4,644,496, Cl. 364-900.000.
Irie, Yutaka: See—
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,644,499, Cl. 364-900.000.
Irvin, David R.: See—
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Ishida, Giichi: See—
Nojiri, Yuukou; Ishizaki, Koshio; Ishida, Giichi; and Inamura, Junshiro, 4,644,232, Cl. 318-66.000.
Ishida, Minoru, to Feather Safety Razor Co., Ltd. T-shaped razor, 4,642,892, Cl. 30-44.000.
Ishiguro, Kazuyoshi; and Araki, Hidemoto, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Buckle apparatus, 4,642,858, Cl. 24-641.000.
Ishii, Daisuke, to NEC Corporation. Pager with automatically illuminated display, 4,644,350, Cl. 340-825.440.
Ishii, Fumio: See—
Koshizuka, Kunihiro; Kitamura, Shigehiro; Abe, Takao; Nakamura, Masaki; Ishii, Fumio; and Hotta, Yuji, 4,643,917, Cl. 427-256.000.
Ishii, Norihisa: See—
Miura, Nobuo; Ishii, Norihisa; and Ogawa, Sumitaka, 4,643,150, Cl. 123-418.000.
Ishii, Yutaka; Funada, Fumiaki; and Matsura, Masataka, to Sharp Kabushiki Kaisha; and Merck Patent Gesellschaft mit beschränkter Haftung. Liquid-crystal composition, 4,643,841, Cl. 252-299.610.
Ishikawa, Satoshi: See—
Takahashi, Yoshifusa; Kadonaga, Hiroshi; Ishikawa, Satoshi; and Kikuchi, Junichi, 4,644,587, Cl. 455-601.000.
Ishikawa, Takashi: See—
Taguchi, Tetsuo; and Ishikawa, Takashi, 4,643,599, Cl. 400-124.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: See—
Suzuki, Ryushi; and Yamaga, Joji, 4,643,746, Cl. 55-204.000.
Ishizaki, Akira; Akashi, Akira; Ohtaka, Keiji; Suda, Yasuo; and Hiramatsu, Akira, to Canon Kabushiki Kaisha. Exposure control apparatus, 4,643,557, Cl. 354-406.000.
Ishizaki, Isao: See—
Uchiyama, Taro; Takehisa, Kiwamu; and Ishizaki, Isao, 4,643,889, Cl. 423-579.000.
Ishizaki, Koshio: See—
Nojiri, Yuukou; Ishizaki, Koshio; Ishida, Giichi; and Inamura, Junshiro, 4,644,232, Cl. 318-66.000.
Ishizu, Yoshiaki: See—
Takeuchi, Michikazu; and Ishizu, Yoshiaki, 4,644,316, Cl. 338-22.00R.
Isobe, Koji: See—
Tanaka, Masataka; Ohto, Masao; Sekine, Tetsuo; Isobe, Koji; and Maruyama, Masaru, 4,643,196, Cl. 128-753.000.
Isogai, Tokio: See—
Okunaka, Masaaki; Nakatani, Mitsuo; Matsuyama, Haruhiko; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; Matsukuma, Kunihiro; Midorikawa, Sumiyuki; and Suzuki, Satoru, 4,643,913, Cl. 427-75.000.
Isono, Keinosuke; and Naoi, Keiji, to Terumo Kabushiki Kaisha. Artificial organ and method for manufacture thereof, 4,643,715, Cl. 604-4.000.
Issakainen, Onni, to Oy Tampella AB. Apparatus for feeding cement material into a drill hole for cement bolting of a rock, 4,643,619, Cl. 405-303.000.
Istituto de Angeli S.p.A.: See—
Cereda, Enzo; Donetti, Arturo; Giachetti, Antonio; and del Soldato, Piero, 4,643,993, Cl. 514-93.000.
Isuzu Motors Limited: See—
Hattori, Toshihiro; Uriuhara, Makoto; Kasai, Hitoshi; Asagi, Yasuyoshi; and Ogawa, Noriaki, 4,643,048, Cl. 74-866.000.
Ito, Kazuo: See—
Terabe, Seiji; and Ito, Kazuo, 4,643,921, Cl. 428-15.000.
Ito, Masaaki: See—
Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,643,985, Cl. 501-136.000.
Ito, Masazumi: See—
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,644,499, Cl. 364-900.000.
Ito, Novuei: See—
Atsumi, Morihiro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, 4,644,133, Cl. 219-270.000.
Ito, Takeshi: See—
Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, 4,643,984, Cl. 501-134.000.
Ito, Tetsuo; and Arita, Setsuo, to Hitachi, Ltd. Multiplex transmission system, 4,644,346, Cl. 340-825.030.
Ito, Yuji: See—
Ohe, Shinichi; and Ito, Yuji, 4,643,566, Cl. 356-72.000.

Itoh, Masataka: See—
Nishigaki, Satoshi; Itoh, Masataka; and Katoh, Shohichi, 4,644,406, Cl. 358-213.000.
Itou, Shouichi; Kaneko, Makoto; and Yasuhara, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray diagnostic apparatus, 4,644,395, Cl. 358-111.000.
ITT Corporation: See—
Gerety, Eugene P., 4,644,348, Cl. 340-825.060.
ITT Industries, Inc.: See—
Belart, Juan, 4,642,989, Cl. 60-551.000.
Wagner, Wilfried, 4,643,075, Cl. 91-369.00A.
Iwabuchi, Hideo: See—
Masaka, Mitusuke; Arai, Takatoshi; Iwabuchi, Hideo; and Idei, Michio, 4,643,653, Cl. 417-417.000.
Iwahori, Hiroaki: See—
Yonekura, Koji; Suzuki, Kenichi; Takahashi, Yoshiyasu; and Iwahori, Hiroaki, 4,643,241, Cl. 164-101.000.
Iwakura, Ken: See—
Satomura, Masato; Igarashi, Akira; and Iwakura, Ken, 4,644,377, Cl. 346-221.000.
Iwasa, Yoshio: See—
Ura, Shozabu; and Iwasa, Yoshio, 4,643,136, Cl. 123-52.00M.
Iwasaki, Kousei. Device for preventing drying of nib of cartridge type pen, 4,643,605, Cl. 401-243.000.
Iwasaki, Satoshi, to Pioneer Electronic Corporation. Gate circuit for central control of CATV system, 4,644,396, Cl. 380-6.000.
Iwasaki, Takashi; and Mori, Keiji, to Fuji Photo Film Co., Ltd. Piezo-electric vibration measurement head, 4,644,215, Cl. 310-367.000.
Iwasaki, Takayuki: See—
Ookubo, Mamoru; Iwasaki, Takayuki; and Mieda, Kenji, 4,642,871, Cl. 29-513.000.
Iyer, Raja, to Acme Resin Corporation. Cold-setting compositions for foundry sand cores and molds, 4,644,022, Cl. 523-144.000.
Izumi, Mitsuo. Vise for clamping two works, 4,643,411, Cl. 269-153.000.
Izutani, Naoki: See—
Ohmori, Akira; Yasuhara, Takashi; Izutani, Naoki; and Ueda, Yasufumi, 4,644,043, Cl. 526-246.000.
J. Eberspachge: See—
Reuter, Fritz, 4,644,266, Cl. 324-73.00R.
J.I. Case Company: See—
Horsch, Joachim, 4,643,285, Cl. 192-87.130.
Maurer, Herman J.; and Shumaker, John F., 4,643,631, Cl. 414-723.000.
J. M. Huber Corporation: See—
Carson, Forrest L., 4,643,459, Cl. 285-84.000.
Schramm, Dale E., 4,643,890, Cl. 423-659.000.
J.M. Voith GmbH: See—
Muhle, Erwin; and Rahmig, Hermann, 4,642,862, Cl. 29-132.000.
Schiel, Christian, 4,643,802, Cl. 162-358.000.
Wanke, Wilhelm, 4,643,127, Cl. 118-413.000.
Jachowski, Ronald E.; and Dickson, Donald C., to Orion Industries, Inc. Multiple cavity square prism filter transmitter combiner with shared square walls and tuning controls mounted on rectangular end walls, 4,644,303, Cl. 333-134.000.
Jackowski, Ronald A., to Chicago Rawhide Mfg. Co. Fluid seals with unitary wear sleeve elements, 4,643,436, Cl. 277-1.000.
Jackson, Raymond. Boom mounting assembly, 4,643,358, Cl. 239-166.000.
Jacob, Gernot; and Radom, Leon, to Progress-Elektrogerate Mauz; and Pfeiffer GmbH & Co. Housing for a vacuum cleaner, 4,642,840, Cl. 15-323.000.
Jacobs, Edward H.: See—
Mudge, Dennis; Coskie, Joseph; Jacobs, Edward H.; and Harris, David R., 4,643,410, Cl. 269-64.000.
Jacobs, Harold, deceased: See—
Horn, Robert E.; Jacobs, Harold, deceased; and Schwing, Felix, 4,644,363, Cl. 343-785.000.
Jacobs, Lydia S., executrix: See—
Horn, Robert E.; Jacobs, Harold, deceased; and Schwing, Felix, 4,644,363, Cl. 343-785.000.
Jacobs, Norman: See—
Goldman, Mark; Frank, Robert; Roberts, Craig; and Jacobs, Norman, 4,643,343, Cl. 224-275.000.
Jacobs, Paul T.; and Lin, Szu-Min, to Surgikos, Inc. Hydrogen peroxide plasma sterilization system, 4,643,876, Cl. 422-23.000.
Jacobson, Gunnard K., and Trivedi, Nayankumar B., to Universal Foods Corporation. Yeast strains, method of production and use in baking, 4,643,901, Cl. 426-62.000.
Jaffe, James: See—
Daley, William D.; and Jaffe, James, 4,643,887, Cl. 423-533.000.
Jaffe, Jeffrey M.: See—
George, Frederick D.; Jaffe, Jeffrey M.; and Moss, Franklin H., 4,644,532, Cl. 370-94.000.
Jager, Wolfgang: See—
Junginger, Helmut; Wolf, Horst; and Jager, Wolfgang, 4,644,236, Cl. 318-309.000.
Jakovlev, Vladimir: See—
Engel, Jürgen; Jakovlev, Vladimir; Nickel, Bernd; Thieme, Klaus; and Scheffler, Gerhard, 4,643,995, Cl. 514-210.000.
James, Granville C.: See—
Brooks, Derek J.; and James, Granville C., 4,643,483, Cl. 299-81.000.
Jandeleit, Otto: See—
Agethen, Heinrich; Gesenhues, Paul; Radisch, Helmer; Jandeleit, Otto; and Schafer, Wolfgang, 4,643,944, Cl. 428-349.000.

- Jane Cabagnero, Ramon. Children's push-chair or stroller. 4,643,445, Cl. 280-644.000.
- Janler Corporation. See—
Klingler, Josef F., 4,643,326, Cl. 220-94.00R.
- Janome Sewing Machine Industry Co., Ltd.: See—
Hanyu, Susumu; and Koide, Akio, 4,643,120, Cl. 112-466.000.
- Janos, Wilbert J., to Republic Steel Corporation. Hot annealed weld inspection. 4,644,272, Cl. 324-240.000.
- Jansen, Franz: See—
Casellas, Pierre; Gros, Pierre; and Jansen, Franz, 4,643,895, Cl. 424-85.000.
- Jansheski, John E., to U.S. DenTek Corporation. Dental tool for personal oral hygiene. 4,643,676, Cl. 433-143.000.
- Japan Tobacco Inc.: See—
Kuga, Hisashi; and Sasaki, Chikara, 4,644,150, Cl. 250-223.00R.
- Jarema, Ferdinand: See—
Ebeling, Joachim; Friedrich, Peter; Jekat, Herbert; Lugscheider, Walter; Riegler, Ernst; Zajicek, Ernst; Achleitner, Walter; and Jarema, Ferdinand, 4,644,557, Cl. 373-22.000.
- Jaswa, Vijay C.: See—
Bedard, James F.; and Jaswa, Vijay C., 4,644,498, Cl. 364-900.000.
- Jedrzewski, Stanley T., to Avco Corporation. Mechanical override for electronic fuel control on a piston engine. 4,643,148, Cl. 123-376.000.
- Jeffers, Larry A., to Babcock & Wilcox Company, The. Flame quality analyzer with fiber optic array. 4,644,173, Cl. 250-554.000.
- Jegousse, Michel: See—
Puisais, Xavier; Hamon, Jean-Pierre; Jegousse, Michel; and Kaluszynski, Michel, 4,644,132, Cl. 219-158.000.
- Jekat, Herbert: See—
Ebeling, Joachim; Friedrich, Peter; Jekat, Herbert; Lugscheider, Walter; Riegler, Ernst; Zajicek, Ernst; Achleitner, Walter; and Jarema, Ferdinand, 4,644,557, Cl. 373-22.000.
- Jen, Hsianmin: See—
Libertini, Zoltan; Jen, Hsianmin; and Martinelli, James, 4,643,636, Cl. 415-138.000.
- Jenkins, Robert H., Jr.: See—
Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,643,737, Cl. 44-63.000.
- Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,643,738, Cl. 44-63.000.
- Jennings, Baldwin P., Jr.; and Kivlighan, Pamela M. Safety blood sample apparatus. 4,643,199, Cl. 128-763.000.
- Jennings, Baldwin P., Jr. Safety blood donor apparatus. 4,643,200, Cl. 128-763.000.
- Jennings, Glenn A., to University of California. The Regents of the. Dynamic activity-creating data-driven computer architecture. 4,644,461, Cl. 364-200.000.
- Jidosha Kiki Co., Ltd.: See—
Masaka, Mitsuke; Arai, Takatoshi; Iwabuchi, Hideo; and Idei, Michio, 4,643,653, Cl. 417-417.000.
- Satoh, Satoru, 4,643,076, Cl. 91-369.00R.
- Jin, Chikara: See—
Mochizuki, Noritaka; Jin, Chikara; and Kaneko, Toshie, 4,644,155, Cl. 250-227.000.
- Jin, Sungho; Mottine, John J., Jr.; Sherwood, Richard C.; and Tiefel, Thomas H., to AT&T Bell Laboratories. Pressure-responsive position sensor. 4,644,101, Cl. 178-18.000.
- Jirasko, Petr: See—
Havelka, Jilji; Jirasko, Petr; Koloc, Zdenek; and Vaclavik, Miroslav, 4,643,372, Cl. 242-43.200.
- Jobe, Michael J., to Alcon Laboratories, Inc. Syringe holder. 4,643,724, Cl. 604-232.000.
- Jobin, Luc; and Coulombe, Charles, to Canadian Patents and Development Limited. Multi-functional high capacity insect trap. 4,642,936, Cl. 43-122.000.
- Jocher, Reiner: See—
Sturtz, Gunter; Jocher, Reiner; and Baitinger, Hartmut, 4,644,447, Cl. 362-61.000.
- John D. Hollingsworth on Wheels, Inc.: See—
Waters, Oran G.; and Chandler, Larry G., 4,643,367, Cl. 242-7.210.
- John, Thomas: See—
Ehrlenspiel, Klaus; John, Thomas; and Schuierer, Andreas, 4,643,698, Cl. 464-111.000.
- Johnsen, John N.; and Balog, Georg E., to Standard Telefon og Kabel-fabrik A/S. Armored submarine power cable. 4,644,097, Cl. 174-102.00R.
- Johnson, Charles B.; and Gardener, Howard D., to Data General Corp. PCM channel multiplexer/demultiplexer. 4,644,535, Cl. 370-99.000.
- Johnson, Charles H. Method and apparatus for wrapping blocks of cheese. 4,642,969, Cl. 53-433.000.
- Johnson, George E.; and Newman, Walter, to Leviton Manufacturing Company, Inc. Fluorescent lamp mounting system. 4,643,503, Cl. 339-50.00R.
- Johnson, Harold E. Muzzle stabilization arrangement for firearms. 4,643,073, Cl. 89-14.300.
- Johnson, Irvin D., to Marathon Oil Company. Method and apparatus for measuring water in crude oil. 4,644,263, Cl. 324-65.00P.
- Johnson & Johnson Products, Inc.: See—
Kammerer, Gene W., 4,643,909, Cl. 427-2.000.
- Johnson, Kerrie A., to Nalco Chemical Company. Papermaking aid. 4,643,801, Cl. 162-164.100.
- Johnson, Kim L.: See—
Hubele, Norman D.; and Johnson, Kim L., 4,643,166, Cl. 126-263.000.
- Johnson, Marvin M., to Phillips Petroleum Company. Upgrading of spent butane isomerization catalyst to pentane isomerization catalyst. 4,644,090, Cl. 585-749.000.
- Johnson, Raynor A.: See—
Jones, Thomas E.; and Johnson, Raynor A., 4,643,268, Cl. 180-116.000.
- Johnston, James R., to National Manufacturing Co. Trolley hanger for sliding door. 4,642,844, Cl. 16-98.000.
- Johnston, James R.; and Crown, Marlin D., to National Manufacturing Co. Gate latch. 4,643,469, Cl. 292-66.000.
- Jonas, Udo: See—
Koss, Walter; and Jonas, Udo, 4,643,169, Cl. 128-1.00R.
- Jones, Robert L. Resource recovery utility. 4,643,111, Cl. 110-234.000.
- Jones, Stanley C., to Marathon Oil Company. Porous end plug disk for testing core samples. 4,643,019, Cl. 73-38.000.
- Jones, Thomas E.; and Johnson, Raynor A., to American Antigravity Co., Inc. Air lifted and propelled vehicle. 4,643,268, Cl. 180-116.000.
- Jonsson, Nils G., to Craelius Aktiebolag. Pressurized medium actuated gripping device. 4,643,262, Cl. 173-149.000.
- Jorgensen, Robert A. Collapsible table. 4,643,103, Cl. 108-36.000.
- Joseph E. Seagram & Sons, Inc.: See—
Boucher, Armand R., 4,643,083, Cl. 99-275.000.
- Joseph Gartner & Co.: See—
Schulz, Harald, 4,642,870, Cl. 29-509.000.
- Joy Manufacturing Company: See—
Williams, John B., Jr., 4,643,395, Cl. 251-172.000.
- Juanarena, Douglas B., to Pressure Systems Incorporated. Digital pressure transducer and corrections circuitry system. 4,644,482, Cl. 364-558.000.
- Jujo Paper Co., Ltd.: See—
Satake, Toshimi; Minami, Toshiaki; Maruyama, Kazuo; and Fujimura, Fumio, 4,644,375, Cl. 346-209.000.
- Julovich, George C. Energy-saving method and apparatus for automatically controlling cooling pumps of steam power plants. 4,642,992, Cl. 60-661.000.
- Junemann, Hubert, to Kochs Adler, AG. Workpiece holder for sewing the tip area of neckties. 4,643,115, Cl. 112-121.220.
- Junginger, Helmut; Wolf, Horst; and Jager, Wolfgang, to Zinser Textil-maschinen GmbH. Drive restart control for ring spinning or twisting machine. 4,644,236, Cl. 318-309.000.
- Jurrius, Eran J. P.; Russ, Geri A.; and Russ, Travis A., to BodiGard Technologies, Inc. Manufacture of gloves and the like. 4,643,791, Cl. 156-251.000.
- Justice, James W., to Pakway Container Corp. Cooler with container centering means. 4,642,999, Cl. 62-440.000.
- Justice, Steven W.: See—
Wise, Robert D.; and Justice, Steven W., 4,643,474, Cl. 254-250.000.
- Juvinall, John W., to Owens-Illinois, Inc. Identification of a molded container with its mold of origin. 4,644,151, Cl. 250-223.00B.
- Kaatze, Michael; and Reiff, Dieter, to TCHIBO-Frisch-Rost-Kaffee AG. Method and apparatus for roasting small quantities of coffee. 4,642,906, Cl. 34-13.000.
- Kabbe, Hans-Joachim: See—
Gauss, Walter; Kabbe, Hans-Joachim; Paulus, Wilfried; Rosslenbroich, Hans-Jurgen; and Brandes, Wilhelm, 4,644,000, Cl. 514-260.000.
- Kabushiki Kaisha Daikin Seisakusho: See—
Ookubo, Mamoru; Iwasaki, Takayuki; and Mieda, Kenji, 4,642,871, Cl. 29-513.000.
- Yoneda, Kazuhiko; Kitano, Seiichi; and Fukuda, Yoshinobu, 4,643,289, Cl. 192-106.200.
- Kabushiki Kaisha Daini Seikosha: See—
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- Kabushiki Kaisha Daisei Kikai: See—
Suzuki, Tomosaburo, 4,642,939, Cl. 47-14.000.
- Kabushiki-Kaisha Goko Eizo-Kagaku Kenkyujo: See—
Goto, Tadashi, 4,643,565, Cl. 356-24.000.
- Kabushiki Kaisha Komatsu Seisakusho: See—
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- Yato, Tokuhiko; and Tsutsumi, Yoshio, 4,644,334, Cl. 340-679.000.
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- Kabushiki Kaisha Sankyo Seiki Seisakusho: See—
Yoshikawa, Shinichi; Nishiwaki, Shigeru; and Shimodaira, Toshiro, 4,644,239, Cl. 318-641.000.
- Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—
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- Kabushiki Kaisha Toshiba: See—
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- Banno, Haruhiko; and Dewa, Koichi, 4,644,418, Cl. 360-39.000.
- Haji, Yasutaka, 4,644,187, Cl. 307-303.000.
- Ibe, Hiroyuki; and Shibagaki, Taro, 4,644,300, Cl. 331-111.000.
- Kojima, Fumitoshi; and Hatanaka, Masahiko, 4,644,473, Cl. 364-414.000.
- Maeda, Satoshi, 4,642,878, Cl. 29-571.000.
- Maeda, Takeo, 4,643,777, Cl. 148-1.500.
- Matsukawa, Naohiro; Morita, Sigeru; and Nozawa, Hiroshi, 4,642,881, Cl. 29-576.00B.
- Mizutani, Yoshihisa; and Yokogawa, Syunzi, 4,642,880, Cl. 29-576.00B.
- Nakagawa, Masaki; and Suzuki, Susumu, 4,644,389, Cl. 358-28.000.
- Narita, Ryuho; and Imai, Masahiro, 4,644,571, Cl. 377-56.000.
- Sato, Hajime; and Mizuguchi, Mamoru, 4,644,411, Cl. 358-294.000.

- Shibuya, Kunihiko; and Hara, Kunio, 4,644,391, Cl. 358-75.000.
- Sudo, Hajime; and Takahashi, Hiroshi, 4,644,205, Cl. 310-90.500.
- Tanimoto, Akira, 4,644,307, Cl. 335-16.000.
- Tezuka, Hideharu, 4,644,183, Cl. 307-268.000.
- Watanabe, Junji, 4,644,370, Cl. 346-76.0PH.
- Yoshihara, Kunio; Sudo, Toshiro; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, 4,644,093, Cl. 174-36.000.
- Kabushiki Kaisha Toyosha Seisakusho: See—
Kazuyuki, Ishii; Yoshio, Ebe; and Shuji, Fujieda, 4,643,470, Cl. 292-216.000.
- Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Yonekura, Koji; Suzuki, Kenichi; Takahashi, Yoshiyasu; and Iwahori, Hiroaki, 4,643,241, Cl. 164-101.000.
- Kadonaga, Hiroshi: See—
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- Kageno, Kenji: See—
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- Kahara, Toshiaki: See—
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- Kai, Osamu: See—
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- Kaiser, David, to Chrysler Motors Corporation. Retaining clip. 4,642,859, Cl. 24-669.000.
- Kaita, Hiroshi; Kojima, Tsuyoshi; and Kawai, Motoji, to Hitachi, Ltd. Rivet supplying apparatus. 4,643,344, Cl. 227-112.000.
- Kajiki, Minoru: See—
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- Kajimoto, Norifumi; and Azegami, Hitoshi, to TDK Corporation. Magnetic recording medium. 4,643,934, Cl. 428-141.000.
- Kakishima, Mitsutoshi: See—
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- Kalawrytinos, Georg: See—
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- Kallenbach, Dieter H. F.: See—
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- Kaltenbach & Voigt GmbH & Co.: See—
Kuhn, Bernhard, 4,643,675, Cl. 433-126.000.
- Kaluszynski, Michel: See—
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- Kalwall Corp.: See—
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- Kamino, Yoshikazu: See—
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- Funahashi, Yoshiko; Matsumura, Yasuharu; Harimaya, Senichi; Kamino, Yoshikazu; and Kitaoka, Hidenari, 4,643,979, Cl. 436-78.000.
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- Kamioka, Hajime: See—
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- Kamishiro, Toshiro: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.
- Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; Imazu, Keinosuke; and Tomioka, Hidehiro, to Omron Tateisi Electronics Co. Proximity switch. 4,644,298, Cl. 331-65.000.
- Kamiyama, Sakae: See—
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- Kammerer, Gene W., to Johnson & Johnson Products, Inc. Reinforced casting material. 4,643,909, Cl. 427-2.000.
- Kamo, Tomoichi: See—
Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiaki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.
- Kanai, Makoto; Aikawa, Hideaki; Inada, Eiichi; and Ohtsuka, Katsumi, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Process for the treatment of radioactive sodium. 4,643,846, Cl. 252-626.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; and Kishi, Takamichi, 4,643,808, Cl. 204-98.000.
- Kaneko, Makoto: See—
Itou, Shouichi; Kaneko, Makoto; and Yasuhara, Hiroshi, 4,644,395, Cl. 358-111.000.
- Kaneko, Rokusaburo; and Takenaka, Yuji, to Fuji Photo Film Co., Ltd. Exposure correction method. 4,643,562, Cl. 355-56.000.
- Kaneko, Shinobu: See—
Kondo, Kunio; Haga, Katutoshi; Kurumiya, Tadashi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,643,623, Cl. 409-232.000.
- Kaneko, Toshie: See—
Mochizuki, Noritaka; Jin, Chikara; and Kaneko, Toshie, 4,644,155, Cl. 250-227.000.
- Kaneko, Youichi: See—
Nakaso, Akishi; Kaneko, Youichi; Okamura, Toshiro; and Yamanoi, Kiyoshi, 4,643,793, Cl. 156-306.600.
- Kaneyuki, Kazutoshi, to Mitsubishi Denki Kabushiki Kaisha. Accessory drive device in engine. 4,643,046, Cl. 74-752.00C.
- Kang, Yun H.; Im, Wha S.; and Lee, Kil S., to Samsung Electronic Co., Ltd. Refrigerator cooling air flow control apparatus. 4,642,998, Cl. 62-187.000.
- Kangaroos U.S.A., Inc.: See—
Caldeira, Adelino, 4,642,914, Cl. 36-50.000.
- Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, to Takenaka Koh-muten Co., Ltd. Method of creating offshore seabed mound. 4,643,617, Cl. 405-222.000.
- Kano, Toshiji: See—
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; and Kishi, Takamichi, 4,643,808, Cl. 204-98.000.
- Kanoh, Toshiro; and Kouchiwa, Taira, to Ricoh Company Ltd. Fringe scanning shearing interferometer. 4,643,576, Cl. 356-353.000.
- Kanthal AB: See—
Fredriksson, Tommy, 4,642,887, Cl. 29-611.000.
- Kanto Yakin Kogyo Kabushiki Kaisha: See—
Takahashi, Susumu, 4,643,348, Cl. 228-223.000.
- Kanzaki Kokyukoki Mfg. Co., Ltd.: See—
Ohashi, Ryota; Kawamura, Masahisa; and Fujisaki, Koichiro, 4,643,442, Cl. 280-461.00A.
- Kanzako Kokyukoki Mfg. Co., Ltd.: See—
Yano, Kazuhiko; Ohtsuki, Kazuhiko; Awaya, Takao; and Yoshii, Gen, 4,643,687, Cl. 440-75.000.
- Kao Corporation: See—
Kishine, Nobuyuki; Imamura, Tetsuya; Minami, Hideyuki; and Yamauchi, Michihide, 4,644,431, Cl. 360-122.000.
- Kao, Kenneth C.: See—
Green, Terry D.; Kao, Kenneth C.; O'Loughlin, Robert J., Jr.; and Reese, Robert C., 4,643,465, Cl. 285-236.000.
- Karami, Hamzeh, to Colgate Palmolive Company. Elasticized diaper with waterproof crotch seals. 4,643,728, Cl. 604-385.00A.
- Karden, Karl G., to Atlas Copco Aktiebolag. Portable power tool. 4,643,263, Cl. 173-168.000.
- Karl Lautenschlager KG, Möbelbeschlagfabrik: See—
Lautenschlager, Karl, 4,642,846, Cl. 16-382.000.
- Karl Moeller Nagbol: See—
Luter, Charles H.; Lethin, Nils L.; Moeller, Johan; and Holm, Bjarne R., 4,643,484, Cl. 301-11.00S.
- Karl, Veit-Holger, to Alpine Aktiengesellschaft. Take-away device for plastic tubing. 4,643,656, Cl. 425-72.00R.
- Karley, Terence F.: See—
Macmorine, David R. L.; Maczyszenko, Andrzej; and Karley, Terence F., 4,642,974, Cl. 53-558.000.
- Karr, Michael A., Jr.; and Zwiagel, John M., to Gray Tool Company. Fail-safe valve actuator. 4,643,390, Cl. 251-63.600.
- Kartheus, Holger: See—
Pietsch, Hanns; Kartheus, Holger; and Reul, Helmut, 4,643,732, Cl. 623-2.000.
- Karuzas, Jonas. Bottle opener and lighter cover. 4,642,827, Cl. 7-151.000.
- Kasai, Hitoshi: See—
Hattori, Toshihiro; Uriuhara, Makoto; Kasai, Hitoshi; Asagi, Yasuyoshi; and Ogawa, Noriaki, 4,643,048, Cl. 74-866.000.
- Kasboske, George C. Vehicle headlamp with fog penetrating capability. 4,644,452, Cl. 362-214.000.
- Kasch, Hellmuth: See—
Fischer, Kurt; Petersen, Harro; Kasch, Hellmuth; and Wistuba, Eckehardt, 4,644,028, Cl. 524-376.000.
- Kasuga, Toshihiro; and Nakagawa, Kenji, to Hoya Corporation. High-strength glass-ceramic containing anorthite crystals and process for producing the same. 4,643,982, Cl. 501-8.000.
- Katagi, Takashi; Mano, Seiji; and Chiba, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Antenna system. 4,644,359, Cl. 342-379.000.
- Kataoka, Keiji: See—
Arimoto, Akira; Saito, Susumu; Tatsuno, Kimio; and Kataoka, Keiji, 4,644,160, Cl. 250-201.000.
- Katayama, Nobuaki, to Toyota Jidosha Kabushiki Kaisha. Power transfer device for four wheel drive. 4,643,045, Cl. 74-695.000.
- Kato, Akira: See—
Makabe, Eiichi; Harada, Naoki; Imai, Kiyotaka; Hosoda, Yoshiro; and Kato, Akira, 4,643,587, Cl. 374-104.000.
- Kato, Kozo: See—
Watanabe, Yuji; and Kato, Kozo, 4,644,583, Cl. 382-22.000.
- Kato, Mitsuo: See—
Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shimozato, Yoshio; Yanagi, Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.
- Kato, Yasuo: See—
Kondo, Kunio; Haga, Katutoshi; Kurumiya, Tadashi; Haga, Minoru; Kato, Yasuo; and Kaneko, Shinobu, 4,643,623, Cl. 409-232.000.

- Katoh, Shohichi: See—
Nishigaki, Satoshi; Itoh, Masataka; and Katoh, Shohichi, 4,644,406, Cl. 358-213.000.
- Katryniok, Christine, legal representative: See—
Schmoede, Peter; Katryniok, Detlef, deceased; and Ruch, Jean P., 4,643,235, Cl. 141-1.100.
- Katryniok, Detlef, deceased: See—
Schmoede, Peter; Katryniok, Detlef, deceased; and Ruch, Jean P., 4,643,235, Cl. 141-1.100.
- Katsube, Ryoji: See—
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- Katsuta, Hiroo: See—
Toriumi, Yuki; Suzuki, Kazunori; and Katsuta, Hiroo, 4,643,579, Cl. 356-401.000.
- Kaufman, Glenn A.: See—
Becker, Thomas P.; Grover, Donald D.; Stout, Christopher B.; Kaufman, Glenn A.; and Olson, Gene E., 4,643,030, Cl. 73-862.230.
- Kavehrad, Mohsen; and Salz, Jack, to AT&T Company; and AT&T Bell Laboratories. Combined cross polarization interference cancellation and intersymbol interference equalization for terrestrial digital radio systems. 4,644,562, Cl. 375-14.000.
- Kawabata, Takashi: See—
Tsunekawa, Tokuchi; Kawabata, Takashi; Sato, Yuichi; and Matsumura, Susumu, 4,644,149, Cl. 250-214.00A.
- Kawabata, Yasuhiro, to Aisin Seiki Kabushiki Kaisha. Turbocharger control system. 4,642,991, Cl. 60-602.000.
- Kawada Co., Ltd.: See—
Keiji, Iwabuchi, 4,643,691, Cl. 446-97.000.
- Kawada, Shigeo: See—
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- Kawada, Toshiaki: See—
Fukamachi, Toshio; Matsuda, Kazuto; Noma, Kouichi; Kawada, Toshiaki; Sakurai, Toshio; and Osawa, Takeshi, 4,643,351, Cl. 236-44.00E.
- Kawai, Hisasi: See—
Idogaki, Takaharu; Kawai, Hisasi; and Hayashi, Ikuo, 4,644,211, Cl. 310-266.000.
- Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, 4,644,212, Cl. 310-317.000.
- Kawai, Motoji: See—
Kaita, Hiroshi; Kojima, Tsuyoshi; and Kawai, Motoji, 4,643,344, Cl. 227-112.000.
- Kawai Musical Instrument Mfg. Co., Ltd.: See—
Deutsch, Ralph, 4,643,067, Cl. 84-1.1010.
- Kawakami, Kenji: See—
Horikawa, Kenichi; Yamamoto, Yoshinori; and Kawakami, Kenji, 4,644,433, Cl. 360-132.000.
- Kawamura, Masahisa: See—
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- Kawano, Hidoe; and Sakuma, Isamu, to NEC Corporation. Buried-type semiconductor laser. 4,644,551, Cl. 372-45.000.
- Kawarabayashi, Hideaki: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.
- Kawarada, Minoru: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.
- Kawasaki Jukogyo Kabushiki Kaisha: See—
Nishida, Hiroshi, 4,643,685, Cl. 440-42.000.
- Soma, Hiroshi; Hashimoto, Isao; Kinoshita, Tosuke; Uchida, Masahiro; and Uchiyama, Susumu, 4,643,366, Cl. 241-117.000.
- Kawasaki, Masami; and Naito, Masayuki, to Olympus Optical Co., Ltd. Microscope provided with an automatically controlled illuminating optical system. 4,643,540, Cl. 350-502.000.
- Kawasaki Steel Corporation: See—
Funahashi, Yoshiko; Kamino, Yoshikazu; Matsumura, Yasuharu; and Harimaya, Senichi, 4,643,978, Cl. 436-78.000.
- Funahashi, Yoshiko; Matsumura, Yasuharu; Harimaya, Senichi; Kamino, Yoshikazu; and Kitaoka, Hidenari, 4,643,979, Cl. 436-78.000.
- Takajo, Shigeaki, 4,643,765, Cl. 75-0.50B.
- Kawashima, Hiromi; and Arakawa, Hideki, to Fujitsu Limited. Delay circuit having delay time period determined by discharging operation. 4,644,182, Cl. 307-246.000.
- Kawashima, Syoichiro, to Fujitsu Limited. Semiconductor memory device typically used as a video ram. 4,644,502, Cl. 365-219.000.
- Kawata, Haruo; and Nishi, Hidetoshi, to Fujitsu Limited. Method of making self-aligned FET using GaAs substrate and spatially controlled implanted channel region. 4,642,879, Cl. 29-576.00B.
- Kay, Peter L.: See—
Salant, Richard F.; Key, William E.; and Kay, Peter L., 4,643,437, Cl. 277-28.000.
- Kazuyuki, Ishii; Yoshio, Ebe; and Shuji, Fujieda, to Honda Giken Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toyosha Seisakusho. Locking device of opening and closing members for vehicles. 4,643,470, Cl. 292-216.000.
- Kearney & Trecker Corporation: See—
Kis, Charles J., 4,643,037, Cl. 74-342.000.
- Keem, John E.; and Flack, James D., to Ovonic Synthetic Materials Company, Inc. Multilayer protective coating and method. 4,643,951, Cl. 428-469.000.
- Keiji, Iwabuchi, to Kawada Co., Ltd. Articulated doll arrangement. 4,643,691, Cl. 446-97.000.
- Keisuke Honda: See—
Asakura, Kunio, 4,644,511, Cl. 367-101.000.
- Kelem, Howard. Method and apparatus for automatic pressure packing of a food casing. 4,642,865, Cl. 29-243.560.
- Kelley, Thomas J.: See—
Coburn, David E., 4,643,271, Cl. 181-210.000.
- Kellison, Roger C. Grout in place fastener system. 4,642,964, Cl. 52-699.000.
- Kellner, Gerd: See—
Bertiller, Roland; Kellner, Gerd; and Reudelsterz, Helmut, 4,642,928, Cl. 42-77.000.
- Kelly, Robert D.; and Yatsko, Lawrence T., to Southwest Wire Rope, Inc. Socket for mounting on the end of a steel cable. 4,642,854, Cl. 24-265.00R.
- Kelly, Samuel T., to Robertshaw Controls Company. Fuel control valve construction, parts therefor and methods of making the same. 4,643,391, Cl. 251-85.000.
- Kelly, Thomas L. Reroofing with sloping plateau forming insulation. 4,642,950, Cl. 52-90.000.
- Kempe, Tomas G. Calcitonin analogs with amino acid substituents at position 31. 4,644,054, Cl. 530-307.000.
- Kemper, Christian T.; Bellows, James C.; and Kleinosky, Pamela J., to Westinghouse Electric Corp. Diagnostic apparatus. 4,644,479, Cl. 364-550.000.
- Kemper, Johannes A.: See—
Ponsioen, Ysbrand P. J. M.; and Kemper, Johannes A., 4,644,442, Cl. 361-341.000.
- Kendall Company, The: See—
Drach, George W., 4,643,716, Cl. 604-8.000.
- Kendall, James M., Jr.; Wang, Taylor G.; and Elleman, Daniel D., to California Institute of Technology. Shell forming system. 4,643,854, Cl. 264-12.000.
- Kennecke, Mario: See—
Weber, Alfred; Wilke, Detlef; Kurzidim, Johannes; and Kennecke, Mario, 4,644,067, Cl. 548-497.000.
- Kennedy, Bruce L.; Beller, Joseph K.; and Modjeski, Roger A., to Carter-Duncan Corporation. Variable power amplifier for audio frequency signals and method. 4,644,289, Cl. 330-145.000.
- Kennedy, Leo J., to Owens-Illinois, Inc. Container systems. 4,643,330, Cl. 220-288.000.
- Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., to Buddy L Corporation. Toy work vehicle having power take-off. 4,643,695, Cl. 446-427.000.
- Kennett, Scott W., to E-Systems, Inc. RF pulse modulated amplifier having conduction angle control. 4,644,293, Cl. 330-296.000.
- Kennon, Jerry M., to Westinghouse Electric Corp. Wireless power line communication apparatus. 4,644,321, Cl. 340-310.00A.
- Kenny, Thomas J.; and Sutherland, James F., to Westinghouse Electric Corp. Redundant power supply arrangement with surge protection. 4,644,440, Cl. 361-111.000.
- Kent-Moore Corporation: See—
Mandeville, David C.; and Lazar, David W., 4,643,336, Cl. 222-145.000.
- Provost, Lawrence A.; and Boyer, Robert D., 4,642,900, Cl. 33-169.00B.
- Kerlin, Jack H. Rotary balancing apparatus. 4,644,123, Cl. 219-68.000.
- Kern, Charles L., Jr.: See—
Smith, Richard R.; and Kern, Charles L., Jr., 4,643,925, Cl. 428-35.000.
- Kernforschungsanlage Julich GmbH: See—
Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinis, Georg; and von der Decken, Claus-Benedict, 4,643,832, Cl. 210-712.000.
- Kernforschungszentrum Karlsruhe GmbH: See—
Hohlein, Gunter; Hempelmann, Wilhelm; Waldenmeier, Gunter; Koster, Rainer; Meyer, Fritz; and Pfeifer, Ulrich, 4,643,311, Cl. 206-508.000.
- Kerr, Robert D.: See—
Kerr, Thomas J.; and Kerr, Robert D., 4,643,899, Cl. 426-2.000.
- Kerr, Robert L., to Wean United, Inc. Roof assembly for an electric arc furnace. 4,644,558, Cl. 373-74.000.
- Kerr, Thomas J.; and Kerr, Robert D., to Georgia Research Foundation. Microorganism having characteristics of an Arthrobacter capable of degrading peanut hull lignin. 4,643,899, Cl. 426-2.000.
- Kertesz, Ivan: See—
Csery, Huba; Czigan, Imre; Horvath, Zoltan; Kertesz, Ivan; Kroo, Norbert; and Schmidt, Gyorgy, 4,644,550, Cl. 372-40.000.
- Keskey, William H.; Schuetz, James E.; and Hickman, Andrew D., to Dow Chemical Company, The. Non-ghosting pressure sensitive adhesives. 4,644,032, Cl. 524-549.000.
- Kestler, Joachim, to Siemens Aktiengesellschaft. Apparatus for the formation of images of an examination subject with nuclear magnetic resonance. 4,644,282, Cl. 324-322.000.
- Ketcham & McDougall, Inc.: See—
Grilk, Henry G., 4,644,512, Cl. 367-108.000.
- Ketori, Takao: See—
Sumida, Takashi; Sasaki, Shigeo; and Ketori, Takao, 4,643,304, Cl. 206-387.000.
- Kettner, Charles A.; and Korant, Bruce D., to Du Pont de Nemours, E. I., and Company. Method for preparing specific inhibitors of virus-specified proteases. 4,644,055, Cl. 530-330.000.

- Key, William E.: See—
Salant, Richard F.; Key, William E.; and Kay, Peter L., 4,643,437, Cl. 277-28.000.
- Khakzad-Ghomi, Abdol-Hossein. Fluid-raising apparatus driven by low hydraulic head. 4,643,650, Cl. 417-90.000.
- Kiang, Webster W., to Enron Chemical Company. Heat sealable blend of polypropylene terpolymers and linear low density polyethylene. 4,643,945, Cl. 288-349.000.
- Kiba, Yasuo: See—
Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroshi; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, 4,643,849, Cl. 540-955.000.
- Kidd, Garry B., to Chrysler Motors Corporation. Container construction. 4,643,314, Cl. 206-600.000.
- Kidd, Roy E., to Emhart Industries, Inc. Fluid detector. 4,644,354, Cl. 340-870.270.
- Kieger, Roger, to 501 Societe Lorraine de Laminage & Continu-Sollac; and 502 Unimetal. Process for refining phosphoric pig iron. 4,643,766, Cl. 75-51.400.
- Kiesling, David A.: See—
Davidson, Evan E.; and Kiesling, David A., 4,644,265, Cl. 324-73.00R.
- Kiewit, David A.; and Lu, Daozheng, to A. C. Nielsen Company. Ultrasonic audience measurement system and method. 4,644,509, Cl. 367-87.000.
- Kight, Henry H.: See—
Swensen, Michael W.; Martin, William C.; and Kight, Henry H., 4,644,443, Cl. 361-384.000.
- Kikuchi, Junichi: See—
Takahashi, Yoshifusa; Kadonaga, Hiroshi; Ishikawa, Satoshi; and Kikuchi, Junichi, 4,644,587, Cl. 455-601.000.
- Killmann, Irolt: See—
Werlberger, Peter; Killmann, Irolt; and Cartellieri, Wolfgang, 4,643,022, Cl. 73-117.300.
- Kim, Choung U., to Bristol-Myers Company. Carbapenem antibiotics. 4,644,061, Cl. 540-350.000.
- Kim, Daniel S. Y. Dental instrument. 4,643,677, Cl. 433-164.000.
- Kim, George A. Method of machining hard and brittle material. 4,643,161, Cl. 125-30.00R.
- Kimberly-Clark Corporation: See—
Ales, Thomas M.; Strobben, David T.; and Damico, Joyce A., 4,642,819, Cl. 2-400.000.
- Chen, Franklin M. C.; and Van Bommel, William R., 4,643,730, Cl. 604-390.000.
- Padgett, Lonnie W., 4,644,586, Cl. 383-102.000.
- Kimble, James B.; and Parlmann, Robert M., to Phillips Petroleum Company. Recovering metal sulfides by flotation using mercaptoalcohols. 4,643,823, Cl. 209-166.000.
- Kime, James A. Pump apparatus. 4,643,258, Cl. 166-369.000.
- Kimura, Kenji: See—
Nishikawa, Masayasu; and Kimura, Kenji, 4,643,157, Cl. 123-568.000.
- Kimura, Kouichi: See—
Shiiba, Yoshio; Koshigaya, Akira; and Kimura, Kouichi, 4,643,630, Cl. 414-589.000.
- Kimura, Masakatsu; and Nakamura, Osamu, to Idemitsu Petrochemical Co., Ltd. Coextrusion multi-layer tubular film. 4,643,928, Cl. 428-36.000.
- Kinetron B. V.: See—
Knapp, Petrus M. J., 4,644,246, Cl. 320-21.000.
- King, James L., to General Electric Company. Method of assembling a stator. 4,642,885, Cl. 29-596.000.
- King, William R.; and Hart, C. Jack, to Phillips Petroleum Company. Apparatus and process for carbon black production. 4,643,880, Cl. 422-156.000.
- Kinoshita, Toshiharu: See—
Takeda, Yoshiaki; Kinoshita, Toshiharu; and Kai, Osamu, 4,644,109, Cl. 379-27.000.
- Kinoshita, Tosuke: See—
Soma, Hiroshi; Hashimoto, Isao; Kinoshita, Tosuke; Uchida, Masahiro; and Uchiyama, Susumu, 4,643,366, Cl. 241-117.000.
- Kirby's Engineers, Ltd.: See—
Highfield, James H.; and Pugh, Roy, 4,643,062, Cl. 83-285.000.
- Kirkhouse, Henry A., to Kirkhouse Jet Plug Pty. Ltd. Spark plug with pre-combustion chamber and venturi passage. 4,644,218, Cl. 313-120.000.
- Kirkhouse Jet Plug Pty. Ltd.: See—
Kirkhouse, Henry A., 4,644,218, Cl. 313-120.000.
- Kirsch, Hans-Peter, to Maser-Werke Oberndorf GmbH. Method and apparatus for marking workpieces. 4,642,897, Cl. 33-18.100.
- Kirschner, Wallace: See—
Salazar, Edilberto I.; and Kirschner, Wallace, 4,643,089, Cl. 101-91.000.
- Kis, Charles J., to Kearney & Trecker Corporation. Gear change mechanism. 4,643,037, Cl. 74-342.000.
- Kishi, Hajimu; Tanaka, Kunio; and Takegahara, Takashi, to Fanuc Ltd. Cutting direction input method in automatic programming. 4,644,460, Cl. 364-171.000.
- Kishi, Takamichi: See—
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; and Kishi, Takamichi, 4,643,808, Cl. 204-98.000.
- Kishida, Yoshifumi; and Takeuchi, Masayoshi, to Sharp Corporation; and Daiichi Shoji Co., Inc. Method of washing and drying substrates. 4,643,774, Cl. 134-1.000.
- Kishine, Nobuyuki; Imamura, Tetsuya; Minami, Hideyuki; and Yamachi, Michihide, to Kao Corporation. Magnetic head for a perpendicular magnetic recording system. 4,644,431, Cl. 360-122.000.
- Kitagawa, Hisao; and Inoue, Yasuo, to Olympus Optical Co., Ltd. Photographing indication device for microscopes. 4,643,550, Cl. 354-79.000.
- Kitaguchi, Hiroshi: See—
Sawada, Satoru; Naito, Hideki; and Kitaguchi, Hiroshi, 4,643,964, Cl. 430-523.000.
- Kitami, Kunko: See—
Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiki; Imahashi, Jinichi; Horiji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.
- Kitamura, Shigehiro: See—
Koshizuka, Kunihiro; Kitamura, Shigehiro; Abe, Takao; Nakamura, Masaki; Ishii, Fumio; and Hotta, Yuji, 4,643,917, Cl. 427-256.000.
- Kitamura, Yoshiharu: See—
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- Kitano, Seiichi: See—
Yoneda, Kazuhiko; Kitano, Seiichi; and Fukuda, Yoshinobu, 4,643,289, Cl. 192-106.200.
- Kitaoka, Hidenari: See—
Funahashi, Yoshiko; Matsumura, Yasuharu; Harimaya, Senichi; Kamino, Yoshikazu; and Kitaoka, Hidenari, 4,643,979, Cl. 436-78.000.
- Kittaka, Toshiharu: See—
Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shimozato, Yoshio; Yanagi, Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.
- Kittelson, Clifford E. Battery conditioner. 4,644,244, Cl. 320-4.000.
- Kittrell, James R.: See—
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- Kleiman, Rafael N., to AT&T Bell Laboratories. Field-assisted bonding method and articles produced thereby. 4,643,532, Cl. 350-343.000.
- Klein, Hans-Hermann: See—
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- Klingler, Josef F., to Janler Corporation. Drinking cup construction. 4,643,326, Cl. 220-94.00R.
- Klinvex, Daniel E., to Westinghouse Electric Corp. Ultrasonic probe for the remote inspection of nuclear reactor vessel nozzles. 4,643,029, Cl. 73-632.000.
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- Klomp, Edward D., to General Motors Corporation. Squish control engine. 4,643,142, Cl. 123-90.280.
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- Knobel, Thomas M.: See—
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- Kobayashi, Michio: See—
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- Kobler, Robert J., to AMP Incorporated. Wire seal. 4,643,506, Cl. 339-94.000.
- Koch, Charles P., to Adex, Inc. Modular display system. 4,642,946, Cl. 52-38.000.
- Koch Engineering Company, Inc.: See—
Allocca, Peter T., 4,643,584, Cl. 366-337.000.
- Koch, Hans-Georg: See—
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- Kochs Adler AG: See—
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- Junemann, Hubert, 4,643,115, Cl. 112-121.220.
- Schrudde, Reinhold; Loh, Rainer; and Hampel, Klaus, 4,643,113, Cl. 112-199.000.
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- Kojima, Keiji; and Torii, Shunichi, to Hitachi, Ltd. Method for processing a data base. 4,644,471, Cl. 364-300.000.
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- Kojima, Yasumichi, to Brother Industries, Ltd. Printing apparatus. 4,644,477, Cl. 364-523.000.
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- Kollmar, Ulrich. Method and device for extracting juice from fruit. 4,643,088, Cl. 100-37.000.
- Kollmorgen Technologies Corporation: See—
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- Kollross, Günter, to Teepak Produkte N.V. Process for automated manufacture of link sausages having casings formed of synthetic tubular material. 4,642,848, Cl. 17-49.000.
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- Kolycheck, Edmond G.; and Ondercin, Lawrence, to BF Goodrich Company, The. Magnetic recording tape. 4,643,949, Cl. 428-425.900.
- Komatsu, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of electron beam exposure. 4,644,170, Cl. 250-492.200.
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- Konshak, Michael V.: See—
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- Koppel, Jakob: See—
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- Korant, Bruce D.: See—
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- Korostenski, Erwin: See—
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- Korzeczek, Karl-Ludwig: See—
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- Kosaka, Yoshiteru: See—
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- Koslov, Evan E. Energy efficient phase transfer/dispersion systems and methods for using the same. 4,643,852, Cl. 261-93.000.
- Koss, Walter; and Jonas, Udo, to Koss, Walter. Device for selectively opening and closing tubular organs of the body. 4,643,169, Cl. 128-1.00R.
- Koster, Rainer: See—
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- Kothe, Norbert; Dichtelmüller, Herbert; Stephan, Wolfgang; and Eichentopf, Bertram, to Biotest Pharma GmbH. Method of preparing a solution of lactic or colostric immunoglobulins or both and use thereof. 4,644,056, Cl. 530-387.000.
- Kotschy, Josef: See—
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- Kovari, Kalman; and Koppel, Jakob, to Gesellschaft zur Förderung der industrieorientierten Forschung an den Schweizerischen Hochschulen und weiteren Institutionen. Method of, and measuring tube and measuring probe for, measuring fluid pressure in a sealed bore hole. 4,643,024, Cl. 73-151.000.
- Kovarik, Frank S., to Atlantic Richfield Company. Carbon dioxide miscible displacement process. 4,643,252, Cl. 166-263.000.
- Kovatch, Stephen C., to Hess & Eisenhardt Armoring Company. Demountable windshield armor for vehicles. 4,643,477, Cl. 296-84.00K.
- Koyanagi, Yuzo, to Sanwa Seiki Mfg. Co., Ltd. Method of controlling actuator by applying driving pulse. 4,644,475, Cl. 364-431.070.
- Krafft, Herfried, to Deutsche Airbus GmbH. Process and apparatus for power- and air conditioning-fresh air generation in aircraft. 4,642,997, Cl. 62-87.000.
- Kramer, Richard: See—
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- Krausch, Neil J., II, to ASEA Electric, Inc. Linear transformer switch. 4,644,112, Cl. 200-16.00F.
- Kraus, Mark G.: See—
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- Krause, Joachim: See—
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- Kraus-Maffei, A.G.: See—
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- Krawiec, Zbigniew A.: See—
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- Kreijger, Pieter J.: See—
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- Kreuz, Werner: See—
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- Kreuzer, Manfred, to Hottinger Baldwin Measurements, Inc. Electrical multi-position measuring device. 4,644,262, Cl. 324-62.000.
- Krieger, Eberhard; and Moser, Theo, to Robert Bosch GmbH. Platform conveyor. 4,643,297, Cl. 198-803.010.

- Krivec, Bert; Murphree, Gary R.; and Evans, Walter R., to Sargent & Greenleaf, Inc. Two movement time lock. 4,643,010, Cl. 70-272.000.
- Kroo, Norbert: See—
Csery, Huba; Czizany, Imre; Gyorvath, Zoltan; Kertesz, Ivan; Kroo, Norbert; and Schmidt, Gyorgy, 4,644,550, Cl. 372-40.000.
- Kroy, Ralph E.; and Catterfeld, Fritz C., to Rockwell International Corporation. Sealed and balanced motor and fluid pump system. 4,644,202, Cl. 310-58.000.
- Kroy, Ralph E.: See—
Catterfeld, Fritz C.; and Kroy, Ralph E., 4,644,207, Cl. 310-126.000.
- Kruckmeyer, William C.; Buchanan, Harry C., Jr.; and Fannin, Wayne V., to General Motors Corporation. Rotational actuator for vehicle suspension damper. 4,644,200, Cl. 310-43.000.
- Kruger, Robert A.; and Sorenson, James A., to University of Utah. Electronic slit collimation. 4,644,575, Cl. 378-99.000.
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- Kubota, Satoshi; Yoshida, Tetsuo; and Ohmatsu, Hideki, to Fuji Photo Film Co., Ltd. Direct positive photographic light-sensitive materials. 4,643,965, Cl. 430-567.000.
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- Kuehnhan, Gerhard O.: See—
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- Kuhn, Bernhard, to Kaltenbach & Voigt GmbH & Co. Dental hand-piece. 4,643,675, Cl. 433-126.000.
- Kuiper, Adrianus M. Lampholder assembly for loop-, u- or pi-shaped gas discharge or fluorescent lamps with a single lamp cap. 4,643,504, Cl. 339-51.000.
- Kulik, Yaroslav P.; Shmyrin, Ivan I.; Utyamyshev, Rustam I.; and Vyrzhikovskaya, Marina N., to Blagoveshchensky Gosudarstvennyy Meditsinsky Institut. Aortic cannula. 4,643,712, Cl. 604-4.000.
- Kulka, Ernest F.: See—
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- Kunugi, Yoshiro; Odaka, Makoto; Sato, Takeshi; Sasaki, Yoshio; and Tokumo, Akio, to Pioneer Electronic Corporation. Automatic gain and frequency characteristic control unit in audio device. 4,644,292, Cl. 330-279.000.
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- Kurakata, Ryo, to Citizen Watch Co., Ltd. Coating film by ion plating. 4,643,952, Cl. 428-472.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: See—
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- Kurita, Kohji: See—
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- Kurita, Masaya, to Fuji Electric Co., Ltd. Control apparatus for clinic bed. 4,642,825, Cl. 5-453.000.
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- Kuroda, Masao: See—
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- Kurzdin, Johannes: See—
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- Kusaka, Yosuke; and Shimomura, Jun, to Nippon Kogaku K. K. Focus detecting apparatus. 4,644,148, Cl. 250-201.000.
- Kusakawa, Nobuhiro: See—
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- Kusayanagi, Yoshikazu: See—
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- Kuster, Erich: See—
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- Kuyel, Birol, to AT&T Technologies, Inc. Method and apparatus for producing x-ray pulses. 4,644,576, Cl. 378-119.000.
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- La Telemecanique Electrique: See—
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- La Telemecanique Electrique: See—
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- Ladney, Michael: See—
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- LaForge, Laurence E., to Environments, Limited. Portable stove assembly. 4,643,164, Cl. 126-44.000.
- Lagadec, Roger: See—
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- Laing, Nikolaus. Stator having a spiral yoke. 4,644,208, Cl. 310-166.000.
- Lake, Michael A.: See—
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- Lake Shore Cryotronics, Inc.: See—
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- Lakin, Bryan L., to Fasco Industries, Inc. Motor housing and end shield mount. 4,644,204, Cl. 310-89.000.
- Lambeth, David N., to Eastman Kodak Company. Fill and spill for charge input to a CCD. 4,644,572, Cl. 377-60.000.
- Lanciano, Andrew P., to Medi-Tech. Drainage catheter. 4,643,720, Cl. 604-95.000.
- Landmann, Wolf S.: See—
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- Landouar, Pierre: See—
Magarino, Jose; Szydlowski, Nicolas; Hareng, Michel; and Landouar, Pierre, 4,643,527, Cl. 350-333.000.
- Lange, Francois, to Alcatel Thomson Gigadisc, SA. Protected optical disk of welded construction. 4,644,520, Cl. 369-284.000.
- Langen, Marinus J. M.; and Guttinger, Peter, to H. J. Langen & Sons Limited. Carton loading machine. 4,642,975, Cl. 53-564.000.
- Langley, Lawrence W., to Kollmorgen Technologies Corporation. Linear DC permanent magnet motor. 4,644,199, Cl. 310-12.000.
- Langlois, Bernard, to Rhone-Poulenc Specialties Chimiques. Photochemical process for the preparation of dichlorotrifluoroethoxy- and dichlorotrifluoroethylthiobenzene derivatives. 4,643,811, Cl. 204-157.800.
- Langston, Mark C.; and Boutwell, David G., to Exxon Chemical Patents Inc. Industrial textile fabric. 4,643,119, Cl. 112-421.000.
- Laplanche, Pierre, to Beghin-Say S.A. Elastic fasteners for a diaper. 4,643,729, Cl. 604-389.000.
- La Rocca, Aldo V., to Fiat Auto S.p.A. Method of carrying out a treatment on metal pieces with the addition of an added material and with the use of a power laser. 4,644,127, Cl. 219-121.0FS.
- Larsen, Gunnar M., to Hiab Export A/S. Crane bracket for mounting over the chassis side members of a truck. 4,643,320, Cl. 212-180.000.
- Larsen, Thor A.; Martin, David H.; and Moth, Frank T., to International Business Machines Corporation. Electrochromic matrix display. 4,644,344, Cl. 340-785.000.
- Larson, Byron A.; and Molteni, John J. Apparatus for repairing deformed, yieldable structures. 4,643,015, Cl. 72-305.000.
- Larsson, Raymond P.: See—
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- Laurello, Vincent P., to United Technologies Corporation. Stator structure for supporting an outer air seal in a gas turbine engine. 4,643,638, Cl. 415-136.000.
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- Merrell Dow Pharmaceuticals Inc.: See—
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- Merrington, Graham: See—
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- Merritt, James S.: See—
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- Meyer, Willy; and Fory, Werner, to Ciba-Geigy Corporation. Herbicidal sulfonylureas, 4,643,760, Cl. 71-92.000.
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- Obman, Howard J.; and Brodbeck, Howard D., 4,643,401, Cl. 266-80.000.
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- Miller, Larry J.; Wells, Richard K.; and Tippetts, Ronald B., to Sperry Corporation. Quad multi-channel synthesizer, 4,644,195, Cl. 307-518.000.
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- Mitchell, John P., to AT&T Bell Laboratories. Component mounting apparatus, 4,643,499, Cl. 339-17.0CF.
- Mitomo, Mamoru; and Yoshioka, Yuji, to National Institute for Researches in Inorganic Materials. Process for the production of fine non-oxide powders from alkoxides, 4,643,859, Cl. 264-65.000.
- Mitsubishi Denki Kabushiki Kaisha: See—
Fukatsu, Takeo, 4,644,314, Cl. 336-58.000.
- Gotoh, Tohru, 4,643,346, Cl. 228-155.000.
- Hirosaki, Yoshihiko, 4,644,238, Cl. 318-332.000.
- Hori, Toshimitsu; and Sumita, Mitsutaka, 4,644,124, Cl. 219-69.00M.
- Ida, Yoshiaki, 4,644,153, Cl. 250-225.000.
- Kaneyuki, Kazutoshi, 4,643,046, Cl. 74-752.00C.
- Katagi, Takashi; Mano, Seiji; and Chiba, Isamu, 4,644,359, Cl. 342-379.000.
- Serizawa, Yoshinori; and Hayakawa, Masaharu, 4,644,415, Cl. 360-10.300.
- Takada, Mitsuyuki; Morihoro, Yoshiyuki; and Takasago, Hayato, 4,643,798, Cl. 156-630.000.
- Takata, Nobuharu; and Kurita, Kohji, 4,644,242, Cl. 318-771.000.
- Yonezu, Ryo; and Sakashita, Kazuhiro, 4,644,500, Cl. 365-189.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: See—
Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shimozato, Yoshio; Yanagi, Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.
- Mitsubishi Paper Mills, Ltd.: See—
Hiraishi, Shigetoshi; Kondo, Kazuyoshi; and Banba, Takashi, 4,644,374, Cl. 346-209.000.
- Tsubai, Yasuo; Okazaki, Koji; and Yoshida, Akio, 4,643,962, Cl. 430-205.000.
- Mitsubishi Plastics Industries Limited: See—
Hashimoto, Tadashi, 4,643,788, Cl. 156-203.000.
- Mitsui Grinding Wheel Co., Ltd.: See—
Uchiyama, Taro; Takehisa, Kiwamu; and Ishizaki, Isao, 4,643,889, Cl. 423-579.000.

- Mitsui Toatsu Chemicals, Incorporated: See—
Hosonuma, Sin; Fujio, Junichi; Tanaka, Kozo; Suzuki, Harue; and Baba, Kenichi, 4,643,529, Cl. 350-337.000.
- Miura, Kazuhiko: See—
Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, 4,643,745, Cl. 55-137.000.
- Miura, Masaaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Image reading device, 4,644,159, Cl. 250-239.000.
- Miura, Nobuo; Ishii, Norihisa; and Ogawa, Sumitaka, to Honda Giken Kogyo Kabushiki Kaisha. Ignition timing control system for internal combustion engines, 4,643,150, Cl. 123-418.000.
- Miura, Yasunao, to Nippondenso Co., Ltd. Ceramic filters, 4,643,749, Cl. 55-523.000.
- Miwa, Takahiro; and Hibino, Yoshihiko, to Brother Kogyo Kabushiki Kaisha. Method and apparatus for recording information on magnetic disk, 4,644,421, Cl. 360-66.000.
- Miyagi, Takeshi: See—
Yoshihara, Kunio; Sudo, Toshio; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, 4,644,093, Cl. 174-36.000.
- Miyajima, Goh, to Hitachi, Ltd. Cylindrical magnet apparatus, 4,644,313, Cl. 335-296.000.
- Miyakawa, Yoshitaka, to Honda Giken Kogyo Kabushiki Kaisha. Pressure switch including a special seal member, 4,644,116, Cl. 200-83.00R.
- Miyaki, Munekazu: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.
- Miyakoshi Printing Machinery Co., Ltd.: See—
Yamagishi, Kenich; and Mori, Katsuyuki, 4,643,092, Cl. 101-350.000.
- Miyamori, Hideharu: See—
Seko, Maomi; Takemura, Reiji; and Miyamori, Hideharu, 4,643,818, Cl. 204-253.000.
- Miyawaki, Naokazu; and Ogura, Mitsugi, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory clock pulse generating circuit with reduced peak current requirements, 4,644,184, Cl. 307-269.000.
- Miyazaki, Atsushi; and Tohjo, Yoshikazu, to Olympus Optical Co., Ltd. Endoscope apparatus, 4,643,170, Cl. 128-6.000.
- Miyoshi, Takahito; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium, 4,643,941, Cl. 428-323.000.
- Mizoe, Mikio: See—
Watanabe, Kanji; Mizoe, Mikio; and Inoo, Eiji, 4,643,929, Cl. 428-36.000.
- Mizuguchi, Mamoru: See—
Sato, Hajime; and Mizuguchi, Mamoru, 4,644,411, Cl. 358-294.000.
- Mizuhara, Howard, to GTE Products Corporation. Tin based ductile brazing alloys, 4,643,875, Cl. 420-502.000.
- Mizukoshi, Yukio: See—
Nozawa, Koji; and Mizukoshi, Yukio, 4,642,985, Cl. 60-435.000.
- Mizuno, Fumio: See—
Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,643,985, Cl. 501-136.000.
- Mizuno, Kenji: See—
Onoda, Hiroshi; and Mizuno, Kenji, 4,644,367, Cl. 346-33.00R.
- Mizuno, Naohito: See—
Atsumi, Morihoro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, 4,644,133, Cl. 219-270.000.
- Mizusawa, Mitutoyo; and Horiuchi, Makoto, to Nissin Kogyo Kabushiki Kaisha; and Honda Giken Kogyo Kabushiki Kaisha. Master cylinder and oil-hydraulic booster assembly, 4,642,990, Cl. 60-554.000.
- Mizutani, Michitaka, to Kyocera Corporation. Process for preparation of sintered silicon nitride body, 4,643,858, Cl. 264-62.000.
- Mizutani, Yoshihisa; and Yokogawa, Syunzi, to Kabushiki Kaisha Toshiba. Method for manufacturing a recessed semiconductor device, 4,642,880, Cl. 29-576.00B.
- Mobberley, Laura P.; Smith, Ernest L.; and MacEwen, George E. Tamper evident container, 4,643,329, Cl. 220-257.000.
- Mobil Oil Corporation: See—
Dellinger, Thomas B., 4,643,264, Cl. 175-61.000.
- Green, Gary J.; McVeigh, Harry A.; Penick, Joe E.; and Yan, Tsoung Y., 4,643,666, Cl. 431-4.000.
- Zachariadis, Robert G., 4,644,508, Cl. 367-24.000.
- Mobin-Uddin, Kazi. Embolus trap, 4,643,184, Cl. 128-303.00R.
- Mochida, Tetsuo: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.
- Mochizuki, Fujiaki: See—
Toda, Fumio; Okamoto, Masaru; and Mochizuki, Fujiaki, 4,644,021, Cl. 523-122.000.
- Mochizuki, Noritaka; Jin, Chikara; and Kaneko, Toshie, to Canon Kabushiki Kaisha. Reading optical system, 4,644,155, Cl. 250-227.000.
- Modjeski, Roger A.: See—
Kennedy, Bruce L.; Beller, Joseph K.; and Modjeski, Roger A., 4,644,289, Cl. 330-145.000.
- Moeller, Johan: See—
Luter, Charles H.; Lethin, Nils L.; Moeller, Johan; and Holm, Bjarn R., 4,643,484, Cl. 301-11.00S.
- Mohn, Walter R.; and Roth, Peter A., to Atlantic Richfield Company. Mirror optic article, 4,643,543, Cl. 350-609.000.
- Moleculon, Inc.: See—
Nichols, Larry D., 4,643,856, Cl. 264-41.000.
- Molins PLC: See—
Labbe, Francis A. M., 4,643,203, Cl. 131-94.000.
- Mollon, Leslie, to AAR Corporation. Neutron absorbing panel, 4,644,171, Cl. 250-518.100.
- Molteni, John J.: See—
Larson, Byron A.; and Molteni, John J., 4,643,015, Cl. 72-305.000.
- Monsanto Company: See—
Rakestraw, Lawrence F.; and Stevens, Harry M., 4,643,662, Cl. 425-222.000.
- Ucci, Pompelio A., 4,643,930, Cl. 428-96.000.
- Montgerard, William E. Mobile band instrument repair shop, 4,643,476, Cl. 296-24.00R.
- Montgomery, Warren A., to AT&T Bell Laboratories. Flow control between a data terminal and a host computer system, 4,644,472, Cl. 364-300.000.
- Moore, Douglas R.: See—
Mathias, Lon J.; and Moore, Douglas R., 4,644,050, Cl. 528-323.000.
- Moore, James W.: See—
Lewis, David W.; Moore, James W.; and LeBleu, Julien, Jr., 4,643,592, Cl. 384-100.000.
- Moore Special Tool Co., Inc.: See—
Winski, Dennis A., 4,643,622, Cl. 409-84.000.
- Mora, Camillo C., to Camillo Corvi S.p.A. Derivative of (—)-6,6-dimethylbicyclo [3.1.1]hept-2-ene-2-ethanol having mucoscretolytic activity, a process for its preparation and pharmaceutical compositions containing the same, 4,644,087, Cl. 568-823.000.
- Mora, Marie H.: See—
Fraleux, Jean; Hennion, Christine; Mora, Marie H.; and Ploix, Jean L., 4,643,689, Cl. 445-3.000.
- Mori, Katsuyuki: See—
Yamagishi, Kenich; and Mori, Katsuyuki, 4,643,092, Cl. 101-350.000.
- Mori, Kei. Method of using a condensing lens, 4,643,524, Cl. 350-320.000.
- Mori, Keiji: See—
Iwasaki, Takashi; and Mori, Keiji, 4,644,215, Cl. 310-367.000.
- Mori, Toshikatsu: See—
Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.
- Mori, Yoshikatsu: See—
Fujii, Hiroshi; Hara, Akio; Kobayashi, Mitsunori; and Mori, Yoshikatsu, 4,643,620, Cl. 407-119.000.
- Morihiro, Yoshiyuki: See—
Takada, Mitsuyuki; Morihiro, Yoshiyuki; and Takasago, Hayato, 4,643,798, Cl. 156-630.000.
- Morinaga, Hiroshi; Kamiyama, Sakae; and Sato, Yuzo, to Nissan Chemical Industries Ltd. Process for preparing a catalyst for polymerization or copolymerization of ethylene, 4,643,986, Cl. 502-104.000.
- Morishita, Koichi; Omori, Shinji; Yamagata, Shimbu; Yokoyama, Tetsuo; Sano, Koichi; and Ogushi, Akira, to Hitachi, Ltd. Image registration method, 4,644,582, Cl. 382-6.000.
- Morita, Isao, to Tachikawa Spring Co. Structure for securing the trim cover assembly of a seat back, 4,643,480, Cl. 297-218.000.
- Morita, Sigeru: See—
Matsukawa, Naohiro; Morita, Sigeru; and Nozawa, Hiroshi, 4,642,881, Cl. 29-576.00B.
- Moritoh, Naoya: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.
- Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, to Nippon Soken, Inc. Power supply for piezoelectric-element driving device, 4,644,212, Cl. 310-317.000.
- Moriyama, Masaru, to Victor Company of Japan, Ltd. Digital signal reproducing apparatus, 4,644,417, Cl. 360-26.000.
- Morris, George E.; and Wainhouse, Gillian, to British Petroleum Company p.l.c., The. Process for the coproduction of dialkyl carbonate and tertiary butanol, 4,644,078, Cl. 558-277.000.
- Morris, Max F. Reading system, 4,643,450, Cl. 283-46.000.
- Morris, Thomas A.; and Norman, Leslie D., to Uniscan Limited. Collapsible walking frame having pivotal seat, 4,643,211, Cl. 135-67.000.
- Morrison, Howard J.: See—
Meyer, Steven M.; Morrison, R. Scott; and Morrison, Howard J., 4,643,421, Cl. 273-1.00E.
- Morrison, R. Scott: See—
Meyer, Steven M.; Morrison, R. Scott; and Morrison, Howard J., 4,643,421, Cl. 273-1.00E.
- Morrison, Thomas E., to Continental Conveyor & Equipment Co. Idler roll assembly, 4,643,300, Cl. 198-842.000.
- Morse, John E., to Eastman Kodak Company. Apparatus and method for synchronizing exposure of a document onto a photosensitive member, 4,643,560, Cl. 355-3.00R.
- Morse, Margaret S.: See—
Schneider, Wayne A.; Morse, Margaret S.; and Tjoelker, John, 4,644,343, Cl. 343-767.000.
- Mortensen, David J.: See—
Hotchkin, Glenn T.; Mortensen, David J.; and Sheth, Jayesh V., 4,644,463, Cl. 364-200.000.

Mortimer, Francis J., to Fam Title Restoration Services, Ltd. Suspended ceiling tile system. 4,642,951, Cl. 52-145.000.
 Morton Thiokol Inc.: See—
 McEntee, Thomas C.; Guilbault, Lawrence J.; Brophy, James F.; and Koob, Judith L., 4,643,920, Cl. 427-434.600.
 Mosconi, Pierbattista; and Dosmo, Renato, to SACE S.p.A. Costruzioni Elettromeccaniche. Automatic locking device for linkages subjected to undesirable mechanical stresses, applicable in particular to electrical switches. 4,644,181, Cl. 361-119.000.
 Moser, Theo.: See—
 Krieger, Eberhard; and Moser, Theo., 4,643,297, Cl. 198-803.010.
 Moss, Franklin H.: See—
 George, Frederick D.; Jaffe, Jeffrey M.; and Moss, Franklin H., 4,644,532, Cl. 370-94.000.
 Moth, Frank T.: See—
 Larsen, Thor A.; Martin, David H.; and Moth, Frank T., 4,644,344, Cl. 340-785.000.
 Motoren-und Turbinen-Union Munchen GmbH: See—
 Huller, Josef, 4,643,648, Cl. 416-241.00B.
 Motorola, Inc.: See—
 Miller, Ira, 4,644,325, Cl. 340-347.0DA.
 Motorola, Inc.: See—
 Birrittella, Mark S.; Marley, Robert R.; and Seelbach, Walter C., 4,644,194, Cl. 307-475.000.
 Flannagan, Stephen T., 4,644,196, Cl. 307-530.000.
 Flannagan, Stephen T., 4,644,197, Cl. 307-530.000.
 Foutz, Eugene L., 4,643,910, Cl. 427-10.000.
 Lucas, Alfred R.; and Leonard, Jerome C., 4,644,347, Cl. 340-825.040.
 Main, W. Eric, 4,644,295, Cl. 330-301.000.
 Olds, Keith A., 4,644,297, Cl. 331-17.000.
 Rathke, William M., 4,644,251, Cl. 323-267.000.
 Warder, Philip C., 4,644,260, Cl. 324-58.00B.
 Zabarsky, Alan P.; Steiger, Suzette D.; Staiano, Edward F.; and Sandvos, Jerry L., 4,644,351, Cl. 340-825.440.
 Motline, John J., Jr.: See—
 Jin, Sungho; Motline, John J., Jr.; Sherwood, Richard C.; and Tiefert, Thomas H., 4,644,101, Cl. 178-18.000.
 Mounier-Poulart, Francois; Beupellet, Jean; and Gardier, Patrick, to Renault Vehicules Industriels. Fastening of a leaf spring of composite material. 4,643,406, Cl. 267-52.000.
 Muck, Jurgen; Fischer, Hans; and Kramer, Richard, to Siemens Aktiengesellschaft. Method for balancing wound rotors of electrical machines. 4,642,886, Cl. 29-598.000.
 Mudge, Dennis; Coskie, Joseph; Jacobs, Edward H.; and Harris, David R., to American Machine & Science, Inc. Coupling construction and clamp therefor. 4,643,410, Cl. 269-64.000.
 Mudge, Philip H., to Cerberus AG. Compact passive infrared intrusion sensor. 4,644,164, Cl. 250-353.000.
 Mueller, Helga. Mounting board for needlework designs. 4,642,923, Cl. 38-102.000.
 Mueller, Walter B., to W. R. Grace & Co., Cryovac Div. Flexible medical solution pouches. 4,643,926, Cl. 428-35.000.
 Muhlbauser, Johann: See—
 Riegler, Ernst; Zajicek, Ernst; and Muhlbauser, Johann, 4,643,404, Cl. 266-240.000.
 Muhle, Erwin; and Rahmig, Hermann, to J.M. Voith GmbH. Stone roller for paper making machines. 4,642,862, Cl. 29-132.000.
 Mukai, Yasuo; and Shimizu, Masanobu, to Victor Company of Japan, Ltd. Magnetic recording material. 4,643,947, Cl. 428-413.000.
 Muller, Hans R., to Sundstrand Data Control, Inc. Solid state memory for aircraft flight data recorder systems. 4,644,494, Cl. 364-900.000.
 Muller, Paul, to Teldix GmbH. Method for determining angular velocity. 4,643,574, Cl. 356-350.000.
 Muller, Rudolph R. M., to Multifastener Corporation. Process of attaching a nut to a plate-shaped workpiece. 4,642,869, Cl. 29-432.200.
 Multifastener Corporation: See—
 Muller, Rudolph R. M., 4,642,869, Cl. 29-432.200.
 Multiform Desiccants, Inc.: See—
 Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,642,973, Cl. 53-546.000.
 Mumallah, Naim A.; and Shioyama, Tod K., to Phillips Petroleum Company. Permeability contrast correction employing a sulfate-free propionate-sequestered chromium (III) solution. 4,644,073, Cl. 556-2.000.
 Munn, Robin W.: See—
 Cheresnowsky, Michael J.; Brunelli, Timothy A.; and Munn, Robin W., 4,643,884, Cl. 423-53.000.
 Munns, Dennis L., to Deere & Company. Off-road vehicle fairlead assembly for fibre-optic communication cable. 4,643,397, Cl. 254-134.3FT.
 Munson, Robert W.: See—
 Lewis, Frederick; and Munson, Robert W., 4,643,439, Cl. 277-95.000.
 Muntz, Ronald L.: See—
 Manis, Paul A.; Martin, Eugene R.; and Muntz, Ronald L., 4,644,074, Cl. 556-401.000.
 Murata, Hiroshi, to Canon Kabushiki Kaisha. Plural mode language translator having formatting circuitry for arranging translated words in different orders. 4,644,492, Cl. 364-900.000.
 Murata Kikai Kaisha: See—
 Fukunaga, Mitsuo; and Inoue, Yoshihisa, 4,642,980, Cl. 57-58.860.
 Noda, Koshi, 4,642,978, Cl. 57-328.000.
 Shimano, Akira, 4,642,981, Cl. 57-414.000.

Murata, Tomoji: See—
 Shibasaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, 4,644,499, Cl. 364-900.000.
 Murata, Yasuzo; and Sato, Hiroshi, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Magnetic display panel. 4,643,684, Cl. 434-409.000.
 Murayama, Hiroshi: See—
 Ooka, Tomoyuki; and Murayama, Hiroshi, 4,644,491, Cl. 364-784.000.
 Murayama, Naohiro: See—
 Sakagami, Teruo; Fujii, Yasufumi; and Murayama, Naohiro, 4,644,025, Cl. 526-261.000.
 Murayama, Seiichi: See—
 Tsujii, Kanji; Yajima, Yusuke; and Murayama, Seiichi, 4,643,799, Cl. 156-635.000.
 Murphree, Gary R.: See—
 Krivec, Bert; Murphree, Gary R.; and Evans, Walter R., 4,643,010, Cl. 70-272.000.
 Murphree, Pat D. Guide means for stabilizing pipe strings. 4,643,624, Cl. 414-22.000.
 Murphy, Joseph: See—
 Murray, Myles N.; and Murphy, Joseph, 4,642,876, Cl. 29-570.000.
 Murphy, Kenneth J.; Baker, Gerald R.; and Gard, Matthew F., to STC Companies, Inc. The mobile chair with removable rear wheel assembly. 4,643,446, Cl. 280-648.000.
 Murphy, Wesley T. Energy transfer and conservation apparatus. 4,643,035, Cl. 74-64.000.
 Murray, Myles N.; and Murphy, Joseph. Apparatus useful in the manufacture of electrolytic capacitors. 4,642,876, Cl. 29-570.000.
 Murtaugh, Bernard H. Hub removing device and method. 4,642,866, Cl. 29-259.000.
 Musacchia, John. Hunting arrow. 4,643,435, Cl. 273-422.000.
 Musha, Tohru, to Olympus Optical Co., Ltd. Optical head. 4,644,516, Cl. 369-43.000.
 Mussini, Emilio: See—
 Casagrande, Cesare; Mussini, Emilio; and Vecchiotti, Vittorio, 4,644,004, Cl. 514-332.000.
 Muth, David L.: See—
 Sides, Richard J., Jr.; Crawford, Christopher L.; Nunweiler, Raymond J., Jr.; Muth, David L.; and Hope, George P., 4,643,493, Cl. 312-7.200.
 Muto, Kentaro: See—
 Akazawa, Hozumi; and Muto, Kentaro, 4,643,824, Cl. 210-167.000.
 Mutz, Gerhard. Tachograph for motor vehicles. 4,644,368, Cl. 346-33.00D.
 Mycogen Corporation: See—
 Cardina, John; Littrell, Robert H.; and Stowell, Larry J., 4,643,756, Cl. 71-79.000.
 Mynuddin, Mohammed K.: See—
 Arciero, Carlo; and Mynuddin, Mohammed K., 4,643,269, Cl. 180-141.000.
 Nabeta, Teiichi: See—
 Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, 4,643,745, Cl. 55-137.000.
 Nagarajan, Ramakrishnan; and Schabel, Amelia A., to Eli Lilly and Company. Modified glycopeptides. 4,643,987, Cl. 514-8.000.
 Nagasawa, Hiroyuki: See—
 Tani, Tatsuhiro; Nagasawa, Hiroyuki; Tomite, Tosio; Tsubota, Kiyomasa; and Takahashi, Akira, 4,644,201, Cl. 310-51.000.
 Nagasawa, Masanori, to Fujitsu Limited. Semiconductor memory device with charging circuit. 4,644,501, Cl. 365-203.000.
 Nagase, Masaomi: See—
 Matsuno, Kiyotaka; Nagase, Masaomi; and Tsukamoto, Keisuke, 4,643,154, Cl. 123-501.000.
 Nagashima, Sumio; Suzuki, Etsuji; Chiyoda, Kiyomiu; and Kodama, Masahiro. Pattern position detecting apparatus. 4,644,584, Cl. 382-34.000.
 Nagashima, Tetsuya: See—
 Matsushita, Eige; and Nagashima, Tetsuya, 4,644,331, Cl. 340-587.000.
 Nagata, Toru; Aoshima, Chikara; Maeno, Hiroshi; and Tamamura, Hideo, to Canon Kabushiki Kaisha. Data imprinting device for a camera. 4,643,549, Cl. 354-64.000.
 Nagel, Dietmar: See—
 Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,643,695, Cl. 446-427.000.
 Nagy, Richard A.: See—
 McNeal, Norman E.; Nagy, Richard A.; and Norell, Ronald A., 4,643,935, Cl. 428-157.000.
 Naito, Hideki: See—
 Sawada, Satoru; Naito, Hideki; and Kitaguchi, Hiroshi, 4,643,964, Cl. 430-523.000.
 Naito, Masayuki: See—
 Kawasaki, Masami; and Naito, Masayuki, 4,643,540, Cl. 350-502.000.
 Nakagawa, Kenji: See—
 Kasuga, Toshihiro; and Nakagawa, Kenji, 4,643,982, Cl. 501-8.000.
 Nakagawa, Masaki; and Suzuki, Susumu, to Kabushiki Kaisha Toshiba. Digital television signal processing circuit. 4,644,389, Cl. 358-28.000.
 Nakagawa, Shigeru; and Uchikawa, Kiyotaka, to Marui Industry Co., Ltd. Method for forming a metal layer with pattern on a substrate. 4,643,912, Cl. 427-57.000.
 Nakajima, Keiji. Ball for ballgames and manufacturing process thereof. 4,643,424, Cl. 273-60.00B.

Nakamura Bussan Kabushiki Kaisha: See—
 Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, 4,643,939, Cl. 428-283.000.
 Nakamura, Junji; Iida, Norikazu; and Ogino, Nobukuni, to Matsushita Electric Industrial Co., Ltd. Electrolytic capacitor. 4,644,446, Cl. 361-433.000.
 Nakamura, Kenji: See—
 Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, 4,643,939, Cl. 428-283.000.
 Nakamura, Masaki: See—
 Koshizuka, Kunihiro; Kitamura, Shigehiro; Abe, Takao; Nakamura, Masaki; Ishii, Fumio; and Hotta, Yuji, 4,643,917, Cl. 427-256.000.
 Nakamura, Osamu: See—
 Kimura, Masakatsu; and Nakamura, Osamu, 4,643,928, Cl. 428-36.000.
 Nakamura, Tetsuro: See—
 Shimura, Katsumasa; and Nakamura, Tetsuro, 4,643,394, Cl. 251-129.080.
 Nakamura, Youichi: See—
 Inoue, Takao; Matsuo, Takahiro; and Nakamura, Youichi, 4,643,911, Cl. 427-54.100.
 Nakanishi, Keiichi; Yamada, Minoru; Masaki, Akira; Imai, Kuninori; and Chiba, Katuaki, to Hitachi, Ltd. Cooling module for integrated circuit chips. 4,644,385, Cl. 357-82.000.
 Nakao, Kazuo: See—
 Haruna, Koichi; Nakao, Kazuo; Nishiyama, Tamotsu; Tashiro, Tsutomu; Matsumoto, Kuniaki; and Saida, Nobuyuki, 4,644,480, Cl. 364-552.000.
 Nakase, Hiromi: See—
 Ozawa, Kuniichi; Goto, Yasuhiro; Nakase, Hiromi; and Yukino, Shinya, 4,644,157, Cl. 250-231.05E.
 Nakaso, Akishi; Kaneko, Youichi; Okamura, Toshiro; and Yamanoi, Kiyoshi, to Hitachi Chemical Company, Ltd. Process for treating metal surface. 4,643,793, Cl. 156-306.000.
 Nakata, Mitsuo: See—
 Tomioka, Hiroyuki; Nakata, Mitsuo; Kusakawa, Nobuhiro; and Torigoe, Kaname, 4,642,979, Cl. 57-264.000.
 Nakatani, Mitsuo: See—
 Okunaka, Masaaki; Nakatani, Mitsuo; Matsuyama, Haruhiko; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; Matsukuma, Kunihiro; Midorikawa, Sumiyuki; and Suzuki, Satoru, 4,643,913, Cl. 427-75.000.
 Nakatsuka, Hisayoshi, to Namiki Precision Jewel Co., Ltd. Circuit connection for coils wound on yoke of an electromagnetic pickup cartridge. 4,644,518, Cl. 369-146.000.
 Nakayama, Hiroki: See—
 Yamada, Yasuyuki; Sato, Yasuhisa; Nakayama, Hiroki; and Oizumi, Kouji, 4,643,536, Cl. 350-422.000.
 Nakazawa, Tamotsu: See—
 Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, 4,643,939, Cl. 428-283.000.
 Nalco Chemical Company: See—
 Johnson, Kerrie A., 4,643,801, Cl. 162-164.100.
 Koepf-Gall, Sandra; and Schild, Ronald H., 4,643,835, Cl. 210-754.000.
 Namiki Precision Jewel Co., Ltd.: See—
 Nakatsuka, Hisayoshi, 4,644,518, Cl. 369-146.000.
 Nance, Kenneth H., to BP Chemicals Limited. Additive for inhibiting respiration and promoting desiccation of crops. 4,643,754, Cl. 71-1.000.
 Nannig, Urban R.: See—
 Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,643,790, Cl. 156-242.000.
 Naoi, Keiji: See—
 Isono, Keinosuke; and Naoi, Keiji, 4,643,715, Cl. 604-4.000.
 Narita, Ryuho; and Imai, Masahiro, to Kabushiki Kaisha Toshiba. Timer. 4,644,571, Cl. 377-56.000.
 Narita, Ryuho: See—
 Asahi, Morio; Aoshima, Terutaka; Narita, Ryuho; and Imai, Masahiro, 4,644,137, Cl. 219-497.000.
 Nash, Dennis P.; Rex, Donald K.; Siegl, Ludwig R.; and Wussow, Wendy, to International Business Machines Corporation. Ribbon positioning mechanism. 4,643,601, Cl. 400-216.100.
 Nastari, John J.; and Cotter, Walter C., to Fabco Medical Products, Inc. Surgical wire and method for the use thereof. 4,643,178, Cl. 128-92.0YD.
 Nathan, Robert, to California Institute of Technology. Pipeline active filter utilizing a booth type multiplier. 4,644,488, Cl. 364-724.000.
 National Institute for Researches in Inorganic Materials: See—
 Mitomo, Mamoru; and Yoshioka, Yuji, 4,643,859, Cl. 264-65.000.
 National Manufacturing Co.: See—
 Johnston, James R., 4,642,844, Cl. 16-98.000.
 Johnston, James R.; and Crown, Marlin D., 4,643,469, Cl. 292-66.000.
 National Research Development Corp.: See—
 Patterson, Roy D., 4,644,327, Cl. 340-384.00E.
 Turner, Nicholas J.; Ogden, Geoffrey A.; and Bridge, Richard S., 4,642,852, Cl. 19-236.000.
 National Semiconductor Corporation: See—
 Charoensakvirochana, Chamras; and Boey, Wing K., 4,644,384, Cl. 357-74.000.
 Sivasothy, Sivakumar; and Balakrishnan, Ramanatha V., 4,644,186, Cl. 307-300.000.
 Todd, Ronald C., 4,644,185, Cl. 307-279.000.

National Starch and Chemical Corporation: See—
 Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., 4,644,040, Cl. 525-426.000.
 Nawamaki, Tsutomu: See—
 Baba, Masatoshi; Tanaka, Norio; Ikai, Takasi; Nawamaki, Tsutomu; and Matsunaga, Masaji, 4,643,757, Cl. 71-86.000.
 NCR Corporation: See—
 Fairey, Brian M., 4,643,091, Cl. 101-233.000.
 NEC Corporation: See—
 Akabane, Masashi, 4,644,580, Cl. 381-4.000.
 Harafuji, Yoshihiko; Yamamoto, Hideki; and Yamamoto, Kat-suhiko, 4,644,458, Cl. 363-65.000.
 Ishii, Daisuke, 4,644,350, Cl. 340-825.440.
 Kawano, Hideo; and Sakuma, Isamu, 4,644,551, Cl. 372-45.000.
 Kouyama, Toshitake; and Katsube, Ryoji, 4,644,400, Cl. 358-149.000.
 Masuda, Shinji, 4,644,291, Cl. 330-261.000.
 Noguchi, Masahiko; and Hiromori, Kunio, 4,643,626, Cl. 414-103.000.
 Saito, Koji, 4,644,466, Cl. 364-200.000.
 Sato, Masakazu, 4,644,539, Cl. 371-11.000.
 Yokoyama, Yukio, 4,644,361, Cl. 343-700.0MS.
 Nader, Gunter; Schurger, Rainer; and Ernst, Horst M., to SKF GmbH. Sealed rolling bearing. 4,643,594, Cl. 384-478.000.
 Neering, Michael J.: See—
 Cannon, Wayne G.; and Neering, Michael J., 4,644,486, Cl. 364-570.000.
 Nelson, Gary E. Quick squeeze tool. 4,643,054, Cl. 81-352.000.
 Nelson, Iver L.: See—
 Seiter, George M.; Klitzke, Loren J.; and Nelson, Iver L., 4,643,878, Cl. 422-101.000.
 Nelson, Richard E. Press having novel guide bars. 4,643,017, Cl. 72-446.000.
 Nelson, Robert R.: See—
 McJohnson, Robert B.; Currin, Adrian B.; and Nelson, Robert R., 4,644,143, Cl. 235-462.000.
 Nemoto, Tsuneo; and Sawa, Tetsuo, to Sony Corporation. Micro floppy disc cassette. 4,644,435, Cl. 360-133.000.
 Neubrand, Theo, to Alfred Teves GmbH. Slip-controlled brake system for automotive vehicles. 4,643,487, Cl. 303-114.000.
 Neumann, Dietmar J. Flexible bulk container. 4,643,475, Cl. 296-10.000.
 New Process Industries, Inc.: See—
 Benson, Glendon M., 4,642,988, Cl. 60-641.140.
 Newman, Hugh, Jr.: See—
 Bezwada, Rao S.; Shalaby, Shalaby W.; Newman, Hugh, Jr.; and Kafrawy, Adel, 4,643,191, Cl. 128-335.500.
 Newman, Robert W.: See—
 Sierocuk, Thomas J.; and Newman, Robert W., 4,644,276, Cl. 324-307.000.
 Newman, Walter: See—
 Johnson, George E.; and Newman, Walter, 4,643,503, Cl. 339-50.00R.
 Ngai, Peter Y. Y.: See—
 Herst, Douglas J.; and Ngai, Peter Y. Y., 4,644,454, Cl. 362-224.000.
 NGK Spark Plug Co., Ltd.: See—
 Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,643,985, Cl. 501-136.000.
 NGK Sparkplug Co., Ltd.: See—
 Masuda, Senichi, 4,644,457, Cl. 363-37.000.
 NHK Spring Co. Limited: See—
 Ojima, Juji; and Kitamura, Yoshiharu, 4,643,382, Cl. 248-371.000.
 Nichols, Charles; and Howard, John, to Dracett Company, The. Broom having interlocking components. 4,642,837, Cl. 15-171.000.
 Nichols, Larry D., to Moleculon, Inc. Process of making gelled cellulose triacetate product. 4,643,856, Cl. 264-41.000.
 Nichols, Roy: See—
 Goleczka, Joseph; Mills, Edmund P.; Harrison, Edward K.; and Nichols, Roy, 4,643,977, Cl. 436-34.000.
 Nickel, Bernd: See—
 Engel, Jurgen; Jakovlev, Vladimir; Nickel, Bernd; Thiemer, Klaus; and Scheffler, Gerhard, 4,643,995, Cl. 514-210.000.
 Nickelsen, Joachim: See—
 Barlebo, Lars M.; and Nickelsen, Joachim, 4,642,905, Cl. 34-10.000.
 Nicolson, Peter J., to C4 Carbides plc. Method for applying material to a substrate. 4,643,740, Cl. 51-293.000.
 Niedermayr, Erich, to Siemens Aktiengesellschaft. Apparatus for determining the deviations from a circular form in a dynamically balanced part. 4,642,902, Cl. 33-543.000.
 Nieman, Frank C. Hand manipulated exercise device. 4,643,417, Cl. 272-67.000.
 Nievergelt, Hermann E.: See—
 Bednorz, Johannes G.; Gueret, Pierre L.; Nievergelt, Hermann E.; Ott, Hanspeter; Pohl, Wolfgang D.; and Widmer, Daniel F., 4,643,627, Cl. 414-217.000.
 Niggemann, Richard; and Readman, John, to Sundstrand Corporation. Fluid jet impingement heat exchanger for operation in zero gravity conditions. 4,643,250, Cl. 165-159.000.
 Nihon Musen Kabushiki Kaisha: See—
 Sekine, Chogo, 4,644,358, Cl. 342-356.000.
 Nilsen, Ole K. Series-resonant parallel-loaded fluorescent lamp ballast. 4,644,228, Cl. 315-242.000.
 Nilsen, Ole K. Electronic inverter having magnitude-controllable output. 4,644,459, Cl. 363-133.000.

Nippon Chemiphar Co., Ltd.: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.

Nippon Electric Co., Ltd.: See—
Fujita, Tsuneo, 4,644,322, Cl. 340-347.0AD.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Oya, Akiyoshi, 4,643,066, Cl. 84-1.010.

Nippon Kogaku K. K.: See—
Hasegawa, Hiroshi, 4,643,558, Cl. 354-484.000.
Kusaka, Yosuke; and Shimomura, Jun, 4,644,148, Cl. 250-201.000.
Wakabayashi, Hiroshi, 4,643,555, Cl. 354-403.000.

Nippon Kokan Kabushiki Kaisha: See—
Gohdo, Shigeru, 4,643,121, Cl. 114-40.000.
Makabe, Eiichi; Harada, Naoki; Imai, Kiyotaka; Hosoda, Yoshiro; and Kato, Akira, 4,643,587, Cl. 374-104.000.

Nippon Mining Co., Ltd.: See—
Sato, Yasukazu; Matsuda, Kenichi; Ozaki, Hiromi; Suzuka, Teruo; and Yamane, Mamoru, 4,643,813, Cl. 204-157.780.

Nippon Sheet Glass Co., Ltd.: See—
Ichikawa, Hiroyuki; Nishi, Hisami; and Toyama, Minoru, 4,643,535, Cl. 350-413.000.

Nippon Soken, Inc.: See—
Atsumi, Morihiro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, 4,644,133, Cl. 219-270.000.
Idogaki, Takaharu; Kawai, Hisasi; and Hayashi, Ikuo, 4,644,211, Cl. 310-266.000.
Moritugu, Mitiyasu; Kawai, Hisasi; and Tokura, Norihito, 4,644,212, Cl. 310-317.000.
Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, 4,643,745, Cl. 55-137.000.

Nippon Telegraph & Telephone Public Corporation: See—
Harafuji, Yoshihiko; Yamamoto, Hideki; and Yamamoto, Katsuhiko, 4,644,458, Cl. 363-65.000.

Nippon Zeon Co., Ltd.: See—
Oyama, Motofumi; Kubo, Yoichiro; and Honda, Toshiharu, 4,643,938, Cl. 428-268.000.

Nipponden Co., Ltd.: See—
Atsumi, Morihiro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, 4,644,133, Cl. 219-270.000.
Miura, Yasunao, 4,643,749, Cl. 55-523.000.

Nishi, Hidetoshi: See—
Kawata, Haruo; and Nishi, Hidetoshi, 4,642,879, Cl. 29-576.00B.

Nishi, Hisami: See—
Ichikawa, Hiroyuki; Nishi, Hisami; and Toyama, Minoru, 4,643,535, Cl. 350-413.000.

Nishida, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Water jet propelled craft, 4,643,685, Cl. 440-42.000.

Nishigaki, Satoshi; Itoh, Masataka; and Katoh, Shohichi, to Sharp Kabushiki Kaisha. Large scale contact type image reading unit using two-dimensional sensor array, 4,644,406, Cl. 358-213.000.

Nishii, Takeshi: See—
Nishimori, Shoji; and Nishii, Takeshi, 4,644,115, Cl. 200-67.00D.

Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Control system for a hydraulic transmission to prevent vehicle creep, 4,643,049, Cl. 74-868.000.

Nishikawa, Masayasu; and Kimura, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Cylinder head for internal combustion engines, 4,643,157, Cl. 123-568.000.

Nishimori, Shoji; and Nishii, Takeshi, to Matsushita Electric Works, Ltd. Compact snap action switch, 4,644,115, Cl. 200-67.00D.

Nishimoto, Naomichi; Hirota, Akira; and Kosaka, Yoshiteru, to Victor Company of Japan, Ltd. Video signal recording and reproducing apparatus, 4,644,412, Cl. 358-335.000.

Nishinakagawa, Kou: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.

Nishitani, Yasuo: See—
Yamada, Koichi; Kubo, Kanji; and Nishitani, Yasuo, 4,644,414, Cl. 360-10.200.

Nishiwaki, Shigeru: See—
Yoshikawa, Shinichi; Nishiwaki, Shigeru; and Shimodaira, Toshiro, 4,644,239, Cl. 318-641.000.

Nishiyama, Nobumasa; Aoi, Hajime; Tamura, Takashi; Ouchi, Yasuhide; and Saitou, Makoto, to Hitachi, Ltd. Equalizer used for magnetic storage device, 4,644,424, Cl. 360-65.000.

Nishiyama, Tamotsu: See—
Haruna, Koichi; Nakao, Kazuo; Nishiyama, Tamotsu; Tashiro, Tsutomu; Matsumoto, Kuniaki; and Saïda, Nobuyuki, 4,644,480, Cl. 364-552.000.

Nishizawa, Junichi; and Ohmi, Tadahi, to Handotai Kenkyu Shinkokai. Integrated circuit employing insulated gate electrostatic induction transistor, 4,644,386, Cl. 357-23.300.

Nishizawa, Kazunori: See—
Fuzita, Kazuhiro; Nishizawa, Kazunori; and Imamura, Shinji, 4,642,838, Cl. 15-250.210.

Nissan Chemical Industries, Ltd.: See—
Baba, Masatoshi; Tanaka, Norio; Ikai, Takasi; Nawamaki, Tsutomu; and Matsunaga, Masaji, 4,643,757, Cl. 71-86.000.
Morinaga, Hiroshi; Kamiyama, Sakae; and Sato, Yuzo, 4,643,986, Cl. 502-104.000.

Nissan Motor Company, Limited: See—
Nozawa, Koji; and Mizukoshi, Yukio, 4,642,985, Cl. 60-435.000.
Ura, Shozabu; and Iwasa, Yoshio, 4,643,136, Cl. 123-52.00M.

Nisshin Steel Company, Ltd.: See—
Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shimozato, Yoshio; Yanagi, Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.

Nissin Kogyo Kabushiki Kaisha: See—
Mizusawa, Mitutoyo; and Horiuchi, Makoto, 4,642,990, Cl. 60-554.000.

Nisus Video, Inc.: See—
Swinehart, Steven L., 4,643,548, Cl. 352-216.000.

Nitto Boseki Co., Ltd.: See—
Ueda, Toshiro; Kageno, Kenji; Shimizu, Kiyoshi; Hasegawa, Sakuro; and Harada, Susumu, 4,644,042, Cl. 526-204.000.

Nixon, Ralph D., to English Electric Valve Company Limited. Display systems, 4,644,407, Cl. 358-242.000.

Noda, Koshi, to Murata Kikai Kabushiki Kaisha. Pneumatic spinning apparatus, 4,642,978, Cl. 57-328.000.

Nodera, Hisatoshi: See—
Kamiya, Fumio; Nodera, Hisatoshi; Ueda, Kenji; Imazu, Keinosuke; and Tomioka, Hidehiro, 4,644,298, Cl. 331-65.000.

Nogi, Toshiharu: See—
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,643,151, Cl. 123-432.000.

Noguchi, Hiroki: See—
Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, 4,643,745, Cl. 55-137.000.

Noguchi, Masahiko; and Hiromori, Kunio, to NEC Corporation. Card item stacker capable of readily taking out card items, 4,643,626, Cl. 414-103.000.

Nojiri, Yuukou; Ishizaki, Koshi; Ishida, Giichi; and Inamura, Junshiro, to Hitachi, Ltd. Method of and an apparatus for controlling a plurality of DC motors, 4,644,232, Cl. 318-66.000.

Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Four quadrant control circuit for a brushless three-phase d.c. motor, 4,644,234, Cl. 318-254.000.

Noma, Kouichi: See—
Fukamachi, Toshiro; Matsuda, Kazuo; Noma, Kouichi; Kawada, Toshiaki; Sakurai, Toshiro; and Osawa, Takeshi, 4,643,351, Cl. 236-44.00E.

Norca Industries Limited: See—
Tvensberg, Nils, 4,642,822, Cl. 4-488.000.

Norcast Inc.: See—
McKim, A. Meredith, 4,643,365, Cl. 241-101.200.

Nordson Corporation: See—
Baker, Robert G., 4,644,134, Cl. 219-301.000.

Norell, Ronald A.: See—
McNeal, Norman E.; Nagy, Richard A.; and Norell, Ronald A., 4,643,935, Cl. 428-157.000.

Norman, Leslie D.: See—
Morris, Thomas A.; and Norman, Leslie D., 4,643,211, Cl. 135-67.000.

Norris, Daniel A.; Lowery, James O.; and Armstrong, Robert F., to Southwire Company. Longitudinally wrapped cable, 4,644,098, Cl. 174-115.000.

North American Philips Corporation: See—
Boser, Otmar H., 4,644,259, Cl. 324-51.000.
Bronnes, Robert L.; Sweet, Richard C.; and McKinlay, James K., 4,643,347, Cl. 228-208.000.
Paolini, Francis R., 4,644,578, Cl. 378-146.000.

North American Philips Electric Corporation: See—
Caruso, Nancy J.; and Masto, Michael H., 4,643,690, Cl. 445-6.000.

North, Larry J.: See—
North, Vaughn W.; and North, Larry J., 4,643,455, Cl. 283-81.000.
North, Vaughn W.; and North, Larry J. Detachable bank card transaction recording device, 4,643,455, Cl. 283-81.000.

Northern Telecom Limited: See—
Abe, Koichi, 4,643,751, Cl. 65-3.120.

Northwestern University: See—
Raviv, Gil; Marhic, Michel E.; and Epstein, Max, 4,643,514, Cl. 350-3.600.

Norton Christensen, Inc.: See—
Aitua, Noboru; and Sawaki, Yoshio, 4,643,265, Cl. 175-226.000.

Norwich Eaton Pharmaceuticals, Inc.: See—
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,643,996, Cl. 514-336.000.

Norwood Industries, Inc.: See—
Bowditch, W. Raymond; and Rybalka, Borys, 4,644,018, Cl. 521-130.000.

Noser, Friedrich: See—
Hanefeld, Wolfgang; Rothlisberger, Rudi; and Noser, Friedrich, 4,643,997, Cl. 514-226.000.

Notettry Limited: See—
Dyson, James, 4,643,748, Cl. 55-338.000.

Novetta Limited: See—
Caplin, Roger W. G.; Southern, Roderic G.; Fry, Gerald L.; and Hunt, David, 4,644,450, Cl. 362-147.000.

Nozawa, Hiroshi: See—
Matsukawa, Naohiro; Morita, Sigeru; and Nozawa, Hiroshi, 4,642,881, Cl. 29-576.00B.

Nozawa, Koji; and Mizukoshi, Yukio, to Nissan Motor Company, Limited. Oil pump system in power train, 4,642,985, Cl. 60-435.000.

Nozawa, Yoshikuni, to Entac Co., Ltd. Cup-shaped winding and method of fabricating same, 4,644,209, Cl. 310-198.000.

NSK-Warner K. K.: See—
Ono, Katsuyasu, 4,642,857, Cl. 24-637.000.

Nunogaki, Naohika: See—
Atsumi, Morihiro; Nunogaki, Naohika; Ito, Novuei; and Mizuno, Naohito, 4,644,133, Cl. 219-270.000.

Nunweiler, Raymond J., Jr.: See—
Sides, Richard J., Sr.; Crawford, Christopher L.; Nunweiler, Raymond J., Jr.; Muth, David L.; and Hope, George P., 4,643,493, Cl. 312-7.200.

Nurre, Harry: See—
Phlipot, James R.; Pinkston, Steve R.; and Nurre, Harry, 4,643,215, Cl. 137-15.000.

Nusse, Klaus J. R.: See—
Baines, Alfred H. P., deceased; Campetti, Gianfranco; Baumgartl, Walter A.; and Nusse, Klaus J. R., 4,644,312, Cl. 335-236.000.

Oakes, Thomas R.: See—
Maloney, James F.; Freis, Richard E.; and Oakes, Thomas R., 4,643,800, Cl. 162-5.000.

Oates, Robert M.; Petronio, Carlo F.; and Kraus, Mark G., to Westinghouse Electric Corp. Apparatus for monitoring housed turbine blading to obtain blading-to-housing distance, 4,644,270, Cl. 324-207.000.

Obman, Howard J.; and Brodbeck, Howard D., to MG Industries. Apparatus for cooling a vacuum furnace, 4,643,401, Cl. 266-80.000.

O'Brien, John A., Jr.; and Hutson, James H., to Outboard Marine Corporation. Feed roll tensioning device, 4,643,236, Cl. 144-208.00E.

Ochi, Shigeharu, to Fuji Photo Film Co. Ltd. Photoelectric sensor array support package, 4,644,390, Cl. 358-50.000.

Odaka, Makoto: See—
Kunugi, Yoshio; Odaka, Makoto; Sato, Takeshi; Sasaki, Yoshio; and Tokumo, Akio, 4,644,292, Cl. 330-279.000.

Oe, Shigeyuki: See—
Yoshihara, Kunio; Sudo, Toshio; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, 4,644,093, Cl. 174-36.000.

Oelsch, Jurgen, to Preh Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co. Device and method for connecting a printed circuit film, 4,643,497, Cl. 339-17.00F.

Oen, Joshua T., to Paccar, Inc. Latching arrangement and method, 4,643,468, Cl. 292-2.000.

Ogawa, Noriaki: See—
Hattori, Toshihiro; Uriuhara, Makoto; Kasai, Hitoshi; Asagi, Yasuyoshi; and Ogawa, Noriaki, 4,643,048, Cl. 74-866.000.

Ogawa, Sumitaka: See—
Miura, Nobuo; Ishii, Norihisa; and Ogawa, Sumitaka, 4,643,150, Cl. 123-418.000.

Ogawa, Yuji: See—
Shibasaki, Masakatsu; Sodeoka, Mikiko; and Ogawa, Yuji, 4,644,068, Cl. 549-214.000.

Ogawa, Yukio, to Canon Kabushiki Kaisha. Camera with focal length varying device, 4,643,554, Cl. 354-400.000.

Ogden, Geoffrey A.: See—
Turner, Nicholas J.; Ogden, Geoffrey A.; and Bridge, Richard S., 4,642,852, Cl. 19-236.000.

Ogino, Nobukuni: See—
Nakamura, Junji; Iida, Norikazu; and Ogino, Nobukuni, 4,644,446, Cl. 361-433.000.

Ogura, Atsushi; and Egami, Koji, to Agency of Industrial Science and Technology. Semiconductor device, 4,643,950, Cl. 428-446.000.

Ogura, Mitsugi: See—
Miyawaki, Naokazu; and Ogura, Mitsugi, 4,644,184, Cl. 307-269.000.

Ogura, Yukio, to Ricoh Company, Ltd. Laser beam scanning apparatus, 4,643,516, Cl. 350-6.500.

Ogushi, Akira: See—
Morishita, Koichi; Omori, Shinji; Yamagata, Shimbu; Yokoyama, Tetsuo; Sano, Koichi; and Ogushi, Akira, 4,644,582, Cl. 382-6.000.

Oh, Se J.: See—
Halling, Horace P.; and Oh, Se J., 4,643,463, Cl. 285-226.000.

Ohashi, Ryota; Kawamura, Masahisa; and Fujisaki, Koichiro, to Kanazaki Kogyokoki Mfg. Co., Ltd. Fluid supply system for working vehicles, 4,643,442, Cl. 280-461.00A.

Ohe, Shinichi; and Ito, Yuji, to Canon Kabushiki Kaisha. Particle analyzing apparatus, 4,643,566, Cl. 356-72.000.

Ohio State University Research Foundation, The: See—
Richardson, Richard W., 4,644,131, Cl. 219-124.340.

Ohishi, Shiro; and Shinozaki, Masatsugu, to Hitachi, Ltd. Data transmission method and system, 4,644,563, Cl. 375-17.000.

Ohkubo, Shigeo: See—
Tachikawa, Takeyoshi; and Ohkubo, Shigeo, 4,643,238, Cl. 160-168.00R.

Ohmatsu, Hideki: See—
Kubota, Satoshi; Yoshida, Tetsuo; and Ohmatsu, Hideki, 4,643,965, Cl. 430-567.000.

Ohmi, Tadahi: See—
Nishizawa, Junichi; and Ohmi, Tadahi, 4,644,386, Cl. 357-23.300.

Ohmori, Akira; Yasuhara, Takashi; Izutani, Naoki; and Ueda, Yasufumi, to Daikin Industries Ltd. Fluorine-containing polymer for gas separating membrane, 4,644,043, Cl. 526-246.000.

Ohmori, Kouichi, to Canon Kabushiki Kaisha. Multiple light emission flash unit, 4,643,551, Cl. 354-132.000.

Ohshima, Ken; Okada, Hiroo; and Sakamoto, Masaharu, to Olympus Optical Co., Ltd. Head drive control apparatus, 4,644,514, Cl. 369-32.000.

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Ohta, Toshihiko: See—
Okada, Fujio; and Ohta, Toshihiko, 4,643,865, Cl. 264-288.400.

Ohtaka, Keiji: See—
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Ohto, Masao: See—
Tanaka, Masataka; Ohto, Masao; Sekine, Tetsuo; Isobe, Koji; and Maruyama, Masaru, 4,643,196, Cl. 128-753.000.

Ohtsubo, Akio, to Bayer Aktiengesellschaft. Perpendicular magnetic recording medium, 4,643,942, Cl. 428-328.000.

Ohtsuka, Katsuyuki: See—
Kanai, Makoto; Aikawa, Hideaki; Inada, Eiichi; and Ohtsuka, Katsuyuki, 4,643,846, Cl. 252-626.000.

Ohtsuki, Kazuhiko: See—
Yano, Kazuhiko; Ohtsuki, Kazuhiko; Awaya, Takao; and Yoshii, Gen, 4,643,687, Cl. 440-75.000.

Oishi, Kengo; and Ono, Toshiro, to Fuji Photo Film Co., Ltd. Shutter member for a magnetic disk cartridge, 4,644,434, Cl. 360-133.000.

Oishi, Yuji, to Amada Company, Limited. Gas laser device, 4,644,549, Cl. 372-38.000.

Oizumi, Kouji: See—
Yamada, Yasuyuki; Sato, Yasuhisa; Nakayama, Hiroki; and Oizumi, Kouji, 4,643,536, Cl. 350-422.000.

Ojima, Juji; and Kitamura, Yoshiharu, to NHK Spring Co. Limited. Television stand having a tilt mechanism, 4,643,382, Cl. 248-371.000.

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Okada, Tsutomu, to Olympus Optical Co., Ltd. High-frequency incising and excising instrument, 4,643,187, Cl. 128-303.150.

Okamoto, Masaru: See—
Toda, Fumio; Okamoto, Masaru; and Mochizuki, Fujiaki, 4,644,021, Cl. 523-122.000.

Okamura, Toshiro: See—
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Okazaki, Koji: See—
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Okuda, Hiroko; Sakurai, Keiichi; and Minamitaka, Junichi, to Casio Computer Co., Ltd. Electronic musical instrument with automatic rhythm playing unit, 4,643,068, Cl. 84-1.030.

Okuhara, Hisakazu: See—
Sasaki, Kiichi; Tabata, Hiroshi; Okuhara, Hisakazu; and Higuchi, Kazuo, 4,643,449, Cl. 280-808.000.

Okunaka, Masaaki; Nakatani, Mitsuo; Matsuyama, Haruhiko; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; Matsukuma, Kunihiro; Midorikawa, Sumiyuki; and Suzuki, Satoru, to Hitachi, Ltd. Process for producing solar cells, 4,643,913, Cl. 427-75.000.

Olasz, Joseph S., to Federal Products Corporation. Guide system, 4,643,590, Cl. 384-8.000.

Old, Lloyd J.: See—
Fradet, Yves; Cordon-Cardo, Carlos; Whitmore, Willet F., Jr.; Melamed, Myron R.; Old, Lloyd J.; and Lloyd, Kenneth O., 4,643,971, Cl. 435-240.000.

Olds, Keith A., to Motorola, Inc. Frequency locked loop for the temperature compensation of phase coded surface acoustic wave devices, 4,644,297, Cl. 331-17.000.

Olifant, Jacques: See—
Guery, Jean-Pierre; Gasset, Gerald; Olifant, Jacques; and Plumet, Raymond, 4,644,308, Cl. 335-128.000.

Guery, Jean-Pierre; and Olifant, Jacques, 4,644,311, Cl. 335-230.000.

Olin Corporation: See—
Alexander, Roy P.; Faust, J. Philip; and Milford, Alan H., 4,643,881, Cl. 422-265.000.

O'Neill, Cormac G., 4,643,155, Cl. 123-506.000.

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Green, Terry D.; Kao, Kenneth C.; O'Loughlin, Robert J., Jr.; and Reese, Robert C., 4,643,465, Cl. 285-236.000.

Olson, Gene E.: See—
Becker, Thomas P.; Grover, Donald D.; Stout, Christopher B.; Kaufman, Glenn A.; and Olson, Gene E., 4,643,030, Cl. 73-862.230.

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Matsubara, Masaki, 4,643,541, Cl. 350-522.000.

Miyazaki, Atsushi; and Tohjoh, Yoshikazu, 4,643,170, Cl. 128-6.000.

Musha, Tohru, 4,644,516, Cl. 369-43.000.

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MacGavin, Donald J., 4,643,065, Cl. 83-830.000.

- Omori, Shinji: See—
Morishita, Koichi; Omori, Shinji; Yamagata, Shimbū; Yokoyama, Tetsuo; Sano, Koichi; and Ogushi, Akira, 4,644,582, Cl. 382-6.000.
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- Omron Tateisi Electronics Co.: See—
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- Onda, Hiroyuki: See—
Araki, Tetsuro; and Onda, Hiroyuki, 4,644,324, Cl. 340-347.0DA.
- Ondercin, Lawrence: See—
Kolycheck, Edmond G.; and Ondercin, Lawrence, 4,643,949, Cl. 428-425.900.
- Ondis, Albert W., to Astro-Med, Inc. Lottery ticket. 4,643,454, Cl. 283-74.000.
- O'Neal, Thomas D.; Bhalla, Prithvi R.; and Cross, Barrington, to American Cyanamid Company. Method for the control of stem growth and stem stiffness of graminaceous crops. 4,643,755, Cl. 71-76.000.
- O'Neill, Cormac G., to Olin Corporation. Variable stroke, electronically controlled fuel injection control system. 4,643,155, Cl. 123-506.000.
- Ono, Katsuyasu, to NSK-Warner K. K. Belt buckle assembly. 4,642,857, Cl. 24-637.000.
- Ono, Tuiyoshi: See—
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- Ontario Technologies Corporation: See—
Schulz, David W., 4,642,863, Cl. 29-156.80B.
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- Ookubo, Mamoru; Iwasaki, Takayuki; and Mieda, Kenji, to Kabushiki Kaisha Daikin Seisakusho. Manufacturing method of a clutch cover assembly. 4,642,871, Cl. 29-513.000.
- Opitz, Norbert; and Lubbers, Dietrich W., to Max Planck Gesellschaft zur Foerderung der Wissenschaften. Fluorometer. 4,643,877, Cl. 422-68.000.
- Orban, Ralph F., to Material Concepts, Inc. Continuous process for the metal coating of fiberglass. 4,643,918, Cl. 427-304.000.
- Orion Industries, Inc.: See—
Jachowski, Ronald E.; and Dickson, Donald C., 4,644,303, Cl. 333-134.000.
- Orndorff, Gary J.: See—
Brewer, Richard A.; Merk, Robert H.; and Orndorff, Gary J., 4,643,904, Cl. 426-549.000.
- Orsini, Milagros C.; and Spector, George. ECO set didactic blocks/cubes. 4,643,683, Cl. 434-403.000.
- Osawa, Takeshi: See—
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- Oswalt, Stephen M.: See—
Saracsan, Jeffrey W.; and Oswalt, Stephen M., 4,643,794, Cl. 156-310.000.
- Othen, David G., to British Petroleum Company p.l.c., The. Corrosion inhibiting coating composition. 4,643,769, Cl. 106-1.170.
- Otsuka Pharmaceutical Co., Ltd.: See—
Asakura, Shoshiro; and Adachi, Masakazu, 4,643,896, Cl. 424-88.000.
- Ott, Hanspeter: See—
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- Ott, William E., to United States of America, Air Force. Analog circuit for simulating a digitally controlled rheostat. 4,644,193, Cl. 307-490.000.
- Otto, Wilhelm, to Blohm & Voss AG. Apparatus for adjusting and locking pitch of a variable pitch propeller on a ship. 4,643,643, Cl. 416-154.000.
- Ouchi, Yasuhide: See—
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- Outboard Marine Corporation: See—
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- Dunham, William D.; and Miller, Gerald L., 4,643,149, Cl. 123-403.000.
- O'Brien, John A., Jr.; and Hutson, James H., 4,643,236, Cl. 144-208.00E.
- Whipple, Roger B., 4,643,140, Cl. 123-65.0PE.
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- Ovonic Synthetic Materials Company, Inc.: See—
Keem, John E.; and Flascck, James D., 4,643,951, Cl. 428-469.000.
- Ovren, Christer: See—
Brogårdh, Torgny; Hok, Bertil; and Ovren, Christer, 4,644,154, Cl. 250-227.000.
- Hidman, Tomas; and Ovren, Christer, 4,644,379, Cl. 357-17.000.
- Owens, Boyd L. Lawn mower trimmer and edger attachment. 4,642,976, Cl. 56-16.900.
- Owens-Corning Fiberglass Corporation: See—
Glaser, Hellmut I., 4,643,750, Cl. 65-2.000.
- Owens-Illinois, Inc.: See—
Juvinal, John W., 4,644,151, Cl. 250-223.00B.
- Kennedy, Leo J., 4,643,330, Cl. 220-288.000.
- Owens, Kenneth B.: See—
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- OxiProcessing: See—
Zarrineghbal, Hossein; Kittrell, James R.; and Darian, Saeed T., 4,643,820, Cl. 208-222.000.
- Oy Tampella AB: See—
Issakainen, Onni, 4,643,619, Cl. 405-303.000.
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- Oyama, Motofumi; Kubo, Yoichiro; and Honda, Toshiharu, to Nippon Zeon Co., Ltd. Belt comprising rubber and fibers. 4,643,938, Cl. 428-268.000.
- Oyama, Yoshishige: See—
Yamauchi, Teruo; Nogi, Toshiharu; and Oyama, Yoshishige, 4,643,151, Cl. 123-432.000.
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- Ozawa, Kunichi; Goto, Yasuhiro; Nakase, Hiromi; and Yukino, Shinya, to Matsushita Electric Industrial Co., Ltd. Optical rotation detecting apparatus. 4,644,157, Cl. 250-231.0SE.
- P.T.I., Inc.: See—
Cameron, Joseph, 4,644,105, Cl. 379-56.000.
- Paccar, Inc.: See—
Oen, Joshua T., 4,643,468, Cl. 292-2.000.
- Pacific Kenyon Corp.: See—
Sawhill, J. Wallace, 4,643,908, Cl. 426-630.000.
- Padgett, Lonnie W., to Kimberly-Clark Corporation. Combination sterilization and infectious waste disposal container. 4,644,586, Cl. 383-102.000.
- Pakway Container Corp.: See—
Justice, James W., 4,642,999, Cl. 62-440.000.
- Palara, Sergio; and Torazzina, Aldo, to SGS Componenti Elettronici S.p.A. Device for protecting a push-pull output stage against a short-circuit between the output terminal and the positive pole of the supply. 4,644,294, Cl. 330-298.000.
- Palentyn, Gunther H.; Dehlinger, James R.; and Rigsby, Donald R., to Bentele Corporation. Laser contour cut manifolds. 4,644,128, Cl. 219-121.0LG.
- Palermo, Anthony; and Zupancic, Anton Z., to Picker Corporation. Computed tomography method and apparatus. 4,644,573, Cl. 378-15.000.
- Palm, John W., to Amoco Corporation. Process and apparatus for recovery of sulfur from ammonia containing acid gas streams. 4,643,888, Cl. 423-574.00R.
- Palmer, Derek R.: See—
Ballenegger, Marc E.; Rimbault, Christian G.; Albert, Alban I.; Weith, Andre J.; Courbat, Pierre; Tyson, Robert G.; Palmer, Derek R.; and Thompson, David G., 4,644,011, Cl. 514-456.000.
- Palmer, Eric, to Glasdon Limited. Waste bin having fire preventing lid. 4,643,324, Cl. 220-88.00R.
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- Panafacom Limited: See—
Iinuma, Hiroshi; Sakaguchi, Shuichi; and Suzuki, Takashi, 4,644,419, Cl. 360-46.000.
- Pandell, Nestor W., to Weathermate Marine Manufacturing, Inc. Method for punching holes in edge binding and the product produced thereby. 4,642,868, Cl. 29-429.000.
- Panek, Karel J., to Mallinckrodt Diagnostica (Holland) B.V. Preparation and use of a ^{195m}Au-containing liquid. 4,643,891, Cl. 424-1.100.
- Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, to International Mobile Machines Corp. Modem for RF subscriber telephone system. 4,644,561, Cl. 375-9.000.
- Panse, Hubert, to Siemens Aktiengesellschaft. Switch controller having a regulating path and an auxiliary regulating path parallel thereto. 4,644,254, Cl. 323-282.000.
- Pantel, Roland: See—
Arnaud D'Avitaya, Francois; Campidelli, Yves; and Pantel, Roland, 4,643,914, Cl. 427-93.000.
- Paolini, Francis R., to North American Philips Corporation. Detection arrangements for X-ray security systems. 4,644,578, Cl. 378-146.000.
- Parker, Donald L., to General Motors Corporation. Vacuum check valve. 4,643,221, Cl. 137-516.290.
- Parker, Harry A.; and Greenman, Joseph, to Transfer Print Foils. Method for preparing a decorated insert and continuous insert molding operation. 4,643,789, Cl. 156-219.000.
- Parkes, Adrian S.; Corbett, Gordon J.; Clough, Peter S.; and Barker, Colin N. H., to British Gas Corporation. Sealing joints and leaks. 4,643,855, Cl. 264-36.000.
- Parkinson, George L. Ski steering apparatus. 4,643,444, Cl. 280-606.000.
- Parks, Malcolm G. Method of and means for coupling a two conductor transmission line to an antenna. 4,644,364, Cl. 343-825.000.
- Parlman, Robert M.: See—
Kimble, James B.; and Parlman, Robert M., 4,643,823, Cl. 209-166.000.
- Parsonage, Philip G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Trade and Industry in Her

- Britannic Majesty's Government of the. Method of separation of material from material mixtures. 4,643,822, Cl. 209-8.000.
- Pass, Reinhard: See—
Hulsmann, Hans L.; Pass, Reinhard; and Hermsdorf, Horst, 4,643,850, Cl. 260-410.700.
- Patterson, Charles A.: See—
Garth, Geoffrey C.; and Patterson, Charles A., 4,643,719, Cl. 604-73.000.
- Patterson, Roy D., to National Research Development Corp. Methods for generating auditory indicators. 4,644,327, Cl. 340-384.00E.
- Paul, Helmut, to Continental Gummi-Werke Aktiengesellschaft. Apparatus for producing, by extrusion, flat profiled articles of plastic mixtures of various composition. 4,643,659, Cl. 425-131.100.
- Paulus, Wilfried: See—
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- Payn, Ward J., to I.m.e. Corporation. Modular universal postage meter. 4,644,142, Cl. 235-101.000.
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Garner, Ricky B.; Payne, Thomas H.; and Tranjan, Farid M., 4,642,877, Cl. 29-571.000.
- Paynton, Richard D. Method of manufacturing a filter. 4,643,785, Cl. 156-101.000.
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Bozai, Mohammed Z., 4,643,669, Cl. 431-202.000.
- Peerless Lighting Corporation: See—
Herst, Douglas J.; and Ngai, Peter Y. Y., 4,644,454, Cl. 362-224.000.
- Pellegrini, Maurice: See—
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- Pelsy, Gilles. Process and device for obtaining data relative to the position in a vertical plane of a supply pipe in the process of being buried. 4,643,615, Cl. 405-175.000.
- Pencept, Inc.: See—
Blesser, Barry A.; and Prentice, Thomas C., 4,644,102, Cl. 178-19.000.
- Penick, Joe E.: See—
Green, Gary J.; McVeigh, Harry A.; Penick, Joe E.; and Yan, Tsoung Y., 4,643,666, Cl. 431-4.000.
- Penobscot Shoe Company: See—
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- Pentel Kabushiki Kaisha: See—
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- Ferber, Alan C.; and Chamran, Morteza M., deceased, 4,643,571, Cl. 356-326.000.
- Ferber, Alan C.; and Chamran, Morteza M., deceased, 4,644,485, Cl. 364-569.000.
- Schmid, Carl E., 4,643,649, Cl. 417-45.000.
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- Persson, Carl G. A.: See—
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- Petix, Edward A.: See—
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- Petracchi, Patrice, to Fives-Cail Babcock. Apparatus for manipulating a protective tube for a jet of molten metal. 4,643,339, Cl. 222-607.000.
- Petrillo, Barry. Tremolo device for stringed instruments. 4,643,070, Cl. 84-313.000.
- Petro-Tex Chemical Corporation: See—
McFarland, Cecil J., 4,644,088, Cl. 585-658.000.
- Petroleo Brasileiro S.A. - Petrobras: See—
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- Petronio, Carlo F.: See—
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- Petibone Corporation: See—
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- Pettus, William G.: See—
Thornton, Thomas A.; and Pettus, William G., 4,643,866, Cl. 376-245.000.
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- Pewitt, Bernard B. Ventilated wall and roofing system. 4,642,958, Cl. 52-302.000.
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Bailey, Peter, 4,643,340, Cl. 223-40.000.
- Pfaff Industriemaschinen GmbH: See—
Bungert, Heinrich; Ulmen, Mathias; and Wenz, Herbert, 4,643,118, Cl. 112-318.000.
- Wentz, Klaus; and Bungert, Heinrich, 4,643,117, Cl. 112-315.000.
- Pfander, Wilhelm, to Penobscot Shoe Company. Article of footwear and method of making same. 4,642,915, Cl. 36-57.000.
- Pfeifer, Ulrich: See—
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- Pfeiffer GmbH & Co.: See—
Jacob, Gernot; and Radom, Leon, 4,642,840, Cl. 15-323.000.
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- Pfizer Inc.: See—
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- Phibbs, Hugh C. Hand controlled puppet. 4,643,694, Cl. 446-327.000.
- Phiet, Do Q., to Australian Telecommunications Commission. Instant speaker algorithm for digital conference bridge. 4,644,530, Cl. 370-62.000.
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- Phillips Home Products: See—
Meyer, Lawrence L.; and Bredbeck, Donald H., 4,643,701, Cl. 474-153.000.
- Phillips, Ian R.; Lodge, Robert H.; and Loveday, Alan A. Tape dispenser. 4,643,059, Cl. 83-162.000.
- Phillips Petroleum Company: See—
Burleigh, John; and Uraeck, Carl A., 4,644,024, Cl. 524-99.000.
- Johnson, Marvin M., 4,644,090, Cl. 585-749.000.
- Kimble, James B.; and Parlman, Robert M., 4,643,823, Cl. 209-166.000.
- King, William R.; and Hart, C. Jack, 4,643,880, Cl. 422-156.000.
- Lee, Fu Ming, 4,644,089, Cl. 585-407.000.
- Mumallah, Naim A.; and Shioyama, Tod K., 4,644,073, Cl. 556-2.000.
- Stahl, G. Allan, 4,644,020, Cl. 522-79.000.
- Phillips, Roger: See—
Brown, Jeffery H.; and Phillips, Roger, 4,644,569, Cl. 375-118.000.
- Philobos, Alexander M., to Westinghouse Electric Corp. Elevator system. 4,643,276, Cl. 187-107.000.
- Philpot, James R.; Pinkston, Steve R.; and Nurre, Harry, to Essex Industries, Inc. Gas flow control valve. 4,643,215, Cl. 137-15.000.
- Piatt, Wilson T., Jr.: See—
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- Picker International Limited: See—
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- Pierce, Wayne. Wheeled vehicle for stringing a cable. 4,643,370, Cl. 242-86.700.
- Piereder, Ludwig. Meat packaging apparatus with backflow restrictor. 4,642,849, Cl. 17-49.000.
- Pietsch, Hanns; Kartheus, Holger; and Reul, Helmut, to Beiersdorf Aktiengesellschaft. Heart valve prosthesis. 4,643,732, Cl. 623-2.000.
- Pilachowski, Martin, to Wacker Corporation. Vibratory compactor having improved cast base. 4,643,611, Cl. 404-133.000.
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Harrison, Peter J.; and Castle, Derek C., 4,644,139, Cl. 219-522.000.
- Pillar Naco Industries (Europe) Srl: See—
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- Pilot Man-Nen-Hitsu Kabushiki Kaisha: See—
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- Pinck, Peter: See—
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- Pini, Maria. Apparatus for loading and unloading palletized articles. 4,643,628, Cl. 414-279.000.
- Pinkston, Steve R.: See—
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- Pioneer Electronic Corporation: See—
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- Kunugi, Yoshiro; Odaka, Makoto; Sato, Takeshi; Sasaki, Yoshio; and Tokumo, Akio, 4,644,292, Cl. 330-279.000.
- Pioneer Magnetics, Inc.: See—
Wilkinson, Bruce L., 4,644,252, Cl. 323-273.000.
- Pitney Bowes Inc.: See—
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- Linkowski, William J., 4,644,541, Cl. 371-20.000.
- Salazar, Edilberto I.; and Kirschner, Wallace, 4,643,089, Cl. 101-91.000.

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Pitz, Doris E. Lactose-free synthetic ice cream. 4,643,906, Cl. 426-565.000.

Pizza Hut, Inc.: See—
Brewer, David E., 4,643,167, Cl. 126-299.00R.

Player, Kenneth W.; and Wilson, Lonny L., to SCM Corporation. Savory, flavored baking chips. 4,643,907, Cl. 426-580.000.

Plesniarski, Edward J.; Loose, Richard D.; and Capo, Juan M., to General Motors Corporation. Seat belt guide loop. 4,642,853, Cl. 24-163.00R.

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Simons, Robert W.; Scott, Danny E.; and Poland, John R., 4,643,051, Cl. 76-108.00A.

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Porter, Roy W., to Basic American Foods. Method for making bakery products. 4,643,900, Cl. 426-21.000.

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Postle, Stephen R.; and Barber, Roy P., to Ciba-Geigy AG. Method of monitoring temperature. 4,643,588, Cl. 374-160.000.

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Powell, James R.: See—
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Prandin, Otello. A-shelter. 4,642,952, Cl. 52-169.600.

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Prentice, Thomas C.: See—
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Chabria, Paul R., 4,644,451, Cl. 362-189.000.

Press, Irving D., to Unidynamics Corporation. Joint for plastic lined metal piping with reduced diameter pipe lap. 4,643,457, Cl. 285-55.000.

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Prince Industrial Development Co., Ltd.: See—
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Fu, Yi-Chang, 4,643,919, Cl. 427-393.100.

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Provost, Lawrence A.; and Boyer, Robert D., to Kent-Moore Corporation. Shim selector. 4,642,900, Cl. 33-169.00B.

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Cable, Jane; and Higgins, George, 4,644,029, Cl. 524-407.000.

Quadic Systems, Inc.: See—
Chang, Benny, 4,644,249, Cl. 323-223.000.

Quan, Nancy N., to Minnesota Mining and Manufacturing Company. Developing powder composition containing a fatty acid amide component. 4,643,960, Cl. 430-106.600.

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Edl, Josef, 4,643,282, Cl. 192-18.00B.

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Randaccio, Carlo, to Spada, Vittorio. Photochemical process to eliminate lead in gasoline with a high octane number. 4,643,810, Cl. 204-157.300.

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- Rinder, Laurenz, to American Standard Inc. Screw rotor profile and method for generating. 4,643,654, Cl. 718-201.000.
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- Rossi, Robert D.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. High temperature stable acrylic adhesive compositions employing aromatic polyimide and polyisimide bis-acetylene additives. 4,644,040, Cl. 525-426.000.
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- Rush, Derek A., to Smiths Industries Public Limited Company. Clamping means, and modules and units including clamping means. 4,644,444, Cl. 361-388.000.
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- Ryan, Patrick, to Alpha Mail Systems. Postal tray. 4,643,306, Cl. 206-425.000.
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- Saginaw Machine Systems, Inc.: See—
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- Saito, Koji, to NEC Corporation. Pipeline processor. 4,644,466, Cl. 364-200.000.
- Saito, Shunji, to Tokyo Electric Co., Ltd. Floppy disk drive apparatus. 4,644,426, Cl. 360-71.000.
- Saito, Susumu: See—
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- Saito, Tamio: See—
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- Saitoh, Tadashi: See—
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- Sakaguchi, Shuichi: See—
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- Sakai Chemical Industry Co., Ltd.: See—
Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, 4,643,984, Cl. 501-134.000.
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- Sakakibara, Nobuyoshi; Hattori, Tadashi; Miura, Kazuhiko; Noguchi, Hiroki; Fukami, Akira; and Nabeta, Teiichi, to Nippon Soken, Inc. Air cleaner using ionic wind. 4,643,745, Cl. 55-137.000.
- Sakamoto, Masaharu: See—
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- Sakashita, Kazuhiro: See—
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- Sakuma, Isamu: See—
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- Sakuma, Kunio, to Seiko Epson Kabushiki Kaisha. Resin mounting structure for an integrated circuit. 4,644,445, Cl. 361-398.000.
- Sakurai, Junji; and Kamioka, Hajime, to Fujitsu Limited. Semiconductor bipolar integrated circuit device and method for fabrication thereof. 4,642,883, Cl. 29-576.00B.
- Sakurai, Keiichi: See—
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- Sakurai, Toshio: See—
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- Salant, Richard F.; Key, William E.; and Kay, Peter L., to Borg-Warner Industrial Products, Inc. Mechanical seal with automatic gap convergence control. 4,643,437, Cl. 277-28.000.
- Salazar, Edilberto I.; and Kirschner, Wallace, to Pitney Bowes Inc. Apparatus for controlling printing means. 4,643,089, Cl. 101-91.000.
- Saleh, Lotfy L.; Turton, John A.; and Matthews, Steven L., to Celanese Corporation. Apparatus for lubricating and dissipating heat from cheek plates of a textile crimping mechanism. 4,642,860, Cl. 28-269.000.
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Baird, J. Andrew, 4,643,989, Cl. 514-12.000.
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- Sandelli, Gregory J.; and Taylor, William A., to United Technologies Corporation. Coke filled separator plate for electrochemical cells. 4,643,956, Cl. 429-34.000.
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- Sandcock, John R., to RCA Corporation. Anti-vibration system. 4,643,385, Cl. 248-550.000.
- Sanders, Ernest D.; Sanders, Lawrence D.; and Sanders, Nigel D., to Development Finance Corporation of New Zealand. Method and apparatus for modification of climatic conditions. 4,643,355, Cl. 239-2.100.
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- Sanderson, Thomas F., to Hercules Incorporated. Method of improving the color of tall oil rosin. 4,643,847, Cl. 260-97.700.
- Sandiford, Burton B.; and Zillmer, Roger C., to Cities Service Oil and Gas Corporation. Gel and process for preventing loss of circulation, and combination process for enhanced recovery. 4,643,255, Cl. 166-295.000.
- Sandland, Paul; Levy, Kenneth; Singleton, Russell M.; Hodgson, Michael L.; and Cutler, Gerald R., to KLA Instruments Corporation. Electronic control of an automatic wafer inspection system. 4,644,172, Cl. 250-548.000.
- Sandvos, Jerry L.: See—
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- Sangamo Weston, Inc.: See—
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- Sani-Fresh International, Inc.: See—
Bokmiller, David J., 4,642,836, Cl. 15-118.000.
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Casellas, Pierre; Gros, Pierre; and Jansen, Franz, 4,643,895, Cl. 424-85.000.
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Farias, Paulo D.; Mazzei, Francisco A. F.; Santo, Ubirajara do E.; and Werle, Paulo, 4,644,256, Cl. 323-299.000.
- Sanwa Seiki Mfg. Co., Ltd.: See—
Koyanagi, Yuzo, 4,644,475, Cl. 364-431.070.
- Sanyo Electric Co., Ltd.: See—
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- Sapiejewski, Roman, to Bose Corporation. Headphone with sound pressure sensing means. 4,644,581, Cl. 381-74.000.
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- Sargent & Greenleaf, Inc.: See—
Krivec, Bert; Murphree, Gary R.; and Evans, Walter R., 4,643,010, Cl. 70-272.000.
- Sari, Eric T., to ETS Energy Technology Systems Inc. System for the treatment of edge supported substrates. 4,643,129, Cl. 118-641.000.
- Sasaki, Chikara: See—
Kuga, Hisashi; and Sasaki, Chikara, 4,644,150, Cl. 250-223.00R.
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Sumida, Takashi; Sasaki, Shigeo; and Ketori, Takao, 4,643,304, Cl. 206-387.000.

Sasaki, Shiro: See—
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Sasol Operations (Proprietary) Limited: See—
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Sato, Hajime; and Mizuguchi, Mamoru, to Kabushiki Kaisha Toshiba. Image sensor, 4,644,411, Cl. 358-294.000.

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Sato, Hiroshi: See—
Murata, Yasuzo; and Sato, Hiroshi, 4,643,684, Cl. 434-409.000.

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Sato, Takeshi: See—
Kunugi, Yoshiro; Odaka, Makoto; Sato, Takeshi; Sasaki, Yoshio; and Tokumo, Akio, 4,644,292, Cl. 330-279.000.

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Yamada, Yasuyuki; Sato, Yasuhisa; Nakayama, Hiroki; and Ozumi, Kouji, 4,643,536, Cl. 350-422.000.

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Sato, Yoichi: See—
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Tsunekawa, Tokueichi; Kawabata, Takashi; Sato, Yuichi; and Matsumura, Susumu, 4,644,149, Cl. 250-214.00A.

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Morinaga, Hiroshi; Kamiyama, Sakae; and Sato, Yuzo, 4,643,986, Cl. 502-104.000.

Satoh, Masaru: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.

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Satomura, Masato; Igarashi, Akira; and Iwakura, Ken, to Fuji Photo Film Co., Ltd. Fluorine derivatives and recording material using the same, 4,644,377, Cl. 346-221.000.

Sauers, Marvin E.: See—
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Saunders, David H.: See—
Fairhurst, Robert M.; and Saunders, David H., 4,642,944, Cl. 51-436.000.

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House, David N.; and Sauseda, Blas O., 4,643,505, Cl. 339-75.00P.

Savelainen, Matti, to Instrumentation Corp. Coil arrangement for producing a homogeneous magnetic field, 4,644,281, Cl. 324-320.000.

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Sawaki, Yoshio: See—
Aiura, Noboru; and Sawaki, Yoshio, 4,643,265, Cl. 175-226.000.

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Sayanagi, Kazuo, to Canon Kabushiki Kaisha. Color image data processing method, 4,643,563, Cl. 355-77.000.

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Schabel, Amelia A.: See—
Nagarajan, Ramakrishnan; and Schabel, Amelia A., 4,643,987, Cl. 514-8.000.

Schafer, Ralf; and Stormberg, Hans P. High-pressure discharge lamp, 4,644,216, Cl. 313-25.000.

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Schartz, Omar. Saddle mount device for a tractor, 4,643,441, Cl. 280-5.00R.

Schatz, Oskar. Internal combustion engine with a positive displacement supercharger mechanically driven from the engine crankshaft, 4,643,156, Cl. 123-560.000.

Scheevel, Mark R.: See—
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Haffer, Gregor; Borner, Helmut; and Huth, Andreas, 4,644,062, Cl. 546-85.000.

Weber, Alfred; Wilke, Detlef; Kurzdin, Johannes; and Kennecke, Mario, 4,644,067, Cl. 548-497.000.

Schiel, Christian, to J. M. Voith GmbH. Extended nip press with heating effects avoidance, 4,643,802, Cl. 162-358.000.

Schild, Ronald H.: See—
Koepf-Gall, Sandra; and Schild, Ronald H., 4,643,835, Cl. 210-754.000.

Schlemmer, Harry: See—
Machler, Meinrad; Sachse, Richard; and Schlemmer, Harry, 4,643,570, Cl. 356-246.000.

Schlesser, Marilyn; and Bernard, Marie. Combination package and applicator, 4,643,725, Cl. 604-306.000.

Schlichtig, Roger J., to R. A. McDonald. Dynamic threshold binary generator, 4,644,410, Cl. 358-282.000.

Schlosser, Donald E.: See—
McKee, Jere L.; Majcher, John P.; Smith, William E.; and Schlosser, Donald E., 4,644,121, Cl. 200-153.00G.

Schmid, Carl E., to Perkin-Elmer Corporation. The. Digital control for rapid refill of a liquid chromatograph pump, 4,643,649, Cl. 417-45.000.

Schmid, Lawrence A. Radial flow filter having air fluidizing backwash means, 4,643,836, Cl. 210-795.000.

Schmidt, Arno Siegmund: See—
Voges, Heinz-Werner; and Schmidt, Arno Siegmund, 4,644,086, Cl. 568-804.000.

Schmidt, Gyorgy: See—
Csery, Huba; Czigan, Imre; Horvath, Zoltan; Kertesz, Ivan; Kroo, Norbert; and Schmidt, Gyorgy, 4,644,550, Cl. 372-40.000.

Schmidt, Hans-Werner; Koch, Walter; Hirsch, Martin; Rosenthal, Karlheinz; and Yetmen, Yilmaz, to Metallgesellschaft AG. Method of processing sodium oxalate formed during the digestion of bauxite, 4,643,885, Cl. 423-119.000.

Schmidt, Viktor: See—
Arendt, Gerhard; Brodbeck, Klaus-Peter; Engenhardt, Reinhold; Schmidt, Viktor; and Wedler, Klaus, 4,642,965, Cl. 53-118.000.

Schmitt, Manfred; and Illius, Herbert, to Bopp & Reuther. Valve for regulating the passage of a fluid, 4,643,219, Cl. 137-454.600.

Schmitz, Bertram. Two-sided brush and container, 4,642,835, Cl. 15-104.00A.

Schmoele, Hermann, to H. Stoll GmbH & Co. Cam system and method for combined loop formation and transfer in flat-bed knitting machines, 4,643,003, Cl. 66-78.000.

Schmoede, Peter; Katryniok, Detlef, deceased (by Katryniok, Christine, legal representative); and Ruch, Jean P., to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG. Method for making oxygen electrode for alkaline galvanic cells, 4,643,235, Cl. 141-1.100.

Schneider, Wayne A.; Morse, Margaret S.; and Tjoelker, John, to Boeing Company. The. Y-slot waveguide antenna element, 4,644,343, Cl. 343-767.000.

Schnitzlein, Melvern E., to Ford Motor Company. Engine cooling system air venting arrangement with buoyant air purge valve, 4,643,134, Cl. 123-41.100.

Schoenberg, Julian H., to W. R. Grace & Co., Cryovac Div. Multi-layer polyolefin shrink film, 4,643,943, Cl. 428-339.000.

Schoening, Josef; and Schwiens, Hans-Georg, to Hochtemperatur-Reaktorbau GmbH. Process for the construction of a nuclear reactor with a reinforced concrete pressure vessel, 4,643,872, Cl. 376-296.000.

Scholl, Inc.: See—
Wildman, Gary C.; Wirth, Frank; and Surpuriya, Vijay, 4,642,912, Cl. 36-44.000.

Scholz, Frederick J., to Amitec, Inc. Miniature radio transceiver antenna, 4,644,366, Cl. 343-895.000.

Schonich, Helmut: See—
Klusowski, Hans-Jurgen; and Schonich, Helmut, 4,643,438, Cl. 277-81.00P.

Schramm, Dale E., to J. M. Huber Corporation. Perforated reactor tube for a fluid wall reactor and method of forming a fluid wall, 4,643,890, Cl. 423-659.000.

Schreiner, Wayne L.: See—
Ahmad, Mahmood; and Schreiner, Wayne L., 4,644,528, Cl. 370-58.000.

Schrudde, Reinhold; Lohe, Rainer; and Hampel, Klaus, to Kochs Adler, AG. Chain stitch sewing machine, 4,643,113, Cl. 112-199.000.

Schubert & Salzer: See—
Balz, Jurgen, 4,643,226, Cl. 137-625.330.

Schuetz, James E.: See—
Keskey, William H.; Schuetz, James E.; and Hickman, Andrew D., 4,644,032, Cl. 524-549.000.

Schuieler, Andreas: See—
Ehrlenspiel, Klaus; John, Thomas; and Schuieler, Andreas, 4,643,698, Cl. 464-111.000.

Schukei, Glen E.; and Schukei, Robert J., to Combustion Engineering, Inc. Rapid installation tube gripper, 4,643,472, Cl. 294-94.000.

Schukei, Robert J.: See—
Schukei, Glen E.; and Schukei, Robert J., 4,643,472, Cl. 294-94.000.

Schultz, Eric V.: See—
Flynn, Kevin; and Schultz, Eric V., 4,644,484, Cl. 364-569.000.

Schulz, David W., to Ontario Technologies Corporation. Manufacturing method for hollow metal airfoil type structure, 4,642,863, Cl. 29-156.80B.

Schulz, Harald, to Joseph Gartner & Co. Composite profile, 4,642,870, Cl. 29-509.000.

Schulze, Friedrich-Wilhelm: See—
Aulich, Hubert; and Schulze, Friedrich-Wilhelm, 4,643,833, Cl. 210-714.000.

Schumacher, Berthold W., to Ford Motor Company. Method for producing parallel-sided melt zone with high energy beam, 4,644,126, Cl. 219-121.0ED.

Schurger, Rainer: See—
Neder, Gunter; Schurger, Rainer; and Ernst, Horst M., 4,643,594, Cl. 384-478.000.

Schuster, Gert; Vierrath, Helmut; Kupfer, Hans; and Wolf, Heinz, to Metallgesellschaft Aktiengesellschaft. Fuel distributor in a reactor for gasifying solid granular fuels, 4,643,739, Cl. 48-86.00R.

Schutz, Udo. Drum of thermoplastic synthetic resin, 4,643,323, Cl. 220-72.000.

Schwartz, Joseph: See—
Guthrie, Karl; and Schwartz, Joseph, 4,643,378, Cl. 248-1.000.

Schwartz, Leonard: See—
Mead, James B.; Schwartz, Leonard; and DeVeau, Emile J., 4,644,360, Cl. 343-700.0MS.

Schwarz, Philip R.: See—
Rung, Robert; and Schwarz, Philip R., 4,643,224, Cl. 137-559.000.

Schwarz, Walter, to MAHO Werkzeugmaschinenbau Babel & Company. Adjustable guide for relatively moveable parts, particularly of machine tools, 4,643,591, Cl. 384-44.000.

Schwering, Felix: See—
Horn, Robert E.; Jacobs, Harold, deceased; and Schwering, Felix, 4,644,363, Cl. 343-785.000.

Schwiens, Hans-Georg: See—
Schoening, Josef; and Schwiens, Hans-Georg, 4,643,872, Cl. 376-296.000.

Sciortino, Giacomo: See—
Hoffmann, Manfred; and Sciortino, Giacomo, 4,643,405, Cl. 267-8.00R.

Scelavo, S.p.A.: See—
Berretti, Rodolfo; Tarli, Paolo; and Berti, Brunilde, 4,643,974, Cl. 435-287.000.

SCM Corporation: See—
Player, Kenneth W.; and Wilson, Lonny L., 4,643,907, Cl. 426-580.000.

Scott, Danny E.: See—
Simons, Robert W.; Scott, Danny E.; and Poland, John R., 4,643,051, Cl. 76-108.00A.

Scott, Larkin B.: See—
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,644,323, Cl. 340-347.0NT.

Scott, Robert G.: See—
Hughes, Robert R.; and Scott, Robert G., 4,642,842, Cl. 15-359.000.

Scripps Clinic and Research Foundation: See—
Goodman, Michael G.; and Weigle, William O., 4,643,992, Cl. 514-45.000.

Seaton-SSK Engineering Co., Inc.: See—
McKibben, Kenneth D.; Gould, Alan P.; Groh, Craig J.; and Wuepper, Thomas E., 4,643,243, Cl. 164-260.000.

Secure Keyboards Limited: See—
Villalobos, Luis; Hirsch, Steven B.; Hauser, Steven G.; and Von Buelow, John, 4,644,326, Cl. 340-365.00R.

Seelbach, Walter C.: See—
Birritella, Mark S.; Marley, Robert R.; and Seelbach, Walter C., 4,644,194, Cl. 307-475.000.

Segawa, Kayoko: See—
Abe, Kazunobu; Aoki, Masashi; Rikimaru, Hiroaki; Ito, Takeshi; Hidaka, Kazuhisa; and Segawa, Kayoko, 4,643,984, Cl. 501-134.000.

Segrest, Jere P.; and Anantharamaiah, Gattadahlali M., to Research Corporation. Amphipathic peptides, 4,643,988, Cl. 514-12.000.

Seibert, Wolfram: See—
Belart, Juan; Weise, Lutz; and Seibert, Wolfram, 4,643,486, Cl. 303-114.000.

Belart, Juan; Fennel, Helmut; Seibert, Wolfram; and Batistic, Ivica, 4,643,492, Cl. 303-119.000.

Seidel, Thomas E.: See—
Lynch, William T.; and Seidel, Thomas E., 4,643,804, Cl. 204-15.000.

Seiko Engineering and Research Co. Ltd.: See—
Yoshida, Yoshiichi, 4,643,664, Cl. 425-549.000.

Seiko Epson Kabushiki Kaisha: See—
Sakuma, Kunio, 4,644,445, Cl. 361-398.000.

Seiko Instruments & Electronics Ltd.: See—
Taguchi, Masaaki; and Suenaga, Hitoshi, 4,643,842, Cl. 252-299.670.

Seikosha Co., Ltd.: See—
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, 4,643,596, Cl. 400-121.000.

Seilinger, Alexandre. Apparatus for producing hot air for inhalations, 4,643,183, Cl. 128-204.170.

Seipke, Gerhard: See—
Bicker, Richard; and Seipke, Gerhard, 4,644,057, Cl. 530-409.000.

Seiter, George M.; Klitzke, Loren J.; and Nelson, Iver L., to Waldorf Corporation. Extraction cell, 4,643,878, Cl. 422-101.000.

Seitz Enzinger Noll Maschinenbau Aktiengesellschaft: See—
Becker, Hans F., 4,643,827, Cl. 210-228.000.

Sekine, Chogo, to Nihon Musen Kabushiki Kaisha. Siem orientation measurement apparatus, 4,644,358, Cl. 342-356.000.

Sekine, Tetsuo: See—
Tanaka, Masataka; Ohto, Masao; Sekine, Tetsuo; Isobe, Koji; and Maruyama, Masaru, 4,643,196, Cl. 128-753.000.

Seko, Maomi; Takemura, Reiji; and Miyamori, Hideharu, to Asahi Kasei Kogyo Kabushiki Kaisha. Multi-cell electrolyzer, 4,643,818, Cl. 204-253.000.

Selander, Raymond K., to International Business Machines Corporation. Material identification using infrared thermometry, 4,644,163, Cl. 250-341.000.

Seo, Jongsoo; and Feher, Kamilo, to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee. Superposed quadrature modulated baseband signal processor, 4,644,565, Cl. 375-60.000.

Serafin, Frank G., to W. R. Grace & Co. Grinding aids for hydraulic cement, 4,643,362, Cl. 241-16.000.

Serizawa, Yoshinori; and Hayakawa, Masaharu, to Mitsubishi Denki Kabushiki Kaisha. Magnetic video recording and reproducing apparatus, 4,644,415, Cl. 360-10.300.

Servi, John K. Wheelchair shade or canopy means, 4,643,479, Cl. 297-184.000.

Seugnet, Patrick: See—
Roy, Jean-Claude; and Seugnet, Patrick, 4,644,405, Cl. 358-213.000.

Seybold, Paul G., to Wright State University. Diffusion controlled security tags, 4,643,122, Cl. 116-206.000.

SGS Componenti Elettronici S.p.A.: See—
Palara, Sergio; and Torazzina, Aldo, 4,644,294, Cl. 330-298.000.

Shaffer, James: See—
Distin, Robert; and Shaffer, James, 4,643,047, Cl. 74-804.000.

Shalaby, Shalaby W.: See—
Bezawda, Rao S.; Shalaby, Shalaby W.; Newman, Hugh, Jr.; and Kafrawy, Adel, 4,643,191, Cl. 128-335.500.

Shank, Gordon W.; Bristol, Lloyd R.; Eby, David H.; and Kleck, Jeffrey A., to Tektronix, Inc. Method and apparatus for controlling oscilloscope displayed menu selection, 4,644,337, Cl. 340-709.000.

Shannon, Thomas G.: See—
Brunelle, Daniel J.; Evans, Thomas L.; Shannon, Thomas G.; and Williams, David A., 4,644,053, Cl. 528-371.000.

Shapiro, Sanford S.; and Avishur, Mayroma. Credit card security system, 4,643,453, Cl. 283-73.000.

Sharp Corporation: See—
Kishida, Yoshifumi; and Takeuchi, Masayoshi, 4,643,774, Cl. 134-1.000.

Sharp Kabushiki Kaisha: See—
Ishii, Yutaka; Funada, Fumiaki; and Matsuura, Masataka, 4,643,841, Cl. 252-299.610.

Nishigaki, Satoshi; Itoh, Masataka; and Katoh, Shohichi, 4,644,406, Cl. 358-213.000.

Taniguchi, Koki, 4,643,498, Cl. 339-17.00M.

Tonegawa, Tadashi, 4,643,559, Cl. 355-3.00R.

Wada, Yoshihiro, 4,644,481, Cl. 364-557.000.

Shaw, Ken M.; Wessling, Ritchie A.; Yats, Larry D.; and Yalvac, Selim, to Dow Chemical Company. The. Low density fiber-reinforced plastic composites, 4,643,940, Cl. 428-308.400.

Shea, Dennis W.: See—
Hardt, John G.; and Shea, Dennis W., 4,643,284, Cl. 192-50.000.

Sheath, Jeremy C.; and Hodges, William D., to Machines Chambon S.A. Gravure printing machine, 4,643,130, Cl. 118-681.000.

Sheffer, Phil B., to Merchandising Innovations Co., Inc. Promotional delivery van assembly, 4,643,349, Cl. 229-8.000.

Sheffer, Phil B., to Merchandising Innovations Co., Inc. Promotional full trailer assembly, 4,643,697, Cl. 446-488.000.

Shell Offshore Inc.: See—
Bergeron, Robert P., 4,643,612, Cl. 405-60.000.

Shell Oil Company: See—
Dilgren, Richard E.; and Owens, Kenneth B., 4,643,256, Cl. 166-303.000.

Laursen, Nils K., 4,643,614, Cl. 405-169.000.

Roberts, David L.; and van Velzen, Johan F. G., 4,643,257, Cl. 166-303.000.

Vinegar, Harold J.; and Waxman, Monroe H., 4,644,283, Cl. 324-376.000.

Sheng, Shinan-Chur, to Spectra-Physics, Inc. Capillary bore suspension, 4,644,554, Cl. 372-61.000.

Shepherd, Ewan W.: See—
Harris, Ian R.; and Shepherd, Ewan W., 4,644,302, Cl. 333-125.000.

Shepherd, Lawrence H., Jr.; DeWitt, William J.; and Kuehnhauss, Gerhard O., to Ethyl Corporation. Oil recovery process, 4,643,253, Cl. 166-274.000.

Sheppard, Joseph E.; Dell, Paul C.; Gearren, Peter F.; Bittar, Edward S.; and Miller, Gary J., to University of Florida. Dynamic traction wrist cast brace, 4,643,177, Cl. 128-84.00C.

Sheridan, Nicholas K.; and Sander, Gerhard K., to Xerox Corporation. Fluid assisted ion projection printing head, 4,644,373, Cl. 346-159.000.

Sherwin-Williams Company, The: See—
Gupta, Goutam, 4,644,077, Cl. 556-457.000.
Sherwood, Richard C.: See—
Jin, Sungho; Mottine, John J., Jr.; Sherwood, Richard C.; and Tiefert, Thomas H., 4,644,101, Cl. 178-18.000.
Sheth, Jayesh V.: See—
Hotchkin, Glenn T.; Mortensen, David J.; and Sheth, Jayesh V., 4,644,463, Cl. 364-200.000.
Shi, Yan-Chi: See—
Harstead, Edward E.; Klastner, Leon; and Shi, Yan-Chi, 4,643,521, Cl. 350-96.200.
Shiba, Kenji: See—
Suzuki, Takao; and Shiba, Kenji, 4,643,681, Cl. 434-286.000.
Shibagaki, Taro: See—
Ibe, Hiroyuki; and Shibagaki, Taro, 4,644,300, Cl. 331-111.000.
Shibasaki, Masakatsu; Sodeoka, Mikiko; and Ogawa, Yuji, to Sagami Chemical Research Center. Bicyclo[3.3.0]octenylaldehyde derivatives, 4,644,068, Cl. 549-214.000.
Shibata, Hisanari: See—
Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroshi; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, 4,643,849, Cl. 540-955.000.
Shibata, Yasuo: See—
Miyamaru, Yukio; Kawada, Shigeo; Hatanaka, Kaoru; and Shibata, Yasuo, 4,644,318, Cl. 340-73.000.
Shibazaki, Kenji; Irie, Yutaka; Ito, Masazumi; and Murata, Tomoji, to Minolta Camera Kabushiki Kaisha. Copying magnification setting device for an electrophotographic copying apparatus, 4,644,499, Cl. 364-900.000.
Shibuya, Kunihiro; and Hara, Kunio, to Kabushiki Kaisha Toshiba. Image information input apparatus for inputting supplemental information to a copying machine, 4,644,391, Cl. 358-75.000.
Shibuya, Tsuyoshi, to Tokyo Juki Industrial Co., Ltd. Piezoelectric actuator, 4,644,213, Cl. 310-328.000.
Shieh, Chan-Long, to Siemens Corporate Research & Support, Inc. 1^2L heterostructure bipolar transistors and method of making the same, 4,644,381, Cl. 357-35.000.
Shiga, Minoru: See—
Samejima, Yasushi; Shiga, Minoru; Kano, Toshiji; and Kishi, Takamichi, 4,643,808, Cl. 204-98.000.
Shiga, Norio, to Tokyo Juki Industrial Co., Ltd. Stabilizing device for hammer bounding at printers, 4,643,600, Cl. 400-157.200.
Shigi, Toshio: See—
Hase, Yoshiaki; and Shigi, Toshio, 4,642,913, Cl. 36-50.000.
Shiiba, Yoshio; Koshigaya, Akira; and Kimura, Kouichi, to Honda Giken Kogyo Kabushiki Kaisha. Heavy-object loading jig, 4,643,630, Cl. 414-589.000.
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Impact type dot printer, 4,643,596, Cl. 400-121.000.
Shimano, Akira, to Murata Kikai Kabushiki Kaisha. Rotor with yarn guide for open-end spinning, 4,642,981, Cl. 57-414.000.
Shimidzu, Yasutaka; Harada, Naoki; and Tezuka, Yasuo, to Sumitomo Chemical Company, Limited. Reactive pyridone azo dyes having both monochlorotriazinyl and vinylsulfone type reactive groups, 4,644,058, Cl. 534-635.000.
Shimizu, Isamu: See—
Omote, Tatsuyuki; Yoshida, Tomiharu; Shimizu, Isamu; and Moteki, Kichinori, 4,643,845, Cl. 252-626.000.
Shimizu, Kiyoshi: See—
Ueda, Toshio; Kageno, Kenji; Shimizu, Kiyoshi; Hasegawa, Sakuro; and Harada, Susumu, 4,644,042, Cl. 526-204.000.
Shimizu, Masanobu: See—
Mukai, Yasuo; and Shimizu, Masanobu, 4,643,947, Cl. 428-413.000.
Shimodaira, Toshiro: See—
Yoshikawa, Shinichi; Nishiwaki, Shigeru; and Shimodaira, Toshiro, 4,644,239, Cl. 318-641.000.
Shimomura, Jun: See—
Kusaka, Yosuke; and Shimomura, Jun, 4,644,148, Cl. 250-201.000.
Shimoni, Yair, to Elscint, Ltd. Superinterlacing imaging systems, 4,644,398, Cl. 358-140.000.
Shinozaki, Yoshio: See—
Umeda, Shozo; Tsukiji, Norio; Aiko, Takuya; Kittaka, Toshiharu; Furukawa, Heizaburo; Wake, Kanji; Shinozaki, Yoshio; Yanagi, Kenichi; Kato, Mitsuo; and Wada, Tetsuyoshi, 4,643,131, Cl. 118-718.000.
Shimp, David A.: See—
Boyd, Jack D.; and Shimp, David A., 4,644,039, Cl. 525-422.000.
Shimura, Katsumasa; and Nakamura, Tetsuro, to C.K.D. Controls Co., Ltd. Gas solenoid valve, 4,643,394, Cl. 251-129.080.
Shinko Kosen Kogyo Kabushiki Kaisha: See—
Tomikawa, Hiroyuki; Nakata, Mitsuo; Kusakawa, Nobuhiro; and Torigoe, Kaname, 4,642,979, Cl. 57-264.000.
Shinozaki, Haruhiko: See—
Masaki, Mituo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,644,063, Cl. 546-209.000.
Shinozaki, Masatsugu: See—
Ohishi, Shiro; and Shinozaki, Masatsugu, 4,644,563, Cl. 375-17.000.
Shioyama, Tod K.: See—
Mumallah, Naim A.; and Shioyama, Tod K., 4,644,073, Cl. 556-2.000.
Shirahata, Ryuji: See—
Arai, Yoshihiro; and Shirahata, Ryuji, 4,643,915, Cl. 427-130.000.

Shirai, Yasuyuki: See—
Takahashi, Nobuyuki; Sugimoto, Ryuji; and Shirai, Yasuyuki, 4,643,629, Cl. 414-331.000.
Shiseido Company Ltd.: See—
Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, 4,643,939, Cl. 428-283.000.
Shmyrin, Ivan I.: See—
Kulik, Yaroslav P.; Shmyrin, Ivan I.; Utyamyshev, Rustam I.; and Vyrzhikovskaya, Marina N., 4,643,712, Cl. 604-4.000.
Shoffner, Stanley G.: See—
Elson, Edward E.; Bolwell, Farley W.; Manska, Wayne E.; and Shoffner, Stanley G., 4,643,389, Cl. 251-10.000.
Shoketsu Kinzoku Kogyo Kabushiki Kaisha: See—
Kosugi, Seiji; and Suzuki, Tadao, 4,643,393, Cl. 251-129.010.
Shone, Robert L.: See—
Masateru, Miyano; and Shone, Robert L., 4,644,071, Cl. 549-417.000.
Shop-Vac Corporation: See—
Berfield, Robert C.; and Fegan, Richard M., 4,642,841, Cl. 15-330.000.
Shuji, Fujieda: See—
Kazuyuki, Ishii; Yoshio, Ebe; and Shuji, Fujieda, 4,643,470, Cl. 292-216.000.
Shumaker, John F.: See—
Maurer, Herman J.; and Shumaker, John F., 4,643,631, Cl. 414-723.000.
Shuman, Ralph J.; and Burns, Barbara, to Dennison Manufacturing Company. Readhering and removable adhesive, 4,644,026, Cl. 524-270.000.
Shutske, Gregory M., to Hoechst-Roussel Pharmaceuticals Inc. 1,2-benzisoxazoloxethylamines and intermediates for the preparation thereof, 4,644,064, Cl. 548-241.000.
SICAME Societe Industrielle de Construction d'Appareils et de Materiel Electriques: See—
Prodel, Michel H. M. F., 4,643,512, Cl. 339-248.00R.
Sides, Richard J., Jr.; Crawford, Christopher L.; Nunweiler, Raymond J., Jr.; Muth, David L.; and Hope, George P., to RCA Corporation. Television chassis, 4,643,493, Cl. 312-7.200.
Sidler, Gregor; and Rickenbach, Jakob, to Fritz Gegauf AG, Bernina-Nahmaschinenfabrik. Device for braking the limbs of needle threads in oscillating hook type sewing machines, 4,643,112, Cl. 112-185.000.
Siegl, Ludwig R.: See—
Nash, Dennis P.; Rex, Donald K.; Siegl, Ludwig R.; and Wussow, Wendy, 4,643,601, Cl. 400-216.100.
Siegle, Martin: See—
Bohme, Rolf; Rinderle, Heinz; and Siegle, Martin, 4,644,257, Cl. 323-313.000.
Siemens Aktiengesellschaft: See—
Adam, Peter; and Knappe, Wolfram, 4,643,040, Cl. 74-425.000.
Aulich, Hubert; and Schulze, Friedrich-Wilhelm, 4,643,833, Cl. 210-714.000.
Bachmann, Friedrich, 4,644,130, Cl. 219-121.0LJ.
Eberhard, Guenther; and Krause, Joachim, 4,644,190, Cl. 307-450.000.
Grabmaier, Christa; Kotschy, Josef; and Lerchenberger, August, 4,643,797, Cl. 156-603.000.
Huebner, Erwin, 4,644,219, Cl. 313-270.000.
Kestler, Joachim, 4,644,282, Cl. 324-322.000.
Muck, Jurgen; Fischer, Hans; and Kramer, Richard, 4,642,886, Cl. 29-598.000.
Niedermayr, Erich, 4,642,902, Cl. 33-543.000.
Panse, Hubert, 4,644,254, Cl. 323-282.000.
Schaller, Werner, 4,643,508, Cl. 339-147.00R.
Vettari, Giancarlo, 4,644,258, Cl. 323-324.000.
Siemens Corporate Research & Support, Inc.: See—
Shieh, Chan-Long, 4,644,381, Cl. 357-35.000.
Sierocuk, Thomas J.; and Newman, Robert W., to General Electric Company. Three-dimensional nuclear magnetic resonance phantom, 4,644,276, Cl. 324-307.000.
Sigerist, Helmut, to Venturtech Enterprises, Inc. Doorjamb assembly, 4,642,954, Cl. 52-204.000.
Sigma Enterprises, Inc.: See—
Spencer, Larry K., 4,643,228, Cl. 137-625.660.
Silvey, E. Ray. Saw chain depth gauge grinder, 4,643,050, Cl. 76-25.00A.
Simes S.p.A.: See—
Casagrande, Cesare; Mussini, Emilio; and Vecchiatti, Vittorio, 4,644,004, Cl. 514-332.000.
Simons, Robert W.; Scott, Danny E.; and Poland, John R., to Hughes Tool Company-USA. Pack carburizing process for earth boring drill bits, 4,643,051, Cl. 76-108.00A.
Singelyn, Daniel D.; and Singelyn, Paul J. Apparatus for dehydrating metal hydroxide sludge, 4,643,108, Cl. 110-228.000.
Singelyn, Paul J.: See—
Singelyn, Daniel D.; and Singelyn, Paul J., 4,643,108, Cl. 110-228.000.
Singer Company, The: See—
Mead, James B.; Schwartz, Leonard; and DeVeau, Emile J., 4,644,360, Cl. 343-700.0MS.
Singleton, Russell M.: See—
Sandland, Paul; Levy, Kenneth; Singleton, Russell M.; Hodgson, Michael L.; and Cutler, Gerald R., 4,644,172, Cl. 250-548.000.
Site Microsurgical Systems, Inc.: See—
Cook, Kenneth P.; and Bross, Robert M., 4,643,717, Cl. 604-22.000.

Siu, David: See—
Tang, Wai-Cheung; Frenna, Joseph; and Siu, David, 4,644,305, Cl. 333-208.000.
Sivasothy, Sivakumar; and Balakrishnan, Ramanatha V., to National Semiconductor Corporation. Fast switching circuit for lateral PNP transistors, 4,644,186, Cl. 307-300.000.
SKF GmbH: See—
Brandenstein, Manfred; Edelmann, Ludwig; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,643,700, Cl. 474-112.000.
Neder, Gunter; Schurger, Rainer; and Ernst, Horst M., 4,643,594, Cl. 384-478.000.
SKF Steel Engineering AB: See—
Hammarberg, Bjorn, 4,643,742, Cl. 55-20.000.
Skjervén, Perikristian: See—
Gudbrandsen, Gunnar F.; Skjervén, Perikristian; and Bjerkvoll, Bjorn S., 4,643,098, Cl. 102-513.000.
Skonezny, Paul M.: See—
Vyas, Dolatrai M.; and Skonezny, Paul M., 4,644,072, Cl. 549-433.000.
Skowbo, James W.: See—
Feigenbaum, Barry A.; Sachsenmaier, Robert; and Skowbo, James W., 4,644,470, Cl. 364-200.000.
Skowron, Eugene: See—
Riley, Kenneth E.; and Skowron, Eugene, 4,642,861, Cl. 29-38.00A.
Skurka, James A., to Sloan Valve Company. Means for connecting a brake rod to the lever arm of an automatic slack adjuster, 4,643,279, Cl. 188-79.50K.
SKW Trostberg Aktiengesellschaft: See—
Bruckmann, Heinz; Wolfgruber, Friedrich; and Weiser, Ernst A., 4,643,768, Cl. 420-578.000.
Ebeling, Joachim; Friedrich, Peter; Jekat, Herbert; Lugscheider, Walter; Riegler, Ernst; Zajicek, Ernst; Achleitner, Walter; and Jaroma, Ferdinand, 4,644,557, Cl. 373-22.000.
Sloan-Kettering Institute: See—
Fradet, Yves; Cordon-Cardo, Carlos; Whitmore, Willet F., Jr.; Melamed, Myron R.; Old, Lloyd J.; and Lloyd, Kenneth O., 4,643,971, Cl. 435-240.000.
Sloan Valve Company: See—
Lissau, Frederic, deceased, 4,643,008, Cl. 70-167.000.
Skurka, James A., 4,643,279, Cl. 188-79.50K.
Small, Vernon R.: See—
Liston, Thomas V.; Lowe, Warren; and Small, Vernon R., 4,643,838, Cl. 252-52.00R.
Smedley, James L.; and Blair, Paul W. Telescoping water meter reading apparatus, 4,643,523, Cl. 350-319.000.
Smit, Cornelis. Device for administering a liquid in a number of doses, 4,643,723, Cl. 604-207.000.
Smith, Christopher D. Continuously variable torque converter, 4,644,206, Cl. 310-115.000.
Smith, Edward, to International Computers Limited. Method and apparatus for verifying the design of digital electronic components, 4,644,487, Cl. 364-578.000.
Smith, Ernest L.: See—
Moberley, Laura P.; Smith, Ernest L.; and MacEwen, George E., 4,643,329, Cl. 252-257.000.
Smith, James L., to United States of America, Energy. Device for equalizing molten electrolyte content in a fuel cell stack, 4,643,954, Cl. 429-26.000.
Smith, James L.; and Zwick, Stanley A., to United States of America, Energy. Molten carbonate fuel cell reduction of nickel deposits, 4,643,955, Cl. 429-34.000.
Smith, James M., Jr., to Georgia Krolin Company, Inc. Energy conserving process for drying a clay slurry, 4,642,904, Cl. 34-9.000.
Smith, Peter E.; and Laxton, Raymond, to AGB Research PLC. Means for monitoring people who are watching a television set, 4,644,393, Cl. 358-84.000.
Smith, Richard R.; and Kern, Charles L., Jr., to Goodyear Tire & Rubber Company, The. Multi-layer polyisophthalate and polyterephthalate articles and process thereof, 4,643,925, Cl. 428-35.000.
Smith, William E.: See—
McKee, Jere L.; Majcher, John P.; Smith, William E.; and Schlosser, Donald E., 4,644,121, Cl. 200-153.00G.
Smith, William L., Jr. Closure system for storage, transport and disposal of hypodermic needles, 4,643,722, Cl. 604-192.000.
Smith-Williams, Margie M. Light bracket, 4,644,449, Cl. 362-80.000.
Smiths Industries Public Limited Company: See—
Rush, Derek A., 4,644,444, Cl. 361-388.000.
Smoot, Edmond, III; and Spector, George. System cooler for a computer, 4,643,245, Cl. 165-47.000.
Snap-On Tools Corporation: See—
Becker, Thomas P.; Grover, Donald D.; Stout, Christopher B.; Kaufman, Glenn A.; and Olson, Gene E., 4,643,030, Cl. 73-862.230.
Societe Chimique des Charbonnages, S.A.: See—
Gloriod, Pierre; Andureau, Joel; and Pellegrini, Maurice, 4,644,044, Cl. 526-272.000.
Societe de Fabrication d'Instruments de Mesure: See—
Roy, Jean-Claude; and Cerutti, Bernard, 4,644,397, Cl. 358-126.000.
Roy, Jean-Claude; and Seugnet, Patrick, 4,644,405, Cl. 358-213.000.
Societe Nationale Elf Aquitaine (Production): See—
Castel, Yvon; and Iato, Michel, 4,643,616, Cl. 405-191.000.
Sodeoka, Mikiko: See—
Shibasaki, Masakatsu; Sodeoka, Mikiko; and Ogawa, Yuji, 4,644,068, Cl. 549-214.000.
Soderstrom, Sven E.: See—
Lofgren, Folke; and Soderstrom, Sven E., 4,643,564, Cl. 356-5.000.

Soechtig, Wolfgang; Wagner, Peter; and Korzeczek, Karl-Ludwig, to Krauss-Maffei, A.G. Piston metering apparatus of a reaction injection molding machine, 4,643,581, Cl. 366-76.000.
Solar Turbines Incorporated: See—
Metcalfe, Arthur G.; and Ward, Michael E., 4,642,864, Cl. 29-157.30R.
Solazzi, Monte J., to Chemplex Industries, Inc. Sample cup for use in X-ray spectroscopy, 4,643,033, Cl. 73-864.910.
Soma, Hiroshi; Hashimoto, Isao; Kinoshita, Tosuke; Uchida, Masahiro; and Uchiyama, Susumu, to Kawasaki Jukogyo Kabushiki Kaisha. Roller mill, 4,643,366, Cl. 241-117.000.
Soma International Ltd.: See—
Law, N. Y., 4,643,696, Cl. 446-465.000.
Someah, Kaveh S.: See—
Voith, Donald J.; and Someah, Kaveh S., 4,643,248, Cl. 165-95.000.
Somevna B.V.: See—
Ettema, Ernst; and de Vries, Jan, 4,642,940, Cl. 47-44.000.
Sommerfeld, Claus-Dieter: See—
Haas, Peter; Freitag, Hans-Albrecht; Avar, Geza; Sommerfeld, Claus-Dieter; and Illger, Hans-Walter, 4,644,017, Cl. 521-129.000.
Sonic Tape P.L.C.: See—
Czajkowski, Stanislaw B., 4,644,513, Cl. 367-108.000.
Sonnenberg, Joseph, to Raychem Corporation. Flame retardants and compositions containing them, 4,644,066, Cl. 548-462.000.
Sonobe, Youji; Tamura, Youichi; and Umesaki, Kenichiro, to Anritsu Electric Company, Limited. Driving circuit of a grating, 4,643,572, Cl. 356-334.000.
Sony Corporation: See—
Doi, Toshitada; Brandes, Claudia; and Lagadec, Roger, 4,644,546, Cl. 371-49.000.
Furuya, Tsuneo; and Hori, Katsuya, 4,644,544, Cl. 371-37.000.
Horikawa, Kenichi; Yamamoto, Yoshinori; and Kawakami, Kenji, 4,644,433, Cl. 360-132.000.
Nemoto, Tsuneo; and Sawa, Tetsuo, 4,644,435, Cl. 360-133.000.
Takashima, Mitsuru, 4,643,522, Cl. 350-255.000.
Tamaki, Isao, 4,644,425, Cl. 360-69.000.
Sorber, Robert, to Duke Power Company. Radiation dose rate measuring device, 4,644,167, Cl. 250-374.000.
Sorenson, James A.: See—
Kruger, Robert A.; and Sorenson, James A., 4,644,575, Cl. 378-99.000.
Soto, Toby A.: See—
Feld, David; and Soto, Toby A., 4,643,180, Cl. 128-156.000.
Southern, Roderic G.: See—
Caplin, Roger W. G.; Southern, Roderic G.; Fry, Gerald L.; and Hunt, David, 4,644,450, Cl. 362-147.000.
Southern, Thomas W.; and Daniel, Phillip G. Fish weight and length comparison apparatus, 4,643,267, Cl. 177-190.000.
Southwest Wire Rope, Inc.: See—
Kelly, Robert D.; and Yatsko, Lawrence T., 4,642,854, Cl. 24-265.00R.
Southwire Company: See—
Norris, Daniel A.; Lowery, James O.; and Armstrong, Robert F., 4,644,098, Cl. 174-115.000.
Spada, Vittorio: See—
Randaccio, Carlo, 4,643,810, Cl. 204-157.300.
Spector, George: See—
Bell, John H.; and Spector, George, 4,643,173, Cl. 128-68.100.
Orsini, Milagros C.; and Spector, George, 4,643,683, Cl. 434-403.000.
Smoot, Edmond, III; and Spector, George, 4,643,245, Cl. 165-47.000.
Spectra-Physics, Inc.: See—
Sheng, Shian-Chur, 4,644,554, Cl. 372-61.000.
Spencer, Kenneth B.: See—
McHenry, Robert J.; Brito, Joseph B.; Platt, Wilson T., Jr.; Reed, Robert J.; Vavadarajan, Krishnaraju; Spencer, Kenneth B.; Tsai, Boh C.; Williams, Mark A.; Vosti, Donald C.; and Wachtel, James A., 4,642,968, Cl. 53-425.000.
Spencer, Larry K., to Sigma Enterprises, Inc. Convertible high or low pressure pilot valve, 4,643,228, Cl. 137-625.660.
Sperber, Franz: See—
Hahn, Michael; and Sperber, Franz, 4,643,646, Cl. 416-226.000.
Sperlich, Josef, to ANT Nachrichtentechnik GmbH. TDMA point-to-multipoint communications system and its use, 4,644,534, Cl. 370-95.000.
Sperry Corporation: See—
Miller, Larry J.; Wells, Richard K.; and Tippetts, Ronald B., 4,644,195, Cl. 307-518.000.
Spooner, Frank: See—
Crossley, Ian; Donoghue, Daniel; Goldwasser, Robert; Miley, John; and Spooner, Frank, 4,644,296, Cl. 331-1.00R.
Sprecker, Mark A.; Wiegner, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., to International Flavors & Fragrances Inc. Alkyl substituted and unsubstituted para-carboalkoxy cyclohexanones and organoleptic uses thereof, 4,643,903, Cl. 426-538.000.
Sprengel, Dietrich: See—
Glotz, Karl; Knabenbauer, Wolfgang; Sprengel, Dietrich; and Tepel, Rudolf, 4,643,959, Cl. 429-222.000.
Spriessler, Heinz, to Liebherr-Hydraulikbagger GmbH. Apparatus for controlling the rotary speed of a diesel engine for a hydraulic excavator or the like, 4,643,146, Cl. 123-357.000.
Spychalski, Stephen E., to United States of America, Navy. Broadband matching network, 4,644,505, Cl. 367-15.000.

Stabilimento Industriale Singer Srl: See—
Primati, Marco, 4,642,921, Cl. 38-36.000.

Staerzl, Richard E., to Brunswick Corporation. Electronic fuel injection with fuel optimization and exhaust pressure feedback. 4,643,147, Cl. 123-357.000.

Stahl, G. Allan, to Phillips Petroleum Company. Production of high molecular weight vinyl lactam polymers and copolymers. 4,644,020, Cl. 522-79.000.

Staiano, Edward F.: See—
Zabarsky, Alan P.; Steiger, Suzette D.; Staiano, Edward F.; and Sandvos, Jerry L., 4,644,351, Cl. 340-825.440.

Stamicarbon B.V.: See—
Van Geenen, Albert A., 4,644,051, Cl. 528-323.000.

Standard Elektrik Lorenz AG: See—
Brunn, Otto, 4,644,222, Cl. 313-406.000.

Standard Elektrik Lorenz Aktiengesellschaft: See—
Gundner, Hans M., 4,644,145, Cl. 250-201.000.

Standard Oil Company (Indiana): See—
Zavelovich, Joshua; and Reddy, K. Virupaksha, 4,643,812, Cl. 204-157.610.

Standard Telefon og Kabelfabrik A/S: See—
Johnsen, John N.; and Balog, Georg E., 4,644,097, Cl. 174-102.00R.

Stanley, Gerald R., to Crown International, Inc. Method of fault sensing for power amplifiers having coupled power stages with normally alternate current flow. 4,644,288, Cl. 330-2.000.

Staran, Michael E.; Czulinski, Ronald B.; and Hammond, Albert J., to Ferro Manufacturing Corporation. Flex drive window regulator system. 4,642,941, Cl. 49-352.000.

Starrett, William R.: See—
Anderson, Thomas W.; Avva, Radha K.; Forrest, Bruce T.; Krawiec, Zbigniew A.; and Starrett, William R., 4,644,527, Cl. 370-58.000.

Statt der Nederlanden (Statusbiedrij der Rosterijen, Telegrafie en Telefonie): See—
Barendsz, Anton W.; van Beest, Cornelis A.; and Leur, Robert, 4,644,333, Cl. 340-634.000.

Staub, Hermann: See—
Bracher, Bernhard; Baumann, Karl; and Staub, Hermann, 4,643,128, Cl. 118-503.000.

Stauffer Chemical Company: See—
Scher, Herbert B., 4,643,764, Cl. 71-100.000.

STC Companies, Inc., The: See—
Murphy, Kenneth J.; Baker, Gerald R.; and Gard, Matthew F., 4,643,446, Cl. 280-648.000.

Steele, Francis J. Gravity fed dispenser for soft drink cup lids and the like. 4,643,334, Cl. 221-63.000.

Steffes, Helmut: See—
Reinartz, Hans-Dieter; and Steffes, Helmut, 4,643,489, Cl. 303-114.000.

Steiger, Suzette D.: See—
Zabarsky, Alan P.; Steiger, Suzette D.; Staiano, Edward F.; and Sandvos, Jerry L., 4,644,351, Cl. 340-825.440.

Stein, Eric D.: See—
Deaton, Thomas P.; and Stein, Eric D., 4,643,310, Cl. 206-506.000.

Steinbach, Hans-Horst; and Rieder, Matthias, to Bayer Aktiengesellschaft. Production of water-repellent moldings from plaster. 4,643,771, Cl. 106-111.000.

Steinwart, Johannes: See—
Ruf, Max; Korostenski, Erwin; and Steinwart, Johannes, 4,643,138, Cl. 123-52.00M.

Stepan Company: See—
Magnus, George; Loeb, Melvin; and Wood, Robert J., 4,644,027, Cl. 524-375.000.

Magnus, George; Loeb, Melvin; and Wood, Robert J., 4,644,048, Cl. 528-176.000.

Wood, Robert J., 4,644,047, Cl. 528-176.000.

Stephan, Wolfgang: See—
Kothe, Norbert; Dichtelmüller, Herbert; Stephan, Wolfgang; and Eichentopf, Bertram, 4,644,056, Cl. 530-387.000.

Stephens, Lawrence K.; and Hayes, Robert B., to International Business Machines Corp. Monitoring and alarm system for custom applications. 4,644,478, Cl. 364-550.000.

Sterling Drug Inc.: See—
Brocklehurst, Peter; and Ferguson, Angus S., 4,643,840, Cl. 252-160.000.

Stern, Howard, to Robotic Vision Systems, Inc. Arrangement for scanned 3-D measurement. 4,643,578, Cl. 356-376.000.

Stevens, Harry M.: See—
Rakestraw, Lawrence F.; and Stevens, Harry M., 4,643,662, Cl. 425-222.000.

Steyert, William A.: See—
Longworth, Ralph C.; and Steyert, William A., 4,643,001, Cl. 62-514.0JT.

Stokes, Kenneth B., to Medtronic, Inc. Single-pass A-V lead. 4,643,201, Cl. 128-786.000.

Stokoe, Ridley, to Aerial Access Equipment Limited. Access equipment. 4,643,273, Cl. 182-2.000.

Stolen, Rogers H.: See—
Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., 4,643,752, Cl. 65-3.150.

Stoll, Kurt. Clamping element with a short stroke. 4,643,408, Cl. 269-22.000.

Stoller, Kenneth P.: See—
Taff, Barry E.; and Stoller, Kenneth P., 4,643,172, Cl. 128-16.000.

Stoltz, Andries J.; and Kallenbach, Dieter H. F., to Coxwold (Proprietary) Limited. Valve assembly. 4,642,833, Cl. 15-1.700.

Stone, Gerald P. System for measuring liquid level in a pressurized vessel. 4,643,025, Cl. 73-302.000.

Storage Technology Partners II: See—
Wilson, Scott D., 4,643,538, Cl. 350-421.000.

Stormberg, Hans P.: See—
Schafer, Ralf; and Stormberg, Hans P., 4,644,216, Cl. 313-25.000.

Stout, Christopher B.: See—
Becker, Thomas P.; Grover, Donald D.; Stout, Christopher B.; Kaufman, Glenn A.; and Olson, Gene E., 4,643,030, Cl. 73-862.230.

Stowe, John H., to Curtis-Dyna Products Corporation. Multi-layer poultry vaccinator. 4,643,354, Cl. 239-1.000.

Stowell, Larry J.: See—
Cardina, John; Littrell, Robert H.; and Stowell, Larry J., 4,643,756, Cl. 71-79.000.

Strauss, Manfred: See—
Ruger, James; Strauss, Manfred; and Welz, Wolfgang, 4,643,517, Cl. 350-6.600.

Streit, Kenneth F., to Geerpres, Inc. Bail mounting structure. 4,643,325, Cl. 220-91.000.

Strickler, Roger D., to Elliott Turbomachinery Co., Inc. Remote operated turning gear engager. 4,643,637, Cl. 415-122.00R.

Strobel, Albert, to Heinemann Electric Company. Assembly for coupling switch handles. 4,644,114, Cl. 200-50.00C.

Strohbeen, David T.: See—
Ales, Thomas M.; Strohbeen, David T.; and Damico, Joyce A., 4,642,819, Cl. 2-400.000.

Strong, Hovey R.: See—
Aghilli, Houtan; Cristian, Flaviu I.; and Strong, Hovey R., 4,644,542, Cl. 371-22.000.

Stroucken, Klaus; and Gustafsson, Bengt-Olof, to Alfa-Laval Separation AB. Centrifuge operating system. 4,643,708, Cl. 494-40.000.

Sturm, Walter; Becker, Helmut; Witt, Jürgen; Fritz, Werner; and Eyscholt, Ursula, to W. C. Heraeus GmbH. Sensor for testing light and weather resistance of samples. 4,644,166, Cl. 250-372.000.

Sturtz, Gunter; Jocher, Reiner; and Baitinger, Hartmut, to Daimler-Benz Aktiengesellschaft. Lamp unit for vehicles. 4,644,447, Cl. 362-61.000.

Stutz, Glenn E.: See—
Sullivan, Sean; and Stutz, Glenn E., 4,643,569, Cl. 356-237.000.

Suda, Yasuo: See—
Ishizaki, Akira; Akashi, Akira; Ohtaka, Keiji; Suda, Yasuo; and Hiramatsu, Akira, 4,643,557, Cl. 354-406.000.

Sudderth, William H.; and Vos, Gary, to Blue Bell, Inc. Embroidery hoop. 4,642,924, Cl. 38-102.200.

Sudo, Hajime; and Takahashi, Hiroshi, to Kabushiki Kaisha Toshiba. Positioning device of magnetic suspension type. 4,644,205, Cl. 310-90.500.

Sudo, Toshio: See—
Yoshihara, Kunio; Sudo, Toshio; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, 4,644,093, Cl. 174-36.000.

Suenaga, Hitoshi: See—
Taguchi, Masaaki; and Suenaga, Hitoshi, 4,643,842, Cl. 252-299.670.

Sugimoto, Ryuji: See—
Takahashi, Nobuyuki; Sugimoto, Ryuji; and Shirai, Yasuyuki, 4,643,629, Cl. 414-331.000.

Sugimoto, Yoshiaki: See—
Yasuda, Tadao; Kamio, Toru; and Sugimoto, Yoshiaki, 4,643,703, Cl. 474-242.000.

Sugiyama, Tadashi: See—
Hoshino, Kazuya; Yamada, Noriaki; Yoshitome, Eiji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, 4,644,279, Cl. 324-309.000.

Sugiyama, Yasuo; Hiraoka, Osamu; Nakazawa, Tamotsu; and Nakamura, Kenji, to Shiseido Company Ltd.; and Nakamura Bussan Kabushiki Kaisha. Oil absorbing cosmetic tissue. 4,643,939, Cl. 428-283.000.

Suling, Carlhans: See—
Brauer, Wolfgang; Willenberg, Bernd; Korte, Siegfried; and Suling, Carlhans, 4,643,946, Cl. 428-372.000.

Sullivan, Sean; and Stutz, Glenn E., to Lincoln Laser Company. Dual beam laser inspection apparatus. 4,643,569, Cl. 356-237.000.

Sulzer Brothers Limited: See—
van Donk, Cornelis, 4,643,369, Cl. 242-47.010.

Sumi, Masahiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Addressing system for electronic computer. 4,644,469, Cl. 364-200.000.

Sumida, Takashi; Sasaki, Shigeo; and Ketori, Takao, to Hitachi Maxell, Ltd. Tape cartridge with extending reference surfaces. 4,643,304, Cl. 206-387.000.

Sumita, Mitsutaka: See—
Hori, Toshimitsu; and Sumita, Mitsutaka, 4,644,124, Cl. 219-69.00M.

Sumitomo Chemical Company, Limited: See—
Shimidzu, Yasutaka; Harada, Naoki; and Tezuka, Yasuo, 4,644,058, Cl. 534-635.000.

Suzukamo, Gohfu; and Fukao, Masami, 4,644,080, Cl. 560-124.000.

Sumitomo Electric Industries, Ltd.: See—
Fuji, Hiroshi; Hara, Akio; Kobayashi, Mitsunori; and Mori, Yoshikatsu, 4,643,620, Cl. 407-119.000.

Watanabe, Kanji; Mizoe, Mikio; and Inoo, Eiji, 4,643,929, Cl. 428-36.000.

Sumner, William J.: See—
Robbins, Kenneth E.; Ruggles, Stephen G.; Duncan, Dan; Williams, John C.; Tung, Stephen K.; Sumner, William J.; and Dinh, Cuong V., 4,643,645, Cl. 416-190.000.

Sunbeam Plastics Corporation: See—
Gach, Peter P., 4,643,321, Cl. 215-252.000.

Sundet, Sherman A., to Du Pont de Nemours, E. I., and Company. Multilayer reverse osmosis membrane in which one layer is poly-meta-phenylene cyclohexane-1,3,5-tricarboxamide. 4,643,829, Cl. 210-500.330.

Sundstrand Corporation: See—
Caine, Gerard H., 4,643,639, Cl. 415-148.000.

Metcalfe, Jeffrey D.; and Gillingham, Gary D., 4,643,290, Cl. 192-141.000.

Niggemann, Richard; and Readman, John, 4,643,250, Cl. 165-159.000.

Sundstrand Data Control, Inc.: See—
Muller, Hans R., 4,644,494, Cl. 364-900.000.

Sung, Rodney L.; and Jenkins, Robert H., Jr., to Texaco Inc. Polyol-acid anhydride-N-alkyl-alkylene diamine reaction product and motor fuel composition containing same. 4,643,737, Cl. 44-63.000.

Sung, Rodney L.; and Jenkins, Robert H., Jr., to Texaco Inc. Polyox-yisopropylendiamine-acid anhydride-N-alkyl-alkylene diamine reaction product and motor fuel composition containing same. 4,643,738, Cl. 44-63.000.

Superior Linen Company, Inc.: See—
Hersfield, Alan; and Danis, Gary P., 4,642,843, Cl. 16-87.40R.

Surgikos, Inc.: See—
Brown, Craig C., 4,643,181, Cl. 128-156.000.

Feld, David; and Soto, Toby A., 4,643,180, Cl. 128-156.000.

Jacobs, Paul T.; and Lin, Szu-Min, 4,643,876, Cl. 422-23.000.

Surkamp, Paul: See—
Brock, Josef; and Surkamp, Paul, 4,643,231, Cl. 139-66.00R.

Surpuriya, Vijay: See—
Wildman, Gary C.; Wirth, Frank; and Surpuriya, Vijay, 4,642,912, Cl. 36-44.000.

Sutherland, James F.: See—
Kenny, Thomas J.; and Sutherland, James F., 4,644,440, Cl. 361-111.000.

Suzuka, Teruo: See—
Sato, Yasukazu; Matsuda, Kenichi; Ozaki, Hiromi; Suzuka, Teruo; and Yamane, Mamoru, 4,643,813, Cl. 204-157.780.

Suzukamo, Gohfu; and Fukao, Masami, to Sumitomo Chemical Co., Ltd. Method for racemization of chrysanthemic acid or its ester. 4,644,080, Cl. 560-124.000.

Suzuki, Etsuji: See—
Nagashima, Sumio; Suzuki, Etsuji; Chiyoda, Kiyomu; and Kodama, Masahiro, 4,644,584, Cl. 382-34.000.

Suzuki, Harue: See—
Hosonuma, Sin; Fujio, Junichi; Tanaka, Kozo; Suzuki, Harue; and Baba, Kenichi, 4,643,529, Cl. 350-337.000.

Suzuki, Kazunori: See—
Toriumi, Yuki; Suzuki, Kazunori; and Katsuta, Hiroo, 4,643,579, Cl. 356-401.000.

Suzuki, Kenichi: See—
Yonekura, Koji; Suzuki, Kenichi; Takahashi, Yoshiyasu; and Iwahori, Hiroaki, 4,643,241, Cl. 164-101.000.

Suzuki Mechanical Engineering Co., Ltd.: See—
Suzuki, Tsuneo, 4,642,834, Cl. 15-21.00R.

Suzuki, Mikio; and Tanooka, Shigeo, to Toyoda Koki Kabushiki Kaisha. Linear solenoid-operated valve for use in power steering system. 4,643,227, Cl. 137-625.380.

Suzuki, Ryushi; and Yamaga, Joji, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for separating gas from fluid. 4,643,746, Cl. 55-204.000.

Suzuki, Satoru: See—
Okunaka, Masaaki; Nakatani, Mitsuo; Matsuyama, Haruhiko; Yokono, Hitoshi; Isogai, Tokio; Saitoh, Tadashi; Matsukuma, Kunihiko; Midorikawa, Sumiyuki; and Suzuki, Satoru, 4,643,913, Cl. 427-75.000.

Suzuki, Susumu: See—
Nakagawa, Masaki; and Suzuki, Susumu, 4,644,389, Cl. 358-28.000.

Suzuki, Tadao: See—
Kosugi, Seiji; and Suzuki, Tadao, 4,643,393, Cl. 251-129.010.

Suzuki, Takamitsu: See—
Uchiyama, Kazuo; and Suzuki, Takamitsu, 4,643,143, Cl. 123-90.310.

Suzuki, Takao; and Shiba, Kenji, to Minolta Camera K.K. Planetarium having an auxiliary projector independently rotatable about a star field projector. 4,643,681, Cl. 434-286.000.

Suzuki, Takashi: See—
Iinuma, Hiroshi; Sakaguchi, Shuichi; and Suzuki, Takashi, 4,644,419, Cl. 360-46.000.

Suzuki, Tomosaburo, to Kabushiki Kaisha Daisei Kikai. Sprouting vegetable cultivation apparatus. 4,642,939, Cl. 47-14.000.

Suzuki, Tsuneo, to Suzuki Mechanical Engineering Co., Ltd. Washing apparatus. 4,642,834, Cl. 15-21.00R.

Suzuki, Yasuo, to Matsushita Electric Works, Ltd. D.C. brushless motor having wider and narrower pole parts. 4,644,233, Cl. 318-254.000.

Swanson, Dail L.: See—
Hammer, Edward E.; Lemmers, Eugene; and Swanson, Dail L., 4,644,227, Cl. 315-96.000.

Sweet, Ervin J., to Avco Corporation. Combustor liner wall. 4,642,993, Cl. 60-752.000.

Sweet, Richard C.: See—
Bronnes, Robert L.; Sweet, Richard C.; and McKinlay, James K., 4,643,347, Cl. 228-208.000.

Swensen, Michael W.; Martin, William C.; and Kight, Henry H., to Texas Instruments Incorporated. Computer cooling system using recycled coolant. 4,644,443, Cl. 361-384.000.

Swenson, John E.: See—
Frushour, James E.; Mahar, Michael L.; Majka, Christopher J.; and Swenson, John E., 4,644,237, Cl. 318-313.000.

Swiech, Tom E., Jr.; and Maher, David P. Vending machine panels. 4,642,959, Cl. 52-311.000.

Swinderman, Robert T., to Martin Engineering Company. Conveyor belt cleaner. 4,643,293, Cl. 198-497.000.

Swinehart, Steven L., to Nisus Video, Inc. Shutter mechanism for a video tape camera. 4,643,548, Cl. 352-216.000.

Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Liquid coating supply system for a printing press blanket coater. 4,643,124, Cl. 118-259.000.

Swoveland, Jack E., to Dana Corporation. Control cable attachment assembly. 4,643,042, Cl. 74-501.50R.

SWS Silicones Corporation: See—
Manis, Paul A.; Martin, Eugene R.; and Muntz, Ronald L., 4,644,074, Cl. 556-401.000.

Synco Machine Co.: See—
Hattersley, Harold J., Jr., 4,643,368, Cl. 242-25.00A.

System Material Handling Company: See—
Gawlik, Robert F.; and Eccles, Timothy C., 4,643,511, Cl. 339-231.000.

Szekely, Lajos: See—
Csorba, Istvan; Szekely, Lajos; and Bodas, Sandor, 4,642,987, Cl. 60-641.200.

Szydlow, Nicolas: See—
Magarino, Jose; Szydlow, Nicolas; Hareng, Michel; and Landouar, Pierre, 4,643,527, Cl. 350-333.000.

Szymansky, Edward; Wegryn, Richard J.; and Baker, Richard I., to Remington Products, Inc. Buoyant alarm device. 4,644,328, Cl. 340-539.000.

T.E.M. s.r.l. Tecnologie Elettroniche e Meccaniche: See—
Bucefari, Massimo; and Rubecchini, Roberto, 4,644,175, Cl. 250-561.000.

Taarning, Claus E., to F. L. Smith & Co. A/S. Fast-acting spark-over detector. 4,644,439, Cl. 361-87.000.

Tabata, Hiroshi: See—
Sasaki, Kiichi; Tabata, Hiroshi; Okuhara, Hisakazu; and Higuchi, Kazuo, 4,643,449, Cl. 280-808.000.

Tabi, Masatoshi, to Fuji Photo Film Co., Ltd. Solid-state image pickup device and manufacturing method thereof. 4,644,404, Cl. 358-213.000.

Tachikawa Corporation: See—
Tachikawa, Takeyoshi; and Ohkubo, Shigeo, 4,643,238, Cl. 160-168.00R.

Tachikawa Spring Co.: See—
Morita, Isao, 4,643,480, Cl. 297-218.000.

Tachikawa, Takeyoshi; and Ohkubo, Shigeo, to Tachikawa Corporation. Venetian blind. 4,643,238, Cl. 160-168.00R.

Tachino, Tomio: See—
Furuta, Yohichi; Yamasaki, Takeo; Tachino, Tomio; and Tanikawa, Masayoshi, 4,643,043, Cl. 74-503.000.

Tada, Satoru: See—
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, 4,643,596, Cl. 400-121.000.

Taff, Barry E.; and Stoller, Kenneth P. Luminescent tongue depressor. 4,643,172, Cl. 128-16.000.

Taguchi, Masaaki; and Suenaga, Hitoshi, to Seiko Instruments & Electronics Ltd.; and Teikoku Chemical Industry Co., Ltd. Liquid crystal composition. 4,643,842, Cl. 252-299.670.

Taguchi, Tetsuo; and Ishikawa, Takashi, to Pentel Kabushiki Kaisha. Inking apparatus for a wire matrix printer. 4,643,599, Cl. 400-124.000.

Taig, Alistair G., to Allied Corp. Universal joint having a bearing block with cylindrical receptacles. 4,643,699, Cl. 464-112.000.

Taillebois, Jacques A. J., to M.C.B. Device for optical code reading, by diascopy, and a process for manufacturing same. 4,644,158, Cl. 250-231.05E.

Tairaku, Seiichi: See—
Saita, Shigeaki; Takada, Hiroshi; and Tairaku, Seiichi, 4,644,224, Cl. 313-634.000.

Taiyo Yuden Kabushiki Kaisha: See—
Hayashi, Yutaka; Iida, Hideyo; and Mishuku, Toshio, 4,644,091, Cl. 136-259.000.

Tajima, Eiichi: See—
Watanabe, Haruo; Tajima, Eiichi; Matsunaga, Masaaki; Hirohara, Toshihide; Iinuma, Yoshio; Ando, Naotake; Takahashi, Shigeyuki; and Takahashi, Teruaki, 4,643,526, Cl. 350-332.000.

Tajima, Satoshi; and Watanabe, Shinpei, to International Business Machines Corp. Serial keyboard interface system with frame retransmission after non-timely acknowledgements from data processor. 4,644,497, Cl. 364-900.000.

Takada, Hiroshi: See—
Saita, Shigeaki; Takada, Hiroshi; and Tairaku, Seiichi, 4,644,224, Cl. 313-634.000.

Takada, Mitsuyuki; Morihiro, Yoshiyuki; and Takasago, Hayato, to Mitsubishi Denki Kabushiki Kaisha. Composite and circuit board having conductive layer on resin layer and method of manufacturing. 4,643,798, Cl. 156-630.000.

Takagi, Nobukazu: See—
Abe, Tatsuhiko; and Takagi, Nobukazu, 4,643,223, Cl. 137-554.000.

Takahashi, Akira, to Ricoh Company. Film transport indicator for cameras. 4,643,552, Cl. 354-217.000.

Takahashi, Akira: See—
Tani, Tatsuhiro; Nagasawa, Hiroyuki; Tomite, Tosio; Tsubota, Kiyomasa; and Takahashi, Akira, 4,644,201, Cl. 310-51.000.

Takahashi, Hiroshi: See—
Sudo, Hajime; and Takahashi, Hiroshi, 4,644,205, Cl. 310-90.500.

Takahashi, Nobuyuki; Sugimoto, Ryuj; and Shirai, Yasuyuki, to Anelva Corporation. Automatic loader, 4,643,629, Cl. 414-331.000.

Takahashi, Shigeyuki: See—
Watanabe, Haruo; Tajima, Eiichi; Matsunaga, Masaaki; Hirohara, Toshihide; Inuma, Yoshio; Ando, Naotake; Takahashi, Shigeyuki; and Takahashi, Teruaki, 4,643,526, Cl. 350-332.000.

Takahashi, Susumu, to Kanto Yakin Kogyo Kabushiki Kaisha. Brazing method for aluminum parts, 4,643,348, Cl. 228-223.000.

Takahashi, Teruaki: See—
Watanabe, Haruo; Tajima, Eiichi; Matsunaga, Masaaki; Hirohara, Toshihide; Inuma, Yoshio; Ando, Naotake; Takahashi, Shigeyuki; and Takahashi, Teruaki, 4,643,526, Cl. 350-332.000.

Takahashi, Yoshifusa; Kadonaga, Hiroshi; Ishikawa, Satoshi; and Kikuchi, Junichi, to Ricoh Company, Ltd. Optical data communication system, 4,644,587, Cl. 455-601.000.

Takahashi, Yoshihiro; Abe, Hiraku; and Mamiya, Yasuhiro, to Alps Electric Co., Ltd. Code wheel for reflective optical rotary encoders, 4,644,156, Cl. 250-231.05E.

Takahashi, Yoshiyasu: See—
Yonekura, Koji; Suzuki, Kenichi; Takahashi, Yoshiyasu; and Iwahori, Hiroaki, 4,643,241, Cl. 164-101.000.

Takajo, Shigeaki, to Kawasaki Steel Corporation. Tin-containing ferrous composite powder and method of producing same and tin-containing sintered magnetic material, 4,643,765, Cl. 75-0.50B.

Takamizawa, Kinya; and Uchiumi, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Probe for electronic scanning type ultrasonic diagnostic apparatus, 4,644,214, Cl. 310-334.000.

Takasago, Hayato: See—
Takada, Mitsuyuki; Morihoro, Yoshiyuki; and Takasago, Hayato, 4,643,798, Cl. 156-630.000.

Takashima, Mitsuru, to Sony Corporation. Optical pickup having a driving unit for moving objective lens, 4,643,522, Cl. 350-255.000.

Takata, Nobuharu; and Kurita, Kohji, to Mitsubishi Denki Kabushiki Kaisha. Controlling system for a pole change electric motor, 4,644,242, Cl. 318-771.000.

Takatoo, Masao: See—
Kobayashi, Takao; Abe, Shigeo; Bandoh, Tadaaki; Takatoo, Masao; Matsumoto, Hidekazu; and Hara, Hideyuki, 4,644,490, Cl. 364-748.000.

Takayama, Nobutoshi, to Canon Kabushiki Kaisha. Automatic tracking control device, 4,644,413, Cl. 360-10.200.

Takeda Chemical Industries, Ltd.: See—
Tsuda, Masao; Sawa, Yoichi; and Yamazaki, Iwao, 4,644,012, Cl. 514-456.000.

Takeda, Yoshiaki; Kinoshita, Toshiharu; and Kai, Osamu, to Tamura Electric Works, Ltd. Alarm information transmission system for coin telephone, 4,644,109, Cl. 379-27.000.

Takegahara, Takashi: See—
Kishi, Hajimu; Tanaka, Kunio; and Takegahara, Takashi, 4,644,460, Cl. 364-171.000.

Takehisa, Kiwamu: See—
Uchiyama, Taro; Takehisa, Kiwamu; and Ishizaki, Isao, 4,643,889, Cl. 423-579.000.

Takemura, Reiji: See—
Seko, Maomi; Takemura, Reiji; and Miyamori, Hideharu, 4,643,818, Cl. 204-253.000.

Takenaka Kohmuten Co., Ltd.: See—
Kanno, Haruki; Tsuyoshi, Hidekazu; Nishinakagawa, Kou; Hara, Makoto; Mochida, Tetsuo; Hisaka, Tsugio; Miyaki, Munekazu; Kawarada, Minoru; and Kawarabayashi, Hideaki, 4,643,617, Cl. 405-222.000.

Takenaka, Yuji: See—
Kaneko, Rokusaburo; and Takenaka, Yuji, 4,643,562, Cl. 355-56.000.

Takeuchi, Masato: See—
Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiaki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.

Takeuchi, Masayoshi: See—
Kishida, Yoshifumi; and Takeuchi, Masayoshi, 4,643,774, Cl. 134-1.000.

Takeuchi, Michikazu; and Ishizu, Yoshiaki, to TDK Corporation. Positive temperature coefficient thermistor device, 4,644,316, Cl. 338-22.00R.

Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiaki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, to Hitachi, Ltd. Fuel cell, 4,643,957, Cl. 429-41.000.

Tako S.p.A.: See—
Martini, Gino, 4,643,863, Cl. 264-219.000.

Martini, Gino, 4,643,864, Cl. 264-220.000.

Talarico, Louis C., II. Dual-compression forefoot compensated footwear, 4,642,911, Cl. 36-30.00R.

Taiwar, Anil K.: See—
Peters, David; Denick, John, Jr.; and Taiwar, Anil K., 4,643,892, Cl. 424-15.000.

Peters, David; Denick, John, Jr.; and Taiwar, Anil K., 4,643,898, Cl. 424-155.000.

Tamaki, Isao, to Sony Corporation. Control apparatus for controlling, 4,644,425, Cl. 360-69.000.

Tamamura, Hideo: See—
Nagata, Toru; Aoshima, Chikara; Maeno, Hiroshi; and Tamamura, Hideo, 4,643,549, Cl. 354-64.000.

Tamamura, Junichi: See—
Aoki, Shigeo; Tamamura, Junichi; and Ukai, Yasuhiro, 4,644,338, Cl. 340-719.000.

Tamura Electric Works, Ltd.: See—
Takeda, Yoshiaki; Kinoshita, Toshiharu; and Kai, Osamu, 4,644,109, Cl. 379-27.000.

Tamura, Kohki: See—
Takeuchi, Seizi; Kamo, Tomoichi; Horiba, Tatsuo; Kitami, Kunko; Mori, Toshikatsu; Kahara, Toshiaki; Imahashi, Jinichi; Honji, Akio; Takeuchi, Masato; and Tamura, Kohki, 4,643,957, Cl. 429-41.000.

Tamura, Takashi: See—
Nishiyama, Nobumasa; Aoi, Hajime; Tamura, Takashi; Ouchi, Yasuhide; and Saitou, Makoto, 4,644,424, Cl. 360-65.000.

Tamura, Youichi: See—
Sonobe, Youji; Tamura, Youichi; and Umesaki, Kenichiro, 4,643,572, Cl. 356-334.000.

Tanada, Kikuko: See—
Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroto; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, 4,643,849, Cl. 540-955.000.

Tanaka, Hirokazu: See—
Umehara, Kazuyoshi; Yoshida, Keizo; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,643,990, Cl. 514-18.000.

Tanaka, Kazunobu; and Kobayashi, Michio, to Daicel Chemical Industries, Ltd. Heat- and impact-resistant resin composition, 4,644,034, Cl. 525-68.000.

Tanaka, Kazuo: See—
Fujiwara, Akihiro; and Tanaka, Kazuo, 4,643,556, Cl. 354-406.000.

Tanaka, Kozo: See—
Hosonuma, Sin; Fujio, Junichi; Tanaka, Kozo; Suzuki, Harue; and Baba, Kenichi, 4,643,529, Cl. 350-337.000.

Tanaka, Kunio: See—
Kishi, Hajimu; Tanaka, Kunio; and Takegahara, Takashi, 4,644,460, Cl. 364-171.000.

Tanaka, Masataka; Ohto, Masao; Sekine, Tetsuo; Isobe, Koji; and Maruyama, Masaru, to Hakko Electric Machine Works Co., Ltd. Biopsy needle set, 4,643,196, Cl. 128-753.000.

Tanaka, Norio: See—
Baba, Masatoshi; Tanaka, Norio; Ikai, Takasi; Nawamaki, Tsutomu; and Matsunaga, Masaji, 4,643,757, Cl. 71-86.000.

Tanaka, Toshiharu: See—
Usami, Toshimasa; and Tanaka, Toshiharu, 4,644,376, Cl. 346-215.000.

Tang, Wai-Cheung; Frenna, Joseph; and Siu, David, to Com Dev. Ltd. Odd order elliptic waveguide cavity filters, 4,644,305, Cl. 333-208.000.

Tani, Tatsuhiro; Nagasawa, Hiroyuki; Tomite, Tosio; Tsubota, Kiyomasa; and Takahashi, Akira, to Hitachi, Ltd. Armature for direct current motor with imbalance correction, 4,644,201, Cl. 310-51.000.

Taniguchi, Koki, to Sharp Kabushiki Kaisha. Anisotropic electric conductive rubber connector, 4,643,498, Cl. 339-17.00M.

Taniguchi, Yasushi, to Canon Kabushiki Kaisha. Metallic rotational polygon mirror, 4,643,518, Cl. 350-6.800.

Tanikawa, Masayoshi: See—
Furuta, Yohichi; Yamasaki, Takeo; Tachino, Tomio; and Tanikawa, Masayoshi, 4,643,043, Cl. 74-503.000.

Tanimoto, Akira, to Kabushiki Kaisha Toshiba. Current limiting type circuit breaker, 4,644,307, Cl. 335-16.000.

Tanooka, Shigeo: See—
Suzuki, Mikio; and Tanooka, Shigeo, 4,643,227, Cl. 137-625.380.

Tarli, Paolo: See—
Berretti, Rodolfo; Tarli, Paolo; and Berti, Brunilde, 4,643,974, Cl. 435-287.000.

Tashiro, Tsutomu: See—
Haruna, Koichi; Nakao, Kazuo; Nishiyama, Tamotsu; Tashiro, Tsutomu; Matsumoto, Kuniaki; and Saida, Nobuyuki, 4,644,480, Cl. 364-552.000.

Tatase, Victor. Ladder stand-off device with safety harness, 4,643,274, Cl. 182-106.000.

Tatsuno, Kimio: See—
Arimoto, Akira; Saito, Susumu; Tatsuno, Kimio; and Kataoka, Keiji, 4,644,160, Cl. 250-201.000.

Tatum, John A. Educational aid for spelling, 4,643,679, Cl. 434-167.000.

Taylor, Joseph R., Jr. Belt abrading apparatus and method, 4,642,943, Cl. 51-135.00R.

Taylor, William A.: See—
Sandelli, Gregory J.; and Taylor, William A., 4,643,956, Cl. 429-34.000.

Tazawa Koomuten Co., Ltd.: See—
Tazawa, Yoshio, 4,643,388, Cl. 249-219.00W.

Tazawa, Yoshio, to Tazawa Koomuten Co., Ltd. Device for holding reinforcing materials on concrete-applying frames, 4,643,388, Cl. 249-219.00W.

TCHIBO-Frisch-Rost-Kaffee AG: See—
Kaatz, Michael; and Reiff, Dieter, 4,642,906, Cl. 34-13.000.

TDK Corporation: See—
Kajimoto, Norifumi; and Azegami, Hitoshi, 4,643,934, Cl. 428-141.000.

Takeuchi, Michikazu; and Ishizu, Yoshiaki, 4,644,316, Cl. 338-22.00R.

Teac Corporation: See—
Araki, Tetsuro; and Onda, Hiroyuki, 4,644,324, Cl. 340-347.0DA.

Technical Research Associates: See—
Barabino, William A., 4,644,177, Cl. 250-577.000.

Techrad Corporation: See—
Mirel, Arthur G., 4,643,213, Cl. 137-10.000.

Tedesco, Robert J., to Westinghouse Electric Corp. Molded case circuit breaker with a movable lower electrical contact positioned by a torsion spring, 4,644,120, Cl. 200-153.00G.

Teepak Produktie N.V.: See—
Kollross, Gunter, 4,642,848, Cl. 17-49.000.

Teeters, Dale C.: See—
Gurgio, Arthur E.; Winkist, Marvin E.; Knobel, Thomas M.; and Teeters, Dale C., 4,643,953, Cl. 428-520.000.

Teijin Limited: See—
Yamada, Takeyoshi, 4,644,046, Cl. 528-28.000.

Teikoku Chemical Industry Co., Ltd.: See—
Taguchi, Masaaki; and Suenaga, Hitoshi, 4,643,842, Cl. 252-299.670.

Tektronix, Inc.: See—
Shank, Gordon W.; Bristol, Lloyd R.; Eby, David H.; and Kleck, Jeffrey A., 4,644,337, Cl. 340-709.000.

Teldix GmbH: See—
Muller, Paul, 4,643,574, Cl. 356-350.000.

Telefonaktiebolaget LM Ericsson: See—
Forsberg, Gunnar S., 4,643,568, Cl. 356-218.000.

Telefunken electronic GmbH: See—
Bohme, Rolf; Rinderle, Heinz; and Siegle, Martin, 4,644,257, Cl. 323-313.000.

Teleplex Corporation: See—
Brown, Jeffery H.; and Phillips, Roger, 4,644,569, Cl. 375-118.000.

Temes, Gabor C., to University of Calif. The Regents of the. Switched-capacitor pseudo-n-path filter, 4,644,304, Cl. 333-173.000.

Tepel, Rudolf: See—
Glotzl, Karl; Knabenbauer, Wolfgang; Sprengel, Dietrich; and Tepel, Rudolf, 4,643,959, Cl. 429-222.000.

Terabe, Seiji; and Ito, Kazuo, to Inax Corporation. Simulated marble article, 4,643,921, Cl. 428-15.000.

Terumo Kabushiki Kaisha: See—
Fujii, Tadashi, 4,644,510, Cl. 367-87.000.

Isono, Keinosuke; and Naoi, Keiji, 4,643,715, Cl. 604-4.000.

Tetra Pak International AB: See—
Holmstrom, Hakan, 4,643,094, Cl. 101-401.100.

Texaco Inc.: See—
McDaniel, Kenneth G., 4,644,019, Cl. 521-173.000.

Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,643,737, Cl. 44-63.000.

Sung, Rodney L.; and Jenkins, Robert H., Jr., 4,643,738, Cl. 44-63.000.

Texas A&M University System, The: See—
Lawhon, James T.; and Lusas, Edmund W., 4,643,902, Cl. 426-271.000.

Texas Instruments Incorporated: See—
Garner, Ricky B.; Payne, Thomas H.; and Tranjan, Farid M., 4,642,877, Cl. 29-571.000.

Swensen, Michael W.; Martin, William C.; and Kight, Henry H., 4,644,443, Cl. 361-384.000.

Tezuka, Hideharu, to Kabushiki Kaisha Toshiba. Pulse generator circuit, 4,644,183, Cl. 307-268.000.

Tezuka, Yasuo: See—
Shimidzu, Yasutaka; Harada, Naoki; and Tezuka, Yasuo, 4,644,058, Cl. 534-635.000.

Thau, Lawrence W., Jr.; and Webb, Maurice J., to Victaulic Company of America. Fire resistant seal, 4,643,461, Cl. 285-112.000.

Theiling, Ernst-August: See—
Walz, Gerd; and Theiling, Ernst-August, 4,644,036, Cl. 525-386.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobil track leveling, lining and tamping machine, 4,643,101, Cl. 104-7.200.

Thiel, Rudolf; and Doell, Andreas, to Alfred Teves GmbH. Actuating apparatus for a disc brake, 4,643,278, Cl. 188-72.700.

Thiemer, Klaus: See—
Engel, Jürgen; Jakovlev, Vladimir; Nickel, Bernd; Thiemer, Klaus; and Scheffler, Gerhard, 4,643,995, Cl. 514-210.000.

Thijssen, Nicolaas J. W.; and Vander, Timen, to Hoogovens Groep B.V. Method of making coke in a coke oven battery, 4,643,803, Cl. 201-1.000.

Tholen, John H.: See—
Goar, Richard T.; and Tholen, John H., 4,643,093, Cl. 101-401.100.

Thomarat, Marc: See—
Cheminal, Bernard; Mathais, Henri; and Thomarat, Marc, 4,643,851, Cl. 260-544.00Y.

Thomas, John H.; Duncan, Don P.; Lake, Michael A.; and Womack, Gary B., to Westvaco Corporation. Modified rosin ester preparation, 4,643,848, Cl. 260-104.000.

Thomas, Mark S.: See—
Thomas, Stephen E.; and Thomas, Mark S., 4,644,203, Cl. 310-67.00A.

Thomas, Stephen E.; and Thomas, Mark S. Generator assembly with torque balancing generation, 4,644,203, Cl. 310-67.00A.

Thompson, David G.: See—
Bailegger, Marc E.; Rimbault, Christian G.; Albert, Alban I.; Weith, Andre J.; Courbat, Pierre; Tyson, Robert G.; Palmer, Derek R.; and Thompson, David G., 4,644,011, Cl. 514-456.000.

Thompson, Greg J., to International Radiology Systems, Inc. X-ray film mount, 4,642,925, Cl. 40-158.00B.

Thompson, Mark E., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides, 4,643,759, Cl. 71-90.000.

Thomson-CSF: See—
Douziech, Patrick; and Imbert, Michel, 4,644,388, Cl. 358-23.000.

Frœux, Jean; Hennion, Christine; Mora, Marie H.; and Ploix, Jean L., 4,643,689, Cl. 445-3.000.

Hoet, Roger; and Gerlach, Pierre, 4,644,217, Cl. 313-35.000.

Magarino, Jose; Szydio, Nicolas; Hareng, Michel; and Landouar, Pierre, 4,643,527, Cl. 350-333.000.

Thomson-CSF Telephone: See—
Charransol, Pierre; Audrix, Jean C.; and Athenes, Claude, 4,644,382, Cl. 357-42.000.

Thomson, Donald W.; and Christopher, R. Keene. Foamed insulation and process for producing the same, 4,644,014, Cl. 521-68.000.

Thorn, Lawrence B.: See—
Melvin, William S.; Betts, Robert E.; and Thorn, Lawrence B., 4,642,983, Cl. 60-219.000.

Thornton, Thomas A.; and Pettus, William G., to Babcock & Wilcox Company. The. Nuclear fuel pellet-cladding interaction test device and method modeling in-core reactor thermal conditions, 4,643,866, Cl. 376-245.000.

Thrash, Robert J.; and Connolly, John F., to Amoco Corporation. Electrolyte additive for lithium-sulfur dioxide electrochemical cells, 4,643,958, Cl. 429-105.000.

Throckmorton, Peter E.: See—
Scaccia, Carl; Fisher, Dennis H.; and Throckmorton, Peter E., 4,644,015, Cl. 521-129.000.

Tiefel, Thomas H.: See—
Jin, Sungho; Mottine, John J., Jr.; Sherwood, Richard C.; and Tiefel, Thomas H., 4,644,101, Cl. 178-18.000.

Ting, Patrick L.: See—
Cowles, John M.; Goldstein, Henry; Chicoye, Etzer; and Ting, Patrick L., 4,644,084, Cl. 568-341.000.

Tippetts, Ronald B.: See—
Miller, Larry J.; Wells, Richard K.; and Tippetts, Ronald B., 4,644,195, Cl. 307-518.000.

Tjoelker, John: See—
Schneider, Wayne A.; Morse, Margaret S.; and Tjoelker, John, 4,644,343, Cl. 343-767.000.

Tocco, Inc.: See—
Vickers, Robert V.; and Sachtjen, Peter D., 4,643,781, Cl. 148-127.000.

Toda, Fumio; Okamoto, Masaru; and Mochizuki, Fujiki, to Kurita Water Industries Ltd. Sustained release antimicrobial agents and methods of fouling control using the same, 4,644,021, Cl. 523-122.000.

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- Yonekura, Koji; Suzuki, Kenichi; Takahashi, Yoshiyasu; and Iwahori, Hiroaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of preparing composite aluminum material, 4,643,241, Cl. 164-101.000.
- Yonezu, Ryo; and Sakashita, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with a controlled precharging arrangement, 4,644,500, Cl. 365-189.000.
- York, Billie M., Jr., to Alcon Laboratories, Inc. 3-chloro-4-(4,5-dihydro-1H-imidazo-2-yl)-amino-5-alkylbenzoic acids, esters, salts, compositions and methods, 4,644,007, Cl. 514-392.000.
- York, Theodore H.: See—
Vercellotti, Leonard C.; Verbanets, William R., Jr.; and York, Theodore H., 4,644,547, Cl. 371-69.000.
- Yoshida, Akio: See—
Tsubai, Yasuo; Okazaki, Koji; and Yoshida, Akio, 4,643,962, Cl. 430-205.000.
- Yoshida, Keizo: See—
Umehara, Kazuyoshi; Yoshida, Keizo; Tanaka, Hirokazu; Uchida, Itsuo; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,643,990, Cl. 514-18.000.
- Yoshida Kogyo K. K.: See—
Ikemura, Akio; and Kajiki, Minoru, 4,643,246, Cl. 165-54.000.
- Yoshida, Tetsuo: See—
Kubota, Satoshi; Yoshida, Tetsuo; and Ohmatsu, Hideki, 4,643,965, Cl. 430-567.000.
- Yoshida, Tomiharu: See—
Omote, Tatsuyuki; Yoshida, Tomiharu; Shimizu, Isamu; and Metoki, Kichinori, 4,643,845, Cl. 252-626.000.

- Yoshida, Yoshiichi, to Tsutsumi, Shigeru; and Seiko Engineering and Research Co. Ltd. Pointed heat-generating device for molds of injection molding machines, 4,643,664, Cl. 425-549.000.
- Yoshihara, Kunio; Sudo, Toshiro; Iida, Atsuko; Miyagi, Takeshi; Saito, Tamio; and Oe, Shigeyuki, to Kabushiki Kaisha Toshiba. Circuit board, 4,644,093, Cl. 174-36.000.
- Yoshii, Gen: See—
Yano, Kazuhiko; Ohtsuki, Kazuhiko; Awaya, Takao; and Yoshii, Gen, 4,643,687, Cl. 440-75.000.
- Yoshikawa, Shinichi; Nishiwaki, Shigeru; and Shimodaira, Toshiro, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Motor actuator with control means responsive to internal and external conditions, 4,644,239, Cl. 318-641.000.
- Yoshinaga, Sadao, to Prince Industrial Development Co., Ltd. Burner device, 4,643,671, Cl. 431-255.000.
- Yoshino Kogyosho Co., Ltd.: See—
Iizuka, Shigeo, 4,643,338, Cl. 222-321.000.
- Yoshio, Ebe: See—
Kazuyuki, Ishii; Yoshio, Ebe; and Shuji, Fujieda, 4,643,470, Cl. 292-216.000.
- Yoshioka, Yuji: See—
Mitomo, Mamoru; and Yoshioka, Yuji, 4,643,859, Cl. 264-65.000.
- Yoshitome, Eiji: See—
Hoshino, Kazuya; Yamada, Noriaki; Yoshitome, Eiji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, 4,644,279, Cl. 324-309.000.
- Yoshizawa, Hiroshi: See—
Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, 4,643,049, Cl. 74-868.000.
- Yotsuji, Minako: See—
Hirai, Shiro; Hirano, Hiroshi; Arai, Hiroto; Kiba, Yasuo; Shibata, Hisanari; Kusayanagi, Yoshikazu; Yotsuji, Minako; Hashiba, Kazuhiko; and Tanada, Kikuko, 4,643,849, Cl. 540-955.000.
- Young, Ian R., to Picker International Limited. Nuclear magnetic resonance apparatus, 4,644,275, Cl. 324-307.000.
- Young, Murray M., to University of Waterloo. Method and apparatus for multiphase contacting between gas, solid and liquid phases, 4,643,972, Cl. 435-252.000.
- Yu, Chia-Nien: See—
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,643,996, Cl. 514-336.000.
- Yu, Hongchang; Yang, Zhen; Wang, Chaodong; and Zai, Zhongqing. Thermostable polycrystalline diamond body, method and mold for producing same, 4,643,741, Cl. 51-295.000.
- Yukino, Shinya: See—
Ozawa, Kunichi; Goto, Yasuhiro; Nakase, Hiromi; and Yukino, Shinya, 4,644,157, Cl. 250-231.0SE.
- Zabarsky, Alan P.; Steiger, Suzette D.; Staiano, Edward F.; and Sandvos, Jerry L., to Motorola, Inc. Two way personal message system with extended coverage, 4,644,351, Cl. 340-825.440.
- Zachariadis, Robert G., to Mobil Oil Corporation. Method and apparatus for selectively reinforcing detected seismic waves, 4,644,508, Cl. 367-24.000.
- Zachrai, Jurgen: See—
Debus, Jurgen; Koch, Hans-Georg; Zachrai, Jurgen; and Butergers, Helmut, 4,643,319, Cl. 211-189.000.
- Zai, Zhongqing: See—
Yu, Hongchang; Yang, Zhen; Wang, Chaodong; and Zai, Zhongqing, 4,643,741, Cl. 51-295.000.
- Zajicek, Ernst: See—
Ebeling, Joachim; Friedrich, Peter; Jekat, Herbert; Lugscheider, Walter; Riegler, Ernst; Zajicek, Ernst; Achleitner, Walter; and Jarema, Ferdinand, 4,644,557, Cl. 373-22.000.
- Riegler, Ernst; Zajicek, Ernst; and Muhlbaier, Johann, 4,643,404, Cl. 266-240.000.
- Zamacola, Eduardo I., to Laurona Armas, S.A. Selector device for firearms, 4,642,927, Cl. 42-42.010.
- Zangenfeind, Helmut: See—
Wurfel, Reinhart; Zangenfeind, Helmut; Domges, Gunther; and Kugel, Raimund, 4,643,371, Cl. 242-55.000.
- Zanuso, Marco; and Fratti, Fabio, to I.C.A. S.p.A. Industria Componenti per l'Architettura. Self-cleaning sanitary apparatus, 4,642,821, Cl. 4-662.000.
- Zarges, Frank. Stacking system, 4,643,312, Cl. 206-514.000.
- Zarrineghbal, Hossein; Kittrell, James R.; and Darian, Saeed T., to OxiProcessing. Process for enhancing the cetane number of diesel fuel, 4,643,820, Cl. 208-222.000.
- Zavelovich, Joshua; and Reddy, K. Virupaksha, to Standard Oil Company (Indiana). Photochemical process for the hydrobromination of olefinic double bonds, 4,643,812, Cl. 204-157.610.
- Zdarsky, Eduard, to Vereinigte Dentalwerke Antaeos-Beutelrock Zipperer Zdarsky Ehr-GmbH & Co. K.G. Holding arrangement for dental hand instruments, 4,643,674, Cl. 433-102.000.
- Zeiger, Donald J., to Mallard Machine Company. Check valve assembly for injection molding machine, 4,643,665, Cl. 425-563.000.
- Zeiringer, Hans. Method of producing a grinding medium, 4,643,983, Cl. 501-87.000.
- Zellweger Uster, Ltd.: See—
Aemmer, Peter F.; and Aepli, Kurt, 4,643,230, Cl. 139-1.00B.
- Zemel, Jay N., to University of Pennsylvania. Substance-sensitive electrical structures, 4,644,380, Cl. 357-25.000.
- Zenith Electronics Corporation: See—
Brenner, Michael C.; and Fitzgibbon, James J., 4,644,100, Cl. 178-18.000.
- Zeringue, Freddie J., Jr., to Autobust, Inc. Hydraulic drill string break-down and bleed off unit, 4,643,259, Cl. 166-77.500.
- Ziccardi, John: See—
Ziccardi, Philip; and Ziccardi, John, 4,643,251, Cl. 152-223.000.
- Ziccardi, Philip; and Ziccardi, John. Traction devices for automotive wheels, 4,643,251, Cl. 152-223.000.
- Zillmer, Roger C.: See—
Sandiford, Burton B.; and Zillmer, Roger C., 4,643,255, Cl. 166-295.000.
- Zimmerman, William T., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides, 4,643,761, Cl. 71-92.000.
- Zimmer, Arthur L.: See—
Greene, Franklin R.; Zimmer, Arthur L.; Wayne, Jerome D.; and Petix, Edward A., 4,643,197, Cl. 128-762.000.
- Zimzik, Henry. Utilization of wool grease as well as drilling, grinding, or cutting emulsions, 4,643,837, Cl. 252-8.511.
- Zingler, Christian J.; and Bonner, James D., to Allied Corporation. Floating gang rotary slitting device and method, 4,643,058, Cl. 83-23.000.
- Zinser Textilmaschinen GmbH: See—
Junginger, Helmut; Wolf, Horst; and Jager, Wolfgang, 4,644,236, Cl. 318-309.000.
- Ziolkowski, Antoni M. Scaling of sound source signatures in underwater seismic exploration, 4,644,507, Cl. 367-23.000.
- Zirk, Wolfgang, to Fichtel & Sachs A.G. Mechanical system comprising two faces movable with respect to each other, and a lubricant therebetween, 4,643,407, Cl. 267-64.270.
- Zitz, Alfred: See—
Droscher, Bernhard; and Zitz, Alfred, 4,643,567, Cl. 356-152.000.
- Zordan, Richard D.: See—
Crook, Paul; and Zordan, Richard D., 4,643,767, Cl. 420-12.000.
- Zublin, Marcel. Method for deflection of optical rays and an optical arrangement therefor, 4,644,147, Cl. 250-221.000.
- Zupancic, Anton Z.: See—
Palermo, Anthony; and Zupancic, Anton Z., 4,644,573, Cl. 378-15.000.
- Zwick, Stanley A.: See—
Smith, James L.; and Zwick, Stanley A., 4,643,955, Cl. 429-34.000.
- Zwiegel, John M.: See—
Karr, Michael A., Jr.; and Zwiegel, John M., 4,643,390, Cl. 251-63.600.
- Zyma SA: See—
Ballenegger, Marc E.; Rimbault, Christian G.; Albert, Alban I.; Weith, Andre J.; Courbat, Pierre; Tyson, Robert G.; Palmer, Derek R.; and Thompson, David G., 4,644,011, Cl. 514-456.000.
- 501 M.C.C. Nederland B.V.: See—
Wallaart, Jacobus J., 4,643,298, Cl. 198-805.000.
- 501 Naarden International N.V.: See—
Broekhof, Nicolaas L. J. M.; van der Weerd, Antonius J. A.; and Hofma, Jochum, 4,643,844, Cl. 252-522.00R.
- 501 Shipping Corporation of New Zealand, The: See—
Harris, Samuel; and Lovegrove, John R., 4,642,996, Cl. 62-78.000.
- 501 Societe Lorraine de Laminage & Continuo -Sollac-: See—
Kieger, Roger, 4,643,766, Cl. 75-51.400.
- 502 Unimetal: See—
Kieger, Roger, 4,643,766, Cl. 75-51.400.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bennett, David S.; and Hoath, Grantley R., to Molins PLC. Apparatus for conveying rod-like articles. Re. 32,353, Cl. 198-404.000.
Cardarelli, Nathan F., to Consolidated Fertilizers Limited. Controlled release of compounds utilizing a plastic matrix. Re. 32,356, Cl. 424-78.000.
Consolidated Fertilizers Limited: See—
Cardarelli, Nathan F., Re. 32,356, Cl. 424-78.000.
Dawson, Robert H.; and Schnable, George L., to RCA Corporation. Method of manufacturing a passivating composite comprising a silicon nitride (Si₃N₄) layer and a phosphosilicate glass (PSG) layer for a semiconductor device layer. Re. 32,351, Cl. 29-571.000.
Furuno Electric Co., Ltd.: See—
Nagao, Syuji; Nakai, Ryoichi; and Yamauchi, Kazuo, Re. 32,357, Cl. 364-449.000.
Hoath, Grantley R.: See—
Bennett, David S.; and Hoath, Grantley R., Re. 32,353, Cl. 198-404.000.
Molins PLC: See—
Bennett, David S.; and Hoath, Grantley R., Re. 32,353, Cl. 198-404.000.
Nagao, Syuji; Nakai, Ryoichi; and Yamauchi, Kazuo, to Furuno Electric Co., Ltd. Moving body track indicator system. Re. 32,357, Cl. 364-449.000.
Nakai, Ryoichi: See—
Nagao, Syuji; Nakai, Ryoichi; and Yamauchi, Kazuo, Re. 32,357, Cl. 364-449.000.
Portec, Inc.: See—
Warren, Kenneth D.; and Tenold, Gregory G., Re. 32,355, Cl. 241-300.000.
Powers, Kerns H., to RCA Corporation. Television display system with reduced line-scan artifacts. Re. 32,358, Cl. 358-21.00R.
RCA Corporation: See—
Dawson, Robert H.; and Schnable, George L., Re. 32,351, Cl. 29-571.000.
Powers, Kerns H., Re. 32,358, Cl. 358-21.00R.
Savage, Chester, to Scholle Corporation. Container for holding and dispensing fluid. Re. 32,354, Cl. 222-81.000.
Schnable, George L.: See—
Dawson, Robert H.; and Schnable, George L., Re. 32,351, Cl. 29-571.000.
Scholle Corporation: See—
Savage, Chester, Re. 32,354, Cl. 222-81.000.
Tenold, Gregory G.: See—
Warren, Kenneth D.; and Tenold, Gregory G., Re. 32,355, Cl. 241-300.000.
Wang, Cheng C. Portable multi-function manicure apparatus. Re. 32,352, Cl. 132-73.600.
Warren, Kenneth D.; and Tenold, Gregory G., to Portec, Inc. Impeller shoe assembly. Re. 32,355, Cl. 241-300.000.
Yamauchi, Kazuo: See—
Nagao, Syuji; Nakai, Ryoichi; and Yamauchi, Kazuo, Re. 32,357, Cl. 364-449.000.

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- Abbott Laboratories: See—
Larkin, Mark E.; and Tripp, Edward S., 288,365, Cl. D24-56.000.
Acufex Microsurgical, Inc.: See—
Lichtman, Philip R., 288,361, Cl. D24-30.000.
Adams, Steven. Wrist support. 288,372, 2-17-87, Cl. D29-20.000.
Akagawa, Masaki: See—
Kobayashi, Osamu; Akagawa, Masaki; and Hayashi, Hiroshi, 288,377, Cl. D99-28.000.
Kobayashi, Osamu; Akagawa, Masaki; and Hayashi, Hiroshi, 288,378, Cl. D99-28.000.
Akerlund, John R., to ScandCourier. Hoist cage for use in diving. 288,376, 2-17-87, Cl. D34-35.000.
Aktiebolaget Volvo: See—
Sandberg, Ulf A., 288,313, Cl. D12-211.000.
Alanis, J. Jesus, to Alopex Industries, Inc. Filter bag. 288,373, 2-17-87, Cl. D32-31.000.
Alopex Industries, Inc.: See—
Alanis, J. Jesus, 288,373, Cl. D32-31.000.
Amada Company, Limited: See—
Mano, Kenji, 288,326, Cl. D15-123.000.
American Commercial, Incorporated: See—
Laslo, Larry R., 288,269, Cl. D7-5.000.
Winterling, Alfred, 288,270, Cl. D7-9.000.
American Hospital Supply Corporation: See—
McCord, Kenneth R., 288,364, Cl. D24-53.000.
Anderson, Belinda H.; and Anderson, Thomas E. Disposable baby bib. 288,260, 2-17-87, Cl. D2-229.000.
Anderson, Thomas E.: See—
Anderson, Belinda H.; and Anderson, Thomas E., 288,260, Cl. D2-229.000.
Andrews MacLaren Limited: See—
Brewster, Alan R., 288,306, Cl. D12-129.000.
Angle, Steve R. Combined patch for damaged walls and door bumper. 288,290, 2-17-87, Cl. D8-400.000.
Angle, Steve R. Combined patch for damaged walls and door bumper. 288,291, 2-17-87, Cl. D8-400.000.
Anton, Christian: See—
Arnoux, Daniel; Anton, Christian; and Genter, Claude, 288,301, Cl. D10-79.000.
Aquino, Salvatore A. Dual compartment carton. 288,292, 2-17-87, Cl. D9-346.000.
Armorgard Products Company: See—
Stollman, Irving V., 288,367, Cl. D25-53.000.
Arnoux, Daniel; Anton, Christian; and Genter, Claude, to Construction d'Appareillage. Clamp-on current probe. 288,301, 2-17-87, Cl. D10-79.000.
Arvans, Robert S., to Polycon Industries, Inc. Handled dispensing container. 288,293, 2-17-87, Cl. D9-370.000.
ASICS Corporation: See—
Yokoishi, Hiromi, 288,262, Cl. D2-317.000.
Auld, Douglas. Game board. 288,339, 2-17-87, Cl. D21-34.000.
Baldwin, Steve, to Baldwin, Steve. Game board. 288,338, 2-17-87, Cl. D21-20.000.
Barrett, Keith, to Dart Industries Inc. Parts manipulator. 288,329, 2-17-87, Cl. D15-199.000.
Becker, Ralph R., to Owens-Illinois, Inc. Goblet or similar article. 288,271, 2-17-87, Cl. D7-13.000.
Black & Decker, Inc.: See—
Lacher, Vernon R.; Gogoll, Thornton H.; and McCloskey, Don R., 288,371, Cl. D26-50.000.
Brewster, Alan R., to Andrews MacLaren Limited. Stroller. 288,306, 2-17-87, Cl. D12-129.000.
Bridgestone Corporation: See—
Takenoya, Masato; and Nishio, Hideaki, 288,308, Cl. D12-146.000.
Bright, Stephen A. Handle or similar article. 288,278, 2-17-87, Cl. D8-107.000.
Brock, James E.: See—
Hentschel, Walter G.; Brock, James E.; and Norcross, David R., 288,288, Cl. D8-380.000.
Bumgardner, Donald L.: See—
Ryan, Desmond J.; Bumgardner, Donald L.; and Juziuk, Jurgen A., 288,323, Cl. D14-106.000.
Calzado Puma, S.A. de C.V.: See—
Palacio, Jorge E. M., 288,261, Cl. D2-309.000.
Campbell, Duncan F., to Reed Inc. Merchandizing rack module. 288,266, 2-17-87, Cl. D6-462.000.
Canon Kabushiki Kaisha: See—
Kojima, Tatsuo, 288,330, Cl. D16-11.000.
Kojima, Tatsuo, 288,333, Cl. D16-28.000.
Carroll, J. Frank; and Williamson, Edward M. Technical pen adapter. 288,336, 2-17-87, Cl. D19-54.000.
Chan, Raymond, to Integrated Display Technology Limited. Stop-watch. 288,297, 2-17-87, Cl. D10-30.000.
Chesnut, M. Gaines. Firearm magazine release mechanism. 288,279, 2-17-87, Cl. D8-349.000.
Citizen Watch Co., Ltd.: See—
Ohtsu, Yutaka, 288,321, Cl. D14-77.000.
Collis, John S., Jr. Surgical reamer. 288,360, 2-17-87, Cl. D24-28.000.
Colson Castors (Europe) Limited: See—
Screen, Stafford T., 288,286, Cl. D8-375.000.
Screen, Stafford T., 288,287, Cl. D8-375.000.

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- Construction d'Appareillage: See—
Arnoux, Daniel; Anton, Christian; and Genter, Claude, 288,301, Cl. D10-79.000.
Cooper, Robert G.: See—
Proctor, Robert H.; and Cooper, Robert G., 288,327, Cl. D15-123.000.
Courtemanche, Richard; and McCormack, Timothy D. Hook implement for holding disposable receptacle liners. 288,284, 2-17-87, Cl. D8-373.000.
Courtwright, Lorraine M.; and Freeland, Roberta A. Roll type case or similar article. 288,264, 2-17-87, Cl. D3-75.000.
Crane Co.: See—
Smith, Vance, 288,351, Cl. D23-58.000.
Smith, Vance, 288,352, Cl. D23-58.000.
Smith, Vance, 288,353, Cl. D23-58.000.
Smith, Vance, 288,354, Cl. D23-58.000.
Smith, Vance, 288,355, Cl. D23-70.000.
Dacor Corporation: See—
Walsh, Mark L., 288,346, Cl. D21-238.000.
Dair, Thomas: See—
Stowell, Davin; Viemeister, Tucker; and Dair, Thomas, 288,277, Cl. D8-36.000.
Dart Industries Inc.: See—
Barrett, Keith, 288,329, Cl. D15-199.000.
Davis, Lee W.; Doughty, Kenneth L.; and Hollingsworth, James S., III. Vertical pump. 288,325, 2-17-87, Cl. D15-7.000.
Daystar, Inc.: See—
Goodman, C. Richard; and Sexton, Yancey D., 288,322, Cl. D14-90.000.
Diamond, Harvey E. Bathtub. 288,350, 2-17-87, Cl. D23-55.000.
Doughty, Kenneth L.: See—
Davis, Lee W.; Doughty, Kenneth L.; and Hollingsworth, James S., III, 288,325, Cl. D15-7.000.
Durham, Bobbie. Football bed covering. 288,268, 2-17-87, Cl. D6-603.000.
Envall, Bjorn E. A.; and Ohlsson, Dick O., to Saab-Scania Aktiebolag. Exterior door panel for an automobile. 288,303, 2-17-87, Cl. D12-196.000.
Envall, Bjorn E. A., to Saab-Scania Aktiebolag. Wheel cover. 288,312, 2-17-87, Cl. D12-210.000.
Etablissements Renault: See—
Regnault, Pierre, 288,335, Cl. D19-49.000.
Ford Motor Company: See—
Stoddard, John; and Grinyer, Clive, 288,316, Cl. D14-5.000.
Freeland, Roberta A.: See—
Courtwright, Lorraine M.; and Freeland, Roberta A., 288,264, Cl. D3-75.000.
Garcia, Juan M., to Saab-Scania Aktiebolag. Central muffler. 288,311, 2-17-87, Cl. D12-194.000.
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Ginsberg, Murray: See—
Van Buren, John M.; Houdek, Pavel; and Ginsberg, Murray, 288,368, Cl. D24-1.100.
Gogoll, Thornton H.: See—
Lacher, Vernon R.; Gogoll, Thornton H.; and McCloskey, Don R., 288,371, Cl. D26-50.000.
Goodman, C. Richard; and Sexton, Yancey D., to Daystar, Inc. Microwave down converter. 288,322, 2-17-87, Cl. D14-90.000.
Gould, Gertrude R. Food support. 288,273, 2-17-87, Cl. D7-76.000.
Grinyer, Clive: See—
Stoddard, John; and Grinyer, Clive, 288,316, Cl. D14-5.000.
Grun, Otto. Botanical sculpture or similar article. 288,304, 2-17-87, Cl. D11-131.000.
GTI Graphic Technology, Inc.: See—
McCurdy, Frederic, 288,332, Cl. D16-26.000.
Hans Rinninger u. Sohn GmbH u. Co.: See—
Rinninger, Hans J., 288,370, Cl. D25-80.000.
Harney, Eugene U. Carrier for large flat sheets of building materials. 288,276, 2-17-87, Cl. D8-14.000.
Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Garden shear. 288,275, 2-17-87, Cl. D8-5.000.
Hayashi, Hiroshi: See—
Kobayashi, Osamu; Akagawa, Masaki; and Hayashi, Hiroshi, 288,377, Cl. D99-28.000.
Kobayashi, Osamu; Akagawa, Masaki; and Hayashi, Hiroshi, 288,378, Cl. D99-28.000.
Hentschel, Walter G.; Brock, James E.; and Norcross, David R., to TECO Products & Testing Corporation. Step support bracket. 288,288, 2-17-87, Cl. D8-380.000.
Herring, John B.; and Herring, Valerie P. Game board. 288,340, 2-17-87, Cl. D21-35.000.
Herring, Valerie P.: See—
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Hoff, Patrick E. Monopolar electrosurgical device with dual 360° hand switch. 288,359, 2-17-87, Cl. D24-28.000.
Holden, M. James, to Mobil Oil Corporation. Packaging tray. 288,295, 2-17-87, Cl. D9-425.000.
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Houdek, Pavel: See—
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Howlett, Leon, to Kiwong Pty. Limited. Float vent valve. 288,349, 2-17-87, Cl. D23-19.000.
Hug, James M. Lubrication service building. 288,366, 2-17-87, Cl. D25-34.000.
Huldt, Johan, to Innovator Design AB. Cart. 288,331, 2-17-87, Cl. D34-21.000.
Ikeda, Gilbert N. Drainer tray. 288,374, 2-17-87, Cl. D32-56.000.
Imanishi Kinzoku Kogyo Kabushiki Kaisha: See—
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Yuen, John S., 288,318, Cl. D14-57.000.
Juziuk, Jurgen A.: See—
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Kabushiki Kaisha Nippon Coinco: See—
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Kang, Eui C. Tape measure. 288,300, 2-17-87, Cl. D10-72.000.
Kembo B.V.: See—
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Kiwong Pty. Limited: See—
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- Yoshida, Eiichi. African violet (variety—Eileen). 5,884, 2-17-87, Cl. 69.000.
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269	4,642,860	CLASS 47	187	4,642,997	30	4,643,055	CLASS 110		76 R	4,643,173
CLASS 29		1.5	440	4,642,999	36 A	4,643,056	80 C		79	4,643,175
38 A	4,642,861	2	467	4,643,000	36 R	4,643,057	228	4,643,108	84 C	4,643,177
132	4,642,862	14	514 JT	4,643,001	CLASS 82		229	4,643,109	92 YD	4,643,178
156.8 B	4,642,863	44	525	4,643,002	30	4,643,055	234	4,643,110	156	4,643,179
157.3 R	4,642,864	CLASS 48	2	4,643,750	23	4,643,058	CLASS 112			4,643,181
243.56	4,642,865	CLASS 49	3.12	4,643,751	162	4,643,059	121.22	4,643,115	201.25	4,643,182
259	4,642,866	CLASS 51	3.15	4,643,752	171	4,643,060	185	4,643,112	204.17	4,643,183
423	4,642,867	100 R	21.3	4,643,753	174.1	4,643,061	199	4,643,113	303 R	4,643,184
429	4,642,868				285	4,643,062	240	4,643,114		4,643,185
432.2	4,642,869				311	4,643,063	315	4,643,115	303.1	4,643,186
509	4,642,870				522	4,643,064	318	4,643,116	303.15	4,643,187
513	4,642,871						421	4,643,117	314	4,643,188
564.6	4,642,872						466	4,643,118	321	4,643,189
566.3	4,642,873							4,643,119	324	4,643,190
566.4	4,642,874							4,643,120	335.5	4,643,191
568	4,642,875							4,643,121	632	4,643,192
570	4,642,876								639	4,643,193
571	Re.32.351								668	4,643,194
	4,642,877									
	4,642,878									

740	4,643,195	358	4,643,802	812	4,643,299	501	4,644,138		153	4,643,411
753	4,643,196			842	4,643,300	522	4,644,139			
762	4,643,197	CLASS 164				535	4,644,140	201	CLASS 250	CLASS 271
763	4,643,198	20	4,643,240		CLASS 200	543	4,644,141		4,644,145	4,643,412
	4,643,199	101	4,643,241	5 R	4,644,110				4,644,148	94
	4,643,200	153	4,643,242	8 A	4,644,111				4,644,160	95
786	4,643,201	260	4,643,243	16 F	4,644,112	15	4,643,322	202	4,644,146	183
	4,643,202			17 R	4,644,113	72	4,643,323	221	4,644,147	268
		CLASS 165		50 C	4,644,114	88 R	4,643,324	223 B	4,644,151	CLASS 272
		1	4,643,244	67 D	4,644,115	91	4,643,325	223 R	4,644,150	38
94	4,643,203	47	4,643,245	83 R	4,644,116	94 R	4,643,326		4,644,152	67
231	4,643,204	54	4,643,246	84 R	4,644,117	215	4,643,327	225	4,644,153	69
275	4,643,205	76	4,643,247	144 R	4,644,118	256	4,643,328	227	4,644,154	73
336	4,643,206	95	4,643,248		4,644,119	257	4,643,329		4,644,155	140
		159	4,643,249	153 G	4,644,120	288	4,643,330	231 SE	4,644,156	CLASS 273
			4,643,250		4,644,121	324	4,643,331		4,644,157	1 E
73.6	Re.32,352				4,644,122	327	4,643,332		4,644,158	1.5 R
	4,643,207	77.5	4,643,259			345	4,643,333	239	4,644,159	26 A
88.5	4,643,208	263	4,643,252	CLASS 201	4,643,803			296	4,644,161	60 B
		274	4,643,253	I		63	4,643,334	340	4,644,162	142 B
		292	4,643,254	CLASS 204				341	4,644,163	145 R
1	4,643,274	295	4,643,255		4,643,804			353	4,644,164	160
15	4,643,275	303	4,643,256		4,643,805	81	Re.32,354	372	4,644,165	166
21	4,643,276	305	4,643,257		4,643,806	135	4,643,335		4,644,166	243
123	4,643,209	369	4,643,258	59 R	4,643,807	145	4,643,336	374	4,644,167	251
				98	4,643,808	214	4,643,337	398	4,644,168	252
20 B	4,643,210	46	4,643,260	155	4,643,809	321	4,643,338	492.2	4,644,170	260
67	4,643,211			157.3	4,643,810	607	4,643,339	518.1	4,644,171	402
		2	4,643,261	157.61	4,643,812			548	4,644,172	408
				157.78	4,643,813			554	4,644,173	422
259	4,644,091			157.8	4,643,811	40	4,643,340	559	4,644,174	CLASS 277
		CLASS 137		180.1	4,643,814	101	4,643,341	561	4,644,175	1
1	4,643,212	149	4,643,262	180.2	4,643,815			572	4,644,176	28
10	4,643,213	168	4,643,263	228	4,643,816			577	4,644,177	81 P
12	4,643,214			242	4,643,817	42.42	4,643,342	578	4,644,178	95
15	4,643,215	36	4,644,092	253	4,643,818	275	4,643,343		4,643,339	117
68.1	4,643,216		4,644,093	269	4,643,819				4,643,340	
112	4,643,217	47	4,644,094	CLASS 206		112	4,643,344	10	4,643,389	CLASS 280
237	4,643,218	50	4,644,095		4,643,301	156	4,643,345	63.6	4,643,390	5 R
454.6	4,643,219	52 H	4,644,096		4,643,302			85	4,643,391	461 A
516.13	4,643,220	102 R	4,644,097	315.1	4,643,303			89	4,643,392	491 R
516.29	4,643,221	115	4,644,098	370	4,643,304	155	4,643,346	129.01	4,643,393	606
528	4,643,222	117 F	4,644,099	387	4,643,305	208	4,643,347	129.08	4,643,394	644
554	4,643,223			388	4,643,306	223	4,643,348	172	4,643,395	648
559	4,643,224			425	4,643,307				4,643,396	712
596.17	4,643,225	61	4,643,264	443	4,643,308	8	4,643,349	8.511	4,643,337	808
625.33	4,643,226	226	4,643,265	444	4,643,309			52 R	4,643,838	CLASS 283
625.38	4,643,227			484	4,643,310			75	4,643,839	
625.66	4,643,228	169	4,643,266	506	4,643,311	101	4,644,142	160	4,643,840	46
		190	4,643,267	518	4,643,312	462	4,644,143	299.61	4,643,841	56
				504	4,643,313	487	4,644,144	299.67	4,643,842	62
109	4,643,229	18	4,644,100	533	4,643,314			299.67	4,643,843	73
		19	4,644,101	600	4,643,315			522 R	4,643,844	74
			4,644,102	620		12.12	4,643,350	626	4,643,845	81
		CLASS 139		CLASS 208		44 E	4,643,351		4,643,846	CLASS 285
1 B	4,643,230			4,643,820		48 R	4,643,352			
66 R	4,643,231			4,643,821		49	4,643,353			
92	4,643,232									
435	4,643,233	2 A	4,644,104	CLASS 209						
		CLASS 140		8	4,643,822					
147	4,643,234	116	4,643,268		4,643,823	1	4,643,354	93 HP	4,643,398	18
		141	4,643,269	166	4,643,824	2.1	4,643,355	116	4,643,396	55
		299	4,643,270	702	4,643,316	13	4,643,356	134.3 FT	4,643,397	62
1.1	4,643,235							250	4,643,374	112
		CLASS 141						386	4,643,399	4,643,461
		CLASS 144								
208 E	4,643,236	210	4,643,271	167	4,643,824	166	4,643,358			
369	4,643,237	260	4,643,272	188	4,643,825	585	4,643,359	52	4,643,400	226
				225	4,643,826	682	4,643,360			233
		CLASS 148		228	4,643,827					236
		2	4,643,273	412	4,643,828	16	4,643,361	97.7	4,643,847	4,643,466
1.5	4,643,277	106	4,643,274	500.33	4,643,829		4,643,362	104	4,643,848	334
6.5 R	4,643,278	107	4,643,275	629	4,643,830	20	4,643,363	410.7	4,643,850	CLASS 292
11.5 A	4,643,279			668	4,643,831	55	4,643,364	544 Y	4,643,851	2
12.7 A	4,643,280			712	4,643,832	101.2	4,643,365			66
127	4,643,281		4,643,276	714	4,643,833	117	4,643,366		4,643,852	216
404	4,643,282			740	4,643,834	300	Re.32,355	93	4,643,853	616
		CLASS 152		754	4,643,835			112	4,643,854	CLASS 293
223	4,643,251	1.11	4,643,277	795	4,643,836					128
		72.7	4,643,278	CLASS 211		7.21	4,643,367			CLASS 294
		79.5 K	4,643,279			25 A	4,643,368			
				14	4,643,317	43.2	4,643,372			94
64	4,643,283			123	4,643,318	47.01	4,643,369			111
98	4,643,284			189	4,643,319	55	4,643,371			
101	4,643,285					86.7	4,643,370			
187	4,643,286			CLASS 212						
196	4,643,287				4,643,320					
203	4,643,288	3.33	4,643,283	180						
219	4,643,289	18 B	4,643,282							
242	4,643,290	50	4,643,284	252	4,643,321	3.19	4,643,373	109	4,643,860	10
251	4,643,291	87.13	4,643,285			52	4,643,374	118	4,643,861	24 R
294	4,643,292	98	4,643,286			159	4,643,375	133	4,643,862	84 K
306.6	4,643,293	106.2	4,643,287			198	4,643,376	219	4,643,863	221
310	4,643,294		4,643,288	68	4,644,123			220	4,643,864	CLASS 297
562	4,643,295		4,643,289	69 G	4,644,125			288.4	4,643,865	184
584	4,643,296		4,643,290	121 ED	4,644,126	1	4,643,377	80	4,643,401	218
603	4,643,297			121 FS	4,644,127		4,643,378	82	4,643,402	458
630	4,643,298			121 LC	4,644,128	49	4,643,379	225	4,643,403	CLASS 299
635	4,643,299			121 LG	4,644,129	97	4,643,380	240	4,643,404	1
		356	4,643,291	121 LC	4,644,129	154	4,643,381			81
		364	4,643,292	121 LJ	4,644,130	178	4,643,382			
		404	Re.32,353	124.34	4,644,131	396	4,643,383			
168 R	4,643,238	497	4,643,293	158	4,644,132	476	4,643,384			
201	4,643,239	498	4,643,294	270	4,644,133	550	4,643,385			
		594	4,643,295	301	4,644,134	632	4,643,386			
		735	4,643,296	370	4,644,135					
		803.01	4,643,297	400	4,644,136					
		805	4,643,298	497	4,644,137	193	4,643,387			
5	4,643,800					219 W	4,643,388			
164.1	4,643,801									

115	4,643,490	65 P	4,644,263	701	4,644,336	77	4,643,563	224	4,644,454	CLASS 371
118	4,643,491	73 R	4,644,264	709	4,644,337			309	4,644,455	
119	4,643,492		4,644,265	717	4,644,338	CLASS 356		376	4,644,456	9
	CLASS 307		4,644,266	731	4,644,339	5	4,643,564			11
10 BP	4,644,179	77 K	4,644,267	749	4,644,340	24	4,643,565	CLASS 363		16
66	4,644,180	83 R	4,644,268	753	4,644,341	152	4,643,567	37	4,644,457	20
246	4,644,182	188 F	4,644,269	762	4,644,342	218	4,643,568	65	4,644,458	22
268	4,644,183	207	4,644,270	785	4,644,344	237	4,643,569	133	4,644,459	37
269	4,644,184	238	4,644,271	825 03	4,644,346	246	4,643,570		CLASS 364	
279	4,644,185	240	4,644,272	825 04	4,644,347	326	4,643,571	171	4,644,460	38
300	4,644,186	244	4,644,273	825 06	4,644,348	334	4,643,572	200	4,644,461	49
303	4,644,187	262	4,644,274	825 25	4,644,349	338	4,643,573		4,644,462	
363	4,644,188	307	4,644,275	825 44	4,644,350	350	4,643,574		4,644,463	CLASS 372
449	4,644,189		4,644,276		4,644,351	351	4,643,575		4,644,464	2
450	4,644,190	309	4,644,277	825 440	4,644,352	353	4,643,576		4,644,465	38
465	4,644,191		4,644,278	825 48	4,644,353	358	4,643,577		4,644,466	2
475	4,644,192		4,644,279	825 83	4,644,354	376	4,643,578		4,644,467	40
490	4,644,193	320	4,644,280	870 27	4,644,354	401	4,643,579		4,644,468	45
518	4,644,195	322	4,644,281	870 36	4,644,355	440	4,643,580		4,644,469	
530	4,644,196	376	4,644,283		CLASS 342	CLASS 357			4,644,470	61
549	4,644,198	397	4,644,284	160	4,644,356	17	4,644,378	300	4,644,471	72
		425	4,644,285	168	4,644,357		4,644,379		4,644,472	97
	CLASS 310		CLASS 329	356	4,644,358	23.3	4,644,380	414	4,644,473	
12	4,644,199	50	4,644,286	379	4,644,359	25	4,644,381	431.05	4,644,474	CLASS 373
43	4,644,200		4,644,287		CLASS 343	35	4,644,382	431.07	4,644,475	22
51	4,644,201			700 MS	4,644,360	42	4,644,383	449	Re.32,357	74
58	4,644,202		CLASS 330		4,644,361	74	4,644,384	513.5	4,644,476	104
67 A	4,644,203	2	4,644,288		4,644,362	82	4,644,385	523	4,644,477	CLASS 374
89	4,644,204	145	4,644,289	767	4,644,363		CLASS 358	550	4,644,478	1
90.5	4,644,205	149	4,644,290	778	4,644,364	21 R	Re.32,358	552	4,644,479	104
115	4,644,206	261	4,644,291	825	4,644,365		4,644,387	557	4,644,480	178
126	4,644,207	279	4,644,292	882	4,644,366	23	4,644,388	569	4,644,481	CLASS 375
166	4,644,208	296	4,644,293	895	CLASS 346	28	4,644,389		4,644,482	
198	4,644,209	298	4,644,294		33 D	50	4,644,390		4,644,483	1
211	4,644,210	301	4,644,295		33 R	75	4,644,391	570	4,644,484	9
266	4,644,211		CLASS 331		75	4,644,369	4,644,392	578	4,644,485	14
317	4,644,212		4,644,296	76 PH	4,644,370	84	4,644,393	724	4,644,486	17
328	4,644,213	1 R	4,644,297		4,644,371	101	4,644,394	736	4,644,487	18
334	4,644,214	17	4,644,298		4,644,372	111	4,644,395	748	4,644,488	17
367	4,644,215	65	4,644,299		4,644,373	126	4,644,396	784	4,644,489	60
	CLASS 312	78	4,644,300	159	4,644,374	140	4,644,398	900	4,644,490	94
7.2	4,643,493	111		209	4,644,375	142	4,644,399		4,644,491	108
111	4,643,494		CLASS 333		4,644,376	149	4,644,400		4,644,492	118
268	4,643,495	101	4,644,301	215	4,644,377	183	4,644,401		4,644,493	CLASS 376
299	4,643,496	125	4,644,302	221	4,644,377	213	4,644,402		4,644,494	
	CLASS 313	134	4,644,303		CLASS 350		4,644,403		4,644,495	245
25	4,644,216	208	4,644,304	3.6	4,643,514		4,644,404		4,644,496	248
35	4,644,217	214	4,644,305	3.67	4,643,515		4,644,405		4,644,497	262
120	4,644,218		4,644,306	6.5	4,643,516		4,644,406		4,644,498	282
270	4,644,219		CLASS 335	6.6	4,643,517	242	4,644,407		4,644,499	272
318	4,644,220	16	4,644,307	6.8	4,643,518	254	4,644,408	189	4,644,500	280
373	4,644,221	128	4,644,308	96.19	4,643,519	256	4,644,409	203	4,644,501	286
406	4,644,222	195	4,644,309	96.20	4,643,520	282	4,644,410	219	4,644,502	292
487	4,644,223	215	4,644,310		4,643,521	294	4,644,411	230	4,644,503	17
634	4,644,224	230	4,644,311	255	4,643,522	335	4,644,412		4,644,504	56
	CLASS 315	236	4,644,312	319	4,643,523				4,644,505	60
39.51	4,644,225	296	4,644,313	320	4,643,524		CLASS 360	CLASS 366		CLASS 378
50	4,644,226		CLASS 336		4,643,525	10.2	4,644,413	76	4,643,581	
96	4,644,227		331 R		4,643,526		4,644,414	102	4,643,582	15
242	4,644,228	58	4,644,314	332	4,643,527	10.3	4,644,415	149	4,643,583	58
310	4,644,229		CLASS 338		4,643,528		4,644,416	337	4,643,584	99
382	4,644,230		334		4,643,529	26	4,644,417		4,644,576	119
383	4,644,231	2	4,644,315	337 R	4,643,530	39	4,644,418		4,644,577	133
	CLASS 318	22 R	4,644,316	341	4,643,531	46	4,644,419	15	4,644,578	146
66	4,644,232		CLASS 339		4,643,532	61	4,644,420	19	4,644,506	CLASS 379
254	4,644,233	17 CF	4,643,499	350 S	4,643,533	60	4,644,421	23	4,644,507	
282	4,644,235	30	4,643,497		4,643,534	61	4,644,422	27	4,644,508	27
309	4,644,236	17 M	4,643,498		4,643,535	65	4,644,423	87	4,644,509	42
313	4,644,237	30	4,643,500	403	4,643,536	66	4,644,424		4,644,510	56
332	4,644,238	35	4,643,501	421	4,643,537	69	4,644,425	101	4,644,511	375
641	4,644,239	36	4,643,502	438	4,643,538	71	4,644,426	108	4,644,512	388
768	4,644,240	50 R	4,643,503	440	4,643,539	98	4,644,427		4,644,513	406
771	4,644,241	51	4,643,504	502	4,643,540	105	4,644,428		CLASS 368	CLASS 380
807	4,644,242	94 M	4,643,506	522	4,643,541	109	4,644,429		4,643,585	6
	4,644,243	97 P	4,643,507	562	4,643,542	113	4,644,430	9		
		147 R	4,643,508	609	4,643,543	122	4,644,431		CLASS 369	CLASS 381
	CLASS 320		4,643,509	615	4,643,544	123	4,644,432	32	4,644,514	4
4	4,644,244	176 R	4,643,510	618	4,643,545	132	4,644,433		4,644,515	74
13	4,644,245	231	4,643,511		CLASS 351	133	4,644,434		4,644,516	
21	4,644,246	248 R	4,643,512	205	4,643,546	137	4,644,435	43	4,644,517	CLASS 382
39	4,644,247	254 R	4,643,513	205	4,643,547		4,644,436	134	4,644,518	6
	CLASS 323		CLASS 340		CLASS 352	56	4,644,437	146	4,644,519	4
205	4,644,248	58	4,644,317	216	4,643,548	75	4,644,438	275	4,644,520	22
223	4,644,249	73	4,644,318		CLASS 354	87	4,644,439	284	4,644,521	34
235	4,644,250	310 A	4,644,320	64	4,643,549	111	4,644,440	291		48
267	4,644,251		4,644,321	79	4,643,550	120	4,644,441		CLASS 370	CLASS 383
273	4,644,252	347 AD	4,644,322	137	4,643,551	341	4,644,442	18	4,644,522	102
277	4,644,253	347 DA	4,644,324	212	4,643,552	384	4,644,443	29	4,644,523	
275	4,644,253		4,644,325	234 I	4,643,553	388	4,644,444		4,644,524	8
282	4,644,254	347 NT	4,644,323	403	4,643,554	398	4,644,445	30	4,644,525	400
299	4,644,255	365 R	4,644,326	406	4,643,555	433	4,644,446	58	4,644,526	144
313	4,644,257	384 E	4,644,327		4,643,556				4,644,527	371
324	4,644,258	539	4,644,328		4,643,557			60	4,644,528	478
	CLASS 324	556	4,644,329	484	4,643,558	61	4,644,447	62	4,644,529	503
51	4,644,259	575	4,644,330		CLASS 355	66	4,644,448	77	4,644,530	CLASS 400
58 B	4,644,260	587	4,644,331		3 R	80	4,644,449	94	4,644,531	
61 R	4,644,261	624	4,644,332			147	4,644,450	95	4,644,532	121
62	4,644,262	634	4,644,333		14 D	189	4,644,451	99	4,644,533	124
		679	4,644,334			214	4,644,452	100	4,644,534	
		683	4,644,335	16	4,643,562	223	4,644,453	119	4,644,535	157.2

CLASSIFICATION OF PATENTS

216.1	4,643,601			317	4,643,975	338	4,644,005		
354	4,643,602					362	4,644,006	CLASS 546	
616.1	4,643,603					392	4,644,007	85	4,644,062
		CLASS 401				412	4,644,008	209	4,644,063
131	4,643,604					423	4,644,009		
243	4,643,605						4,644,010	CLASS 548	
		CLASS 403				456	4,644,011	241	4,644,064
24	4,643,606						4,644,012	251	4,644,065
194	4,643,607						4,644,013	462	4,644,066
225	4,643,608						4,644,014	481	4,644,067
369	4,643,609						4,644,015	603	4,644,068
407.1	4,643,610						4,644,016	5	4,644,069
		CLASS 404					4,644,017	9	4,644,070
133	4,643,611						4,644,018	13	4,644,071
		CLASS 405					4,644,019	214	4,644,072
60	4,643,612						4,644,020	261	4,644,073
161	4,643,613						4,644,021	399	4,644,074
169	4,643,614						4,644,022	417	4,644,075
175	4,643,615						4,644,023	433	4,644,076
191	4,643,616						4,644,024	440	4,644,077
222	4,643,617						4,644,025	457	4,644,078
287	4,643,618						4,644,026	479	4,644,079
303	4,643,619						4,644,027	497	4,644,080
		CLASS 407					4,644,028	501	4,644,081
119	4,643,620						4,644,029	549	4,644,082
		CLASS 408					4,644,030	590	4,644,083
57	4,643,621						4,644,031	599	4,644,084
		CLASS 409					4,644,032	601	4,644,085
84	4,643,622						4,644,033	603	4,644,086
232	4,643,623						4,644,034	604	4,644,087
		CLASS 414					4,644,035	605	4,644,088
22	4,643,624						4,644,036	606	4,644,089
24.5	4,643,625						4,644,037	607	4,644,090
103	4,643,626						4,644,038	608	4,643,711
217	4,643,627						4,644,039	609	4,643,712
279	4,643,628						4,644,040	610	4,643,713
331	4,643,629						4,644,041	611	4,643,714
589	4,643,630						4,644,042	612	4,643,715
723	4,643,631						4,644,043	613	4,643,716
730	4,643,632						4,644,044	614	4,643,717
732	4,643,633						4,644,045	615	4,643,718
749	4,643,634						4,644,046	616	4,643,719
		CLASS 415					4,644,047	617	4,643,720
1	4,643,635						4,644,048	618	4,643,721
122 R	4,643,637						4,644,049	619	4,643,722
136	4,643,638						4,644,050	620	4,643,723
138	4,643,639						4,644,051	621	4,643,724
148	4,643,640						4,644,052	622	4,643,725
164	4,643,641						4,644,053	623	4,643,726
170 A	4,643,642						4,644,054	624	4,643,727
		CLASS 416					4,644,055	625	4,643,728
90 A	4,643,643						4,644,056	626	4,643,729
154	4,643,644						4,644,057	627	4,643,730
174	4,643,645						4,644,058	628	4,643,731
190	4,643,646						4,644,059	629	4,643,732
226	4,643,647						4,644,060	630	4,643,733
230	4,643,648						4,644,061	631	4,643,734
241 B	4,643,649						4,644,062	632	4,643,735
		CLASS 417					4,644,063	633	4,643,736
45	4,643,650						4,644,064	634	4,643,737
90	4,643,651						4,644,065	635	4,643,738
265	4,643,652						4,644,066	636	4,643,739
364	4,643,653						4,644,067	637	4,643,740
417	4,643,654						4,644,068	638	4,643,741
		CLASS 418					4,644,069	639	4,643,742
201	4,643,655						4,644,070	640	4,643,743
		CLASS 419					4,644,071	641	4,643,744
33	4,643,673						4,644,072	642	4,643,745

CLASSIFICATION OF DESIGNS

D2—	229	288,260	354	288,280	72	288,300	72	288,320	131	288,341	288,360
	309	288,261	373	288,281	79	288,301	77	288,321	132	288,342	288,361
	317	288,262		288,282	90	288,302	90	288,322	144	288,343	288,362
D3—	56	288,263		288,283	131	288,304	106	288,323	150	288,344	288,363
	75	288,264		288,284	114	288,305	111	288,324	191	288,345	288,364
D6—	375	288,265	375	288,285	129	288,306	129	288,325	238	288,346	288,365
	462	288,266		288,286	146	288,307	146	288,326	288,347	288,366	
	481	288,267		288,287	191	288,308	191	288,327	288,348	288,367	
	603	288,268	380	288,288	194	288,309	194	288,328	288,349	288,368	
D7—	5	288,269		288,289	211	288,310	211	288,329	288,350	288,369	
	9	288,270	400	288,290	216	288,311	216	288,330	288,351	288,370	
	13	288,271		288,291	217	288,312	217	288,331	288,352	288,371	
	47	288,272	D9—	346	288,292	218	288,313	218	288,332	288,372	
	76	288,273		370	288,293	219	288,314	219	288,333	288,373	
	348	288,274		408	288,294	220	288,315	220	288,334	288,374	
D8—	5	288,275		425	288,295	32	288,316	32	288,335	288,375	
	14	288,276	D10—	30	288,296	52	288,317	52	288,336	288,376	
	36	288,277		288,297	57	288,318	57	288,337	288,377	288,378	
	107	288,278		288,298	58	288,319	58	288,338	288,379	288,380	
	349	288,279		288,299							

CLASSIFICATION OF PLANTS

P.—	7	5,880	49	5,882	69	5,883	5,884	5,885	74	5,886
	9	5,881								

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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,642,983	4,643,188	4,644,066	4,643,047	4,643,055
	4,643,026	4,643,194	4,644,107	4,643,357	4,643,079
	4,643,236	4,643,208	4,644,142	4,643,384	4,643,124
	4,643,267	4,643,217	4,644,168	4,643,538	4,643,140
	4,643,300	4,643,229	4,644,169	4,643,714	4,643,149
	4,643,456	4,643,234	4,644,172	4,643,727	4,643,193
	4,643,466	4,643,255	4,644,186	4,644,263	4,643,212
	4,643,988	4,643,306	4,644,193	4,644,521	4,643,240
	4,644,234	4,643,316	4,644,202	4,642,950	4,643,249
04 :	4,642,929	4,643,327	4,644,203	4,642,993	4,643,250
	4,643,096	4,643,377	4,644,207	4,643,585	4,643,272
	4,643,166	4,643,378	4,644,208	4,643,083	4,643,279
	4,643,274	4,643,380	4,644,210	4,643,089	4,643,285
	4,643,280	4,643,389	4,644,220	4,643,090	4,643,290
	4,643,313	4,643,391	4,644,252	4,643,111	4,643,293
	4,643,332	4,643,409	4,644,289	4,643,123	4,643,325
	4,643,420	4,643,452	4,644,299	4,643,370	4,643,326
	4,643,427	4,643,453	4,644,304	4,643,472	4,643,381
	4,643,569	4,643,462	4,644,326	4,643,622	4,643,417
	4,643,716	4,643,468	4,644,339	4,643,635	4,643,421
	4,643,910	4,643,471	4,644,353	4,643,636	4,643,436
	4,644,136	4,643,473	4,644,356	4,643,638	4,643,437
	4,644,194	4,643,479	4,644,357	4,643,649	4,643,469
	4,644,297	4,643,500	4,644,364	4,643,852	4,643,476
	4,644,303	4,643,533	4,644,366	4,643,881	4,643,496
	4,644,325	4,643,618	4,644,373	4,643,956	4,643,514
	4,644,540	4,643,640	4,644,384	4,644,005	4,643,520
05 :	4,644,295	4,643,676	4,644,390	4,644,094	4,643,571
06 :	Re.32,354	4,643,679	4,644,399	4,644,099	4,643,598
	4,642,855	4,643,719	4,644,401	4,644,129	4,643,634
	4,642,863	4,643,731	4,644,409	4,644,164	4,643,639
	4,642,864	4,643,734	4,644,410	4,644,543	4,643,667
	4,642,894	4,643,762	4,644,420	4,644,328	4,643,713
	4,642,931	4,643,764	4,644,422	4,644,348	4,643,773
	4,642,935	4,643,792	4,644,429	4,644,456	4,643,791
	4,642,947	4,643,817	4,644,430	4,644,578	4,643,801
	4,642,963	4,643,838	4,644,432	4,643,812	4,643,812
	4,642,977	4,643,854	4,644,449	4,643,835	4,643,835
	4,642,988	4,643,870	4,644,454	4,643,899	4,643,945
	4,643,005	4,643,875	4,644,461	4,643,954	4,644,098
	4,643,015	4,643,879	4,644,463	4,643,955	4,644,134
	4,643,025	4,643,900	4,644,486	4,643,958	4,644,523
	4,643,067	4,643,908	4,644,488	4,643,847	4,644,022
	4,643,069	4,643,924	4,644,495	4,644,055	4,644,027
	4,643,072	4,643,935	4,644,504	4,644,060	4,644,038
	4,643,104	4,643,948	4,644,515	4,644,378	4,644,047
	4,643,133	4,643,967	4,644,526	4,643,545	4,644,071
	4,643,155	4,643,970	4,644,542	4,644,003	4,644,078
	4,643,162	4,643,976	4,644,554	4,642,820	4,644,100
	4,643,168	4,643,989	4,644,561	4,642,843	4,644,107
	4,643,172	4,643,992	4,644,569	4,642,893	4,644,128
	4,643,176	4,644,039	4,642,923	4,642,938	4,644,221
	4,643,185	4,644,065	4,643,019	4,642,956	4,644,251
				4,643,013	4,644,323

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

18	4,644,451 4,644,452 4,644,459 4,644,472 4,644,485 4,644,527 4,644,528 4,644,568 4,642,934 4,642,992 4,642,999 4,643,012 4,643,161 4,643,218 4,643,239 4,643,321 4,643,354 4,643,426 4,643,631 4,643,699 4,643,711 4,643,758 4,643,767 4,643,883 4,643,975 4,643,987 4,644,230 4,644,231 4,644,288 4,644,354 4,644,387 4,644,408 4,642,815 4,643,159 4,643,423 4,643,167 4,643,441 4,643,511 4,643,836 4,643,973 21 : 4,643,010 4,643,204 4,643,206 4,643,375 4,643,386 4,643,513 4,643,523 4,643,547 4,643,663 4,643,861 4,643,991 4,644,105 22 : 4,644,423 4,643,253 4,643,259 4,643,399 4,643,467 4,643,612 4,643,940 23 : 4,642,911 4,642,915 4,644,249 4,642,842 4,643,302 4,643,413 4,643,463 4,643,806 4,644,306 4,644,348 4,644,556 4,642,829 4,642,914 4,642,917 4,643,052 4,643,164 4,643,275 4,643,343 4,643,362 4,643,428 4,643,575 4,643,584 4,643,692 4,643,718 4,643,720 4,643,814 4,643,826 4,643,856 4,643,920 4,643,968 4,644,026 4,644,037 4,644,075 4,644,177 4,644,253 4,644,269 4,644,290 4,644,296 4,644,476 4,644,484 4,644,489 4,644,529 4,644,549 4,644,581 26 : 4,642,824 4,642,853 4,642,859	4,642,861 4,642,885 4,642,896 4,642,900 4,642,903 4,642,907 4,642,908 4,642,941 4,642,953 4,643,017 4,643,023 4,643,032 4,643,038 4,643,041 4,643,074 4,643,126 4,643,134 4,643,142 4,643,192 4,643,216 4,643,269 4,643,283 4,643,287 4,643,314 4,643,337 4,643,350 4,643,352 4,643,359 4,643,418 4,643,429 4,643,444 4,643,448 4,643,515 4,643,573 4,643,610 4,643,655 4,643,668 4,643,776 4,643,782 4,643,787 4,643,807 4,643,951 4,644,023 4,644,032 4,644,123 4,644,125 4,644,126 4,644,128 4,644,151 4,644,171 4,644,284 4,644,474 4,644,585 4,642,925 4,643,093 4,643,129 4,643,201 4,643,303 4,643,373 4,643,625 4,643,633 4,643,641 4,643,783 4,643,800 4,643,878 4,643,960 4,644,054 4,644,165 4,642,910 4,643,087 4,644,050 4,644,505 29 : 4,642,916 4,643,105 4,643,195 4,643,215 4,643,329 4,643,510 4,643,662 4,644,204 4,644,329 31 : 4,642,961 4,643,110 4,643,443 4,643,447 4,644,345 4,642,949 4,643,439 4,643,525 4,644,102 34 : Re.32,358 Re.32,358 4,642,890 4,642,964 4,643,034 4,643,058 4,643,182 4,643,186 4,643,189 4,643,191 4,643,220 4,643,224 4,643,276 4,643,322 4,643,345	4,643,368 4,643,430 4,643,431 4,643,457 4,643,461 4,643,499 4,643,521 4,643,532 4,643,582 4,643,682 4,643,690 4,643,726 4,643,752 4,643,753 4,643,755 4,643,770 4,643,789 4,643,804 4,643,821 4,643,887 4,643,892 4,643,898 4,643,903 4,643,909 4,643,937 4,643,980 4,644,009 4,644,010 4,644,030 4,644,096 4,644,101 4,644,114 4,644,198 4,644,206 4,644,247 4,644,268 4,644,287 4,644,301 4,644,310 4,644,360 4,644,363 4,644,381 4,644,437 4,644,512 4,644,522 4,644,533 4,644,537 4,644,562 4,644,570 4,644,576 4,642,994 4,643,548 4,642,823 4,642,865 4,642,868 4,642,882 4,642,930 4,642,973 4,643,002 4,643,033 4,643,035 4,643,063 4,643,070 4,643,106 4,643,158 4,643,173 4,643,197 4,643,207 4,643,210 4,643,213 4,643,245 4,643,318 4,643,347 4,643,465 4,643,481 4,643,502 4,643,503 4,643,534 4,643,544 4,643,546 4,643,560 4,643,561 4,643,578 4,643,645 4,643,669 4,643,683 4,643,695 4,643,705 4,643,709 4,643,737 4,643,738 4,643,743 4,643,780 4,643,868 4,643,966 4,643,969 4,643,994 4,643,996 4,644,006 4,644,053 4,644,061 4,644,072 4,644,079 4,644,082 4,644,138 4,644,146	4,644,163 4,644,178 4,644,188 4,644,237 4,644,243 4,644,259 4,644,261 4,644,265 4,644,286 4,644,335 4,644,342 4,644,344 4,644,393 4,644,498 4,644,503 4,644,524 4,644,541 4,644,560 4,644,572 4,642,814 4,642,860 4,642,874 4,642,924 4,642,943 4,643,042 4,643,205 4,644,092 4,644,108 4,644,167 4,644,321 4,644,532 39 : Re.32,356 4,642,876 4,642,933 4,642,946 4,642,960 4,643,016 4,643,122 4,643,184 4,643,221 4,643,243 4,643,258 4,643,271 4,643,284 4,643,301 4,643,310 4,643,330 4,643,341 4,643,433 4,643,446 4,643,474 4,643,528 4,643,537 4,643,589 4,643,606 4,643,608 4,643,665 4,643,688 4,643,701 4,643,750 4,643,781 4,643,794 4,643,815 4,643,816 4,643,904 4,643,905 4,643,907 4,643,918 4,643,919 4,643,925 4,643,927 4,643,949 4,644,015 4,644,049 4,644,052 4,644,117 4,644,131 4,644,162 4,644,173 4,644,200 4,644,227 4,644,267 4,644,271 4,644,272 4,644,274 4,644,369 4,644,453 4,644,558 4,644,573 4,642,873 4,642,976 4,643,334 4,643,342 4,643,823 4,643,880 4,643,888 4,644,020 4,644,073 4,644,089 4,644,090 4,644,255 4,644,427 4,643,050	4,643,065 4,643,160 4,643,165 4,643,222 4,643,542 4,644,095 4,644,320 4,644,337 4,643,256 4,643,264 4,642,841 4,642,856 4,642,866 4,642,872 4,642,889 4,642,895 4,642,919 4,642,926 4,642,932 4,643,001 4,643,014 4,643,029 4,643,031 4,643,080 4,643,148 4,643,247 4,643,251 4,643,337 4,643,349 4,643,353 4,643,363 4,643,401 4,643,402 4,643,493 4,643,501 4,643,506 4,643,507 4,643,509 4,643,637 4,643,652 4,643,658 4,643,666 4,643,697 4,644,535 4,643,722 4,643,761 4,643,778 4,643,785 4,643,825 4,643,834 4,643,867 4,643,884 4,643,894 4,643,961 4,643,592 4,644,018 4,644,035 4,643,694 4,644,040 4,644,059 4,644,074 4,644,081 4,644,193 4,644,119 4,644,221 4,644,120 4,644,121 4,644,122 4,644,248 4,644,270 4,644,273 4,643,261 4,644,380 4,643,294 4,644,440 4,644,547 4,644,566 4,643,178 4,643,410 4,643,775 4,643,454 4,643,862 4,644,045 4,643,119 4,643,132 4,643,367 4,643,543 4,643,926 4,643,943 4,642,845 4,643,209 4,644,244 4,643,912 4,643,056 4,643,060 4,643,108 4,643,141 4,643,397 4,643,332 4,643,432 4,643,466 4,642,836 4,642,854 4,642,877 4,642,909 4,643,936 4,642,957 4,642,958 4,642,982 4,643,051 4,643,053 4,643,054 4,643,097	4,643,163 4,643,175 4,643,180 4,643,181 4,643,222 4,643,228 4,643,252 4,643,331 4,643,390 4,642,841 4,642,856 4,642,866 4,642,872 4,642,889 4,642,895 4,642,919 4,643,624 4,643,724 4,642,932 4,643,001 4,643,014 4,643,029 4,643,031 4,643,080 4,643,148 4,643,247 4,643,251 4,643,337 4,643,349 4,643,353 4,643,363 4,643,401 4,643,402 4,643,493 4,644,196 4,644,197 4,644,260 4,644,283 4,644,285 4,644,394 4,644,443 4,644,464 4,644,478 4,644,508 4,644,535 4,643,455 4,644,185 4,644,195 4,644,293 4,642,847 4,643,073 4,643,199 4,643,200 4,643,519 4,643,592 4,644,035 4,643,694 4,644,040 4,643,809 4,643,830 4,644,074 4,644,081 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DESIGN PATENTS

04 : 288,322	08 : 288,373	17 : 288,293	34 : 288,310	39 : 288,314	50 : 288,291
05 : 288,348	09 : 288,276	21 : 288,346	35 : 288,302	40 : 288,263	51 : 288,351
06 : 288,285	10 : 288,328	22 : 288,365	36 : 288,320	41 : 288,271	52 : 288,352
288,267	11 : 288,359	23 : 288,345	37 : 288,264	42 : 288,278	53 : 288,353
288,305	12 : 288,279	24 : 288,288	38 : 288,269	43 : 288,360	54 : 288,354
288,324	13 : 288,294	25 : 288,327	39 : 288,277	44 : 288,282	55 : 288,355
288,334	14 : 288,299	26 : 288,371	40 : 288,295	45 : 288,325	56 : 288,284
288,337	15 : 288,289	27 : 288,339	41 : 288,296	46 : 288,292	57 : 288,336
288,350	16 : 288,304	28 : 288,361	42 : 288,315	47 : 288,268	58 : 288,338
288,362	17 : 288,368	29 : 288,366	43 : 288,332	48 : 288,260	59 : 288,347
288,364	18 : 288,374	30 : 288,367	44 : 288,332	49 : 288,290	60 : 288,283
288,372	19 : 288,375	31 : 288,309	45 : 288,273		

PLANT PATENTS

06 : 5,883	5,884	5,885	48 : 5,880	5,881	53 : 5,882
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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 24, 1987 Volume 1075 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at \$1.50 each; PLANT PATENTS in color, \$6.00 each; copies of TRADEMARKS at \$1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed as of Nov. 1, 1986 and was announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

International PCT fees were changed due to differences in the exchange rate effective Nov. 1, 1986 and were announced in the *Official Gazette* at 1071 O.G. 22 on Oct. 21, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed:	250.00
European Patent Office as Searching Authority	
All cases:	1015.00
International fees	
Basic fee (first 30 pages):	430.00
Basic Supplemental fee (for each page over 30):	8.00
Designation fee for the first 10 national or regional offices:	105.00
Designation fee for 11th and subsequent designations:	No charge

Sept. 30, 1986.
DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 21, 1984, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,432,099 through 4,433,438
Reissue Patents based on the above identified patents.

1075 OG 28

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . \$ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) \$ 225.00
By other than a small entity \$ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 \$ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) \$ 55.00
By other than a small entity \$ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable \$ 500.00"

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

FEBRUARY 24, 1987

U.S. PATENT AND TRADEMARK OFFICE

1075 OG 29

PATENTS WHICH EXPIRED DECEMBER 7, 1986,
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,361,913	06/250,612	12/7/82
4,361,915	06/222,295	12/7/82
4,361,928	06/279,386	12/7/82
4,361,932	06/293,882	12/7/82
4,361,947	06/236,028	12/7/82
4,361,956	06/225,050	12/7/82
4,361,959	06/254,400	12/7/82
4,361,961	06/257,405	12/7/82
4,361,964	06/240,101	12/7/82
4,361,966	06/220,316	12/7/82
4,361,972	06/289,053	12/7/82
4,361,982	06/229,895	12/7/82
4,362,006	06/271,939	12/7/82
4,362,007	06/276,893	12/7/82
4,362,016	06/241,528	12/7/82
4,362,051	06/232,442	12/7/82
4,362,065	06/309,605	12/7/82
4,362,097	06/221,025	12/7/82
4,362,103	06/241,676	12/7/82
4,362,127	06/274,978	12/7/82
4,362,130	06/266,995	12/7/82
4,362,135	06/262,350	12/7/82
4,362,136	06/341,017	12/7/82
4,362,145	06/219,222	12/7/82
4,362,157	06/235,768	12/7/82
4,362,182	06/225,081	12/7/82
4,362,197	06/228,131	12/7/82
4,362,202	06/249,024	12/7/82
4,362,205	06/230,455	12/7/82
4,362,240	06/243,726	12/7/82
4,362,243	06/281,013	12/7/82
4,362,265	06/259,652	12/7/82
4,362,266	06/239,311	12/7/82
4,362,278	06/236,736	12/7/82
4,362,292	06/242,913	12/7/82
4,362,299	06/239,421	12/7/82
4,362,314	06/243,029	12/7/82
4,362,326	06/230,922	12/7/82
4,362,338	06/233,676	12/7/82
4,362,360	06/253,485	12/7/82
4,362,414	06/244,190	12/7/82
4,362,415	06/249,687	12/7/82
4,362,425	06/216,796	12/7/82
4,362,437	06/222,065	12/7/82
4,362,439	06/239,353	12/7/82
4,362,470	06/256,905	12/7/82
4,362,478	06/228,064	12/7/82
4,362,484	06/295,538	12/7/82
4,362,491	06/305,609	12/7/82
4,362,498	06/286,401	12/7/82
4,362,503	06/269,538	12/7/82
4,362,532	06/291,752	12/7/82
4,362,547	06/223,637	12/7/82
4,362,548	06/229,371	12/7/82
4,362,549	06/234,235	12/7/82
4,362,557	06/258,075	12/7/82
4,362,570	06/310,689	12/7/82
4,362,583	06/256,230	12/7/82
4,362,588	06/297,643	12/7/82
4,362,618	06/267,470	12/7/82
4,362,621	06/258,109	12/7/82
4,362,628	06/240,418	12/7/82
4,362,653	06/257,690	12/7/82
4,362,673	06/286,700	12/7/82
4,362,699	06/242,232	12/7/82
4,362,701	06/248,522	12/7/82
4,362,703	06/353,066	12/7/82
4,362,721	06/327,058	12/7/82
4,362,725	06/305,953	12/7/82
4,362,743	06/289,103	12/7/82
4,362,746	06/226,640	12/7/82
4,362,753	06/306,695	12/7/82
4,362,760	06/242,985	12/7/82
4,362,769	06/293,412	12/7/82

4,362,779	06/262,210	12/7/82
4,362,808	06/241,697	12/7/82
4,362,817	06/239,258	12/7/82
4,362,828	06/323,420	12/7/82
4,362,873	06/246,979	12/7/82
4,362,883	06/315,784	12/7/82
4,362,904	06/340,480	12/7/82
4,362,910	06/221,719	12/7/82
4,362,912	06/243,859	12/7/82
4,362,920	06/250,232	12/7/82
4,362,932	06/227,568	12/7/82
4,362,933	06/227,472	12/7/82
4,362,965	06/220,321	12/7/82
4,363,008	06/216,202	12/7/82
4,363,010	06/263,012	12/7/82
4,363,017	06/266,305	12/7/82
4,363,022	06/249,099	12/7/82
4,363,062	06/268,162	12/7/82
4,363,064	06/287,005	12/7/82
4,363,073	06/217,467	12/7/82
4,363,075	06/220,441	12/7/82
4,363,114	06/226,986	12/7/82
4,363,115	06/228,055	12/7/82
4,363,119	06/272,193	12/7/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,476,594, Re. S.N. 920,227, Filed Oct. 16, 1986, Cl. 5/464, REVERSIBLE MATTRESS, Arlis D. McLeod, Owner of Record: $\frac{1}{2}$ Interest to Clarence W. Woods, Jr., Attorney or Agent: Richard H. Tushin, et al., Ex. Gp.: 358

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Closing of Patent and Trademark Office on
Monday, Jan. 26, 1987

In view of the official closing of the Federal and District of Columbia government offices in the Washington, D.C. metropolitan area, including the Patent and Trademark Office, on Jan. 26, 1987, the Patent and Trademark Office will consider Jan. 26, 1987, a "federal holiday within the District of Columbia" under 35 U.S.C. §21. Any action or fee due that day will be considered as timely for the purpose of, e.g., 35 U.S.C. §§119, 133 and 151, if the action is taken, or fee paid, on Jan. 27, 1987.

Jan. 28, 1987.
DONALD W. PETERSON,
Acting Assistant Secretary
and Commissioner of Patents
and Trademarks.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Ser-

vice as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Grundy Terminals, Inc., San Diego, Calif., Registration No. 1,159,808, for the mark "DATA-EEZ", Canc. No. 15,971.

Jelly Beans from California, Los Angeles, Calif., Registration No. 1,276,309, for the mark "GENNY CALIFORNIA (STYLIZED)", Canc. No. 15,911.

A. C. Hynd Corp., Dayton, Ohio, Registration No. 510,223, for the mark "HAIRLIFE", Canc. No. 15,856.

ERMA S. BROWN,
Administrator
of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

U.S. Department of Commerce
Patent and Trademark Office

Public Advisory Committee for Trademark Affairs
Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 5:00 p.m. on Mar. 9, 1987, at the U.S. Patent and Trademark Office in Rm. 11C24 of Bldg. 3, Crystal Plz., located at 2021 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

- (1) Activities of the Trademark Examining Operation
- (2) Operations of the Trademark Trial and Appeal Board
- (3) Financial Reports
- (4) Automation Activities

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis.

If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

For further information, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP3-11C17, Patent and Trademark Office, Washington, D.C. 20231. Telephone: 703-557-7464.

DONALD W. PETERSON,
Deputy Assistant Secretary
and Deputy Commissioner of
Patents and Trademarks.
Jan. 29, 1987.

Status of PTO Services

The following is an update of the status of PTO services for January 1987:

Service Item	FY 1987 Goal (Calendar Days*)	Monthly Average (Calendar Days*)
Filing Receipts:		
Patents	22	39**
Trademarks	30	47**
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	10 Hours
Window Coupons	5	2
Mail Coupons	12	4
Letter Orders	16	22
Certified Copies:		
Trademark Registrations	21	31
Applications-As-Filed	17	25***
File-Wrapper/Contents	N/A	27
Walk-up Certification	1	2
Trademark Search Library:		
Filing Pending Marks	21	31
Filing Reg. Certificates	Issue Date	7 days Late
Assignments:		
Patents	20	19
Trademarks	20	20
Avg. Days from Issue Fee Payment to Issue Date	90-100	117****
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Delayed due to
Trademark Copies Available	Issue Date	holidays.

* Unless otherwise noted.
** Delays occurred as a result of holiday leave, staffing shortages, computer outages, and leave due to adverse weather conditions.
*** The 5% of orders for which fiche are not on site are not included in calculations.
**** Interval from fee payment to issuance is increasing because of the budget cut which necessitated the printing of 4,000 fewer patents than originally planned in FY 86.

Jan. 30, 1987.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

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PATENT NOTICES

Certificates of Correction for the Week of Feb. 24, 1987

D. 278,027	4,573,788	4,606,508	4,618,180
D. 286,423	4,576,801	4,606,622	4,618,246
4,281,633	4,576,827	4,606,805	4,618,408
4,407,104	4,579,847	4,606,928	4,618,661
4,409,605	4,580,361	4,607,009	4,618,690
4,413,127	4,581,185	4,607,644	4,618,969
4,417,296	4,584,656	4,609,080	4,619,049
4,426,215	4,586,036	4,609,098	4,619,184
4,429,844	4,587,670	4,609,357	4,619,849
4,451,748	4,588,628	4,609,928	4,620,779
4,455,871	4,589,767	4,610,019	4,621,320
4,467,421	4,589,840	4,610,202	4,621,633
4,467,641	4,590,949	4,612,133	4,621,686
4,469,871	4,591,583	4,613,227	4,621,882
4,474,859	4,592,437	4,613,561	4,621,921
4,498,171	4,592,813	4,613,640	4,621,943
4,502,005	4,593,389	4,613,948	4,622,195
4,504,279	4,593,755	4,613,989	4,622,226
4,517,985	4,594,459	4,614,020	4,622,745
4,523,024	4,594,476	4,614,140	4,623,072
4,524,134	4,594,645	4,614,255	4,623,903
4,525,279	4,594,858	4,614,484	4,624,131
4,529,145	4,596,542	4,614,929	4,624,297
4,532,309	4,597,263	4,615,141	4,624,583
4,534,226	4,597,414	4,615,257	4,624,600
4,535,315	4,598,832	4,615,326	4,624,960
4,546,008	4,601,496	4,617,154	4,625,936
4,550,623	4,601,938	4,617,567	4,626,127
4,555,584	4,603,176	4,617,634	4,621,792
4,557,761	4,603,304	4,617,660	4,626,821
4,558,070	4,603,457	4,617,758	4,627,008
4,564,556	4,606,444	4,617,901	4,627,027

1075 OG 32

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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State	Name of Library	Telephone Contact
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
	Denver Public Library	(303) 571-2122
Colorado	New Haven: Science Park Library	(203) 786-5000
Connecticut	Newark: University of Delaware Library	(302) 451-2965
Delaware	Washington: Howard University Libraries	(202) 636-5060
Dist. of Columbia	Fort Lauderdale: Broward County Main Library	(305) 357-7444
Florida	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
	Moscow: University of Idaho Library	(208) 885-6235
Idaho	Chicago Public Library	(312) 269-2865
Illinois	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Maryland	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
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Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
	Albany: New York State Library	(518) 474-7040
New York	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
Ohio	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
Oklahoma	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia: The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
Rhode Island	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
Utah	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Virginia	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Wisconsin	Seattle: Engineering Library, University of Washington	(206) 543-0740
	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS
RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 17, 1987

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-22-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	1-21-86
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	7-25-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	2-25-85
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-19-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-26-84
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	7-03-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	1-11-85
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-22-85
DESIGN, GROUP 290—K. L. CAGE, Director	6-15-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-29-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-08-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-06-85
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-03-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during January 1987, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents Numbers 3,487,470 to 3,492,671, inclusive
Plant Patents Numbers 2,959 to 2,966 inclusive

1075 OG 34

REEXAMINATIONS

FEBRUARY 24, 1987

Matter enclosed in heavy brackets [] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

BI 3,428,735 (636th)
**METHOD OF TREATING DEPRESSION WITH
5-(3-DIMETHYLAMINOPROPYLIDENE)DIBENZO[a,d]
[1,4]CYCLOHEPTADIENE OR ITS NON-TOXIC SALTS
THEREOF**
Edward L. Engelhardt, Gwynedd Valley, Pa., assignor to Merck
& Co., Inc., Rahway, N.J.
Reexamination Request No. 90/000,264, Sep. 30, 1982.
Reexamination Certificate for Patent No. 3,428,735, issued Feb.
18, 1969, Ser. No. 662,907, Aug. 24, 1967.
Continuation-in-part of Ser. No. 855,981, Nov. 30, 1959. This
application Sep. 30, 1982, Ser. No. 662,907
Int. Cl.⁴ A61K 31/135
U.S. Cl. 514—657

AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

Claims 1-3 are cancelled.

[1. A method of treating human mental disorders involving
depression which comprises orally administering to a human
affected by depression 5-(3-dimethylaminopropylidene)biben-
zo[a,d][1,4]cycloheptadiene or its non-toxic salts in daily dos-
age of 25 to 250 mg. of said compound.]

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REISSUES

FEBRUARY 24, 1987

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

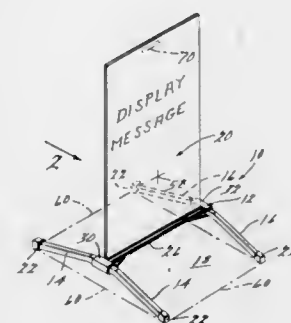
Re. 32,359
PORTABLE WIND-RESISTANT SIGN STAND WITH
FLEXIBLE SIGN

James R. Seely, Rochester, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.
Original No. 4,516,344, dated May 14, 1985, Ser. No. 567,379,
Dec. 30, 1983. Application for reissue Nov. 14, 1985, Ser. No.
797,978

Int. Cl.⁴ G09F 7/00

U.S. Cl. 40—602

27 Claims



1. A lightweight and readily portable sign and stand apparatus, comprising an elongated base assembly, a plurality of ground-engaging legs extending transversely from and secured to said elongated base assembly, a one-piece monolithic sign panel having a lower peripheral portion and protruding in a generally vertical direction from said elongated base assembly and having at least one generally planar display surface thereon, said base assembly including clamping means for clampingly securing and anchoring substantially the entire length of the lower peripheral portion of said sign panel to said elongated base assembly in a generally fixed relationship therewith, said sign panel being sufficiently rigid to be self-supporting in said generally vertically protruding relationship with said base assembly but sufficiently flexible and resilient to bendably deflect without yielding in response to predetermined loads exerted thereon in directions transverse to the plane of said display surface, said sign and stand apparatus having a combined center of gravity located a predetermined vertical distance above the ground, said legs being configured to engage the ground at a predetermined horizontal distance from said base assembly, said combined center of gravity remaining horizontally within the confines of the area defined by the locations at which said legs engage the ground during said bendable deflection of said sign panel in order to substantially prevent said sign and stand apparatus from tipping over in response to said predetermined transverse loads, said sign panel, when deflected, having a continuously curved portion defining an airfoil shape, said sign panel having the lower peripheral portion disposed a preselected height above the ground to define an open area generally beneath said sign panel, the size of said open area in relation to the size of said sign panel and [the shape of] said airfoil shape cooperating to substantially negate aerodynamic [lift] forces.

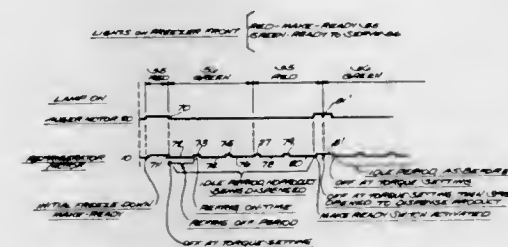
Re. 32,360
SOFT-SERVE FREEZER CONTROL

Tom N. Martineau, Clinton, Iowa, assignor to Stoelting, Inc., Kiel, Wis.
Original No. 4,383,417, dated May 17, 1983, Ser. No. 298,677,
Sep. 2, 1981. Application for reissue Mar. 18, 1985, Ser. No.
712,876

Int. Cl.⁴ A23G 9/00; F25C 1/00

U.S. Cl. 62—127

21 Claims



1. In a soft-serve freezer including a freezing chamber with a spigot, a mixing element, a first motor for said mixing element and a refrigeration system including a second motor for a compressor in said refrigerator system, the improvement comprising control circuit means for said first and second motors, said control circuit means including electric power sensing means associated with said first motor, said control circuit means providing an operational sequence with first and second modes in which said mixing element and said refrigeration system are operating concurrently in a first mode until said power sensing means senses a predetermined power input to said first motor corresponding to a preselected consistency, whereupon said circuit is switched to said second mode wherein said second motor is switched on and off at a selected frequency and said circuit including manually operable mode changing means to change to said first mode with said first motor driving said mixing element in contemplation of the dispensing of product from said spigot and said circuit remaining in said second mode until said manually operable means are actuated.

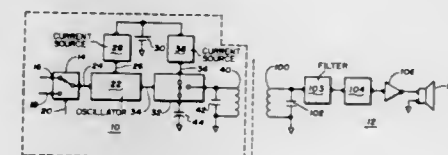
Re. 32,361
IMPLANTABLE TELEMETER TRANSMISSION SYSTEM
FOR ANALOG AND DIGITAL DATA

Stephen R. Duggan, Rosemount, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Original No. 4,281,664, dated Aug. 4, 1981, Ser. No. 38,805,
May 14, 1979. Application for reissue Jul. 19, 1982, Ser. No.
399,638

Int. Cl.³ A61B 5/00

U.S. Cl. 128—696

14 Claims



8. A transmitter for transmitting signals from an implantable medical device which are representative of either analog or digital values comprising a signal controlled variable frequency oscillator means having a control terminal, signal application means for selectively presenting information signals representative of said

digital and analog values to said control terminal to vary the frequency of said oscillator means in response thereto relative to a nominal output frequency of said oscillator means that exists when said information signals are not being supplied, tank circuit and antenna means having a predetermined ringing frequency of oscillation when pulsed with energy, and drive circuit means coupled to said oscillator means and to said tank circuit and antenna means for supplying pulses of energy to said tank circuit and antenna means at a rate that is proportional to the output frequency of said oscillator means whereupon said pulses are radiated from said tank circuit and antenna means as damped ringing signals wherein said drive circuit means comprises a storage capacitor and discharge means for discharging said capacitor into said tank circuit and antenna means at a rate proportional to the frequency of said oscillator means so as to cause bursts of energy to be expended in said tank circuit and antenna means and transmitted thereby.

Re. 32,362

FIRE DAMPER AND METHOD OF FABRICATION

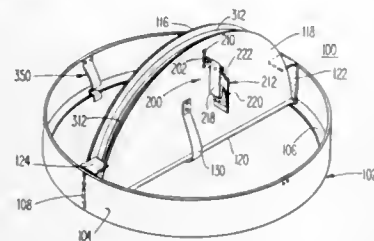
Francis J. McCabe, Doylestown, Pa., assignor to Prefco Products, Inc., Buckingham, Pa.

Original No. 4,146,048, dated Mar. 27, 1979, Ser. No. 792,525, May 2, 1977. Application for reissue Mar. 26, 1981, Ser. No. 247,820

Int. Cl.⁴ F16L 55/18

U.S. Cl. 137—15

31 Claims



20. A fire damper for use in conjunction with a duct, said damper comprising: at least one damper blade; pivoting means for pivotal displacement of said blade between open and closed positions with respect to said duct; and heat insulation means for insulating an atmosphere on a first side of said damper from a heated atmosphere on a second side of said damper, wherein said heat insulation means includes heat insulation material attached to portions of said first side of said damper.

Re. 32,363

ANVIL ASSEMBLY FOR VERTICAL SHAFT CENTRIFUGAL IMPACT CRUSHING MACHINE

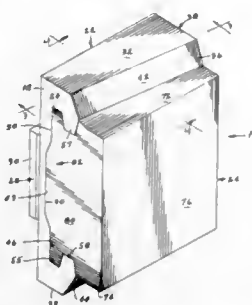
Kenneth D. Warren, and Gregory G. Tenold, both of Spokane, Wash., assignors to Portec, Inc., Oak Brooke, Ill.

Original No. 4,347,988, dated Sep. 7, 1982, Ser. No. 160,811, Jun. 18, 1980. Application for reissue Sep. 7, 1984, Ser. No. 648,811

Int. Cl.⁴ B02C 19/06

U.S. Cl. 241—300

16 Claims



1. An anvil assembly for mounting to a stationary bracket to position the anvil assembly in the path of material thrown from

a rotating horizontal turntable of a vertical shaft centrifugal impact crushing machine to cause the material to disintegrate as the material impacts against the anvil assembly; comprising: a wedge-shaped supporting base member having a bottom face, a top face, a back face, an inclined front face, an upstream side face and a downstream side face; said front face being at an inclined acute angle with respect to the back face tapering inward from the upstream side face to the downstream side face; said back face of the base member having bracket mounting means projecting therefrom adapted to secure the anvil assembly to the stationary bracket; said front face of the base member having a horizontal female dovetail channel formed therein extending at the acute angle with respect to back face and parallel with the front face with an entrance opening in the upstream side face; said base member having abutment surface formed adjacent the upstream face; a wedge-shaped wear resistant member having a bottom face, a top face, a back face, a front face, an upstream side face and a downstream side face; said back face of the wear resistant member being at an inclined acute angle with respect to the front face tapering inward from the downstream side face to the upstream side face; said back face of the wear resistant member having a horizontal male dovetail projection formed thereon complementary to the female dovetail [groove] channel for enabling the male dovetail projection to slide into the female dovetail [groove] channel through the entrance opening to enable the wear resistant member to overface the base member with the front face of the wear resistant member facing the turntable to receive the material; and said wear resistant member having a shoulder surface for engaging the abutment surface of the base member to limit the sliding movement of the wear resistant member with respect to the base member and to align the wear resistant member centrally on the base member.

Re. 32,364

FLEXIBLE CORE FOR TOOL HANDLES

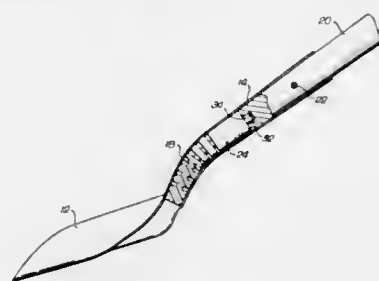
Joseph A. Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Original No. 4,451,073, dated May 29, 1984, Ser. No. 407,819, Aug. 13, 1982. Application for reissue Aug. 9, 1984, Ser. No. 639,246

Int. Cl.⁴ A01B 1/22; B25G 3/24

U.S. Cl. 294—57

14 Claims



6. A hand tool, comprising: a tool portion having a handle receiving socket; a flexible core inserted into said handle receiving socket, said core including an elongated, generally cylindrical body, at least one groove formed in said body forming at least one socket filler for bearing a compressive load in said handle receiving socket, and a flexible shaft capable of bending to permit said core to conform to the shape of said handle receiving socket; and a handle received and secured within said handle receiving socket.

PLANT PATENTS

GRANTED FEBRUARY 24, 1987

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,887

BEGONIA PLANT

Erland V. Schelbeck, Odense, Denmark, assignor to L. Daehnfeldt A/S, Odense, Denmark

Filed Jan. 10, 1985, Ser. No. 690,287

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of *Begonia hiemalis* plant named Grete, as shown and described, and particularly characterized by its medium-sized, heavily filled rose flowers, fast propagation, rapid flowering and its resistance to powdery mildew.

5,888

KALANCHOE PLANT NAMED ATTRACTION

Hermann Finger, Wiesmoor, Fed. Rep. of Germany, assignor to Wiesmoor-Gartnerie und Baumschule GmbH, Fed. Rep. of Germany

Filed Jul. 1, 1985, Ser. No. 750,599

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of *Kalanchoe* named Attraction, as described and illustrated, and particularly characterized by its abundant reddish orange flowers, compact growth habit with excellent branching, small and dense foliage, early flowering, and by the good keeping quality of its flowers.

5,889

KALANCHOE PLANT NAMED FASCINATION

Hermann Finger, Wiesmoor, Fed. Rep. of Germany, assignor to Wiesmoor-Gartnerie und Baumschule GmbH, Fed. Rep. of Germany

Filed Jul. 1, 1985, Ser. No. 750,600

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of *Kalanchoe* named Fascination, as described and illustrated, and particularly characterized by its abundance of lavender pink flowers, excellent branching; small, relatively dark and dense foliage, compact growth habit, early flowering, and by its good keeping qualities.

5,890

ASIATIC LILLY NAMED EDITH

Edward A. McRae, Boring, Oreg., assignor to Melridge, Inc., Gresham, Oreg.

Filed Mar. 11, 1985, Ser. No. 710,308

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinctive variety of hybrid Asiatic lily, substantially as herein shown and described, characterized by its high resistance to disease and tolerance to virus; its vigorous

growth; its excellent flower form and substance; and its versatility both as a garden plant and as a plant produced from precooled bulbs forced for cut-flower production; and in particular, its unique rich cream-yellow coloring and inconspicuous maculation.

5,891

AFRICAN VIOLET NAMED TRACY

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Apr. 24, 1985, Ser. No. 726,849

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—69

1 Claim

1. An African violet plant having blossoms which are white with violet centers, profusely produced above abundant foliage.

5,892

CACTACEAE PLANT

Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.

Filed May 30, 1985, Ser. No. 739,443

Int. Cl.⁴ A01H 5/00

U.S. Cl. Plt.—88

1 Claim

1. The new and distinct plant variety of the Cactaceae family as described and illustrated herein and which is principally distinguished by a growth habit combining the following characteristics:

- (1) a greater natural tendency for branching without the need for pruning than the 'Christmas Magic' variety,
- (2) a greater resistance to nutrient deficiencies than the 'Christmas Magic' variety,
- (3) a greater resistance to stem breakage than the 'Christmas Magic' variety,
- (4) a slightly lesser resistance to bud abscission than the 'Christmas Magic' variety,
- (5) a habit of producing more blooms on specimens of comparable age at an earlier date in the blooming season, and with a slightly longer bloom life than the 'Christmas Magic' variety,
- (6) a habit of producing blooms with a substantially larger number of tepals in the tube laminating series of tepals, and with tepals in the tube laminating and tube forming series of tepals which average slightly greater width dimensions in comparison to the 'Christmas Magic' variety,
- (7) a bloom with more uniform and greater coverage of the marginal and center field areas of the blades of the tube forming and tube laminating series of tepals with color dominated by purplish red and/or reddish purplish hues in comparison to the 'Christmas Magic' variety,
- (8) sterile specimens.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
092-078	4,644,847
623-016	4,644,942
406-056	4,645,370
203-030	4,645,576
380-002	4,645,871
379-054	4,645,872
379-093	4,645,873
379-093	4,645,874
379-070	4,645,875
379-143	4,645,876
379-183	4,645,877
379-202	4,645,878
379-355	4,645,879
379-191	4,645,880
379-252	4,645,881
379-387	4,645,882
379-406	4,645,883
379-406	4,645,884
191-045	4,645,885
200-001	4,645,886
187-100	4,646,058
380-014	4,646,147
360-137	4,646,302
371-038	4,646,312

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PATENTS

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GENERAL AND MECHANICAL

4,644,588

EYE SHIELD CAP FOR INFANTS

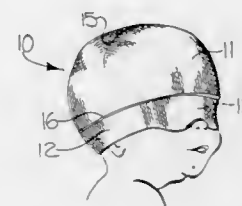
Edna M. Zawacki, Grosse Ile, Mich., assignor to Alba Health Care, division of Alba-Waldensian, Inc., Valdeese, N.C.

Filed Jun. 6, 1986, Ser. No. 871,467

Int. Cl.⁴ A61F 9/00

U.S. Cl. 2—10

3 Claims



1. An eye shield cap for protecting an infant's eyes from phototherapy treatment light and comprising
 - a crown portion of tubular knit stretchable open mesh fabric shaped to cover and snugly fit the head of the infant,
 - a turned hem portion integral with and extending around the open lower edge of said crown and adapted to extend behind the head and across the eyes of the infant, said turned hem being formed by turning the tubular knit fabric upon itself,
 - an elongate opaque fabric insert positioned inside of said turned hem and extending across the area of the turned hem covering the eyes of the infant, and
 - stitching means extending along and around said turned hem and penetrating said opaque fabric insert to retain the same in position in said turned hem, and connecting the upturned hem portion to said crown portion.

4,644,589

SELF ADMINISTRABLE GARMENTS FOR ARTHRITIC PERSONS

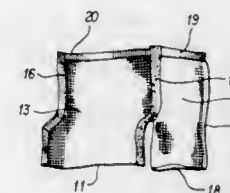
Mary J. Pettis, 2420 Olson St., Temple Hills, Md. 20748

Filed Feb. 5, 1985, Ser. No. 698,441

Int. Cl.⁴ A41B 9/00

U.S. Cl. 2—109

10 Claims



1. A self-donning garment for a wearer who may be a partially crippled or arthritic person who has restricted limb movement of some limb members of one's body and in which the garment has left and right oriented wearing portions disposed about an axis positioned about the garment and defined as generally centrally of and parallel with a locus of the left and right portions thereof and the axis extending generally in a vertical direction should the wearer be standing and in which the garment comprises in combination
 - a single layer of flexible fabric material having a pair of laterally opposed apertures for providing insertion of at least one of the wearers limb members and for thereupon enveloping at least a portion of the body,
 - a pair of opposed leading edges on the flexible fabric mate-

- rial of the garment positioned vertically of the garment midway between the locus of the pair of laterally opposed apertures and the edges extending from an upper border of the garment to a lower border thereof,
- a pair of laterally opposed apertures formed of the layer of flexible fabric material but in which one of the apertures provides for a reception of and insertion of at least one of the wearer's limb members including one portion of the material thereupon enveloping at least one portion of the body and in which the other of the apertures is formed of another portion of the material adapted to swing around another portion of the body and thereupon enveloping at least a further and generally contiguous other portion of the body, and
- a fastening means positioned generally parallel to the axis of the garment and enveloping at least a portion of the body consisting essentially of a thin strip of compressive pressure sensitive fastening material positioned generally parallel to the axis and on the external face of one of the pair of opposed leading edges and on the internal face of the other member of the pair of opposed leading edges, each overlapping in fastener secured relation and the fastening means being fastenable by the wearer without the necessity of the wearer elevating the wearer's limb member above a plane defined as generally horizontal to the location of the limb member having restricted limb movement.

4,644,590

HALO SHIRT

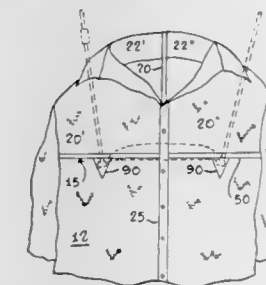
Wilma I. Pincham, 14548 Yelm Hwy. SE., Yelm, Wash. 98597

Filed Feb. 18, 1986, Ser. No. 830,047

Int. Cl.⁴ A41B 1/00

U.S. Cl. 2—115

6 Claims



1. A garment apparatus for use in combination with a halo apparatus having a plurality of widely spaced apart support arms; wherein, the garment apparatus comprises:
 - a front opening garment unit having: a midriff encircling member; a pair of arm members; a plurality of panel members; and, releasable closure means operably connecting said panel members to said midriff encircling member;
 - wherein, said midriff encircling member is fixedly secured to the lower portions of said arm members; and, said panel members are fixedly secured to the lower portion of said arm members.

4,644,591

SOFT SCULPTURE FACE MASK

Mel Goldberg, c/o Topstone Industries, Inc., 2 Augusta Dr., Danbury, Conn. 06810

Filed Aug. 19, 1985, Ser. No. 766,949

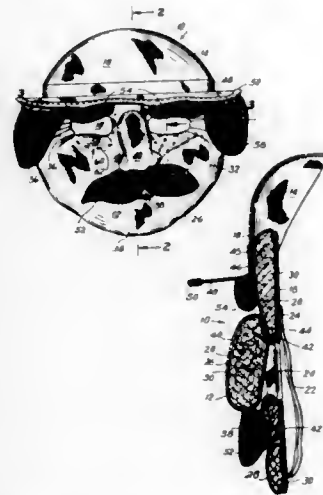
Int. Cl.⁴ A42B 1/18

U.S. Cl. 2—206

6 Claims

1. A face mask comprising:

- (a) a relatively flat mask support layer having a pair of eye apertures;
- (b) an air penetrable, face mask skin, made from elastic fabric and secured around its perimeter to said mask support layer and secured to said eye apertures around their perimeters;
- (c) the area between said mask support layer and said face mask skin defining a three-dimensional stuffing pocket;

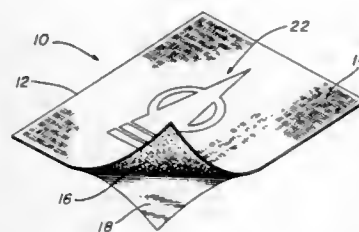


- (d) a mass of lightweight, air penetrable stuffing material maintained in said stuffing pocket for providing three-dimensionality including depth to said face mask; and
- (e) at least one facial mask feature being provided to said face mask by selective accumulation of said stuffing material in selected areas of said stuffing product and securement of said face mask skin and said accumulated stuffing material to said mask support layer.

4,644,592
DISPOSABLE FLOOR MAT
 John D. Small, 2236 Homeway Cir., Dallas, Tex. 75228
 Filed Mar. 25, 1986, Ser. No. 843,704
 Int. Cl.⁴ A47K 3/12

U.S. Cl. 4—583

19 Claims



1. For temporary use on a surface subject to exposure to an environment saturated with water, a fully removeable and disposable mat comprising:

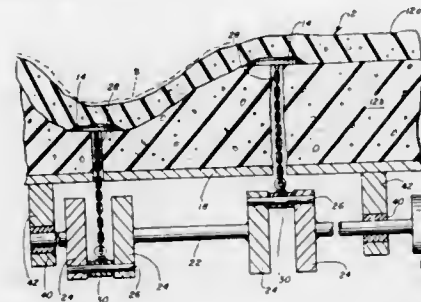
- (a) a mat member having oppositely disposed first and second major faces;
- (b) a sealer coating on said first major face providing a barrier between said first major face and the environment saturated with water;
- (c) a fully releaseable pressure sensitive non-hygroscopic adhesive permanently secured to at least a portion of said second major face and adapted to releaseably secure said second major face to said surface subject to exposure to an environment saturated with water; and
- (d) a protective liner covering said adhesive and removeable therefrom to permit said adhesive to be releaseably at-

tached to said surface subject to exposure to an environment saturated with water.

4,644,593
VARIABLE SUPPORT CUSHION FOR SUPPORTING ANATOMICAL BODY WEIGHT
 James A. O'Brien, 450 Villa, Dubuque, Iowa 52001
 Filed Oct. 9, 1985, Ser. No. 785,895
 Int. Cl.⁴ A47C 23/04

U.S. Cl. 5—60

19 Claims



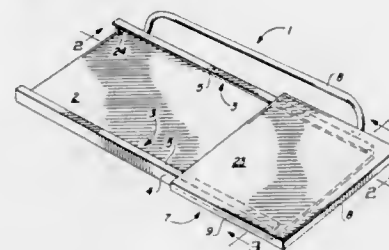
1. A variable support apparatus for supporting anatomical body weight, comprising:

- a supporting cushion with a top surface and a bottom surface;
- at least one relief device including a pressure member on the supporting cushion at a given location normally under a particular anatomical body portion of a user, and flexible linkage means connected to the pressure member and extending through the supporting cushion; and
- powered motive means mounted below the supporting cushion and operatively connected to said flexible linkage means for intermittently pulling the pressure member toward the bottom surface of the supporting cushion, compressing at least a portion of the cushion, to thereby provide pressure relief at that given location but permitting the natural resiliency of the cushion to return the pressure member to its normal position.

4,644,594
PATIENT TRANSPORT DEVICE
 Roger A. Johnson, P.O. Box 78290, Shreveport, La. 71107
 Filed Apr. 24, 1985, Ser. No. 726,430
 Int. Cl.⁴ A61G 1/02

U.S. Cl. 5—81 R

13 Claims



1. A device for moving a patient to and from a bed comprising:

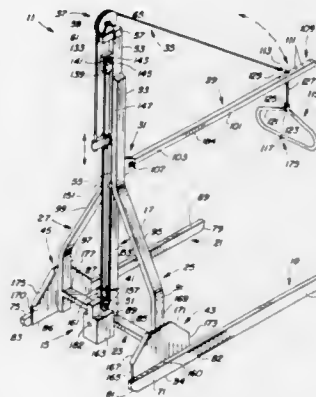
- (a) a generally flat rail bed;
- (b) a pair of rails carried by said rail bed in spaced, general parallel relationship, said rails each having an upward standing rail side extending from an opposite edge of said rail bed and a rail flange projecting inwardly of said rail bed in facing relationship to define a pair of spaced, facing channel members;
- (c) a support positioned over said rail bed and said rails, with the sides of said support extending beyond said rails;

- (d) A plurality of L-shaped brackets carried by said support in spaced relationship;
- (e) A pair of axles rotatably carried by said brackets, said axles extending between said rails; and
- (f) At least two rollers rotatably mounted on each of said axles, said rollers located between said rail flange and said rail bed and lying adjacent said rail side in said rails, respectively, whereby said rollers are constrained to traverse said rails when said support traverses said rail bed.

4,644,595
PORTABLE MOTORIZED BED LIFT APPARATUS
 R. A. Daniel, 9859 N. 110th Ave., Sun City, Ariz. 85351
 Filed Oct. 29, 1985, Ser. No. 792,679
 Int. Cl.⁴ A61F 5/00

U.S. Cl. 5—81 R

20 Claims



1. A portable motorized bed lift apparatus for lifting a prone patient to a sitting position on a bed such that the patient's head and shoulders are substantially vertically above the patient's hips to enable the patient to get out of bed and into a wheelchair or the like without human assistance, said lift apparatus comprising:

- leg means including a spaced apart pair of elongated leg members having a front portion and a rear portion, said leg members adapted to be operably disposed substantially parallel to one another and such that said front portion is operatively disposed at least partially under the foot of the patient's bed for countering the torque of the lifting action to prevent tipping and the like;

base means operatively disposed between the rear end portions of said pair of leg members and being disposed substantially perpendicular thereto for maintaining said spaced separation;

mast means including an elongated, vertically upright mast member having a lower end portion operatively secured proximate the midportion of said base means and being substantially perpendicular to the longitudinal axis of said base means and to the longitudinal axis of said leg members, said mast member further including a mid-portion and an upper end portion;

support means including a pair of generally upright angled members each having a relatively straight lower end portion adapted to be operatively secured in a vertically upright position to opposite end portions of said base means and to said rear end portion of said leg members so as to be substantially perpendicular to the longitudinal axis thereof, an upper end portion operatively secured in a vertically upright position to opposite sides of the midportion of said vertically upright mast member so as to be substantially parallel thereto, said upper and lower end portions of each of said angled members having longitudinal axes which are parallel to and spaced apart from one another, each of said pair of angled members including an intermediate diagonal portion integral with said vertically

upright upper and lower end portions for forming a single unitary, integral, angled support member;

an elongated boom member pivotably attached to a pivot means at a rear end portion thereof and to said midportion of said upright mast member such that the forward end portion of said boom is free to swing in a circular arc about said pivot means;

handle means operatively suspended from a selected position on said forward end portion of said boom means for enabling the patient to grasp said handle means with at least one of his hands, wrists, inner elbow, and arm pits;

pulley means operatively disposed atop said mast member; cable means having an intermediate portion operably positioned over said pulley means, one end portion operatively coupled to a forward end of said boom means proximate the attachment point of said handle means, and an opposite end portion;

trolley means including a vertical guide post operably disposed generally parallel to said mast member, means associated with said trolley means for operatively connecting the opposite end portion of said cable means thereto for raising and lowering said boom and said handle means as said trolley means is vertically lowered and raised on said guide post;

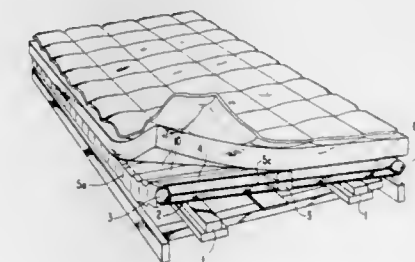
motor drive means including a motor, a drive sprocket means rotatably driven by said motor, an upper idler pulley means operatively mounted to an upper end portion of said mast member, said drive means for running a chain-like drive assembly, said motor drive means having a drive mechanism and a chain-like member passing around the sprocket means of said drive assembly being rotatably driven thereby, one end portion of said chain-like member being operatively coupled to a bottom portion of said trolley means and the opposite end of said cable-like member being connected to one end of a cable having an intermediate portion passing over said upper pulley and downward so that the opposite end portion is secured to the top of the trolley such that when the motor is operated in the forward or reverse direction, the trolley is moved selectively down and up to selectively position the boom up and down in a circular arc so as to provide a vertical lift component and a horizontal pull component to enable the patient to be lifted to the proper sitting position.

4,644,596
RESILIENT SURFACE FOR SITTING AND LYING FURNITURE, PREFERABLY FOR BEDS
 Balthasar Hüslar, Goldau, Switzerland, assignor to Liform AG, Zug, Switzerland
 PCT No. PCT/CH84/00146, § 371 Date May 30, 1985, § 102(e) Date May 30, 1985, PCT Pub. No. WO85/01425, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 14, 1984, Ser. No. 741,309
 Claims priority, application Switzerland, Sep. 30, 1983, 5296/83

Int. Cl.⁴ A47C 23/06
 U.S. Cl. 5—236 R

12 Claims



1. A bed or the like including a support structure for resil-

iently supporting a pad or the like on which a person can sit or lie, said support structure comprising

first and second substantially parallel, elongated, spaced-apart bearing members;

a plurality of substantially identical elongated modules lying side-by-side on and generally perpendicular to said bearing members, each of said modules including

first and second elongated, resilient strips extending substantially the entire length of said module, and

a plurality of spacers positioned between said first and second strips to maintain said strips in generally parallel, spaced relationship with respect to each other, with said first strip above said second strip, said spacers being offset from said bearing members;

fabric means for loosely holding said modules together in generally parallel relationship while allowing substantially independent limited relative movement, said fabric means including pockets for receiving the ends of said strips, tubular portions for receiving said spacers and a sheet-like portion extending between said strips of said modules.

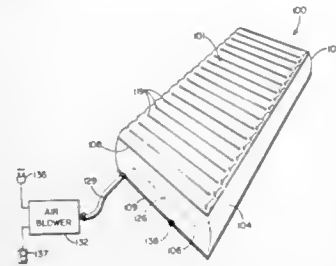
4,644,597

AIR MATTRESS WITH PRESSURE RELIEF VALVE
Robert A. Walker, Minneapolis, Minn., assignor to Dynatech, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 492,954, May 9, 1983,
abandoned. This application Apr. 24, 1985, Ser. No. 726,608
Int. Cl.⁴ A47C 27/08

U.S. Cl. 5—449

20 Claims



1. An air mattress accommodating air under pressure for providing a body support comprising: a top wall, a bottom wall spaced from and located below the top wall, side walls and end walls secured to said top and bottom walls, all of said walls comprising flexible air impervious sheet members sealed together along the edge portions thereof to form a chamber for accommodating gas under pressure, seam means securing adjacent portions of the sheet means together, a plurality of support means located in said chamber extended between said side walls and secured to said top and bottom walls providing transverse passages accommodating air and limiting outward expansion of the top and bottom walls when air under pressure is stored in said chamber, each of said support means having a web section and opposite end portions secured to said side walls to limit outward expansion of the side walls when air pressure is stored in said chamber, each of said end portions having at least one opening allowing air communication between said transverse passages, tube means mounted in the seam means to facilitate supplying air under pressure into said chamber, and air pressure relief valve means mounted in the seam means open to said chamber and atmosphere, said valve means having a cylindrical body secured to the seam means, said body having a passage open to said chamber and atmosphere, an annular plug having a center hole located within said passage in engagement with said body, valving means located in said passage engageable with said plug to close said passage, said valving means including a rod having an outer end extended through said center hole, a head joined to said outer end of the rod engageable with the plug to close said center hole and a member mounted on the rod; and spring

means engageable with said plug and member to bias said head in sealing engagement with said plug to maintain the pressure of air in said chamber, said spring means having a biasing force that allows the head to move away from the plug when the pressure of the air within the chamber exceeds a selected maximum limit whereby air is vented from said chamber.

4,644,598

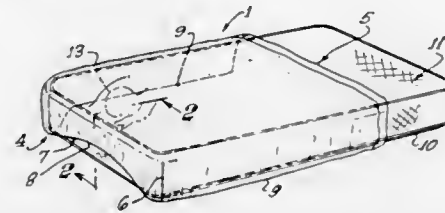
FITTED COMFORTER FOR INFANT

Douglas R. McGuire, 199D McCulloch Blvd., Suite 275; Sherry L. McGuire, 2961 Tonto Dr., both of Lake Havasu City, Ariz. 86403, and Ellen A. Rohrich, 1719 Cody Ave., Casper, Wyo. 82604

Filed Aug. 1, 1984, Ser. No. 636,731
Int. Cl.⁴ A47G 9/02

U.S. Cl. 5—497

2 Claims



1. In an infant-safe comforter fitted to the foot end of a crib mattress, which comforter has first and second boxed corners adapted to reach under corresponding first and second bottom perimeter corners at the foot end of the mattress, the improvement consisting of providing a limited central elasticized segment of the free edge at the foot end of said comforter, said free edge extending from a first seam in said first boxed corner to a second seam in said second boxed corner, said limited central elasticized segment of said free edge extending from a first point spaced about 1 to 2 inches inboard from said first seam in said first boxed corner to a second point spaced about 1 to 2 inches inboard from said second seam in said second boxed corner of said comforter, whereby the grasping power of said first and second boxed corners of said comforter on said crib mattress is reduced to an extent that the nudging head of an infant crawling under said comforter toward said foot end releases the grasp of said comforter on said crib mattress and raises said comforter free edge to admit access of air under the comforter and thereby prevent asphyxiation of the infant.

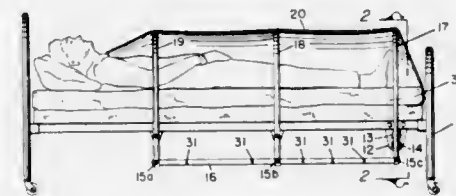
4,644,599

BED COVER LIFTER

Anna M. Wolcott, 13122 Bow Pl., Santa Ana, Calif. 92705
Filed Sep. 13, 1984, Ser. No. 650,215
Int. Cl.⁴ A47C 21/02

U.S. Cl. 5—504

2 Claims



1. In combination with a hospital bed of any width having a patient lying thereon, a bed cover lifter comprising: six multisectional arms arranged in opposing spaced pairs between the head and foot of the bed and having vertically extending sections pivotally attached to the frame of the bed, each pair having a top side with curved sections and other sections interconnecting each opposed pair of

curved sections, at least each of said vertical arms on the same side of the bed having a lower end beneath the pivot axis thereof;

means on some of said curved sections and said other interconnecting sections for frictionally slideably extending said top side to accommodate any bed width;

means for slidably interconnecting said vertical arms to said curved sections with thumb screw means for anchoring the so-adjusted parts;

an electric motor underneath said bed;

two identical gear pairs on each side of the bed, one gear of each gear pair being attached to the drive shaft of the motor, with the other gear of said gear pair fastened to each vertical arm of the pair of arms over the foot of the bed; and

a horizontal arm temporarily attached by a pull ring and finger means to each of said lower ends of the vertical arms for enabling movement of the motor to rotate the gears and cause the vertical arms to keep the upper bed-covers supported by said bed cover lifter off the patient's body where desired.

4,644,601

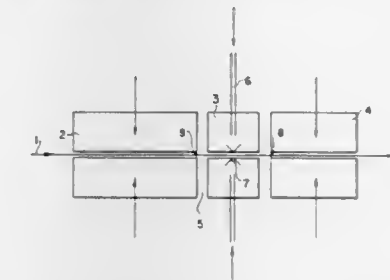
METHOD AND APPARATUS FOR APPLYING EVAPORABLE FINISHING MEANS OR TEXTILE MATERIAL

Kurt van Wersch, Wegberg, Fed. Rep. of Germany, assignor to A. Monforts GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 10, 1985, Ser. No. 698,178
Int. Cl.⁴ D06B 1/02

U.S. Cl. 8—149.2

2 Claims



1. Method for finishing textile material containing synthetic fibers, especially a web of textile cloth, with an evaporable finishing medium forming a solid solution with the material of the synthetic fibers, which comprises, evaporating the finishing medium out of contact with the textile material to be finished, heating the textile material prior to making contact with the evaporated finishing medium to a treatment temperature required for dissolving the finishing medium in the synthetic fiber, transferring the finishing medium in the vapor phase by means of a transport gas to the textile material unimpeded by a heat transfer solid carrier, and wherein the finishing medium has a dew point in the finishing medium/transport gas mixture below the treatment temperature of the textile material to cause dissolving without condensation of the finishing medium vapor in the synthetic fiber.

4,644,600

EXTENSION HANDLE FOR WRENCHES

Jimmy D. Fugate, 6623 S. 23rd St., Phoenix, Ariz. 85040
Filed Apr. 15, 1985, Ser. No. 723,344
Int. Cl.⁴ B25F 1/00

U.S. Cl. 7—166

16 Claims



1. An extension device for receiving the handle of a wrench so as to assist in the rotation thereof, said device comprising: a. a handle portion having first and second ends and first and second edges, and generally residing in a first plane; b. an offset portion having a first end coupled to the first end of said handle portion and having a second end and first and second edges, and generally residing in a second plane substantially parallel to said first plane and offset therefrom by a predetermined distance; and c. first means including at least first and second stirrups coupled to the first and second edges, respectively, of said offset portion for receiving and positioning the handle of said wrench such that the plane of rotation of said handle portion is coplanar with the plane of rotation of the handle of said wrench.

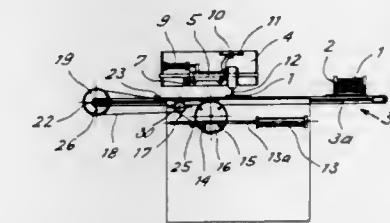
4,644,602

MACHINE FOR AUTOMATICALLY CARDING SOLES OF FOOTWEAR

Mario Bruggi, Corso Torino, 114-Vigevano (Pavia), Italy
Filed Mar. 21, 1985, Ser. No. 714,378
Claims priority, application Italy, May 4, 1984, 20803 A/84
Int. Cl.⁴ A43D 117/00

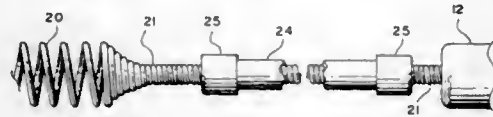
U.S. Cl. 12—1 A

8 Claims



1. A machine for carding of a sole of footwear, which comprises at least one carding unit carrying a sliding tool, a template for guiding the sliding tool, a chain carrier for placing the sole under said template, said chain carrier having a plurality of driving blocks acting on said sole and a control wheel, a fixed-stroke actuator for the said chain carrier, a pin (27) for arresting said chain carrier engageable with said control wheel and means for regulating the arrest position of said chain carrier.

4,644,603
PLUMBER'S SNAKE
 Fred J. Meyer, North Miami Beach, Fla., assignor to Eagle Industries, Inc., Hialeah, Fla.
 Filed Apr. 2, 1985, Ser. No. 719,202
 Int. Cl.⁴ B08B 9/02
 U.S. Cl. 15—104.3 SN 2 Claims



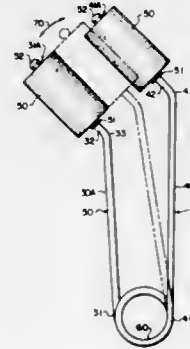
1. For use with a hand-operated driving means, a snake for cleaning a drain and the like, comprising, in combination:
- (a) a driven member having an elongated configuration and defined by a generally cylindrical coiled wire of a first diameter, comprising wire coils in abutting relation to one another,
 - (b) an integral nose cylinder on said coiled wire defining a distal end of said coiled wire and comprising a plurality of spaced apart coils each having a substantially equal diameter greater than said first diameter, and an integral generally cone-shaped zone comprising closely adjacent wire coils intermediate said nose cylinder and said coiled wire,
 - (c) said nose cylinder terminating at a distal free extremity of said plurality of coils in a snag tip,
 - (d) said snag tip being disposed substantially within the cylindrical path of the diameters of said nose cylinder,
 - (e) a sheath structure having an elongated configuration and a hollow interior extending continuously along its length, said coiled wire movably disposed within said hollow interior of said sheath structure along a majority of the length of said coiled wire,
 - (f) said sheath structure comprising a sheath cap secured to each end thereof, each sheath cap comprising a central aperture formed therein and dimensioned to allow passage of said coiled wire therethrough in non-frictional engagement therebetween,
 - (g) each of said sheath caps further comprising a plurality of annularly configured collars mounted on an interior surface thereof and disposed in spaced relation to one another, each of said collars having an inner diameter of lesser dimension than said interior surface and further dimensioned to frictionally engage said sheath structure, each of said sheath caps gripping opposite ends of said sheath structure at a plurality of spaced locations along the length of said respective sheath cap.

4,644,604
ROLLER PAINT APPLICATOR FOR WROUGHT IRON RAILING
 Jack W. Kierce, 4656 La Cuenta Dr., San Diego, Calif. 92124
 Filed Aug. 19, 1985, Ser. No. 766,518
 Int. Cl.⁴ B05C 17/02, 1/08

- U.S. Cl. 15—244 A 11 Claims
1. A device suitable for painting wrought iron railing, which comprises:
- a pair of elongated prongs, each one of the prongs having a handle end and a roller end;
 - a pair of generally straight handle portions of the prongs, each one of the handle portions extending from the handle end of a respective one of the prongs to an offset bend of the respective prong;
 - a pair of generally straight offset portions adapted to rotatably receive a pair of rollers, each one of the offset portions extending from the offset bend of a respective one of the prongs to the roller end of the respective prong;
 - connecting means for connecting the handle ends of the prongs together, both so that the handle portions extend outwardly from the handle ends generally in a common plane and in a common direction that defines a gripping

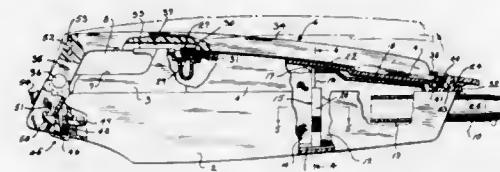
axis, and so that the offset portions extend outwardly from the handle portions generally in said common plane and in a common offset direction that is offset from the gripping axis; and

spring-biasing means both for spring biasing the prongs in side-by-side relation with the offset portions slightly spaced apart, and for enabling a pair of rollers mounted on the offset members to be flexed together



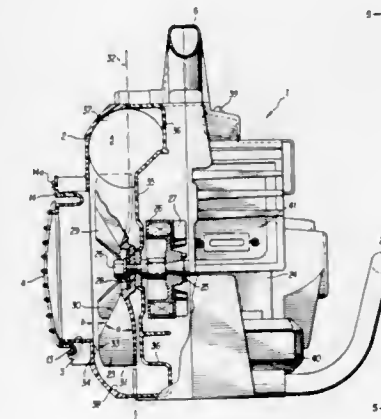
against a selected section of railing by manually squeezing the prongs together to enable a user to squeeze the handle portions, with a section of railing between a pair of rollers mounted on the offset portions, the back of the user's hand generally parallel to said common plane, and the gripping axis offset from the rotational axes of the rollers, while the rollers are moved along the section of railing in a direction generally perpendicular to said common plane.

4,644,605
STICK VACUUM CLEANER
 Michael S. Joss, Chicago, Ill., and David E. McDowell, Grand Rapids, Mich., assignors to Bissell Inc., Grand Rapids, Mich.
 Filed Mar. 25, 1985, Ser. No. 715,324
 Int. Cl.⁴ A47L 5/28
 U.S. Cl. 15—329 9 Claims



1. A vacuum cleaner convertible between an upright vacuum cleaner and a portable hand carried vacuum cleaner, the combination comprising:
- a housing having opposite ends;
 - nozzle means at one end of said housing;
 - motor means in said housing for effecting suction of air through said nozzle means;
 - filter means in said housing for receiving air from said nozzle means and arranged to remove and collect dirt from the air;
 - a handle pivotably mounted on the other end of said housing for selective movement between an open position extending from said housing for manipulation thereof in an upright floor carried vacuum cleaning operation, and a closed position overlying said housing wherein said handle and housing cooperate to form a hand grip of discrete length at a location remote from said nozzle means adjacent said other end for manipulation thereof in a portable hand carried vacuum cleaning operation; and
 - handle locking means for automatically locking said handle in its open position upon movement thereto.

4,644,606
LAWN/GARDEN BLOWER/VACUUM
 Adolf Luerken, Rancho Palos Verdes; John S. Cannistra, Chatsworth; John L. Zimmerer, Torrance, and Edward J. Pilatowicz, Los Angeles, all of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.
 Filed Apr. 8, 1985, Ser. No. 720,883
 Int. Cl.⁴ A47L 5/14
 U.S. Cl. 15—330 15 Claims

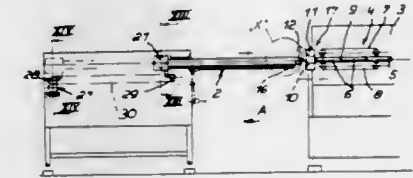


1. A hand-held blower/vacuum device comprising an air chamber having a front, a back, an axial air inlet in the front and a tangential air outlet having a central axis thereof, impeller means having an axis and rotatable in the chamber about the axis for drawing air through the air inlet into the chamber and discharging air from the chamber out of the air outlet, motor means for rotatably driving the impeller means, throttle means for controlling the speed of said motor means, handle means generally located above said air chamber and said motor means and generally above the center of gravity of the device and comprising a first section having an axis generally parallel to the axis of the air outlet and an adjoining second section having an axis extending at an angle of about 15° to 60° to the first section and generally below the first section when said first section is horizontal, throttle trigger means located proximate the juncture of said first section and said second section, said handle means for gripping by an operator in either of two preselected modes wherein when the first section is gripped and held in a generally horizontal orientation, with a digit of the operator's gripping hand proximate the throttle trigger means, said device is in the vacuum position with the air outlet generally horizontal, and when the second section is gripped and held in a generally horizontal orientation, with a digit of the operator's gripping hand proximate the throttle trigger means, said device is in the blower position with the air outlet generally facing ahead of the operator and at a downward angle.

4,644,607
DEVICE FOR APPLYING A STRAND OF SAUSAGE OR THE LIKE TO A SMOKING ROD
 Alfred Sziade, Geradstetten, Fed. Rep. of Germany, assignor to Karl Schnell, Fed. Rep. of Germany
 Filed Jan. 23, 1986, Ser. No. 821,598
 Claims priority, application Fed. Rep. of Germany, Jan. 24, 1985, 3502274
 Int. Cl.⁴ A22C 11/00, 15/00
 U.S. Cl. 17—45 28 Claims

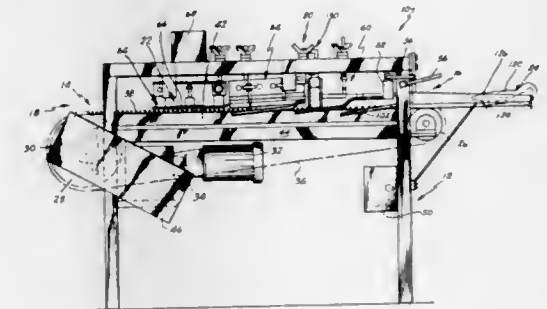
23. A method of applying a strand of filled casing from a portioning machine onto a rod-shaped carrier, comprising rotating a carrier finger about a longitudinal axis of the strand as it leaves the portioning machine, the carrier finger being provided for engaging the strand and for turning the strand

around the longitudinal axis, feeding the strand from the carrier finger onto a feeder arm extending coaxially with the longitudinal axis and adjacent the finger, the feeder arm thus receiving turns of the strand from the finger, mounting a rod-shaped carrier under the feeder arm and parallel to the longitudinal axis, retracting the feeder arm away from the carrier



finger after it has received a plurality of turns of strand while the rod-shaped carrier is held stationary, and sliding turns of the strand off the feeder arm onto the rod-shaped carrier while maintaining a selected spacing between turns of the strand on the feeder arm and as the turns leave the feeder arm and are dropped onto the rod-shaped carrier.

4,644,608
THIGH DEBONER
 Eugene G. Martin, New Holland, and Dale M. Risser, Denver, both of Pa., assignors to FoodCraft Equipment Company, Inc., New Holland, Pa.
 Filed Jan. 16, 1984, Ser. No. 570,914
 Int. Cl.⁴ A22C 25/16
 U.S. Cl. 17—46 40 Claims

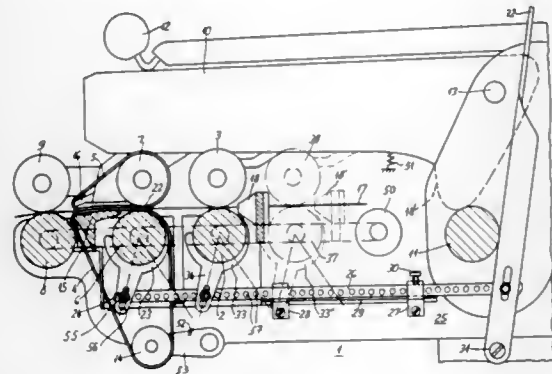


1. A deboner apparatus for removing the meat from a poultry thigh bone, said apparatus comprising:
- an elongated conveyor defining an upper run having a feed end and a discharge end, said conveyor including a plurality of dogs adapted to engage the bone of a poultry thigh;
 - a guide rail assembly extending from a point adjacent the feed end towards the discharge end for holding the thigh on the conveyor and initially folding meat from the thigh bone;
 - a peel-down assembly positioned downstream of said guide rail assembly and along said conveyor, said peel-down assembly defining an elongated slot positioned at an angle with respect to said upper run of said conveyor so that as the thigh bone passes through the slot, the edges of the slot progressively pass along the sides of the bone to peel the meat until the meat is retained on the bone along the lower edge of the bone; and
 - a cutting assembly positioned downstream of said peel-down assembly and wherein said cutting assembly includes a cutting blade positioned along a lower edge of the thigh bone for cutting the meat from the lower edge of the bone after the bone has passed through said peel-down assembly.

4,644,609
SPINNING MACHINE DRAFTING FRAME
 Manfred Lattner, Ebersbach, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,733
 Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 3404291

Int. Cl.⁴ D01H 5/86
 U.S. Cl. 19—244 10 Claims

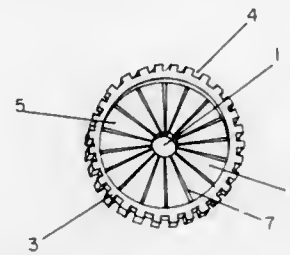


1. In a spinning machine drafting frame having at least two contacting feed belts in a main drafting zone through which the yarn or thread is fed, said belts being each guided around at least one guide member and at least one roller, one of said rollers being a drive roller, the improvement wherein between said drive roller and the respective one of said belts a movable blocking member is insertable in the direction of the line of contact of said drive roller and said one belt, said blocking member on engagement raising said one belt from said drive roller of said one belt and thereby stopping both said belts, said spinning machine drafting frame having at least one pair of rollers through which yarn or thread is fed between said feed belts, said roller pair comprising an upper roller contacting a lower roller, and said upper roller being mounted rotatably on a support which is raisable so that said upper roller may be raised from said lower roller, a shifting member for raising said upper roller from said lower roller being provided, said blocking member being constructed as a part cylindrical shell, conformed to engage said drive roller and pivotally attached to an operating lever engaged to a connecting rod of an operating apparatus, said pair cylindrical shell being insertable between said drive roller of said lower feed belt and said lower feed belt, when said connecting rod is pulled away from said blocking member so as to pivot said blocking member between said drive roller and the respective feed belt.

4,644,610
DISC SHAPED HOLDER WITH AN EXPANDABLE CENTER HOLE
 Ivan L. Fish, 2804 Carolina NE., Albuquerque, N. Mex. 87110
 Filed Sep. 6, 1984, Ser. No. 647,973
 Int. Cl.⁴ F16L 3/08 7 Claims

U.S. Cl. 24—30.5 S
 1. A disc shaped holder comprising: a generally circular bead around a central membrane, said central membrane having an access hole centrally located and further having a plurality of narrow slits radially disposed from the access hole to the bead, wherein the bead has a significant thickness compared to the membrane, wherein the bead has on its exterior circumference means to support the holder and the article placed therein, said support means comprising serrations or

striations for facilitating grasping the disc shaped holder, and wherein the slits in the membrane form truncated pie shaped

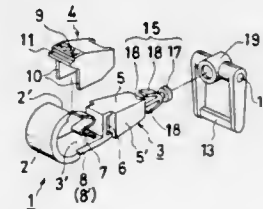


portions of the membrane which remain attached to the bead on its interior circumference.

4,644,611
SNAP HOOK
 Toshie Tanaka, Tama, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Nov. 19, 1985, Ser. No. 799,487
 Claims priority, application Japan, Nov. 29, 1984, 59-180026[U]

Int. Cl.⁴ A44B 13/02
 U.S. Cl. 24—231 3 Claims

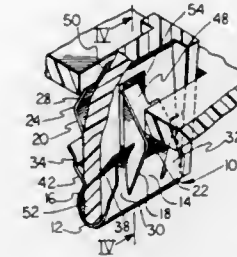


1. A snap hook comprising a base member having a longitudinal axis and including a body and a J-shaped hook extending from said body in the direction of the longitudinal axis, said J-shaped hook having a stem integral with and extending from said body and a curved end on said stem remote from and curving back toward said body, and a slider mounted on said base member for rectilinear movement relative thereto transversely of said longitudinal axis, one of said body and said slider having rectilinear guide track means thereon and the other thereof having structure interfitting with said guide track means for rectilinear movement of said slider relative to said body, said slider having an end portion cooperating with the curved end of said J-shaped hook for releasably closing said hook, and a resilient member acting between said base member and said slider for moving said slider to hook closing position.

4,644,612
PANEL RETAINER
 Robert W. Osterland, Marine City, Mich., assignor to USM Corporation, Farmington, Conn.
 Filed May 30, 1986, Ser. No. 868,975
 Int. Cl.⁴ F16L 33/12 7 Claims

U.S. Cl. 24—295
 1. A resilient clip for retaining a projection on a panel into an opening in a support, comprising: a pair of side members connected by a centrally disposed rounded main support member to form a substantially "U" or "V" shaped configuration to the clip, said side members comprising opposed elongated centrally located legs with locking shoulders, each of said side members further has substantially symmetrical opposed separate locking legs disposed adjacent said centrally located legs so that the locking legs of one side member oppose the locking legs of the other side member, each of said locking legs having

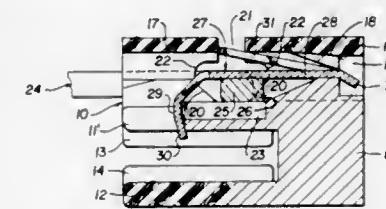
locking tabs for locking against the sides of the projection in the loaded condition, said locking shoulders extending outwardly away from one another to lock against the sides of the opening in the support to retain the projection of the panel in the support, said centrally located leg members each having a



free end opposite said rounded main support member, said free ends being disposed in facing relation to one another and having a portion removed therefrom whereby said free ends move past one another when said locking shoulders are moved through said opening.

4,644,613
LOCKING SLIDER FOR SLIDE FASTENER
 Stanley G. Kedzierski, Saegertown, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Oct. 21, 1985, Ser. No. 789,328
 Int. Cl.⁴ A44B 19/30
 U.S. Cl. 24—421 8 Claims



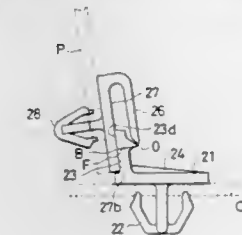
1. A locking slider for a slide fastener comprising a slider body including spaced wings joined at corresponding ends by a connecting post, a pair of crown portions on the slider body separated by a cross passage and having substantially aligned internal passage means longitudinally of the slider body, said crown portions having spaced opposing inclined divergent ramp faces at their separated ends and arcuate concave surfaces leading from the ramp faces on opposite sides of the cross passage, a locking spring having a body portion inserted through said aligned passage means and having a retaining leaf in divergent relationship to the spring body portion adapted to snap lockingly into engagement with an end face of one of said crown portions within said cross passage, a locking tooth on said spring at one end of the spring body portion extending generally transversely of the spring body portion beyond one side thereof and transversely of the longitudinal axis of the slider body, the slider body having a slot near one end thereof through one of said wings receiving the locking tooth whereby the locking tooth may engage coupling elements of a slide fastener between said wings, a pull tab for the locking slider having a through bar disposed between said ramp faces and arcuate concave surfaces and lying beneath said spring body portion and being retained thereby in assembled relationship with the slider body, and including said through bar of the pull tab being offset laterally from the longitudinal axis of the pull tab and being elongated in its cross sectional shape along the axis of the pull tab and having a guide lug projecting from one side of said through bar, and said slider body having a longitudi-

dinal guide groove receiving and guiding said lug during rotation of the pull tab.

4,644,614
PLASTIC FASTENER FOR SPACING AND SUPPORTING TWO PLATES

Akira Mizusawa, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Jun. 16, 1986, Ser. No. 874,623
 Claims priority, application Japan, Jun. 26, 1985, 60-97090[U]
 Int. Cl.⁴ F16B 13/04; H05K 7/12
 U.S. Cl. 24—453 8 Claims

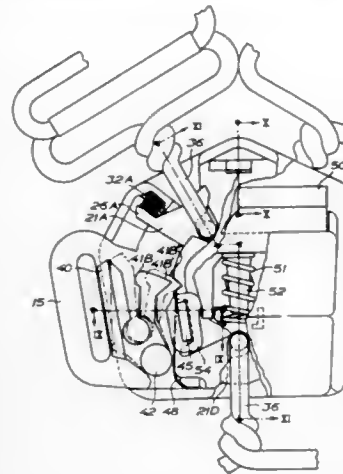


1. A fastener consisting of a one-piece molding of a plastic material, comprising:
 a first plate-like base portion for fastening a first member to be secured;
 an upright portion projecting from one surface of said first plate-like base portion;
 an L-shaped portion foldably united by a reduced thickness hinge portion to an intermediate portion of said upright portion and having a portion extending in the direction of said first plate-like base portion; and
 a second plate-like base portion extending from the other end of said L-shaped portion in the direction opposite to the direction in which said first plate-like base portion substantially extends from said upright portion, and substantially parallel to said first plate-like base portion, for fastening a second member to be secured;
 said second plate-like base portion being brought into contact with the free end of said upright portion when said second plate-like base portion and L-shaped portion are turned about said hinge portion in a direction away from said first plate-like base portion, said second plate-like base portion being brought into and held in contact with a surface of said upright portion on the side opposite said hinge portion due to elastic restoring force of said L-shaped portion when the point of contact between said second plate-like base portion and free end of said upright portion exceeds a point of intersection between said second plate-like base portion and a line normal to said second plate-like base portion and passing through said hinge portion.

4,644,615
LOCK FOR SAFETY BELTS
 Lars Hultqvist, Västra Frölunda, Sweden, assignor to Broderne Holmbergs Fabriks AB, Anderstorp, Sweden
 Filed Mar. 21, 1985, Ser. No. 714,632
 Claims priority, application Sweden, Mar. 22, 1984, 8401591
 Int. Cl.⁴ A44B 11/26 11 Claims

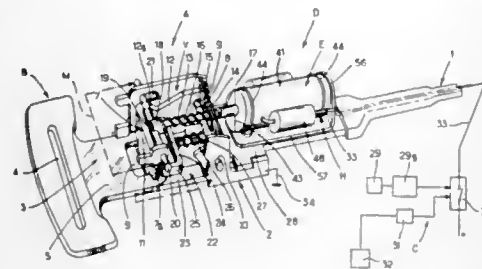
U.S. Cl. 24—574
 1. Lock for safety belts having at least two hip strap portions and at least one further strap portion, said lock including a lock housing to be attached to one hip strap portion; a lock mechanism enclosed by said casing; and a lock tongue on each of the other hip strap portion and said further strap portion, or each further strap portion, respectively, which can be inserted into the lock housing for cooperation with the lock mechanism, said lock mechanism comprising a number of lock plates one for each lock tongue, which are mounted in the lock housing

for pivotal movement about a common axis and each form an abutment for the associated lock tongue and a hook for retaining locking engagement with the lock tongue, first spring means biasing each of the lock plates out of engagement with the associated lock tongue, the hook of the lock plate being engaged with the lock tongue against the spring bias when the lock tongue is inserted into the lock housing to be engaged with the abutment, an arresting element for each lock plate to be engaged therewith to arrest temporarily the lock plate in the



engaged position, manually operable means for actuating the arresting elements to engagement with the associated lock plates, a latch member, second spring means biasing the latch member to engage the lock plates when all lock plates are temporarily arrested in the engaged position, to retain permanently the lock plates in said position, and a manually operable release member for actuating the latch member against the spring bias thereof to release the lock plates and allow pivotal movement thereof under the spring bias of the lock plates, to release the respective lock tongues from the lock mechanism.

4,644,616
SAFETY BELT BUCKLE DEVICE WITH AUTOMATIC UNLOCKING
Jacques H. Ferry, Paris, France, assignor to Equipements Automobiles Marchall, Issy-Les-Moulineaux, France
Filed Jul. 17, 1985, Ser. No. 755,733
Claims priority, application France, Jul. 17, 1984, 84 11301
Int. Cl.⁴ A44B 11/25; H01H 3/16
U.S. Cl. 24—602



1. In a safety belt buckle device comprising first and second components, said first component comprising a fastening member to be attached to a safety belt and the second component being adapted to be fixed to an anchorage point of a movable structure; said second component including locking means for locking the fastening member in the casing, automatic unlocking means for releasing the said fastening member, actuating means for the automatic unlocking means, and means respon-

sive to a parameter of the state of said movable structure and capable of actuating the unlocking means and hence of releasing the fastening member after detection of a change of said parameter of the state of said movable structure; said locking means comprising, on the casing, a triggering device, and elastic means actuating said triggering device in the locking direction; and said automatic unlocking means comprising means for automatically exerting a force against said elastic means to actuate the triggering device, the improvement wherein:

- (a) the means for automatically exerting a force comprise metallic means capable of exerting a force when heated, said metallic means having a first part joined to said casing and a second part joined to the triggering device, and
- (b) heating means are provided for heating the metallic element, said actuating means being capable of energising the heating means to produce the automatic unlocking.

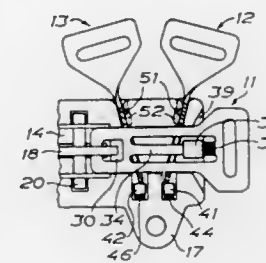
4,644,617
RELEASABLE LOCKING COUPLING OR SUPPORT DEVICE
Alan W. Tupper, The Weavers House, Castle Combe Wiltshire, SN14 7HX, and Peter R. Flux, 1 Chaveywell Court, Castle Street, Calne, Wiltshire, both of England
PCT No. PCT/GB83/00230, § 371 Date Aug. 1, 1984, § 102(e) Date Aug. 1, 1984, PCT Pub. No. WO84/01414, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 20, 1983, Ser. No. 619,164
Claims priority, application United Kingdom, Sep. 28, 1982, 8227660; Feb. 14, 1983, 8304044
Int. Cl.⁴ E04G 25/04
U.S. Cl. 24—611



1. A releasable locking, coupling or support device, comprising first and second cooperating parts which are positionable into a slidable disposition relative to each other, and interengageable latching means on said first and second parts characterized in that said latching means are engageable automatically when said first and second parts are in said disposition and the second of said parts is moved in a first direction relative to the first part by a predetermined amount so as to restrict subsequent movement of said second part relative to said first part, and are disengageable automatically upon a predetermined movement of said second part relative to said first part, from the latched position thereof, followed by movement in said first direction in an opposite direction; at least one abutment being provided on the first one of said cooperating parts; at least one rotary pawl being mounted on the second of said parts for cooperation with the abutment and being freely rotatable through complete revolutions about its axis of rotation; said pawl having a peripheral portion of generally parallelogram shape; a pair of notches formed in a pair of opposite side edges of the pawl for receiving an edge portion of the abutment in a locking position of the device; and control means including resilient means positioned on said second part for engaging in succession each side of the parallelogram-shaped

peripheral portion associated with the pawl, as the pawl is rotated by engagement and disengagement from the abutment so as to rotate and then locate the pawl in the required angular position thereof for the next step in a locking and release sequence.

4,644,618
LOCK FOR SAFETY BELLS
Göte E. Y. Holmberg, deceased, late of Anderstorp; by Brita G. E. Holmberg, legal representative, Tokarp, Box 2010, and by Dick L. L. Holmberg, legal representative, Bergkullavägen 12, both of S-334 00 Anderstorp, all of Fed. Rep. of Germany
PCT No. PCT/SE85/00212, § 371 Date Mar. 21, 1986, § 102(e) Date Mar. 21, 1986, PCT Pub. No. WO85/05258, PCT Pub. Date Dec. 5, 1985
PCT Filed May 22, 1985, Ser. No. 834,335
Claims priority, application Sweden, May 22, 1984, 8402750; Aug. 16, 1984, 8404109
Int. Cl.⁴ A44B 11/26
U.S. Cl. 24—630

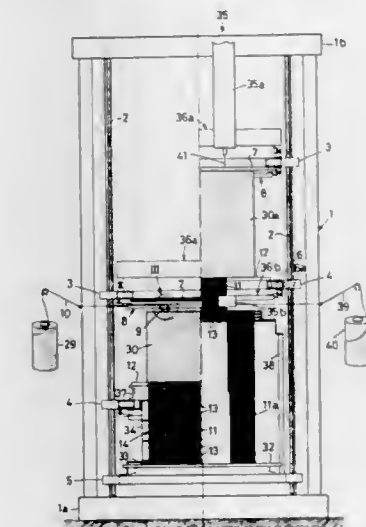


1. Lock for safety belts having two hip strap parts and at least one further strap part, said lock comprising a lock housing (10) to be attached to one hip strap part and enclosing a lock mechanism (18) having a release member (22) to be actuated manually, a lock tongue (11) to be attached to the other hip strap part, which can be inserted into an insert opening (39, 40) in the lock housing for co-operation with the lock mechanism, and a fitting (12; 13) for the further strap part to be connected with the lock housing and the lock tongue by these elements being lockingly engaged with each other, characterized in that a blocking shoulder (41, 42) is provided in the lock housing, which is spring-biased to project partly into the insert opening (39, 40) for the lock tongue (11) under the spring bias so as to prevent insertion of the lock tongue through the opening to engagement with the lock mechanism, and that the lock housing forms an insert opening (47, 49; 48, 50) for the fitting (12; 13) for the insertion thereof transversely through the insert opening for the lock tongue, the fitting being engaged with the blocking shoulder and the blocking shoulder being displaced from the insert opening for the lock tongue against the spring bias, the fitting (12; 13) forming an opening (53) for the insertion of the lock tongue to retain the fitting in the lock housing when the lock tongue is engaged with the lock mechanism.

4,644,619
METHOD FOR PRODUCING COMPLEX OBJECTS BY MULTIDIRECTIONAL DEPOSITION OF THREAD
Georges J. J. Cahuzac, Le Bouscat, and Francois J. R. Monget, Merignac, both of France, assignors to Societe Nationale Industrielle et Aerospaciale, France
Continuation-in-part of Ser. No. 679,297, Dec. 7, 1984, abandoned, which is a division of Ser. No. 519,578, Aug. 2, 1983, abandoned. This application Jan. 16, 1986, Ser. No. 819,814
Claims priority, application France, Aug. 9, 1982, 82 13893
Int. Cl.⁴ B32B 7/08; D04H 3/04
U.S. Cl. 28—100

1. A method for producing a package for use as a framework in the manufacturing of a body of composite material and

which is formed by threads assembled by a multi-directional deposit of thread, said method comprising:
depositing a single thread without residual tension in a sinuous path extending in a first direction and zig-zagging between end portions of rigid mutually parallel rods as to form a layer of said thread in a plane transverse to the direction of said rods;
supporting the layer on a bearing surface;
moving the bearing surface away from the region in which the thread is being deposited by about the thickness of the layer;
compacting the layer along the rods with sliding of the layer by applying a pressure to the layer;
depositing the single thread without residual tension in a sinuous path extending in a second direction and zig-zagging between end portions of the rigid mutually parallel



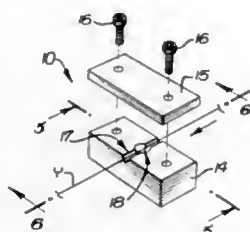
rods so as to form a subsequent layer of said thread in a plane transverse to the direction of said rods, said second direction crossing said first direction so that said first-mentioned layer crosses said subsequent layer;
supporting the subsequent and first-mentioned layers on the bearing surface;
again moving the bearing surface away from the region in which the thread is being deposited by about the thickness of the subsequent layer;
compacting the subsequent layer along the rods with sliding of the subsequent layer by applying a pressure to the subsequent layer; and
repeating the steps of depositing, supporting, moving and compacting to form additional superimposed layers alternating in the first and second direction until a desired number of layers is formed.

4,644,620
DRAW TEXTURING AND ENTANGLEMENT APPARATUS FOR YARN
Yoshiyasu Maeda, Yamato Kouriyama, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Continuation of Ser. No. 446,467, Dec. 3, 1982, abandoned. This application Jun. 14, 1985, Ser. No. 745,991
Int. Cl.⁴ D02G 1/20; D02J 1/08
U.S. Cl. 28—220

1. An apparatus for entangling yarn including a device comprising:
(a) a yarn path part block having a channel formed in a surface thereof so as to have at least two different cross-section portions; (1) one portion, in the form of a yarn path channel, having a first cross-section which is defined by at least one planar wall arranged longitudinally in the yarn

travelling direction; and (2) another portion, forming a yarn treating section, formed continuous with and intermediate along the yarn path channel, such portion defined by a curved surface forming a second cross-section having a larger cross-sectional area than the first cross-section, with at least one fluid jet opening in the vicinity of the bottom of said curved surface;

(b) means for enclosing said at least two different cross-section portions of said yarn path part block to form there-

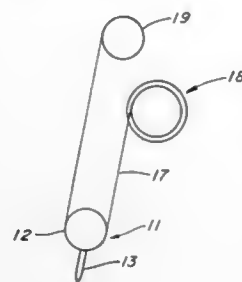


with a tunnel-like structure, said fluid jet opening lying in the plane defined by the longitudinal surface of said yarn path channel which is furthest from said means for enclosing said cross section portions; and

(c) means for supplying a fluid to said at least one fluid jet opening;

wherein at least one edge of said planar wall of said yarn path channel is tangent to the imaginary arc of the curved surface of said yarn treating section; whereby a yarn having alternating entangled portions and open portions is produced.

4,644,621
CHILLED YARN GUIDE
Samuel L. Yates, Lexington, S.C.; Frank L. Peckinpaugh, Petersburg, Va.; Thomas A. Flower, Colonial Heights, Va., and Michael K. Westmoreland, Midlothian, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jan. 31, 1983, Ser. No. 462,265
Int. Cl.⁴ D02G 1/20; D02J 1/02
U.S. Cl. 28—247 11 Claims



1. Apparatus comprising means for texturing multiple ends of a continuous running length of nylon filament yarn, said yarn having no externally applied tension subsequent to texturing a curved surface having a minimum length for yarn contact of 7.6 cm, an RMS (microinches) of up to 10 and a temperature of -29° to 2° C. (-20° to 35° F.) said multiple ends being in contact with said curved surface for at least 4 milliseconds at a yarn tension of at least 0.036 to 0.045 grams per denier per end.

4,644,622
APPARATUS FOR AIR ENTANGLING A PLURALITY OF ADVANCING YARNS

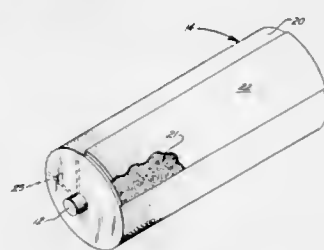
Karl Bauer, and Michael Hanisch, both of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 676,723, Nov. 30, 1984, Pat. No. 4,592,119. This application Apr. 5, 1985, Ser. No. 720,139
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405891; Apr. 7, 1984, 3413276
Int. Cl.⁴ D02G 1/16; D02J 1/08
U.S. Cl. 28—271 31 Claims

1. An apparatus for simultaneously air jet entangling a plurality of advancing multifilament yarns, and which is adapted for use in association with the drawing and warp beaming of such yarns, and comprising an elongate air jet beam, said air jet beam including a longitudinal air supply passageway extending along its length, a plurality of individual air jet nozzle heads releasably mounted in a row along said air jet beam, and with said heads being mounted only to said beam and being disposed in a closely spaced relationship therealong, and

each of said air jet nozzle heads including a plurality of individual yarn entanglement nozzles and a central air chamber communicatively connected with said individual yarn entanglement nozzles and said air supply passageway so that air passes from said air supply passageway, through said central air chamber, and into said individual yarn entanglement nozzles to engage and air jet entangle individual yarns passing through said yarn entanglement nozzles.

4,644,623
METHOD OF MAKING A ROTATABLE MOLDING ELEMENT FOR SELECTIVELY APERTURING THERMOPLASTIC FILM

Garland E. Raley, and Dean M. Spear, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.
Division of Ser. No. 499,857, Jun. 1, 1983, Pat. No. 4,541,794.
This application Apr. 11, 1985, Ser. No. 721,883
Int. Cl.⁴ B21H 1/18; B32B 31/04
U.S. Cl. 29—148.4 D 8 Claims



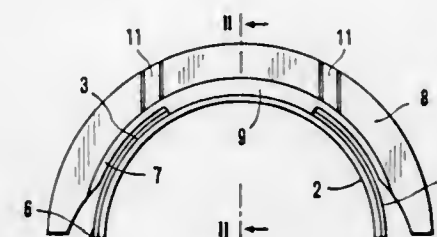
1. A method of making a rotatable molding element means for selectively aperturing thermoplastic sheet or film comprising:

- providing a cylindrically shaped base pattern screen having a plurality of openings therein arranged in a predetermined pattern wherein as thermoplastic film is contacted with said screen and a fluid pressure differential is placed on the surface of the film, said pattern on said screen is imparted to the film;
- mounting a spunbonded-nonwoven breathable thermally resistant thin airflow restrictor sheet material over the outer surface of a portion of the base pattern screen for providing localized restriction of airflow through said screen; and
- mounting an overlay screen over said airflow restrictor sheet material and securing said overlay screen on said base pattern screen thereby providing a rotatable element means for perforating a thermoplastic film having a desired pattern of perforated areas and non-perforated areas.

4,644,624
METHOD FOR MANUFACTURING A FLANGED HALF BEARING

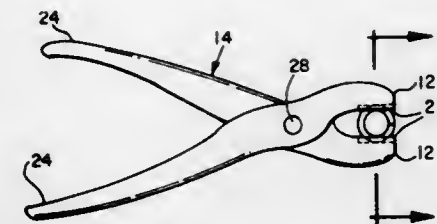
Mario Fontana, Cuorgnè, Italy, assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jun. 26, 1984, Ser. No. 624,901
Claims priority, application Italy, Jul. 21, 1983, 67789 A/83
Int. Cl.⁴ B21D 53/10
U.S. Cl. 29—149.5 R 16 Claims



1. A process for the manufacture of half bearings with thrust flanges rigidly connected thereto, comprising the steps of: producing a plain half bearing having connection portions thereon; separately producing a pair of thrust half rings having an inner contour provided with a plurality of protrusions for connection to said plain half bearing; carrying out on said plain half bearing and said pair of thrust half rings all required working and finishing operations; mounting said pair of thrust half rings on said plain half bearing with said protrusions of said inner contour of said pair of thrust half rings registering with and contacting said connection portions of said plain half bearing; and rigidly connecting said pair of thrust half rings to said half bearing by a projection welding process wherein said inner contour subsequently abuts said connection portions.

4,644,625
PLIER TOOL FOR MAKING AN IMPROVED ELECTRICAL CONNECTION
Howard H. Sheppard, 7430 Sprague St., Philadelphia, Pa. 19119
Division of Ser. No. 644,304, Aug. 24, 1984, which is a division of Ser. No. 417,240, Sep. 13, 1982, Pat. No. 4,482,782. This application Apr. 7, 1986, Ser. No. 848,872
Int. Cl.⁴ B23P 19/04
U.S. Cl. 29—268 1 Claim



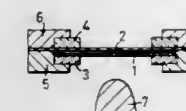
1. A tool in combination with a ring for making an improved soldered connection between a wire and a terminal, comprising:

- a pair of members pivoted together between their ends, each member having a mating jaw formed at one end and a handle at the other;
- a longitudinal slot in each jaw;
- a ring;
- said slot in each jaw being adapted to receive a portion of said ring;
- said ring being comprised of a member, said ring having an

outside and an inside diameter and a thickness measured perpendicular to said diameters, said ring member having a width dimension measured as the difference between an outside radius and an inside radius in the direction of the diameter, both of said diameters being large relative to said thickness, said ring being comprised of a metallic material of a composition sufficiently malleable to be radially inwardly compressible over a terminal and a wire and of a sufficient rigidity to retain the deformed shape as compressed such that it is adapted to hold a wire tightly against the terminal;

said ring being mountable over a terminal and a wire such that the plane of the diameters of the ring is substantially perpendicular to said terminal and wire and the plane of the diameters of the ring is in the plane in which said pair of members move when pivoted on each other; and wherein the depth of the longitudinal slot in each jaw is selected to be substantially equal to the width of said member from which said ring is formed, whereby upon compression of said jaw members toward each other, said ring member may not be forced through said wire resulting in a cutting action.

4,644,626
FORMING OF METAL ARTICLES
Anthony J. Barnes, Malvern, and Russell J. Stracey, Persbore, both of England, assignors to Alcan International, Ltd., Montreal, Canada
Filed Aug. 23, 1985, Ser. No. 768,577
Claims priority, application United Kingdom, Aug. 25, 1984, 8421634
Int. Cl.⁴ B23D 17/00; B21D 22/10
U.S. Cl. 29—421 R 20 Claims



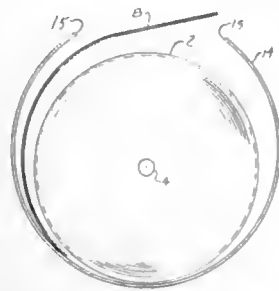
1. A method of forming a shaped metal article in which a body of said metal is contacted on opposite sides thereof by sheets of a metal capable of being deformed plastically at an elevated temperature, one of the sides in contact with or adjacent a mould surface, and both sheets with the body between them are urged against the body while the sheets are at a temperature at which they can be plastically deformed and the body is at a temperature at which it can conform to the shape of the sheets so that the body is deformed and pressed against the mould surface with one of the sheets between the mould surface and the body.

4,644,627
METHOD OF MAKING DOUBLE WALL STORAGE TANK FOR LIQUIDS
David T. Palazzo, P.O. Box 290676, Tampa, Fla. 33687
Continuation-in-part of Ser. No. 775,140, Sep. 12, 1985. This application Jan. 13, 1986, Ser. No. 818,258
Int. Cl.⁴ B23P 17/00, 19/04; B21D 39/00
U.S. Cl. 29—423 17 Claims

1. A method of manufacturing a rigid double wall tank for

storage of liquids from a rigid, single wall, cylindrical inner tank the exterior surface of which has cylindrical sidewall portions of predetermined axial length and end portions extending generally transverse to said sidewall portions, said method comprising the steps of

- applying to at least a portion of the cylindrical sidewall portions of the exterior surface of said rigid inner tank primary spacing material having a predetermined thickness;
- applying over and closely adjacent both said cylindrical sidewall portions of said inner tank exterior surface and said primary spacing material a substantially rigid sheath of a material that is substantially liquid-tight, whereby said sheath defines a substantially cylindrical member;



forming an opening through said sheath, said opening extending the full length of said sheath cylindrical member; introducing between said sheath and said inner tank exterior surface secondary spacing material to space at least a substantial portion of the inner surface of said sheath from said inner tank exterior surface; closing said sheath opening; and applying to the axial extremities of said sheath cylindrical member substantially rigid and liquid-tight sheath end portions overlying said inner tank end portions and extending generally transverse to said sheath cylindrical portions, whereby is formed a sheath enclosing said inner tank, thus defining a double wall tank.

4,644,628

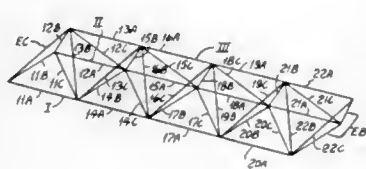
METHOD OF TRUSS STRUCTURE CONSTRUCTION
Anthony P. Coppa, Merion, Pa., assignor to General Electric Company, Philadelphia, Pa.

Division of Ser. No. 605,372, Apr. 27, 1984, Pat. No. 4,601,152.
This application Jan. 27, 1986, Ser. No. 822,638

Int. Cl.⁴ E04G 21/00; B23P 11/02

U.S. Cl. 29—429

6 Claims



1. A method for constructing an elongate prism-form truss structure from a stack of disconnected, planar, congruent triangular elements, each of said triangular elements having first, second and third sides opposite first, second and third vertices respectively; said first and second sides of each of said elements being substantially equal in length and said third side being substantially $2/\sqrt{3}$ times one of the shorter sides, said method comprising the steps of:

- sequentially removing said elements from said stack;
- joining said first vertex of each removed element to said third vertex of the next removed element to form a chain of said removed elements; and
- sequentially joining said second vertex of each Nth element to said first vertex of the subsequent element N+2 and to

the third vertex of the subsequent N+3 in said chain, up to but excluding the second element before the ultimate element of the chain and connecting the said second vertex of element N+1 to the said first vertex of the ultimate element of the chain.

3. A method for constructing an elongate prism-form truss structure from a stack of disconnected, planar, congruent, triangular elements by the use of a holding fixture and a fabrication fixture, said structure being defined by first, second and third lateral edges parallel to the longitudinal axis of said fabrication fixture and having a right cross section in the form of an equilateral triangle, each of said triangular elements having first, second and third sides opposite first, second and third vertices respectively, said first and second sides of each of said elements being substantially equal in length and said third side being substantially $2/\sqrt{3}$ times one of the shorter sides, said fabrication fixture having a cross section adapted to fit within the structure to be constructed to allow relative axial movement therebetween and having a length at least twice that of one of said shorter sides; said method comprising the steps of:

- (1) feeding a first triangular element to said fabrication fixture from said stack when said fabrication fixture is in its initial position;
- (2) grasping said first triangular element near each vertex thereof with said fabrication fixture such that the first side of said first element is positioned in said first lateral edge;
- (3) rotating said fabrication fixture 120° in a predetermined direction about said axis;
- (4) advancing said fabrication fixture along said axis a distance substantially equal to $\frac{1}{2}$ the length of said first side;
- (5) feeding a second triangular element to said fabrication fixture from said stack;
- (6) fastening the third vertex of said second triangular element to the first vertex of said first element;
- (7) grasping said second triangular element near each vertex thereof with said fabrication fixture such that the first side of said second triangular element is positioned in said second lateral edge;
- (8) repeating steps (3) and (4) above;
- (9) feeding a third triangular element to said fabrication fixture from said stack;
- (10) fastening the third vertex of said third triangular element to the first vertex of said second element;
- (11) grasping said third triangular element near each vertex thereof with said fabrication fixture such that the first side of said third triangular element is positioned in said third lateral edge;
- (12) repeating steps (3) and (4) above;
- (13) feeding a fourth triangular element to said fabrication fixture from said stack;
- (14) fastening the third vertex of said fourth triangular element to the first vertex of said third element and fastening the third vertex of said fourth element to the second vertex of previously added element N-3, where N is the element currently being added to said structure;
- (15) grasping said fourth triangular element near each vertex thereof with said fabrication fixture such that the first side of said fourth triangular element is positioned in said first lateral edge;
- (16) grasping said structure externally thereof with said holding fixture and releasing it from said fabrication fixture;
- (17) returning said fabrication fixture to said initial position;
- (18) grasping said structure with said fabrication fixture and releasing it from said external fixture; and
- (19) repeating steps (3) to (18) until the desired number of triangular elements have been joined, provided however that the third vertex of each element N so added to said structure is fastened to the first vertex of the previously added element and to the second vertex of previously added element N-3.

4,644,629

EMBROIDERY FRAMING METHOD

Edgar F. Moore, III, 4447 Old Randleman Rd., Greensboro, N.C. 27405

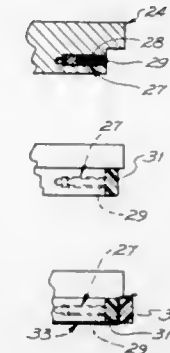
Division of Ser. No. 626,530, Jun. 29, 1984, Pat. No. 4,538,335.

This application Jun. 24, 1985, Ser. No. 748,334

Int. Cl.⁴ B23P 11/02

U.S. Cl. 29—448

3 Claims



1. A method for forming a frame of material for embroidering including the steps of: engaging an inner embroidery frame along its inside edge with tension means along an outer periphery of a plunger head whereby a bottom of the plunger head is in coplanar relation with a bottom of the inner embroidery frame while an upper edge of the inner frame is contiguous with a shoulder of the plunger head, maintaining said relation while urging the bottom of the inner frame and the plunger head into contact with a desired material, directing the material into an outer frame until the bottom edges of the inner frame, plunger head and outer frame are substantially coplanar to sandwich the material between the inner and outer frames, releasing the inner frame from the plunger head thereby providing a uniformly tensioned frame of material between the inner and outer frames.

4,644,630

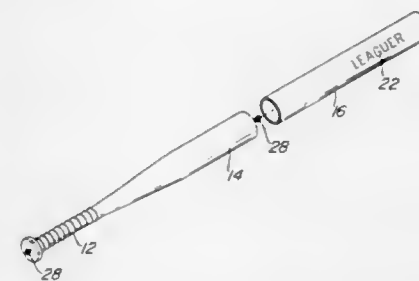
METHOD OF PRODUCING A PLASTIC BASEBALL BAT OR THE LIKE HAVING METALLIC APPEARANCE

Seymour Blum, Rockville Centre, N.Y., assignor to H-G Toys Inc., Long Beach, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,548

Int. Cl.⁴ A63B 59/06; B23P 19/02; B29C 49/06, 61/02
U.S. Cl. 29—453

6 Claims



1. A method of producing a metallic appearance on a non-metallic article comprising the steps of: moulding an elongated generally conical shaped plastic bat having a fat end, a handle end and a tapered portion between the handle and fat end; providing a flat substantially transparent heat-shrinkable film; applying an opaque coating having a metallic appearance on substantially all of one surface of the flat clear film; folding the coated film to form a tube having a continuous outer surface which is the non-coated surface and having a diameter sufficient to permit telescoping of the tube over the fat end of the

bat; cutting the film to a length substantially equal to the length of the tapered portion and fat end of the non-metallic bat; telescoping the tube over the tapered portion of the fat end of the bat; and applying heat to shrink the film onto the surface of the bat so as to provide an illusion of a metallic structure for the surface of the bat covered by the film.

4,644,631

METHOD OF MAKING FLOORING ASSEMBLY FOR DUMP TRUCKS AND R.R. CARS

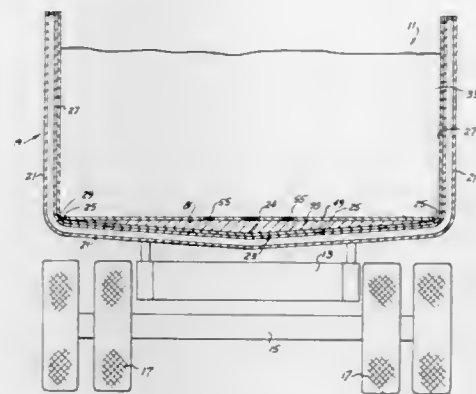
John Shock, 251 Lothrop, Grosse Pointe Farms, Mich. 48236

Filed Jul. 17, 1985, Ser. No. 755,726

Int. Cl.⁴ B23P 19/04, 7/00, 19/04, 7/04

U.S. Cl. 29—460

11 Claims



1. The method of making a replacement flooring for a dump truck having a body nested within and secured upon a skeleton frame, said body including side and front walls and a steel flooring plate, comprising the steps:

1. loosely superimposing a replacement steel floor plate upon and overlying the top surface of the flooring plate in registry therewith;
2. peripherally welding the replacement plate to underlying portions of the floor plate, defining a sealed chamber between said plates;
3. drilling through said replacement plate at least one vent opening and a fill opening;
4. injecting under pressure through said fill opening into and filling said chamber a quantity of liquid thermosetting copolymer selected from the group consisting of polyethylene, polyurethane, polypropylene, polystyrene and polycarbonate;
5. filling said chamber with said copolymer to a predetermined pressure;
6. plugging up the openings in said replacement plate; and
7. curing the thermosetting copolymer for a period of time sufficient to provide a hardened spacer filler between said plates substantially throughout their opposing surfaces in supporting engagement with said replacement plate.

4,644,632

METHOD OF ASSEMBLING THE OPTICAL COMPONENTS OF AN OPTICAL APPARATUS AND A DEVICE THEREFOR

Meinrad Mächler, Ellwangen; Reinhold Bittner, Mögglingen; Franz Glück; Harry Schlemmer, both of Aalen, and Richard Sachse, Königshorn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 13, 1986, Ser. No. 839,339

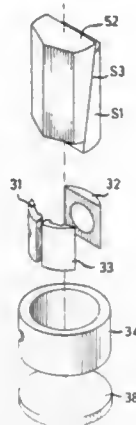
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509131

Int. Cl.⁴ B23P 21/00; B32B 31/00; G02B 1/00; G01J 3/28
U.S. Cl. 29—469

16 Claims

1. A method for the adjusted assembly of the optical compo-

nents of an optical apparatus, the method comprising the steps of:
adjusting and permanently fixing the optical components



being moved, and stopping said die assemblies in response to a stop signal from said control computer when they reach a desired horizontal position from which they can trim and bend said axial leads.

4,644,634 REMOVABLE BLADES FOR CUT-CLINCH HEAD ASSEMBLY

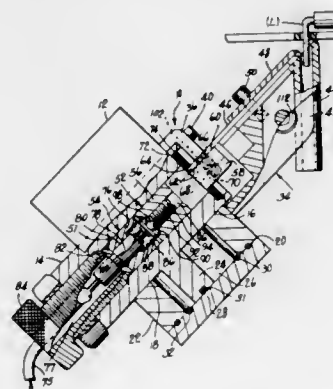
Rodney P. Jackson, Auburn, N.H., assignor to USM Corporation, Farmington, Conn.

Filed Jul. 30, 1984, Ser. No. 635,628

Int. Cl.⁴ B21F 1/00

U.S. Cl. 29—566.3

3 Claims



onto selected ones of a plurality of shaped component bodies; and,
then assembling and fixing said shaped component bodies in a defined manner.

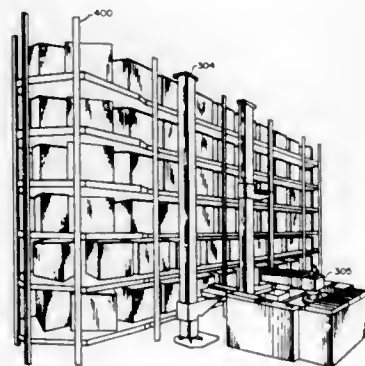
**4,644,633
COMPUTER CONTROLLED LEAD FORMING**
Steven P. Jones, and David J. Tilles, both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 23, 1985, Ser. No. 768,664

Int. Cl.⁴ B21F 45/00

U.S. Cl. 29—566.3

10 Claims



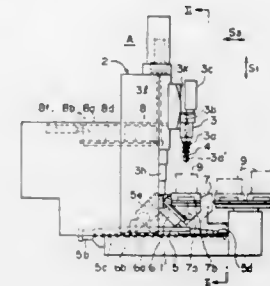
1. In combination with a control computer, which directs a kitting robot to select an axial component with known electrical characteristics and two axial leads, a lead forming apparatus for trimming and shaping said axial leads by receiving directional signals from said control computer, said lead forming apparatus comprising:

first and second die assemblies which trim and bend said axial leads in response to said direction signals from said control computer when said axial component is held suspended between them by said kitting robot; and
a means for incrementally moving said first and second die assemblies horizontally into known positions, said incrementally moving means initially holding said first and second die assemblies in a "home" position, then moving said first and second die assemblies together and apart in response to an activate signal from said control computer, said incrementally moving means producing a count signal which indicates said die assemblies' position as it is

**4,644,635
MACHINING CENTER**
Masayoshi Murai, and Akira Fuyuki, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Sep. 26, 1985, Ser. No. 780,669
Claims priority, application Japan, Oct. 3, 1984, 59-207520
Int. Cl.⁴ B23Q 3/157

U.S. Cl. 29—568

4 Claims



1. A machining center comprising a bed, an arch shaped column having a pair of post portions spaced from each other in the transverse direction of the bed and a crossbeam portion connecting the post portions, a spindle head supported on the crossbeam portion of the column to be movable both in the vertical direction and in the transverse direction of the bed and supporting a spindle which is rotatable about a substantially vertical rotatable shaft on which a tool is demountably mounted, a base table supported on the bed between the post portions of the column to be movable back and forth, a support supported on the base table by a projected supporting portion of the base table to be rotatable in an indexing manner about a rotatable shaft inclined upwardly toward the front end thereof at 45° to the rotatable shaft of the spindle, a turn table provided on the support to be rotatable in an indexing manner about a rotatable shaft at 45° to the rotatable shaft of the support, and a tool magazine for storing a plurality of tools to be mounted on the spindle and disposed between upper parts of the post portions of the column, at least a part of the supporting portion of the base table for supporting said support being disposed between the post portions of the column.

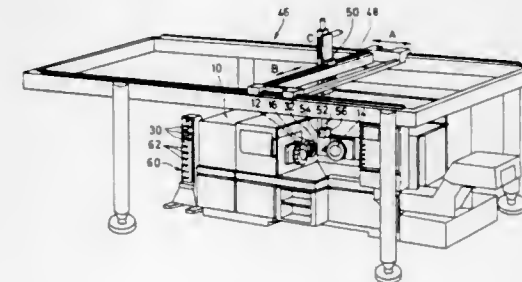
**4,644,636
DEVICE FOR CHANGING CHUCK ATTACHMENT JAWS**
Helmut F. Link, Aichwald, and Walter Grossmann, Baltmannsweiler, both of Fed. Rep. of Germany, assignors to Index-Werke Komm.-Ges. Hahn & Tessky, Fed. Rep. of Germany
Filed Jan. 6, 1986, Ser. No. 816,279

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1985, 3501416

Int. Cl.⁴ B23Q 3/156

U.S. Cl. 29—568

16 Claims



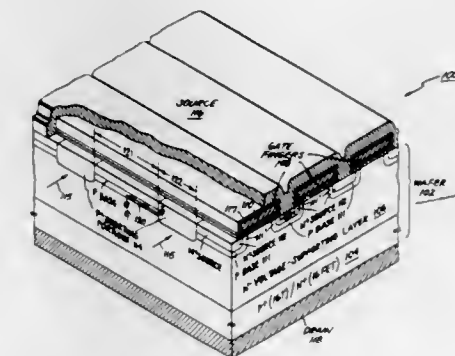
1. An apparatus for changing chuck attachment jaws for chucks comprising a plurality of main jaws displaceable on a chuck body in radial direction relative to the chuck axis, each of said main jaws mounting an interchangeable attachment jaw serving to clamp workpieces, main jaw and attachment jaw

having a recess and a projection on their facing end surfaces, said projection being insertable into said recess in a direction having at least one component in the direction of the chuck axis, and also comprising an attachment jaw gripping device for holding an attachment jaw to be changed, said gripping device having an actuating element for actuating a locking device provided between main jaw and attachment jaw, characterized in that main jaw and attachment jaw (24 and 30, respectively) have at least two recesses (38, 40) and two projections (26, 28) on their facing end surfaces (25, 34), one of said projections (26) being insertable into the associated recess (38 or 40) to fit in a radial as well as a tangential direction and the other projection (28) to fit at least in a tangential direction, and that said locking device (100, 72, 80) has clamping faces (76, 78; 74, 104) inclined relative to said end faces (25, 34) for pressing said end faces together.

**4,644,637
METHOD OF MAKING AN INSULATED-GATE SEMICONDUCTOR DEVICE WITH IMPROVED SHORTING REGION**
Victor A. K. Temple, Jonesville, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 30, 1983, Ser. No. 567,116
Int. Cl.⁴ H01L 21/265

U.S. Cl. 29—571

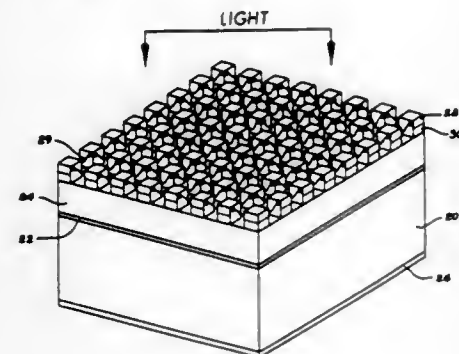
16 Claims



1. A method of fabricating an insulated-gate semiconductor device with an improved shorting region, said method including the steps of:

- providing a wafer of semiconductor material including a drain region and a voltage-supporting layer of one conductivity type overlying said drain region;
- providing an insulating coating atop said wafer;
- introducing into said voltage-supporting layer shorting portions of opposite conductivity type that are generally parallel to each other;
- forming a plurality of generally parallel gate fingers that are situated atop said insulating coating and transverse to said shorting portions; and
- forming base portions of the opposite conductivity type in the upper part of said voltage-supporting layer and forming source portions of the one conductivity type, each source portion being situated within a respective base portion.

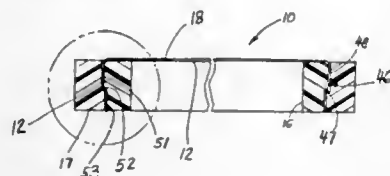
4,644,638
PHOTOVOLTAIC DEVICE PREPARED BY ELECTROLESS DEPOSITION
 Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
 Division of Ser. No. 518,814, Aug. 1, 1983, Pat. No. 4,492,811.
 This application Sep. 24, 1984, Ser. No. 653,359
 Int. Cl.⁴ H01L 31/18
 U.S. Cl. 29—572 35 Claims



6. A method for the preparation of a photovoltaic device comprising the step of electroless deposition of a conductive solid coating material containing a degenerate n-type semiconductor having a band gap from about 0.5 to about 2.35 e.V. which forms a heterojunction with a solid substrate consisting essentially of an n-type semiconductor material.

14. The method defined in claim 6 further comprising attaching a front ohmic electrode having a grid configuration to said coating material.

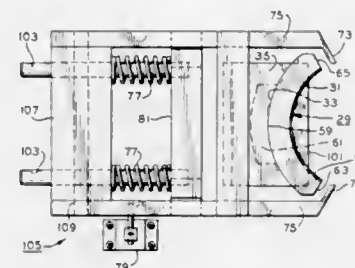
4,644,639
METHOD OF SUPPORTING AN ARTICLE
 Jack H. Atteberry, Pleasant Hill, and Rupert D. Clark, Kansas City, both of Mo., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
 Filed Dec. 21, 1984, Ser. No. 684,892
 Int. Cl.⁴ H01L 21/68
 U.S. Cl. 29—589 4 Claims



1. A method of supporting an article on a mounting frame which comprises:
 placing a sheet of pliable material across an opening through an inner frame member of such mounting frame with an orientation with respect to such inner frame member which causes a peripheral right-angle ledge formed by an offset in an outer wall of the inner frame member to be directed away from the sheet of pliable material;
 placing an outer frame member of such mounting frame concentrically with respect to the inner frame member over the sheet of pliable material, and with an orientation with respect to said inner frame member such that a right-angle ledge formed by an offset in the inner wall of the outer frame member complementary to the right angle ledge in the outer wall of the inner frame member is directed away from the sheet of pliable material;
 urging the outer frame member into a coplanar position with the inner frame member, thereby grasping the sheet of pliable material between adjacent outer and inner walls of

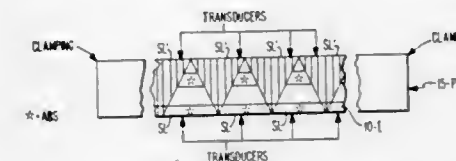
the inner and outer frame members, respectively, whereby the sheet becomes stretched across the opening through the inner frame member;
 engaging the respective ledges in the outer and inner walls of the inner and outer frame members with the sheet grasped between engaged surfaces of such ledges, thereby locking the sheet of pliable material stretched across such opening; and
 mounting an article to the stretched sheet of pliable material to support such article thereon.

4,644,640
APPARATUS AND METHOD FOR ADJUSTABLY EFFECTING THE DISPOSITION OF A MAGNET MATERIAL ELEMENT IN A PRESELECTED POSITION THEREFOR
 Alexander Muller, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.
 Division of Ser. No. 616,200, Jun. 1, 1984, Pat. No. 4,586,244, which is a continuation-in-part of Ser. No. 593,840, Mar. 27, 1984, Pat. No. 4,608,752. This application Mar. 20, 1986, Ser. No. 842,097
 Int. Cl.⁴ H02K 15/00
 U.S. Cl. 29—596 17 Claims



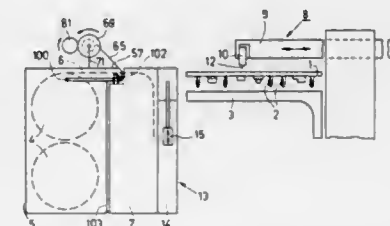
14. Apparatus for adjustably effecting the disposition of a magnet material element in a preselected position therefor, the magnet material element having at least one generally arcuate surface interposed between a pair of generally opposite marginal edges defining the arcuate length of the magnet material element, respectively, the apparatus comprising:
 means operable generally between a pair of positions and adapted for receiving the magnet material element in one of the positions thereof, said receiving means including arcuate means for locating engagement with the at least one arcuate surface of the magnet material element when it is received in said receiving means;
 means operable generally in response to the operation of said receiving means from the one position toward the other of the positions thereof for caging in engagement the opposite marginal edges of the magnet material element thereby to adjustably move the magnet material element generally about the locating engagement between the at least one arcuate surface of the magnet material element and said arcuate means of said receiving means so as to at least generally center the arcuate length of the magnet material element with respect to that of said arcuate means; and
 means associated with said caging means and operable generally for actuating it toward a displaced position disengaged from the magnet material element at least when said receiving means is in the other position thereof.

4,644,641
FABRICATION OF "DELTA" MAGNETIC HEAD-SLIDERS
 Michael A. Verdone, Hillsborough, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
 Filed Dec. 30, 1985, Ser. No. 814,824
 Int. Cl.⁴ G11B 5/60
 U.S. Cl. 29—603 10 Claims



1. A method of fabricating a "Delta slider" means for flying a magnetic head on a fluid bearing relative to magnetic recording media moving in a predetermined direction in the fluid, this slider means comprising:
 a slider body having means defining a wedge-shaped fluid bearing surface having leading and trailing edges for flying above the moving media, the fluid bearing surface defining means comprising:
 a generally cuneiform planar fluid support surface FSS, the method including:
 providing a rectangular bar of slider material, this bar including a pair of elongate planar parallel "top" and "bottom" faces defined between opposing parallel sides;
 forming a row of identical relatively adjacent triangular slider pieces, including forming air bearing surfaces and associated cavities and other elements in common, the sliders being disposed in alternating reversed juxtaposition along the row; and
 severing the sliders so formed from the bar.

4,644,642
METHOD OF AND DEVICE FOR PLACING CHIP-TYPE ELECTRICAL AND/OR ELECTRONIC COMPONENTS ON A SUBSTRATE
 Hendrik C. Wardenaar, and Bernardus J. Kuppens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
 Continuation of Ser. No. 479,585, Mar. 28, 1983, abandoned.
 This application Sep. 3, 1985, Ser. No. 772,196
 Claims priority, application Netherlands, Apr. 21, 1982, 8201653
 Int. Cl.⁴ H05K 3/30; B23P 19/00
 U.S. Cl. 29—834 8 Claims



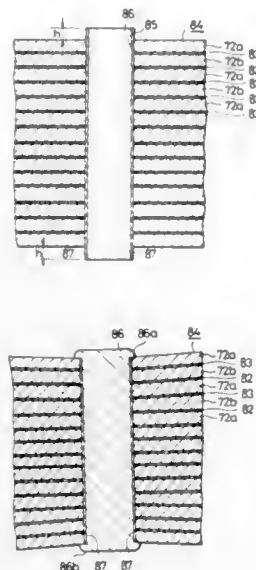
1. An improved method of placing chip-type electrical components on a substrate, including the steps of positioning a pick-up device having a plurality of pick-up elements over a supply of components such that simultaneously each of said pick-up elements picks up one component, and subsequently positioning the pick-up device over a substrate; characterized by the additional steps of
 moving said pick-up device relative to said substrate;
 calculating a sequence in which each of said pick-up elements is sequentially positioned over the substrate position designated to receive the component held by said element

such that the distance to be travelled by said pick-up device is as short as possible;
 moving sequentially each pick-up element to that position over said substrate designated to receive the component held by that pick-up element;
 depositing one component on said designated position from said one pick-up element positioned over said designated position for receiving said component on said substrate;
 continuing said sequence until all components picked up by said pick-up device have been deposited on said substrate; and
 controlling the relative motion of the pick-up device and the substrate by means of a program and controlling the movement of said pick-up elements by said program.
 4. An improved device for placing chip-type electrical components on a substrate, said device including a movable pick-up means having a plurality of pick-up elements, said pick-up elements being arranged in a defined pattern, and being movable such that each pick-up element may be positioned over a designated location in which components are situated for pick-up and from which each element may pick up one component and including said pick-up elements subsequently being movable by drive means to a position over a substrate support wherein the improvement comprises:
 a housing in which a transfer means is mounted;
 said transfer means including a first electrically driven carriage means mounted in said housing;
 said first electrically driven carriage means having a first guide means for movement in the X-axis;
 a second electrically driven carriage means perpendicular to said first electrically driven carriage means and having second guide means perpendicular to said first guide means and connected thereto by rollers for movement in the y-axis;
 means on said second carriage means to support said pick-up means;
 said two mutually perpendicular guide means permitting said pick-up means to move in a first direction from a position over said components to a position over said substrate support via said first guide means; and said pick-up means to move in a second direction perpendicular to said first direction via said second guide means so that each of said pick-up elements can be positioned sequentially over one designated position on said substrate, in which position each of said pick-up elements can separately place and release its component on one designated position on said substrate; and
 program means for controlling said drive means and said pick-up elements.

4,644,643
METHOD OF ELECTRICALLY INTERCONNECTING A LAMINATED PRINTED CIRCUIT BY USE OF A COMPRESSED, SOLDER-PLATED CONNECTOR PIN
 Michio Sudo, Kuki, Japan, assignor to Kangyo Denkikiki Kabushiki Kaisha, Tokyo, Japan
 Division of Ser. No. 582,414, Feb. 22, 1984, Pat. No. 4,594,524.
 This application Jul. 29, 1985, Ser. No. 760,229
 Int. Cl.⁴ H05K 3/46
 U.S. Cl. 29—845 1 Claim

1. A method for electrically interconnecting a laminated printed circuit structure, comprising:
 laminating a plurality of printed circuit sheets each composed of an insulating sheet having a conductive wiring pattern formed on at least one surface of said insulating sheet, said wiring pattern of each of said printed circuit sheets including at least one interconnecting section, the interconnecting sections of said printed circuit sheets being disposed in overlying relation to one another;
 forming a through hole penetrating through the respective interconnecting sections and insulating sheets of said laminated printed circuit sheets;
 press-inserting a connecting conductor pin, which is solder

plated over its entire peripheral surface, into said through hole; and
 passing an electric current through said connecting conductor pin for a time sufficient to fuse the solder plating on said pin thereby to connect said conductor pin to the said interconnecting sections of said printed circuit sheets at the inner peripheral surface of said through hole;



said method including the step, before said electric current is passed through said connecting conductor pin, of applying pressure to the ends of said pin to compress said pin so as to increase the thickness of said pin thereby to enhance the electrical connection between the pin and said interconnecting sections of said printed circuit sheets and to form flanges at the opposite ends of said pin before passing current through the pin.

4,644,644

SHEAR-TYPE NAIL CLIPPER

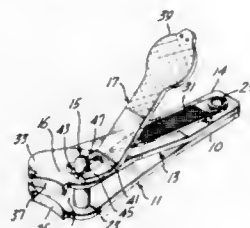
John F. Elsholz, 14721 Cottonwood Pl., Bothell, Wash. 98011

Filed Dec. 12, 1985, Ser. No. 808,177

Int. Cl.⁴ A45D 29/00

U.S. Cl. 30—28

14 Claims



1. A shear-type nail clipper comprising:
 a base arm having an attachment end and a blade end, said base arm including a transverse blade formed in said blade end and a hole located near said blade end;
 a twisted arm having an attachment end, a blade end and a twist located between said attachment end and said blade end, said twisted arm including a transverse blade formed in said blade end and a hole located near said blade end;
 attachment means for attaching said attachment ends of said base arm and said twisted arm together such that said transverse blades formed in said blade ends of said base arm and said twisted arm are aligned with one another, said twist in said twisted arm causing said blade formed in

said blade end of said twisted arm to be canted with respect to said blade formed in said blade end of said base arm;

said base arm and said twisted arm each including a stud flange located along the edges of said base arm and said twisted arm adjacent to the wide side of said canted blades, said holes located near the blade ends of said base arm and said twisted arm being formed in said stud flanges;

a stud mounted in said holes located near the blade ends of said base arm and said twisted arm; and,

a lever arm having a bend formed in one end, said bend end of said lever arm attached to said stud in a manner such that said lever arm can be positioned so as to overlie and diverge from said twisted arm and such that movement of said lever arm toward said twisted arm when said twisted arm is positioned so as to overlie and diverge away from said lever arm causes said blade formed in said blade end of said twisted arm to move toward said blade formed in said blade end of said base arm such that a shear cutting action occurs as said blades meet.

4,644,645

RAZOR HOLDER

Gerard Audet, 19 Redfern St., North Providence, R.I. 02911

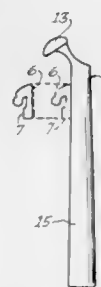
Continuation of Ser. No. 537,027, Sep. 29, 1983, abandoned. This

application Dec. 23, 1985, Ser. No. 814,156

Int. Cl.⁴ B26B 19/44

U.S. Cl. 30—41

2 Claims



1. A razor holding system for maintaining an orderly appearance in one's bathroom including a closed container of shaving cream foam and a razor holding article for a razor having a handle to hold a razor on the generally vertical ledge on the top of said closed container, comprising:

a ledge mounting means for mounting said article on the ledge of said closed container of shaving cream foam, and a connecting means for permanently connecting said mounting means to said razor nearest the end used for shaving thereof, said connecting means connected to said mounting means,

said mounting means is a clip means having a mouth movable over said ledge of said container to hold the razor on the container of shaving cream foam,

said ledge comprises first and second sides substantially parallel to one another, and said clip means includes a pair of arms forming said mouth adapted to resiliently lock over the first and second sides of the ledge,

said razor and said mounting means and said connecting means are parts of one unitary member,

said ledge is on the upper edge of said container having a side surface,

the end of said razor used for shaving being positioned above the ledge of said container, and

said mounting means including a spacer razor support means for spacing the razor from the side surface of said container, said spacer razor support means being a protrusion on said mounting means.

4,644,646

STRAP CUTTING TOOL

Eli M. Ladin, 1608 Morton Ave., Ann Arbor, Mich. 48104

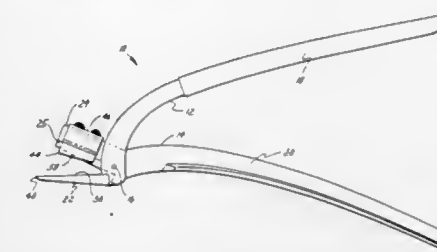
Continuation of Ser. No. 387,071, Jun. 10, 1982, abandoned.

This application Dec. 26, 1984, Ser. No. 685,208

Int. Cl.⁴ B65B 7/00

U.S. Cl. 30—134

4 Claims



1. In a cutting tool for cutting tensioned strapping, said tool being of the type comprising a cutting mechanism operated by a pair of handles which are squeezed together to sever the strapping, said cutting mechanism comprising a blade operated by one of said handles, the improvement for absorbing energy which is released upon severing of the strapping which comprises anvil portions associated with the other of said handles and disposed on the cutting tool at lateral sides of the cutting mechanism, resiliently compressible energy absorbing structures in the form of elastomeric bodies of generally uniform compressibility throughout disposed at lateral sides of the cutting mechanism blade said mounting means comprising a laterally extending support member attached to said blade, mounting means for mounting said energy absorbing structures on said blade, said anvil portions and said energy absorbing structures being cooperatively arranged and constructed to forcefully hold the strapping on lateral sides of the cutting mechanism as the handles are operated to sever the strapping with said energy absorbing structures resiliently compressing in the process, said energy absorbing structures having proximal portions disposed against said support member and distal portions projecting from said proximal portions toward said anvil portions, said distal portions projecting freely of said proximal portions and of said support member, said distal portions terminating in friction faces which engage the strapping and press it against said anvil portions and said energy absorbing structures having the areas of expanse of their friction faces so proportioned relative to the extent of the free projections of their distal portions from their proximal portions as to be endowed with columnar stability in the direction in which they apply force to the strapping throughout operation of the cutting mechanism to sever the strapping such that said energy absorbing structures bulge outwardly as they resiliently compress in pressing the strapping against said anvil portions, and upon severing of the strapping said energy absorbing structures absorbing a substantial portion of the energy released in the severed strapping by lateral yielding away from the cutting mechanism while still bulging outwardly and forcefully holding in cooperation with the anvil portions the severed ends of the strapping.

4,644,647

DEVICE FOR CLEAVING AN OPTICAL FIBER IN A FERRULE

Tadeusz Szostak, Gillette, and Anthony F. Kuklo, Jr., Bridge-water, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 17, 1985, Ser. No. 777,105

Int. Cl.⁴ C03B 37/16

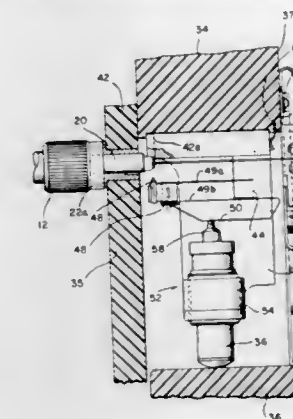
U.S. Cl. 30—164.9

13 Claims

1. A device for cleaving an optical fiber extending in substantially axial direction from a fiber optic ferrule, said device comprising:

a housing for receipt of a portion of said fiber optic ferrule; a cleaving module in said housing for scoring said extending fiber;

means for movably supporting said cleaving module with respect to said housing for resilient movement of said cleaving module in said axial direction in response to receipt of said ferrule portion by said housing;



4,644,648

PORTABLE HYDRAULIC TOOLS

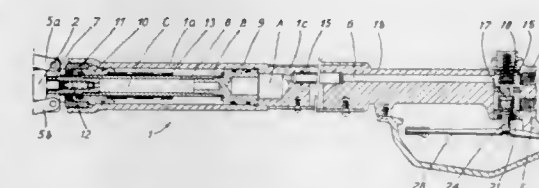
Roger J. P. Pellenc, Pertuis, France, assignor to Esabissements Pellenc & Motte, Pertuis, France

Filed Mar. 2, 1984, Ser. No. 585,668

Int. Cl.⁴ B26B 15/00

U.S. Cl. 30—228

14 Claims



1. In a portable hydraulic tool having:
 (a) a structure, including a hollow body defining a bore,
 (b) a driving piston slidable in fluid-tight manner in said bore,
 (c) means in said bore defining, with a working face of said piston, a working pressure chamber to receive a flow of hydraulic fluid under pressure therein for effecting a working stroke of said piston,
 (d) a piston rod connected to said piston,
 (e) at least one operating member, of the tool, movably mounted on said structure and connected to said piston rod,
 the improvement which comprises:

(i) means defining a return chamber bounded by a return face of said piston and the volume of which return chamber decreases as said driving piston is progressively displaced during its working stroke, and
 (ii) a resiliently compressible fluid in said return chamber whereby upon reduction of the pressure of the hydraulic fluid in the working pressure chamber to less than that of the compressible fluid in the return chamber, the piston is

caused to effect a return stroke by expansion of said compressible fluid
 a cutting head including a forward body portion,
 a push-rod connected at one end to one face of the piston and extending out of the hollow body,
 shaft means engaged in said forward portion,
 cutting means comprising a pair of abutting pivotable blades carried by said shaft means,
 a pair of ball thrust members on said shaft means each abutting a respective blade,
 resilient means for adjustably biasing said ball thrust members against said blades to maintain said blades in abutting relation,
 and means coupling said driving piston to at least one of the blades to effect a cutting stroke and a return stroke.

13. A portable hydraulic tool, having:

(a) A single acting ram including a driving piston, a piston rod connected to said piston, a hollow body having means defining a bore, said piston being slidable in fluid-tight manner in said bore and the working stroke of said piston being carried out by the thrust of hydraulic fluid under pressure in a pressure chamber of said bore and acting on a working face of said piston,

(b) at least one movable operating member, for said tool, connected to said piston rod,

(c) means defining a return chamber the volume of which decreases when said driving piston is displaced in a working stroke by said thrust of hydraulic fluid under pressure, said return chamber containing a compressible fluid under pressure such that, when the thrust exerted by said hydraulic fluid on said piston becomes less than the thrust exerted on said piston by said compressible fluid, said piston is caused to perform its return stroke by expansion of said compressible fluid,

(d) a cutting head including a forward body portion, an axle bolt engaged in said forward portion and carrying a nut, two abutting pivotable blades carried pivotably by said axle bolt and coupled to said driving piston, a pair of ball thrust members on said axle bolt each abutting a respective pivotable blade, a ring axially slidable on said axle bolt and abutting one of said ball thrust members, and a resilient thrust member engaged between said nut and ring.

4,644,649

APPARATUS FOR TRIMMING REEDS OF MUSICAL INSTRUMENTS

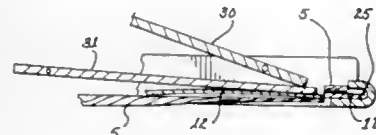
Roy C. Seaman, 11 E. Orange Grove Rd., #1023, Tucson, Ariz. 85704, and Ronald D. McCaul, 1247 N. 2nd Ave., Tucson, Ariz. 85705

Filed Sep. 26, 1985, Ser. No. 780,426

Int. Cl.⁴ B26B 13/00

U.S. Cl. 30—229

3 Claims



1. An apparatus for trimming a reed of a musical instrument, said apparatus comprising:
 cutting means including a planar portion, and an integral punching tongue portion movable relative to said planar portion for cooperation therewith for trimming an edge of said reed positioned between said tongue portion and said planar portion;
 a frame structure for supporting and removably receiving said cutting means, said frame structure defining a pair of laterally spaced, inwardly opening, opposed grooves for respectively removably slidably receiving laterally opposed marginal edges of said planar portion of said cutting

means, said frame structure including a pair of laterally spaced side portions respectively positioned adjacent to said opposed grooves, said frame structure further defining another groove at a front portion thereof for receiving a forward edge of said cutting means; and

lever means pivotally mounted on said side portions of said frame structure, said lever means being operatively engageable with said tongue portion of said cutting means, whereby said lever means is pivotable relative to said frame structure for effecting trimming of the edge portion of said reed positioned between said tongue portion and said planar portion, said cutting means being removable from said frame structure to permit replacement of said cutting means for cutting reeds of different sizes.

4,644,650

MANUALLY OPERATED CUTTING TOOL

Friedrich-Günther Laux, and Steffen Laux, both of Königsweg 304, D-1000 Berlin West, Fed. Rep. of Germany, assignors to Friedrich-Günther Laux and Steffen Laux, both of West Berlin, Fed. Rep. of Germany

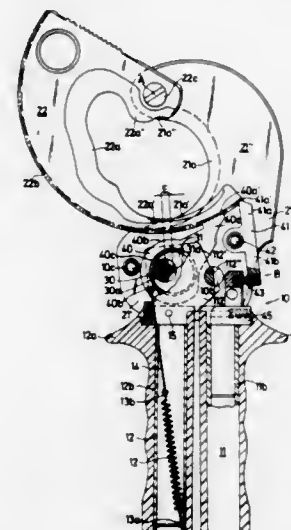
Filed Nov. 21, 1985, Ser. No. 800,463

Claims priority, application Sweden, Dec. 14, 1984, 8406388

Int. Cl.⁴ B26B 13/08

U.S. Cl. 30—250

13 Claims



1. A manually operated cutting tool, particularly a cable cutter, comprising in combination a stationary cutting plate having at one end a mounting portion and adjacent thereto a cutting portion with an outer periphery and an inner periphery, a first curvilinear cutting edge extending along said inner periphery between a first end adjacent said mounting portion and a second end remote therefrom; a rotary knife member having a circular outer periphery and an inner periphery, a row of teeth arranged along said outer periphery and a second curvilinear cutting edge arranged along said inner periphery between a first end and a second end and facing said first cutting edge; a pivotal connection between said cutting plate and said knife member in the region of both said second ends and said row of teeth being centered on said pivotal connection; a stationary first handle rigidly connected at one end to said mounting portion; a movable second handle having at one end an attachment part for pivotal connection to said mounting portion; and a force-and-motion transmission means interposed between said end of said second handle and said outer periphery of said knife member for transforming strokes of the second handle into a pivotal closing movement of the knife member toward the cutting plate, wherein said means is embodied by a high-power-transmitting excenter drive comprising a pivot pin

means for pivotally attaching said second handle to said mounting portion at a fixed location; a cylindrical block rigidly affixed to said attachment part with selected eccentricity other than zero relative said pivot pin means; a driving pawl member having an engagement portion provided with a toothing for engagement with said row of teeth and a supporting portion provided with a circular opening for accommodating said cylindrical block, and said pawl being rotationally mounted on said block with the aid of said opening; a resilient member affecting said pawl so as to urge said toothing into engagement with said row of teeth; and a releasable retaining latch meshing with said row of teeth so as to prevent a return movement thereof, unless released.

4,644,651

INSTRUMENT FOR GRIPPING OR CUTTING

Stephen C. Jacobsen, Salt Lake City, Utah, assignor to Jacobsen Research Corp., Salt Lake City, Utah

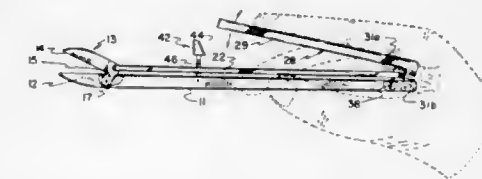
Continuation of Ser. No. 591,269, Mar. 19, 1984, abandoned.

This application Nov. 18, 1985, Ser. No. 798,840

Int. Cl.⁴ B65B 13/00

U.S. Cl. 30—251

16 Claims



1. An instrument for gripping or cutting comprising an elongate base arm having a fixed jaw at a first end thereof which projects outwardly from the base arm, a movable jaw having a laterally extending member at a rear end of the jaw pivotally mounted on said arm adjacent the fixed jaw to pivot and cause the movable jaw to move toward the fixed jaw to a closed position and away from the fixed jaw to an open position, said movable jaw projecting outwardly generally parallel to and in close proximity or contact with the fixed jaw when in the closed position, a shank extending generally parallel to said arm, one end of which is pivotally connected to the movable jaw, and an elongated handle having a first laterally extending section at a rear end, said section being pivotally mounted on said arm at a second end thereof opposite the first end, said elongated handle having a second laterally extending section located forwardly of the first section and pivotally connected to the other end of the shank so that a forward end of the handle extends forwardly in an overlying relationship with the shank, and so that as the handle is pivoted toward the shank to a position generally parallel with the shank and arm, the shank is moved to cause the movable jaw to pivot to the closed position.

4,644,652

LOPPER WITH BYPASSING BLADES

Richard E. Davis, West Hollywood, Calif., assignor to S.M.S. Industries, Inc., Glendale, Calif.

Filed Sep. 25, 1985, Ser. No. 780,013

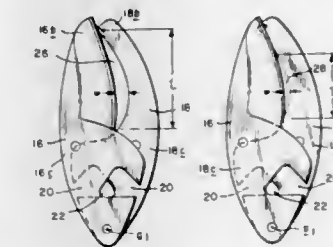
Int. Cl.⁴ B26B 13/06

U.S. Cl. 30—252

3 Claims

1. A lopper comprising: first and second blades arranged on opposite sides of a cutting plane, each of said blades having an arcuate cutting edge leading from a base portion of the blade to the blade tip; means for inter-connecting the base portions of said blades for pivotal movement about an axis perpendicular to said plane; and handle means connected to said base portions, said handle means being arranged to pivot said blades about said axis between an open position at which said blade tips are spaced apart and said cutting edges define an open

notch, and a closed position at which said blade tips and said cutting edges completely bypass each other, the curvatures of said cutting edges being such that when the base portions and the tips of said blades initially overlap at two mutually spaced locations, the cutting edge segments extending between said



4,644,653

RECIPROCATING KNIFE

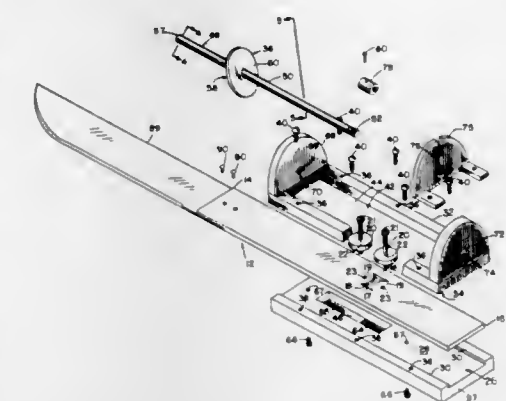
Donald V. Bacon, 6017 Gateway Green, Monona, Wis. 53716, and David D. Bacon, 1070 County Trunk N, Stoughton, Wis. 53589

Filed Jul. 30, 1985, Ser. No. 760,488

Int. Cl.⁴ B26B 7/00

U.S. Cl. 30—272 R

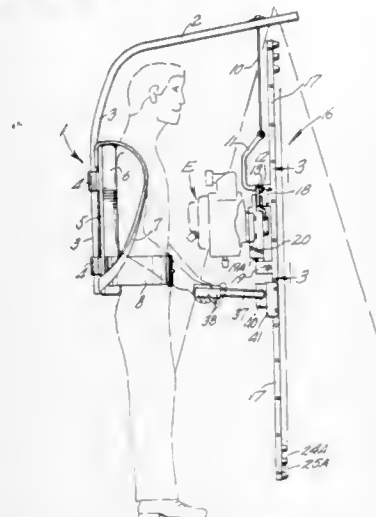
17 Claims



1. An improved reciprocating knife comprising:
 (a) an elongated blade having a front, a rear, and a rearward blade section having a blade opening with a rim of selected shape;
 (b) a blade guide defining a track around said rearward blade section for guiding the reciprocating movement of said blade over a reciprocating cycle between a forward position in which the front extends forwardly a selected distance from the blade guide and a rearward position in which the front is withdrawn rearwardly from its forward position, said blade guide having a guide aperture alignable with said blade opening;
 (c) a blade drive including an elongated shaft positioned adjacent to said blade guide and connectable with a drive means for imparting rotational movement to said shaft about its central axis, and said blade drive also including a cam plate surrounding said shaft and secured thereto, which cam plate is angled with respect to the central axis of the shaft, and has two plate surfaces which extend into said guide aperture and blade opening with one of said plate surfaces facing generally forwardly and the other plate surface facing generally rearwardly;

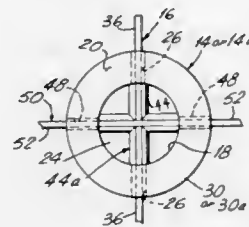
- (d) mounting means for mounting said blade drive such that the shaft is free to rotate in its position adjacent to the blade guide, and that rotation of the shaft causes at least one of said plate surfaces to engage the rim of the blade opening to reciprocate the blade within the track; and
- (e) biasing means for biasing the rim of the blade opening against said cam plate over at least a part of the reciprocating cycle such that any play between the cam plate and the rim is modulated, and such that the biasing means aids the reciprocating movement of the blade for a portion of the reciprocating cycle and resists the reciprocating movement of the blade for another portion of the reciprocating cycle, wherein the biasing means includes two opposed elastic members.

4,644,654
TREE TRIMMING APPARATUS
 Ernie W. Howe, 6627 Rochester St., NE., and Stanley C. Howe, 10500 - 86th Ave. NE., both of Brooks, Ore. 97305
 Continuation-in-part of Ser. No. 709,330, Mar. 7, 1985, abandoned. This application Sep. 24, 1985, Ser. No. 779,622
 Int. Cl.⁴ B26B 27/00
 U.S. Cl. 30—296 R 2 Claims



1. A tree trimming apparatus comprising in combination, an elevated support assembly including a support arm, an elongate cutter bar assembly including a cutter bar disposed in upright fashion below said support arm, multiple cutter blades slidably mounted on said cutter bar, a connector plate on each of said blades and imparting reciprocal motion to the blades,
- a power source and transmission for driving said cutter bar assembly, said transmission imparting reciprocal motion to the blades by means of the connector plate on each of said blades,
- elongate means coupling said cutter bar assembly to said support arm in a suspended manner,
- said cutter bar assembly additionally including attachment means located so as to receive one end of said elongate means at a point laterally offset from the cutter assembly center of gravity to cause said cutter bar assembly to be suspended inclined somewhat off the vertical for tree trimming along an inclined course, and stabilizing means on said cutter bar assembly.

4,644,655
CUTTING HEAD FOR LAWN TRIMMER
 Douglas O. Bottamiller, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007
 Filed Sep. 30, 1985, Ser. No. 781,699
 Int. Cl.⁴ A01D 50/00
 U.S. Cl. 30—347 2 Claims



1. A cutting head for a lawn trimmer which comprises:
- (a) a cylindrical housing block having an opening extending upwardly from underside, a central aperture at top of said housing block extending into said opening and a pair of opposed holes at side of said housing block extending into said opening, said housing block is bolted upwardly through said opening and said central aperture to lower portion of said lawn trimmer so that said housing block is rotatably mounted thereto;
- (b) a flexible cord with a knot manually formed at center of said cord, said knot is placed within said opening of said housing block with ends of said cord extending outwardly through each of said opposed holes at said side of said housing block so that when said lawn trimmer is in operation the cord will be retained in said block against one of said holes, wherein said cylindrical housing block further having a V-shaped annular groove on exterior of said side to allow each said end of said flexible cord to recess within said V-shaped annular groove when said cord comes in contact with a solid object, further comprising a sleeve being C-shaped with a wavy inner surface in cross section for gripping and being retained on said flexible cord, said sleeve being of equal length with diameter of said opening in said housing block so that said sleeve will keep said cord centered within said housing block with said ends of said cord extending outwardly symmetrically.

4,644,656
METHOD AND APPARATUS FOR DISASSEMBLY OF A SPOT-WELDED STRUCTURE
 Michael J. Chouinard, 88 Milton St., Milton, Mass. 02186
 Filed Jun. 8, 1984, Ser. No. 618,574
 Int. Cl.⁴ B26F 1/00
 U.S. Cl. 30—362 3 Claims

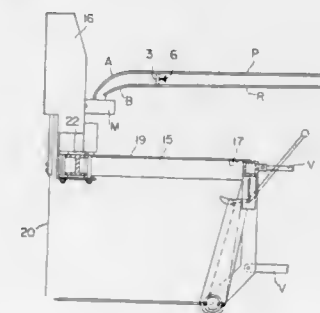
1. A fluid operated metal punching device for punching spot welds from assembled sheet metal assemblies, the device comprising:
- a handpiece having a longitudinal axis;
- a head mounted on the handpiece and having
- (i) front and rear faces;
- (ii) a cutout portion in the front face defining upper and lower jaws of the head, the lower jaw being proximate to the handpiece and the upper jaw being distal therefrom;
- (iii) a cutting element, movably mounted in the lower jaw of the head along a punching axis substantially parallel to the front face of the head and proximate thereto and parallel to the longitudinal axis of the handpiece;
- (iv) actuating means, mounted in the lower jaw of the head, for urging the cutting element, along the punching axis, toward the upper jaw;
- the upper jaw having an aperture therein defining a punch die into which the cutting element may be urged, so that

when material is placed between the jaws the actuating means may urge the cutting element to punch a hole in the material,



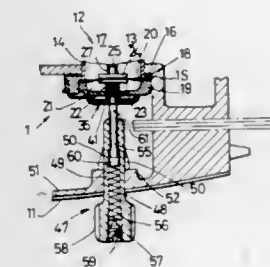
the upper jaw further including a die plate attached thereto with a weld with a low melting point, the die plate further including a groove rabbeted therein for alignment purposes.

4,644,657
SPEED-CONTROLLED APPARATUS FOR CUTTING AND TAKING OUT BLOCKS FROM A SILO FODDER BIN
 Hans von der Heide, Ibbenbürener Strasse 17, 4533 Laggenbeck, Fed. Rep. of Germany
 Continuation of Ser. No. 550,739, Nov. 14, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 777,002
 Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241633
 Int. Cl.⁴ B23D 49/02
 U.S. Cl. 30—379.5 1 Claim



1. Apparatus for cutting material comprising a U-shaped support means to which is attached a cutting means, said cutting means comprising a hydraulic motor which drives a travelling gear, said travelling gear supporting thereon a cutting blade, said motor connected to said travelling gear by feed and return means which control flow of hydraulic fluid to said travelling gear, and a control means which connects said feed and return means, said control means adopted to control speed of said travelling gear on said U-shaped bridge by varying the flow cross-section of hydraulic fluid conduit, said control means comprising a bolt threaded into the conduit for varying said flow cross-section by rotation, and a handwheel on the bolt for its rotation.

4,644,658
LUBRICATING-OIL PUMP ARRANGEMENT FOR A MOTOR-DRIVEN APPARATUS
 Hans Dolata, Waiblingen; Reinhold Fink, Fellbach; Gerd Itzrodt, Waiblingen; Adam Kelbert, Remshalden; Siegfried Rysel, Kirchberg/Murr; Anton Wehle, Fellbach; Dieter Wieland, Remseck, and Gerhard Zerrer, Korb, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
 Filed Dec. 11, 1984, Ser. No. 680,397
 Claims priority, application Fed. Rep. of Germany, Dec. 14, 1983, 3345121
 Int. Cl.⁴ B23D 57/02; F01M 1/00
 U.S. Cl. 30—381 17 Claims



1. A lubricating-oil pump arrangement for an apparatus such as a chain saw or the like to supply lubricating oil to a work tool of the apparatus, the apparatus having a motor including means for developing changes in pressure, the arrangement comprising:
- a tank for holding the supply of lubricating oil;
- pump means for pumping the lubricating oil from the tank to the work tool;
- said pump means including: a cylinder communicating with said tank; a piston mounted in said cylinder for reciprocatory movement through a predetermined stroke distance; and, actuating means for actuating said piston for said movement through said stroke distance for pumping said lubricating oil; and,
- interrupt means for interrupting the flow of lubricating oil to the work tool, said interrupt means including limit means for restricting the movement of said piston through said stroke thereby interrupting the flow of said lubricating oil; said pump means further including a housing for accommodating said cylinder and said actuating means, said housing having a cover arranged transversely with respect to the longitudinal axis of said cylinder; and, said limit means being mounted on said cover so as to be displaceable along said axis to limit the stroke of said piston; said actuating means including a pump membrane connected to said piston, said pump membrane being arranged in said housing so as to define a chamber therein conjointly with said cover, said chamber communicating with said pressure changing means for developing overpressure and underpressure conditions in said chamber for actuating said membrane; said cover having a bore formed therein coaxially with said piston, said limit means being a bushing extending through said bore; and, said interrupt means further comprising a spring for resiliently biasing said bushing in a direction away from said membrane; said bushing being mounted in said bore so as to be displaceable against the force of said spring in a direction toward said membrane for limiting the movement thereof.

4,644,659
TRANSIT

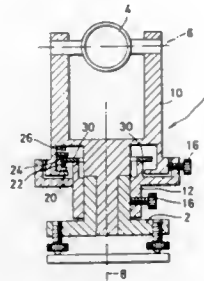
Akio Takahama, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jun. 10, 1985, Ser. No. 742,869

Claims priority, application Japan, Jun. 25, 1984, 59-130414
Int. Cl.⁴ G01C 11/06

U.S. Cl. 33—1 T

11 Claims



1. A transit including:

- (a) a first rotational member provided with a collimator and supported on said transit for rotation about a predetermined axis;
- (b) a second rotational member supported on said transit for rotation about said predetermined axis;
- (c) detection means for generating a pulse in accordance with a predetermined angle of displacement between said first rotational member and said second rotational member;
- (d) first counter means for counting the number of pulses from said detection means, the maximum countable pulse number of said first counter means corresponding to the angle of 360°, said first counter means generating a pulse in accordance with its counting of the maximum pulse number; and
- (e) second counter means for counting the pulses from said first counter means up to a predetermined number.

4,644,660
SLIDE GAGE

Günther Mathes, Mauren, Liechtenstein, assignor to Etablissement Sinoval, Vaduz, Fed. Rep. of Germany

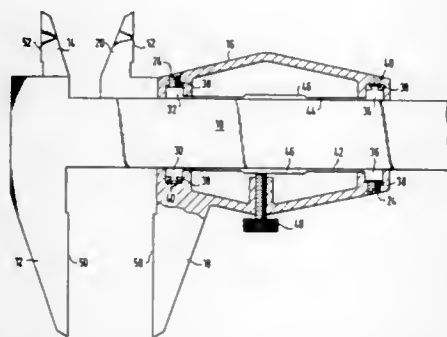
Filed May 20, 1985, Ser. No. 735,735

Claims priority, application Fed. Rep. of Germany, May 21, 1984, 3418878, Sep. 24, 1984, 3434993

Int. Cl.⁴ G01B 3/20

U.S. Cl. 33—143 M

14 Claims



1. A slide gage with a guide rail having opposing longitudinal edges and a measuring leg at one end, a slide displaceable on the guide rail and having a second measuring leg, and a number of sliding elements which are arranged in sliding

contact with the longitudinal edges of the guide rail, wherein two spaced apart sliding elements are provided on each longitudinal side of the guide rail, and wherein the sliding elements on the side of the guides rail on which the measuring legs project, nearer to the measuring legs, is supported resiliently on the slide, and the sliding elements on the opposite side of the guide rail, at a greater distance from the measuring legs, is supported resiliently on the slide, whilst the remaining two sliding elements are supported rigidly on the slide.

4,644,661

SIGNAL FOR INDUSTRIAL SURVEYS

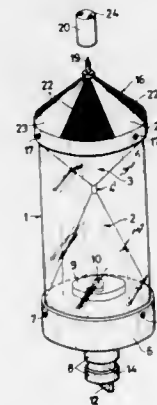
Giovanni Bozzolati, Segrate, Italy, assignor to AGIP, S.p.A., Milan, Italy

Filed Feb. 11, 1986, Ser. No. 828,441

Claims priority, application Italy, Apr. 19, 1985, 20430 A/85
Int. Cl.⁴ G01C 15/06

U.S. Cl. 33—293

11 Claims



1. An industrial surveyor's signal for measuring planimetric and altimetric coordinates by collimating a signal from a plurality of goniometric positions, comprising:
 - a transparent cylindrical body having an upper and a lower end;
 - a cylindrical base secured to the lower end of said body;
 - a vertical cylindrical axial bore formed within said body for identifying a collimation point for the determination of said planimetric coordinates;
 - an inverted conical bore formed in said body to extend upwardly from said lower end and to terminate at its vertex in said vertical cylindrical bore;
 - a conical bore coaxial with said inverted conical bore and formed in said body to extend downwardly from said upper end and to terminate at its vertex in said vertical cylindrical bore;
 - a conical cap secured to the upper end of said body said cap having an upper surface and a lower surface;
 - a vertical cylindrical rod axially positioned within said cap having a spherical lower end extending downwardly through said lower surface and a sharp conical upper end extending upwardly through said upper surface, said conical upper end identifying a collimation point for the determination of said altimetric coordinates; and
 - illuminating means within said body for directing light upwardly through said vertical cylindrical axial bore and said vertical cylindrical rod so as to provide a luminous mark at the collimation points for the determination of said planimetric and altimetric coordinates.

4,644,662

CAPACITIVE GRAVITY SENSOR

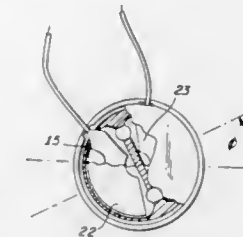
Jane E. Anderson, Phoenix; Harold L. Swartz, Glendale, and Mario DiMarco, Phoenix, all of Ariz., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 696,625, Jan. 3, 1985. This application Apr. 29, 1986, Ser. No. 870,646

Int. Cl.⁴ G01C 9/06

U.S. Cl. 33—366

5 Claims



1. An inclinometer comprising:

- a housing having a fluid container therewithin formed by first and second metallic outer walls and a metallic perimeter;
- a first sheet of dielectric material positioned within said fluid container at a preselected distance from said first metallic outer wall to form a first fluid chamber bounded by said first sheet of dielectric material, said first metallic outer wall, and said metallic perimeter;
- a second sheet of dielectric material positioned within said fluid container in a parallel relationship with said first sheet of dielectric material at a distance from said second metallic outer wall that is equal to said preselected distance to form a second fluid chamber bounded by said second sheet of dielectric material, said second metallic outer wall, and said metallic perimeter;
- first and second coplanar, electrically decoupled, metallic sensor plates positioned in a plane located between said first and second sheets of dielectric material to form a laminated disk, said first and second metallic sensor plates being completely covered by said first and second sheets of dielectric material, said first and second metallic sensor plates having a separation distance therebetween to provide a metal free region in said plane defining an area having a predetermined length;
- a fluid, having a preselected dielectric constant, contained in said first and second fluid chambers at equal predetermined levels; and
- a gas having a dielectric constant less than said preselected dielectric constant filling areas in said first and second fluid chambers not containing said fluid.

4,644,663

MEASURING DEVICE

Steve Needs, 19351 NE. 1st Pl., Miami, Fla. 33179

Filed Aug. 9, 1985, Ser. No. 764,083

Int. Cl.⁴ B43L 7/00

U.S. Cl. 33—486

7 Claims

1. A measuring device of the type primarily designed to locate a plurality of score lines and accomplish required dimensioning of a duct board structure to be folded upon itself at the score lines in the formation of an elongated hollow interior, multi side conduit, said device comprising:
 - (a) a body having an elongated configuration and oppositely disposed spaced apart and substantially parallel longitudinal edges extending the length thereof;
 - (b) a head portion secured at one end of said body and extending outwardly from each longitudinal edge in substantially transverse relation thereto;
 - (c) said head portion including one side having a linear configuration extending perpendicularly outward from said body;
 - (d) an exposed surface mounted on said body along the

length thereof and disposed between said longitudinal edges and in inwardly recessed relation below said longitudinal edges,

- (e) scale means formed on said exposed surface of said body and comprising a plurality of elongated scales each extending along the length of said body in adjacent and parallel relation to one another,
- (f) a leading end of said scale means being disposed in aligned relation to said one side of said head portion and defining a beginning point of measurement of said scale means, a first of said scales having a beginning end disposed a predetermined spaced distance from said leading end, a remainder of said scales each disposed a successively greater spaced distance from said leading end to define a staggered, offset relation to one another,
- (g) said predetermined spaced distance of said first scale and said successively greater spaced distances of the remainder of said scales being dimensioned to compensate for the dimension of respective ones of the plurality of score lines formed in the duct board,
- (h) indicator means comprising a plurality of scale indicators each movably mounted on said body above and out of context with said scale means and each selectively posi-

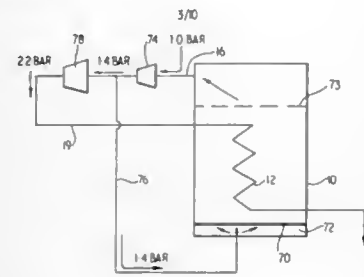


- tionable along the length of said scale means in aligned relation to a different one of said plurality of scales,
- (i) said plurality of scale indicators being equal in number to the number of said plurality of scales and equal to or greater than the number of sides of the multi sided conduit being formed,
- (j) each scale indicator comprising a scale marker formed thereon, each scale marker located on its respective scale indicator at a different location from the other scale markers on their respective scale indicators and each scale marker disposed in registry with a different one of said plurality of scales,
- (k) marker means for marking the duct board at designated spaced apart locations fixedly formed on each of said scale indicators and structured to travel therewith along the length of said body,
- (l) locking means secured to each of said scale indicators and structured for removable securement of each scale indicator at a selected location along the length of said scale means, and
- (m) whereby said scale indicators may be located and fixed at predetermined locations along said scale means for successive markings of score lines on a plurality of duct boards.

4,644,664
A METHOD OF AND APPARATUS FOR DRYING
MOISTURE CONTAINING MATERIAL
 William Bradshaw, Dogwell Barn, Newby, Rimington, Nr. Clitheroe, Lancashire, United Kingdom
 Filed Mar. 12, 1982, Ser. No. 357,710
 Int. Cl.⁴ F26B 3/08

U.S. Cl. 34—10

2 Claims



1. A method of generating vapour in a drying process, the process utilising a fluid bed drying chamber, a compression system including a compressor and a heat exchanger, the process including drying moisture containing material located in said fluid bed drying chamber, subjecting the material in said fluid bed to heat emitted by said heat exchanger located in said fluid bed so that vapour is given off by the material, at least some of the vapour given off by said material being dried being compressed in said compression system, vapour being generated by injecting hot water condensate into the suction side of said compressor of the compression system to create in said drying chamber an internal pressure greater than that existing on the outside of said drying chamber in order to prevent air from entering the chamber, part of the vapour from said compression system being passed through said heat exchanger 50 that part of the latent heat of evaporation of the vapour at the increased pressure is used to create the necessary temperature gradient between said heat exchanger and said material to be dried within said drying chamber to cause the heat emission for drying the material, and part of the vapour leaving said compression system being supplied to said chamber to cause fluidisation of the material in said fluid bed, and recycling vapour which has left said heat exchanger back through said compression system.

4,644,665
PROCESS FOR SUPERVISING AND/OR CONTROLLING
OF PHYSICAL TREATMENT PROCESSES AND
BIOREACTIONS IN VENTILATION SYSTEMS AS WELL
AS DEVICE FOR EXECUTING THE PROCESS
 Dietmar Naunapper, Breisach-Oberrimsingen, and Gunter Braun, Grenzach-Wyhlen, both of Fed. Rep. of Germany, assignors to Firma Glatt GmbH, Binzen, Fed. Rep. of Germany

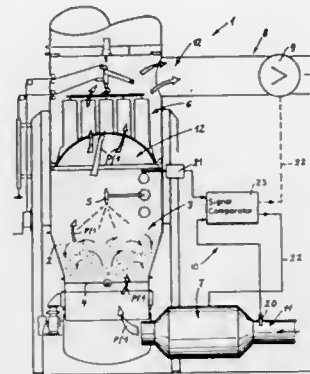
Filed May 10, 1984, Ser. No. 616,564
 Int. Cl.⁴ F26B 3/08

U.S. Cl. 34—26

27 Claims

1. A method for supervising and/or guiding of physical treatment processes and bioreactions in ventilation systems, in which inlet air or gas is fed in and exhaust air or gas is expelled, and in which a product is being processed, said method comprising the steps of:
 establishing a fluidized bed in which the product to be treated is suspended by a flow of fluidizing inlet air supplied to a vessel;
 spraying an aqueous solution on the product while it is in the fluidized bed;
 measuring the humidity of the inlet air;
 measuring the humidity of the exhaust air;
 comparing the humidity of the exhaust air with the humidity of the inlet air; and
 altering certain process conditions, including at least one of

the quantity of spraying solution, the temperature of the inlet air, and the volume of inlet air, the alteration of process conditions based on the humidity comparison to regulate the humidity of the product being processed,



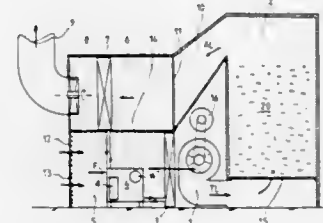
wherein the altering step is carried out to first alter the quantity of spraying solution, then the temperature of the inlet air, if necessary, and then the volume of inlet air, if necessary in that sequence, to regulate the humidity of the product being processed.

4,644,666
APPARATUS FOR DRYING A MOIST MATERIAL BY
AIR HEATED BY A HEAT PUMP
 Heini Eberle, Oberuzwil, and Josef Huber, Siehnen, both of Switzerland, assignors to Getag AG, Jona/Kempraten, Switzerland

Filed Jul. 9, 1985, Ser. No. 753,139
 Claims priority, application Switzerland, Jul. 9, 1984, 3334/84
 Int. Cl.⁴ F26B 9/06

U.S. Cl. 34—34

5 Claims



1. An apparatus for drying a moist material, especially an agricultural product, comprising:
 a bin for accommodating the material to be dried;
 an induction duct communicating with the ambient natural atmosphere and with said bin;
 a blower disposed within said induction duct for conducting fresh air into said bin;
 an exhaust duct for exhausting used air from said bin and communicating with the ambient natural atmosphere and with said bin and having an end adjacent the ambient natural atmosphere;
 a heat pump having a condenser and an evaporator;
 said condenser being arranged within said induction duct;
 said evaporator being arranged at said end of said exhaust duct such that any predetermined quantity of said used air passing through said evaporator exhausts to the ambient natural atmosphere;
 an adjustable damper mounted in said exhaust duct between said bin and said evaporator;
 said condenser having an induction side;

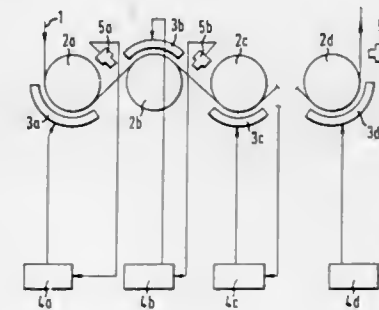
said exhaust duct having a region lying on said induction side of said condenser; and
 said adjustable damper operatively interconnecting said induction duct and said region of said exhaust duct.

4,644,667
COOLING APPARATUS FOR STRIP METAL
 Kenichi Yanagi, Katsumi Makihara, Takeo Fukushima, all of Hiroshima; Osamu Hashimoto, Chiba, and Sachihiko Iida, Kurashiki, all of Japan, assignors to Mitsubishi Jukogyo Kabushika Kaisha, Tokyo and Kawasaki Steel Corporation, Hyogo, both of Japan

Filed Jan. 29, 1985, Ser. No. 696,242
 Claims priority, application Japan, Feb. 14, 1984, 59-24414
 Int. Cl.⁴ F26B 7/00

U.S. Cl. 34—54

6 Claims



1. An apparatus for cooling a strip of strip metal, comprising a series of spaced cooling rolls around which the strip metal is passed lengthwise such that it follows a serpentine path and is cooled by contact with the rolls; elongate gas jet devices disposed widthwise of the strip opposite the outer surface parts of respective cooling rolls in contact with the strip, each of said gas jet devices being partitioned into segments in said widthwise direction, each segment being provided with a corresponding gas flow control valve; means, provided at least at one of said cooling rolls, for detecting the temperature of the strip across its width; strip temperature control and arithmetic means to which the gas flow valves and the temperature detecting means are electrically connected, for measuring the temperature difference ΔT between the average temperature T over the complete width of the strip and the temperature of the strip at each segment width position based on signals indicative of temperatures delivered from the temperature detecting means, and for controlling the corresponding gas flow control valves to bring the temperature difference of the strip at each segment within predetermined limits if the temperature difference at any widthwise position is above or below said predetermined limits.

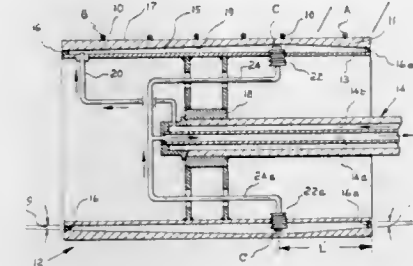
4,644,668
DRYER ROLL
 Robert E. Hull, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
 Filed Aug. 28, 1985, Ser. No. 770,346
 Int. Cl.⁴ F26B 25/20

U.S. Cl. 34—119

9 Claims

1. A vapor heated roll for heating a material spirally advancing from an entrance at one end to an exit at the other end of the roll and wherein condensate is formed within said roll said roll comprising: first and second concentric cylindrical walls spaced from each other; an annular end plate attached to each end of said walls and enclosing a chamber within said roll; said first cylindrical wall having an outer surface constituting the working surface of the roll and an inner surface, said inner surface being tapered from each end toward a location within the chamber to provide a chamber having a gradually increasing cross-sectional area from each end of the chamber toward said location, said cross-sectional area changing continuously

throughout the length of the chamber; to manage condensate movement within said chamber; a rotatable supporting shaft, attached to said second wall in axial alignment with said roll, said shaft having passages therethrough, one for condensate, one for heated vapor; a vapor-injection pipe in communication

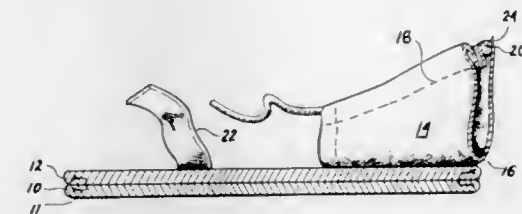


with said chamber and said heated vapor passage of said shaft; and a condensate removal pipe in communication with the condensate passage in the supporting shaft and said chamber at said location, said location being at a distance from said one end of the roll of about twenty to forty percent of roll length.

4,644,669
TOELESS SLIPPER
 Margaret Greco, 6847 Overlook Dr., Ft. Myers, Fla. 33907
 Filed Oct. 23, 1985, Ser. No. 790,504
 Int. Cl.⁴ A43B 1/02, 3/12

U.S. Cl. 36—9 R

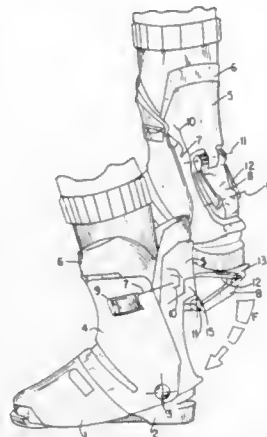
6 Claims



1. A toeless slipper comprising:
 an elongated sole having a front portion and a rear portion and said sole extending the full length of said slipper;
 an elongated insole coextensive with said sole;
 said sole and said insole being sewed together along their margins;
 heel containing means formed from a fold of material and connected at said fold to, and extending upwardly from, the margin of said rear portion of said sole and insole;
 tying means extending from the anterior ends of the upper margin of said heel containing means;
 the free edges of said fold of material being stitched to provide a passage through said heel containing means for said tying means; and
 an adjustable strap formed of two pieces having mating, releasably interconnecting means thereon, with said pieces connected on opposite sides of the margin of said front portion of said sole and insole and extending across the instep portion of the wearer's foot for retaining the front portion of said insole against the bottom of the wearer's foot.

4,644,670
MANIPULATION LEVER FOR CLOSING AND LATCHING OF A REAR-ENTRY SKI BOOT
 Jean-Claude Rochard, Annecy-Le-Vieux, and Norbert Kopp, Chavanod, both of France, assignors to Salomon S.A., Annecy, France

Filed May 10, 1985, Ser. No. 732,636
 Claims priority, application France, May 18, 1984, 84 08600
 Int. Cl.⁴ A43B 5/04, 11/00
 U.S. Cl. 36—117 41 Claims



1. A manipulation element for closing and latching a ski boot, wherein said boot comprises a cable attaching said boot to said manipulation element, wherein said cable comprises means for closing and latching said boot, wherein said manipulation element comprises:

- (a) means for actuating said cable to close and latch said boot, wherein said actuating means is attached to said boot and said cable is attached to said actuating means; and
- (b) at least one protective enclosure means attached to said actuating means for at least partially enclosing said cable along at least a portion of the length of said cable to protect said cable from damage, wherein said at least one protective enclosure means is journaled on said actuating means, wherein said element further comprises elastic means for biasing said at least one protective enclosure means toward said actuating means.

4,644,671
ATHLETIC FOOTWEAR, ESPECIALLY A SKI BOOT
 Klaus Walkhoff, Kreuzlingen, Switzerland, assignor to Raichle Sportschuh AG, Kreuzlingen, Switzerland

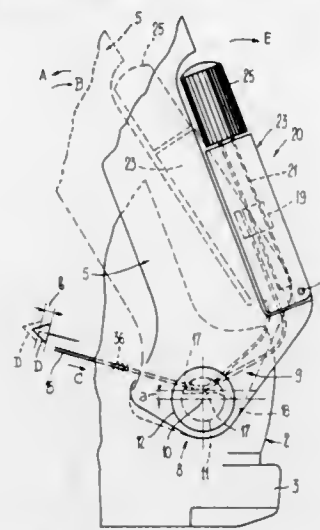
Filed Mar. 25, 1985, Ser. No. 715,684
 Claims priority, application Switzerland, Mar. 30, 1984, 1622/84

The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.
 Int. Cl.⁴ A43B 5/04

U.S. Cl. 36—119 24 Claims
 1. An article of athletic footwear, especially a ski boot, having a heel region, a toe region and a longitudinal axis and comprising:

- a shell member;
- said shell member being provided with a sole;
- said shell member being provided with pivot means defining a pivot axis extending transverse to the longitudinal axis;
- a rear upper portion having an outer side and engaging said pivot means for performing a forward pivoting motion about said pivot axis toward the toe region;
- a pressure pad arranged within said shell member to act upon an upper side of the foot of a wearer;
- tensioning means arranged on said outer side of said rear upper portion for moving said pressure pad rearwardly toward the heel region;

connecting means for connecting said pressure pad with said tensioning means; and

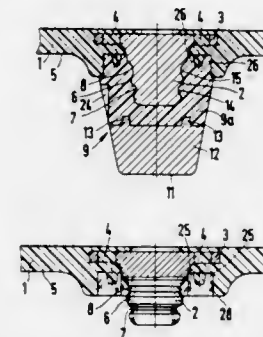


said pressure pad being capable of performing a forward motion away from the heel region when said rear upper portion performs said forward pivoting motion.

4,644,672
OUTER SOLE FOR AN ATHLETIC SHOE HAVING CLEATS WITH EXCHANGEABLE GRIPPING ELEMENTS
 Armin A. Dassler, and Willi Bauer, both of Herzogenaurach, Fed. Rep. of Germany, assignors to Puma AG Rudolf Dassler Sport, Herzogenaurach, Fed. Rep. of Germany

Filed Jul. 18, 1985, Ser. No. 756,249
 Claims priority, application Fed. Rep. of Germany, Jul. 19, 1984, 3426600

Int. Cl.⁴ A43B 5/00 20 Claims
 U.S. Cl. 36—134



1. An outer sole for an athletic shoe having cleats with exchangeable gripping elements, said cleats being formed of stud-shaped holding elements extending from a broadened base that is anchored within the sole to a free end projecting from the sole at a ground contacting side of the sole, and a gripping element in the form of a cap made of a resilient material for mounting over a projecting portion of a respective one of said holding elements and detachably secured thereto at least one snap-lock arrangement; wherein the holding elements are formed of a single structural part and the broadened base includes a flange about which the sole is molded; wherein the snap-lock arrangement comprises at least one annular snap-lock groove on an outer surface of the projecting portion of each of the stud-shaped holding elements and at least one annular snap-in rib on an inner surface of each cap for engaging a respective snap-lock groove; wherein the sole has a portion disposed about each of the holding elements that is locally

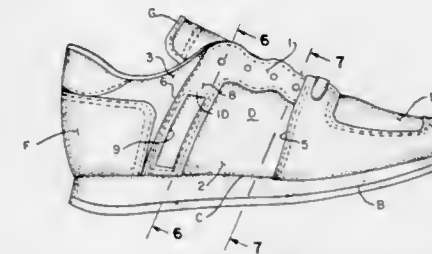
thickened to form at least one raised area without producing a reduction in the thickness of other portions of the sole, each raised area creating at least one annular recess coaxially about a respective one of the stud-shaped holding elements; and wherein each cap has a base portion which engages within the annular recess formed by a respective raised area and has a circumferential abutment edge which bears on a rim of the raised area.

4,644,673
REARWARDLY OPENING POCKETED ATHLETIC SHOE

Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A. Inc., Chesterfield, Mo.

Continuation-in-part of Ser. No. 757,917, Jul. 22, 1985, Pat. No. 4,612,714, which is a continuation of Ser. No. 433,460, Oct. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 612,992, May 21, 1984, which is a continuation of Ser. No. 314,134, Oct. 23, 1981, abandoned. This application Oct. 28, 1985, Ser. No. 792,212

Int. Cl.⁴ A43B 23/00, 5/00 5 Claims
 U.S. Cl. 36—136



1. In a pocket for an athletic shoe designed to hold smaller sized personal items such as keys, coins, or the like, comprising, said shoe having a quarter portion secured approximately the sole shank at its lower extent, said quarter portion being formed of a pair of liners, said liners comprising an inner and outer liner, and forming a pocket therebetween, extending from the shoe eyestay to its sole shank, the outer liner having a rear edge, said outer liner at its rear edge being normally free of connection with the inner liner of the quarter portion, fastening means provided intermediate the inner and outer liners extending approximately along the rear edge of the formed quarter portion, said inner and outer liners forming the quarter portion at their rear edges being capable of being pulled apart to provide access into the formed pocket arranged intermediate thereof to provide for deposition or removal of the afore-said type of items therefrom, an eyestay provided along the upper quarter portion for the formed shoe, said eyestay at its rearwardmost location integrally extending downwardly for securement to the athletic shoe proximate its shoe shank, said downwardly extending eyestay providing for reinforcement for the formed pocket and its pair of liners proximate the rear edge of the formed pocket.

4,644,674
ALLOY FOR COINS
 George R. Burrows, Dudley, and Ian R. Scholes, Sutton Coldfield, both of England, assignors to The Deputy Master and Controller Royal Mint, Wales, United Kingdom

PCT No. PCT/GB84/00062, § 371 Date Oct. 30, 1984, § 102(e) Date Oct. 30, 1984, PCT Pub. No. WO84/03522, PCT Pub. Date Sep. 13, 1984

PCT Filed Feb. 27, 1984, Ser. No. 668,274
 Claims priority, application United Kingdom, Mar. 1, 1983, 8305610

Int. Cl.⁴ C22C 9/04 16 Claims
 U.S. Cl. 40—27.5

1. A coin wherein at least the surface of the coin is made of a copper-based alloy consisting essentially of from 20% to 30% (by wt) zinc, from 2% to 7% (by wt) tin, and up to 7% (by wt)

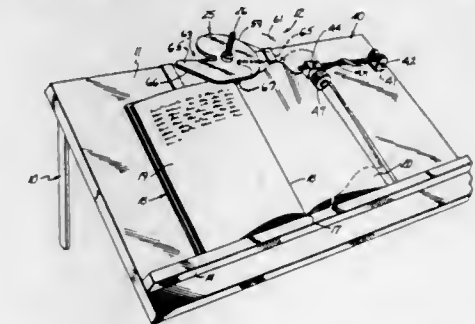
nickel, the balance being copper apart from incidental impurities, said alloy being gold-colored, tarnish-resistant, fabricable,



and wear-resistant, provided that when the alloy consists essentially of copper, zinc and tin, the alloy contains at least 3.5% (by wt) tin.

4,644,675
PAGE TURNING DEVICE
 John G. Berger, and David J. Emmons, both of Roseville, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Feb. 11, 1985, Ser. No. 700,741
 Int. Cl.⁴ G09F 19/00 13 Claims
 U.S. Cl. 40—531



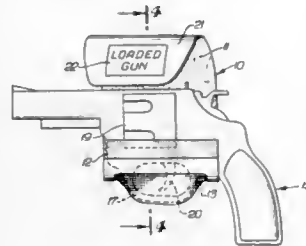
1. In a page turning apparatus comprising a support for a bound volume in which the pages are to be turned, said support holding the bound volume in an open position, the pages facing in a direction toward a viewer, and being bound together at a binding at edges of the pages which binding is substantially in the center of said opened pages, the improvement comprising: a shaft rotatably mounted on said support about an axis generally perpendicular to the plane of the pages in their open position, said shaft also being slidably mounted on the support for movement along said axis; a generally planar disc fixedly mounted on said shaft, and overlying edge portions of adjacent open pages, adjacent one end of pages with which the disc is used only, and adjacent the location where the pages are bound together; power means coupled directly to said shaft to rotate said shaft and disc at selected intervals, said power means providing a biasing force on said shaft urging the disc toward the pages with which the disc is used; means laterally of said disc for engaging a page to be turned for forming a curl in such page to raise a center portion of such page above the level of underlying pages; said disc having a periphery which is irregularly shaped, a first portion thereof being of size to rest on the end edge portion only of the opened pages, and a second portion thereof forming a recessed throat to define a finger portion that extends outwardly from said recessed throat, so that as said disc rotates said finger can move under the formed curl and as said finger rotates, pull the page in which a curl has been formed across the junction between

the bound pages and turn the page in which the curl has been formed to expose the opposite side of such page, said finger moving clear of the opened pages as the disc continues to rotate; and means to disable said power means to stop said disc after one revolution with the finger in a rest position away from the pages and with portions of the disc continuing to overlie end portions only of the opened pages.

4,644,676
FIREARM SAFETY APPARATUS
Michael A. Stern, 1030 N. Maclay Ave., San Fernando, Calif. 91340

Filed Jul. 8, 1985, Ser. No. 752,804
Int. Cl.⁴ F41C 27/10
U.S. Cl. 42—70.07

4 Claims



1. An improved firearm safety apparatus in combination with a firearm having a trigger guard wherein the improvement comprises:

- (a) a substantially rectangular, uniformly flexible sheath having first and second opposed, planar surfaces and an aperture therethrough substantially at a first end thereof, said aperture being disposed perpendicular to the longitudinal axis of said rectangular sheath, said sheath being adapted to be wrapped about the trigger guard of the firearm
- (b) an elastic insert secured to said sheath fully enclosing said aperture, said insert being parallel to the first and second opposed, planar surfaces; and
- (c) a hook and loop fastener having two mating portions, one portion secured to the first surface of said sheath adjacent said elastic insert, the second portion being secured to the second surface of said sheath at the second end of said sheath.

4,644,677
BAITING MACHINE FOR TRAWL LINE FISHING USING ENTIRE FISHES

Bernard Chureau, La Turballe, France, assignor to Societe Anonyme Recherche, Montage, Production "Polylignes", Saint-Nazaire, France

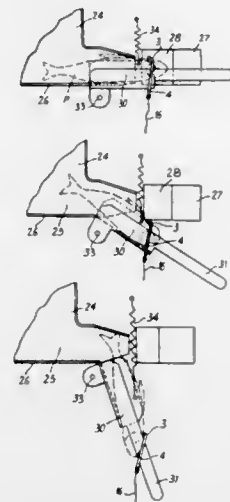
Filed Sep. 30, 1985, Ser. No. 782,593
Int. Cl.⁴ A01K 97/00, 79/00

U.S. Cl. 43—4

5 Claims

1. A baiting machine for trawl line fishing using entire fish, comprising: a guide of known type to guide the point of a plurality of fish hooks having a curvature along a rectilinear trajectory, the point of each fish hook protruding with respect to the guide; an introduction corridor for the admittance of baiting fish, said corridor being perpendicular to the trajectory of the fish hook point and having a wall; a retractable door comprising at least a first wall substantially in a prolongation of the corridor wall situated on the downstream side of the trajectory of the fish hook, wherein the retractable door includes a second wall perpendicular to the first wall and connected to said first wall along the edge of said first wall which is near the fish hook guide, said second wall being prolonged by an arm which can be engaged by the fish hook in order to pivot the retractable door about a pivoting axis situated near the corridor and downstream with respect to the fish hook trajectory; and an oblique ramp pushing back a head of the baiting fish

which are introduced along the longitudinal direction of the corridor toward the second wall of the retractable door, said



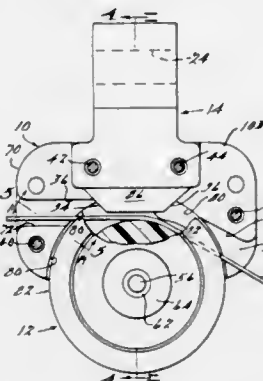
second wall being on the trajectory of the curvature of the fish hook.

4,644,678
PULLEY FOR DOWNRIGGER WEIGHTED LINE
Alex Seres, Frankfort, Mich., assignor to Incoe Corporation, Troy, Mich.

Filed Oct. 16, 1985, Ser. No. 788,020
Int. Cl.⁴ A01K 97/00

U.S. Cl. 43—4

11 Claims



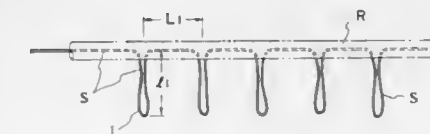
1. A pulley assembly for the weighted line of a downrigger fishing apparatus, said assembly comprising a housing provided at the top thereof with a longitudinal swivel mounting and having a downwardly opening slot therein; and a rotatable pulley wheel having a peripheral groove provided with annular edge surfaces at opposite sides of said groove, said pulley wheel being carried by said housing with the upper portion thereof in said slot and the lower portion thereof extending exteriorly of said housing through the slot opening, said housing enclosing said upper portion of said pulley wheel and having curved shoulders overlaying the edge surfaces of said upper portion and spaced therefrom a distance less than the diameter of said weighted line whereby to prevent the latter from lodging between and wedging in the space between said edge surfaces and said shoulders, said housing further having a line inlet and a line outlet at opposite sides thereof,

the enclosing portion of said housing being provided with a depending segmental member projecting into said groove, said groove having annular, substantially flat, radially inwardly convergent sides and said segmental member being generally complementary in cross section to the cross sectional shape of said groove with the bottom of said segmental member spaced from the bottom of said groove a distance greater than the diameter of said weighted line and the sides of said segmental member spaced substantially uniformly from the sides of said groove a distance less than the diameter of said weighted line, whereby said weighted line can run freely in the groove but the portion of said line at the top of said pulley wheel is guided in its running movement by said segmental member and whereby the latter and its closely spaced relationship with the sides of the pulley groove tends to prevent the line from jumping out of the groove and wedging in use between a side of the segmental member and the confronting side of the pulley wheel.

4,644,679
METHOD OF CONNECTING A FISHING NET
Tatsuzo Ban, Aichi, Japan, assignor to Toyohashi Braided Rope Industrial Co., Ltd., Japan

Filed May 2, 1986, Ser. No. 859,004
Int. Cl.⁴ A01K 71/100, 73/112
U.S. Cl. 43—7

4 Claims



1. A method of connecting an untied fishing net having a support rope and fishing net meshes, said support rope being formed from a strand of ropes and said strand of ropes forming a plurality of first ear portions integrally stranded with the support rope and depending therefrom, comprising the steps of:

- hanging a portion of the fishing net meshes, one by one, on one of said first ear portions;
- forming a second ear portion by inserting said first ear portion in said strand of ropes and then projecting a foremost part of said first ear portion from said strand by penetrating said foremost part of said first ear portion in a direction coaxial with said rope, said second ear portion being smaller in length than said first ear portion, and then
- operatively connecting said second ear portion with one of the next first ear portions without tying said ear portions by inserting said next first ear portion in said second ear portion;
- successively repeating said steps one after another until, at the extreme end of connection, a final one of said first ear portions is firmly engaged to said rope by inserting said final ear portion in said rope; and
- disassembling said fishing net by repeating said steps in reverse order.

4,644,680
TRANSMITTER ROD
James W. Dawson, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

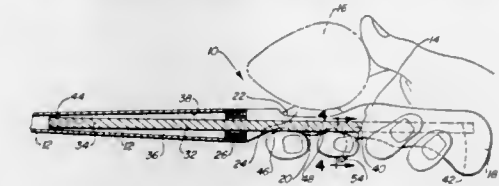
Filed Mar. 10, 1986, Ser. No. 838,140
Int. Cl.⁴ A01K 87/00

U.S. Cl. 43—18.1

13 Claims

1. An improved fishing rod having a rod handle for connection to a rod blank that has a hollow portion with an inside surface, the improvement comprising: a transmitter assembly; means for interconnecting the rod handle, rod blank and

transmitter assembly, said means having a portion of the transmitter assembly lying inside of and in operative contact with the inside surface of the rod blank for conducting vibrations imparted to the rod blank to the transmitter assembly and said means having another portion of



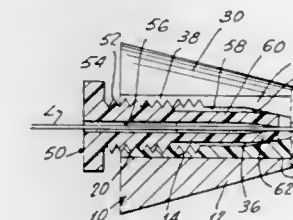
the transmitter assembly extending into the rod handle; and means on the rod handle for allowing a user of the rod handle to sense the vibrations conducted through the portion of the transmitter assembly extended into the rod handle.

4,644,681
FISHING FLOAT
Duane Hutson, 1315 Country Club Prado, Coral Gables, Fla. 33134

Filed Mar. 18, 1985, Ser. No. 713,235
The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.
Int. Cl.⁴ A01K 93/00

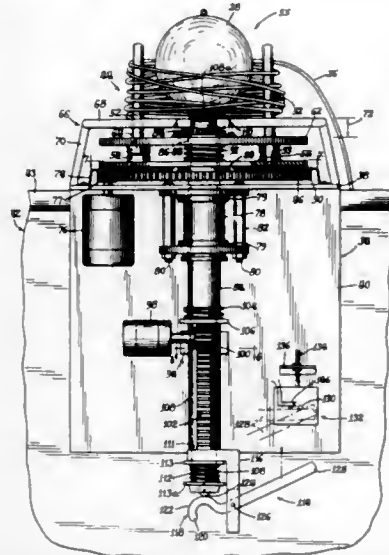
U.S. Cl. 43—44.91

20 Claims



1. An improved fishing float comprising: a main body, having an axis, with a specific gravity less than one, formed with a first axial channel and a connecting outer radially extending slot therein; a bushing secured in said first axial channel formed with a second axial channel including a tapered female socket portion and connecting inner radially extending slot therein in an aligned relation to the outer radially extending slot; a core member in axial adjustable screw threaded engagement within said second axial channel, formed with axially extending slot means therethrough, having an outwardly extending end portion with a slot along only its radius, and having an inwardly extending end portion comprising a plurality of durable flexible finger tapered, male portions integral with said outwardly extending end portion, defining at least one diametrically disposed slot; means to selectively clamp with adjustable pressure a length of line in a generally axially extending relation through said axially extending slot means by manual operation of the screw threaded engagement to flex into contact with the line the flexible finger by cooperation between the tapered male portions of the flexible fingers and the tapered female socket portion of the bushing.

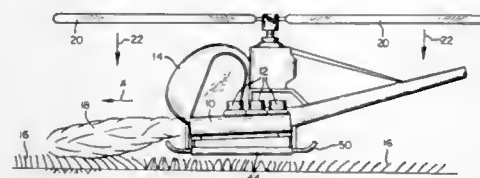
4,644,682
TRAP HAULING AND EJECTING METHOD
 Ernest Cloud, 2846 Old Mayport Rd., Atlantic Beach, Fla. 32233
 Division of Ser. No. 577,019, Feb. 6, 1984, Pat. No. 4,588,166.
 This application May 8, 1986, Ser. No. 860,643
 Int. Cl.⁴ A01K 79/00, 91/02
 U.S. Cl. 43—100



1. A method of handling a fisherman's trap wherein the trap is positioned in the water and a line connects a buoy to the trap, comprising the steps, withdrawing the buoy from the water and utilizing the buoy to secure the line to a winch mounted on a boat, then; winding said line into a coil on said winch, then; placing the trap on the boat for removal of its contents and/or insertion of bait, then; ejecting the buoy and the entire coil consisting of substantially the entire line into the water independent of each other, then; discarding the trap into the water, in conjunction with, but after ejection of the buoy and the line.

4,644,683
METHOD AND APPARATUS FOR ENHANCING THE POLLINATION OF ALFALFA
 Darrell R. Jones, 14010 NW. 36th Ave., Vancouver, Wash. 98685

Filed Jul. 12, 1985, Ser. No. 754,170
 Int. Cl.⁴ A01G 13/06; F24H 3/04
 U.S. Cl. 47—1.41



1. A method for increasing the production of mature alfalfa seed by enhancing the pollination of alfalfa comprising: providing a heat source on a helicopter; flying the helicopter over a field of alfalfa and directing the heat from said source forwardly of the helicopter flight path so as to increase the ambient temperature and reduce relative humidity adjacent the alfalfa blossoms sufficient to cause them fully to open; and thereafter causing the downdraft from the blades on said helicopter to agitate the opened blossoms, thereby causing spreading of the pollen throughout the alfalfa crop to effect an increase in the production of mature alfalfa seed.

4,644,684
WOVEN SCREEN MATERIAL AND METHOD OF MAKING
 Pierre Verbeeck, Zele, Belgium, assignor to Phormium N.V., Belgium
 Continuation of Ser. No. 466,119, Feb. 14, 1983, abandoned.
 This application May 30, 1985, Ser. No. 739,758
 Claims priority, application Belgium, Mar. 19, 1982, 0207.617
 Int. Cl.⁴ A01G 13/00
 U.S. Cl. 47—31



1. A shading and insulating screen for greenhouses and especially suited for use in the open air, comprising a flat sheet of air permeable but water impermeable warp and weft elements, each of such elements comprising a flat rectangular shaped monofilament air impermeable strip of synthetic material which is quite thin in relationship to its width, at least some of said thin strips being made of transparent synthetic material, and other of said strips being made of a synthetic material adapted to reflect solar rays, said warp and weft elements interlaced with respect to one another to provide a chequer configuration, said strips having a width of at least 2.4 mm and wherein the strips are so spaced relative to one another that the resulting permeability is at least approximately 0.16 percent so as to achieve the limited transfer of air from one side of the screen to the other but to inhibit the transfer of water therebetween.

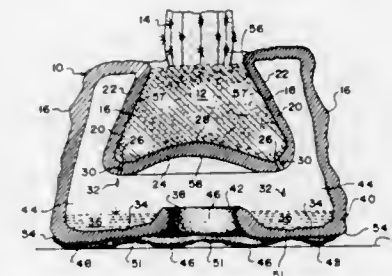
4,644,685
EDGING STRIP
 Cosmo N. Tisbo, and Thomas A. Tisbo, both of Barrington, Ill., assignors to Suncoast Corporation, Batavia, Ill.
 Filed Dec. 29, 1980, Ser. No. 220,270
 Int. Cl.⁴ A01G 1/08
 U.S. Cl. 47—33



1. An elongated extruded plastic garden edging strip adapted for being positioned in the ground to separate plant growing areas comprising: an elongated flexible thin upright wall, said upright wall having an elongated bead formed integral with one edge of the wall, said wall having a lower edge opposite to the one edge, and an ear having one edge formed integral with the wall and being hingedly connected to said wall by that one edge and having a free edge, said free edge being adjacent to the one edge of the wall having the bead, said ear being formed of a portion of the wall to form an opening in the wall when the free edge of the ear is pivoted outward away from the wall

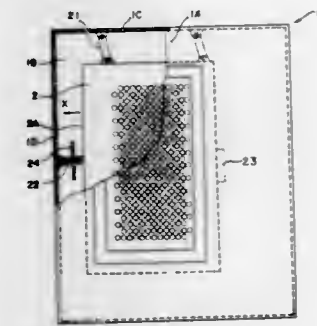
about the edge of the ear formed integral with the wall, the thin wall includes a plurality of elongated ribs formed integral with the thin wall and extending outward from the thin wall, said ear having a portion of one of said ribs on one surface of the ear.

4,644,686
ORNAMENTAL PLANT POT
 William C. Whitman, 604 2nd Ave., North Brunswick, N.J. 08902
 Continuation of Ser. No. 264,974, Jun. 21, 1972, abandoned.
 This application Jan. 16, 1974, Ser. No. 433,750
 The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.
 Int. Cl.⁴ A01G 9/02, 9/04
 U.S. Cl. 47—71



1. A plant pot comprising a first inner container and a second outer container formed as a unitary assembly, said first container including a side wall, the upper end of which defines an opening into which soil and a plant can be inserted, and a bottom wall which is convex and curves upwardly toward said opening, said bottom wall having drain holes at its periphery whereby excess water readily drains out of said first container, said second container including a side wall having an upper open end which is secured to the upper open end of said first container and is spaced from the wall of said first container to thereby provide a closed annular insulating space between the outer wall of said inner container and the inner wall of said outer container, said second container also including a bottom wall which is spaced below the bottom wall of said first container, the bottom wall of said second container having a central opening which provides communication between the interior of said second container and the outside air, the bottom wall of said second container which defines said central opening extending upwardly from the bottom wall to form an annular waterreceiving trough surrounding said central opening therein, whereby any water, which runs from said first container through said drain holes in its bottom wall and into said annular trough, evaporates therefrom due to air circulation through said central aperture into the space between said first and second containers, the outer surface of the bottom wall of said second container being provided with support legs which raise said plant pot above the surface on which it is supported whereby air can circulate from outside the plant pot into the inside of said plant pot through said central opening in said bottom wall to thereby promote water evaporation.

4,644,687
DOOR WITH A SHUTTER DEVICE
 Shu L. Liou, 2FL., No. 33, Lane 52, Szu Wei Road, Taipei, Taiwan
 Continuation-in-part of Ser. No. 570,095, Jan. 12, 1984, abandoned. This application Jul. 22, 1985, Ser. No. 757,168
 Int. Cl.⁴ E06B 7/02
 U.S. Cl. 49—38

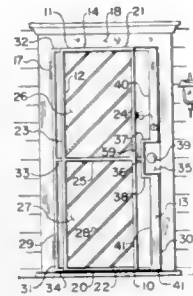


1. A door construction, comprising: a first door panel a portion thereof having a plurality of openings, a shutter panel suspended from an upper part of said door by links and moveably disposed to overlap said door panel, said shutter panel having a plurality of openings of the same size, configuration and location as the openings of said door panel, said openings being arranged in a screen-like formation to enable one from a distance to see through said openings and identify an object on the opposite side of said shutter panel without opening said door, an operating device for selectively moving said shutter panel between a first position where said openings of said shutter panel are out of alignment with said openings of said door panel, and a second position where said openings of said shutter panel are aligned with said openings of said door panel, said shutter panel being normally urged into said first position by a spring member; said operating device having a locking means for locking said shutter panel in said first position, and a releasing means for releasing said shutter panel from being locked in said first position when said operating device is operated to move said shutter panel from said first position to said second position and a wicket gate in said door panel below said shutter panel adapted to be selectively openable for the passage of articles.

4,644,688
SECURITY DOOR
 Lawrence Benderoff, 23605 Riverview, Southfield, Mich. 48034
 Filed Oct. 5, 1984, Ser. No. 658,406
 Int. Cl.⁴ E05C 7/02

U.S. Cl. 49—67
 1. A lockable security door having a means immediately available to occupants of a building for locking and unlocking said security door comprising, in combination: (a) a security panel adapted for being pivotally mounted in the entranceway of a building forward of, in spaced apart relationship to a prime outer door of the building; (b) a means for pivotally mounting the security panel to the entranceway of the building; (c) a key lock mounted in the security panel for locking and unlocking the security door, said key lock having a lock cylinder mounted in the rear portion of the security panel for receiving a key to lock and unlock the security door; and (d) a rearward opening housing surrounding the lock cylinder for enclosing the key, said housing having a length

which substantially spans the space between the prime outer door and the security door when both doors are in their closed positions whereby when a spare key is inserted into and kept in the locked cylinder, the key is in



plain view when the prime door is open and is immediately available to occupants of the building for locking and unlocking the security door, but when the prime door is closed, the key is out of view of and inaccessible to persons attempting to unlawfully enter said building.

4,644,689

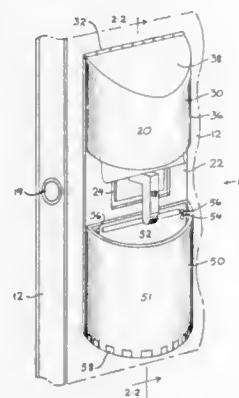
SANITARY DEVICE

Michael W. Ariens, Rte. 2, Box 227, Elgin, Ill. 60120
Filed Dec. 16, 1985, Ser. No. 809,402

Int. Cl.⁴ E06B 7/00

U.S. Cl. 49-70

9 Claims



1. A door, and combination receptacle and dispenser for use with said door to improve sanitary conditions around said door, said combination receptacle and dispenser being secured to said door and comprising in combination a mounting plate secured to said door, a dispensing means secured to a first end of said mounting plate and a receiving means removably secured to a second end of said mounting plate, wherein;

- (a) said mounting plate includes a handle receiving means between said first end and said second end;
- (b) said dispensing means includes an outer cover;
- (c) said dispensing means further includes a means for holding a dispenser of a disposable paper product in a position to be covered by said outer cover; and
- (d) said dispensing means further includes a means for removably securing said receiving means to said mounting plate.

4,644,690

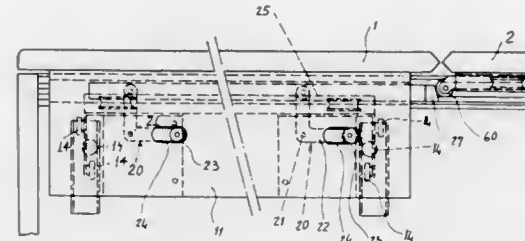
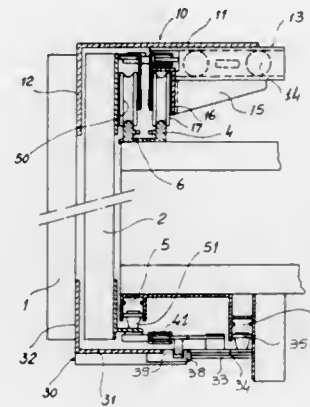
SLIDING DOOR STRUCTURE

Giuseppe Caimi, Via Provinciale, 31, 22060 Novedrate, Italy
Filed Sep. 18, 1985, Ser. No. 777,245

Claims priority, application Italy, Mar. 25, 1985, 20062 A/85
Int. Cl.⁴ E05D 15/20

U.S. Cl. 49-130

9 Claims



1. A sliding door structure comprising at least a first and a second upper guide and a first and a second lower guide, said guides being elongated and parallel to and spaced from one another; at least a first and a second door each extending along a plane and having an upper and a lower edge region; means for supporting said first and second doors respectively on said first and second upper guides for sliding movement longitudinally thereof and parallel to said planes, and said first door also for transverse displacement relative to said planes, between a closed position in which said first door is substantially coplanar with said second door and a plurality of open positions in which said first door is superimposed with said second door, including first and second upper rollers respectively engaging said first and second upper guides for said movement along the same, and means for rotatably mounting said first and second upper rollers on said upper edge regions respectively of said first and second door, including an upper linking mechanism which mounts said first upper rollers on said upper edge region of said first door for said transverse displacement of said first door relative to said first upper rollers at said closed position; and means for guiding said lower edge regions of said first and second doors respectively on said first and second lower guides for said movement longitudinally thereof and for said transverse displacement of said first door at said closed position, including first and second lower rollers respectively engaging said first and second lower guides for said movement along the same, and means for rotatably mounting said first and second lower rollers on said lower edge regions respectively of said first and second door, including a lower linking mechanism which mounts said first lower rollers on said lower edge region of said first door for said transverse displacement of said first door relative to said first lower rollers at said closed position and includes an elongated lower bracket having an upright flange affixed to said lower edge region of said first door and a substantially horizontal flange, at least two slides

secured to said horizontal flange at locations which are spaced from one another longitudinally of said lower bracket, at least two guiding members each engaging one of said slides and carrying one of said first lower rollers, at least two cranked lower thrust elements each having an elbow portion pivoted on one of said guiding members and two arms one of which is slidably connected to said horizontal flange of said lower bracket, a lower thrust element displacement rod pivotally connected to the other of said two arms of each of said lower thrust elements, and a thrust roller rotatably mounted on said second door and engaging said lower thrust element displacement rod.

4,644,691

APPARATUS FOR MOUNTING AND STABILIZING A TILTABLE WINDOW SASH

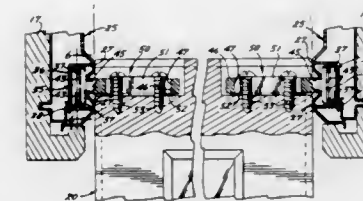
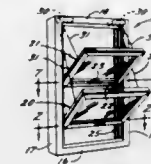
Wright, Thomas M., Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Jun. 11, 1985, Ser. No. 743,564

Int. Cl.⁴ E05D 15/22

U.S. Cl. 49-161

9 Claims



1. Apparatus for supporting an upright window sash for up and down movement and mounting the sash for downward and inward tilting, said apparatus comprising a pair of vertically fixed upright side jambs located on opposite upright sides of the sash, means on opposite upright sides of the sash and coacting with said side jambs to guide said sash for up and down movement relative to said side jambs, an upright, mounting means extending laterally from the adjacent upright side of the sash near the lower end thereof to mount said sash for downward and inward tilting, said mounting means comprising a spool disposed within said channel and fixed against rotation relative to said sash, a radially outwardly opening groove extending circumferentially around said spool between the ends thereof and located completely within said channel, an upright rib projecting into said channel between opposite laterally spaced upright sides thereof and extending into said groove, one circumferentially extending portion of said groove being of one axial width and moving freely along said rib during normal upward and downward movement of said sash, and another circumferentially extending portion of said groove being of a narrower axial width and pinching against said rib when said spool is turned in said channel during downward and inward tilting of said sash whereby said pinching frictionally resists free vertical movement of the sash when the latter is in a tilted position.

4,644,692

DRIVE ASSEMBLY FOR THE WING OF A SWING-OUT SLIDING DOOR

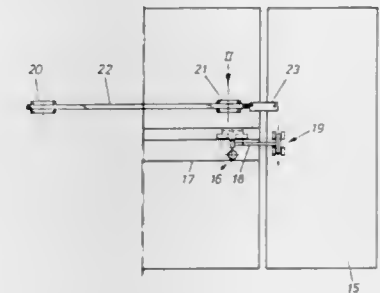
Manfred Schindehütte, Calden, Fed. Rep. of Germany, assignor to Gebr. Bode & Co. GmbH, Kassel, Fed. Rep. of Germany
Filed May 20, 1985, Ser. No. 735,624

Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419338

Int. Cl.⁴ E05D 15/10

U.S. Cl. 49-213

5 Claims



1. A drive assembly for the wing of a swing-out type sliding door, wherein the wing slides into and out of a doorway, comprising:

- at least two spaced-apart reversing rollers, one of which is positionable adjacent to the doorway;
- a belt guided around said rollers;
- a guide element for the wing of the door, including a guide rail having a curved end piece, said guide rail being positioned adjacent to said belt with said curved end piece thereof disposed adjacent to said one reversing roller, and a roller carriage mounted on said rail for movement therealong which is adapted for pivotable securing to the door wing; and
- means for coupling said belt to said carriage.

4,644,693

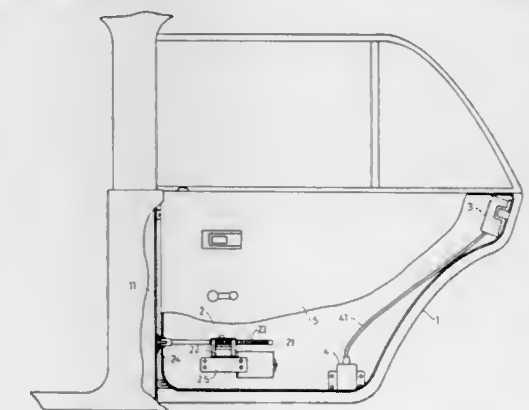
ELECTRIC DEVICE FOR OPENING OR SHUTTING AUTOMATIVE DOORS

Hong J. Wang, 14-3, Fu Shin 1 Rd., Kaohsiung, Taiwan (800)
Filed Aug. 20, 1985, Ser. No. 767,603

Int. Cl.⁴ E05F 15/00

U.S. Cl. 49-280

2 Claims



1. An apparatus for opening and closing vehicle doors, comprising in combination:

- a means for opening a door lock;
- a means for moving a vehicle door;
- said means for moving being mounted in a vehicle door;
- said means for operating a door lock being mounted in the door;
- said means for moving the door including a rack member;

said rack member having a pinned end and a free end; said pinned end being pinned to a frame which does not move with the door;

said means for moving the vehicle door including an electrically operated motor connected to said rack; said motor being fixed to the door;

said motor having an output gear which is in toothed engagement with said rack;

a means for retaining said rack in engagement with said gear during angular motion of said rack relative to said motor;

a control means for controlling operation of said motor and operation of said door lock;

said control means having 3 states; in a first state, power is supplied to said means for controlling said door lock to open said door lock;

an electromagnetically operated clutch connected to said motor to transmit rotary motion from said motor to said output gear only when said clutch is energized;

in said first state, said control means also supplying power to said motor and to said clutch, whereby said motor operates in a forward direction to cause opening of the vehicle door;

in a second state, said control means cuts off power to said motor, said clutch, and said means for operating said door lock;

in a third state, said control means supplying power of a reversed polarity to said motor; said control means in said third state supplying power to said clutch but not to said means for opening said door lock; whereby said reversed polarity causes reversed movement of said motor to cause closing of the vehicle door;

in said second state, said clutch is disengaged from said output gear so as to permit manual operation of the vehicle door.

4,644,694

WINDING DEVICE FOR CABLES

Hiroshi Ujihara, Yokohama, Japan, assignor to Ohi Seisakusho Co., Ltd., Kanagawa, Japan

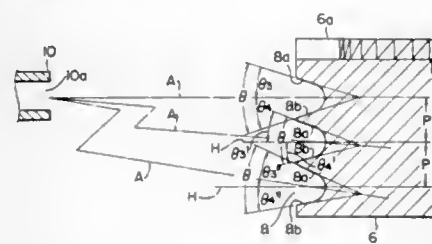
Filed Aug. 8, 1985, Ser. No. 763,803

Claims priority, application Japan, Aug. 15, 1984, 59-124044[U]

Int. Cl.⁴ E05F 11/48

U.S. Cl. 49—352

8 Claims



1. A winding device for cables wherein grooves having first and second side walls and a substantially V-shaped or U-shaped cross-section are formed in the outer circumference of a take-up drum mounted to a support for rotation about an axis, and cables drawn from openings provided in said support are wound round the outer circumference of the take-up drum along said grooves, characterized by that;

angles between said first side walls of said grooves and normal lines perpendicular to said axis of the take-up drum increase gradually with distance of said first walls from the associated openings, the distances of said second walls to said opening being equal or greater than the distances of the associated first walls to said opening.

4,644,695

DOOR WINDOW REGULATOR

Daiichi Shiraishi, Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin Seiki Co., Ltd., both of Japan

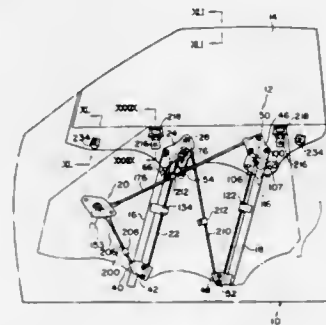
Filed Jun. 5, 1985, Ser. No. 741,617

Claims priority, application Japan, Jun. 6, 1984, 59-83813[U]; Jun. 6, 1984, 59-83833[U]

Int. Cl.⁴ E05F 11/48

U.S. Cl. 49—352

22 Claims



1. A door window regulator for guiding the vertical movement of a door window glass, comprising:
 - (a) upper and lower pulleys respectively disposed at the upper and lower portions of a door;
 - (b) a wire stretched between said upper and lower pulleys such as to form a closed loop;
 - (c) a driving unit adapted to move said closed loop wire in opposite directions along the length of said wire;
 - (d) a wire hook secured to a portion of said wire between said upper and lower pulleys; p1 (e) a wire mounting bracket secured to said door window glass and adapted to retain said wire hook; and
 - (f) elastic means interposed between said wire mounting bracket and said wire hook in both said opposite directions of movement of said wire, for absorbing noise generated as the result of collision between said wire hook and said wire mounting bracket at the gap therebetween when movement of said wire is commenced upon operation of said driving unit.

4,644,696

PATIO DOOR ASSEMBLY FOR REMOVABLE ASTRAGAL

William M. Bursk, Middletown, Ohio, assignor to Pease Industries, Inc., Fairfield, Ohio

Filed Jun. 18, 1986, Ser. No. 875,819

Int. Cl.⁴ E05C 7/04

U.S. Cl. 49—367

10 Claims

1. In a double door installation including head and side jambs and a sill defining a rectangular door frame and a pair of doors mounted on said side jambs to swing to and from closed positions in line with each other, said doors being proportioned to leave a space of predetermined width therebetween in said closed positions, the combination of

- (a) an astragal of generally T-shape in horizontal section providing arm portions defining stops establishing said closed positions of said doors and a stem portion proportioned to be received in said space between said closed doors,
- (b) means for removably attaching said astragal to the top and bottom of said door frame,
- (c) locking means in one of said doors including a horizontally movable dead bolt,
- (d) means defining a keeper recess for said dead bolt in the other of said doors and in line with said dead bolt, and
- (e) said astragal having an opening therethrough aligned with said dead bolt and said keeper recess whereby said

dead bolt will extend through said astragal into said slots and ribs in aligning said main frame with respect to said keeper recess to lock both of said doors to each other and sub-frame when closed.

4,644,697

SECURITY SCREEN ASSEMBLY

Edmund A. Nida, 25779 Ridgewood Dr., Farmington Hills, Mich. 48018

Filed Sep. 21, 1984, Ser. No. 652,887

Int. Cl.⁴ E05D 7/00; A47H 13/00

U.S. Cl. 49—401

5 Claims



1. A security screen assembly comprising a rectangular sub-frame composed of top, bottom and side sub-frame members abutting end-to-end at the four corners of the frame to define a rectangular opening, said top sub-frame member having a back wall, said bottom and said sub-frame members each having front and back walls, a channel in the back wall of each sub-frame member at each corner with the channels of abutting sub-frame members connecting with one another, additional channels in the front walls of the side and bottom sub-frame members at each bottom corner with said additional channels of abutting side and bottom sub-frame members connecting with one another, means at each corner of said sub-frame for holding the sub-frame members in predetermined angular relationship comprising a rigid L-shaped key engaged in each of the connecting channels, a rectangular main frame composed of top, bottom and side main frame members abutting end-to-end at the four corners thereof and defining a rectangular, screened opening, each main frame member having front and back walls, a channel in the front wall of each main frame member at each corner of said main frame with the channels of abutting main frame members connecting with one another, means at each corner of said main frame for holding said main frame members in predetermined angular relationship comprising a rigid key engaged in the connecting channels thereof, fasteners at each corner of said sub-frame and main frame for securing said abutting frame members together, a hinged connection between said frames permitting pivotal movement of said main frame between an open position and a closed position closing the opening in said sub-frame in which the rear walls of said main frame members overlap and are substantially flush with the rear walls of said sub-frame members, means for releasably latching said main frame closed, and means for aligning said main frame with respect to said sub-frame in the closed position thereof comprising elongated slots along the front wall of the bottom and side sub-frame members and elongated ribs along the front wall of the bottom and side main frame members, said slots receiving said ribs in the closed position of the main frame, said keys in the channels of the front walls of said bottom and said sub-frame and main frame members being located adjacent said slots and ribs to assist said

4,644,698

REFRIGERATOR AND METHOD OF GASKET ASSEMBLY CONSTRUCTION

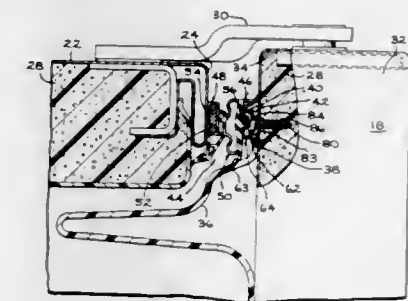
Keith W. Gerdes; Douglas E. Corts; Thomas E. Jenkins; Stephen C. Lesmeister, and Louis A. Welle, Sr., all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 2, 1986, Ser. No. 869,589

Int. Cl.⁴ E06B 7/16

U.S. Cl. 49—478

19 Claims



1. A refrigerator comprising: a cabinet having an outer case, an inner liner with thermal insulation therebetween, and a storage compartment having an access opening surrounded by a face portion comprising an area composed of magnetic material; a door hingedly mounted on said cabinet along one edge thereof for closing said access opening, said door comprising an outer metal panel having an inwardly turned flange extending about the periphery thereof and an inner panel having a flange with a peripheral edge portion and terminal end overlying said metal panel flange; elongated channel member sections having top, bottom and side walls adjacent the peripheral edges of the door and having spaced screw openings in the bottom and top walls, said screw openings in the bottom wall are counter-sunk and an open slot in the top wall interconnecting the screw openings along the length thereof, said channel member sections overlying the peripheral edge portion and terminal end of the inner panel and secured thereto by screws having a threaded body and countersink head and passing the threaded body of the screws through the peripheral edge portion and the inwardly turned flange of the outer metal panel; and a sealing gasket of resilient material mounted on said elongated metal channel member sections including in lateral cross-section a base portion with a downwardly projecting winged dart having a body and two diverging arms projecting through the open slot in the top wall of the channel member sections and overlying the screws securing the channel member to the door and removably retained in said channel member sections, and a cabinet engaging portion integrally joined to the base portion and including a magnetic means attached to said area of magnetic material and providing the sole means for holding the door in a closed position.

4,644,699

TRANSPARENT JEEP TYPE VEHICLE DOOR

Kenneth E. Chandler, 1444 S. Yampa Ct., Aurora, Colo. 80017, and Loren K. Wolfe, 14026 E. 22nd Pl., Aurora, Colo. 80011

Filed May 31, 1984, Ser. No. 616,013

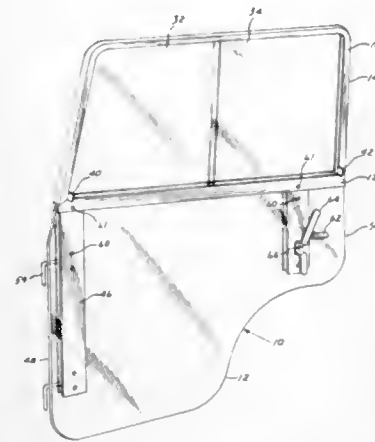
Int. Cl.⁴ B60J 5/04

U.S. Cl. 49—502

5 Claims

1. A combination safety window and door for use on open cab vehicles which comprises:

an upper portion having a transparent window portion; and, a lower door portion sized and shaped to provide a door

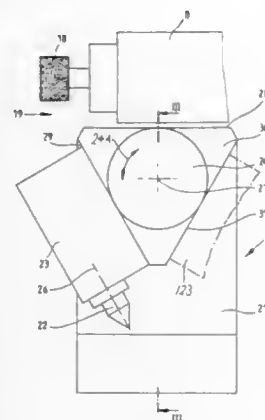


closure means wherein the lower portion is devoid of a frame about the lower extremities which lower extremities are completely and entirely transparent.

4,644,700
TAILSTOCK FOR UNIVERSAL GRINDING MACHINES
Rudolf Beyer, Esslingen; Lutz-Peter Heerdt, Altbach, and Roland Schemel, Stuttgart, all of Fed. Rep. of Germany, assignors to Schaudt Maschinenbau GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,906
Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420207

Int. Cl.⁴ B24B 5/18
U.S. Cl. 51—237 T



1. A machine tool, particularly a grinding machine, comprising a frame; a carrier mounted in said frame and having at least one tool supporting device, said carrier being movable relative to said frame so as to place the tool supporting device in a predetermined position; and a tailstock including a first portion mounted in said frame and a second portion having at least one work-contacting component and being indexible relative to said first portion about a substantially horizontal axis between a first position in which said component is ready to engage a workpiece which is to be treated by a tool in the supporting device occupying said predetermined position and in which said second portion is likely to interfere with movements of said carrier relative to said frame, and at least one second position in which said second portion permits movements of said tool supporting device and of the tool which is held thereby to and from said predetermined position, at least a part

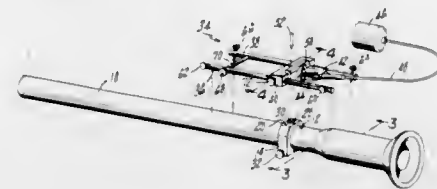
of said first portion being disposed at a level below said second portion.

4,644,701
HAND OPERATED GRINDING WHEEL WITH SURFACE AREA AND DEPTH CONTROL

John P. Arrigoni, Wallingford, and Kenneth C. Carlson, Forestville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 29, 1985, Ser. No. 728,544
Int. Cl.⁴ B24B 5/36, 17/02

U.S. Cl. 51—241 S

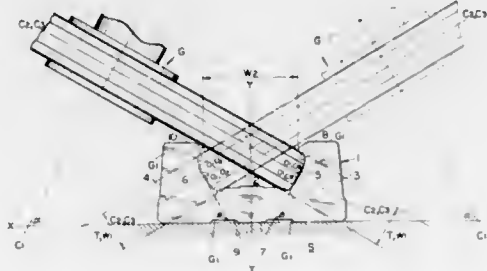


1. A hand operated grinding tool for removing material from a preselected surface surrounding an oil hole in a cylindrical shaft comprising, a pair of elongated parallel disposed rails, a carriage slideably supported by said rails, a pair of extending adjustable feet supported on opposite ends of each of said rails adapted to bear against the cylindrical shaft when in the grinding position, means for locking said carriage in a predetermined position relative to said oil hole, a template fixed to said shaft at a predetermined position relative to said oil hole, a retractable stylus extending from said carriage adapted to be guided by said template to form a circular pattern that said grinding wheel can be positioned by an operator, said carriage supporting a grinding wheel in fixed relation to said carriage, means for flexing said rails to allow them to move vertically relative to said preselected surface to regulate the depth of said grinding wheel relative to said outer diameter of said cylindrical shaft, and means for imparting rotary motion to said grinding wheel.

4,644,702
SIMULTANEOUSLY GROUND TYPE BEARING BODY AND LIMITED SLIDING BEARING UNIT EMPLOYING THE SAME

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Tokyo, Japan
Division of Ser. No. 524,585, Aug. 19, 1983, abandoned. This application Aug. 14, 1985, Ser. No. 765,568

Claims priority, application Japan, Oct. 27, 1982, 57-188869
Int. Cl.⁴ B24B 1/00; F16C 33/64
U.S. Cl. 51—291



1. A method of manufacturing a sliding bearing unit of limited stroke including a track shaft, a bearing body of a substantially U-shaped cross section mounted on said track shaft for movement therealong through rolling balls disposed therebetween, said bearing having a central portion with right and left skirts extending therefrom and a central cavity defined between said skirts, said skirts being provided in the inner

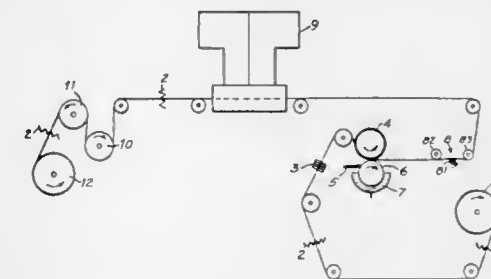
peripheral side surfaces thereof with a pair of opposing recesses, each of said recesses having at its opposite sides a pair of axially extending ball rolling surfaces and a bottom surface disposed therebetween, said bottom surface being inclined at an angle of about 55 to about 65 degrees relative to a horizontal line defined by an upper surface of a machining reference surface on which said bearing body is mounted with the opening side of said central cavity directed upward, and an axially slidable cage disposed between said track shaft and said bearing body for rollably retaining said balls at prescribed positions thereof, said method comprising:

positioning a grinding wheel, having a thickness equal to the width of each recess, onto the surface of each recess at an inflex angle equal to said angle of inclination of said bottom surface of a corresponding one of said recesses; and simultaneously grinding the pair of ball rolling surfaces at the opposite side of each recess by means of said grinding wheel.

4,644,703
PLURAL LAYERED COATED ABRASIVE
Wesley R. Kaczmarek, Malta; Eugene Zador, Clifton Park, and Sitaramiah Ravipati, Colonie, all of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Mar. 12, 1986, Ser. No. 839,243
Int. Cl.⁴ B24D 11/00

U.S. Cl. 51—401



1. A plural layer coated abrasive, comprising:

- (a) a flexible backing;
- (b) an inner layer of first size graded abrasive grits distributed over at least one major surface of and adhered to said flexible backing; and
- (c) an outer layer of second size graded abrasive grits distributed over and adhered to the side of said inner layer opposite from said backing,

wherein said second size graded abrasive grits have a median size which is at least 150% of the median size of said first size graded abrasive grits.

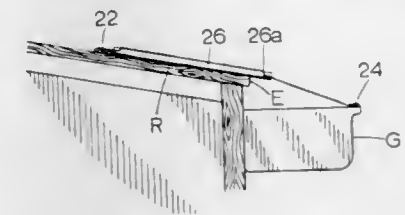
4,644,704
RAIN GUTTER DEBRIS ELIMINATOR
John S. Pedgonay, 53 E. Bel Air Ave., P.O. Box 127, Aberdeen, Md. 21001

Filed Nov. 18, 1985, Ser. No. 798,907
Int. Cl.⁴ E04D 13/06

U.S. Cl. 52—12

1. A system for shielding a gutter with an outer edge, installed along the eaves of a sloping roof, from clogging with waterborne debris from the roof, while assuring collection of water in the gutter, comprising: a panel of screening with an upper border and a lower border, means for affixing the upper border along a said sloping roof substantially parallel with and spaced up the roof from a said gutter, means for affixing the lower border along the outer edge of a said gutter, means for causing said water to pass between the panel of screening and a said roof, including a plurality of separate means between the upper border and lower border for holding intermediate portions of the panel of screening in an upward

position, and said holding of intermediate portions of the panel of screening including holding said screening in a plane parallel-spaced relative to said roof for passage of water therealong

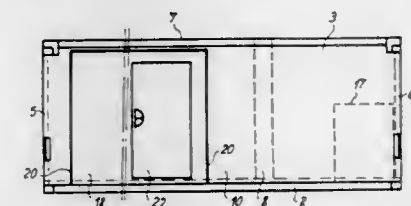


beneath said panel of screening, and the plurality of means for holding comprising a plurality of members having substantially uniform parallel spacing from each other along the length of said roof.

4,644,705
UNFOLDING, MOVABLE HOSPITAL UNIT
Daniel Saccomani, Maule, and Bernard Tarin, Paris, both of France, assignors to Societe d'Etudes Techniques et d'Entreprise Generales Sodeteg, Le Plessis Robinson, France

Filed May 7, 1986, Ser. No. 860,737
Int. Cl.⁴ E04H 3/08

U.S. Cl. 52—27



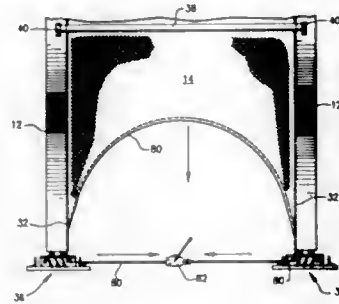
1. Movable hospital unit comprising a rigid, parallelepipedal, extensible structure that cannot be dismantled, comprising at least one bearing frame without its own means of motion, with heat-insulating side walls, end walls and ceiling and a fixed cross partition used, all at once, as a water tank, a means to divide the hospital unit into two zones, i.e. a utilities zone and a hospital zone, and as a means of providing heat and sound insulation between these two zones.

4,644,706
BUILDING STRUCTURE WITH TRANSVERSELY TENSIONED FABRIC COVERING
Robert Stafford, 3017 Clay St., Newport Beach, Calif. 92663, and Gregory J. Cook, 3611 - 36th St., San Diego, Calif. 92104
Filed Jan. 27, 1986, Ser. No. 822,328
Int. Cl.⁴ E04B 1/32

U.S. Cl. 52—63

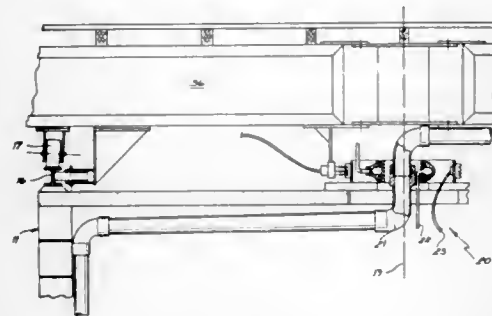
1. A building structure, comprising: a plurality of arches each having a pair of lower ends; means for rigidly holding the arches in longitudinally spaced, transversely extending, vertical positions; a plurality of panels of a flexible web material each having a width corresponding to the longitudinal distance between adjacent ones of the arches and a length corresponding to the transverse edges thereof for connecting the same between a corresponding adjacent pair of the arches and a pair of lines connected to corresponding opposite end portions of the panel and extending generally arcuately between the transverse edges thereof so that the opposite ends of the lines terminate adjacent the lower ends of the corresponding adjacent pair of arches; and

a plurality of base means each attached to the lower end of a corresponding one of the arches for guiding the opposite ends of each line so that they can be connected and pulled together to thereby transversely tension the panels each base means including a horizontal base plate, means for rigidly connecting a corresponding lower end of one of



the arches to the base plate, a pair of rollers, means for rotatably mounting the rollers to the base plate for rotation about respective horizontal axes for each carrying thereabout one of an adjacent pair of ends of lines from an adjacent pair of panels, and clamp means for fixing the positions of lines after they have been pulled together.

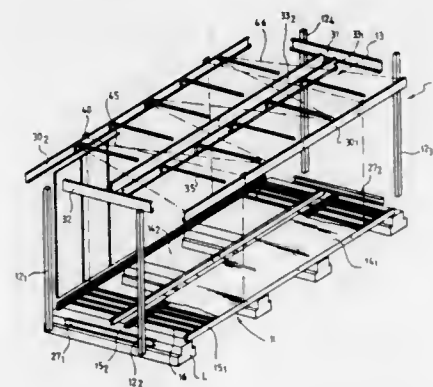
4,644,707
ROTATABLE BUILDING FRAME
Peter L. Aubourg, and John W. Carrick, both of Fanshawe Road, Otford, New South Wales 2508, Australia
Filed Jun. 8, 1984, Ser. No. 618,490
Int. Cl.⁴ F16L 27/08
U.S. Cl. 52—65 6 Claims



1. A building structure including a rigid floor frame supported on a pedestal base, said base being supported on a ground surface so as to extend upwardly therefrom and terminating at its upper end with a support for said floor frame, said floor frame having engaging means to engage said support, said support and engaging means providing an annular surface oriented in a generally horizontal plane and a plurality of rollers abutting said annular surface thereby enabling rotation of said frame about the longitudinal axis of said annular surface, a coupling mounted so as to extend generally coaxial with respect to said axis to enable the drainage of sewerage from said floor frame and the delivery of mains water pressure to said floor frame, said coupling comprises a first sleeve to be fixed stationary relative to said base, said sleeve extending generally coaxial with respect to said axis and being adapted to be coupled to a drainage line, a second sleeve also coaxial with said axis and sealingly located within an upper portion of said first sleeve, said second sleeve being adapted to be attached to a drainage conduit fixed to said floor frame, a manifold of generally annular configurations surrounding said first and second sleeves and spaced radially therefrom, said manifold having an inlet to be attached to said mains water supply, and

an outlet to deliver water to water outlets fixed to said frame, said manifold including a first portion having said outlet, and a second portion having said inlet, and seal means connecting said first and second portions to allow relative rotation therebetween about said axis, and wherein said manifold provides an annular cavity separating the inlet and outlet for said water, from said first and second sleeve which provide for the drainage of sewerage.

4,644,708
PREFABRICATED MODULAR BUILDING ELEMENT AND A BUILDING COMPRISING SUCH ELEMENTS
Claude Baudot, Thionville, and Vincent Contini, Konacker, both of France, assignors to Constructions Metalliques Fillod, Florange, France
Filed Jan. 22, 1986, Ser. No. 821,446
Claims priority, application France, Oct. 3, 1985, 85 14647
Int. Cl.⁴ E04B 1/348
U.S. Cl. 52—79.9 12 Claims

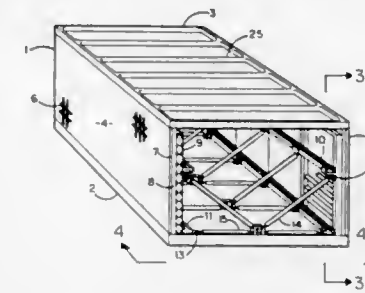


9. A building adapted to be formed by assembling together a first and a second modular element, said first element comprising two identical metal half frames each formed by an assembly of first longitudinal members and cross pieces which are assembled together to form a floor of said element, a ceiling comprising second longitudinal members and spacers, corner posts connecting said floor to said ceiling for forming a self supporting structure and bolts means for assembling together the parts constituting said element, said second element comprising two identical metal half frames each formed by an assembly of first longitudinal members and cross pieces which are assembled together to form a floor of said element, a ceiling comprising second longitudinal members and purlins, corner posts connecting said floor to said ceiling for forming a self supporting structure roofing trays above said ceiling and bolts means for assembling together the parts constituting said element and means for assembling together said first and second elements with interposition of seal means between the second longitudinal members of said first element and the first longitudinal members of said second element.

4,644,709
OMNIFORM BUILDING SYSTEM
Hanns U. Baumann, Laguna Beach, Calif., assignor to Sharon K. Baumann Trust, Laguna Beach, Calif.
Filed May 2, 1985, Ser. No. 729,747
Int. Cl.⁴ E04B 1/34
U.S. Cl. 52—79.14 8 Claims

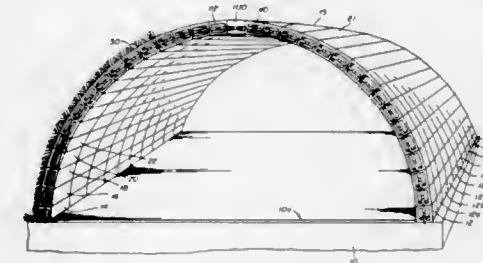
1. As a lightweight transportable unit, the combination of a prefabricated building module and a collapsible internal bracing system; said module comprising at least two vertical walls having inner surfaces and a floor and ceiling, said bracing system including separate vertical panels, said panels extending

over substantially all of the inner surfaces of said vertical walls, said walls of about one inch of concrete thickness and said



inner surfaces of said walls having a layer of finished material applied thereto.

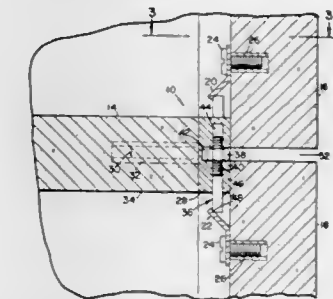
4,644,710
LIP BLOCK CONSTRUCTION
Lloyd K. Lippe, P.O. Box 95, Seguin, Tex. 78155
Division of Ser. No. 391,566, Jun. 24, 1982, Pat. No. 4,505,088.
This application Nov. 26, 1984, Ser. No. 674,658
Int. Cl.⁴ E04B 1/32
U.S. Cl. 52—86 2 Claims



1. A concrete building block assembly for use in the construction of an arcuately shaped building, comprising (a) a plurality of building blocks, each comprising (1) top and bottom walls; (2) a pair of planar side walls integrally connected with the side edges of said top and bottom walls, respectively, to define a chamber; and (3) an integral intermediate wall connected between said side walls for bisecting said chamber, the front and rear surfaces of said top, bottom, side and intermediate walls defining parallel planar front and rear surfaces of said block, respectively, said side walls each containing an elongated slot extending between said front and rear surfaces and arranged midway between said top and bottom walls, said slots each having spaced parallel upper and lower planar portions and a planar section arranged normal to said upper and lower planar portions, said intermediate wall front and rear surfaces each containing a recess centrally arranged between said side walls, respectively; (b) means for connecting adjacent blocks in side-by-side relationship to define an arcuate row of blocks, said block connecting means comprising a plurality of elongated fastening members arranged in said slots of said adjacent blocks, said fastening members each having a rectangular configuration; (c) means for connecting adjacent rows of blocks to define an arcuate structure, said row connecting means comprising tie wire brackets arranged in at least said intermediate front wall surface of one block of the first row of blocks and said intermediate rear wall surface of a corresponding block of the last row of blocks; and (d) end wall means connected with said one block front surface and with said corresponding block rear surface for

closing said bisected chambers thereof, said rear wall means containing a central opening for receiving a portion of said tie wire bracket and for connecting said bracket with said end wall means, whereby said elongated fastening members and said tie wall brackets resist torsional, compression, and moment forces generated in the arcuately-shaped building.

4,644,711
FASTENING APPARATUS FOR SHUTTERS
John K. Eickhof, Crookston, Minn., assignor to Paul Eickhof, Crookston, Minn., a part interest
Continuation-in-part of Ser. No. 437,907, Nov. 1, 1982, abandoned. This application Dec. 17, 1984, Ser. No. 682,655
Int. Cl.⁴ E04B 2/82
U.S. Cl. 52—127.11 11 Claims



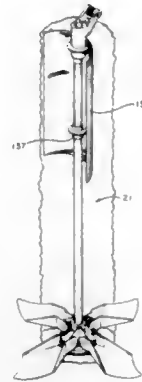
1. Fastening apparatus for shutters wherein a first edge of a first said shutter is separated from a second edge of an adjacent second said shutter to define a separation space, said first and second shutters being substantially in the same plane, said apparatus comprising:

a stud;
means for holding said stud, said holding means being attached to a framework behind the separation space between said first shutter and said second shutter;
a ramp member attached to said first shutter; and
means, accessible through said separation space, for retractably advancing said stud generally parallel with said plane to contact said ramp member to draw said first shutter in a direction approximately perpendicular to said plane.

4,644,712
EARTH ANCHOR
Gary Q. Watson, Odessa, Tex., assignor to Morrow Manufacturing Co., Inc., Odessa, Tex.
Filed Aug. 1, 1983, Ser. No. 519,042
Int. Cl.⁴ E04H 12/20; E02D 5/74
U.S. Cl. 52—162 10 Claims

1. An anchor adapted to be located in a hole formed in the earth and secured therein, comprising:
elongated metal rod means having a first end and a spaced second end,
said first end of said rod means being adapted to be located at the lower end of a hole formed in the earth,
connecting means coupled to said second end of said rod means and adapted to be located above the earth when the anchor is secured in place,
metal end means coupled to said first end of said rod means and extending transversely outward therefrom,
a metal tubular means surrounding a portion of said rod means and extending from said metal end means toward said second end of said rod means,
a metal end member connected to said second end of said rod means and supporting said connecting means,
said end member having a lower portion which is spaced from and surrounds said rod means and extends toward said first end of said rod means,

a plastic sleeve means located around said rod means and extending from said tubular means to said lower portion of said end member forming a normally sealed chamber around said rod means,
a normally closed inlet formed through said lower portion of said end member near said second end of said rod means through which a fluid may be injected into said chamber, and
a support means having a plurality of flukes pivotally coupled thereto,



said support means having an aperture for receiving said plastic sleeve means such that when said anchor is employed for anchoring purposes said support means is located around said plastic sleeve means near said first end of said rod means and may be moved toward said first end of said rod means near said end means such that said flukes will engage said end means and be pivoted outward into the earth surrounding the hole as said support means is moved further toward said first end of said rod means.

4,644,713

POST ANCHOR DEVICE

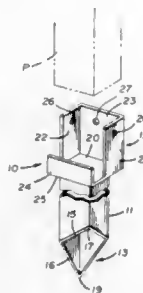
John F. Lehman, Canfield, Ohio, assignor to The Steel City Corporation, Youngstown, Ohio

Filed Jan. 30, 1986, Ser. No. 824,279

Int. Cl.⁴ E02D 27/42

U.S. Cl. 52—165

1 Claim



1. A post anchor to mount post in the ground comprising a support bracket having an elongated tubular member extending therefrom, said support bracket having a base, at least three upstanding members extending from said base, said upstanding members being inner-connected and of the same height, two of said upstanding members being oppositely disposed to one another and of an equal width, a flange extending from said base in oppositely disposed spaced relation to said other of said upstanding members, and in spaced relation to said two upstanding members for lateral alignment with a post position in said support bracket, said means on said tubular member for progressively engaging and penetrating said ground.

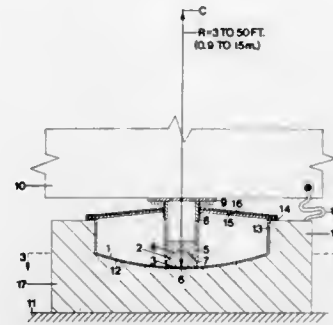
4,644,714
EARTHQUAKE PROTECTIVE COLUMN SUPPORT
Victor A. Zayas, Alameda, Calif., assignor to Earthquake Protection Systems, Inc., Alameda, Calif.

Filed Dec. 2, 1985, Ser. No. 803,895

Int. Cl.⁴ E04B 1/98

U.S. Cl. 52—167

13 Claims



1. In a support for a building or other load, said support having a member with a concave load bearing surface that has a predetermined center of curvature and a predetermined radius of curvature, a load bearing component which is spaced from said concave surface and which extends away therefrom and which is translatable relative thereto, and a load transmitting slider disposed between said load bearing component and said concave surface, said slider being tiltable relative to said load bearing component about a predetermined pivot point, wherein the improvement comprises:

said pivot point being spaced from said predetermined center of curvature of said concave surface by a distance which exceeds 90% of said radius of curvature of said concave surface.

4,644,715

SOIL EXCAVATING SLEEVE

John A. Burell, and Joseph Mason, both of Tucson, Ariz., assignors to Loadmaster Systems, Inc., Tucson, Ariz.

Filed Dec. 9, 1985, Ser. No. 806,640

Int. Cl.⁴ E02D 27/42

U.S. Cl. 52—170

19 Claims



11. A soil excavating sleeve comprising:
an elongated hollow cylinder, said cylinder having two circular ends and inside and outside cylindrical surfaces; and
a soil engaging excavating flap operably attached to said cylindrical surfaces and situated at a first end of said elongated hollow cylinder, said excavating flap adapted to engage the soil interiorly to said cylinder and move the soil outside the cylinder when said sleeve is rotated and thereby evacuate the volume interiorly of said cylinder.

4,644,716

BUILDING-INTEGRATED FLUORESCENT SOLAR COLLECTOR

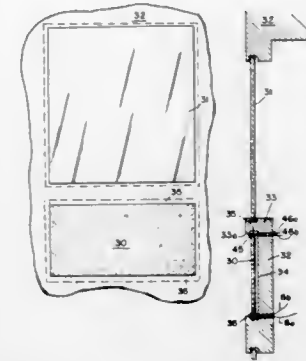
Norbert Neuroth, Mainz-Mombach, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jun. 11, 1985, Ser. No. 743,448

Int. Cl.⁴ G04H 14/00; H01L 31/04

U.S. Cl. 52—173 R

2 Claims



1. In combination with a building wall wherein the building wall includes windows, window parapets and areas below the window parapets, the window parapets including overhanging lips defining slots with the areas beneath the parapets; fluorescent solar collectors received in the slots to form an exterior facing over the area beneath the parapets, photoelectric cell means arranged with the fluorescent panels and having leads thereon for conducting electric current therefrom, the photoelectric cell means being positioned within the slots so as to be protected thereby.

4,644,717

CURTAIN WALL VALVE SYSTEM

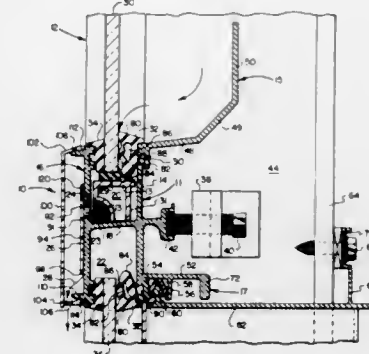
Lawrence F. Biebuyck, Dallas, Tex., assignor to Butler Manufacturing Co., Kansas City, Mo.

Filed Mar. 8, 1985, Ser. No. 709,573

Int. Cl.⁴ E06B 7/14

U.S. Cl. 52—209

18 Claims



1. An improved drainage system for a curtain wall structure having horizontal mullions defining hollow sections and being secured beneath glass panels disposed within said curtain wall of the type wherein a weep hole is provided within a lower region of said hollow sections of said mullion with a flap disposed thereover for permitting egress of water therefrom and preventing the infiltration of water therein said improvement comprising said flap member being constructed of substantially resilient material disposed in flush engagement against said weep hole, the surface area therearound, and substantially therebeneath, an upper portion of said flap member being

secured to said outer weep hole surface for permitting said flush engagement and outward, resilient movement of said flap adjacent said weep hole and said portion thereof extending therebeneath for the passage of water through said weep hole and beneath said downwardly extending flap member, said resilient flap member having material characteristics which permit the presence of a stream of water beneath said resilient flap member and against said surface beneath said weep hole and the creation of capillary action thereunder for urging water contained within said mullion downwardly beneath said resilient flap member extending beneath said weep hole for discharge from said curtain wall structure.

4,644,718

FOUNDATION ARRANGEMENT

Richard M. Burnell, Banbury, and Donald Bridge, Chelmsford, both of England, assignors to Penguin Swimming Pools Limited, Chelmsford, England

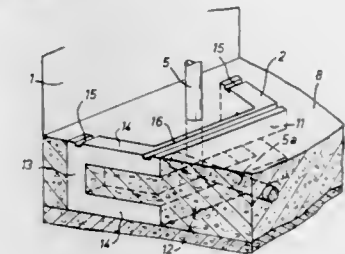
Filed Dec. 23, 1985, Ser. No. 812,190

Claims priority, application United Kingdom, Dec. 21, 1984, 8432349; Jun. 4, 1985, 8514038

Int. Cl.⁴ E04G 11/48; E02D 27/00

U.S. Cl. 52—295

17 Claims



1. A footing element for use in the formation of a foundation layer, the said footing element having upper surfaces with means for locating shuttering for walls to be erected on a plurality of footing elements, and also being adapted to receive reinforcing bars for the foundation layer and the walls, the footing element being in the form of a pair of upwardly open U-shaped frames which are spaced apart and joined by parallel top members.

4,644,719

DECORATIVE WALL PANEL

Edward J. Salazar, 818 W. Kelly, Loveland, Colo. 80537
Continuation-in-part of Ser. No. 503,024, Jun. 10, 1983, Pat. No. 4,590,726. This application Mar. 18, 1985, Ser. No. 712,747

Int. Cl.⁴ E04C 1/00, 2/24

U.S. Cl. 52—311

8 Claims



1. A decorative wall panel adapted to be fastened to a wall substrate, said panel comprising:
(a) a continuous base layer comprising a reinforced cementitious material; and
(b) a patterned layer bonded to the surface of said base layer, wherein said patterned layer comprises a slow-cured

molded mixture of Portland cement, sand, and pigmented binder;
wherein said patterned layer exhibits high temperature color fastness.

4,644,720

HARDWOOD FLOORING SYSTEM

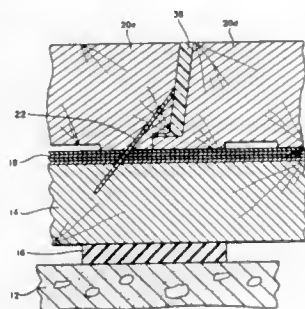
Raymond H. Schneider, 1525 Eastmoor Rd., Burlingame, Calif. 94010

Filed Nov. 1, 1984, Ser. No. 667,094

Int. Cl.⁴ E04F 15/02; E04B 5/00

U.S. Cl. 52—392

37 Claims



1. A method of constructing a hardwood flooring system upon a base, said method comprising the steps of:
milling a supply of flooring members of hardwood so that they have substantially identical cross-sectional geometry, each member including a top face, a bottom face and sidewalls therebetween,
spacing said members upon support means supported by said base, and attaching said members to said support means, said members being aligned in side-by-side relationship so that substantially uniform voids in an upper major surface of said system are thereby defined by and between adjacent opposed sidewalls of adjacent members, the void dimensions being chosen to correspond to the amount of transverse expansion to be expected by the adjacent members upon absorption of moisture,
after said members have been attached to said support means, filling said voids by flowing an initially flowable, curable elastomeric filler-sealer material into said voids which thereupon effectively contacts and seals said adjacent opposed sidewalls from moisture penetration and which when cured compressibly yields when adjacent members expand due to absorption of moisture.

4,644,721

GRILLE FASTENER SYSTEM AND METHOD OF USING THE SAME

Eric R. Bloomquist, and Rajiv K. Dhital, both of Minneapolis, Minn., assignors to Rasmussen Millwork, Inc., St. Paul, Minn.

Filed Nov. 15, 1985, Ser. No. 798,463

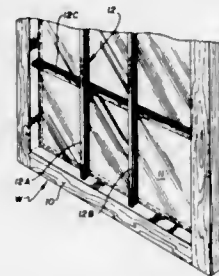
Int. Cl.⁴ E06B 3/30; E04C 2/38

U.S. Cl. 52—456

18 Claims

1. A system for removably securing a grille bar along an inner surface of a glass pane in a frame comprising:
(a) a tab member comprising a tip means inserted between the inner surface of the glass pane and the frame, and a male means, extending substantially perpendicularly from a plane of the tab member, the male means being compressible when a suitable mechanical force is applied and expandable to its approximate original shape when the mechanical force is released; and
(b) female means in a portion of a first surface of the grille

bar which engages the male means so that the first surface of the grille bar contacts the inner surface of the glass pane



and is constructed in such a manner that the female means is visible only from the first surface of the grille bar.

4,644,722

REPAIRING UTILITY POLES

Cecil L. Phillips, Boughton, Great Britain, assignor to Scott Bader Company Limited, Great Britain

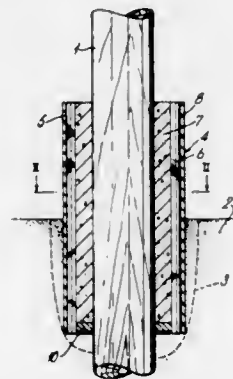
Filed Oct. 15, 1985, Ser. No. 787,092

Claims priority, application United Kingdom, Oct. 16, 1984, 8426085

Int. Cl.⁴ E02D 5/60; E04G 21/00

U.S. Cl. 52—514

14 Claims



1. A method of repairing in situ a utility pole projecting from the ground comprising the steps of:
fitting a sleeve of predetermined length around the pole at a predetermined clearance therefrom;
filling the clearance only with a flowable hardenable composition of magnesium phosphate concrete which is to be nonshrinking on hardening; and
allowing the composition to harden to a core bonded at least mechanically to the sleeve and to the pole to be the sole means for transmitting shear between them;
whereby to yield an assembly comprising the pole the core and the sleeve in which shear load is substantially sustained by the pole and the sleeve.

4,644,723

WALLBOARD CLIP

William R. Weber, 4200-50th Ave. NE., Seattle, Wash. 98105

Filed Mar. 5, 1986, Ser. No. 836,482

Int. Cl.⁴ E02D 37/00

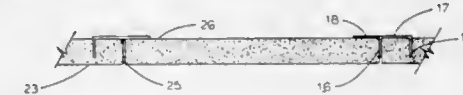
U.S. Cl. 52—514

2 Claims

1. A method of repairing a hole in a plasterboard wall having a front and back surface comprising the steps of:
(a) providing a plurality of wallboard clips each having a back surface with at least one point projecting at about ninety degrees therefrom, a positioning lug extending

from the back surface parallel to and in the same direction as the point, and a patch locating lug extending parallel to said back surface;

(b) pressing said at least one point of each clip into the back surface of said wall about said hole using said positioning lug as a guide to space the said point at a predetermined



distance from the edges of said hole with the patch locating lug extending into said hole and the at least one point and positioning lug extending at right angles to the front and back surface of said wall; and

(c) inserting said patch into said hole to be supported by the patch locating lugs of the clip.

4,644,724

SANDWICH PANEL AND END STRIPS THEREFOR AND ASSEMBLY OF SUCH SANDWICH PANELS

Hendrikus J. Schijf, St. Amandsberg, Belgium, assignor to Contractual Services (Jersey) Ltd., Jersey, Channel Islands

Filed Apr. 4, 1985, Ser. No. 719,846

Claims priority, application United Kingdom, Apr. 5, 1984, 8408750

Int. Cl.⁴ E04C 1/10

U.S. Cl. 52—588

4 Claims



1. A sandwich panel adopted to be interconnected to a second similar panel, each panel being formed of two cover plates with filling material therebetween, and two end strips disposed at the longitudinal edges of said panels, each strip having a web provided with a lug extending along the length of said web for engagement with a lug of complementary shape on a strip of a said second panel, said lug being disposed on one side edge of said web and an adjoining flange at least part of which extends at an acute angle relative to said web, the web on the opposite side edge being provided with a further flange at least part of which extends at an acute angle relative to said web, the adjoining flange and the further flange each being disposed on the side of said web remote from said lug for the purpose of fastening said cover plates.

4,644,725

DOUBLE-WALLED PANEL

Hendrikus J. Schijf, St. Amandsberg, Belgium, assignor to Contractual Services (Jersey) Ltd., Jersey, Channel Islands

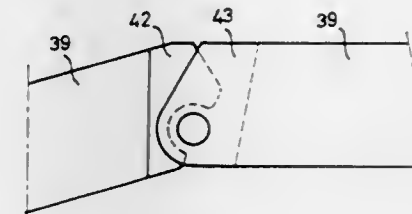
Filed Mar. 11, 1985, Ser. No. 710,241

Claims priority, application United Kingdom, Mar. 10, 1984, 8406352

Int. Cl.⁴ E04C 1/10

U.S. Cl. 52—463

13 Claims



1. A double-walled panel adapted to be interconnected with a similar, adjacent panel, each of said panels having a first pair of longitudinally extending opposed sides and a second pair of longitudinally extending, relatively narrow opposed sides, each of said narrow longitudinal sides comprising a profiling formed of recesses and frames, the profiling on a first of said narrow longitudinal sides being formed so as to functionally complement the profiling on the second of said narrow longitudinal sides, whereby two adjacent panels can be interengaged, said panel having on one narrow side a frame (7) which, in cross-section, forms a curved nose facing towards one of the wide side surfaces, a base of said nose being spaced from said one wider side surface (10), and a free end of said nose enclosing a recess (5) located at said one wider side surface, said panel further having a free-standing thickened portion (6) disposed at the other narrow side and supported near said one wider side surface of said panel, said thickened portion being adapted to fit into said recess enclosed by said curved nose defined in an adjacent panel, said thickened portion being supported on a frame (13) which is parallel to but spaced from said one wider side surface and which has a support frame (14) extending from said one wider surface to said parallel frame (13) at said thickened portion (6), and the latter has a round cross-section with a flattened portion (18) near said support frame.

4,644,726

STEEL PLACEMENT ASSEMBLY

Charles F. Wheeler, 6141 NW, 34th Way, Ft. Lauderdale, Fla. 33309

Filed Mar. 3, 1986, Ser. No. 835,292

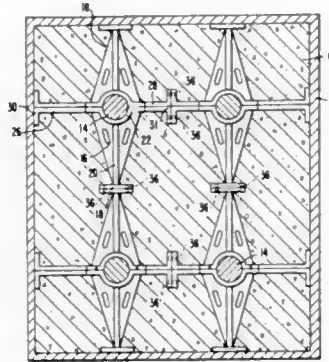
Int. Cl.⁴ E04C 5/16

U.S. Cl. 52—677

17 Claims

1. A steel placement assembly for positively locating and supporting reinforcing steel bars in a concrete structural member comprising a plurality of identical steel placement lock members,
each of said steel placement lock members being provided with a flat planar base,
a body portion extending upwardly from said base and terminating in a semicircular recess,
a first side edge of said recess terminating in a first extension, a second side edge of said recess terminating in a second extension,
said first and second extensions being provided respectively with first and second vertically depending flanges,
a plurality of sockets formed in said second vertically depending flange,
means for connecting at least one of said first and second extensions of a first steel placement lock member to the like extension of a second steel placement lock member

when said first steel placement lock member is inverted in relation to said second steel placement lock member to form a mated pair of steel placement lock members, said recesses of said mated pair of steel placement lock members defining a circular cavity adapted to support and retain a steel reinforcing bar, said first vertically depending flanges of said mated pair forming a surface adapted to abut a concrete form, said mated second vertically depending flanges forming a surface adapted to abut the like surface formed by a hori-

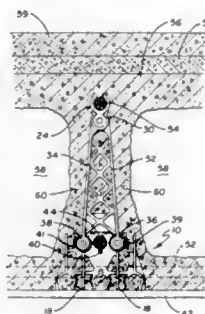


zontally adjacent like mated pair of second vertically depending flanges, such that said sockets formed in said abutting second vertically depending flange are aligned, means for connecting said abutting second vertically depending flanges, said horizontally adjacent mated pairs together forming a horizontal assembly adapted to support and retain a plurality of reinforcing bars along their transverse length and intermediate their ends, and means provided on said ends of said reinforcing bars for preventing lateral movement of said bars.

4,644,727
STRAND CHAIR FOR SUPPORTING PRESTRESSING CABLE AND CROSS-MESH IN ELONGATED PRECAST CONCRETE PLANK
David W. Hanson, Golden Valley; Richard R. Koehn, Prior Lake; Richard C. Nash, New Prague, and Lonnie G. Fox, Burnsville, all of Minn., assignors to Fabcon, Inc., Savage, Minn.

Continuation of Ser. No. 577,077, Feb. 6, 1984, abandoned. This application Feb. 4, 1986, Ser. No. 825,852

Int. Cl.⁴ E04C 5/16
U.S. Cl. 52—687



1. An assembly for supporting reinforcing or prestressing strand comprising:

a lower strand chair of molded plastic including a plurality of strand receiving cups each of which is constructed for receiving a strand therein, each of said strand receiving cups defining a strand receiving slot adapted to receive a

strand section therein, said strand receiving cups connected to and supported by a common frame means having a top and bottom, said frame means including spaced base members, the base members constructed to extend transversely of said frame means thereby providing resistance to tipping of said chair said lower strand chair being constructed and arranged such that said frame includes base members at said top and bottom such that either said top or bottom of said lower strand chair may be the base; and

an upper strand chair of molded plastic having a strand cup mounted at one end of a frame and at least one engagement means for connecting said upper strand chair to the lower strand chair by inserting the engagement means into strand receiving cups of said lower strand chair, the engagement means comprising portions adapted and arranged to snap fit into some of said cups of said lower strand chair.

4,644,728
SECURING ELEMENTS FOR ATTACHING ON OR TO CONSTRUCTION SERVING ADDITIONS TO STRUCTURES

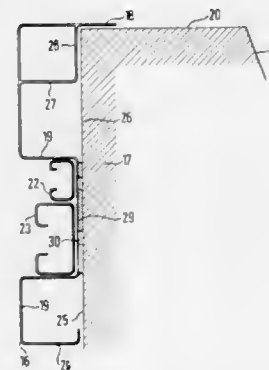
Eberhard Stauss, Munich; Hans-Rudolf Klein, Berg, and Alfons Thalmeir, Munich, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann AG, München-Riem, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,160

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 8401113[U]; Jul. 16, 1984, 3426118

Int. Cl.⁴ E04D 13/15; E04B 1/56
U.S. Cl. 52—710

1 Claim



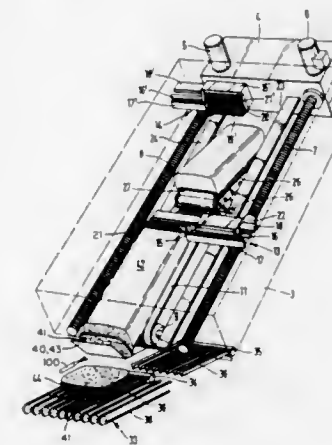
8 Claims

1. A securing arrangement for tensionally fastening an additive structure to a main building structure, comprising: a main building structure with one side to which an additive structure is to be secured; a securing element mounted on said main structure and extending over substantially the total length of said side of said main building structure; at least one fastening rail held by said securing element and extending over substantially the total length of said securing element; said securing element has an upper flank section and a lower flank section connected together by a base section forming a depressed area with sides of said upper flank section and said lower flank section, said fastening rail being held in said depressed area; said upper flank section and said lower flank section comprising each two arms joined by a connecting section positioned substantially parallel to an outside surface of said main building structure, said arms extending towards said outside surface of said main building structure, said lower flank section and said upper flank section having each an arm forming said sides connected to said base section, each said connecting section joining said arms being spaced from said outside surface of said main building structure; and an angle section having one arm joined to the connecting section of said upper flank section, said angle section having another side joined to the arm of said

upper flank section positioned opposite the arm of said upper flank section which is connected to said base section, said angle section forming a rectangular cross section with the connecting section and the arm of the upper flank section to which said angular section is joined; said arms of said upper flank section and said lower flank section being parallel to each other; two fastening rails being positioned in said depressed area; said fastening rails having different-size cross sections; said angle section forming an abutment for said outside surface of said main building structure; said angle section comprising a continuous angled rail; a mounting plate positioned between said depressed area and said outside surface of said main building structure for mounting said securing element thereto.

4,644,729
SLAB-CUTTING MACHINE
Ewald Fessler, Heimenkirch/Allgäu, Fed. Rep. of Germany, assignor to Natec, Reich, Summer GmbH & Co., K.G., Heimenkirch/Allgäu, Fed. Rep. of Germany
Division of Ser. No. 537,839, Sep. 30, 1983, Pat. No. 4,583,435.
This application Sep. 26, 1985, Ser. No. 780,277
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239178
Int. Cl.⁴ B26D 7/06; B65B 61/22
U.S. Cl. 53—157

20 Claims



1. A machine for cutting successive elongated articles into slices, which comprises:

cutter means for cutting slices from each of the successive elongated articles as the article is fed relative to the cutter means;

inclined feed conveyor means adjacent the cutter means for supporting each of the successive elongated articles as the article is fed relative to the cutter means;

storage conveyor means movably mounted adjacent an upper end of the inclined feed conveyor means for storing a next succeeding article in readiness for a slicing operation, the storage conveyor means being movable between a lower storage position below a conveying plane of the inclined feed conveyor means and a position in the conveying plane of the feed conveyor means for feeding the next succeeding article onto the feed conveyor means;

first and second article gripping means for gripping upper ends of respective alternate ones of the successive elongated articles to control movement of the articles on the feed and storage conveyor means;

drive means for incrementally advancing the first and second article gripping means, to advance each of the gripped articles on the inclined feed conveyor means relative to the cutter means in increments corresponding to a desired thickness of the slices to be cut from the article;

means for retracting each of the first and second article gripping means to a respective retracted position in which the article gripping means grips an upper end of the next

succeeding article on the storage conveyor means after the storage conveyor means has been moved into the conveying plane of the inclined feed conveyor means; retractable stop means adjacent a front end of the storage conveyor means for precluding feeding of the next succeeding article on the storage conveyor means onto the inclined feed conveyor means until one of the article gripping means has gripped the upper end of the article; means for moving the storage conveyor means between its article storage position and its position in the conveying plane of the inclined feed conveyor means; means on the storage conveyor means for moving the retractable stop means between operative and retracted positions; means below the cutter means for catching the slices cut from the elongated articles by the cutter means; and paper feeding means adjacent a lower end of the inclined feed conveyor means for intermittently feeding a free front end portion of a paper web from a supply into a position adjacent a lower face of the elongated article on the feed conveyor means, such that as the cutter means cuts each slice from the article, the cutter means simultaneously cuts a sheet of paper from the paper web, which sheet drops with the cut slice onto the slice-catching means.

4,644,730
METHOD AND APPARATUS FOR FOLDING ARTICLES ON HEADER CARDS

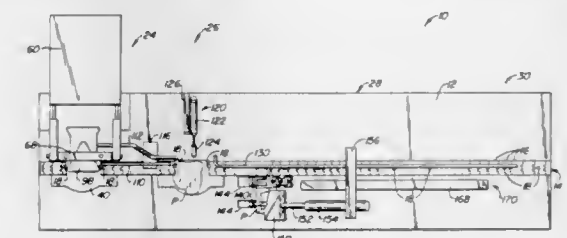
William R. Rogers, Fremont, and Duane B. Liescheidt, White Cloud, both of Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Oct. 24, 1985, Ser. No. 790,926

Int. Cl.⁴ B65B 11/00

U.S. Cl. 53—397

17 Claims



1. A method for packaging fabric articles on header cards having a central portion and three flaps extending outward from the central portion, said method comprising:

incrementally advancing the header cards a fixed distance along a path;

placing one fabric article on each header card at a first location along the path, said article being placed to cover at least the central portion and one of the flaps while leaving at least one flap uncovered;

folding an uncovered first flap over onto the article at a second location which is an integral multiple of said fixed distance from the first location along the path;

folding a covered second flap over onto the first flap at a third location which is an integral multiple of said fixed distance from the first location along the path so that a portion of the article is folded onto the first flap together with the second flap;

applying an adhesive onto the surface of the second flap at a fourth location which is an integral multiple of said fixed distance from the first location along the path; and folding the third flap over onto the second flap at a fifth location which is an integral multiple of said fixed distance from the first location along the path so that the third flap adheres to the second flap.

11. A system for folding flat header cards having fabric articles placed thereon, said header cards including a central

portion and three orthogonal flaps extending outward from the central portion, the fabric articles being placed on the central portion and one of the flaps, said system comprising:

means for advancing the header card along a path;
means located along a segment of the path for clamping the header card along a line between a first flap and the central portion while the header card is being advanced;
an inclined ramp along the segment for elevating the first flap as the article is advanced along the path;
means for folding the first flap over onto the central portion of the header card and the fabric article located along the path beyond the clamping means;
means located along the path for clamping the fabric article and the header card along a second line between a second flap and the central portion;
reciprocable folding forks for folding over the second flap having the fabric article thereon while the second clamping means is disposed against the fabric article and the header card;

a reciprocable ramp located along the path so that the third flap will be raised when the ramp is elevated and along the header card advanced along the path and over the ramp; and

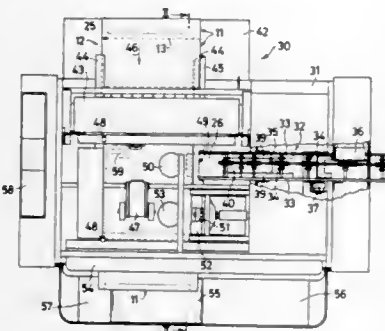
a folding bar fixed transversely over the path so that the third is engaged and folded over the second flap as the header card is advanced along the path.

4,644,731
METHOD AND EQUIPMENT FOR THE AUTOMATIC INSERTING OF ENCODED CARDS INSIDE ENVELOPES, AND RELATING ENVELOPE MODULE
Carlo Zangheri, Milan, Italy, assignor to FIMA S.p.A., Milan, Italy

Filed Apr. 2, 1985, Ser. No. 719,120
Claims priority, application Italy, Apr. 3, 1984, 20370 A/84
Int. Cl.⁴ B65B 61/26

U.S. Cl. 53—411

24 Claims



1. Method for automatically inserting so-called encoded cards inside of envelopes, said method comprising in sequence the operations of:

automatically feeding a continuous strip of envelope-modules in a stepwise movement,
contemporaneously feeding encoded cards to be inserted inside said envelope-modules,
printing an address or like data on an outside face of a single envelope-module corresponding to at least an encoded card being fed for insertion into said single envelope-module,
inserting at least said pre-printed encoded card inside a corresponding envelope-module,
verifying the introduction of the card within the corresponding envelope-module,
closing and sealing the envelope-module.

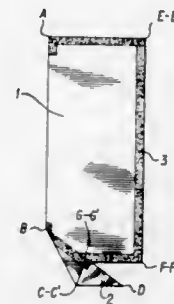
4,644,732
EASY OPENING, DISPOSABLE CONDIMENT CONTAINER

Jay Morton, Miami Beach, Fla., assignor to Lumo, Inc., Miami, Fla.

Filed Aug. 8, 1985, Ser. No. 763,622
Int. Cl.⁴ B65B 61/18

U.S. Cl. 53—412

6 Claims



1. A method of making an easy opening, disposable condiment container comprising the steps of:

folding a sheet of heat sealable, thermoplastic material;
forming an inside reverse fold at one corner of the fold line, said inside reverse fold being made by making two valley folds and a crease fold and using the crease fold as a peak fold to create the inside reverse fold defining a four thickness layer of material and said inside reverse fold extending beyond the portion of the container which will hold the contents thereof;

heat sealing the four thickness layer of the inside reverse fold to form a tear line along the heat seal for opening the container;

providing opening means for the container connected to the four thickness heat seal defining the tear line;

forming an open container by a heat seal extending from the four thickness heat seal and additional heat seals as required by the shape of the sheet;

filling the container and completing the container by a heat seal made along the edge of the open container.

4,644,733
DUNNAGE MATERIAL
Blair E. Dolinar, St. Louis, Mo., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 725,022, Apr. 19, 1985, Pat. No. 4,588,638, which is a continuation-in-part of Ser. No. 604,096, Apr. 26, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 819,433

Int. Cl.⁴ B65B 23/00, 23/22

U.S. Cl. 53—472

6 Claims

3. A method for packaging an article with a plurality of expanded, resilient, thermoplastic dunnage particles, which particles comprise an amount of an additive deposited on at least a portion of an outer surface area of a majority of said dunnage particles which additive is selected from the group consisting of synthetic polymer latexes, pressure sensitive adhesives, glues, low molecular weight polymers which have a ring and ball softening point, as determined in accordance with American Society for Testing and Materials Test E-28, of greater than 30° Centigrade, waxes, contact cements, urethane adhesives, starch derived adhesives and protein derived adhesives, and is deposited on the dunnage particles after expansion of said dunnage particles and which additive results in the packing material having improved cushioning properties and reduces the tendency of articles to migrate through the dunnage particles, wherein the particles have an average maximum cross-sectional dimension of at least 0.5 inch, the method comprising:

(a) providing a packaging container, the container having at

least one wall, a top, and a bottom, the container also being of sufficient size to contain (1) at least one article to be packaged and (2) an amount of dunnage particles sufficient to space the article from the wall, the top, and the bottom of the container;

(b) adding a quantity of the dunnage particles to the packaging container, the quantity being sufficient to provide a layer of adequate thickness to space the article to be packaged from the bottom of the container;

(c) placing the article to be packaged on the later of dunnage particles;

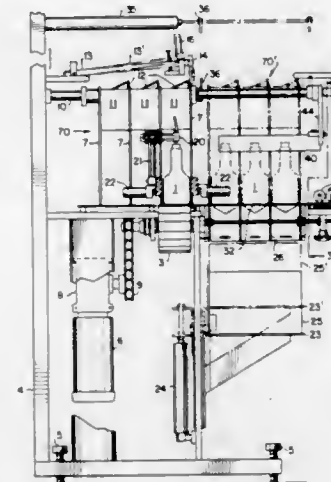
(d) adding a further quantity of dunnage particles to the packaging container, the further quantity being placed about the sides, within, and on top of the article to space it from the walls and the top of the container and from other articles, the further quantity being sufficient to provide a slight overfill of the packaging container; and

(e) closing the packaging container to slightly compact the dunnage particles by pushing down on the overfill.

4,644,734
CASE PACKER
Thomas S. Hartness, Rte. 12, Paris Mountain, Greenville, S.C. 29609

Filed Feb. 8, 1985, Ser. No. 699,790
Int. Cl.⁴ B65B 5/06, 21/06, 35/40, 57/20
U.S. Cl. 53—500

6 Claims



1. A case packer for placing bottles or like containers in a case or similar receptacle comprising:

(a) an infeed conveyor for conveying containers arranged in a column;

(b) means for stopping the motion of containers on the conveyor;

(c) brake means located upstream of the stopping means for halting container motion at the brake means position;

(d) counter means for actuating the brake means after a pre-selected number of containers have passed the counter;

(e) horizontally acting trap door means located adjacent the conveyor between the stopping means and the brake means, said trap door means remaining in the same horizontal plane during actuation thereof;

(f) indexing means for moving a column of containers located on the conveyor between the stopping means and brake means onto the trap door means after the brake means has been actuated;

(g) alignment bar means located between containers on the trap door means to restrain horizontal motion of the container when the trap door means is actuated and to orient each container as it drops directly into the case; and,

(h) grid guide means located beneath the trap door means to

guide each container as it drops into a case beneath the guide means.

4,644,735
CONSTRUCTION FOR MOUNTING MESH BAGS ON BAG HANDLING PORTION OF AUTOMATIC WEIGHER/BAGGER MACHINE
James G. Savigny, Lockport, N.Y., assignor to AG-PAK, Inc., Gasport, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,401
Int. Cl.⁴ B65B 43/46

U.S. Cl. 53—570

11 Claims



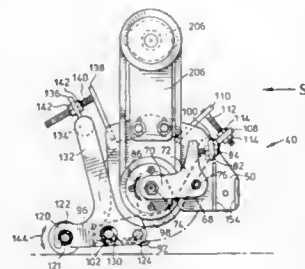
1. In an automatic bagging machine for handling a bag having a first side with a first upper rim portion and a second side with a second upper rim portion opposite to said first upper rim portion, said machine having a rocker frame, bag mounting means including a wicket bar mounted on said rocker frame and having a bag mounting side and an opposite side, first and second spaced prongs extending outwardly from said bag mounting side of said wicket bar, vacuum nozzle means for engaging said second side and pulling said second side of said bag away from said first side to form an open mouth on said bag, a pair of spades having front faces and rear faces, means for moving said spades between a closed position wherein they are close to each other proximate said opposite side of said wicket bar and an open position wherein they are spread apart, means for moving said rocker frame to a higher position from a lower position when said spades are in said closed position proximate said wicket bar and when said bag has an open mouth to cause said open mouth to receive said spades in said closed position, and clamping means for clamping said first and second upper rim portions to said rear faces of said spades after said bag has been separated from said wicket bar, the improvement for releasing from said wicket bar mesh bags wherein said first and second sides are fabricated of spaced fiber strands with openings therebetween and with first and second spaced openings in said first upper rim portion between said spaced fiber strands and below the uppermost fiber strand which receive said first and second spaced prongs comprising first knife means, first means mounting said first knife means in contiguous relationship to said first prong, second knife means, second mounting means mounting said second knife means in contiguous relationship to said second prong, said first and second knife means severing said uppermost fiber strand incidental to said spades being moved to said open position to thereby completely separate said bag from its mounted position on said bag mounting means including said first and second prongs, said first knife means being mounted proximate the junction of said first prong and said bag mounting side of said wicket bar, said second knife means being mounted proximate the junction of said second prong and said bag mounting side of said wicket bar, first and second slots in said first and second prongs, respectively, proximate said first and second junctions, respectively, said first and second knife means extending into said first and second slots, respectively, and having portions extending above said first and second slots.

4,644,736
COTTON DOFFER UNIT
 John Cerny, Jr., Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.
 Continuation of Ser. No. 595,334, Mar. 30, 1984, abandoned.
 This application Jul. 3, 1986, Ser. No. 882,014
 Int. Cl.⁴ A01D 46/16
 U.S. Cl. 56—41 10 Claims



1. A doffer unit for cotton picking machines comprising a hub portion adapted to drivingly engage a driveshaft, a ring portion concentric with said hub portion and a plurality of circumferentially spaced, radially extending lugs carried by said ring and disposed on one planar side of said unit and wherein said doffer lugs are comprised of a vulcanized millable polyurethane elastomer.

4,644,737
MOWER
 William T. Arnold, Sutton West, Canada, assignor to Brouwer Turf Equipment Limited, Keswick, Canada
 Filed Dec. 24, 1984, Ser. No. 685,502
 Int. Cl.⁴ A01D 35/24
 U.S. Cl. 56—249 4 Claims



1. A mower comprising:

- a frame, said frame comprising a top member and two side members one at each side of said top member and depending downwardly therefrom, said side members being rigidly connected to said top member,
- a reel having a central axial shaft having a pair of ends, said ends projecting outwardly of said side members,
- a pulley mounted on one of said ends and hence also being located outwardly of its associated side member, said pulley being adapted to receive a drive belt to drive said mower,
- means mounting said reel for rotary movement relative to said frame and including reel adjustment means mounted between at least one end of said reel and said frame for adjusting the position of each end of said reel relative to said frame,
- said means mounting said reel comprising two reel holding members each rotatably supporting one end of said central shaft and pivotally mounted on a said side member, said adjustment means being connected between each reel holding member and its associated member for adjustably pivoting each reel holding member relative to said frame, and hence for moving said ends of said shaft relative to said frame, said pulley thereby moving with movement of its associated reel holding member, each adjustment means including locking means for locking each reel holding member against movement from its adjusted position,
- a bed knife assembly comprising:

- a bed knife positioned behind said reel,
- two side arms one connected to each end of said bed knife and extending upwardly to a position adjacent the top of said mower and above the top of said reel,
- an upper transverse member connecting said upper ends of said side arms together above the top of said reel,
- pivot means pivotally connecting said bed knife assembly to said frame at a position adjacent said bed knife, and
- bed knife adjustment means located above the top of said reel and connected between said upper transverse member, adjacent the centre of said upper transverse member, and said top member of said frame for pivoting said bed knife assembly about said pivot means to adjust the position of said bed knife relative to said reel.

4,644,738
TWIN SICKLE CUTTER BAR
 Frederick C. Krambeck; Craig A. Richardson, and James C. Walters, all of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.
 Filed Oct. 29, 1985, Ser. No. 792,391
 Int. Cl.⁴ A01D 53/12
 U.S. Cl. 56—259 3 Claims



1. In a cutter bar assembly including a transversely extending cutter bar means, first and second sets of knife guards fixed to the cutter bar means respectively at opposite sides of a longitudinal centerline passing through the cutter bar means and first and second sickles respectively supported by the first and second sets of knife guards for being stroked inwardly and outwardly along the cutter bar means with the first sickle operating in a plane displaced below the second sickle so as to permit inner end portions of the sickles to operate in overlapping areas without interference, said sickles each including a knife back and a plurality of identical knife sections secured to the knife back and with the first sickle including an end knife section at an inner end of the knife back and with the second sickle having a knife back extension at its inner end, the improvement comprising: said first set of knife guards including at least one stub guard mounted to the cutter bar means adjacent said centerline of the cutter bar means; a knife hold-down means mounted to the cutter bar means and including a finger portion disposed above said stub guard; and the second sickle including an end knife section mounted to the knife back extension and located so as to cut against the finger portion and the stub guard.

4,644,739
AGRICULTURAL BALER
 John Robb, Sudbury, United Kingdom, assignor to Bamfords International Limited, Staffordshire, United Kingdom
 Continuation-in-part of Ser. No. 662,135, Oct. 18, 1984. This application Jul. 29, 1985, Ser. No. 760,320
 Claims priority, application United Kingdom, Jul. 31, 1984, 8419498
 Int. Cl.⁴ A01D 59/00
 U.S. Cl. 56—341 14 Claims

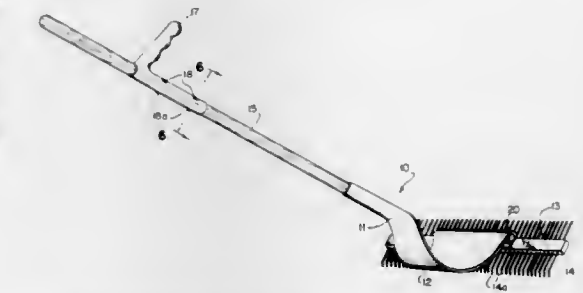
1. An agricultural baler comprising an elongate body, the body having; support means to permit of the baler being advanced over the ground, a pick-up carried by a part of the body to pick up crop from the ground, an elongate compression chamber disposed rearwardly of the pick-up, transport means carried by a part of the body to transport crop along a path in a direction which lies at least substantially parallel to a vertical plane containing the longitudinal axis of the compression chamber, rearwardly from the pick-up and into the compression chamber in an amorphous mass, a compression member movable into an operative position in which the compression member is disposed within the compression chamber, and movable rearwardly when in said operative position to compress crop against a stop to form the amorphous mass into a bale having a defined shape; and movable into an inoperative position, in which the compression member is disposed outside the compression chamber, and movable forwardly when in said inoperative position to return the compression member to the front of the compression chamber, the part of the body which carries the pick-up, the part of the body which carries the transport means and the compression chamber being rigidly interconnected, and the transport means being disposed rearwardly of the pick-up and the compression chamber being disposed rearwardly of the transport means wherein the transport means feeds crop rearwardly in batches which are spaced apart longitudinally of said path and means are provided to move the compression member into said operative position along a track at least part of which is disposed forwardly of, and spaced from, the forward end of a batch of crop which has been transported into the compression chamber by the transport means and so that the compression member passes into said path rearwardly of, and spaced from, a further batch of crop to be transported into the compression chamber by the transport means.

tion chamber, rearwardly from the pick-up and into the compression chamber in an amorphous mass, a compression member movable into an operative position in which the compression member is disposed within the compression chamber, and movable rearwardly when in said operative position to compress crop against a stop to form the amorphous mass into a bale having a defined shape; and movable into an inoperative position, in which the compression member is disposed outside the compression chamber, and movable forwardly when in said inoperative position to return the compression member to the front of the compression chamber, the part of the body which carries the pick-up, the part of the body which carries the transport means and the compression chamber being rigidly interconnected, and the transport means being disposed rearwardly of the pick-up and the compression chamber being disposed rearwardly of the transport means wherein the transport means feeds crop rearwardly in batches which are spaced apart longitudinally of said path and means are provided to move the compression member into said operative position along a track at least part of which is disposed forwardly of, and spaced from, the forward end of a batch of crop which has been transported into the compression chamber by the transport means and so that the compression member passes into said path rearwardly of, and spaced from, a further batch of crop to be transported into the compression chamber by the transport means.



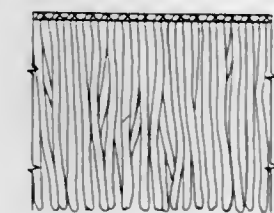
1. A reversible dual functioning raking device comprising: an elongated handle member having a first and a second end for pushing and pulling said device; an arcuate bearing member having first and second ends, said first end of said arcuate bearing member being connected to said first end of said handle member; a transverse shaft fixed to said first end of said handle member by way of said arcuate bearing member, said arcuate bearing member having a convex surface, with a concave surface on the opposite side of said arcuate bearing member, said transverse shaft being connected to said second end of said arcuate bearing member; a multiplicity of raking tines which are disposed so as to project from said transverse shaft in the direction of said concave surface of said arcuate bearing member to accommodate the pulling of said device; and a scraper member disposed so as to project from said transverse shaft in the direction of said convex surface of said arcuate bearing member to accommodate the pushing of said device on said convex surface along the ground, said raking tines thereby projecting from said transverse shaft in a direction opposite to the direction of projection of said scraper member.

ber, said transverse shaft being connected to said second end of said arcuate bearing member; a multiplicity of raking tines which are disposed so as to project from said transverse shaft in the direction of said concave surface of said arcuate bearing member to accommodate the pulling of said device; and a scraper member disposed so as to project from said transverse shaft in the direction of said convex surface of said arcuate bearing member to accommodate the pushing of said device on said convex surface along the ground, said raking tines thereby projecting from said transverse shaft in a direction opposite to the direction of projection of said scraper member.



a scraper member disposed so as to project from said transverse shaft in the direction of said convex surface of said arcuate bearing member to accommodate the pushing of said device on said convex surface along the ground, said raking tines thereby projecting from said transverse shaft in a direction opposite to the direction of projection of said scraper member.

4,644,741
MOP YARNS MADE BY FIBER BONDING PROCESS
 J. Gary Grading, Shawnee Mission, Kans.; Robert W. Quearry, Kansas City, Mo.; Robert D. Chalfant, Atchison, Kans., and Charles G. Wilson, Kearney, Mo., assignors to Golden Star, Inc., North Kansas City, Mo.
 Filed Jun. 11, 1984, Ser. No. 619,335
 Int. Cl.⁴ D02G 3/44, 3/04; A47L 13/20
 U.S. Cl. 57—256 1 Claim



1. A cut end yarn adapted for use in mops and mats comprising:

- a plurality of staple length fibers;
 - some of said fibers being cotton, having moisture absorbent qualities and being unmeltable;
 - others of said fibers being of a synthetic material which surface melts at a temperature of approximately 320° F. to 330° F.;
- the cotton fibers and the synthetic material fibers being spun and twisted together in an intermingled manner in mutual surface contact to form a yarn; and
- the fibers of said synthetic yarn being heat fused to the cotton fibers about an outer surface of said yarn at temperatures of approximately 320° F. to 330° F., causing said fibers in said outer surface to bind together and retain an inner core of said yarn which blooms at a cut end of said yarn for absorbing water and resisting linting along said outer surface.

4,644,740
REVERSIBLE RAKE
 Ung L. Lee, 193 Tumblebrook Dr., South Windsor, Conn. 06074
 Filed Feb. 26, 1985, Ser. No. 705,648
 Int. Cl.⁴ A01D 7/10
 U.S. Cl. 56—400.04 5 Claims

1. A reversible dual functioning raking device comprising: an elongated handle member having a first and a second end for pushing and pulling said device; an arcuate bearing member having first and second ends, said first end of said arcuate bearing member being connected to said first end of said handle member; a transverse shaft fixed to said first end of said handle member by way of said arcuate bearing member, said arcuate bearing member having a convex surface, with a concave surface on the opposite side of said arcuate bearing member, said transverse shaft being connected to said second end of said arcuate bearing member; a multiplicity of raking tines which are disposed so as to project from said transverse shaft in the direction of said concave surface of said arcuate bearing member to accommodate the pulling of said device; and a scraper member disposed so as to project from said transverse shaft in the direction of said convex surface of said arcuate bearing member to accommodate the pushing of said device on said convex surface along the ground, said raking tines thereby projecting from said transverse shaft in a direction opposite to the direction of projection of said scraper member.

4,644,742

PROCESS AND DEVICE FOR JOINING A THREAD IN AN OPEN-END SPINNING DEVICE

Kurt Lovas, Böhmfeld; Walter Mayer, and Stephan Wittmann, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

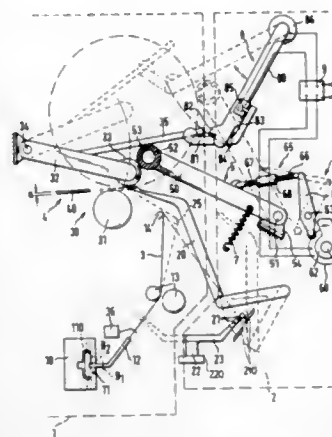
Filed Jan. 24, 1983, Ser. No. 460,639

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1982, 3202428

Int. Cl.⁴ D01H 15/02

U.S. Cl. 57—263

28 Claims



1. A device for joining a thread in an open-end spinning device having a bobbin, comprising:
- a first pair of auxiliary rollers for receiving, feeding back and releasing the thread on the open-end spinning device;
 - a pair of draw-off rollers for drawing off the thread during the normal spinning operation;
 - an auxiliary draw-off device located at a greater distance from said open-end spinning device than the normal draw-off distance whereby the twist arising as threads are joined can be distributed over a greater length of thread to reduce over-twisting;
 - a thread-cutting device and a feedback-measuring device which are associated with said first pair of auxiliary rollers; and
 - a thread throw-off member for deflecting the thread which is located between said pair of draw-off rollers and the bobbin.

4,644,743

MACHINE FOR THE PRODUCTION OF ORNAMENTAL CHAINS, IN PARTICULAR OF THE PAIRED TYPE

Massimo Bucefari, and Roberto Rubecchini, both of Arezzo, Italy, assignors to I.C.M. S.p.A. Italiana Costruzioni Metalmeccaniche and T.E.M. s.r.l. Tecnologie Eletttroniche e Meccaniche, both of Arezzo, Italy

Filed Mar. 29, 1985, Ser. No. 717,974

Claims priority, application Italy, Mar. 29, 1984, 9364 A/84

Int. Cl.⁴ B21L 3/02

U.S. Cl. 59—31

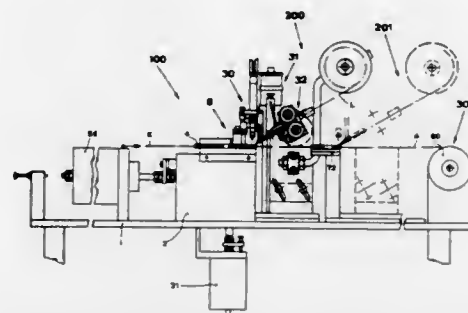
18 Claims

1. An apparatus for the production of ornamental chains of the paired type, comprising:

- a feed assembly for at least two chains comprising a run guideway for said chains suitable for aligning them in side by side relationship along common advancement direction, transport means for said chains suitable for engaging the chain themselves on fixed locations determined by their geometrical pattern and means suitable for imparting to said transport means a to and fro reciprocating translational motion in the advancement direction and a reciprocating lifting and lowering motion in a direction orthogonal to the advancement direction, said lifting motion being provided at the end of the forwarding stroke of said translational motion, for allowing the disengagement from the

links after the advancement of desired lengths of chain, said lowering motion being provided at the end of the return stroke of said translational motion for allowing the engagement of said transport means with new side by side corresponding links;

- a welding assembly for welding the side-by-side links, first on one face, then on an opposite face thereof positioned downstream of said feeding assembly of the chains, comprising means for the delivery of deoxidizing liquid, means for the delivery of small portions of welding wire and flame delivery means for providing the necessary heat for the heating of the parts to be welded and for the melting of the wire, there being provided means for imparting



- to said means delivering flame and welding wire a simultaneous approaching motion towards the parts to be welded and a subsequent simultaneous moving away movement;
- a take-up device of the produced chain, downstream of said welding assembly, suitable for operating synchronously with said feeding assembly, for the takeup of portions of produced chain having a length equal to the portions of chain contemporaneously advanced by said feeding assembly, so that on the chain a constant and predetermined tensile stress is maintained;
- programmable centralized sequencer means for the control and synchronization of said assembly for feeding the chains, of said welding assembly and of said take up device of the produced chain.

4,644,744

CONTROL DEVICE FOR CONTROLLING AN ENGINE OF A TURBINE POWER SYSTEM HAVING MORE THAN ONE ENGINE

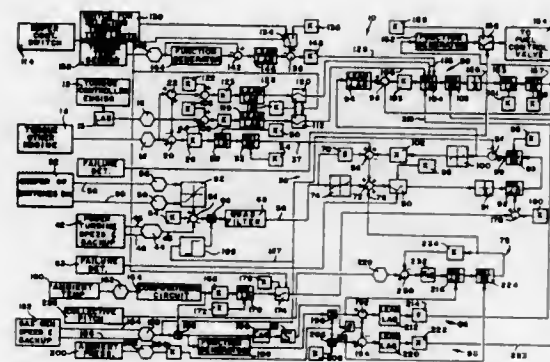
Gerald C. Mittendorf, South Bend, Ind., and Francis G. Sollman, Jacksonville, Fla., assignors to Allied Corporation, Morristown, N.J.

Filed Apr. 19, 1985, Ser. No. 725,049

Int. Cl.⁴ F02C 6/02, 9/28

U.S. Cl. 60—39.15

11 Claims



1. Control device for controlling an engine of a turbine power system having more than one engine comprising first

torque measuring means for generating a primary torque signal which varies as a function of the torque generated by the controlled engine, second torque measuring means for generating a secondary torque signal which varies as a function of the torque generated by one of the other engines of said power system, means for subtracting the secondary torque signal from the primary torque signal to form a difference signal, said controlled engine having a power turbine, means for generating a speed signal proportional to the speed of the power turbine, means for generating a summing signal as a function of the sum of said speed signal and said difference signal, means for generating a control signal as a function of the summing signal, said control signal generating means including means for integrating a difference signal which varies as a function of the difference between said summing signal and a feedback signal which varies as a function of said control signal, and means responsive to said control signal for controlling fuel flow to said controlled engine under predetermined conditions.

4,644,745

FIXED GEOMETRY ROCKET THRUST CHAMBER WITH VARIABLE EXPANSION RATIO

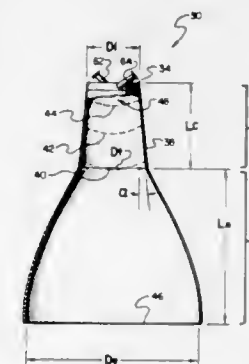
William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 577,940, Feb. 8, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 762,030

Int. Cl.⁴ F02K 9/00, 9/42, 9/72

U.S. Cl. 60—258

9 Claims



1. A rocket thrust chamber with a variable expansion ratio nozzle comprising:

- a fixed geometry divergent combustor;
- an injector axially oriented at a forward end of said divergent combustor for injecting propellants into said divergent combustor at a high initial velocity and an initially rapid burning rate;
- throttling means for variably positioning the location of sonic flow conditions within said divergent combustor according to the following equation:

$$\frac{dM^2}{M^2} = \frac{-2 \left(1 + \frac{\gamma-1}{2} M^2 \right)}{1 - M^2} \frac{dA}{A} +$$

$$\frac{(1 + \gamma M^2) \left(1 + \frac{\gamma-1}{2} M^2 \right)}{1 - M^2} \frac{dT_0}{T_0}$$

where M is the Mach number of the combustion product gases, γ is the specific heat ratio of said gases, A is the cross-sectional area of the combustor at a selected axial location, and T_0 is the total temperature of said gases, said throttling means including: means for injecting propellants at a full throttle first rate to

achieve sonic flow conditions at a first selected axial location adjacent a back end of said divergent combustor, said latter means further providing for injection of propellants at a lower second rate to achieve sonic flow conditions at a second selected axial location intermediate said injector and said first selected axial location; and

a fixed geometry divergent nozzle attached at the back end of said divergent combustor for further expanding the output of said combustor, said nozzle being abruptly more divergent than said combustor near the region of attachment to said combustor.

4,644,746

GAS COMPRESSOR FOR JET ENGINE

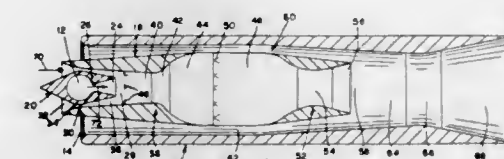
Neil W. Hartman, Richfield, Wis., assignor to L. W. Fleckenstein, Inc., Brookfield, Wis.

Filed Dec. 30, 1985, Ser. No. 814,385

Int. Cl.⁴ F02C 7/12

U.S. Cl. 60—269

4 Claims



1. A gas compressor including:

- (a) a housing defining a passage therethrough, said housing having an inlet and an outlet;
- (b) means disposed near said inlet for producing a stream of gas flowing at supersonic velocity in a direction from said inlet toward said outlet;
- (c) a mixing chamber, internal to said housing, downstream from and in fluid communication with said inlet, which mixing chamber is also in communication with said gas producing means and into which passes said stream of gas;
- (d) a source of liquid coolant and means for injecting said coolant into said mixing chamber to accomplish modification of stagnation enthalpy and temperature of the gases in said mixing chamber;
- (e) a converging, diverging nozzle disposed internal to said housing between and in fluid communication with said housing inlet and said mixing chamber for providing a passage for inlet gases from said inlet to said mixing chamber whereby said supersonic velocity gas stream which flows through said mixing chamber creates a partial vacuum in said mixing chamber causing said inlet gases to flow through said inlet and through said converging, diverging nozzle into said mixing chamber at supersonic velocity;
- (f) a diffuser internal to said housing disposed downstream of and in fluid communication with said mixing chamber, said diffuser including: (1) a supersonic diffuser defining a chamber of decreasing volume; (2) a subsonic diffuser defining a chamber of increasing volume; and (3) a throat connecting said supersonic diffuser and said subsonic diffuser.

4,644,747

LOW-STRESS SHIELDED EXHAUST PASSAGE ASSEMBLIES

Donald R. Petersen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1986, Ser. No. 827,531

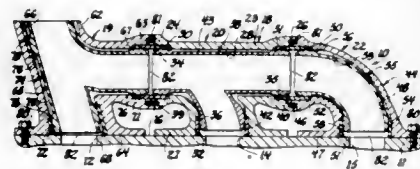
Int. Cl.⁴ F01N 7/10

U.S. Cl. 60—322

8 Claims

1. A low-stress exhaust passage assembly for an internal combustion engine, said assembly comprising
- a housing defining a passage for the transmission of engine

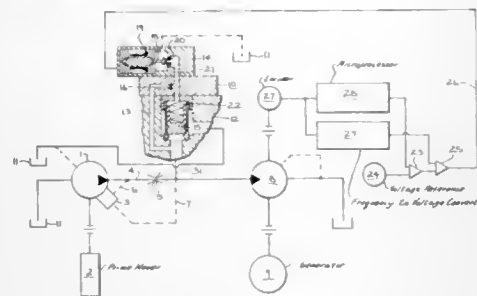
exhaust gases therethrough, the passage having at least two spaced ends opening outwardly of the housing, internal bearing means in the housing at each of said ends, at least one of the bearing means being of at least part-cylindrical form, and a tubular shield within the passage and extending between



said spaced ends, said shield having ball-like ends, one engaging each of the bearing means to fix the lateral position of the shield within the passage, said ball-like shield ends providing slip joints within their associated bearing means to allow freedom for rotational motion, and said at least part-cylindrical bearing means also permitting free axial motion of its associated ball-like end.

4,644,748
CONSTANT SPEED HYDRAULIC DRIVE
Reginald J. Goss, Jr., Grafton, and Gary S. Jendrzejek, Milwaukee, both of Wis., assignors to The Oilgear Company, Milwaukee, Wis.

Filed Apr. 29, 1985, Ser. No. 728,822
Int. Cl.⁴ F16D 31/02
U.S. Cl. 60—395 7 Claims

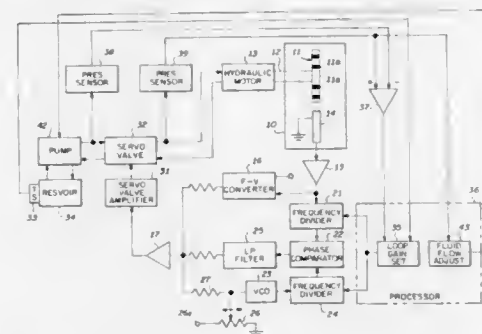


1. A constant speed hydraulic drive comprising a variable displacement hydraulic pump with a load sensing control to maintain a constant rate of flow of fluid delivered by said pump, a fixed displacement hydraulic motor receiving motive fluid from said pump, said constant rate of flow of fluid being sufficient to drive said motor at a predetermined load, a pilot operated pressure relief valve operative to bleed fluid from ahead of said motor, a pilot valve for said relief valve being urged open by pressure of said motive fluid and being urged closed by an electromechanical force proportional to the value of the electric current to a control element of said pilot valve, and electronic speed sensing means responsive to the speed of said motor to deliver said electric current having a value proportional to the load imposed on said hydraulic motor.

4,644,749
PHASE LOCKED LOOPED CONTROLLER FOR MOTORDRIVERS
Richard K. Somes, Berlin, Mass., assignor to Sperry Corporation, New York, N.Y.
Filed Mar. 21, 1983, Ser. No. 476,943
Int. Cl.⁴ F16H 39/50

U.S. Cl. 60—459 7 Claims
1. An apparatus for controlling the speed of a motor comprising:

motor drive means for driving said motor in response to motor drive signals coupled thereto;
tachometer means coupled to said motor for providing a signal at a frequency representative of said motorspeed;
reference signal generating means for generating a signal at a selected reference frequency that is representative of a selected motor speed;
first scale factor means coupled to said tachometer means for altering said frequency representative of said motor speed in accordance with scale factors determined from measured operating conditions of said motor to provide a signal at a scaled frequency representative of said motor speed;
second scale factor means coupled to said reference signal means for altering said selected reference frequency in

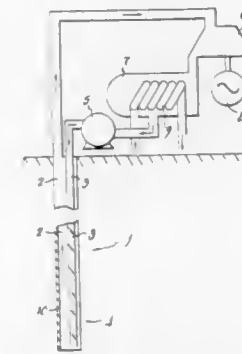


accordance with scale factors determined from measured operating conditions of said motor to provide a signal at a scaled selected reference frequency;
phase comparator means coupled to receive said signal at said scaled selected reference frequency and coupled to receive said signal at said scaled frequency representative of said motor speed for providing a first motor drive signal, to said motor drive means, which is representative of a phase difference between said scaled selected reference frequency and said scaled frequency representative of said motor speed; and
frequency control and motor drive reference signal means coupled to said reference signal generating means for providing a frequency control signal and coupled to said motor drive means for providing a motor drive reference signal as a second motor drive signal.

4,644,750
HEAT RECOVERY SYSTEMS
George E. Lockett, and Robert D. Thurston, both of Skelmersdale, England, assignors to Energy Soft Computer Systems Limited, Lancashire, England
PCT No. PCT/GB85/00267, § 371 Date Feb. 4, 1986, § 102(e) Date Feb. 4, 1986, PCT Pub. No. WO86/00124, PCT Pub. Date Jan. 3, 1986
PCT Filed Jun. 14, 1985, Ser. No. 829,148
Claims priority, application United Kingdom, Jun. 14, 1984, 84 15116

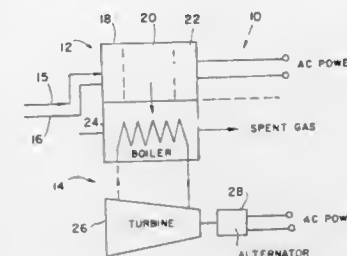
Int. Cl.⁴ F03G 7/04 6 Claims
1. A method of recovering geothermal energy comprising the steps of inserting a closed tube in the form of an assembly of two tubes disposed in concentric relation, the inner tube being constituted by a relatively small diameter capillary for the return of a working fluid, into a bore hole extending from the surface into a zone of relatively hot strata, so that one end of said closed tube is at or adjacent the surface and the other end is in said zone, providing heat exchange means in operative contact with said one end, followed by operating said heat

exchange means to recover energy from said working fluid, characterised by the preliminary step of at least partially evac-



uating the closed tube prior to introducing a quantity of working fluid thereto.

4,644,751
INTEGRATED FUEL-CELL/STEAM PLANT FOR ELECTRICAL GENERATION
Michael S. Hsu, Lincoln, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Mar. 14, 1985, Ser. No. 711,900
Int. Cl.⁴ F01K 27/00 9 Claims

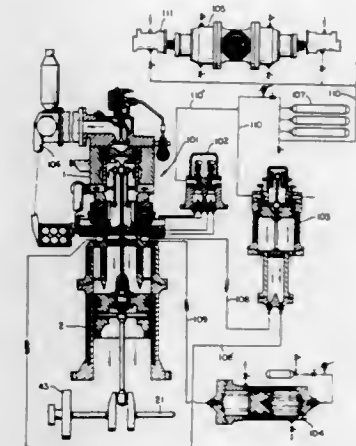


1. An electrical generating facility having increased efficiency comprising:
a fossil fired steam power plant including a boiler having a combustion furnace;
a high temperature fuel-cell in operative relationship with said combustion furnace;
a fossil-fuel supply;
means for introducing said fossil fuel to said fuel-cell for generating electricity whereby said fossil fuel becomes partially spent and surplus heat is generated; and
means for directing said partially spent fossil fuel and said surplus heat from said fuel-cell to said combustion furnace for further combustion.

4,644,752
ENGINE SYSTEM FOR SHIPS
Chul W. Nam, No. 225-13, Sinwoul-Dong, Kangseo-ku, Seoul, Rep. of Korea
Continuation-in-part of Ser. No. 438,647, Nov. 3, 1982, Pat. No. 4,531,480. This application May 17, 1985, Ser. No. 735,244
Int. Cl.⁴ F02B 73/00 5 Claims

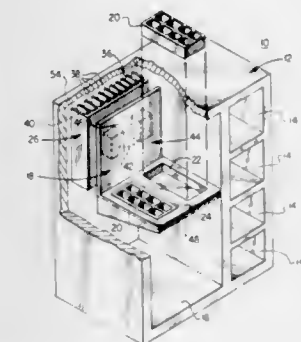
U.S. Cl. 60—716 5 Claims
1. An engine system for ships, comprising:
an engine body including a main combustion engine for transmitting the power generated by explosion pressure to a pumping piston and a power transmission apparatus for transmitting to a power crank shaft the power that is increased by the ratio of the cross-sectional areas of a

combustion chamber piston to a power piston, wherein the stroke distance of the combustion chamber piston is equal to that of the power piston;
one or more swash plate-type stirling engines coupled to the exhaust gas outlet of the main combustion engine to be driven by the exhaust gas heat;
a single-stage screw-type compressor coupled by the drive shaft to the swash plate-type stirling engine, thereby generating a great amount of compressed air;
a compressed air source connected to said compressor for storing a great amount of compressed air from said compressor;



a booster connected between said compressed air source and said power transmission apparatus to amplify the air pressure derived from the compressed air source and then to provide the amplified air pressure to said power transmission apparatus by operation of the cam in accordance with the rotation of a crank shaft;
an accumulator in communication with said power transmission apparatus through a fluid oil pipe, thereby maintaining constant control of the oil pressure in said power transmission apparatus; and
a compressed air control device for intake and exhaust of compressed air which is added and released to/from the pumping piston of said power transmission apparatus.

4,644,753
REFRIGERATOR
Edward J. Burke, Plano, Tex., assignor to Marlow Industries, Inc., Dallas, Tex.
Filed Oct. 4, 1985, Ser. No. 783,969
Int. Cl.⁴ F25B 21/02 4 Claims



1. A refrigerator comprising:
(a) a housing having a vent compartment and an insulated

box having a cooler compartment and a freezer compartment;

- (b) a thermoelectric heat pump means mounted in the housing, the heat pump means including a finned heat sink of high temperature coefficient material mounted in the vent compartment, a hot plate attached to the heat sink, a thermopile having a hot side connected to the hot plate and a cold side, a block of high temperature coefficient material connected to the cold side and extending into the freezer compartment an L-shaped bracket of high temperature coefficient material having a vertical portion attached to the block and a horizontal portion, a freezer compartment of high temperature coefficient material having a bottom attached to the L-shaped horizontal portion, said bottom portion having walls forming an ice cube tray receiving recess whereby the continuous structure of high temperature coefficient material exists between the thermopile and ice cube tray receiving recess to produce a sub freezing temperature in the recess; and
- (c) an ice cube tray having a shape corresponding to that of the ice cube tray receiving recess whereby five sides of the ice cube tray are in freezing engagement with the bottom recess forming walls for freezing ice cubes.

4,644,754

PROCESS AND APPARATUS FOR COOLING A CHARGE OF PRODUCTS

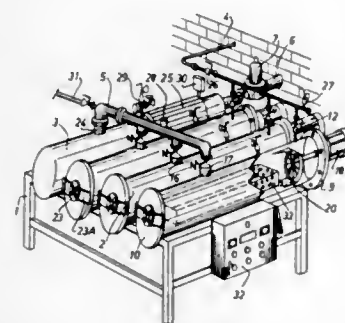
Claude Gibot, Malakoff, France, assignor to Carboxyque Francaise, Paris, France

Filed Jul. 9, 1985, Ser. No. 753,330

Claims priority, application France, Jul. 12, 1984, 84 11089; Jan. 11, 1985, 84 00361

Int. Cl.⁴ F25D 25/00

U.S. Cl. 62—62



1. Process for cooling a charge of products, and in particular food products, comprising the steps of: introducing a cryogenic gas under pressure, particularly CO₂, into container means sealed to the ambient atmosphere, said container means containing said charge; cooling said charge in said container means by means of said gas at a predetermined pressure higher than atmospheric pressure; withdrawing excess gas from said container means into a heating means in communication with said container means; heating said withdrawn gas in said heating means at superatmospheric pressure to a temperature higher than 0° C.; and discharging the heated gas from said heating means through a calibrated, pressure-regulating discharging means.

4,644,755

EMERGENCY REFRIGERANT CONTAINMENT AND ALARM SYSTEM APPARATUS AND METHOD

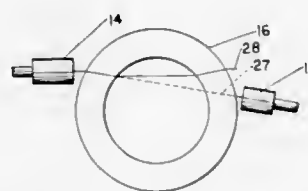
Steven L. Esslinger, Loveland, and Donald H. Mohring, Cincinnati, both of Ohio, assignors to Esswood Corporation, Cincinnati, Ohio

Filed Sep. 14, 1984, Ser. No. 651,062

Int. Cl.⁴ F25B 49/00

U.S. Cl. 62—126

36 Claims



1. A method of detecting refrigerant leaks in a vapor compression refrigeration system having a circulating refrigerant, comprising the steps of:

- (a) monitoring the flow of refrigerant past a detection location and producing a signal indicative of whether the refrigerant is in a gaseous, liquid, or liquid with bubbles state;
- (b) determining whether the refrigerant flowing past the detection location during a predetermined monitoring period includes any liquid segments having a predetermined length;
- (c) producing a control signal indicative of whether any liquid segments exceeding said predetermined length flow past the detection location during the predetermined monitoring period; and
- (d) controlling the refrigeration system in response to the control signal to selectively contain the refrigerant within a predetermined space.

4,644,756

MULTI-ROOM TYPE AIR CONDITIONER

Takayuki Sugimoto; Yoshiyuki Okuzawa, and Nobuo Suzuki, all of Kusatsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

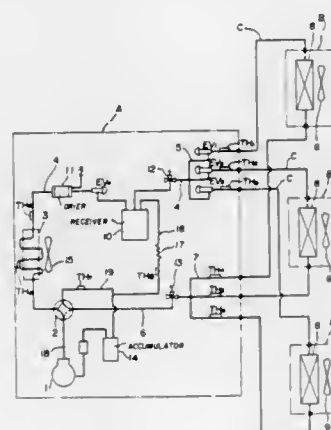
Filed Dec. 17, 1984, Ser. No. 682,312

Claims priority, application Japan, Dec. 21, 1983, 58-242766; Dec. 21, 1983, 58-242770; Nov. 24, 1984, 59-248527

Int. Cl.⁴ F25B 13/00

U.S. Cl. 62—160

13 Claims



1. A multi-room type air-conditioner comprising an outdoor unit which has a compressor, a source-side heat exchanger and a 4-way valve with high or low pressure change-over ports, a

plurality of indoor units each of which has a use-side heat exchanger and a fan attached thereto, and a plurality of connection pipes which connect said each indoor unit with said outdoor unit and capable of providing cooling and heating by change-over of said 4-way valve, said multi-room type air-conditioner comprising:

- a liquid line main connected to said source-side heat exchanger and passing liquid refrigerant,
- a plurality of liquid line branches branching out from said liquid line main and connected to said connection pipes,
- a gaseous line main connected to one of a high and a low pressure change-over port and passing gaseous refrigerant,
- a plurality of gaseous line branches branching out from said gaseous line main and connected to said connection pipes,
- a plurality of motorized valves mounted on said liquid line branches, an amount of opening of each said motorized valve being controllable within a range from a completely closed position to a fully opened position,
- a means for controlling superheat of low pressure gaseous refrigerant at an outlet of said use-side heat exchanger of an operating indoor unit in the cooling mode by controlling an amount of opening of said motorized valves,
- a means for controlling sub-cool of high pressure liquid refrigerant at an outlet of said use-side heat exchanger in heating of the operating indoor unit,
- a means for completely closing, in cooling, a said motorized valve mounted on a said liquid line branch connected to a non-operating said indoor unit,
- a means for shutting down, in heating, a said fan mounted on the non-operating indoor unit, and
- a means for controlling at a small opening, in heating, said motorized valve mounted on the liquid line branch connected to the non-operating indoor unit.

4,644,757

AUGER TYPE ICE-MAKING APPARATUS

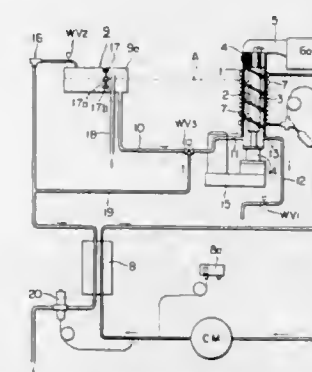
Junichi Hida, Chiryu; Yasumitsu Tsukiyama, Toyoake; Yoshikazu Kito, Oobu, and Susumu Tatsumatsu, Nagoya, all of Japan, assignors to Hoshizaki Electric Co., Ltd., Toyoake, Japan

Filed Feb. 12, 1985, Ser. No. 701,282

Int. Cl.⁴ F25D 17/02; F25C 1/14

U.S. Cl. 62—188

4 Claims



1. An auger type ice making apparatus comprising an ice-making water tank, a water inlet having a water supply valve for supplying ice-making into said ice-making water tank, means, including a water level switch in said tank, for opening and closing said water supply valve when the level of water in said tank is detected by said water level switch to be respectively at a lower level and a higher level above said lower level, a water inlet pipe, a generally cylindrical freezing cylinder communicating with the inside of the ice-making water tank through said water inlet pipe, a screw shaft mounted in the freezing cylinder and having a screw edge, a freezing

portion including a compressor for supplying a refrigerant to a freezing pipe coiled around the outer periphery of the freezing cylinder, a water discharge valve for said freezing cylinder, and a control circuit means, including a cleaning timer, for controlling said water supply valve and the water discharge valve, wherein said cleaning timer and said water level switch are operatively controlled by said circuit control means to open said water discharge valve during the time that said water supply valve is closed by said opening and closing means, whereby the inside of said water inlet pipe and of said freezing cylinder are cleaned with an amount of the ice-making water in said water tank between said upper and lower levels in said ice-making water tank.

4,644,758

REFRIGERATED DISPLAY CABINET

Kazuo Maehara, and Toshiyuki Fukuda, both of Isesaki, Japan, assignors to Sanden Corporation, Gumma, Japan

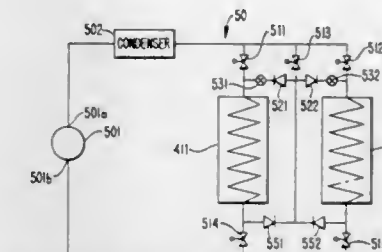
Filed Oct. 29, 1985, Ser. No. 792,606

Claims priority, application Japan, Nov. 26, 1984, 59-250320; Dec. 28, 1984, 59-199555[U]; May 29, 1985, 60-79378[U]

Int. Cl.⁴ F25D 21/00; F25B 47/00

U.S. Cl. 62—234

8 Claims



1. In a refrigerated display cabinet comprising an external housing, an internal housing within the external housing for storing merchandise, a front opening for access to the interior of said internal housing, passage means formed between said external and internal housing including inner and outer conduits interconnecting respective inlets and outlets extending across opposed edges of said front opening, circulating means for driving air around said passages means from said outlets to said inlets in the form of inner and outer air curtains, and refrigerating means in the inner conduit for refrigerating the inner curtain of air, the improvement comprising said refrigerating means including a compressor, a condenser and two evaporators, the inlet sides of said evaporators being connected with one another by a first passage line in which first and second decompression devices with check valves disposed in series with located said line having the ends thereof communicated with said compressor through valve devices, said evaporators having their outlet sides connected with one another by a second passage line in which two check valve devices are disposed in series with the ends of said second line respectively connected to said compressor through valve devices, and said first and second passage lines being connected with one another and connected to said condenser through a valve device.

4,644,759

HEAT PUMP AND METHOD

Grady A. Bingham, Muscle Shoals, Ala., assignor to Thermal Concepts, Inc.

Continuation of Ser. No. 737,270, May 23, 1985, Pat. No. 4,598,558, which is a continuation-in-part of Ser. No. 681,365, Dec. 13, 1984, abandoned. This application Jun. 30, 1986, Ser. No. 879,930

Int. Cl.⁴ F25B 13/00

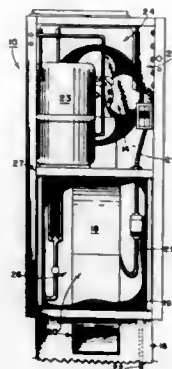
U.S. Cl. 62—324.1

18 Claims

1. A self-contained indoor air conditioning system of the type having a compressor, an indoor air condenser/evaporator coil, an outdoor air condenser/evaporator coil, an indoor

blower fan, and an outdoor blower fan, all assembled to form a closed refrigerant circuit for providing conditioned air to a dwelling or other enclosed structure, said system further comprising:

- a enclosed housing having a top, a bottom, a front wall, a back wall and two side walls;
- said housing being subdivided into an indoor air compartment and an outdoor air compartment;
- a substantially vertically oriented outdoor air intake means for providing an intake air passageway between said outdoor air compartment and a first unconditioned air space;



a substantially vertically oriented outdoor air discharge means for providing a discharge air passageway between said outdoor air compartment and a second unconditioned air space;

- said outdoor air compartment, said outdoor air intake means and said outdoor air discharge means forming an outdoor air flow circuit through said outdoor air compartment;
- indoor air return means for providing a return air passageway between said indoor air compartment and the conditioned air space; and
- indoor air discharge means for providing a conditioned air discharge passageway between said indoor air compartment and the conditioned space.

4,644,760

REVERSIBLE FOUR-WAY VALVE FOR REVERSIBLE REFRIGERATING CYCLE

Tadashi Aoki; Masakazu Isobe, and Hiroshi Kuno, all of Tokyo, Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Japan

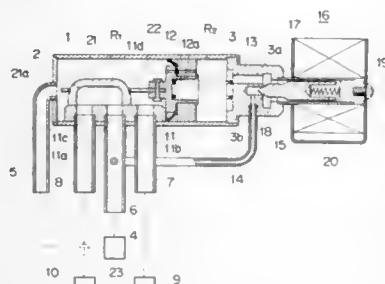
Filed Nov. 4, 1985, Ser. No. 794,851

Claims priority, application Japan, Nov. 5, 1984, 59-232932; Mar. 13, 1985, 60-048122; Mar. 25, 1985, 60-058290; Apr. 12, 1985, 60-076629; Oct. 21, 1985, 60-233175

Int. Cl.⁴ F25B 13/00

U.S. Cl. 62—324.6

8 Claims



1. A reversible four-way valve for reversible refrigerating cycle comprising

- a cylindrical reversible valve body;
- a single piston slidably provided within said cylindrical

reversible valve body to divide the same into a first chamber and a second chamber, said first chamber being formed with a high pressure port communicating with a compressor delivery side, said single piston having an equalizing hole therein to render said first and second chambers in constant communication with each other and normally under a substantially equal pressure;

a valve seat formed within said first chamber to extend longitudinally, said valve seat being formed with a first outlet communicating with a first heat exchanger and second outlet communicating with a second heat exchanger, said valve seat being formed with a low pressure port between said first and second outlets for communicating with a compressor suction side;

a slide valve connected to said single piston and adapted to slide over said valve seat to communicate said low pressure port selectively with said first outlet and said second outlet;

resilient means having a force sufficient for urging said piston toward the first chamber when both chambers are under substantially equal pressure;

low pressure communication means for bringing said second chamber and said compressor suction side into communication with each other when it is operated from a normal position where it is closed, said low pressure communication means having a larger diameter than said pressure equalizing hole in the single piston; and

pilot valve means for controlling said low pressure communication means by selectively closing and opening said low pressure communication means.

4,644,761

LOW-TEMPERATURE GONIOMETER FOR X-RAY AND NEUTRON DIFFRACTOMETRY

Johann Chatzipetros, Frechen; Bernhard Dujka, Jülich; Frank Elf, Kaarst, and Georg Will, Swisttal-Buschoven, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

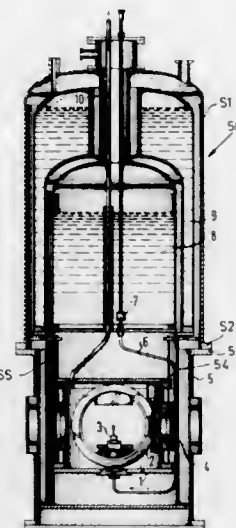
Filed Feb. 8, 1985, Ser. No. 699,731

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1984, 84239093[U]

Int. Cl.⁴ F25B 19/00

U.S. Cl. 62—514 R

16 Claims



1. An Euler's two-circle goniometer for cryogenic, X-ray and neutron diffractometry, comprising:

- a casing defining a chamber containing a coolant;
- a specimen holder in said chamber for a test sample;

first and second rotating means each arranged within said chamber and operatively connected with said specimen holder for turning said test sample about a first and a second turning circle in mutually perpendicular planes; and

a respective stepper motor in said chamber connected to each of said rotating means for actuating the latter so as to turn the test sample about said turning circles.

4,644,762

MULTIPLE SYSTEM CIRCULAR KNITTING MACHINE FOR KNITTING STOCKINGS

Wolfgang Häcker, Altenstadt, Fed. Rep. of Germany, assignor to Fred Vatter Strumpffabriken Schongau-Altenstadt GmbH, Schongau, Fed. Rep. of Germany

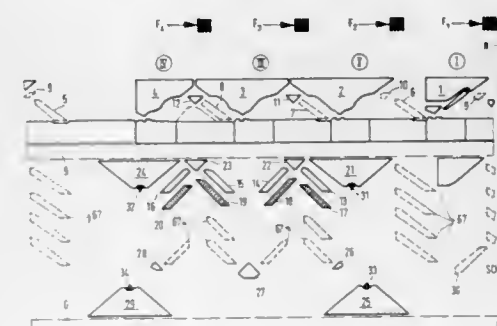
Continuation of Ser. No. 548,088, Nov. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 251,137, Apr. 6, 1981, abandoned. This application Aug. 1, 1985, Ser. No. 761,541

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022080; Jul. 28, 1980, 3028603; Jan. 28, 1981, 3102814

Int. Cl.⁴ D04B 9/20

U.S. Cl. 66—51

3 Claims



1. A multiple system circular knitting machine for knitting stockings having leg portions and heel cup portions, said machine being operable in a rotation mode to knit said leg portions and being operable in a reciprocating mode to knit said heel cup portions, said machine comprising: needles having butts thereon, needle retractors (1-4), jacks (SCH) and jack advancing and retracting cams (13-30) together with narrowing (31-32) and widening (33-34) pickers, needle advancing cams (5-8) engaging said butts for advancing the needles in the rotation mode, and a reciprocating means for knitting the heel cup using at least two of said multiple systems; wherein during said reciprocating mode all needles are adapted to be retracted out of the knitting position by said needle retractors (2-4) and to be advanced only by means of said jacks (SCH), means (57, 68a-b) being provided for said needle advancing cams (5-8) to be deactivated in said reciprocating mode; so that said needles are lifted to their thread take-up position during said reciprocating mode solely by said jacks.

4,644,763

KNITTING MACHINE WITH ELECTROMAGNETIC NEEDLE SELECTION

Fritz Kohler, and Andre Perotti, both of Couvet, Switzerland, assignors to Edouard Dubied & Cie, S.A., Couvet, Switzerland

Filed Jul. 9, 1986, Ser. No. 883,528

Claims priority, application Switzerland, Jul. 12, 1985, 3027/85

Int. Cl.⁴ D04B 7/00

U.S. Cl. 66—75.2

8 Claims

1. In a knitting machine with electromagnetic selection of needles of the kind with stitch transfer capability and including needle beds arranged in pairs equipped with grooves in which are located needles and selectors with needle butts, which needles can be positioned at the level of or above the needle bed, and with the selector needle butts capable of being positioned at different levels in relation to the needle bed and in different positions along the grooves, and having electromagnetic selection stations cooperating with sliding elements to enable them to occupy two different positions; one pair of sliding elements being supplied for each needle, and having vertical cams fixed and placed on a knitting carriage of the knitting machine acting on two-arm levers and releasing the respective two-arm levers after the needle selection, with the



two-armed levers being retained or released by the sliding elements, the improvement characterized by means for orienting said two-arm levers in four different positions, and by lower selector means forming the sliding elements and being adapted for movement into two different positions for cooperating with an end of a corresponding two-arm lever, whereby said lower selector means are actuated in such a way as to produce said four positions of said two-arm levers.

4,644,764

TAIL SHORTENER FOR CYLINDER AND DIAL KNITTING MACHINES FOR KNITTING RIBBED SOCKS

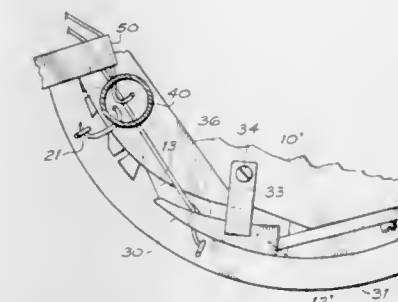
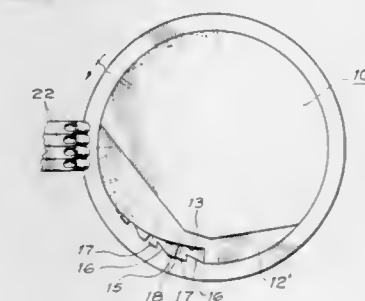
Louis H. Wilkes, 28 Center St., Seneca Falls, N.Y. 13148

Continuation of Ser. No. 535,154, Sep. 23, 1983, abandoned. This application Jun. 11, 1985, Ser. No. 743,400

Int. Cl.⁴ D04B 15/61

U.S. Cl. 66—140 S

17 Claims



1. A tail shortener for a circular knitting machine for knitting ribbed socks with a cylinder having cylinder needles, with a dial having a radially extending upper flange periphery disposed closely inside said cylinder needles and having radial slots open at the top of said dial and extending to the outer perimeter of said upper flange to receive radially movable dial

hooks and cast-offs, and with a dial head fixed closely above and extending to said outer perimeter of said top of said dial to move said dial hooks and cast-offs radially within said slots for knitting ribs as said dial turns, said tail shortener comprising:

- a uniform yarn catching notches formed in said upper flange periphery between said slots for said rib knitting dial hooks and cast-offs;
- a yarn lead-in surface radially recessed into an outer periphery of said dial head so that said yarn lead-in surface opens a space above said dial flange;
- said yarn lead-in surface being located rotationally beyond yarn feed fingers and extending inward of the radially inner extremities of said yarn catching notches;
- a yarn cutter mounted on said dial head in the region of said lead-in surface and biased against a top surface of said dial flange;
- said yarn cutter extending along said outer perimeter of said dial flange for a sufficient extent to span and ride over said slots and said yarn catching notches; and
- said lead-in surface and yarn cutter on said dial head being arranged so that each yarn change causes yarn tails to be drawn radially inward adjacent said lead-in surface where said notches catch each yarn tail near a cylinder needle holding the yarn closest to the yarn tail and each caught yarn is cut in thereafter passing under said cutter, resulting in yarn change tails cut short enough to eliminate picking and clipping.

4,644,765

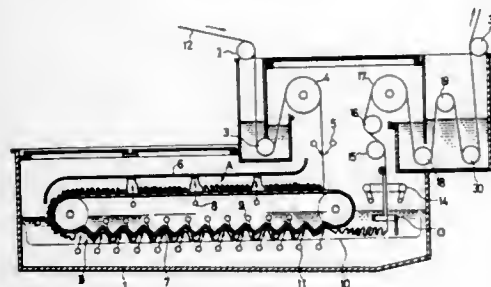
CONTINUOUS TREATING SYSTEM FOR WIDE CLOTH
Kiyoharu Kito, Nagoya, Japan, assignor to Nippon Dyeing Machine Mfg. Co., Ltd., Aichi, Japan

Filed Apr. 17, 1985, Ser. No. 724,124

Int. Cl.⁴ D06B 3/10

U.S. Cl. 68—62

5 Claims



1. In a continuous treating system for a wide cloth which continuously treats said wide cloth while it is being conveyed and passed through a treating tank, containing treating liquid, by a conveyor disposed inside said treating tank; the improvement wherein

- said conveyor is a single endless conveyor disposed substantially horizontally inside said treating tank;
- an upstream portion of said conveyor is disposed above said treating liquid with a downstream portion of said conveyor being submerged in said treating liquid;
- a guide disposed spaced above said conveyor so as to face said conveyor defining a first gap between an upper side of said conveyor and said guide, said first gap constituting a gaseous phase passage;
- a net stretched spaced below said conveyor so as to face said conveyor defining a second gap between a lower side of said conveyor and said net, said second gap constituting a submerged passage;
- means for imparting zigzag motion to said conveyor itself, said means is disposed adjacent said conveyor further defining said submerged passage;
- first jet pipes having first jet ports for jetting said treating liquid, said jet ports are open at the inside of said conveyor

in such a manner as to face said gaseous phase passage and said submerged passage;

second jet pipes having second jet ports for jetting said treating liquid, said second jet ports are open at a lower part of said net in such a manner as to face said submerged passage; and

said single endless conveyor constitutes exclusive means for imparting zig-zag motion to the cloth in cooperation with said jetting, and for contacting said conveyor with only one side of the cloth.

4,644,766

NON-ELECTRONIC CARD-KEY ACTUATED COMBINATION LOCK

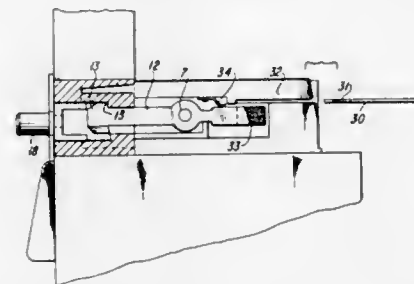
Walter C. Lovell, Wilbraham, Mass., assignor to Avant Incorporated, W. Concord, Mass.

Filed Oct. 4, 1983, Ser. No. 538,980

Int. Cl.⁴ E05B 47/00

U.S. Cl. 70—276

24 Claims



1. In a combination locking device:

- first and second anchor means;
- first and second sets of latching fingers having hooks thereon and finger actuating portions;
- pivot support means for pivotably supporting said first set of latching fingers about a single longitudinal support axis for causing the hooks thereof to extend from said fingers solely in a first direction toward said first anchor means to enable said hooks to interact with said first anchor means and for pivotably supporting said second set of latching fingers, interlaced with said first set about said single longitudinal support axis, for causing the hooks thereof to extend solely in a second direction different from said first direction toward said second anchor means to enable said hooks to interact with said second anchor means;
- finger actuating means for actuating all of the fingers of said first set and none of the fingers of said second set in order to open said lock; and
- means for positioning a card-key closely adjacent said finger actuating portions of said latching fingers, said finger actuating portions having magnets coupled thereto and said card-key having highly magnetically permeable material positioned at selected portions thereof closely adjacent said magnets for attracting said magnets.

4,644,767

PERMUTATION LOCK HAVING ROTARY DIALS AND A DIAL LOCKING SPRING

Rudi Dueringer, Wuppertal, Fed. Rep. of Germany, assignor to S.Franzen Sohne GmbH & Co., Solingen, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,489

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1984, 3431648

Int. Cl.⁴ E05B 37/02, 15/14

U.S. Cl. 70—312

3 Claims

1. A permutation lock comprising:

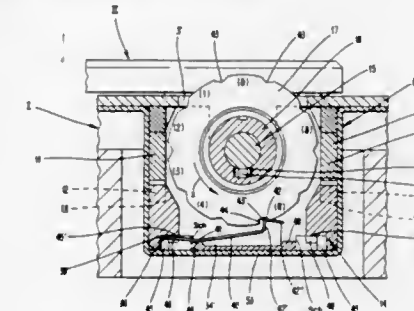
- a housing having front and rear sides, a groove provided at said rear side and opening in the rearward direction, said

groove extending in a longitudinal direction and including a longitudinal floor and longitudinal shoulders,

an axle mounted in said housing and extending in said longitudinal direction,

a plurality of dials rotatably mounted on said axle, each dial including

- a plurality of setting marks spaced around the circumference and visible at said front side of said housing, and a plurality of locking marks spaced around the circumference in alternating relationship with said setting marks, locking means movable to an unlocking position when said dials are arranged in a predetermined pattern, and a dial locking spring disposed at a rear side of said housing for yieldably retaining said dials in their respective retaining positions, said dial locking spring being formed of a spring material and including



a base strip disposed in said groove and extending at an angle relative to said floor of said groove, said base strip including a longitudinal edge engaging said shoulders of said groove, and

- a plurality of spring arms extending from said edge so as to extend generally transversely relative to the longitudinal direction, said arms forming an angle with the plane of said base strip and including free ends which form projections which are received in said locking notches to yieldably retain said dials in position, said arms engaging portions of said housing at locations spaced from said projections and being biased rearwardly by said dials causing said base strip to be swung about a fulcrum defined by said housing portions to urge said base strip against said floor of said groove.

4,644,768

DISC TUMBLER CYLINDER LOCK

Claude Nowak, Wettingen, and Peter Landis, Neuenhof, both of Switzerland, assignors to Uniswitch AG., Wettingen, Switzerland

Filed Jul. 13, 1984, Ser. No. 630,390

Claims priority, application Switzerland, Jul. 26, 1983, 4079/83

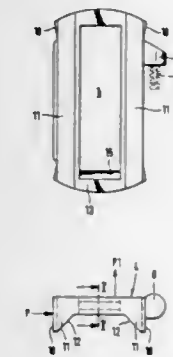
Int. Cl.⁴ E05B 15/14, 29/04

U.S. Cl. 70—364 R

9 Claims

1. In a disc tumbler cylinder lock, the combination of a case; a cylinder rotatably mounted in said case and having a key hole; a plurality of disc tumblers disposed transversely of the axis of said cylinder, said cylinder having slots reciprocally receiving said tumblers and surfaces surrounding said slots, each of said tumblers having spaced-apart ribs extending transversely of the axis of said cylinder and a passage for the corresponding portion of a key, the cross-sectional outlines of said tumblers being substantially complementary to the outlines of surfaces surrounding the respective slots so that the ribs as well as the tumbler portion between the ribs are in large surface-to-surface contact with said cylinder in each position of the tumblers; and means for biasing said tumblers transversely of said cylinder to thereby urge said tumblers into said case, said tumblers including portions extending into said case under the

action of said biasing means to prevent rotation of said cylinder in said case in the absence in said key hole of a proper key



which maintains said enlarged portions in the interior of said cylinder against the opposition of said biasing means.

4,644,769

WIRE DRAWING METHOD AND APPARATUS

John W. Pamplin, Hansterley, and Brian R. Astbury, Witton-le-Wear, both of United Kingdom, assignors to Marshall Richards Barcro Limited, Crook, United Kingdom

Continuation of Ser. No. 662,350, Oct. 18, 1984, abandoned.

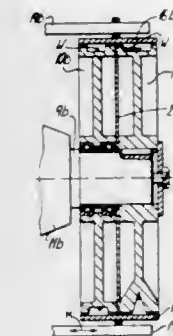
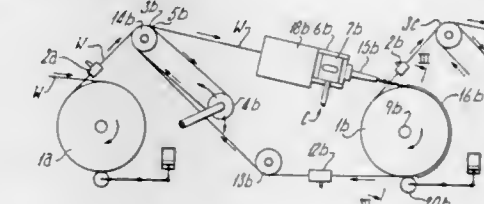
This application Jul. 14, 1986, Ser. No. 883,867

Claims priority, application United Kingdom, Oct. 28, 1983, 8328843

Int. Cl.⁴ B21C 9/00, 1/12, 1/14

U.S. Cl. 72—43

8 Claims



1. In a multi-stage wire drawing machine, a single-stage wire drawing apparatus defining a wire path therethrough comprising:

- first and second dies serially positioned along said wire path with said second die being downstream of said first die, said first die having an orifice of a first predetermined cross-sectional area and said second die having an orifice of a second predetermined cross-sectional area less than said first predetermined cross-sectional area of said first die, a drawing wheel downstream of said second die to provide substantially the entire drawing tension for drawing wire through both the first and second dies, said drawing wheel

having a wire-engaging peripheral surface around which at least a part turn of wire is frictionally engaged, motor means for rotating the drawing wheel in the direction to draw wire engaged on its peripheral surface through the first and second dies, means for directing wire along the wire path between the first die and the second die, said directing means comprising a rotatable idler wheel adapted to engage wire and be rotatably driven thereby, first liquid coolant supply means for feeding liquid coolant directly to wire leaving the orifice of the first die, lubricating means for applying lubricant to wire as it enters the orifice of the second die, wire drying means intermediate the first liquid coolant supply means and the lubricating means for removing liquid coolant from wire before it reaches the lubricating means, second liquid coolant supply means for feeding liquid coolant directly to wire leaving the second orifice in the second die and coolant trap means to hold coolant against the peripheral surface of the drawing wheel.

4,644,770
METHOD AND APPARATUS FOR PRODUCING SPACERS OR BLOCKS PRIMARILY FOR USE IN LOAD PALLET STRUCTURES

Olle L. W. Wahlström, Katrineholm, Sweden, assignor to Lars Hammarberg, Switzerland
PCT No. PCT/SE84/00141, § 371 Date Dec. 13, 1984, § 102(e) Date Dec. 13, 1984, PCT Pub. No. WO84/04082, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 13, 1984, Ser. No. 692,889
Claims priority, application Sweden, Apr. 14, 1983, 8302088
Int. Cl.⁴ B21D 39/03, 51/12, 13/04
U.S. Cl. 72—51

2 Claims



1. A method for producing supporting elements for use in pallet structures in one continuous operation at a single work station, comprising the steps of:

- advancing an elongate, substantially rectangular sheet metal blank into a nip formed by first and second corrugated rolls with the main plane of said blank inclined relative to the plane passing through the axes of the rolls such that the front edge of the blank is located and secured in an axial groove formed in the surface of said first roll;
- rotating said rolls at least one revolution such that said blank is given a corrugated configuration as it passes through said nip formed by said rolls, said corrugated configuration corresponding substantially to the shape of the corrugations on said rolls, said corrugated blank being brought into engagement as it is shaped against the surface of said first roll by the fixation

of said front edge of said blank in said groove, said corrugated blank thereby acquiring a sleeve-like shape on said first roll,

the portion of said blank adjacent the front edge of said blank overlapping the portion of said blank adjacent the rear edge of said blank after said first roll has been rotated one revolution;

(c) riveting the portion of said blank adjacent the front edge of said blank to the portion of said blank adjacent the rear edge of said blank with hard metal pins projecting from the surface of said second roll, said pins punching through said corrugated sheet and pressing into corresponding axial grooves disposed in the surface of said first roll, said grooves being located on said first roll such that they coincide in position with said pins when said rolls are rotated; and

(d) axially withdrawing said corrugated and riveted blank from said first roll.

4,644,771

MILL FOR HOT ROLLING OF BEVEL GEARS

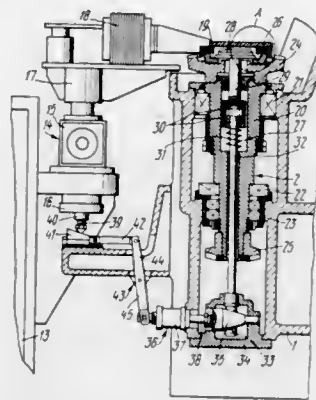
Alexandr M. Gorokhovskiy, and Leonid F. Fomichev, both of Moscow, U.S.S.R., assignors to Nauchno-Issledovatel'skiy Institut Tekhnologii Avtomobilnoi Promyshlennosti Niiavtoprom, Moscow, U.S.S.R.

Filed Jun. 17, 1985, Ser. No. 745,491

Int. Cl.⁴ B21B 27/06; B21H 5/04

U.S. Cl. 72—69

5 Claims



1. A mill for hot rolling of bevel gears, comprising:
- a stand;
 - a gear blank spindle mounted for rotation in said stand;
 - a device for clamping a gear blank to said gear blank spindle, said device having a first hydraulic cylinder and arranged in said gear blank spindle;
 - a tool spindle mounted in said stand and means for rotating and moving said tool spindle at an angle to the axis of said gear blank spindle;
 - a device for heating a gear blank, said heating device including a transformer, a r.f. current inductor, a second hydraulic cylinder, a third hydraulic cylinder and a platform mounted for travelling in a direction parallel with the axis of said gear blank spindle by means of the second hydraulic cylinder and transversely to the axis of said gear blank spindle by means of the third hydraulic cylinder, said transformer being mounted on the platform, and said r.f. current inductor being mounted on the platform;
 - a stop member fitted on the rod of said second hydraulic cylinder for interaction with said clamping device and adapted to limit the movement of said inductor in the direction parallel with the axis of said gear blank spindle toward said gear blank;
 - a cam mounted on said stand for movement relative to said stop member and brought into immediate contact there-

with when said platform is moved in a direction parallel with the axis of said gear blank spindle;

a tie-rod pivotally attached to said cam; and

a two-arm lever having a first and second arm and mounted in said stand to turn in a plane passing through the axis of said gear blank spindle and through that of said second hydraulic cylinder, said two-arm lever having its first arm pivotally attached to said tie-rod and its second arm to the rod of said first hydraulic cylinder incorporated in said clamping device.

4,644,772

SNAP RING FORMING AND GROOVING

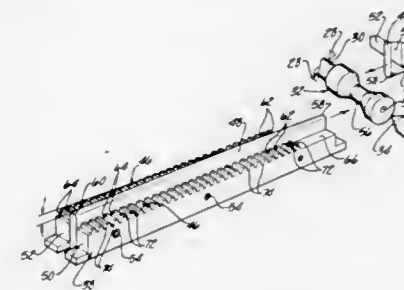
James T. Killop, Warren, and Gerald W. Holbrook, Saint Clair, both of Mich., assignors to Anderson-Cook, Inc., Fraser, Mich.

Filed Aug. 26, 1985, Ser. No. 769,581

Int. Cl.⁴ B21D 17/04

U.S. Cl. 72—88

19 Claims



11. A die member (38,40,90,92) for grooving and splining a workpiece (32) comprising: a spline forming work surface (46) including a plurality of spline forming teeth; an elongated straight slot extending transverse to said spline forming teeth; and characterized by groove forming means (48) mounted in said slot for simultaneously deforming a workpiece (32) to form a groove as said spline forming teeth form splines in the workpiece (32), said groove forming means (48) including a groove forming element (48) having a constant width when viewed in transverse cross section and having a portion secured in said slot and a groove forming edge extending from said slot, said edge having a leading portion (58) and a trailing portion (60), said element progressively increasing in height above said work surface from said leading portion (58) to said trailing portion (60), and said edge becoming progressively squared in transverse cross section from said leading portion (58) to said trailing portion (60).

4,644,773

CONVERTIBLE HEAD TO FORM COILS

Antonino Duri, Pradamano, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Sep. 4, 1985, Ser. No. 772,480

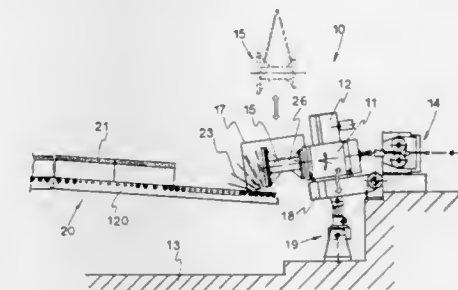
Claims priority, application Italy, Sep. 19, 1984, 60459/84[U]
Int. Cl.⁴ B21F 3/04; B21B 43/00

U.S. Cl. 72—135

5 Claims

1. A convertible head to form coils of rod, comprising
- a tiltable base;
 - a body supported on said tiltable base;
 - motor means for rotating said body;
 - rotor means including a set of interchangeable rotors, wherein at least one of said rotors is structured for forming and depositing horizontal coils and at least one of said rotors is structured for forming and depositing vertical coils;
 - conveyor means;

coupling means on said body for selectively and detachably securing either of said rotors on said body to alternatively



form and then deposit either horizontal or vertical coils on said conveyor means.

4,644,774

APPARATUS FOR COOLING A WORK ROLL IN A ROLLING MILL FOR ROLLING METAL STRIP
Gerhard van Steden, Broek op Langendijk, Netherlands, assignor to Hoogovens Groep B.V., IJmuiden, Netherlands

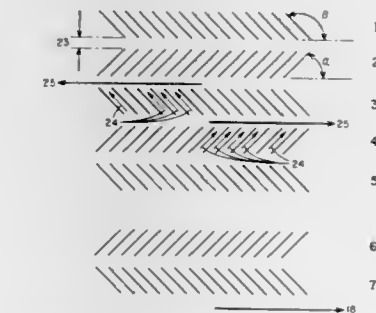
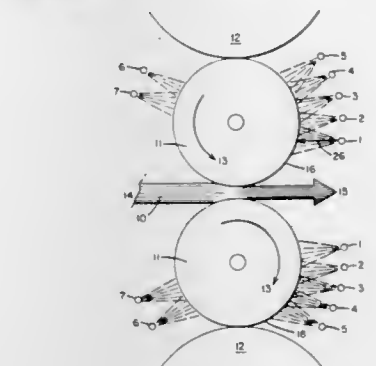
Filed Dec. 12, 1985, Ser. No. 808,029

Claims priority, application Netherlands, Dec. 17, 1984, 8403821

Int. Cl.⁴ B21B 27/10

U.S. Cl. 72—201

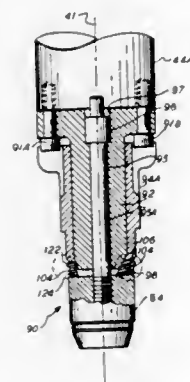
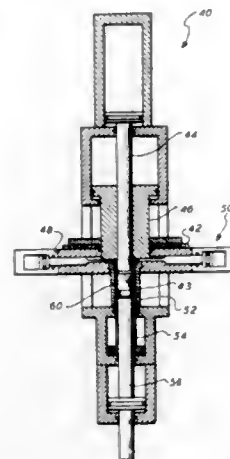
16 Claims



1. Apparatus for cooling a work roll in a rolling mill for rolling metal strip, comprising a plurality of spray means arranged in a plurality of rows closely spaced in the peripheral direction of the work roll and extending in the longitudinal direction of the work roll, said spray means being directed toward the work roll surface and being arranged to spray cooling water onto the work roll surface during cooling of the work roll in a manner which defines a surface of contact of the cooling water from each spray means on the work roll surface

which is oblong in shape and the longitudinal axes of the said surfaces of contact form an angle to a describing line on the work roll surface, at least a first row of said spray means being arranged so that the longitudinal axes of the surfaces of contact from said first row of said spray means form a first angle α to a first describing line on the work roll surface to direct removal of the cooling water towards one end of the work roll, and an adjacent second row of said spray means being arranged so that the longitudinal axes of the surfaces of contact from said adjacent second row of said spray means form a second angle β to a second describing line on the work roll surface to direct removal of the cooling water towards the other end of the work roll, said surfaces of contact from adjacent rows forming a herringbone pattern.

4,644,775
SHELL FORMING APPARATUS AND PROCESS
 Francis J. Fuchs, Jr., P.O. Box 10016, Naples, Fla. 33941
 Filed Jun. 14, 1985, Ser. No. 745,304
 Int. Cl.⁴ B21D 22/26, 22/20
 U.S. Cl. 72-348 15 Claims



1. Apparatus for forming from a generally cylindrical flat blank having a circumferential edge a generally cylindrical shell having interior and exterior surfaces, an open end with a first internal diameter, a generally closed opposite end, a first internal portion intermediate said ends with a second internal diameter smaller than said first internal diameter, and a second internal portion intermediate said first internal portion and said closed opposite end with a third internal diameter larger than said second internal diameter, comprising:
 a forming die provided with an inner surface for forming the exterior surface of said shell;
 a mandrel having an axis and provided with an outer surface for forming the interior surface of said shell, said mandrel

and said forming die mounted for relative movement towards each other to form said shell, said forming die having a top into which said mandrel enters;
 said mandrel comprised of a plurality of distinct members mounted for relative movement with respect to each other, predetermined ones of said members expandable radially outwardly with respect to said mandrel axis to form said second internal portion and upon said shell being formed, said predetermined ones of said members contractable radially inwardly sufficiently to permit said mandrel to be moved relatively away from said formed shell through said open end to permit said formed shell and said mandrel to be separated; and
 an iris die mounted circumferentially around the top of said forming die, said iris die comprising a plurality of reciprocally mounted iris forming members for applying radially inward force to said blank circumferential edge upon said relative movement of said forming die and mandrel towards each other to facilitate forcing of said blank into said forming die and between said mandrel and said forming die to form said shell.

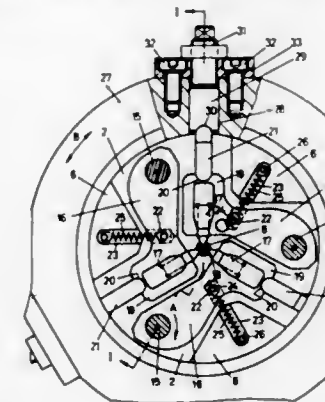
4,644,776
METHOD OF MAKING A LOW-ALLOY FORGING
 Rütger Berchem, Gelsenkirchen, Fed. Rep. of Germany, assignor to Berchem & Schaberg GmbH, Gelsenkirchen, Fed. Rep. of Germany
 Continuation of Ser. No. 633,184, Jul. 23, 1984, abandoned. This application Dec. 11, 1985, Ser. No. 809,836
 Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326642
 Int. Cl.⁴ B21J 1/06 2 Claims

1. In a method of forging a low-alloy steel workpiece having a carbon content below 0.6% and consisting of a microalloy steel in which the workpiece is heated to a temperature above the A_{C1} point and is subjected to forging in at least one step to effect a shape change as measured by the ratios of cross sections in the forging direction of 10 to 80%, the improvement wherein at least 10% of the shape change is effected at a reduced forging temperature of at most 1060° C. and the workpiece is thereafter subjected to controlled cooling, forging of the workpiece being effected in n forging steps, wherein n is at least 2 and the initial forging temperature is selected so that n-1 forging steps are effected at a forging temperature in excess of 1060° C. and the n-1th step is carried out so that the temperature following the n-1th step is at most 1060° C. and the nth forging step effects at least 10% of the shape change during forging.

4,644,777
DEVICE FOR GROOVING CYLINDRICAL WORKPIECES
 Siegmund Kumeth, Bayreuther Strasse, 8450 Amberg, Fed. Rep. of Germany
 Filed Sep. 9, 1985, Ser. No. 773,874
 Claims priority, application Fed. Rep. of Germany, Sep. 7, 1984, 3432939; Dec. 15, 1984, 3445806
 Int. Cl.⁴ B21D 17/02 7 Claims

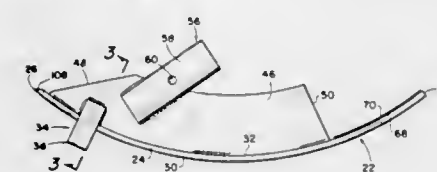
1. A device for forming grooves in workpieces, and especially in cylindrical workpieces, comprising
 a first tool part defining a receiver for the workpiece, at least one lever pivotally mounted on said first tool part, said lever having a tool provided with a cutting edge on the side of the lever facing the receiver, said lever also having a bearing surface on the side opposite said cutting edge;
 a clamping bolt having one end in abutment with said surface; and
 a second tool part pivotally attached to the first tool part so that said second tool part can pivot around the axis of said receiver,

said second tool part having a second bearing and supporting surface for the clamping bolt on its side that faces the receiver,
 an operating lever whose longitudinal extension is at right angles to the axis of the receiver, said operating lever being attached at one end to the second tool part,



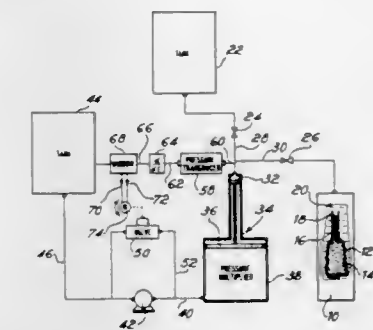
an intermediate lever attached at one end to the other end of the operating lever,
 a bearing attached at the other end of the intermediate lever, and
 a circular-cylindrical eccentric engaged within said bearing, said eccentric having an axis of rotation parallel to the receiver axis.

4,644,778
LANDSCAPE EDGING BENDER
 William D. Newton, 11, 2734 E. 45th Pl., Tulsa, Okla. 74105
 Filed Oct. 4, 1985, Ser. No. 785,174
 Int. Cl.⁴ B21J 13/08 27 Claims



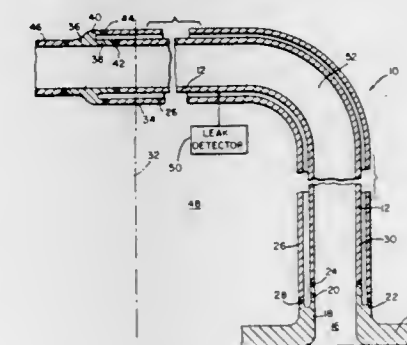
1. A device for making large radius bends or circles and small radius bends or right angles in metal plate, comprising:
 a rolling shoe comprised of a curved metal plate having a first end, a second end, an outside bottom surface, and an inside top surface;
 a handle attached to the rolling shoe;
 first retention means for receiving and retaining a workpiece of metal plate to be bent against the outside surface of the rolling shoe;
 a stationary shoe comprised of a substantially planar metal plate, the stationary shoe having a first end, a second end, a top surface, and a bottom surface; and
 a second retention means for receiving and retaining the workpiece against the bottom surface of the stationary shoe; and
 wherein the stationary shoe is placed in tandem with the rolling shoe with the first end of the stationary shoe being adjacent the first end of the rolling shoe with the top surfaces of the shoes facing upward, the workpiece extending through the first and second retention means and being received and retained by the first and second retention means in order that the workpiece may be bent by moving the handle in such a manner as to roll the rolling shoe towards the stationary shoe.

4,644,779
METHOD AND EQUIPMENT TO PERFORM POROSIMETRIC ANALYSES
 Giorgio Sisti, Milan; Pietro Italiano, Cernusco Sul Naviglio; Ermete Riva, Merate, and Bruno Tosi, Carate Brianza, all of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy
 Continuation of Ser. No. 393,603, Jun. 30, 1982, abandoned.
 This application Jun. 10, 1985, Ser. No. 742,636
 Claims priority, application Italy, Jul. 9, 1981, 22820 A/81
 Int. Cl.⁴ G01N 15/08 13 Claims



1. Apparatus for porosimetric determinations comprising:
 test chamber means for holding a sample and a liquid, said liquid for penetrating pores in said sample;
 means for increasingly applying pressure to said liquid in said test chamber means to force said liquid into said pores in said sample, said means for increasingly applying pressure acting to increase pressure applied to said liquid until a selected pressure is reached; and
 means for decreasing pressure applied to said liquid to permit said liquid to withdraw from said pores in said sample, said means for decreasing pressure acting to reduce pressure on said liquid from said selected pressure to a predetermined minimum pressure at a substantially constant rate in time throughout a given pressure range.

4,644,780
SELF-SUPPORTING PIPE RUPTURE AND WHIP RESTRAINT
 Howard R. Jeter, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Oct. 19, 1983, Ser. No. 543,662
 Int. Cl.⁴ G01M 3/08; G21C 19/28 20 Claims



1. A pipe rupture and whip restraint system, comprising:
 first pipe means for conveying a fluid within an area to be protected from whipping of said first pipe means in response to a pipe rupture condition which can occur at any axial position along the longitudinal extent of said first pipe means within said area to be protected; and

second pipe means, concentrically disposed about said first pipe means in a radially spaced fashion so as to define a free annular space between said first and second pipe means into which said fluid can enter under said pipe rupture condition and having its opposite ends integrally fixed to the opposite ends of said first pipe means such that said ends of said first and second pipe means are joined together to form single-piece, unitary structures whereby said first pipe means will be entirely encased within said second pipe means in a fluid-tight and load-bearing manner, for withstanding dynamic load forces attendant a rupture of said first pipe means, for containing said fluid within said annular space defined between said first and second pipe means, and for physically and stably restraining the whipping of said first pipe means within said second pipe means under said pipe rupture condition of said first pipe means by permitting said fluid to enter said annular space defined between said first and second pipe means.

4,644,781

FLUID PROPERTY MEASURING DEVICE

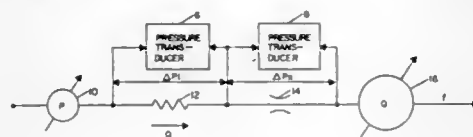
George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 7, 1984, Ser. No. 679,343

Int. Cl.⁴ G01N 11/04

U.S. Cl. 73—55

11 Claims



7. A device for measuring viscosity, density, volumetric flow rate, and mass flow rate of a gas or liquid comprising: a laminar flow fluid source; a first fluid resistor in fluid connection with said fluid source; a second fluid resistor in fluid connection with said first fluid resistor; a first pressure transducer to measure the pressure drop across said first fluid resistor; a second pressure transducer to measure the pressure drop across said second fluid resistor; a negative feedback oscillator in fluid connection with said second fluid resistor, said negative feedback oscillator comprising a laminar proportional amplifier, a first feedback resistor, and a second feedback resistor; and a buffer laminar proportional amplifier in fluid connection with said negative feedback oscillator.

4,644,782

SPINNING ROD INTERFACIAL TENSIOMETER

Daniel D. Joseph, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Feb. 13, 1986, Ser. No. 829,416

Int. Cl.⁴ G01N 13/02

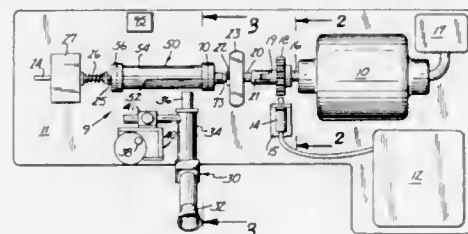
U.S. Cl. 73—64.4

15 Claims

1. An apparatus for measuring interfacial tension between two liquids of different densities spinning together in steady state equilibrium, said apparatus comprising:

- (a) an outer cylinder for receiving the liquids, said outer cylinder having an internal chamber capable of being sealed at both ends;
- (b) a tubular rod having a diameter smaller than that of said outer cylinder, said rod being mounted within and along the longitudinal axis of said outer cylinder;
- (c) means for rotation said outer cylinder about its longitudinal axis in a horizontal manner at a constant rotational

speed sufficient to maintain steady state equilibrium and to form a layer of the less dense liquid around said rod; (d) means for measuring the rotational speed of said outer cylinder when an appropriate steady state equilibrium exists between the liquids in the outer cylinder; and



(e) means for measuring the diameter of the interface between the two liquids when an appropriate steady state equilibrium exists between the liquids.

4,644,783

ACTIVE CONTROL OF ACOUSTIC INSTABILITY IN COMBUSTION CHAMBERS

John P. Roberts, and Maxime L. Vuilleumoz, both of London, United Kingdom, assignors to National Research Development Corp., London, England

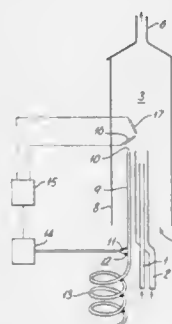
Filed Jul. 15, 1985, Ser. No. 755,313

Claims priority, application United Kingdom, Jul. 16, 1984, 8418056

Int. Cl.⁴ G01M 15/00

U.S. Cl. 73—116

6 Claims



1. A combustion system comprising:

- at least one chamber for the combustion of gaseous or vaporized reactants,
- sensing means responsive to acoustic noise within said chamber to produce an electrical signal dependent on the amplitude, frequency and phase of said acoustic noise,
- control circuit means connected to said sensing means to produce an electrical control signal and
- transducer means to receive said control signal and to generate therefrom an acoustic signal in anti-phase with said acoustic noise,
- said transducer comprising an electrical arc struck between electrodes within the combustion chamber.

4,644,784

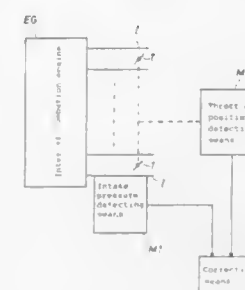
SUCTION PIPE PRESSURE DETECTION APPARATUS
Hiroshi Okano; Yukio Kawai, and Akira Ii, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Nov. 27, 1985, Ser. No. 802,459

Claims priority, application Japan, Nov. 29, 1984, 59-252758; Dec. 28, 1984, 59-275529; Dec. 28, 1984, 59-275530; Dec. 28, 1984, 59-275531

Int. Cl.⁴ F02M 51/00

U.S. Cl. 73—117.3

7 Claims



1. A suction pipe pressure detection apparatus for detecting the suction pipe pressure of an internal combustion engine having a throttle valve provided in the suction pipe for each cylinder thereof comprising:

- suction pipe pressure detection means for detecting the suction pipe pressure on the downstream side of the throttle valves provided for at least one cylinder out of the total number of cylinders of the internal combustion engine in synchronism with the crank angle of the internal combustion engine, and for generating a suction pipe pressure signal;
- throttle opening detection means for detecting the throttle valve opening at a higher frequency than that at which said suction pipe pressure detection means detects the suction pipe pressure, and for generating a throttle-opening signal; and
- correction means for correcting the suction pipe pressure signal according to the throttle-opening signal.

4,644,785

HINGED STRAIN CELL MOUNTING APPARATUS
John E. Doyle, Menlo Park, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 6, 1985, Ser. No. 773,272

Int. Cl.⁴ G01L 1/22

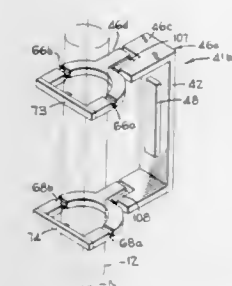
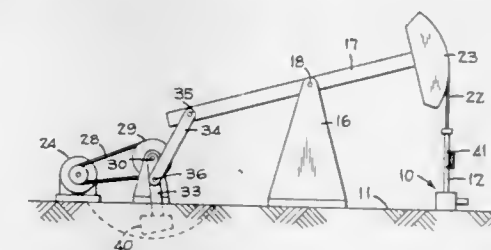
U.S. Cl. 73—151

11 Claims

1. Apparatus for removably connecting a strain cell for measuring the axial strain in a polished rod of a well pumping unit having a sucker-rod string and a power unit to reciprocate said rod string to produce fluid from an underground location, said apparatus comprising:

- a frame member having a gage beam and a pair of gage arms with each gage arm being connected to a corresponding end of said gage beam;
- a pair of clamps for securing said gage arms to axially spaced portions of said polished rod;
- a first pair of flexible hinges, each of said first hinges being connected between a first one of said clamps and a first one of said gage arms with said first hinges being mounted with a bending axis of each of said first hinges substantially at right angles to a neutral axis of said polished rod;
- a second pair of flexible hinges, each of said second hinges being connected between a second one of said clamps and a second one of said gage arms with said second hinges being mounted with a bending axis of each of said second hinges substantially at right angles to said neutral axis of said polished rod;
- a third pair of flexible hinges, each of said third hinges being mounted between a portion of one of said gage arms and a corresponding one of said first and said second pairs of

hinges with a bending axis of a first of said third hinges extending at right angles through said bending axis of said first pair of hinges, a bending axis of a second of said third



hinges extending at right angles through said bending axis of said second pair of hinges; and means for securing said strain cell to said gage beam of said frame member.

4,644,786

RAIN GAUGE OF THE TILTABLE SPOON TYPE
Hans Jacobsen, Skolevej 2, DK-8670 Laasby, and Ole Jacobsen, Egeallé 209, DK-8600 Silkeborg, both of Denmark

Continuation of Ser. No. 563,390, Nov. 23, 1983, abandoned.

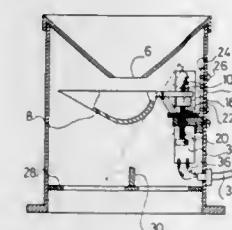
This application Mar. 31, 1986, Ser. No. 847,436

Claims priority, application Denmark, Mar. 24, 1982, 1570/82

Int. Cl.⁴ G01N 1/14

U.S. Cl. 73—171

6 Claims



1. A rain gauge comprising: a tiltable water collector, said collector being tiltable by a predetermined degree of water filling so as to thereby at least partly empty out water collected therein, said collector being returnable to a water collecting position, sensor means for producing an electrical counting signal in response to the tilting operation of the water collector, a permanent magnet carried by the collector and providing a counter weight, said permanent magnet cooperating with a fixed magnetic attraction member for releasably holding the water collector in the water collecting position, but enabling the water collector to be retracted from the fixed magnetic attraction member and the water collecting position in direct response to the collector being filled to said predetermined degree, means for maintaining a predetermined distance be-

tween said fixed magnetic attraction member and said permanent magnet whereby said permanent magnet does not engage the cooperating fixed magnetic attraction member, an adjusting means being provided whereby the spacing between the fixed magnetic attraction member and the permanent magnet in the water collecting position of the tiltable collector is adjustable.

4,644,787

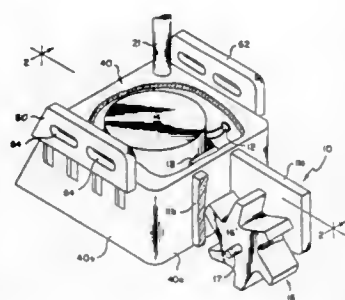
MARINE INSTRUMENT

Stephen G. Boucher, Amherst, and Robert K. Jeffers, Concord, both of N.H., assignors to Airmar Technology Corporation, Amherst, N.H.

Continuation of Ser. No. 616,289, Jun. 1, 1984, Pat. No. 4,555,938. This application Aug. 16, 1985, Ser. No. 766,875 Int. Cl.⁴ G01C 21/10

U.S. Cl. 73—187

8 Claims



5. A combination temperature sensor and speed sensor for transom mounting on marine vessels as a unitary structure comprising:

- (a) a sensor housing in which are housed:
 - (i) a temperature sensor device, and
 - (ii) an electromagnetic sensor means for generating pulsed electric signals in response to changes in electromagnetic fields;
- (b) paddlewheel for generating a patterned electromagnetic field rotatably mounted on struts affixed to an external surface of said housing laterally adjacent said electromagnetic sensor and vertically unenclosed, the paddles of said paddlewheel being disposed to partially extend into water when said sensor housing is mounted on said vessel.

4,644,788

MODULAR MARINE INSTRUMENT

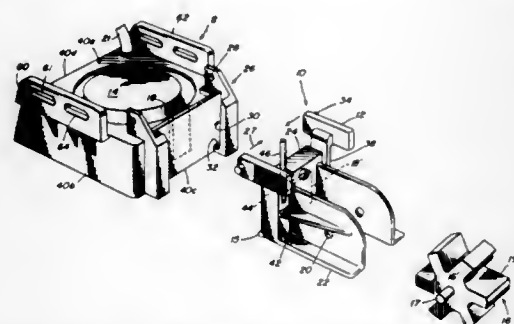
Stephen G. Boucher, Amherst, N.H., assignor to Airmar Technology Corporation, Amherst, N.H.

Filed Dec. 6, 1985, Ser. No. 805,963

Int. Cl.⁴ G01G 21/10

U.S. Cl. 73—187

11 Claims



1. Apparatus for mounting a speed sensor to a marine vessel, said sensor of the type comprising a magnetized paddlewheel for providing electromagnetic signals proportional to the rotational speed of said paddlewheel to be sensed by an electro-

magnetic sensor responsive to said electromagnetic signals and comprising:

- (a) a walled member with bracket means on said member for mounting said member on the exterior of the vessel;
- (b) a paddlewheel assembly for separable mounting on said member comprising:
 - i. a pair of struts extending from a frame member,
 - ii. a pair of compressable tabs extending from said frame member, said tabs including locking means for locking said assembly onto said walled member,
 - iii. engagement means on said frame member for providing interlocking engagement between the walled member and the assembly, and
 - iv. a paddlewheel rotatably mounted between a pair of struts extending aft from said frame member for generating a patterned electromagnetic field extending from the paddlewheel forward toward said walled member for sensing by said electromagnetic sensor.

4,644,789

LIQUID LEVEL INDICATOR SYSTEM

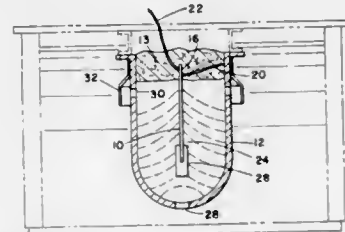
Daniel S. Snyder, Norwalk, Ohio, assignor to Clevite Industries Inc., Glenview, Ill.

Filed Dec. 20, 1985, Ser. No. 811,423

Int. Cl.⁴ G01F 23/00; H01L 41/08

U.S. Cl. 73—290 V

8 Claims



1. A liquid level indicator assembly for a container containing a liquid comprising:

housing means within said container for housing a representative sample of the liquid and including a restrictive access port at one end for communicating the liquid between the housing and container and a vent hole at an other end;

piezoelectric transducer means substantially immersed in said liquid and mounted in said housing means for detecting vibrational movement and for producing an electrical signal in response to vibrational movement of said transducer means, said piezoelectric transducer means comprising a piezoelectric beam which is mass tuned to a preselected natural frequency of vibration by selective sizing of a paddle means affixed to said piezoelectric transducer means;

said paddle means being connected directly to said piezoelectric transducer means immersed in the liquid and operatively engaged to said transducer means to inhibit vibrational movement of said transducer means due to fluid resistance against the paddle means; and

control circuit means for sensing said electrical signal and generating an alarm signal representative of an abnormal liquid condition wherein reduction of liquid below a preselected level allows vibrational movement of said transducer means and consequent electrical signal generation by said transducer means, said signal generation being representative of an abnormal liquid level.

4,644,790

LIQUID LEVEL INDICATOR FOR HUMIDIFIER

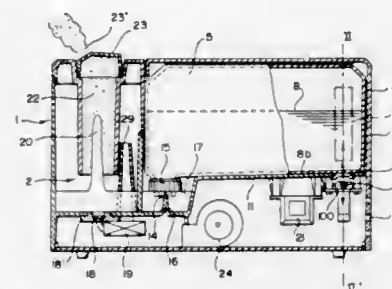
Saburo Mizoguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1985, Ser. No. 718,232

Int. Cl.⁴ G01F 23/02

U.S. Cl. 73—293

10 Claims



1. A liquid level indicator for a humidifier comprising: a liquid storing tank for storing liquid therein containing a first transparent portion and a second transparent portion; mounting means for detachably mounting said liquid storing tank therein containing a third transparent portion and a fourth transparent portion; non-transparent covering means being detachable from the humidifier above said liquid storing tank within said mounting means; and light source means for emitting light into the liquid tank means through said fourth transparent portion of said mounting means and said second transparent portion of the liquid storing tank, wherein the light emitted from the light source means is reflected in the direction of the first transparent portion of the liquid storing tank by the inclined surface of liquid produced by the surface tension of the liquid at the side wall of the liquid storing tank, said light being deflected at the surface of the liquid level to pass through the first transparent portion of the liquid storing tank and the third transparent portion of the mounting means whereby the level of the liquid can be measured through said first transparent portion from outside the liquid storage tank.

4,644,791

MOVING APPARATUS FOR A HOLLOW CURVED PIPE-ARRANGEMENT AND AN OPERATING METHOD IN THE PIPE-ARRANGEMENT BY USING THE MOVING APPARATUS

Shinji Sonoda, Hitachi; Norihiko Ozaki, Mito; Seishi Watabiki, Katsuta; Yasuzi Sakuma, and Masayoshi Yamaguchi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

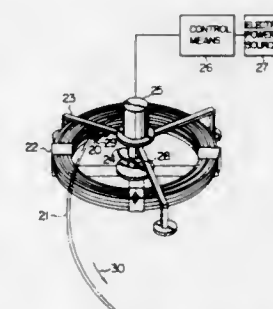
Filed Aug. 17, 1984, Ser. No. 641,677

Claims priority, application Japan, Aug. 20, 1983, 58-152354

Int. Cl.⁴ G01M 19/00; G01D 21/00

U.S. Cl. 73—432.1

4 Claims



4. A method of performing operations within a hollow

curved pipe arrangement by using a moving apparatus for the pipe arrangement, comprising the steps of: winding a long moving member made of a material having an elasticity and a moderate degree of flexibility around a supporting means allowed to rotate through the operation of a prime mover, storing an elastic strain energy in said moving member through the winding operation of said supporting means, advancing said moving member within said pipe arrangement by continuously releasing said elastic strain energy stored in said moving member and adding power of said prime mover when advancing velocity of said moving member becomes slower than a predetermined velocity during advancing of said moving member, and continuously performing an inspecting operation with respect to the interior of said pipe arrangement by means of an inspection means provided on a forward end of said moving member while said moving member is being moved within said pipe arrangement.

4,644,792

METHOD AND APPARATUS FOR DETERMINING THE MASS CENTER OF A BODY

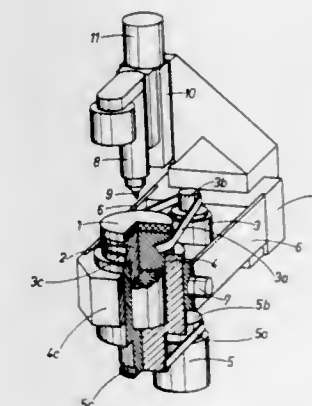
Guenter Fietzke, Lynchburg, Va., assignor to American Hofmann Corp., Lynchburg, Va.

Filed Jun. 17, 1985, Ser. No. 744,946

Int. Cl.⁴ G01M 1/26

U.S. Cl. 73—461

9 Claims



1. Apparatus for determining the location of the axis of inertia of a body and for marking a point on the surface of the body through which the axis of inertia of the body passes, said apparatus comprising:

- (a) holding means for holding a body for which the location of the axis of inertia is to be determined;
- (b) first rotation means for rotating the holding means about a holding means axis;
- (c) measuring means for measuring the unbalance of the rotating body and for calculating the location of the axis of inertia of the body, said measuring means including a housing for rotatably receiving the holding means and force-sensing transducer means positioned adjacent the housing for sensing centrifugal forces induced by unbalance in the rotating body;
- (d) marking means for making a mark on the surface of the body at the location of the axis of inertia, said marking means including a marking point; and
- (e) positioning means for positioning the body to align the axis of inertia thereof with the point of the marking means to cause the surface of the body to be marked to identify a point on the surface through which the axis of inertia passes, said positioning means including second rotation means to rotate said housing about a second axis of rotation spaced from the holding means axis.

4,644,793

VIBRATIONAL GYROSCOPE

Peter D. Church, Middlesex, England, assignor to The Marconi Company Limited, England

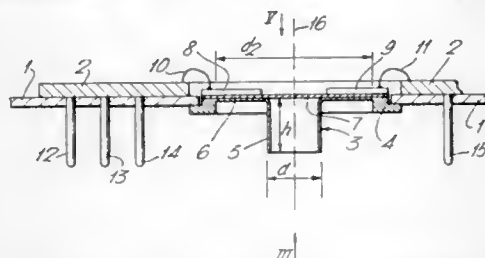
Filed Aug. 29, 1985, Ser. No. 770,831

Claims priority, application United Kingdom, Sep. 7, 1984, 8422699

Int. Cl.⁴ G01C 19/56

U.S. Cl. 73—505

20 Claims



1. A vibrational gyroscope comprising a flat flexible plate, a flexible annular shell extending from said plate, driving means for causing said plate to vibrate in such a way as to excite radial vibration in said annular shell and sensing means for sensing changes in the vibration of said plate in response to changes in said radial vibrations induced by rotation about the shell axis.

4,644,794

ACOUSTIC GUIDE FOR NOISE-TRANSMISSION TESTING OF AIRCRAFT

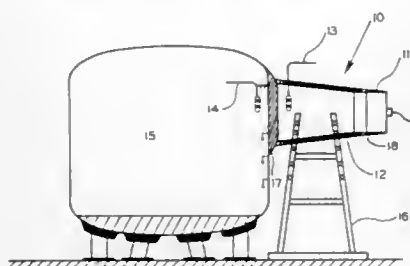
Rimas Vaicaitis, New York, N.Y., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 3, 1985, Ser. No. 751,695

Int. Cl.⁴ G01N 29/00

U.S. Cl. 73—583

15 Claims



1. A method for acoustic testing of interior cabin noise levels in assembled, full-scale vehicles which allows selective testing of installed components and subassemblies comprising the following steps:

- sealing an acoustic guide to a noise source and to a test component such that noise impingement is restricted to the test component only;
- transmitting noise into the acoustic guide;
- directing said noise from the acoustic guide on to a component or subassembly of a test object;
- measuring noise energy delivered to the exterior of the test component;
- measuring noise energy transmitted through the test component into the interior of the test object;
- modifying the noise transmission characteristics of the test component;
- measuring new noise levels transmitted to the test object interior through the modified test component;
- comparing interior noise level results to determine noise transmitted.

4,644,795

HIGH RESOLUTION MULTILINE ULTRASONIC BEAMFORMER

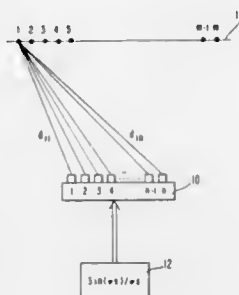
Larry J. Augustine, Bothell, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Jul. 29, 1985, Ser. No. 759,761

Int. Cl.⁴ G01N 29/00

U.S. Cl. 73—625

1 Claim



1. A multiline beamformer for use with a phased array ultrasound transducer comprising:

- (a) means for transmitting lines of ultrasound having pressures at the array aperture which correspond to the formula $\sin(\pi x)/\pi x$, where x is the normalized distance measured from the center of the array; and
- (b) a plurality of bundled delays for generating received ultrasound lines, the number of such delays corresponding to the multiple of received lines generated for each line transmitted.

4,644,796

PRESSURE MEASUREMENT APPARATUS AND METHOD

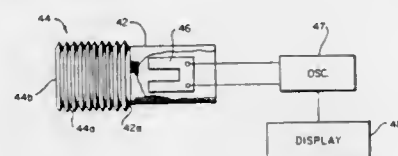
Roger W. Ward, Salt Lake City, Utah, assignor to Quartztronics, Inc., Salt Lake City, Utah

Continuation of Ser. No. 506,314, Jun. 21, 1983, Pat. No. 4,574,639. This application Dec. 12, 1985, Ser. No. 808,351

Int. Cl.⁴ G01L 7/00

U.S. Cl. 73—702

9 Claims



- 1. Gas density/pressure transducer apparatus comprising a generally rigid hollow housing having an opening on one side,
- an expandable and collapsible enclosure sealingly disposed over said opening so that the interiors of the housing and enclosure are in communication, and wherein the interior volume of the housing is less than the interior volume of the enclosure when the enclosure is expanded,
- a gas contained in the housing and enclosure,
- an elongate bar mounted in the housing and adapted to vibrate, said bar having a thickness T and width w , where $T/w \geq 0.1$,
- means for causing the bar to resonate at a frequency f , said frequency varying with variation in the density of the gas in the housing and enclosure and thus with variation of the exterior pressure on the housing and enclosure, and
- means for determining the frequency f .

4,644,797

SEMICONDUCTOR PRESSURE TRANSDUCER

Norio Ichikawa, Mito; Seiji Takeda, Toukai, and Kazuhiro Tsuruoka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

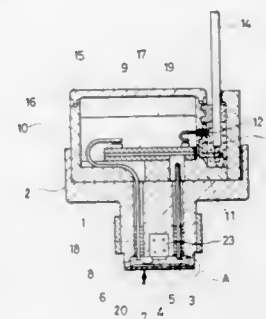
Filed Jul. 11, 1985, Ser. No. 753,854

Claims priority, application Japan, Jul. 11, 1984, 59-142359

Int. Cl.⁴ G01L 7/08, 9/08

U.S. Cl. 73—706

7 Claims



1. A semiconductor pressure transducer having a housing which has a chamber for enclosing a semiconductor strain-gage, a seal diaphragm formed in the manner to hermetically close said chamber, and an oil sealed in the space defined between said seal diaphragm and said chamber, characterized in that said seal diaphragm is hermetically sealed to said chamber at the peripheral portion thereof by means of a plastically deformed material at an outer periphery of a plate with a pressure introduction bore.

4,644,798

CAPACITIVE TYPE CONVERTER DEVICE

Hisashi Tamura; Terutaka Hirata; Tetsu Odohira, and Tadahiro Ogawa, all of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

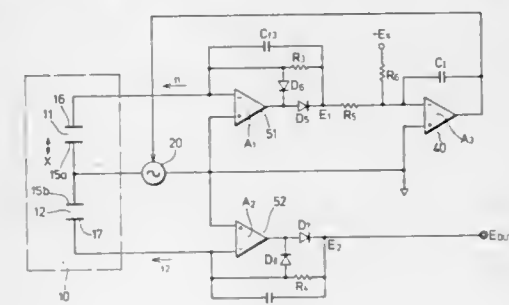
Filed Aug. 28, 1985, Ser. No. 770,664

Claims priority, application Japan, Sep. 6, 1984, 59-187093

Int. Cl.⁴ G01L 7/08, 9/12, 19/04; C08C 19/10

U.S. Cl. 73—708

10 Claims



- 1. A capacitive type converter device comprising variable condenser having a capacitance variable in response to a value to be measured;
- reference condenser having a capacitance fixed independent of said value to be measured;
- oscillator means for supplying an oscillation output to said variable condenser and to said reference condenser;
- first rectifying circuit comprising an operational amplifier having an inverting input terminal connected to said variable condenser, and having a non-inverting input terminal connected to a reference point, said first rectifying circuit producing an output;
- second rectifying circuit for rectifying a current flowing through said reference condenser, said second rectifying circuit producing an output;

through said reference condenser, said second rectifying circuit producing an output; and control means for controlling said oscillation output of said oscillation means in response to said output of said first rectifying circuit or in response to said output of said second rectifying circuit together with said output of said first rectifying circuit, whereby an output signal representative of the capacitance of said variable condenser is obtained from said second rectifying circuit, or an output signal representative of the difference between the capacitance of said reference condenser and the capacitance of said variable condenser is obtained from said outputs of said first and second rectifying circuits.

4,644,799

ELECTROMAGNETIC FLOW METER

Toyofumi Tomita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

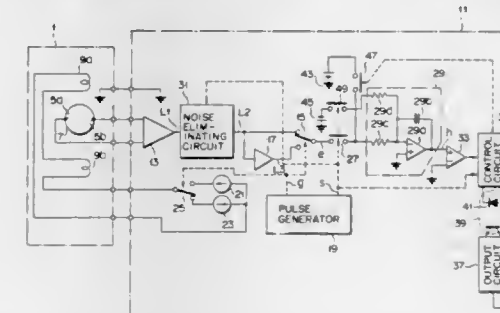
Filed Aug. 29, 1985, Ser. No. 770,586

Claims priority, application Japan, Sep. 7, 1984, 59-187577

Int. Cl.⁴ G01F 1/60

U.S. Cl. 73—861.12

15 Claims



- 1. An electromagnetic flow meter comprising: a flow meter main body which supplies a square wave excitation current to at least one excitation coil, impresses the resultant magnetic field on an electrically conductive fluid, and draws out the voltage induced in said electrically conductive fluid as a flow rate signal by means of at least one paired electrodes;
- delay means which is connected to said flow meter main body to receive said flow rate signal, delay said flow rate signal by an integer multiple of half the period of said flow rate signal and output a delayed signal;
- noise-eliminating means which is connected to said flow meter main body and said delay means, receives said flow rate signal and said delayed signal, eliminates the low frequency noise component included in said flow rate signal based on said delayed signal, and output a corresponding signal corresponding to said flow rate signal which has been freed of said noise component; and
- means which is connected to said noise-eliminating means and determines the flow rate of said electrically conductive fluid from the level of the corresponding signal.

4,644,800

ANNULAR VENTURI FLOW MEASURING DEVICE

Martin J. Kozlak, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 2, 1986, Ser. No. 869,510

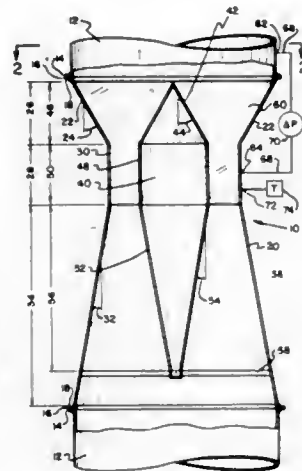
Int. Cl.⁴ G01F 1/44

U.S. Cl. 73—861.64

9 Claims

- 1. A reduced length differential pressure venturi type flow measuring device for installation within a flow duct comprising: a peripheral flow confining conduit having a longitudinal axis, and having an upstream end of a flow area substantially equal to the flow area of the duct; the walls of said

conduit converging inwardly from the upstream end at a first angle with respect to said axis for a first length; the walls of said conduit thereafter extending substantially parallel to said axis for a throat length; the walls of said conduit thereafter diverging at a second angle with respect to said axis for a second length to substantially the size of the upstream end; and internally centrally located hub substantially co-extensive with said walls; the upstream portion of said hub diverging at a third angle with respect to said axis for a third length;



the central portion of said hub extending substantially parallel to said axis for throat length, the annular space between the substantially parallel walls of said conduit and the substantially parallel portion of said hub comprising a throat; the downstream portion of said hub converging at a fourth angle with respect to said axis for a fourth length to the downstream end of said hub; means for supporting said hub within said conduit; means for sensing the static pressure within said duct; and means for sensing the static pressure within said throat.

4,644,801

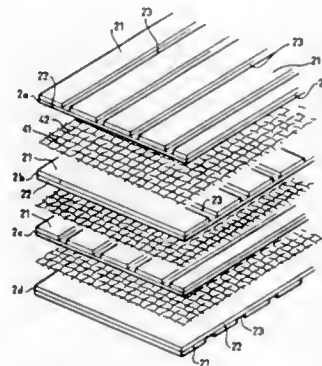
SURFACE-AREA PRESSURE TRANSDUCER AND LINE-SELECTION CIRCUIT FOR USE THEREWITH
Yosef Kustanovich, Eisenberg St. 32/A, Rehovot, Israel, assignor to Cybertronics Ltd., Tel-Aviv, Israel

Filed Aug. 21, 1985, Ser. No. 767,891

Claims priority, application Israel, Aug. 21, 1984, 72736
Int. Cl.⁴ G01D 7/02; H01G 7/00

U.S. Cl. 73-862.04

19 Claims



1. A surface-area-pressure transducer comprising: at least one pair of electrode layers each including a plurality

of electrically-conductive elements, the elements of one layer extending in spaced, crossing relationship to the elements of the other layer; and a compressively-deformable dielectric layer interposed between the two electrode layers to define therewith an array of capacitors whose capacitances are changed by the compression of said dielectric layer when subjected to pressure; characterized in that said dielectric layer is composed of fibers selected from the group consisting of nylon, glass and paper.

4,644,802

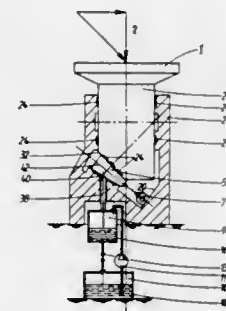
FORCE MEASURING APPARATUS AND METHOD
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany
Filed Apr. 1, 1985, Ser. No. 718,314

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1984, 3412211; Apr. 2, 1984, 3412212

Int. Cl.⁴ G01L 1/26; G01G 21/02

U.S. Cl. 73-862.38

23 Claims



1. An apparatus for measuring a force or force component comprising:
a force receiving member arranged to have the force (component) applied thereto;
a base member for guiding in an essentially frictionless manner the force receiving member for movement in the direction of the force (component) to be measured;
a force measuring device supported on the base member for measuring the force applied to the force receiving member;
wedge means having opposite first and second surfaces inclined to each other and being guided in an essentially frictionless manner with its first and second surfaces between the force receiving member and the base member for movement in the direction of a wedge axis and acting onto the force measuring device in the direction of the wedge axis, the direction of the force (component) to be measured intersecting at least one of the first and second surfaces at an angle differing from 90°; and
bias force means acting onto the wedge means at least partially in the direction of the wedge axis.

4,644,803

FORCE MEASUREMENT APPARATUS AND METHOD
Roger W. Ward, Salt Lake City, Utah, assignor to Quartztronics, Inc., Salt Lake City, Utah

Division of Ser. No. 506,314, Jun. 21, 1983, Pat. No. 4,574,639.
This application Nov. 13, 1985, Ser. No. 797,599

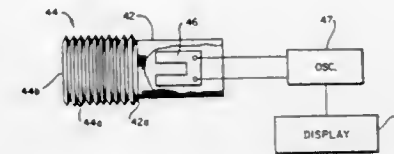
Int. Cl.⁴ G01L 1/02, 7/00; G01P 15/08; G01F 1/34

U.S. Cl. 73-862.58

12 Claims

1. Gas density/force transducer apparatus comprising
a hollow housing having first and second chambers which are in communication with one another, the housing surrounding the first chamber being collapsible and expandable and the housing surrounding the second chamber

being generally rigid, said first chamber being equal to or larger in volume than said second chamber when expanded, a movable wall disposed on the housing on one side of said first chamber to vary the volume in the housing as the wall is moved, a gas contained in the housing,



means for applying a force to the movable wall, a vibratory element disposed in the housing, means for causing the element to resonate at a frequency f , said frequency varying with variation in the density of the gas in the housing and thus in the force applied to the movable wall, and means for determining the frequency f .

4,644,804

QUARTZ RESONATING FORCE AND PRESSURE TRANSDUCER

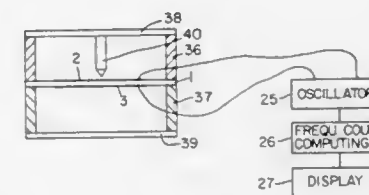
A. Jürgen Ramm, Kriens, and Jerome Formaz, Evillard, both of Switzerland, assignors to Franz Rittmeyer AG, Grienbachstrasse, Switzerland

Filed Jul. 17, 1984, Ser. No. 631,811

Int. Cl.⁴ G01L 1/10, 1/16

U.S. Cl. 73-862.59

10 Claims



1. A force and pressure sensor operating as a piezoelectric resonator working in a thickness shear resonating mode comprising:

a piezoelectric membrane formed of an AT cut quartz crystal having an electrode arranged on both sides, said electrodes being of a size to cover only a portion of the surface of the respective sides of said membrane and at least one of said electrodes being substantially ring-shaped having a central area void of electrode material, said electrodes being connected to an active oscillator circuit, said membrane being of substantially uniform thickness and having a natural frequency of a thickness shear vibration dependent upon deformation caused by force or pressure exerted perpendicularly to said membrane, and mounting means allowing the membrane to be fixed at its edge.

4,644,805

FORCE MEASURING DEVICE

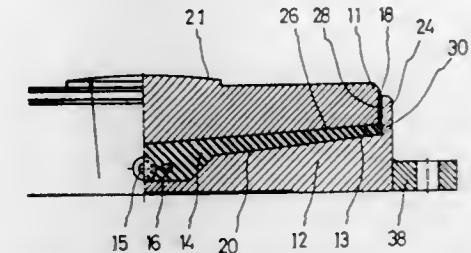
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany
Filed Dec. 10, 1984, Ser. No. 680,126

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1983, 3344901

Int. Cl.⁴ G01L 1/22, 5/00

U.S. Cl. 73-862.68

15 Claims



1. A force measuring device comprising:

a force receiving member and a support member arranged essentially in parallel to each other and having substantially annular planar exterior surfaces perpendicular to the force to be measured and inner surfaces defining a space therebetween, said support member being formed with a peripheral rim and said force receiving member being inserted into said rim in such a manner that a narrow annular gap is formed between an outer peripheral surface of said force receiving member and an inner peripheral surface of said rim, which gap has a width in the order to between 1/100 and 1/1,000 of the diameter of said members;

elastomeric material provided in said space between and bonded to said members and at least partially filling said gap; and

a pressure sensor in contact with said elastomeric material.

4,644,806

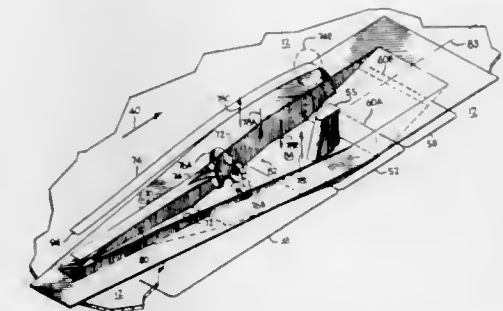
AIRSTREAM EDUCTOR

Elgin E. Flagg, and Melvin Bobo, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Apr. 22, 1985, Ser. No. 725,963

Int. Cl.⁴ G01N 1/20

U.S. Cl. 73-863.58

5 Claims



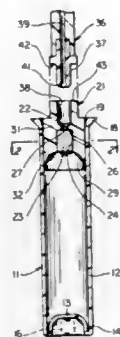
1. In an aircraft nacelle bearing a probe, the improvement comprising:

(a) means for diverting boundary layer air from the probe and
(b) means for inducing freestream air to impinge upon the probe.

4,644,807
FLUID SAMPLE DELIVERY APPARATUS
 Dav Mar, Sunnyvale, Calif., assignor to Dionex Corporation,
 Sunnyvale, Calif.

Filed Feb. 21, 1985, Ser. No. 703,861
 Int. Cl.⁴ G01N 1/14
 U.S. Cl. 73—864.62

17 Claims

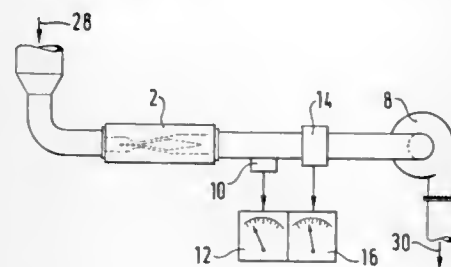


1. In apparatus for delivering a fluid sample: a sample holding vial having a side wall and an upwardly convex bottom wall, and a plunger slideably mounted in the vial in sealing engagement with the side wall and having an upwardly concave lower side which mates with the bottom wall of the vial when the plunger is in a depressed position at the bottom of the vial, said plunger also having an axially extending passageway through which the sample is delivered as the plunger is moved toward the depressed position.

4,644,808
APPARATUS FOR MEASURING THE CONCENTRATION OF CAVITATION NUCLEI IN A LIQUID
 Yves Lecoffre, Le Versoud, France, assignor to Alstom, France

Filed Dec. 10, 1985, Ser. No. 807,081
 Claims priority, application France, Dec. 10, 1984, 84 18820
 Int. Cl.⁴ G01M 10/00
 U.S. Cl. 73—866

7 Claims

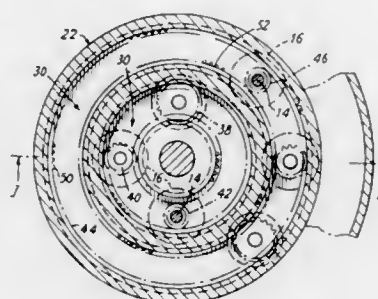


1. Apparatus for measuring the concentration of cavitation nuclei in a flowing liquid, said apparatus comprising:
 a pressure-reducing duct for confining flow of said liquid during passage of liquid in a given flow direction through said duct, said duct having a length and an axis along the flow direction and comprising a venturi passage including an upstream portion having a flow cross-section of the liquid which decreases up to minimum flow cross-section so as to progressively decrease the pressure, a minimum pressure portion having a predetermined length, and a downstream portion having a flow cross-section which increases progressively so as to increase the pressure; circulation means for causing said liquid to flow through said duct venturi passage at a sufficient rate to ensure that the pressure in said minimum pressure portion is sufficiently low to ensure that the cavitation nuclei whose concentration in the liquid is to be measured, give rise to

bubbles of vapor of sufficient individual bubble volume to be detected individually;
 means for detecting the bubbles created in this way;
 means for counting the bubbles to measure the number of bubbles in a given period of time; and
 means for obtaining the flowrate of the liquid flow through the duct venturi passage in such a manner as to enable the nuclei concentration to be deduced from said number of bubbles and said flow rate;
 the improvement wherein said duct is made of an outer tube and of an inner coaxial core and the said venturi passage flow cross-section of the liquid is constituted over the length of said core by an annular passage between said core and said tube so that a spherical bubble can occupy only a small fraction of the liquid cross-section, each right cross-section through the duct and said annular passage showing the passage to have a radial widths extending in directions going away from the axis of the duct, and an average circumferential length which is the length of the line which connects the middles of its widths.

4,644,809
DRIVE MECHANISM
 Geoffrey P. Howse, Reading, England, assignor to Aquatech Marketing Limited, Newbury, England
 PCT No. PCT/GB85/00057, § 371 Date Oct. 11, 1985, § 102(e)
 Date Oct. 11, 1985, PCT Pub. No. WO85/03752, PCT Pub. Date Aug. 29, 1985
 PCT Filed Feb. 14, 1985, Ser. No. 789,305
 Claims priority, application United Kingdom, Feb. 14, 1984, 8403843
 Int. Cl.⁴ F16H 21/16, 25/16
 U.S. Cl. 74—25

9 Claims

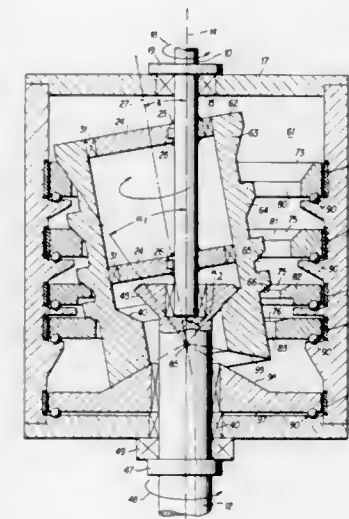


1. A drive mechanism for transmitting bidirectional drive to two or more rotary actuators, comprising a rotatable input member, drive transmitting means coupled to the input member and rotatable about an axis, and two or more output members coupled to respective rotary actuators and rotatable about substantially parallel axes, the drive transmitting means having a plurality of drive tracks each with first and second engagement formations occupying different sectors around the track, and the output members carrying driven members having engageable formations engageable alternately on opposed sides by the first and second engagement formations respectively of respective ones of the drive tracks to cause reciprocity of pivotal movement of the output members in selectively controlled manner for each of the output members respectively.

4,644,810
CONICAL DRIVE
 Roy E. Vanderlinden, Frederick, Md., and John H. Francis, Charles Town, W. Va., assignors to Frederick Manufacturing Company, Frederick, Md.

Filed Jan. 16, 1985, Ser. No. 691,862
 Int. Cl.⁴ F16H 13/02, 15/00, 1/02
 U.S. Cl. 74—191

9 Claims

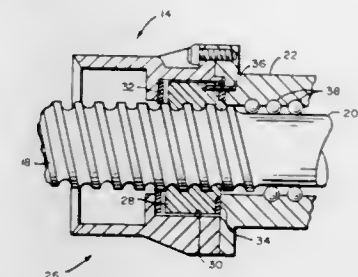


1. A mechanism for transmitting torque less than a predetermined torque comprising:
 a first shaft;
 means for mounting the first shaft for rotation about a first axis;
 a first bearing surface, the first bearing surface having as a generatrix a radially extending first line intersecting the first axis at a point and rotating about the point through 360° at a constant angle with respect to the first axis;
 a rotatable member having a first conical surface in engagement with the first bearing surface along a line of contact which is coincident with the radially extending straight line which forms the generatrix of the first bearing surface, the conical surface also having an apex which is coincident with the point on the first axis about which the generatrix rotates; the rotatable member further having a second conical surface which is continuously conical, the second conical surface having an apex which is also coincident with the point on the first axis about which the generatrix rotates;
 means for mounting the rotatable member to rotate about a second axis, which second axis is oblique with respect to the first axis and coincident with the axis of the first conical surface, the second axis intersecting the first axis at the point on the first axis about which the generatrix rotates;
 a second shaft;
 means for mounting the second shaft for rotation about the first axis;
 a conical surface on the second shaft, the conical surface on the second shaft being in engagement with the second conical surface on the rotatable member, the conical surface on the second shaft having an apex which is coincident with the point on the first axis about which the generatrix rotates, and
 means for urging the conical surfaces together whereby the conical surfaces do not slip on one another as the first axis is rotated to drive the second axis so long as the torque is less than the predetermined torque.

4,644,811
TERMINATION LOAD CARRYING DEVICE
 John N. Tervo, Phoenix, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1985, Ser. No. 746,617
 Int. Cl.⁴ F16H 25/20; B66B 11/04
 U.S. Cl. 74—412 TA

1 Claim



1. A termination load carrying device, said device comprising:
 a screw drive actuator, said actuator having a screw thereon with a run-off end having no threads thereon, a load being attached to said termination load carrying device, said load translating by said screw in the direction of said run-off end;
 a load carrying nut assembly, said load carrying nut assembly being initially threaded onto said screw, said load being attached to a load supporting device of said load carrying assembly, said load carrying nut assembly having a tubular housing, said housing having a plurality of balls rotatably mounted on an inside cylindrical surface whereby threads of said screw operably engage said balls causing said housing to translate upon said screw as said screw rotates; and
 a follower nut assembly, said follower nut assembly fixedly attached onto said load carrying nut assembly, said follower nut assembly having therein a cage, said cage having said screw pass therethrough, said cage having mounted rotatably therein and on said screw a thrust bearing, a nut, and a spacer, said thrust bearing being in contact with said nut and said load carrying nut assembly, said spacer insuring minimum end play between said nut and said cage, said nut being releasably held to said load carrying nut assembly by a shear pin, said shear pin breaking when said load carrying nut assembly is fully extended onto said run-off end of said screw, after said balls of said load carrying nut assembly are on said run-off end of said screw, the torque of said screw is fully applied to said nut whereby said shear pin breaks, said nut after said shear pin breaks rotating with said screw and against said thrust bearing to hold said load in said fully extended position.

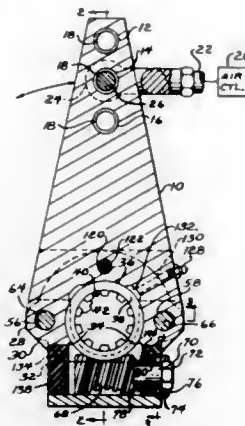
4,644,812
GEAR MECHANISM FOR BRAKE ADJUSTMENT
 Bertel S. Nelson, Naperville, Ill., assignor to Wedgtrac Corporation, Naperville, Ill.

Filed Jan. 14, 1985, Ser. No. 690,897
 Int. Cl.⁴ F16D 65/48; F16H 1/16
 U.S. Cl. 74—425

9 Claims

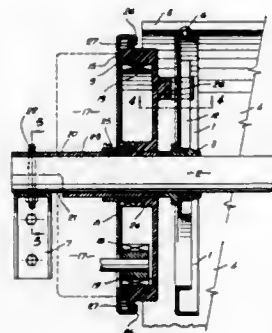
1. Adjusting mechanism such as for brake adjustment comprising a turnable member, a worm gear having a continuous circumferential succession of teeth mounted for turning with said member and independently of said member, said member having a part thereof disposed in close adjacent relation to the periphery of said gear, said worm gear being adapted to be secured to a shaft such as a brake operating shaft, a tapered worm, means mounting said worm from said member in meshing engagement with said worm gear, means for turning said worm and said gear relative to said member for effecting ad-

justment of said member relative to a shaft secured to said gear, and means for locking said worm against rotation for locking said worm gear relative to said member for turning of said worm gear with said member, turning of said member causing



said gear to mesh with a larger diameter portion of said tapered worm, said tapered worm thereby forcing said perimeter of said gear into clamping engagement with said part of said member upon turning of said member.

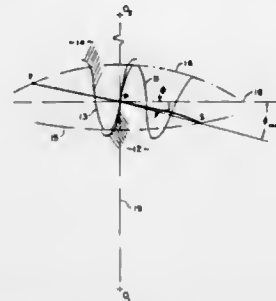
4,644,813
DRIVE MEANS FOR ROLLER DOOR
Martin H. Whitehouse, Northmead, and Richard E. Jones, Carlingford, both of Australia, assignors to Byrne & Davidson Industries Limited, Revesby, Australia
Filed Jul. 24, 1984, Ser. No. 633,996
Claims priority, application Australia, Jul. 29, 1983, PG0579
Int. Cl.⁴ F16H 55/00
U.S. Cl. 74-431 3 Claims



1. A rolling door device assembly of the type including a driven gear rotatable about an axis, a motor drive assembly for driving said driven gear, an end drum mounted coaxially to and driven by said driven gear, said end drum having a plurality of spokes interengageable with at least one fork provided on said driven gear to couple said end drum and said driven gear for conjoined rotation about said axis and permit limited floating motion therebetween, said spokes being parallel with said fork in their region of engagement thereby to promote smooth sliding contact therebetween, a driven gear retaining means comprising a radially projecting peripheral flange on said driven gear and an end plate fixed with respect to said axis, said end plate having a plurality of hooked flanges extending therefrom to engage said peripheral flange for locating said driven gear against axial displacement relative to said motor drive assembly, and wherein said driven gear and said end drum are adapted to be mounted for rotation about a fixed axle defining said axis, a bearing sleeve, said driven gear being

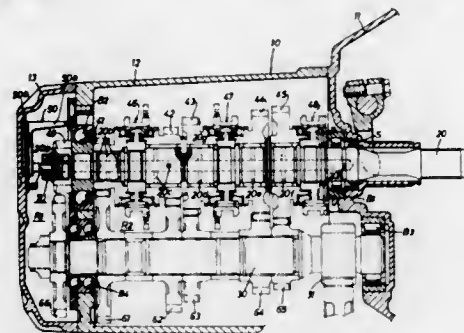
rotatably mounted to said bearing sleeve, said end plate being fixedly secured to said sleeve.

4,644,814
WIDE-ANGLE GEARING
William S. Rouverol, P.O. Box 9122, Berkeley, Calif. 94709
Filed Jul. 22, 1985, Ser. No. 757,350
Int. Cl.⁴ F16H 55/08
U.S. Cl. 74-462 23 Claims



1. A pair of mating gears having coplanar axes and teeth formed to be conjugate in the transverse direction along a path of contact that is non-straight, said path of contact intersecting the interference point locus circle of one of said pair at two points and terminating outside of said circle, the sum of the addendum coefficients of the teeth of said pair being greater than 2.0, the number of teeth on one of said pair being smaller than 30, the difference between the maximum and minimum transverse pressure angles at points on said path of contact being smaller than 20°.

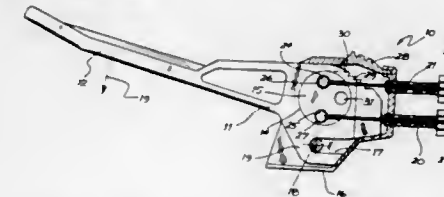
4,644,815
LUBRICATION DEVICE IN TRANSMISSIONS
Ken Kawano, Nagoya; Takuo Sibata, Okazaki, and Kouiti Kouketu, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed May 9, 1983, Ser. No. 492,562
Claims priority, application Japan, May 21, 1982, 57-75181
Int. Cl.⁴ F16H 57/04; F01M 9/10
U.S. Cl. 74-467 4 Claims



1. A transmission lubrication device comprising: a casing assembly in which an amount of lubricating oil is stored, a hollow shaft rotatably mounted in said casing assembly and having a central axial blind bore including an open end and a closed end, said open end being exposed to an interior of said casing assembly and a plurality of axially spaced radial oil ports in open communication with said axial blind bore, and a plurality of axially spaced change-speed gears rotatably mounted by means of a plurality of axially spaced bearings on said shaft, said oil ports being arranged to supply therethrough the lubricating oil to said bearings from said axial blind bore; an oil collector mounted in said casing assembly and located above the open end of said axial blind bore to receive lubricating oil picked in said casing assembly;

an oil feed pipe extending from said oil collector and having an outlet located within the open end portion of said axial blind bore to supply the lubricating oil from said oil collector into said axial blind bore; and impeller means arranged within the open end portion of said axial blind bore and surrounding the outlet of said feed pipe with an annular clearance, said impeller means cooperating with the outer periphery of said feed pipe for impelling the flow of lubricating oil in an axial direction of said impeller means from the said feed pipe toward the closed end of said axial blind bore during rotation of said hollow shaft, said impeller means being in the form of a pump impeller assembly, said pump impeller assembly comprising a sleeve member integrally formed therein with a plurality of equiangularly spaced blades in surrounding relationship with an outer portion of said feed pipe, an annular clearance being defined between said blades and said feed pipe, said impeller means being coupled in place within the open end portion of said axial blind bore.

4,644,816
BRAKE ACTUATOR
Paul A. Cockburn, Paddington, Australia, assignor to Acrow Pty. Limited, Guildford, Australia
Filed Feb. 8, 1982, Ser. No. 346,836
Claims priority, application Australia, Feb. 20, 1981, PE7679
Int. Cl.⁴ F16C 1/10
U.S. Cl. 74-501 R 3 Claims

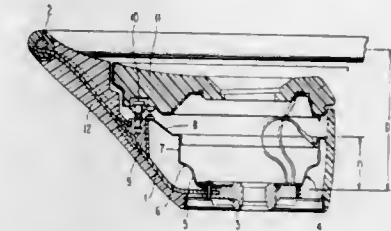


1. A brake actuator for a vehicle having a front and rear wheel and a brake assembly operatively associated with each wheel, and a brake cable extending from each assembly and coupled thereto so as to cause actuation thereof to brake the wheels, said actuator comprising a base to be fixed to the vehicle at a location enabling manipulation of the actuator by a rider of the vehicle, a manually operable lever pivotally mounted on the base so as to pivot about a predetermined axis, a braking force division member directly pivotally mounted on said lever so as to move therewith about said predetermined axis while pivoting about a second axis spaced from said predetermined axis but generally parallel thereto, and cable end retaining means on said member to operatively retain an end of each of said cables, wherein said retaining means are unequally spaced from said second axis so as to be on opposite sides thereof, said lever includes a handle portion and a head portion, said head portion being formed with a cylindrical opening co-axial with said second axis, and said member is slidably received within said opening.

4,644,817
STEERING WHEEL FOR A MOTOR VEHICLE
Wilhelm Albrecht, Vaibingen; Dieter Würz, Ditzingen; Karl Peltzmeier, Neuhausen; Heinz Waldschutz, Ostfildern; Walter Rückert, Esslingen; Klaus Kuhn, and Helmut Patzelt, both of Fellbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 184,911, Sep. 8, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,975
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935936
Int. Cl.⁴ B62D 1/04; G05G 1/10
U.S. Cl. 74-552 13 Claims

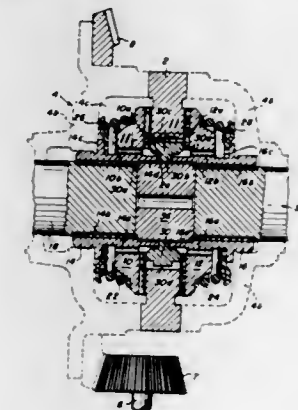
1. A steering wheel for motor vehicles, the steering wheel including a steering wheel rim, a hub means disposed at a position below a plane extending through the steering wheel

rim, a plurality of spokes connecting the steering wheel rim to the hub means, and comprising a deformation means for absorbing energy of an impact upon the steering wheel, the deformation means includes a deformation member having a height which is less than a distance between the hub means and the steering wheel rim, means are provided for connecting a lower end of the deformation member to the hub means,



bracket means mounted at one end thereof only to said spokes, said bracket means rigidly connected at a second end thereof via connecting means to an upper area only of the deformation member, each spoke comprising an upper means, restrained against deformation, for connecting to the steering wheel rim and lower means deforming more readily than the upper means of the spoke for connecting the spoke to the hub means.

4,644,818
DIFFERENTIAL APPARATUS WITH SIDE-GEAR-CENTERED CENTER CAM
Alvin A. Choma, Grosse Pointe Farms, and Timothy R. Edwards, Warren, both of Mich., assignors to Tractech, Inc., Warren, Mich.
Filed Oct. 29, 1984, Ser. No. 665,969
Int. Cl.⁴ F16H 35/04
U.S. Cl. 74-650 5 Claims



1. In a differential mechanism for driving a pair of colinearly arranged output shafts (18,20) from an input shaft (6), including (a) a housing (4) containing a chamber defining opposed end walls containing aligned openings for receiving said output shafts, respectively;

- (b) an annular driver member (2) arranged in said chamber in concentrically spaced relation about the longitudinal axis of the output shafts;
- (c) clutch means normally effecting a driving connection between said driver member and said output shafts, respectively, said clutch means including a pair of annular side gears (14,16) mounted on the adjacent ends of said output shafts, respectively, a pair of driven clutch members (10,12) mounted for axial displacement on said side gears on opposite sides of said driver member, respectively, said driven clutch members having clutch teeth (10a, 10b) operable to engage corresponding driving teeth at opposite ends of said driver member, respectively, and spring means (22,24) biasing said driven clutch members inwardly in the clutch-engaging direction toward said driver member;
- (d) center cam means operable when one of said output shafts overruns the other for disengaging from said driver member the driven clutch member associated with the overrunning shaft, said center cam means comprising:
- (1) an annular center cam member (30) concentrically mounted within said driver member and between said clutch members, said center cam member including at opposite ends cam teeth (30a) for engaging portions of the clutch teeth of the adjacent clutch members, respectively; and
 - (2) means (2a, 32) connecting said center cam member for limited angular displacement between clutch-engaging and clutch disengaging positions relative to said driver member, the cam teeth on said center cam member being operable to cooperate with the associated clutch teeth to cam out to the disengaged condition the clutch member associated with the overrunning shaft;
- the improvement which comprises
- (e) means for positioning said center cam member at a central position relative to said driver member, including
- (1) an annular integral centering flange (30b) centrally arranged on the inner periphery of said center cam member and extending radially inwardly between said side gears;
 - (2) the adjacent ends of said side gears being in abutting engagement with the end faces of said centering flange, respectively, said side gears including external annular support shoulders (14c,16c) the remote surfaces of which abut the adjacent housing end wall surfaces, respectively, thereby to accurately center said center cam member relative to said driving member;
 - (3) said limited angular displacement connecting means including
- (a) an axially-extending internal rib (2a) on said driver member that extends radially inwardly from the internal periphery of said driving member;
 - (b) said cam member including on its outer periphery an oversized axially-extending slot (32) receiving said rib, thereby to limit the angular displacement of said cam member relative to said driving member, said cam means being operable solely to maintain the clutch member associated with the overrunning shaft in the disengaged indexed condition as long as that shaft is in the overrunning condition.

4,644,819

HIGH-LOW SPEED DRIVE SYSTEM FOR MULTIPLE SPINDLE MACHINES

Martin J. Zugel, Euclid, Ohio, assignor to Leggett & Platt Incorporated, Cleveland, Ohio

Filed Sep. 18, 1985, Ser. No. 777,206

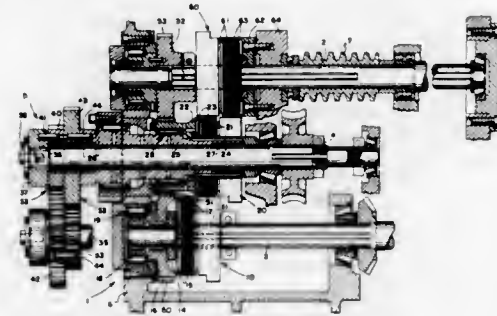
Int. Cl.⁴ F16H 37/06

U.S. Cl. 74—665 B

19 Claims

1. A high-low speed drive system for a multiple spindle machine, said drive system comprising a main housing, a main drive shaft and high and low speed shafts all mounted for rotation within said main housing, and high and low speed shaft fluid operated disc clutch means associated with the

respective high and low speed shafts for selectively coupling said main drive shaft to one or the other of said high and low speed shafts for rotation thereby, said low speed shaft having an idler gear sleeve rotatably journaled thereon, said idler gear sleeve extending coaxially along said low speed shaft both interiorly and exteriorly of said main housing, feed change gear means exteriorly of said main housing for drivingly connecting said idler gear sleeve to said low speed shaft, each of said high and low speed shaft clutch means including clutch discs respectively driven by said high speed shaft and said idler gear sleeve, and clutch cages surrounding the respective clutch discs, said clutch cages being respectively mounted for rotation on said high speed shaft and said idler gear sleeve, said



clutch cages having cage discs extending between the respective clutch discs, whereby when said clutch means are engaged, said clutch cages are drivingly connected to the respective high speed shaft and idler gear sleeve, and when said clutch means are disengaged, said clutch cages are free to rotate relative to the respective high speed shaft and idler gear sleeve, said clutch cages having gear teeth thereon in meshing engagement with each other, and said main drive shaft having a gear thereon in meshing engagement with the gear teeth on one of said clutch cages, where upon disengagement of one of said clutch means and engagement of the other of said clutch means, the engaged clutch means will drivingly connect said main drive shaft to the associated high or low speed shaft.

4,644,820

GEARED-NEUTRAL CONTINUOUSLY VARIABLE TRANSMISSION

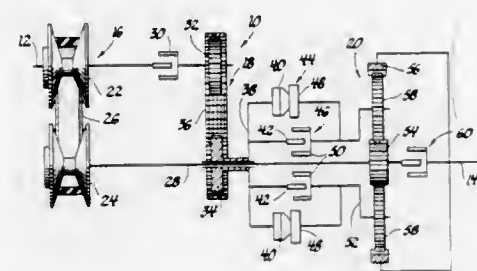
James P. Macey, Birmingham, and Hamid Vahabzadeh, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1986, Ser. No. 825,153

Int. Cl.⁴ F16H 37/00

U.S. Cl. 74—689

3 Claims



1. A continuously variable transmission comprising: input drive means; output drive means, a variable ratio friction belt drive means drivingly connected to said input drive means and including a driven shaft; fixed ratio drive means having an input shaft and an output shaft; selectively engageable first clutch means for connecting said input drive means to said input shaft; planetary gear means having a sun gear connected

to said driven shaft, a ring gear drivingly connected with said output drive means and carrier and pinion gear means drivingly connected between said sun gear and said ring gear; second clutch means being selectively engageable for connecting said sun gear to said output drive means; third clutch means being selectively engageable for connecting said output shaft to said carrier and pinion gear means; and oneway clutch means disposed in parallel drive relation with said third clutch means for transmitting torque to said carrier and pinion gear means when said third clutch means is disengaged and said output shaft is attempting to rotate faster than said carrier and pinion gear means.

4,644,821

CONTINUOUSLY VARIABLE VEHICULAR TRANSMISSION FOR REDUCING TRANSMISSION TORQUE APPLIED TO BELT-TYPE CONTINUOUSLY VARIABLE TRANSMISSION MECHANISM

Masaharu Sumiyoshi, and Fumio Matsunari, both of Aichi, Japan, assignors to Kubushiki Kaisha Toyota Chuo Kenkyusho, Japan

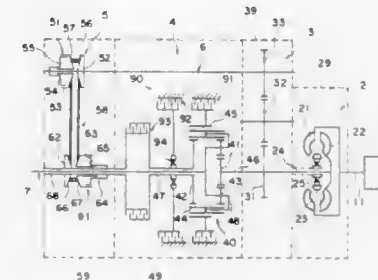
Filed Nov. 27, 1984, Ser. No. 675,363

Claims priority, application Japan, Nov. 28, 1983, 58-223599

Int. Cl.⁴ F16H 11/04, 37/00

U.S. Cl. 74—689

13 Claims



1. A continuously variable transmission for a vehicle, comprising:

- a torque converter driven by an engine;
 - an input shaft connected to an output of said torque converter;
 - a transmission output shaft;
 - a transmission mechanism of variable ratio including a planetary gear mechanism and a controller for controlling rotational states of elements of said planetary gear mechanism, said transmission mechanism having at least reverse and forward low speed ranges of large reduction ratios and a forward high speed range of small reduction ratio, said transmission mechanism of variable ratio being in torque transmitting engagement with said input shaft and said transmission output shaft, said input shaft constituting a first input to said transmission mechanism of variable ratio;
 - a belt-type continuously variable transmission mechanism including an input pulley in torque transmitting engagement with said input shaft and an output pulley provided on a sleeve, each pulley having a stationary flange and a movable flange axially movable with respect to said stationary flange, and torque transmitting means of an endless belt type running on said two pulleys, said output pulley being coupled to said transmission output shaft via said planetary gear mechanism in said forward high speed range; and
 - clutch means for providing releasable engagement between said sleeve of the output pulley of said belt-type continuously variable transmission mechanism and a second input to said transmission mechanism of variable ratio;
- wherein when said planetary gear mechanism of said transmission mechanism of variable ratio is in said forward high speed range of small reduction ratio, said clutch means is applied to enable said transmission mechanism of variable

4,644,822

TRANSFER CASE FOR VEHICLE DRIVETRAINS

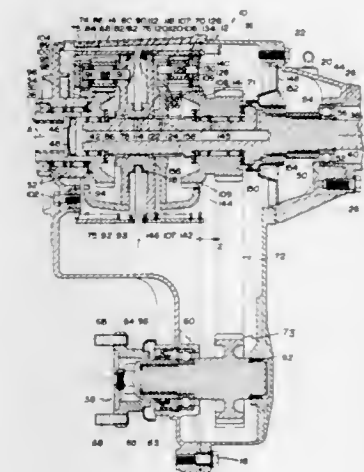
Robert B. Batchelor, Birmingham, Mich., assignor to American Motors Corporation, Southfield, Mich.

Filed Feb. 11, 1985, Ser. No. 700,175

Int. Cl.⁴ F16H 37/08

U.S. Cl. 74—695

9 Claims



1. In a vehicle transfer case including an input adapted to be rotatively driven about a central axis by an engine and also including first and second outputs that are spaced from the input and respectively rotatively drive first and second pairs of wheels, the improvement comprising:

- a first planetary gear set that is rotatively driven by the input and located between the input and both outputs;
- a second planetary gear set that is rotatively driven by the first planetary gear set and located adjacent thereto between the input and both outputs;
- said first planetary gear set having an operating position where the planetary operation thereof about the central axis by driving rotation of the input provides driving of the second planetary gear set with speed reduction, the first planetary gear set also having a nonoperating position where driving of the second planetary gear set by the input is provided without any speed reduction resulting from planetary operation of the first planetary gear set;
- said second planetary gear set including a pair of components embodied by first and second gears supported for rotation about the central axis, said second planetary gear set also including another component embodied by a planet carrier rotatable about the central axis, two of said components being respectively connected to the first and second outputs and the other component being rotatively driven by the first planetary gear set, said planet carrier having first and second sets of planet gears supported thereby for rotation about associated planet axes that extend parallel to the central axis, said first and second sets of planet gears being respectively meshed with the first and second gears and also being meshed with each other to connect the first and second outputs, the second plane-

tary gear set having an operating position where planetary operation thereof about the central axis provides a differential action between the first and second outputs, the second planetary gear set also having a locked position where the planetary operation thereof is locked out to connect both outputs without any differential action;

a central shaft that extends along the central axis through both the first and second planetary gear sets, said central shaft having one end that is located adjacent the input of the transfer case and another end that constitutes the first output of the transfer case;

an output member rotatably on the central shaft between the ends thereof and being connected to the second output of the transfer case; and

a selector for selectively positioning: (a) the first planetary gear set in its operating position and the second planetary gear set in its locked position to provide low speed driving without any differential action between the first and second outputs, or (b) the first planetary gear set in its nonoperating position and the second planetary gear set in its operating position to provide high speed driving with differential action between the first and second outputs.

4,644,823

DIFFERENTIAL GEAR

Robert Mueller, Weissach, Fed. Rep. of Germany, assignor to Dr. Ing. H.C.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

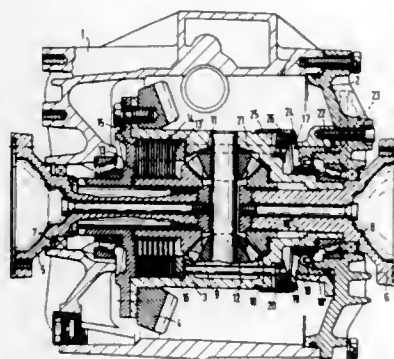
Filed Mar. 31, 1983, Ser. No. 480,817

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212495

Int. Cl.⁴ F16H 1/44

U.S. Cl. 74—710.5

23 Claims



1. A differential gear for motor vehicles which is operable to be blocked by compression of a lamellae package means arranged thereat, characterized in that an engaging force is applied on the lamellae package means by an engaging clutch means which includes a displaceable engaging bearing means, an engaging spring means and pressure elements, and having a differential housing means, bevel gears in meshing engagement within said differential housing means, of which two bevel gears are secured on two axle output shafts, characterized in that the lamellae package means is arranged between the bevel gear of one axle output shaft and the differential housing means, the engaging clutch means being located within the area of the opposite bevel gear and being operable to act on the lamellae package means, the engaging clutch means including a hydraulic ring, the engaging bearing means, a cup spring as spring means and a pressure member, and several pins longitudinally guided in the differential housing means operatively connecting the engaging clutch means to the lamellae package.

4,644,824

EPICYCLIC GEAR SPEED CHANGE MECHANISM

Yasuo Shimizu, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

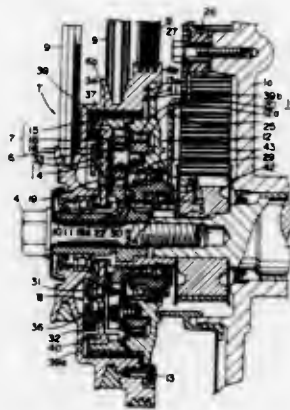
Filed Mar. 19, 1985, Ser. No. 713,801

Claims priority, application Japan, Mar. 24, 1984, 59-56460

Int. Cl.⁴ F16H 3/44, 57/00

U.S. Cl. 74—781 R

7 Claims



1. In a speed change pulley drive mechanism employing an epicyclic gear train with a ring gear, multiple planet gears and a sun gear, input and output members, and a clutch operable to either directly connect the input and output rotary members or indirectly connect the input and output members through the epicyclic gear train, the improvement comprising, means supporting the sun gear for preventing rotational movement while permitting only limited radial movement and for relatively uniformly engaging said multiple planet gears.

4,644,825

INDEXING AND POSITIONING DEVICE

Yoshio Yamazaki, Hamamatsu, Japan, assignor to Kabushiki Kaisha Yamazaki, Shizuoka, Japan

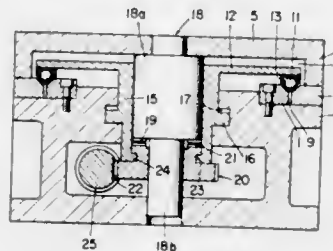
Filed Dec. 4, 1984, Ser. No. 678,014

Claims priority, application Japan, Apr. 16, 1984, 59-75166

Int. Cl.⁴ B23B 29/32

U.S. Cl. 74—813 R

6 Claims



1. An indexing and positioning device comprising: an inner ring; an outer ring disposed coaxially and closely around an outer side of the inner ring with an annular boundary therebetween forming a gap, said inner and outer rings having respective first surfaces disposed in the same plane, one of the inner and outer rings being fixed and the other ring being adapted to revolve relative thereto about the common axis thereof; a plurality of positioning recesses provided as depressions in said first surfaces at equal indexing intervals along, and straddling said boundary; each of said positioning recesses being in the shape of an inverted pyramid with an equilateral parallelepiped base constituting an opening edge of the recess, which is formed symmetrically on inner and outer sides of said boundary as symmetrically opposed inner and outer parts of the recess formed respectively in an outer edge rim of the inner ring and in an inner edge rim of the outer ring when said inner

and outer parts are brought into mutually coincident register in an indexing position; a plurality of positioning members one of which is floatably accommodated within each of the positioning recesses; retainer means confining and guiding each of the positioning members; and a clamp ring operable to press the positioning members into the respective positioning recesses to thereby cause accurate and positive centering and positioning of indexing positions of the inner and outer rings relative to each other.

4,644,826

IDLING CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION PROVIDING SMOOTH STARTING OFF ACTION

Seitoku Kubo; Yutaka Taga, and Shinya Nakamura, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 26, 1985, Ser. No. 769,329

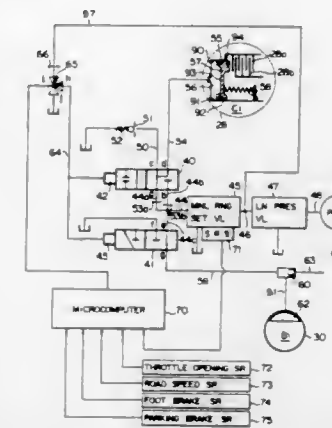
Claims priority, application Japan, Aug. 24, 1984, 59-176302;

Apr. 11, 1985, 60-77218

Int. Cl.⁴ B60K 41/18, 41/16

U.S. Cl. 74—866

3 Claims



1. An idling control system for an automatic transmission system for a vehicle equipped with an engine and a braking system, said automatic transmission system comprising a gear transmission mechanism which comprises: a power output shaft, a forward clutch which is engaged when said gear transmission mechanism is engaged to a forward speed stage, a one way clutch which in cooperation with said forward clutch provides a first speed stage by means of rotation prevention, and a brake which, when engaged, in cooperation with said one way clutch prevents said power output shaft of said gear transmission mechanism from rotating in the direction to allow reverse motion of said vehicle, comprising:

a first means for engaging said forward clutch selectively either to a maximum amount or to an intermediate amount substantially lower than said maximum amount;

a second means for selectively engaging said brake; and

a third means for:

when it comes to be that said automatic transmission is being operated in a forward driving mode, said vehicle is substantially stationary, said engine is in substantially idling condition, and said braking system is applied:

starting the actuation of said first means to engage said forward clutch to said intermediate amount and starting the actuation of said second means to engage said brake; and thereafter,

for:

when said automatic transmission continues to be operated in a forward driving mode, said vehicle continues to be substantially stationary, and said engine continues to be in substantially idling condition, if said application of said braking system is terminated:

starting the actuation of said first means to engage said

forward clutch to said maximum amount and continuing the actuation of said second means to engage said brake;

and for:

if either said automatic transmission ceases to be operated in a forward driving mode, or said vehicle ceases to be substantially stationary, or said engine ceases to be in substantially idling condition:

continuing the actuation of said first means to engage said forward clutch to said maximum amount and starting the actuation of said second means to disengage said brake.

4,644,827

HYDRAULIC CONTROL SYSTEM FOR AN INFINITELY VARIABLE BELT-DRIVE TRANSMISSION

Toshio Takano, Hamuramachi, and Ryuzo Sakakiyama, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

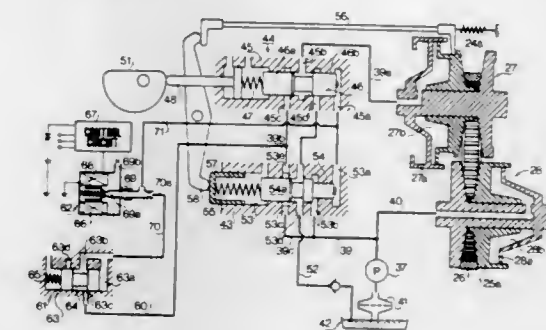
Filed Mar. 22, 1984, Ser. No. 592,155

Claims priority, application Japan, Mar. 23, 1983, 58-48400

Int. Cl.⁴ B60K 41/12, 41/18

U.S. Cl. 74—866

3 Claims



1. In a system for controlling the transmission ratio of an infinitely variable transmission for transmitting the power of an internal combustion engine comprising a primary pulley having a hydraulically shiftable disc and a hydraulic cylinder for shifting the disc, a secondary pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the latter disc, a belt engaged with both pulleys, and a pressure oil circuit having a pump for supplying pressurized oil, a transmission ratio control valve having a spool responsive to engine speed for controlling the pressurized oil so as to move the disc of the primary pulley to change the transmission ratio, the improvement comprising:

a hydraulic circuit for applying control oil to one end of the spool of the transmission ratio control valve so as to axially move the spool for the controlling of the pressurized oil;

an electronic control circuit responsive to ignition pulses of said engine for producing an output signal dependent on the engine speed;

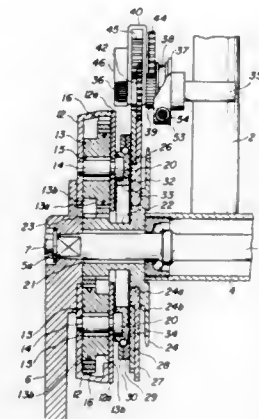
a modulator valve provided in the hydraulic circuit for producing a constant pressure of the control oil;

an electromagnetic valve provided in the hydraulic circuit and having a coil responsive to said output signal for controlling the constant pressure of the control oil applied to the spool of the transmission ratio control valve, thereby to control the transmission ratio.

4,644,828
STEPLESS SPEED CHANGE DEVICE FOR BICYCLE
 Kunitoshi Kozakae, Ageo, Japan, assignor to Bridgestone Cycle Co., Ltd., Tokyo, Japan
 Filed Apr. 1, 1985, Ser. No. 718,097
 Claims priority, application Japan, Apr. 10, 1984, 59-69906; May 15, 1984, 59-95750

Int. Cl. F16H 3/44
 U.S. Cl. 74-750 B

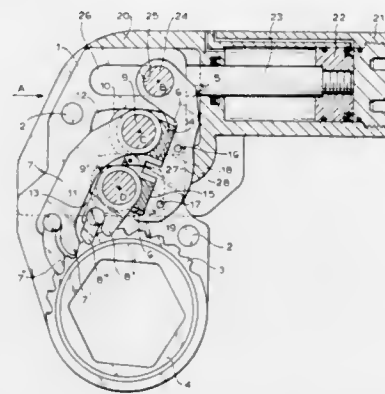
8 Claims



1. A stepless speed change device for a bicycle comprising: a carrier fixed to a crankshaft for the bicycle; a plurality of planetary members rotatably journaled in said carrier into parallel planes perpendicular to said crankshaft; planetary gears respectively fitted on said planetary members through one-way clutches so as to rotate in one direction; rocking pins eccentric to and extending from said planetary members; an eccentric shifter having a circular track connected thereto for guiding said rocking pins and enabling its eccentricity relative to said crankshaft to change; a sun gear in mesh with said planetary gears and integrally connected to a crank gear as an output portion of the device; an eccentric center disc formed on its outer periphery with a gear concentric to said crankshaft and supporting said eccentric shifter in a manner enabling said eccentricity relative to said crankshaft to change; a support shaft fixed to a frame of said bicycle and in parallel with said crankshaft; a bracket whose end is fitted on said support shaft; a wire reel integrally formed with a pinion being fitted on said support shaft; a gear casing whose one end is fitted on said support shaft; a stationary side gear arranged in said gear casing having a one-way clutch on its inner circumferential surface and in mesh with said gear of said eccentric center disc; a sector gear fixed to a shaft passing through the other end of said gear casing and in mesh with said pinion; an intermediate gear rotatably fitted on said shaft having said sector gear fixed thereto in said gear casing and in mesh with said stationary side gear; a rocking arm having a pivotal end fixed to said shaft extending out of said gear casing; a pin extending from a free end of said rocking arm; a moving side gear rotatably fitted on said pin and in mesh with said intermediate gear and a gear formed on a circumferential surface of said eccentric shifter; a spring for urging said shaft having said gear sector toward said moving side gear and said eccentric shifter; and an operating wire extending around said wire reel for driving it.

4,644,829
FLUID-OPERATED WRENCH
 John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458
 Filed Aug. 21, 1985, Ser. No. 768,036
 Int. Cl. B25B 13/46

9 Claims

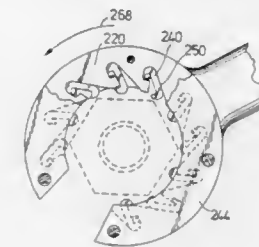


1. A fluid-operated wrench, comprising support means, a ratchet gear mounted on said support means turnably about its axis and having a plurality of teeth; a pair of driving pawls respectively turnable about their axes and having free ends engageable with said teeth of said ratchet gear; driving means having a driving element reciprocable along a forward and a rearward stroke; a driving arm pivotally connected with said driving element in a connecting axle and cooperating with said driving pawls so that during a forward stroke of said driving element said driving arm displaces and turns one of the driving pawls in a given direction along an active stroke so as to drive said ratchet through a given angle and also displaces and turns the other of said driving pawls along a return stroke to move in a direction opposite to said given direction over at least one tooth of the ratchet gear, while during the rearward stroke of said driving element said driving arm displaces and turns said other driving pawl along its return stroke, said driving arm being pivoted about its pivot axis during reciprocation of said driving element; and guiding means for guiding said driving arm so that it is pivoted about said pivot axis, said guiding means for guiding said driving arm being located outside of and spaced from said pivot axis of said driving arm so that guiding of said driving arm during its pivoting is performed only by said guiding means located outside and spaced from said pivot axis, and no guiding means, for guiding said driving arm during its pivoting, is located in the region of said pivot axis.

4,644,830
RATCHET WRENCH
 Roy E. Bailey, 44 Water St., Clifton, Tenn. 38425, and Ben J. Bailey, 901 Michigan St., Brighton, Mich. 48116
 Continuation-in-part of Ser. No. 424,093, Sep. 27, 1982, Pat. No. 4,488,459. This application Nov. 2, 1984, Ser. No. 667,844
 Int. Cl. B25B 13/46

U.S. Cl. 81-58.2 16 Claims
 1. In a ratchet wrench, a head comprising a substantially cylindrical body having a central opening extending there-through, an inner periphery at least partially surrounding said central opening, a plurality of recesses extending radially outward from the inner periphery of the central opening, a plurality of nut engageable pawls acting as jaw members with each being retained in one of the recesses and extending into the central opening and spring means in each recess in engagement with each pawl to retain each pawl in operative engagement with the head, the improvement characterized by at least one of said recesses being formed with a thrust wall engageable by one of

said pawls retained therein, said pawl comprising two convex curved surfaces joined by a central portion there-between, the central portion being relieved on one side to form a channel having a bottom, the bottom being adapted to engage the thrust wall, said one of said recesses including an undercut forming a shoulder adjacent the thrust wall and said one of said recesses including a concave surface at a distance greater than the distance of said shoulder from the inner periphery and substantially complementary to and adapted to engage one of the convex pawl curved surfaces, said con-



cave and said one of the convex curved surfaces extending into the undercut, the other of said convex pawl curved surfaces extending into the central opening to form a nut engageable portion of the pawl, wherein engagement by a nut on the opposite side of the other convex curved pawl surface from the thrust wall causes tight driving engagement of the nut, and wherein engagement by a nut on the same side of the other convex pawl curved surface as the thrust wall causes rotation of the pawl to permit the nut to ratchet by the pawl.

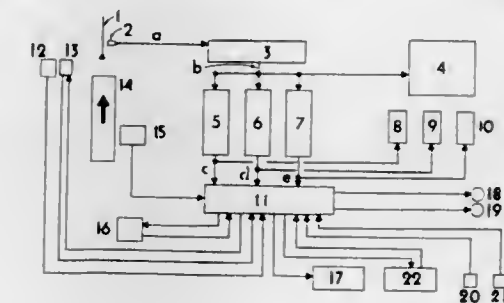
4,644,831
ADAPTOR SLEEVE
 Miriam Yang, No. 23, Lane 240, Li Jen Road, Ta Li Hsiang, Taichung Hsien, Taiwan
 Filed Jul. 5, 1985, Ser. No. 751,907
 Int. Cl. B25B 13/02, 13/58
 U.S. Cl. 81-125 3 Claims



1. An improved adaptor sleeve which comprises: a hollow sleeve member having a first and a second end, having a first bore opening at said first end for receiving a coupling end of a handle, and having at said second end a second bore opening which has an inner wall of a hexagonal cross section for receiving the head of a tool or screw driver; and a U-shaped spring clamp plate, entirely received in said second bore opening of said hollow sleeve, for clamping the head of a tool or a screw driver, the U being formed by a base portion and two arm portions; said base portion being disposed between said first and second bore open-

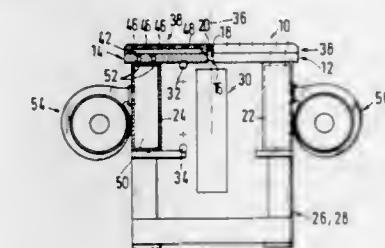
ings such that said base portion is positioned between said head and said first bore opening when said head is received in said second bore opening; said second bore opening having two opposite inner surfaces, and said base portion of said U-shaped spring clamp being slightly longer than the distance between said opposite inner surfaces of said second bore opening; said arm portions of said U-shaped spring clamp extending in the direction from said first bore opening to said second bore opening and having middle portions which are slightly curved inwardly toward the center of the U, each of said arm portions having only a single curve.

4,644,832
METHOD FOR MONITORING SAW BLADE STABILITY AND CONTROLLING WORK FEED RATE ON CIRCULAR SAW AND BANDSAW MACHINES
 H. Reid Smith, P.O. Box 2200, Poulsbo, Wash. 98370
 Filed Mar. 21, 1985, Ser. No. 714,466
 Int. Cl. B26D 5/00
 U.S. Cl. 83-72 4 Claims



1. A method of controlling vibration in saw blades comprising: detecting lateral movement of saw blade; using signal conditioning means to provide an electrical signal proportional to said saw blade movement; calculating referenced mean displacement, peak to peak, and displacement RMS signals; comparing the conditioned signals to assigned levels; and controlling the speed of the saw blade responsive to said comparison by predetermined program logic.

4,644,833
WORKPIECE SUPPORTING TABLE FOR PANEL SAWS
 Erwin Jenkner, Lindenstrasse 13, Gechingen, Fed. Rep. of Germany D-7261
 Filed Oct. 18, 1985, Ser. No. 789,106
 Claims priority, application Fed. Rep. of Germany, Oct. 31, 1984, 3439739
 Int. Cl. B26D 7/01
 U.S. Cl. 83-99 8 Claims



1. Workpiece supporting table for panel saws, with two box-shaped hollow supports arranged horizontally in laterally spaced parallel relationship to each other and carrying at the

top one table plate each, arranged in a common horizontal plane and forming with their longitudinal edges located opposite each other a saw slit extending in the feed direction of a saw carriage guided beneath the table, with the profile interior of the hollow supports being connected to a blower and their table plate being penetrated by a plurality of bores running into the profile interior, characterized in that the table plates (12; 14) of the hollow supports (22; 24) comprise on their upper side groove-type recesses (40) arranged in spaced, parallel relationship to one another and extending perpendicularly to the saw slit (20), and in that only the ridges (38) located between the recesses (40) are each penetrated by at least one air outlet channel (46) which exits at their upper horizontal surface (48) and is connected to the corresponding profile interior (50).

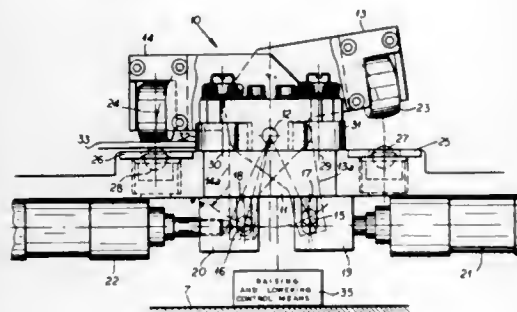
4,644,834
APPARATUS FOR POSITIONING OF SHEET METAL PLATES ARRANGED ON A METAL FEED TABLE OF A METAL SHEAR

Eduard Hänni, Zofingen, and Marcus Zweili, Basel, both of Switzerland, assignors to Hammerle AG, Zofingen, Switzerland

Filed Jan. 30, 1985, Ser. No. 696,318
Claims priority, application Austria, Jan. 30, 1984, 295/84
Int. Cl.⁴ B26D 7/02

U.S. Cl. 83—415

7 Claims



1. In an apparatus for positioning sheet metal plates arranged on a metal feed table of a metal shear, a feed lever extending parallel to knives of the metal shear transversely over the metal feed table and movable perpendicularly to a cutting plane, and with a lateral stop which extends along the metal feed table perpendicularly to the cutting plane and which is movable parallel to the cutting plane, individual guide members forming the lateral stop being spaced apart from one another, and arranged so as to be displaceable in slot-shaped grooves of the metal feed table by means of a common support and can be raised and lowered on said support, the improvement wherein each guide member is equipped with a guide body connected to said support and provided with at least one lateral stop in the form of a roller against which an edge to be guided of a sheet metal plate comes to rest, and a guide and clamping device for gripping the sheet metal plate located alongside of the roller.

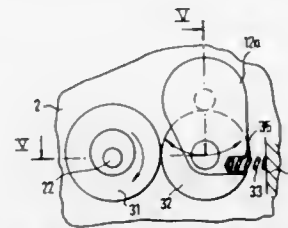
4,644,835
MOTOR-DRIVEN CIRCULAR SAW
Manfred Bleicher, Leinfelden, and Ulrich Böhne, Kohlberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 10, 1985, Ser. No. 753,677
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435454

Int. Cl.⁴ B23D 45/04; B27B 5/06
U.S. Cl. 83—471.2

4 Claims

1. A motor-driven circular saw, comprising a housing; a rotary saw blade shaft carrying a saw blade and being movably supported relative to said housing; and stroke drive means connected to said shaft, said means moving said shaft during operation of the circular saw perpendicularly to an axis of

elongation of said shaft back and forth between two end positions, said stroke drive means including an axle rigidly supported in said housing, a first gear eccentrically positioned on said axle, a first disc coaxially mounted to said first gear and rotatable therewith and having an outer diameter corresponding to a pitch diameter of said first gear, a second gear meshed



with said first gear and mounted on said saw blade shaft and connected to a motor shaft for driving said saw blade shaft, a second disc mounted on said saw blade shaft with said second gear and having an outer diameter corresponding to a pitch diameter of said second gear, and a spring which acts to hold said first disc and said second disc in abutting relationship with each other.

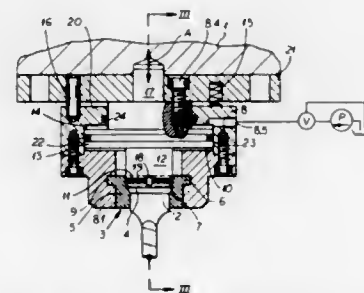
4,644,836
PUNCH PRESS WITH VERTICALLY RECIPROCATING PLUNGER

Joachim Wepner, Gevelsberg, and Kurt Wengenroth, Wuppertal, both of Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Jun. 27, 1985, Ser. No. 749,877
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1984, 3423970
Int. Cl.⁴ B21D 37/04; B30B 15/02

U.S. Cl. 83—698

17 Claims



1. In a punch press, the combination which comprises:
a reciprocating plunger;
a tool exchanger for selectively securing a die punch at said plunger, said tool exchanger including an exchange insert having guide elements and having a retainer for a die punch head;
a holding member resiliently and adjustably connected to said plunger by way of at least one reset spring and at least one guide rod, for operatively mounting said tool exchange insert, said holding member including guide elements which are complementary in shape to the guide elements of said exchange insert; and
a clamping device between said die punch and said plunger for positively fixing said die punch to said plunger at least against a surface adapted to serve as an abutment bearing, said clamping device including a piston having at a free end thereof said surface adapted to serve as an abutment bearing, said piston being formed with a shoulder, said clamping device including a cylinder chamber housing said piston at least in the region of the shoulder thereof,

and said cylinder chamber being at least in part formed by said holding member.

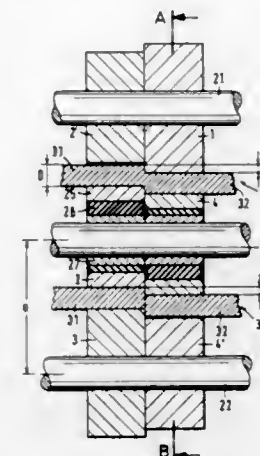
4,644,837
DEVICE FOR THE BURR-FREE CUTTING OF STRIP-SHAPED MATERIAL
Werner Krüs, Leverkusen, Fed. Rep. of Germany, assignor to Karl Jungel GmbH & Co. KG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1986, Ser. No. 841,510
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1985, 3510847

U.S. Cl. 83—864

Int. Cl.⁴ B23D 19/04

6 Claims



1. In a device for burr-free cutting of strip material, especially of metal, in two steps, having a first and a second pair of rotating cooperating circular shearing knives on parallel axis knife shafts, each pair of circular knives comprising a cutting knife and a counter-knife, said first pair of circular knives in a first parting step cutting the strip material in one direction and, said second pair of circular knives in a second parting step, severing the strip material in the opposite direction, the improvement wherein said counter-knives of the two pairs of circular knives are arranged on a common shaft resting against one another the cutting knives of the two pairs of circular knives are arranged on separate parallel shafts, and wherein the counter-knives each comprise an outer rigid cutting ring and an inner annular elastomeric hub part.

4,644,838
APPARATUS FOR HELICAL CUTTING OF POTATOES
Dennis J. Samson, Connell, and George R. Alcorn, Pasco, both of Wash., assignors to Rogers Walla-Walla, Inc., Pasco, Wash.

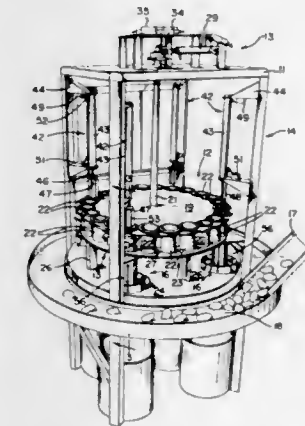
Continuation-in-part of Ser. No. 534,182, Sep. 20, 1983, abandoned. This application Sep. 18, 1984, Ser. No. 651,760
Int. Cl.⁴ B26D 3/11

U.S. Cl. 83—865

18 Claims

1. Apparatus for cutting articles into helical strips comprising:
at least one holder having a longitudinal passage therein, and a plurality of inwardly biased members extendable in said passage to align and hold an article therein against rotation while the article is being cut into helical strips and pivotally connected to said holder and extended through slots in said holder into said holder passage;
a rotary cutter mounted adjacent each said holder, including a blade assembly oriented to cut an article into a plurality of helical strips as the held article is pushed through said passage;
and an article feeder including a plunger associated with each said holder and axially moveable in said passage for

pushing an article through said passage into said blade assembly, said plunger having a periphery configured to



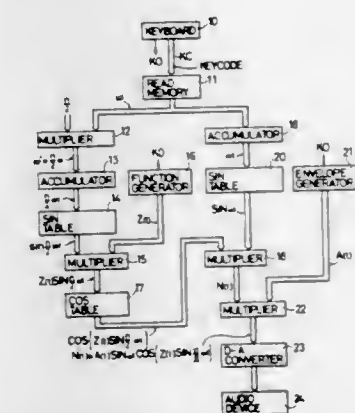
cooperate with the article aligning and holding members to enable said members to maintain positional control over an article during movement into said blade assembly.

4,644,839
METHOD OF SYNTHESIZING MUSICAL TONES
Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 759,936, Jul. 29, 1985, abandoned, which is a continuation of Ser. No. 656,442, Oct. 2, 1984, abandoned, which is a continuation of Ser. No. 600,595, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 544,063, Oct. 23, 1983, abandoned, which is a continuation of Ser. No. 410,841, Aug. 23, 1982, abandoned, which is a continuation of Ser. No. 300,193, Sep. 8, 1981, abandoned, which is a continuation of Ser. No. 152,306, May 22, 1980, abandoned, which is a continuation of Ser. No. 66,285, Aug. 13, 1979, abandoned, which is a continuation of Ser. No. 842,325, Oct. 14, 1977, abandoned. This application Apr. 15, 1986, Ser. No. 852,390

Claims priority, application Japan, Oct. 16, 1976, 51-123439
Int. Cl.⁴ G10H 1/043, 7/00

U.S. Cl. 84—1.01

47 Claims



1. A method of synthesizing a non frequency modulated musical tone signal comprising a plurality of frequency components utilizing the formula $N_x(t) = F(\omega t) \cos [Z \sin (\omega' t)]$, wherein ω and ω' represent angular frequencies having a preselected ratio, t represents time and Z represents a modulating index, comprising:
arranging the modulating index Z as a function of time $Z(t)$, and
producing said non frequency modulated musical tone signal

by modulating a basic signal represented by $F(\omega t)$ in only an amplitude sense, the modulating being by a modulated function signal represented by $\cos [Z(t) \sin (\omega' t)]$.

4,644,840

ELECTRONIC KEYBOARD MUSICAL INSTRUMENT AND A METHOD OF OPERATING THE SAME
Reinhard Franz, Emmelshausen; Wilfried Dittmar, Halsenbach, both of Fed. Rep. of Germany; Christian Scheidegger, Buchs, Switzerland, and Roland Fröhlich, Leiningen, Fed. Rep. of Germany, assignors to Franz Reinhard, Emmelshausen, Fed. Rep. of Germany

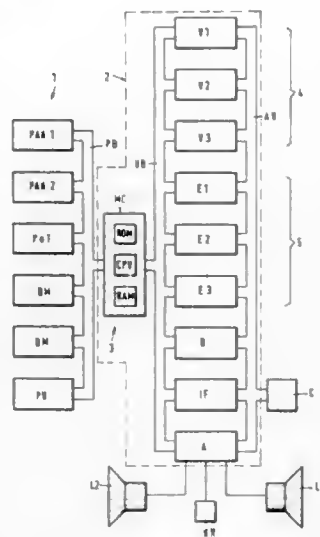
Filed May 21, 1984, Ser. No. 612,201

Claims priority, application Fed. Rep. of Germany, May 21, 1983, 3318667

Int. Cl.⁴ G10H 7/00

U.S. Cl. 84—1.01

11 Claims



7. An electronic keyboard musical instrument with input actuating elements such as tone selecting keys comprising main system computer means including a main system memory, a main system microprocessor and a main system bus, tone module subsystem computer means for generating tone signals and being coupled to communicate with the main system computer means by way of the latter's main system bus, said tone module subsystem computer means comprising a subsystem bus, a subsystem memory and a subsystem central processor unit; and bus switch means for alternately coupling the subsystem memory to the main system bus and the subsystem bus, the bus switch means being selected to enable bidirectional flow of data between the main system computer means and said tone module subsystem computer means, and the bus switch means and the subsystem memory being selected so as to be capable of operating at a speed which is twice the pulse frequency of the main system microprocessor.

4,644,841

ELECTRONIC MUSICAL INSTRUMENT
Yoichi Nagashima, and Eiji Nagashima, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Jul. 29, 1985, Ser. No. 760,316

Claims priority, application Japan, Jul. 31, 1984, 59-162048

Int. Cl.⁴ G10H 1/02, 1/057

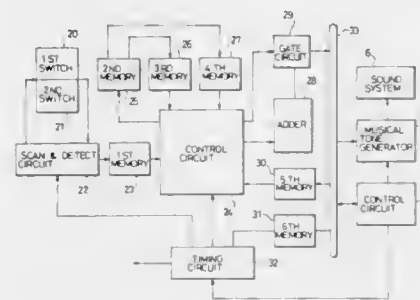
U.S. Cl. 84—1.1

7 Claims

1. An electronic musical instrument which has a keyboard

and produces a musical tone by striking a key of the keyboard, comprising:

- a operation control circuit and an adder both for performing chattering prevent operation processing and touch response detect operation processing of keyboard switches;
- a timing control circuit for controlling the switching between the chattering preventing operation and the touch response detecting operation and the scanning of the keyboard switches to detect their status;
- a musical tone generator which performs a musical tone producing operation asynchronously with the keyboard switch scanning operation and the chattering preventing and touch response detecting operations of the keyboard switches; and
- a transfer circuit for transferring touch response information to the musical tone generator; wherein the musical tone produced by striking the key of the keyboard has a touch response characteristic corresponding to the key striking force;
- a first switch which is provided for each key and changes its state in response to the striking of the key;
- a second switch which is provided for each key and changes its state with a time lag relative to the first switch;
- a timing circuit for generating a phase signal serving as a reference of a chattering eliminating operation and the touch response detecting operation, a scanning signal, an address signal and a control signal;
- a scan and detect circuit for scanning either one of the first



- and second switches by the scanning signal from the timing circuit to detect their status;
- a first memory which responds to the control signal from the timing circuit to temporarily store a switch detected signal from the scan and detect circuit;
- a control circuit which responds to the phase signal and the control signal from the timing circuit to perform a predetermined control operation;
- a second memory which responds to the control signal from the timing circuit to temporarily store the output signal of the first memory and a switch status signal having chattering eliminated by the control circuit;
- a third memory which responds to the control signal from the timing circuit to temporarily store the output signal of the second memory and to supply it as first switch information to the control circuit;
- a data bus which time-shares various data signals and various control signals of the entire system; a fifth memory which responds to the control signal from the timing circuit to temporarily store the signal on the data bus and to supply it to the control circuit;
- a sixth memory which responds to the control signal and the address signal from the timing circuit to temporarily store the signal on the data bus;
- an adder which performs an add-operation of the output signal of the control circuit to obtain touch response information or chattering prevent information;
- a gate circuit which responds to the control signal from the

- timing signal to provide the output signal of the adder and the output signal of the control circuit on the data bus;
- a musical tone generator which is supplied with a musical parameter by the signal on the data bus to generate the musical tone; and
- a control circuit which controls the musical tone generator and the timing circuit to reflect a touch response characteristic in a musical tone signal.

4,644,842

COMPOUND DRUM BEATER

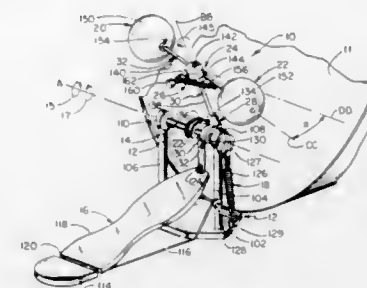
Alan L. Aluisi, 4359 Batavia, Denver, Colo. 80220

Filed Dec. 30, 1985, Ser. No. 814,507

Int. Cl.⁴ G01D 13/02

U.S. Cl. 84—422 R

20 Claims



1. A drum beater assembly for striking a base drum or the like comprising:
support base means for supporting various beater assembly components;
rotatable shaft means journaled to said support base for providing oscillatory rotational movement in a first rotational direction and a second rotational direction;
foot pedal means pivotally mounted on said support base and operably linked to said rotatable shaft means for rotating said rotatable shaft means in said first direction in response to downward pressure on said foot pedal means;
a first beater means operably associated with said rotatable shaft means for striking an adjacently positioned drum head a first strike in response to initial downward movement of said foot pedal means;

4,644,843

GAS ACTUATED GUN SYSTEM FOR LAUNCHING A PROJECTILE

William G. Soper, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Arlington, Va.

Filed Sep. 10, 1985, Ser. No. 774,516

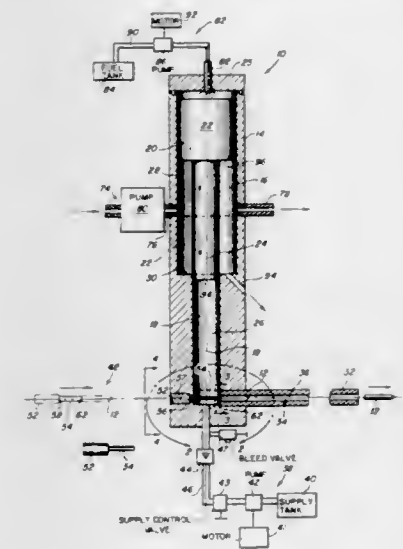
Int. Cl.⁴ F41F 1/04

U.S. Cl. 89—7

25 Claims

1. A gaseous propellant gun system for launching a projectile, said system comprising:
housing means having a chamber with enlarged and reduced chamber portions at opposite ends thereof,
double-acting piston means having an enlarged piston means in the enlarged chamber portion at one end of the housing means and a reduced piston means in the reduced chamber portion at the opposite end of the housing means,
barrel means connected to the housing means and having a bore therein in direct open communication with the reduced chamber portion;

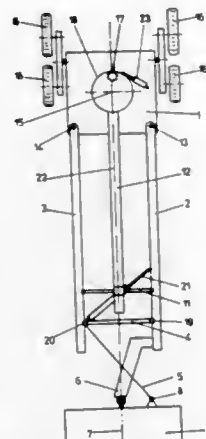
compressible and pressurized gaseous medium to the reduced chamber portion during system use;
projectile support and handling means, said housing means including means for receiving the projectile support and handling means and for directing the projectile support and handling means such that the projectile thereof is inserted through the reduced chamber portion and in the bore at the inner end of the barrel means, the support means of the projectile support and handling means having a reduced intermediate portion connected to the projectile but fracturable from the projectile when the double-acting piston means is advanced toward the opposite end of the housing means with the projectile in the barrel bore and the compressible gaseous medium in the reduced chamber portion during system use, the projectile having a pressure responsive surface portion immediately adjacent to the reduced intermediate portion but facing in a direction toward the inside of the reduced chamber portion and arranged at an angle generally transverse to the barrel bore axis;
forced air inlet and exhaust means connected to the housing means for admitting a first volume of pressurized air in the enlarged chamber portion between the enlarged piston means and the one end of the housing means, the first volume of air being compressed by the enlarged piston



means when the double-acting piston means advances toward the one end of the housing means, the forced air inlet and exhaust means for also introducing a second volume of pressurized air in the enlarged chamber portion between the enlarged and reduced piston means so as to biasingly urge the double-acting piston means in a direction towards the one end of the housing means and thereby assist in compressing the first volume of pressurized air, and
fuel injection means connected to the housing means for timely injecting a preselected amount of fuel into the compressed first volume of air so as to cause admixing of the fuel and air and then ignition of the fuel-air admixture into an explosive admixture for driving the double-acting piston means in the other direction toward the opposite end of the housing means so as to progressively compress the relatively lightweight gaseous medium in the reduced chamber portion, the double-acting piston means at the end of its advancement in the other direction causing the compressed gaseous medium to act upon the pressure responsive surface portion of the projectile so as to generate a force for separating the projectile from the reduced intermediate portion of the projectile support and han-

ding means thereby enabling launch of the projectile from the barrel means.

4,644,844
MOVABLE CANNON
Reinhard Zierler, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria
Filed May 18, 1983, Ser. No. 495,605
Claims priority, application Austria, May 21, 1982, 2023/82
Int. Cl.⁴ F41F 23/10
U.S. Cl. 89—40.08 5 Claims

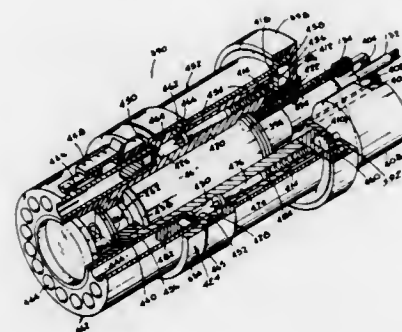


1. Cannon movable by means of a traction vehicle and comprising an upper mount pivoted to a lower mount for rotation about a vertical axis, the lower mount carrying running wheels, the mounts thereby forming a swivelling bolster, characterized in that at least two laterally spaced apart spars are hingedly connected at one end to the lower mount for pivotal movement about vertical axes and are interconnected by means of a supporting rod pivoted at its ends to the spars for pivotal movement about vertical axes to form a parallelogram joint having a vertical longitudinal center plane, in that a limber rod having a free end located approximately in the vertical longitudinal center plane of the parallelogram joint and carrying a trailer coupling is rigidly connected to one of said spars at the end remote from said lower mount, in that a holding device for a gun barrel is arranged on at least one of said spars and in that a control mechanism for being put in operating connection with the traction vehicle is provided for controlling the maneuverability of the lower mount about the pivot axis of the upper mount when the cannon is being towed along a path of short radius.

4,644,845
SURVEILLANCE AND WEAPON SYSTEM
Jacob W. Garehime, Jr., 1700 Griffith Ave., Las Vegas, Nev. 89104
Continuation of Ser. No. 940,652, Sep. 8, 1978, abandoned, which is a division of Ser. No. 490,053, Jul. 19, 1984, Pat. No. 4,112,818, which is a continuation of Ser. No. 254,541, May 18, 1972, abandoned. This application Feb. 26, 1980, Ser. No. 124,746
Int. Cl.⁴ F41G 1/40
U.S. Cl. 89—41.05 8 Claims

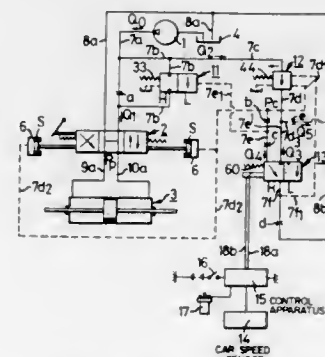
1. A surveillance and weapon system which comprises a tubular, generally annularly symmetrical multiple fire weapon having a generally unobstructed throat extending axially therethrough, and optical scope means disposed in said throat substantially coaxial with the weapon, said optical scope means constituting a forward optics portion of a substantially complete optical scope, said scope

including a rearward portion external of said weapon throat, and



said optical scope including tiltable scope means external of said weapon throat.

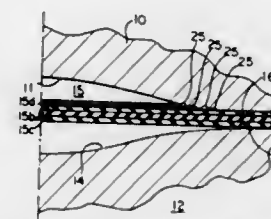
4,644,846
POWER STEERING SYSTEM
Hajime Kozuka, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 22, 1984, Ser. No. 593,247
Claims priority, application Japan, May 19, 1983, 58-86599
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.⁴ F15B 13/04, 9/10, 11/08; B62D 5/06
U.S. Cl. 91—31 1 Claim



1. A power steering system comprising: an input shaft coupled to a steering wheel; a torsion bar for transmitting rotation of said input shaft to an output shaft; and oil path switching valve fitted around the outer circumference of said input shaft and engaged with said output shaft so as to rotate integrally with said output shaft and in which oil paths are switched according to a rotational angle difference between said input shaft and said output shaft; a power cylinder operatively coupled to said output shaft; a high pressure oil path for supplying working oil delivered from a constant flow rate oil pump means to said power cylinder via said oil path switching valve; a low pressure oil path for returning the working oil from said power cylinder to an oil tank via said oil path switching valve; a cylinder in said output shaft; a reaction piston disposed within said cylinder and operatively engaged with said input shaft for apply a restraint force which restrains the rotational angle difference between the input shaft and the output shaft; a main orifice disposed in said high pressure oil path upstream of said oil path switching valve; a control oil path branched from said high pressure oil path on the upstream side of said main orifice and communicating with said reaction piston; a pressure control valve means interposed in said control oil path for controlling the oil pressure to be equal to or lower than a predetermined highest pressure; a bypass connected between

the upstream side and the downstream side of said main orifice for bypassing said main orifice; and oil pressure increase means provided in said bypass for increasing the flow resistance in said bypass to increase the pressure in the said control oil path only when the oil pressure on the downstream side of said pressure control valve means is equal to or lower than a predetermined lowest value.

4,644,847
REDUCTION OF FAILURE INCIDENCE OF METALLIC DIAPHRAGMS FOR COMPRESSORS
Robert C. Wolf, Langhorne, Pa., assignor to Fluitron, Inc., Ivyland, Pa.
Continuation-in-part of Ser. No. 495,101, May 16, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,411
Int. Cl.⁴ F15B 21/04
U.S. Cl. 92—78 5 Claims



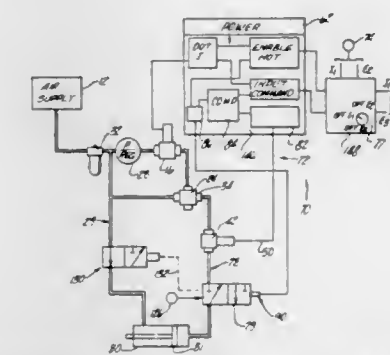
1. In a compressor which has upper and lower head portions with an interposed metallic diaphragm, the interior configuration of said upper head providing a gas cavity, said upper head portion having a suction hole and a discharge hole, the improvement which comprises

apparatus for increasing the service life of the diaphragm by reducing the incidence of failure of the diaphragm due to build up of fretting products and other foreign particles such as dust and gas borne contaminants and the resultant stress concentrations wherein said upper head portion is provided with a plurality of circumferential grooves therein in communication with said gas cavity for the collection of fretting products and other foreign particles; said grooves are V-shaped with an included angle in the range from ten degrees to one hundred degrees; said grooves are of a depth of the order of one to thirty thousandths of an inch; and said grooves have their apices spaced apart of the order of five to fifty thousandths of an inch.

4,644,848
ELECTRO-PNEUMATIC PRESSURE REGULATOR FOR TOOLS
Lorne J. McKendrick, 365 W. Girard Ave., Madison Heights, Mich. 48071
Filed May 3, 1985, Ser. No. 730,332
Int. Cl.⁴ F15B 11/16
U.S. Cl. 91—419 24 Claims

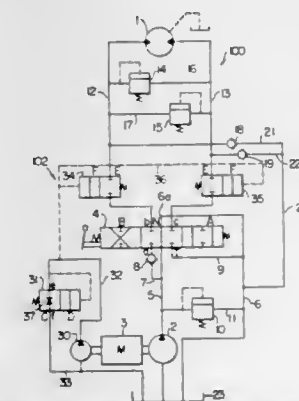
1. A control system for coupling and regulating the flow of fluid from a supply of pressurized fluid to at least one fluid powered tool in response to at least one, electrical, first control signal said control system comprising: transducer means for establishing a first predetermined output fluid pressure which is continuously variable in proportion to said first control signal, fluid passage means for coupling said transducer means to said at least one tool,

and feedback means for sensing the pressure in said fluid passage means and generating a responsive control signal



corresponding to the pressure of fluid in said fluid passage means.

4,644,849
LOCKING APPARATUS OF INERTIAL MASS DRIVE HYDRAULIC CIRCUIT SYSTEM
Hideaki Tanaka, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 386,276, Jun. 8, 1982, abandoned. This application May 28, 1985, Ser. No. 738,513
Claims priority, application Japan, Jun. 12, 1981, 56-89666
Int. Cl.⁴ F15B 13/042
U.S. Cl. 91—445 4 Claims



1. In a hydraulic excavator comprising an inertial mass drive hydraulic system having a hydraulic pump, actuator means driven by the hydraulic pump for driving a relatively large inertial mass, a directional control valve mounted in main line means connecting the hydraulic pump with the actuator means, and replenishing line means connecting portions of the main line means located between the actuator means and the directional control valve with a reservoir for replenishing the main line means with a hydraulic fluid upon occurrence of a sub-atmospheric pressure in the main line means, the improvement comprising:

an apparatus for locking the inertial mass drive hydraulic system, said apparatus comprising on-off valve means interposed in the main line means between the portions thereof at which the replenishing line means are connected to the main line means and the directional control valve means, the on-off valve means having an open position in which a hydraulic fluid is allowed to freely flow therethrough and thus through the main line means for allowing the actuator means to be driven by the pump in the hydraulic circuit system, and a closed position in which the hydraulic fluid is prevented from flowing there-through and thus through the main line means for allow-

ing the actuator means to be held in an inoperative position in the hydraulic circuit system, the on-off valve means being normally placed in a closed position; and means for sensing the discharge condition of the hydraulic pump to thereby issue a signal for actuating the on-off valve means for switching from the closed position to the open position upon sensing the hydraulic pump being in a discharge condition, said sensing means including an independent pilot pressure circuit including an auxiliary pump driven with rotation of said hydraulic pump, pilot line means between said auxiliary pump and said on-off valve means, and a pilot-pressure setting valve associated with said pilot line means for establishing a pilot-pressure as said signal for actuating said on-off valve means when said hydraulic pump is caused to rotate with rotation of said hydraulic pump, said pilot line means being separate and independent from the main line means of the inertial mass drive hydraulic system such that said pilot line means is not in fluid communication with said main line means whereby the discharge of the hydraulic pump can be sensed without being influenced by change in pressure in the main line means by the inertial mass drive hydraulic system even if the hydraulic system is subjected to a condition of operation in which the actuator means works as a pump.

4,644,850

FLUID MACHINE

Hisanobu Kanamaru; Kazushi Sasaya; Tomiyasu Onuma, and Akira Tohkairin, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

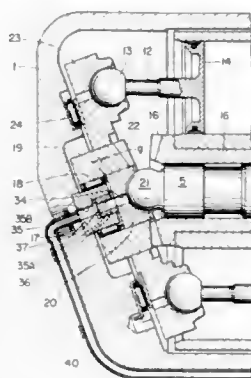
Filed Dec. 30, 1985, Ser. No. 814,757

Claims priority, application Japan, Dec. 29, 1984, 59-280145; Dec. 29, 1984, 59-280147

Int. Cl.⁴ F01B 13/04; F04B 1/12

U.S. Cl. 91—507

4 Claims



1. A fluid machine comprising:
 - a casing with a bottom;
 - a rotary shaft projecting into said casing;
 - a shaft having a cylinder block and being secured to said rotary shaft;
 - a stationary projection formed integrally into the bottom of said casing and having an access which intersects with an access of said rotary shaft at an acute angle;
 - a shaft having a rotary plate and rotatably rotated by said stationary projection;
 - a gear engaging mechanism provided on both of said shafts to engage with each other;
 - a plurality of pistons supported by said rotary plate and inserted in throughholes formed in said cylinder block;
 - a spherical contact means interposed between the end portion of said rotary shaft and said shaft having the rotary plate;
 - a suction system and a delivery system for effecting suction

and delivery operation by the rotation of said cylinder block and said pistons;

a passage for inducing to said spherical contact means a high-pressure working gas containing lubricating oil generated in said delivery system; and

wherein said spherical contact means includes mutually complementary shapes provided between the end portion of said rotary shaft and said shaft having the rotary plate, said spherical contact means including a spherical portion secured to the end portion of said rotary shaft and a spherical recess bearing surface formed in a central portion of said shaft having the rotary plate, said high pressure working gas containing the lubricating oil is induced to said spherical means through an oiling passage formed in said spherical bearing; and

wherein said spherical bearing surface has a very small gap with the end portion of said stationary projection, a cylindrical member is provided in a throughhole formed in said stationary projection and has therein an oiling passage passing through said very small gap to come into contact with said spherical bearing surface, and said oiling passage of said cylindrical member is connected to said oiling passage formed in said spherical bearing surface.

3. A fluid machine comprising:

a substantially bowl-shape casing for rotatably carrying a driving shaft and forming an outer case;

an end plate for gas-tightly sealing an opening of said casing;

a driven shaft rotatably supported by a stationary projection provided on said end plate said driven shaft having an axis which intersects with an axis of said driving shaft at an acute angle, and an outer periphery of said driven shaft projecting mainly from a tip thereof is engaged with said driving shaft through a bevel gear means;

a cylinder block encircling said driving shaft and rotating integrally with said driven shaft;

a rotary plate disposed adjacent to an inner wall surface of said casing and secured to an outer periphery of said driving shaft;

gear means provided on said driven shaft and driving shaft for engagement with each other;

a plurality of piston means with each piston means having one end disposed in a corresponding throughhole of said cylinder block and another end retained by said rotary plate;

a spherical contact means disposed between an end portion of said driving shaft and said driven shaft for receiving a thrust generated therebetween;

a suction system and a delivery system for effecting suction and delivery operation by the rotation of said cylinder block and said plurality of piston means;

passage means for inducing to said spherical contact means a high-pressure working gas containing lubricating oil generated in said delivery system;

said spherical contact means includes a spherical portion secured to an end portion of the driving shaft and a spherical recess bearing surface formed in a central area of said driven shaft, said high-pressure working gas containing the lubricating oil is induced to said spherical contact means through an oiling passage formed in said spherical bearing surface; and

wherein said spherical bearing surface has a very small gap from an end portion of said stationary projection, a cylindrical member is provided in a throughhole formed in said stationary projection and has therein an oiling passage passing through said small gap to come into contact with said spherical bearing surface, and said oiling passage of said cylindrical member is connected to said oiling passage formed in said spherical bearing surface.

4,644,851

LINEAR MOTOR COMPRESSOR WITH CLEARANCE SEALS AND GAS BEARINGS

Niels O. Young, Free Union, Va., assignor to Helix Technology Corporation, Waltham, Mass.

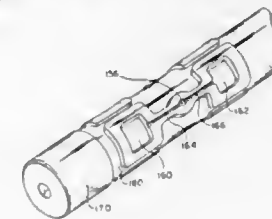
Division of Ser. No. 576,815, Feb. 3, 1984, Pat. No. 4,545,738.

This application Jul. 30, 1985, Ser. No. 760,682

Int. Cl.⁴ F01B 31/00; F04B 39/00

U.S. Cl. 92—127

6 Claims



1. A reciprocating piston for compressing gas comprising:
 - a. a piston positioned for axial movement within a sleeve with a working volume at one end thereof;
 - b. a gas storage reservoir in fluid communication with said working volume when the piston is at one end of its stroke such that high pressured gas is supplied to the gas storage reservoir;
 - c. axial channels positioned on a circumferential surface of the piston having a first end in fluid communication with the gas storage reservoir;
 - d. a gas bearing positioned on the circumferential surface of the piston in fluid communication with a second end of the axial channels;
 - e. a recess on the circumferential surface of the piston which substantially surrounds the axial channels and the gas pockets and communicates with a second reservoir of gas; and
 - f. a gas bearing formed between the piston and the sleeve by lateral gas flow from the channels and the gas pockets to the recess.
4. A method of producing a gas bearing between a reciprocating piston for compressing gas and a cylinder housing the piston comprising the steps of:
 - a. communicating a volume of gas from a working gas volume to a gas storage reservoir when the piston is at one end of its stroke such that high pressured gas is supplied to the gas storage reservoir;
 - b. feeding gas from the gas storage reservoir to axial channels on the circumferential surface of the piston;
 - c. directing the gas from the axial channels to gas pockets on the circumferential surface of the piston;
 - d. exhausting gas from the axial channels and the gas pockets to a recess which substantially surrounds the axial channels and the gas pockets; and
 - e. draining the exhausted gas from the recess to a non-working volume of gas.

4,644,852

ACTUATOR HAVING TOLERANCE TO BALLISTIC DAMAGE

Edward H. Kusiak, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 451,636, Dec. 20, 1982, This application

Oct. 4, 1984, Ser. No. 657,633

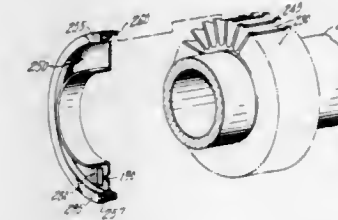
Int. Cl.⁴ F01B 7/00

U.S. Cl. 92—151

6 Claims

1. An hydraulic actuator comprising a piston fixed to a connecting rod and longitudinally reciprocable within a cylinder in response to pressurization thereof with hydraulic fluid, said actuator being tolerant to ballistic failure thereof resulting in an obstruction in an inner surface of said cylinder, said piston being driven by a redundant actuator under conditions of said ballistic failure, said actuator being characterized by:
 - said piston comprising a plurality of longitudinally stiff

support ribs circumferentially spaced about said connecting rod and extending radially outwardly therefrom, said support ribs being joined by at least one pair of unweakened, longitudinally thin, frangible bulkheads forming end caps of said piston and covering end portions of said ribs



adjacent thereto, said bulkheads being adapted for transmission of normal hydraulic loading to said ribs and rupturable when encountering an obstruction to said piston thereby enabling said piston to reciprocally traverse said obstruction by accommodation of said obstruction between said support ribs.

4,644,853

PISTON AND BEARING ASSEMBLIES

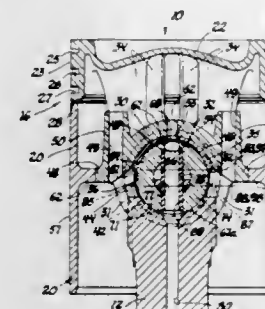
Robert A. Russell, Ann Arbor; Trevor J. Moore, Farmington Hills, and Timothy V. Schafer, Livonia, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1984, Ser. No. 674,097

Int. Cl.⁴ F16J 1/14

U.S. Cl. 92—190

9 Claims



1. A four-stroke cycle engine piston assembly comprising
 - a connecting rod having a generally cylindrical piston pin secured to one end of said rod,
 - a skirt member having an outer wall with a pair of oppositely disposed piston pin receiving openings through said wall, said piston pin extending into said openings and supporting said skirt for oscillating motion about the piston pin,
 - a head member having a crown section connected with a peripheral depending ring belt section above said skirt member and having a piston pin connecting section internally depending from said crown section and extending within said skirt member, said pin connecting section including a pair of oppositely disposed downwardly extending pin receiving openings interconnected along upper edges by a downwardly opening saddle portion extending between the arms,
 - a downwardly opening arcuate primary recess of less than semicylindrical extent in said saddle portion and extending outwardly into said pin receiving openings and a part cylindrical bearing shell insert of less than semicylindrical extent in said primary recess and engaging said piston pin to carry primary axial thrust forces therebetween,
 - a pair of upwardly opening arcuate secondary recesses of less than semicylindrical extent in said pin receiving open-

ings and a part cylindrical bearing shell insert of less than semicylindrical extent in each of said secondary recesses and engaging said piston pin to carry secondary axial reverse thrust forces therebetween, said inserts being restrained against substantial circumferential motion within said recesses by the engagement of coplanar surfaces of each of said inserts with mating surfaces of their respective recesses, said mating surfaces being provided at opposite arcuate edges of said inserts and recesses.

4,644,854

AIR SWEEP DEFROSTER

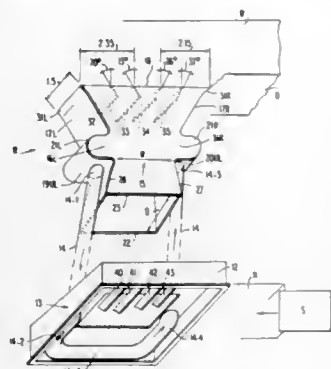
Ronald D. Stouffer, Silver Spring, and Otho Boone, Columbia, both of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Mar. 27, 1985, Ser. No. 716,737

Int. Cl.⁴ B60S 1/54

U.S. Cl. 98—2.09

30 Claims



1. In a defrost/defog system for vehicle comprising a source of defrost/defog air under pressure and a fluidic oscillator having a power nozzle coupled to receive defrost/defog air from said source, an outlet for issuing a sweeping stream of defrost/defog air on a window surface of said vehicle, the improvement wherein said fluidic oscillator comprises, means forming a pair of control ports immediately adjacent and in fluid communication with the downstream side of said power nozzle, continuous inductance loop means connecting said control ports together, said continuous inductance loop being of a length and cross-sectional area such as to maintain the frequency of oscillation sufficiently low such that there is minimum mixing of defrost/defog air with ambient air.

4,644,855

BEVERAGE PRODUCTION

Paul Woolman, Stoke Poges, and Barry Seward, Hook, both of England, assignors to Mars G.B. Limited, London, England Division of Ser. No. 513,229, Jul. 13, 1983, Pat. No. 4,581,239. This application Jan. 14, 1986, Ser. No. 818,792

Claims priority, application United Kingdom, Jul. 19, 1982, 8220855; Apr. 27, 1983, 8311542

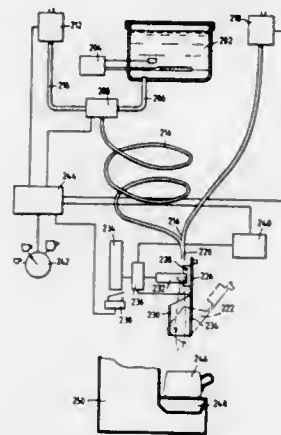
Int. Cl.⁴ A47J 31/06, 31/32

U.S. Cl. 99—280

9 Claims

1. A beverage dispensing apparatus for producing an infused beverage comprising: means to heat a supply of an aqueous medium, delivery means to direct portions of said heated aqueous medium to a heated aqueous medium discharge outlet, said discharge outlet adapted to be placed in operable communication with an infusible beverage product retained in a filter medium, means cooperable with said delivery means to inject selec-

tively and sequentially discrete and measured quantities of said heated aqueous medium to said discharge outlet, and means associated with said delivery system to deliver a pressurized medium at a pressure above atmospheric pres-



sure to said discharge outlet in sequence following the delivery of said discrete and measured quantities of said heated aqueous medium thereby to agitate and suspend said infusible beverage product retained by said filter medium.

4,644,856

APPARATUS FOR BREWING ESPRESSO COFFEE

Michael Borgmann, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany

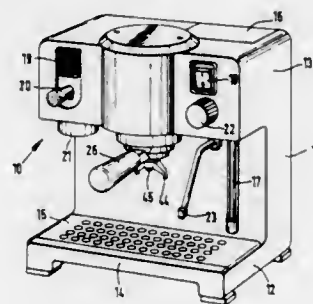
Filed Jan. 9, 1985, Ser. No. 689,844

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400567

Int. Cl.⁴ A47J 31/34

U.S. Cl. 99—295

8 Claims



1. In an apparatus for brewing espresso coffee, the combination of a support; a filter holder including a first cupped member having an open end; means for separably connecting said holder to said support; a filter arranged to receive a supply of comminuted coffee beans and receivable in said holder, said filter including a second cupped member fitting into said first cupped member and having an open end; and means for separably coupling said filter to said holder, said coupling means including complementary male and female coupling components, and said female coupling component being provided in the region of the open end of said first cupped member, said male coupling component being provided in the region of the open end of said second cupped member, and said male coupling component comprising a pair of male coupling elements disposed substantially diametrically opposite each other with reference to the axis of said second cupped member, said female coupling component having an annulus of sockets including several pairs of sockets disposed diametrically opposite each other with reference to the axis of said first cupped mem-

ber, and said male coupling elements being removably receivable in any one of said pairs of sockets.

4,644,857

FOOD PROCESSING CHAMBER

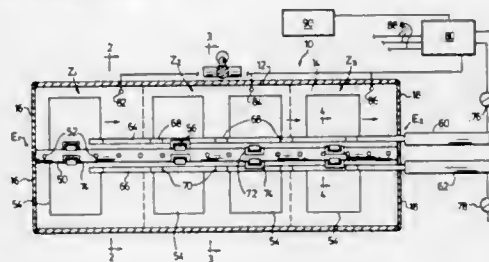
Guy E. Buller-Colthurst, 3 Dundas Street East, Erin, Ontario, Canada

Filed Sep. 27, 1985, Ser. No. 780,835

Int. Cl.⁴ A47J 37/00

U.S. Cl. 99—335

8 Claims



1. Processing apparatus for processing products in units and comprising: chamber means defining a plurality of chamber zones; means for establishing predetermined processing conditions in different chamber zones; continuous conveyor means extending through said chamber zones and defining a single conveyor axis; unit support means supportable on said conveyor means at spaced intervals, for moving units through said chamber zones; unit movement means operable in steps at predetermined time intervals to move a first unit along said axis of said conveyor means at predetermined first time intervals; and being further operable to move a second unit along the same said axis of said conveyor means at predetermined second time intervals; engagement means selectively interengageable between said unit support means and said movement means, whereby a said unit support means can be engaged and moved either at said first, or at said second time intervals, and, control means whereby to control said movement means for selective timed operation.

4,644,858

BAKING PAN ASSEMBLY

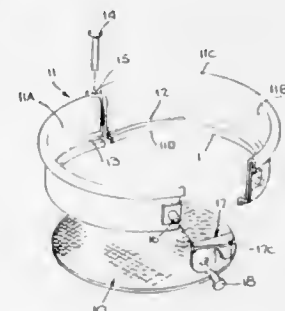
Donna Liotto, 26 Charles St., Apt. B, Westwood, N.J. 07675, and Victor Scocozza, 117 E. 30th St., New York, N.Y. 10016

Filed Jun. 19, 1986, Ser. No. 875,961

Int. Cl.⁴ A47J 37/01

U.S. Cl. 99—449

9 Claims



1. A pan assembly for a food product comprising: A. a circular base having a peripheral lip; B. a cylindrical shell formed by a pair of arcuate sections which are hinged together at one end, said shell having

adjacent its bottom an inner groove to receive the lip of the base; and

C. means at the other ends of the sections to clamp the sections together, whereby after the food product is baked or otherwise heated, the shell may be detached from the base to expose the baked product without disturbing its structure.

4,644,859

INTRODUCED IN CONNECTION WITH OLIVE PITTING AND STUFFING MACHINES

Joaquin Gutierrez Rubio, and Antonio Garrido Diaz, both of Seville, Spain, assignors to Sociedad Anonima de Racionalizacion y Mechanizacion (SADRYM), Spain

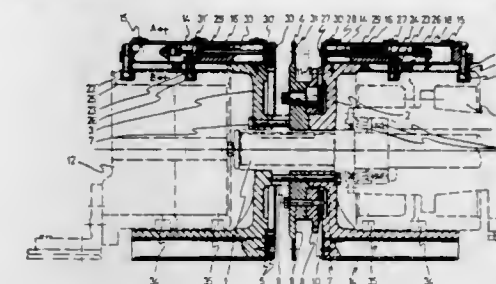
Filed Apr. 24, 1985, Ser. No. 726,821

Claims priority, application Spain, Nov. 21, 1984, 537820

Int. Cl.⁴ A23N 4/08

U.S. Cl. 99—494

7 Claims



1. A machine for pitting olives and for stuffing the pitted olives with an edible paste, this machine comprising:

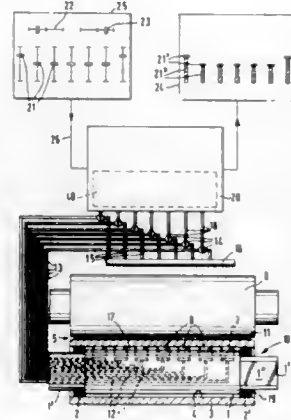
a plurality of bonnets arranged in a circle, centered on an axis, all of these bonnets facing in a like axial direction; each said bonnet having a centrally-ported annular recess constructed and arranged to support a single, axially-aligned, pit-containing olive, by one end of that olive; each recess having a central port of sufficient size to pass an axially-aligned olive pit therethrough; means for rotating said bonnets successively through a plurality of stations, including a first station at which each bonnet is arranged to receive a single axially-aligned olive to be supported in the respective said recess for rotation with the respective said bonnet; a respective plurality of olive-holding bushing means arranged in a circle centered on said axis and arranged to rotate about said axis with said bonnets; each said bushing means being adapted to engage an opposite end of a respective olive generally in opposition to the respective said recess, beginning at said first station and continuing through said plurality of stations, for holding that olive seated in the respective said recess; each said bushing means being configured to centrally expose, for punch access, an end portion of the olive engaged thereby; means associated with rotation of said bonnets through said plurality of stations, for moving each olive-holding bushing means into engagement with an end of a respective said olive and for maintaining such engagement as the bonnet supporting such olive is rotated through a plurality of stations, and for then moving out of engagement with that olive so as to release that olive from said machine; punch means aligned with said axis and arranged to address each respective olive at a respective station by moving axially towards that olive, piercing that olive, engaging the pit of that olive, and pushing that pit and a tapin connected therewith completely through the respective said central port of the respective said recess of the respective said bonnet, and then to retract

through that central port until clear of the respective resultingly-pitted olive;
means associated with rotation of said bonnets through said plurality of stations, for moving said punch means to address each respective olive;
a system for containing and supplying an edible paste, this system including a hopper adapted to contain said paste, nozzle means adapted to dispense said paste, conduit means connecting said hopper with said nozzle means, and pump means adapted to draw paste from said hopper and force such paste along said conduit means for dispensing such paste from said nozzle means;
means stationarily mounting said nozzle means in juxtaposition to said circle of said bonnets on an axially opposite side of said circle of said bonnets from said circle of said olive-holding bushing means and at a paste-filling station that angularly trails where the respective punch means, upon retracting to clear the respective resultingly-pitted olives, clear the respective central ports of the respective said bonnets; the nozzle means being arranged to open towards the respective central ports of the respective bonnets at said paste-filling station;
and means associated with rotation of said bonnets through said plurality of stations, for closing said nozzle means except when said nozzle means is in communication with a respective said resultingly pitted olive through a respective said central port of a respective said bonnet.

4,644,860
METHOD OF CONTROLLING THE LINE PRESSURE DISTRIBUTION IN A ROLL ARRANGEMENT
Bernhard Brendel, Grefrath, Fed. Rep. of Germany, assignor to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Fed. Rep. of Germany
Filed Mar. 18, 1985, Ser. No. 712,662
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410136

Int. Cl.⁴ B30B 13/00, 3/04
U.S. Cl. 100—35

15 Claims



1. A method of controlling the linear or nip pressure distribution in a roll arrangement adapted for the pressure treatment of a web of material, said roll arrangement comprising at least one roll comprising a stationary beam extending axially of the roll and having a shell rotatable therearound, the shell being mounted relatively to the beam by means of a plurality of supporting elements spaced consecutively along the beam and adapted to apply pressure to the shell to control the line or nip pressure of the roll arrangement, said method including the step of determining a pressure profile to be applied to the web, and providing signals representative of the profile to control signal generating means, to generate signals to control the pressure applied to the web by the supporting elements, and including the step of indicating the width of the web to the

means which produce the control signals so that the control signal producing means will automatically create appropriate control signals having regard to the width of the web.

7. Apparatus for controlling the linear nip or pressure distribution in a roll arrangement for the pressure treatment of webs of material, said arrangement comprising at least one roll having a stationary beam extending axially of the roll and a shell rotatable therearound, the shell being mounted relatively to the beam by means of a plurality of supporting elements spaced consecutively along the beam and adapted to apply pressure to the shell to control the line or nip pressure of the roll arrangement, the apparatus further comprising means for determining a pressure profile to be applied to the web, means for providing signals representative of the profile to a control signal generating means, adapted to generate signals to control the pressure applied to the web by the supporting elements, and means for indicating the width of the web to the control signal producing means, the control signal producing means being adapted to create appropriate control signals automatically having regard to the width of the web.

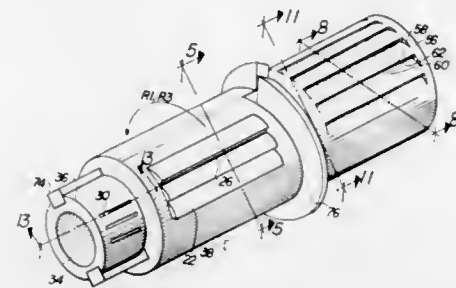
4,644,861
SYSTEM AND METHOD FOR INCREASED EFFICIENCY OF SCREW PRESSES

Peter W. Mansfield, 511 59th St., Holmes Beach, Fla. 33510
Filed Dec. 30, 1985, Ser. No. 814,485

Int. Cl.⁴ B30B 9/14

U.S. Cl. 100—37

24 Claims



1. In a high pressure mechanical screw press system for removal of fluids from organic materials such as sugar cane, meal, nuts, bagasse and other fibrous materials including a hollow main shaft, at least one pressure chamber having an outer cylindrical housing, at least one feed worm, and collars arranged on said hollow main shaft, securing means for securing said worms and collars on said hollow main shaft, said worms rotationally driven by said hollow main shaft to express fluids from the fibrous material within said at least one pressure chamber, wherein the improvement comprises:

a plurality of center drainage slots disposed in said collar;
a plurality of center drainage apertures disposed in said main shaft in fluid communication with said drainage slots;
the outer surface between each said center drainage slot adapted to create a pocket adjacent each said drainage slot for enhancing fluid flow into said center drainage slots and for reducing build up of fibrous material at said pockets.

4,644,862
ADJUSTING APPARATUS FOR BALER PACKER ASSEMBLY
Robert G. Young, Bird-in-Hand, Pa., assignor to New Holland Inc., New Holland, Pa.
Filed Mar. 3, 1986, Ser. No. 835,680

Int. Cl.⁴ B30B 1/26; A01D 89/00

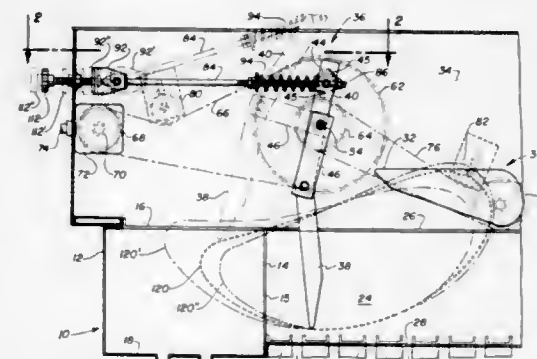
U.S. Cl. 100—189

11 Claims

1. In an agricultural baler having a bale case, a feed chamber adjacent said bale case, a packer assembly for delivering crop material from said feed chamber into said bale case, said packer

assembly including a fork movable so that its tip follows a predetermined path through portions of said feed chamber and said bale case, apparatus for adjusting the position of said predetermined path with respect to said bale case, said apparatus comprising:

a control link having one end thereof rotatably connected to said fork;



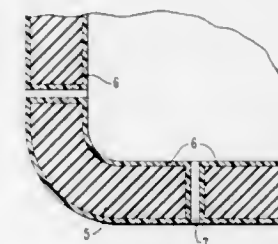
support means rotatably supporting the other end of said control link; and
adjusting means connected to said support means for moving said support means to different positions in order to adjust the position of said predetermined path with respect to said bale case.

4,644,863
ELECTRIC DETONATOR
Richard Bender, Lauf/Bayern; Hellmut Bandler, Nuremberg; Horst Penner, Fürth/Bayern, and Reinhold Sander, Seukendorf/Bayern, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 9, 1984, Ser. No. 669,798
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340461

Int. Cl.⁴ F42E 19/12
U.S. Cl. 102—202.5

11 Claims



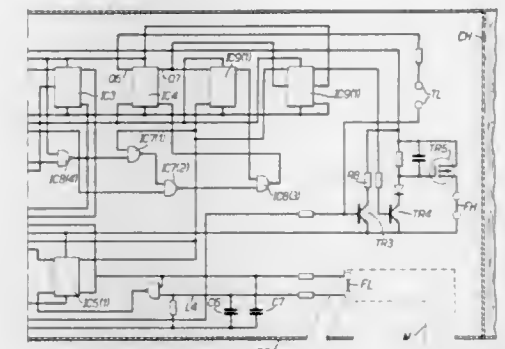
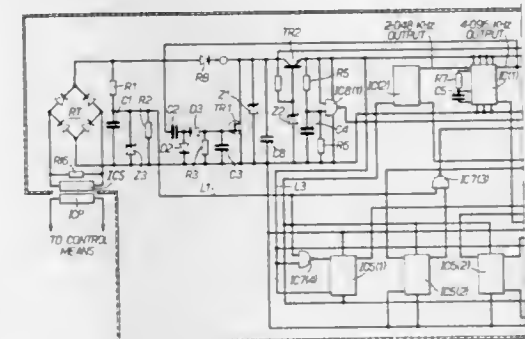
1. An electric detonator with a casing, a pole piece electrically insulated with respect to the casing by means of a non-conductive insulating cup, and an ignition resistor electrically connected to the casing and to the pole piece, characterized in that an electrically conductive coating is provided on the insulating cup, said coating being in contact with the casing and the pole piece to form an electrically conductive connection which is high-ohmic as compared to the ignition resistor between the pole piece and the casing in order to attain a controlled electric shunt in parallel to the ignition resistor.

4,644,864
VARIABLE TIMING AND POWER STORAGE ARRANGEMENTS
Robert Komorowski, Hampshire, and Harpal Punia, Southampton, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jan. 18, 1985, Ser. No. 692,424
Claims priority, application United Kingdom, Jan. 25, 1984, 8401893

Int. Cl.⁴ F42C 11/06
U.S. Cl. 102—215

5 Claims

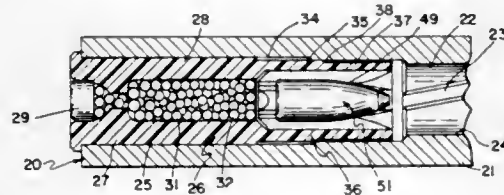


1. A variable timing power storage arrangement for pre-setting a time interval between launch of a rocket motor propelled projectile and the initiation of a particular function or functions of said projectile and for storing power required inter alia for the initiation of said function or functions at the expiration of said interval, the arrangement comprising inductive coupling means for establishing before launch of the projectile an electrical coupling path between the projectile and control means associated with projectile launching means, signal generating means associated with the control means for generating a train of tone-burst modulated pulses for transmission over said inductive coupling means to the projectile, rectifying means in said projectile for rectifying the pulses of said train the first of which is utilised for charging up power storage capacitor means in the projectile to provide a d.c. power supply which serves inter alia for subsequently initiating a function or functions of the projectile and the subsequent pulses of said train being utilised for the setting of counter means in the projectile in accordance with the requisite duration of the time interval between launch of the projectile and initiation of the aforesaid particular function or functions and means in the projectile responsive to the firing or launch of said projectile to cause the counter means to commence a counting-out operation at a predetermined rate at the termination of which the power storage capacitor means is discharged for the initiation of said function or functions of the projectile in which the means responsive to the firing of the projectile comprises a fusible link arranged to be melted by exhaust heat from the projectile rocket motor.

4,644,865
ONE-PIECE CARTRIDGE AND SABOT WITH
GAS-ACTUATED CUTTER MEMBER
 David M. Lawrence, Billerica, Mass., assignor to Automation
 Associates, Inc., Billerica, Mass.
 Filed May 20, 1985, Ser. No. 736,221
 Int. Cl.⁴ F42B 5/02

U.S. Cl. 102—430

10 Claims



1. In combination:

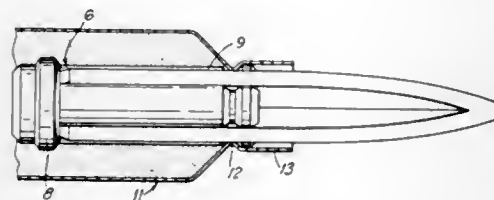
- a cartridge of plastic material having a main body of cylindrical configuration, said main body containing a propellant chamber and a primer pocket;
- a tubular sabot, of said plastic material, integral with said main body, and of full caliber;
- said sabot having a plurality of spaced, elongated, alternate ribs and grooves extending radially inwardly and outlining an axial bore of sub-caliber;
- a projectile of said sub-caliber sleeved within said sabot for discharge therewith upon detonation of said propellant in said chamber;
- and cutter means interposed between said projectile and said propellant in said chamber for expanding laterally to slice said sabot in one piece from said cartridge, under detonation gas pressure during ejection of said projectile.

4,644,866
AMMUNITION ROUND
 Leroy J. Sullivan, Huntington Beach, Calif., assignor to Branscomb Corporation N.V., Curacao, Netherlands Antilles
 Filed Jun. 18, 1984, Ser. No. 621,735
 Claims priority, application European Pat. Off., Jun. 22, 1983, 83106054.6; Jan. 13, 1984, 84100331.2; Jan. 13, 1984, 84106760.6

Int. Cl.⁴ F42B 11/00

U.S. Cl. 102—439

19 Claims



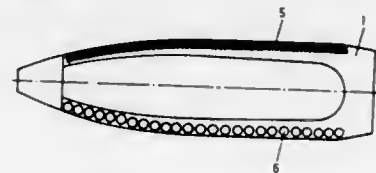
1. An ammunition round comprising: a casing for containing a propelling charge; a full bore diameter bullet which has a plurality of full length grooves in its outer surface extending generally longitudinally of the bullet; and a homogeneous plastics sabot into which the bullet seats and which seals the bullet into the casing, the sabot comprising a body part with a diameter greater than the diameter of the bullet and a plurality of spaced apart fingers engaging respective ones of the grooves in the bullet to cause the bullet to spin as the sabot is rotated by engagement of said body part with rifling grooves in a barrel through which the round is fired.

4,644,867
SHELL CASE WITH NON-COMPRESSIBLE
FRAGMENTS METALLURGICALLY BONDED TO THE
CASING
 Lars Hellner; Ingemar Haglund; Torsten Rönn, and Kjell Albrektsson, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Sweden

Filed Mar. 21, 1985, Ser. No. 714,283
 Claims priority, application Sweden, Apr. 2, 1984, 8401792
 Int. Cl.⁴ F42B 13/48

U.S. Cl. 102—495

9 Claims

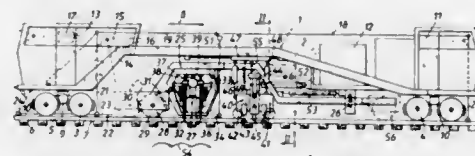


1. A hollow fragmentation jacket for a shell with improved fragmentation effect having a cylindrical wall for enclosing an explosive comprising a shell casing having an inner and an outer surface and a plurality of preshaped fragments embedded in the wall of said casing, said shell casing throughout the entire wall between said outer and said inner surface consisting essentially of a uniform, completely dense non-compressible material, said fragments consisting of a high density material, and wherein said fragments are metallurgically bonded to the casing material while being embedded in the wall of the casing.

4,644,868
CONTINUOUSLY ADVANCING TRACK LEVELING,
LINING AND TAMPING MACHINE
 Josef Theurer, Vienna, and Johann Hansmann, Klosterneuburg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
 Filed Nov. 16, 1984, Ser. No. 672,119
 Claims priority, application Austria, Jun. 1, 1984, 1817/84
 Int. Cl.⁴ E01B 27/17

U.S. Cl. 104—7.2

21 Claims



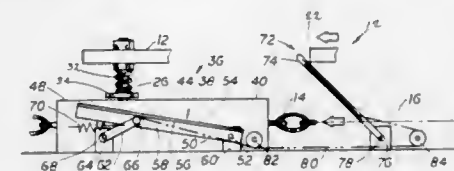
1. A continuously advancing machine for leveling, lining and tamping a track consisting of two rails fastened to successive ties resting on ballast, which comprises
- (a) a heavy main frame supported on two spaced apart undercarriages for continuous movement in an operating direction,
 - (b) a power plant, drive means and operating control means as well as an operator's cab for operating the drive and control means mounted on the main frame,
 - (c) two separate carrier frames arranged between the two undercarriages of the heavy main frame,
 - (d) another drive means connected to the heavy main frame for longitudinally displacing the carrier frames in relation to the main frame, the other drive means comprising a drive connecting one of the carrier frames to the main frame, and the other carrier frame being longitudinally adjustably mounted on the main frame,
 - (e) coupling means connecting the carrier frames for common and intermittent longitudinal displacement whereby the carrier frames may be intermittently advanced during the continuous movement of the heavy main frame, the

- drive having a displacement path corresponding to a distance between at least two successive ties,
- (f) tamping means mounted on the one separate carrier frame for tamping ballast in intermittent tamping cycles under respective ones of the ties at points of intersection of the two rails and the respective ties,
- (g) track lifting and lining means mounted on the other one of the separate carrier frames,
- (1) the tamping, lifting and lining means being arranged within sight of the operator's cab, and
- (2) the power plant delivering power to, and the operating control means controlling, the tamping, track lifting and lining means, and
- (h) track leveling and lining reference systems associated with the track lifting and lining means.

4,644,869
DEVICE FOR INTERRUPTING THE MOVEMENT OF
LOAD CARRYING UNITS ALONG A CONVEYOR PATH
 Arthur B. Rhodes, 7227 Helen Ave., Louisville, Ky. 40258
 Filed Jul. 19, 1984, Ser. No. 632,581
 Int. Cl.⁴ B61K 7/02; B61B 10/04

U.S. Cl. 104—172.2

15 Claims



1. In a conveyor system for moving load bearing units along a path defined by the conveyor flight, a device for interrupting the movement of the load bearing units comprises:
- movable conveyor engagement pin means association with each of the load bearing units, the movable engagement pin means being movable toward and into engagement with the conveyor path defining flight wherein the load bearing units are connected to the conveyor flight for movement along the path defined by the conveyor flight, and away from and out of engagement with the conveyor path defining flight;
 - actuating means comprising a ramp device adapted for pivotable movement about its lower end between a first position forcing the pin means away from and out of engagement with the conveyor path defining flight and a second position providing for engagement of the pin means with the conveyor path defining flight, and a ramp control arm adapted for pivotable movement about its lower end between the first and second positions; and
 - trigger means for triggering the actuating means from the first position to the second position in response to the preselected location of another one of the load bearing units moving along the defined path.

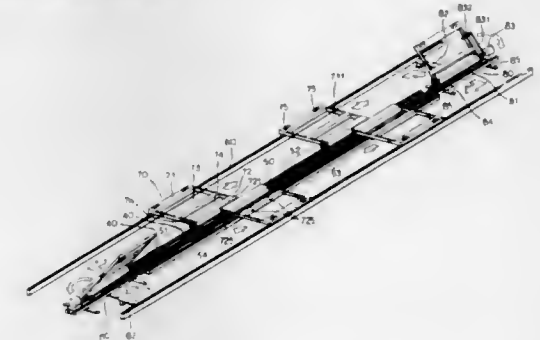
4,644,870
CONVEYING SYSTEM UTILIZING A LINEAR PULSE
MOTOR
 Toshiro Higuchi, Yokohama; Shigeki Kamei, Nishinomiya, and Kojiro Kawaguchi, Osaka, all of Japan, assignors to Hitachi Kiden Kogyo Kabushiki Kaisha, Amagasaki, Japan
 Filed Oct. 22, 1984, Ser. No. 663,724
 Claims priority, application Japan, Oct. 22, 1983, 58-197954
 Int. Cl.⁴ B60L 13/02, 7/28

U.S. Cl. 104—292

4 Claims

1. A conveying system comprising:
- a linear pulse motor comprising stators and a mover;
 - a travelling conveying truck comprising a driver and a chassis, said driver being positioned at a side of said chassis and including said mover of said linear pulse motor;

- a plurality of main wheels mounted on said truck and arranged in pairs at each side of said driver;
- a pair of parallel main travelling rails spaced to accommodate a respective one of each of said pairs of main wheels;
- a plurality of said stators of said linear pulse motor positioned between said pair of main travelling rails to cooperate with said mover to compose said linear motor for driving said truck;



- a plurality of auxiliary wheels mounted on said chassis at a side opposite to the side of said driver for supporting said opposite side; and
- a pivotal hinge means coupling said chassis to said driver so that said chassis may be pivoted to provide for reciprocal movement of said truck on an adjacent set of rails.

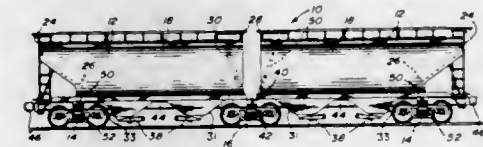
4,644,871
ARTICULATED HOPPER RAILCAR
 Kelly J. Arrey, and Samir Berrada, both of Montreal, Canada, assignors to Canadian National Railway Company, Montreal, Canada

Filed Dec. 11, 1985, Ser. No. 807,610

Int. Cl.⁴ B61D 3/14, 7/02

U.S. Cl. 105—4.1

7 Claims



1. An articulated hopper railcar comprising:
- two hopper car bodies, each car body having an adjacent end and an exterior end, each car body having a hopper therein with at least one discharge means, the hopper having a substantially vertical end sheet at the exterior end of the car body joined to an exterior slope sheet sloping down to the discharge means and an inward sloping end sheet at the adjacent end of the car body sloping downwardly toward the adjacent car body joined to an adjacent slope sheet sloping down to the discharge means;
 - two end trucks with wheels, each end truck supporting the exterior end of each car body;
 - end support means mounted on each end truck for pivotally supporting the exterior end of the car body on the end truck;
 - center truck with wheels for supporting the adjacent ends of the two car bodies;
 - articulated connector means mounted on the center truck for connecting the adjacent ends of the two car bodies together and for pivotally supporting the adjacent ends of the two car bodies on the center truck;
 - end coupling means at the exterior end of each car body adapted for coupling the hopper railcar to an adjacent railcar or locomotive, and
 - center sill member in each car body extending in line

through the hopper from the end coupling means to the articulated connector means, adapted to transfer traction load through the hopper railcar.

4,644,872
DEPRESSED FLOOR TURNAGE FOR ARTICULATED RAIL VEHICLES

Giorgio Vianello, and Ugo Soloni, both of Padova, Italy, assignors to Officina Meccanica Della Stanga-O.M.S. S.p.A., Padova, Italy

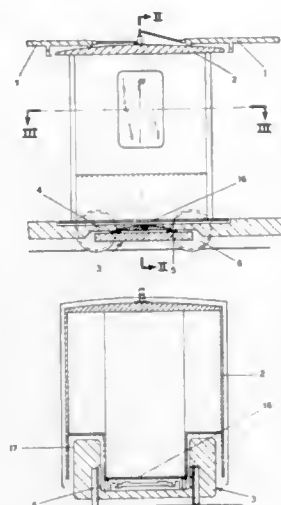
Filed Jun. 21, 1984, Ser. No. 623,015

Claims priority, application Italy, Jun. 28, 1983, 61950/83[U]

Int. Cl.⁴ B61D 17/20

U.S. Cl. 105—801

3 Claims



1. An articulated joint for urban and suburban transport vehicles running on rails, in particular for tramway and/or underground railway vehicles having at least two adjacent bodies with depressed floors and comprising a turn cage (2), which:

is interposed between the adjacent bodies, has a platform (16) substantially coplanar with the depressed floors of the adjacent bodies (1), is provided with a bogie (3) rotationally bound to it, having wheels (6) of independent type and having a horizontal dimension not greater than that of said turn cage (2), possesses two lateral compartments (17) which extend upwards beyond the platform (16) and house the wheels (6) of said bogie (3), suspensions (10, 11) shock absorbers (14, 15) and braking members (8, 9), and said bogie (3) being provided with a thrust block (5), to which there are pivoted two appendices (4) provided with the bodies (1), this assembly being covered by said platform (16) disposed substantially at the same level as the floor of the adjacent bodies.

4,644,873
ELECTRIC OVERHEAD TROLLEY CONVEYOR
Georg Uttscheid, Rosenheimer Str. 117, D-2808 Kolbermoor, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 696,180

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403460

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

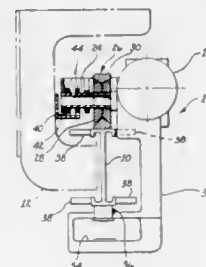
Int. Cl.⁴ B61C 11/04; E01B 25/04, 25/22

U.S. Cl. 105—29.1

7 Claims

1. An electric overhead trolley conveyor having a rail with horizontal sections and non-horizontal sections and including electric trolleys each having at least one drive wheel engaging the rail, said drive wheel having an inner hub connected to a

drive shaft and having an outer ring rotatably held by said hub and contacting said rail, said non-horizontal sections each including a non-slip contact surface, each of said trolleys including a non-slip contact wheel for engaging said non-slip



contact surface and driving said trolley at said non-horizontal sections, the circumferential velocity of said non-slip contact wheel being less than the circumferential velocity of the outer ring of said drive wheel.

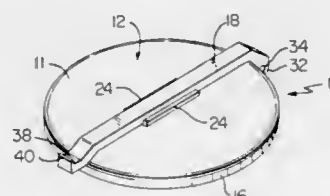
4,644,874
HATCH COVER FOR HOPPER CARS
Donald L. Kleykamp, Washington Township, Montgomery County, Ohio, assignor to Dayco Products, Inc., Dayton, Ohio

Filed Aug. 15, 1985, Ser. No. 765,777

Int. Cl.⁴ B61D 39/00

U.S. Cl. 105—377

5 Claims



1. In a hatch cover for a hopper car comprising a substantially circular lid having an outside surface and an inside surface and a rim defining the outside edge of said inside surface, and a locking arm traversing a geometric center of said outside surface and being fixedly attached to said lid, said arm having opposed ends respectively extending beyond said rim of said lid and having a certain width at said geometric center, the improvement wherein said cover is made substantially of polymeric material and has a substantially flat circular reinforcing member embedded therein, said reinforcing member having a geometric center thereof substantially coincident with said geometric center of said lid and having a diameter that is larger than said certain width of said arm whereby said member provides reinforcement for said lid and distributes the forces applied by the locking arm incrementally throughout the polymeric material of said lid when said hatch cover is closed, said arm also being made substantially of polymeric material and having a U-shaped metal channel embedded therein for reinforcement thereof, said channel being formed in the shape of said locking arm and having approximately the same length thereof, and means for attaching said reinforcing member to said channel in said locking arm, said attaching means comprising a bolt which passes through said channel and through a hole substantially in said geometric center of said reinforcing member, and a nut threaded onto the end of said bolt, said bolt being secured to said channel.

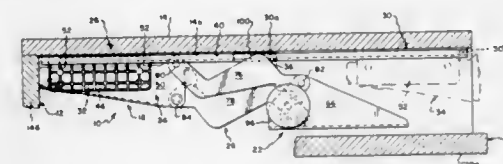
4,644,875
ADJUSTABLE KEYBOARD SUPPORTING MECHANISM
Richard L. Watt, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Mar. 22, 1985, Ser. No. 715,028

Int. Cl.⁴ A47B 57/00

U.S. Cl. 108—93

5 Claims



1. A mechanism for mounting a keyboard for movement relative to a horizontal support, said mechanism comprising:

a pair of slide devices defined by first parts having means for fixing same to depend from a lower surface of said support and second parts supported by said first parts for horizontally directed reciprocating movements between keyboard storage and use position, said first parts are horizontally elongated guide channels having downwardly opening guide slots bounded by pairs of aligned guide flanges, said second parts are defined by followers slidably supported one by each of said guide tracks and mounting brackets carried one on each of said followers, said followers have a generally T-shaped sectional configuration with head portions thereof slidably supported within said guide channels by said guide flanges and with depending portions thereof depending downwardly through said guide slots, said mounting brackets are of L-shaped cross-sectional configurations having upstanding plate portions fixed to said depending portions and defining an upper aperture and a lower aperture and horizontally extending plate portions arranged in a facing relationship and shaped to define mounting hooks;

support means for supporting said keyboard, said support means includes a pair of support brackets each having an upper aperture and a lower aperture, at least one of said support brackets having an arcuate slot disposed concentrically of said lower aperture thereof, said support brackets are associated one with each of said mounting brackets, said support brackets are of L-shaped cross-sectional configuration having upstanding plate portions defining said upper and lower apertures of said support brackets and horizontally extending plate portions arranged in a facing relationship;

link means for supporting said support means on said second parts for vertically directed movements between upper and lower keyboard use positions relative to an intermediate position in which said support means and said keyboard may be stored closely adjacent said lower surface to provide a thin vertical profile for said mechanism and said keyboard when said second parts are disposed in said keyboard storage position, said link means includes two pairs of upper and lower links with first and second ends of the upper and lower links of each pair pivotally supported relative to said upper and lower apertures of associated ones of said mounting and support brackets, respectively, at least one of said lower links carrying a member slidably received within said arcuate slot for engagement with opposite ends thereof to define said upper and lower keyboard use positions, said member having a free end thereof threaded to adjustably support a clamping device cooperating with said one of said lower links to releasably clamp said one of said support brackets therebetween and thereby releasably lock said support means in any use position throughout the range of its movement between said upper and lower keyboard use positions, said upper links lie adjacent oppositely facing surfaces of said upstanding plate portions of said mounting and support brackets in vertical alignment with said guide slots, said

lower links lie adjacent facing surfaces of said upstanding plate portions of said mounting and support brackets and are shaped to define mounting hooks; and spring means coupling said mounting brackets to said lower links to at least partially counterbalance the weight of said support means and keyboard supported thereon, said spring means comprise a pair of spring devices having opposite ends thereof fixed to said mounting hooks of said mounting brackets and said lower links, said first ends of said lower links are coupled transversely of said mechanism by a torsion member, and said upper links have cam surfaces shaped and arranged to engage interiorly of said guide channels for moving said support means into said intermediate position from said upper use position incident to movement of said second parts towards said keyboard storage position.

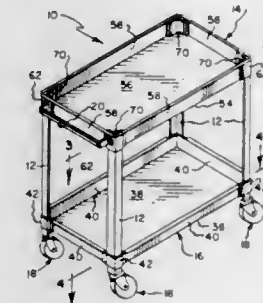
4,644,876
KNOCKDOWN TABLE OR THE LIKE
Clayton A. Thomas, Sinclair Dr., Sinclairville, N.Y. 14782, assignor to Richard A. Noon, Jamestown, N.Y.

Filed May 8, 1986, Ser. No. 861,131

Int. Cl.⁴ A47B 47/00

U.S. Cl. 108—111

4 Claims



1. A knockdown table or the like capable of being readily assembled or disassembled without tools comprising:

four elongated legs of L-shaped cross section, each leg being provided with abutment means on its inner surface adjacent one end; and

top and bottom pan assemblies adapted to be assembled to said legs to form a load bearing assembly having upper and lower support portions, each assembly including a principal support member of generally open box-like rectangular construction, each support member having a rectangular generally planar support portion and four sidewalls extending at right angles to the perimeter of the planar support portion, each of said pan assemblies further including four outside corner straps mounted on outer surface portions of said sidewalls, each outside corner strap extending from one outer surface portion of one sidewall to an outer surface portion of an adjacent sidewall and having an intermediate portion disposed away from the outer surface of said sidewalls to such an extent that one of said legs is adapted to be snugly received between the intermediate portion of the outside corner strap and the adjacent outer surfaces of said sidewalls, said top pan assembly further including four inside corner straps mounted on inside surface portion of said sidewalls, each inside corner strap extending from one inside surface portion of one sidewall to an inside surface portion of an adjacent sidewall and having an intermediate portion disposed away from the inside surface of said sidewalls to such an extent that one of said legs is adapted to be snugly received between the intermediate portion of the inside corner strap and the adjacent inside surfaces of said sidewalls, and said top pan assembly further including stop means spaced away from said planar support portion and

extending between the intermediate portion of the outside corner straps and the adjacent sidewalls, wherein the bottom pan assembly may be assembled to said four legs in such a manner that either the support portion contacts the stop means so that the bottom pan assembly is in its tray position or the sidewall edge remote from the support portion contacts the abutment means so that the bottom pan assembly is in its shelf position, and wherein the top pan assembly may be assembled to said four legs in such a manner that either the legs pass between the intermediate portions of the outer straps and the adjacent outer surface of the sidewalls with the top ends of the legs contacting the stop means so that the top pan assembly is in its tray position, or wherein the top pan assembly may be assembled to said four legs with said legs passing between the intermediate portions of the inner corner straps and the inner surfaces of the adjacent sidewalls with the top ends of the legs contacting the support portion so that the upper pan assembly forms a shelf.

4,644,877

PLASMA PYROLYSIS WASTE DESTRUCTION

Thomas G. Barton, Kingston, and Edward S. Fox, Welland, both of Canada, assignors to Pyroplasma International N.V., Philipsburg, Netherlands Antilles

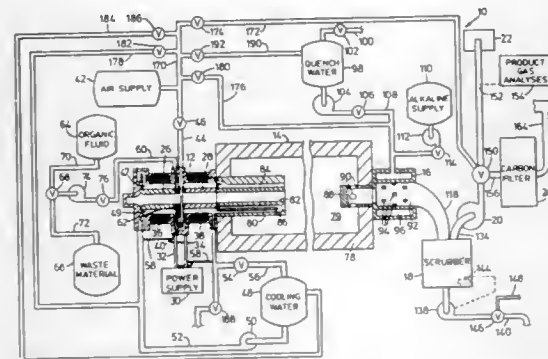
Filed May 17, 1984, Ser. No. 611,541

Claims priority, application Canada, Jan. 23, 1984, 445887

Int. Cl.⁴ F23G 5/10, 5/12

U.S. Cl. 110—250

31 Claims



1. A method for the pyrolytic destruction of waste material, comprising the steps of:

- feeding waste material through a feed line to a plasma burner having hollow electrodes defining a co-linear electrode space;
- introducing the waste material directly into a plasma arc having a temperature in excess of 5,000° C., in said co-linear electrode space under substantially pyrolytic conditions to atomize and ionize the waste material, said plasma arc being generated by a plasma burner, said plasma burner receiving power input from a power supply;
- cooling the atomized and ionized waste material in a reaction chamber to form recombined products including product gas and particulate matter;
- quenching the recombined products with an alkaline atomized spray to neutralize the recombined products and wet the particulate matter;
- extracting the product gas from the recombined products; and
- burning the extracted product gas.

4,644,878

SLURRY BURNER FOR MIXTURE OF CARBONACEOUS MATERIAL AND WATER

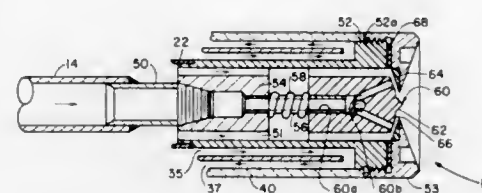
Dennis G. Nodd, West Mifflin, and Richard J. Walker, Bethel Park, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 5, 1985, Ser. No. 795,294

Int. Cl.⁴ F23D 1/02

U.S. Cl. 110—264

16 Claims



1. A burner for atomizing and directing a carbonaceous material-water slurry into a combustion chamber comprising: a fuel delivery tube into which the carbonaceous material-water slurry is introduced and displaced therealong toward a first end thereof; an atomizing air tube coaxially positioned about said fuel delivery tube, said atomizing air tube coupled to an atomizing air source wherein said atomizing air source directs atomizing air under pressure into said atomizing air tube toward a first end thereof; a fixed generally cylindrical nozzle mounted to said combustion chamber and coupled to the respective first ends of said fuel delivery tube and said atomizing air tube, said nozzle having a plurality of outer channels continuous with said atomizing air tube at the first end thereof through which said atomizing air is directed and an inner, aft center fuel channel coupled to and continuous with said fuel delivery tube at the first end thereof, said nozzle further including a plurality of forward inner diverging fuel channels coupled to and continuous with said aft center fuel channel and forming relatively small acute angles therewith and through which the carbonaceous material-water slurry is directed toward the outer periphery of a forward end portion of said nozzle and exits therefrom, said nozzle further including a plurality of slots positioned upon a front surface thereof and in communication with a respective diverging fuel channel as it exits said nozzle and extending from the periphery of said nozzle generally toward the center thereof; outer deflection means positioned immediately adjacent to the forward end portion of said nozzle for deflecting the atomizing air from said outer channels through said slots and generally transversely across the carbonaceous material-water slurry as it exits the nozzle thus exerting a maximum shear force upon the carbonaceous material-water slurry for the atomization thereof, said first deflection means having a generally circular aperture therein; and inner deflection means positioned on the forward end portion of the nozzle and disposed within the aperture of said first deflection means so as to form an annular aperture therewith for further atomizing and directing the carbonaceous material-water slurry through said annular aperture and into the combustion chamber.

4,644,879

METHOD AND ANNULAR BURNER FOR SPRAYING AQUEOUS ADDITIVE SUSPENSION IN THE CENTRAL PORTION OF AN ANNULAR BURNER

Klaus Grethe, Gummersbach; Ralf Hülsen, Leverkusen, and Walter Thielen, Gummersbach, all of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

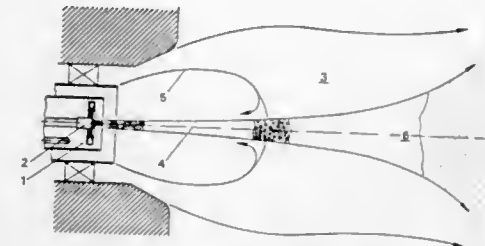
Filed Nov. 22, 1985, Ser. No. 801,010

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 3444469

Int. Cl.⁴ F23B 7/00

U.S. Cl. 110—343

8 Claims



1. In a method of binding sulfur and other impurities during the combustion of fuels that contain such impurities, where the fuel is burned in an annular burner flame that has an internal recirculation zone, and where an additive in the form of an aqueous suspension is sprayed into the combustion chamber via at least one two-component atomizing nozzle and the additive is mixed with the gases of the flame under optimum reaction conditions, the improvement including the steps of: disposing an atomizing nozzle for said additive in the central portion of said annular burner; spraying said additive as an external mixture, via said atomizing nozzle, along the longitudinal axis of said flame, as a narrow stream, through said internal recirculation zone and into said flame; and selecting the flow pulse and the angle of dispersion of said additive suspension stream in such a way that said additive suspension is not atomized until it reaches the optimum reaction region of said flame.

4,644,880

METHOD AND APPARATUS FOR TRANSPLANTING CORPUS

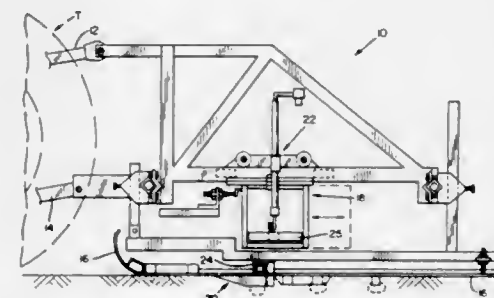
Gregory L. Branch, Salinas, Calif., assignor to Growers Transplanting, Inc., Salinas, Calif.

Filed Feb. 22, 1985, Ser. No. 704,569

Int. Cl.⁴ A01C 11/00

U.S. Cl. 111—3

22 Claims



1. A method for transplanting a seedling plug into the ground of a field comprising: creating a furrow in the ground; holding the seedling plug internally by inserting an impaling means into the seedling plug and while so holding the plug

displacing it in a substantially vertical orientation into the furrow; maintaining the seedling plug by the internal hold substantially vertical in the furrow; directing and packing soil around the vertically maintained seedling plug thereby to plant it in the furrow; and releasing the internal hold on the seedling plug.

4,644,881

EMBROIDERY FRAME SECURING DEVICE

Gottfried Schmidt, Stebach; Edgar Busch, Trippstadt, and Lothar Schilling, Kaiserslautern, all of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

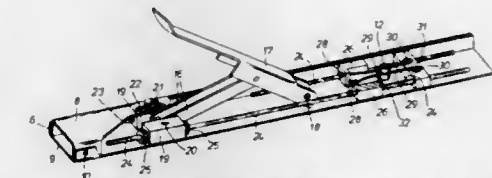
Filed Jun. 2, 1986, Ser. No. 870,160

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1985, 8516137[U]

Int. Cl.⁴ D05C 7/04

U.S. Cl. 112—103

5 Claims



1. An apparatus for securing and releasing an embroidery frame to a clamping rail, comprising a clamping rail having a plurality of spaced apart embroidery frame pin receiving openings, a hand lever having one end pivotally mounted on said clamping rail, a connecting piece within said clamping rail, a coupling element connected between said connecting piece and said hand lever in a spaced location from its pivotal connection to said clamping rail and having a bore therethrough, a rod extending through the bore of said connecting piece and secured to said connecting piece, said lever being movable to move said connecting piece with said rod to shift said rod along said clamping rail, said embroidery frames having at least one pin engageable in the selective opening of said clamping rail, said pin having side with a cutout, a resilient holder mounted adjacent each opening and including resilient members disposed in the path of movement of said rods, said rods having a pressure piece engageable with said holders and being movable upon flexing of said lever to engage and disengage said resilient holder for the purpose of engaging said resilient holder with a cutout of said pin to secure said pin in the clamping rail and to disengage from said pin to release said pin.

4,644,882

WORKPIECE GUIDE RAIL INCLUDING SEWING MATERIAL STRETCHING DEVICE

Horst Fenzl, Oerlinghausen, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Fed. Rep. of Germany

Filed Jun. 19, 1986, Ser. No. 876,224

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522329

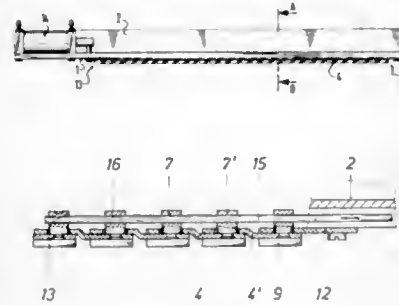
Int. Cl.⁴ D05B 21/00

U.S. Cl. 112—121.26

18 Claims

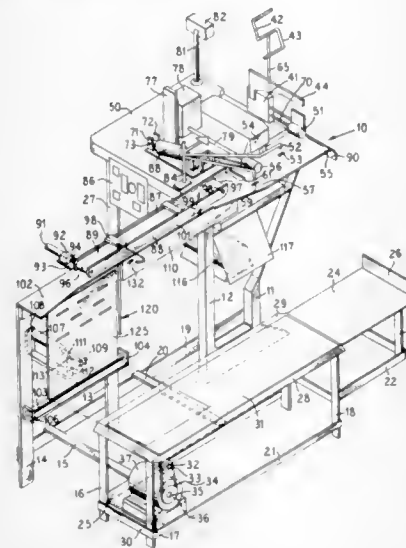
1. A workpiece guide rail for a sewing machine for guiding a workpiece past a stitch formation point, comprising: a frame; a plurality of holding elements movably mounted on the bottom of the frame, each holding element having a bottom surface adapted for gripping the workpiece; and means for temporarily increasing a spacing between the

holding elements by a predetermined amount to stretch the workpiece, and decreasing the spacing between the



holding elements to their previous spacing to allow the workpiece to return to its previous dimensions.

4,644,883
AUTOMATIC RIB CUFF MACHINE
Carmen N. Guin, Tupelo, and Sammy Hood, Myrtle, both of Miss., assignors to Denton Mills, Inc., New Albany, Miss.
Filed Dec. 26, 1985, Ser. No. 813,479
Int. Cl.⁴ D05B 33/00
U.S. Cl. 112-121.29



1. A machine for attaching cuffs to a sleeve blank comprising, a frame member with a planar portion, a supply of cuff material supported by said frame member and supplied to said planar member, a sewing machine head mounted on said frame member to receive said cuff material, and said sleeve blanks for sewing them together, first switch means connected to said sewing machine head to actuate it when a sleeve blank is placed on said planar member, second switch means, a cuff material cutter connected to said second switch means and actuated to sever said cuff material between a pair of sleeves, a first conveyor positioned to receive said sleeves after the cuff material has been severed, a stacker mounted to receive sleeves from said first conveyor, third switch means connected to said stacker to actuate it when a sleeve arrives at said stacker, and a second conveyor positioned to receive sleeves from said stacker, said first switch means is a first electric eye and a first light source and said sleeve blank intercepts light energy between said first light source and said first electric eye to actuate said sewing machine head, said second switch means is a second electric eye and a second light source and said sleeve blank actuates said second electric eye to actuate said cuff cutter, said third switch means is a third light source and a third electric eye and said sleeve blank actuates said third electric eye to actuate said stacker.

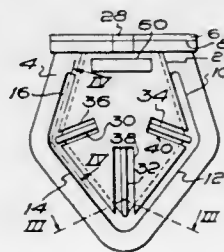
4,644,884
THREAD CHAIN SEWING APPARATUS FOR USE IN OVEREDGE SEWING MACHINE
Eiji Tatsumi, Nara, Japan, assignor to Pegasus Sewing Maching Mfg. Co., Ltd., Japan
Filed Jul. 24, 1984, Ser. No. 633,978
Claims priority, application Japan, Jul. 28, 1983, 58-139780; Jul. 28, 1983, 58-139781
Int. Cl.⁴ D05B 37/04, 29/06, 65/00, 27/04
U.S. Cl. 112-130



1. A thread chain sewing apparatus for use in an overedge sewing machine which is equipped with a known thread chain catcher having a cutter for cutting off a thread chain formed to extend from an end of a fabric and suctionally induced to a suction opening, said thread chain sewing apparatus comprising:

- a presser foot having a guide groove for insertion of a thread chain and the presser foot being movable up and down;
- a thread chain carrier arranged in parallel with said thread chain catcher and having a suction nozzle for suctionally receiving the cut-off thread chain to carry the thread chain over said presser foot; and,
- a thread chain presser mechanism having a holding plate movable up and down above said presser foot for pressing the thread chain carried by said thread chain carrier into the guide groove of said presser foot.

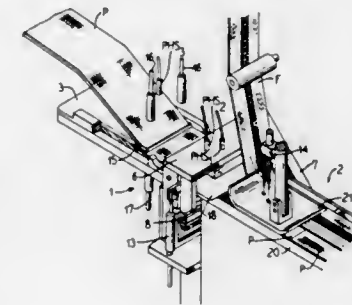
4,644,885
METHOD OF AND APPARATUS FOR SET-BACK TIPPING OF NECKTIES
Michael N. Bennison, Leeds, England, assignor to Automated Machinery Systems, Inc., Richmond, Va.
Filed Sep. 3, 1982, Ser. No. 414,754
Claims priority, application United Kingdom, Nov. 24, 1981, 8135414; May 17, 1982, 8214345
Int. Cl.⁴ D05B 1/00
U.S. Cl. 112-262.2



1. A sewing jig for sewing set back tipped ends of neckties by means of a sewing machine guided along a seam line bending at an end corner of the necktie and at two side corners on opposite sides of the end corner, comprising:
a base plate, a fulling plate, and an upper plate,
the upper and fulling plates being movable relative to one another and relative to the base plate between raised positions over the base plate and lowered positions in which they are lowered toward the base plate so that the three plates lie against one another,

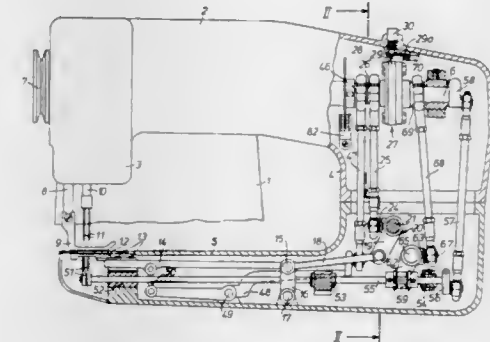
said base plate and fulling plate being adapted to receive a piece of necktie lining cloth therebetween,
said upper plate and fulling plate each having a tip corner and opposite side corners corresponding to said corners of the necktie,
a first elongated fulling rib projecting upwardly from the fulling plate toward the upper plate and extending on the fulling plate to the tip corner thereof,
second and third elongated fulling ribs projecting upwardly from the fulling plate toward the upper plate and extending on the fulling plate to respective opposite side corners thereof,
pleat forming means having a fulling rib engaging means adapted to cooperate with the first fulling rib in a manner to form a first pleat in the necktie face cloth that is positioned between the fulling and upper plates of the jig,
the pleat forming means being constructed and arranged to form the first pleat in the necktie face cloth when the upper plate approaches the fulling plate and before the fulling and upper plates completely come together,
first and second fulling rib receiving means extending to respective opposite corners of the upper plate and adapted to receive the second and third fulling ribs, respectively, in order to form second and third pleats in the necktie face cloth,
said pleat forming means that cooperates with the first fulling rib being yieldingly mounted to permit movement together of the upper and fulling plates after the first pleat is formed and before the second and third pleats are fully formed.

4,644,886
METHOD AND APPARATUS FOR ATTACHING FLY STRIPS TO A SLIDE FASTENER CHAIN
Kazuo Miyakawa, Marietta, Ga., assignor to Yoshida Kogyo K., Tokyo, Japan
Division of Ser. No. 643,543, Aug. 23, 1984. This application Apr. 14, 1986, Ser. No. 851,816
Int. Cl.⁴ D05B 97/00
U.S. Cl. 112-265.2



1. A method of feeding successive individual pieces to a continuously operating sewing machine for sewing, comprising the steps of:
sewing a preceding piece in said sewing machine with a leading end of said preceding piece sewn first and a trailing end of said preceding piece sewn last,
superimposing a leading end of a succeeding piece over said preceding piece trailing end as said preceding piece is being sewn,
keeping said succeeding piece waiting upstream of said sewing machine in the superimposed position while said preceding piece is being sewn,
detecting when the trailing end of said preceding piece advances out from under the leading end of said succeeding piece as said preceding piece is being sewn, and
supplying said succeeding piece to said sewing machine for sewing in response to said detection.

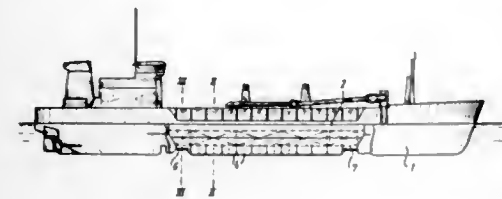
4,644,887
SEWING MACHINE WITH REVOLVING STITCH REGULATOR AND DISPLAY DEVICE
Winfried Pech, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany
Filed May 8, 1986, Ser. No. 861,224
Claims priority, application Fed. Rep. of Germany, May 9, 1985, 3516712
Int. Cl.⁴ D05B 27/22, 35/12
U.S. Cl. 112-315



1. A device for adjusting the feed amount of a cloth feeder in a sewing machine having a housing and a main shaft mounted for rotation in the housing, the device comprising a stitch regulator connected to the main shaft for rotation therewith, transmission means connected between said stitch regulator and the cloth feeder for transmitting rotation of the stitch regulator to the cloth feeder, said stitch regulator including a setting element which is movable in steps with respect to the main shaft for adjusting the feed amount, fixing means mounted on the housing and engageable with said setting element for holding said setting element with rotation of the main shaft to permit movement of the setting element by an adjustment amount with respect to the main shaft, a pulse generator operatively connected to the main shaft for delivering pulses corresponding to the adjustment amount, switch means operatively connected to said fixing means and connected to said pulse generator for activating said pulse generator when said fixing means engages said setting element so as to initiate the delivery of pulses, pulse evaluating means connected to said pulse generator for evaluating pulses delivered from said pulse generator, and display means connected to said pulse evaluating means for displaying said adjustment amount.

4,644,888
FLOATING HOPPER BARGE WITH DISCHARGING TRAP DOORS IN THE BOTTOM
 Hendrik Langejan, Krimpen a/d Lek, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands
 Continuation of Ser. No. 712,002, Mar. 14, 1985, abandoned.
 This application Jun. 20, 1986, Ser. No. 878,403
 Claims priority, application Netherlands, Mar. 16, 1984, 8400861

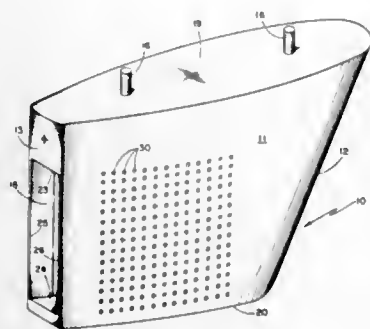
Int. Cl.⁴ B63B 35/30
 U.S. Cl. 114—27



1. A hopper vessel for storing bulk material, comprising a bow and a stern, at least one hold disposed between the bow and the stern, a first plurality of trap doors that are disposed only in the bottom of the hold and that are spaced rearwardly of the bow and forwardly of the stern and that open by moving downwardly below the bottom of the vessel, and a second plurality of trap doors that are disposed only in the bottom of the hold and that are spaced rearwardly of the bow and forwardly of the stern and that open by moving downwardly to a level higher than the level to which said first plurality of trap doors moves down, both said first and said second plurality of trap doors being so disposed as to support material in the hold and to permit the discharge of material downwardly past said trap doors when said trap doors are moved downwardly to their open position, said at least one hold having an upwardly open top, and both said first and said second plurality of trap doors being disposed directly below said open top.

4,644,889
SAILBOAT KEEL
 Keith A. Krans, 5246 Xerxes Ave. South, Minneapolis, Minn. 55410
 Filed Aug. 26, 1985, Ser. No. 769,417
 Int. Cl.⁴ B63B 3/38
 U.S. Cl. 114—40

5 Claims

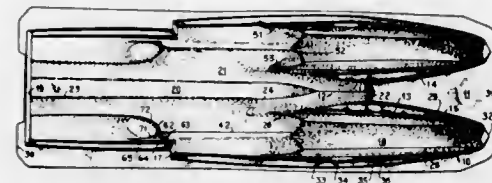


1. A sailboat keel including:
 an elongated body generally symmetrical about a longitudinal center plane, said body having fore and aft edges and a generally elliptical cross-section taken transversely of said center plane;
 an elongated internal chamber formed in said body between the upper and lower ends thereof, and extending forwardly to a point aft of a minor axis of said elliptical cross-section, said internal chamber having a pair of op-

posed lateral walls on opposite sides of said center plane, and open to the aft edge of said body;
 a plurality of bores formed in said body and extending diagonally from forward ports along the outer surface of the body to aftward ports along said lateral walls of said internal chamber.

4,644,890
TRIMARAN WITH PLANING HULL
 David A. Lott, Rte. 2 Box 55, Broxton, Ga. 31519
 Filed Mar. 5, 1985, Ser. No. 708,279
 Int. Cl.⁴ B63B 1/20
 U.S. Cl. 114—61

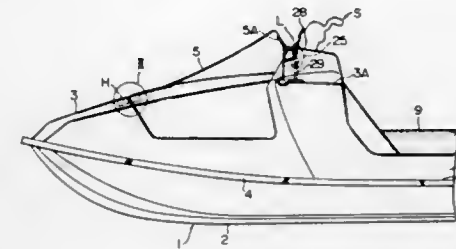
5 Claims



1. A boat hull comprising twin forward subhulls, a structure bridging therebetween, a central subhull having its fore-end juxtaposed between the forward subhulls and positioned upwardly from the points at which the twin forward subhulls have their maximum depth, and a pair of stabilizing fins, each of which is formed in the hull aft of a forward subhull and which extends rearwardly to a step; a fore part of the central subhull and the twin forward subhulls forming a pair of venturi throats, these throats reaching a minimum cross-sectional area at approximately one-half the hull length; the forward subhulls terminating generally midship and proximate said minimum cross-sectional area; the central subhull having a pair of upper walls and a transversely flat bottom wall, the upper walls sloping upwardly and outwardly from the bottom wall; a front portion of the bottom wall being forwardly and upwardly inclined towards the fore-end of the central subhull; said bottom wall, forward of said minimum cross-sectional area, terminating in substantially a point; the bottom wall extending rearwardly of said point to the stern of the boat, the greatest width of the bottom wall being approximately equal to the narrowest separation between the forward twin subhulls; the bottom wall serving both as a planing surface and to straighten and smooth the flow as it enters the region which a propeller occupies in use; each forward subhull having a modified W cross-sectional form which terminates downwardly in a pair of forward keel edges; the pair of forward keel edges for each forward subhull bounding a concave underside and being disposed approximately parallel to the longitudinal axis of the hull; each of the stabilizing fins extending rearwardly from a point aft of one of the forward subhulls, the fore-end of each fin being offset generally from the longitudinal centerline of the concave underside of the proximate forward subhull toward said longitudinal axis and diverging rearwardly therefrom, each fin extending generally one-half the distance from the forward subhull to the stern of the boat and terminating rearwardly of said step; the span of the hull being reduced substantially at the step to decrease the water contact surface in the aft part of the hull; the central subhull forming a pair of spoilage tunnels, each tunnel being disposed between one of the stabilizing fins and the bottom wall; the two venturi throats being positioned to direct flow therethrough into the spoilage tunnels; rearwardly of the step, the central subhull forming a pair of generally flattened side walls which are inclined upwardly with respect to the bottom wall and which extend outwardly therefrom; the hull exhibiting a smooth transition from rest to a planing mode, the capacity to recover quickly after traversing a wake and stability during tight turns at high speeds.

4,644,891
UNIT FOR MOUNTING HOOD OF WATERCRAFT
 Jiro Niina, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan
 Filed Apr. 2, 1986, Ser. No. 847,250
 Claims priority, application Japan, Apr. 3, 1985, 60-70517
 Int. Cl.⁴ B63B 19/14
 U.S. Cl. 114—201 R

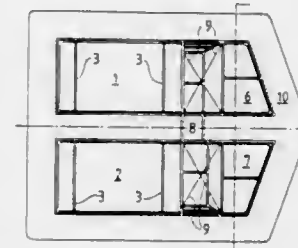
5 Claims



1. A hood mounting unit suitable for use in a small-sized watercraft comprising a hull and a hood, said unit comprising at least one hinge means disposed between the hull and the hood and including first and second hinge elements, said first hinge element having a first engaging portion provided on the distal end of said first hinge element having a constant width in one direction at one side, said second hinge element having a hood-rotation guide groove having the same width as that of the distal end of said first hinge element and two opposite upright walls located on the opposite sides of said hood-rotation guide groove, one of said upright walls being formed with a second engaging portion engageable with said first engaging portion when said first engaging portion is moved in said one direction, the other of said upright walls being formed with a hood-removal guide groove engaged by the distal end of said first hinge element when said first hinge element is moved vertically relative to said hood-removal guide groove, said hood-removal guide groove having a guide face for guiding said first hinge element such that the first hinge element can be moved relative to said second hinge element in said one direction to engage said first hinge element with said second engaging portion.

4,644,892
BUOYANT TRAMPOLINE
 Gavin R. Fisher, Unit 2, Bora Place, 1987 Gold Coast Highway, Miami, 4220, Queensland, Australia
 Filed May 7, 1984, Ser. No. 607,426
 Claims priority, application Australia, Jul. 27, 1983, 17321/83
 Int. Cl.⁴ A63B 5/10
 U.S. Cl. 114—264

11 Claims

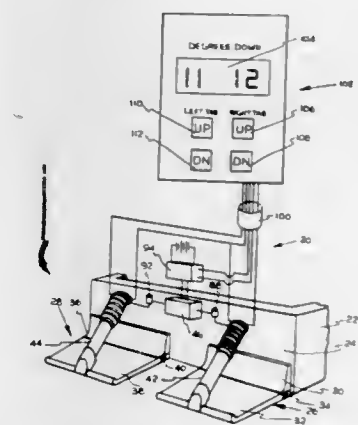


1. A buoyant marine structure comprising:
 a frame member defining at least one trampoline support frame;
 an elevated platform supported by said support frame;
 a resiliently mounted trampoline mat attached about its periphery to said support frame;
 said elevated platform providing an enlarged area for jumping off onto said trampoline mat, said resiliently mounted

trampoline mat being located about a major portion of said support frame; and
 buoyancy means formed of at least one inflatable bladder like member located about the periphery of said support frame and said trampoline mat, said trampoline mat being located within the interior periphery of said buoyancy means.

4,644,893
POSITION INDICATING APPARATUS FOR USE IN A BOAT LEVELING SYSTEM
 Lawrence P. Zepp, Toledo, Ohio, assignor to International Hydraulic Systems, Inc., Southgate, Mich.
 Filed Aug. 6, 1984, Ser. No. 638,233
 Int. Cl.⁴ B63B 1/22
 U.S. Cl. 114—286

10 Claims



1. A trim tab positioning assembly for a boat having a transom comprising a trim tab connected to said transom by a hinge, an extendible fluid motor, the fluid motor having a cylinder member directly pivotally connected to said trim tab on one end, a piston slidably disposed in the cylinder member and a rod member connected to the piston and directly pivotally connected to said transom, position indicating apparatus comprising a linear potentiometer having a flexible plastic envelope and a pair of normally spaced-apart conductive strips sealed in said envelope, a longitudinally extending slot formed in one of said members and said envelope being disposed in said slot, means carried by the other of the members for contacting said envelope and forcing said conductive strips into electrical contact with each other, and resistance measuring means connected in circuit with said conductive strips.

4,644,894
ANCHOR
 Bryan F. Woodgate, 2 Penlue Close, Four Lanes, Redruth, United Kingdom
 Filed Feb. 5, 1985, Ser. No. 698,338
 Int. Cl.⁴ B63B 21/038
 U.S. Cl. 114—304

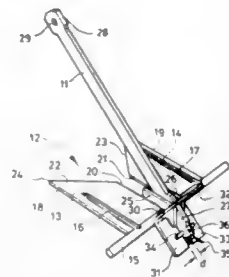
8 Claims

1. In an anchor for nautical or marine use, of the type having a pair of spaced anchor flukes each having a pair of parallel faces thereon extending substantially in a single plane, and comprising:
 an elongate anchor shaft member having a first end for attachment of said anchor to an anchor chain and a distal end remote therefrom,
 an anchor body member incorporating said two spaced coplanar anchor flukes,
 means pivotally connecting said anchor body member to said anchor shaft member for turning movement with respect thereto, and
 shear pin retaining means for retaining said anchor body

member in a position in which it is inclined to said anchor shaft member at not more than a predetermined angle, said predetermined angle being determined by engagement of said shear pin retaining means with cooperating abutment means,

the improvement wherein said pivotal connection between said elongate anchor shaft member and said anchor body member is formed at a position along said elongate anchor shaft member spaced from said distal end thereof such that a distal end portion of said elongate anchor shaft member extends from said pivotal connection of said anchor shaft member and said anchor body member to said distal end of said anchor shaft member,

said shear pin retaining means comprise a single shear pin passing through an aperture in said elongate anchor shaft



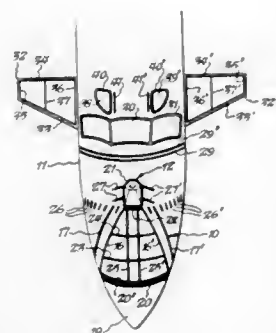
member at a point between said pivotal connection to said anchor body member and said distal end and projecting on each side of said anchor shaft member, and

said abutment means includes two pairs of abutment plate members each pair extending rearwardly away from said flukes of said anchor body member and said two pairs forming between them a V-shape, plate members of each said pair being coplanar and parallel to one another and spaced by a gap only slightly larger than the thickness of said distal end portion of said elongate anchor shaft member such that said plate members and said anchor shaft members together act to exert a shear force on a said shear pin when said anchor body member is turned about said pivotal connection to said elongate anchor shaft member to bring said shear pin into contact with one or other of said pairs of spaced parallel abutment plate members

4,644,895
MARKING ARRANGEMENT FOR AIDING AIRCRAFT MID-AIR REFUELING
 C. Paul Cozad, Kenmore, N.Y., assignor to Scipar, Inc., Williamsville, N.Y.

Filed Feb. 19, 1985, Ser. No. 703,028
 Int. Cl.⁴ G01D 11/00
 U.S. Cl. 116—200

40 Claims



33. A marking arrangement for enhancing visual perception of a predetermined area on a convex aircraft body having a longitudinal axis comprising spaced substantially parallel com-

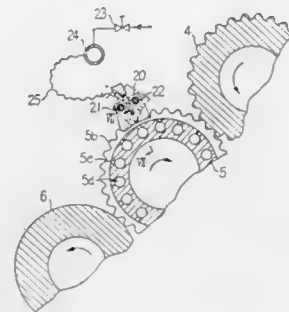
parator lines of selected separation determined by the appearance of a fuel boom in relation to said comparator lines and extending axially toward said predetermined area for visually gauging the proximity of the end of said fuel boom as it approaches the vicinity of said predetermined area, and a plurality of spaced substantially parallel milestone marker lines extending transversely to said spaced substantially parallel lines.

4,644,896
LOWER ROLL APPARATUS FOR SINGLE FACER
 Tadashi Hirakawa, Hiroaki Sasashige, and Haruo Okawa, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1985, Ser. No. 769,360
 Int. Cl.⁴ B05C 1/08

U.S. Cl. 118—44

7 Claims



1. A lower roll apparatus for a single facer, comprising: frame means;
- a lower corrugated roll rotatably mounted on said frame means, said lower roll rotatable about a roll axis and having at least one circumferential groove formed on a radially outer peripheral surface thereof, a plurality of suction bores opening at one end thereof into said at least one circumferential groove, the other end of said suction bores being in fluid communication with a source of suction for holding a core paper sheet to said outer peripheral surface of said lower roll during a single facing operation;
- at least one suction bore cleaning means for blowing compressed air or steam into a respective circumferential groove of said lower roll to clean said suction bores, said suction bore cleaning means comprising a nozzle and movable support means mounted on said frame means for positioning said nozzle into and out of said respective circumferential groove; and
- a piping system means connected between said nozzle and a source of compressed air or steam for selectively supplying either compressed air or steam to said at least one circumferential groove to thereby blow away glue and paper dust caught in said suction bores.

4,644,897
MODULAR ROBOTIC FINISHING WORK CENTER
 Norman N. Fender, Monroe, Mich., assignor to Graco Robotics, Inc., Livonia, Mich.

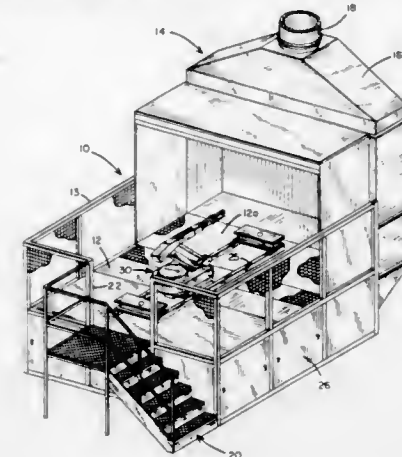
Filed Oct. 1, 1985, Ser. No. 782,430
 Int. Cl.⁴ B05B 15/12

U.S. Cl. 118—323

16 Claims

1. A self-contained work center for the automatic application of coatings to products, comprising:
 - (a) a framework having an elevated platform;
 - (b) a turntable rotatably affixed above said platform for rotation about a first vertical axis; said turntable having a plurality of stations thereon for affixing products thereto;
 - (c) means for driving said turntable about said first vertical axis;
 - (d) a robotic manipulator affixed above said turntable, and

having means for rotating about said first vertical axis, said manipulator having attached thereto a coating applicator, and said manipulator having controllable freedom of motion for positioning said applicator at any point within a predetermined volume envelope, and means for driving said applicator; and



(e) control means connected to said means for driving said turntable and to said means for driving said applicator, said control means having prestored means for coordinating the respective positions of said turntable and said applicator.

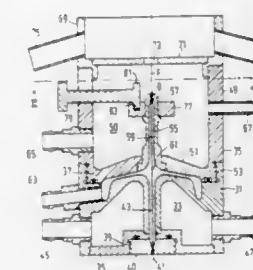
4,644,898
ARRANGEMENT FOR COATING OPTICAL FIBRES
 Cornelis M. G. Jochem, and Jacobus W. C. van der Ligt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1985, Ser. No. 789,512
 Claims priority, application Netherlands, Apr. 19, 1985, 8501146

U.S. Cl. 118—405

Int. Cl.⁴ B05C 3/15

9 Claims



1. An arrangement for coating a fiber comprising:
 - (a) a housing provided with a sidewall portion, a bottom wall portion essentially transverse to said sidewall portion, and including a pressure chamber for providing liquid coating under pressure on a fiber passing through said pressure chamber;
 - (b) a closure member transverse to, and cooperating with, the sidewall portion of said housing for closing the upper side of said pressure chamber and comprising a guide duct with an inlet opening for the supply and guidance of a fiber to be coated by liquid coating in said pressure chamber;
 - (c) a supply opening situated in a wall of said housing for supplying said liquid coating to said pressure chamber;
 - (d) an overflow opening for said liquid coating material situated in the sidewall portion of said housing, and
 - (e) a nozzle situated in the bottom wall portion of said housing

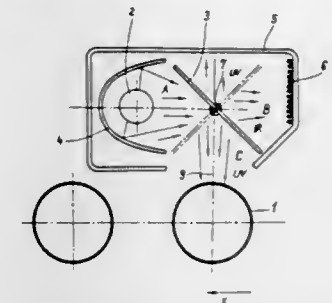
ing and provided with an opening, coaxial with said guide duct and in communication with said pressure chamber, characterized in that said guide duct is provided in a tubular guide member secured in said closure member and having a free end adjustable in the radial direction.

4,644,899
PROCESS AND APPARATUS FOR UV-POLYMERIZATION OF COATING MATERIALS
 Bernhard Glaus, Holzstrasse 41, 9010 St. Gallen, Switzerland
 Filed Aug. 21, 1985, Ser. No. 767,325
 Claims priority, application Switzerland, Aug. 31, 1984, 4176/84

U.S. Cl. 118—642

Int. Cl.⁴ B05D 3/06

3 Claims



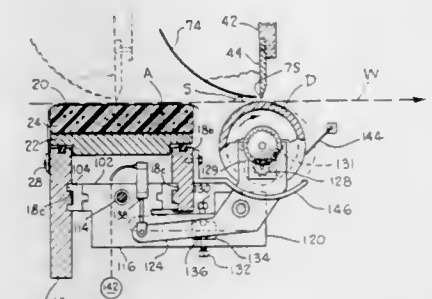
1. Apparatus for hardening polymerisable coating materials on a cyclically or continuously moving substrate, in particular printing inks and varnishes, comprising at least one ultraviolet radiation source in a housing, a reflector system for focusing the rays emitted by the radiation source onto the substrate, said system including a mirror pivotally arranged in the housing and in the beam of the ultraviolet radiation source, said mirror having a thin film coating with dielectric properties for making a selection in respect of the rays in such a way that the mirror in one pivoted position directs the greatest part of the ultraviolet rays through an opening in the housing onto the substrate while the component of rays having a higher thermal content passes through the mirror in a straight line toward a wall of the housing, and cooling means disposed in the housing behind the mirror in the path of rays with higher thermal content that pass through the mirror.

4,644,900
COATING APPARATUS WITH AUTOMATIC TROUGH CONTROL AND SEAM PASSAGE
 Robert J. Poterala, Rte. 15, Rocky Pointe Way, Greenville, S.C. 29601

Filed Apr. 25, 1985, Ser. No. 727,273
 Int. Cl.⁴ B05C 5/02

U.S. Cl. 118—670

29 Claims



1. Coating apparatus for coating a traveling web of fabric with a coating compound comprising:

a frame having a pair of side frame members between which said fabric travels;

a blade assembly carried by said frame having a coating blade for applying said coating compound on said fabric;

a trough assembly carried by said frame;

a trough included in said trough assembly for containing said coating compound to support said coating compound above the surface of said fabric to control the sink rate into said fabric;

trough support means for supporting said trough in a position in which said coating compound is dispensed over an edge of said trough onto said fabric;

said trough support means slideably supporting said trough on said trough assembly in a horizontal direction;

trough positioning means for setting the horizontal position of said trough in a desired gap position to define a predetermined metering gap between said edge of said trough and said coating blade;

closure means for moving said trough against said coating blade to close said gap during cessation of said web travel, and for returning said trough to said gap position automatically upon resumption of web travel;

a roll mandrel assembly carried by said frame including a coating roll carried by said mandrel assembly generally below said coating blade;

pivot means carrying said coating roll on said mandrel assembly for movement in a rearward arcuate motion having a horizontal and vertical component to allow passage of a thickened seam of said fabric;

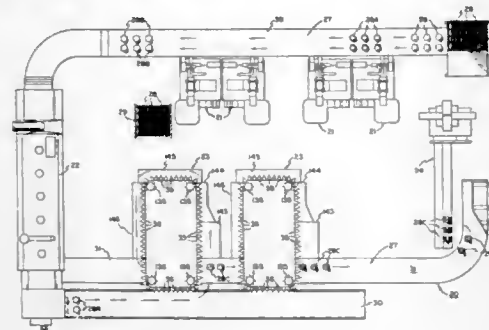
biasing means acting on said pivot means to urge said coating roll in an upward direction to a coating position in which said web of fabric travels over said roll with said coating blade applying said coating compound onto said fabric; and

said biasing means exerting an even pressure on said coating roll against said fabric and coating blade during coating and during said rearward arcuate motion.

4,644,901
APPARATUS FOR MAKING CHOCOLATE-COATED ICE CREAM COOKIE SANDWICHES
 John F. Jones, 140 Summit Rd., Prospect, Conn. 06712
 Division of Ser. No. 604,858, Apr. 27, 1984, Pat. No. 4,580,476.
 This application Sep. 18, 1985, Ser. No. 777,161
 Int. Cl.⁴ B05C 3/10

U.S. Cl. 118—694

15 Claims



1. A chocolate-coating ice cream cookie sandwich manufacturing system comprising:

A. conveyor means for receiving and transporting the chocolate coated ice cream cookie sandwich throughout its various manufacturing stages;

B. an ice cream brick slicing machine comprising

a. brick receiving means for receiving standard ice cream bricks,

b. cutting means for sequentially cutting the ice cream bricks into a plurality of slices, and

c. positioning means for placing each ice cream slice in a holding zone for transferral to the conveyor means;

C. freezer means

a. for receiving and quickly freezing the ice cream cookie sandwiches inserted therein,

b. positioned between the slicing machine and the coating machine for freezing the ice cream prior to coating thereby assuring trouble-free operation; and

D. a chocolate coating machine comprising

a. a plurality of clamps for securely holding the ice cream cookie sandwiches therein, and

b. drive means for moving the clamps with the ice cream cookie sandwiches through a chocolate supply for coating the ice cream cookie sandwich with a chocolate layer, and

c. release means for opening the clamps to release the chocolate-coated ice cream cookie sandwich onto the conveyor means for transportation to a wrapping zone.

4,644,902
PET CARRIER
 Reba L. Doyle, 422 N.E. 93rd St., Miami Shores, Fla. 33138
 Filed Aug. 1, 1985, Ser. No. 762,731
 Int. Cl.⁴ A62B 35/00

U.S. Cl. 119—19

6 Claims



1. A carrier for a pet occupant, the carrier being formed of a sheet of flexible material comprising a body portion having four openings for the occupant's legs to extend through and integral strap portions forming straps extending from opposing sides of the body portion, the carrier further including releasable securement means at the ends of the respective straps for releasably securing the straps together, the body portion in use being drawn up to an occupant from below with the occupant's legs extending through the openings, a pair of flexible restraining panels attached to the body portion outwardly of said openings, means at the free edges of said panels detachably connecting them together in overlying engagement with the occupant and the straps being brought together above and in spaced relation to the connected free ends of the panels for securement whereby the carrier is formed into a sling for the occupant with its legs protruding through said openings.

4,644,903
AUTOMATIC ANIMAL FEEDER
 Richard Shaver, 1899 Haig, Montreal, Quebec, Canada H1N 3E1
 Filed Jun. 3, 1985, Ser. No. 740,544
 Int. Cl.⁴ A01K 5/02

U.S. Cl. 119—51 R

23 Claims

1. An automatic animal feeder for automatically exposing feed at predetermined substantially regular intervals, which comprises:

a frame having a base portion and an upwardly extending rear portion;

at least two feeding troughs arranged side-by-side in said base portion and adapted to contain animal food;

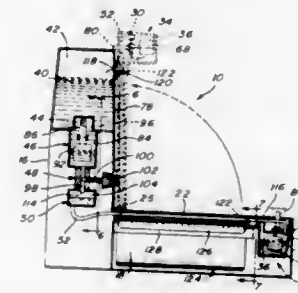
a lid associated with a respective one of said feeding troughs, said lid being movable between open and closed positions and normally biased toward said open position;

a retention means associated with a respective lid for retaining same in said closed position;

a liquid-operated release mechanism associated with a re-

spective retention means, said release mechanism including a chamber with an inlet for receiving a liquid being operative to release said respective retention means when said liquid reaches a predetermined level in said chamber, said chamber having liquid discharge means for emptying same after use;

a liquid feed tank adapted to contain said liquid, said feed tank having an outlet and being arranged in the rear portion of said frame to enable said liquid to flow by gravity through said outlet; and



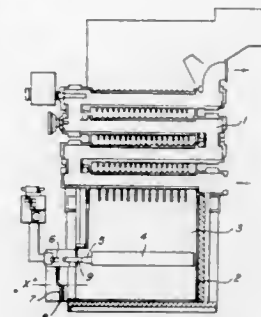
liquid supplying means interconnecting the tank outlet with the chamber inlet of a respective release mechanism for successively supplying said liquid to the respective chambers so as to successively release the associated retention means and cause successive opening of the associated lids, thereby exposing said animal food at predetermined substantially regular intervals corresponding to the time required for said liquid to fill a respective chamber, to said predetermined level.

4,644,904
GAS FIRED HEATING BOILER
 Peter Metz, Meuhltal, Fed. Rep. of Germany, assignor to Hydrotherm Geraethebau GmbH, Dieburg, Fed. Rep. of Germany
 Filed Feb. 25, 1985, Ser. No. 705,195
 Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406503

Int. Cl.⁴ F22B 5/00

U.S. Cl. 122—13 R

7 Claims



1. A gas-fired heating boiler comprising:

a combustion chamber with a plurality of heat exchanger elements in open communication therewith;

a first and second means for intake of combustion air into the combustion chamber,

wherein said first means for intake of combustion air is a Venturi tube in the wall of said combustion chamber; and said second means for intake of combustion air is an air damper in the wall of said combustion chamber for supplying variable amounts of air to said combustion chamber;

means for supplying combustion air to said Venturi tube and said air damper; and

wherein said combustion chamber, Venturi tube and air

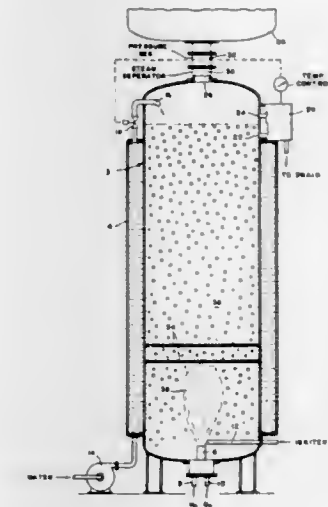
damper are sealed against the flow of uncontrolled air into said combustion chamber;

wherein said Venturi tube has a cross section and volume which limits the flow of combustion air to a constant partial amount of the volume required in a full load operation of said boiler and said air damper further comprises an opening in said combustion chamber wall calibrated for the flow of an amount of combustion air which in addition to the constant partial amount is sufficient for optimum efficiency of combustion in said combustion chamber; and wherein said opening in said combustion chamber comprises a window or opening for said air damper and a replaceable diaphragm disk for calibrating the flow of combustion air.

4,644,905
METHOD OF PRODUCING STEAM
 Donald E. Vierling, 11309 Toledo Dr., Austin, Tex. 78759
 Filed Jan. 8, 1986, Ser. No. 817,268
 Int. Cl.⁴ F22B 1/02

U.S. Cl. 122—31 A

6 Claims



1. The method of producing steam at temperatures suitable for handling in available materials which comprises providing a pool of water of substantial depth, burning hydrogen with oxygen beneath the surface to generate steam at extremely high temperatures, said generated steam mixing with said water to lower said generated steam temperature and form additional steam from said water, providing additional water to said pool, and controlling the amount of added water to maintain the top level of said pool of water above the burning hydrogen so as to provide steam at the desired temperature.

4,644,906
DOUBLE TUBE HELICAL COIL STEAM GENERATOR
 George Garabedian, Boston, and Robert A. DeLuca, Newton Centre, both of Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.
 Filed May 9, 1985, Ser. No. 732,369
 Int. Cl.⁴ F22B 1/02, 37/24

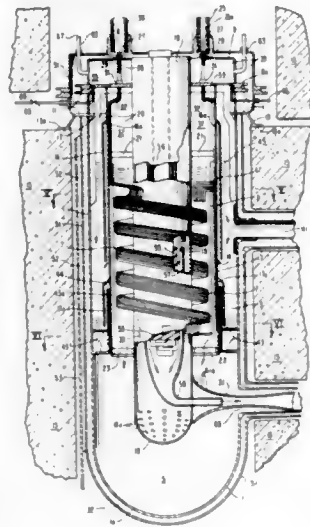
U.S. Cl. 122—32

22 Claims

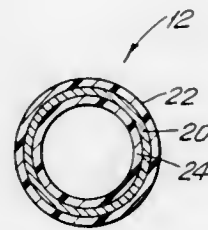
1. A steam generator comprising a container having a closed lower end, divided into longitudinally arranged sections including an uppermost disengaging chamber, an upper plenum, and a lower plenum, said upper plenum being above said lower plenum and containing a multiplicity of double tube helical coils, wherein

each of said double tube helical coils is comprised of an inner tube individually enclosed for at least a portion of its length by an outer tube to form a double tube portion and

thereby define an annular gap which is outside said inner tube but enclosed by said outer tube;
said inner tube being attached at one end to a feedwater inlet, and said inner tube being attached at the other end to a steam outlet;
said outer tube being in open communication at both ends with said disengaging chamber;
said double tube portion being in the configuration of a helix for part of its length;

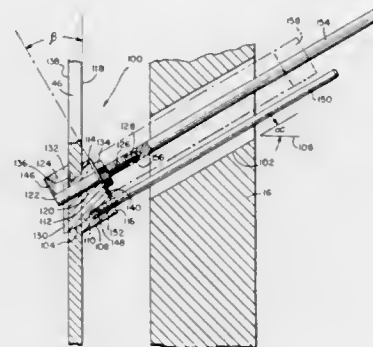
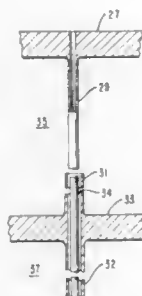


said fireside surface and said waterside surface, wherein the material of said coating is dichlorodimethylsilane or its fluoro-



carbon composition version and wherein the radial thickness of said coating is on the order of 1×10^{-6} inch (2.54×10^{-6} cm).

4,644,908
STEAM GENERATOR WRAPPER CLOSURE AND METHOD OF INSTALLING THE SAME
John M. Matusz, Plum Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 13, 1984, Ser. No. 670,793
Int. Cl.⁴ F22B 37/10
U.S. Cl. 122—511 19 Claims



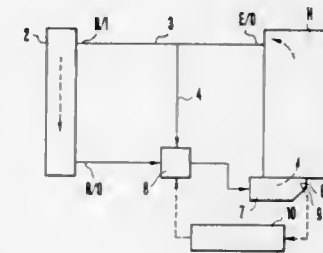
said upper plenum having no communication with said disengaging chamber and having restricted communication with said lower plenum such that liquid metal entering the upper plenum and flowing to said lower plenum closely contacts at least a portion of the double tube helical coils; and
said annular gap being at least partially filled with liquid metal.

4,644,907
BOILER TUBES OF ENHANCED EFFICIENCY AND METHOD OF PRODUCING SAME
Edward H. Hunter, P.O. Box 507, Westbury, N.Y. 11590
Filed Nov. 29, 1985, Ser. No. 802,834
Int. Cl.⁴ F22B 15/00, 25/00, 37/10
U.S. Cl. 122—235 C 8 Claims

1. A composite boiler tube having a fireside surface and a waterside surface and comprising a metallic tubular member having an outer surface and an inner surface, at least one of said metallic surfaces having an efficiency enhancing coating adhered thereto and providing said composite tube with one of

1. A steam generator, comprising:
a wrapper having an interior surface adapted to circumferentially envelope a plurality of heat exchange tubes;
means defining a penetration within said heat exchange tube wrapper;
plug means for closing said heat exchange tube wrapper penetration comprising a first cylindrical portion having a diametrical extent slightly less than the diametrical extent of said penetration so as to permit said first cylindrical portion to be disposed within said wrapper penetration; and
a second cylindrical portion having a diametrical extent greater than said diametrical extent of said first cylindrical portion so as to define with said first cylindrical portion an annular shoulder portion for engagement with the exterior surface of said heat exchange tube wrapper when said first cylindrical portion of said plug means is disposed within said wrapper penetration; and
means rotatably mounted upon said plug means for lockingly retaining said plug means upon said heat exchange tube wrapper and within said heat exchange tube wrapper penetration.

4,644,909
SYSTEM FOR COOLING INTERNAL COMBUSTION ENGINES
Masahiro Nishikata, Tokyo, and Masato Nozaki, Kawasaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed May 8, 1985, Ser. No. 731,894
Claims priority, application Japan, May 10, 1984, 59-93569
Int. Cl.⁴ F01P 7/16
U.S. Cl. 123—41.1 4 Claims

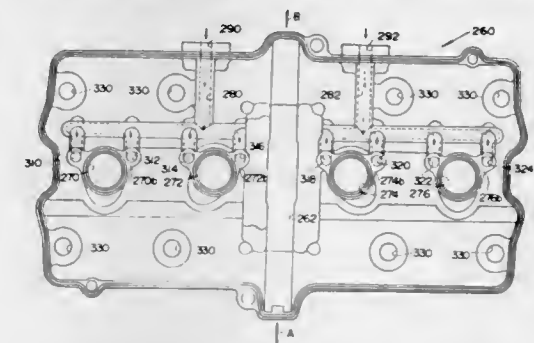


1. A system for cooling internal combustion engines comprising:
a main cooling water line for circulating water through a radiator;
a by-pass cooling water line diverging from said main cooling water line and circulating water without passing through the radiator;
a motor-driven valve mechanism positioned for mixing the water from said main cooling water line with the water from said by-pass cooling water line in a mixture ratio controlled in accordance with the temperature of the cooling water to be supplied to the engine;
a water temperature sensor arranged at a position close to a water inlet to the engine; and
an electric control circuit for receiving the signal from said water temperature sensor and generating the signal to control the operation of said motor-driven valve mechanism, wherein said valve mechanism comprises a valve body, a spool inserted into said valve body and a direct current motor for driving said spool, said spool making an up-down movement between a first opening for the main cooling water line and second opening for the by-pass cooling water line, so as to regulate the water mixture ratio.

4,644,910
APPARATUS FOR COOLING CYLINDER HEAD OF AN ENGINE
Seiichi Kawamura, Shizuoka, Japan, assignor to Suzuki Motor Co., Ltd., Japan
Filed Sep. 12, 1985, Ser. No. 775,317
Claims priority, application Japan, Sep. 14, 1984, 59-193096
Int. Cl.⁴ F01P 3/02
U.S. Cl. 123—41.31 1 Claim

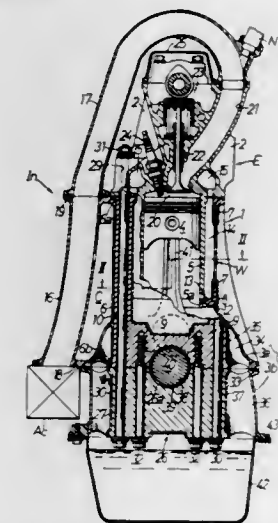
1. An apparatus for cooling a cylinder head of an engine comprising:
a cylinder head cover in the form of a plate adapted to fully cover an upper opened surface of said cylinder head, said cylinder head cover being formed in an upper wall thereof with an insert hole for inserting an ignition plug fitting and removing tool, said insert hole being formed on an inner wall thereof with an inclined guide groove for guiding said ignition plug fitting and removing tool;
an oil passage formed in said cylinder head cover, one end of said oil passage being opened at a side portion of said cylinder head cover and the other end being branched such that the branched ends extend around a plug seat in said cylinder head;
a recess formed around said plug seat in said cylinder head;

covers adapted to cover said recess; and
nozzles each disposed between said recess and the other end of said oil passage, one end of said nozzle connecting with



the other end of said oil passage and the other end extending into said recess, whereby lubricating oil pumped up from an oil pan is fed via said oil passage and said nozzle and is spouted into said recess so as to cool said engine.

4,644,911
CYLINDER BLOCK FOR INTERNAL COMBUSTION ENGINE
Yoshiaki Hidaka, Junichi Araki, both of Saitama, and Masayuki Tamura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1984, Ser. No. 657,685
Claims priority, application Japan, Oct. 7, 1983, 58-187790; Oct. 7, 1983, 58-187791
Int. Cl.⁴ F02F 1/10
U.S. Cl. 123—52 M 18 Claims



1. A cylinder block for an internal combustion engine, comprising: a square-shaped skeleton frame made of metal having four sides each containing a substantial void therein, and a bottom member joining said sides; a cylinder sleeve made of metal for positioning a piston slidably therein and having an outer periphery, said cylinder sleeve being accommodated in said skeleton frame while leaving a clearance between said outer periphery and said sides of said skeleton frame; and an outer wall portion made of a heat resisting plastic and formed integrally to all exposed surfaces of said skeleton frame but the bottom member, and extending over said voids in a manner to surround the exposed surfaces and voids on the sides of said skeleton frame to form a water jacket between said outer wall portion and said cylinder sleeve for passing cooling water therethrough.

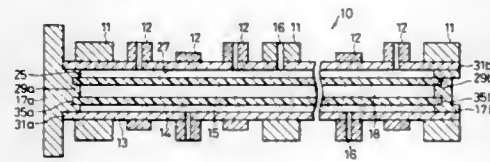
4,644,912

CAM SHAFT AND METHOD OF MANUFACTURE
Genkichi Umeha, Tokyo; Shigeru Urano, Saitama; Osamu Hirakawa, Saitama, and Shunsuke Takegushi, Saitama, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,838
Claims priority, application Japan, Jan. 20, 1984, 59-7032
Int. Cl.⁴ F01L 1/46

U.S. Cl. 123—90.34

12 Claims



1. A hollow cam shaft of the type wherein lubricating oil is distributed to the cam portions through the hollow shaft, the shaft comprising:

- a pipe member having a longitudinal axis and a through-hole along said axis, said pipe having an inner cylindrical surface to be contacted by the lubricating oil;
- means for reducing the volume of said through-hole accessible to the lubricating oil, said reducing means including:
 - (i) a rod member positioned in the pipe member through-hole at a fixed axial location with respect to said pipe member, said rod member being formed of a light-weight material compatible with lubricating oil and having an outer surface with a diameter less than the diameter of said through-hole, the volume of lubricating oil in said pipe member being reduced by the volume enclosed by the outer surface of said rod member, and
 - (ii) means for spacing said rod member from said pipe member inner surface along said longitudinal axis; and
- conduit means extending through said pipe member inner surface for connecting the cam portions and the portion of said pipe member through-hole adjacent the inner cylindrical surface.

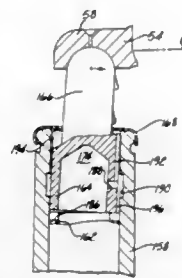
4,644,913

RECIRCULATING VALVE LASH ADJUSTER
Richard R. Stoody, Jr., New Baltimore, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Oct. 2, 1985, Ser. No. 782,778
Int. Cl.⁴ F01L 1/24

U.S. Cl. 123—90.46

5 Claims



1. In an internal combustion engine with a valve assembly of the type including overhead valves supported by a cylinder head for opening and closing movements in a substantially vertical direction and a rotatable overhead camshaft thereabove lubricated by engine oil pumped by an engine oil pump, a hydraulic lash adjuster with an internal reservoir therein which is solely supplied with run-off lubricating oil from the camshaft which oil is pumped into the internal reservoir of the lash adjuster by self-pumping operation of the lash adjuster

produced by lateral forces thereon by the rotative operation of the camshaft comprising:

- a housing of the lash adjuster including an axially extending bore therethrough with a lower wall means of the housing closing the lower end thereof;
- a first plunger member being closely slidably received in the bore of the housing and having wall means defining a fluid filled power chamber with the lower wall means of the housing;
- a second plunger member of the lash adjuster having a portion being loosely slidably received and extending into the bore of the housing for reciprocation therein and another portion extending upwardly from the housing to operatively receive alternating side-to-side force inputs from operation of the camshaft;
- the first and second plunger members being hollow and with abutting end surfaces for defining a fluid reservoir means therein;
- passage and check valve means through the wall of the first plunger member to permit flow of fluid from the reservoir means to the power chamber but not otherwise;
- means including the upper end of the housing to collect a quantity of run-off lubricant from the camshaft;
- air vent means communicating the upper portion of the reservoir means with atmosphere;
- the first plunger member and the housing being closely fitted together to permit only a minimal flow of fluid from the power chamber between the housing and the second member;
- the second plunger member and the housing being relatively loosely fitted together over a significant axial length of the housing bore sufficient to permit sufficient angular cocking of the second member in the bore of the housing relative to the axis thereof and relative to the first member in response to the side-to-side forces thereon produced by the rotating camshaft whereby rapid alteration of this side-to-side cocking causes collected oil at the upper portion of the housing to be pumped into the reservoir between the abutting end surfaces of the first and second members.

4,644,914

VALVE MECHANISM OF INTERNAL COMBUSTION ENGINE

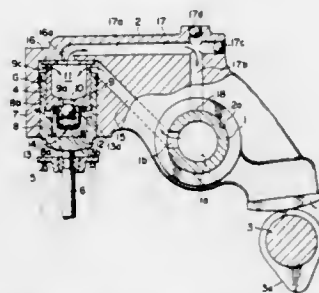
Sbuiji Morita; Katsujiro Sato, both of Toyota; Yoshio Asaoka, Nishio; Isao Harada, Hekinan, and Tomiyasu Hirano, Nishio, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Odai Tekko Kabushiki Kaisha, both of Aichiken, Japan
Filed Jul. 10, 1985, Ser. No. 753,603

Claims priority, application Japan, Aug. 29, 1984, 59-129830[U]

Int. Cl.⁴ F01L 1/24

U.S. Cl. 123—90.55

21 Claims



1. A valve mechanism of an internal combustion engine, said valve mechanism comprising:
a hydraulic valve lifter assembled in a recess of a rocker arm pivotably connected to a rocker shaft, said shaft extending through a hole in said rocker arm, said hydraulic valve

lifter having a lifter body slidably inserted in said recess, a plunger slidably inserted in said lifter body, an oil chamber formed between said recess and said plunger, an oil pressure chamber communicating with said oil chamber through a passage and formed between said lifter body and said plunger, and a check valve located in said passage for providing selective communication between said oil chamber and said oil pressure chamber;
an oil supply path formed in said rocker arm and extending from an oil path formed in said rocker shaft to said oil chamber; and
a return path formed in said rocker arm and communicating with said oil path in said rocker shaft, said return path extending from the top of said oil chamber to a clearance between an inside of the hole of said rocker arm and an outside of said rocker shaft, said return path providing constant communication between said oil chamber and said clearance.

4,644,915

HEAT RETAINING COVER FOR INTERNAL-COMBUSTION ENGINE

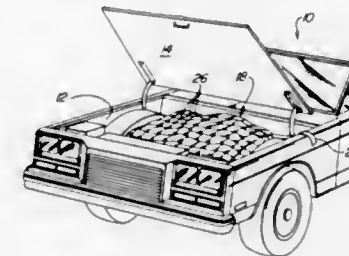
Bahram Afshar, 3662 Salem Walk, #A1, Northbrook, Ill. 60062

Filed Oct. 31, 1985, Ser. No. 793,436

Int. Cl.⁴ F02N 17/00; F02B 77/12

U.S. Cl. 123—142.5 R

3 Claims



1. A heat retaining cover for use beneath the hood of a vehicle having an internal-combustion engine, comprising a multi-layered blanket of flexible nature adapted to overlie the top and depend at least partly along opposite sides of the engine, said blanket having an outer layer in the form of a sheet of wind- and water-repellent material, a secondary layer affixed to the underneath of the outer layer and composed primarily of heat insulating material and a third layer affixed to the underside of the secondary layer, said third layer composed of relatively soft material adapted generally to conform to irregularities in engine top surfaces.

4,644,916

V-TYPE FOUR STROKE ENGINE WITH COUNTER ROTATING BALANCE WEIGHTS CANCELING OUT FIRST ORDER IMBALANCE MOMENTS OF RECIPROCATING AND OF ROTATIONAL MOTION
Katsutoshi Kitagawa, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 17, 1985, Ser. No. 755,821

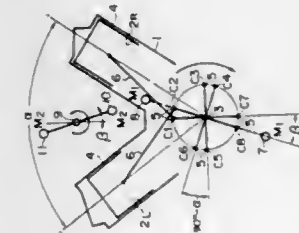
Claims priority, application Japan, Aug. 2, 1984, 59-163197
Int. Cl.⁴ F16F 15/26

U.S. Cl. 123—192 B

3 Claims

1. A four stroke V configuration engine comprising: first and second cylinder banks arranged in a V configuration and angled with respect to one another at a bank angle α ;
a plurality of pairs of cylinders, each said pair of cylinders comprising a cylinder of said first cylinder bank, and a cylinder of said second cylinder bank angled with respect to said cylinder of said first cylinder bank at a bank angle α ;
a crank shaft having opposed axial ends and formed with a plurality of pairs of crank pins, each said pair of crank pins comprising a first crank pin for a cylinder of said first

cylinder bank, and a second crank pin for a cylinder of said second cylinder bank, said first and second crank pins of each said pair of crank pins being angled with respect to one another at a crank angle equal to $90^\circ - \alpha$;
a pair of camshafts arranged in parallel with said crankshaft, and including a first camshaft for said first cylinder bank, and a second camshaft for said second cylinder bank;
a balance shaft arranged in parallel with said crank shaft and said camshafts;
a first set of balance weights fixed to said crank shaft adjacent the opposed axial ends of said crank shaft;
a second set of balance weights fixed to said balance shaft;
a first sprocket wheel non-rotatably mounted on said crank shaft;
a second sprocket wheel non-rotatably mounted on said balance shaft, said second sprocket wheel having a diameter equal to the diameter of said first sprocket wheel;
a third sprocket wheel non-rotatably mounted on said first



camshaft, said third sprocket wheel having a diameter which is twice as large as the diameter of said first sprocket wheel;
a fourth sprocket wheel non-rotatably mounted on said second camshaft, said fourth sprocket wheel having a diameter which is twice as large as the diameter of said first sprocket wheel;
and an endless chain engaging said first, second, third and fourth sprocket wheels such that the balance shaft and the crank shaft rotate in opposite directions at the same speed and the first and second camshafts rotate in the same direction as the crank shaft at one-half the speed of the crank shaft;
wherein the weights of said first and second set of balance weights and the position of the weights of said first and second set of balance weights relative to said crank shaft and said balance shaft respectively, are selected so as to cancel out first order unbalance moments of reciprocating and rotational motions in said engine.

4,644,917

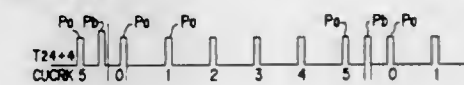
METHOD AND APPARATUS FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE
Masahiko Yakuwa, and Hideto Iijima, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1986, Ser. No. 826,536

Claims priority, application Japan, Feb. 6, 1985, 60-19856
Int. Cl.⁴ F02P 5/00

U.S. Cl. 123—414

9 Claims



1. In a method of controlling an internal combustion engine for generating a reference pulse at a predetermined crank angle period in synchronization with the rotation of a crank shaft of said internal combustion engine, and generating crank angle pulses at a fixed crank angle period shorter than the period of

1. Method of controlling the fuel metering apparatus of an internal combustion engine in the overrun mode of operation with a resume speed threshold $n_{RE}(t)$ above which the fuel metered to the engine is interrupted and below which fuel is again metered to the engine, the method comprising:

that the resume speed threshold $n_{RE}(t)$ runs between an upper speed threshold n_0 and a lower speed threshold n_1 ; and,

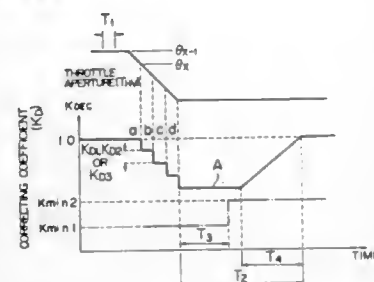
in the overrun mode of operation starting said resume speed threshold $n_{RE}(t)$ at a value n_0 and reducing said resume speed threshold $n_{RE}(t)$ to a value n_1 with the instantaneous value of $n_{RE}(t)$ being dependent upon the first derivative dn/dt of the rotational speed of the engine.

4,644,923

ELECTRONICALLY CONTROLLED FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINE Kiyomi Morita; Mineo Kashiwaya, and Masahide Sakamoto, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan Filed Mar. 27, 1985, Ser. No. 716,638

Claims priority, application Japan, Mar. 27, 1984, 59-59133
Int. Cl.⁴ F02D 41/12
U.S. Cl. 123—493

3 Claims



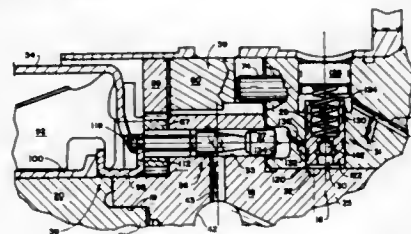
1. An electronically controlled fuel injection apparatus, including a crank angle sensor for detecting the revolution number of an internal combustion engine and an air flow sensor for detecting the amount of air sucked by an engine cylinder, fuel being supplied to said engine in the amount determined in dependence on output signals produced by both of said sensors, respectively, further comprising a throttle sensor for detecting throttle aperture, first means for sampling at a predetermined periodic interval the signal produced by said throttle sensor and representing the throttle aperture, second means for comparing the signals sampled at every interval by said first means to detect the rate of change of the throttle aperture, selecting means for selecting a deceleration correcting coefficient at each sampling interval based on the rate of change of the throttle aperture, integrating means for integrating the deceleration correcting coefficients selected at each interval during deceleration and third means for performing correction of deceleration with the aid of said integrated deceleration correcting coefficients when the value resulting from said comparison is not smaller than a predetermined value.

4,644,924

FUEL INJECTION PUMP WITH SPILL CONTROL MECHANISM

Ilija Djordjevic, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.
Continuation-in-part of Ser. No. 658,887, Oct. 9, 1984, Pat. No. 4,552,117. This application Sep. 23, 1985, Ser. No. 779,201
Int. Cl.⁴ F02M 37/04
U.S. Cl. 123—506

16 Claims



1. In a rotary fuel injection pump for an internal combustion engine, having a housing, a rotor rotatable in the housing, a charge pump having a plurality of radially extending plunger bores in the rotor and a plunger pump for each plunger bore having a pumping plunger reciprocable in the bore, the pumping plungers having outward fuel intake strokes and inward fuel delivery strokes for supplying high pressure charges of fuel for fuel injection, a cam ring surrounding the rotor and

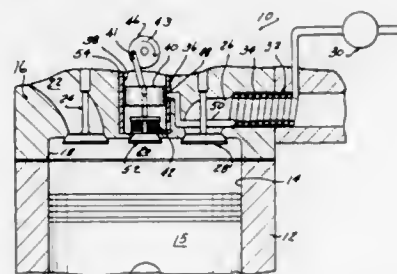
engageable with the plunger pumps to reciprocate the plungers as the rotor rotates, and pumping plunger timing means for relatively angularly adjusting the cam ring and rotor for adjusting the pumping plunger timing, and a spill control mechanism having spill valve means connected to the charge pump for spill control of the said high pressure charges of fuel, the improvement wherein the spill valve means comprises at least one rotary spill valve having a valve bore in the rotor connected to the charge pump and a rotary spill valve member rotatably mounted within the valve bore, and wherein the spill control mechanism comprises first means for rotating each rotary spill valve member in unison with the rotor and in synchronism with the reciprocable movement of the pumping plungers for spill control of the said high pressure charges of fuel, the pumping plunger timing means and said first means providing for separate relative angular adjustment of the cam ring and rotor and relative angular adjustment of the rotary spill valve member of at least said one rotary spill valve and the rotor.

4,644,925

APPARATUS AND METHOD FOR COMPRESSIVE HEATING OF FUEL TO ACHIEVE HYPERGOLIC COMBUSTION

Lyle O. Hoppie, Birmingham; Richard Chute, Troy; David H. Scharnweber, and Kenneth P. Waichunas, both of Milford, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Dec. 26, 1985, Ser. No. 813,888
Int. Cl.⁴ F02M 27/02, 31/14, 31/18
U.S. Cl. 123—558

15 Claims



1. A method of heating fuel prior to introduction into the combustion chamber of a combustion device in order to achieve hypergolic combustion therein said combustion device of the type including an air intake system for introducing an air charge into said combustion chamber, during each operational cycle of said device an exhaust system for removing products of combustion from said combustion chamber after each operational cycle of said device, and a fuel supply system for supplying fuel to said combustion chamber, comprising the steps of: vaporizing a quantity of said fuel required for a combustion cycle of said device; compressing said quantity of fuel adiabatically, to heat said vaporized fuel sufficiently to achieve hypergolic combustion; and controllably directing said quantity of heated compressed fuel into said air charge in said combustion chamber, during a period in each combustion cycle of said device to thereby cause hypergolic combustion therein.

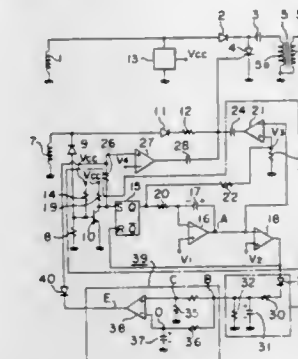
6. In a combustion device of the type including a combustion chamber, an air intake system for introducing an air charge into said combustion chamber during each operational cycle of said device, an exhaust system for removing products of combustion from said combustion chamber after each operational cycle, a fuel supply system for introducing fuel into said combustion chamber, the improvement comprising fuel vaporizing means for vaporizing said fuel prior to introduction into said combustion chamber; compressor means for adiabatically compressing a quantity of vaporized fuel to a degree to sufficiently heat the quantity of fuel to enable substantially hypergolic combustion in said combustion chamber; and, valving means

4,644,927

ENGINE IGNITION TIMING CONTROL DEVICE Hiroshi Okuda, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan Filed Jun. 27, 1985, Ser. No. 749,550

Claims priority, application Japan, Jun. 29, 1984, 59-135717
Int. Cl.⁴ F02P 3/06
U.S. Cl. 123—602

6 Claims



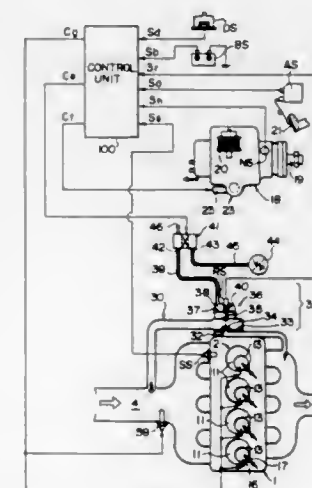
4,644,926

DIESEL CYCLE ENGINES HAVING HEAT INSULATED AUXILIARY COMBUSTION CHAMBERS

Shigeru Sakurai, and Shigeki Hamada, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 18, 1985, Ser. No. 712,850

Claims priority, application Japan, Mar. 17, 1984, 59-51597
Int. Cl.⁴ F02M 25/06
U.S. Cl. 123—569

11 Claims



2. A diesel engine comprising main combustion chamber means communicating with intake and exhaust means, auxiliary chamber means connected with said main combustion chamber means, said auxiliary chamber means being located in cylinder head means and being defined by shell means including a lower ceramic section, an upper ceramic section and a metallic ring connecting said lower and upper sections, a heat insulative space between an outer surface of said metallic ring and an inner surface of said cylinder head means, said shell means being secured to said cylinder head means at positions of upper and lower ends of the metallic ring, exhaust gas recirculation valve means for regulating a controlled amount of exhaust gas recirculated from said exhaust means to said intake means through exhaust gas recirculation passage means, valve driving means for driving said exhaust gas recirculation valve means, load detecting means for detecting an engine load value, temperature detecting means for detecting an engine cooling medium temperature, recirculation control means for operating said valve driving means to drive said exhaust gas recirculation valve means to control the amount of exhaust gas recirculated to the intake means in accordance with an engine operating condition, said recirculation control means including means for providing an exhaust gas recirculation ratio which is in a range between $(60-100 \times 1/\lambda)$ and $(140-120 \times 1/\lambda)$ during an engine operating range where engine cooling medium temperature is higher than a predetermined temperature and where engine load is greater than a predetermined load value, where λ is an excess air ratio.

1. An engine ignition timing control device, characterized in that it comprises:

- (a) a power source for ignition which generates an electric potential in accordance with revolution of an engine and supplies an electric power required for selectively ignition of said engine;
- (b) switching elements for supplying electric power from said ignition power source to an ignition winding at a predetermined timing;
- (c) signal generating means to generate a signal for establishing the ignition timing in accordance with revolution of said engine;
- (d) an ignition timing operation circuit which operates the ignition timing on the basis of the signal from said signal generating means to output ignition signals to said switching elements and to simultaneously output pulse signals in accordance with the number of revolution of said engine;
- (e) a frequency-voltage conversion circuit to output an electric potential in accordance with frequency of the pulse signals from said ignition timing operation circuit; and
- (f) an electric potential changing quantity detection circuit which detects a changing quantity per unit time of an output voltage from said frequency-voltage conversion circuit and generates an output signal when said changing quantity takes a value higher than a predetermined value, wherein the ignition timing of said engine being determined, at the time of an abrupt speed change in said engine, in accordance with an output signal from said voltage changing quantity detection circuit.

4,644,928

COMPRESSION STRING BOW

Richard R. Studanski, 320 - 8th St. N.E., Sartell, Minn. 56377
Filed Mar. 22, 1985, Ser. No. 715,104
Int. Cl.⁴ F41B 5/00
U.S. Cl. 124—24 R

7 Claims

7. A compression string bow comprising: a bow handle having a grip in the center portions thereof, and spaced apart oppositely extending ends forming mounting blocks hingedly connected to the opposite ends of the handle with separate flexible hinge connections, said handle bowing at its outer end in a first direction; said bow comprising outwardly extending limbs mounted to the mounting blocks at the outer ends of said handle, said hinge connections permitting forming pivoting areas for easy pivoting of the mounting blocks and the limbs;

a compression carrying leg connected to both of the mounting blocks, said leg being curved away from said handle in said first direction, to extend farther away from said handle than the mounting blocks;
means at the opposite end of the limbs from the mounting blocks to support the ends of a drawstring;
said handle, said leg and said limbs lying generally along a central draw plane for said draw string, said draw string



being capable of being drawn away from said handle, so that the mounting blocks hinge at said hinge connections at the ends of said handle to pivot and force the leg to go into compression as the limbs are moved to tend to straighten out the leg and move it toward said handle to thereby exert a compound force tending to force the mounting blocks apart and create tension load in said string.

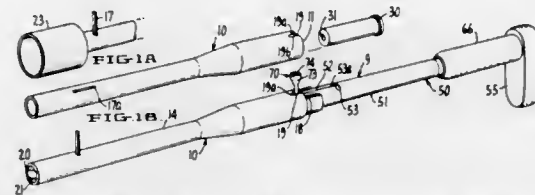
4,644,929
LIMB STRUCTURE FOR ARCHERY BOWS
Paul L. Peck, Fond du Lac, Wis., assignor to Archery Designs, Inc., North Fond du Lac, Wis.
Filed Mar. 27, 1985, Ser. No. 716,816
Int. Cl. 4 F41B 5/00
U.S. Cl. 124-24 R 7 Claims



1. In an archery bow including a rigid section, a limb connected to said rigid section, and a bow string connected to said limb, said limb being flexed as said bow string is drawn, the improvement comprising a new limb structure including, two spaced parallel limb elements of substantially uniform width, each of said limb elements having an inner end and an outer end,
means connecting the inner end of each of said limb elements

to said rigid section so said limb elements project therefrom in side-by-side manner in generally the same plane, means between the outer ends of said limb elements for connection to said bow string,
pivot means on each said limb element between said ends, pivot means on said rigid section cooperating with said pivot means on each limb element.

4,644,930
GUN FOR FIRING A VARIETY OF PROJECTILES
Robert Mainhardt, 936 Redwood Dr., Blackhawk Country Club, Danville, Calif. 94526
Filed Jul. 18, 1984, Ser. No. 631,911
Int. Cl. 4 F41B 11/00; F41C 21/10
U.S. Cl. 124-58 5 Claims

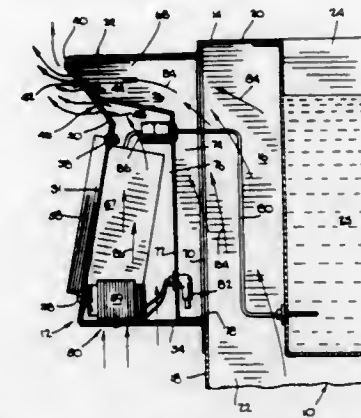


1. A gun capable of firing a variety of projectiles driven by a variety of propellants comprising:
stock means
barrel means
quick connect means for readily connecting said barrel means to and disconnecting said barrel means from said stock means, without requiring the use of any hand tools, a plurality of removable barrel insert means any one of which may be carried by said barrel means for supporting a predetermined propellant within a firing chamber defined by said barrel insert means,
trigger means, and
inertial firing pin means responsive to said trigger means, wherein said trigger means comprises a firing knob rigidly carried by a shaft and in which said stock means has a longitudinal groove formed therein in which said shaft may advance and in which said barrel means has a camming notch formed in the rearward end thereof in which said shaft may advance so that as the shaft advances into said camming notch, a camming action of said shaft against the surface of said camming notch ensures that the barrel means is fully seated against said stock means prior to full advancement of said inertial firing pin means.

4,644,931
HEADER ASSEMBLY FOR DEEP FAT FRYING COOKING SYSTEM
George J. Veth, Fairfield, Conn., assignor to Food Automation-Service Techniques, Inc., Stratford, Conn.
Division of Ser. No. 727,399, Apr. 25, 1985, Pat. No. 4,610,238.
This application May 14, 1986, Ser. No. 863,183
Int. Cl. 4 A21B 1/00
U.S. Cl. 126-21 R 8 Claims

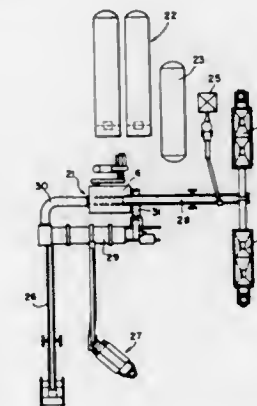
1. An assembly for use in mounting an electronic cooking control to a cooking device having a hollow housing with at least one chamber therein and with an opening in said chamber, comprising:
a casing defining an enclosure having an opening on one side thereof and further defining first, second and third vent means therein, said first and second vent means being spaced vertically from each other, said casing having a control mounting panel having a centrally located control mounting aperture therein;
shield means mounted within said enclosure of said casing and separating said enclosure into first and second passageways, said first vent means and said opening of said casing being in communication with said first passageway;

said second and third vent means being in communication with said second passageway thereof;
said control mounting panel and said centrally located control mounting aperture being adapted for so mounting a cooking control system on said casing as to be accessible from outside said casing and as to extend into said second



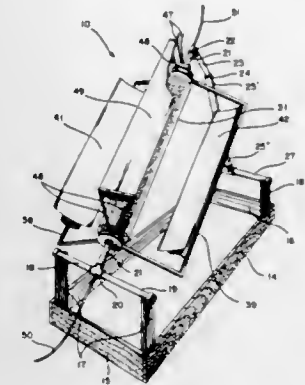
passageway whereby air heated within said casing can flow by means of convection air flow through said chamber and casing openings, said first passageway and said first vent means thereby drawing air through said second and third vent means and said second passageway past said cooking control system to cool the same.

4,644,932
METHOD AND DEVICE FOR ENERGY RECOVERY BY MANUFACTURING OF ASPHALT IN BULK
Ivar Lund, Ottestad, Norway, assignor to Ameco A/S, Hamar, Norway
PCT No. PCT/NO83/00026, § 371 Date Mar. 5, 1984, § 102(e)
Date Mar. 5, 1984, PCT Pub. No. WO84/00377, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 4, 1983, Ser. No. 598,306
Int. Cl. 4 E01C 19/45; F24H 1/00
U.S. Cl. 126-343.5 A 6 Claims



1. Method for manufacture of asphalt in bulk comprising:
(a) conducting the asphalt in bulk downwardly along an inclined plane, having an upper wall and a lower wall, by means of gravity;
(b) vibrating said inclined plane to move said bulk, and;
(c) conducting furnace gasses upwardly within said plane through said bulk.

4,644,933
SOLAR SYSTEM
Samuel T. Gregory, P.O. Box 148, Scotland Neck, N.C. 27874
Filed Oct. 28, 1985, Ser. No. 791,981
Int. Cl. 4 F24J 2/38
U.S. Cl. 126-424 8 Claims

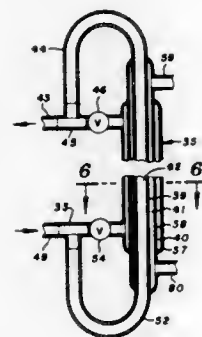
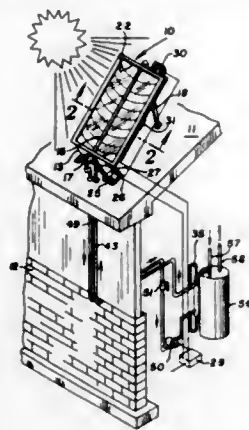


1. An improved solar heat collecting system comprising: a collecting means having upper and lower end caps; means for supporting said collecting means in a position generally perpendicular to ambient solar radiations and to permit periodic adjustment thereof; said support means including a base, a first support bar pivotally secured to said base and extending generally parallel to the ground, a first support member extending perpendicular from said first support bar to said lower end cap, a second support bar pivotally secured to said base and extending generally parallel to said first support bar, a support leg having a lower portion that extends perpendicularly from said second support bar, an intermediate leg portion slidably mounted on said lower leg portion and an upper leg portion pivotally secured to said intermediate leg portion, and a second support member extending perpendicularly from said upper leg portion to said upper end cap; lens means disposed above said collecting means for concentrating solar radiation on said collecting means; a pair of reflector means mounted below and on opposite sides of the radiation shadow of said lens means for concentrating solar radiation on said collecting means; mounting means for mounting said lens means and said reflector means, said mounting means including first and second bracket means rotatively mounted respectively to said first and second support members, a pair of radially extending U-shaped reflector mounts having opposite ends secured to respective bracket means, and a pair of radially extending lens supports secured to respective bracket means; and means for rotating said mounting means and associated lens mean and reflector means to track the source of solar radiation whereby an improved, highly efficient solar heat collecting system is provided.

4,644,934
SOLAR ENERGY HEATING SYSTEM
David P. Kaus, 10140 Pleasant Ave., South, Bloomington, Minn. 55420
Filed May 3, 1985, Ser. No. 730,470
Int. Cl. 4 F24J 2/30
U.S. Cl. 126-435 11 Claims

1. A solar energy heating system comprising in combination:
(A) at least one collector comprising:
(1) an elongated concave lightweight rigid durable molded reinforced synthetic resinous plastic rotatable parabolic solar ray concentrating unit,
(2) an elongated double-walled liquid heat-absorbing pipe or tub conduit within said concentrating unit extending generally along the axis of rotation thereof and defining a first outermost and immediately adjacent second innermost liquid passageway therein,

- (3) a metallized flexible pressure sensitive film laminated to form a reflective surface on the interior wall of said concentrating unit,
- (4) a protective ray-transparent cover over said concentrating unit, and
- (5) tracking mechanism for rotating said concentrating unit,
- (B) a liquid circulation and triple-walled heat exchanger sub-system connected to said collector and comprising:
- (1) a plurality of three elongated concentric liquid passageways,
 - (2) a first conduit means in communication with the first end of the innermost and outermost of said heat exchanger passageways and connected to the outermost of said collector passageways, said first conduit means being bifurcated adjacent to the heat exchanger and including:
 - (a) one segment in communication with the first end of the outermost heat exchanger passageway,



- (b) a flow equalizing control valve in said conduit segment, and
 - (c) a second conduit segment in communication with the same end of the innermost heat exchanger passageway and connected to said first segment downstream from said valve,
- (3) a second conduit means in communication with the opposite ends of the innermost and outermost of said heat exchanger passageways and connected to the innermost of said collector passageways,
 - (4) a pump in one of said first or second conduit means,
 - (5) a check valve in one of said first or second conduit means between said pump and collector,
 - (6) a third conduit means in communication with the first end of the intermediate heat exchanger passageway and connected to a source of cold water under pressure, and
 - (7) a fourth conduit means in communication with the opposite end of the intermediate heat exchanger pas-

sageway for discharge of hot water from the heat exchanger to a hot water storage tank.

4,644,935

SOLAR HEATER CONTROL

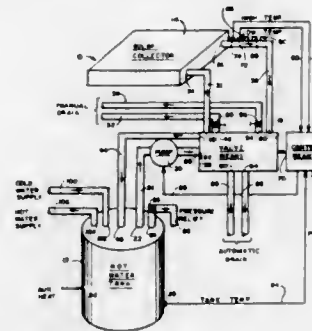
Daniel M. Gallagher, Tampa, Fla., assignor to Rayflow Corp., Tampa, Fla.

Filed Sep. 21, 1984, Ser. No. 652,643

Int. Cl.⁴ F24J 2/04

U.S. Cl. 126—437

12 Claims



1. A solar heater control system for use with a water reservoir and a solar collector, comprising in combination:
- a valve means for controlling water flow in the solar heater control system;
 - a water supply line in fluid communication between the water reservoir and said valve means;
 - a circulating pump interdisposed in said water supply line for pumping water from the water reservoir through said valve means;
 - a collector water supply line in fluid communication between said valve means and the solar collector;
 - a solar heated water supply line for conducting water from the solar collector to said valve means;
 - a hot water supply line for conducting water from said valve means to the water reservoir;
 - a first drain line connected to said valve means for conducting water from said valve means to a discharge point;
 - a reservoir temperature sensing means for sensing the temperature of the water in the water reservoir;
 - a collector temperature sensing means for sensing the temperature of the water in the solar collector;
 - a control means for controlling the operation of said pump and the operation of said valve means as a function of the output of said reservoir temperature sensing means and the output of said collector temperature sensing means;
- said valve means further including:
- a first and a second inlet;
 - a first, second, a third, and a fourth outlet;
 - valve gate means capable of motion between a first position and a third position;
- a motor for driving said valve gate means in a direction from said third position toward said first position;
 - biasing means for urging said valve gate means in a direction from said first position towards said third position;
- wherein said valve gate means permits fluid communication between said first inlet and said first outlet and simultaneously permits fluid communication between said second inlet and said second outlet when said valve gate means is disposed in said first position to enable the water to be pumped by said pump from the water reservoir to the solar collector in order to heat the water in the solar collector and back to the water reservoir where the sensed temperature condition of the water in the solar collector is higher than the sensed temperature condition of the water in the water reservoir;
- wherein said valve gate means permits fluid communication between said first outlet and said third outlet and

simultaneously permits fluid communication between said second inlet and said fourth outlet when said valve gate means is disposed in said third position to enable water to be drained from said collector supply line, said solar heated supply line and the solar collector where a low temperature condition is sensed at the solar collector which may result in freezing of the water in said collector supply line, said solar heated supply line and the solar collector, or where an over temperature condition is sensed at the solar collector which may result in boiling and increased pressure of the water in said collector supply line, said solar heated supply line and the solar collector or where an electrical power failure occurs thereby preventing the sensing of said temperature conditions and to further seal said water supply line and said water reservoir supply line to prevent loss of water therefrom; and

wherein fluid communication with said first inlet, said second inlet, said first outlet, said second outlet, said third outlet and said fourth outlet is blocked by said valve gate means when said valve gate means is disposed in a second position to completely isolate water in said collector supply line, and solar heated supply line and the solar collector from water in the remainder of the system to prevent thermosiphoning where the sensed temperature condition of the water in the solar collector is lower than the sensed temperature condition of the water in the water reservoir.

4,644,936

PERCUTANEOUS INTRA-AORTIC BALLOON AND METHOD FOR USING SAME

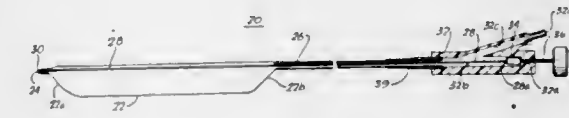
Peter Schiff, Cookeville, Tenn., assignor to IABP, Boston, Mass.

Continuation of Ser. No. 442,958, Nov. 19, 1982, Pat. No. 4,576,142. This application Jun. 10, 1985, Ser. No. 742,953

Int. Cl.⁴ A61M 25/00

U.S. Cl. 128—1 D

3 Claims



1. An intra-aortic balloon assembly adapted to provide an inflatable, relatively large elongated balloon in a blood vessel of a body, near the heart, that can be repeatedly expanded and contracted by gas flowing through an associated catheter into said elongated balloon to provide cardiac assist, comprising:
- a balloon having a distal end terminating in a tip;
 - a catheter tube having a distal end joined in supporting relationship to the proximal end of said balloon and defining a passage for conveying said gas between outside the body and said elongated balloon during repeated inflation and deflation of said balloon;
 - a support means extending within said balloon to said tip;
- said balloon adapted for wrapping about said support means to reduce the outer diameter of said balloon to aid in insertion of said large, elongated balloon into the blood vessel;

said exterior surface of said balloon having a coating of a blood-soluble sticky substance, said balloon assembly being provided to the user with the balloon wrapped about said support means, adjacent, engaging surface portions of the walls of said balloon being adhered to each other by said blood-soluble sticky substance, said sticky substance being effective to retain said balloon in wrapped condition during insertion into the blood vessel; and

said sticky substance being quickly dissolvable by blood in the bloodstream to release the balloon from the wrapped condition when the wrapped balloon assembly is inserted into the blood vessel.

4,644,937

MOUTH AND TOOTH SPRAY APPARATUS

Edgar Hommann, Grossaffoltern, Switzerland, assignor to Gimelli & Co. AG, Switzerland

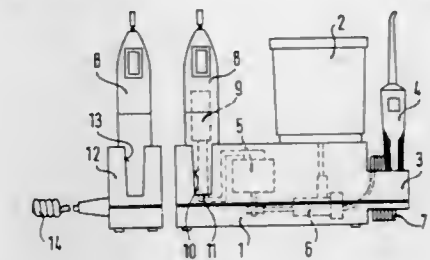
Filed May 2, 1984, Ser. No. 606,219

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316016

Int. Cl.⁴ A61H 9/00

U.S. Cl. 128—66

4 Claims



1. Mouth- and tooth-spray apparatus comprising an apparatus base, a water container mounted on said base, a handpiece containing a spray nozzle removably mounted on said base, said base containing an electric motor and a water pump driven thereby, said electric motor being a low-voltage motor, the terminals of which are detachably connected to a rechargeable battery disposed in an electric toothbrush, said pump being operatively connected between said container and said handpiece to pump water from said container to said nozzle.

4,644,938

HAND EXERCISER

Jan B. Yates, Reynoldsburg, and Lawrence M. Lubbers, Worthington, both of Ohio, assignors to Danninger Medical Technology, Columbus, Ohio

Filed Jan. 22, 1985, Ser. No. 693,672

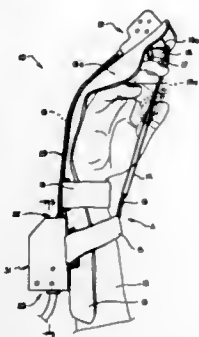
Int. Cl.⁴ A61H 1/02

U.S. Cl. 128—26

11 Claims

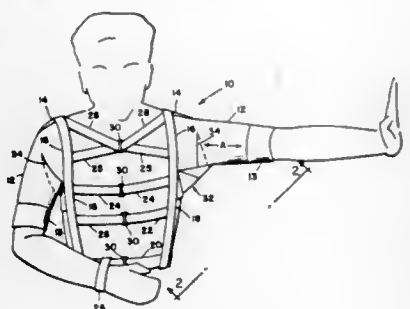
1. A device for passively exercising a digit of a human limb comprising:
- an elastic element biasing the digit towards a first position and drive means for selectively moving the digit between the first position and a second position by applying a force to the digit substantially opposing the bias of the elastic element;
 - the drive means comprising a cable operatively connected to the digit to a drum driven by a reversible motor; and
 - overtravel means for maintaining a relatively constant tension on the cable independently of the rate of the motor, the overtravel means comprising a drive wheel rotatable with respect to the drum and operably coupled to the motor and the drum, the drive wheel permitting the drum to rotate in a first direction as the elastic element applies a tension to the cable when the motor rotates the drive wheel in said first direction and the drum is inhibited from rotating in the first direction other than when the motor

rotates the drive wheel in the first direction, and the drive wheel rotating the drum in a second opposite direction when the motor rotates the drive wheel in a second opposite direction;



and said overtravel means further comprising a means for biasing said drum in said second opposite direction against the bias of the elastic element so as to maintain a constant tension on the cable should a sudden movement of the digit occur in said first or second direction.

4,644,939
SHOULDER BRACE
Thomas A. Coleman, Meyers Rd., Shaftsbury, Vt. 05262
Filed Feb. 8, 1985, Ser. No. 699,829
Int. Cl.⁴ A61F 5/02, 5/37
U.S. Cl. 128—78

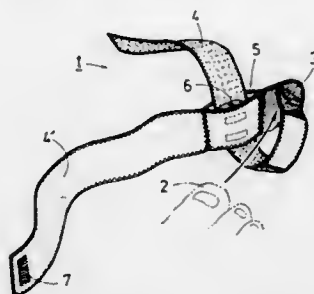


I. A shoulder brace for treating a dislocated shoulder, said brace being effective to force the humerus into the glenoid fossa, said brace comprising:

- (a) a web having a first web region sized and positioned to extend around the circumference of at least a portion of the deltoid-bicep region of the upper arm of a user, a second web region extending along the arm from the first web region toward a third web region sized and positioned to extend over the top of the shoulder of the user, each said web region comprising two-way stretch elastic; and
- (b) a first anchor attached to said third web region and extending therefrom across the chest, and a second anchor attached to the rear of said third web region and extending therefrom across the users back, said anchors being adapted in use to apply tension to said web to pull said first web region away from said third region and to pull both anterior and posterior portions of said third web region inferiorly and medially, thereby creating force circumferentially around the longitudinal axis of the humerus guiding the humerus upward into the glenoid fossa, thus restricting elevation of the humerus beyond horizontal and restricting anterior and posterior rotation of the humerus.

4,644,940
HALLUX VALGUS BRACE
Toshiro Nakamura, Ha 132, Omori-cho, Oda-shi, Shlmane, Japan
Filed Mar. 20, 1985, Ser. No. 714,184
Int. Cl.⁴ A61F 5/30, 5/01
U.S. Cl. 128—81 R

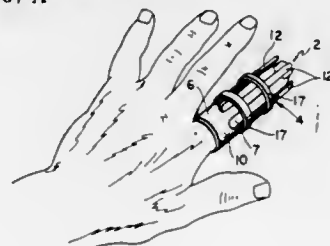
1 Claim



1. A hallux valgus brace adapted to be folded into a small volume, which comprises:
 - a bag portion for receiving the hallux of a user's toe, the bag portion being centrally located on the brace;
 - foldable first and second belts joined to and extending in opposite directions from the bag portion, each of the first and second belts being formed of an elastic and foldable material, the bag portion being formed of a foldable material similar to the material of which the first and second belts are formed;
 - a cushion member removably mounted on the first belt; fastening means secured to at least one of said first and second belts for fastening said first and second belts together; and
 - a pocket formed on the first belt and situated thereon in proximity to the bag portion, the pocket having opposite open ends, the pocket receiving the second belt there-through and retaining said cushion in a position adjacent to the metatarsal head of the user's toe, wherein the brace is adapted to be folded in a first storage state and assembled in a second usable state by passing the second belt through the pocket on the first belt and securing the first and second belts to the ankle of the user.

4,644,941
ORTHOPEDIC SPLINT ARRANGEMENT
George B. Ogle, II, 5616 Bonita, Alta Loma, Calif. 91701
Continuation-in-part of Ser. No. 612,683, May 21, 1984, abandoned. This application May 15, 1985, Ser. No. 734,328
Int. Cl.⁴ A61F 5/00
U.S. Cl. 128—87 A

22 Claims

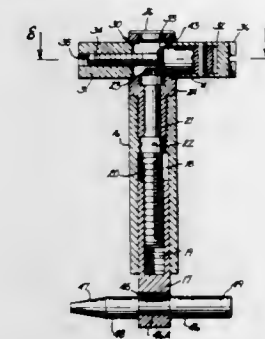


1. An improved splint device for the immobilization of a body member, comprising, in combination:
 - a splint means having:
 - a tubular base portion, and the body member insertable in the tubular base portion; and
 - at least one elongated support member having a base end

coupled to said tubular base portion and a free end spaced from said base end, said at least one support member positionable adjacent the body member for immobilizing support thereof, said at least one support member further comprises a plurality of projections thereon extending outwardly therefrom in a preselected spaced array between said base end and said free end thereof.

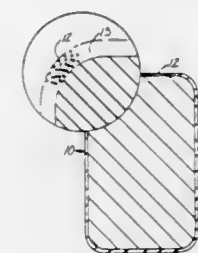
4,644,943
BONE FIXATION DEVICE
Roby C. Thompson, Minneapolis; Arthur G. Erdman, New Brighton, and Frank D. Dorman, Minneapolis, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Jul. 20, 1984, Ser. No. 632,851
Int. Cl.⁴ A61F 5/04
U.S. Cl. 128—92 YY

14 Claims



4,644,942
PRODUCTION OF POROUS COATING ON A PROSTHESIS
Kenneth R. Sump, Richland, Wash., assignor to Battelle Development Corporation, Richland, Wash.
Continuation-in-part of Ser. No. 401,112, Jul. 23, 1982, which is a continuation-in-part of Ser. No. 287,166, Jul. 27, 1981. This application Jan. 9, 1984, Ser. No. 569,199
Int. Cl.⁴ A61F 5/04
U.S. Cl. 623—16

25 Claims



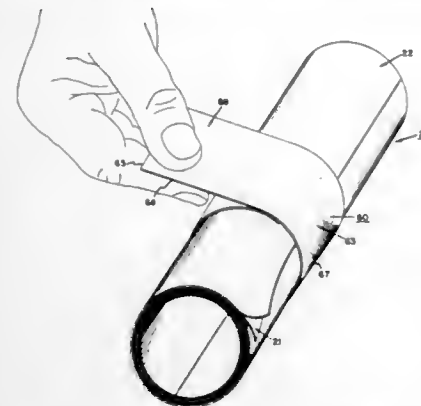
1. A method of producing a porous coating for tissue in-growth applications on a preselected metallic substrate area of a prosthesis, comprising the following steps:
 - covering the metallic substrate area of the prosthesis with a blended mixture of primary particles and secondary particles, said primary particles being metallic and capable of metallurgically bonding to the substrate area, said secondary particles being solid phase and capable of mechanically supporting the primary particles in a matrix;
 - raising the temperature of the mixture and metallic substrate area to an elevated temperature at which metallurgical bonding of the primary particles can occur under compression and at which melting of the secondary particles or reactions between the primary and secondary particles does not occur;
 - compressing the mixture against the metallic substrate area while at the elevated temperature to metallurgically bond the contacting primary particles and portions of the substrate area as a result of the combination of elevated temperature and compression to which they are subjected; and
 - removing the expendable secondary particles to present a homogeneously porous coating on the metallic substrate area in which bonded primary particles are separated from one another by a network of interconnected voids.

1. A bidirectional, adjustable fixation device for securing adjacent, separated bone portions together at an interface, and being completely implanted within such bone portions comprising:
 - first and second longitudinally extending members adapted to be moved toward and away from each other along a longitudinal axis;
 - said first member being adapted to be fitted into a provided longitudinally extending opening in a first portion of a bone to be secured to the second portion of bone, and said second member being adapted to be fitted into an aligning longitudinally extending opening of the second bone portion adjacent the interface of the bone portions to be fixed together;
 - means within the bone portions to fix the first and second members relative to the respective bone portion against movement in direction toward the other bone portion;
 - drive means mounted within the bone portions coupled between the first and second members so that upon actuating said drive means the first and second members will be moved axially relative to each other; and
 - selectively actuatable actuating means substantially contained within one of said bone portions and extending through a transverse opening in said one bone portion for actuating said drive means from a position proximate the exterior surface of said one bone portion.

4,644,944
MEMBRANE DISPENSING ASSEMBLY AND METHOD OF MANUFACTURE
James S. MacConkey, Winchester; Douglas F. Melville, Jr., Wakefield, both of Mass., and Edward J. Sharkany, Huntington, Conn., assignors to Acme United Corporation, Fairfield, Conn.
Continuation-in-part of Ser. No. 473,311, Mar. 8, 1983. This application Aug. 31, 1984, Ser. No. 645,858
The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.
Int. Cl.⁴ A61F 13/00

- U.S. Cl. 128—132 D
1. An easily handled, readily employable membrane dispensing assembly comprising
 - A. a self-supporting, self-contained, substantially cylindrically shaped roll incorporating
 1. a first layer formed by a pressure sensitive adhesive membrane and
 2. a second layer formed by a coated release paper, the

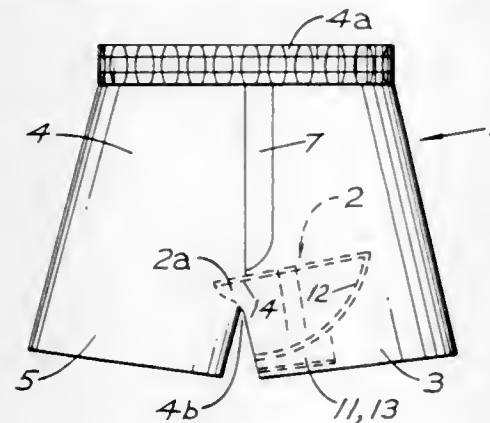
coated surface of which is in intimate protective contact with the adhesive surface of the membrane; and



B. retaining means comprising a band peripherally surrounding the substantially cylindrically shaped roll and maintaining said cylindrically shaped roll in the desired configuration.

4,644,945
PROTECTOR GARMENT FOR MEN
Robert H. Thorner, 32237 Willoughby, Farmington Hills, Mich. 48018

Filed Apr. 4, 1983, Ser. No. 481,888
Int. Cl.⁴ A61F 5/40
U.S. Cl. 128—159 46 Claims



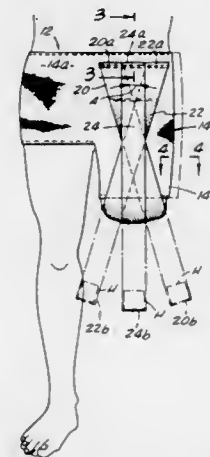
1. In a protector garment for men adapted to be worn adjacent to the skin of the wearer and including aperture means to form an opening large enough for the penis and the wearer's hand to pass therethrough, the combination comprising: right and left leg-portion of said garment including a large amount of material to provide a substantially predetermined space between the wearer's legs and said leg-portion for producing a generally loose fit on the wearer; a crotch-portion of said garment extending into said leg-portion and including a large amount of material to provide a substantially predetermined space between the wearer and said crotch-portion for enabling the testicles and penis to be suspended substantially free and unrestricted; pouch means including at least a portion thereof operatively connected to one of said leg-portion; said pouch means including means forming an open chamber to receive the penis and including enough material to provide a predetermined large space in said chamber for enabling the penis to remain therein free and unrestricted while said testicles are in said free and unrestricted condition outside said pouch means; said pouch means comprising a size, shape and material mounted in a particular position in relation to said one leg-portion

tion and said aperture means, all to make the wearer feel substantially unaware of the existence of said pouch means; and liquid-absorbent means associated with said pouch means to prevent penis-discharge from reaching the outside surface of said garment.

4,644,946
STUMP SHRINKING APPARATUS FOR ABOVE KNEE AMPUTEES

G. Cremona-Bonato, 2930 Scott Rd., Burbank, Calif. 91504
Filed Sep. 13, 1985, Ser. No. 776,120
Int. Cl.⁴ A61F 13/00

U.S. Cl. 128—165 7 Claims



1. A post surgical appliance for applying compressive forces to the stump of an above the knee amputee, comprising:
(a) an elongated support panel of stretch material for encircling the lower abdominal portion of the amputee, said support panel having front and rear surfaces and overlapping edge portions;
(b) first fastening means carried by one of said overlapping edge portions and second fastening means carried by the other of said overlapping edge portions, said first and second fastening means cooperating to releasably interconnect said edge portions;
(c) third fastening means carried by said rear surface of said support panel;
(d) first and second elongated straps depending from said support panel in a diagonally extending, crossing relationship, said first and second straps each having first and second ends, said first ends being connected to said front surface of said support panel;
(e) a third elongated strap extending substantially vertically from said support panel in a crossing relationship with said first and second straps, said third elongated strap having first and second ends, said first end being connected to said front surface of said panel; and
(f) fourth fastening means carried by said second ends of said first, second and third straps for releasable interconnection with said third fastening means carried by said rear surface of said support panel.

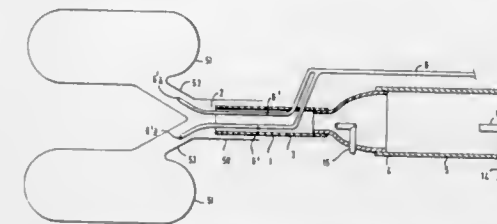
4,644,947

RESPIRATOR

James G. Whitam, Flat A, 47 Beaumont Street, London W1, and Mihir K. Chakrabarti, 19 Elton Avenue, Greenford, both of England

Continuation-in-part of Ser. No. 484,339, Apr. 12, 1983, Pat. No. 4,596,247. This application Aug. 5, 1985, Ser. No. 762,294
Claims priority, application United Kingdom, Apr. 15, 1982, 8210912

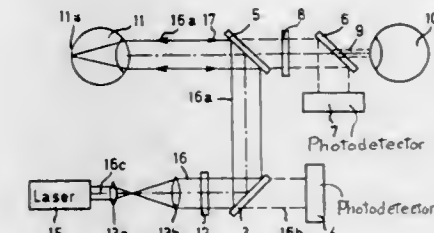
Int. Cl.⁴ A61M 16/00
U.S. Cl. 128—204.25 2 Claims



1. A respirator including a respirator conduit having a downstream end for connection to a patient duct; supplying means for supplying relatively low pressure respiratory gas to a patient through and out of the patient duct; the respiratory gas supplying means comprising a respiratory gas line having a first end for connection to a respiratory gas supply, the respiratory gas line being divided at a point remote from the first end thereof to form two subsidiary respiratory gas lines each having a respective end, the end of each subsidiary respiratory gas line extending beyond the patient duct for location in a respective one of the main bronchi of the patient; means for introducing and directing pulses of driving gas axially of and in the respirator conduit towards the downstream end of the respirator conduit from upstream of the respiratory gas supplied by the supplying means to drive the respiratory gas into a patient's lungs; and means for supplying a constant stream of driving gas to the respirator conduit for operation with a desired end expiratory pressure.

of an eye by means of laser radiation, comprising:

- (a) a laser radiation source for producing a beam of therapy radiation;
- (b) means for directing said beam of therapy radiation from said source to the fundus of an eye;
- (c) a first photodetector;
- (d) a first beam splitter located in said beam for directing part of said beam to said first photodetector to be measured thereby;
- (e) a shutter located in said beam for controlling passage or stoppage of said beam of therapy radiation;
- (f) radiation of the fundus of the eye by said beam of therapy



radiation serving to produce fluorescence at said fundus, thereby producing a return beam of fluorescent radiation emanating from said fundus;
(g) a second photodetector;
(h) a second beam splitter located in said return beam for directing part of said return beam of fluorescent radiation to said second photodetector to be measured thereby;
(i) a cutoff filter located in said return beam; and
(j) means controlling said shutter jointly by output from said first photodetector integrated with respect to time and output from said second photodetector differentiated with respect to time.

4,644,949

Patent Not Issued For This Number

4,644,948

APPARATUS FOR DOSE MEASUREMENT UPON PHOTOCOAGULATION IN THE FUNDUS OF THE EYE
Walter Lang, Koenigsbrunn; Gerhard Mueller, Aalen, and Eugen Weimer, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim on the Brenz, Fed. Rep. of Germany

Filed May 22, 1984, Ser. No. 612,670
Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319203

Int. Cl.⁴ A61B 17/36
U.S. Cl. 128—303.1 6 Claims
1. Apparatus for producing photocoagulation at the fundus

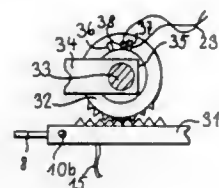
4,644,950

HIGH FREQUENCY RESECTION ENDOSCOPE WITH MOVEMENT ACTUATED SWITCH
Bruno Valli, Perugia, Italy, assignor to Olympus Winter & Ibe, GmbH, Hamburg, Fed. Rep. of Germany
Filed Mar. 13, 1985, Ser. No. 711,162
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1984, 3409944

Int. Cl.⁴ A61B 17/39
U.S. Cl. 128—303.15 10 Claims
1. A resection endoscope of the type having an elongated

hollow shaft, a high frequency cutting electrode longitudinally and movably disposed in said shaft and carrier means for supporting said shaft and for moving said electrode longitudinally in a cutting direction relative to said shaft for resection wherein the improvement comprises

circuit means connectable to a source of high frequency power for supplying energizing current to said electrode; and
switch means mounted on said carrier means for selectively



breaking said circuit means or actuating said power source,

said carrier means including actuating means for moving said electrode and for simultaneously closing said switch means, said actuating means being operative to automatically close said switch means whenever said actuating means is operated to place said electrode in motion in its cutting direction independent of the actual position of the electrode.

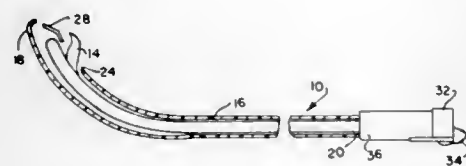
4,644,951

VACUUM SLEEVE FOR A SURGICAL APPLIANCE
F. Barry Bays, Seminole, Fla., assignor to Concept, Inc., Clearwater, Fla.

Filed Sep. 16, 1985, Ser. No. 776,439
Int. Cl.⁴ A61F 17/32

U.S. Cl. 128—305

18 Claims



1. An adaptor vacuum sleeve for removing severed tissues from a surgical site for use with a self-contained cutting instrument having a cutting element and for connection to a vacuum source, comprising:

an externally applied adapter sleeve means for removably receiving a self-contained cutting instrument;
said adaptor sleeve means including an elongated body member having a distal end and a proximal end with an internal passageway means extending therebetween;
said internal passageway means of said elongated body member being formed for receiving in use said self-contained cutting instrument therein;
an aperture in said elongated body member enabling said cutting element of the cutting instrument in use to extend

through said elongated body member to sever tissue from the surgical site;
seal means located at said proximal end of said elongated body member for forming a seal between said cutting instrument and said elongated body member; and
said seal means being flexible for resiliently engaging said self-contained cutting instrument at said proximal end of said elongated body member;
a vacuum port in fluid communication with said internal passageway means of said elongated body member and being connectable to the vacuum source for removing tissue severed from the surgical site by drawing the removed tissue through said aperture and along said internal passageway means of said elongated member by action of the vacuum source.

4,644,952

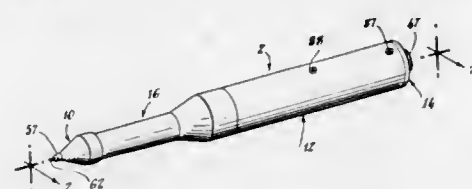
SURGICAL OPERATING INSTRUMENT

Michael Patipa, West Palm Beach; Thomas A. McMillan, North Palm Beach, and Henry W. Mitchell, Palm Beach Gardens, all of Fla., assignors to Palm Beach Medical Engineering, Inc., Teaneck, N.J.

Filed Feb. 19, 1985, Ser. No. 702,500
Int. Cl.⁴ A61F 17/32

U.S. Cl. 128—305

4 Claims



1. A compact surgical operating instrument comprising
 - (a) a generally cylindrical elongated housing an axial bore therein;
 - (b) a shaft mounted in said housing for limited axial reciprocable movement, the forward end of said shaft projecting outwardly through said bore;
 - (c) a hollow cylindrical cam assembly mounted in said housing in coaxial relation with said shaft for rotation about said shaft;
 - (d) drive housing for rotating said cam assembly;
 - (e) the rearward end of said shaft being connected to said cam assembly;
 - (f) said cam assembly having spaced, opposed forward and rearward continuous cam surfaces;
 - (g) said forward cam surface having an opening there-through;
 - (h) the rearward end of said shaft extending through the opening of said forward cam surface;
 - (i) cam follower means mounted on the rearward end of said shaft and being positioned between said facing cam surfaces;
 - (j) said cam follower being displaced axially of said housing by said cam surfaces to convert rotating movement of said cam assembly to reciprocal movement of said shaft.

4,644,953

SURGICAL INSTRUMENT, MORE PARTICULARLY HYSTERECTOMIUM

Johann Lahodny, Gmünd, Austria, and Ernst Dreier, Steckborn, Switzerland, assignors to Fritz Gegauf AG Bernina Nähmaschinen Fabrik, Steckborn, Switzerland

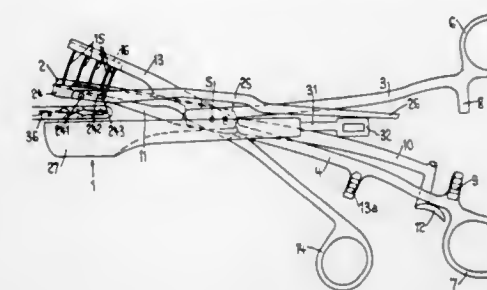
Filed Aug. 27, 1984, Ser. No. 644,782
Claims priority, application Canada, Sep. 13, 1983, 4927
Int. Cl.⁴ A61F 17/32

U.S. Cl. 128—305

13 Claims

1. Hysterectomy in form of a multi-purpose instrument with clamping jaws and a locking device for stopping the

clamping jaws in a clamping position, characterized in that a stitching device is provided at one side of the clamping jaws for stitching clamped parts of tissue over a section of the length of the clamping jaws and in that at the other side of the clamp-



ing jaws a mobile cutting blade is provided which is movable from an ineffective open position at a side of one clamping jaw to a region of a counter cutting edge at the other clamping jaw for cutting tissue over a section of the length of the clamping jaws at the said other side of the clamping jaws.

4,644,954

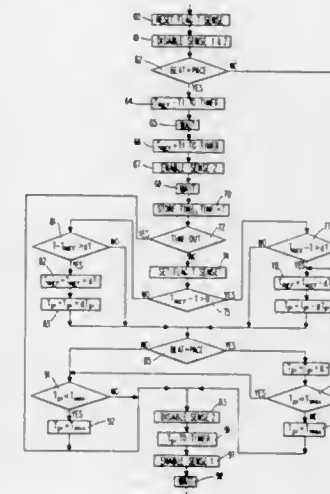
RATE ADAPTIVE PACEMAKER APPARATUS AND METHOD

Frederik H. M. Wittkamp, LK Brummen, Netherlands, and Anthony F. Rickards, Chalcot Park, England, assignors to Vitafin N.V., Curacao, Netherlands

Continuation of Ser. No. 569,670, Jan. 10, 1984, abandoned. This application Jun. 18, 1985, Ser. No. 745,836
Int. Cl.⁴ A61N 1/36

U.S. Cl. 128—419 PG

9 Claims



1. Demand pacer apparatus for pacing a patient, having stimulus means for delivering stimulus pulses, sensing means for sensing natural heartbeats, and inhibiting means for inhibiting delivery of stimulus pulses when natural heartbeats are sensed, comprising:

QT means for sensing the QT interval of a pacer cycle; rate means for modifying the rate of delivery of stimulus pulses by said stimulus means as a sensitivity function of said sensed QT interval; and
further comprising patient history means for accumulating patient history data over a plurality of pacer cycles, and sensitivity control means automatically operative following cessation of inhibited operation for controlling said sensitivity function in accordance with said accumulated patient history data.

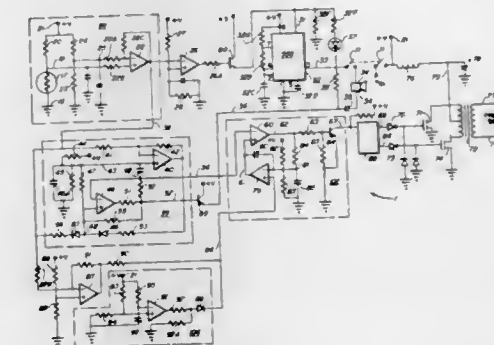
4,644,955

CIRCUIT APPARATUS AND METHOD FOR ELECTROTHERMAL TREATMENT OF CANCER EYE
Paul Mioduski, Tucson, Ariz., assignor to RDM International, Inc., Phoenix, Ariz.

Continuation of Ser. No. 453,811, Dec. 27, 1982, Pat. No. 4,531,524. This application Mar. 4, 1985, Ser. No. 708,007
The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.⁴ A61N 1/32

U.S. Cl. 128—422

4 Claims



1. In an apparatus for electrothermal treatment of unhealthy tissue, a circuit for producing a flow of a high frequency current through the unhealthy tissue to heat it without damaging adjacent healthy tissue, said electrothermal apparatus including first and second spaced current probes each having a contact surface for electrically contacting the surface of said unhealthy tissue to thereby conduct said high frequency current through said unhealthy tissue, said electrothermal treatment apparatus also including output oscillating circuit means for producing a high frequency voltage signal for application across said first and second current probes to cause said high frequency current to flow through said unhealthy tissue if said contact surfaces are held sufficiently forcefully against the surface of said unhealthy tissue, said output oscillating circuit means including a control input for receiving a duty cycle signal for regulating the duty cycle of the flow of high frequency current, said circuit comprising in combination:

- (a) temperature sensing means for sensing the temperature of said first current probe to produce a first electrical signal representative of the temperature of said first probe, the temperature of said first current probe being indicative of the temperature of said unhealthy tissue and hence the amount of said high frequency current flowing through said unhealthy tissue, the amount of said high frequency current flowing through said unhealthy tissue being dependent upon the contact resistance between said unhealthy tissue and said first and second current probes, said contact resistance between said unhealthy tissue and said first and second current probes being dependent upon the force with which said first and second current probes are held against said unhealthy tissue;
- (b) voltage controlled oscillating circuit means responsive to said first electrical signal for producing an audio signal representative of the temperature of said first current probe and indicative of the sufficiency the forces pressing said contact surfaces of first and second current probes against said unhealthy tissue;
- (c) audio transducer means responsive to said audio sound for producing an audible sound, the pitch of which represents the temperature of said first current probe and hence the temperature of said unhealthy tissue, the rate of change of the pitch being indicative of said sufficiency of said forces when said unhealthy tissue is being heated by said high frequency current;
- (d) regulating circuit means for generating said duty cycle

signal for application to said control input of said oscillating circuit means; and

- (e) delay circuit means for reducing the duty cycle of said high frequency current to a predetermined level for a predetermined initial time period after initial application of operating power to said circuit, to prevent initial overheating of said tissue due to thermal lag between heating of said unhealthy tissue by said high frequency current and heating of said first current probe by thermal conduction of heat thereto from said unhealthy tissue;

whereby the user of said electrothermal treatment apparatus can be immediately notified of a condition of insufficient contact surface pressure of the either of said first and second current probes against said unhealthy tissue by a predetermined change in the pitch of said audible sound and can thereby immediately increase the contact surface pressure.

4,644,956

PHYSIOLOGICAL TEST PROBE

Jurgen Morgenstern, Im Heidewinkel 33, 4000 Dusseldorf, Fed. Rep. of Germany

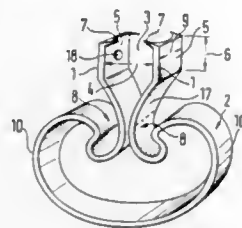
Filed Oct. 15, 1984, Ser. No. 661,236

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1983, 3337188; Sep. 21, 1984, 3434657

Int. Cl.⁴ A61B 5/04

U.S. Cl. 128—642

7 Claims



1. A physiological test probe for transcervical attachment to the headskin of a fetus and provided with a signal cable, said probe comprising: a pair of legs each of which is formed as a flat strip extending in a straight direction and having mutually opposing parallel surfaces; a spring bent into the shape of a partially circular ring connected to said legs so that the legs and spring together form a clip; a junction zone between each leg and the spring, each junction zone being bent with a curvature which is opposite to the curvature of the spring, said junction zones touching each other along a line extending in the direction of the breadth of the gap between the legs in any state of the spring; and inwardly directed punctiform teeth provided on said legs and spaced apart by a distance which is less than the distance between said legs; an open position of said legs corresponding to a stressed state of said spring so that said legs move towards each other from the open position when the spring is relaxed and, in use, as the spring is relaxed from its stressed state, a fold of headskin is drawn between said mutually opposed surfaces, said mutually opposed surfaces defining the length and breadth of said fold of skin and the relative distance between said mutually opposed surfaces assuming a predetermined value.

4,644,957
APPLICATOR STRUCTURE FOR BIOLOGICAL NEEDLE PROBES EMPLOYING SPIRAL-SHAPED RETAINING COILS

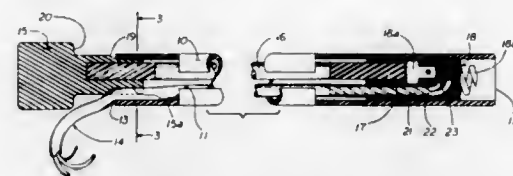
Robert H. Ricciardelli, 4240 Weise Rd., Carson City, Nev. 89701, and John E. Shulze, 1450 Corte de Primavera, Thousand Oaks, Calif. 91360

Filed Apr. 8, 1985, Ser. No. 720,961

Int. Cl.⁴ A61B 5/00

U.S. Cl. 128—642

10 Claims



1. Apparatus for application of a tissue-penetrating probe employing a spiral-shaped retaining coil comprising:

- a guide channel with a longitudinal slot, said slot of a sufficient width to allow passage of a monitor interconnecting cable but of insufficient width to allow passage of an internally disposed cylindrically-shaped carrier/retaining coil assembly;
- a cylindrically-shaped carrier slidably and rotatably disposed in the distal end of the guide channel; said carrier containing one or more monitoring means and having at least one spiral retaining coil embedded in its distal end, and a monitor interconnecting cable exiting the proximal end of said carrier and traveling longitudinally through said guide channel, said carrier also employing a cooperating engaging means on its proximal end for engagement and rotation by a drive wrench means;
- a drive wrench means having a flexible, torque-transmitting shaft, said shaft being of sufficiently small diameter to allow parallel slidable residence of the monitor interconnecting cable in said guide channel; said drive wrench having a cooperating-engaging means at its distal end for engaging said carrier, and a manipulating means extending proximally from said guide channel for manual advancement and rotation of said shaft thereby to advance and rotate said carrier for the purpose of inserting the spiral retaining coil mounted on said carrier.

4,644,958

INHALATION THERAPY APPARATUS ADAPTER

Alfred G. Brisson, Schaumburg, and Christopher Nowacki, Arlington Heights, both of Ill., assignors to Trutek Research, Inc., Lake Zurich, Ill.

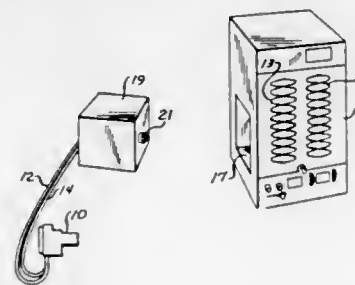
Continuation of Ser. No. 593,412, Mar. 26, 1984, abandoned.

This application Mar. 7, 1986, Ser. No. 838,188

Int. Cl.⁴ A61B 5/08

U.S. Cl. 128—725

12 Claims



1. Adapter for use with inhalation therapy apparatus for detecting patient inhalation and of a type normally having a turbine type mouthpiece and receiving a series of sequential

pairs of electric pulses from said mouthpiece, said adapter comprising a replacement mouthpiece for said turbine type mouthpiece and having fixed flow restricting means for developing a pressure differential upon patient inhalation, a housing remote relative to said replacement mouthpiece, solid state air pressure-to-electric voltage transducer means in said housing, pneumatic tubing means connecting said pressure differential means and said transducer means for converting said pressure differential into a voltage proportional to said pressure differential, electric circuit means in said housing interconnected with said transducer means for producing a series of pairs of pulses related to said voltage, inhalation through said replacement mouthpiece producing said pairs of pulses in a desired predetermined sequence and at a repetition rate proportional to the volumetric rate of patient inhalation, and means for electrically connecting the pulses so produced by said pulse producing means to said apparatus to operate said apparatus.

4,644,959

METHOD OF FUNCTIONAL ASSESSMENT OF CANCER HUMORAL FACTORS

Sergiu Calmanovici, 127 Allenby Street, Haifa 35 513, Israel

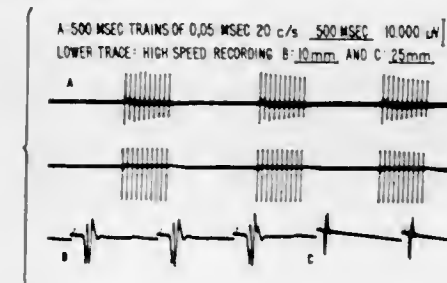
Filed Nov. 1, 1984, Ser. No. 667,252

Claims priority, application Israel, Apr. 12, 1984, 71537

Int. Cl.⁴ A61B 5/05

U.S. Cl. 128—733

7 Claims



1. A method of identifying cancer in a suspected cancer patient, comprising the steps of: electrically stimulating the neuromuscular junction of a multiple-innervated muscle of a vertebrate; injecting said vertebrate with the serum of a suspected cancer patient while continuing said electrical stimulating step; varying the frequency, intensity and duration of said stimulation to obtain an electromyographical pattern determining the presence or absence of cancer electromyographically evoked activity; whereby the presence of said cancer electromyographically evoked activity is a positive indication of the presence in the patient of a serum factor only produced when the patient has a cancerous condition.

4,644,960

DEVICE FOR MAKING ELECTRICAL CONNECTION TO AN ELECTROLYTE, AND SYSTEM EMPLOYING SAME

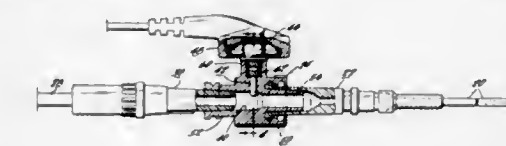
Thomas G. Johans, Des Peres, Mo., assignor to Arrow International, Inc., Reading, Pa.

Filed Sep. 23, 1985, Ser. No. 779,394

Int. Cl.⁴ A61M 5/00

U.S. Cl. 128—786

1 Claim



1. In a system for providing electrical connection between a

chamber of the heart of a living person and external electrical medical equipment, comprising a catheter adapted to extend at one end through a blood vessel and into said heart chamber, a source of electrolyte, a tube connected at one end to said source for filling said catheter with a flow of electrolyte, a device for making electrical contact to said electrolyte, and an electrical lead connected between said device and said medical equipment, the improvement wherein said device comprises:

a T-shaped adapter made of electrically insulating material and having a cylindrical cross-bar portion and a cylindrical stem portion extending at right angles to said cross-bar portion at the center of the length thereof, said cross-bar portion having a first cylindrical bore extending axially through its length, said stem portion having a second cylindrical bore extending axially through it to intersect said first bore, and the two opposite ends of said cross-bar portion comprising quick-disconnect hydraulic connectors providing hydraulic communication between one end of said first bore and the other end of said catheter remote from said heart chamber, and between the other end of said first bore and the other end of said tube remote from said electrolyte source;

said adapter further comprising a metallic electrode one end of which extends through said second bore and into the interior of said first bore to contact said electrolyte at a predetermined position and the other end of which extends outwardly from the exterior of said stem portion and comprises a quick-disconnect snap-on electrical connector for enabling quick connection to, and quick disconnection from, said electrical connection of said electrical lead connected to said medical equipment, said electrical connector also comprising a circumferential outwardly-extending flange intermediate its opposite ends, said second bore having an internal shoulder against which said flange bears to hold said one end of said electrical connector in said predetermined position.

4,644,961

MACHINE FOR MANUFACTURING FILTER-TIPPED CIGARETTES

Motonobu Horie, Teruo Shimizu, and Kouichiro Obara, all of Tokyo, Japan, assignors to Japan Tobacco, Inc., Japan

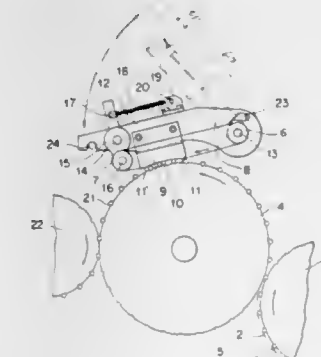
Filed Feb. 26, 1985, Ser. No. 705,601

Claims priority, application Japan, Jul. 20, 1984, 59-149724

Int. Cl.⁴ A24C 5/47

U.S. Cl. 131—94

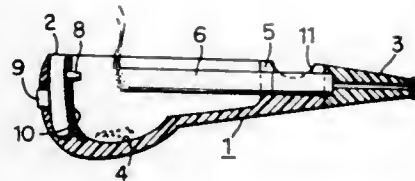
6 Claims



1. In a machine including a cylindrical drum and a rolling mechanism for manufacturing a filter-tipped cigarette in which pasted coupling paper is wound around a unit defined by a pair of untipped cigarette portions spaced coaxially with each other on the drum and a filter tip material is interposed between the untipped cigarettes and attached to the cigarettes with the paper while the unit rotates in a rolling passage defined between said cylindrical drum carrying the unit and the rolling

mechanism facing the drum, the improvement wherein said rolling mechanism comprises a pair of rollers rotatably and respectively mounted on shafts supported in the machine in generally parallel relation to a rotary shaft supporting the cylindrical drum; an endless belt mounted to rotate around said rollers in opposing relation to a surface of the drum; and a belt positioning block mounted between said rollers between an upper and lower extent of said belt, said positioning block having a cylindrical concave surface positioned concentric with the surface of said cylindrical drum, said belt extending between said concave surface and the cylindrical drum surface, wherein the length of said concave surface as measured between opposite ends thereof in the circumferential direction of said cylindrical drum surface and the radial positioning of said concave surface relative to the rotary shaft of said drum is such that in an operating position of said rolling mechanism, during running of said machine, said belt is supported by said ends to normally extend in a generally straight line therebetween in spaced relation to said concave surface and said cylindrical drum surface and out of wearing contact therewith, said belt being positioned to deform into engagement with the concave surface under the action of said unit advancing into contact with the belt during rotation of said drum, a portion of said belt extending between said ends thereby defining the rolling passage with the cylindrical drum surface.

4,644,962
MULTI-PURPOSE CIGARETTE PIPE
Kyung D. Chi, 481 Rollins Rd., Burlingame, Calif. 94010
Filed Oct. 11, 1984, Ser. No. 659,834
Int. Cl.⁴ A24F 7/00, 13/18
U.S. Cl. 131-174 2 Claims

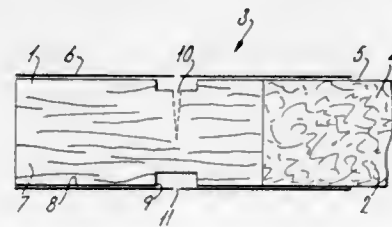


1. A multi-purpose cigarette pipe for smoking a cigarette comprising a housing having a forward portion, a rear portion, and a middle portion connecting said forward and rear portion; said rear portion comprising a cigarette holder and associated with said holder is a means for extinguishing a cigarette; said middle portion having a means to collect ashes at the bottom of said middle portion; said housing opened at its top; means to light a cigarette in said housing attached to said forward portion; and a nicotine extractor located in said hollow.

4,644,963
SMOKING ARTICLES
David E. Creighton, Southampton, England, assignor to British-American Tobacco Company Limited, London, England
Filed May 7, 1985, Ser. No. 731,465
Claims priority, application United Kingdom, May 19, 1984, 8412867
Int. Cl.⁴ A24D 3/04
U.S. Cl. 131-336 9 Claims

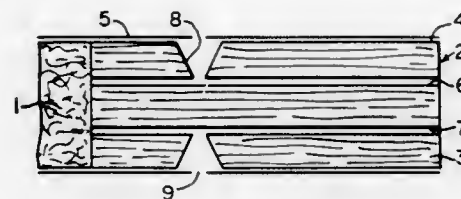
1. A smoking article comprising a smoking material rod, a mouthpiece attached to said rod, and a wrapper extending about said mouthpiece at least at a location spaced from the mouth end of said mouthpiece and said wrapper being highly air permeable at said location, said mouthpiece comprising a smoke passage extending through said element to the mouth end of said mouthpiece, and said mouthpiece further comprising a ventilation air chamber bounded by said wrapper at said location, the walls of said chamber being air impermeable except for orifice means extending therethrough, which orifice means provides an air-flow communication, having a cross-

sectional area within a range of 0.2 mm² to 0.8 mm², between the interior of said chamber and said smoke passage, said ori-



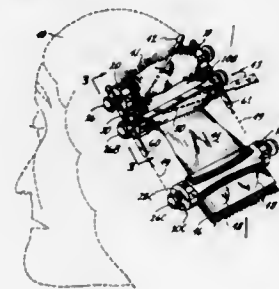
fice substantially controlling the degree of ventilation of the mouthpiece.

4,644,964
SMOKING ARTICLE MOUTHPIECE ELEMENTS
Martin G. Duke, Southampton, United Kingdom, assignor to British-American Tobacco Company Limited, London, England
Filed Jun. 10, 1985, Ser. No. 743,065
Claims priority, application United Kingdom, Jun. 22, 1984, 8415972
Int. Cl.⁴ A24D 3/04
U.S. Cl. 131-336 11 Claims



1. A mouthpiece element comprising a smoke passage extending from end-to-end of said element and first and second ventilation ducts, said first duct extending from a location at the periphery of said element to a downstream end of said element at a location spaced from said periphery, and said second duct extending from a location at said periphery to an upstream end of said element and wherein the air flow impedance of said first duct is greater than the air flow impedance of said second duct.

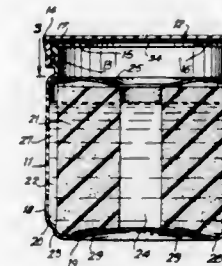
4,644,965
PERMANENT WAVE HAIR ROD
Larry R. Alexander, 101 Florence Ave., Evanston, Ill. 60202
Filed Oct. 18, 1985, Ser. No. 788,889
Int. Cl.⁴ A45D 2/00
U.S. Cl. 132-40 16 Claims



1. A device for use in hairdressing comprising: a tubular component having a first end portion, a second end

portion, and a mid-portion therebetween about which to wind a lock of hair in the process of hairdressing;
a first enlarged portion at the first end portion and a second enlarged portion at the second end portion, each enlarged portion having a periphery formed of a plurality of a small number of facets and being polygonal in cross section, each one of said facets having a substantial flat surface area contiguous to like facets on either side thereof to define a discrete radial angle for engaging a like facet of a similar device and help support said similar device at a desired distance away from the scalp of a person whose hair is being dressed;
a pair of first and second end members at respective ones of the first and second end portions in positions extending axially outward therefrom; and
connection means including first and second projection on each one of the respective first and second end members for enabling each one of the end portions to be connected to a corresponding end portion of a similar tubular component by interconnecting corresponding end members to cause a single selected facet on one device to bear against a single selected facet on a similar tubular component over a substantial surface areas of interengagement to inhibit relative axial rotation, and for enabling a pair of the devices to be positioned relative to one another for arranging the hair in a desired configuration.

4,644,966
FINGERNAIL TREATMENT ARRANGEMENT
Luigi M. Ferrari, Douglaston Hills, N.Y., assignor to Del Laboratories, Inc., Farmingdale, N.Y.
Division of Ser. No. 451,328, Dec. 20, 1982, Pat. No. 4,466,452.
This application Apr. 2, 1984, Ser. No. 595,929
Int. Cl.⁴ A45D 29/17
U.S. Cl. 132-73 2 Claims

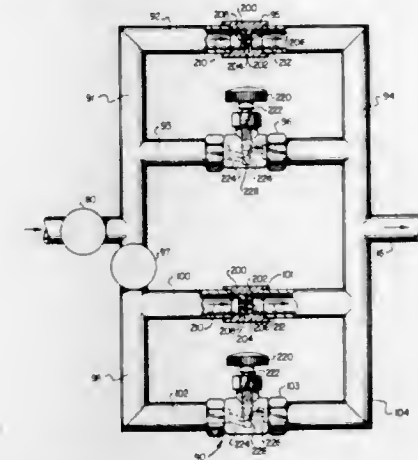


1. A method of manufacturing a leak- and spill-resistant arrangement for treating fingernails with a volatile nail polish remover predominantly absorbed in a liquid-absorbing porous body accommodated in a vessel having relatively thin walls constituted of synthetic plastic material and yieldable to super-atmospheric pressure, comprising the steps of:

- heating a predetermined quantity of the nail polish remover to a temperature substantially in the range of 40° C. to 50° C. and below the boiling temperature of the nail polish remover;
- introducing the heated quantity of the nail polish remover through an inlet opening of the vessel into the interior of the latter for predominant absorption by the porous body, said heated quantity of the nail polish remover introduced within the vessel having a liquid state and a vapor state in at least one of which the heated quantity is prone to leak out of the vessel to the exterior thereof;
- sealingly closing the inlet opening, after the introduction of the heated quantity into the vessel, by sealingly connecting a fluid-impermeable foil around the entire circumference of the inlet opening and spanning the same; and
- cooling the heated quantity of the nail polish remover sealingly closed within the vessel to room temperature and concomitantly causing a subatmospheric pressure to

prevail within the vessel, said subatmospheric pressure being less than the atmospheric pressure prevailing at the exterior of the vessel to prevent escape of the nail polish remover within the vessel to the exterior thereof, and to resist outward bulging of the relatively thin vessel walls, thus assuring vessel stability and resistance to spilling.

4,644,967
FLUID FLOW CONTROL SYSTEM
W. Gerald Wyatt, Arlington, and Richard Redus, Dallas, both of Tex., assignors to Vapor Energy Corp., Arlington, Tex.
Continuation-in-part of Ser. No. 554,780, Nov. 25, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 759,665
Int. Cl.⁴ F17D 3/00
U.S. Cl. 137-599 9 Claims



1. A dual output, pressure responsive, adjustable, fluid flow control system comprising:
first and second flow networks coupled in parallel flow communication;
said first and second flow networks each comprising first and second flow paths;
said first flow path of said flow networks each comprising an adjustable flow control valve for regulating the flow therethrough;
said second flow path of said networks comprising a pressure responsive valve disposed therein for maintaining substantially constant flow therethrough with variations in fluid flow pressure therein;
means for supplying fluid to said flow networks;
means for receiving fluid from said fluid flow networks; and
means for engaging and disengaging said second flow network to said fluid supply means for selectively permitting the flow therethrough and facilitating a dual flow output.

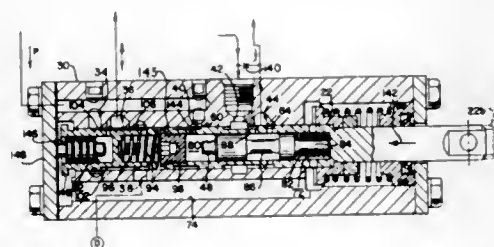
4,644,968
MASTER CLUTCH PRESSURE AND LUBRICATION VALVE
Probir K. Chatterjee, Mount Prospect, Ill., assignor to J. I. Case Company, Racine, Wis.
Filed Aug. 29, 1983, Ser. No. 527,603
Int. Cl.⁴ F16K 31/12
U.S. Cl. 137-599.2 1 Claim

1. In an actuating and lubrication valve assembly for a hydraulically actuated clutch including a load spring and adjustable means to meter actuating fluid to the clutch for clutch engagement pressures, the improvement comprising:
a load plunger valve (22) for compressing the load spring having internal valve surfaces comprising a plunger valve port (88) and a delay plunger valve port (90) and external valve surfaces comprising a land (64) and a lubrication port (44);

a bore (32) receiving said load plunger valve, and said internal and external valve surfaces defining a first passage through said bore for directing (64) lubrication flow to said clutch only when the load plunger valve is in a loading position to modulate clutch control pressure, said internal and external valve surfaces defining a second passage through said bore which permits intermittent lubrication flow to said clutch (64, 44, 88, 90), and passage blocking means (78) for blocking flow through said second passage to said clutch;

means (80, 76) for causing an appreciable delay between the time the second passage permits flow to said clutch and the time the second passage is blocked by said passage blocking means;

said passage blocking means and said delay means comprising a shuttle valve (48) arranged in concentric relationship with the load plunger valve with said shuttle valve being located within said load plunger valve, said shuttle valve



including a control face (78) and the control face of said shuttle valve being controlled by a shuttle valve spool and a biasing spring in said bore, and said control face being movable with respect to the internal valve surfaces to block flow or permit flow through the second passage;

said shuttle valve spool (76) arranged within said load plunger valve with a loose telescopic fit to define an expandable and contractable pressure chamber (80) between said shuttle valve spool and said plunger valve, incoming fluid pressure to said bore expanding said chamber with resulting force being applied against the shuttle valve spool and the shuttle valve spool moving against and overcoming the force of said biasing spring; and

means (140) defining a permanently open third passage which restrictively directs lubrication flow to said clutch at a continuous but significantly diminished flow rate as compared to the flow rate of lubrication flow to the clutch through said first and second passages.

4,644,969 WATER CONTROL VALVE WITH PNEUMATIC ACTUATOR

Mituru Watanabe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1985, Ser. No. 766,295

Claims priority, application Japan, Aug. 20, 1984, 59-171595; Sep. 25, 1984, 59-143511

Int. Cl.⁴ F16K 11/02, 31/126

U.S. Cl. 137—625.27

5 Claims

1. A pneumatically operated three-way pure water control valve for use in pure water piping systems for semiconductor manufacturing plants, comprising:

- an air actuator, including an air cylinder, an air piston ring disposed in said air cylinder for sliding reciprocal movement therein in response to air pressure applied thereto, and a piston shaft connected to said piston ring for movement with said air piston ring in said air cylinder;
- a valve portion, including a valve cylinder, a first stationary valve seat having a through-hole therein, a second stationary valve seat opposing said first valve seat, an obturator between said first and second valve seats, reciprocally movable in opposite directions into sealing engagement

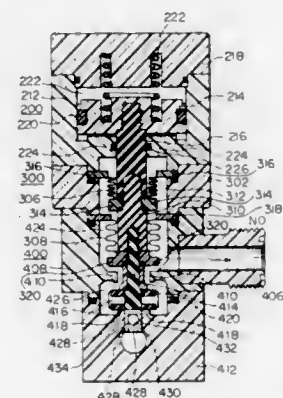
with said first and second valve seats, and a lower valve shaft mounted to said obturator,

an intermediate cylinder mounted between said air cylinder and said valve portion and having an opening communicating with the atmosphere;

an intermediate valve shaft serially connected at an upper end thereof to said piston shaft and at a lower end thereof to said lower valve shaft, for transmitting movement of said piston shaft to said obturator to alternatively move said obturator into sealing engagement with said first valve seat and said second valve seat;

a first bellows formed of polytetrafluoroethylene having one end hermetically mounted to said lower end of said intermediate shaft and the other end hermetically mounted to said inner wall of said intermediate cylinder; and

a second bellows formed of polytetrafluoroethylene having one end hermetically mounted to said upper end of said intermediate shaft and the other end hermetically



mounted to said inner wall of said intermediate cylinder, such that said first and second bellows define a space therebetween isolating said piston shaft from said lower valve shaft;

said first bellows having a first thickened polytetrafluoroethylene end portion hermetically mounted between a top end of said intermediate cylinder and a bottom end of said air cylinder and a second thickened polytetrafluoroethylene end portion opposite said first thickened end portion hermetically mounted between a top end of said intermediate valve shaft and a bottom end of said piston shaft, said second bellows having a third thickened polytetrafluoroethylene end portion hermetically mounted between a top end of said valve cylinder and a bottom end of said intermediate cylinder and a fourth thickened polytetrafluoroethylene end portion opposite said third thickened end portion hermetically mounted between a top end of said lower valve shaft and a bottom end of said intermediate valve shaft.

4,644,970 MIXING FAUCET

Robert D. Lowry, 330 Marguerite Ave., Cuyahoga Falls, Ohio 44221

Filed Oct. 11, 1985, Ser. No. 786,533

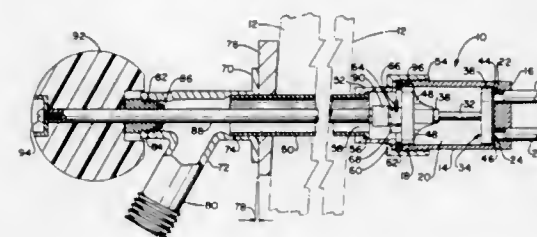
Int. Cl.⁴ F16K 11/06; F16L 5/00

U.S. Cl. 137—625.41

2 Claims

1. A mixing faucet comprising a casing having a mixing chamber, an inlet plate member at one end of said mixing chamber, said inlet plate member having a hot water inlet port and a cold water inlet port, an outlet member at an opposite end of said mixing chamber having a mixed water outlet port, valve means mounted for rotation in said mixing chamber to selectively open and close said cold water inlet port and said hot water inlet port, an elongated tubular member having an open first end fastened to said casing at said outlet member and

in communication with said mixed water outlet port, said tubular member having a second end attached to a nozzle member, said nozzle having a nozzle in communication with said tubular member, a control rod connected to said valve means extending through said tubular member, through said second end, and said nozzle member, a single handle means mounted on said control rod for rotating said valve means, said cold water inlet port and said hot water inlet port being selectively opened upon rotation of said valve means in one direction to provide a mixture of hot and cold water in the mixing chamber for passage through said mixed water outlet and said



tubular member to said nozzle member, said cold water inlet port and said hot water inlet port being closed at said inlet plate member upon rotation of said valve means in an opposite direction, a detachable coupling connecting said control rod to said valve means at said outlet member, said casing at said outlet member being detachably connected to said tubular member for removal of said casing from said tubular member and said control rod to service said valve means, a bushing in said nozzle member, and said control rod extending through said bushing and having a flanged portion located at an interface of said bushing for limiting axial movement of said control rod to hold said control rod in said coupling after installation.

4,644,971 HIGH PRESSURE PILOT OPERATED VALVE

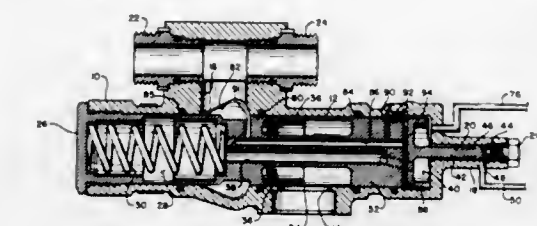
Ralph L. Vick, Granada Hills, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 30, 1985, Ser. No. 781,829

Int. Cl.⁴ F15B 13/043

U.S. Cl. 137—625.64

15 Claims



1. A valve construction including a valve body having an inlet passage and an outlet passage with an internal bore communicating with said passages,

a slide valve member movable in said bore between a first position blocking communication between said passages and a second position communicating said passages, said member including an internal chamber communicating with said inlet passage and a plurality of metering orifices through the wall of said member which provide communication between said internal chamber and said outlet passage, a source of fluid under high pressure and means connecting said source to said inlet passage, and a low fluid pressure source, and operator-operated means for controlling movement of said slide valve member;

characterized in that said slide valve member further includes a passageway including a first radially directed conduit having an outlet adjacent said bore and which connects said outlet passage with said low pressure source when said member is in said first position, a first dynamic

seal is positioned in said housing acting against said member near the outlet of said radially directed conduit, a second radially directed conduit connecting said passageway with said bore and having an outlet adjacent to said bore on the opposite side of said first dynamic seal from the outlet of said first radially directed conduit when said member is in said first position, a second dynamic seal in said housing acting against said member axially displaced toward said outlet passage from said second radially directed conduit, a third dynamic seal in said housing acting against said member and displaced from said outlet passage a distance only slightly greater than the axial length of any of said metering orifices, a fourth dynamic seal in said bore acting against said member on the opposite side of said outlet passage from said third dynamic seal,

each of said dynamic seals comprising an annular groove in the wall of said bore, an O-ring in said groove and a low friction sealing ring in said groove in contact with said member.

4,644,972 FLOATING SEAL VALVE ASSEMBLY

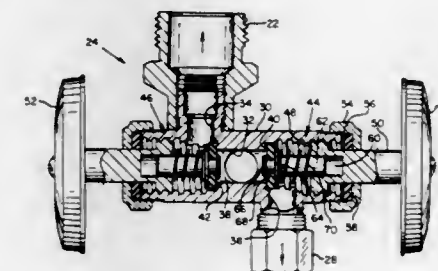
Charles H. Perrott, Portland, Oreg., assignor to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Jul. 12, 1985, Ser. No. 754,094

Int. Cl.⁴ F16K 17/04

U.S. Cl. 137—883

3 Claims



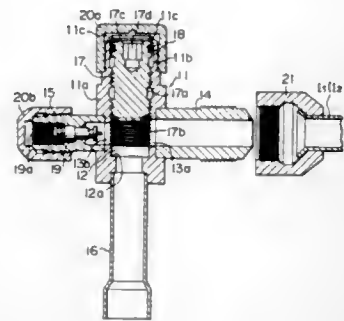
1. A floating seal valve assembly, comprising:

- (a) a casing housing a valve chamber,
- (b) a normally pressurized fluid inlet communicating with the chamber,
- (c) a first outlet in the casing communicating with the chamber,
- (d) a first valve seat in the casing associated with the first outlet,
- (e) a first valve body in the chamber movable toward and away from the first valve seat,
- (f) a first valve seal on the first valve body movable with and relative to the latter toward and away from the first valve seat to open and close the first outlet,
- (g) a second outlet in the casing communicating with the chamber,
- (h) a second valve seat in the casing associated with the second outlet,
- (i) a second valve body in the chamber movable toward and away from the second valve seat,
- (j) a second valve seal on the second valve body movable with and relative to the latter toward and away from the second valve seat to open and close the second outlet, and
- (k) resilient means interengaging each seal and its associated valve body and operable to exert a seat-closing force on the associated seal which is less than the seat-opening force on said seal exerted by the normal inlet fluid pressure at the inlet to the chamber, whereby to prevent back flow of fluid from the associated outlet to the chamber upon reduction of said normal inlet fluid pressure to a force below the seat-closing force of the resilient means.

4,644,973
VALVE UNIT FOR AIR-CONDITIONER PIPING
 Nobuaki Itoh, and Takashi Sekine, both of Hiratsuka, Japan,
 assignors to Yokohama Aeroquip Company, Tokyo, Japan
 Filed Oct. 1, 1985, Ser. No. 782,368
 Claims priority, application Japan, Oct. 3, 1984, 59-149079
 Int. Cl.⁴ F16K 11/044

U.S. Cl. 137—883

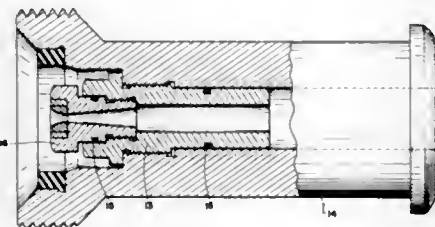
1 Claim



1. A valve unit for the piping of an air-conditioner, comprising a valve housing (11) including a lower thick barrel portion (11a) and an upper thin head portion (11b), a straight-cylindrical longitudinal bore (12) extending therethrough, an adapter (14) for connection of a conduit, another adapter (15) serving as a charging inlet for a refrigerant and having valve core (19) therein, said adapters being located on opposite sides of said barrel portion; a short pipe (16) attached to the lower end of said barrel portion (11a); an inward-facing valve seat (11c) formed on the upper end of said head portion (11b); a rodlike valve element (17) having an annular recess (17a) around a middle portion thereof and screwed into said valve housing (11); and a cap (20a) detachably fitted to said head portion (11b) and having an inward annular protrusion (20c) around an inner bottom surface therein covering said head portion (11b) of said valve housing (11), said inward-facing valve seat being arranged to be (11c) nipped between said inward annular protrusion (20c) and said edge (17c) of said valve element (17); said rodlike valve element (17) having at its lower end an oblique surface (17b) capable of being brought into contact with a lower valve seat (12a) of said longitudinal bore (12) and at its upper end an upper edge (17c) adapted to be brought into engagement with said inward facing valve seat (11c) on the upper end of said head portion (11b) to define a refrigerant passage.

4,644,974
CHOKE FLOW BEAN
 Warren M. Zingg, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.
 Continuation of Ser. No. 185,061, Sep. 8, 1980, abandoned. This application Oct. 26, 1984, Ser. No. 665,205
 Int. Cl.⁴ E21B 41/00; F15D 1/02
 U.S. Cl. 138—44

2 Claims



1. A removable and replaceable choke flow bean capable of reducing the pressure of abrasive fluids under high pressure passing therethrough, comprising:
 a housing having a first end and second end defining a bore

of generally circular cross section which extends, along with its axis of generation, from the first end to the second end, the external portion of the first end of the housing having a surface adapting it as a wrench-engaging fitting, the external portion of the second end of the housing having connecting means for operatively securing it to a choke nipple and separately applied sealing means for preventing the high pressure fluid from passing along the external portion of the choke flow bean, said sealing means being spaced from said connecting means,

the bore being of varying diameter along its axis of generation with regions of larger diameter adjacent the first and second ends of the housing, a region of minimum diameter d , intermediate the first and second ends,

the bore having a general configuration approximating that of a trumpet bell between the first end and the region of minimum diameter wherein the radius of curvature of the wall is about $0.5d$ to $1.0d$ and is an abrasion-resistant material, said trumpet bell formed by an insert at said first end within said housing, said insert having its bore at the end closest to said second end adjacent said region of minimum diameter and being substantially equal thereto in diameter,

the bore having a frustoconical configuration between the second end and the region of minimum diameter with a total included angle of from about 4° to about 8° and having a length along the axis of generation of about $9d$ between the region of minimum diameter and the second end,

whereby the choke flow bean causes a substantial reduction in pressure of the high pressure abrasive fluid at its minimum diameter without substantial turbulence or cavitation while resisting wear and being readily replaceable.

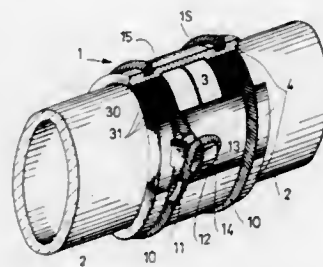
4,644,975
DEVICE FOR PREVENTING RUPTURING OF A PIPELINE

Hans Fricker, Rickenback-Attikon, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
 Filed Feb. 13, 1985, Ser. No. 701,084
 Claims priority, application Switzerland, Feb. 13, 1984, 669/84

Int. Cl.⁴ F16L 1/00, 9/22

U.S. Cl. 138—110

19 Claims



1. In combination with a pipeline having a rupture-risk zone and peripheral grooves in a peripheral surface, a device for preventing rupture of said pipeline in said risk zone, said device including

a plurality of tension bars secured to and distributed uniformly about said peripheral surface of said pipeline on opposite sides of said risk zone, each said tension bar having a tooth system at least on one end in engagement with said grooves; and

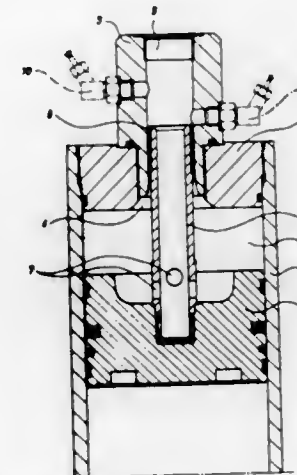
at least one tensioning band extending peripherally about said pipeline and said tension bars to press said tension bars against said pipeline.

4,644,976
HYDROPNEUMATIC FLOATING-PISTON ACCUMULATOR
 Gunter Peter, Theley, and Siegfried Klett, Affalterbach, both of Fed. Rep. of Germany, assignors to Gesellschaft fuer Hydraulik-Zubehoer mbH, Sulzbach, Fed. Rep. of Germany
 Filed Mar. 29, 1985, Ser. No. 718,001
 Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411592

Int. Cl.⁴ F16L 55/04

U.S. Cl. 138—31

10 Claims



1. A hydropneumatic accumulator, comprising:
 a tubular housing with a chamber;
 a separator piston movably mounted in said chamber of said housing;
 a tubular piston rod fixedly coupled to and extending axially from said piston for movement simultaneously with said piston, said piston rod having opposite first and second ends with said first end attached to said piston and said second end remote from said piston;
 a switch member mounted on said piston rod at a first distance from said piston;
 a tube member mounted on one end of said housing and surrounding said switch member when said separator piston is in a top position thereof, said tube member having filling means for attaching a filling device to said tube member;
 a filling conduit extending through said tube member and through said piston rod from said first end of said piston rod for conveying fluid into said chamber between said piston and said tube member, said filling conduit including a bore extending radially through said piston rod adjacent said piston and opening into said chamber; and
 sensor means, mounted in said tube member, for sensing positions of said switch member in said tube member.

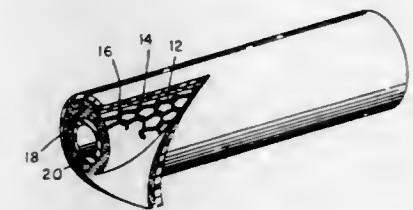
4,644,977
HOSE WITH COEXTRUDED COVER CONSISTING OF MULTIPLE FOAMED OR NONFOAMED LAYERS
 Robert B. Arterburn, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.
 Filed Mar. 25, 1985, Ser. No. 715,542
 Int. Cl.⁴ F16L 9/14

U.S. Cl. 138—137

16 Claims

1. A hose comprising:
 a two-component tube consisting of a thin, nonfoamed inner liner and a foamed interlayer circumferentially encompassing the inner liner;
 a textile reinforcement telescoped over said tube; and
 a two-component, coextruded, thermoplastic outer cover layer circumferentially encompassing said reinforced tube and having a first thermoplastic layer with a multitude of

closed gas-filled cells and interposed between the tube and a second thermoplastic layer which is nonfoamed and has a thickness of from 15% to 73% of the thickness of the

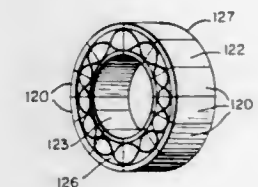


first thermoplastic layer, the coextruded first and second thermoplastic layers being free of any intervening material.

4,644,978
TENSION ARCH STRUCTURE
 Samuel G. Bonasso, 241 S. High St., Morgantown, W. Va. 26505
 Continuation-in-part of Ser. No. 568,219, Dec. 28, 1983, which is a continuation-in-part of Ser. No. 372,805, Apr. 28, 1982, Pat. No. 4,464,803. This application Oct. 3, 1985, Ser. No. 783,567
 Int. Cl.⁴ F16C 9/22

U.S. Cl. 138—157

1 Claim



1. A load bearing structure being a segment of a pipe comprising in combination:

- (a) a plurality of cylindrical compression sections;
 - (b) each of the cylindrical compression sections having an outer surface and an inner surface comprising a segment of the outer and inner surfaces of a cylinder;
 - (c) each cylindrical compression section having a left surface and right surface which join the right surface and left surface of adjacent cylindrical compression sections;
 - (d) each cylindrical compression section having a front surface and back surface which joins the back surface and front surface of adjacent segments of said pipe;
 - (e) the front surface of each cylindrical compression sections having a pair of cable grooves meeting in the center of the cylindrical compression sections;
 - (f) a pair of continuous tension elements, each one of the continuous tension elements contained within a pair of cable grooves;
 - (g) said cylindrical compression sections assembled side to side to form a torus; and,
 - (h) said continuous tension elements running from cylindrical compression sections to cylindrical compression sections;
- whereby the cylindrical compression sections and the continuous tension elements support the radial load in both tension and compression.

4,644,979

HEDDLE DRIVE FOR A WEAVING MACHINE

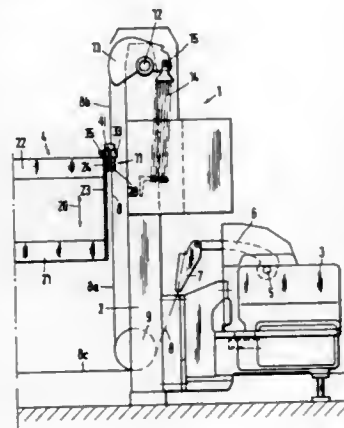
Georg Senn, and Herbert Oberholzer, both of Ruti, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Apr. 26, 1985, Ser. No. 727,539

Claims priority, application European Pat. Off., May 15, 1984, 84810238.0

Int. Cl.⁴ D03C 13/00

U.S. Cl. 139—82

12 Claims



1. In a weaving machine, the combination comprising a heddle including a pair of longitudinal beams and a pair of transverse beams; and means coupled to at least one of said transverse beams for reciprocating said heddle in a path parallel to said one transverse beam, an adjustable stop in said means, said stop further provides adjustment of said heddle relative to said means along said path.

4,644,980

DEVICE FOR INSERTING WEFT YARN IN A FLUID JET LOOM

Kinpei Mitsuya, and Mitsubishi Iwasaki, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, Japan

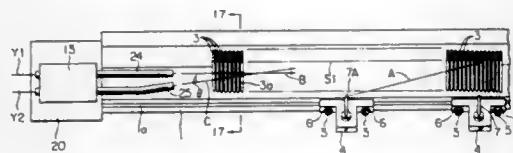
Filed Dec. 9, 1985, Ser. No. 806,778

Claims priority, application Japan, Dec. 28, 1984, 59-275215; Feb. 9, 1985, 60-24123; Feb. 22, 1985, 60-34977

Int. Cl.⁴ D03D 47/30

U.S. Cl. 139—435

16 Claims



1. A weft-inserting device for inserting weft threads into a warp shed in a fluid jet loom having a sley, and an aligned plurality of weft guides on and extending across said sley, each said weft guide having means defining a weft guide aperture for passage of said weft threads therethrough, each said aperture having an open side and a recessed wall portion opposite its said open side, all of said weft apertures being aligned and oriented to form a weft guide channel having an open side and substantially a recessed wall surface opposite to said open side formed by said recessed wall portions of said guides, said device comprising at least two weft-inserting main nozzles mounted on one end of said sley, each said main nozzle having a fluid jet opening directed substantially into said weft guide channel for inserting a weft thread therein, means for selectively emitting a jet of fluid from each of said nozzle openings for carrying respective weft threads therefrom along respec-

tive fluid jet axes into said weft guide channel, and at least one auxiliary nozzle mounted on said sley spaced away from said main nozzle openings and having a fluid jet opening positioned for emitting a jet of fluid into said weft guide channel in a direction away from said main nozzle openings and inclined towards said recessed wall surface for assisting movement of said weft threads through said channel, one of said main nozzles having its said fluid jet axis directed parallel to said recessed wall surface, and another of said main nozzles having its said fluid jet axis inclined towards said recessed wall surface, whereby said fluid jet from said auxiliary nozzle maintains said weft threads within said weft guide channel.

4,644,981

FILLING ELEMENT FOR FILLING MACHINES

Herbert Bernhard, Wolfsheim, Fed. Rep. of Germany, assignor to Seitz Enzinger Noll Maschinenbau Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

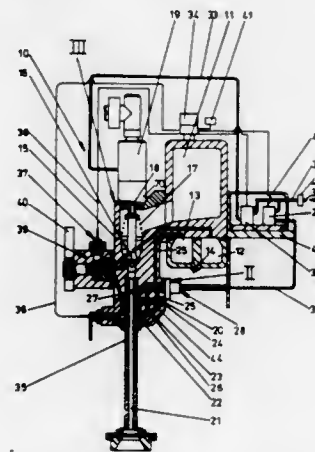
Filed May 24, 1985, Ser. No. 738,031

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420181; Apr. 20, 1985, 3514441

Int. Cl.⁴ B67C 3/06

U.S. Cl. 141—39

16 Claims



1. A filling element for filling machines, said filling element including liquid introduction means which leads to the interior of a container pressed onto said filling element so that it can be filled; said liquid introduction means has at least one liquid flow valve, which is under the influence of an opening spring and of an electrically controlled valve actuating device which acts counter to said opening spring; also provided is at least one gas-conveying system having at least one electrically controllable shutoff valve; the improvement comprises:

a respective electrically controlled actuating device for each of said shutoff valves, with at least one of said actuating devices of said at least one shutoff valve and of said at least one liquid flow valve containing, as an element which generates actuating force for the functioning of its valve, a respective diaphragm which is operated by pressure medium; pressure medium supply means for supplying said pressure medium to each of said diaphragm; and pressure medium control valve means for said supply means, with said control valve means being mounted on said machine at a location which is separate and at a distance from other parts of said filling element, and which is protected from the entry of liquid.

4,644,982

REFRIGERANT MATERIAL TRANSFER ADAPTER

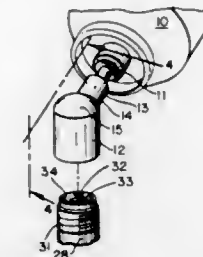
Jimmie K. Hatch, 7819 Lowery St., Fort Worth, Tex. 76112

Filed Sep. 23, 1985, Ser. No. 778,879

Int. Cl.⁴ B65B 3/04

U.S. Cl. 141—383

16 Claims



1. A refrigerant material transfer adapter comprising: an adapter formed of semi-rigid yet resiliently flexible plastic having a side tube projection that fits on the valve stem of a pressurized can having a can valve with a valve stem of the type that opens the can valve for release of contents when the valve stem is sidewise angle deflected; internal shoulder means within said side tube projection limiting the extent of insertion of a can valve stem into said side tube projection; an outlet end opening in said adapter body shaped to fit on and over the low pressure suction side valve fitting of a refrigerant system; projection means within said outlet end opening positioned to engage the valve stem of the refrigeration system suction side valve fitting so that as the adapter is pushed to the seated state on the refrigeration system suction side valve fitting the fitting valve is opened to receive refrigerant material and the pressurized can is moved to open the can valve for movement of refrigerant material from the can through the adapter and the suction side valve fitting into the refrigeration system.

4,644,983

SPILL REDUCING SYSTEM

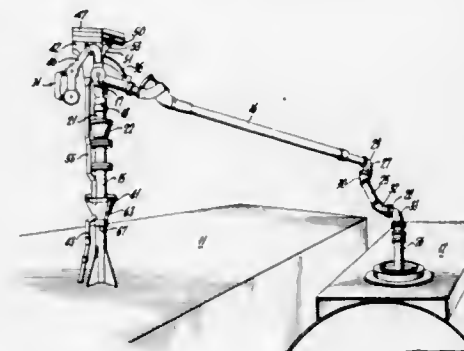
Stephen R. Bishop, Bristol, United Kingdom, assignor to Texaco Limited, London, England

Filed Mar. 20, 1985, Ser. No. 714,134

Int. Cl.⁴ B65B 3/04; B67D 5/00

U.S. Cl. 141—387

6 Claims



1. A spill reducing system for a loading dock having a stationary container which holds a supply of liquid to be transferred to a mobile container (42), which stationary container is fixedly communicated to an upright conduit (15), at least one elongated articulated fill pipe assembly sealably engaging said upright conduit (15) at a rotatable seal joint (22), said fill pipe assembly including a plurality of fill pipe segments (21, 16, 26) which are interconnected into a continuous conduit by swivel joints therebetween, fill pipe segment (26) having a discharge end which is adapted to removably register in a filler port of

the mobile container during a liquid transfer operation to the latter, said spill reduction system including:

a first funnel (41) depending from said upright conduit (15), a second funnel (42) depending from said fill pipe assembly and being horizontally movable in response to rotative movement of the fill pipe assembly with respect to said upright conduit (15), drain conduit means (43, 55) communicating the respective first and second funnels with a collection tank, and a chute (50) depending from said fill pipe assembly including, a pipe support member positioned to supportably engage the end of said remote fill pipe segment (26) to align the discharge end thereof with said second funnel (42) when the remote pipe segment (26) is disengaged from said mobile container filler port, whereby residual liquid in said fill pipe assembly will drain from the remote pipe segment (26), into said second funnel (42).

4,644,984

SELF SERVICE GAS CAP

Samuel R. Abraham, 3521 NW, 54 #291, Oklahoma City, Okla. 73112

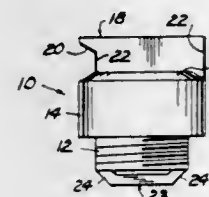
Continuation-in-part of Ser. No. 560,618, Dec. 12, 1983, Pat. No. 4,544,007. This application Sep. 27, 1985, Ser. No. 780,754

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.⁴ B65D 51/24

U.S. Cl. 141—392

1 Claim



1. In a gasoline pump elongated dispensing valve nozzle having a laterally spaced longitudinally extending lever guard and having a variable position lever movable toward and away from the lever guard for dispensing and interrupting gasoline flow from the nozzle in combination with a vehicle gasoline tank filler neck gas cap having circular outer and inner end portions and having a diametric or axial dimension freely received between said lever and the lever guard when the lever is moved toward gasoline dispensing position, the improvement comprising:

a rectangular torque handle diametrically secured to the normally outward end surface of the gas cap, said torque handle having a recess in one surface capable of nesting an intermediate portion of said valve nozzle lever; a mounting handle, having opposite ends, diametrically spanning and secured at its respective ends to the normally inward disposed end of the gas cap, said mounting handle having a recess projecting toward the adjacent end of the gas cap; and, resilient material overlying the surfaces defining the recesses.

4,644,985

TEMPLATE AND WORKPIECE HOLDER

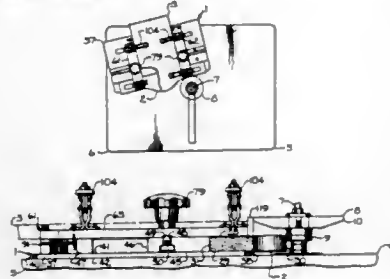
Richard A. Weaver, Kansas City, Kans., assignor to L. A. Weaver Co., Inc., Kansas City, Kans.

Filed Nov. 2, 1984, Ser. No. 667,852

Int. Cl.⁴ B27C 1/12

U.S. Cl. 144—145 R

16 Claims



1. A template and workpiece holder, which comprises:
 - (a) template centering means adapted for centering a template in a predetermined position on the holder;
 - (b) workpiece centering means adapted for centering a workpiece in a predetermined position on the holder and comprising a pair of clamp assemblies transversely slidable with respect to the holder and adapted for centering the workpiece therebetween;
 - (c) a base plate mounting said template and workpiece centering means;
 - (d) said clamp assemblies being connected to said base plate and including clamps adapted for clamping the template and workpiece on the holder above the base plate with one of said template and holder overlying the other; and
 - (e) handle means connected to said base plate for manipulating said holder.

4,644,986

AUTO TRAVEL SKI BAG

Louis V. Fusaro, 7 Mallard La., Smithtown, N.Y. 11787

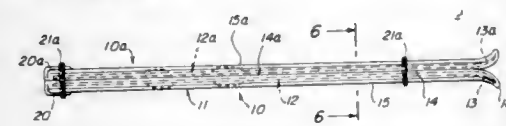
Continuation-in-part of Ser. No. 550,636, Nov. 10, 1983,

abandoned. This application Apr. 8, 1985, Ser. No. 720,537

Int. Cl.⁴ A45C 11/00; A63C 11/00

U.S. Cl. 150—52 R

1 Claim



1. Auto travel bags for carrying a pair of ski comprising a pair of separated substantially identical elongated casings each made of flexible material, each elongated casing further comprising: a longitudinal upper face, a longitudinal lower face substantially parallel with said longitudinal upper face, a first side edge surface extending between said upper and lower longitudinal faces from a first edge thereof, a second side edge surface extending between said upper and lower longitudinal faces from a second edge thereof, said first and second edge surfaces being parallel with each other when said casing is in its opened ski-receiving position, each of said first and second side edge surfaces having a first longitudinal portion and a second longitudinal portion, said first and second longitudinal portions being connected to each other at a fold line, each said fold line being positioned relative to the side edge of a respective upper and lower longitudinal face such that each said fold line is offset in a direction toward the opposite side edge surface from a plane containing therein said respective side edges of the upper and lower longitudinal faces, each said fold line causing said first and second longitudinal portions of each said edge surface to extend at an angle to each other with said fold line

being apex of said angle, so that said side edge surfaces have the tendency to collapse inwardly toward each other and thus collapse said casing in an accordion-like manner, each said casing further having a front open end and a rear curved end, said front open end receiving therethrough a respective ski for storing in said casing, each said casing further comprising a front lid attached to one of said lower upper longitudinal faces at a front edge thereof and means for securing said ski within said casing after insertion therein, said means for securing being attached on the exterior of said casing and comprising strips having loop pile fastener material throughout the length of the strip on one side thereof and mating hook fastener material throughout the length of the strip on the opposing side thereof, said fold lines dividing the interior of said casing into an upper and lower compartment, one of said compartments receiving therein the ski while the other compartment is closed off by said means for securing after entry of the ski in said one compartment, said first and second edge surfaces being tapered at a rear curved end with said upper and lower longitudinal faces converging each other, said rear curved end is fully extended with the ski in said first compartment, said curved rear end receiving therein the curved portion of the ski, said means for securing on said first casing serving to secure a first ski therein after insertion of the ski therein, said means for securing on said second casing serving both to secure a second ski thereafter insertion of the ski therein and also securing said first and second casings together wherein said first and second casings lie adjacent each other with reference to their longitudinal lower faces and are secured to each other by said securing means being wrapped around said first and second casings one of said loop pile fastener and mating hook pile fastener material contained on the inside of the securing means on said second casing being of a length for engaging the opposing mating fastener material on the exterior of the securing means on the first casing to securely retain the second casing onto the first casing without permitting any sliding therebetween and the securing means on the second casing being sufficiently long to close onto itself to hold closed the second casing.

4,644,987

PROTECTIVE COVERING DEVICE FOR RIFLES

Raymond Kiang, 7th Floor, 10, Alley 33, Lane 216, Sec. 4,

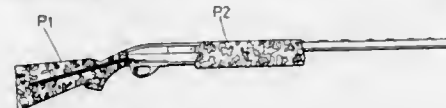
Chung-Hsiao E. Road, Taipei, Taiwan

Filed Dec. 10, 1985, Ser. No. 807,158

Int. Cl.⁴ F41C 27/00; B65D 65/08

U.S. Cl. 150—52 R

3 Claims



1. A protective covering device for rifles comprising:
 - a fiber cloth sheet integrally formed with a variegated outer fiber layer, an intermediate rubber layer and an inner fiber layer for providing elasticity and impermeability to water, said fiber cloth sheet being designed in accordance with the shape of a wooden portion of a rifle, and having its opposite longitudinal edges applied with adhesive agent and sewn together so as to form a covering body with an opening respectively defined at both its upper and lower ends and a single waterproof seam formed at one of its sides of the covering body, for being wrapped around the wooden portion of the rifle stock;
 - a closing means longitudinally disposed in a middle area of one side of said covering body with its bottom piece located at a distance away from a lower end of said fiber cloth sheet and its top piece positioned at an upper edge of said fiber cloth sheet for effecting opening and closing therewith; and

4,644,989

REINFORCEMENT CABLE FORMED SOLELY OR AT LEAST IN PART OF AN ASSEMBLY OF TWO-WIRE STRANDS; ARTICLES CONTAINING SUCH CABLES

Jean-Louis Charvet, Clermont-Ferrand, and Christian Garcia,

Riom, both of France, assignors to Compagnie Generale des

Etablissements Michelin, Clermont-Ferrand, France

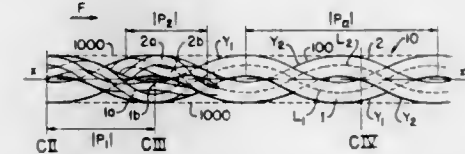
Filed Nov. 30, 1984, Ser. No. 676,675

Claims priority, application France, Dec. 16, 1983, 83 20424

Int. Cl.⁴ B60C 9/00; D02G 3/48

U.S. Cl. 152—451

13 Claims



4,644,988

HIGH PERFORMANCE TIRE AND TREAD COMPOUND FOR IT

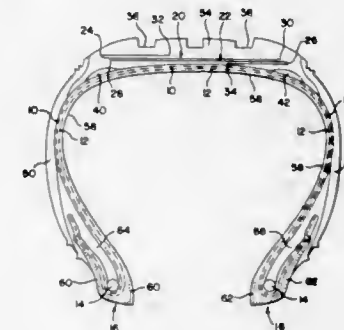
Shamim Ahmad, Canal Fulton; Larry A. Kraus, Stow, and Paul C. Staab, Akron, all of Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Jan. 31, 1984, Ser. No. 575,431

Int. Cl.⁴ B60C 11/00; C08L 7/00

U.S. Cl. 152—209 R

12 Claims



1. In a tubeless pneumatic radial tire comprising two spaced inextensible beads, a ground contacting tread portion, a pair of individual sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective beads, a carcass portion having at least one ply of rubberized cords lying essentially in radial planes wherein said cords are wrapped around said beads, a circumferential belt comprising at least two plies of rubber-coated fiberglass cords with the cords in each ply parallel to each other and at an angle to the circumferential central plane of the tire and with the tire cords in one ply extending in a direction opposite to the cords in the adjacent ply, wherein each said belt ply has at least one marginal edge that is folded wherein the tread composition comprises,
 - (a) 100 parts by weight (wt) of rubber hydrocarbon at least about 70 parts by wt of which is styrene-butadiene copolymer rubber (SBR);
 - (b) at least 30 parts, and up to 60 parts by wt of processing oil per 100 parts of rubber; and,
 - (c) at least 50 parts, and up to about 100 parts by wt of a high structure carbon black per 100 parts by wt rubber, a major portion by wt of which carbon black is a special N103 black having a primary particle size smaller than 20 nanometers (nm), a DBPA greater than 120 cm³/100 g carbon black, and a relatively high level of volatiles as measured by an iodine number (I₂ No.) in the range from 130 to 160 mg/g;

so as to provide said tire with high performance handling characteristics, including improved steering response, swing-out, plowing, linearity, on-center feel-tracking, returnability, lift-throttle oversteer, cornering stability and turn in.

1. A reinforcement cable characterized by the fact that it is formed solely or at least in part by an assembly of strands, said assembly having the following characteristics when its axis is rectilinear:
 - (a) each strand consists of two wires;
 - (b) in each strand the two wires are wound around each other in the same direction, called the "direction of the strand," with a constant pitch, called the "pitch of the strand," the length of this pitch being less than 300 mm;
 - (c) in each strand the two wires have substantially linear contact with each other, this line of contact describing substantially a helix, called the "contact helix," around the axis of the assembly;
 - (d) all the contact helices have the same direction, called the "direction of the assembly," and the same constant length of pitch, called the "length of the pitch of the assembly";
 - (e) the distance from the contact helices to the axis of the assembly, in a plane perpendicular to said axis, being substantially the same for all of these helices;
 - (f) the strands are twisted together;
 - (g) the assembly satisfies at least one of the following two conditions:
 - (I) it consists of two strands, the lengths of the pitches of the strands being equal and the directions of the strands being opposite;
 - (II) it is formed of at least two strands and at most four strands; the length of the pitch of the assembly is equal to the length of the pitch of at least one of the strands, the direction of the assembly being the same as that of said strand or strands; at least one other strand of the assembly has either a length of pitch different from the length of the pitch of the assembly or both a length of pitch equal to the length of the pitch of the assembly and a direction opposite to the direction of the assembly.

4,644,990

AUTOMATIC CLOSING SYSTEM FOR WINDOW BLINDS

James E. Webb, Sr., Richardson, Tex., and William F. Dunn, 6050 Melody La., Unit 105, Dallas, Tex. 75231, assignors to William F. Dunn, Dallas, Tex.

Filed Sep. 3, 1985, Ser. No. 771,605

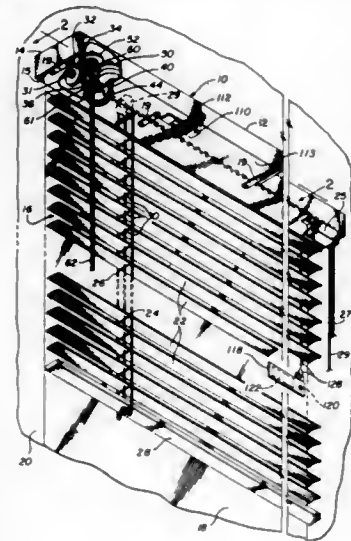
Int. Cl.⁴ E06B 9/322

U.S. Cl. 160—5

28 Claims

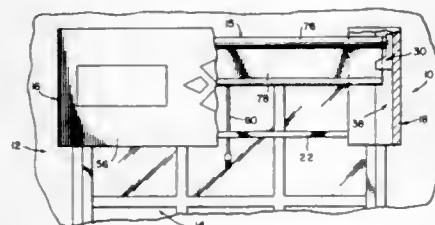
1. A window blind louver control comprising:
 - a plurality of blind louvers moveable between open and closed positions;
 - a first control device coupled to said louvers for manually moving said louvers to a first one of said open or closed positions;
 - a power storage device coupled to said first control device

for storing energy as said louvers are manually moved to said first one of said open or closed positions, and



4,644,991
CORNICE ASSEMBLY
John A. Boyd, 5535 Columbia Pike, Arlington, Va. 22204
Filed May 7, 1985, Ser. No. 731,295
Int. Cl.⁴ E06B 9/00
U.S. Cl. 160—38

6 Claims



1. A window dressing assembly comprising support means adapted to be attached along opposite sides of a window; a first roller assembly rotatably attached to said support means and rotatable about a first axis; a second roller assembly rotatably attached to said support means and rotatable about a second axis; said first axis and said second axis being disposed perpendicularly to one another and both being parallel to the plane of the window; said first roller assembly including a window shade mounted upon a spring-loaded cartridge which is rotatable about said first axis and adapted to be manually raised and lowered to selectively cover or expose the window; said second roller assembly including a decorative sheet mounted upon a spring-loaded cartridge which is rotatable about said second axis and adapted to be manually drawn to an extended position wherein the decorative sheet projects laterally across the window to cover both the support means and the first roller assembly; said support means including means to releasably fasten the decorative sheet in said extending position.

4,644,992
PIVOT BLOCK FOR BIFOLD DOORS
Torsti T. T. Jerila, West Covina, Calif., assignor to Acme General Corporation, San Dimas, Calif.
Filed Feb. 4, 1986, Ser. No. 825,800
Int. Cl.⁴ E05D 15/26
U.S. Cl. 160—213

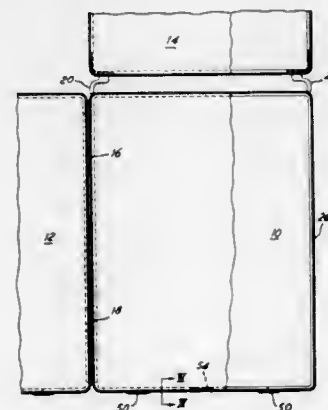
25 Claims



1. A corner block for a bifold door comprising: a generally flat, rectangular block having a sufficient thickness for fitting into a U-shaped channel of a rail and a U-shaped channel of a stile at the corner of a door with one face of the block exposed at the inside of the door and the opposite face adjacent a door panel; a single hardware receiving hole extending through the block parallel to the exposed face, the hole being closer to one side of the block than the opposite side of the block, the block being symmetrical except for the locus of the hole; and means for securing the block to an adjacent rail and stile.

4,644,993
MODULAR PANEL SYSTEM
John Cooper, "Sherwood", School Road, Barkham, Berkshire; Reginald E. Hall, "Perada", Marsh Lane, Taplow, Berkshire, and Peter G. Lloyd-Jones, "Woodlands", Fleet Hill, Finchampstead, Berkshire, all of England
Filed Mar. 6, 1985, Ser. No. 708,710
Claims priority, application United Kingdom, Mar. 7, 1984, 8405915; Dec. 6, 1984, 8430882
Int. Cl.⁴ E06B 3/12
U.S. Cl. 160—229 R

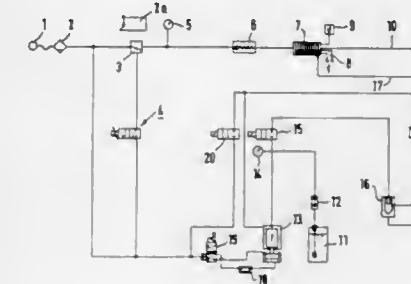
5 Claims



1. A modular panel system, comprising a plurality of panels, each panel having one or more hinges, and at least one of the hinges of the system including first and second pin members, each having parallel limbs of circular cross-section forming

hinge pins, and first and second hinge plates, each of the hinge plates having first and second limb-receiving journals offset and noncollinear with respect to each other for rotatably receiving the first and second pin members, respectively, at least one of the hinge plates of each hinge having a hook-like member thereon whereby said hinge can be releasably connected to an adjacent panel, such that one hinge plate can pivot through 360° relative to the other, the first 180° of this movement being pivoting about a first common axis defined by collinearity of the axis of pivoting of the second limb of the first pin member within the first journal of the second hinge plate and the axis of pivoting of the first limb of the second pin member within the second journal of the first hinge plate, and the second 180° of the said movement being pivoting about a second common axis defined by collinearity of the axis of pivoting of the first limb of the first pin member within the first journal of the first hinge plate and the axis of pivoting of the second limb of the second pin member within the second journal of the second hinge plate.

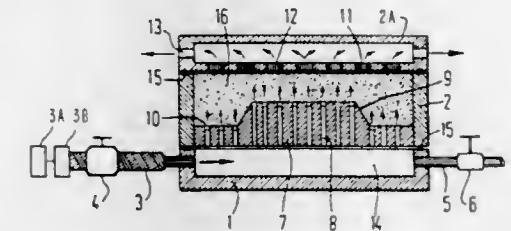
4,644,994
APPARATUS FOR HARDENING CORES AND/OR MOLDS MADE OF SAND WITH THE ADDITION OF HARDENABLE BINDING AGENTS
Horst W. Michel, Industriestr. 7, 7707 Engen-Hegau, Fed. Rep. of Germany
Filed Jun. 12, 1985, Ser. No. 743,829
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422742
Int. Cl.⁴ B22C 9/12
U.S. Cl. 164—12



1. An apparatus for hardening sand cores and molds by the addition thereto of a hardenable binding agent during each cycle of operation, a source of air under pressure, said apparatus comprising: a conduit connected at one end to a source of air under pressure and discharging into the mold at the other end; a source of binding agent and a heating chamber for gasifying the binding agent, said binding agent source being connected to said heating chamber, said heating chamber being mounted in said conduit between said air source and said mold; means between said binding agent source and said heating chamber for injecting a measured quantity of the binding agent into said heating chamber; a flow control valve in said conduit between said air source and heating chamber; a single pressure regulating and reducing valve connected to said air source and to said flow control valve; the operation of said flow control valve being solely controlled by said pressure regulating and reducing valve; said flow control valve being normally closed and periodically operable to sequentially connect said heating chamber to said air source through said pressure regulating and reducing valve and then connect said heating chamber directly to said air source whereby and throughout an initial period of air is passed at a substantially constant reduced pressure through said heating chamber for a period of time sufficient to introduce the entire change of binding agent therein to the mold and a subsequent purging charge of air is passed through said heating chamber and mold at a substantially constant pressure equal to the pressure of air from said air source.

4,644,995
DEVICE FOR FABRICATING FROZEN MOULDING MOULDS OR CORES
Daniel Goumy, Saint Egreve, France, and Charles Defrancq, Zele, Belgium, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France
Filed Jun. 27, 1985, Ser. No. 749,406
Claims priority, application France, Jun. 27, 1984, 84 10107
Int. Cl.⁴ B22C 9/02
U.S. Cl. 164—159

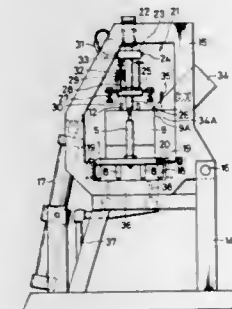
13 Claims



1. A device for fabricating molding molds or cores from moistened and frozen particles, comprising means defining a cavity for receiving the particles and having at least one forming wall, means for blowing a refrigerating fluid into said cavity through said wall, and means for discharging gas located in opposed relation to said wall, said forming wall being formed by a surface of a massive block made from a thermally conductive material, said block comprising a multitude of orifices extending between said surface of said block and an opposed surface of said block which defines a refrigerating fluid supply chamber in operation of the device, said device further comprising means for progressively increasing the refrigerating fluid blowing pressure.

4,644,996
INCLINING MOLTEN METAL CHARGING APPARATUS FOR FORCED COOLING CASTING
Hiroshi Kawai, Yukio Ohtsuka, and Kuniaki Mizuno, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jan. 14, 1986, Ser. No. 818,675
Int. Cl.⁴ B22D 15/00
U.S. Cl. 164—336

8 Claims



1. An inclining molten metal charging apparatus for forced cooling casting, comprising: a fixed frame; an inclining frame pivotally supported by said fixed frame and reciprocatingly inclineable by a predetermined angle and defining a space; a stool having positioned on and fitted thereon a casting mold having a cavity, a plurality of chillers disposed so as to face said cavity of said casting mold and a tubular member

disposed so as to pass through said cavity and to be internally chilled;
 stool support means for supporting and carrying said stool into and out of said space defined by said inclining frame; clamp means for clamping said stool to a predetermined position inside said space, wherein said clamp means further comprises push means for pushing said casting mold towards said stool when said clamp means clamps said stool;
 a molten metal vessel fixed to said inclining frame such that a molten metal inlet thereof faces a molten metal port of said casting mold, receiving said molten metal at an end of forward movement of said inclining frame and completing charge of said molten metal into said casting mold at an end of a return movement of said inclining frame;
 a cooling nozzle disposed such that a tip portion thereof corresponds to an upper end of said tubular member when said stool is at said predetermined position, and which is fitted to said upper end of said tubular member by the clamping operation of said clamp means;
 a chiller cooling means for blowing a cooling medium to said chillers in order to cool said chillers; and
 a cooling medium tank for storing a cooling medium passing through said tubular member and a cooling medium blow to said chillers.

4,644,997

APPARATUS FOR CONTROLLING THE OSCILLATIONS OF A CONTINUOUS POUR INGOT MOLD

Joel Cazaux, Chelles, France, assignor to Fives-Cail Babcock, Paris, France

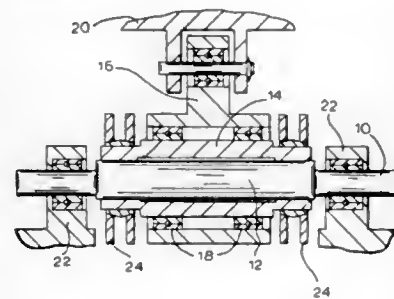
Filed Aug. 15, 1985, Ser. No. 765,687

Claims priority, application France, Aug. 29, 1984, 84 13340

Int. Cl.⁴ B22D 11/04, 27/08

U.S. Cl. 164—416

5 Claims



1. In an apparatus for controlling the oscillations of a continuous pour ingot mold having at least one eccentric consisting of an eccentrically bored sleeve and a shaft fixed together in rotation, the improvement comprising a clamping means for fixing the sleeve on an off-centered portion of the shaft and means for cancelling the clamping constraints to allow the rotation of the shaft with respect to the sleeve to adjust the eccentricity.

4,644,998

PRODUCTION OF METAL RODS

Frederic C. Mayer, 1407 W. Brooklake Dr., Houston, Tex. 77077

Continuation of Ser. No. 543,235, Oct. 21, 1983, Pat. No. 4,510,989, which is a continuation of Ser. No. 246,675, Mar. 23, 1981, abandoned. This application Apr. 2, 1985, Ser. No. 719,077. The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

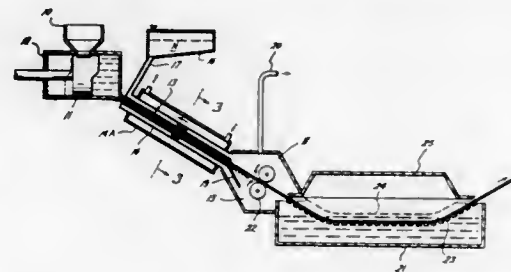
Int. Cl.⁴ B22D 11/00, 11/124

U.S. Cl. 164—461

4 Claims

1. A method for continuously pressure casting steel rods, comprising of the steps of forcing molten steel through an elongate tube to form a continuous rod thereof, causing the rod

to pass in a straight, generally horizontal path from which it is deflected in order to move into and out of the upper open end of a receptacle in which molten aluminum is contained and thus through the molten aluminum which adheres to the rod as the rod emerges therefrom to form a corrosion-resistant sheath thereabout, and circulating a cooling medium through a hous-



ing which surrounds the tube and the rod as it emerges from the tube, so that the rod is at least externally solidified as it enters the molten aluminum, and from the housing through an enclosure above the receptacle, so that the rod is cooled to a temperature which is below its critical temperature as it emerges from the molten aluminum, said cooling medium being oxygen-free and inert to both steel and aluminum.

4,644,999

INLINE WINDER WITH TAKE-UP WEB

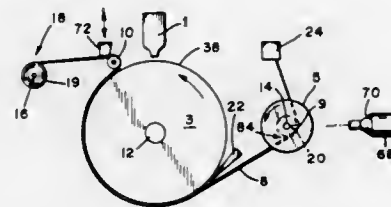
John R. Bedell, Madison; Naim S. Hemmat, Mendham, and Paul Jeges, Blairstown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 25, 1985, Ser. No. 695,148

Int. Cl.⁴ B22D 11/06, 11/08

U.S. Cl. 764—463

6 Claims



1. A method for taking-up and winding a strip of metal, which is advancing at a predetermined velocity from a moving casting surface, comprising the steps of:

- supplying a flexible take-up web;
- pressing said take-up web into a substantially non-slip frictional engagement with said casting surface;
- connecting said take-up web to a peripheral winding surface on a winding reel;
- rotating said reel to provide a peripheral velocity at said winding surface which substantially equals the velocity of said advancing metal strip;
- contacting said advancing metal strip with said take-up web to move said metal strip along with said take-up web onto said reel; and
- concentrically winding said metal strip and take-up web onto said reel.

4,645,000

TUBE AND FIN HEAT EXCHANGER

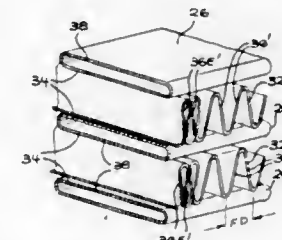
Louis Scarselletta, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1986, Ser. No. 853,902

Int. Cl.⁴ F28D 1/02

U.S. Cl. 165—152

2 Claims



1. A tube and fin heat exchanger comprising a pair of tanks, a plurality of tubes of non-circular cross section connected at their ends to said tanks, a plurality of corrugated fin strips each arranged between and extending along the length of adjacent ones of said tubes, characterized by each said fin strip having a constant corrugation spacing extending along an intermediate and almost the entire length of said tubes and further having a substantially smaller corrugation spacing extending the remainder of the length of the tubes to their ends so as to provide increased resistance to ballooning of the tubes at their ends by internal pressure.

4,645,001

HEAT EXCHANGER

Björn I. Hillerström, Onsala, Sweden, assignor to ArmaturJonsson AB, Vastra Frolunda, Sweden

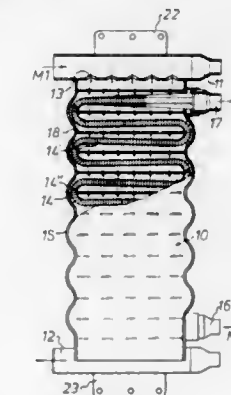
Filed May 17, 1985, Ser. No. 735,559

Claims priority, application Sweden, May 24, 1984, 8402808

Int. Cl.⁴ F28D 7/00

U.S. Cl. 165—159

6 Claims



1. A heat exchanger comprising: a shell with an inlet and an outlet for a first medium, a plurality of tube coils in said shell, adjacent ones of said tube coils being substantially in contact with each other, each said tube coil having substantially parallel coil legs and turns adjacent opposite shell walls, and an outlet for a second medium for exchanging heat with said first medium, and a plurality of distribution plates, each said distribution plate having a plurality of spray holes and a dimension corresponding to the internal cross-sectional area of the shell parallel to said coil legs, each of said plates being located at a predetermined distance in front of each respective coil leg of said plurality of tube

coils as counted in the direction of flow of said first medium, and said spray holes in each plate being separated into rows, with each row being positioned in line with, and directly in front of, a coil leg of one of said tube coils.

4,645,002

RADIATOR

Willem G. Keyzer, Uden, Netherlands, assignor to NRF Holding B.V., Netherlands

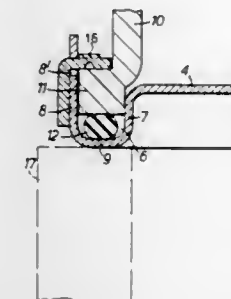
Filed Nov. 13, 1984, Ser. No. 670,263

Claims priority, application Netherlands, Oct. 17, 1983, 8303966

Int. Cl.⁴ F28F 9/02

U.S. Cl. 165—175

4 Claims



1. A radiator comprising a pipe block having channels for passing a fluid to be cooled with the aid of air flowing around the channels, fluid-collecting casings positioned near the ends of said pipe block, said pipe block having continuous grooves of substantially U-shaped cross section around peripheries thereof, said casings have continuous rims around peripheries thereof, said rims extending into said continuous grooves, each of said grooves having an outer flange with holes spaced therealong, a resilient gasket positioned between the bottom of each of said grooves and a face of the corresponding rim, a separate guard member for each of said grooves having a strip-shaped part with fingers extending transversely from an edge portion of said strip-shaped part and spaced therealong, said fingers extending through said holes and engaging a surface of the corresponding rim located on the side of said rim remote from the corresponding gasket, and which is substantially parallel to the face of the rim, said fingers urging the rim toward the bottom of the corresponding groove to maintain the corresponding gasket under compression.

4,645,003

PATTERNS OF HORIZONTAL AND VERTICAL WELLS FOR IMPROVING OIL RECOVERY EFFICIENCY

Wann-Sheng Huang, and Margaret A. Hight, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 23, 1985, Ser. No. 812,693

Int. Cl.⁴ E21B 43/24, 43/30

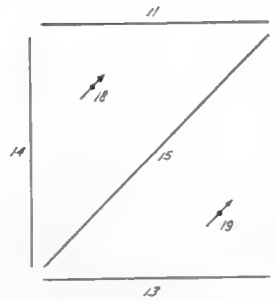
U.S. Cl. 166—245

5 Claims

1. A method of recovering hydrocarbons from an underground formation by employing a seven well pattern, which comprises:

- four substantially horizontal production wells, each horizontal well forming a side of a substantially rectangular pattern;
- a fifth substantially horizontal production well aligned on a diagonal running between two opposite corners of the substantially rectangular pattern formed by the four horizontal wells;
- said five horizontal production wells extending from the ground surface and running a substantially horizontal distance within the hydrocarbon formation;
- said five horizontal wells located so that a sufficient distance

exists between the ends of the five horizontal wells to prevent direct communication between the different horizontal production wells;
first and second substantially vertical injection wells,

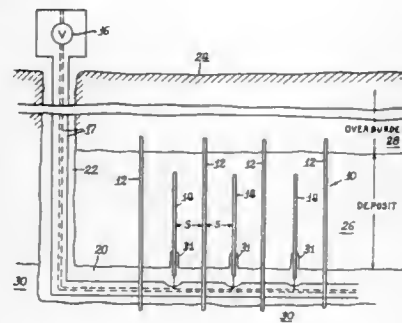


said first injection well approximately located near the center of one of the two substantially triangular patterns formed by the five horizontal wells, and
said second injection well approximately located near the center of the other substantially triangular pattern formed by the five horizontal wells.

4,645,004
ELECTRO-OSMOTIC PRODUCTION OF HYDROCARBONS UTILIZING CONDUCTION HEATING OF HYDROCARBONACEOUS FORMATIONS
Jack E. Bridges, Park Ridge; Allen Taflove, Wilmette, and Guggilam C. Sresty, Burbank, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 489,746, Apr. 29, 1983, abandoned. This application Apr. 25, 1984, Ser. No. 603,583. The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.
Int. Cl.⁴ E21B 43/24

U.S. Cl. 166—248



1. An electro-osmotic method for the production of hydrocarbons utilizing in situ heating of earth formations having substantial electrical conductivity occasioned by the presence of water, said method comprising

bounding a particular volume of a said earth formation with a waveguide structure formed of respective rows of discrete elongated electrodes in a dense array with the spacing between rows greater than the distance between electrodes in a row wherein the active electrode area and the row separation are chosen in reference to the formation thickness to avoid heating barren layers, the row separation being no greater than about the thickness of said formation,

applying electrical power at no more than a relatively low frequency between respective said rows of electrodes to deliver power to said bounded volume of said formation while producing relatively uniform heating thereof and limiting the relative loss of heat to adjacent regions, and utilizing a d.c. polarized potential to make the electrodes

of one row anodic and the electrodes of another row cathodic and thereby enhance the flow of reservoir fluid toward at least one preselected electrode,
at the same time controlling the temperature of said electrodes thereat to retain water and thereby maintain an electrically conductive path between said electrodes and said formation, and
removing collected reservoir fluids that have flowed between said rows toward said at least one preselected electrode.

4,645,005

METHOD OF PRODUCING HEAVY OILS
Noble B. Ferguson, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Apr. 16, 1985, Ser. No. 723,765

Int. Cl.⁴ E21B 43/04, 43/24, 43/26

U.S. Cl. 166—278

3 Claims

1. A method of producing viscous oils from a subterranean reservoir containing unconsolidated or friable sand, said reservoir being penetrated by at least one well in fluid communication therewith comprising:

- first, stimulating the reservoir by injecting steam through the well at a pressure sufficient to fracture the reservoir adjacent the well;
- next, shutting in the well for a period of time;
- then, completing the well adjacent the reservoir with a gravel pack;
- then, producing oil from the reservoir through the well; and
- periodically, subsequently stimulating the reservoir by injecting steam through the well and into the reservoir at a pressure below the pressure which would fracture the reservoir adjacent the well.

4,645,006

ANNULUS ACCESS VALVE SYSTEM

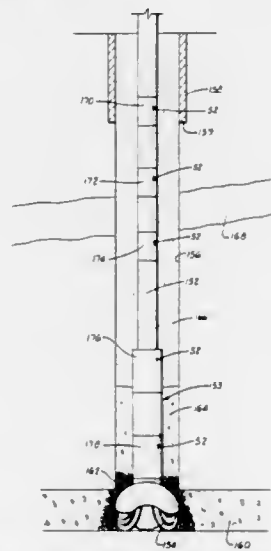
Paul J. Tinsley, 2300 Crestmont, Norman, Okla. 73069

Filed Dec. 7, 1984, Ser. No. 679,288

Int. Cl.⁴ E21B 21/10, 34/14

U.S. Cl. 166—374

17 Claims



1. An annulus access apparatus for use in a drill string positioned in a well bore, said apparatus comprising:

a valve adapted for fitting in said drill string and defining a longitudinal opening therethrough and a substantially transverse port therein for interconnecting said longitudinal opening with an annulus formed between said valve and said well bore, said valve including annulus access means for placing said transverse port in communication

with said longitudinal opening when in an open position and covering said transverse port when in a closed position;

a retrievable actuator movable through a central opening of said drill string for moving said annulus access means from said closed position to said open position and having selectable fluid flow control means for alternately preselecting one of a closed position thereof, in which fluid pumped through said drill string will be totally diverted through said transverse port in said valve when said annulus access means is in said annulus access means open position, and a preset open position thereof, in which a portion of said fluid is diverted through said transverse port in said valve with a remaining portion of said fluid continuing downwardly through said central opening of said drill string below said valve; and
return means for returning said annulus access means to said closed position when said actuator is retrieved from said valve.

4,645,007

TUBING DRAIN VALVE

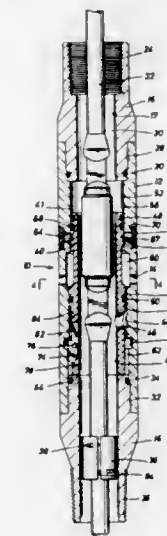
Paul B. Soderberg, Houston, Tex., assignor to Soderberg Research & Development, Inc., Houston, Tex.

Filed Jun. 8, 1984, Ser. No. 618,469

Int. Cl.⁴ E21B 34/10, 34/14

U.S. Cl. 166—374

21 Claims



1. A method for operating a valve means, said valve means comprising a tubular piston movable within a tubular member suitable for use in a borehole pipe string to open and close a port through the wall of said tubular member, comprising the steps of:

- biasing said valve means in its closed position;
- pressurizing the interior of said piston to a predetermined pressure to overcome the biasing closed force and to actuate said valve means to its open position;
- biasing said valve means to its open position; and
- actuating said valve means to its closed position by engaging a first arm of a dog pivotally mounted on said piston with an engaging means insertable through the interior of said tubular piston;
- moving said piston relative to said tubular member;
- rotating said dog about its pivot to bring a second arm of said dog into contact with a detent in said tubular member; and
- applying sufficient force to said first arm to continue rotating said dog about said pivot, while engaging said detent with said second arm of said dog, in order to

overcome the biasing open force to actuate said valve means to its closed position.

8. A tubing drain valve suitable for use in a borehole pipe string, comprising:

- a sub suitable for incorporating within a borehole pipe string;
- a port between the interior and the exterior of said sub; and
- valve means for opening and closing said port wherein said valve means comprises
- a tubular piston movable within said sub and having an exterior adapted for sealing cooperation with the interior of said sub and having working surfaces in pressure communication with the interior of said pipe string;
- means for communicating fluid from the interior to the exterior of said piston to permit fluid communication through said port from the interior to the exterior of said sub when said valve means is in its open position;
- means for biasing said piston to its closed position;
- means for actuating said valve means to its open position in response to a pressure force developed across said working surfaces by the pressure in the interior of said sub; and
- lever means for actuating said valve means to its closed position in response to an actuating device movable through said pipe string, wherein said lever means comprises
- a dog having first and second arms pivotally mounted at a rotation/fulcrum point on said piston;
- said dog engageable on said first arm by said actuating device; and
- said dog engageable on said second arm with a surface of said sub to urge said valve means to its closed position.

4,645,008

RACING-TYPE HORSESHOE

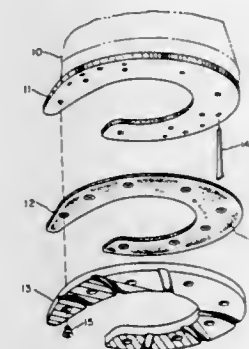
James M. Benning, 1857 Tilton Dr., Pittsburgh, Pa. 15241

Filed May 20, 1985, Ser. No. 735,523

Int. Cl.⁴ A01L 1/04

U.S. Cl. 168—11

5 Claims



1. A horseshoe comprising a substantially flat metal sole plate affixed to a horse's hoof in contact with the hoof without pinching or bending said plate to fit it to the hoof and without unusual modification of the hoof, a cushioned base plate attached to said sole plate for ground contacting purposes with said base plate comprising a substantially flat metal support plate attached to said sole plate in metal-to-metal contact and substantially coextensive therewith and an elastomeric ground plate bonded to said support plate, said sole plate and said ground plate having holes in them and said base plate having matching countersunk holes in it, and a plurality of threaded means for attaching said base plate to said sole plate by passing the threaded means through said holes in said plates after the sole plate is affixed to a horse's hoof and for quickly and easily removing and replacing said base plate with any of a variety of alternative base plates, said attachment of the base plate to the

sole plate being entirely by securement of said support plate to said sole plate with said threaded means and with the bottom end of said threaded means disposed substantially no lower than the bottom surface of said metal support plate to minimize deleterious effects on said threaded means or on the connection of the base plate to the sole plate during use of the horseshoe on a horse's hoof.

4,645,009

METHOD AND MEANS FOR PRODUCING AND DISPENSING EXTINGUISHING FLUIDS

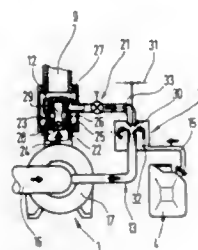
Walter Hawelka, and Walter Irsigler, both of Linz/Donau, Austria, assignors to Konrad Rosenbauer KG, Leonding, Austria

Filed May 13, 1985, Ser. No. 733,512

Claims priority, application Austria, May 18, 1984, 1643/84
Int. Cl.⁴ A62C 35/00, 5/02; B05B 7/00; E03B 00/00

U.S. Cl. 169—15

10 Claims



1. An apparatus for producing and dispensing an extinguishing fluid mixed with an adjuvant, comprising
 - (a) a supply of the extinguishing fluid,
 - (b) a supply of the adjuvant,
 - (c) a fluid pump having
 - (1) a suction intake pipe connected to the supply of the extinguishing fluid and
 - (2) a pressure delivery pipe,
 - (d) a by-pass pipe extending between the suction intake and pressure delivery pipes, the by-pass pipe having
 - (1) an intake connected to the pressure delivery pipe and an output connected to the suction intake pipe,
 - (e) a premixer device in the by-pass pipe, the premixer device having
 - (1) a suction intake pipe connected to the adjuvant supply, and
 - (2) a control valve in the pressure delivery pipe, the valve connecting the pressure delivery pipe to the by-pass pipe intake and comprising
 - (1) a valve casing and
 - (2) a valve member displaceable in the valve casing in response to the fluid pressure in a direction of flow of the fluid through the pressure delivery pipe from a closed to an open position, the valve member comprising a control piston defining fluid flow control aperture means communicating with the by-pass pipe intake in the open position for diverting a portion of the volume of the fluid flowing through the pressure delivery pipe to the by-pass pipe intake, the diverted volume portion being proportionate to the fluid volume passing through the pressure delivery pipe.

4,645,010

LAWN EDGER

Harold J. Luedeman, 950 E. Wye La., Fox Point, Wis. 53217
Filed Oct. 29, 1984, Ser. No. 666,241

Int. Cl.⁴ A01B 1/24; A01G 3/06

U.S. Cl. 172—13

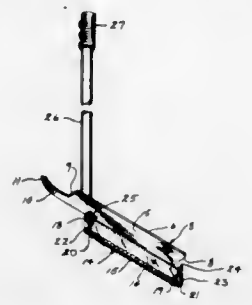
8 Claims

1. A device for edging lawns adjacent walkways and the like, comprising:
 - a foot plate including forward and rearward ends and a substantially flat foot-receiving surface thereon;
 - an elongated handle having an upper end including a grip

portion engageable by a user and a lower end operatively attached to said foot plate;

an edging blade depending from said foot plate having forward and rearward ends and an upper edge attached to said foot plate and a lower cutting edge, said blade including an inner side facing the walkway and an outer side opposite said inner side facing a lawn when said lower edge is forced downwardly to edge a lawn; and

spacer means including a first integral leg at said forward end and a second integral leg at said rearward end projecting inwardly from the inner side of said blade wherein said first and second legs include lower cutting edges located



in a coplanar relationship with the cutting edge of said blade to form a channel-shaped blade and further including an abutment surface engageable with the walkway for positioning said blade in spaced relation to the walkway when said blade is forced downwardly to edge the lawn, said edging blade extends rearwardly beyond the rearward end of said foot plate to form a first relief opening between the rearward end of said foot plate and said second integral leg, and said foot plate includes a second relief opening formed therethrough adjacent said first integral leg to prevent the jamming of a strip of lawn between said blade, foot plate and legs.

4,645,011

LAWN EDGER DEVICE

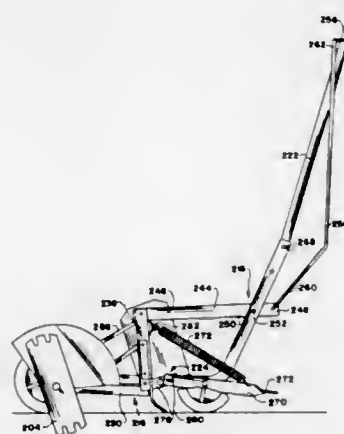
Roger Feikema, and Harry J. Bakker, both of 6050 Palmer Blvd., Sarasota, Fla. 33582

Continuation-in-part of Ser. No. 537,072, Sep. 29, 1983, Pat. No. 4,532,998. This application Apr. 11, 1985, Ser. No. 722,070

Int. Cl.⁴ A01B 45/04

U.S. Cl. 172—15

14 Claims



1. A lawn edger having a power means and a cutter blade, comprising:
 - a frame;
 - a plurality of ground engaging wheels rotatably secured to

said frame for movably supporting said frame at a constant distance from the ground;

a platform for supporting the power means, said platform being pivotally secured to said frame;

cutter blade support means for rotatably supporting the cutter blade, said cutter blade support means being pivotally connected to said frame such that the pivotal axis of said cutter blade support means and the pivotal axis of said platform are parallel relative to each other, the cutter blade being rotated by the power means;

said cutter blade support means further including a first arm and a second arm;

said first arm of said cutter blade support means having a proximal end and a distal end, said proximal end of said first arm being pivotally connected to said frame, said distal end of said first arm rotatably supporting the cutter blade;

said second arm of said cutter blade support means having a proximal end and a distal end, said proximal end of said second arm being rigidly connected to said proximal end of said first arm, said second arm extending angularly away from said first arm;

position retaining means pivotally connected to said distal end of said second arm of said cutter blade support means, said position retaining means cooperating with said frame for varying the pivotal disposition of said cutter blade support means relative to said frame;

a clutch means operatively connected with said cutter blade support means; and

a control means connected to said position retaining means to selectively raise said blade and for remotely controlling the disposition of said position retaining means relative to said frame for adjusting the depth of the cutter blade relative to the ground in response to movement of said clutch means.

4,645,012

TURF AERATING APPARATUS

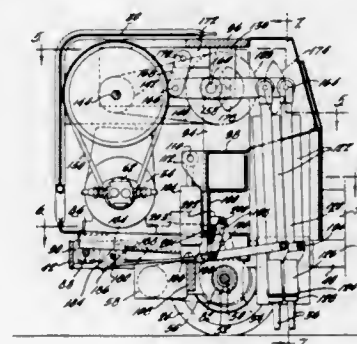
Loren F. Hansen, and Mark E. Lamb, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 16, 1985, Ser. No. 691,848

Int. Cl.⁴ A01B 45/02

U.S. Cl. 172—22

25 Claims



1. Turf aerating apparatus comprising a frame, means supporting said frame for rolling movement across a turf area, means for driving said supporting means to move said frame across the turf, an aerator mechanism mounted on said frame comprising a pair of substantially vertical tine arms, each said tine arm having a plurality of downwardly directed turf coring tines disposed on the lower end thereof, said aerator mechanism including tine arm actuating means connected to the upper end of each said tine arms for imparting an alternating substantially vertical reciprocatory motion to said tine arms to drive said tines into the turf, said aerator mechanism further including a tine arm return mechanism for alternately returning the lower ends of said tine arms to a forward position following each ground penetrating stroke, said tine arm return

mechanism including a rocker shaft mounted on said frame for oscillating movement with respect thereto, a pair of rocker arms mounted on said rocker shaft for movement therewith, each said rocker arm extending in diametrically opposed relation to the other said rocker arm, and link means linking the lower end of each of said tine arms to one of said rocker arms, the alternating engagement of said tine arms with the turf and the rearward movement of the engaged tine arms created by the forward movement of the frame producing an oscillating movement of said rocker shaft and effecting a forward movement of the tine arms free of the turf commensurate with said rearward movement.

4,645,013

AGRICULTURAL SWEEP

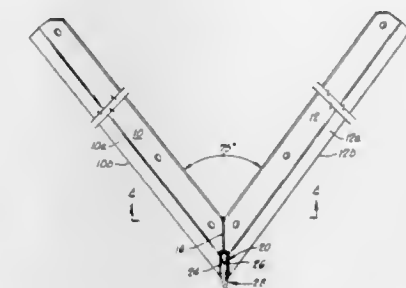
Delmar D. Edmison, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.

Filed Sep. 12, 1985, Ser. No. 775,142

Int. Cl.⁴ A01B 15/04, 39/22

U.S. Cl. 172—730

14 Claims



1. An agricultural sweep comprising:
 - a pair of elongated wings arranged in a divergent relationship to each other and so as to define an angle of divergence of from about 60° to about 100°, each of said wings having an upper side and a lower side, and having a line of joinder at which the wings are joined to each other, said line of joinder lying in a plane which bisects said angle, and each of said wings further having a beveled cutting edge, said cutting edges converging toward a point of intersection at the leading ends of said wings, but terminating before reaching said point of intersection; and
 - a hard metal insert secured to the upper side of said wings over a portion of said line of joinder, said insert including, an elongated body portion of triangular cross-sectional configuration; and
 - a pointed, downwardly and forwardly directed head portion carried on one end of said body portion and positioned immediately adjacent the termini of said cutting edges at their location of nearest convergence, said head portion extending downwardly below a plane in which both cutting edges of the two wings commonly lie.

4,645,014

AMPLITUDE CHANGING APPARATUS

Uno Andersson, Gnesta, and Bengt Svensson, Hässlö, both of Sweden, assignors to Dynapac AB, Solna, Sweden

Filed Nov. 13, 1984, Ser. No. 670,824

Claims priority, application Sweden, Nov. 11, 1983, 8306217

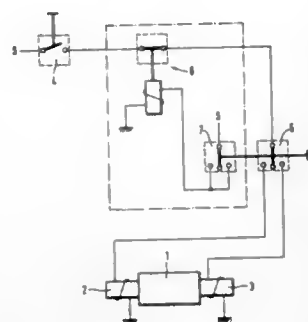
Int. Cl.⁴ B06B 1/16

U.S. Cl. 173—49

2 Claims

1. An apparatus for changing the amplitude of vibration of a hydraulically-driven vibration device that includes two eccentrics arranged on a rotary shaft, one of the eccentrics being fixed to the shaft and the other one of the eccentrics being rotatable relative to the shaft, the apparatus comprising:
 - hydraulic valve means including directional valve means for changing the direction of rotation of the rotary shaft from

a first direction of rotation corresponding to a high amplitude of vibration to a second direction of rotation corresponding to a low amplitude of vibration;
said hydraulic valve means further including two solenoids for actuating said directional valve means, said solenoids corresponding to respective ones of said amplitudes of vibration;
power supply means supplying electrical energy to actuate said solenoids;
an electric circuit for connecting said power supply means to said solenoids, the electric circuit including:
first switch means for connecting said power supply means to said circuit;
second switch means movable from a first position whereat one of said solenoids is connected to said first switch means to a second position whereat the other one of said solenoids is connected to said first switch means;



normally-closed time-delay relay means for opening its contact for a predetermined period of time, said contact being disposed in said electric circuit between said power supply means and said solenoids; and,
third switch means mechanically connected to said second switch means for actuating said relay means only in response to a movement of said second switch means between said first and second positions thereof thereby causing said contact to prevent the flow of current to the one of said solenoids connected to said first switch means by said second switch means for said predetermined period of time so as to delay the change in the direction of said rotation thereby permitting a reduction in the kinetic energy of said shaft before said change of direction occurs.

4,645,015

POWERED IMPACT INSTRUMENT

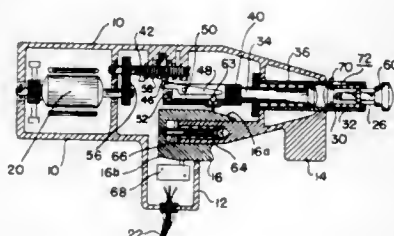
William C. Mitchell, 6440 N. Berkeley Cir., Moorpark, Calif. 93021

Filed Sep. 12, 1985, Ser. No. 775,377

Int. Cl.⁴ B25D 11/06, 17/08

U.S. Cl. 173-115

11 Claims



1. An automatic power impact instrument comprising: a housing; a head slidably mounted at one end of the housing; a first resilient means coupled to the housing and to the head for biasing the head inwardly with respect to the housing; a striker slidably mounted in the housing independently of said head in

axial alignment with said head; a second resilient means coupled to said housing and to said driver for driving said striker toward said head to cause said striker to impact said head and drive said head against the biasing action of said first resilient means; drive means including a drive gear having at least one eccentric drive pin mounted thereon for drawing said striker back against the force of said second resilient means away from said head; a block attached to said striker and slidably mounted in said housing for reciprocal movement in said housing along the common axis of said head and said striker; a spring-loaded sear mounted on said block having a lip releasably engaging said eccentric pin for coupling said striker to said drive means; and manually operated trigger means coupled to said sear to release said sear from said eccentric pin at adjustable positions of said striker with respect to said head to control the impact force of said head.

4,645,016

RESONANT PILE DRIVING SYSTEM

Frank S. Barnes, Boulder, Colo., assignor to University Patents, Inc., Westport, Conn.

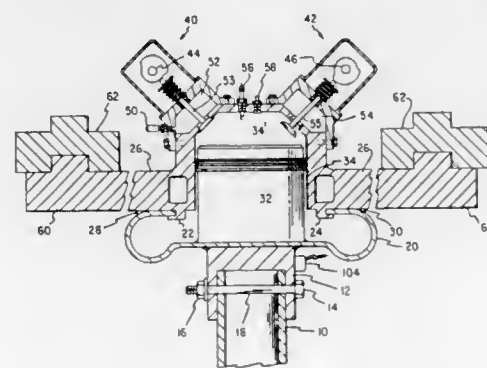
Continuation of Ser. No. 509,084, Jun. 29, 1983, abandoned.

This application May 6, 1985, Ser. No. 730,420

Int. Cl.⁴ B23B 45/16

U.S. Cl. 173-134

5 Claims



1. In an internal combustion system for driving an elongated member into a resistive medium, the combination comprising: piston means;
coupling means for detachably coupling said piston means to said elongated member so as to prevent independent movement therebetween;
an internal combustion engine provided with cylinder means which houses said piston means, an explosive force within said cylinder means being transferred via said piston means through said coupling means to said elongated member;
resilient coupling means located between said engine and said elongated member and connecting each to the other, said resilient coupling means allowing independent movement between said cylinder means and said elongated member while providing a predetermined positional relationship between said cylinder means and elongated member when at rest; and
means for operating said engine to impart successive force impulses to said piston means and its connected elongated member, such action, in combination with said resilient coupling means causing said cylinder means and piston means to exhibit a relative linear reciprocating motion with respect to each other.

4,645,017

VIBRATIONAL ISOLATION SYSTEM FOR SONIC PILE DRIVER

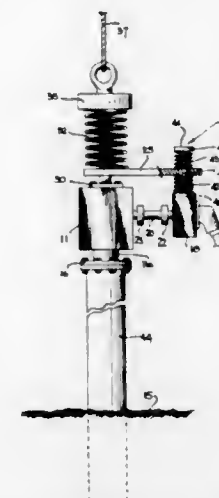
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 10, 1985, Ser. No. 721,688

Int. Cl.⁴ E21B 7/24

U.S. Cl. 173-162 R

9 Claims



1. In a sonic pile driving system for driving a pile into an earthen formation, said system having support and suspension means for suspending and supporting the pile while it is being driven, a sonic oscillator for generating sonic energy; means for coupling the energy from the oscillator to the pile and means for driving said oscillator to generate sonic energy at a predetermined frequency, the improvement being separate systems for vibrationally isolating the support and suspension means from the sonic energy and the oscillator drive means from the sonic energy, said improvement comprising:

first spring means having the capability of a relatively large range of elastic deformation interposed between the support and suspension means and the oscillator for vibrationally isolating the support and suspension means from the oscillator said first spring means being capable of handling a large range of high loads; and
second spring means having a relatively low load capacity and small elastic deformation capability as compared with said first spring means interposed between the oscillator and the oscillator drive means for providing a limited range of relative motion and vibrational isolation between said oscillator drive means and the oscillator, the resonant frequency of the vibration system formed by said second spring means and the oscillator drive means suspended thereon being substantially different from the frequency of the sonic energy driving the pile.

4,645,018

PROCESS AND DEVICE FOR RECORDING THE WEIGHT OF REFUSE MATERIAL AS THE MATERIAL IS EMPTIED INTO A REFUSE COLLECTING VEHICLE

Rolf Garbade, Lilienthal; Hans J. Kahle, Oldenburg; Hans H. Schreier, Oldenburg, and Wolfgang Jabbusch, Oldenburg, all of Fed. Rep. of Germany, assignors to Pontech Gesellschaft für Technologische Entwicklungen mbH, Bremen, Fed. Rep. of Germany

Filed Dec. 24, 1985, Ser. No. 813,047

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1984, 3447648

Int. Cl.⁴ G01G 23/38, 19/08, 19/00

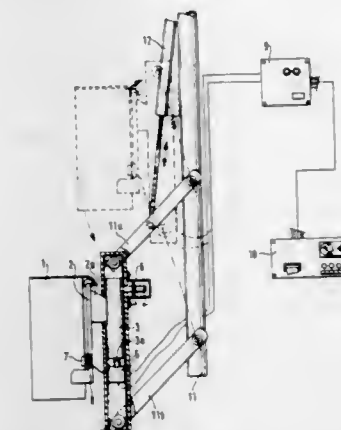
U.S. Cl. 177-6

13 Claims

1. A method of recording the weight of refuse material which is emptied from a refuse container into a refuse collecting vehicle by means of a hydraulically operated unloading device, the refuse filled container being placed in the unloading

device of the refuse collecting vehicle, the unloading device then being swung up to empty the container and swung back whereupon the container is removed from the unloading device, the method comprises:

(a) identifying the container after it is placed into the unloading device by means of an identification element arranged on the container which is caused to interact with a sensor arranged on the unloading device to thereby generate an identification signal;



(b) weighing the container a first time by means of a weighing system integrated in the unloading device prior to the unloading device being swung up to empty the container to thereby generate a weight signal;
(c) weighing the container a second time by means of the weighing system subsequent to the unloading device being swung back after emptying of the container to thereby generate a weight signal; and
(d) recording and storing said two weight signals and said identification signal in a recording and storing system.

4,645,019

METHOD OF WEIGHTING AND COUNTING

Kazukiyo Minamida, and Yoshiharu Asai, both of Kurita, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

PCT No. PCT/JP81/00146, § 371 Date Feb. 16, 1982, § 102(e) Date Feb. 16, 1982, PCT Pub. No. WO82/00198, PCT Pub. Date Jan. 21, 1982

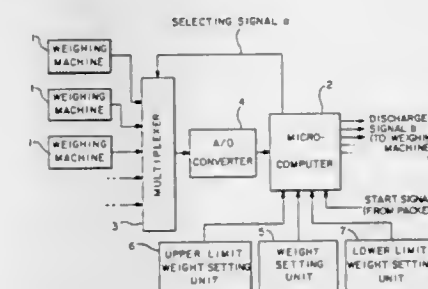
Continuation of Ser. No. 611,397, May 18, 1984, which is a continuation of Ser. No. 355,597, Feb. 16, 1982, abandoned. This PCT application Jun. 24, 1981, Ser. No. 785,102

Claims priority, application Japan, Jul. 1, 1980, 55-90461; Aug. 15, 1980, 55-112834

Int. Cl.⁴ G01G 19/22

U.S. Cl. 177-25

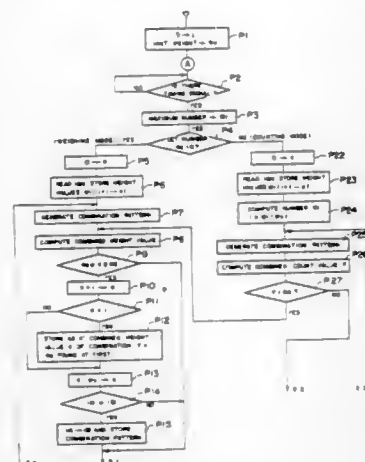
14 Claims



1. The method of obtaining a combination of articles of a target number comprising the steps of:

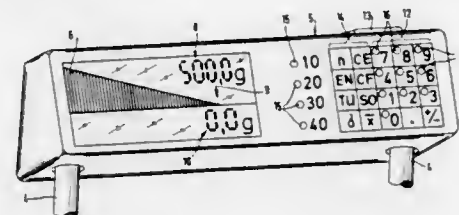
weighing groups of articles with a plurality of weighing machines;
 converting analog output signals from the weighing machines into digital signals in succession for storage in a microcomputer;
 dividing the weight of the articles in each group by a unit weight of article to find the number of articles therein;
 computing the sum of number of articles for every combination of said groups of articles;
 storing all or part of the combinations;
 selecting a particular combination from among the stored combinations having the sum of number of articles equal to or nearest a preset number; and
 discharging the articles from those weighing machines corresponding to the particular combination.

4,645,020
COMBINATORIAL WEIGHING MACHINE WITH WEIGHING AND COUNTING MODES
 Setsuo Haze, Shiga, Japan, assignor to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan
 Filed Apr. 25, 1985, Ser. No. 726,981
 Claims priority, application Japan, Apr. 26, 1984, 59-084635
 Int. Cl.⁴ G01G 19/22
 U.S. Cl. 177—25



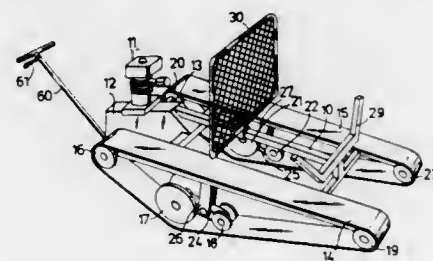
1. An automatic combinatorial weighing machine having weighing and counting modes, comprising:
 a plurality of weighing units for measuring the weights of supplied articles and issuing weight data corresponding to the measured weights;
 an arithmetic control unit, coupled to said plurality of weighing units and having a weighing mode and a counting mode, for effecting a combinatorial arithmetic operation on the weight data from said weighing units;
 a weight setting unit, coupled to said arithmetic control unit, for supplying a preset weight value to said arithmetic control unit;
 a number setting unit, coupled to said arithmetic control unit, for supplying a preset number of articles to said arithmetic control unit; and
 a unit weight setting unit, coupled to said arithmetic control unit, for supplying the average weight of one of the articles to said arithmetic control unit;
 said arithmetic control unit effecting the combinatorial arithmetic operation in the weighing mode when the preset number of articles set by said number setting unit is zero, and effecting the combinatorial arithmetic operation in the counting mode when the preset number of articles set by said number setting unit is other than zero.

4,645,021
ELECTRONIC BALANCE WITH DUAL PURPOSE 10-KEY KEYBOARD
 Erich Knothe, Eddigehausen; Franz-Josef Melcher, Hardegsen, and Christian Oldendorf, Göttingen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany
 Filed Jan. 15, 1986, Ser. No. 819,043
 Claims priority, application Fed. Rep. of Germany, Jan. 18, 1985, 3501503
 Int. Cl.⁴ G01G 23/14, 19/22
 U.S. Cl. 177—165



1. Electronic balance having a measured value receiver, a digital signal processing unit, a digital display, a tare key, a 10-key keyboard for inputting data and commands, and having a counter inside the digital signal processing unit which is advanced by one each time the tare key, is actuated, characterized in that a light source (16) is associated with each of at least a few keys of the 10-key keyboard (12) and that the counter (24) located in the digital signal processing unit (20) actuates the light source of the 10-key keyboard corresponding to its counter reading.

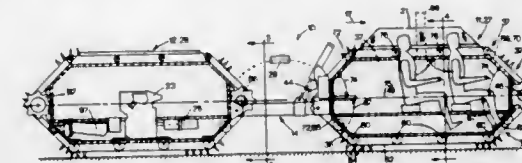
4,645,022
TRACKED LOAD CARRYING VEHICLE
 Eric A. Bergquist, Sandviken, Sweden, assignor to Elektro Mekan I Arjang AB, Arjang, Sweden
 PCT No. PCT/SE84/00296, § 371 Date Jul. 11, 1985, § 102(e)
 Date Jul. 11, 1985, PCT Pub. No. WO85/01275, PCT Pub. Date Mar. 28, 1985
 PCT Filed Sep. 12, 1984, Ser. No. 740,916
 Claims priority, application Sweden, Sep. 14, 1983, 8304950
 Int. Cl.⁴ B62D 51/04
 U.S. Cl. 180—6.7



1. A tracked load carrying vehicle comprising: a chassis; an engine mounted on said chassis for propelling the vehicle; an output shaft driven by said engine; two parallel tracks provided one on either side of said chassis, with each said track running over a respective plurality of wheels; means for driving said tracks including respective clutches connected between said output shaft of said engine and at least one of said wheels associated with each of said tracks with said clutches being arranged so that either one of said tracks can be disengaged from said output shaft; a control lever for steering the vehicle; a cross arm connected to said control lever; means for mounting said control lever and said cross arm on said chassis such that they can be turned together about a substantially vertical shaft; and first and second linkage means, each connected between said cross arm and a respective one of said clutches and each responsive to the turning of said control

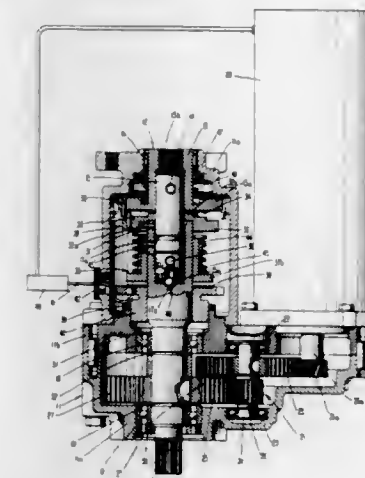
lever from a neutral position toward a respective side of the vehicle, for activating the one of said clutches on the side to which said lever is turned to interrupt the driving of the associated said track by said drive shaft without affecting the clutch of the other side of the vehicle, each of said linkage means including a link arm having one of its ends pivotally mounted on a respective end of said crossbar and its other end provided with a projecting pin, and a pivotally mounted angular arm having an aperture at one end which is engaged by said projecting pin of said link arm and means at the other end of said angle arm for engaging the moveable portion of the associated one of said clutches.

4,645,023
ALL TERRAIN VEHICLE AND METHOD OF OPERATING SAME
 Kenneth A. Rea, and Alan H. Reynolds, both of Vancouver, Canada, assignors to Watcraft Offshore Canada Ltd., Richmond, Canada
 Filed Feb. 22, 1985, Ser. No. 704,427
 Claims priority, application Canada, Mar. 5, 1984, 448862
 Int. Cl.⁴ B62D 55/06; B60D 7/00
 U.S. Cl. 180—9.32



1. An articulated vehicle combination having:
 (a) first and second vehicle units, each vehicle unit having a body with respective front and rear portions, each body having a pair of spaced parallel endless crawler tracks having respective upper and lower crawler track runs which are supported and powered for moving the respective vehicle unit,
 (b) an articulating link means which interconnects oppositely facing portions of the vehicle units when aligned in tandem along a generally horizontal central longitudinal axis, the articulating link means having a link longitudinal axis and longitudinally spaced apart, first and second pitch hinge assemblies cooperating with the first and second vehicle units respectively to permit relative rotation between the vehicle units and the link means about transversely disposed, generally horizontal, first and second pitch hinge axes respectively,
 (c) pitch swivelling means to apply torque between a particular one of said vehicle units and the articulating link means to force relative rotation about a particular hinge axis associated with the particular one of the vehicle units and the articulating link means,
 (d) the oppositely facing portions of each vehicle unit having clearance means to permit the vehicle units to rotate in opposite directions relative to the articulating link means so as to swing towards each other without interference between the vehicle units so as to negotiate marginal terrain,
 (e) the articulating link means further comprising a yaw hinge assembly and having a generally vertical yaw axis intersecting the central longitudinal axis, the yaw hinge assembly having a yaw swivelling means to apply torque to the articulating link means to force one vehicle unit to rotate about the yaw axis relative to the articulating link means, so as to provide relative rotation between the vehicle units about the yaw axis for steering.

4,645,024
ELECTRICAL POWER STEERING SYSTEM
 Toshiyuki Takabayashi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
 Filed Sep. 16, 1985, Ser. No. 776,624
 Claims priority, application Japan, Sep. 21, 1984, 59-143880[U]
 Int. Cl.⁴ B62D 5/04
 U.S. Cl. 180—79.1

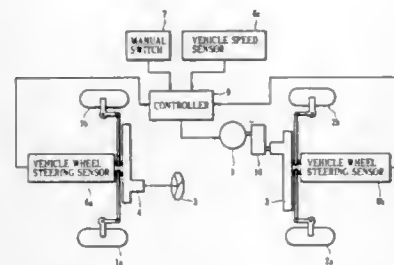


1. An electrical power steering system comprising:
 a housing;
 an input shaft rotatably held to the housing via bearings;
 an output shaft rotatably held to the housing via bearings, the output shaft having a hole in which one end of the input shaft is loosely mounted;
 an angular displacement producing mechanism for producing an angular displacement between the input and output shafts according to the torque applied to the input shaft;
 a sensor for producing an electrical signal corresponding to said angular displacement, the sensor including a movable member which is displaced axially of the input and output shafts according to the angular displacement, the movable member having a slot in which a pin firmly fixed to the input shaft is inserted so as to be slidable;
 an electric motor which receives an electrical input corresponding to the output from the sensor and which imparts a rotating force to the output shaft;
 one end surface of the input shaft having a tapering recessed surface at its center, the bottom surface of the hole in the output shaft also having a tapering recessed surface at its center;
 a steel ball disposed between the tapering recessed surfaces so as to contact these recessed surfaces; and
 a compressed spring whose one end bears on the input shaft, the other end bearing on the inner surface of the housing via a thrust bearing, whereby the input shaft is pressed against the output shaft via the steel ball.

4,645,025
STEERING APPARATUS FOR VEHICLE
 Takeshi Ohe, Tadaaki Fujii, and Ichiro Koike, all of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan
 Filed Feb. 28, 1986, Ser. No. 835,108
 Claims priority, application Japan, Mar. 6, 1985, 60-42790
 Int. Cl.⁴ B62D 5/06
 U.S. Cl. 180—79.1

1. A steering apparatus for a vehicle which steers both front and rear wheels, comprising:
 an electric power steering unit for steering the rear wheels with a rotational force of a motor;

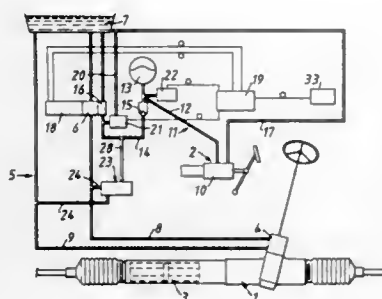
first sensor for sensing a vehicle speed; second and third sensors for sensing front and rear wheel steering angles, respectively; an input signal processor consisting of a waveshaper for receiving and waveshaping a vehicle speed signal from said first sensor; first and second voltage transformers for transforming front and rear wheel steering angle voltages from said second and third sensors, respectively; first and second analog to digital converters for converting



output signals from said first and second voltage transformers to digital signals representing front and rear steering angles, respectively; a control circuit supplied with the vehicle speed signal from said input signal processor and said digital signals representing front and rear steering angles from said first and second analog to digital converters, respectively, to generate and supply a signal for steering said rear wheel to said electric power steering unit, said control circuit including a decoder, a plurality of pattern memories, a subtracter, and a timer.

4,645,026
VEHICLE CONTROL SYSTEM
Frederick J. Adams, Clevedon, United Kingdom, assignor to TRW Cam Gears Limited, Hitchin, Great Britain
Filed Aug. 28, 1985, Ser. No. 770,404
Claims priority, application United Kingdom, Oct. 31, 1984, 8427617

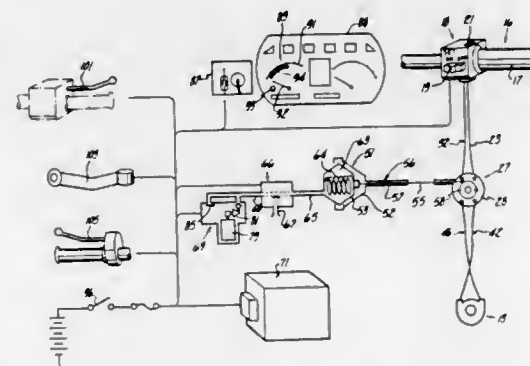
Int. Cl.⁴ B60T 13/00
U.S. Cl. 180—132



1. A vehicle control system having a first hydraulic system part comprising a first pump the output from which feeds an open center valve which valve controls operation of a first servo device, a second hydraulic system part comprising a second pump the output from which feeds an accumulator and a closed center valve which is fed from said accumulator and controls operation of a second servo device, a motor for simultaneously driving both said first and second pumps, and pressure control means which is responsive to pressure in the accumulator and which means directs at least part of the output from the second pump to a low pressure sink when said pressure attains a predetermined value to relieve the load on the motor which is attributable to it driving the second pump,

the first hydraulic system part including regulating means which is responsive to pressure from the output of the second pump and which regulating means permits at least part of the output from the first pump to flow to the low pressure sink when the pressure of the output from the second pump attains a predetermined value so that the pressure which is available to the open center valve is less than the maximum pressure available from the output of the first pump and the load on the motor which is attributable to it driving the first pump is relieved.

4,645,027
AUTOMATIC SPEED CONTROL SYSTEM FOR MOTORCYCLES
Yutaka Masuda, Fukuroi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Aug. 29, 1984, Ser. No. 645,494
Claims priority, application Japan, Aug. 31, 1983, 58-160037
Int. Cl.⁴ B60K 31/08, 31/18
U.S. Cl. 180—176



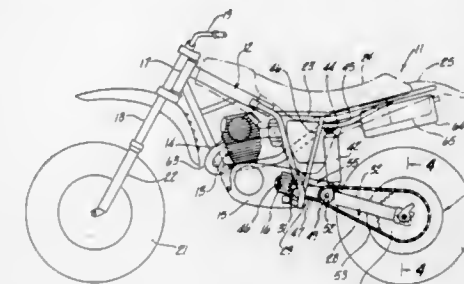
1. In an automatic speed control for a motorcycle comprised of a dirigible front wheel, a rear wheel, an engine and means for driving said rear wheel from said engine, comprising throttle means for controlling motorcycle speed, operator control means for selectively positioning said throttle means, and automatic speed control means for operating said throttle means to operate the motorcycle at a preset speed, the improvement comprising said automatic speed control means having power means powered independently of the induction system vacuum of the engine for operating said throttle means comprising an electrically driven vacuum pump and means incorporated within said vacuum pump operative to provide a variable degree of vacuum for positioning said throttle means.

4,645,028
MOTORCYCLE HAVING BALLOON TIRE
Masahiro Kawashima, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Oct. 29, 1984, Ser. No. 665,782
Claims priority, application Japan, Nov. 10, 1983, 58-209855; Nov. 24, 1983, 58-219613

Int. Cl.⁴ B62K 11/00
U.S. Cl. 180—227

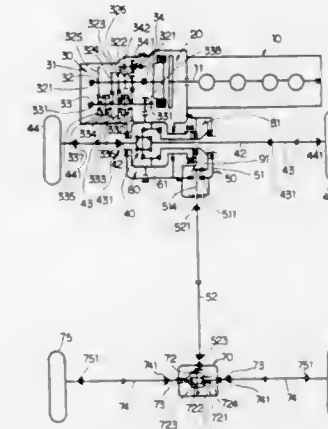
1. A suspension system for an off the road motorcycle having frame means, an engine having an output shaft supported by said frame means, a balloon tired rear wheel having a width at least equal to the width of said frame means, suspension arm means pivotally supported at one end thereof on said frame means and having a pair of rearwardly extending arm members each extending on one side of said rear wheel and journaling said rear wheel, suspension means interposed between said arm means and said frame means for cushioning the movement of said rear wheel relative to said frame means, and means for driving said rear wheel from said engine output shaft compris-

ing a first chain driven by said output shaft and driving an intermediate shaft journaled upon said suspension arm means and a second chain driven by the intermediate shaft and driv-



ing said rear wheel, said first chain being positioned laterally inwardly relative to the longitudinal center line of the motorcycle from said second chain and inwardly of the sides of said rear wheel.

4,645,029
FOUR-WHEEL VEHICLE DRIVE SYSTEM
Kan Sasaki, Aichi; Keisuke Takimura, Toyota; Nobuaki Katayama, Toyota, and Fumitomo Tsuchiya, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Nov. 5, 1985, Ser. No. 795,862
Int. Cl.⁴ B60K 17/34
U.S. Cl. 180—249



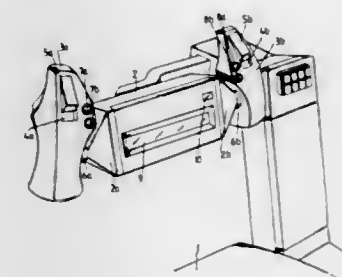
1. A four-wheel drive system for use in a vehicle including a first and a second pair of road wheels, a power unit including an output shaft, and a power transmission gear unit including input and output shafts, the input shaft of the power transmission gear unit being selectively connected to the output shaft of the power unit, the output shaft of the power transmission gear unit selectively being in driving engagement with the input shaft of the power transmission gear unit, the four-wheel drive system comprising:

an engagement member being rotatable about a rotational axis located in a lateral direction of the vehicle, said engagement member being held in driving engagement with the output shaft of the power transmission gear unit;
a central differential gear assembly including a central input member fixed to and coaxially rotatable with said engagement member about the rotational axis of said engagement member and including a first central output member and a second central output member enclosed within the central input member, the first and second central output members being rotatable at different speeds about rotational axes substantially aligned with the rotational axis of said engagement member;
a first wheel differential gear assembly being enclosed within

the central input member of said central differential gear assembly and including a first wheel input member being rotatable with the first central output member of said central differential gear assembly about the rotational axis of said engagement member and two first wheel output members, the two first-wheel output members being rotatable at different speeds about axes substantially aligned with the rotational axis of said engagement member, the two first-wheel output members being held in driving engagement with the first wheel input member;
a second wheel differential gear assembly including a second wheel input member and two second wheel output members being rotatable at different speeds about rotational axes which are substantially parallel to the rotational axis of said engagement member, the two second wheel output members being held in driving engagement with the second wheel input member; and
transmitting means for transmitting drive force from said central differential gear assembly to said second wheel differential gear assembly including a transmitting input member and a transmitting output member, said transmitting input member being held rotatable with the second central output member of said central differential gear assembly about the rotational axis of said engagement member and being located at substantially a central point of the vehicle in the lateral direction of the vehicle, said transmitting output member having a longitudinal axis, along substantially a central longitudinal line of the vehicle and being connected to said second wheel input member of said second wheel differential assembly, said transmitting means further including a right-angle power transfer gear means for changing the rotational direction from about the lateral axis of the transmitting input member to about the longitudinal axis of the transmitting output member, the right-angle power transfer gear means being connected to said transmitting input member and said transmitting output member.

4,645,030
MULTI-FUNCTION DIRECTIONAL HANDLE
Hans-Dietrich von Berouth, and Franz Heine, both of Dortmund, Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany
Filed Mar. 26, 1984, Ser. No. 593,728
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310626

Int. Cl.⁴ B60K 26/00
U.S. Cl. 180—333



1. A control device for controlling of a course of movement of a working device and of pivotal movement of superstructure of a construction machine, particularly a hydraulic excavator, with control elements mounted for turning in both directions, said control elements comprising:
an axially mounted turnable control spoke for said pivotal movement of the superstructure;
said spoke provided turnably adjustably fixed in position in front of an operator's seat of the construction machine and

having left and right ends positioned corresponding to left and right hands of the operator;
 a pair of hand-grippable individually movable directional control handles corresponding to left and right hands of the operator, one each of the control handles being pivotally mounted on respective ends of said spoke;
 said control handles at least at top portions thereof facing the seat defining with respect thereto relatively small openings;
 finger-displaceable directional dump levers pivotally mounted within said openings;
 the size and position of said control handles and said dump levers being such that, said control handles being turnable by the operator's hands while said hands grip thereon while said dump levers being movable by respective fingers of the operator's hands while the operator's hands grip said control handles; and
 the pivot axes of the control handles and dump levers extending, approximately parallel, to the pivot axes of controlled pivotal parts of the excavator and of the operator's hands and said fingers of the operator's hands and the directions of pivoting of the movements of the control elements agreeing with that of the movements controlled of the working device, and of the operator's hands and said fingers of the operator's hands.

4,645,031

EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hideo Omura, Yokosuka; Toshiyuki Kaminaga, Hitachi, and Hirofumi Takei, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

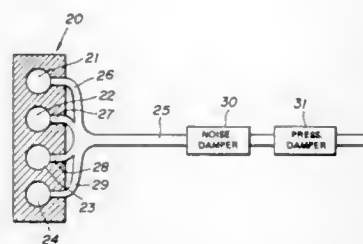
Filed Apr. 9, 1985, Ser. No. 721,397

Claims priority, application Japan, Apr. 13, 1984, 59-54375[U]

Int. Cl.⁴ F01N 1/02, 1/08

U.S. Cl. 181-232

9 Claims



1. An exhaust system for an internal combustion engine having a combustion chamber, the system comprising:

- an exhaust passage having an upstream end connected to the combustion chamber and a downstream end open to the atmosphere and developing standing pressure waves upon engine rotation;
- means, connected to the exhaust passage, for substantially equalizing natural frequencies of the exhaust passage respectively corresponding to third-degree and fourth-degree modes of said standing pressure waves developing in the exhaust passage by engine rotations above a certain speed; and
- a pressure damper connected to a point of the exhaust passage at which an antinode of the third-degree or fourth-degree mode lies.

4,645,032
COMPACT MUFFLER APPARATUS AND ASSOCIATED METHODS

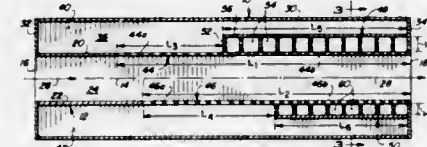
David F. Ross, Scottsdale, and Craig A. Lyon, Mesa, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 5, 1985, Ser. No. 772,831

Int. Cl.⁴ F01N 1/02

U.S. Cl. 181-250

11 Claims



1. A compact muffler for attenuating gas turbine engine noise, comprising:

- a housing having a rectangular cross-section which circumscribes an axis;
- an exhaust duct having a rectangular cross-section and extending coaxially through the interior of said housing, said exhaust duct having four side walls, first and second ones of said side walls each having a perforated section;
- a duality of baffle members extending between and intersecuring said housing and exhaust duct, and defining therewith first and second sound attenuating chambers each extending laterally around axial portions of at least two of said side walls, said first sound attenuating chamber communicating with the interior of said exhaust duct through a first portion of said perforated section of said first side wall, and said second sound attenuating chamber communicating with the interior of said exhaust duct through a first portion of said perforated section of said second side wall, each of said sound attenuating chambers extending axially beyond the portion of said perforated section through which it communicates with the interior of said exhaust duct;
- a first latticed wall structure positioned within said first sound attenuating chamber and extending along a second portion of said perforated section of said first side wall, said first latticed wall structure defining a series of laterally extending sound attenuating cells each having an open laterally inner end communicating with the interior of said exhaust duct through a second portion of said perforated section of said first side wall, and a covered laterally outer end; and
- a second latticed wall structure positioned within said second sound attenuating chamber and extending along a second portion of said perforated section of said second side wall, said second latticed wall structure defining a series of laterally extending sound attenuating cells each having an open laterally inner end communicating with the interior of said exhaust duct through a second portion of said perforated section of said second side wall, and a covered laterally outer end.

4,645,033

STRAP SEAT

Hans H. Oelschläger, Bücken, Fed. Rep. of Germany, assignor to Heinrich Oelschläger Metallwarenfabrik, Hoya, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,093

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1984, 3402162

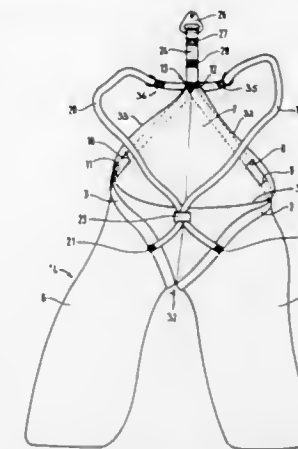
Int. Cl.⁴ A62B 35/00

U.S. Cl. 182-6

19 Claims

1. A strap seat comprising:
 a pair of trousers having a front side, a back side opposite

thereto, an upper edge and two trouser legs contiguous with one another at a crotch area;
 two carrying bands having respective upper ends and respective lower ends, said lower ends of said bands being folded back on themselves, and fixedly attached to themselves, to form a pair of leg loops, said leg loops passing through said crotch area and encircling respective ones of said trouser legs at upper portions thereof, said upper ends of said bands being fastened to one another at an overlap point of said bands on said front side of said pair of trousers, said pair of trousers including on said front side a substantially triangular portion extending from a waist region of said pair of trousers to said overlap point of said carrying bands, a portion of said upper edge of said pair of trousers forming a pair of converging edges of said triangular portion, said carrying bands extending in part along said converging edges;



securing means on said pair of trousers for displaceably guiding said bands along said upper edge of said pair of trousers, said securing means including openings in said triangular portion proximate to said converging edges, said opening 6 being traversed by said carrying bands, said triangular portion having an apex spaced from the waist region of said pair of trousers, said apex of said triangular portion being fastened to said carrying bands at said overlap point;
 two dorsal bands crossing one another at said back side of said pair of trousers and joining said carrying bands to one another; and
 connector means at said overlap point of said carrying bands for releasably attaching a rope payout device to the strap seat.

4,645,034

DESCENT SYSTEM

Selman D. Griffith, 4728 Southshore Dr., Metairie, La. 70002

Filed Jun. 26, 1985, Ser. No. 748,798

Int. Cl.⁴ A62B 1/10

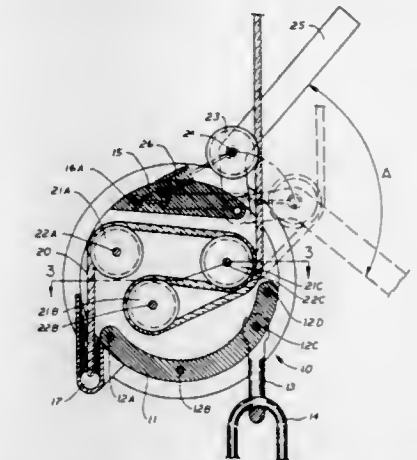
U.S. Cl. 182-231

4 Claims

1. A descent apparatus for lowering people or material from physical heights, comprising:

- a body;
- a plurality of rollers rotatably attached within said body;
- a flexible linear member contained within said body which passes over said rollers with various sections of said flexible linear member interactively contacting one another in opposed directions when passing about at least one of said rollers as said flexible linear member exits said body;
- a braking means attached to said body for influencing the degree of interactive contact between the various sections of said flexible linear member;
- a storage means contained within said body to receive

said flexible linear member for storing said flexible linear member within said body;
 (f) a friction means mounted within said body which comes in contact with said storage means for controlling the rate at which said flexible linear member exists said body;
 (g) a retrieval means for returning said flexible linear member storage means contained within said body;
 (h) a lever rotatably attached to said body;
 (i) a roller rotatably attached to said lever which engages said flexible linear member as said flexible linear member exists said body, influencing the degree of interactive contact between the various sections of said flexible linear



member within said body as said flexible linear member passes over said rollers within said body, the various sections of said flexible linear member interactively contacting one another in opposed directions, said roller being attached to said lever external of said body and engaging said flexible linear member external to said body;
 (j) a biasing member attached at one end to said lever and at the other end to said body biasing said lever toward the maximum degree of interactive contact between the various sections of the flexible linear member as said flexible linear member passes over said rollers within said body as said linear member exits said body.

4,645,035

MODULAR CONVEYOR SYSTEM FOR DRIVE-IN BANKS AND THE LIKE

Edward F. Bavis, 201 Grandin Rd., Mainesville, Ohio 45039

Filed Jun. 21, 1984, Ser. No. 623,007

Int. Cl.⁴ E04H 3/04

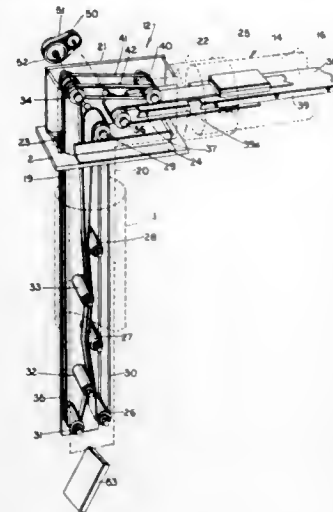
U.S. Cl. 186-37

12 Claims

1. In a conveyor system for conveying a transfer box between a first station and a remote second station, each of said stations having a ceiling, a first vertically disposed module at the first station, a second vertically disposed module at the second station, and a horizontal module interconnecting the upper ends of the vertical modules;

said vertical modules each comprising a support plate secured to the ceiling, an elongated conveyor assembly having an elongated pair of spaced apart side plates connected at their upper ends to and suspended from said support plate and extending downwardly therefrom, a hollow cylindrical housing surrounding and enclosing said conveyor assembly, said housing being suspended from said support plate, and an access opening in said housing adjacent the lower end of said conveyor assembly;
 said conveyor assemblies each having belt supporting guide rollers extending between said side plates, an opposing pair of conveyor belts mounted on said guide rollers, said belts being adapted to receive and convey a transfer box

therebetween in a vertical path of travel, translation means at the upper ends of said conveyor belts for transferring the transfer box between the vertical modules and the horizontal module;
said horizontal module comprising a hollow cylindrical housing having an elongated slide plate therein, and a



horizontal conveyor belt extending lengthwise along said slide plate, the ends of said horizontal conveyor belt being positioned to coact with said translation means to transfer the transfer box from one module to the other; and reversible drive means interconnecting the conveyor belts in said vertical and horizontal modules for movement in unison.

4,645,036

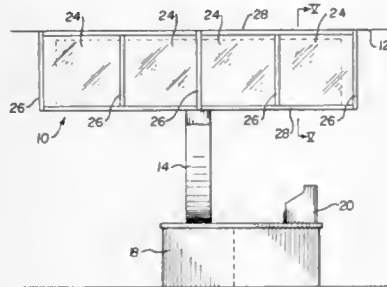
PRODUCT DISPENSER

Richard F. Nestler, 1385 Glencoe Ave., Pittsburgh, Pa. 15205
Filed Dec. 12, 1983, Ser. No. 560,446

Int. Cl.⁴ B65G 1/00, 47/00

U.S. Cl. 186—55

13 Claims



1. A product dispenser comprising:
a shell;
at least one storage compartment, said compartment being capable of receiving and storing a plurality of products;
said shell and compartment including means adapted to suspend said dispenser from a ceiling;
said storage compartment being capable of assuming a retracted position in which said compartment cooperates with said shell to prevent direct access to the products, and an extended position in which direct access to the products is possible to permit loading and unloading of said compartment;
means for moving said compartment between said extended

and retracted positions along a vertical path when said dispenser is mounted to the ceiling;
means selectively actuatable for ejecting at least one product from said compartment; and
means for receiving a said ejected product and delivering said ejected product to a desired location.

4,645,037

ELEVATOR ESCAPE STRUCTURE

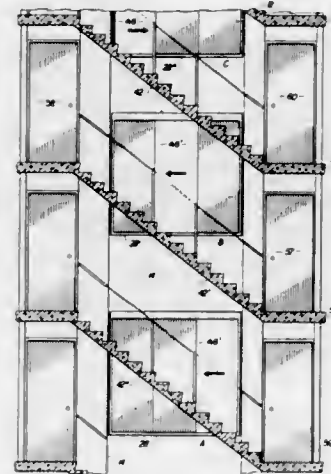
Samuel Gomez, 712 SW. 56 Ave., #8, Miami, Fla. 33134

Filed May 22, 1985, Ser. No. 736,953

Int. Cl.⁴ B66B 9/00; E04F 11/00

U.S. Cl. 187—1 R

4 Claims



1. In a multi-story building having at least one floor at one level and an other floor at another level, and having an elevator shaft with a front elevator lobby wall with an entrance opening into said shaft at each floor for ingress and egress, a pair of side walls each extending from the front elevator lobby wall to an oppositely disposed end of each side wall, an elevator cab sized to move vertically between the front and side walls in the shaft, and said elevator cab including lift means operatively connecting the elevator cab and the building, the improvement comprising:
(a) a rear wall disposed parallel to the front wall and spaced from the ends of the side wall a predetermined distance,
(b) a stair structure fixedly secured to the building and disposed between the rear wall and the ends of the side walls,
(c) said stair structure being elongated and extending substantially between one of the pairs of side wall ends and the one floor and the other of the pairs of side wall ends at the other floor,
(d) the elevator cab having an elevator rear wall disposed substantially between the ends of the pair of side walls and a door opening in the elevator rear wall substantially extending across the entire elevator cab and along a majority of the length of the stair structure,
(e) a door mounted in said elevator cab and comprising a plurality of segments movable relative to one another and selectively positionable relative to the door opening to open at least either of two opposite ends of the door opening for direct access to the stair structure, and
(f) the stair structure angularly oriented between floors and accessible from the elevator cab through at least one of the two opposite ends of the door opening regardless of the level of the elevator cab relative to the stair structure.

4,645,038

DISC BRAKE

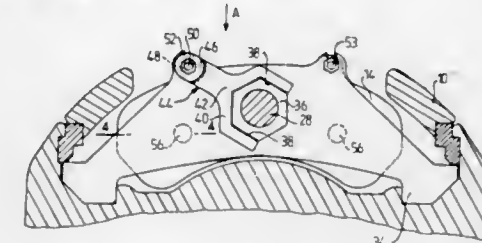
Guy Meynier, Aulnay-sous-Bois, France, assignor to Bendix France, Paris, France

Filed Nov. 20, 1985, Ser. No. 800,003

Int. Cl.⁴ F16D 65/56

U.S. Cl. 188—71.9

3 Claims



1. A disc brake with a caliper sliding on a fixed support and incorporating a first friction component capable of being applied against one surface of a brake disc by means of a brake actuator through a plunger, and a second friction component capable of being applied against the other surface of the disc through the sliding caliper, rotation of the plunger moving the plunger axially relative to the brake actuator, characterized in that the brake includes an adjusting and retaining component having a fork at one end which cooperates with complementary surfaces formed on the plunger and having a hole at the other end by means of which the adjusting and retaining component is immobilized, through removable means, relative to the first friction component, the removable means comprising a screw which passes through the hole and is screwed into the first friction component to hold the first friction component against a reinforcing pad, the pad having an oblong opening which communicates with an external peripheral pad edge and allows the screw to pass through radially, relative to the disc, when the screw is disengaged from the first friction component, disengagement of the screw from the first friction component permitting the adjusting and retaining component to be rotated in order to rotate and displace axially the plunger.

4,645,039

PARKING BRAKE FOR OFF-HIGHWAY VEHICLES

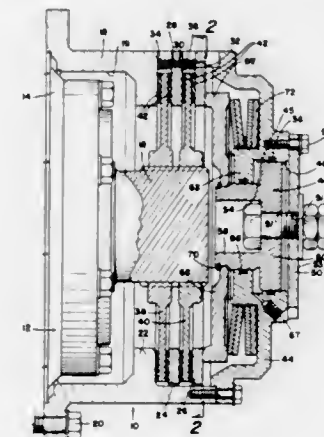
Billy M. Lewis, Joplin, Mo., and Walter I. Myers, Tulsa, Okla., assignors to Wiseda Ltd., Cardin, Okla.

Filed Jun. 20, 1985, Ser. No. 746,719

Int. Cl.⁴ F16D 55/22

U.S. Cl. 188—72.3

20 Claims



1. A parking brake assembly for a large off-highway vehicle having at least one wheel powered by a wheel motor provided with rotatable shaft means extending axially outwardly therefrom, said assembly comprising:
housing means encasing said shaft means and secured to said

wheel motor for precluding rotation of said housing means;
clutch means disposed within said housing means and operably connected with said shaft means, said clutch means having alternately disengaged and engaged positions for providing alternate rotation and non-rotation of said shaft means;
reciprocable piston means disposed in said housing means outwardly from said shaft means and engagable with said clutch means for providing said alternate engaged and disengaged positions thereof;
spring means cooperating between said housing means and said piston means for constantly urging said piston means in a direction toward said clutch means for providing said engaged position of said clutch means, corresponding to a normal position of said piston means, and thereby precluding rotation of said shaft means; and
pressure chamber means in communication with said piston means for selectively applying pressure against said piston means for movement of said piston means in a direction away from said clutch means for providing selective disengagement of said clutch means, and thereby permitting free rotation of said shaft means.

4,645,040

ADJUSTING AND CENTERING CONTRIVANCE FOR SERVO BRAKES

Valentin Knott, Eggstätt; Hans Huber, Gollenshausen; Wolfgang Langheinrich, Eggstätt, and Stephan Maier, Marquartstein, all of Fed. Rep. of Germany, assignors to Firma. Maschinenbau Knott Eggstätt Ing. Valentin Knott, Fed. Rep. of Germany

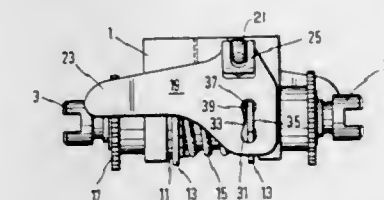
Filed Feb. 8, 1984, Ser. No. 577,984

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304593

Int. Cl.⁴ F16D 51/00, 65/38

U.S. Cl. 188—79.5 GT

9 Claims



1. In an improved adjusting and centering contrivance for a servo brake, wherein said servo brake includes:

(a) fixed guide bushing having an essentially U-shaped profile;
(b) a slide-through lock mounted in axial borings formed in said guide bushing and arranged for axially outwardly displaceable motion from a central position against the force of a centering spring, said slide-through lock including:

(1) a pair of bolts threadedly engaging a first adjustment tube and with said first adjustment tube being firmly joined to an adjustment gear having an arresting tooth-thing arranged on one side thereof and in axially symmetric disposition,
(2) an adjustment pawl engaging and arranged to circumferentially move said adjustment gear with a slide-through movement of said slide-through lock, such that in the case of an extreme movement in the direction toward an associated brake shoe said pawl executes an outwardly pivotal movement and stops over a certain tooth and with a subsequent movement of the slide-through lock in the reverse direction said pawl executes a return circumferential movement and engages the

tooth previously stopped over, thereby rotating said pawl in the direction of screwing out one of said adjustment tube engaging bolts, said adjustment pawl also being seated on an adjustment lever that is maintained for pivotal rotation about a bolt arranged on the guide casing of a fixed brake part, said adjustment pawl having a laterally offset disposed first stop disposed in the path of movement of an outwardly movable actuation add-on piece that is moved along with the slide-through lock and which add-on piece effects outward pivotal motion of the adjustment lever, the improvement comprising:

- (i) said centering spring being mounted so as to serve as a return spring for said adjustment lever;
- (ii) the said movable add-on piece being outwardly projecting and having first and second opposed side surfaces, said movable add-on piece being positionably mounted so as to be movable with said slide-through lock and with said first side surface being arranged to engage said laterally disposed first stop, and to operate with said first stop when moved in a first lineal direction toward said first stop surface in a first stage of adjustment and with said second side surface being arranged to engage said laterally disposed second stop surface and to operate with said second stop when moved in a direction opposed to said first lineal direction and toward said second stop in a second stage of adjustment, such that upon completion of a slide-through movement when centering the slide-through lock, the second side surface of said add-on piece effects a pivotal motion of the adjustment lever for the return thereof to its initial position as said add-on piece is moved along with said slide-through lock.

4,645,041 BRAKE DISCS

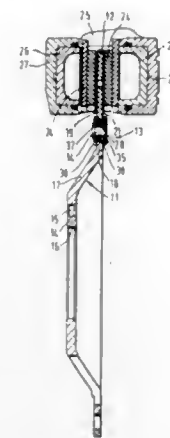
Richard A. Bass, Hampton Magna, United Kingdom, assignor to Automotive Products plc, Leamington Spa, England
Filed Apr. 11, 1985, Ser. No. 722,063

Claims priority, application United Kingdom, Apr. 24, 1984, 8410423

Int. Cl.⁴ F16D 65/12

U.S. Cl. 188—218 XL

5 Claims



1. A brake disc comprising an inner mounting member; an outer annular braking member having radially aligned, axially outer planar surfaces; a driving connection between the members comprising flat substantially radial drive faces defining aligned substantially rectangular notches in the outer and inner peripheries respectively of the two members and a one piece substantially rectangular drive dog engaged in each pair of aligned notches having corresponding flat substantially radial drive faces co-operating with the drive faces of the notches, clearances in a radial direction between the dog in the notches

and an aperture extending completely through the drive dog parallel to the disc axis, said clearances allowing some relative movement between the members including radial thermal expansion of the braking member and relative axial movement between the members; the drive dog having an axial length greater than the thickness in an axial direction of the mounting member in the region of the drive dogs and greater than the thickness in an axial direction of the braking member in the region of the drive dogs and axial constraining means operative between the mounting member and the braking member comprising two stop flanges one to each axial end of each dog in abutment with their respective axial end of the dog and fastening means passing through the aperture and engaged with the flange to secure them against the axial ends of the dog; the flanges extending beyond the dog and co-operating with both said members to provide axial constraint therebetween.

4,645,042 HYDRAULIC DAMPER

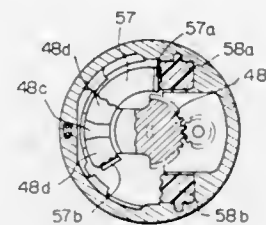
Masaru Inoue, and Masahiro Ashiba, both of Kanagawa, Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha and Tokico Ltd., both of Kanagawa, Japan
Filed Dec. 19, 1984, Ser. No. 683,552

Claims priority, application Japan, Dec. 21, 1983, 58-196541[U]

Int. Cl.⁴ F16F 9/34

U.S. Cl. 188—319

5 Claims



1. In a hydraulic damper including a piston working in a cylinder and partitioning the interior of the cylinder into two liquid chambers, a piston rod having a first end connected to said piston and a second end extending to the outside of said cylinder, a liquid passage formed in said piston rod for connecting said two liquid chambers, an opening adjusting member movably disposed in said liquid passage for selectively adjusting the effective passage area of said liquid passage between at least three different passage area conditions, and actuating means for reciprocally moving said adjusting member between two extreme positions and at least one intermediate position corresponding to respective said passage area conditions, the improvement wherein said actuating means comprising:

- a rotary actuator;
- a reciprocally rotatable member connected to said adjusting member and driven by said rotary actuator;
- two fixed stop means for engaging with said rotatable member corresponding to said two extreme adjusting positions;
- at least one axially displaceable member displaceable in a direction parallel to the rotary axis of said rotatable member between a first position cooperating with and stopping rotary movement in respective given directions from either of said extreme adjusting positions of said rotatable member to define an intermediate position corresponding to said intermediate adjusting position and a second position permitting rotation of said rotatable member in said given directions;
- means for displacing axially said axially displaceable member between said first and second positions thereof; and
- means for preventing movement of said axially displaceable member in the circumferential direction at least when said axially displaceable member is in said first position thereof.

4,645,043 HYDRAULIC DAMPER OF ADJUSTABLE DAMPING FORCE TYPE

Tomio Imaizumi, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

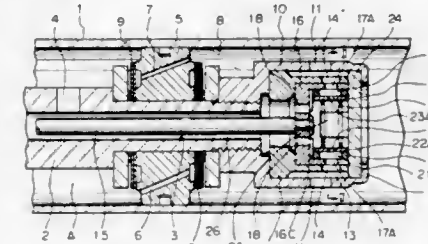
Filed Jun. 19, 1985, Ser. No. 746,771

Claims priority, application Japan, Jun. 20, 1984, 59-126679

Int. Cl.⁴ F16F 9/34

U.S. Cl. 188—319

4 Claims



1. In a hydraulic damper of adjustable damping force type including a cylinder containing hydraulic liquid, a piston working in said cylinder and partitioning the interior thereof into first and second liquid chambers, a piston rod connected to said piston and extending through said first liquid chamber to the outside of said cylinder, a coaxial bore formed in said piston rod, a liquid passage communicating said liquid chambers and including at least a portion of said bore, an adjusting rod inserted into said coaxial bore and adapted to be operated rotatably from the outside of the damper, and a generally cylindrical rotary valve secured to said adjusting rod and having a plurality of circumferentially spaced and radially extending first orifices having different diameters for selectively changing the effective passage area of said liquid passage, thereby adjusting the damping force, the improvement comprising:

check valve means, mounted at the inner circumference of said rotary valve for rotation integrally therewith, and having a plurality of circumferentially spaced and radially extending second orifices having different diameters and aligned with respective said first orifices, the size of each said second orifice being smaller than the size of the respective aligned first orifice, for opening radially inwardly during one of the contraction or extension strokes of the damper, thereby allowing fluid flow through a selected said first orifice, and for closing radially outwardly during the other of the contraction or extension strokes of the damper, thereby restricting the fluid flow by a selected said second orifice.

4,645,044 HYDRAULIC DAMPER OF ADJUSTABLE DAMPING FORCE TYPE

Tetsuo Kato, and Tomio Imaizumi, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

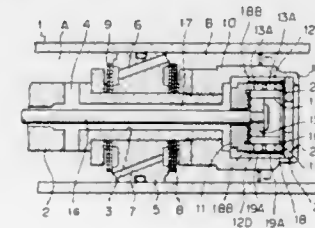
Filed Jun. 19, 1985, Ser. No. 746,772

Claims priority, application Japan, Jun. 20, 1984, 59-91936[U]

Int. Cl.⁴ F16F 9/34

U.S. Cl. 188—319

5 Claims



1. In a hydraulic damper of the adjustable damping force type including a cylinder containing hydraulic liquid, a piston working in said cylinder and partitioning the interior thereof

into first and second liquid chambers, a piston rod connected to said piston and extending through said first liquid chamber to the outside of said cylinder, a coaxial bore formed in said piston rod, a liquid passage communicating said liquid chambers and including at least a portion of said bore, an adjusting rod inserted into said coaxial bore and adapted to be operated rotatably from the outside of the damper, and a rotary valve secured to said adjusting rod and operable thereby from the outside of the damper to selectively change the effective passage area of said liquid passage, the improvement comprising:

- a generally cylindrical orifice tube positioned in said liquid passage, said orifice tube having an outer surface having formed therein a plurality of axially extending and circumferentially spaced engaging surface portions, and a plurality of first orifices extending radially through said orifice tube at locations corresponding to at least some of said engaging surface portions;
- said rotary valve being positioned within said orifice tube and having an outer surface slidably engaging an inner surface of said orifice tube, said rotary valve having means for, upon rotation of said rotary valve relative to said orifice tube, opening and closing selected said first orifices; and

check valve means for enabling different fluid flows through said liquid passage during movement of said piston in opposite directions, said check valve means comprising a disc-like bottom plate portion positioned adjacent a first axial end of said orifice tube, a plurality of elongated resilient plate-like portions integrally connected to the outer circumference of said bottom plate portion, said plate-like portions extending axially of said orifice tube and resiliently engaging respective said engaging surface portions of said orifice tube, and a plurality of second orifices extending through at least some of said plate-like portions at locations such that each second orifice is aligned with a respective said first orifice, the size of each said second orifice being smaller than the size of the respective aligned first orifice;

whereby upon movement of said piston in a first said direction said plate-like portions resiliently engage said engaging surface portions and liquid flow through said liquid passage is restricted by said second orifices, and upon movement of said piston in a second said direction said plate-like portions are expanded radially outwardly from said engaging surface portions by the pressure of said liquid and liquid flow through said liquid passage is restricted by said first orifices.

4,645,045 AUTOMATIC TRANSMISSION SYSTEM FOR VEHICLES

Hideyasu Takefuta, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

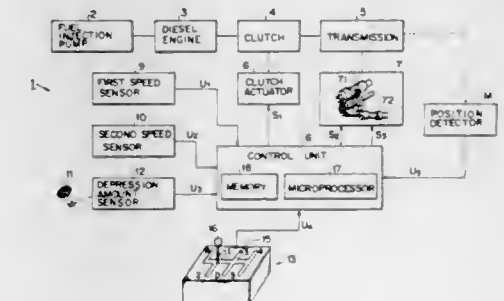
Filed Feb. 20, 1985, Ser. No. 703,291

Claims priority, application Japan, Feb. 20, 1984, 59-28772

Int. Cl.⁴ B60K 41/22, 41/28

U.S. Cl. 192—3.62

7 Claims



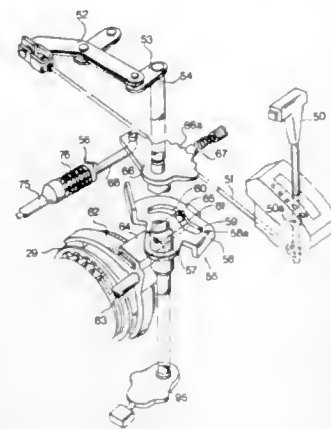
1. An automatic transmission system for vehicles having a

friction clutch coupled to an internal combustion engine, a speed-change-gear type transmission coupled to said clutch, a first actuator for operating said clutch in response to an electric signal, a second actuator for operating said transmission in response to an electric signal, means for producing at least one condition data indicative of the condition of operation of the vehicle and a control means responsive to at least said condition data for controlling the operation of said first and second actuators in order to carry out the gear change operation of said transmission, wherein said control means includes: (1) a storing means for storing a first data representing a first gear change map showing gear change characteristics for obtaining economical running and a second data representing a second gear change map showing gear change characteristics for obtaining high-power-output running; (2) a signal generating means which has an operation lever movable along a predetermined gear shift pattern used for manual operation and generates a command signal indicative of the position of the operation lever on the gear shift pattern; and (3) means responsive to said command signal and said condition data for controlling said first and second actuators so as to carry out a gear change operation in one mode among a first control mode in which said transmission is shifted to the gear position corresponding to the position of the operation lever, a second control mode in which said transmission is automatically shifted in accordance with the first gear change map and a third control mode in which said transmission is automatically shifted in accordance with the second gear change map.

4,645,046

PARKING LOCK MECHANISM FOR A VEHICLE HAVING AN INFINITELY VARIABLE TRANSMISSION
Toshio Takano, Hamura, and Masahiko Takahashi, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 693,709
Claims priority, application Japan, Jan. 31, 1984, 59-15416
Int. Cl.⁴ B60T 1/00; B60K 20/00
U.S. Cl. 192—4 A 2 Claims



1. In a parking lock mechanism for a vehicle having an infinitely variable transmission having a main shaft, a forward gear train, a reverse gear train, coupling means for engaging either of the forward and reverse gear trains with the main shaft, and a selector lever for selecting a forward drive range, reverse drive range, and parking lock range, the improvement comprising:

- a parking pawl provided to be engaged with one of locking notches formed on one of rotative members on an output shaft of the transmission;
- first means for actuating the parking pawl to engage it with one of the locking notches;
- second means comprising a cam plate rotated by the operation of the selector lever and a cam follower operatively connected to the coupling means for transmitting the

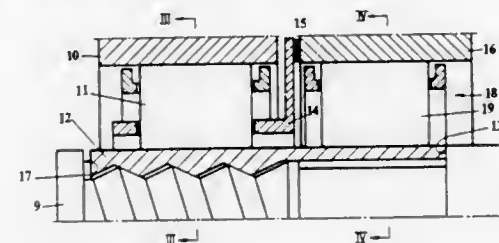
operation of the selector lever to the coupling means for selecting the drive ranges and the parking range, the second means being so arranged that the parking range is selected after the selection of the reverse drive range; and the cam plate being so arranged that when the parking range is selected, the cam follower remains at a reverse drive range position to keep the engagement of the reverse gear train.

4,645,047

FREEWHEEL MECHANISM

Rune Adolfsson, Borås, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Sep. 26, 1985, Ser. No. 780,400
Claims priority, application Sweden, Nov. 28, 1984, 8406001
Int. Cl.⁴ F16D 11/06
U.S. Cl. 192—12 B 6 Claims



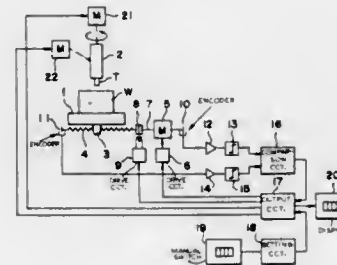
1. A freewheel mechanism for transmitting rotational movement between two elements (9, 10) and comprising a number of tiltable blocking members (11) arranged between two co-axial annular raceways arranged in connection to the respective elements, characterized in that one raceway is arranged on a body (12) co-operating with one element (9), the body being movable in relation to the element so that the distance between the raceway on the body and the raceway arranged in connection to the other element (10) is variable, the variations of the distance between the raceways being brought about by relative turning of the body (12) and the element (9) co-operating with the body.

4,645,048

DRIVE MECHANISM FOR MACHINES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue Japax Research Incorporated, Kanagawaken, Japan

Filed Jun. 17, 1983, Ser. No. 505,225
Int. Cl.⁴ F16D 43/20
U.S. Cl. 192—0.034 8 Claims



1. A drive mechanism for a machine, comprising:
rotatable shaft means drivingly connected with a movable element in the machine;
drive shaft means for rotation by motor means;
coupling means for drivingly connecting said drive shaft means with said rotatable shaft means to move said movable element in the machine;

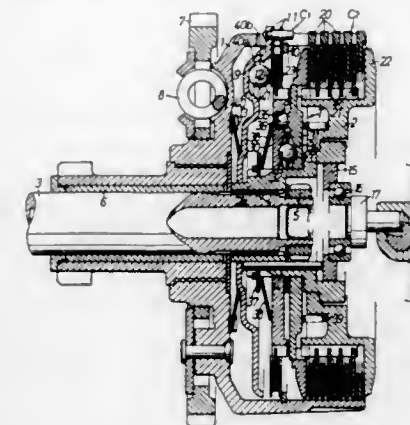
able element in a predetermined form of movement under a variable load in the machine;
first sensing means responsive to the rotation of said drive shaft means to produce a first sensing signal;
second sensing means responsive to the rotation of said rotatable shaft means to produce a second sensing signal;
comparison means responsive to said first and second sensing signals to produce a comparison signal representing a torque produced at said coupling means between said drive and rotatable shaft means while said element is moved in said form of movement by said motor means; and
output means responsive to said comparison signal and to a reference signal representing a predetermined reference value of torque to produce an output signal, said output means comprising control means connected to an energization circuit for said motor for controlling the rotation of said drive shaft means thereby with said output signal so as to maintain said detected torque at said coupling means substantially at said reference value.

4,645,049

CLUTCH SYSTEM HAVING MEANS FOR CONVERTING TRANSMITTED TORQUE INTO FRICTIONAL FORCE

Minoru Matsuda, Chofu, and Tadashi Muraishi, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,331
Claims priority, application Japan, Sep. 1, 1983, 58-160980
Int. Cl.⁴ F16D 23/10, 43/24, 13/04
U.S. Cl. 192—35 5 Claims



1. A clutch system comprising:
a clutch input member;
a clutch output member;
a primary friction clutch connected to said clutch input member, said primary friction clutch including: a first pressure plate slideably splined to said clutch input member; a receiving ring retained by said clutch input member and facing said first pressure plate; a pair of first driving friction disks positioned between said first pressure plate and said receiving ring and slideably engaged with said clutch input member; a first driven friction disk positioned between said pair of first driving friction disks; a dish-shaped clutch spring biasing said first pressure plate towards said receiving ring to engage said primary friction clutch; a plurality of radially extending guide grooves formed on an inner side of said pressure plate facing an outermost one of said pair of first driving friction disks, said guide grooves each having an inclined bottom portion at an outer radial portion of said pressure plate and inclined toward said outermost first driving friction disk, and a stopper end wall closing a radially outermost end of said inclined bottom portion; and a centrifugal ball-shaped

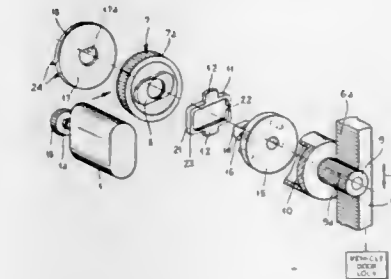
weight positioned in each said guide groove and contacting said outermost first driving friction disk;
a secondary friction clutch between said clutch input and output members and operatively associated with said clutch output member;
means for selectively disengaging said primary friction clutch; and
thrust generating means interconnecting said primary friction clutch and said secondary friction clutch for generating axial thrust to engage said secondary friction clutch under transmission of torque from said primary friction clutch.

4,645,050

DEVICE FOR ACTUATING A MOTOR VEHICLE DOOR CLOSURE

Jürgen Ingenhoven, Velbert, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co Kommanditgesellschaft, Heilingenhaus, Fed. Rep. of Germany

Filed May 10, 1985, Ser. No. 733,150
Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418802
Int. Cl.⁴ F16D 13/14; E05B 47/00
U.S. Cl. 192—36 6 Claims



1. An actuating device, especially for actuating a motor vehicle door closure, said device comprising:
a bidirectional drive motor; and
a clutch for transmission of motive power, said clutch comprising:
a hollow input gear wheel adapted to be driven by said motor,
a cam formation in said input gear wheel,
a unitary resilient coupling element having a substantially rectangular, elastically deformable frame which is inherently capable of performing the function of a self-resetting spring, and controlled by said cam formation, said coupling element including engaging projections at two opposite sides of said frame,
a coupling drum having a noncircular inner surface surrounding said element and engageable by said projections,
an output gear wheel connected to said coupling drum for providing an output of the device,
a driving sleeve carrying said input gear,
a driving disc connected to said driving sleeve and having projecting driving pins which can engage in said coupling element,
a brake disc mounted on said driving sleeve,
a substantially annular spring wound about the perimeter of said brake disc, and
means providing a stop for said annular spring.
6. A device, especially for actuating a motor vehicle door closure, comprising:
a housing;
a control rod, said control rod being adapted to actuate the respective motor vehicle door closure and also being adapted to move freely;
a shaft rotatably journaled in said housing with its respective first and second ends;

a driver mounted on said shaft for rotation therewith, said driver including a tubular sleeve for coaxially mounting the driver on said shaft near the first end thereof;

a drive disc extending substantially perpendicularly with respect to the longitudinal central axis of said shaft and operatively connectable to said tubular sleeve, said drive disc including a plurality of projecting drive pins;

an input gear wheel mounted on said tubular sleeve, said input gear wheel including a hollow cylindrical recess which presents an opening towards said control rod;

a cam formation mounted in said input gear and connected thereto;

an output gear wheel adapted to actuate the control rod having a coupling drum connected thereto, said coupling drum having, when viewed in the direction of the drum axis, a substantially noncircular inner wall surface, and said coupling drum extending at least in part into said hollow cylindrical recess through the opening thereof;

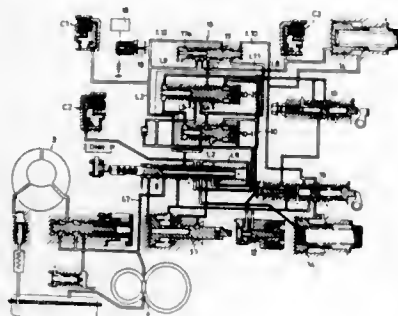
a drive motor having two drive directions, and said drive motor being adapted to rotate said input gear wheel; and a coupling element, said coupling element including radially directed actuating projections, said coupling element being adapted to be controlled by said cam formation in said input gear, and said coupling element being resilient and being a unitary component having a substantially rectangular, elastically deformable frame which inherently is capable to perform the functions of a reset spring, and at which are connected at two opposite sides the actuating projections, said frame being capable of being spread at its respective ends to form a gap when controlled by said cam formation such that said actuating projections, when said clutch is engaged, operatively contact the interior wall surface of said coupling drum; and

wherein said driving pins are adapted to engage in the coupling element.

4,645,051
BRAKE AND SPEED RESPONSIVE CONTROLLED TRANSMISSION
 Masakazu Maezono; Takeyuki Shimizu, and Keiichi Ishikawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 5, 1985, Ser. No. 708,348
 Claims priority, application Japan, Mar. 6, 1984, 59-41349
 Int. Cl.⁴ B60K 41/28

U.S. Cl. 192-0.055

7 Claims



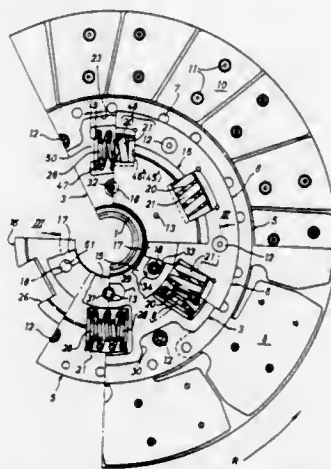
1. A control apparatus for multi-speed, oil pressure operated vehicle transmission having an oil pressure operated clutch for each speed drive train, a lowest and a highest speed drive train, and a one-way clutch in the lowest speed drive train, comprising, means for detecting a brake actuated condition and a stopped condition of the vehicle including means responsive to the throttle opening and governor of the vehicle engine, and means responsive to said detecting means for supplying oil pressure to the clutch for the highest speed drive train during the continuance of either said brake actuated or stopped vehicle condition for minimizing the torque transmitted through the transmission.

4,645,052
Patent Not Issued For This Number

4,645,053
DAMPER DISC
 Kozi Kitayama, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
 Filed Jul. 3, 1985, Ser. No. 751,411
 Claims priority, application Japan, Jul. 5, 1984, 59-102279[U]
 Int. Cl.⁴ F16D 3/66

U.S. Cl. 192-106.2

6 Claims



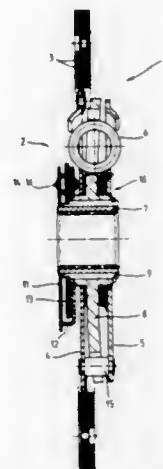
1. A damper disc having a splined hub, said hub having a radial flange, annular side plates disposed on said hub at opposite sides of said flange and annular sub-plates disposed on said hub at the sides of said side plates opposite the side at said flange, said flange and said side plates having a plurality of aligned, equally spaced, circumferentially extending openings, the openings in said flange being longer in the circumferential direction of said flange than the openings in said side plates, a pair of torsion springs in each of said aligned openings, first friction members between said flange and said side plates, second friction members between said side plates and said sub-plates, a plurality of equally spaced, circumferentially elongated first slots extending through said flange radially inward of said flange, a spacer pin in each of said first slots extending through said first slots into aligned holes in said first friction member and said side plates for spacing said side plates at the opposite sides of said flange, a plurality of equally spaced, circumferentially elongated second slots extending through said flange at the outer periphery of said flange, a stop pin in each of said second slots extending through said second slots and interconnecting said side plates at the opposite sides of said hub flange, a plurality of equally spaced, circumferentially elongated third slots extending through said flange intermediate said first slots and aligned circumferentially elongated slots extending through said first friction members, said side plates and said second friction members and a stud pin in each of said third slots extending through said aligned elongated slots and interconnecting said sub-plates at the opposite outer sides of said friction members and said side plates for causing relatively heavy friction engagement with said second friction member between said sub-plates and said side plates and for causing relatively light friction engagement with said first friction member between said side plates and said hub flange spaced with respect thereto by said spacer pins, said second friction member having engaging means at the outer periphery of said second friction member for engaging the opposite ends of one of said torsion springs of said pair of torsion springs.

4,645,054
TORSIONAL VIBRATION DAMPER WITH SMOOTH TRANSITION BETWEEN TWO SPRING SYSTEMS
 Harald Raab, Schweinfurt, Fed. Rep. of Germany
 Filed Mar. 1, 1985, Ser. No. 707,468
 Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407524

Int. Cl.⁴ F16D 3/12

U.S. Cl. 192-106.2

8 Claims



1. A torsional vibration damper, especially for clutch discs of motor vehicles, comprising at least two spring systems (14; 6) with different spring characteristic curves (C_1 , C_2), wherein in the transition from the spring system (14) with the less steep spring characteristic curve (C_1) to the spring system (6) with the steeper spring characteristic curve (C_2) the system (14) with the less steep spring characteristic curve (C_1) is bridged over by stops and at least some torsion springs (6) of the spring system (6) with the steeper spring characteristic curve (C_2) are installed under pre-stress, characterized in that the abutment torque (M_A) of the spring system (14) with the less steep spring characteristic curve (C_1) is made by design greater than the pre-stress transmission torque value (M_P) of the spring system (6) with the steeper spring characteristic curve (C_2).

4,645,055
REPLACEABLE LINER FOR A GRAIN ELEVATOR DISCHARGE SPOUT
 Edward T. Griese, R.R.; Carl A. Griese, Jr., Box 524, and Donald A. Griese, R.R., all of Dolliver, Iowa 50531
 Filed Apr. 7, 1986, Ser. No. 848,803
 Int. Cl.⁴ E04H 7/00

U.S. Cl. 193-2 R

2 Claims



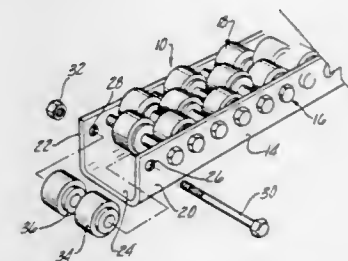
1. In combination with an elongated discharge spout for a grain elevator, said discharge spout being formed of metal and being oriented in an inclined relation to direct grain there-through, an abrasion resistant elongated liner formed of high molecular weight polyurethane positioned in said spout in snug fitting relation therewith, said liner being formed from a rectangular blank of high molecular weight polyurethane material and being shaped into cylindrical configuration

with the longitudinal edges thereof disposed in confronting abutting relation, said liner being rotatable in the discharge spout to permit even wearing of the inner surface of the liner, and said liner being readily removable from the spout to permit replacement thereof when the liner has become worn.

4,645,056
MATERIAL FLOW RAIL
 Francis V. Palazzolo, and Wayne T. Polachowski, both of Sterling Heights, Mich., assignors to Custom Automation, Inc., Roseville, Mich.
 Division of Ser. No. 575,769, Feb. 1, 1984, Pat. No. 4,541,518.
 This application Apr. 24, 1985, Ser. No. 726,842
 The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.
 Int. Cl.⁴ B65G 13/00

U.S. Cl. 193-35 A

5 Claims



1. A material flow rail for transmitting articles by gravity comprising:
 a support channel forming upstanding leg sections extending along a longitudinal axis, said leg sections forming a plurality of bores;
 a plurality of bolt assemblies extending between said upstanding leg sections and passing through said leg section bores, said bolt assemblies oriented transversely with respect to said longitudinal axis, and bearing assemblies loosely supported on said bolt assemblies having an inner race and an outer race and rolling bearing elements interposed therebetween, said bolt assemblies spaced in the direction of said support channel longitudinal axis a distance less than the outer diameter of said outer races such that said bearing assemblies are overlapping in said longitudinal direction; and
 means for providing contact between a first one of said bearing assemblies and a second one of said bearing assemblies for transmitting lateral forces between said first and second bearing assemblies, the transmission of said lateral forces thereby determining the relative transverse position of said second bearing assembly with respect to said first bearing assembly.

4,645,057
DEVICE FOR COUPLING CARRIERS, SUCH AS SHOPPING CARRIERS AND LUGGAGE CARRIERS
 Karin Schramme, Santisblick 6, D 7778 Markdorf, and Theresia Bohler, Glashutten 19/1, D 7799 Ilmensee, both of Fed. Rep. of Germany
 Filed Feb. 13, 1985, Ser. No. 701,105
 Claims priority, application Fed. Rep. of Germany, Feb. 14, 1984, 3405101

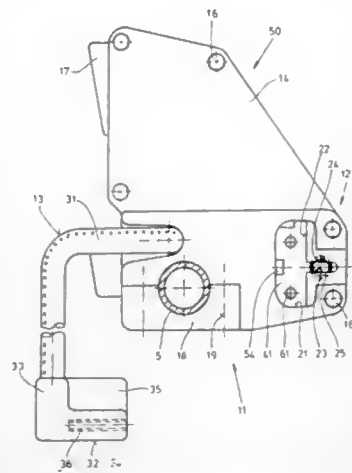
Int. Cl.⁴ B62B 3/00

U.S. Cl. 194-246

8 Claims

1. A device for coupling a carrier such as a shopping cart, comprising a housing adapted to be mounted on the carrier and having a face with an opening forming a coupling trap, a flexible cable having one end secured to said housing and an

opposite end extending out of said housing having a plug thereon engageable in a coupling trap from an adjacent carrier, releasable lock means in said housing engageable with said plug to hold it in said trap, means defining a coin chute in said housing, and electrical switch means having an actuator in said chute actuable by a coin and connectable to said lock means to release said lock means, said switch actuator holding the coin in said chute for releasing the coin when said plug is reinserted into said trap, a T-shaped recess formed in a face of said hous-



ing which extends perpendicular to the longitudinal axis of the carrier and extends into a side face of said housing, said lock means including an electromagnet having a plunger, said plug having a recess into which the plunger engages when the plug is inserted and electrical contact means in said housing engageable with said plug when said plug is inserted, said T-shaped recess in said housing including an abutment therein extending perpendicular to the longitudinal axis of the carrier, said plug being insertable into said recess up to said abutment.

4,645,058

APPARATUS FOR ORIENTING EGGS IN A EGG HANDLING SYSTEMS

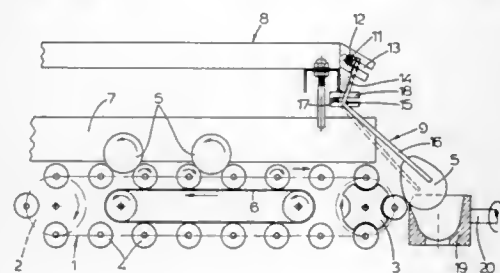
Pieter Meyn, Noordeinde 68C, 1511 AE Oostzaan, Netherlands
Continuation of Ser. No. 535,302, Sep. 23, 1983, abandoned. This application Feb. 18, 1986, Ser. No. 830,244

Claims priority, application Netherlands, Sep. 24, 1982, 8203705

Int. Cl.⁴ B65G 47/24

U.S. Cl. 198—400

16 Claims



1. An egg handling system, comprising:

means for supplying and conveying eggs in a continuous row along a track with said eggs all in a position with their longitudinal axes extending horizontally and perpendicularly to the direction of forward movement of the eggs, said track having a terminal end where the eggs leave said track;

receiving means, disposed just beyond and beneath said

terminal end of said track, adapted for receiving eggs with their blunt ends substantially downward;

a single integral member pivotally arranged at the end of said track for conducting successively, in cooperation with said track terminal end, said eggs from said track to said receiving means, such that said eggs while being conducted by said member are both aligned with their blunt ends facing generally forwardly in the direction of their movement and oriented with their blunt ends facing substantially downwardly in the direction of said receiving means; wherein

said pivoting integral member comprises a single elongate egg aligning and orienting member disposed at the downstream end of said track, said member having its upper end pivotally mounted above and even with or just upstream of said track terminal end, and having a downwardly extending lower portion; and

said system further comprising means for determining a rest position for said pivoting integral member in which said lower portion thereof extends from above said track terminal end to substantially obliquely forwardly and downwardly across and spaced from said track terminal end so that the tip of said pivoting integral member is relatively adjacent said receiving means to aid in conducting eggs thereto; and wherein

said pivoting integral member is mounted to be swung upwardly from said rest position by said eggs; and further wherein

said pivoting integral member has two guide edges extending longitudinally for at least the lower portion thereof and facing said track terminal end; and said guide edges, at an area above and just upstream of said track terminal end where advancing eggs first engage said pivoting integral member, having a lateral spacing and position such that each egg is initially engaged adjacent its acute end by one of said two guide edges while the blunt end of such egg is instead permitted to slide downwards along said track terminal end in a single, continuous movement thereof along the other one of said guide edges for simultaneous downward orientation of the egg as the egg swings around for defined alignment thereof during said single-movement downward-sliding of same to a position in said receiving means in which its blunt end faces generally forwardly in said direction of forward movement and is substantially oriented downwards in the direction of said receiving means; said guide edges converging downwardly near said receiving means to a fixed relative lateral spacing which is smaller than the thickest part of said eggs so that said pivoting integral member remains substantially on the upper part of said eggs, which smaller lateral spacing guides and centers said eggs directly into said receiving means; whereby

said eggs are aligned and oriented by a single, integral pivoting member while being conducted thereby from said track terminal end to said receiving means.

4,645,059

ROLLER-PATH SYSTEM

Peter Höfling, Dortmund, and Klaus Schöneeweiss, Hattingen, both of Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany
Filed Oct. 10, 1984, Ser. No. 659,473

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337611

Int. Cl.⁴ B66B 9/00

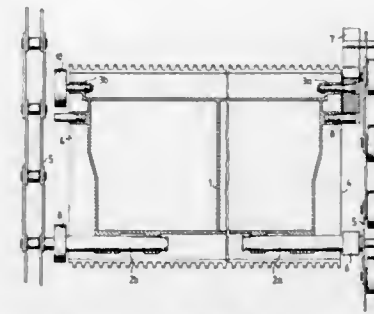
U.S. Cl. 198—321

16 Claims

1. In two separate, independent roller-path systems for the transportation of persons and goods, each system having an endless band reversed around a horizontal axis including traction-chains and tread-plates, each of said tread-plates having two pull and two drag bolts disposed close to corners of the tread-plates opposite each other, said traction-chains being freely supported in a first of the systems and being supported

by rollers therebetween in a second of the systems, said tread-plates in said first system being directly freely supported, via freely supporting tread-plate rollers and the pull bolts in addition to the traction-chains of the first system, said tread-plates in said second system being indirectly supported, having the pull bolts mounted in the traction-chains of the second system and fork-shaped tread-plate resting elements attached by the drag bolts over which they grip, the improvement in said tread-plates wherein

said tread-plates exclusive of said bolts are the same in said first and second systems, respectively, each of said tread-plates is connectable universally to both of said first and second systems, respectively,



each of said tread-plates has side walls, the traction-chains having inside plates laterally adjacent said side walls and having outside plates,

said pull and drag bolts are replaceably mountable in said tread-plates and are adaptable respectively to either said first or second system, and

said tread-plate rollers of said first system and said fork-shaped tread-plate resting elements of said second system of all said tread-plates are respectively aligned with each other parallel to the direction of travel of the tread-plates arranged between said side walls of said tread-plates and said inside plates of respective of said traction-chains.

4,645,060

DEVICE FOR SUPPLYING TUBES IN A POSITIVE MANNER TO THE PROCESSING LINE OF TUBE-FILLING MACHINES, AND PARTICULARLY TUBE-FILING AND BOXING MACHINES

Ivo Argazzi, Pianoro Nuova, Italy, assignor to I.M.A. Industria Macchine Automatiche S.p.A., Bologna, Italy

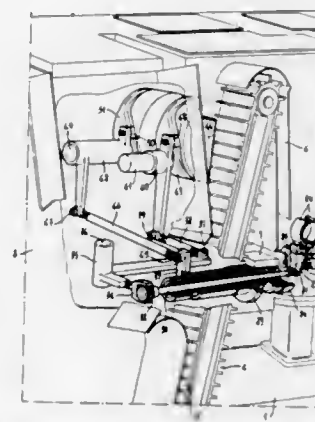
Filed Jun. 27, 1985, Ser. No. 749,879

Claims priority, application Italy, Jul. 18, 1984, 3529 A/84

Int. Cl.⁴ B65G 25/00

U.S. Cl. 198—409

1 Claim



1. A transfer device for supplying crushable-type preformed tubes having bases thereof open toward a processing line lying

along a transport path of a tube-filling machine, said tubes being supplied to said transfer device in individual sequence and horizontally disposed by a rocker member having a horizontally alternating reciprocable movement, and a plurality of take-up members uniformly spaced along said transport path, each respective take-up member being formed by an upturned cup-shaped element having longitudinal slots formed around the periphery thereof and defining resilient fingers for holding a respective tube in a vertical orientation, said transfer device comprising:

a horizontal support member disposed adjacent said rocker member;

a rotary body supported horizontally and coaxially in said support member in an angularly reciprocable rotary manner;

a horizontally disposed rod slidably engaged in an axially reciprocable manner coaxially within said rotary body; gripper means formed by a pair of opposed jaws in mutually meshing engagement pivotally mounted on said rotary body and reciprocably movable toward and away from one another, one of said pair of jaws being articulated to said reciprocable rod; and

actuation and control means for operating said transfer device whereby said jaws are opened by the axial movement of said reciprocable rod when said rocker member positions a horizontally disposed tube in registration with said gripper means and said gripper means is rotated by said rotary body into a position with said jaws thereof flanking said horizontally disposed tube, an axial movement of said reciprocable rod closing said jaws on said tube, and an angular rotation of said rotary body transferring said horizontally disposed tube from said rocker member into a vertical position with the base thereof upwardly open toward said processing line and the tube being inserted into a respective take-up member by said gripper means, the respective jaws of said gripper means each having a semicircular shape open toward one another for gripping a respective cylindrical tube in an even manner, said jaws being in meshing engagement with one another whereby movement of the one jaw causes movement of the other jaw, the opening movement of said jaws being opposed by a spring.

4,645,061

MACHINE FOR STACKING NESTABLE EXTRUDED CANS

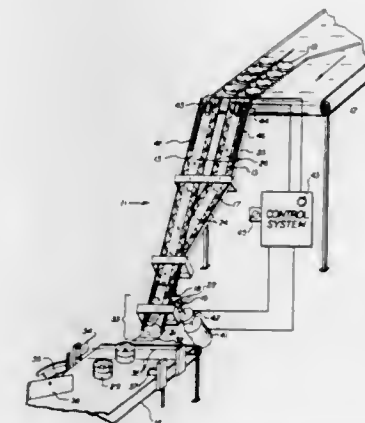
Hubert E. Welch, 1941 Babil St., Ceres, Calif. 95307

Filed Feb. 26, 1985, Ser. No. 705,605

Int. Cl.⁴ B65G 57/06

U.S. Cl. 198—420

9 Claims



1. A machine for stacking nestable containers comprising in combination,

a pair of inclined chutes each having a sliding platform, two side rails, and a top rail which, in combination, define two horizontally parallel channels at an elevated level each shaped to receive one container at a time, the channels becoming vertically parallel, upper and lower chutes at a lower elevation, the chutes bridging from the elevated level at their upper ends to a lower level at their lower ends, whereby a stream of the containers at the elevated level is received and divided into two single file container streams which are positioned vertically parallel one above the other at a lower elevation as the containers slide down the chutes from the elevated level toward the lower level; collocating means located proximate the lower ends of the chutes for positioning the containers sliding down the chutes in vertically registering pairs, and discharging each vertically registering pair of containers from the chutes to the lower level, the sliding platform of the upper chute having a lower end with a concave scalloped configuration at a point less than one container diameter upstream from the collocating means;

resilient means for urging each vertically registering pair of containers into nested engagement as each container sliding down the upper chute slides off the concave scalloped lower end of the sliding platform of the upper chute;

accelerating means receiving each pair of vertically nested containers as the containers are discharged from the chutes accelerating and conveying each pair of nested containers onto the lower level for establishing spacing between the vertically nested containers on the lower level, whereby, a stream of single containers received at the elevated level are stacked and spaced apart in nested pairs at the lower level.

4,645,062

TRANSFER APPARATUS FOR FLAT ITEMS

Georg Kopp, Uhriesen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

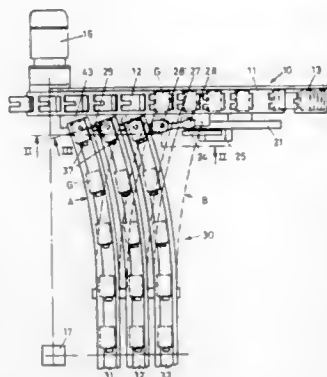
Filed May 8, 1985, Ser. No. 731,957

Claims priority, application Switzerland, May 9, 1984, 2274/84

Int. Cl.⁴ B65G 47/68, 19/28

U.S. Cl. 198—448

7 Claims



1. In an apparatus for transferring flat items, in a substantially lying orientation, from a first conveyor to a second conveyor; said first and second conveyors having respective first and second conveying directions oriented to one another at an angle other than zero; means for transferring said items from said first conveyor to said second conveyor at a location of transfer; the improvement wherein said first conveyor comprises a guide plate and a counter plate each having a length dimension extending parallel to said first conveying direction; said guide plate and said counter plate being horizontally spaced from one another transversely to said first conveying direction and being edgewise upright oriented; further wherein

said guide plate has a top item supporting edge face and said counter plate has top wall portions defining a trough extending parallel to said first conveying direction; said top item supporting edge and said trough together forming a first item supporting surface defining a first plane; and a plurality of separate item carrying elements forming part of said second conveyor and spaced from one another parallel to said second conveying direction for advancing the items thereon; each said item carrying element having a second item supporting surface defining a second plane substantially identical in inclination for all the item carrying elements; the second planes being at least approximately parallel to said first plane at least in said location of transfer.

4,645,063

CIGARETTE TRANSFER DEVICE

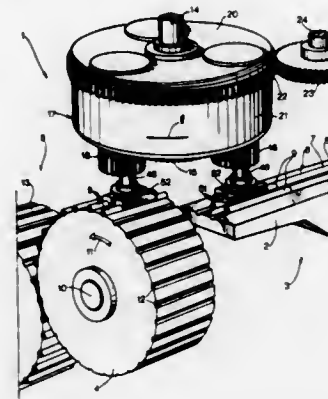
Enzo Seragnoli, Bologna, Italy, assignor to G.D. Società per Azioni, Bologna, Italy

Continuation of Ser. No. 439,383, Nov. 5, 1982, abandoned. This application Jun. 17, 1985, Ser. No. 745,813

Claims priority, application Italy, Nov. 24, 1981, 49764 A/81 Int. Cl.⁴ B65G 29/00, 47/86

U.S. Cl. 198—450

5 Claims



1. Apparatus for transferring at least a pair of cigarette rods from a take-up position at the end of an output bed (2) of a cigarette-making machine to a release position above the top of an input drum (4) of a filter fitting machine (5) comprising: a cylindrical casing (19,20,21) mounted on a fixed central shaft (14) to rotate freely relative to the shaft; means (22,23) to rotate the casing; cigarette transfer means (16,45) comprising a cylindrical body (27) rotatably mounted in a circular hole in the casing, a head shaft extending through the cylindrical body parallel to but off set from the axis of the cylindrical body, and a head on the lower end of the head shaft for releasably receiving at least a pair of cigarette rods, and means to rotate the head shaft in the cylindrical body, when the casing rotates, to thereby turn and translate the head along a transfer path passing through the take-up position to the release position; head level variation means (42) comprising means to axially displace the cylindrical body together with the head shaft as the head shaft rotates therein to impart movement to the head in a direction perpendicular to a plane (6) defined by the cigarette rods (7 or 8) as the head moves along the transfer path from the take-up position to the release position; the transfer means and the level variation means being independently operable of each other; and the transfer path being substantially parallel to a direction of advance of the said rods along the bed (2) at the take-up position, and being substantially perpendicular to the said direction of advance in the said release position.

4,645,064

SCREW CONVEYOR

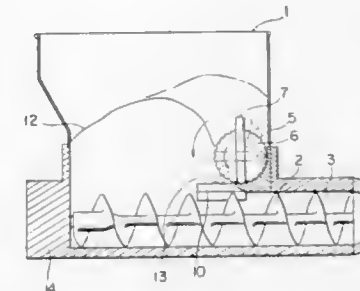
Torahiko Hayashi, 3-4, Nozawa-machi, Utsunomiya-shi, Tochigi-ken, Japan

Filed Dec. 16, 1985, Ser. No. 809,581

Claims priority, application Japan, Dec. 17, 1984, 59-191161 Int. Cl.⁴ B65G 47/19

U.S. Cl. 198—533

4 Claims



1. A screw conveyor comprising a housing, at least one screw horizontally disposed in the housing, and a hopper mounted on the housing, the housing being provided with an outlet at the delivery end of the screw, characterized by at least one driven roller disposed horizontally above the screw and inside said hopper and adjacent a wall of said hopper, at least one vane, having a length greater than the diameter of said roller, received slidably in at least one slot bored along the longitudinal axis of the roller and across the circular cross section thereof, and a guide member provided on said wall and with an arcuate face fitting a portion of the periphery of the roller and at least an arm extending generally horizontally from the lowest point of the guide member and said at least one vane being urged by said arm to retract into said roller on the side of said roller adjacent said arm and to simultaneously project from said roller on the opposite side of said roller.

4,645,065

APPARATUS FOR FEEDING WASTE TIRE CHIPS

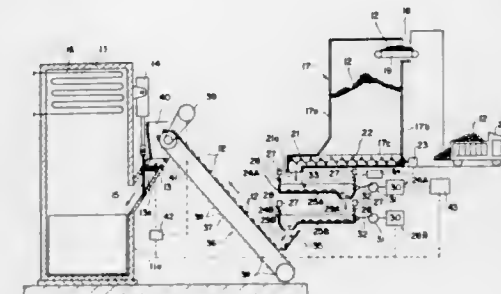
Yukio Tomita, Osaka; Takayuki Wakabayashi, Takatsuki; Mitsunobu Matsuda, Kawasibi; Nobuji Shibamoto, Nara, and Yoshihiro Yamashiro, Takatsuki, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Mar. 4, 1985, Ser. No. 707,910

Claims priority, application Japan, Aug. 11, 1984, 59-123366 Int. Cl.⁴ B65G 43/08

U.S. Cl. 198—573

3 Claims



1. An apparatus for feeding waste tire chips comprising a container having a discharge outlet at its bottom portion for containing waste tire chips, a screw feeder provided at the bottom of the container for delivering the chips from the container through the discharge outlet, vibrating feeders arranged in a plurality of stages and at least including an uppermost vibrating feeder for receiving the chips delivered from the container and delivering the chips by vibration and a low-

ermost vibrating feeder for receiving the chips delivered from the uppermost vibrating feeder or from an immediately preceding vibrating feeder and delivering the chips by vibration, a transfer conveyor for transporting the chips delivered from the lowermost vibrating feeder to a feed chute provided for an incinerator, a first sensor for detecting the quantity of chips received by the uppermost vibrating feeder, first control means for controlling the screw feeder in response to an output signal from the first sensor, a second sensor for detecting the quantity of chips within the feed chute, second control means for controlling at least the lowermost vibrating feeder and the transfer conveyor in response to an output signal from the second sensor, and third control means for intermittently operating the uppermost vibrating feeder in timed delivery periods and for discontinuing such intermittent operation in response to an output signal from the second sensor.

4,645,066

ADJUSTABLE CONVEYOR ASSEMBLY FOR REGULAR PERIODIC TRANSVERSE MOVEMENT OF A LONGITUDINALLY MOVING CONVEYOR BELT

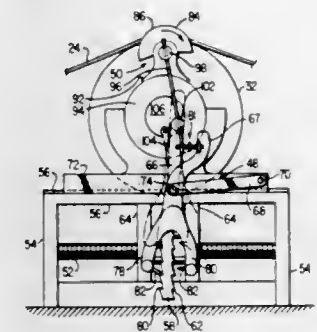
Walter L. Richardson, Pointe Claire, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 8, 1985, Ser. No. 752,749

Int. Cl.⁴ B65G 21/10

U.S. Cl. 198—631

4 Claims



1. A conveyor assembly comprising: a conveyor belt and a plurality of conveyor belt supporting rollers, one of said rollers being movable to change the angle subtended between its axis and the direction of movement of the belt to place a sideways force on the belt and cause its displacement transversely while it is being driven, roller moving means for regularly periodically moving the roller in one direction to change the subtended angle from a first extreme angle at one side of a line normal to the direction of movement of the belt to a second extreme angle at the opposite side of said line normal to the direction of movement of the belt and then in the opposite direction to change said subtended angle from the second extreme angle to the first extreme angle so as to effect a regular periodic alternating transverse movement of the belt from one to another of two extreme positions of lateral displacement, the roller moving means comprising: a screw-threaded spindle; a ratchet nut threaded onto the spindle and having ratchet teeth on each of two oppositely facing radial surfaces; a linkage comprising a first link and a second link connected to the first link to pivot together with the first link about a common pivot point, the second link having two arms, one arm extending along each radial surface of the nut, the linkage being pivotable between two actuating positions and in each actuating position, an arm being actably connected to the ratchet teeth on one radial surface to rotate the ratchet nut in one direction to move it in an appropriate direction along the threaded spindle with each actuating position of the linkage effecting an oppo-

site directional movement of the ratchet nut from the other actuating position, one end of the roller transversely movable with its bearing upon a support together with the ratchet nut as it moves along the threaded spindle; linkage adjustment means operable to adjust the relative positions of the first link and the second link around the common pivot point to thereby adjust the degree of driving engagement of the second link with the ratchet nut; and a triggering means operable upon the belt reaching a certain location during its movement towards either extreme position of lateral displacement for pivoting the linkage between its two actuating positions to change the direction of rotation of the ratchet nut and hence the direction of movement of the roller.

4,645,067

SCREW CONVEYOR

Bengt-Göran George, Enköping, Sweden, assignor to AB Nordstroms Linbanor, Enköping, Sweden

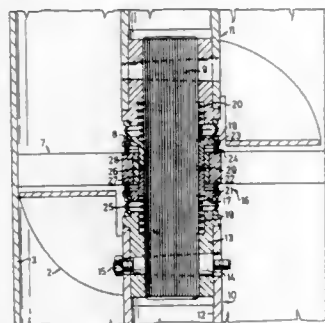
Filed Feb. 11, 1986, Ser. No. 828,260

Claims priority, application Sweden, Feb. 15, 1985, 8500729

Int. Cl.⁴ B65Q 33/32

U.S. Cl. 198—666

8 Claims



1. A screw conveyor where a conveyor screw is arranged in a casing, and where there is at least one support means fastened to the casing between the ends of the conveyor screw, for mounting the conveyor screw via a bearing sealed by a sealing means, the conveyor screw shaft having a reduced diameter at the support means, characterized in that the sealing means includes two sealing devices mounted nonrotatably, but axially displaceable on the shaft of the conveyor screw, the sealing devices each being arranged to press axially, from opposite directions, with a sealing portion sealingly against a corresponding sealing portion, respectively, on the support means, in that the sealing portions are situated radially outside the bearing and preferably have a diameter substantially equal to the normal diameter of the shaft, and in that each sealing device, at its end facing away from the support means, is in contact with a sealing element, which in turn at its end facing away from the support means connects to the shaft, and has an outside diameter substantially equal to the normal diameter of the shaft.

4,645,068

BONDING OF HIGHLY WEAR-RESISTANT PLATES, PARTICULARLY CERAMIC PLATES, TO A CARRIER TO BE PROTECTED AGAINST WEAR

Klaus-Dieter Partz, Leichlingen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Dentz Aktiengesellschaft, Fed. Rep. of Germany

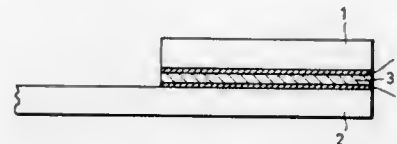
Filed Jun. 13, 1985, Ser. No. 744,256

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1984, 3422097

Int. Cl.⁴ B23K 1/12; B65G 33/26

U.S. Cl. 198—676

5 Claims



1. An article of manufacture comprising in combination: an outer highly wear-resistant ceramic plate for forming the outer edge surface of a helix of a screw conveyor; an inner metal helix carrier member for forming the supporting structure for said plate; and an intermediate composite joining layer coextensive with the facing surfaces of said inner member and said wear-resistant plate comprised of metal particles thermally embedded between solder foils and bonded to the facing surfaces of said plate and carrier member.

4,645,069

VACUUM ACCUMULATING CONVEYOR

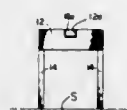
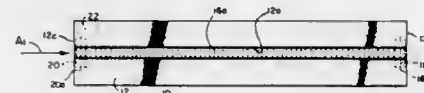
Christer A. Sjogren, Miami, Fla., assignor to Quipp, Incorporated, Miami, Fla.

Filed Nov. 12, 1985, Ser. No. 797,216

Int. Cl.⁴ B65G 17/46, 15/58

U.S. Cl. 198—689.1

22 Claims



1. Apparatus for controlling the movement of bundles, packages, and the like along a predetermined path comprising: a conveying surface including first and second elongated members arranged in spaced, substantially parallel fashion defining an elongated gap space therebetween; the top surfaces of said members being substantially flat and lying in a common plane; a closed loop conveyor belt having an elongated upper run positioned within said gap, the top surface of the upper run of said belt lying a spaced distance below the top surface of both of said elongated members; means for continuously moving the upper run of said belt along said gap; a plurality of chambers arranged end-to-end at spaced intervals beneath said belt upper run; means for creating a vacuum in selected ones of said chambers;

said chambers being open along their upper ends, said belt upper run moving over the open ends of said chambers; said belt being designed to freely pass air therethrough to cause the surface of a bundle positioned over a vacuumized chamber and resting upon said low friction surfaces to be drawn against said moving belt whereby said belt moves said bundle over each vacuumized chamber and whereby the bundle is halted when the belt passes over a chamber which is not vacuumized.

4,645,071

IDLER ROLL ASSEMBLY

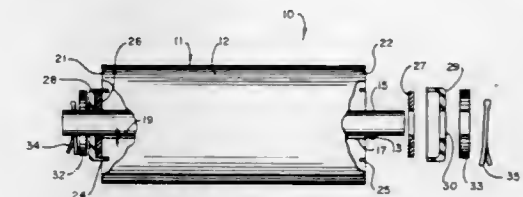
Danny E. Faulkner, Atlanta, and William R. Little, Decatur, both of Ga., assignors to Alpha Manufacturing, Inc., Tucker, Ga.

Filed Sep. 24, 1984, Ser. No. 653,137

Int. Cl.⁴ B65G 39/10

U.S. Cl. 198—842

1 Claim



4,645,070

DUAL BEND CONVEYOR

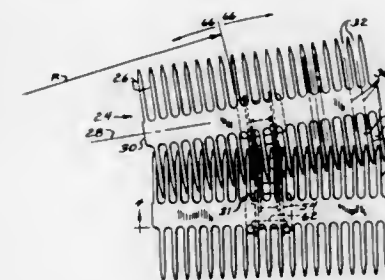
Ronald F. Homeier, Plainfield, Ind., assignor to PT Components, Inc., Indianapolis, Ind.

Filed Nov. 7, 1984, Ser. No. 668,897

Int. Cl.⁴ B65G 17/06, 21/22, 39/20

U.S. Cl. 198—831

11 Claims



1. An endless conveyor having a generally flat, continuous carrying surface adaptable for bending in vertical and horizontal planes including a centrally disposed guide chain for supporting said carrying surface wherein said guide chain comprises a plurality of pin links pivotally connected to roller links for engaging teeth of sprockets oriented normally to said carrying surface, reduced diameter pin means providing articulation of the roller links in the plane of the carrying surface, said pin means extending outwardly from the pin links to provide exposed pin link end portions, a plurality of non-metallic top plates removably secured to the guide chain, tab means extending downwardly from said top plates substantially intermediate their ends, notch means formed at a lower end of said tab means, said notch means being adaptable to receive said pin link end portions for securing said top plates to said chain, said top plates each comprises a base member, closely spaced, equal length laterally flexible finger members extending outwardly from said base member in a direction substantially normal thereto and adaptable to flex laterally during bending of said carrying surface in a horizontal plane, said finger members having unobstructed narrow spaces therebetween, said narrow spaces between said fingers being shaped to receive in closely aligned relationship finger members of a like constructed top plate, said finger members being disposed in substantially equal numbers on either side of the base member, each of said fingers having a longitudinal axis extending from one side of the base member to substantially bisect a respective space between finger members disposed on the other side of the base member, said top plates when arranged tandemly on the guide chain having their finger members interlaced to form the conveying surface.

1. An idler roll assembly, comprising: elongated shaft member;

a single, elongated cylindrical roller mounted on said shaft member, said cylindrical roller defining an outer peripheral surface, a left end wall, a right end wall and an inner peripheral surface, said inner peripheral surface defining a cylindrical passage of uniform diameter throughout extending the full length of the said roller from end wall to end wall; said roller, including said outer peripheral surface and said inner peripheral surface, comprising a solid unit formed of ultra-high molecular weight high density polyethylene resin;

said shaft member extending through said cylindrical passage of said roller and protruding from both ends of said roller, said roller being rotatable about said shaft member, as about an axle; said shaft member making direct contact with said inner peripheral surface of said roller throughout the entire length of said passage;

said cylindrical passage of said roller defining an inside diameter ranging from six percent (6%) to twenty-eight percent (28%) greater than the outside diameter of said shaft member; and

retention means held on each end of said shaft member for retaining said shaft member within said passage of said roller,

whereby said roller rotates about said shaft member without the presence of added bearing, bushings or lubricants; and a seal assembly located at each end of said shaft member for sealing entry to said passage of said roller, said seal assembly comprising a flexible gasket member fitting tightly about said shaft member at each end of said shaft member, an annular groove formed in each end wall of said roller circumscribing the opening to said passage, a rigid seal cup press fitted into each annular groove holding said gasket members pressed against the respective said end walls, each said seal cup comprising a central opening through which said shaft member protrudes, said central opening defining an inside diameter sufficiently greater than the diameter of said shaft member to allow up-and-down movement of said shaft member within said central opening, whereby said shaft member and one of said gasket members combine to seal each opening of the roller passage.

4,645,072

CONTAINER CARRIER

William C. Lemon, P.O. Box 6064, Incline Village, Nev. 89450

Filed Nov. 13, 1984, Ser. No. 670,392

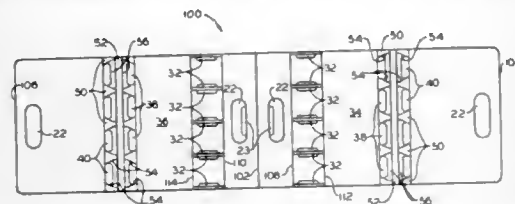
Int. Cl.⁴ B65D 75/00

U.S. Cl. 206—199

12 Claims

1. A container carrier formed from a unitary sheet of material comprising: a multi-layer central supporting panel forming an upper

portion a handle means to grasp said carrier and at a lower portion a first set of support legs;
 a top cover extending from opposite sides of said central panel and forming a plurality of apertures;
 a pair of side panels extending from said cover and forming in cooperation with said cover and central panel two rows of receptacles opening through said apertures and including at a lower portion a second set of support legs; and
 a lower support web connecting said central panel and side



panels at lower portions thereof, said support web comprising a plurality of longitudinally spaced transverse members forming retainer edges and a longitudinally extending support platform for each said receptacle interconnecting said members so that the central and side panels may be generally uprightly supported by said first and second set of legs and a container received in a said receptacle may be captured between said retainer edges and seated against said platform to clamp the containers between said central and side panels.

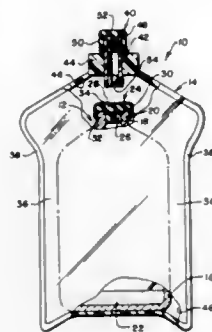
4,645,073
ANTI-CONTAMINATION HAZARDOUS MATERIAL PACKAGE
 Gerlof Homan, Olivette, Mo., assignor to Survival Technology, Inc.

Filed Apr. 2, 1985, Ser. No. 719,130

Int. Cl.⁴ A61J 5/00; B65D 25/02

U.S. Cl. 206—219

19 Claims



1. A package for enabling a user to mix a diluent with a hazardous material and then fill a syringe with the solution in such a way as to substantially prevent the hazardous material from entering the immediate atmospheric environment comprising

a vial including an open ended glass container, a hazardous material in said container, and an elastomeric stopper assembly disposed in sealing relation with the open end of said container for enabling the hazardous material to be sealingly contained therein, and
 a sealed bag enclosing the entire vial so as to provide exterior sealed containment for the vial in the event of unexpected failure of the container and elastomeric stopper assembly to sealingly contain said hazardous material, said hazardous material being in a form suitable to be readily dissolved by a diluent injected from a diluent containing

syringe into said container through a needle extended through said elastomeric stopper assembly,
 said hazardous material being in an amount such that when dissolved in a proper amount of diluent within said container the solution has a volume substantially less than the sealed interior volume of said container,
 said bag being formed of plastic sheet material and having septum means therein operable to sealingly receive a needle therethrough and to provide a seal in response to the needle being withdrawn therefrom,
 said vial being sealed within said bag so as to form a space exteriorly of the vial which is controlled by the bag and into which access can be obtained by extending a needle of a syringe through said septum means,
 the plastic sheet material of said bag being sufficiently transparent as to enable a user to move a needle of a diluent containing syringe through (1) said septum means (2) an extent of said controlled space and (3) said elastomeric stopper assembly so that the syringe may be thereafter operated to inject the diluent into the container thus creating an increase in gas pressure within said container,
 said controlled space being operable to receive any hazardous material in the form of aerosol or droplets that may pass outwardly through said elastomeric stopper assembly as a result of the withdrawal of the syringe needle therefrom and the increased interior gas pressure created within said container as aforesaid,
 the controlled space being initially devoid of any hazardous material or diluent therefor and having a volume sufficient to enable the pressure therein to remain near atmospheric pressure in the event of the escape of gas pressure from said vial container as aforesaid so that there is substantially no tendency for gas therein to cause hazardous material which may have passed into said controlled space to escape to the atmosphere when the needle is removed from said septum means.

4,645,074
SYSTEM FOR THE ORGANIZED STORAGE OF A PLURALITY OF RECORD CARRIERS
 Werner Gröske, Am Mühlgarten 21, D-8521 Spardorf, Fed. Rep. of Germany

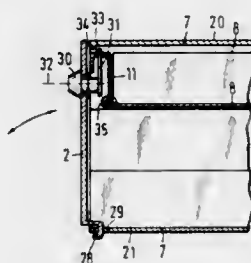
Filed Aug. 7, 1985, Ser. No. 763,434

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431814

Int. Cl.⁴ B65D 85/672

U.S. Cl. 206—309

9 Claims



1. In a system for the organized storage of a plurality of sheet or disk-type record carriers, such as diskettes or microfiches, having a container to hold a plurality of the record carriers wherein the container and carriers have corresponding indexing line markings, the improvements comprising:

(a) interlocking means on the container adapted to permit a plurality of containers to be stacked one upon the other and to interlock a plurality of containers in side-by-side arrangement;
 (b) a locking plate;
 (c) means hingedly attaching one edge of the locking plate to a container; and

(d) a security lock attached to the locking plate and adapted to engage a container, the security lock including a lock bolt which engages a projection formed on a front portion of a container to secure the lock plate in position.

4,645,075
CASSETTE HOLDER COMPRISING A PLURALITY OF COMPARTMENTS, EACH INTENDED FOR RECEIVING A MAGNETIC-TAPE CASSETTE

Piet Van der Lely, Knegsel, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

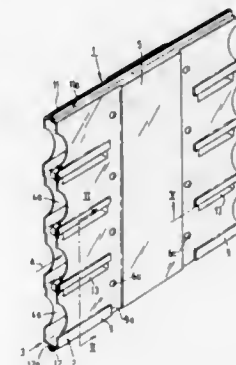
Filed Jun. 6, 1985, Ser. No. 741,987

Claims priority, application Netherlands, Jul. 19, 1984, 8402285

Int. Cl.⁴ B65D 85/672

U.S. Cl. 206—387

10 Claims



1. A cassette holder having a plurality of cassette compartments,
 each compartment being configured to receive a magnetic-tape cassette inserted therein, the cassette being of a type having two parallel substantially rectangular major walls, two short side walls and two parallel long side walls, said side walls being substantially perpendicular to said major walls; each major wall having a base surface, and a raised housing portion extending in a longitudinal direction adjoining one of said long side walls,
 each compartment having two parallel holder walls, each having an outer edge, said edges defining a cassette insertion opening; a guide channel formed in at least one of said holder walls extending from said opening in an insertion direction, said guide channel being arranged to guide the raised housing portion of a cassette when the cassette is inserted along said longitudinal direction into the compartment; a stop arranged to engage a cassette which is inserted fully into the compartment; and a clamping element projecting from an inner surface of a holder wall to clamp a cassette which has been inserted so as to engage said stop,

characterized in that the holder consists of two mirror-image portions formed of a plastic sheet material, said clamping elements formed by dimples in the sheet material, said each holder wall of each compartment has a guide channel and a clamping element formed therein, and said holder walls are mirror-symmetrical;
 at an end remote from the insertion opening, each guide channel has an end wall which forms said stop,
 each clamping element is disposed near an end of the compartment remote from the insertion opening, arranged such that, when one of said cassettes inserted into the respective compartment has a central surface recessed with respect to said major wall base surface, and an edge parallel to the cassette short wall between said central and base surface, the clamping element acts against and engages a portion of the respective major wall of the cassette

adjacent the short side wall remote from the insertion opening, behind said edge of the one cassette, and each holder comprises two rows of compartments, each row having its respective insertion openings in line, said rows being spaced from each other; and a raised flat central portion disposed on each side of the holder, said holder walls and flat central portions being substantially parallel.

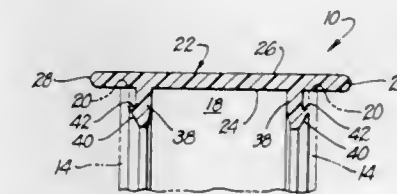
4,645,076
REEL COVER
 Donald E. Mock, San Dimas, Calif., assignor to Kirkhill Rubber Co., Brea, Calif.

Filed Sep. 3, 1985, Ser. No. 772,332

Int. Cl.⁴ B65D 85/66

U.S. Cl. 206—400

7 Claims



1. A reel cover for use in enclosing the periphery of a reel, said reel having aligned circular sides, said reel cover comprising:

an elongated cover strip of a flexible, self-supporting material, said cover strip having an under surface and an outer surface extending between side edges and first and second ends, said cover strip being formed from an elongated extruded strip having a uniform cross-sectional configuration throughout its length,
 said cover strip being sufficiently long so that when it is located around said reel a portion of said first end of said cover strip will overlie a portion of said first end of said cover strip with the under surface of said portion of said first end being located against the outer surface of said portion of said second end,
 parallel ridge means for engaging said sides of said reel located on said undersurface of said cover strip and extending between said portions of said cover strip,
 said portion of said second end including opening means extending there through between its outer and under surfaces, said opening means being spaced from said second end,
 said portion of said first end including projection means having the same cross sectional configuration as said ridge means extending from its under surface, said projection means being capable of being fitted within said opening means of said portion of said second end so as to hold said ends with respect to one another when said reel cover is used on said reel, and said opening means being formed by the removal of material from said extruded strip so as to separate said projection means from said ridge means.

4,645,077
RECEIPT HOLDER
 Brenda C. McLaughlin, and John W. McLaughlin, both of 13834 Hollowgreen, Houston, Tex. 77082

Filed Aug. 26, 1985, Ser. No. 769,121

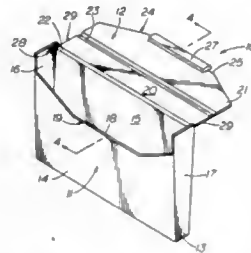
Int. Cl.⁴ B65D 85/48

U.S. Cl. 206—449

6 Claims

1. A container for use in holding receipts or the like comprising
 a hollow body formed of contiguous bottom, front, rear, opposed side panels, and a cover extending from said rear panel beyond said side panels, said hollow body and said cover molded together to form an integral unit,

said cover hinged to the top of said rear panel by a first integral hinge and divided into contiguous top and front portions by a second integral hinge spaced parallel to the integrally hinged juncture of said cover with said rear panel, said cover pivotal about said first integral hinge at said rear panel and said top and front portions thereof pivotal about said second integral hinge, said first and second integral hinges spaced apart and disposed relative to the top edges of said side panels such that when said cover is in the closed position said cover top portion will be received between said side panels of said body and flush with the top edges of said side panels, a retaining tab integral with said cover front portion offset parallel inwardly adjacent the leading edge thereof and extending a distance therealong to engage the interior



surface of said front panel of said body when said cover is in the closed position and disengaged therefrom upon upward and pivotal outward movement, a small concave detent formed in each side edge of said cover top portion, a small protuberance extending laterally inward from the top portion of each said side panel, said protuberances biased received within said detents when said cover is in the closed position and released from said detents upon pivotal upward movement of said cover top portion, a lifting tab integral with said cover front portion extending perpendicularly outward from the leading edge thereof for moving same upward and pivotally outward to disengage said retaining tab from said front panel interior surface and said cover to the open position, and attaching means adapted to be secured to the exterior of said container for releasably attaching same to other objects.

4,645,078

TAMPER RESISTANT PACKAGING DEVICE AND CLOSURE

Ellis M. Reyner, 1050 George St., Ste. 16 H, New Brunswick, N.J. 08901

Filed Mar. 12, 1984, Ser. No. 588,897

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.⁴ B65D 81/20, 85/86; G01L 19/12

U.S. Cl. 206—524.8

6 Claims



1. In a tamper-resistant package type, a flexible enclosure means fitted with closure means holding at least one flowable material including the product, the internal pressure in said

flexible enclosure means is at a predetermined pressure lever higher than that of its surrounding atmosphere, means associated with said package for manifesting evidence in the event that the contents of the inner enclosure is tampered with through at least one aperture made in said flexible enclosure means, wherein said closure means includes tamper-indicating means.

4,645,079

SHIPPING AND STORING SUPPORT

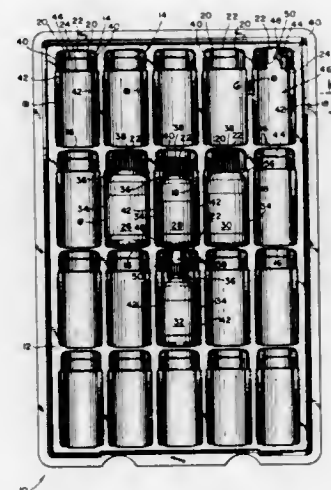
Robert C. B. Hill, Greenville, N.C., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 9, 1984, Ser. No. 659,202

Int. Cl.⁴ B65D 5/50, 85/62

U.S. Cl. 206—563

8 Claims



1. A shipping and storing support for housing a plurality of differently shaped articles in a recess comprising: a base including at least one recess of a size sufficient to receive selectively and frictionally therein articles at least partially in their supine position; said recess having a plurality of internal contours for selectively receiving therein, at different times, a plurality of articles of different cross-sectional diameters; some of said internal contours being of the same size as a portion of the external dimensions of the differently shaped articles; said recess including a longitudinal axis; and at least three of said internal contours being generally parallel to said axis to accommodate different articles of different cross-sectional diameters.

4,645,080

METHOD AND APPARATUS FOR GRADING NON-ORIENTING ARTICLES

Stephen D. Scopatz, Three Rivers, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 2, 1984, Ser. No. 626,577

Int. Cl.⁴ B07C 5/342

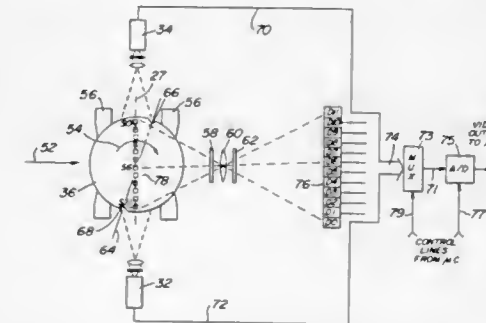
U.S. Cl. 209—558

13 Claims

1. Apparatus for processing items such as fruit and the like comprising:

- first means for examining a substantial portion of the surface of the item and developing a plurality of discrete data signals representative of a surface condition of the item;
- second means for examining only selected portions of the surface of the item not examined by the first means and developing discrete data signals representative of the orientation of the item being examined by the first means;
- third means for generating preliminary process data representative of the condition of the item's surface exam-

ined by the first means based upon the plurality of data signals developed by the first means and for modifying the preliminary process data to account for the orientation of



the item while examined by the first means based upon the plurality of data signals developed by the second means and thereby provide final corrected process data representative of the surface condition of the item.

4,645,081

ROTATABLE AND VERTICALLY ADJUSTABLE SINGLE-COLUMN PRESENTATION STAND

Bernd Korth, Weil am Rhein, Fed. Rep. of Germany, assignor to Protoned B.V., Amsterdam, Netherlands

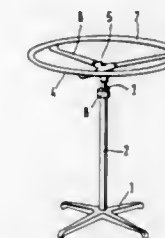
Filed Oct. 28, 1985, Ser. No. 792,304

Claims priority, application Switzerland, Nov. 14, 1984, 5450/84

Int. Cl.⁴ A47F 5/02

U.S. Cl. 211—196

8 Claims



1. Rotatable and vertically adjustable single-column presentation stand having a vertical tube (2) held on a supporting base (1), an extension column (3) which is rotatable in the vertical tube (2), is supported on a radial and axial pivot bearing device (11, 14) and a height-fixing device and has an article-supporting arrangement (4) at its upper end, and having a guide device (9, 30) centering the extension column (3) in the vertical tube (2), characterized in that the pivot bearing device and the height-fixing device consist of a support flange (11) fixed to the upper end of the vertical tube (2) and having an annular bearing surface (13), a bearing ring (14) supporting the extension column (3) on the support flange (11) via a detachable coupling element (15), and a housing (16) gripping around the coupling element (15), the support flange (11), the bearing ring (14) and the upper end of the vertical tube (2), with the housing (16) being engageable in rotational relationship via the coupling element (15), and an annular flange (19) connected to the housing (16) being in engagement with the support flange (11) in such a way that there is a positive connection between the vertical tube (2) and the extension column (3) when the coupling element (15) is engaged.

4,645,082

MEANS FOR SUSPENDING A SKID PAN FROM A WINCH MOUNTED ON A TRACTOR

Johannes Sandvik, Stokke, Norway, assignor to Elkem a/s, Oslo, Norway

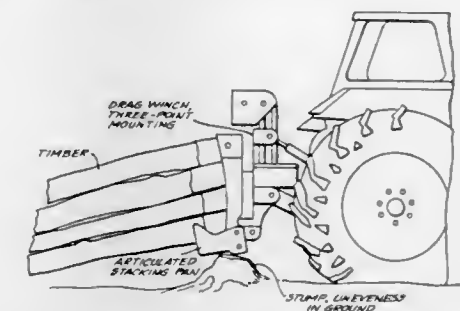
Continuation of Ser. No. 567,570, Jan. 3, 1984, abandoned. This application Oct. 30, 1985, Ser. No. 793,490

Claims priority, application Norway, Jan. 19, 1983, 830165

Int. Cl.⁴ B66C 23/00

U.S. Cl. 212—141

5 Claims



- An apparatus for skidding logs comprising:
 - a winch frame vertically mounted on a vehicle, capable of raising an end of a log prior to skidding and maintaining the end of the log in the raised position while skidding;
 - a skid pan pivotally mounted on said winch frame, said skid pan hanging in a generally vertical direction off the ground when said log is in said raised position during said skidding and said skid pan being capable of pivoting rearwardly and upwardly when said skid pan engages an obstacle while skidding said log; and
 - stop member mounted on said winch frame, said stop member preventing said skid pan from swinging forwardly and upwardly in the direction of said vehicle.

4,645,083

OVERHEAD TRAVELLING CRANE FOR POWER GAS TURBINE BAYS

Costantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

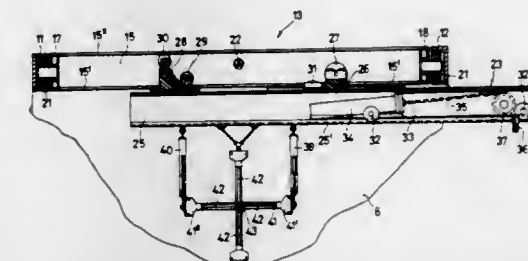
Continuation of Ser. No. 458,893, Jan. 18, 1983, abandoned. This application Dec. 6, 1985, Ser. No. 805,417

Claims priority, application Italy, Feb. 5, 1982, 19470 A/82

Int. Cl.⁴ B66C 5/04, 17/06

U.S. Cl. 212—210

4 Claims



- An overhead travelling crane positioned about the periphery of a power gas turbine bay defined by a length and a width, comprising:
 - two runways affixed to the top of the bay, extending along the length of the bay and on either side of the bay;
 - a first main load-bearing trolley extending along the width of the bay and being supported at either end by said two runways on running wheels so as to enable said first trolley to traverse the length of the bay;

- (c) a second winch trolley having load bearing cables and slidably supported on two pairs of running wheels within a third trolley, said third trolley being parallel to and slidably supported along said first main load-bearing trolley;
- (d) means for raising and lowering a load attached to said load bearing cables of said second winch trolley;
- (e) a diagonally projecting hooking means mounted to said first main load-bearing trolley, said hooking means comprises a cross-shaped hooking member having the ends of its two horizontal arms respectively hinged to the ends of two connecting rods, the other ends of which are hinged to a support block fixed to a channel beam mounted on said first main load-bearing trolley, said connecting rods being retained in a predetermined angular position by corresponding length-adjustable tie rods hinged between said connecting rods and said support block, and a centering system comprising two length-adjustable tie rods being hinged between said support block and the upper end of the vertical arm of said cross-shaped member.

4,645,084

ROBOT ARM

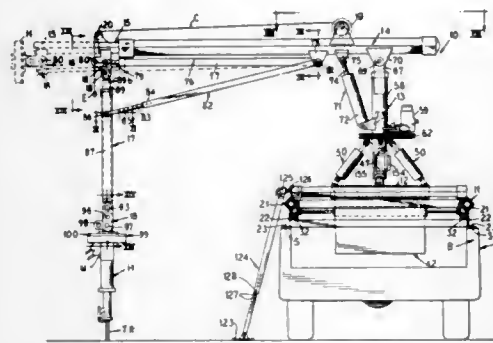
Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.

Filed Feb. 21, 1985, Ser. No. 704,047

Int. Cl.⁴ E21C 5/00

U.S. Cl. 212—271

30 Claims



1. A boom assembly controlled from a portable station to hold, accurately position, and downcrowd a powered tool which comprises a base adapted to be mounted on the ground or on a truck, an upstanding rotatable pedestal supported on said base, a boom arm pivoted on said pedestal for swinging in a vertical plane and for rotating with said pedestal to swing in a horizontal plane, an extension arm telescoped in said boom arm, an extendible forearm suspended from said extension arm, a power tool mounting on said forearm, fluid pressure actuated means rotating said pedestal, tilting said boom arm on said pedestal, extending and retracting said extension arm, and extending said forearm to downcrowd the power tool mounting, and a manually actuated unit selectively controlling flow of hydraulic fluid to and from said fluid pressure actuated means.

4,645,085

METHOD OF ENHANCING RIGIDITY IN A RAILWAY CAR COUPLER KNUCKLE

Richard M. Hanula, Lyndhurst, and Fred C. Kulieka, Jr., Tallmadge, both of Ohio, assignors to National Castings, Inc., Cleveo, Ill.

Filed Apr. 8, 1985, Ser. No. 720,797

Int. Cl.⁴ B61G 3/00

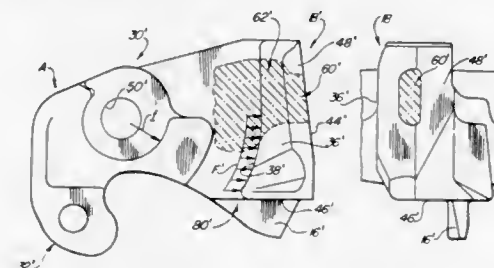
U.S. Cl. 213—155

4 Claims

1. A method for enhancing rigidity in a rail car coupler knuckle having integrally formed nose, hub, and tail portions and wherein at least said tail portion must be cored from the terminal end thereof toward said hub portion to form a hollow core for reducing the coupler weight toward a predetermined

acceptable level, said tail portion including at least a first pulling lug defining a pulling surface generally laterally spaced from the end face of said terminal end and adapted to receive a pulling force over a section thereof from a first end at a locking face toward a second end spaced therefrom, and wherein said locking face is adapted to receive a component of the pulling force, said method comprising the steps of:

- (a) determining the length of said pulling surface from said first end to said second end along which a pulling force will be operative when the knuckle is placed into use;



- (b) locating a core support aperture in the end face of said terminal end spaced from said locking face and in communication with said tail portion core in such manner that at least a major portion of said aperture is spaced remote from that section of said pulling surface which is adapted to receive a pulling force; and
- (c) configuring that portion of said hollow core in that portion of said tail portion intermediate said end face and said pulling surface so that at least a major portion thereof is spaced remote from that section of said pulling surface which is adapted to receive a pulling force.

4,645,086

CLOSURE DEVICE FOR A CONTAINER

Karl-Heinz Rosenthal, Reichshof, Fed. Rep. of Germany, assignor to Bielsteiner Verschluss-technik GmbH, Gummersbach, Fed. Rep. of Germany

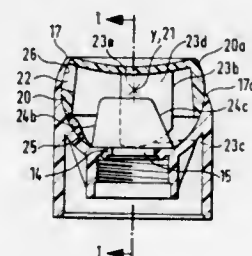
Filed Sep. 27, 1985, Ser. No. 781,253

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1984, 3435782

Int. Cl.⁴ B67D 3/00

U.S. Cl. 215—235

19 Claims



1. A closure device made of plastic for a container for free-flowing substance, said closure device comprising a cap having a cover plate with a port, and a cap wall extending upwardly from said cover plate, said cap defining an upwardly open recess above said cover plate, and an upper edge at the upper edge of said cap wall, and a closure part, said closure part being pivotally supported about a pivot axis for movement between a closed position and an open position, and wherein one side of the closure part acts as an actuating member and the other side is provided with a laterally disposed outlet opening which, in the closed position of the closure part, is closed by the cap wall, with the closure part side which acts as an actuating

member being located in the closed position at a distance above said upper edge,

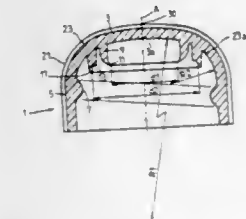
and wherein the closure part comprises a cap lid, said cap lid, at its periphery, having an encircling circumferential border which projects downwardly from said cap lid and into said open recess, the outer surface of said border of said cap lid being a curved spherical surface segment, the center of curvature of which spherical surface segment is located on the pivot axis of said cap lid intermediate the height of said spherical surface segment, and

said lateral outlet opening being located beneath the underside of the cap lid and in the upper portion of the height of said encircling lid border,

said encircling lid border being sufficiently expansive around said outlet opening to seal against said cap wall below said upper edge,

said cap wall, below said upper edge, being provided with an encircling, undercut recess portion formed in a cup-shape complementary to said cap lid border, wherein when the cap lid is inserted into said recess, said cap lid border seats against said cup-shaped recess and is pivotally guided in said cup-shaped recess,

and further comprising support and pivot means at the underside of the closure part, by means of which support and pivot means the cap lid is non-rotatably and pivotably supported relative to the recess base, and stop means provided in said recess against which said cap lid rests in its closed and opened positions.



4,645,088
PLASTIC CLOSURE FOR BOTTLES AND THE LIKE
Alberto Menichetti, Umiken, Switzerland, assignor to Gebrüder Hoffman AG, Thun, Switzerland

Filed Sep. 11, 1985, Ser. No. 774,974

Claims priority, application Switzerland, Oct. 5, 1984, 4788/84; Feb. 14, 1985, 663/85

Int. Cl.⁴ B65D 41/04

U.S. Cl. 215—329

9 Claims

1. A plastic cap for containers of the type including an externally threaded portion and an open end bounded by an annular end face with a predetermined outer diameter, comprising an end wall having a concave inner side and an elastic annular sealing lip extending from said inner side into engagement with the end face of the externally threaded portion of a container which carries the cap; an internally threaded tubular skirt arranged to surround the externally threaded portion whose end face is engaged by said lip; an annular intermediate portion integral with said end wall and said skirt, said concave inner side having a radius of curvature which equals or exceeds one-half of said predetermined outer diameter and said intermediate portion having a concave internal surface with a radius of curvature which is greater than one-tenth of the radius of curvature of said inner side; and a ring-shaped sealing element extending from the inner side of said end wall, surrounding said lip and having a contour at least substantially conforming to that of the adjacent part of the externally threaded portion of the container carrying the cap, said sealing element having a circumferentially complete groove with an outer diameter approximating said predetermined outer diameter.

4,645,087

TAMPER INDICATING DEVICE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

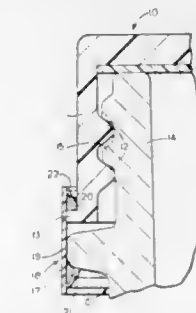
Continuation-in-part of Ser. No. 669,556, Dec. 17, 1984,

abandoned. This application Dec. 5, 1985, Ser. No. 805,025

Int. Cl.⁴ B65D 41/34

U.S. Cl. 215—254

16 Claims



1. A tamper indicating band in combination with a closure having a lower radially outwardly extending lip and a container having a radial flange beneath and adjacent said lip, said band comprising an annular molded plastic band of a height greater than the vertical spacing between the closure lip and the container flange, a first inwardly extending locking means integrally formed with the inner surface of said band adjacent one edge thereof and engaging the top of said closure lip, a second inwardly extending locking means integrally formed with the inner surface of said band adjacent the other edge thereof and adapted to engage beneath said container flange and said band spanning the space between the closure lip and container flange.

4,645,089

ADJUSTABLE OUTLET BOX MOUNTING

Larry L. Horsley, Lithia Springs, Ga., assignor to Martha Wilene Horsley, Lithia Springs, Ga.

Continuation-in-part of Ser. No. 524,571, Aug. 19, 1983, Pat.

No. 4,569,458. This application Apr. 22, 1985, Ser. No. 725,949

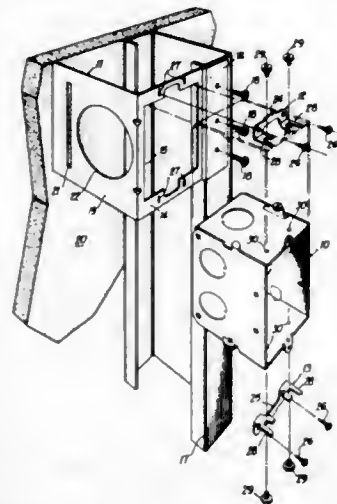
Int. Cl.⁴ H02G 3/08

U.S. Cl. 220—3.6

9 Claims

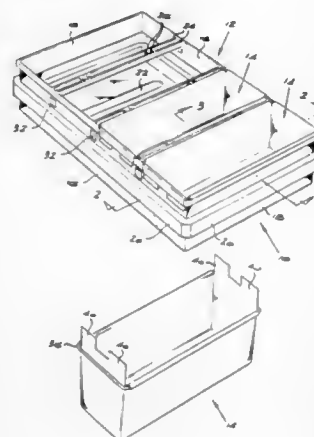
1. An adjustable outlet box mounting comprising a mounting bracket adapted for attachment to a vertical wall stud and including a front panel having an opening to receive an outlet box, said mounting bracket comprising an L-shaped bracket having a rearwardly extending stabilizing panel secured to said front panel and extending rearwardly therefrom and being adapted to contact the interior face of a rear dry wall section at the rear face of the vertical wall stud, an outlet box for placement in said opening, and means connected with the outlet box near its top and bottom for attaching the outlet box to said mounting bracket and for enabling horizontal adjust-

ment of the outlet box in a front-to-rear direction at the time of installation of the box so that the front of the box will be



substantially flush with a dry wall section at the front face of the stud to which the mounting bracket is attached.

4,645,090
BAKING UTENSILS
David Lewin, 24 Fulton Street, Industria West, Transvaal, South Africa
Filed Sep. 23, 1985, Ser. No. 779,219
Claims priority, application South Africa, Sep. 28, 1984, 84/7659; Dec. 21, 1984, 84/9994
Int. Cl.⁴ B65D 21/02
U.S. Cl. 220—23.4



1. A baking utensil for use in commercial baking operations, the utensil comprising a rigid frame which is in the form of a rectangular, open-topped box having a perforated bottom wall and side walls which extend transversely from the bottom wall to their upper edges which define the open top of the box, the side walls of the frame carrying projecting bumpers which extend around the frame, and at least one baking pan which is also in the form of an open-topped box having a bottom wall and side walls and which can be secured to, and supported by, the upper edges of the side walls of the frame with the bottom wall and side walls of the pan protected by the frame, the bottom wall and side walls of the pan being of steel sheet material which is no more than 0.4 mm in thickness, the internal baking surfaces of the bottom wall and side walls of the pan being non-stick in nature.

4,645,091

VALVE COVER FOR GAS STORAGE CYLINDER
Paul R. Madden, Whitehouse Station, N.J.; Andrew T. Kostanecki, Darien, Conn.; George Mileos, Riverdale, N.Y., and Michael J. Michno, Jr., Bridgewater, N.J., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Nov. 18, 1985, Ser. No. 798,982
Int. Cl.⁴ B65D 41/06

U.S. Cl. 220—85 P

19 Claims



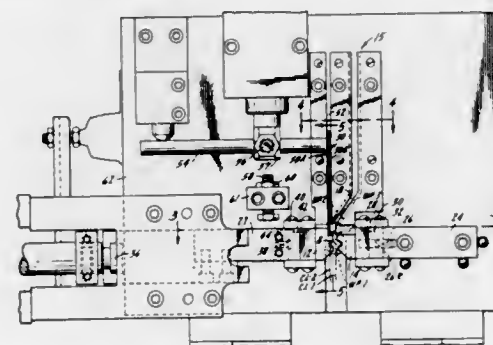
1. A valve cover for a gas storage cylinder comprising a support member for affixation to the cylinder and a cap member capable of matingly engaging the support member, said support member being ring-shaped and having at least one locking aperture along its circumference, said locking aperture comprising: an indentation along the inner circumference having a first depth communicating with a first channel perpendicular to the first depth and circumferentially adjacent the indentation, said first channel having a second depth communicating with a second channel perpendicular to the second depth and circumferentially adjacent said first channel and having a taper declining away from the first channel; said cap member having at one end a ring shape corresponding to that of the support member, said ring-shaped end having at least one tab of a size capable of insertion into said locking aperture, said tab having a taper on a bearing edge of the tab corresponding to the taper of the second channel.

4,645,092

MACHINE TOOLS
Adolph V. Klancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.
Filed May 6, 1985, Ser. No. 730,498
Int. Cl.⁴ B23Q 7/00

U.S. Cl. 221—239

3 Claims



1. A machine tool in which small easily distorted workpieces such as hollow pins, studs and the like disposed in a supply channel are advanced from a ready position therein to a pair of clamping jaws at loading station and from there to a work station, the latter located on a predetermined first center line, where a tapping, drilling, facing or like operation involving torque is performed thereon, comprising: a pair of opposed

workpiece clamping jaws for clamping a workpiece at the work station;

a first one of the jaws disposed slidably in a first jaw holder on one side of the work station and a first detent spring biasing the first jaw toward the second jaw at the work station;

the second jaw disposed in a second jaw holder on the other side of the work station and biased by a second detent spring toward the opposed jaw at the work station, the opposing free faces of the jaws presenting a recess substantially complementary to the workpiece to clamp the workpiece at the work station;

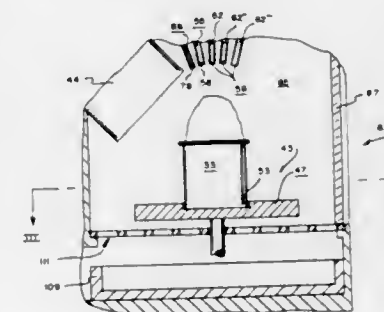
a feed finger reciprocal along a second center line at a loading station displaced to one side of said first center line and operating in a guide channel which intersects the supply channel at a point of confluence;

reciprocal means to actuate the second jaw holder in an advancing direction laterally toward the work station thereby to cause the second jaw to push the first jaw toward the first center line against its spring and cooperate with the first jaw effectively to dispose and clamp a workpiece to be machined at the first center line against the torque of the tool and to withdraw the second jaw holder in a return direction toward the second center line, the spring bias on the first jaw causing it to slide in its holder to follow the second jaw during return movement so both jaws hold the machined workpiece by detenting during return movement of the first jaw holder to the second center line, whereby a workpiece is translated back and forth between the stations while clamped between the jaws;

the recess presented by the jaws being disposed substantially at the second center line when the second jaw is returned by the reciprocal means thereby enabling the feed finger to load a fresh workpiece, located at the point of confluence, into and between the free faces of the spring-biased jaws for transfer to the work station when such reciprocal means is next advanced toward the first center line, the machined workpiece being ejected from the recess concurrently with loading the jaws with a fresh workpiece.

4,645,093
VENDING APPARATUS FOR VENDING INDIVIDUAL SERVINGS OF ICE CREAM
John R. Jones, Memphis, Tenn., assignor to Richard F. Kriz, Cordova; Thomas Lemon, Memphis, both of, Tenn. and Charles Thomas, Holly Springs, Miss., part interest to each
Filed Nov. 23, 1984, Ser. No. 674,530
Int. Cl.⁴ G07F 13/06, 13/10
U.S. Cl. 221—93

22 Claims



1. Vending apparatus for vending individual servings of ice cream at the demand and selection of a vendee, said apparatus comprising:

(a) money activated switch means for being closed when the vendee inserts a predetermined amount of money thereinto;

(b) selector switch means for being energized when said money activated switch means is closed, said selector switch means including a plurality of specific selection

switch means for allowing the vendee to select one of a plurality of specific selections when said selector switch means is activated by manually closing one of said specific selection switch means;

(c) container dispenser means for dispensing one ice cream container when said selector switch means is energized and one of said specific selection switch means is closed;

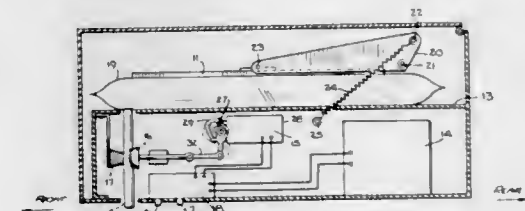
(d) container rotator means for receiving said ice cream container after said ice cream container is dispensed and for rotating said ice cream container when said selector switch means is energized and one of said specific selection switch means is closed;

(e) ice cream dispenser means for dispensing ice cream into said ice cream container as said ice cream container is rotated by said container rotator means when said selector switch means is energized and one of said specific selection switch means is closed; and

(f) syrup dispenser means for dispensing syrup onto the ice cream dispensed into said ice cream container after the ice cream is dispensed into said ice cream container, at least one of said specific selection switch means being connected to said syrup dispenser means, said syrup dispenser means dispensing syrup when said selector switch means is energized and said at least one of said specific selection switch means that is connected to said syrup dispenser means is closed.

4,645,094
PHOTO-ELECTRIC CONTROLLED DISPENSER
John R. Acklin, St. Louis; Lee W. Bush, Chesterfield; Joseph J. Danna, Florissant, all of Mo.; John L. Devitt, Denver, Colo., and George A. Rauh, Manchester, Mo., assignors to Calgon Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 488,867, Apr. 26, 1983, abandoned.
This application Jan. 31, 1986, Ser. No. 825,025
Int. Cl.⁴ B65D 35/28; B67D 5/06
U.S. Cl. 222—52

10 Claims



1. A fluid dispenser comprising:

(a) a flexible container for fluid integrally connected to a valve means and an outlet means;

(b) a means for imparting a squeezing force to said flexible container; and

(c) a proximity detector means connected to a means for opening and closing said valve means; wherein said means for imparting a squeezing force is a pressure plate which is connected to a spring-driven lever which comprises:

(i) an extension spring whose axis is near the central pivot point of a first-class lever when said flexible container is full, said spring axis moving away from said pivot point of said lever as said flexible container is emptied;

(ii) said first-class lever having extremities that comprise the attachment point of said extension spring to the lever and the attachment point of an axle attached to the pressure plate, respectively; and

(iii) said spring having a sufficient length so that the torque increase caused by the increasing distance of the spring center line from the central pivot point as said container empties is more than the torque decrease caused by the lessening extension of the spring caused by movement of the lever as said flexible container empties.

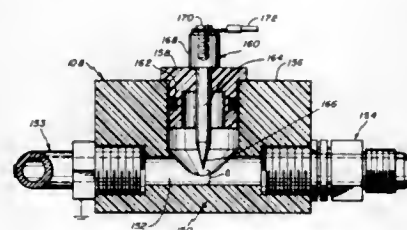
4,645,095
SYRUP SENSOR FOR DISPENSING MACHINE
 Peter J. Coppola, Burlington, Mass., assignor to Jet Spray Corp., Norwood, Mass.

Filed Mar. 19, 1984, Ser. No. 590,994

Int. Cl.⁴ B67D 5/08

U.S. Cl. 222-64

7 Claims



1. A sensor apparatus for sensing an out-of-syrup condition in a dispensing machine having a storage reservoir for the syrup and fluid lines coupling from the storage reservoir to the beverage tank of the dispenser, said sensor apparatus disposed in said fluid line and comprising: a housing having a through passage from one side to the other thereof, said passage intercoupling with said fluid line, means defining a hole in said housing, a probe, a means supporting said probe in said hole extending at least in part into said through passage and disposed substantially transversely to said through passage, a gap being defined between said probe and a wall of said through passage whereby syrup breaks from the probe providing a gap between the probe and syrup, said probe being disposed substantially vertically so that the syrup may break therefrom by gravity, said probe having an end the extremity of which extends partially into said through passage, means for securing a conductor to the probe, in combination with a circuit means and means connecting said circuit means to at least said probe, said circuit means adapted to sense the conductivity at the probe between the probe and syrup, said means for supporting the probe comprising a cap disposed in the hole that extends transversely to the through passage, the depth of said hole being greater than the height that the cap extends into the hole so as to form under the cap and over the passage a small compartment normally under slight vacuum when syrup is present in the through passage, and an annular sealing means disposed between the cap and housing to provide said slight vacuum in said small compartment, said probe having a tapered end terminating in a tip disposed in the through passage, pump means connected to said fluid line downstream of said housing to maintain at least a partial vacuum about said probe, said circuit means further comprising means for sensing an increase in resistance at the probe gap to interrupt said pump means.

4,645,096
BOTTLE NECK WITH RETAINING LIP FOR STOPPER
 Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20015

Filed Jun. 1, 1984, Ser. No. 616,711

Int. Cl.⁴ B65D 39/00, 39/14

U.S. Cl. 222-153

20 Claims

1. In combination, a neck forming an opening allowing the flow of material therethrough, and a closure means adapted to be inserted in said neck to prevent said flow of material, said neck comprising a back wall and a front wall for engaging respective side portions of said closure means to form a seal to prevent said flow of material, said front wall terminating in a top edge, wherein said back wall extends above the top edge of said front wall and includes a retaining means for overlying and engaging an upper surface of said closure means when said closure means is in an inserted position in said neck for retaining said closure means in said neck and wherein said retaining means is located above the top edge of said front wall and extends inwardly from said back wall and only partially

around said opening so as to provide an unobstructed area between said front and back walls to allow said closure means



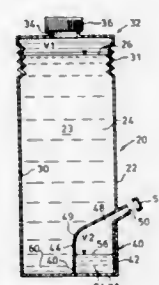
4,645,097
SIDEWALL DISPENSER
 John G. Kaufman, 858 Condor Drive, Burlington, Ontario L7T 3A7, Canada

Continuation-in-part of Ser. No. 482,776, Apr. 7, 1983, abandoned. This application Jul. 9, 1985, Ser. No. 753,229

Int. Cl.⁴ B65D 37/00

U.S. Cl. 222-207

19 Claims



1. A sidewall dispenser for dispensing liquid from an upright position, said dispenser comprising:

- (a) container means for receiving a supply of the liquid, said container means having a container base, a container top and at least one sidewall coupling said container base to said container top, defining a container interior;
- (b) an air pocket means located within said container means at a portion adjacent the container base for containing an auxiliary body of the liquid, said air pocket means having a top portion, a bottom portion, a back wall portion spaced from said at least one sidewall, and a front portion, said back wall portion, said top portion and said front wall portion defining an air pocket portion within said air pocket means for retaining a pocket of air above said auxiliary body of said liquid;
- (c) liquid passageway means connecting the air pocket portion and the interior of said container means said liquid passageway means being located at said bottom portion of said air pocket means;
- (d) outlet means providing an exit from said air pocket means through a lower portion of said at least one sidewall, said outlet means being coupled to said air pocket means and being at a level above said liquid passageway means, said outlet means terminating in a liquid dispensing exit, said liquid dispensing exit being at substantially the same level as said outlet means;
- (e) pressure increasing means operable for providing a pres-

sure increase within said container means for causing liquid to be forced out of said dispensing exit; and
 (f) liquid suck-back control means for sucking back liquid residue remaining in said outlet means and being proportioned with a cross-section sufficient to permit liquid to be forced through the outlet means and to cause an inrush of air as a result of operation of the liquid suck-back control means to positively drive liquid residue into said air pocket means to eliminate dripping from said outlet means.

4,645,098
PRESS-OUT PISTON FOR DISPENSING SUBSTANCE FROM A CONTAINER

Armin Hoffmann, Germering, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

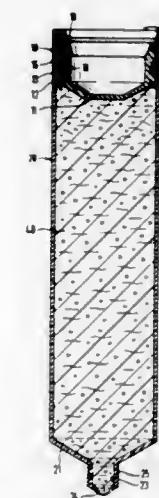
Filed Feb. 15, 1985, Ser. No. 701,968

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405547

Int. Cl.⁴ B67D 5/42; G01F 11/00

U.S. Cl. 222-386

8 Claims



1. Press-out piston for insertion into an axially extending cylindrically shaped container having an inner surface and an outer surface and a front end and a rear end with said piston arranged for displacing a flowable plastic substance out of the front end of the container, said piston having a front end and a rear end with a head forming the front end and arranged to extend transversely across the inside of the container for applying pressure to the substance to be displaced out of the container and to be axially slidably insertable into the rear end of said container and to be axially slidably displaceable from the rear end toward the front end of said container for displacing the plastic substance, an annular wall extending from the outer circumferential periphery of said head toward the rear end and having a first end at said head and a second end at said rear end, said annular wall having a radially outer surface and a radially inner surface, an annular groove formed in the radially outer surface with said groove spaced from the front end and rear end of said piston, wherein the improvement comprises said piston having an axis extending in the front end-rear end direction, said radially outer surface of said annular wall has a generally cylindrically shaped surface section intermediate the first and second ends of said annular wall and extending in the axial direction of said piston from said annular groove toward the rear end of said piston, an elastically deformable sealing ring positioned within said annular groove and having a radially inner surface and a radially outer surface, said annular groove having a base extending in the front end-rear end direction from a first end closer to the front end of said piston and a second end more remote from the front end of said piston and with the depth of the groove from said surface section decreases-

ing in the front end toward the rear end direction, said first and second ends of said annular groove extending transversely of the front end-rear end direction of said piston, said sealing ring in the undeformed state has a quadrangular cross section, said annular wall includes a radially resilient sealing lip at the first end of said annular wall arranged to contact the inside of the container when said piston is inserted into the container, said sealing lip located on the first end side of said annular groove and having a radially inner surface and a radially outer surface extending generally in the axial direction of said piston with the radially outer surface diverging outwardly from the front end side of said annular groove toward the front end of said head, the radially inner surface of said sealing lip diverging outwardly from adjacent the front end side of said annular groove toward the front end of said head and being spaced radially outwardly from the front end of said head, said annular groove located toward the rear end of said piston from said sealing lip, and an annular sealing rim located between said surface section and the rear end of said piston and forming the rear end of said annular wall, said sealing rim has a radially inner surface and a radially outer surface each inclined at an angle relative to the axis of the container and inclined outwardly toward the rear end of said piston, the radially outer surface of said sealing rim said cylindrically shaped surface section and the radially outer surface of said sealing ring being dimensioned to contact the inner surface of said container when said piston is inserted into the rear end of said container without applying pressure to the plastic substance, said sealing lip at the end thereof spaced more remotely from said annular groove is arranged to bear against the inner surface of said container when said piston is inserted into the rear end of said container without applying pressure to the plastic substance, said container being radially outwardly displaceable in the region of the front end of said piston when pressure is applied to said piston displacing the plastic substance out of said container whereby said sealing lip separates from the inner surface of said container and the pressurized plastic substance flows between the sealing lip and the inner surface of said container into contact with said sealing ring for pressing said sealing ring within said annular groove radially outwardly and toward the second end of said annular groove.

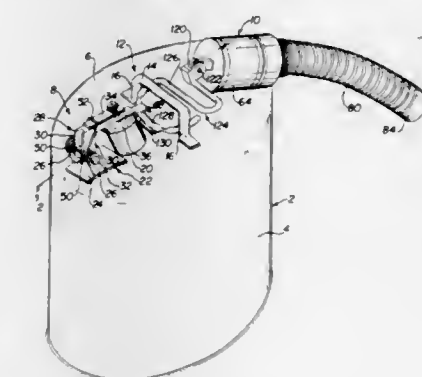
4,645,099
SAFETY CONTAINER FOR FLAMMABLE LIQUIDS
 John G. Gillispie, and Donald J. Mitchell, both of Wellsburg, W. Va., assignors to Eagle Manufacturing Company, Wellsburg, W. Va.

Filed Oct. 16, 1985, Ser. No. 788,006

Int. Cl.⁴ B65D 47/08

U.S. Cl. 222-472

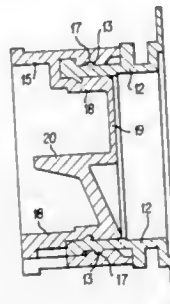
8 Claims



1. A safety container for flammable liquids comprising a filler valve mechanism mounted on the top wall of said container adjacent one edge thereof, a pour valve mechanism mounted on said top wall of said container adjacent the edge

thereof opposite said filler valve mechanism, said filler valve mechanism being provided with a spring-biased filler cap having a lift thereon extending outwardly therefrom in the direction of said pour valve mechanism, said pour valve mechanism having valve means therein for opening and closing said pour valve mechanism, a spring-biased, elongated valve stem attached to said valve means, a valve stem trigger means pivotally mounted to said valve stem at one end thereof and extending at its outer end below said lift of said filler cap, and a rigid carrying handle secured at its ends to said top wall of said container extending laterally over said valve stem trigger means, a portion of said valve stem trigger means being substantially parallel to said carrying handle and being disposed between said carrying handle and said pour valve mechanism.

4,645,100
DISPENSING SPIGOT
 Peter R. Wells, Ashhurst, New Zealand, assignor to Wrighteel Limited, Australia
 Filed Oct. 26, 1984, Ser. No. 665,368
 Claims priority, application Australia, Oct. 27, 1983, PG2086
 Int. Cl.⁴ B65D 47/20
 U.S. Cl. 222—505 6 Claims

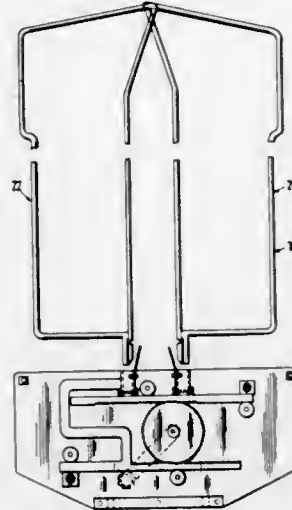


1. A container having a spout and a dispensing spigot attached to said spout for dispensing contents of the container, said spigot including a concave diaphragm wall fitting within said spout such that an external surface of the diaphragm wall engages an inner surface of the spout, the improvement comprising a V-shaped groove formed in the external surface of the diaphragm wall and a complementary flange formed on the inner surface of the spout and projecting into said groove, one surface of said flange being in sealing contact with one side of the V-shaped groove, said flange being an elongate member in a direction projecting away from its associated inner surface of the spout and at an acute angle thereto, the length of said elongate member being greater than the thickness thereof, the length of said flange being formed between said one surface and a generally parallel second surface connected by an end wall of the flange, said second surface and said end wall being joined at a pointed edge, said pointed edge engaging the other side of said V-shaped groove, whereby sealing is achieved along (1) substantially the entire surface of said one surface of the flange and (2) between the pointed edge of said flange with said other side of said V-shaped groove.

4,645,101
DEVICE FOR MOUNTING ARTICLES OF CLOTHING IN AN IRONING APPARATUS
 Kurt Müller, Rottweil, Fed. Rep. of Germany, assignor to Sanetta Textilwerk Gebrüder Ammann, Messstetten, Fed. Rep. of Germany
 Filed Jan. 9, 1986, Ser. No. 817,403
 Claims priority, application Fed. Rep. of Germany, Jul. 29, 1985, 3515355
 Int. Cl.⁴ D06F 59/02, 71/16, 93/00
 U.S. Cl. 223—66 11 Claims

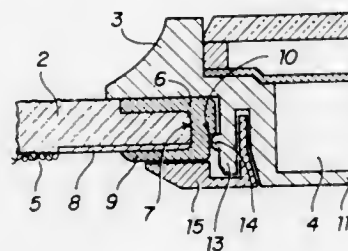
1. An apparatus for mounting articles of clothing for con-

trolling purposes or for smoothing in an ironing apparatus comprising:
 one or more substantially rigid mounting frames for mounting said articles of clothing;
 a holding section operatively associated with each of said mounting frames;
 conveyor means operably associated with said holding section so as to carry said holding sections along as said conveyor means advances;



said mounting frames being comprised of two or more integral component frames arranged alongside each other;
 one or more of said component frames further being separable from the remaining component frames within a range of possible separation; and
 an adjustment device operably associated with said holding section so as to enable alteration of said mutual separation between said component frames in a virtually infinitely variable manner without said range of possible separation.

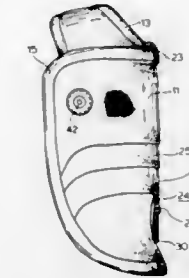
4,645,102
ASSEMBLY COMPRISING A FLAT HOUSING FIXED ON A TEXTILE OR A THIN SYNTHETIC OR NATURAL MATERIAL
 Francois Proelochs, Forel-Lavaux, Switzerland, assignor to Samel, S.A., Switzerland
 Filed Apr. 25, 1985, Ser. No. 727,008
 Claims priority, application Switzerland, Apr. 15, 1985, 1594/85
 Int. Cl.⁴ A44C 5/00
 U.S. Cl. 224—178 19 Claims



1. An assembly wherein a flat housing is fixed on a third substrate comprising material such as textile materials or thin synthetic or natural non-textile materials, said assembly comprising:
 a support ring fixed by setting on a counterpiece adhered to a first surface of said substrate along the periphery of an

aperture in said substrate at a predetermined location thereof, said support ring having first and second projections for grippingly engaging, respectively, said counter-piece, and a second surface of said substrate opposite said first surface and along the periphery of said aperture, said housing having a circular bottom introduced into said support ring, said circular bottom and said support ring having substantially the same thickness, and said housing and said support ring being provided with cooperating fixing means for removably fixing the housing to said substrate.

4,645,103
FABRIC HOLSTER WITH UNIVERSALLY ADJUSTABLE STRAP
 John E. Bianchi, Wayne B. Gregory, both of Temecula, and Richard D. E. Nichols, Fallbrook, all of Calif., assignors to Bianchi International, Temecula, Calif.
 Filed May 25, 1984, Ser. No. 614,286
 Int. Cl.⁴ F41C 33/02
 U.S. Cl. 224—243 14 Claims

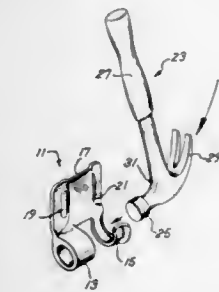


1. A holster comprising a sheet of compressible material formed into a pouch to hold a handgun and including an opening for the insertion and removal of a handgun therefrom;
 said sheet of material being folded together and secured at the edge regions to define the pouch;
 support means secured to said sheet of material whereby said holster may be carried on the wearer; and
 stiffener means secured to the inside of said folded sheet; wherein the means securing said stiffener means to said sheet comprises at least one stitch line extending from the bottom region of said holster to an intermediate region thereof through said stiffener means, locally compressing said sheet of compressible material whereby said compressible material causes bending of said stiffener inwardly along a major portion of its length to define a channel for the muzzle of a handgun within said holster.

4,645,104
TOOL HOLDER
 Joseph L. Vokaty, 2920 Glenview Rd., Glenview, Ill. 60025
 Continuation of Ser. No. 673,000, Nov. 19, 1984, abandoned.
 This application Jul. 28, 1986, Ser. No. 892,873
 Int. Cl.⁴ A45F 5/00
 U.S. Cl. 224—253 6 Claims

1. A tool holder for holding a T-shaped tool having a tool head, a tool tail and a handle, comprising:
 a base supporting member;
 a tool head receiving member secured subjacent to said base supporting member, said receiving member having a barrel for receiving a substantial amount of the tool head, said barrel having an inside continuous surface for engaging the tool head at axially spaced apart points of contact on said continuous surface during jostling movement of the tool relative to said base supporting member; and
 a tool tail receiving member secured subjacent to said base supporting member and having a U-shaped inner surface disposed for guiding the tool head into engagement with said inside continuous surface of said tool head receiving

member and for supporting the tool tail during tool head engagement;



said tool receiving members secured to said base supporting member in a spaced apart relationship of a distance for receiving the tool handle between said receiving members.

4,645,105
GOLFING ACCESSORY
 Michael M. R. Plumbridge, 244 Darkes Lane, Potters Bar, Hertfordshire, England
 Filed Jan. 25, 1985, Ser. No. 694,761
 Claims priority, application United Kingdom, Jan. 30, 1984, 8402420; Mar. 16, 1984, 8406982
 Int. Cl.⁴ A45F 5/00
 U.S. Cl. 224—269 1 Claim



1. A golfing accessory comprising:
 (a) a rigid backing support having a first edge surface, a second edge surface, a front face and a back face, said support having a plurality of holes passing from said front face to said back face, said holes located at a position closer to said first edge surface than said second edge surface of said support, said front face having a width and length generally corresponding to a width and length of a scorecard;
 (b) a separate rigid socketed block having a first edge surface, a second edge surface, a front face and a back face, said back face having a plurality of studs formed thereon, said plurality of studs communicating with said holes in said support for forming an interference fit with said support, said first edge surface of said block being substantially parallel and flush with said first edge surface of said support, said back face of said block and said front face of said support being substantially engaged when said studs and said holes form said interference fit, said block having a width generally corresponding to the width of said front face of said support, said socketed block having a plurality of holes passing from said first edge surface to said second edge surface and into said front face for detachably receiving tees, ballmarkers, a pitch repainer and a writing implement;
 (c) a clipping portion formed between a lower surface of said

back face of said block and an upper surface of said front face of said support, said lower surface of said block being closer to said second edge surface of said block than said first edge surface of said block, and said upper surface of said support being closer to said first edge surface of said support than said second edge surface of said support, said clipping portion having a V-profile entry slot for easy insertion of said scorecard, and wherein said clipping portion engages a corresponding width of said scorecard along an upper surface of said scorecard; and

(d) a flexible resilient tongue having a widened entry into a clipping restriction area, said tongue integrally attached to said back face of said support at a position closer to said first edge surface of said support than said second edge surface of said support.

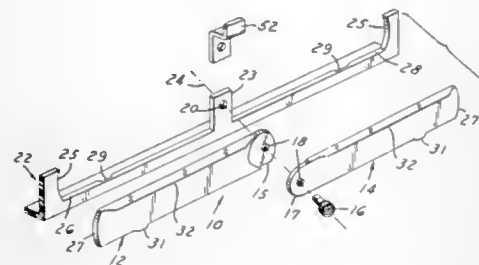
4,645,106

GARMENT CARRIER

E. Timothy Pawl, West Bloomfield, Mich., assignor to Pawl Invention Engineering Corporation, Bloomfield, Mich.
Filed Apr. 17, 1985, Ser. No. 724,262
Int. Cl.⁴ B60R 7/08

U.S. Cl. 224—313

30 Claims



1. A carrier having first and second elongated members each having a first surface, a second surface and an adjacent end portion, each of said elongated members being pivotally connected at said adjacent end portions for pivoting about a horizontal axis from a first position where said members are substantially horizontal to one another substantially forming one continuous member, to a second position where each of said members are angled with respect to one another;

said first elongated member having a first recessed region formed in said first surface at said adjacent end portion;

said second elongated member having a second recessed region formed in said second surface at said adjacent end portion;

said first recessed region operatively receiving said adjacent end portion of said second elongated member;

said second recessed region operatively receiving said adjacent end portion of said first elongated member;

said adjacent end portions sliding within said recessed regions between said first position and said second position, said adjacent end portions and said recessed regions mutually cooperating in said second position to support said first and said elongated members with respect to each other,

whereby a garment may be supported on said elongated members.

4,645,107

SHEET MATERIAL DISPENSER

Patrick M. Norris, 3817 Shadow Creek Dr., Shreveport, La. 71119

Filed Jul. 9, 1985, Ser. No. 753,262

Int. Cl.⁴ B65D 85/672

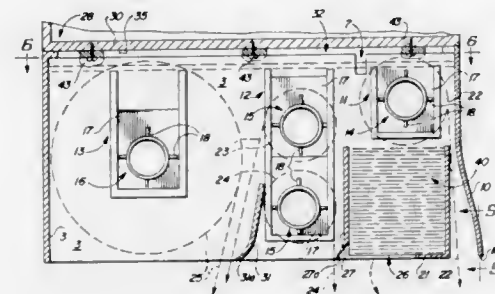
U.S. Cl. 225—37

10 Claims

1. A sheet material dispenser for locating beneath a cabinet and removably supporting and dispensing multiple rolls of

rolled sheet material and carrying a box containing plastic bags for dispensing the plastic bags, comprising:

- (a) a housing having spaced side panels, a front panel closing one end of said side panels and a rear panel closing the opposite end of said side panels, said housing open at the top and bottom;
- (b) a pair of side rails extending outwardly from the top edges of said side panels, respectively, in spaced, substantially parallel relationship for supporting said housing;
- (c) a pair of front spindles carried by said side panels in spaced, facing relationship; a first and second pair of center spindles carried by said side panels rearwardly of said front spindles in stacked, spaced, facing relationship,



- respectively; and a pair of rear spindles carried by said side panels in spaced, facing relationship, said front spindles, said center spindles and said rear spindles engaging opposite ends, respectively, of the rolls of rolled sheet material;
- (d) a pair of flanges provided in spaced relationship in said housing for supporting the box containing the plastic bags, and
- (e) a first blade provided on said front panel, a second blade provided on one of said flanges and a third blade carried by said housing rearwardly of said second blade, for severing a length of sheet material from the rolls of rolled sheet material, respectively.

4,645,108

DISPENSING CARTON AND BLANK THEREFOR

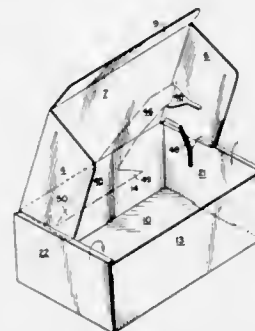
James R. Gavin, Pittsford, N.Y., and Nicholas Phillips, Carol Stream, Ill., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 20, 1985, Ser. No. 777,994

Int. Cl.⁴ B65D 85/671

U.S. Cl. 225—103

6 Claims



1. A blank for forming a dispensing carton, having bottom, top, side, and end walls, which comprises:
- a rectangular bottom panel;
- a first and second outer rectangular end panel connected to opposite sides of the bottom panel;
- a first and second rectangular end panel reinforcing wing

- flap connected to a side of the first and second outer end panel remote from the bottom panel;
- a first rectangular side panel connected to a side of the bottom panel;
- an inner reinforcing wing flap connected to opposite sides of the first rectangular side panel;
- a second rectangular side panel connected to a side of the bottom panel remote from the first rectangular side panel;
- an inner rectangular reinforcing wing flap connected to opposite sides of the second rectangular side panel;
- an outer rectangular top panel connected to a side of the second rectangular side panel remote from the bottom panel;
- a reinforcing wing flap connected to opposite sides of the top panel; and
- a fastening flap connected to a side of the top panel remote from the second side panel, wherein an outer end panel, second side panel and top panel, and one of each of their respective reinforcing wing flaps at one end of the blank have perforated tear strips defining aperture openings wherein the perforated tear strip of the second side panel is connected to the tear strip of the top panel which in turn is connected to the tear strip of its reinforcing wing flap.

4,645,110

DRIVE CONTROL IN AN APPARATUS FOR ASSEMBLING FASTENER ELEMENTS

Yukio Taga, Uozu, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

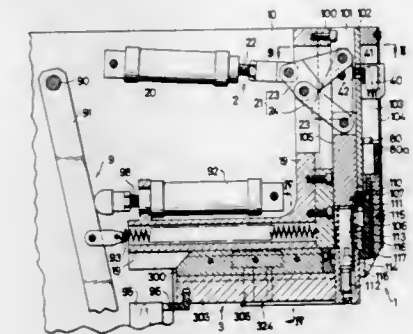
Filed Aug. 19, 1985, Ser. No. 766,989

Claims priority, application Japan, Aug. 30, 1984, 59-132040[U]

Int. Cl.⁴ A41H 37/00, 37/10; B21J 13/00

U.S. Cl. 227—2

2 Claims



1. An apparatus for assembling a pair of fastener elements of a garment fastener, comprising:

- (a) a frame;
- (b) a pair of vertically aligned upper and lower units supported by said frame for receiving the respective fastener elements, said lower unit having a die, said upper unit including an upper plunger reciprocally supported by said frame and having a punch movable, in response to reciprocating movements of said upper plunger, toward and away from said die to join the two fastener elements together;
- (c) a drive mechanism operatively connected to said upper plunger for vertical reciprocating movements, said drive mechanism including an air cylinder having a piston rod, and a toggle joint extending between one end of said piston rod and an upper end of said upper plunger, said toggle joint including a pair of mutually pivotally interconnected levers and being movable, in response to extension and retraction of said piston rod of said air cylinder, between a contracted position in which said levers are angled with respect to each other, and an extended position in which said levers are substantially vertically aligned with each other; and
- (d) means for detecting said extended position of said toggle joint and for terminating the extension of said piston rod in response to said detection,
- said detecting means including: a limit switch mounted on said frame and having an actuator; and a contact member mounted on an edge of one of said levers and engageable, when said one lever assumes a substantially vertical posture, with said actuator of said limit switch to actuate the latter to produce an electrical signal for de-energizing said air cylinder.

4,645,111

SURGICAL STAPLER WITH RETRACTABLE ANVIL

Edward W. Larrabee, Bronxville, N.Y., and Charles M. Huck, Pottersville, N.J., assignors to Howmedica, Inc., New York, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,320

Int. Cl.⁴ B25C 5/04

U.S. Cl. 227—19

12 Claims

1. A stapler comprising a housing, said housing having a discharge opening for placement at a work site, means in said housing for disposing staples one at a time at said discharge opening, an anvil in said housing for being disposed at said discharge opening beneath a staple thereat, a driver movably

4,645,109

APPARATUS FOR THE CONTINUOUS TREATMENT OF ENDLESS TEXTILE MATERIAL

Gerold Fleissner, Chur, Switzerland, assignor to Vepa AG, Basel, Switzerland

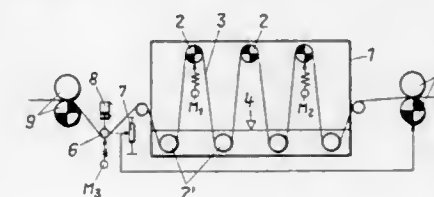
Filed May 24, 1985, Ser. No. 737,482

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419487

Int. Cl.⁴ B65H 23/20

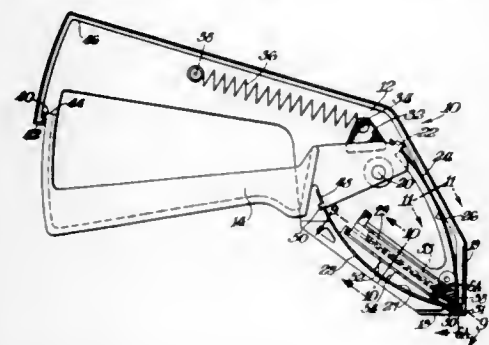
U.S. Cl. 226—42

6 Claims



1. An apparatus for the continuous treatment of endless textile material, which comprises a housing, several guide rolls rotatably mounted in the housing; said guide rolls being arranged in two rows in series; a tension control means, including a dancer roll, a pair of pressure rollers for conveying the textile material which is connected before and/or after the guide rolls and which has a peripheral speed controlled by said tension control means; load cells; and a differential amplifier; at least two of the rolls having drive means that is electrically connected to a load cell, the measured values of the load cells, in combination, are compared in the differential amplifier and converted therein into a positive or negative control signal; said amplifier transmitting the control signal to a drive means of one of said guide rolls to correct the actual torque of the drive means.

mounted in said housing for bending said staple around said anvil at said discharge opening, and means for retracting said anvil within said housing away from said discharge opening as



said driver completes the bending of said staple, said anvil retracting means being coupled to said driver by common drive means in such a manner that actuation of said driver automatically causes retraction of said anvil.

4,645,112

RIVETING MACHINE

John W. Davern, North Tonawanda, and Daniel D. Cook, Lancaster, both of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

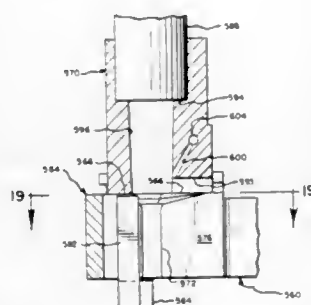
Division of Ser. No. 332,824, Dec. 21, 1981, Pat. No. 4,515,302.

This application Apr. 8, 1985, Ser. No. 720,851

Int. Cl.⁴ B21J 15/10

U.S. Cl. 227—112

19 Claims



1. In a riveting machine, apparatus for maintaining rivets in a predetermined orientation as they are received from a feed tube for subsequent injection into rivet grasping means, each rivet having a head portion, a shank portion of smaller cross-section extending therefrom, and an axis extending longitudinally of said shank portion and each rivet traveling along said feed tube with said shank portion disposed forwardly of said head portion, said apparatus comprising:

- means defining a rivet-receiving opening located in a plane, said opening being of a size to receive the shank of a rivet and having an edge formation for supporting the rivet head in a manner such that the longitudinal axis of the rivet is substantially perpendicular to said plane;
- means defining a passage leading from said feed tube having a longitudinal axis substantially perpendicular to said plane and said passage converging in a direction toward said rivet-receiving opening for funneling and slowing a rivet traveling toward said opening and preventing flipping and jamming of rivets; and
- means defining an air jet passage opening to said converging passage for directing a jet of air toward said opening and traversing the path of the rivet traveling toward said opening and disposed at a predetermined angle relative to said plane containing said opening to act

on the rivet and hold it in position supported by said opening.

4,645,113

CONTAINER MAKING DEVICE

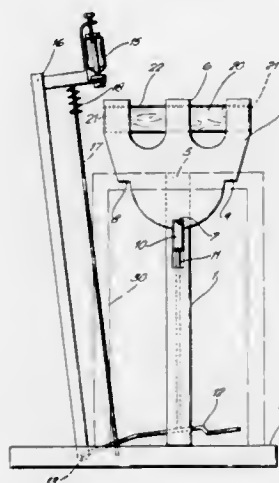
Ronald R. Webber, 14 Tui Street, Te Puke, New Zealand

Filed Apr. 10, 1984, Ser. No. 598,668

Int. Cl.⁴ B27F 7/17; B25D 17/28

U.S. Cl. 227—154

2 Claims



1. Container assembly apparatus comprising a frame, a container support jig pivotally mounted on the frame, the support jig having holding means for holding side, end and base members of a rectangular box-like container in assembled relation for fastening, fastener means, support means mounting the fastener means on the frame for movement toward and away from the jig and releasable holding means connected between the jig and frame for selectively and releasably holding the jig in any one of three positions separated by 90 degree pivotal increments of the jig for respectively presenting one side member, the base member, and the opposite side member of the container to the fastener means for fastening, wherein the jig is pivotally mounted on frame supports extending vertically from a base member, the holding means comprising a part-circular segment on the jig and a manually operable latch means on the frame for removable engagement in a selected one of three stops formed on the segment plate at 90 degree intervals, and wherein the support means comprises a vertically extending subframe pivotally mounted on the base member adjacent the frame supports, the fastener means carried atop the subframe.

4,645,114

SHAPED SOLDER PAD FOR SURFACE MOUNTING ELECTRONIC DEVICES AND A SURFACE MOUNTING POSITION INCORPORATING SUCH SHAPED PADS

Jacques Van Den Brekel, Nepean; Carlyle W. Crothers, Kinburn, and Dale B. Squires, North Gower, all of Canada, assignors to Northern Telecom Limited

Filed Jun. 17, 1985, Ser. No. 745,110

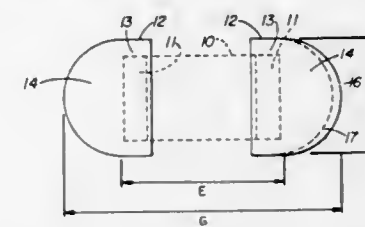
Int. Cl.⁴ B23K 35/14

U.S. Cl. 228—56.3

8 Claims

1. A solder mounting position for an electronic device adapted to be mounted on a substrate surface, comprising at least one pair of solder pads spaced apart along a horizontal axis, each solder pad of substantially uniform thickness and having a rectangular portion with inner and outer edges and an arcuate segmental portion extending from said outer edge of the rectangular portion along said horizontal axis, the inner edges of the rectangular portions being in opposition and the segmental portions extending outward away from each other; each rectangular portion having a width, measured in a

direction normal to said axis, approximately equal to the width of the device plus an amount varying from about 0.02 inches to about 0.04 inches, the amount increasing with increasing width of the device;



each segmental portion having a straight inner edge contiguous with the outer edge of the rectangular portion, and a convex curved outer edge joining at each end to the ends of said inner edge of the rectangular portion.

4,645,115

METHOD OF BONDING CERAMIC ARTICLE

Osami Kamigaito; Haruo Doi; Shoji Noda, and Nobuyuki Yamamoto, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Apr. 25, 1985, Ser. No. 726,973

Claims priority, application Japan, May 1, 1984, 59-88913

Int. Cl.⁴ B23K 31/02; B05D 3/06; C23C 14/00

U.S. Cl. 228—121

13 Claims

1. A method of bonding a ceramic article to the surface of a counterpart with high strength, which comprises: forming a metallic film from at least one metal selected from the group consisting of Co, Ni, Cu, Ag, Au, Ti, Fe and Al on the surface of said ceramic article which is formed from a ceramic material selected from the group consisting of Al_2O_3 , ZrO_2 , Si_3N_4 and SiC; irradiating the surface of said metallic film with high-energy ions at a dosage ranging from 5×10^{16} to 5×10^{17} ions/cm² to promote the adhesion of said metallic film to said ceramic article; and supplying brazing alloy to the surface of said metallic film and brazing said ceramic article to the surface of said counterpart.

4,645,116

FLUXLESS BONDING OF MICROELECTRONIC CHIPS

Gerard E. Henein, Berkeley Heights; Ralph T. Hepplewhite, Millington, and Bertram Schwartz, Westfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

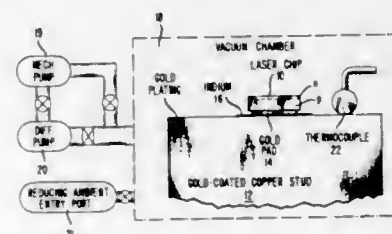
Continuation-in-part of Ser. No. 433,382, Oct. 8, 1982,

abandoned. This application Sep. 5, 1984, Ser. No. 648,411

Int. Cl.⁴ B23K 1/02, 1/20, 35/00

U.S. Cl. 228—123

34 Claims



1. A method of manufacturing a device, which includes bonding a metal layer on a microelectronic chip to a metallized support member, comprising the steps of:

- providing a bonding layer of soft, ductile bonding material on at least one of the metal layer and the support member, the bonding layer having a tendency to form an

oxide thereon, said oxide being reducible with the consequent generation of a gaseous reduction product,

- placing the assembly of the bonding layer, chip and support member in an evacuable chamber,
- reducing the pressure in the chamber to a subatmospheric pressure in order to decrease the partial pressure of said gaseous reduction product,
- introducing a reducing gas into the chamber,
- at a time between steps (a) and (f), bringing the bonding layer into contact with the other of the metal layer and the support member in the absence of any liquid flux, and
- heating the bonding layer to a temperature which is above its melting point, said temperature of step (f) and said pressure of step (c) being effective for said reducing gas to reduce said oxide thereon.

4,645,117

BONDING METAL TO CERAMIC

Lionel Knapp, and GERALD I. E. J. Horrocks, both of Paignton, England, assignors to Standard Telephone and Cables Public Ltd. Co., London, England

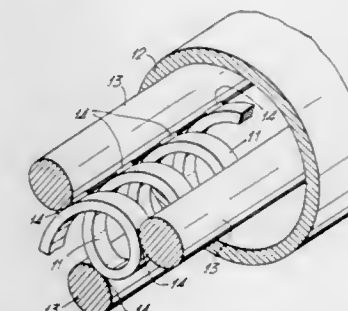
Filed Jun. 5, 1984, Ser. No. 617,610

Claims priority, application United Kingdom, Jun. 17, 1983, 8316553

Int. Cl.⁴ B23K 31/02

U.S. Cl. 228—124

6 Claims



1. A method of bonding a travelling wave tube slow wave helix to a plurality of ceramic support rods wherein a first metallic barrier layer is deposited by sputtering upon the slow wave helix, a layer of active metal in elemental form is deposited by sputtering upon the first barrier layer, and a second metallic barrier layer is deposited by sputtering upon the active metal layer; wherein the composition, extent and manner of deposition of the layers is such as to protect the active metal layer from general oxidation; wherein the composition of the barrier layers is such that on their own, or together with material of the active layer, they combine to form a braze that contains at least one of the elements gold, silver, copper, nickel; wherein the composition of the second barrier layer is selected from the group comprising an alloy, a composite layer whose components constitute the precursor of an alloy, and a layer that forms an alloy with the active metal; wherein the support rods are assembled in position around the slow wave helix and the resulting assembly is heated in vacuum or in an inert atmosphere to a temperature sufficient to cause at least some of the active metal to migrate through into the ceramic and metallize it; and wherein further heat is applied to cause the metal of the barrier layers to combine and form a braze joining the helix to the now metallized support rods.

4,645,118

METHOD AND MEANS FOR THREADING WIRE BONDING MACHINES

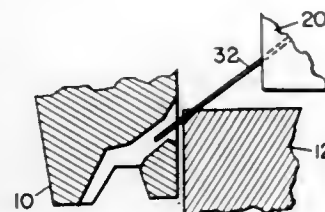
Kenneth L. Biggs, 3407 N. Valley View, Orange, Calif. 92667, and C. Fredrick Miller, 1551 E. Pacifico Ave., Anaheim, Calif. 92805

Filed Aug. 29, 1985, Ser. No. 770,618

Int. Cl.⁴ B23K 31/02, 37/00; D05B 53/00, 87/02

U.S. Cl. 228—170

6 Claims



1. The method of threading bonding wire into the guide hole of a wire bonding tool in the circumstance in which the coordinates of the hole relative to a reference point on the tool are known, with the aid of a structure with respect to which the tool is movable, which method comprises the steps of: positioning the tool such that said reference point on the tool is positioned at a reference point on said structure; placing the wire with which the tool is to be threaded such that its end is disposed at a position whose coordinates relative to the reference point on the structure are known; causing the tool to move in a degree determined as a function of the differences between the coordinates of the end of the wire and the reference point of the tool to a position in which the guide hole of the tool is opposite the end of the wire; and moving the wire toward the guide hole sufficiently to cause the end of the wire to enter said guide hole.

4,645,119

METHOD OF BRAZING AN ALUMINUM HEAT EXCHANGER

Takashi Haramaki, Katsuhiko Shiota, both of Tokai; Satoshi Kokura, Hitachiohta; Takao Funamoto, Hitachi, and Akira Tomita, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

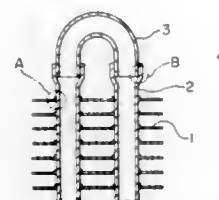
Filed Jul. 5, 1984, Ser. No. 627,892

Claims priority, application Japan, Jul. 6, 1983, 58-122654

Int. Cl.⁴ B23K 35/34

U.S. Cl. 228—183

8 Claims



1. A method of manufacturing a heat exchanger by brazing metal members mainly made of aluminum or aluminum alloy comprising the following steps:

- making a heat exchanger combination by assembling a plurality of brazed metal members, at least one of said brazed metal members being made of a brazing sheet clad with a brazing material;
- immersing said heat exchanger combination in an aqueous solution consisting essentially of 6 to 30% by weight of a fluoride flux containing ZnF_2 and drying said immersed heat exchanger combination to deposit the fluo-

ride flux on brazed portions of said brazed metal members or said whole surface of said heat exchanger combination, said fluoride flux being a corrosion resistant fluoride flux which forms a corrosion inhibiting metallic film; and

- heating said heat exchanger combination on which said fluoride flux is deposited and brazing said brazed members in a furnace in an atmosphere of a non-oxidizing gas of which the dew point of non-oxidizing gas is not more than $-15^\circ C$.

4,645,120

THERMOSTATIC METAL

Jacob L. Ornstein, Reidsville, and Michael A. Hydock, Greensboro, both of N.C., assignors to GTE Products Corporation, Stamford, Conn.

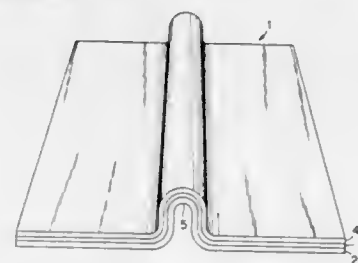
Division of Ser. No. 453,361, Dec. 27, 1982. This application

Jan. 22, 1985, Ser. No. 694,309

Int. Cl.⁴ B23K 20/04

U.S. Cl. 228—190

1 Claim



1. A method of making a thermostatic metal member that is susceptible to orange peel on a surface thereof comprising the steps of: roll bonding a three layer composite comprising a high expansion metal, a first low expansion metal and a second low expansion metal substantially the same as the first but containing, in addition, a grain growth limiting additive added in an amount to substantially inhibit orange peel; heating, cleaning and rolling the bonded three layer composite to a predetermined thickness; forming a support member from said rolled composite so that the surface susceptible to orange peel comprises the layer containing the grain growth limiting additive; disposing the support member in position to form a tunnel therein; forming a tunnel approximately at the center of the support member so that the tunnel has an outer surface of the tunnel comprising the layer of low expansion metal containing the grain growth limiting additive, the support member being an essentially flat member except for the tunnel.

4,645,121

COMPOSITE ROTARY ANODE FOR X-RAY TUBE AND PROCESS FOR PREPARING THE COMPOSITE

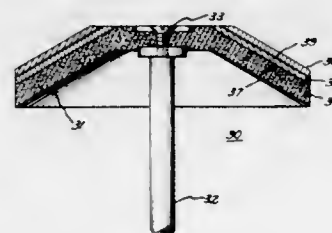
Thomas M. Devine, Jr., Moraga, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 15, 1985, Ser. No. 702,165

Int. Cl.⁴ B23K 20/16

U.S. Cl. 228—194

17 Claims



1. The process for joining mating surfaces of a graphite member and a metal component as elements by diffusion bond-

4,645,123

CONTINUOUS, FILLED ENVELOPE ASSEMBLY WITH NON-MARGINAL SPACED FEED HOLES

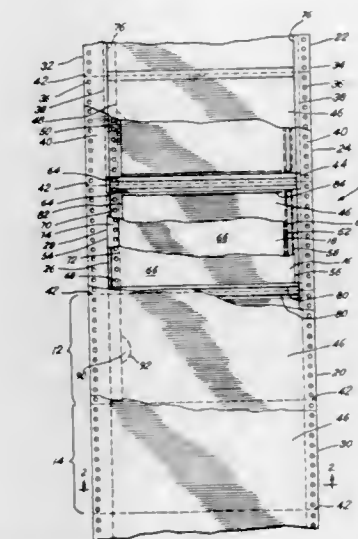
Robert E. Ashby, Quakertown, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,589

Int. Cl.⁴ B65D 27/10

U.S. Cl. 229—69

4 Claims



ing during preparation of an anode assembly for a rotary X-ray anode; the metal of said metal component being selected from the group consisting of tungsten, tungsten alloys, molybdenum and molybdenum alloys, said process comprising the steps of:

- assembling said graphite member, said metal component as elements and disposing at least one continuous layer of metal selected from the group consisting of platinum and platinum alloys therebetween, disposing said assembly in a chamber with said mating surfaces in nesting juxtaposition and said layer contiguous with both said mating surfaces;
- applying a compressive stress to the assembled elements sufficient to urge each of said elements into intimate contact with any adjacent element so as to enable the diffusion of atoms to occur therebetween;
- providing an atmosphere in said chamber inert to said assembled elements;
- heating said assembled elements while under stress to a temperature in the range of from about $1450^\circ C$. to about $1550^\circ C$.
- holding said assembled elements under stress at said temperature for a period of from about 4 to about 5 minutes during which time a crack-free layer of carbide of metal of said metal component forms, said carbide layer having a thickness of less than about 0.0002 inch and said assembled element are unified;
- ceasing the heating to permit the unified assembled elements to cool and
- recovering said unified assembled elements.

4,645,122

CONTAINER FOR PRODUCE AND THE LIKE

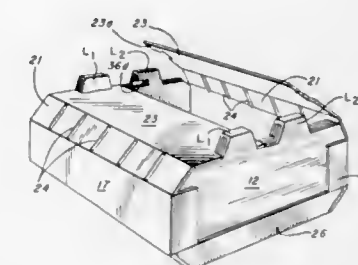
Terrill L. Nederveld, Ada, Mich., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 29, 1986, Ser. No. 823,679

Int. Cl.⁴ B65D 5/32

U.S. Cl. 229—45 R

7 Claims



1. A container for produce and the like comprising a central section having a bottom panel, upright side panels arranged in opposed space relation, top closure panels, first joiner panels, each interconnecting a side edge portion of the bottom panel and an adjacent bottom edge portion of a corresponding side panel, and second joiner panels, each foldably connecting an upper edge portion of a side panel to an adjacent side edge portion of a corresponding top closure panel; and a pair of rigid upright end sections disposed in opposed relation and fixedly secured to predetermined portions of said central section, each end section having upwardly protruding means and an adjacent end edge portion of each top closure panel being provided with complementary locking means, the latter coacting to effect locking of the top closure panel in a predetermined folded position relative to said side panels, each second joiner panel being angularly disposed relative to the top closure panel and side panel connected thereto and in abutting engagement with an adjacent corner edge portion of each end section and restraining lateral relative movement of the corresponding top closure panel when the latter is in said predetermined folded positions.

1. A continuous business form assembly constituting a filled envelope assembly and comprising four webs, each of three of the webs being continuous in a longitudinal direction and having two spaced marginal edges in a transverse direction, a marginal row of spaced feed holes extending along a each marginal edge, a line of marginal perforations extending along each marginal row of spaced feed holes, the marginal row of spaced feed holes and marginal perforations thereby defining two continuous, marginal feed strips along the two marginal edges, and each of the three webs further having a line of non-marginal perforations adjacent a first of the lines of marginal perforations and two spaced transverse lines of perforations, the line of non-marginal perforations defining a non-marginal strip adjacent one of the marginal feed strips and the transverse lines of perforations defining a sheet on the web; the three webs being superimposed with the feed holes, perforations, feed strips, and sheets thereof superimposed and the three webs being attached along the non-marginal strips;

two of the three webs being first and second webs and the other of the three webs being an intermediate third web located between the first and second webs, the intermediate third web defining transversely extending die cuts along the transverse lines of perforations of the intermediate third web between the marginal lines of perforations thereof, the die cuts thereby interrupting the transverse lines of perforations of the intermediate web between the marginal lines of perforations thereof;

the first web being attached to the second web along the transverse lines of perforations and through the die cuts, to form an envelope of the sheets of the first and second webs and an envelope insert of the third web;

the intermediate third web having a non-marginal row of spaced feed holes extending along the line of non-marginal perforations of the intermediate third web in the non-marginal strip of the intermediate third web, the non-marginal strip of the third web thereby being a non-marginal feed strip;

the continuous business form assembly further comprising a non-continuous fourth web superimposed on the intermediate third web between the intermediate third web and the first web, the non-continuous fourth web having trans-

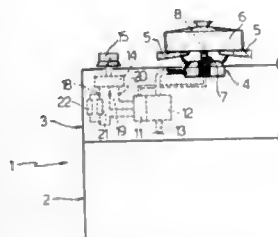
verse edges in the transverse direction along the die cuts and marginal edges spaced in the transverse direction, one of the marginal edges of the non-continuous fourth web extending along the first of the lines of marginal perforations of the third web, the fourth web further having a line of marginal perforations superimposed upon the line of non-marginal perforations of the third web and a row of spaced feed holes superimposed on the non-marginal row of spaced feed holes of the third web, the non-continuous fourth web being attached along the non-marginal strip of the third web to the third web.

4,645,124
DEVICE TO COMPENSATE FOR AN EXTERNAL SOURCES' THERMIC EFFECTS ON A SENSITIVE ELEMENT IN AN AUTOMATIC CONTROL SYSTEM OF THE TEMPERATURE REACHED BY FOODS IN HEATED VESSELS

Luigi Alluto, Moncalieri; Romeo Delotto, Vinovo, and Vanis Orlandin, Pinerolo, all of Italy, assignors to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy
Filed Jan. 16, 1985, Ser. No. 692,032
Claims priority, application Italy, Jan. 18, 1984, 67049 A/84
Int. Cl.⁴ F23N 1/08

U.S. Cl. 236—20 A

15 Claims



1. A device to compensate for the thermal effect of external sources on a temperature sensitive element in a system for automatically controlling the temperature reached by foods in a heated vessel, said device including circuit means to obtain said compensation as a function of the desired foods' temperature setting, said compensation being lower if the value of the set temperature is higher, comprising:

- means to set the desired temperature for said foods;
- means to control the temperature of the heated foods, said means including at least one sensing element for sensing the temperature of the heated foods; and
- electric means for compensating for the thermal effect of external sources on the system.

4,645,125
HEAT TRANSPORT METHOD
Toshiaki Omori, Yachiyo, Japan, assignor to Tokyo Gas Company Limited, Japan

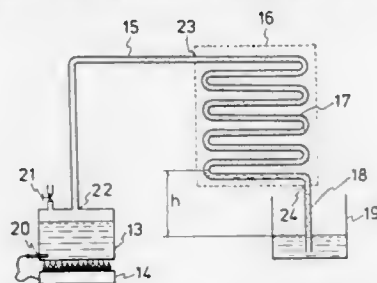
Filed Mar. 5, 1985, Ser. No. 708,263
Claims priority, application Japan, Mar. 6, 1984, 59-42748
Int. Cl.⁴ F24D 1/00; F24C 13/00

U.S. Cl. 237—12

9 Claims

1. A heating method for a house, comprising, adding a vaporizable liquid to a closed steam generator, activating a heating source for heating the steam generator to an extent to generate saturated steam in the steam generator, supplying the saturated steam from the top of the steam generator to at least one heat emitting section which is connected to the steam generator by a steam pipe, latent heat supplied to the heat emitting section by the saturated steam being lost to the surroundings for condensing the saturated steam in the heat emitting section into condensed liquid, supplying at least some of the condensed liquid to a condensed liquid vessel which is connected to the heat emitting section, continuing the activation of the heating source until a level of liquid in the steam generator has fallen to a selected level, deactivating the heat-

ing source when the level in the steam generator has fallen to the selected level, so that a partial vacuum is formed in the steam generator above the liquid level, exposing the condensed liquid vessel to a pressure so that with the partial vacuum in the steam generator, the condensed liquid from the condensed



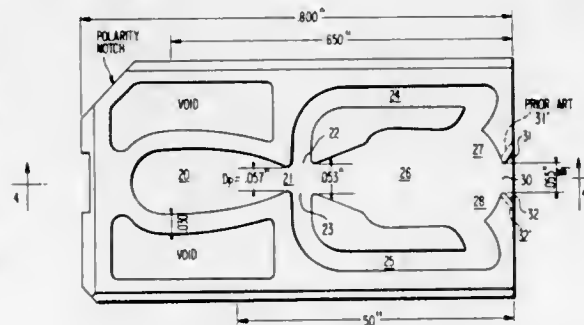
liquid vessel is drawn back to the steam generator over the heat emitting section and the steam pipe, after the steam generator has been filled to a selected volume which raises the selected level, reactivating the heating source to again heat the steam generator and the vaporizable liquid therein for generating saturated steam.

4,645,126
COLD WEATHER FLUIDIC WINDSHIELD WASHER METHOD

Harry C. Bray, Jr., Laurel, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.
Division of Ser. No. 959,112, Nov. 8, 1978, Pat. No. 4,463,904.
This application May 7, 1984, Ser. No. 606,554
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.⁴ B05B 1/08

U.S. Cl. 239—11

2 Claims

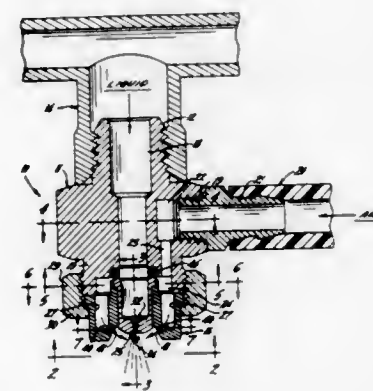


2. A windshield washer method utilizing a fluidic oscillator device having a body member having the following volumetric regions therein, an interaction region having an upstream end and a downstream end and left and right side walls which first diverge from said upstream end and then curve to converge towards said downstream end to define an outlet throat at said downstream end, a power nozzle adapted to issue a jet of windshield washer fluid under pressure through an entrance aperture into the upstream end of said interaction region, left and right control means extending between the upstream end and a downstream end of fluid passing through said fluidic oscillator device to cause the right and left sweeping of said jet of windshield washer fluid and create a fan spray, the improvements for assuring cold fluid oscillation of said fluidic oscillator without increasing the pressure of the jet which comprises expanding the jet issuing from said power nozzle toward said outlet throat in directions transverse of the direction of travel of said jet so the expanded jet is greater in cross-sectional area than said outlet throat and fills said outlet throat to enable said interaction region and said left and right control means to fill with wash liquid and initiate oscillation.

4,645,127
AIR ATOMIZING SPRAY NOZZLE
Lyle J. Emory, Darien, and Patrick Maney, Villa Park, both of Ill., assignors to Spraying Systems Co., Wheaton, Ill.
Filed Aug. 31, 1984, Ser. No. 646,562
Int. Cl.⁴ B05B 7/08

U.S. Cl. 239—299

8 Claims

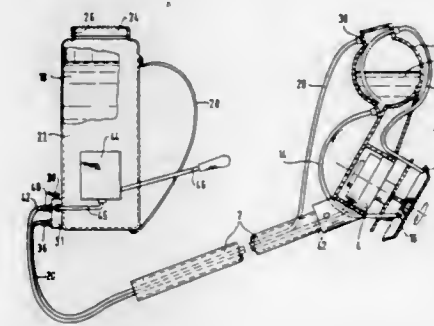


1. An air atomizing spray nozzle comprising, in combination, a hollow body, an annular hub on said body, means defining a liquid passage in said body for receiving pressurized liquid from an external source and conducting it to said annular hub, means defining an air duct in said body for receiving pressurized air from an external source and conducting it to said annular hub, a liquid spray tip mounted on said annular hub, said spray tip having an elongated discharge orifice in fluid communication with said liquid passage, an annular air cap having a central bore telescopically receiving said spray tip, a pair of diametrically opposed air nozzles on said annular air cap, each said air nozzle having an elongated discharge orifice in communication with said air duct for positioning in substantially parallel relation with and on opposites of the elongated discharge orifice of said spray tip, said spray tip having an outwardly projecting flange adjacent its upstream end, said air cap being formed with a shoulder for engaging said spray tip flange, a resilient sealing member interposed between the upstream end of said spray tip and said body, a retainer collar engageable with said air cap and said annular hub for urging said spray tip into engagement with said sealing member and into sealed liquid tight relation to said liquid passage in response to an axial force produced by said retainer collar, said spray tip discharge orifice being formed to discharge liquid longitudinally of said nozzle tip, said air cap discharge nozzles each being formed to each direct pressurized air at angles of about 60° to the longitudinal discharge of liquid from said spray tip to cause the discharging liquid to form a relatively wide liquid spray pattern of substantially uniform thickness and fine particle size, and indexing means between said liquid spray tip and said air cap for orienting the discharge orifice of the spray tip in parallel relation with the discharge orifices of said air cap and for permitting said spray tip and air cap to be adjusted in unison relative to said sealing member about the longitudinal axis of the spray tip without disturbing the parallel orientation of the spray tip and air cap discharge orifices.

4,645,128
APPARATUS FOR SPRAYING PLANT-PROTECTIVE AGENTS
Alfred Graber, Fischbach-Göslikon, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Jul. 10, 1985, Ser. No. 753,513
Claims priority, application Switzerland, Jul. 19, 1984, 3517/84
Int. Cl.⁴ B05B 3/10; A01G 25/14

U.S. Cl. 239—223

16 Claims



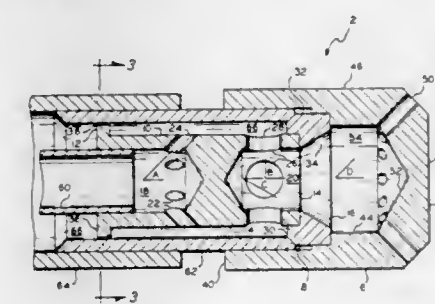
1. A portable apparatus for spraying plant-protective agents, comprising a hand-held lance or rod, a spray head comprising a motor, a driving shaft thereof, a rotatable spray plate connected with said shaft, and a first container, and a connecting pipe line associated with said spray head and having a discharge opening near the centre of said spray plate, a portable second container with a filling aperture for the plant-protective agent, and a supply line having a longitudinal axis and being flexible and rotatable about its longitudinal axis in at least a part of its length and connecting said second container with said first container; said supply line and said connecting line opening into said first container through orifices located at least approximately diametrically opposite one another; said first container is mounted on said lance or rod adjacent the spray head, said lance or rod having a longitudinal axis about which a lance and the first container are rotatable, the lance and the first container are connected to said second container in a manner so as to be slewable upward and downward in a vertical plane.

4,645,129
ATOMIZING NOZZLE AND USE
Francois Terrade, and Claude Laheyne, both of Bordeaux, France, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 5, 1985, Ser. No. 804,953
Int. Cl.⁴ B05B 7/06

U.S. Cl. 239—427

18 Claims



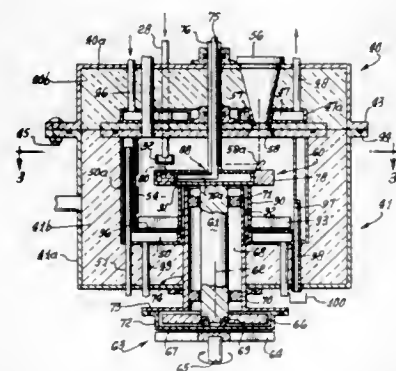
1. Apparatus comprising:
a mixing body having a generally cylindrical outer surface, a first end, a second end, a first borehole extending from the first end toward the second end, a second borehole

extending from the second end toward the first end, said first borehole and said second borehole not being in direct communication, a first plurality of passages extending from the first borehole opening onto the generally cylindrical outer surface at a first longitudinal position on the generally cylindrical outer surface of the mixing body; and a second plurality of passages extending from the second borehole opening onto the generally cylindrical outer surface at a second longitudinal position on the generally cylindrical outer surface of the mixing body between the first longitudinal position and the second end of the mixing body; and an extension mounted on the second end of the mixing body, said extension having a first end, a second end, and a generally cylindrical outer surface, the extension being mounted by a portion adjacent the first end thereof to the second end of the mixing body, said extension having a passage therethrough extending along a longitudinal axis thereof, said passage having a generally frustoconical sidewall diverging in a direction away from the second borehole to the second end of the extension.

4,645,130
METHOD FOR TREATING CARBIDE-BASED DESULFURIZING REAGENTS FOR INJECTION INTO MOLTEN IRON
Ararat Hacetoglu, Fonthill; William K. Kodatsky, Mississauga, and Ray O. Gonzales, Jr., Thorold, all of Canada, assignors to American Cyanamid Company, Stamford, Conn.
Filed Aug. 9, 1985, Ser. No. 764,156
Claims priority, application Canada, Dec. 4, 1984, 469240
Int. Cl.⁴ B02C 19/12

U.S. Cl. 241—16 **2 Claims**
1. In a process where large agglomerations of furnace calcium carbide are milled into very fine particles, the improvement which comprises adding an alcohol to said large agglomerations before or during milling whereby the quantity of fine particles produced is increased.

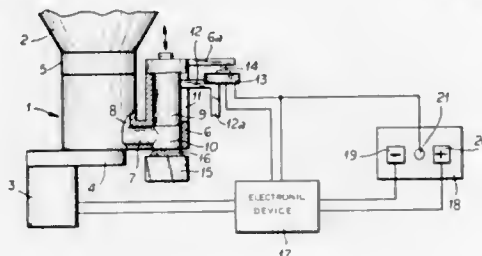
4,645,131
POWDER MILLING METHOD TO PRODUCE FINE POWDER SIZES
Robert W. Hailey, 2030-229 Beverly Plz., Long Beach, Calif. 90815
Filed Dec. 24, 1984, Ser. No. 686,017
Int. Cl.⁴ B02C 13/09
U.S. Cl. 241—23 **9 Claims**



1. The method of milling a powdery metallic substance to finer particle size, that includes impacting said powdery substance against multiple surfaces under vacuum conditions and at reduced temperature conditions to cause particle fracture, said particles being reduced in size by fracturing to under 20 microns in average cross dimension, said impacting including rotating a rotor having certain impacting peripheral surfaces, and controllably feeding said powdery substance downwardly into the path of said surfaces during rotor rotation, and cooling

the rotor to low temperature during rotation thereof by passing coolant therein, and collecting said fractures particles; carrying out said impacting to spread apart the particles as they are thrown outwardly by the rotor impacting surfaces toward and against other impacting surfaces, and positively accelerating the downward feed of said particles into the path of rotation of said certain impacting surfaces.

4,645,132
METHOD OF AND A MACHINE FOR THE MEASURING OUT OF GROUND MATERIAL
Florindo Fregnan, Dosson, Italy, assignor to Fregnan Florindo Costruzioni Macchine de Caffè "Elektra", Dosson, Italy
Filed Apr. 12, 1985, Ser. No. 722,888
Claims priority, application Italy, Apr. 12, 1984, 3420 A/84
Int. Cl.⁴ B02C 25/00
U.S. Cl. 241—30 **3 Claims**

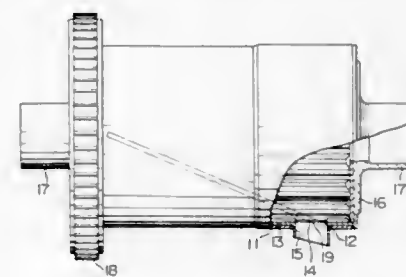


1. A method of preparing precisely metered quantities of a foodstuff, comprising the steps of:
(a) grinding said foodstuff in a grinding chamber and directly transferring ground material to a metering chamber adjacent said grinding chamber;
(b) compacting said ground material in said metering chamber into unit quantities of predetermined volume by reciprocating a piston in said metering chamber;
(c) monitoring the displacement of said piston during reciprocation thereof and detecting a deviation of the compaction stroke of said piston representing deviation of the actual unit volume from a predetermined volume;
(d) signalling said deviation; and
(e) controlling the grinding time in step (a) in response to signals of deviation in step (d) to restore said actual volume to said predetermined volume.

4,645,133
LINER FOR THE OUTLET PORT OF A ROD MILL
Tatsuo Hagiwara, Funabashi; Keiji Imai, Ibaraki; Shigenori Nagaoka, Chiba; Shinji Kogumazaka, Funabashi; Kyoichi Yahagi, Matsudo; Takeshi Imagawa, Ibaraki; Hidenaga Ishii, Tokyo, and Toshitsugu Kikuchi, Takasaki, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Ishii Syoji, Ltd., Tokyo, both of Japan
Filed Jun. 3, 1985, Ser. No. 740,400
Claims priority, application Japan, Jun. 6, 1984, 59-116147
Int. Cl.⁴ B02C 17/04, 17/18, 17/22
U.S. Cl. 241—182 **2 Claims**

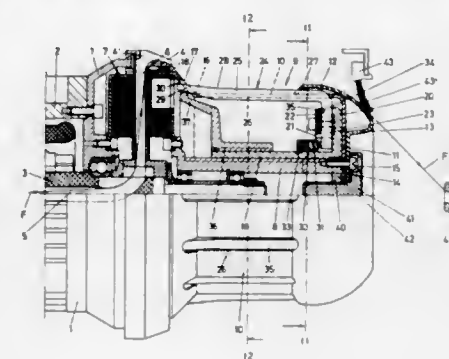
1. In combination, a rod mill comprising a barrel having a wall with an inside surface, a plurality of elongated rods adapted to be received in and extend the length of said barrel for pulverizing material upon rolling of said barrel, an outlet port provided at an end portion in the wall of the barrel and having a size large enough to allow ends of said rods to project through the port, a liner on the inside surface of said barrel at said end portion, said liner having an unobstructed opening defined by a peripheral edge at said outlet port, and means on said peripheral edge including a cylindrical body

extending and projecting outwardly through said outlet port for pushing a rod, which drops in an inclined manner and projects outwardly through the unobstructed opening



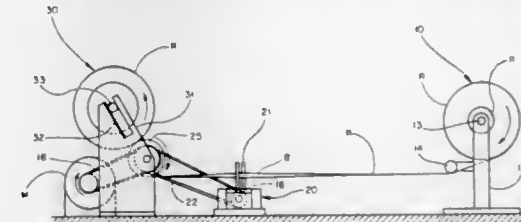
in the liner while material is being pulverized, and comes into abutment with the cylindrical body, back into the barrel with the rolling of the barrel.

4,645,134
THREAD STORAGE AND FEED DEVICE
Alberto G. Sarfati, Como, Italy, assignor to Sobrevin Società de brevetti industriali-Etablissement, Vaduz, Liechtenstein
Filed Jul. 30, 1985, Ser. No. 760,719
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1984, 3429219
Int. Cl.⁴ B65H 51/20
U.S. Cl. 242—47.01 **10 Claims**



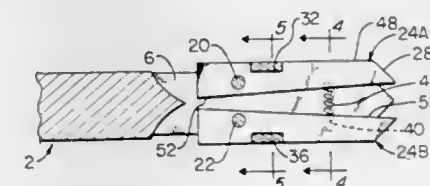
1. In a thread storage and feed device having a winding body to which the thread is fed in a region of a conical widened portion of the winding body to form a supply which is removable therefrom, said winding body defining an axis and having an axial length, arms being arranged cross-wise to a first angular channel of the conical widened portion, said arms extending into slots respectively formed in the region of the conical widened portion of the winding body and being directed towards corners of a polygon, the improvement wherein each of said arms extends substantially over the axial length of the winding body and is longitudinally displaceable in axial direction of said winding body, each of said arms forms a second angular channel at an end thereof facing the first angular channel, a region of said end being insertable into a respective of said slots by longitudinal displacement of said each arm.

4,645,135
METHOD FOR WINDING ELASTOMERIC RIBBON
Marion C. Morris; Randolph J. Hill, both of Appleton; Richard H. Frick, Neenah, and Hugo L. Kons, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of Ser. No. 681,004, Dec. 13, 1984, abandoned, which is a continuation of Ser. No. 298,369, Sep. 1, 1981, abandoned. This application Oct. 24, 1985, Ser. No. 790,701
Int. Cl.⁴ B65H 18/08
U.S. Cl. 242—67.1 R **15 Claims**



1. A method for winding onto a spool a soft elastomeric ribbon having wide surfaces of a width greater than its thickness, the spool having an axial length greater than the width of the ribbon, and the method comprising the steps of:
(a) feeding the ribbon from a ribbon source towards the spool;
(b) at a ribbon traversing station, maintaining the wide surfaces of the ribbon disposed transversely to the longitudinal axis of the spool and applying to only the wide surfaces of the ribbon a traversing force sufficient to traverse the ribbon along a traverse path parallel to the longitudinal axis of the spool;
(c) between the traversing station and the spool, turning the ribbon to dispose the wide surfaces thereof parallel to the longitudinal axis of the spool at a winding point where the ribbon is wound onto the spool; and
(d) winding the ribbon on the spool.

4,645,136
TAKEUP SPINDLE
George M. Woodley, Shrewsbury, and Albert H. Wilson, Marlboro, both of Mass., assignors to King Instrument Corporation, Westboro, Mass.
Continuation of Ser. No. 626,534, Jun. 29, 1984, abandoned. This application Aug. 14, 1985, Ser. No. 765,854
Int. Cl.⁴ B65H 75/24
U.S. Cl. 242—68.3 **1 Claim**



1. A takeup spindle for a cassette-loading machine comprising:
a shaft having a front end and a rear end, said front end terminating in a conically tapered front end surface;
a slot in the front end of said shaft, said slot extending diametrically through said front end of said shaft and said front end surface;
first and second dogs in said slot, said dogs having opposite first and second ends with said second ends being closer to said rear end than said first ends, said first ends extending forwardly of said front end surface, said first ends having leading edge surfaces disposed at an acute angle to the

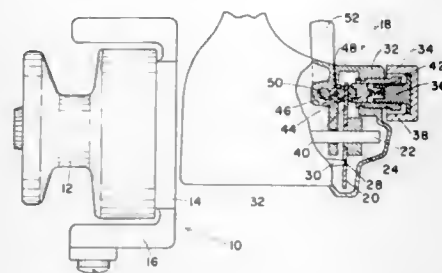
rotational axis of said shaft, said leading edge surfaces extending in converging relation to one another said first and second dogs having surface edges which are substantially straight from the second ends thereof to said leading edge surfaces;

pivot means pivotally securing said dogs to said shaft, said pivot means being located closer to said second ends than said first ends;

dog-limiting means for limiting pivotal movement of said first and second dogs relative to said shaft, said dog-limiting means comprising a ring surrounding said shaft and said dogs between said pivot means and said first ends of said dogs; and

spring means extending between said dogs for urging said dogs into tight engagement with said ring, said spring means comprising a compression spring disposed in blind holes in said dogs.

4,645,137
SPINNING REEL WITH QUICKLY ADJUSTABLE DISC DRAG
John N. Young, Fairfax, Calif., assignor to Charles C. Worth Corporation, Kentfield, Calif.
Filed Apr. 11, 1986, Ser. No. 850,613
Int. Cl.⁴ A01K 89/01, 89/02
U.S. Cl. 242—84.5 A 2 Claims



1. In a spinning reel including a reel body, a main shaft rotatable on said body and a spool carried on said main shaft to rotate therewith, a drag control comprising:

a drag disc slidably carried on said main shaft to rotate therewith;

a primary drag plunger movable on said body parallel to said main shaft to engage an aligned spot on a face of said disc; yieldable means biasing said primary plunger against one side of said disc to impose a preset drag on said main shaft;

a secondary drag plunger movable on said body in alignment with said primary drag plunger to engage the opposite side of said disc;

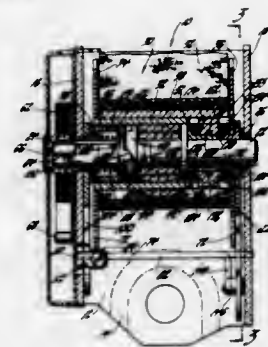
a cam member rotatable about an axis on said body and engaging said secondary drag plunger to increase pressure against said disc when rotated in one direction and to decrease pressure against said disc when rotated in the other direction;

a finger-operated drag lever for rotating said cam partially in either of said directions;

said cam member being tapered along the axis thereof to impart different ranges of movement to said secondary drag plunger at different locations along the axis thereof; and

means for moving said cam member axially on said body to different selected positions.

4,645,138
COMPACT SEAT BELT RETRACTOR
Harley L. Kapanka, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 13, 1986, Ser. No. 818,081
Int. Cl.⁴ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.4 A 4 Claims



1. A seat belt retractor comprising:

a frame having laterally spaced side walls;

locking reel shaft extending between the side walls and journaled for rotation thereon;

a belt spool attached to the reel shaft in radially spaced relation therefrom to define an annular space between the reel shaft and the spool;

a belt attached to the spool and wound therearound;

a sprocket attached to the spool and the reel shaft for rotation therewith;

a lock bar pivotally mounted on the frame side walls and movable into an engagement with the sprocket to lock the reel against belt unwinding rotation;

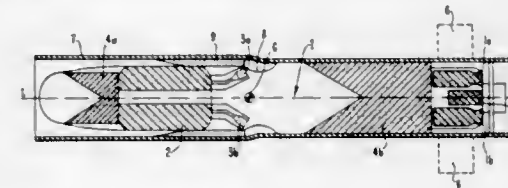
an actuator mounted for rotary movement about the reel shaft and including a portion which extends into proximity with the lock bar and having associated means which moves the lock bar into the sprocket locking engaging position upon rotary movement of the actuator about the reel shaft; and

acceleration sensing means surrounding the reel shaft and situated within the annular space between the reel shaft and the spool, which are adapted to effects rotary movement of the actuator in response to a sensed condition of acceleration whereby the actuator is rotated and the lock bar moved to the sprocket locking position.

4,645,139
PROCEDURE FOR STEERING A LOW-SPEED MISSILE, WEAPON SYSTEM AND MISSILE FOR IMPLEMENTATION OF THE PROCEDURE
Jean Guillot, Chateaufort-Malabry; Jacques Raynaud, Savigny-sur-Orge; Michel Maree, Gif-sur-Yvette; Robert Vaillant, Paris, and Jean Ansaldi, St. Remy-Les-Chevreuses, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed Jun. 3, 1982, Ser. No. 386,636
Claims priority, application France, Jun. 4, 1981, 81 11088
Int. Cl.⁴ F42B 15/033, 15/02
U.S. Cl. 244—3.22 11 Claims

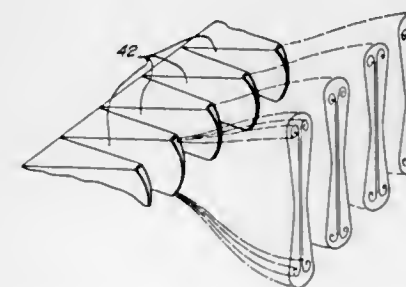
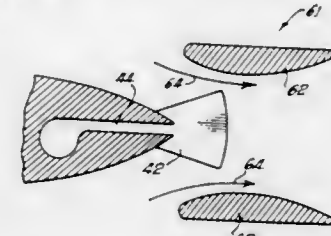
1. A missile for launching from a launching tube; the missile including a combat payload and a propulsion system of the propulsive fuel load type; the propulsion system comprising a first propulsive means arranged in the rear of the missile, the combustion of the first propulsive means being terminated before the missile exits from the launching tube, the first propulsive means imparting a low initial speed to the missile when the missile exits from the launching tube, and a second propulsive means including lateral nozzles for enabling steering of the missile by force and arranged for simultaneously imparting to the missile during flight of the missile axial propulsive thrust

and maneuver forces for steering by force; the combat payload, the first propulsive means and the second propulsive means being arranged in the missile so that when the missile exits from the launching tube after combustion of the first propulsive means, the center of gravity of the missile is positioned in a plane transverse to the longitudinal axis of the



missile and including the maneuver forces, and during the flight of the missile and progressive combustion of the second propulsive means, the position of the center of gravity of the missile moves rearwardly along the longitudinal axis of the missile thereby enabling the generation of aerodynamic torques for producing maneuver forces which are added to the maneuver forces provided for the steering by force.

4,645,140
NOZZLE SYSTEM
Paul M. Bevilacqua, Dublin, and John H. Dehart, Powell, both of Ohio, assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Aug. 18, 1983, Ser. No. 524,481
Int. Cl.⁴ B64C 21/04; B64D 33/04
U.S. Cl. 244—12.1 12 Claims



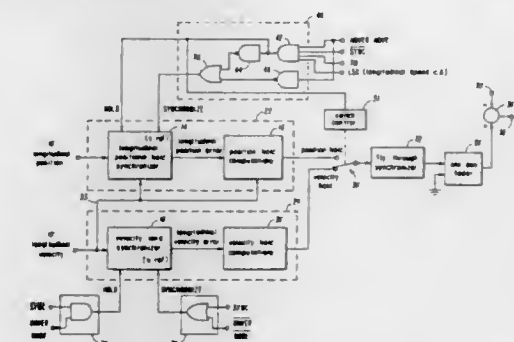
1. A lift and/or propulsion system for an aircraft having wings, comprising:

(a) supply means for supplying pressurized gas; and

(b) nozzle connected with said supply means having a nozzle exit for directing said gas rearwardly of said nozzle to produce the jet stream, said nozzle exit comprising a plurality of horizontal span slots and a plurality of vertical cross slots, said horizontal span slots and said vertical cross slots being distinct from each other, said vertical cross slots having an exit profile which is substantially curved so that the portion of each of said plurality of vertical slots which is approximately horizontally in alignment with the centerline of the jet stream is more rearward than the upper and lower portions of said each

vertical slot, said cross slots having a bowtie shape in cross section such that the width of the cross slots increases outwardly from the centerline of the jet stream to the tips of each cross slot so that the central portion of said cross slots are constricted relative to said tips, said tips having an arcuate shape, said horizontal span slots having a substantially straight exit profile and having a gap of substantially uniform width, said vertical cross slots and said horizontal span slots being adjacent to each other and spaced spanwise along the wings said span slots being in substantially lateral alignment with the central constricted portions of said cross slots whereby the jet stream flowing from said vertical cross slots has counterrotating vortices emanating only from each of said arcuate tips, the counterrotating vortices counterrotating about axes which are generally parallel to the direction of jet stream flow, and whereby the jet stream flow from said vertical cross slots combines with the jet stream flow from said horizontal span slots to form vortex enriched flow.

4,645,141
AUTOMATIC FLIGHT CONTROL SYSTEM
Kenneth W. McElreath, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed May 23, 1984, Ser. No. 613,660
Int. Cl.⁴ B64C 13/22
U.S. Cl. 244—17.13 6 Claims



1. An aircraft control system comprising:

control means movable between a neutral position and a control position for providing an aircraft pilotage control signal in said control position;

means for providing a position signal representing aircraft position;

means for providing a velocity signal representing aircraft velocity;

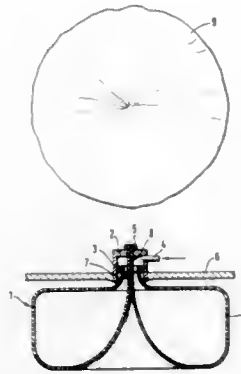
means responsive to said position signal and a reference position signal for generating a position control signal for maintaining aircraft position;

means responsive to said velocity signal and a reference velocity signal established independent of control means displacement from a neutral position for providing a velocity control signal for maintaining aircraft velocity;

means responsive to aircraft velocity for selectively providing one of said position control signal and said velocity control signal as a selected signal; and

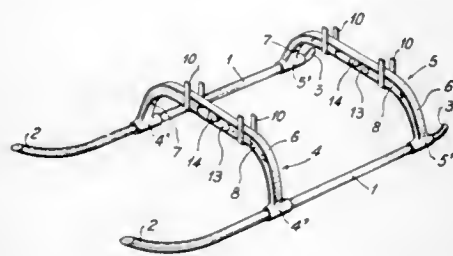
means for controlling said aircraft in response to said aircraft pilotage control signal when said control means is in a control position and for controlling said aircraft in response to said selected signal when said control means is in said neutral position.

4,645,142
IMPACT ATTENUATION
 Michael Soelter, Bremen, Fed. Rep. of Germany, assignor to MBB GmbH, Bremen, Fed. Rep. of Germany
 Filed Dec. 21, 1983, Ser. No. 564,476
 Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247694; Jun. 29, 1983, 3323348
 Int. Cl.⁴ B64D 1/14
 U.S. Cl. 244—100 A 5 Claims



1. A device for attenuating the impact of a descending body comprising:
 a plastically deformable hose having a first end affixed to said object and defining an opening into the hose;
 the other end of the hose being inverted and turned inside out and telescoped through the first mentioned end so that a gap and filling space is defined between the two ends; means for centrally fastening said inverted, inside out end to the object; and
 means defining a filling chamber in communication with gap space between said ends for filling the interior of the hole with pressurized gas.

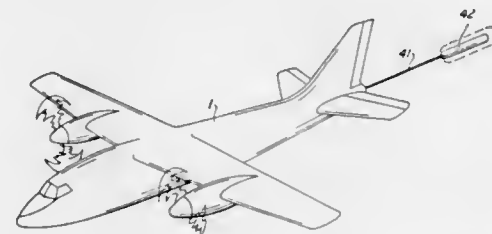
4,645,143
FLEXIBLE GIRDER WITH HIGH ENERGY ABSORPTION, AND LANDING GEAR AND TAIL SKID FOR AN AIRCRAFT EQUIPPED WITH SUCH A GIRDER
 René L. Coffy, Sausset-Les-Pins, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France
 Filed Nov. 2, 1984, Ser. No. 667,672
 Claims priority, application France, Nov. 2, 1983, 83 17394
 Int. Cl.⁴ B64C 25/58
 U.S. Cl. 244—100 R 29 Claims



1. A flexible girder made of composite materials and with high energy absorption, having substantially the shape of an elongate box of laminated structure comprising two rigid flanges connected by two webs, characterized in that it comprises in addition at least one deformable energy-absorbing block unit arranged between the two flanges and comprising at least one block of an elastomeric material with high deformation remanence, the block unit being intended, when the girder is deformed in flexion in a direction substantially perpendicular to the flanges, to absorb the buckling deformation energy of

the flange which is subjected to compressive stress, by resting on the other flange which is subjected to tensile stress, and to control the buckling of the compressed flange, the absorption characteristic of the block bringing about partial restitution of the energy absorbed, when the girder returns to the normal position, at least one of the block units being arranged between two aligned apertures, respectively provided in the webs of the girder.

4,645,144
METHOD AND APPARATUS FOR EFFECTING FINE CONTROL OF AIRCRAFT VELOCITY
 Joseph E. Zupanick, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
 Division of Ser. No. 651,022, Sep. 17, 1984, This application Dec. 13, 1985, Ser. No. 808,544
 Int. Cl.⁴ B64C 9/32
 U.S. Cl. 244—113 9 Claims

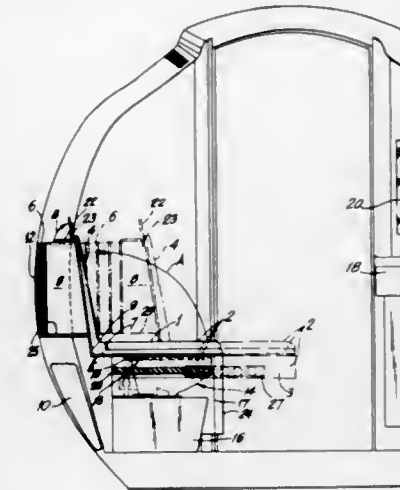


1. A method for effecting fine control of the longitudinal velocity of an aircraft comprising the steps of:
 (A) deploying variable air drag means comprising an elongated inflatable bladder from the aircraft;
 (B) sensing the algebraic value of the aircraft longitudinal acceleration;
 (C) when the longitudinal acceleration is sensed to be positive, increasing the air drag imparted by the elongated inflatable bladder by increasing the air pressure therein to increase the girth thereof and thereby decrease the aircraft velocity; and
 (D) when the longitudinal acceleration is sensed to be negative, decreasing the air drag imparted by the elongated inflatable bladder by decreasing the air pressure therein to decrease the girth thereof and thereby increase the aircraft velocity.

4,645,145
COMBINATION TOILET AND VANITY
 Enrique Alie, Brooklyn, N.Y., assignor to Falcon Jet Corporation, Teterboro, N.J.
 Filed Sep. 28, 1984, Ser. No. 655,516
 Int. Cl.⁴ B64D 11/06
 U.S. Cl. 244—118.5 4 Claims

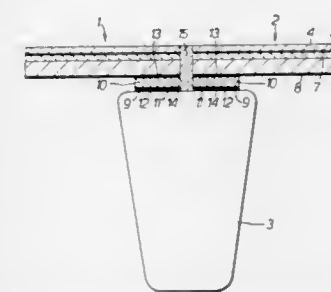
1. A lavatory, comprising:
 a bowl housing fixed in position relative a lavatory floor, said bowl housing at least partially concealing a fixed position toilet bowl;
 a toilet seat portion;
 a vanity, fixed relative said lavatory floor and displaced from said bowl housing;
 supporting means for supporting said toilet seat portion in a horizontal plane directly over said toilet bowl in a first configuration and for supporting said toilet seat portion displaced from said toilet bowl in a horizontal plane in a second configuration, said supporting means being integral with said fixed position bowl housing, said vanity and said bowl housing being positioned with respect to each other such that said toilet seat functions as a vanity seat in said second configuration substantially forwardly adjacent said vanity;

a chair back fixed relative said toilet seat and moveable therewith; and bellows, said bellows being secured at one end thereof to a fixed wall behind said bowl housing and at an opposite end thereof to said chair back, said bellows



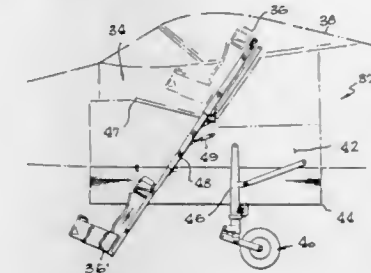
being compressed when said toilet seat is in said first configuration and extended when said toilet seat is in said second configuration, said bellows at least partially covering said toilet bowl when said toilet seat is in said second configuration.

4,645,146
WINDOW PANEL
 Christopher W. G. Hall, Redditch, England, assignor to Pilkington Brothers P.L.C., St. Helens, England
 Filed Apr. 11, 1985, Ser. No. 721,943
 Claims priority, application United Kingdom, Apr. 18, 1984, 8410042; Apr. 18, 1984, 8410043
 Int. Cl.⁴ B64C 1/14
 U.S. Cl. 244—129.3 14 Claims



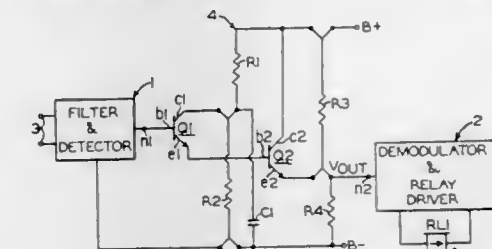
12. A window panel having a peripheral adhesive band one face of which is adhered to the inner face of the panel, said adhesive band comprising:
 an adhesive face for adhesion to a window frame, which adhesive face is composed of a thermoplastic polymeric material of lower softening temperature than said one face of the band; and
 an electrical heating element embedded in said adhesive band closer to said adhesive face than to said one face of said adhesive band.

4,645,147
INGRESS AND EGRESS SYSTEM FOR AN AIRCRAFT
 Klaas Hendricks, Granada Hills, Calif., assignor to Lockheed Corporation, Calabasas, Calif.
 Filed Oct. 15, 1985, Ser. No. 786,989
 Int. Cl.⁴ B64C 1/22; B64D 11/06
 U.S. Cl. 244—137 P 11 Claims



1. A system for ingressing and egressing a crew member from the flight station of an aircraft comprising:
 passage means mounted within the aircraft having a first end coupled to the flight station and a second end terminating at the underside of the aircraft;
 a crew seat assembly movably mounted within the aircraft, said seat assembly movable from a first position within the flight station, via said passage means, to a second position located such that the crew member can obtain access to said seat assembly from the ground; and
 positioning means mounted in said aircraft for moving said seat assembly from said first position to said second position.

4,645,148
FAIL-SAFE VOLTAGE-LIMITING CIRCUIT FOR AN AUDIO FREQUENCY OVERLAY TRACK CIRCUIT
 Dick J. Kolkman, Gibsonia, Pa., assignor to American Standard Inc., Swissvale, Pa.
 Filed May 16, 1985, Ser. No. 735,017
 Int. Cl.⁴ B61L 25/02
 U.S. Cl. 246—34 A 16 Claims



1. A fail-safe voltage-limiting circuit for an audio frequency-controlled railway track circuit arrangement having a filter, demodulator circuit at a receiving track circuit end, said fail-safe voltage-limiting circuit comprising:
 (a) indicating means operable over a preselected battery voltage level for indicating an occupied condition as a function of an amplitude portion of an input signal;
 (b) a first transistor having a base terminal coupled to the filter, demodulator circuit;
 (c) first limiting means coupled to a first collector terminal of said first transistor for limiting such input signal to a predetermined first limit value during an increasing amplitude excursion of such amplitude portion as a function of a predetermined first resistive ratio associated with said first limiting means, such predetermined first resistive ratio being derived in part by a first fail-safe resistor con-

ected to said first collector terminal such that, a ground portion of such preselected battery voltage level is interrupted to said first transistor upon failure of said first limiting means;

(d) a second transistor having a second base terminal connected to a first emitter terminal of said first transistor; and

(e) a second fail-safe resistor connected between a second emitter terminal of said second transistor and said indicating means such that, a failure of said second fail-safe resistor interrupts a positive portion of such preselected battery voltage level to said second transistor and prevents coupling of such amplitude-limited input signal to said indicating means.

4,645,149

CAMMING DEVICE FOR CLIMBERS

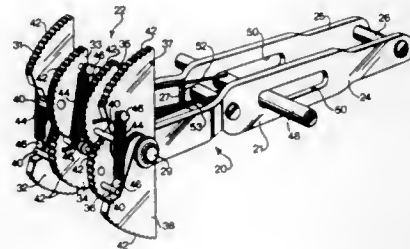
Greg E. Lowe, Boulder, Colo., assignor to Lowe Alpine Systems, Inc., Lafayette, Colo.

Filed Sep. 4, 1985, Ser. No. 772,623

Int. Cl.⁴ A47G 29/00

U.S. Cl. 248—1

19 Claims



1. A device for providing an anchor at multisized openings in a surface, said device comprising:

support means having a body portion insertable into an opening in a surface; and

a plurality of cam means mounted on said body portion of said support means with each of said cam means having a cam surface that is movable between a withdrawn position adjacent to said body portion and an extended position outwardly of said body portion, and with at least one portion of one of said cam surfaces extending outwardly a distance greater than at least one portion of at least one other of said cam surfaces when said cam surfaces are at said extended position whereby said device can be utilized over an extended size range of openings in said surface.

4,645,150

PUSH-IN WALL MOUNT FOR VACUUM CLEANING SYSTEM

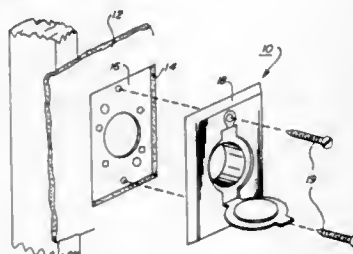
F. Warren Taylor, Cary, N.C., assignor to Fasco Industries, Inc., Boca Raton, Fla.

Filed Dec. 30, 1985, Ser. No. 814,363

Int. Cl.⁴ F16L 5/00

U.S. Cl. 248—56

5 Claims



1. An inlet valve assembly for a central vacuum system adapted to be mounted on a wall or other structural support for a building to provide vacuum flow from one side of the wall to

the other side thereof through an opening formed in the wall or other structural support, comprising

an annular coupling member adapted to be received in said opening for connection to a source of vacuum,

first and second plate members each having therethrough a central aperture, and

means adjustably connecting said members in spaced relation to each other with said coupling member extending therebetween coaxially of said central apertures in said members,

one of said plate members being formed from flexible material, and being of a size such that when it registers with said opening and is in its relaxed, normal condition, opposed portions thereof extend beyond opposed edges of said opening, said one plate member being adapted, during the mounting of the assembly on said wall or support to be flexed to a size wherein the same may be pushed through said opposed edges of said opening thereafter to assume its relaxed condition after being pushed therethrough, and said connecting means being adjustable after the mounting of the assembly on said wall or support to draw said plate members toward each other with said opposed portions of said one plate member urged against one side of the wall or other structural support, and with the other of said plate members urged against the other side of the wall or other structural support.

4,645,151

CABLE AND CONNECTION APPARATUS FOR ELECTROSTATIC POWDER GUNS

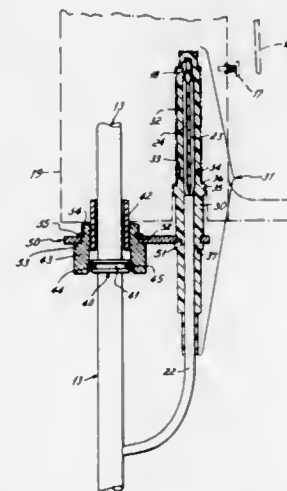
Dale N. Gimben, Grafton, Ohio, assignor to Nordson Corporation, Amberst, Ohio

Filed May 20, 1985, Ser. No. 735,961

Int. Cl.⁴ H01R 11/00, 13/58; B05B 3/00

U.S. Cl. 248—52

7 Claims



1. Tool removable electrostatic cable and control cable system for an electrostatic spray gun and comprising:

an electrostatic cable;

a tool operated coupling nut means for holding said electrostatic cable in said gun;

a control cable terminating in an insulating body and connected to a switch encapsulated therein, said body being insertable into said gun for operation of said switch thereby to control conduction of electricity through said electrostatic cable;

a bracket means engaging said insulating body on said control cable;

said bracket means also being connected to said coupling nut means for maintaining said control cable, together with said electrostatic cable, in operative connection to said

gun until said coupling nut is removed by tool from said gun.

4,645,152

UPRIGHT GOLF BAG SUPPORT

Donald M. Downing, 4408 S. 41 W Ave., Tulsa, Okla. 74107

Filed Aug. 26, 1985, Ser. No. 769,351

Int. Cl.⁴ A63B 55/00

U.S. Cl. 248—96

10 Claims



1. Apparatus for holding a golf bag upright to the ground comprising:

support means vertically attached to said bag, the bottom of which is adjacent the bottom of said golf bag;

a ground spike vertically and movably retained in a first position having its bottom section slightly above the bottom of said support means;

a foot plate means secured to said spike in a first position parallel to said spike, the plate pivotal from said first position to a second position transverse to said spike for pushing the spike beyond the bottom section of said support means into the ground and a second position, detent means on said plate and a catch for said detent means in said support means to releasably hold said plate in said first position; and

means to normally bias said spike upwardly in said second position which automatically retracts the spike and plate means to their first positions when the spike is pulled from the ground.

4,645,153

TILT AND SWIVEL SUPPORT

Robert H. Granzow, Miamisburg; Harold S. Richard, Dayton, and Thomas L. Hermann, Springfield, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 23, 1985, Ser. No. 737,019

Int. Cl.⁴ F16M 11/04

U.S. Cl. 248—178

14 Claims

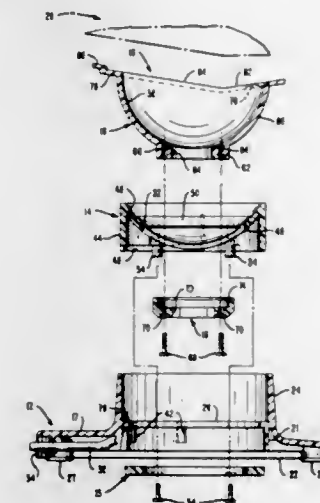
1. Apparatus for supporting a structure for tilting and rotating motion, comprising:

first means attachable to said structure and having a convex lower portion and a projection extending downwardly therefrom;

socket means with respect to which said first means may move in tilting motion, having a concave portion complementary to the concave portion of said first means and being slotted to receive said projection, and also having a peripheral bearing surface;

second means attached to said projection for maintaining a predetermined frictional relationship between said first and second means and said socket means, and including a

clamping means and a plurality of screws extending through the clamping means and threadedly engaging the socket means;



base means having a base surface and also having a bearing surface for cooperating with the peripheral bearing surface of the socket means for rotational movement; and retaining means attached to said socket means for retaining said socket means in said base means.

4,645,154

RETAINING CLIP FOR PEG BOARD HOOK

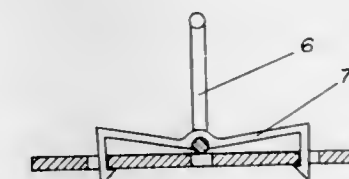
Herbert A. Bly, 10 Shadowstone La., Lawrenceville, N.J. 08648

Filed Apr. 10, 1985, Ser. No. 721,687

Int. Cl.⁴ E04G 3/00

U.S. Cl. 248—220.4

2 Claims



1. A retaining clip apparatus for holding hooks against a pegboard having holes therein, said apparatus comprising:

a central portion including a semi-circular groove therein for at least partially surrounding the shank of a pegboard hook;

a pair of resilient projecting arms attached to opposite sides of said central portion;

a pair of prongs attached respectively to the ends of said projecting arms not connected to said central portion;

barb means attached to the unattached end of said prongs and located on said prongs such that said barb means face towards each other, said barb means having a lip thereon for engaging the surface of said pegboard opposite from the surface against which the shank of said hook lies such that the distance from the lips on said barb means to the intersection of the inside surface of said prongs and said projecting arms is at least equal to the maximum thickness of pegboard to be accommodated, said barb means being tapered towards the center of said pegboard holes into which said prongs are to be inserted in order to align said prongs; and

means for increasing the grip of said barb means in proportion to the increase in the size of the shank of said hook to

be retained, said means for increasing the grip of said barb means including providing an angle of inclination between said projecting arms such that the distance from the lips of said barb means to the base of said semi-circular groove measured parallel to the center line of said retaining clip when said retaining clip is in its relaxed state is less than the minimum thickness of the pegboard to be accommodated in order to insure that elastic deformation will result in a net force applied to the shank of said hook against said pegboard, said clip being formed from a semi-elastic material.

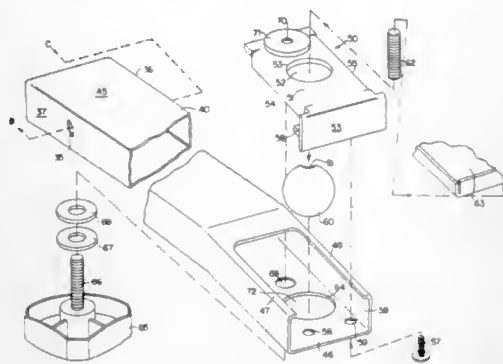
4,645,155

ARM WITH ADJUSTABLE SWIVEL CONNECTION
James B. Eldon, Barto, and Kenneth Wnek, Bethlehem, both of Pa., assignors to Knoll International, Inc., New York, N.Y.
Filed Mar. 19, 1986, Ser. No. 841,209

Int. Cl.⁴ E04G 3/00

U.S. Cl. 248—278

17 Claims



1. An adjustable arm member swivel connection comprising: an arm member comprising at one end thereof a U-shaped channel having a base plate and opposite extending side walls and having in said base plate a round opening forming a round rim; a ball protruding through and retained by said arm member rim, a post fixed to said ball and extending therefrom; lever means having opposite ends positioned within said channel to apply pressure to said ball, said lever means being a sheet metal member having a round opening forming a rim which bears against said ball; adjustment means extending from said arm member and adjustably connected to the lever means on the opposite side of said lever means rim from said lever fixing means, said adjustment means adjustably applying pressure to said ball from said lever fixture rim and against said arm member rim, so that the ball may turn when the adjustment means is loosened and the ball is prevented from turning when the adjustment means is tightened.

4,645,156

SUSPENSION SYSTEM

Alexander D. Karapita, 38 Robinter Drive, Willowdale, Ontario, Canada M2M 3R2

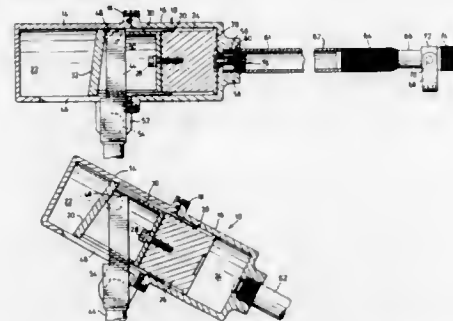
Continuation-in-part of Ser. No. 319,379, Nov. 9, 1981, abandoned. This application Apr. 20, 1984, Ser. No. 602,316
Int. Cl.⁴ F16M 11/12

U.S. Cl. 248—280.1

15 Claims

1. Apparatus for counterbalancing the weight of an object in a gravitational field comprising: a cylinder having first and second opposed ends, a piston slidably mounted within said cylinder, the piston defining with the first end a first chamber exposed to atmospheric pressure, the piston defining with the second end a second chamber in which the pressure is below atmospheric, the pressure difference across the piston from said first to said second chamber being substantially unchanged as the piston moves between two spaced-apart positions within the cylinder, whereby the piston is subjected to a substantially unchanging force due to said substantially unchanging pressure differential,

a swingable member mounted such that it pivots about a substantially horizontal axis, the member being adapted to support the object at a location spaced from said axis, whereby the torque exerted by the object about said axis is the product of the weight of the object and the horizontal distance between said axis and a vertical line through the object,



and cam and follower means which applied the said substantially unchanging force against the swingable member in a counterbalancing sense through a moment arm of which the length varies in proportion to the horizontal distance between said horizontal axis and a vertical line through the object.

4,645,157

BEVERAGE HOLDER FOR VEHICLE

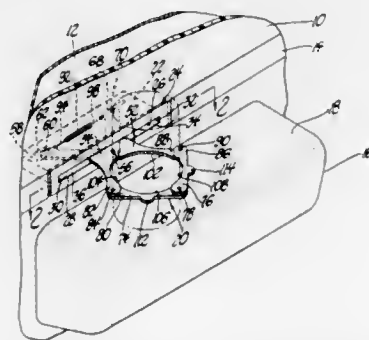
Barry R. Parker, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1985, Ser. No. 812,389

Int. Cl.⁴ A47K 1/09

U.S. Cl. 248—311.2

4 Claims



4. In a motor vehicle body having a planar surface adapted to support a beverage container, a retractable holder for holding the beverage container on the planar surface comprising: first and second projection links having inner ends, outer ends, and central portions; pivot means connecting the central portions of the first and second projection links to one another to define a scissors; first and second connector links having first ends pivotally connected to each other and second ends respectively pivotally connected to the outer ends of the first and second projection links whereby the projection links cooperate with the connector links to define a parallelogram at the end of the scissors; a housing mounted on the vehicle body above the planar surface; means pivotally mounting the inner ends of the first and second projection links on the housing in spaced apart relation and defining a path of limited movement of the inner ends toward and away from one another between a furthest spaced apart position in which the parallelogram is collapsed and the links stored within the housing and a closest together position in which the links are extended

from the housing and the parallelogram is opened to define a receptacle for receiving the beverage container and holding the container on the planar surface; and spring means acting between the inner ends of the first and second projection links and acting to urge the inner ends to their closest together position so that the links are held extended from the housing; and upon movement of the linkage to the retracted position stored within the housing against the bias of the spring means the pivotal connection between the first and second connector links going overcenter with respect to the pivotal connection between the connector links and the projection links so that the bias of the spring means urging the projection link inner ends together acts through the links to urge the pivotal connection between the connector links toward the retracted position whereby the retractable beverage container holder is retained in the retracted position.

4,645,158

CEILING FAN MOUNTING APPARATUS

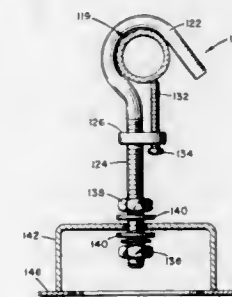
Joseph H. Manning, North Fort Meyers, Fla., assignor to Man-Mor Industries, Inc., Cape Coral, Fla.

Continuation-in-part of Ser. No. 548,147, Nov. 2, 1983, Pat. No. 4,538,786, which is a continuation-in-part of Ser. No. 277,939, Jun. 26, 1981, abandoned. This application Aug. 27, 1985, Ser. No. 769,674

Int. Cl.⁴ B42F 13/00

U.S. Cl. 248—343

7 Claims



1. Apparatus for mounting a fan or similar device adjacent a ceiling having joists supporting the ceiling, comprising: a support bar adapted to be carried by adjacent joists; an outlet box; mounting means carried by the support bar and being movable along the support bar for supporting the outlet box at any one of a plurality of locations along the length of the support bar, the mounting means comprising a mounting element having a hook portion adapted to be received about the support bar and having a threaded shank portion extending downwardly from the support bar when mounted to the support bar, the mounting element being movable along substantially the full length of the support bar to align with a hole in the ceiling within which the outlet box is fitted, the threaded shank portion of the mounting element extending toward the hole; and, means carried by the mounting means for locking the outlet box in a stable position at any one of a plurality of locations along the length of the support bar, the locking means comprising a double nut element having two threaded holes formed therein, the holes being spaced apart and having the longitudinal axes thereof disposed in parallel relation, the threaded shank portion of the mounting element being received within one of the holes, the locking means further comprising a threaded bolt received within the other hole, the bolt being positionable away from the mouth of the hook portion to allow the support bar to be received by the hook portion, the bolt being further positionable relative to the mouth of the hook portion and being rotatable relative to the double nut element to extend into contact with the support bar to lock the mounting element at a desired location along the length of the support bar.

4,645,159

POWERED SEAT ADJUSTING DEVICE

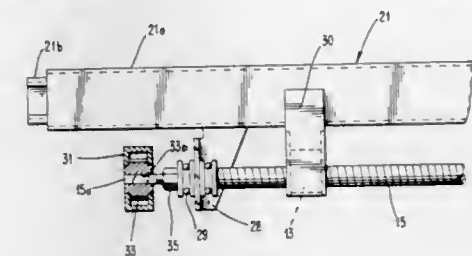
Takami Terada, Toyota, and Masayuki Hayashi, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 16, 1985, Ser. No. 692,041

Claims priority, application Japan, Feb. 7, 1984, 59-21464
Int. Cl.⁴ A47C 1/023

U.S. Cl. 248—429

12 Claims



1. A powered seat adjusting device wherein a seat is slidably supported by a pair of rails so that the position of the seat relative to a floor can be adjusted forwardly and rearwardly, the device comprising: a nut member connected to one of the rails; a screw-threaded shaft connected to the other of the rails, said screw-threaded shaft engaged with said nut member and mounted for rotation relative to said nut member; a worm wheel coupled to said screw-threaded shaft, said worm wheel being slidably mounted on said screw-threaded shaft so as to be slidably shiftable relative to the axis of rotation of said screw-threaded shaft, and the coupling between the worm wheel and the shaft having cooperating means preventing relative rotation between said wheel and said shaft, said cooperating means permitting translation of torque from said worm wheel to said shaft; and a worm gear meshing with said worm wheel and a driving motor, said worm gear connected to be rotatably driven by said driving motor.

4,645,160

CAM OPERATED LOCKING DEVICE

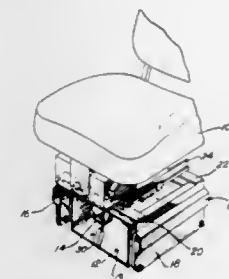
Harold J. Van Duser, Reedsburg, Wis., assignor to Seats Incorporated, Reedsburg, Wis.

Filed Apr. 19, 1985, Ser. No. 725,301

Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—429

12 Claims

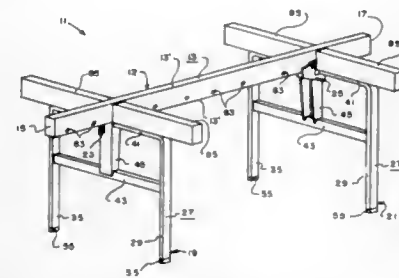


1. An improved cam operated locking device for a seat movable longitudinally on a support means and having a recess therein, the seat having bracket means, the improved locking device being secured to the bracket means and including a U-bar housing, cam means formed on said U-bar housing, a lever rod in said U-bar housing adapted to engage said recess in said seat for locking said seat with respect to said support means, a pin fixed transversely to said lever rod within said U-bar housing and cooperating with the cam means on said U-bar housing, spring means for urging the lever rod into the recess.

position in the said recess, and means for rotating the lever rod in a first direction to slide the pin on the cam means to move the lever rod away from the recess against the bias of the spring means, with rotation of the lever rod in the opposite direction permitting the spring means to bias the lever rod into engagement with the recess, said U-bar housing being secured to the bracket means, said cam means surrounding the lever rod, spring means, and U-bar housing, and said spring means surrounding said lever rod to engage the bracket means at one end and the transverse pin at the other end.

4,645,161
SUPPORT DEVICE
Harold O. Collins, 7551 E. North La., Scottsdale, Ariz. 85258
Filed Jul. 31, 1985, Ser. No. 760,976
Int. Cl.⁴ F16M 11/00
U.S. Cl. 248—439

4 Claims



1. A support device comprising:
(a) a support beam member having a bottom surface;
(b) leg structure; and
(c) bracket means pivotally attaching said support beam member to said leg structure for allowing said leg structure to pivot between an extended position and a collapsed position, said bracket means including pivot rod means extending through said beam member for allowing said beam member to pivot thereabout, said bracket means including support means rigidly mounted relative to said pivot rod means for supportingly engaging said bottom surface of said beam member, said bracket means including attachment means rigidly mounted relative to said pivot rod means and said support means for removably attaching said pivot rod means and said support means to said leg structure, said support means including means for supportingly engaging said beam member when said leg structure is in said extended position to positively lock said leg structure in said extended position and for supportingly engaging said beam member when said leg structure is in said collapsed position to positively lock said leg structure in said collapsed position, said attachment means being adjustable between a loose and a tight position while attached to said leg structure, the movement of said attachment means toward said tight position causing said support means and said pivot means to coact to wedge said support beam therebetween.

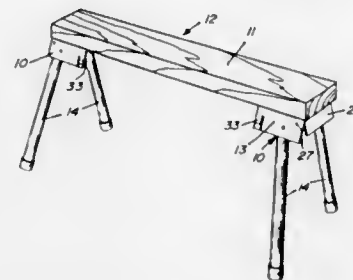
4,645,162
LEG SUPPORT STRUCTURE
Bertrand Roy, P.O. Box 177, Ste-Adele, Que., Canada (J0R 1L0), and Luc Paquin, 2957 Chemin des Epinette, Mont-Roland, Quebec, Canada
Filed Feb. 25, 1986, Ser. No. 832,638
Int. Cl.⁴ F16M 11/32

U.S. Cl. 248—439

14 Claims

1. A leg support structure comprising a leg attachment bracket having a pair of leg members; a top attachment flange for securing said bracket to a support member to be supported elevated by said leg members, said top attachment flange having opposed outwardly angulated side wall members, a leg support structure disposed inwardly of said angulated side wall

members and having a pair of angulated guide walls, each guide wall being disposed substantially parallel to a respective one of said angulated side wall members, each leg member of said pair of leg members being retained between a respective one of said side wall members and guide walls by a pivot pin secured across associated pairs of a side wall member and a guide wall, a structural wall member having a load transfer surface disposed for receiving in abutment a top end of a load transfer surface disposed for receiving in abutment a top end of said leg members in close contact therewith when said leg members are pivotally displaced to their position of use whereby a load disposed on said support structure is transferred axially along said leg members from a top end thereof, said pivot pin of each leg member being a substantially non-load bearing pin connection, said structural wall member also



having a depending abutment wall constituting an arresting means to maintain said leg members in aid position of use with said leg members angulated toward a first inclined direction and a second outwardly inclined direction, a stationary abutment member secured on a side of said leg members opposed to said depending abutment wall when said leg members are in said position of use, said pivot connection being disposed intermediate said abutment wall and said stationary abutment member at a location to permit said leg members to be positioned to said position of use and to a storage position where said leg members lie in a close side-by-side relationship, said guide walls being welded to said structural wall member and said stationary abutment member to constitute a composite structural brace for said structural wall having said load transfer surface.

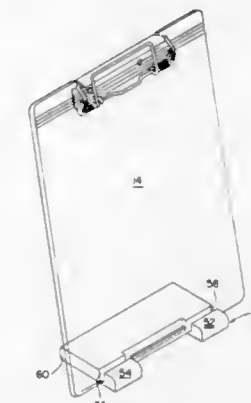
4,645,163
CLIP BOARD DESK AND STAND
Alan P. Zovar, 18333 Hatteras St., #28, Tarzana, Calif. 91356
Filed May 28, 1985, Ser. No. 737,714
Int. Cl.⁴ A47B 97/04

U.S. Cl. 248—452

5 Claims

1. A clip board constructed for being reversed for use as a portable desk comprising
a board having front and back smooth usable writing surfaces on the front and rear sides thereof,
clip means mounted to one end of the board and including a first spring loaded bar for clamping interposed materials to the board on the front side thereof,
means for affixing the spring loaded bar in a stable position when open including a support bar terminated at its ends by a pair of arms extending away therefrom and rotatably attached to said spring loaded bar,
means forming at least one groove extending underneath said spring loaded bar so that, when the support bar is rotated about the spring loaded bar and positioned in the groove means, it is captured therein by the return force of the spring loaded bar and supports the spring loaded bar in an open, extended and stable position to form therewith a

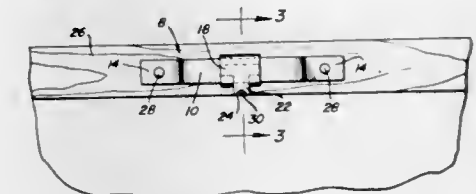
rigid structure extending away from the board or said front side so that the clip board can be laid on a table on



said periphery of said plate member overlying said central opening of said removable mirror support member; and means for releasably securing and fitting said removable mirror support member to said plate member said means comprising at least one rest member attached to said plate member and at least one guide member attached to said support member and having an elongated member longitudinally movable therein, wherein said elongated member can be placed in varying relationship on said at least one rest member whereby said support member is secured to said plate member.

4,645,165
PICTURE HANGER
Gerald G. Raap, Alexandria, Minn., assignor to Donald F. Kutz, Alexandria, Minn.
Filed Jul. 24, 1985, Ser. No. 758,397
Int. Cl.⁴ A47G 1/24
U.S. Cl. 248—476

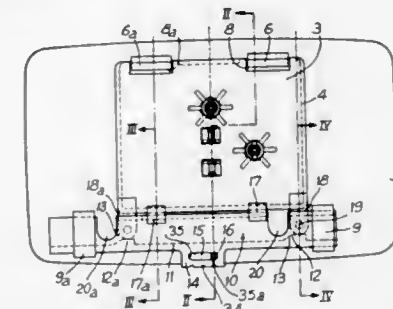
3 Claims



1. A hanger for a picture or like hanging article comprising a substantially straight bar, means at opposite ends of the bar for attaching same to a rear surface of the article with a degree of clearance between the surface and the bar, a collar slidingly mounted on the bar for relative lengthwise adjustment movements of the bar and collar and a locating formation on the collar for suspending the attachment on a wall-mounted hook and the like, said collar having a first portion gripping the bar top and bottom and a second portion extending below the bar, the locating formation comprising a notch extending upwardly from a lower edge of said second portion.

4,645,164
SUPPORT FOR FITTING AND LOCKING A MIRROR SUPPORT ON AN ADJUSTABLE MEMBER OF A VEHICLE REARVIEW MIRROR
Stephane Manzoni, Saint Claude, France, assignor to Manzoni-Bouchot, France
Filed Apr. 10, 1984, Ser. No. 598,886
Int. Cl.⁴ B60R 1/06
U.S. Cl. 248—475.1

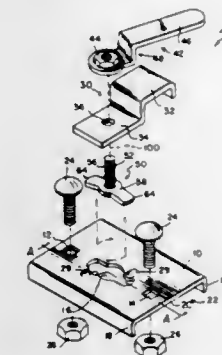
11 Claims



1. A removable mirror support device for a vehicle rearview mirror comprising:
a plate member having a periphery, said periphery having a plurality of edges;
a removable mirror support member adapted to be secured on said plate member, said removable mirror support member having a central opening, said central opening having a shape which corresponds to said periphery of said plate member whereby said plate member can be attached to said removable mirror support member with

4,645,166
SOFA CLAMP-QUICK RELEASE CLAMP FOR VEHICLE SEATS
James D. Checkley, Middlebury, and Larry E. Oberholser, Elkhart, both of Ind., assignors to Hamco Manufacturing, Inc., Elkhart, Ind.
Filed Jul. 31, 1985, Ser. No. 761,197
Int. Cl.⁴ A47B 97/00
U.S. Cl. 248—503.1

12 Claims



1. A quick-release clamp, for removably securing a separable passenger seat to a motor vehicle support surface, comprising: a retaining bracket, mounted to said vehicle support surface,

including a clamping cavity and a slotted portion for providing entry into said cavity;
clamping means releasably engaging said passenger seat and maintaining it in a fixed relation to said clamping means; and
interlocking means, detachably securing said clamping means to said retaining bracket, including a threaded bolt having laterally extending projections on the head portion thereof, said head portion being dimensioned so as to be insertable within said slotted portion and extendable into said cavity and to be rotatable within said cavity to a position restricting removal therefrom, said bolt also engaging said clamping means, and said interlocking means further including locking handle means, threadably engaging said bolt, for rotatably orienting said head portion with respect to said retaining bracket.

4,645,167

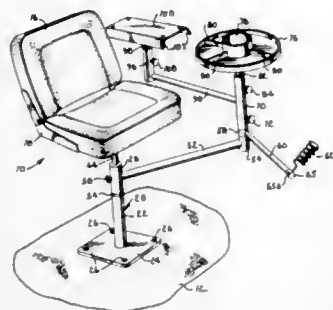
ACCESSORY MOUNTING ARRANGEMENT FOR BOAT SEATS

Gary L. Hardwick, 7341 Ash, Prairie Village, Kans. 66208
Filed Feb. 19, 1985, Ser. No. 702,626

Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—520

7 Claims



I. Apparatus for supporting a boat seat and fishing accessories, said apparatus comprising:

- a deck mounted column having a substantially vertical axis, said column including a stationary base and a spool mounted on the base in a manner permitting the spool to turn about said vertical axis;
- means for mounting said boat seat on said column in a manner permitting the seat to turn about said vertical axis;
- releaseable means for locking the boat seat to said spool;
- a main support arm extending from said spool, said arm being generally horizontal and being coupled at one end with said spool for rotation therewith about the column axis;
- a barrel carried on said arm on the end thereof opposite said one end, said barrel defining a substantially vertical barrel axis offset from the axis of said column and said barrel being supported on the arm to turn about said barrel axis;
- releaseable means for locking said barrel against turning movement about the barrel axis;
- a collar supported to turn about said barrel axis;
- releaseable means for locking said collar against turning movement about the barrel axis;
- an accessory holding tray on said barrel for receiving and holding fishing accessories;
- a first auxiliary arm extending from said barrel, said first auxiliary arm being generally horizontal and being connected at one end with said barrel to turn therewith;
- accessory holding means on said first auxiliary arm for receiving and holding fishing accessories, said accessory holding means being carried on said first auxiliary arm on an end thereof opposite said one end;
- a second auxiliary arm extending from said collar, said second auxiliary arm being generally horizontal and being

connected at one end with said collar to turn therewith; and
a fishing rod holder on said second auxiliary arm on an end thereof opposite said one end, said rod holder being adapted to receive and hold a fishing rod.

4,645,168

REINFORCED SUPPORT STRUCTURE FOR UPRIGHT HIGHWAY MARKER

James R. Beard, Harlingen, Tex., assignor to Sea Hawk Corporation, Pflugerville, Tex.

Filed Mar. 12, 1985, Ser. No. 710,989

Int. Cl.⁴ F16M 13/00

U.S. Cl. 248—548

10 Claims



1. A reinforcing structure for supporting an upright traffic highway marker having an upper end and a lower end and parallel surfaces, comprising:

- a base fabricated from a moldable material, said base being in a plane and having upper and lower surfaces, said base being semi-resilient;
- a channel formed in said base and having a bottom surface and first and second sidewalls for receiving the lower end of the upright traffic marker with said first and second sidewalls perpendicular to the plane of said base and parallel to the surfaces of the upright traffic marker;
- a first reinforcing structure extending upwards from the surface of said base and forming a portion of said first sidewall such that said first sidewall extends upward from said base;
- a second reinforcing structure extending upwards from the surface of said base and forming a portion of said second sidewall such that said second sidewall extends upward from said base; and
- securing means for securing said upright traffic marker in said channel and preventing upward and outward movement thereof;
- said first and second reinforcing structures providing a reinforcement point that prevents rotational motion of the upright traffic marker about said base, said first and second reinforcing structures having a strength sufficient to cause the upright traffic marker to break or bend at the uppermost portions of said first and second reinforcing structures at the point at which uppermost portions of said first and second reinforcing structures contact the upright traffic marker such that damage of said base is prevented.

4,645,169

VEHICLE SEAT

Hans-Peter Mischer, Bad Meinberg, assignor to Gebr. Isringhausen, Lemgo, Fed. Rep. of Germany

Filed Sep. 4, 1984, Ser. No. 647,120

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333604

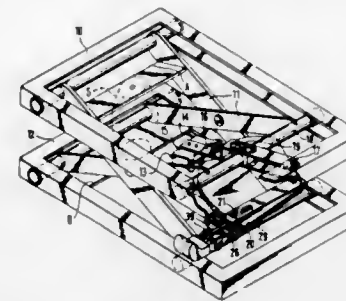
Int. Cl.⁴ A01K 97/10

U.S. Cl. 248—550

4 Claims

1. A vehicle seat having pneumatic cushioning comprises a

seat frame supported for up and down movement relative to a base frame by levers and by a pneumatic spring, and an automatic levelling device for maintaining the seat height at a predetermined static height independently of the weight of the occupant including an inlet valve for the supply of air to the pneumatic spring, an outlet valve for the pneumatic spring and a control member with two tappet members to actuate the valves, the valves being arranged in a common housing or on a common mounting plate and being movable relative to the control member by a coupling device connected to said support levers, so that, during up and down movement of the seat, movement above the static height causes the internal pressure of the pneumatic spring to be decreased by means of the outlet valve and movement of the seat below the static height causes the internal pressure to be increased by means of the inlet valve, wherein, in order to adjust the static height of the seat, the effective separation of the two tappet members of the



control member relative to one another is adjustable so that an operating tappet of the air inlet valve and an operating tappet of the air outlet valve are rendered simultaneously substantially free from play relative to the tappet members of the control member, and a manually-operated adjustment device for adjusting the setting of the control member about its pivot, an auxiliary control member somewhat smaller than said control member and mounted coaxial with said control member on a common pivot, said control member having two tappet members for actuating the valves during normal operation of the seat, the auxiliary member having two tappet members which locate with the valve tappets to render them substantially free from play, the auxiliary member being able to freely pivot during normal use of the seat, and, to alter the static height of the seat, the auxiliary member being lockable relative to the control member in a position in which the tappet members of the auxiliary member are located between the tappet members of the control member.

4,645,170

OUTSIDE REAR VIEW MIRROR

Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.

Filed Mar. 24, 1986, Ser. No. 843,131

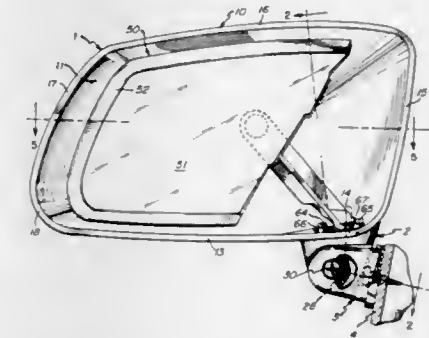
Int. Cl.⁴ B60R 1/06; G02B 5/08

U.S. Cl. 350—632

10 Claims

- 1. An outside rear view mirror comprising:
a mirror head constituted by a housing having a generally upright front opening circumscribed by laterally merged, backwardly extending wall portions of the housing including a lower wall portion joined laterally via an inner lower wall portion with an upwardly extending inner wall portion;
- a mirror assembly inside said housing including a mirror plate to occupy said front opening, a mirror support bracket spaced behind said mirror plate, said bracket extending upwardly and outwardly to a free end portion thereof from a foot portion thereof mounted onto said inner lower wall portion of the housing, and means interconnecting said mirror plate and said bracket end portion for holding said mirror plate firmly yet adjustably in any

selected position within a range of selectable viewing positions of said plate relative to said housing;
a head adaptor member fastened to and protruding downward from said inner lower wall portion of said housing;
a mounting bracket adapted to be fastened onto a body part of a vehicle;



and interengaging means on said mounting bracket and said adaptor member for holding the adaptor member and said mirror head securely yet adjustably at a selected position within a range of angular positions thereof relative to said mounting bracket to suit the height of the mirror plate on the vehicle to the range of vision of a driver seated in the vehicle.

4,645,171

HONEYCOMB TABLETOP

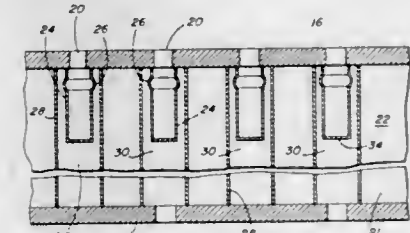
Ulf B. Heide, Marblehead, Mass., assignor to Technical Manufacturing Corporation, Peabody, Mass.

Filed May 15, 1985, Ser. No. 734,130

Int. Cl.⁴ F16M 11/00

U.S. Cl. 248—637

5 Claims



- 1. A honeycomb table top comprising:
a stiffened and damped table surface having an upper skin with a plurality of tapped holes and a lower skin, and a side wall joining the upper and lower skins;
- a plurality of plates disposed between the upper and lower skins, said plates defining a plurality of vertically oriented cells; and
- a plurality of closed cavity non load bearing enclosures disposed below and affixed to the underside of the upper skin, and in registration with the tapped holes, some of said enclosures being received within at least some of said cells the enclosures being secured to the upper skin in a fluid-tight manner to seal off the top skin surface from the interior portion of the table top.

4,645,172

APPARATUS FOR MOUNTING A MOTORCYCLE ENGINE TO A DUNE BUGGY

Cecil R. Wilson, Rt. 2, Box 301C, Atoka, Okla. 74525
Filed May 23, 1985, Ser. No. 737,236

Int. Cl.⁴ F16M 1/024

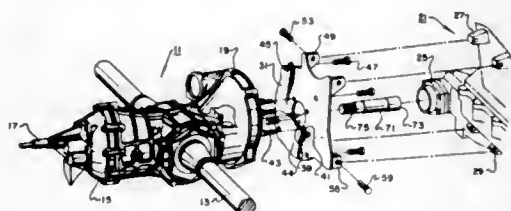
U.S. Cl. 248—674

2 Claims

1. In a vehicle having a motorcycle engine and transmission,

the engine being of a type having upper and lower engine mounting lugs and output shaft means located one side of the engine and facing rearwardly, the vehicle having a trans-axle for driving rear wheels which is mounted with a bell housing facing forwardly, the bell housing encircling input shaft means for driving the transaxle, the improvement comprising in combination:

- an adapter plate mounted between the bell housing and the engine, the adapter plate having an aperture positioned in alignment with the output shaft means and the input shaft means, the plate further having a plurality of inner holes encircling the aperture and a plurality of outer holes positioned outward from the inner holes;
- a plurality of engine bolts extending through the inner holes and secured to the engine in holes provided around the



- output shaft means, the heads of the engine bolts being located on the rearward side of the plate to secure the plate to the engine;
- a plurality of bell housing bolts extending through the outer holes and secured to the bell housing in holes provided in the bell housing to secure the plate to the bell housing, the plate and bell housing enclosing the heads of the engine bolts when the plate is secured to the bell housing;
- upper and lower spaced-apart plate lugs located on the forward side of the plate and bolted to the engine mounting lugs; said upper lugs are located above and to one side of the axis of the aperture, and both lower lugs are located to said one side of and below the axis of the aperture; and
- a shaft extending through the aperture interconnecting the output shaft means with the input shaft means.

4,645,173

DEVICE FOR CLAMPING A MACHINE TABLE OR THE LIKE ON A MACHINE BED

Michael Geiger, Starnberg, Fed. Rep. of Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Fed. Rep. of Germany

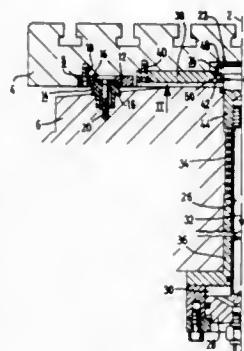
Filed Mar. 15, 1983, Ser. No. 475,438

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209553

Int. Cl.⁴ F16M 5/00

U.S. Cl. 248—680

7 Claims



1. In a combination of a machine table and a machine frame, clamping means for clamping said machine table to said machine frame, said machine table having plural rigid bearing

surfaces spaced from a center of said machine table and on an underside thereof, said machine frame having plural upwardly facing and rigid support surfaces on which rest said bearing surfaces, said clamping means being centrally located and engaging said underside of said machine table, the improvement comprising wherein said clamping means includes a force transmitting means for transmitting a tensioning force onto said bearing surfaces of said machine table, said force transmitting means comprising a plate-like member connected to said underside of said machine table and which has in its center area a means for operatively engaging said clamping means.

4,645,174

MOUNTING ARRANGEMENT FOR A CRITICAL FLOW DEVICE

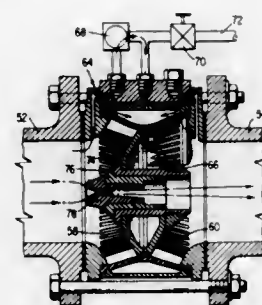
Irwin A. Hicks, Radnor, Pa., assignor to American Meter Company, Philadelphia, Pa.

Filed May 16, 1985, Ser. No. 734,937

Int. Cl.⁴ G01F 25/00

U.S. Cl. 251—5

5 Claims



1. In combination: a valve having an inlet and an outlet; a sonic nozzle; and means for mounting said sonic nozzle in said valve so that when said valve is closed to otherwise block flow from said inlet to said outlet said sonic nozzle is in position so that all flow is directed from said inlet to said outlet through said sonic nozzle; said valve is an axial flow valve having an expandable sleeve of resilient material positioned within a housing on a pair of slotted cage members of conical shape and said mounting means is arranged to support said sonic nozzle substantially along the central axis of said valve to provide a flow path therethrough independent of the state of said sleeve.

4,645,175

MODULAR CLAMP SYSTEM WITH EXTERNALLY THREADED ADJUSTER

Dean L. Kamen, Bedford, N.H., assignor to Baxter Travenol Laboratories, Deerfield, Ill.

Continuation-in-part of Ser. No. 479,328, Mar. 28, 1983, which is a continuation-in-part of Ser. No. 336,068, Dec. 31, 1981, Pat. No. 4,410,164. This application Nov. 15, 1983, Ser. No. 551,956

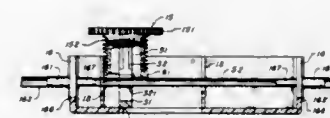
Int. Cl.⁴ F16L 55/14

U.S. Cl. 251—9

32 Claims

1. A flow control system comprising: a case having an inlet and an outlet port; a tube, of which at least a portion is located within the case, connecting the inlet to the outlet port; a pair of spaced apart arms movable with respect to each other having a central longitudinal axis and fixed to the case, and so disposed that the tube passes therebetween proximate to a tube-contact face of each arm, each arm further having at an end thereof an adjustment-contact face; and adjustment means, movably mounted with respect to the

pair of arms for controlled movement along the longitudinal axis, for causing adjustable compression of adjustment-



contact faces of both arms so as to move them toward one another and thereby compress the tube.

4,645,176

CONTROL VALVE

Hiroshi Ogawa, Suita; Yoshiteru Sonoda, Osaka, and Ryosuke Dohi, Higashiosaka, all of Japan, assignors to Fujikin International, Inc., Osaka, Japan

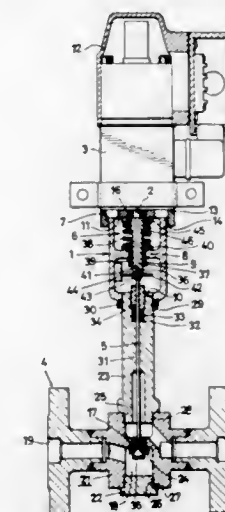
Filed Jul. 18, 1985, Ser. No. 756,105

Claims priority, application Japan, Jul. 19, 1984, 59-151100

Int. Cl.⁴ F16K 31/06

U.S. Cl. 251—129.08

6 Claims



1. A control valve comprising: (a) a vertical tubular yoke having a bottom wall, (b) a solenoid mounted on the upper end of the yoke for giving a force of attraction the magnitude of which is in proportion to the value of the input current, the solenoid having an operation rod directed downward and movable longitudinally thereof by the force of attraction, (c) a valve body connected to the bottom wall of the yoke, (d) a valve stem vertically movably supported by the valve body and having an upper portion extending upward from the valve body into the yoke, (e) conversion means housed in the yoke for converting the force of attraction acting on the operating rod to a displacement of the valve stem, wherein said solenoid being of the push type and having a mount surface covering an upper end opening of the yoke,

4,645,177

TUBULAR CONNECTION

David P. Moakes, 1 The Commons, Welwyn Garden City, Hertfordshire, England

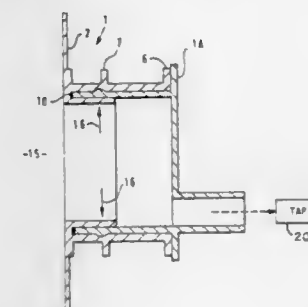
Filed May 7, 1985, Ser. No. 731,228

Claims priority, application United Kingdom, May 8, 1984, 8411719

Int. Cl.⁴ F16K 51/00; F16L 29/00

U.S. Cl. 251—144

6 Claims



1. A tubular connection, comprising: an element which includes an inner tubular portion having first and second ends, an outer tubular portion having first and second ends, and means sealingly connecting the first ends of said portions for coaxially mounting said inner portion within said outer portion so that said portions have an annular space between them, said means including an annular collar having a centrally disposed aperture communicating with the interior of said inner portion; a further element which includes a further tubular portion having first and second ends, the first end of said further portion being disposed within said annular space; and stop means for positioning said further element with respect to said element, said stop means including an outwardly directed first flange affixed to said second end of said outer tubular portion, and an outwardly directed second flange to engage said first flange, said second flange being affixed to said second end of said further tubular portion, wherein said further tubular portion has an annular rib affixed thereto and said outer tubular portion has an annular recess engaging said rib to secure one element to the other, said rib being disposed between said inner and outer

tubular portions, with the distance between the first end of said inner portion and said rib being less than the distance between the first and second ends of said inner portion and with the distance between the first end of said inner portion and said recess being less than the distance between the first and second ends of said inner portion.

4,645,178

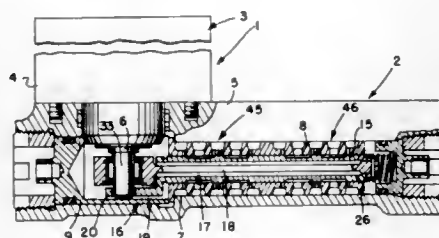
REDUNDANT DRIVE MECHANISMS FOR A DIRECT DRIVE VALVE AND FORCE MOTOR ASSEMBLY
Eugene J. Martin, Portage; James N. Tootle, Kalamazoo; Walter Fallows, Kalamazoo; Howard Lambers, Kalamazoo, and Robert D. Vanderlaan, Kalamazoo, all of Mich., assignors to Pneumo Abex Corporation, Boston, Mass.

Filed Nov. 22, 1985, Ser. No. 800,715

Int. Cl.⁴ F16K 31/44

U.S. Cl. 251-229

30 Claims



1. A direct drive valve and force motor assembly comprising a valve member containing a linearly movable valve plunger, a force motor having a motor output shaft, and redundant drive means providing plural drive paths between said valve plunger and motor output shaft, whereby should a failure occur in one of said drive paths, said force motor can still be used to control the movements of said valve through another drive path and vice versa, said motor output shaft extending perpendicular to the axial centerline of said valve plunger, an eccentric on said motor output shaft, said valve plunger including an axial bore, and said redundant drive means including a drive shaft connected to said valve plunger and extending from said axial bore outwardly beyond and end thereof closest to said motor output shaft, said drive shaft having a drive connection with said eccentric to provide a primary load path between said motor and valve, and a drive tang on said end of said valve plunger drivingly connected to said eccentric to provide a secondary load path between said motor and valve in the event of failure of said primary load path.

4,645,179

GATE VALVE SEAL SYSTEM

Syed Z. Ali, Gretna, La., assignor to Baker CAC, Belle Chasse, La.

Filed Oct. 1, 1985, Ser. No. 782,514

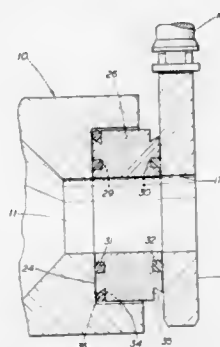
Int. Cl.⁴ F16K 3/02, 25/00

U.S. Cl. 251-327

2 Claims

1. A gate valve having reversible sealing elements comprising a body having a central chamber opening to the exterior of the body and a cylindrical fluid passage extending through the body and having opposed openings communicating with said chamber, a cylindrical counter bore in each of said opposed openings; each said counter bore having a radial base; a gate member movable within said chamber intermediate said opposed openings to open and close flow through said fluid passage; a pair of annular floating valve seat members respectively disposed within said counter bores on opposite side of said gate member for limited axial movement therein; each said valve seat member having a first face adjacent said gate member and a second face adjacent the said base of the respective counter bore; first and second identical annular seal means coaxially mounted on said faces of said annular valve seat members for respectively contacting said gate member and

said counter bore base and maintaining sealing engagement therewith during all phases of gate movement; an annular recess formed in each said face of each said annular valve seat member adjacent the periphery thereof; and a third annular sealing means removably mounted in the annular recess disposed in said second face to sealingly engage the base of the



respective counter bore, whereby each of said annular valve seat members may be reversed in its respective counter bore by shifting said third annular sealing means to said annular recess in said first face of said annular valve seat member and positioning that first face adjacent said radial base of the respective counter bore.

4,645,180

WIRE FORM TYPE INSERT RETAINER FOR A WAFER STYLE BUTTERFLY VALVE

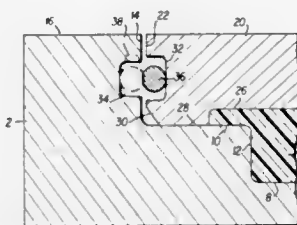
Arie P. Bregman, Sterling Junction; Ronald J. Collette, Spencer, and Edward J. Currier, Woburn, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Continuation-in-part of Ser. No. 621,066, Jun. 15, 1984, Pat. No. 4,575,048. This application Oct. 29, 1985, Ser. No. 792,555

Int. Cl.⁴ F16K 1/22, 43/00

U.S. Cl. 251-360

15 Claims



1. A wafer style butterfly valve comprising:

a valve body having a through opening forming a fluid flow passage and having a wall coaxially surrounding an end portion of said fluid flow passage;
a first annular groove in a surface of said wall;
an insert having a peripheral surface shaped and sized such that said peripheral surface closely faces said wall surface when said insert is positioned within said through opening, said insert including a second annular groove being positioned in facing opposition to said first groove when said insert is positioned within said through opening, wherein said first and second grooves define an annular channel;

at least one wire form having an arcuate section defined by a plurality of interconnected straight sections in an undeformed state wherein said wire form includes first and second portions disposed in said first and second grooves, respectively, when said insert is positioned within said through opening so as to retain said insert within said through opening, further comprising engaging means for securing said wire form in place, said engaging means

comprising a member projecting outwardly from the surface of said wire form and engaging a surface of one of said first and second annular grooves.

4,645,181

HIGH PERFORMANCE AIR JACK

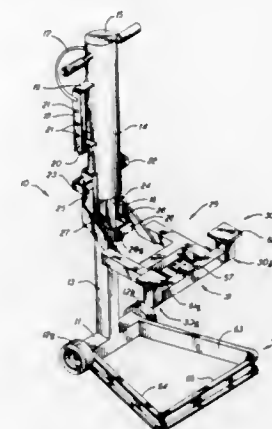
Lloyd D. Schapansky, P.O. Box 129, Cornelia, Ga. 30531

Filed Sep. 30, 1985, Ser. No. 782,021

Int. Cl.⁴ B66F 3/00

U.S. Cl. 254-2 B

15 Claims



1. A high performance air jack, comprising:

an axle having a predetermined length and including wheel means mounted rotatably at each end of said predetermined length;
a vertical member extending from said axle and terminating in a piston member;
a cylinder means having a closed upper end and an open lower end is disposed moveably in air-sealing relationship with said piston member;
means to detachably affix an air supply hose to said cylinder means for receiving a source of air under pressure;
a load-bearing bracket having two tubular arms attached one arm to each side of said cylinder means with three tubular sections in a generally pi configuration, two of said sections fitting in a telescoping relationship with said tubular arms with the third of said three sections affixed to said two telescoping sections with two load-engaging members to define a predetermined distance when fully retracted; and
elongated ground-engaging, jack-stabilizing means with side elements affixed to said axle and extending therefrom in a spaced apart relationship to define a distance at least as great as said predetermined distance.

4,645,182

CONVEYING DEVICE

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,744

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1984, 3425621

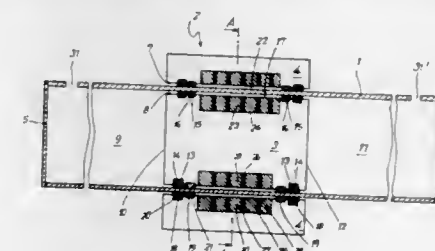
Int. Cl.⁴ B66D 1/00; B61B 13/12

U.S. Cl. 254-264

9 Claims

1. A conveying device comprising a flexible and pliable hose-like hollow pressure duct having opposite ends and defining an inner space, means for closing said opposite ends of said pressure duct for rendering said space gas-tight, a suspension device operatively connected to one of said ends of said pressure duct for suspending said pressure duct, a piston-like runner disposed in said space and in sealing contact with an inner wall of said pressure duct for dividing said space into two pressure chambers, said runner substantially sealing said pressure chambers from each other, a pressure port near each end

of the pressure duct for receiving and discharging pressure fluid for moving said runner with respect to said pressure duct by expanding and contracting said pressure chambers a stationary external rider at least partly embracing said pressure duct in the vicinity of said runner, a first magnetic arrangement fixed to said runner and a second magnetic arrangement fixed



4,645,183

ADJUSTABLE ENCLOSURE

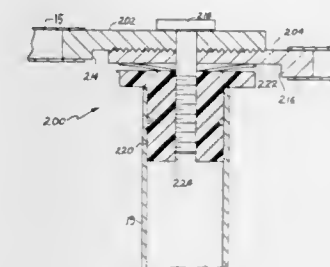
Thomas Rattray, and John D. Osher, both of Cincinnati, Ohio, assignors to Gerber Products Company, Fremont, Mich.

Continuation-in-part of Ser. No. 434,717, Oct. 15, 1982, abandoned. This application Sep. 29, 1983, Ser. No. 536,209

Int. Cl.⁴ F16C 11/00

U.S. Cl. 256-25

17 Claims



1. An adjustable enclosure comprising:

a plurality of inner panels and a pair of end panels each including horizontal upper and lower tubes disposed between spaced vertical tubes, each said panels having a mesh material extending between said horizontal and vertical tubes;
hinge means for pivotally connecting said inner panels and said end panels, said hinge means comprising:
a first hinging element having a stem portion adapted for insertion into an end of the upper horizontal tube of alternate inner panels, the other end of said first hinging element (7) being adapted for insertion into an end of the lower horizontal tube of alternate inner panels, the other end of said first hinging element (7) being adapted for insertion into an end of the lower horizontal tube of alternate inner panels, the other end of said first hinging element (7) being adapted for insertion into an end of the lower horizontal tube of alternate inner panels.

element being formed with a radially ribbed surface offset from said stem portion;

a second hinging element having a stem portion adapted for insertion into an end of the upper horizontal tube of said inner panels disposed between said alternate inner panels, the other end of said second hinging element being formed with a radially ribbed surface offset from said stem portion, said radially ribbed surfaces of said first and second hinging elements being adapted to engage one another; and

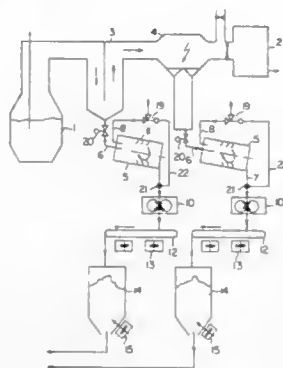
means for mounting said first and second hinging elements in pivotal relation to said vertical tube of each said panels including a tube insert insertable within said vertical tube and having a threaded bore, a spring washer disposed atop said tube insert and being formed with a central bore, and a screw insertable through said spring washer and into said tube insert, said radially ribbed surfaces of said first and second hinging elements being formed with a bore and being adapted to mount atop said tube fitting and said spring washer, whereby said screw is inserted through said first and second hinging elements and said spring washer and then tightened within said threaded central bore of said tube fitting with a torque of about five inch-pounds.

4,645,184
APPARATUS FOR PREPARING BINDER-FREE HOT-BRIQUETS

Heinrich Rellermeyer, Duisburg, and Werner Kaas, Dinslaken, both of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft, Duisburg, Fed. Rep. of Germany
Division of Ser. No. 504,772, Jun. 16, 1983, Pat. No. 4,533,384.
This application May 16, 1985, Ser. No. 734,925
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223203

U.S. Cl. 266—81 Int. Cl. F27D 19/00

10 Claims



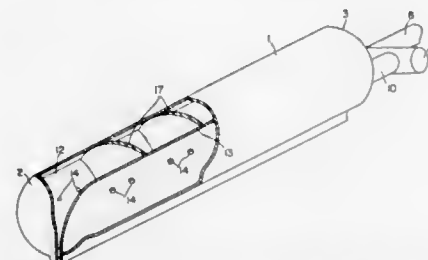
1. In an apparatus for preparing binder-free hot briquets made out of finely divided pyrophoric ferrous solids containing metallic iron, including a rotatable drum with a first conduit at one end of the drum for supplying the drum with finely divided dry pyrophoric solids and with a second conduit at the other end of the drum, a briquetting conduit that communicates with the drum through the second conduit, a briquet cooler disposed downstream of the briquetting, and a hopper disposed downstream of the briquet cooler, the improvement which comprises a third conduit connected to the drum, said third conduit for conveying an oxidizing gas into the drum in order to convey the solids into the drum, first controls disposed in said third conduit, said first controls for regulating the volume of oxidizing gas in such a manner that the oxidation of part of the metallic iron in the finely divided pyrophoric solids heat the solids to a hot-briquetting temperature, and second controls disposed in said first conduit, said second controls for

determining the residence time of the solids remaining in the drum.

4,645,185
DEVICE FOR COOLING HOT-ROLLED FLAT PRODUCTS
Bruno Sabatini, Nemi, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy
Filed Jun. 25, 1985, Ser. No. 748,609
Claims priority, application Italy, Jul. 4, 1984, 48502 A/84
Int. Cl. C21D 1/62

U.S. Cl. 266—114

1 Claim

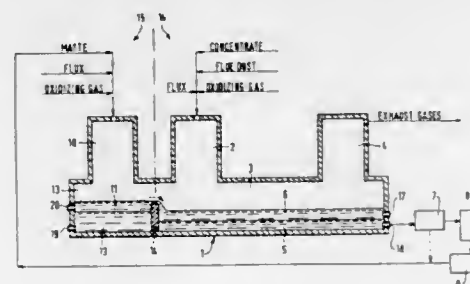


1. In a device for cooling hot-rolled flat products, provided with means for the supply of water and with an elongated water-delivery chamber which extends transverse to the length of the product and which has a linear slit, perpendicular to the direction of movement of the product to be cooled, through which a jet of water in the form of a relatively long, very thin, low-turbulence blade is directed onto the product; the improvement in which the water delivery chamber is separated from said water supply means, said chamber is bounded longitudinally by guide walls converging toward the water-jet delivery slit and is divided transversely into a plurality of smaller chambers by a plurality of baffles transverse to the length of said chamber, each of said smaller chambers being in communication with said water-supply means via at least one device having a flow variator, said baffles being integral with the walls of said chamber and terminating toward said water-jet delivery slit short of the outer edge of said slit.

4,645,186
APPARATUS FOR PROCESSING SULPHIDE CONCENTRATES AND SULPHIDE ORES INTO RAW MATERIAL
Teuvo P. T. Hanniala, Espoo, Finland, assignor to Outokumpu Oy, Helsinki, Finland
Division of Ser. No. 753,399, Jul. 10, 1985. This application Feb. 7, 1986, Ser. No. 827,264
Claims priority, application Finland, Jul. 18, 1984, 842882
Int. Cl. C21C 1/00; C22B 15/00

U.S. Cl. 266—212

3 Claims



1. An apparatus for processing sulphide concentrates and sulphide ores into raw metal within the same process unit comprising means for feeding sulphide material to be treated, flux and oxidizing gases into a smelting zone to produce a

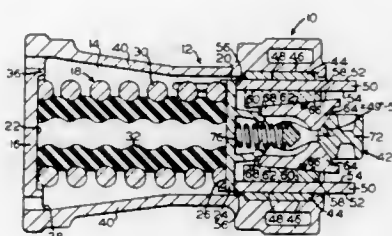
molten slag phase and a molten sulphide matte within said smelting zone, a converting zone for converting solid matte into raw metal, at least one partition member between said smelting and converting zones, said partition member being of such a height that molten slag from said smelting zone is obstructed from flowing into said converting zone, but slag from said converting zone is allowed to flow over said partition member into said smelting zone for mixing with slag in said smelting zone, said partition member preventing contact between raw metal in said converting zone and molten matte in said smelting zone, and said partition member allowing space for gases to flow thereover from said converting zone to said smelting zone, and means for discharging phases produced from said smelting unit.

4,645,187
DRAFT GEAR ASSEMBLY
Wajih Kanjo, Midlothian, and Howard R. Sommerfeld, Oak Forest, both of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Sep. 14, 1984, Ser. No. 650,932
Int. Cl. B60G 15/04

U.S. Cl. 267—9 A

16 Claims



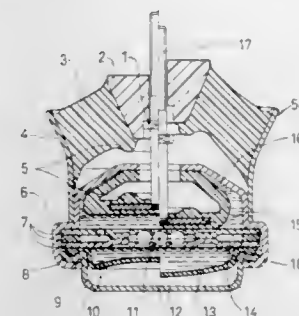
1. A draft gear assembly to cushion shocks encountered in railroad rolling stock, said draft gear assembly comprising:

- a housing closed at one end and open at the opposed end, said housing having a rear portion adjacent said closed end and a front portion adjacent said open end, said front portion being in open communication with said rear portion;
- at least one of a spring and a hydraulic compressible cushioning element centrally disposed within said rear portion with one end thereof abutting at least a portion of an inner surface of said closed end of said housing, said compressible cushioning element extending longitudinally from said one end;
- a positioning means on said inner surface of said closed end of said housing for maintaining said one end of said compressible cushioning element centrally positioned in said rear portion of said housing during compression and extension of said compressible cushioning element;
- a seat means having at least a portion of one surface thereof abutting the opposite end of said compressible cushioning element and mounted to move longitudinally within said housing for respectively compressing and releasing said compressible cushioning element during application and release of a force on said draft gear assembly;
- a friction cushioning means positioned at least partially within said front portion of said housing for absorbing energy during a compression of said draft gear assembly, said friction cushioning means including
 - a pair of laterally spaced outer stationary plates having an outer surface and an opposed inner friction surface, said outer surface engaging said housing, said pair of outer stationary plates having Brinell hardness of between about 277 and 321 throughout,
 - a pair of laterally spaced movable plates of substantially uniform thickness and having an outer friction surface and an inner friction surface and at least one substantially flat edge intermediate said outer friction and inner friction surfaces, said one edge engaging said

- seat means, at least a portion of said outer friction surface movably and frictionally engaging said inner friction surface of said outer stationary plate,
- a pair of laterally spaced tapered plates having an outer friction and an inner friction surface, said outer friction surface movably and frictionally engaging at least a portion of said inner friction surface of said movable plate,
- a pair of laterally spaced wedge shoes having at least a portion of an outer friction surface movably and frictionally engaging at least a portion of an inner friction surface of said tapered plate, and at least a portion of one edge engaging said seat means, said pair of wedge shoes having a predetermined tapered portion which is tapered upwardly and outwardly from a plane intersecting a longitudinal center line of said draft gear assembly at an angle of one of between 49°-51° and an angle of 53° on an opposed edge thereof, and
- a center wedge having a pair of matching predetermined tapered portions for engaging said tapered portion of said wedge shoe to initiate frictional engagement of said friction cushioning means and thereby absorb energy; and
- a spring release means engaging and longitudinally extending between said seat means and said center wedge for continuously urging said friction cushioning means outwardly from said compressible cushioning means to release said friction cushioning element when an applied force compressing said draft gear is removed.

4,645,188
RESILIENT BEARING WITH A HYDRAULIC DAMPER
Ernst-Gunter Jordens, Damme, Fed. Rep. of Germany, assignor to Lemforder Metallwaren AG, Fed. Rep. of Germany
Filed Dec. 26, 1984, Ser. No. 686,142
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347273
Int. Cl. F16M 5/00; F16F 13/00; B60K 5/12
U.S. Cl. 267—140.1

8 Claims



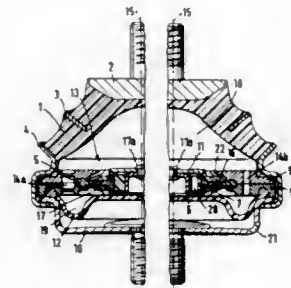
1. A resilient bearing and hydraulic damper combination comprising, an annular cushion assembly of an outer annular rigid shell, a rigid inner part having a central bore therethrough and an annular intermediate central part of resilient material arranged between and bonded to said inner and outer parts, a hydraulic damper part having a damper housing with an upstanding part engaged within said outer part of said annular cushion assembly and having a top opening aligned with the bore of said rigid inner part and having an interior fluid working space with liquid therein, a piston member having a rod portion extending through the bore of said rigid inner part and adjustably engaged therewith and extending through the opening of said damper housing and having a piston portion at its lower end disposed in said working space, a partition wall extending across said working space and dividing it into an upper hydraulic damper space above said wall and a lower equalizing space below said wall, and a flow throttle in said partition wall permitting controlled flow from said upper

working space and said lower equalizing space and a flexible case covering said piston portion and isolating said piston portion relative to said damper housing.

4,645,189
HYDRAULIC DAMPING RUBBER ENGINE MOUNT
Jörn-Rainer Quast, Sinzig-Bad Bodendorf, Fed. Rep. of Germany, assignor to Boge GmbH, Eitorf, Fed. Rep. of Germany
Filed May 3, 1985, Ser. No. 730,770
Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416431

Int. Cl.⁴ F16F 9/08
U.S. Cl. 267—140.1

19 Claims



1. A hydraulically damped vibrationally damping rubber engine motor vehicle mounting device having at least a longitudinal axis along which damping is prevalent, said device having rigid opposite end portions with mounting means thereat, aligned with said longitudinal axis;

said device being of the type including an elastomeric structure being attached to said opposite end portions;

at least two chambers containing damping fluid being disposed one adjacent another along said longitudinal axis, said at least two chambers being separated by partition means having an outer, rigid, peripheral portion and an inner, axially movable portion, having elastic properties, disposed within said outer portion;

said partition means having movement limiting means for limiting movement of said inner portion with respect to said outer portion;

said outer portion having means for holding a portion of said inner portion;

said inner portion having elastic properties comprising an elastic portion being tightly clamped by said holding means of said outer portion;

first pressure relieving means for relieving a pressure difference within a first predetermined range of pressure between said at least two chambers, said first pressure relieving means being disposed at a portion of said outer, rigid, portion of said partition means and being disposed to connect said at least two chambers by substantially the shortest connection therebetween;

said inner portion of said partition means having second pressure relieving means for uni-directionally relieving a pressure difference between said at least two chambers from a first chamber to a second chamber of said chambers in a range that is greater than a second predetermined pressure range and that begins to relieve pressure at a first predetermined pressure differential to minimize cavitation in said damping fluid; and

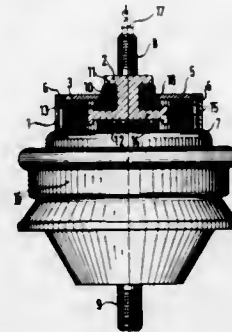
said second pressure relieving means including a disc attached to said inner portion, said disc being pre-stressed for exerting a force against said inner portion of said partition means;

second pressure relieving means being closed by said disc at least when said pressure difference said first chamber and said second chamber is substantially zero.

4,645,190
RUBBER-METAL MOUNT
Kurt Schad, Bischofsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 3, 1985, Ser. No. 771,776
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1984, 3432768

Int. Cl.⁴ F16F 3/08
U.S. Cl. 267—141

1 Claim



1. A rubber-metal mounting for absorbing forces that act essentially in the direction of a center axis having an end portion, in the form of a metal plate on which is disposed a mounting assembly aid in the form of a threaded stud, characterized by displacement control means for allowing movement of the mounting assembly aid on the end portion out of the center axis without substantial distortion of the rubber-metal mounting,

a cover disposed over the end portion essentially perpendicular to the center axis, the cover having an opening in which the mounting assembly aid is movable, a flange extending over the opening and disposed between the cover and the end portion,

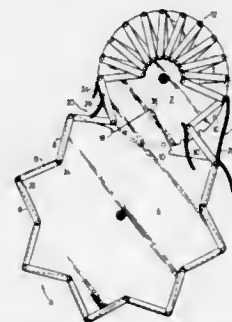
a rubber grommet disposed between the mounting assembly aid and the opening in the cover, a guide plate integral with the grommet located between the cover and the flange, a thrust plate made of rubber disposed between the flange and the end portion, and

an axially extending edge bead on the flange encompassing the thrust plate and spaced apart by the latter from the end portion.

4,645,191
VARIABLE SPEED CONVEYOR APPARATUS
David W. Archibald, Holywood, Northern Ireland, assignor to D.A.R. Tech Limited, Holywood, Northern Ireland
Filed Aug. 9, 1985, Ser. No. 764,054
Claims priority, application United Kingdom, Aug. 22, 1984, 8421291

Int. Cl.⁴ B41L 1/32
U.S. Cl. 270—39

9 Claims

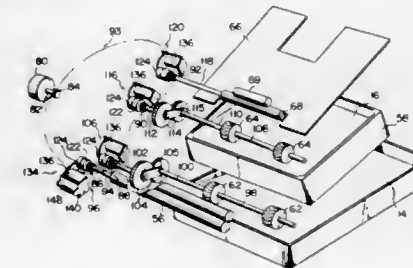


1. A conveyor apparatus comprising a plurality of pairs of links which are pivotally interconnected one with the other and which define an endless chain, first and second index members, means carried by at least one link of each pair of links providing co-operating engagement with the first and second index members, the first and second index members defining an endless path along which the links are movable,

and means for driving the first and second index members in timed relation such that the peripheral speed of the first index member is less than the peripheral speed of the second index member, and first and second guide means to control movement of the links respectively from the second index member to the first index member, and from the latter to the former during movement around the endless path, said first and second guide means being such that said means providing co-operating engagement are transferred one at a time from the second index member to the first index member and one at a time from the first index member to the second index member, the differential peripheral speeds of the first and second index members resulting in the links moving at differing speeds when on each of the two index members.

4,645,192
SHEET FEEDER
Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 20, 1985, Ser. No. 778,501
Claims priority, application Japan, Sep. 27, 1984, 59-202741
Int. Cl.⁴ B65H 3/44
U.S. Cl. 271—9

6 Claims



1. A sheet feeder for feeding sheets one by one along a transfer path, comprising:

feed roller means for delivering and feeding the sheets to the transfer path;

aligning roller means disposed in the transfer path and adapted to align each sheet fed along the transfer path;

a drive source for driving the feed roller means and the aligning roller means, said drive source including a motor with a driving shaft; and

clutch means arranged between the drive source and both the feed roller means and the aligning roller means, and adapted to selectively transmit the driving force of the drive source to the feed roller means and the aligning roller means, said clutch means including a pair of connectors formed individually with sets of mating indentations, said pair of connectors being adapted for engagement with or disengagement from each other when the drive source is switched off, wherein said mating indentations formed on the pair of connectors are tooth-shaped, one of said pair of connectors being connected to the feed roller means and the other of said pair of connectors being connected to the aligning roller means, said pair of connectors being disposed in parallel with the driving shaft of the motor.

4,645,193
FABRIC PICKUP AND THE LIKE
Richard R. Walton, Ten W. Hill Pl., Boston, Mass. 02114, and George E. Munchbach, Roslindale, Mass., assignors to Richard R. Walton, Boston, Mass.
Filed May 30, 1984, Ser. No. 614,478
The portion of the term of this patent subsequent to Feb. 10, 2004, has been disclaimed.
Int. Cl.⁴ B65H 3/22

U.S. Cl. 271—18.3
1. A pickup device for a piece of sheet-form flexible fabric or the like comprising:

first and second fabric gripping elements, and means for producing relative movement of said fabric gripping elements in a direction generally toward each other in a manner to cause the gripping elements to clamp the fabric, characterized in that



said device has means adapted to move said gripping elements laterally in the plane of the fabric, at an angle to said direction to tension the fabric, whereby the fabric when clamped has previously been tensioned by lateral motion of said gripping elements.

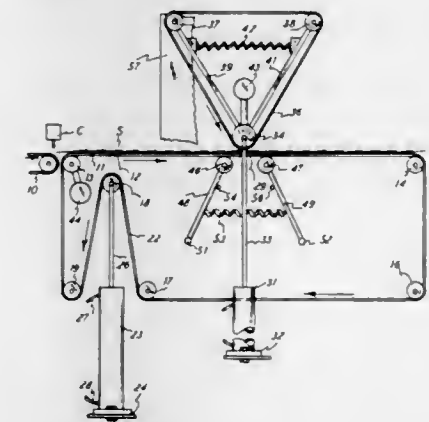
4,645,194
METHOD AND APPARATUS FOR CREATING A GAP IN A SHEET STREAM

Walter J. Stobb, Pittstown, N.J., assignor to Stobb Inc., Clinton, N.J.

Filed Aug. 26, 1985, Ser. No. 769,605
Int. Cl.⁴ B65H 5/34

U.S. Cl. 271—203

19 Claims

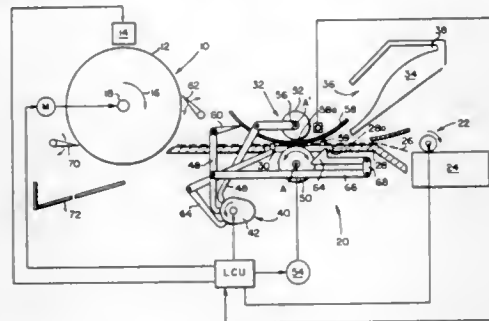


1. A method for creating a gap in a stream of sheets having a first portion which is adjacent a supply of sheets and a second portion which is downstream from said first portion, comprising the steps of providing said supply of sheets at a supply location, arranging said sheets in an imbricated stream formation and receiving said sheets on a conveyor separated from said supply location and moving said sheets at a uniform rate of speed for supporting and moving the entire stream of sheets at a first speed and along a path of movement away from the supply location, subsequently moving said first portion which is adjacent the supply location at a second speed faster than said first speed to thereby form a gap in the stream formation of the sheets adjacent the supply location while moving said second portion, which is downstream from said first portion, at said first speed for stacking said sheets at said first speed.

4,645,195
SHEET-REGISTRATION AND FEEDING APPARATUS
Robert J. Scranton, Dayton, Ohio, and Charles W. Spehrley, Jr., White River Junction, Vt., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 3, 1985, Ser. No. 751,655
Int. Cl.⁴ B65H 5/20, 9/06

U.S. Cl. 271—246
1. Sheet-registration and feeding apparatus for feeding a sheet along a path to a work station, said apparatus comprising:

- (a) a means for registering the leading edge of a sheet moving along said path at a registration position;
 (b) sheet-buckling means positioned upstream of said registration position and operable in either (i) an active mode in which it acts to produce a buckle in a sheet located upstream of said registration position by advancing the sheet edge which is closer to said registration gate toward the



- opposite sheet edge while maintaining said opposite sheet edge stationary, or (ii) a passive mode in which it allows a sheet, upon being buckled, to self-propel itself, by the restoring forces in the sheet, along said path to said registration position; and
 (c) control means for switching said sheet buckling means between active and passive modes.

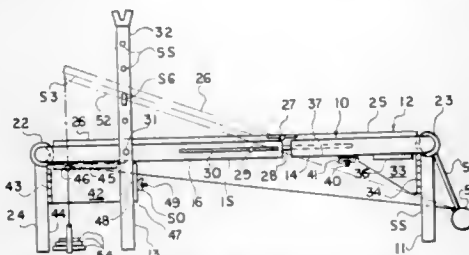
4,645,196

FOLDING WEIGHT BENCH

Larry L. Christie, 12300 Fleming, #44, Houston, Tex. 77013
 Continuation-in-part of Ser. No. 697,873, Feb. 4, 1985,
 abandoned. This application Dec. 4, 1985, Ser. No. 805,092
 Int. Cl.⁴ A63B 13/00

U.S. Cl. 272-123

4 Claims



1. A folding weight bench apparatus comprising:
 (a) a frame comprised of first and second horizontally disposed U-shaped support members each having parallel straight arms and a transverse spanning arm, said support members being disposed in facing relationship to define a perimeter of substantially rectangular configuration in having opposed sides comprised of said parallel arms, and opposed end extremities comprised of said spanning arms, said end extremities being of shorter length than said sides,
 (b) a first pair of legs pivotably associated with the end extremity defined by the spanning arm of said first support member,
 (c) a second pair of legs pivotably associated with the end extremity defined by the spanning arm of said second support member,
 (d) a support surface disposed atop said frame and comprised of a first flat rectangular panel fixed upon said first support member and a second flat rectangular panel positioned upon said second support member, said panels being pivotably interengaged along an axis perpendicular to said opposed sides,
 (e) a pair of joining bolts slideably housed one within each straight arm of one of said support members and a pair of receiving channels disposed one in each straight arm of the facing adjacent support member, wherein said joining

bolts are adapted to be slid into said receiving channels to lock said first and second support members in a coplanar relationship,

- (f) a pair of barbell support posts positioned one on each side of said frame about said second support member and pivotably attached to the sides of the frame in a manner permitting said posts to be moved between an operational position perpendicular to the frame and a storage position coplanar with the second support member of the frame, said posts having a series of apertures for receiving paired positioning pegs,
 (g) a first pair of hinged support brackets, each bracket being associated with one leg of said first pair of legs, said bracket being pivotably attached to the leg and adapted to engage a first securing means beneath the associated side of the frame, and
 (h) a second pair of hinged support brackets, each bracket being associated with one leg of said second pair of legs, said bracket being pivotably attached to the leg so as to move in a horizontal path and adapted to engage a second securing means beneath the associated side of the frame and detachable holding means on said support post, whereby,
 (i) the apparatus can be interconverted between an operational mode of a weight lifting bench when the first and second support brackets are secured and the joining bolts are positioned within the receiving channels and a compactly folded storage mode.

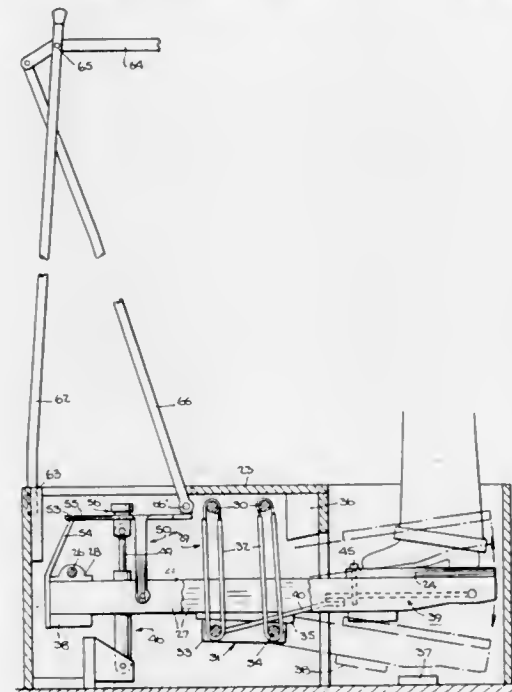
4,645,197

BOUNCE BOARD EXERCISER

Richard McFee, Rt. 1, Box 172, Union Springs, N.Y. 13160
 Filed Sep. 26, 1984, Ser. No. 654,857
 Int. Cl.⁴ A63B 5/08

U.S. Cl. 272-65

26 Claims



1. A bounce board exerciser comprising
 a support;
 at least one platform for mounting a user thereon movably mounted on said support for up and down movement;
 spring means operatively connected to and supporting said platform and balancing the weight of a user thereon; and
 energy dissipation means connected to said platform for dissipating energy delivered thereto in response to a movement of said platform caused by the user.

4,645,198

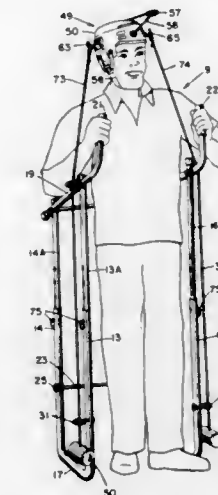
NECK EXERCISING DEVICE

Frederick M. Levenston, 105 East Tamarack, Inglewood, Calif. 90301

Filed Aug. 5, 1985, Ser. No. 762,372
 Int. Cl.⁴ A61H 3/00

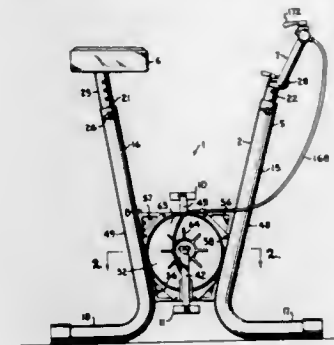
U.S. Cl. 272-70.3

7 Claims



1. A neck exerciser, comprising:
 (a) a free-standing frame wherein a person may stand in an upright position therebetween;
 (b) a pair of handles projecting forwardly from the uppermost forward portion of the frame, said handles providing for manually gripping thereof to steady and support the person using the neck exerciser;
 (c) a helmet adapted to fit over the head of the user of the neck exerciser, said helmet having a plurality of hooks projecting from the front, rear and the two sides of said helmet;
 (d) a plurality of cables the uppermost portions of which are operably secured to the plurality of hooks secured to the helmet;
 (e) cable guiding means secured to the frame for guiding said cables; and
 (f) weight means operably secured to the lowermost portions of said plurality of cables.

- (e) said housing inner surface having a relief portion and a non-relief portion therein:
 (i) said rotor chordal extension periodically aligning with, and becoming out of alignment with, said housing relief portion as said rotor is rotated by said pedal means; and
 (f) fluid level adjustment means for selectively adjusting an amount of fluid positioned in said fluid receiving space;
 (g) whereby fluid is selectively positionable in said fluid receiving space; said fluid, when sufficiently viscous, causing frictional drag and resistance to rotation of said rotor with respect to said housing; and



- (h) whereby when said operator pedals said cycle, said rotor is rotated with energy required to overcome said resistance; and
 (i) whereby an amount of energy required to pedal said cycle may be selectively increased or decreased by adjustment of said amount of fluid in said receiving space; and
 (j) whereby a relative amount of energy required to cause rotation of said rotor varies as said rotor is rotated and said chordal extension of said rotor periodically moves through alignment with said housing relief portion and said housing nonrelief portion.

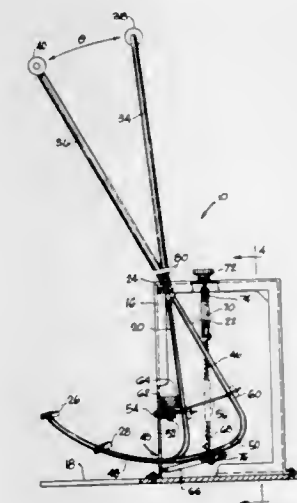
4,645,200

ISOMETRIC EXERCISING DEVICE

William R. Hix, 2224 David Way, Modesto, Calif. 95351
 Filed May 28, 1985, Ser. No. 738,238
 Int. Cl.⁴ A63B 21/00

U.S. Cl. 272-73

13 Claims



1. An exercise device comprising,
 a frame,
 first and second J-shaped pedal bars having upper and lower

4,645,199

EXERCISE DEVICE

Brent J. Bloemendaal, Indianapolis, Ind., assignor to Bio-Dynamic Innovations, Inc., Indianapolis, Ind.
 Filed Jan. 25, 1985, Ser. No. 695,077
 Int. Cl.⁴ A63B 21/00

U.S. Cl. 272-73

25 Claims

1. An exercise cycle for providing exercise to an operator; said cycle comprising:
 (a) a housing having an inner surface;
 (b) a rotatable pedal axle mounted substantially perpendicularly to said housing inner surface;
 (c) pedal means mounted on said pedal axle for rotation of said axle;
 (d) a rotor mounted on said pedal axle;
 (i) said rotor having a friction surface oriented facing said housing inner surface and being spaced apart therefrom to form a fluid receiving space therebetween;
 (ii) said rotation of said rotor causing movement of said rotor friction surface with respect to said housing inner surface;
 (iii) said rotor being substantially circular with at least one chordal segment removed therefrom, leaving a chordal extension thereon;

ends and being pivotally mounted to said frame, the lower ends terminating in foot pedals, first and second arms, said first arm extending from said upper end of said first pedal bar, said second arm extending from said upper end of the second pedal bar, each of said arms terminating in a handle extending perpendicularly outwardly from said arms, and means connected to aid pedal bars for isometrically opposing motion of one foot pedal in one direction when said other foot pedal is pushed in the opposite direction, the foot pedals being movable in a substantially back-and-forth type motion, said back-and-forth type motion of a foot pedal pivoting an associated arm in an opposite direction.

4,645,201

EXERCISE MACHINE

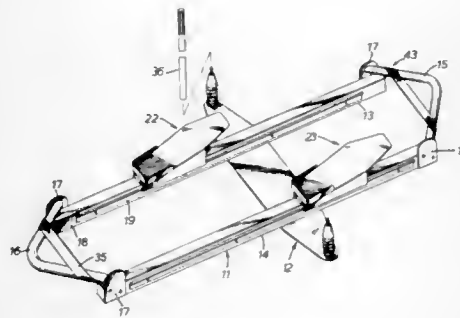
Harold R. Evans, St. Brelade, Channel Islands, assignor to Tekron Licensing B.V., Lomboklaan, Netherlands
Filed Nov. 29, 1983, Ser. No. 555,977

Claims priority, application United Kingdom, Nov. 30, 1982, 8234044

Int. Cl.⁴ A63B 69/18, 1/00

U.S. Cl. 272—97

12 Claims



2. An exercise machine comprising: a pair of horizontal, parallel rails each having a front end and a back end; cross member means for extending between and joining said rail front ends and for extending between and joining said rail back ends; a pair of runners one each mounted on one of said rails and including means for receiving a foot of a user, each runner further including means for supporting said runner for movement on said rail; an elongated flexible tension means fixedly connected to said runners and forming a closed loop with said runners, whereby movement of said runners is synchronized, said tension means extending the full length of each rail between said front and back ends, said tension means extending between said rails at said front rail ends and at said back rail ends; four frictional guides one each located proximate one of the interconnections between one of said rail ends and said cross member means, said frictional guides supporting said tension means in a rectangular shape and providing frictional resistance to said tension means during all movement of said runners; and adjustable friction means for applying additional, readily adjustable, uniform frictional resistance to said tension means during all movement of said runners, whereby said exercise machine provides an adjustably uniform resistance to all movement of said runners to simulate the activity of cross-country skiing.

4,645,202

PRE-SKIING EXERCISE IMPLEMENT

Silvano Tomba, and Giuseppe Tomba, both of Montecchio Magiore, Italy, assignors to Metalmeccanica Fracasso S.p.A., Venice, Italy

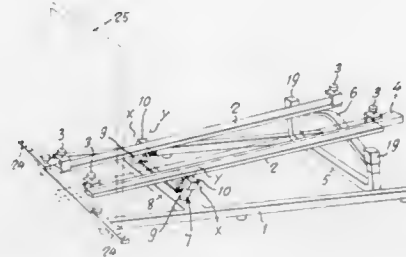
Filed Jan. 25, 1985, Ser. No. 695,031

Claims priority, application Italy, Jan. 25, 1984, 85510 A/84; Mar. 6, 1984, 85537 A/84

Int. Cl.⁴ A63B 69/18

U.S. Cl. 272—97

13 Claims



1. A pre-skiing exercise device comprising two support bars (2) in parallel, side by side relation, and provided with means (3) for attachment thereto of a ski-boot, said support bars (2) having rear end sections slidably bearing on an inverted V rear supporting cross member (6), and supported at an intermediate position by an articulated bar-supporting device (7) on which each of said bars (2) can rock independently of the other bar about an associated horizontal axis of inclination (X) transversal thereto, both bars being allowed to simultaneously perform coordinated equal angular movements about associated upstanding axes of rotation (Y), said bar-supporting device being pivotally connected by means of a transverse horizontal pivot (11), coinciding with the axis of inclination (X), to a bar-carrying head (10) which is rotatably mounted onto a fixed post (9, 109) coinciding with the axis of rotation (Y), the two bar-carrying heads (10) being interconnected so as to be caused to simultaneously perform coordinated equal rotational movements.

4,645,203

PORTABLE FOREARM DEVELOPER

Arthur Moss, 30763 Tamarack, Wixom, Mich. 48096

Filed Apr. 20, 1983, Ser. No. 486,563

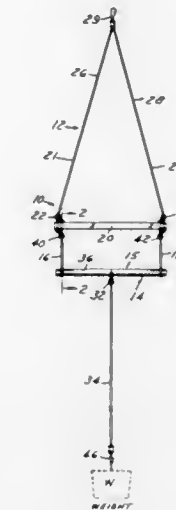
Int. Cl.⁴ A63B 21/00

U.S. Cl. 272—117

4 Claims

1. A weight lifting device for forearm development comprising, in combination: a rotatable handle having two ends and a length sufficient to accommodate two hands, said handle being further provided with a circumscribed groove adjacent each end; an elongated rigid horizontal frame member having two ends; two flexible, isometric sidewalls, each having two ends, one for attachment to an overhead support and the other end for attachment to the frame for freely suspending the frame from the overhead support; a pair of spaced apart elongated loop cords for rotatably suspending the handle from the frame, the cords being supported at the upper end by the frame, the lower ends of the loops having a U-shape into which the circumscribed grooves in the handle are correspondingly placed for support; and

means for suspending a weight from the handle, said means for suspending a weight being attachable to the handle and



the weight and wound about the handle as the handle is rotatable by user.

4,645,204

COMPACT PORTABLE EXERCISING APPARATUS

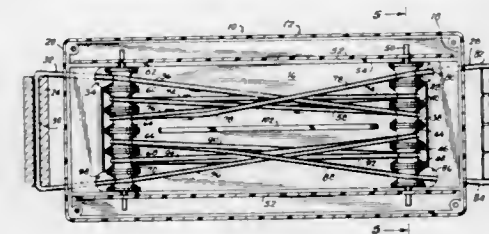
Isaac Berger, 1501 Broadway, New York, N.Y. 10036

Filed Feb. 6, 1985, Ser. No. 698,680

Int. Cl.⁴ A63B 21/02

U.S. Cl. 272—137

5 Claims



1. A compact portable exercising apparatus, comprising: (a) a housing elongated along a longitudinal axis and having opposite end regions; (b) retroverting means mounted within the housing and including a first plurality of pulleys at one end region of the housing and mounted for joint rotation about, and axially arranged in side-by-side relationship along, a first pulley axis which extends generally normal to the longitudinal axis, and a second plurality of pulleys at the other end region of the housing and mounted for joint rotation about, and axially arranged in side-by-side relationship along, a second pulley axis which extends generally normal to the longitudinal axis, said first and second pulley axes being in mutual parallelism and spaced apart by a predetermined distance along the longitudinal axis; (c) a pair of handles located exteriorly of the housing and having handle passages extending through the handles; and (d) an elongated resiliently extensible endless rope having external rope portions extending through the handle passages and internal rope portions looped back and forth between the first and second pluralities of pulleys generally along the longitudinal axis, said endless rope being stretchable between (i) an idle position in which the rope is under low tension

and urges the handles into mutual parallelism at the end regions of the housing, and (ii) a use position in which the rope is under high tension and resists an exerciser from moving the handles apart from each other over a distance greater than said predetermined distance.

4,645,205

ATHLETIC EXERCISER FOR PARAPLEGICS AND QUADRIPLÉGICS

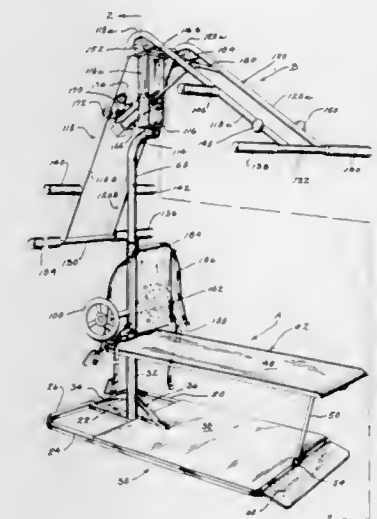
Leslie C. Wolff, Box 188, Lakeview Dr., Hackensack, Minn. 56452

Filed Jul. 8, 1985, Ser. No. 752,960

Int. Cl.⁴ A63B 21/00

U.S. Cl. 272—143

10 Claims



1. Athletic exercise apparatus comprising a ground-supported base and a stationary upstanding post carried by and extending upwardly from said base, means defining an exercise area forwardly of and adjoining said post, an exercise arm, means supported by said post and providing a pivot for said arm having its axis extending in a direction transverse with respect to the longitudinal axis of said post so that said arm may swing over said exercise area and is supported by said post, means restraining the swinging movement of said arm to provide exercise for the user when he moves said arm against said restraining means, and means for selectively adjusting the position of said pivot either backwardly away from or forwardly toward said exercise area so that said arm moves selectively more horizontally or more vertically over said exercise area during its exercising swinging movement, said arm including two arm portions on opposite sides of said pivot, said means for selectively adjusting the position of said pivot as aforesaid including an elongate rod journaled in said post and having a sidewardly extending part on its upper end with said pivot being supported by said sidewardly extending part whereby said pivot may be moved as aforesaid by selectively rotating said sidewardly extending part to extend either in the direction toward said exercise area or in the opposite direction whereby one or the other of said arm portions swings over said exercise area.

4,645,206

UNIT POINT SCORING SYSTEM AND SCOREBOARD

Alan B. Todd, 2500 N. Vernon St., Arlington, Va. 22207

Filed Mar. 26, 1984, Ser. No. 593,575

Int. Cl.⁴ A63B 63/08

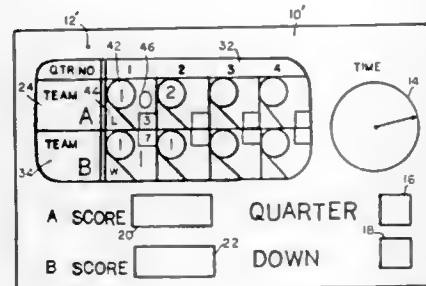
U.S. Cl. 273—1.5 R

10 Claims

1. A method for scoring a contest between a first competing

entity and a second competing entity, the contest being divisible into a plurality of separate competitions that occur in sequence, comprising the steps of:

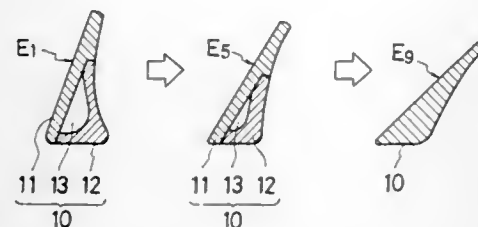
- placing a predetermined number of contest points at stake for each competing entity prior to the beginning of the first competition of the sequence, and displaying such number of contest points;
- determining which competing entity won the first competition of the sequence;
- awarding said predetermined number of contest points to the winner of the first competition of the sequence;
- prior to the beginning of the following competition in the sequence, determining the number of contest points to be



placed at stake for each competing entity on the basis of the outcome of at least one prior competition of the sequence, and displaying the number of contest points to be placed at stake for each competing entity;

- determining which competing entity won said following competition;
- awarding to the winner of said following competition the contest points it had at stake in said following competition;
- repeating steps (d) through (f) until said sequence is exhausted; and
- thereafter declaring, as victor of the contest, the competing entity that has acquired the greatest number of contest points.

4,645,207
SET OF GOLF CLUB IRONS
Mitsutake Teramoto, Kamakura; Shinkichi Saito, Tokyo, and Takamitsu Takebayashi, Musashino, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1985, Ser. No. 758,994
Claims priority, application Japan, Jul. 26, 1984, 59-154051
Int. Cl.⁴ A63B 53/04
U.S. Cl. 273-77 A 4 Claims



1. A set of golf club irons, each including a shaft, a grip disposed at one end of the shaft, and a club head disposed at the other end of the shaft, the lengths of such irons being gradually decreased and the loft angles of the club heads being gradually increased from the longer irons to the shorter irons, the club heads of the longer irons having a hollow portion therein and the club heads of the shorter irons being devoid of any hollow portions therein, the volumes of said hollow portions in said

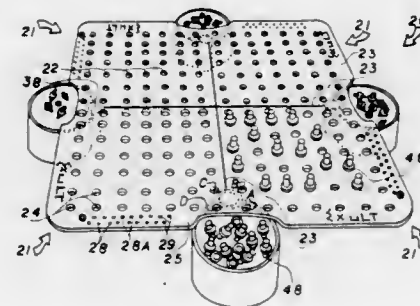
longer irons being gradually decreased to zero as the number of the club changes from the longer irons to the shorter irons.

4,645,208
GOLF TEE
James W. Morabeto, 905 Maple Ave., Pittsburgh, Pa. 15234
Filed Sep. 25, 1985, Ser. No. 779,926
Int. Cl.⁴ A63B 57/00
U.S. Cl. 273-207 4 Claims



1. A golf tee of plastic material comprising a round base portion integrally formed with a ground piercing stem of substantially smaller diameter so that said base portion acts as a limit stop to limit the extent of piercing of said tee into the ground, a plurality of curved fingers of equal size integrally extending upwardly from said base portion, said fingers collectively having a truncated spherical inner face, a substantially inverted cone-shaped ball-supporting portion having a truncated spherical inner face at the top thereof for supporting a golf ball, said ball-supporting portion being detachably secured to said base by having, at the bottom thereof, a spherical portion forming a snap fit with said truncated spherical surface of said base portion, the spacing between said fingers being sufficiently large as to fit about the bottom portion of said ball-supporting portion whereby when a golf ball supported on said inner face is struck, said ball-supporting portion will tilt to approximately a horizontal position between two of said fingers.

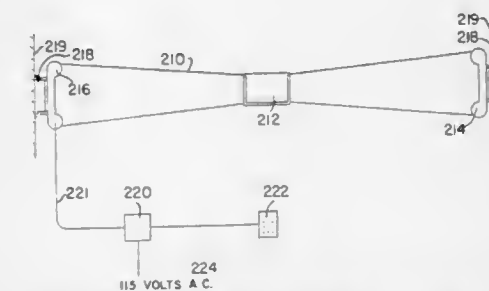
4,645,209
PATTERN-FORMATION STRATEGY BOARD GAME
Victor H. Goulter, and Barbara W. Goulter, both of 485 Molimo Dr., San Francisco, Calif. 94127
Filed May 3, 1985, Ser. No. 730,076
Int. Cl.⁴ A63F 3/00
U.S. Cl. 273-271 18 Claims



12. A board game, comprising, in combination:

- a planar playing board having upper and lower planar surfaces which are parallel to each other, said upper surface having game-playing indicia thereon and including a plurality of spaced holes;
- a plurality of playing-piece storage and board support compartments at opposite sides of and under said board, each compartment being attached to the underside of said board for holding said board in parallel relationship to but above a support surface, said board also including closure means for enabling each of said compartments to be accessible to a player on its side of said board and for closing said compartment to prevent loss of the playing pieces carried therein; and
- at least two groups of playing pieces, each playing piece having a transparent end and a colored end opposite said transparent end, said ends both being sized for mating with said spaced holes in said upper surface so that either end of any piece can be inserted into any of said spaced holes and be retained in its hole until removal thereof, each playing piece having limiting means between said two ends thereof for limiting the depth of insertion of each piece into any hole.

4,645,210
PROGRAMMABLE MOVING TARGET SOCCER PRACTICE
Samuel M. Patsy, P.O. Box 835, Rockville, Md. 20853
Filed Dec. 18, 1984, Ser. No. 682,985
Int. Cl.⁴ F41J 9/02
U.S. Cl. 273-369 26 Claims



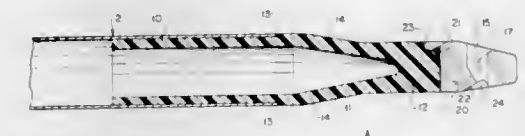
1. A device for training and increasing perceptual and perceptual-motor skills comprising:
a target means;
cable means having a first end and a second end for supporting said target means;
electrically actuated means for moving said target means along said cable means, said moving means including means to sense change in electrical load;
means for supporting said cable means wherein said target means is able to move along the cable means between said ends when driven by said moving means,
means for significantly changing the electrical load on said moving means as said target means moves along the cable means toward one of said ends,
circuit means for reversing said moving means said circuit means being responsive to significant electrical load changes on the moving means.

4,645,211
NOCK FOR ARROWS OF SPORT AND HUNTING BOWS
Werner Beiter, Daimlerstrasse 18, 7735 Dauchingen, Fed. Rep. of Germany
Filed Aug. 26, 1986, Ser. No. 900,621
Claims priority, application European Pat. Off., Aug. 31, 1985, 85111005.6
Int. Cl.⁴ F41B 5/02
U.S. Cl. 273-416 9 Claims

9. A nock for arrows having a shaft, to receive the nock-

location section of a bowstring therein, said nock being of the type including,

- a removable nock body slidably received on the shaft;
 - a pair of projections being integral with and extending rearwardly from the nock, said projections defining a diametrically running furrow therebetween, wherein the nock-location defining section of the bowstring is received;
 - a pair of ribs formed on each of said projections within the furrow on an axis being perpendicular to the longitudinal axis of the arrow, thereby forming a reduced area of the furrow and dividing said furrow into a rearward entrance portion, wherein the nock-location section of the bowstring is received in the nock, and a forward closed portion, wherein the nock-location section of the bowstring is seated during the loading and firing of the arrow;
- wherein the improvement comprises:
each of said projections further having a recessed portion formed therein, whereby a lateral channel is formed in the forward closed portion of the furrow to receive therein the nock-location section of the bowstring when said



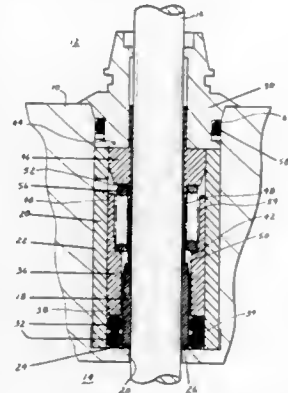
bowstring is relaxed during the loading and firing of the arrow;
each of said projections further having a first cut-off formed therein on the forward upper portion of the recessed portion, said cut-off being inclined at an acute angle in the direction of the arrow with respect to the longitudinal axis thereof;
each of said ribs having a second cut-off formed therein on the lower portion thereof, said second cut-off being inclined at an acute angle in the direction of the arrow with respect to the longitudinal axis thereof;
a first circular notch formed in the nock body in a location at the peripheral end of the first cut-off on a plane intersecting said first cut-off;
a second circular notch formed in the ribs in a location at the peripheral end of the second cut-off on a plane intersecting said second cut-off;
wherein the angle of inclination of the first and second cut-offs are substantially aligned and the first and second circular notches are so formed as to receive therein the nock-location section of the bowstring.

4,645,212
SEAL ARRANGEMENT
Gunnar Lundholm, Lund, Sweden, assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed Dec. 20, 1985, Ser. No. 811,690
Int. Cl.⁴ F16J 15/18, 15/40, 15/56
U.S. Cl. 277-3 15 Claims

1. A seal arrangement for preventing gas leakage along a reciprocating member passing through wall means separating a high pressure gas chamber and a low pressure gas chamber, comprising:

- a sealing gland having a generally cylindrical outer surface positioned within said wall means and surrounding said reciprocating member and wherein one end of the sealing gland is directed toward the high pressure gas chamber and the other end thereof is directed toward the low pressure gas chamber;
- a plurality of axially stacked O-rings positioned around the outer surface of said sealing gland near the said other end thereof and in an annular space between the wall means and said sealing gland;

- (c) bias means for maintaining axial forces on the stacked O-rings;
 (d) means for supplying liquid lubricant to the surface of said reciprocating member; and



- (e) means integral with said sealing gland to effect pumping of liquid lubricant.

4,645,213 NON-CONTACT TYPE SEAL DEVICE FOR TURBOCHARGER

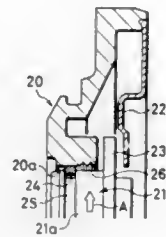
Kouichi Washimi; Makoto Shibata, and Mitsuyuki Ugajin, all of Aichi, Japan, assignors to Taibo Kogyo Co., Ltd. and Toyota Motor Corporation, both of Aichi, Japan

Filed Jun. 28, 1985, Ser. No. 749,967

Claims priority, application Japan, Jun. 28, 1984, 59-131882
 Int. Cl.⁴ F16J 15/447

U.S. Cl. 277-53

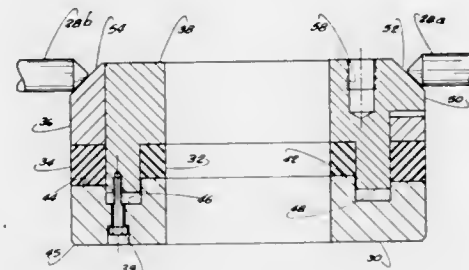
4 Claims



1. A non-contact type seal device for a turbocharger, comprising:
 a retainer mounted in a compressor chamber of a housing of said turbocharger;
 a collar attached to a compressor wheel mounting portion of a rotor shaft of said turbocharger; and
 a ring provided on an inner peripheral surface of said retainer,
 an annular groove receiving said ring being formed in an outer peripheral surface of said collar;
 a first gap being formed between said outer peripheral surface of said collar and said inner peripheral surface of said retainer;
 a second gap being formed between the inner surface of said annular groove and each of inner and opposite end surfaces of said ring; and
 a threaded groove being formed in said inner peripheral surface of said retainer in opposition to said outer peripheral surface of said collar.

4,645,214
WELLHEAD SEALING ASSEMBLY
 Kelly S. Copley, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
 Filed May 16, 1985, Ser. No. 734,544
 Int. Cl.⁴ E21B 33/03; F16J 15/00, 15/18
 U.S. Cl. 277-112

5 Claims



1. A seal assembly comprising
 a base ring having an inner shoulder, an outer shoulder and an annular recess therebetween on its upper surface,
 a first energizing ring having a downwardly facing inner shoulder facing said inner base ring shoulder, a downwardly extending projection engaging in said annular recess and spaced from the bottom thereof and upper outwardly extending lugs with upper tapered surfaces tapering downwardly and outwardly,
 a second energizing ring surrounding said downwardly extending projection on said first energizing ring and having upwardly facing slots to receive said lugs, a lower surface facing said outer base ring shoulder and an upper tapered surface tapering outwardly and downwardly,
 an inner seal ring within said energizing ring projection and being between said inner base ring shoulder and said shoulder on said first energizing ring, and
 an outer seal ring surrounding said energizing ring projection and being between said outer base ring shoulder and said shoulder on said second energizing ring.

4,645,215 SHAFT AND RADIALLY SEALING RING WITH COLD FLEXED SEAL DISK AND A METHOD OF ITS USE FOR SEALING THE CRANKSHAFT OF A TWO-CYCLE ENGINE

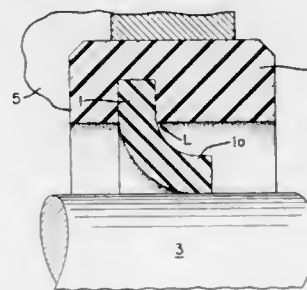
Dieter Fuchs, Riedstadt, and Wolfgang Schmitt, Viernheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany
 Filed Sep. 12, 1985, Ser. No. 775,470

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1985, 3501066

Int. Cl.⁴ F16J 15/32

U.S. Cl. 277-152

20 Claims

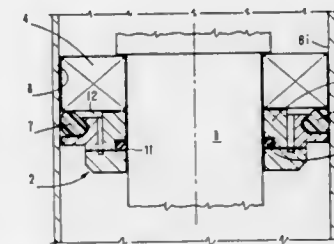


1. A shaft and seal ring combination made by the process comprising:
 providing the shaft;

cold flexing the inside of an annular, planar disk of non-elastomeric plastic about the shaft, the disk having a thickness of from 0.3 to 0.8 mm and, before being cold flexed about the shaft, an inside diameter of from about 1.5 to about 7 times the thickness of the disk less than the diameter of the shaft; and
 sealingly attaching a stiffening ring about the outside of the disk, the line of the innermost sealing attachment between the stiffening ring and the disk being from 2 to 7 times the thickness of the disk from the surface of the shaft.

4,645,216
RADIALLY DISPOSED SEALING DEVICE FOR ROTATING MEMBERS
 Franco Selvatici, Via L. Rodriguez, 4, 40068 S.Lazzaro di Savena (Bologna), Italy
 Filed Feb. 18, 1986, Ser. No. 830,375
 Claims priority, application Italy, Feb. 22, 1985, 4780/85[U]
 Int. Cl.⁴ F16J 15/24
 U.S. Cl. 277-188 R

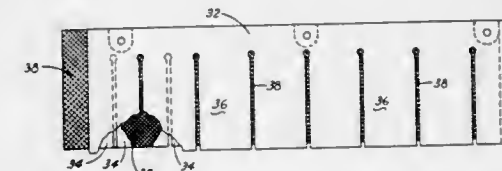
5 Claims



1. A radially positioned sealing device for rotating members comprising: an middle rigid ring adjustable to a given clearance, and being peripherally provided with a shoulder, at least partially accommodating a first annular sealing means; an second adjacent rigid ring, adjustable to a given clearance, adapted to lie, along its upper face contact with the lower face of the middle ring; an annular rigid spacer adapted to be slipped within the middle ring and to be press fitted between the second ring and a rotating member to be protected and being provided with a recessed shoulder in its lower face adapted to provide an annular void serving to accommodate a second annular sealing means.

4,645,217
FINGER SEAL ASSEMBLY
 Fred L. Honeycutt, Jr., Lake Park, and Robert G. Middleton, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
 Filed Nov. 29, 1985, Ser. No. 803,047
 Int. Cl.⁴ F16J 15/12, 15/22
 U.S. Cl. 277-230

6 Claims

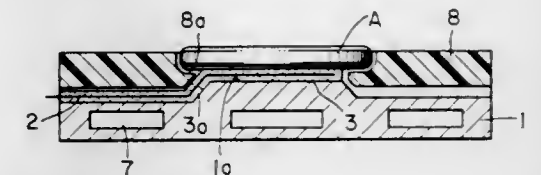


1. A seal means for use between a stationary member and a movable member, said seal means comprising two overlapping inner and outer metallic members each having a solid portion at one end and having slots forming fingers at the other end, said solid portions being contoured to fit a stationary member, said fingers of said outer metallic member being shaped to fit a movable member, said metallic members being offset so that the slots of each member are not aligned, a layer of high temperature resistant cloth positioned between said overlapping

metallic members sealing flow through said slots and between said two metallic members.

4,645,218
ELECTROSTATIC CHUCK
 Hirotsuke Ooshio, and Osamu Watanabe, both of Zama, Japan, assignors to Kabushiki Kaisha Tokuda Seisakusho, Zama, Japan
 Filed Jul. 30, 1985, Ser. No. 760,512
 Claims priority, application Japan, Jul. 31, 1984, 59-117493
 Int. Cl.⁴ B25B 11/00
 U.S. Cl. 279-1 M

16 Claims



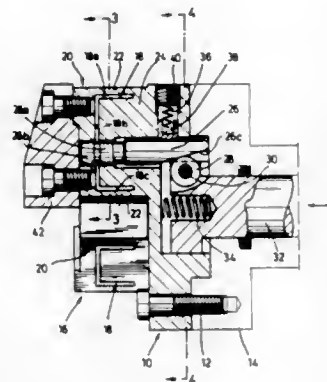
1. An electrostatic chuck for holding a work such as a specimen wafer by electrostatic forces, comprising:
 an electrostatic attraction body including an electrode and an insulator layer which contains and insulates said electrode, said insulator layer having an upper surface for attracting and securing the work;
 an electrically conductive support body for supporting a lower surface of said electrostatic attraction body, said support body having, at the center of the support body, a round protrusion on which the electrostatic attraction body is placed;
 channel means provided in at least one said support body and said attraction body for passing a cooling medium to cool said electrostatic chuck;
 an electric connection portion for connecting said electrode with a power supply; and
 cover means provided at least on the same side as said electrostatic attraction body with respect to the support body, for covering exposed surfaces of the support body except a surface over which the electrostatic attraction body is positioned so that impure materials are prevented from being generated therefrom, said cover means being formed of a cover plate with an aperture in which the work is placed.

4,645,219
CHUCK
 Helmut F. Link, Aichwald, and Erich E. Schäfer, Kirchheim-Nabern, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany
 Filed Dec. 3, 1985, Ser. No. 804,172
 Claims priority, application Fed. Rep. of Germany, Dec. 29, 1984, 3447786; Nov. 8, 1985, 3539599
 Int. Cl.⁴ B23B 31/14, 31/32
 U.S. Cl. 279-1 C

22 Claims

1. A chuck comprising a chuck body, clamping jaws displaceable in a radial direction relative to said chuck body, an actuating member movable in an axial direction relative to said chuck body and an arrangement for converting movement to bring about a radial adjusting movement of said clamping jaws in response to an axial adjusting movement of said actuating member, characterized in that each of said clamping jaws is connected with said chuck body via a pair of arms extending approximately in an axial direction, said arms being resiliently deflectable in a substantially radial direction and acting as a parallel spring link, and that said movement converting arrangement has for each clamping jaw a two-armed lever mounted for pivoting movement relative to said chuck body,

an outer arm of said lever being in operative connection with an associated clamping jaw and an inner arm of said lever being in operative connection with said actuating member so as

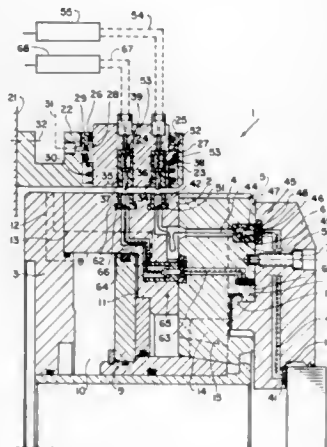


to bring about a pivoting movement of said lever about a pivot axis in response to an axial movement of said actuating member.

4,645,220
APPARATUS AND METHOD FOR MONITORING THE READINESS FOR OPERATION OF A POWER CHUCK
Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weisshaupt GmbH, Fed. Rep. of Germany
Filed Jan. 28, 1985, Ser. No. 695,445
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3402988

Int. Cl.⁴ B23B 31/28
U.S. Cl. 279—111

6 Claims



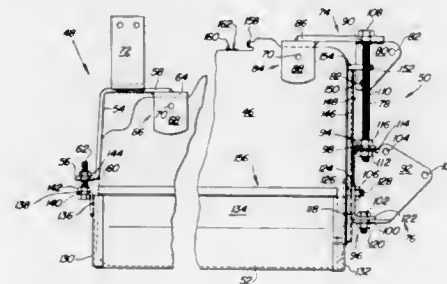
1. Apparatus for measuring the planar clamping of a workpiece having a radial surface and for rotation about an axis, comprising a chuck body having a radially extending groove and for rotation about the axis, at least one clamping jaw movable in said groove, means associated with said chuck body for driving said clamping jaw, at least one electrical signal transmitter mounted on said jaw for engaging the radial surface of the workpiece, and signal transmission and evaluating means extending from said signal transmitter to the exterior of said chuck body through said clamping jaw and said chuck body for evaluating the engagement of said signal transmitter on the radial surface of the workpiece, said signal transmission and evaluating means including a measuring device on the exterior of said chuck body, a piston on the exterior of said chuck body, means mounting said piston for movement toward and away from said chuck body, said piston being connected to said measuring device and being movable to engage said chuck

body, one of said piston and said chuck body having contact pin means and the other of said piston and chuck body having contact bar means and spring means urging said contact pin means toward said bar means, said pin means and said bar means being interengageable against the force of the spring means when said piston is moved into engagement with said chuck body for completing a circuit between said measuring device and said electrical signal transmitter.

4,645,221
ARRANGEMENT OF A CONTAINER ON A VEHICLE
Friedrich Benning, Schwetzingen, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.
Continuation of Ser. No. 727,699, Apr. 26, 1985, abandoned.
This application Jun. 24, 1986, Ser. No. 879,548
Claims priority, application Fed. Rep. of Germany, May 3, 1984, 3416270

Int. Cl.⁴ B60R 11/00; B60K 15/08
U.S. Cl. 280—5 A

19 Claims



5. In the combination of a vehicle, a container, and means pivotally mounting the container on the vehicle for movement about an upright axis between an operational position adjacent the vehicle and an installation position spaced from the vehicle, the improvement comprising:

the means pivotally mounting including means for vertically moving the container between upper and lower positions, and a lock member rigidly secured to the vehicle and extending over the container and having an integral vertical portion which extends along the side of the container remote from the vehicle when the container is in a raised operational position.

4,645,222
VEHICLE AND METHOD OF OPERATING SAME
Robert Hester, "Gretwyn" Haughton Drive, Shifnal, Shropshire, England TF11 8HF
PCT No. PCT/GB84/00103, § 371 Date May 6, 1985, § 102(e) Date May 6, 1985, PCT Pub. No. WO85/01206, PCT Pub. Date Mar. 28, 1985

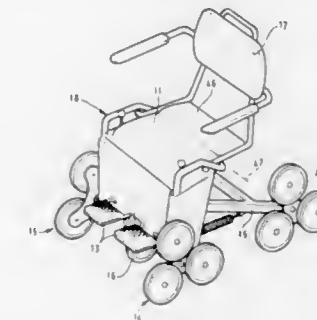
PCT Filed Mar. 28, 1984, Ser. No. 731,110
Int. Cl.⁴ B62B 9/06

U.S. Cl. 280—5.26

7 Claims

1. A wheelchair comprising a seat and front and rear wheel assemblies for supporting the seat wherein each said assembly comprises a respective spider and a plurality of wheels rotatably mounted on the spider, one of said assemblies is movable upwardly and downwardly relative to the seat when the seat is in the normal attitude of use, each of said spiders is mounted for rotation relative to the seat about a respective axis, there is provided control means including a control element displaceable relative to the seat and a linkage for transmitting displacement between the control element and the one wheel assembly and wherein the wheelchair includes a single drive means for simultaneously driving the spiders and the control element, said drive means providing a driving connection between the

spiders and the control element whereby displacement of the control element relative to the seat is dependant on the relation



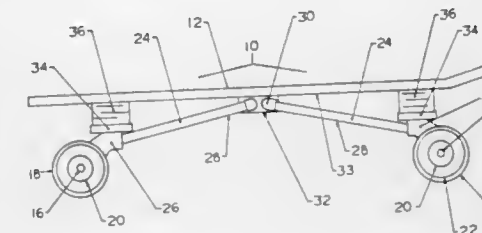
between rotation of the spider of said front assembly and rotation of the spider of said rear assembly.

4,645,223
SKATEBOARD ASSEMBLY
Richard D. Grossman, 20519 Moberly Pl., Canoga Park, Calif. 91311

Filed Feb. 21, 1985, Ser. No. 703,766
Int. Cl.⁴ A63C 17/02

U.S. Cl. 280—11.28

14 Claims



1. An improved skateboard assembly, said assembly comprising, in combination:

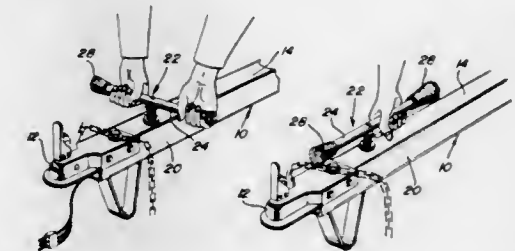
- (a) a skateboard;
- (b) a plurality of spaced wheel axles disposed transversely below said board;
- (c) wheels rotatably connected to opposite ends of said wheel axles;
- (d) wheel axle suspending means connected to each of said wheel axles, each axle suspending means comprising an elongated frame disposed generally longitudinally of said skateboard, said frame having an axle member at a first end thereof generally transversely journaled in a housing connected to the underside of said skateboard at approximately the mid-point thereof, with the end opposite said first end of said frame being secured to one of said wheel axles; and,
- (e) wherein the ends of said frames opposite the first ends of said frames are disposed respectively under opposite ends of said skateboard;
- (f) a resilient shock absorber connected to and extending up above said frame and adapted to bear against the underside of said skateboard during operation thereof to improve its rideability;
- (g) wherein said frame is generally triangular, with the apex thereof connected to said wheel axle and the base thereof generally transversely disposed in a frame housing connected to the underside of said skateboard.

4,645,224
TRAILER TONGUE HANDLE
John W. Poganski, 5541 N.E. River Rd., Sauk Rapids, Minn. 56379

Filed Mar. 20, 1985, Ser. No. 713,981
Int. Cl.⁴ B62B 5/06

U.S. Cl. 280—47.17

6 Claims

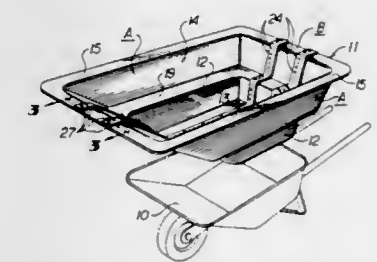


1. In combination with a trailer of the type including an elongated forwardly projecting towing tongue equipped with tow hitch means at its forward end adapted for coupling to a towing vehicle, an elongated handle for assisting in a manually lifting and maneuvering with tongue, said handle being generally horizontally disposed, means supporting said handle from the forward end portion of said tongue with said handle spaced above said tongue and for selected angularly displacement of said handle about an upstanding axis relative to said tongue between first and second positions with said handle disposed transverse to and paralleling said tongue, respectively, said means supporting said handle from said tongue including a vertical passage formed through said tongue and a depending shank carried by said handle reciprocally rotatably and slidably received through said passage and coacting abutment means carried by the lower end of said shank portion and tongue limiting upward displacement of said shank portion relative to said tongue.

4,645,225
WHEELBARROW ENLARGEMENT INSERT
Mack W. Eubanks, 832 "K" Ave., Cayce, S.C. 29033
Filed Jan. 7, 1986, Ser. No. 816,850
Int. Cl.⁴ B62B 1/00

U.S. Cl. 280—47.31

1 Claim



1. A knock-down wheelbarrow enlargement insert having a depressed well which is contoured to fit stably within the body portion of the wheelbarrow and having a substantially enlarged portion above the depressed well adapted to extend substantially outwardly from the margin of a wheelbarrow body portion and well above the latter to materially increase the volumetric capacity of a wheelbarrow, said enlargement insert being constructed in three separate sections to facilitate packaging and storing of the insert, said separable sections including a center section and two side sections, said center and side sections of the insert having straight parallel edges and each insert section being provided with a row of spaced apertures along and near said edges throughout substantially the entire lengths of said edges, the center section of the insert having slightly elevated horizontal flanges along said straight edges of the center section and having the apertures of the

center section formed therethrough, said elevated flanges being adapted to rest on said side sections of the insert with the apertures of the center and side sections in registration, and fastener elements removably engageable through the registering apertures of the center and side sections of the insert to secure them in assembled relationship.

4,645,226

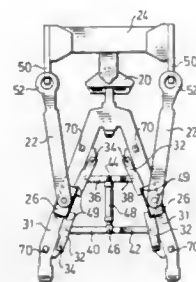
DOLLY HAVING AN ADJUSTING FLEXIBLE OR RIGID CONNECTION

Hans Gustavsson, and Christer Bystedt, both of Vänersborg, Sweden, assignors to Släpvnagsskopplingar AB, Sweden
PCT No. PCT/SE83/00351, § 371 Date Aug. 21, 1984, § 102(e)
Date Aug. 21, 1984, PCT Pub. No. WO84/02501, PCT Pub. Date Jul. 5, 1984

PCT Filed Oct. 11, 1983, Ser. No. 645,318
Claims priority, application Sweden, Dec. 22, 1982, 8207337;
Apr. 13, 1983, 8302043; Jun. 17, 1983, 8303486
Int. Cl.⁴ B62D 53/00

U.S. Cl. 280—423 A

6 Claims



1. Dolly carrying a coupling, for connecting a trailing vehicle there to, a draw device for pivotable connection of the dolly to a drawing vehicle and elongated side supports which by a connection movement are movable from free positions to a lock position in which the side supports form an essentially rigid connection between the dolly and a support element carried by the drawing vehicle, in order to make the connection between the dolly and the drawing vehicle sidewardly rigid, said side supports being carried by pivotal supports on said draw device for allowing swinging movement of said side supports with respect to said draw device, slide means pivotably connected with said side supports and slidable along guide means for allowing continuous connection of said side supports to said support element during said swinging movement, stop means for stopping movement of said slide means and thus preventing said swinging movement of said side supports, and activating means for activating said stop means to stop movement of said slide means in a stop position corresponding to said lock position of said side supports.

4,645,227

PINTLE BRACKET

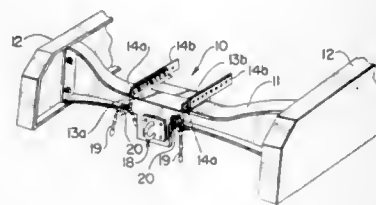
William G. Callahan, 23550 E. 155th, Brighton, Colo. 80601

Filed Sep. 9, 1985, Ser. No. 773,787

Int. Cl.⁴ B60D 1/04

U.S. Cl. 280—495

8 Claims



1. A pintle bracket adapted to be detachably mounted to a

rear crossmember of a truck tractor frame, wherein said crossmember includes a front surface and a rear surface, said bracket comprising:

- (a) a horizontal base member having front and rear sections which are adapted to be secured together at a plurality of, spaced positions in a manner such that the length of said horizontal base member is adjustable,
- (b) a first leg member depending from said front section of said base member;
- (c) a second leg member depending from said rear section of said base member, said second leg member being adapted to securely support a pintle hook, wherein said second leg member includes attachment means;
- (d) securement means comprising two chains which are adapted to extend beneath said crossmember and connect said first and second leg members to secure said bracket to said crossmember, wherein each said chain includes a first end and a second end, wherein said first leg of each said chain is securely attached to said first leg member, and wherein said second end of each said chain is adapted to be detachably connected to said attachment means,

wherein when said horizontal base member rests on top of said crossmember said first leg member is adapted to depend along said front surface of said crossmember and said second leg member is adapted to depend along said rear surface of said crossmember.

4,645,228

COUPLER FOR ASSEMBLING SEGMENTED SKIS

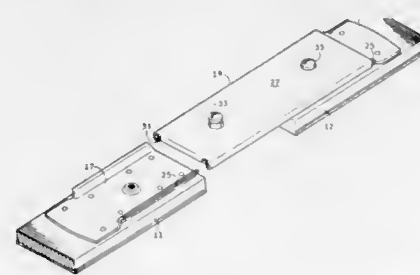
Gerald R. Bertonneau, 1321 Azalea Ave., Ontario, Calif. 91762

Filed Sep. 30, 1985, Ser. No. 782,090

Int. Cl.⁴ A63C 5/02

U.S. Cl. 280—603

6 Claims



- 1. A segmented ski having at least two segments, comprising:
 - a fore segment and a rear segment adapted for end-to-end abutment;
 - a first attachment member secured to the top of the fore segment at the rear end thereof, said first attachment member including a bottom plate having an internally threaded boss thereon and a pair of side flanges extending upwardly of said plate and terminating in a pair of first lips lying in a plane substantially parallel to the top of said ski;
 - a second attachment member secured to the top of the rear segment at the fore end thereof, said second attachment member including a bottom plate having an internally threaded boss thereon and a pair of side flanges extending upwardly of said plate and terminating in a pair of second lips lying in the plane containing said first lips and in longitudinal alignment with said first lips;
 - a bracket releasably connecting said attachment members, said bracket including a rigid body having a pair of third lips formed along the sides thereof and spaced from said first and second lips;
 - a shim member mounted to said bracket, the edges of said shim member being interposed between said third lips and said first and second lips, respectively, and being longitudinally substantially coextensive with said first and second lips; and

a pair of screws rotatably mounted to said bracket in registry with said threaded bosses, said screws forcing said first and second lips and said third lips into clamping engagement with the intervening edges of said shim member and thereby rigidly securing said bracket to said attachment members.

4,645,229

MECHANISM FOR LOCKING OPENED STATE OF BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikisha, Osaka, Japan

Division of Ser. No. 626,110, Jun. 28, 1984, Pat. No. 4,616,844.

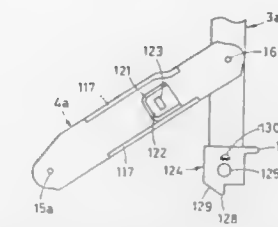
This application Jan. 21, 1986, Ser. No. 820,949

Claims priority, application Japan, Jul. 15, 1983, 58-110370; Nov. 4, 1983, 58-207729

Int. Cl.⁴ B62B 7/06

U.S. Cl. 280—650

4 Claims



1. In a mechanism for locking the opened state of a foldable baby carriage having a pair of front legs (1), a pair of rear legs (2), a pair of push rods (3a), and a pair of connecting rods (4a) for turnably connecting, each at its opposite ends, the respective rear legs (2) and push rods (3a), wherein when said push rods (3a) and said connecting rods (4a) associated therewith are brought into their unfolded state and locked for maintaining the opened state of the baby carriage, while the closed state of the baby carriage is obtained by moving said push rods (3a) and said connecting rods (4a) associated therewith into the folded state, the improvement comprising first and second pivot points at opposite ends of each of said connecting rods for turnably connecting each said rear leg (2) and each said push rod (3a) to each other, said second pivot point (16a) for connecting said push rod (3a) being positioned a predetermined distance above the lower end of the push rod (3a), whereby in said unfolded state, said push rod (3a) and said connecting rod (4a) overlap each other along said predetermined distance, a lock operating member (124) provided at the lower end of each said push rods (3a) in such a way that said lock operating member (124) is slidable in the direction of the push rod (3a), spring means (127) for constantly urging said lock operating member (124) urged by a spring (127) toward the lower end of the push rod (3a), said lock operating member (124) comprising at its lower end an inclined guide portion and an engaging portion (128) extending from said inclined guide portion (129), each of said connecting rods (4a) comprising a further guide portion and a hook portion (119) extending from said further guide portion (120) for engaging said engaging portion (128), and having means for engaging said connecting rod (4a) and the respective lock operating member (124), said engaging means including an engaging hole and an engaging pawl (130) for cooperation with said engaging hole (123) to prevent said lock operating member (124) from sliding relative to said connecting rod (4a) when said locking member (124) is moved on said push rod (3a) toward the upper end of said push rod (3a) against the force of said spring (127) to cancel an engagement with said hook portion (119) of said engaging portion (128).

4,645,230

COLLAPSIBLE TRAILER

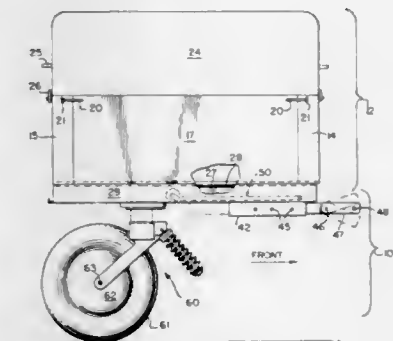
Robert E. Hammons, R.D. 1, Box 176, Dan Main Rd., Norwich, N.Y. 13815

Filed Dec. 13, 1983, Ser. No. 561,244

Int. Cl.⁴ B62D 63/06

U.S. Cl. 280—656

6 Claims



1. A collapsible utility trailer comprising a trailer frame, a bed affixed to said frame, a plurality of wall panels removably attachable to said bed, a top removably connectable either to said panels when attached to said bed, or to the bed itself when said panels are removed thereby forming a storage container for said panels, a pivotable wheel assembly connectable to said frame, said wheel assembly being readily removable from said trailer frame, wherein said assembly comprises a kingpin assembly including a mounting bracket and a kingpin attached thereto, a trunnion journaled on said kingpin, a suspension fork pivotally connected to said trunnion, means for biasing said fork with respect to said trunnion, and a wheel rotatably attached to a lower end of said fork, said bracket having a carrying handle attached thereto and at least one dowel pin means extending therefrom for locating said bracket upon said frame.

4,645,231

STALK FOR A SEAT BELT BUCKLE OR THE LIKE
Juichiro Takada, 12-1, 3-Chome, Shinmachi, Setagayaku, Tokyo, Japan

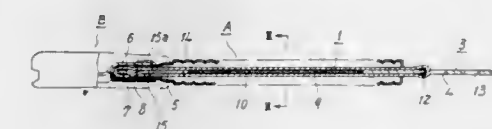
Filed Nov. 12, 1985, Ser. No. 797,138

Claims priority, application Japan, Nov. 12, 1984, 59-170443[U]

Int. Cl.⁴ B60R 21/10

U.S. Cl. 280—801

5 Claims



1. A stalk for supporting a safety belt buckle or the like in a generally predetermined position spaced apart from an anchor point on a vehicle and assembled to an anchor member, the stalk being made of safety belt webbing material, characterized in that a single piece of belt webbing material is folded lengthwise along two fold lines to superpose both edge portions on the center portion and position the selvages closely adjacent each other and the edge portions are stitched to the center portion, thereby providing a double thickness of belt webbing of substantially half the width of the webbing material, in that

a portion of one end of the folded and stitched piece is folded back on itself and overlaps a portion of the other end, in that said overlapping end portions are joined together to form the piece into a loop, in that the loop passes through a hole in the anchor member, and in that the portions of the loop on opposite sides of the anchor member lie substantially flat closely adjacent each other and are stiffened and stabilized by a layer of polymeric material injected and molded in situ between said portions of the loop.

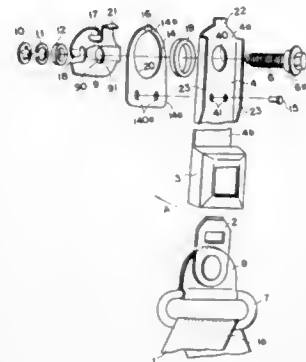
4,645,232

THREE-POINT TYPE SEATBELT SYSTEM FOR VEHICLE

Hideki Hamada, and Tsutomu Shimizu, both of Aichi, Japan, assignors to Toyoto Jidosha Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of, Japan
Filed Jan. 9, 1986, Ser. No. 817,486
Int. Cl.⁴ B60R 21/02

U.S. Cl. 280—801

14 Claims



14. A three-point type seatbelt system for a vehicle, comprising:

- a side portion in the upper part of the vehicle body, said side portion having a retaining bore;
- a cam plate secured to said side portion and having a pawl retained by said retaining bore so as to prevent said cam plate from pivoting, at least two engagement projections, and a mounting bolt receiving bore provided at a substantially central position on said cam plate;
- an anchor plate pivotally mounted on said plate through a spacer and having one end thereof provided with a mounting bolt receiving bore and the other end thereof provided with an engagement device for disengageably connecting a three-point type seatbelt;
- a mounting bolt received through the respective mounting bolt receiving bores of said anchor plate and said cam plate and secured to said side portion in the upper part of the vehicle body, thereby clamping said cam plate between the vehicle body and said anchor plate and supporting said anchor plate so as to be pivotal about said mounting bolt;
- a leaf spring positioned between said anchor plate and said cam plate and having, at least, a mounting bolt receiving bore for receiving said mounting bolt, one end of said leaf spring being secured to said anchor plate so that said leaf spring is pivotal together with said anchor plate, the other end of said leaf spring having a convex portion which selectively and resiliently engages with the two engagement projections of said cam plate, and said leaf spring enabling said anchor plate to be selectively positioned at two positions respectively corresponding to positions at which said convex portion engages with said two engagement projections while making the user or occupant feel recognizable registration when pivoting said anchor plate to said two positions; and
- connecting means having an engagement member dis-

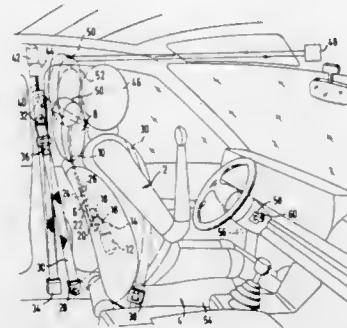
gageably fitted to the engagement device of said anchor plate, and slidably connected to the intermediate portion of said seatbelt.

4,645,233

INSTALLATION FOR THE ADJUSTMENT OF THE HEIGHT OF A HEADREST OF A VEHICLE SEAT
Kurt Bruse, Gaststätte Eichhof, D-6534 Daxweiler; Gerhard Jurgens, and Herbert Becker, both of Coburg, all of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. KG and Kurt Bruse, both of, Fed. Rep. of Germany
Filed Aug. 17, 1984, Ser. No. 641,857
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329606; Jul. 25, 1984, 3427466
Int. Cl.⁴ B60R 22/00

U.S. Cl. 280—808

19 Claims



1. An installation for the adjustment of the height of a headrest of a vehicle seat, comprising motor means mounted on the vehicle seat, sensor means operable to detect the seating height of a person seated on the vehicle seat and automatically controlling the motor means in accordance with the detection results, including a safety belt adapted to be anchored and adjustable in height to the shoulder height of the person seated on the vehicle seat by means of a further motor means, the sensor means being additionally operable to control the further motor means for the height adjustment of the anchoring place of the safety belt, wherein the sensor means includes a light-emitter means arranged in the vehicle in front of a person seated on the vehicle seat in the usual position, a reflecting surface in the upper area of the front side of the headrest, and a light-receiver means arranged in the vehicle in front of the person, on which light transmitted by the light-emitter onto the reflecting surface is able to impinge.

4,645,234

WEBBING GUIDE APPARATUS

Teruhiko Koide, Niwa, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Japan
Filed Jul. 9, 1985, Ser. No. 753,145
Claims priority, application Japan, Jul. 13, 1984, 59-106229[U]

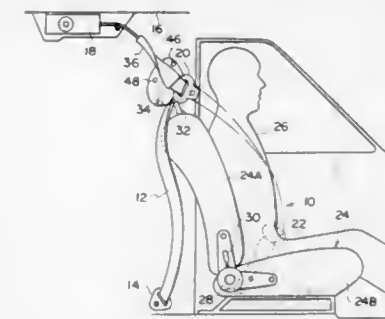
Int. Cl.⁴ B60R 21/10

U.S. Cl. 280—808

20 Claims

1. A webbing guide apparatus employed in a seatbelt system in which one end of a shoulder webbing is housed in a roof portion of the body of a vehicle, said apparatus comprising: guide means for restraining an intermediate portion of said webbing in such a manner that said webbing is movable in its longitudinal direction, said guide means being pivotally supported by a seat back rest of the vehicle or a head rest which is mounted on said seat back rest; and means for limiting the range of pivoting of said guide means so as to raise a distal end of said guide means toward to

roof of said vehicle when the seat back rest is inclined toward the front of the vehicle;



whereby, when said seat back rest is forwardly inclined, a space which allows an occupant to smoothly enter or leave a back seat of said vehicle is provided.

4,645,235

SKI POLE HANDLE

Claude Joseph, Sallanches, France, assignor to Societe Anonyme Kerma, Sallanches, France
Filed Aug. 19, 1985, Ser. No. 767,185
Claims priority, application France, Aug. 21, 1984, 84 13266
Int. Cl.⁴ A63C 11/22

U.S. Cl. 280—821

3 Claims



1. A handle for a ski pole comprising at least two independently fabricated elements, a first of which can be affixed directly to the ski pole and supports the other element, said first element having fixed dimensions and said other elements being selected from a series of second elements having different dimensions, and means on said first and a selected one of said other elements for assembling them together to form the handle with at least transverse dimensions determined by the selected said other element, the first element being a sleeve adapted to fit over the upper end of a ski pole, said sleeve being formed at a forward side with an array of notches adapted to receive fingers of the hand of the skier and along a side opposite said forward side being provided with a seat, said other elements being configured to be receivable in said seat, said seat and a selected one of said elements being interengaged by means for connecting the selected said other element to said seat.

4,645,236

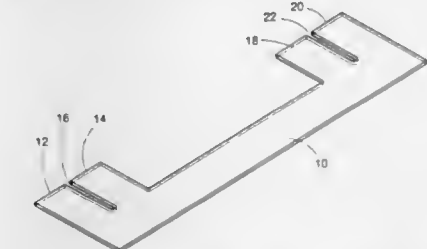
BOOK HOLDER

Louis F. Kemp, Jr., 5334 S. 74 E. Ave., Tulsa, Okla. 74145
Filed Dec. 5, 1985, Ser. No. 804,909
Int. Cl.⁴ B42D 9/00; A44B 21/00; B41J 11/00
U.S. Cl. 281—42

7 Claims

1. A page holder comprising: a thin flat single piece of material having
(a) an elongated back member;

- (b) a first pair of fingers on one end of said back member, there being a page receiving slit between said two fingers;
- (c) a second pair of fingers spaced from said first pair on the other end of said elongated back member with a page receiving slit therebetween;



there being no protrusions from said elongated member between the pair of fingers extending beyond any of said fingers.

4,645,237

BINDER ASSEMBLY FOR PUBLICATIONS AND RETAINERS FOR SAME

Molly A. Squire, Box 1323, Claremont, Calif. 91711, and Wasyl Sawicki, 1714 Granville Ave., Los Angeles, Calif. 90025
Filed Mar. 30, 1984, Ser. No. 595,046
Int. Cl.⁴ B42D 17/00; B42F 1/00, 7/00

U.S. Cl. 281—47

8 Claims

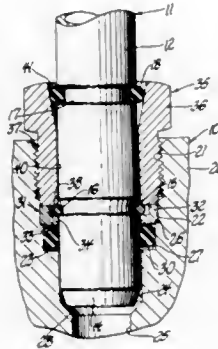


1. A retainer for the detachable mounting of publications having one or more double leaves with vertical folds intermediate their edges, in a binder having three spaced-apart rings, said retainer comprising:

- an elongated rectilinear retainer rod section of substantially equal length with respect to said binder extending across all three of said loops;
- a generally U-shaped ring mounting section extending from each end of the elongated rod section, said end ring mounting sections having distal portions extending generally toward each other and generally parallel to the elongated rod section;
- a loop on the distal end portion of each of said U-shaped sections, said loops being spaced apart to register with the outermost ones of said three spaced-apart rings so as to bypass the middle ring of said three rings;
- whereby a plurality of said publication leaves are mountable on the retainer rod section in close proximity to said bypassed ring by introduction of the retainer rod section between the leaves to engage the elongated retainer rod section with said vertical folds.

disposed on diametrically opposite sides of said central ring, each spanning a first diameter thereof and opening axially outwardly into said first end face, the slots of said second pair opening axially outwardly into said second end face and also being disposed on diametrically opposite sides of said central ring and arranged to each span a second diameter of said central ring, said second diameter extending perpendicular to said first diameter; first and second end rings disposed at the opposite ends of said center ring and each formed with a pair of axially-elongated, diametrically spaced apart lobes received in said respective slots; first and second pairs of pivot pins projecting through said tubes and through said respective first and second pairs of lobes to pivotally connect said respective end rings to said central ring; and flexible, cylindrical enclosure means for surrounding and sealing said first and second end rings and said central rings.

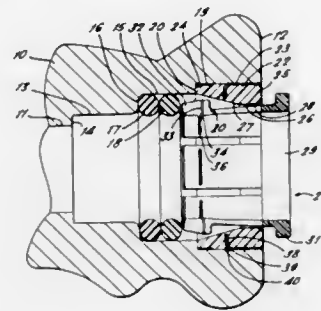
4,645,245
QUICK CONNECT TUBE COUPLING
Gail M. Cunningham, Vassar, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 7, 1985, Ser. No. 784,771
Int. Cl.⁴ F16L 39/00
U.S. Cl. 285—321 2 Claims



1. A quick connect tube coupling assembly including a body member, a straight walled tube, a retainer seat a split ring retainer, a first ring seal, a second ring seal and a tubular nut; said body member having a stepped bore extending from an outboard end thereof to define an internally threaded wall, a first intermediate wall, a second intermediate wall, a tube receiving wall and a fluid passage; said first ring seal being operatively positioned in said body member to sealingly engage said second intermediate wall and said tube; said retainer seat having an axially extending ring portion and a radial inward extending flange washer portion at one end thereof that is operatively received by said first intermediate wall, said tubular nut being threadingly received in said internally threaded wall so as to abut against an end of said ring portion of said retainer seal opposite said washer portion which is sized to receive said tube and to define on one side thereof an abutment shoulder for said ring seal and on the other side thereof defining with said ring portion and the inboard end face of said tubular nut an annular groove in which said split ring retainer is operatively positioned; said tube having a chamfered free end, an annular first retainer groove for said split ring retainer located a predetermined distance from said chamfered free end of said tube and an annular second groove, receiving said second ring seal, located a predetermined distance from said retainer groove; said tubular nut having a bore extending therethrough defining a tube receiving passage at its inboard end and an outwardly flared camming surface at its outboard

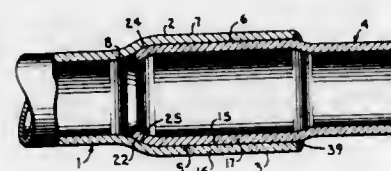
end against which said second ring seal is sealingly compressed.

4,645,246
TUBE COUPLERS
John D. Guest, "Iona", Cannon Hill Way, Bray, Maidenhead, Berkshire, United Kingdom
Filed Mar. 27, 1986, Ser. No. 844,921
Claims priority, application United Kingdom, Mar. 28, 1985, 8508121
Int. Cl.⁴ F16L 21/06
U.S. Cl. 285—323 5 Claims



1. A tube coupler comprising a sleeve having means therein for receiving and gripping the outer surface of a tube to releasably lock the tube in the sleeve, the outer surface of the sleeve having detent means thereon to permit the sleeve to be inserted in one direction into a bore but resisting withdrawal of the sleeve from said bore in the opposite direction by gripping engagement of said sleeve with the wall of said bore, said detent means comprising a ring embedded in the wall of said sleeve, said ring having an outer peripheral part projecting outwardly from the outer surface of said sleeve, thereby forming an annular projection on the sleeve.

4,645,247
MECHANICAL PIPE JOINT
Gregg D. Ward, Olathe, Kans., assignor to Energy Pipelines International Company, Kansas City, Mo.
Division of Ser. No. 613,973, May 25, 1984, Pat. No. 4,627,146.
This application Feb. 14, 1986, Ser. No. 829,492
Int. Cl.⁴ F16L 13/14
U.S. Cl. 285—382.1 6 Claims

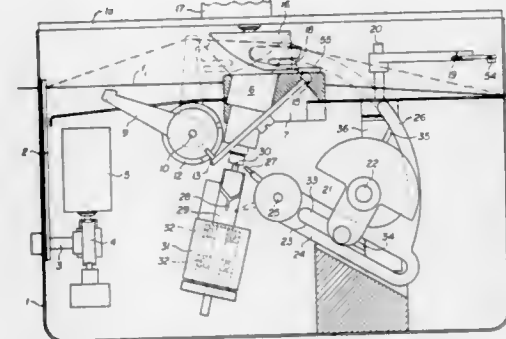


1. A pair of tubular elements engageable with one another to form a mechanical pipe joint; said pair of tubular elements comprising:

- (a) a substantially cylindrical pin member;
 - (i) said pin member comprising a first tubular element of a metallic material subject to strain hardening; said first tubular element having a first inside diameter and a first end portion expanded in diameter beyond said first inside diameter and beyond an elastic limit of the pin member material; said expanded first end portion being a strain-hardened pin having a first outside diameter;
- (b) a substantially cylindrical bell member;
 - (i) said bell member comprising a second tubular element of a metallic material subject to strain hardening; said second tubular element having an inside diameter sub-

stantially equal to said first tubular member first inside diameter, and, said second tubular element having an expanded second end portion; said expanded second end portion including a bell expanded a sufficient amount beyond said diameter of said second tubular element and an elastic limit of the bell member material to form a strain-hardened bell having a first inside diameter less than said first outside diameter of said pin; (c) the differences in said bell first inside diameter and said pin first outside diameter being such that a press-fit insertion of said pin into said bell, to form a mechanical pipe joint, results in expansion of said bell beyond the elastic limit thereof to a point where the ultimate strength of the bell material is approached.

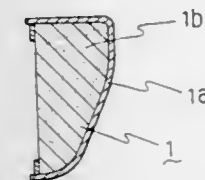
4,645,248
DEVICE FOR SELECTING YARNS FOR A KNITTING MACHINE
R mi Cottenceau, Viry, France, and Francois Fischer, Carouge, Switzerland, assignors to H. Stoll G.m.b.H. & Co., Reutlingen, Fed. Rep. of Germany
Filed Jun. 18, 1986, Ser. No. 875,865
Claims priority, application Switzerland, Jun. 21, 1985, 2647/85
Int. Cl.⁴ A01D 59/04
U.S. Cl. 289—2 6 Claims



1. A device for selecting yarns for a knitting machine comprising means for holding the ends of the yarns to be selected, means for bringing a selected yarn into the path of a rotating member for forming closed loop, means for introducing an open loop of the yarn being knitted through said closed loop and means for passing the portion of selected yarn extending between its end and the closed loop through said open loop, means for releasing said closed loop from said rotating member and for gripping it on said selected yarn and means for cutting the yarn being knitted upstream of the point where said closed loop is gripped, characterized in that said means for holding the ends of yarns to be selected and for cutting the yarn being knitted comprise a rotatable circular housing arranged in the path of the yarn being knitted and having a lateral opening for the entry of the yarns to be selected and a passage aligned with said path, said circular member being rotatably mounted in the said circular housing, a driving member, a shaft integral with said circular member and connected to said driving member and having two distinct symmetrical sectors on said shaft, circular lateral faces of said sectors which faces comprise two respective helicoidal grooves for guiding an angularly fixed circular member, said helicoidal grooves opening respectively, on the one hand in the face of said rotatable circular member adjacent to said angularly fixed circular member and, on the other hand, in one of the two faces defining said respective sectors, respective cutting edges formed between these respective helicoidal grooves and the circular lateral faces of said respective sectors, an edge formed by the intersection of the rim of that of the walls of the downstream portion of said passage situated opposite the direction of rotation of the rotatable circular member with the wall of said circular housing.

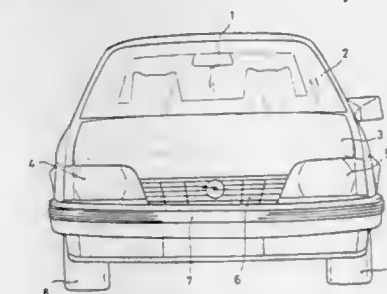
said cutting edges cooperating in turns with said edge, said fixed circular member having a face adjacent to said rotatable circular member being pressed elastically against it and having the form of a sector extending over an angular portion of which the angle is smaller than that of said symmetrical sectors but larger than the space separating these same sectors, the beginning of this sector coinciding substantially with said lateral opening for the entry of the yarns to be selected.

4,645,249
CORE FOR AN AUTOMOBILE BUMPER
Toshiharu Nagosbi, Osaka; Hidehiko Totsuka, Tokyo; Takeshi Taira, Yokohama; Youkichi Gotob, Suita, and Kazuya Senuma, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 5, 1985, Ser. No. 762,170
Claims priority, application Japan, Aug. 14, 1984, 59-169552
Int. Cl.⁴ B32B 5/18; E05C 19/10
U.S. Cl. 293—102 3 Claims



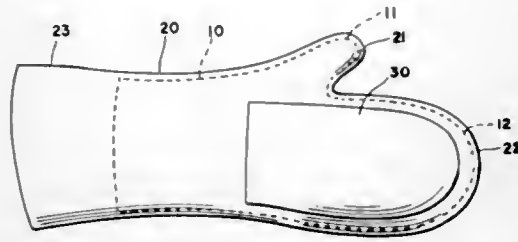
1. In an automobile bumper comprising a foam having a bulk density of 0.047 to 0.18 g/cm³, said foam being made of an ethylene-propylene random copolymer having an ethylene content of 0.1 to 8.0% by weight.

4,645,250
BUMPER-RADIATOR GRILL ASSEMBLY
Helmut Bauer, Trebur, and Karl F. Reuter, Kelsterbach, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 13, 1986, Ser. No. 818,177
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1985, 3523909
Int. Cl.⁴ B62D 25/08
U.S. Cl. 293—115 4 Claims



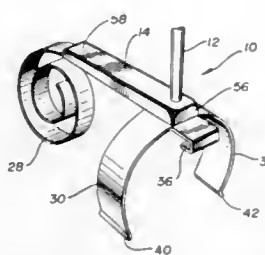
1. A motor vehicle bumper with radiator grill attached thereto characterized by the radiator grill being mounted in a front region thereof by a locking projection that engages in a shaped hole which is reduced towards the front, in an upper side of the bumper, and being mounted in a rear region thereof by at least one catch hook that engages beneath an upper rear edge of the bumper.

4,645,251
GLOVE-LIKE WASTE DISPOSAL SYSTEM
 Alvin D. Jacobs, New York, N.Y., assignor to Leonard Holtz, Oceanside, N.Y., a part interest
 Filed Dec. 23, 1985, Ser. No. 812,303
 Int. Cl.⁴ A01K 29/00; A41D 19/00
 U.S. Cl. 294—1.3 19 Claims



1. A glove-like waste material disposal system comprising: a flexible inner glove member which is placed over the hand of a user; and a separate flexible outer glove member which is placed over the inner glove member; said outer glove member completely enclosing said hand except for the hand opening therein and being made of a thin, flexible, disposable material, and said inner glove member having at least its finger and palm covering portions made of a material which is relatively thick as compared to the material of said outer glove member and of a sufficient thickness to prevent the user from substantially feeling the waste material as it is picked up with a required finger pressure; whereby after picking up of waste, said outer glove member is removed or stripped off of the inner glove member to an inside-out pouch forming configuration which contains the picked-up waste material in the pouch formed therein.

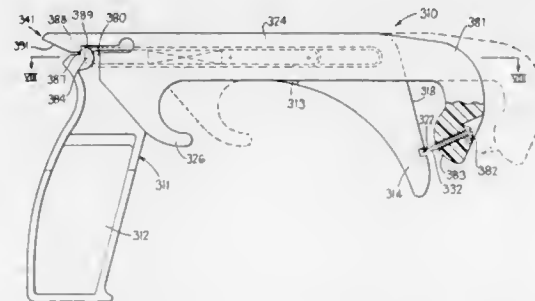
4,645,252
ANIMAL DROPPING TOOL
 Mike Riley, 801 Fourth St., NE, Minneapolis, Minn. 55413
 Filed Apr. 10, 1986, Ser. No. 850,223
 Int. Cl.⁴ A01K 29/00
 U.S. Cl. 294—1.4 10 Claims



1. A device for picking up animal feces in combination with a cup, the device comprising:
 a frame member having a top, bottom and front and back ends;
 (b) an elongated handle detachably connected to said frame member;
 (c) a pair of arcuate support springs, each having a convex face, said springs each being attached at one end to said frame member in a spaced opposing relation such that the convex faces of said springs face each other so as to define an opening and together with the frame member define an arc of greater than about 180 degrees and less than about 320 degrees;
 (d) a coil spring member attached to the back end of said frame member and being constructed and arranged such

that it is normally biased toward the opening defined by said arcuate support springs; and
 (e) lip securement means attached to said frame member for engaging and holding a lip of a cup inserted between said arcuate springs when the bottom of said cup contacts said coil spring member said lip securement means being constructed and arranged such that a cup lip is held to the front end of said frame member and the other portions of said lip may contact fecal matter without feces touching said lip securement means.

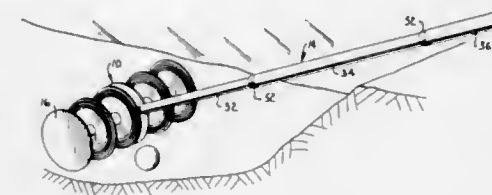
4,645,253
FISH GRIPPING DEVICE
 John D. Hogden, Sr., Tyler, Tex., and Charles M. Clelland, Kalamazoo, Mich., assignors to HoPeC Enterprises, Inc., Tyler, Tex.
 Filed Feb. 6, 1986, Ser. No. 826,821
 Int. Cl.⁴ A01K 97/14
 U.S. Cl. 294—19.1 3 Claims



1. A device for releasably gripping a fish, comprising: a support member, an operating member supported on said support member for movement between first and second position, first and second gripping elements supported for movement relative to each other between a released position spaced from each other and a gripping position adjacent each other, and means for effecting movement of said gripping elements between said released and gripping positions in response to movement of said operating member and support member between said first and second positions, respectively; wherein said first and second gripping elements are respectively adapted to be placed inside the mouth of a first and against an outer surface of the lower jaw of the fish when in said released position, subsequent movement of said gripping elements from said released position toward said gripping position in response to relative movement of said operating member and said support member from said first position toward said second position causing the lower jaw of the fish to be firmly releasably gripped by said gripping elements; wherein said support member includes a handle portion which extends in a first direction and can be manually gripped and an extension portion projecting outwardly from one end of said handle portion in a second direction transverse to said first direction; wherein said second gripping element in a gripping surface provided on an end of said extension portion remote from said handle portion and facing in a direction away from said handle portion; wherein said operating member has a trigger portion adapted to be engaged by a finger of a hand gripping said handle portion of said support member; including resilient means for yieldably urging relative movement of said operating member and said support member from said second position to said first position thereof; wherein said support member has planar first and second surfaces on opposite sides thereof which each extend parallel to said second direction, and has extending between said first and second side surfaces an elongate slot which extends parallel to said second direction, said operating member being slidably disposed against said first side surface; including a retaining member slidably supported against said second side surface of said support member and means which extends

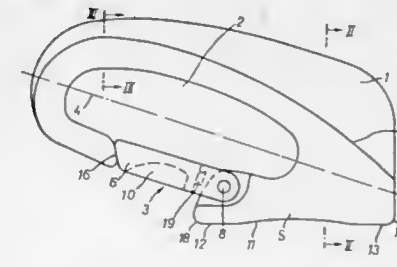
transversely slidably through said slot for fixedly coupling said retaining member and said operating member; and wherein said operating member includes a portion which projects outwardly past said gripping surface on said support member and which has a semicylindrical surface which faces said gripping surface on said support member, said operating member further having a pointed projection which extends outwardly from said semicylindrical surface in a direction toward said gripping surface on said support member, said semicylindrical surface and said pointed projection being said first gripping element.

4,645,254
PORTABLE GOLF BALL RETRIEVER
 Roland R. Warden, 301 S. Evergreen, Wichita, Kans. 67209
 Filed Apr. 7, 1986, Ser. No. 848,584
 Int. Cl.⁴ A63B 47/02
 U.S. Cl. 294—19.2 10 Claims



1. A portable golf ball retrieving tool comprising:
 a shaft;
 handle means;
 means journaling said shaft on the handle means for rotation about the shaft longitudinal axis;
 said shaft comprising a plurality of relatively telescoping sections whereby the shaft may be collapsed longitudinally from an expanded condition to a retracted position of substantially shorter length than said expanded condition;
 a plurality of at least slightly resilient discs mounted on the shaft for rotation therewith, there being at least one disc on each shaft section respectively, the spacing between adjacent discs being no greater than the diameter of a golf ball when the shaft is in said expanded condition so that a ball lodged between a pair of adjacent discs is frictionally gripped therebetween, and whereby the shaft may be collapsed for ready portability of the tool, and expanded for rolling manipulation over a surface to effect lodgement of golf balls between the discs for retrieval when encountered by the tool.

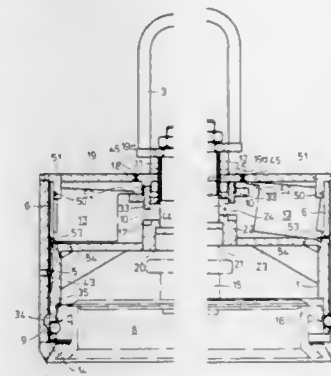
4,645,255
LOAD HOOK
 Hans R. Zepf, Hirsackerstr. 30, Horgen, Switzerland
 Continuation of Ser. No. 191,332, Feb. 16, 1980, abandoned.
 This application Apr. 16, 1986, Ser. No. 852,403
 Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826541
 Int. Cl.⁴ B66C 1/36; B66F 19/00
 U.S. Cl. 294—82.19 6 Claims



1. A load hook for attachment of a load supporting cable or chain to a pivotable lifting device, comprising an elongated

body having two opposite directed semi-circular ends, each of which have first and second arms, the first arm of each of said semi-circular ends being joined to form a continuous support surface, the second arms being spaced from each other and terminating, to define a mouth for insertion of said cable; a safety catch pivotally secured to the second arm of one of said semi-circular ends and extending toward the second arm of the other of said semi-circular ends to cover said mouth; said semi-circular ends, said catch and said continuous support surface defining an oval hook space having a longitudinal axis passing through the centers of said semi-circular ends; the second arm of said one semi-circular end to which said catch is pivoted being enlarged to form an exterior base providing a bearing surface for securement to said lifting device; the longitudinal axis of said oval hook space being inclined obliquely with respect to said bearing surface; and, said catch and said second arm of each of said semi-circular ends extending parallel to said longitudinal axis to provide a space between said hook body and said lifting device for entry into the mouth thereof, wherein said chain or cable can be supported by said hook body regardless of the position of said lifting device.

4,645,256
GRAVITY ACTUATED GRIPPER
 Horst Zeh, Karlsruhe, Fed. Rep. of Germany, assignor to Wiederaufarbeitungsanlage Karlsruhe Betriebsgesellschaft mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany
 Filed Nov. 15, 1984, Ser. No. 672,179
 Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342471
 Int. Cl.⁴ B66C 1/66; G21C 19/10
 U.S. Cl. 294—86.4 2 Claims



1. A gravity actuated gripper for gripping a load having a circumferential supporting ring, comprising:
 an outer shell having a groove and having an upwardly oriented end member with an opening therein;
 an inner shell which is lockable with respect to said outer shell and which lies concentrically in the outer shell and is displaceable with respect thereto between two positions, said inner shell having an inside, an outside, and recesses extending between said inside and said outside, said inside of said inner shell being configured to receive at least a portion of the load, said inner shell additionally having an upwardly oriented end member with a central hub;
 balls which are disposed in said recesses of said inner shell and which can be pushed by said outer shell partially inside said inner shell to grippingly engage the supporting ring of the load when the load is at least partially inside said inner shell, said balls additionally being selectively moveable to one of a position wherein the balls lie completely in the recesses in said inner shell and a position wherein said balls lie partially within said grooves in said outer shell when said outer shell is positioned so that said groove therein covers said recesses from the outside;

a central shaft having an axis and having a collar which supports said inner shell and which is mounted in said central hub so as to be axially displaceable, said shaft extending through said opening in said end member of said outer shell and terminating in an upper end;

an eye element affixed to said upper end of said shaft; and mechanical control means disposed between said inner and outer shells for fixing said two positions of said shells, said mechanical control means being actuable by raising and lowering said shells, said mechanical control means including

a lower ring of crown sawteeth on said central hub and surrounding said shaft, said crown sawteeth of said lower ring having a pitch, having bottoms of uniform configuration, and having cam edges facing a first direction,

an upper ring of crown sawteeth on said end member of said outer shell around said shaft, said crown sawteeth of said upper ring having a pitch that is rotated by half a pitch with respect to the crown sawteeth of said lower ring, having cam edges facing a second direction that is opposite said first direction, and having bottoms, at least one bottom being deeper than at least one other bottom, a switching ring rotatably mounted on said shaft at a fixed axial position with respect thereto, said switching ring being disposed between said upper and lower rings, and at least one tooth mounted on said switching ring and positioned for insertion into said crown teeth of said upper and lower rings, said at least one tooth having a length that is less than the minimum distance between said upper and lower rings.

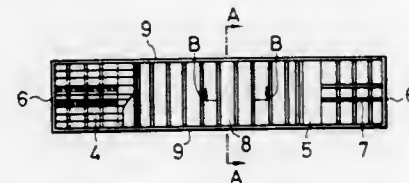
4,645,258
UNDERFRAME CONSTRUCTION FOR RAILWAY VEHICLE

Keiji Obmura; Sueso Kawai; Yoshimasa Murakami; Michifumi Takeichi, and Masato Okazaki, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 2, 1985, Ser. No. 782,902

Claims priority, application Japan, Oct. 3, 1984, 59-206205; Mar. 11, 1985, 60-46509; Mar. 29, 1985, 60-63553
Int. Cl.⁴ B62D 33/02

U.S. Cl. 296—204

10 Claims



1. An underframe construction for rolling stock, comprising side sills disposed parallel in opposite side positions of an underframe, end sills which connect the opposite ends in the longitudinal direction of said side sills, body bolsters arranged at positions at which a vertical load applied on the underframe is supported, load support members comprising upper-horizontal, lower horizontal and vertical parts, respectively, and juxtaposed sequentially in the longitudinal direction of the underframe, end portions of the load support members in the transverse direction of the rolling stock body being jointed to the side sills, a floor board is jointed to the upper-horizontal part of the load support members, and a projection projecting upward and engaging the floor board is provided in the upper-horizontal part at the position at which the part is jointed to the floor board.

4,645,259
ACTUATOR FOR AN OPENABLE VEHICLE ROOF

Jurgen Dufft, Erdington, United Kingdom, assignor to Tudor Webasto Limited, Birmingham, England

PCT No. PCT/GB85/00090, § 371 Date Oct. 4, 1985, § 102(e)
Date Oct. 4, 1985, PCT Pub. No. WO85/03910, PCT Pub. Date Sep. 12, 1985

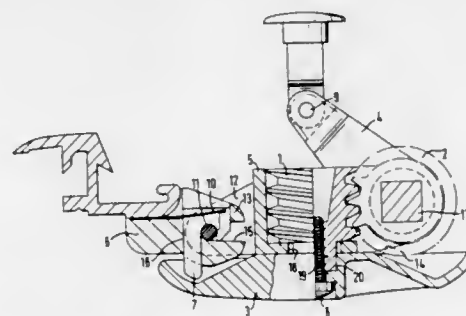
PCT Filed Mar. 5, 1985, Ser. No. 789,957

Claims priority, application United Kingdom, Mar. 6, 1984, 8405856; Aug. 16, 1984, 8420818

Int. Cl.⁴ B60J 7/08; E05F 11/20, 11/34

U.S. Cl. 296—223

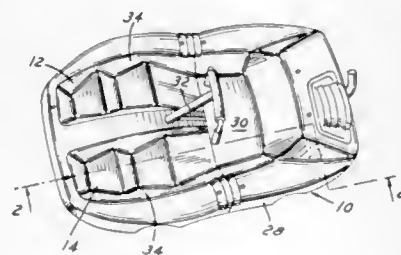
10 Claims



1. An actuator for an openable vehicle roof for a motor vehicle of the kind comprising a panel, one edge of which can be swung outwardly, said actuator comprising a mounting member for mounting the actuator to a fixed part of the vehicle, a body portion hinged adjacent one end to the mounting member, an arm member hinged to the body portion adjacent a second end of the body portion for connection to the openable roof panel and a worm carried by the body portion and

4,645,257
FOOT PODS
Michael E. Salmon, 2622 Makin, Flint, Mich. 48504
Filed May 15, 1985, Ser. No. 734,472
Int. Cl.⁴ B62J 25/00
U.S. Cl. 296—75

8 Claims



1. In a vehicle for a seated occupant having a body surface forward of the seat, a pair of foot pods each comprising a recessed indentation integrally formed in the vehicle body surface having a plurality of transverse V-shaped grooves extending generally perpendicular to the leg of an occupant seated in the seat for support of the occupant's foot at various distances in front of the seat, and a pair of side walls extending longitudinally on each side of the V-shaped grooves to limit transverse movement of the occupant's foot, whereby different size occupants can comfortably sit on the seat by positioning their foot in the V-shaped groove which is most comfortable.

engaged with a worm follower member carried by the arm member, such that rotation of the worm produces angular displacement of the arm member with respect to the body portion.

4,645,260
FOLDING CHAIR

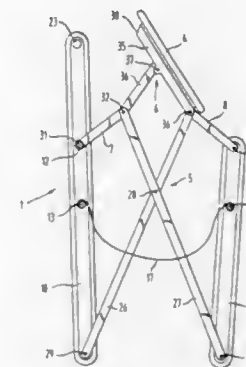
Alexander Harty, Untersiemau, and Jurgen Lange, Stegmuhle, both of Fed. Rep. of Germany, assignors to Loga Mobil GmbH, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,109

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1984, 8400924

Int. Cl.⁴ A47C 4/00

U.S. Cl. 297—35



1. An improved folding chair of the type including a back portion and a front portion connected to each other and provided with a seat and a pair of armrests extending between the back and front portions, which chair comprises:

- a pair of cross strut assemblies connecting the back and front portions together for articulation between an unfolded position of use and a folded position, each cross strut assembly comprising:
 - an elongate front strut member;
 - an elongate rear strut member;
 - means to pivotally connect the front and rear strut members together between their opposite ends;
- a pair of rear braces pivotally connected to the back portion at first pivot points;
- a pair of front braces pivotally connected to the front portion at second pivot points;
- means pivotally connecting the front strut members of the cross strut assemblies to both the rear brace at third pivot points and to the front portion;
- means pivotally connecting the rear strut members of the cross strut assemblies to both the front braces at fourth pivot points and the back portion such that the first, second, third and fourth pivot points lie in a common plane when the cross-strut assemblies are in the unfolded position of use;
- a flexible web defining a seat of the chair connected at opposed edges only to the back and front portions so as to extend therebetween below the plane containing the first through fourth pivot points;
- a pair of articulated linkages, each linkage including first and second elongate struts, wherein the first strut is longer than the second strut, has a free end and supports an armrest;
- means pivotally connecting an end of each second strut to both a corresponding rear brace and a corresponding front strut member;
- means pivotally connecting an end of each first strut to both a corresponding rear strut member and a corresponding front brace; and
- means pivotally connecting an end of the second strut to

the approximate mid-point of the first strut to define a common pivotal axis such that by pressing down the armrest, the articulated linkages apply pressure to spread the strut members of the cross strut assemblies and the front and rear braces apart and subjecting the flexible web to tensile stress and maintain the chair in a stable, unfolded position of use in which the free ends of the first struts engage with the front strut members and wherein the common pivotal axis is located below the plane of the first through fourth pivot points and between the third and fourth pivot points.

4,645,261
CHILD'S CONVERTIBLE FURNITURE

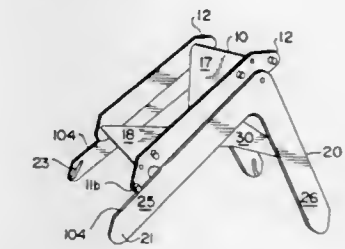
Richard Bourne, and Carol Bourne, both of 1226 Villanova Dr., Davis, Calif. 95616

Filed Sep. 19, 1985, Ser. No. 777,547

Int. Cl.⁴ A47C 13/00

U.S. Cl. 297—118

19 Claims



1. A child's convertible furniture set capable of conversion to a low chair and a high chair, said furniture set comprising: a seat element having two side slats with inner and outer surfaces, said side slats being separated by a first distance with said seat element secured between the inner surfaces thereof, said seat element having a seat back connected to an upper end of said slats and a seat bottom connected to a lower end of said slats, said seat back and seat bottom intersecting at a junction spaced from said side slats;

a base adapted to detachably receive and support said seat element; said base having two L-shaped members defining first and second legs intersecting at an elbow, a first dowel extending between the elbows of said L-shaped members, and a cross-member having a first edge connected to a central portion of said first legs and an opposite second edge connected to a central portion of said second legs; said L-shaped members having facing surfaces separated by a second distance greater than said first distance separating said side slats of said seat element; said first and second members defining an outer edge and an inner edge with a first width therebetween, and having a tip at an end of each leg opposite from said elbow such that said base is supportable in one of a first position on said tips of said first and second legs and a second position on the outer edge of said second legs with said first legs extending generally upward; and

means for detachably securing said seat element to said base, said means comprising

upper and lower pairs of pins each located on the outer surfaces of the upper and lower ends of said side slats, respectively, said upper and lower pairs of pins each having an inner pin and an outer pin separated by a second width greater than said first width of said first and second legs,

upper notches located in said side slats approximately centrally between said inner and outer pins of said upper pair of pins, said notches having a size sufficient to receive said first dowel,

first slots located in the facing surfaces of the tips of said first legs of said base, each of said first slots being adapted to receive at least one of said inner and outer pins of said

upper and lower pairs of pins and having a length greater than said second width between said pins, wherein said seat element is secured to said base in said first position to form the low chair in which said upper notches of said side slats receive said first dowel, and said side slats fit between said first legs to permit said outer pin of said lower pair of pins to contact said outer edge of said first leg, and said seat element is secured to said base in said second position to form the highchair in which one of said upper and lower pairs of pins is received within said slots of said first legs.

4,645,262

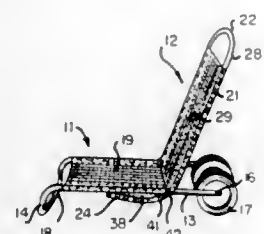
CAMP CHAIR THAT CONVERTS TO A HAND TRUCK
Douglas S. Furubotten, 5903 Fallbrook Ave., Woodland Hills, Calif. 91367

Filed Nov. 21, 1985, Ser. No. 800,522

Int. Cl.⁴ A47C 13/00

U.S. Cl. 297—129

11 Claims



1. A camp chair that converts to a hand truck, comprising: an elongated generally planar seat member having a pair of wheels rotatably mounted to one end thereof and a support member projecting downwardly of the plane of said seat member at the other end thereof, said wheels and support member normally supporting said seat member in a generally horizontal position to provide a seat; a normally upstanding back rest member having a load-bearing platform rigidly mounted to the lower end thereof and projecting forwardly thereof, said back rest member being pivotally mounted at the lower end thereof to said seat member adjacent said wheels with said load-bearing platform positioned below said seat member and adapted for abutment against the under side of said seat member, whereby said back rest member is supported in a generally upright position by said seat member when said seat member is disposed in a generally horizontal position and said seat member is supported in a generally upright position by said back rest member upon rotation thereof into abutment with said back rest member.

4,645,263

INCLINING MECHANISM FOR A SEAT AND IN PARTICULAR FOR AN AUTOMOBILE

Francois Fourrey, Montbeliard, and Jean Perrissin-Fabert, Manbeure, both of France, assignors to Cycles Peugeot, Valentigney, France

Filed Nov. 6, 1984, Ser. No. 668,924

Claims priority, application France, Nov. 16, 1983, 83 18225

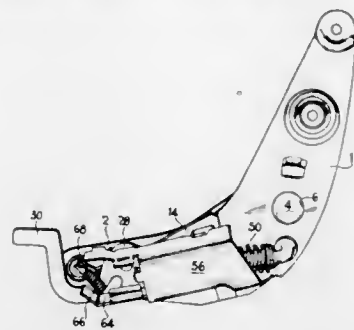
Int. Cl.⁴ B60N 1/02

U.S. Cl. 297—366

10 Claims

1. A mechanism for adjusting the inclination of a seat back on a base of a seat, and in particular a vehicle seat, comprising two side walls, one side wall being movable for securing to the seat back and the other side wall being fixed for securing to the base of the seat, pivot means interconnecting the two side walls and defining a pivot axis about which the movable side wall is pivotable for adjusting the position of the seat back, an arcuate toothed sector integral with the movable side wall and centered on said axis, a toothed pawl, means for guiding the pawl

on the fixed side wall so that the pawl is movable relative to the fixed side wall between a first position in which the toothed pawl is engaged with the toothed sector for immobilizing the movable side wall relative to the fixed side wall and a second position in which the pawl is withdrawn from the toothed sector, means for shifting the pawl between said two positions thereof, a housing combined with the fixed side wall for protecting and retaining the movable side wall, the shifting means and the pawl in position on the fixed side wall, means for locating the housing relative to the fixed side wall, a spring interposed between the housing and the movable side wall for biasing the movable side wall to pivot about said axis in a direction to move the seat back toward a more vertical position, said pivot means comprising a projection on one of two elements consisting of the fixed side wall and the movable side



wall and an opening in the other of said two elements, said guide means comprising at least one projection on one of two second elements consisting of the pawl and the fixed side wall and an opening in the other of said second elements, said locating means comprising projections on one of two third elements consisting of the housing and the fixed side wall and openings on the other of said third elements, said projections and openings being interengaged in assembled positions of the fixed side wall, movable side wall, pawl and the housing and being adapted to be interengaged merely by a relative sliding between the projections and openings upon assembly of the fixed side wall, the movable side wall, the pawl and the housing, the spring being in bearing relation to the housing in such manner as to, in addition, bias the housing in a direction to maintain said locating means interengaged.

4,645,264

MOTORIZED DUMPING VEHICLE

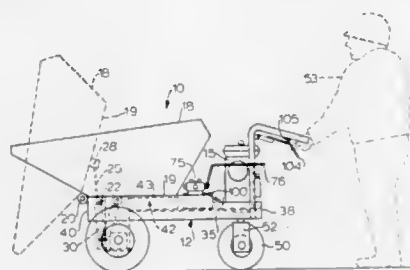
Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Jan. 10, 1985, Ser. No. 690,460

Int. Cl.⁴ B60H 1/22

U.S. Cl. 298—1 H

2 Claims



1. A motorized dump-type vehicle for on-the-job transporting of concrete or other materials, comprising:

(a) a rectangular metal formed chassis frame having integral-

ly-joined side, front and rear members defining in transit front and rear ends thereof;

(b) a gasoline engine mounted above and on the rear end of said frame;

(c) an open top dump container having metal formed side and bottom walls, said container being supported on said frame forwardly of said engine and having a bottom front end portion pivotally mounted on the front end of said frame;

(d) a pair of oppositely positioned hydraulic drive motors secured to said frame below the front end thereof;

(e) a pair of front driving ground-engaging wheels located on opposite sides of said frame front end and each said wheel being drivingly connected to a respective said hydraulic drive motor enabling said wheels to be driven thereby;

(f) a single hydraulic piston/cylinder having one end pivotally mounted on said frame centrally of the width thereof and the opposite end pivotally connected to the bottom wall of said container centrally of the sides thereof enabling said container to be raised and lowered by admitting pressurized fluid to one side or the other of said piston/cylinder;

(g) rear ground-engaging wheel means mounted below and centrally of the rear end of said frame on support means enabling said rear wheel means to swivel about a vertical axis passing through said support means and through said engine for steering said vehicle;

(h) a metal formed hydraulic fluid tank secured to said frame between the side members thereof and structurally reinforcing said frame, said tank having an input connection for receiving and storing heated hydraulic fluid and an output connection for withdrawing fluid to be pumped, said tank having a top wall positioned so as to be immediately below and covered by the bottom wall of said container when said container is in its transport position thereby enabling heat stored in said tank to be dissipated through said tank top wall and bottom wall of said container and transferred to cooler material being transported in said container;

(i) an adjustable dump oil pump mounted on said frame and drivingly connected to said engine, said pump having a pump input connection to the output connection of said tank and a pump output connection; and

(j) a hydraulic valve and conduit system connected between said pump output connection and said tank input connection including a first lever-controlled valve connected by conduit to said piston/cylinder for raising and lowering said container and a second lever-controlled valve connected by conduit to said hydraulic drive motor means for forward and reverse driving of said front wheels.

4,645,265

ROLLER CUTTER LOADER FOR MINE

Gert Braun, and Ernst Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun Industrieanlagen, Fed. Rep. of Germany

Filed Dec. 5, 1985, Ser. No. 805,431

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1984, 3444845

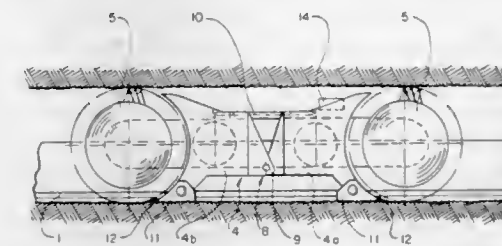
Int. Cl.⁴ E21C 27/34

U.S. Cl. 299—45

14 Claims

1. A roll cutter loader to be guided at a plane guide on a longwall conveyor having a plane chain and extending along a working face of a mine, comprising a machine frame to be guided at the plane guide and for connection to the plane chain for movement of the machine frame in a movement direction along the plane guide, said machine frame being formed of at least two machine joint elements having a floor side and a top side, at least one joint connected between said machine joint elements at one of their floor and top sides for establishing a pivotal connection between said joint elements, and setting means connected between said joint elements at the other of their floor and top sides for setting a pivotal position between

said joint elements, a cutting roll rotatably mounted to each of said joint elements, said cutting rolls being at outboard ends of said machine frame with respect to the movement direction, said joint elements having a vertical height from their floor



side to their top side which is less than a vertical height of said cutting rolls, and roll drive means mounted on each joint element connected respectively to one cutting roll for rotating each cutting roll to work each cutting roll in a region between the plane guide and the working face.

4,645,266

TUNNEL AND GALLERY EXCAVATOR

Friedrich W. Paurat, Kasselweg 29, 4230 Wesel 1, and Roland Paurat, Blumenstrasse 11, 4230 Wesel 13, both of Fed. Rep. of Germany

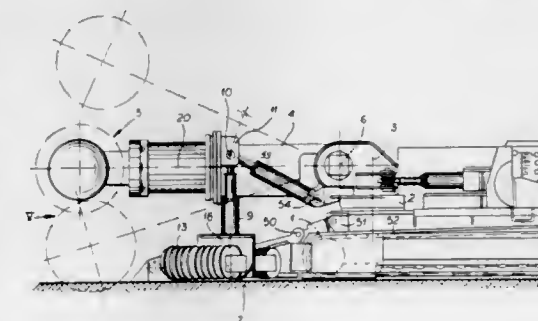
Filed Jan. 16, 1985, Ser. No. 692,039

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402031; Jan. 21, 1984, 3402032

Int. Cl.⁴ E21C 35/20, 25/06

U.S. Cl. 299—64

18 Claims



1. In a tunnel and gallery excavator comprising a motorized drive and chassis, a digging arm mounted pivotally on a swivel base on said chassis so as to be rotatable about a vertically directed swivel base axis, a digging tool attached to an end of said digging arm, said digging arm being lowerable and raisable by pivoting about a horizontal axis, a ground-contacting mechanism projecting from the front of said motorized drive and chassis, and a conveyor for stone and earth debris attached behind said front ground-contacting mechanism, the improvement wherein said digging arm has at least one extendable support attached thereto, said extendable support being supported by and connected to said ground-contacting mechanism, and an operating and adjusting means is provided for raising and lowering said extendable support, said digging arm being elongated and having a longitudinal digging arm axis, said digging tool comprising a front protruding central digging drum symmetrically bisected by said digging arm axis and two lateral digging drums attached to opposite front sides of said digging arm adjacent said front digging drum, said ground-contacting mechanism being formed so as to collect debris and having at least one conveyor screw attached at its front which is oriented substantially parallel to a portion of said tool, said conveyor forming with said portion a breaking-up tool which is juxtaposed with said lowered digging arm to crush and

pulverize said debris and also to transport said debris to said conveyor.

4,645,267
VEHICLE WHEEL HAVING NON-SUSPENSION WIRE SPOKES

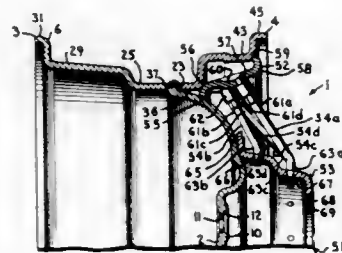
Richard G. Weld, Kansas City, Mo., assignor to Weld Racing Enterprises, Inc., Kansas City, Mo.

Filed Sep. 28, 1984, Ser. No. 655,255

Int. Cl.⁴ B60B 3/02, 7/04, 7/06

U.S. Cl. 301—37 R

15 Claims



1. A vehicle wheel with a rotational axis, which comprises:
(a) a center section including:

- (1) a coaxial hub opening;
- (2) a plurality of lug bolt openings positioned in a circular, radially spaced pattern around said hub opening;
- (3) a forwardly-convex, coaxial transition portion; and
- (4) a coaxial center section mating portion extending rearwardly from said transition portion;

(b) a rear rim half integrally formed with said center section and including:

- (1) an annular, coaxial stop adjacent to and extending outwardly from said center section mating portion;
- (2) a coaxial, annular, rear recessed area positioned rearwardly from said stop;
- (3) a coaxial rear rim bed positioned outwardly and rearwardly from said rear recessed area; and
- (4) a coaxial rear flange extending radially outwardly from said rear rim bed;

(c) a coaxial front rim half including:

- (1) a coaxial front rim half mating portion having an inside diameter corresponding to an outside diameter of said center section mating portion and terminating at a coaxial front rim half rear edge engaging said stop, said front rim half mating portion forming an annular front recessed area;
- (2) a coaxial front rim bed positioned outwardly and forwardly from said front mating portion; and
- (3) a coaxial front flange extending radially outwardly from said front rim bed;

(d) connector means fixedly connecting said mating portions in a structural engagement; and

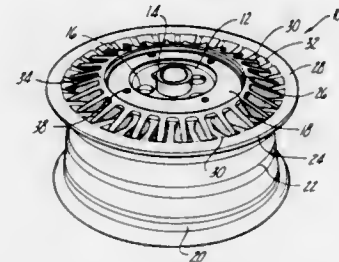
(e) a non-suspension wire spoke assembly including:

- (1) a coaxial, annular spoke felly having an inner edge attached to said center section, a front edge attached to said front rim half and a felly wall extending between said felly edges;
- (2) a hub section attached to said center section and including an annular, outwardly-facing wall and a hub section opening; and
- (3) a plurality of spokes extending radially between said felly and said hub section walls.

4,645,268
CAST METAL WHEEL COVER
Kenneth H. Carlson, Clawson, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.
Filed Dec. 19, 1985, Ser. No. 810,619
Int. Cl.⁴ B60B 7/02

U.S. Cl. 301—37 S

3 Claims



1. A vehicle wheel assembly having an ornamental outer side comprising:

- a unitary cast metal wheel having a wheel center portion provided with a mounting hub having a central aperture and a plurality of stud holes for receiving the axle hub and mounting studs, respectively, of a vehicle's axle hub;
- a rim adapted for mounting a pneumatic tire thereon and joined to said mounting hub by a disc positioned between and connected to said rim and said hub; said disc having radially extending circumferentially spaced apart ribs; and
- a unitary cast metal cap detachably connected to said disc and provided with radially extending circumferentially spaced apart arms which are positioned between and angularly inclined with respect to said ribs of said disc.

4,645,269
VEHICLE WHEEL COVER
Trevor J. Brown, Rochester, and Gerald G. Hoganson, Ortonville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 10, 1985, Ser. No. 753,438

Int. Cl.⁴ B60B 7/02, 7/06

U.S. Cl. 301—37 P

2 Claims



1. A wheel cover for mounting on a vehicle wheel having a wheel opening defined in part by an axially extending radially inwardly facing annular flange comprising, a cover body of plastic material covering the opening and including a plurality of axially outwardly tapered axial extensions cantilevered from the cover body, the extensions having an axially outer relatively thin body portion and an axially inner thicker terminal portion joined to the body portion across an arcuate shoulder and provided with a radially inwardly opening groove at its terminus, a relatively stiff ring seating in the grooves of the terminal portions, clip means having a U-shaped body portion including radially inner and radially outer legs enveloping each

terminal portion, the radially inner leg including an arcuate retrorse terminus engaging the arcuate shoulder between the extension portions for securing the ring and the clip thereto, the cover body as one unit and the ring and terminal portions as the other unit shifting radially relative to each other as the thin body portions of the extensions flex, and retention finger means extending oppositely of each other from the outer leg of the body portion of each clip means and engageable with the wheel flange for securing the wheel cover thereto.

4,645,270
VEHICLE BRAKE SYSTEM AND VALVE
John J. Camm, East Malvern, Australia, assignor to Repco Limited, Melbourne, Australia

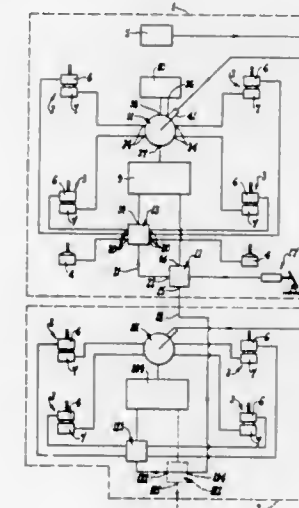
Filed Feb. 6, 1985, Ser. No. 699,052

Claims priority, application Australia, Feb. 9, 1984, PG3553

Int. Cl.⁴ B60T 13/00, 13/62

U.S. Cl. 303—7

7 Claims



1. A vehicle brake system comprising, a prime mover sub-system, at least one tandem trailer sub-system, a source of pressurized fluid, each said sub-system having a plurality of spring brakes, a distribution valve and a relay valve, each said spring brake having a spring actuator, a hold-back chamber and service chamber, each said distribution valve connecting said source to the hold-back chamber of each said spring brake in its respective said sub-system so as to thereby render the spring actuator of each said spring brake inoperative, each said relay valve being operable to connect said source to the service chamber of each said spring brake in its respective said sub-system so as to thereby operate each said spring brake, a control valve connected to both said relay valves and being operable to cause operation of each said relay valve and a control system which is operative to apply pressurized fluid to said control valve and thereby cause operation of that valve so that it exposes each said relay valve to pressurized fluid and thereby causes operation of said relay valves, whereby the brakes of each said sub-system are operated as a consequence of operation of said control valve.

4,645,271
PARKING BRAKE CONTROL SYSTEM
Nicholas J. Brearey, Germantown, and Harry G. P. Burt, Mt. Airy, both of Md., assignors to Knorr-Bremse AG, Munich, Fed. Rep. of Germany

Filed Jun. 26, 1985, Ser. No. 748,959

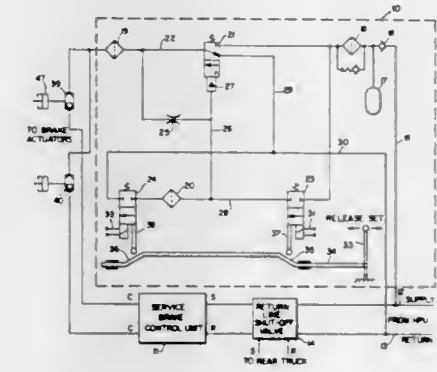
Int. Cl.⁴ B60T 15/16, 15/46

U.S. Cl. 303—14

5 Claims

1. In a device for controlling brakes on a rail vehicle for parking, a differential area shuttle valve having a movable valve member and having an outlet connected to a brake actuator

tor and first and second inlets, said valve member having a larger area end at said first inlet and a smaller area end at said second inlet, a normally closed control valve having an outlet connected to said first inlet of said shuttle valve and actuable to an open position to connect said brake actuator through said shuttle valve to a source of pressure fluid, said control valve having actuating means and a pilot connection to said actuating means, a throttle by-pass around said control valve and connected between said pilot connection and said first inlet of said shuttle valve, a normally closed application valve actuable to an open position to connect between said source of pressure fluid and said pilot connection whereby pressure fluid to said



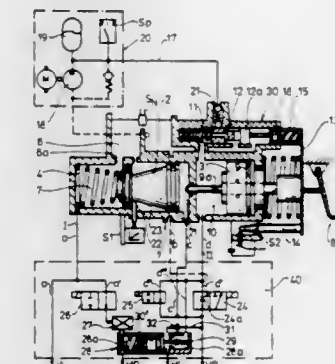
pilot connection actuates said control valve into its open position to permit flow of pressure fluid through said first inlet of said shuttle valve to apply parking pressure to said brake actuator, a normally closed release valve actuable to an open position to connect between said pilot connection and a return to said source of pressure fluid to flow pressure fluid to the return whereby the control valve returns to its closed position to release parking brake pressure, and means connected to said second inlet of said shuttle valve and said source of pressure fluid for applying service pressure to said brake actuator whereby if service and parking brake pressure are applied simultaneously the shuttle valve is moved to close the second inlet through which service pressure is applied.

4,645,272
BRAKE BOOSTER
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 6, 1985, Ser. No. 730,540
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1984, 3420686

Int. Cl.⁴ B60T 8/02

U.S. Cl. 303—119

9 Claims



1. A brake system for a vehicle having a brake pressure

source (12, 20), a pedal for controlling fluid from said brake pressure source, a master brake cylinder, a master brake cylinder piston (2) displaceable in said master brake cylinder that can be acted upon by said fluid from the brake pressure source (12, 20), four brake lines (VL, HR, HL, VR), which lead to four different wheel brakes which receive fluid under pressure from said master brake cylinder, and of which the first brake line (VL) and second brake line (HR) are supplyable from the master brake cylinder (1), and an anti-skid apparatus, said anti-skid apparatus includes valve means (24 or 24'+25) for varying brake pressures with the aid of a pressure medium from said brake pressure source (12,20) in accordance with a rotational behavior of at least one wheel associated with said wheel brakes,

said valve means (24 or 24'+25) of said anti-skid apparatus are connected to said brake pressure source (12, 20) such that the brake fluid pressure in a third brake line (VR) is variable directly and in said first brake line (VL) and second brake line (HR) are variable via said master brake cylinder piston (2);

a further valve means (26), which is embodied in the form of a 2/2-way valve, is inserted between said master brake cylinder (1) and said second brake line (HR) supplyable by said master brake cylinder for the purpose of temporarily maintaining a constant brake pressure in said second brake line (HR);

a standard pressure regulator (27) disposed following said further valve means (26) and before said second brake line (HR);

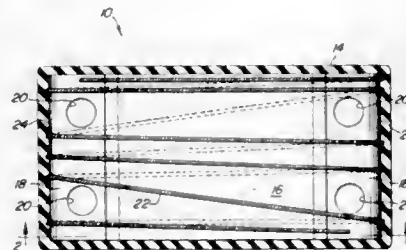
a followup control valve (28) which is embodied in the manner of a controllable check valve is connected via a control inlet to said second brake line (HR) and forms a closable connection between said brake pressure source (12, 20) and a fourth brake line (HL), wherein said control inlet opens into a control cylinder, in which a control piston loaded by an opening spring is displaceable, said control piston being subjected on one side to the pressure from said second brake line (HR) and on an opposite side to the pressure of said fourth brake line (HL), and wherein elements of said followup control valve (28) are disposed such that said followup control valve (28) opens on its own in the event of a pressure drop in a direction of the brake pressure source (12, 20); and

said second brake line (HR) associated with said standard pressure regulator (27) and said fourth brake line (HL) beginning at said followup control valve (28) are associated with one axle of said vehicle.

4,645,273
ENDLESS TRACK FLEXOR HAVING CORD REINFORCED TENSILE LOAD-CARRYING PLATE
William P. Wohlford, Bettendorf, and LaVern B. Hovenga, Davenport, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 9, 1985, Ser. No. 773,495
Int. Cl.⁴ B62D 55/24, 55/28
U.S. Cl. 305—40

2 Claims



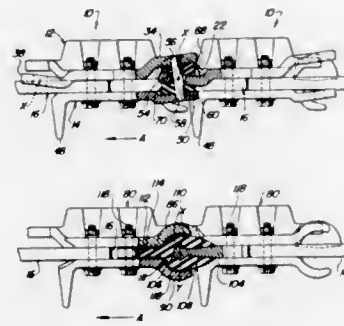
1. In a flexor including a tensile load-carrying core encapsulated in an elastomeric casing, the improvement comprising: said core being in the form of a single rectangular plate wrapped lengthwise by a cord having a tensile pre-load.

4,645,274
RESTRAINTS FOR CONTROLLING UNDESIRABLE DEFLECTION OF TRACK LINK SECTIONS EMBODYING A FLEXOR

William P. Wohlford, Bettendorf, Iowa, and Bernard B. Poore, East Moline, Ill., assignors to Deere & Company, Moline, Ill.
Filed Aug. 29, 1985, Ser. No. 770,468
Int. Cl.⁴ B62D 55/24, 55/28

U.S. Cl. 305—47

5 Claims



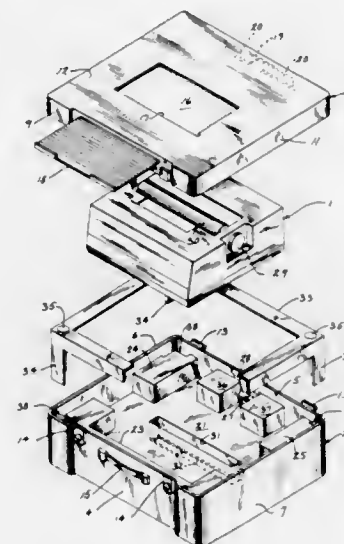
1. In an endless track including a plurality of identical link sections, each including a link member, a grouser member and at least one flexor having a first end sandwiched between the link and grouser members with the opposite end of the flexor being sandwiched between the link and grouser members of an adjacent link section, said flexor thereby establishing a flexible interconnection between adjacent link sections, the improvement comprising: flexure control means acting between adjacent link sections for substantially constraining the flexor interconnecting adjacent link sections for flexing only about a desired horizontal transverse axis of articulation located midway between the first and opposite ends of the flexor.

4,645,275
PORTABLE CARRYING CASE AND SOUND SHIELD FOR A PRINTER WITH A SELF-CONTAINED SUPPORT STAND

Philip D. Pucci, 12912 W. Graham St., New Berlin, Wis. 53151
Filed Jun. 28, 1984, Ser. No. 625,726
Int. Cl.⁴ A47B 83/04

U.S. Cl. 312—244

4 Claims



1. A portable carrying case for a printer of a computer terminal or the like, comprising:
a base including resilient foam means for absorbing sound

emitted from a printer and for protecting the printer from damage, said foam means defining a printer-receiving cavity therein;

a cover removably attachable to said base for enclosing said cavity in a closed position, said cover including a transparent window formed therein;

opaque means on said cover movable between an open position which uncovers said window and a closed position which covers said window; and

support means movable between a first storage position within said base and a second operative position outside said base, said support means includes an open frame member and a plurality of legs extending therefrom that surrounds the printer when in its storage position and supports the base and printer in an elevated position from a substantially horizontal surface upon which said support means rests while providing a means to store paper beneath said base when in said second operative position.

4,645,276
ANGLE IRON FOR SUPPORTING PLATES, PANELS OR OTHER OBJECTS AND CABINET FORMED USING ANGLE IRONS OF THIS TYPE

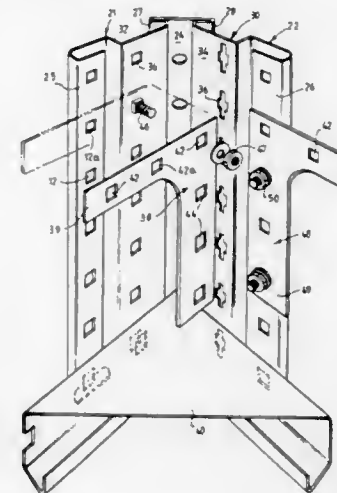
Jean-Pierre Flavigny, Linas, France, assignor to Facom, Morangis, France

Filed Aug. 6, 1985, Ser. No. 762,831

Claims priority, application France, Aug. 8, 1984, 84 12569
Int. Cl.⁴ A47B 43/00

U.S. Cl. 312—257 SK

12 Claims



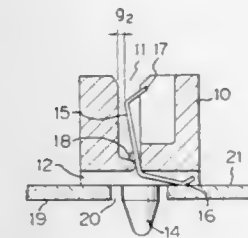
1. Angle iron for supporting plates, panels or other objects and comprising a substantially flat outer central portion having a first general plane, a first flange and a second flange extending laterally rearwardly from the central portion and having second and third general planes making an angle therebetween, a bisector plane of said angle being substantially perpendicular to said central portion, said first flange having a substantially S cross-sectional shape defining an outer groove extending alongside and adjoining an edge of said central portion and an outer rib parallel to and adjoining said groove and having a common shoulder portion with said groove, said second flange being substantially a mirror image of said first S-shaped flange, each flange having an edge portion extending laterally therefrom toward said central portion, each groove having a bottom portion intermediate said central portion and said shoulder portion which defines a series of first fixing holes spaced apart longitudinally of the angle iron and each edge portion defining a series of second fixing holes spaced apart longitudinally of the angle iron, whereby any fixing means disposed in said first holes are inwardly set back from the adjoining rib and any

fixing means disposed in said second holes are externally concealed by said rib.

4,645,277
CONNECTOR FOR CONNECTING BOARDS
Hiroshi Kikuchi, Minoru Teshima, Hideaki Ishimizu, and Hiroyoshi Kawasaki, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 19, 1985, Ser. No. 746,561
Claims priority, application Japan, Jun. 21, 1984, 59-91686[U]
Int. Cl.⁴ H01R 9/09

U.S. Cl. 339—17 LM

3 Claims



1. A connector for electrically interconnecting a base printed-circuit board and a companion printed-circuit board in substantially perpendicular relation to each other, comprising:

(a) a connector housing having an insertion slot opening at the top thereof for receiving the companion printed-circuit board therein, a plurality of grooves defined in a bottom of the connector housing in a direction normal to said insertion slot, and a plurality of pin attachment holes disposed between said grooves and said insertion slot;

(b) a pair of guides mounted on opposite ends of said connector housing for loosely fitting engagement in positional adjustment holes defined in the base printed-circuit board; and

(c) a plurality of contact pins each having bent portions, and first and second leg portions intersecting at said bent portions at an angle slightly greater than 90°, pivotally held in respective one of said pin attachment holes in the vicinity of said bent portions of the contact pin, said contact pins having ends positionable respectively in said grooves and opposite end extending into said insertion slot, whereby when said connector housing is attached to said base printed-circuit board and said companion printed-circuit board is inserted into said insertion slot, said contact pins are pressed against circuit patterns on said printed-circuit boards respectively at the ends of said contact pins.

4,645,278
CIRCUIT PANEL CONNECTOR, PANEL SYSTEM USING THE CONNECTOR, AND METHOD FOR MAKING THE PANEL SYSTEM

Harold M. Yevak, Jr., Westboro; Larry K. Johnson, North Attleboro, and Austin S. O'Malley, Rehoboth, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

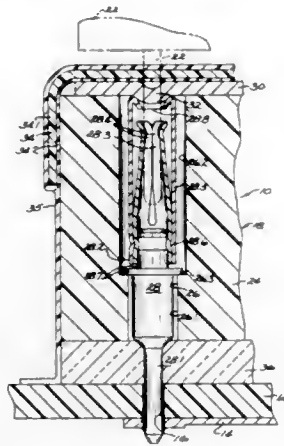
Filed Sep. 9, 1985, Ser. No. 773,904
Int. Cl.⁴ H01R 9/09, 13/447

U.S. Cl. 339—17 T

13 Claims

1. A connector for mounting a component and for electrically connecting component terminals to circuit paths on a circuit panel comprising an electrically insulating body having a plurality of through openings, and electrical contact members mounted in the respective openings having respective post portions at one end extending from the openings at one side of the body to be soldered to selected circuit paths on the circuit panel and having respective terminal entry portions at an opposite end accessible from an opposite side of the body for receiving and resiliently, electrically engaging respective com-

ponents terminals, characterized in that the contact members are movably disposed in the respective openings, a plate is disposed over the opposite body side and has a plurality of portions disposed in selected spaced relation to each other engaging the respective contact members for positioning the movable contact members relative to each other at said selected spacing in the body openings and retaining the contact



members in the openings with said spacing, and means detachably securing the plate to the body for positioning the contact members relative to each other in the body openings until the contact members are soldered to circuit paths on the circuit panel in said selected spaced relation and for permitting removal of the plate after such soldering to permit insertion of component terminals into terminal entry portions of the respective contact members.

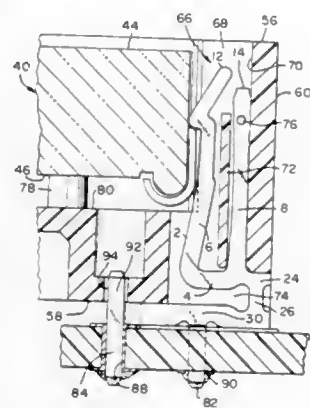
4,645,279
CHIP CARRIER SOCKET HAVING IMPROVED CONTACT TERMINALS

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 584,274, Feb. 27, 1984, abandoned. This application Feb. 6, 1986, Ser. No. 827,133 Int. Cl.⁴ H01R 9/09

U.S. Cl. 339—17 CF

15 Claims



1. A chip carrier socket for an integrated circuit chip carrier, the chip carrier comprising a chip carrier body having oppositely facing major surfaces and outwardly facing chip carrier side surfaces which extend normally of the major surfaces, and spaced-apart contact pads on the chip carrier side surfaces, the socket comprising a socket body having oppositely facing first and second major surfaces and outwardly facing socket body side surface portions, a recess in the first major surface for reception of the chip carrier, the recess having recess side

surfaces which extend inwardly from the first major surface, contact receiving cavities in the socket body in surrounding relationship to the recess, each cavity having opposed side walls extending inwardly from the adjacent recess side surface and an inner end surface which is remote from the recess side surface, a contact terminal in each of the cavities, each terminal having a chip carrier contacting portion for contacting a contact pad on a chip carrier and having a substrate contacting portion for contacting a conductor on a substrate when the chip carrier socket is mounted on one surface of the substrate, the substrate contacting portion being adjacent to the second major surface, the chip carrier socket being characterized in that:

each contact terminal has a web portion and first and second arms extending from the web portion, the web portion being proximate to the substrate contacting portion, the arms being spaced apart and extending towards the first major surface, the arms having free ends which are proximate to the first major surface, the first arm being adjacent to the recess, the second arm being adjacent to the inner end surface of its associated cavity, the chip carrier contacting portion being on the first arm adjacent to the free end thereof,

the second arm having an intermediate portion which is spaced from the inner end surface of its associated cavity and having a supported zone adjacent to its free end, the supported zone being against, and freely supported by, the inner end surface,

the web being connected to the substrate contacting portion by a connecting neck,

each of the contact terminals being a flat complanate member having oppositely facing major surfaces and edge surfaces extending between the major surfaces, the chip contacting portion and the supported zone of each terminal being on the edge surfaces thereof, the contact terminals being in side-by-side relationship with the major surfaces in parallel planes which are opposed to, and substantially parallel to, the cavity sidewalls, whereby,

upon placement of a chip carrier in the recess, the chip carrier contacting portion of the terminals contact the contact pads and the first and second arms are stressed and deflected relatively towards each other thereby developing contact forces in each terminal, the supported zone of the second arm of each terminal being moved along the inner end surface and the intermediate portion being deflected towards the inner end surface of its associated cavity.

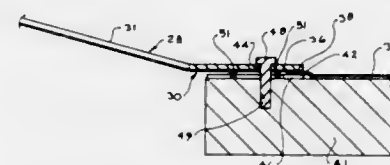
4,645,280
SOLDERLESS CONNECTION TECHNIQUE BETWEEN DATA/SERVO FLEX CIRCUITS AND MAGNETIC DISC HEADS

Herman B. Gordon, Phoenix, Ariz., and Bernard J. Carey, Schenectady, N.Y., assignors to Rogers Corporation, Rogers, Conn.

Filed Aug. 8, 1985, Ser. No. 763,904
Int. Cl.⁴ H01R 9/09

U.S. Cl. 339—17 F

33 Claims



1. A solderless connection between a data/servo flex circuit and a magnetic head in a disc drive comprising:
a rigid arm controlled by an electro-mechanical servo mechanism;
first flexible circuit means on said rigid arm, said first flexible

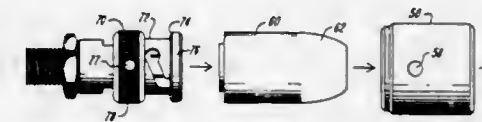
circuit means including a first substrate having a first conductive pattern means thereon;
suspension arm means having a first end and a second end, said first end being detachably connected to said rigid arm;
magnetic head disc means being attached to said second end of said suspension arm means;
second flexible circuit means on said suspension arm means having a first end and a second end, said second flexible circuit means including a second substrate having a second conductive pattern means thereon, said second conductive pattern means extending between and terminating at said first and second ends of said second flexible circuit means defining first and second terminal portions;
said second terminal portion being electrically connected to said magnetic head disc means;
said first terminal portion being detachably connected to said first conductive pattern means on said first flexible circuit means via a first solderless connection wherein said first solderless connection comprises;
mechanical force applying means wherein said mechanical force applying means comprises a rigid plate means having a pair of alignment pins extending therefrom;
elastomeric element means wherein said mechanical means applies force against said elastomeric element means to effect electrical contact between said first terminal portion and said first conductive pattern means on said first flexible circuit means;
a cavity in said rigid arm;
a pair of alignment holes in said cavity, said alignment holes adapted to receive said alignment pins; and
said elastomeric element means being disposed in said cavity.

4,645,281
BNC SECURITY SHIELD
Donald A. Burger, Big Flats, N.Y., assignor to LRC Electronics, Inc., Horseheads, N.Y.

Filed Feb. 4, 1985, Ser. No. 698,127
Int. Cl.⁴ H01R 13/44

U.S. Cl. 339—37

9 Claims



1. A security device for use with a connector having at least one recess requiring rotation for connection and disconnection, comprising:
a security shield having a shape to substantially surround said connector and adapted to receive said connector therein, said shield having at least one radially disposed aperture therein; and
shield locking means to prevent removal of said shield from said connector after installation, including a spring biased toward said recess when said connector is received by said shield to provide retention thereof;
wherein said aperture is disposed to permit actuation of said connector.

4,645,282
RELEASING ELECTRICAL CONNECTOR ASSEMBLY
David L. Frear, Bainbridge, N.Y., assignor to Allied Corporation, Morristown, N.J.

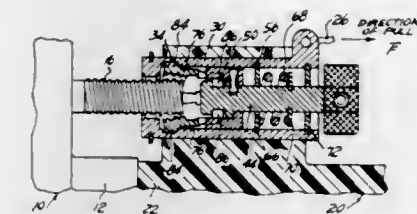
Filed Feb. 28, 1986, Ser. No. 835,019
Int. Cl.⁴ H01R 13/633

U.S. Cl. 339—45 M

12 Claims

1. In an electrical connector assembly comprising mateable first and second housing members which are respectively provided with terminal elements which mate with one another

when the housing members are mated and releasable retaining means for retaining the housing members in their mated condition, said releasable retaining means characterized by a passive threaded male member secured to one housing member, an active threaded receptacle disposed in a through passage of the other housing member for threadably releasably engaging the male member, an operating sleeve slidably mounted in said



passage for axial movement from a retaining first position to a releasing second position, drive means journaled in said sleeve and connected to said receptacle for rotating said receptacle whereby to threadably engage the male member and axially advance the receptacle within the passage, and bias means acting between the sleeve and the receptacle for biasing the operating sleeve forwardly into the first position.

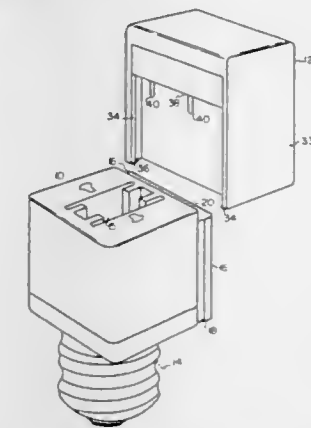
4,645,283
ADAPTER FOR MOUNTING A FLUORESCENT LAMP IN AN INCANDESCENT LAMP TYPE SOCKET

Wallace T. MacDonald, Tewksbury, and Frank M. Latassa, Magnolia, both of Mass., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 455,136, Jan. 3, 1983, abandoned. This application Apr. 3, 1985, Ser. No. 719,035
Int. Cl.⁴ H01R 33/08

U.S. Cl. 339—50 R

15 Claims



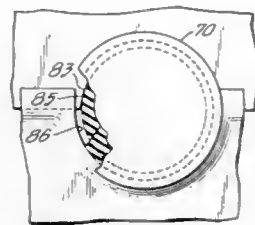
1. An adapter unit for a single-ended fluorescent lamp, comprising
a socket assembly comprising
a first connector for mounting the assembly to and receiving electrical power from a source,
a lampholder portion including a second connector for electrical connection to a lamp, said second connector defining an axial direction, said portion being adapted for connecting a lamp to said socket assembly by inserting the lamp in said axial direction into the lampholder portion, and
a third connector for electrical connection to a ballast assembly,
a ballast assembly, and
means for electrically connecting said ballast assembly to said third connector,

characterized in that said socket assembly includes means for removably mounting said ballast assembly on an external surface of said socket assembly by engagement of interlocking sliding surfaces extending in a given direction on external surfaces of the socket and ballast assemblies respectively,

the socket assembly and ballast assembly are each configured such that the adapter defines an envelope having a traverse section greater than a corresponding transverse section of the socket assembly, and said means for electrically connecting comprises two electrical contacts on said socket assembly independent of said sliding surfaces, and two respective electrical contacts on said ballast assembly independent of said sliding surfaces, arranged such that electrical connection between respective contacts is established by sliding the ballast assembly into said engagement with said socket assembly, the length of interlocking surface engagement, in said given direction, being greater than the length of electrical contact engagement in said given direction.

4,645,284
TELEPHONE BUILDING ENTRANCE TERMINAL
Raymond Duplatre, Bellerose, and Paul V. De Luca, Plandome Manor, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.
Division of Ser. No. 698,922, Feb. 6, 1985, Pat. No. 4,575,169.
This application Dec. 9, 1985, Ser. No. 806,344
Int. Cl.⁴ H01R 4/00
U.S. Cl. 339—94 A

3 Claims

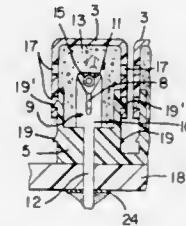


1. Improved sealing means for sealing a generally circular opening in a housing having a main body and an openable cover selectively engaged thereon, said opening being partially formed by a wall of said housing and a wall of said cover when said cover is in at least partially overlapped relation, said means comprising: that part of said opening in said wall of said main body having a first diameter, that part of said opening in said wall of said cover having a second diameter; a generally circular sealing member having a curvilinear side surface, said side surface having a continuous recess therein of stepped cross-sectional configuration to form a plurality of grooves of differing diameter, one of said grooves being of diameter corresponding to that part of said opening in said wall of said main body, and another of said grooves being of a diameter corresponding to that part of said opening formed by said cover; said first and second grooves being laterally spaced from each other a distance corresponding to the degree of overlap upon engagement of said cover with said main body; whereby said sealing member may be simultaneously engaged with said opening with said main body and cover members upon the closing of said cover member upon said said main body; there being a third groove of a diameter common to the groove of larger diameter of said first and second grooves, and symmetrically disposed on either side of said groove of lesser diameter, whereby said sealing member may be positioned in either of two orientations with respect to said main body and said cover.

4,645,285
SEALED INSULATION DISPLACEMENT CONNECTOR
Brian E. Cozzens, Mechanicsburg; John R. Hopkins, Hummelstown, and Anil C. Thakrar, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 26, 1985, Ser. No. 769,294
Int. Cl.⁴ H01R 4/24, 13/52

U.S. Cl. 339—96

6 Claims

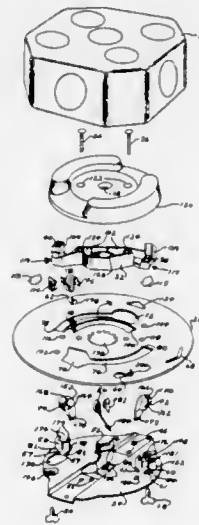


6. An electrical connector of the toolless type adapted for manual operation including an insulating base member and an insulating cap member, the external dimension of the base member and the internal dimension of the cap member being adapted to allow telescoping relationship with said cap slidably mounted on said base member, sharply-pointed electrical terminal having a slot therein dimensioned to receive a conductor wire forced into said slot for termination thereto, said cap member being essentially filled with an insulating elastomer of a density and rigidity to allow said terminal to stab therein in a cutting and sliding relationship when the elastomer is compressed within said cap member, the said cap and said elastomer having a bore adapted to receive a conductor wire inserted therein directly over said terminal and the said cap having an exterior top portion adapted to accommodate manual pushing, whereby the said cap can be depressed to cause said terminal to stab into said elastomer and said wire is terminated within said slot and the termination sealed by the compression of said elastomer.

4,645,286
QUICK CONNECT POWER TAP SYSTEM
Elliot Isban, 161 Mill Rd., Stamford, Conn. 06903; Charles F. Stephenson, and Robert F. Cook, both of Westport, Conn., assignors to Elliot Isban, Stamford, Conn.
Filed Feb. 10, 1983, Ser. No. 465,439
Int. Cl.⁴ H01R 13/625

U.S. Cl. 339—125 L

4 Claims

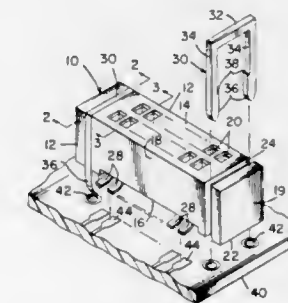


1. An electrical quick connect power tap system comprising:

A. a socket comprising:
a. a front surface,
b. a pair of concentric semicircular slots in said front surface, each terminating at each end at an opening wider than said slot, the opening at one end being wider than the other,
c. a pair of socket contacts spaced away from and to the rear of said front surface and presenting a radially disposed surface generally perpendicular to said front surface, and
d. insulating surfaces surrounding each of said contacts and preventing contact therewith except on said generally perpendicular surface from the rear of said front surface and arcuately with respect to the axis of said concentric slots, and
B. a plug comprising:
a. a front surface, and
b. a pair of uprights adapted to fit through the wider openings of said slots, each of said uprights comprising portions of three widths, a first narrow portion narrower than the one of said slots into which it fits, a second wider portion fitting into the narrower of the two wider openings of the one of said slots into which it fits, and a third widest portion fitting into the widest of the two wider openings of the one of said slots into which it fits, said portions being spaced from the front surface of said plug in order of the narrowest, wider, and widest portions; and
c. a pair of plug electrical contacts adapted to mate with said female contacts wiping against them in an axial motion toward said front surface of said socket when said wider portion of said uprights are fitted into the two narrower of the two wider openings of said slots.

4,645,287
SURFACE MOUNT CONNECTOR
Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sep. 9, 1985, Ser. No. 773,969
Int. Cl.⁴ H01R 9/09
U.S. Cl. 339—125 R

6 Claims

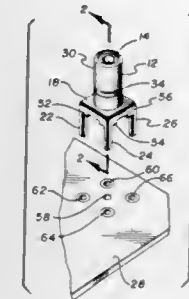


1. An electrical connector for mounting to a printed circuit board, comprising:
an elongate dielectric housing having a top surface, an opposed bottom surface, and two parallel sidewalls,
a plurality of contacts mounted in the housing, the contacts having solder tails aligned with respective pads on the circuit board,
at least one U-shaped metal clip on the housing, the clip comprising a transverse portion and two parallel legs extending therefrom, the transverse portion being received flushly in the top surface of the housing, the legs being received in respective sidewalls, the legs having respective distal ends having a larger cross section than the rest of the leg, the distal ends extending beyond the bottom surface of the housing for interference fit in mounting holes in the circuit board,
a shoulder member provided on each of the legs, the shoulder members being stamped at the transition between the

distal ends and the rest of the respective legs, such that the shoulder members cooperate with the bottom surface of the housing to provide a snap fit against the bottom of the housing to retain the clip to the housing.

4,645,288
PRINTED CIRCUIT BOARD COAXIAL CONNECTOR INTERFACE
Lloyd C. Stursa, Owatonna, Minn., assignor to E. F. Johnson Company, Waseca, Minn.
Filed Dec. 4, 1984, Ser. No. 677,912
Int. Cl.⁴ H01R 17/18
U.S. Cl. 339—177 R

5 Claims



1. A coaxial connector interface for a printed circuit board, said circuit board including structure defining a plurality of connector-receiving holes therein, comprising:
a hollow conductive body portion having an upper end and a lower end and defining a body portion inner diameter;
a dielectric disposed in the body portion and extending substantially from the upper end to the lower end;
an electrically conducting center contact disposed in the dielectric and extending from a point between the upper end and the lower end to a point beyond the lower end, the center contact having a midportion comprising a plurality of radially extending flanges defining a plurality of ribs and at least one groove along said center contact mid portion, said dielectric abutting against said ribs and received within said groove whereby the center contact is fixedly positioned in the dielectric;
a flange extending outwardly from and surrounding the lower end, the flange having a peripheral edge, a lower surface including structure defining an aperture in the center of said lower surface, said aperture having an aperture diameter generally coextensive with said body portion inner diameter, and a plurality of legs depending from said peripheral edge; and
a plurality of pads depending from the lower surface of the flange, each pad extending along said flange lower surface from said flange peripheral edge and radially inwardly to a point immediately adjacent said aperture, whereby when the legs and center contact are extended through said connector-receiving holes in the printed circuit board the body portion and the flange are held in a spaced apart relationship from the circuit board to isolate the body portion from the center contact.

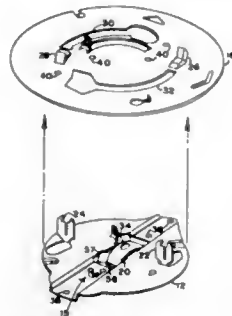
4,645,289
QUICK CONNECT POWER TAP SYSTEM
Elliot Isban, 161 Mill Rd., Stamford, Conn. 06901
Filed Jul. 5, 1985, Ser. No. 752,424
Int. Cl.⁴ H01R 4/54, 4/06
U.S. Cl. 339—190

15 Claims

1. In an electrical quick connect power tap system including two electrical components adapted to be removably mounted to each other, one of said components being a socket adapted to being connected to a source of electrical power, the other of

said components being a plug adapted to being connected to a load, said components each including a plurality of corresponding electrical contacts which are placed in axial alignment with each other by relative movement of said plug and said socket, the improvement comprising:

a ground spring mounted to one of said electrical components such that said ground spring engages with the other of said electrical components to establish a ground connection before said corresponding electrical contacts are moved into axial alignment with each other,



said plug including a plug plate and said ground spring being mounted to said plug plate such that at least a portion of said ground spring extends beyond the plane of said plug plate,

said socket including a socket plate, said socket and said plug plates being opposed to each other when said plug is mounted to said socket, said portion of said ground spring extending beyond said plane of said plug plate having an opening defined thereon, said socket plate having a member extending therefrom and adapted to be received in said opening in said ground spring when said plug is mounted to said socket.

4,645,290

SELECTIVE COLOR FILTER

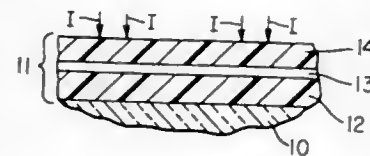
Peter J. Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Jan. 10, 1984, Ser. No. 569,739

Int. Cl.⁴ G02B 5/22, 5/28

U.S. Cl. 350—1.7

26 Claims



1. An optical color filter for selectively transmitting electromagnetic energy of a predetermined band of wavelengths to transmit a predetermined color, comprising a discrete film of metal ranging in thickness from 22 to 26 nanometers sandwiched between two discrete films of a dielectric material, each ranging in thickness from 23 to 245 nanometers, the combination of thicknesses of said metal and two films of dielectric material being chosen for transmitting therethrough said light of a predetermined color, wherein the transmission characteristic of the coating has at least one band centered at a selected wavelength, said coating transmitting visible light in a selected region located at the center of the transmission band having visible transmissivity and transmission band width, $\Delta\lambda$, of less than about 50 nm.

4,645,291

HOLOGRAPHY WITH INSENSITIVITY TO OBJECT SIZE

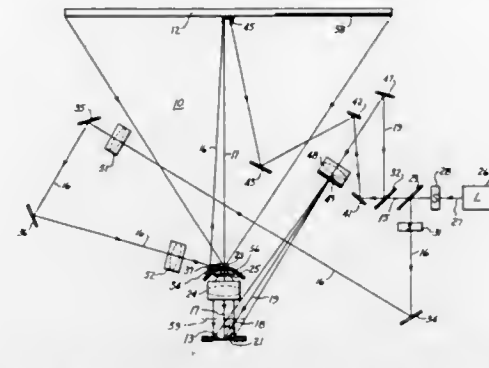
John T. McCrickard, Costa Mesa, Calif., assignor to Newport Corporation, Fountain Valley, Calif.

Filed Apr. 4, 1984, Ser. No. 596,665

Int. Cl.⁴ G03H 1/04

U.S. Cl. 350—3.83

20 Claims



1. In a method of making a hologram of an object on a light-responsive medium with the aid of a reference beam and an object beam reflected by the object, the improvement comprising the step of:

rendering the hologram throughout said light-responsive medium insensitive to object size by projecting said reflected object beam into said medium at an angle to said reference beam constant throughout said medium within a tolerance imperceptible to said light-responsive medium in terms of spatial frequency of the hologram.

4,645,292

DEVICE FOR FACILITATING CONNECTING LIGHT WAVEGUIDES IN A CONNECTOR FOR A MULTIPLE LIGHT WAVEGUIDE

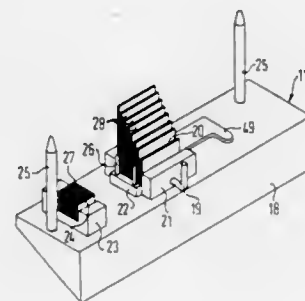
Rudolf Sammueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,473

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.20

29 Claims



1. In an apparatus for facilitating assembly of a plurality of waveguides to a connector for said plurality of waveguides, said apparatus including a first part having means for positioning the stripped ends of individual waveguides, a second part having a second means for positioning each of the light waveguides which are clad with a protective layer, and a third part having third means for fixing the position of all of the waveguides to be connected, the improvements comprising the first means being a first comb system having a plurality of first teeth members with spaces therebetween, said second means being a second comb system with a plurality of second teeth

members with spaces therebetween, the spaces between the first teeth members of the first comb system being matched to the diameter of the stripped waveguide, the spaces between the second teeth members of the second comb system being matched to the diameter of the clad waveguide, a carrier on which said first and second comb systems are mounted with said spaces of the second comb system aligned to the spaces of the first comb system, said means for locating including means for supporting a connector element with centering grooves for multiple waveguides between said first and second comb systems with the centering grooves of the connector element being aligned with the spaces of the first and second comb system and also including clamping means for holding a covering element on the connector element with the waveguides being positioned in the centering grooves and said third means including a universally shared receptacle for all of the light waveguides, a frame adapted for attachment to said carrier on which said locating means and said third means are mounted, and means for fixing the position of said frame on said carrier for accurately positioning at least said means for locating with respect to said first and second comb systems.

4,645,293

OPTICAL WAVEGUIDE COUPLER HAVING A GRATING ELECTRODE

Taizo Yoshida, 1-13-5, Utsukushigaoka, Midori-ku, Yokohama-shi, Kanagawa-ken; Akihito Tanji, 16-10, Higashimaikomachi, Tarumi-ku, Kobe-shi, Hyogo-ken; Masamitsu Masuda, 2-5-34, Kitasakurazuka, Toyonaka-shi, Osaka-fu, and Jiro Koyama, D-40-104, 5-11, Tsukumodai, Suita-shi, Osaka-fu, all of Japan

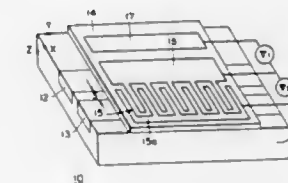
Continuation of Ser. No. 361,207, Mar. 24, 1982. This application Jan. 28, 1985, Ser. No. 695,430

Claims priority, application Japan, Mar. 25, 1981, 56-42444; Mar. 25, 1981, 56-42445

Int. Cl.⁴ G02B 6/10

U.S. Cl. 350—96.14

16 Claims



1. A photo-coupling device comprising:
an electro-optical substrate;
a first optical waveguide formed in a major surface of said substrate;
first electrode means formed on said major surface spaced apart from and in parallel with said first optical waveguide for applying a uniform electric field to said first optical waveguide when a first voltage is applied;
a first buffer layer formed on said major surface over said first optical waveguide and said first electrode means;
a slab of non-electro-optical material formed on said first buffer layer, capable of being optically coupled to said first optical waveguide, and serving as a second optical waveguide;
a second buffer layer formed on said slab; and
second electrode means formed on said second buffer layer

for applying a periodically changing electric field to said first optical waveguide when a second voltage is applied.
8. A photo-coupling device comprising:
an electro-optical substrate having a major surface which is normal to a crystallographic axis of said substrate;
a pair of first and second optical waveguides formed in said major surface of said substrate over a predetermined coupling region, said pair of optical waveguides having differing propagation constants to prevent them from being optically coupled unintentionally;
a buffer layer formed on said major surface;
a first electrode formed on said buffer layer in said coupling region, said first electrode including a plurality of first bar-like portions, spaced apart at a predetermined interval along said first optical waveguide and each extending across said first optical waveguide, and a first elongated portion, located at the side of said first optical waveguide opposite to the side where said second optical waveguide is disposed and commonly connected to said plurality of first bar-like portions;
a second electrode formed on said buffer layer in said coupling region, said second electrode including a second elongated portion, having a width substantially as wide as said second optical waveguide and lying in parallel with said second optical waveguide, and a plurality of second bar-like portions, each of which extends from said second elongated portion across the gap between said first and second optical waveguides and also across said first optical waveguide as interposed between the two corresponding adjacent first bar-like portions;
a third electrode formed on said buffer layer spaced apart from and in parallel with said second electrode on a side opposite from said first electrode; and
means for applying a first voltage between said first and second electrodes and a second voltage between said second and third electrodes.

4,645,294

VARIABLE OPTICAL ATTENUATOR FOR OPTICAL FIBER COUPLING

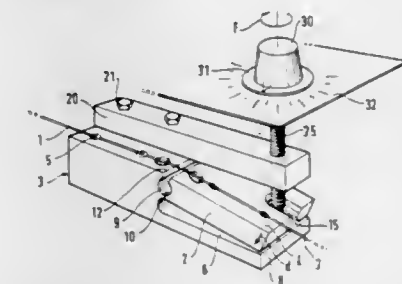
Claude Ogney, Saint Michel sur Orge; Daniel Jamet, Nozay, and Alain Berreby, Yerres, all of France, assignors to Compagnie Lyonnaise de Transmissions Optiques, Clichy, France

Filed Dec. 11, 1984, Ser. No. 680,446

Claims priority, application France, Dec. 16, 1983, 83 20214 Int. Cl.⁴ G02B 6/26, 6/42

U.S. Cl. 350—96.15

10 Claims



1. A variable optical attenuator for achieving a variable coupling between the ends of two optical fibers, by moving the end of one of the optical fibers along a circular arc passing through the end of the other fiber, said attenuator comprising:
a support, said support comprising a rectangular block having a broad fiber supporting surface, said block being provided with a slit in one of its ends, parallel to said broad supporting surface and being of a length to establish first and second block branches, one to each side thereof and parallel to each other, a said first branch being bounded by said supporting surface said block being further provided with a cylindrical through hole transversely crossing said first branch substantially in line with

the inside end of the slit and opening onto said supporting surface to establish a coupling zone between said fibers, and means for rotatively driving said first branch by elastic deformation of said block first branch adjacent said cylindrical hole and acting substantially on the free end of said first branch and wherein said fibers are mounted end to end in general alignment on said broad fiber supporting surface and perpendicular to the axis of said through hole with the junction of fibers overlying said opening of said cylindrical through hole onto said broad fiber supporting surface, whereby said fiber mounted to the portion of the broad supporting surface of said first branch rotates about said circular arc in a plane perpendicular to the axis of said through hole and whose center lies at the area of elastic deformation of the block first branch adjacent said cylindrical through hole.

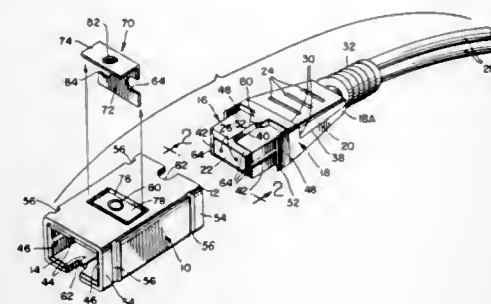
4,645,295

FIBER OPTIC CONNECTOR

Paul F. Pronovost, New Milford, Conn., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Filed Feb. 4, 1980, Ser. No. 118,365
Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.20

17 Claims



9. A fiber optic connector adapted for coupling a pair of optical fibers or a single optical fiber and a light source or detector comprising: a plug having an axially extending bore for receiving an optical fiber; a socket with at least one open end, adapted to axially receive said plug, and a transverse opening spaced from said open end; means positionable through said transverse opening in said socket for spacing said optical fiber of said plug and the other of said optical fibers or said light source or detector; said spacing means being formed with window means permitting optical coupling of said pair of optical fibers or said single optical fiber and said light source or detector; said spacing means comprising a flat shim formed with said window means therein; said spacing means including hanger means projecting transversely from said shim.

4,645,296

OPTICAL FIBER CONNECTOR APPARATUS AND METHOD OF MANUFACTURE

Bernard W. Cattin, Lancaster, and Dmitry Grabbe, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 20, 1984, Ser. No. 683,986

Int. Cl.⁴ G02B 6/38

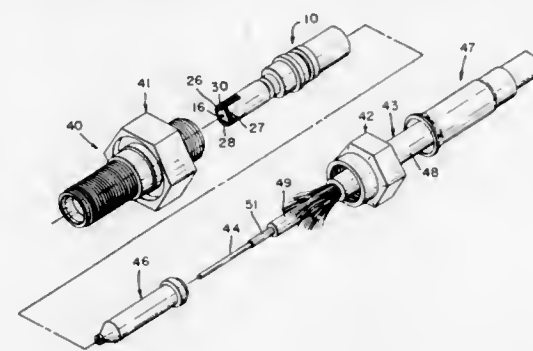
U.S. Cl. 350—96.21

14 Claims

1. An optical fiber holder comprising a housing, means for defining an opening in one end of said housing for receiving and for holding an end of an optical fiber, and a surrounding portion of said housing surrounding said opening, the improvement comprising:

a plurality of centering elements integral with said housing

and distributed around the periphery of said surrounding portion of said housing and constructed for deflection



resiliently toward said surrounding portion of said housing.

4,645,297

FIBER REINFORCED RESIN COATED OPTICAL FIBER AND PROCESS FOR PRODUCING THE SAME

Mitsuo Yoshihara; Yoshitada Morikawa; Yasuo Yamamoto; Mitsuharu Komada, and Masaaki Hattori, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

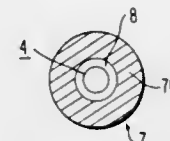
Filed Jan. 14, 1985, Ser. No. 690,907

Claims priority, application Japan, Jan. 13, 1984, 59-4998

Int. Cl.⁴ D02G 3/00; G02B 6/44

U.S. Cl. 350—96.23

11 Claims



1. An optical fiber coated with a fiber reinforced resin comprising an optical fiber having provided thereon a cured layer of a reinforcing material comprising continuous filaments having impregnated therein a curable composition comprising
(a) tri(meth)acrylate of trishydroxyalkyl isocyanurate,
(b) a modified phenol novolak-based epoxy resin comprising a phenol novolak-based epoxy resin having introduced therein (meth)acryloyl groups, and
(c) a polymerization initiator.

4,645,298

OPTICAL FIBER CABLE

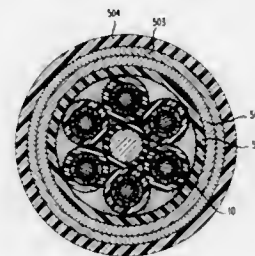
Charles H. Gartside, III, Lilburn, Ga., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 28, 1983, Ser. No. 518,145

Int. Cl.⁴ G02B 6/36

U.S. Cl. 350—96.23

20 Claims



1. A method of making an optical fiber cable by steps com-

prising helically laying at least one optical fiber around, and in contact with, a strength member

CHARACTERIZED IN THAT

said strength member is stressed during said laying sufficiently to produce a strain greater than the strain induced in said at least one optical fiber during said laying, and thereafter releasing the strain in said strength member sufficiently to move said at least one optical fiber out of contact with said strength member.

4,645,299

ROTARY INDICATING DEVICE

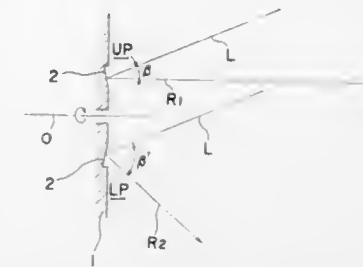
Takeshi Baba, Kasugai; Hiroki Iwasa, Aichi; Chikao Nagasaka, Nagoya, and Kyoze Ohmi, Anjo, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Filed Mar. 5, 1984, Ser. No. 586,087

Claims priority, application Japan, Mar. 8, 1983, 58-38848

Int. Cl.⁴ G02B 5/12

U.S. Cl. 350—99

4 Claims



1. A rotary indicating device which comprises a base member adapted to be rotated about a rotary axis and having an indication surface, said indication surface including an indication region formed thereon and representing a desired image, said indication region comprising a plurality of image element units each of which includes a predetermined number of image elements each consisting of a corresponding reflection face, said reflection face of each image element unit being inclined in various directions at a same angle with respect to a standard plane perpendicular to a rotary axis of said base member so that when said base member rotates, said reflection faces of each image element unit alternately reflect light coming at an angle with respect to said rotary axis, into a fixed direction at a fixed rotary position of said base member.

4,645,300

FOURIER PLANE RECURSIVE OPTICAL FILTER

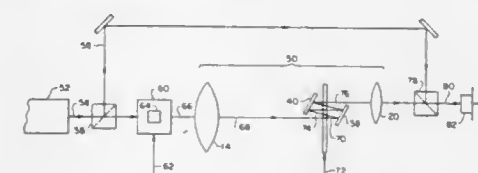
Robert W. Brandstetter, Levittown; Nils J. Fonneland, Lake Ronkonkoma, and Charles E. Lindig, Huntington, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,936

Int. Cl.⁴ G02B 27/46; G06G 9/00

U.S. Cl. 350—162.12

10 Claims



1. In an optical recursive filter system of the type having a source of substantially coherent collimated optical radiation, and optical filtering means, said optical filtering means including means for producing an optical Fourier transform, an optical filter, means for producing an optical inverse Fourier transform, said optical filter being located in the focal plane of

said Fourier transform producing means, recursive means for directing a beam of radiation from said source in a manner to traverse said optical filtering means a plurality of times such that the attenuation of unwanted spectral frequencies by said filtering means is enhanced, and means for extracting the filtered beam for utilization, the improvement comprising; the arranging of said recursive means in the optical path between said optical Fourier transform means and said optical inverse Fourier transform means such that the recursion of said beam through said optical filter is in the Fourier plane of said optical filtering means whereby the throw of the optical train can be shortened such that the overall size of said system can be reduced.

4,645,301

TRANSPARENT SHEET CONTAINING AUTHENTICATING IMAGE AND METHOD OF MAKING SAME

Bruce D. Orensteen, St. Paul, and Thomas I. Bradshaw, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

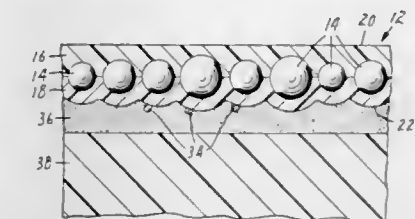
Continuation-in-part of Ser. No. 464,627, Feb. 7, 1983. This

application Aug. 3, 1984, Ser. No. 637,606

Int. Cl.⁴ G02B 27/00

U.S. Cl. 350—167

21 Claims



1. Substantially transparent sheet containing an authenticating image, which sheet is adapted to be adhesively bonded over information areas of a document without appreciably interfering with the legibility of that information, said sheet containing a monolayer of transparent microlenses, and a transparent spacing layer covering at least the back surfaces of said microlenses, wherein the improvement comprises:
a set of axial markings on the back surface of the transparent layer viewable as an authenticating image from the front of the sheet only across a conical field of view.

4,645,302

LIGHT BEAM-SPLITTER

John E. Aughton, London, England, assignor to Crosfield Electronics Limited, London, England

Filed Dec. 13, 1983, Ser. No. 561,117

Claims priority, application United Kingdom, Dec. 21, 1982, 8236345

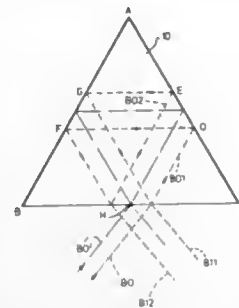
Int. Cl.⁴ G02B 27/10, 5/04

U.S. Cl. 350—173

8 Claims

1. Apparatus for producing parallel light beams comprising: a light source producing a collimated monochromatic light beam; and a triangular prism having two silvered faces and one partially transmissive face, each face being parallel to the prism axis and each angle of the triangular prism being less than 90°, wherein the source and prism are positioned so that the beam lies in a plane normal to the prism axis and strikes the partially-transmissive face at such a position and at such an angle of incidence that it gives rise to only two parallel output beams,

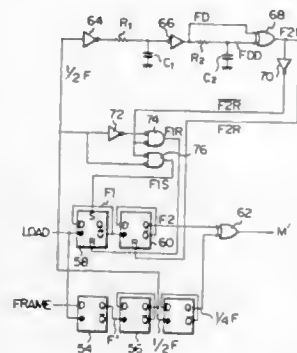
part of the total output light arising from internal reflections at both silvered faces of the prism, and wherein the partially



transmissive face is coated so as to give rise to output beams of substantially equal intensity.

4,645,303 LIQUID CRYSTAL MATRIX DISPLAY PANEL DRIVE METHOD

Fukuo Sekiya, Tanashi, and Hiroshi Shimizu, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1985, Ser. No. 724,423
Claims priority, application Japan, Apr. 20, 1984, 59-79777
Int. Cl.⁴ G05F 3/147
U.S. Cl. 350—332 6 Claims

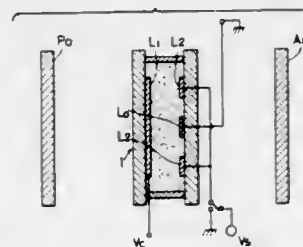


1. A method of driving a liquid crystal matrix display panel having a regular matrix array of liquid crystal display elements arranged in mutually perpendicular rows and columns and driven by common conductors and segment conductors which are respectively aligned with said rows and columns and are driven by common drive signals and segment drive signals, each of said common conductors being addressed once during each of successive frame intervals within a corresponding one of a set of row selection intervals in a frame interval, the method comprising generating a polarity control signal which varies between a first and a second potential and which controls said common and segment drive signals such that with said polarity control signal at said first potential, a positive drive voltage polarity is applied to a display element addressed during said corresponding row selection interval and such that with said polarity control signal at said second potential a negative drive voltage polarity is applied to a display element addressed during said row selection interval, said polarity control signal attaining a different waveform during respective frame intervals of each of successively occurring cycle intervals where each of said cycle intervals comprises four successive frame intervals, said polarity control signal waveforms being formed such that during each row selection interval of any set of two successive row selection intervals occurring at identical timings in each frame interval, said polarity control signal is established at said first potential during two of said frame intervals in said cycle interval, and at said second poten-

tial during the remaining two frame intervals of said cycle interval, with the order in which said polarity control signal is set to said first and second potentials in successive frame intervals of said cycle interval being respectively different for each of said two successive row selection intervals.

4,645,304 LIQUID CRYSTAL DEVICE HAVING INTERDIGITATED ELECTRODES WITH SHADE MEMBER

Takao Kawamura, Senbokuwada Corp. 717, 398-1 Tsujino, Sakai-shi, Osaka, Japan, and Akihiko Sugimura, Sakai, Japan, assignors to Kyocera Corporation, Kyoto and Takao Kawamura, Sakai, both of Japan
Filed Aug. 20, 1982, Ser. No. 409,848
Claims priority, application Japan, Aug. 25, 1981, 56-133674; Sep. 7, 1981, 56-141482; Sep. 18, 1981, 56-148394; Oct. 15, 1981, 56-165376
Int. Cl.⁴ G02F 1/13
U.S. Cl. 350—336 8 Claims

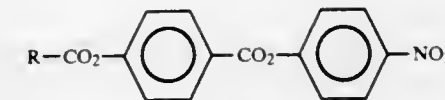


1. A liquid crystal device comprising:
a liquid crystal cell including a first transparent substrate having interdigital electrodes, a second transparent substrate having an opposite electrode, the interdigital electrodes and the opposite electrodes being disposed close to each other so that said interdigital electrodes and opposite electrode are opposite to each other, and liquid crystal between both said transparent substrates; and
a polarizer having the polarization axis parallel to the orientation direction of said liquid crystal caused by the electric field produced between said interdigital electrodes, wherein at least one of said first transparent substrate having the interdigital electrodes and second transparent substrate having the opposite electrode, is provided at a portion corresponding to the bases of said interdigital electrode with a shade member.

4,645,305 LIQUID-CRYSTAL COMPOUND, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DISPLAY DEVICE

Hisao Yokokura; Susumu Era, both of Hitachi; Hidetoshi Abe, Katsuta; Tadao Nakata, Katsuta; Teruo Kitamura, Katsuta, and Akio Mukoh, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 23, 1984, Ser. No. 674,325
Claims priority, application Japan, Nov. 24, 1983, 58-219378
Int. Cl.⁴ G02F 1/13; C09K 19/20
U.S. Cl. 350—351 9 Claims

1. A thermally addressed liquid crystal device comprising a liquid crystal layer between two counterposed electrodes at least one of which is transparent, a means for applying an electrical potential to the liquid crystal layer, and a means for heating a part of the liquid crystal layer, where the heated part of the liquid crystal layer is optically modulated against non-heated part of the liquid crystal layer, thereby making a display, the liquid crystal layer being a smectic liquid crystal composition containing a liquid crystal compound represented by the general formula:



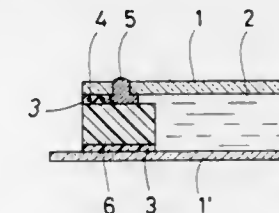
wherein R is an alkyl group having 8 to 13 carbon atoms.

4,645,306 SEALING ELEMENT FOR INJECTION HOLE

Toshio Akai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 641,935, Aug. 20, 1984, abandoned, which is a continuation of Ser. No. 393,876, Jun. 30, 1982, abandoned, which is a continuation of Ser. No. 143,017, Apr. 23, 1980, abandoned. This application Oct. 18, 1985, Ser. No. 788,680

Claims priority, application Japan, Apr. 27, 1979, 54-52697
Int. Cl.⁴ G02F 1/17
U.S. Cl. 350—355 2 Claims



1. A display cell having a peripheral portion for defining a channel for introducing an electrolyte into said cell and a central portion comprising a compartment for containing said electrolyte, with respective electrodes juxtaposed to said compartment, said display cell comprising in combination:
first and second flat substrates having a spacer means positioned at said peripheral portion of said display cell for defining a space at said peripheral portion forming said channel for introduction of said electrolyte into said compartment between said first and second flat substrates said channel space being provided between an upper surface of said spacer means and said upper first substrate;
an injection hole provided at said peripheral portion of said cell within said first flat substrate for introducing said electrolyte into said space at the periphery of said device forming said channel;
means for sealing said peripheral portion of said cell while maintaining said injection hole open for introduction of said electrolyte into said central compartment, said sealing means comprising a sealing material containing spacer elements therein which spacer elements provide said channel between the respective surfaces of said spacer member and said first substrate; and
means for sealing said injection hole.

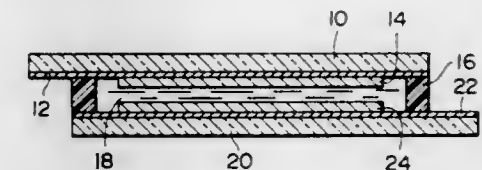
4,645,307 ELECTROCHROMIC DEVICE

Takeshi Miyamoto, Yokosuka; Mikio Ura, Yokohama; Shigenori Kazama; Takao Kase, both of Yokosuka, and Yoshiko Maeda, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 19, 1984, Ser. No. 662,563
Claims priority, application Japan, Oct. 20, 1983, 58-195176
Int. Cl.⁴ G02F 1/01
U.S. Cl. 350—357 8 Claims

1. An electrochromic device comprising:
a first electrode layer which is transparent;
a second electrode layer arranged opposite to and spaced from said first electrode layer;
first and second electrochromic layers formed respectively on said first and second electrode layers, said electrochromic

mic layers comprising an electrochromic material which is Prussian blue, said electrochromic layers facing each other and undergoing electrochemical oxidation and reduction in two stages and alternately and stably assuming three different oxidation states, the color of each said electrochromic layer in each oxidation state being different from the colors in the other two oxidation states such that there is a clear contrast between the color in the intermediate oxidation state and a composite color given

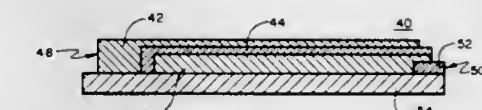


by superposition of the color of one said electrochromic layer in the highest oxidation state on the color of the other said electrochromic layer in the lowest oxidation state; and
an electrolyte which fills up the gap between said first and second electrochromic layers, said electrolyte being a solution of a supporting electrolyte of which the cation is alkali metal ion in an organic polar solvent comprising propylene carbonate or acetonitrile and containing from about 0.8 to about 15 wt % of water.

4,645,308 LOW VOLTAGE SOLID-STATE LATERAL COLORATION ELECTROCHROMIC DEVICE

C. Edwin Tracy; David K. Benson, both of Golden, and Marta R. Ruth, Boulder, all of Colo., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 21, 1984, Ser. No. 685,177
Int. Cl.⁴ G02F 1/01
U.S. Cl. 350—357 13 Claims



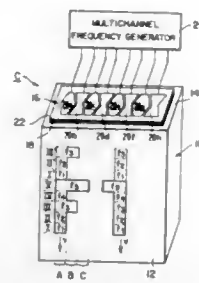
1. A solid-state transition metal oxide device comprising a plurality of layers including cathode contact means, anode contact means, means including a layer of dielectric material and means including an electrochromic oxide layer, said means being arranged and oriented such that the application of a predetermined potential to said transition metal oxide device is effective for actuating blue coloration within said electrochromic oxide layer and wherein the coloration action sweeps across the length of said electrochromic oxide layer from said cathode contact means to said anode contact means.

4,645,309 METHOD AND APPARATUS FOR ACOUSTO-OPTIC CHARACTER GENERATION

Jeffery J. Harris, Gwent, Wales, and Allister McNeish, Bristol, England, assignors to Isomet Corporation, Springfield, Va.
Filed May 1, 1985, Ser. No. 729,218
Int. Cl.⁴ G02F 1/33; H04N 5/74
U.S. Cl. 350—358 22 Claims

1. A method of reproducing character information by acousto-optic interaction, comprising:
providing a body of acousto-optic material and means for introducing a column of acoustic energy into said body,

said column corresponding to a column of character information, introducing into said acoustic energy column a sequence of traveling acoustic energy packets each having a different predetermined frequency and representing a portion of said column of character information, pulsing a beam of light into said body for interaction with acoustic energy packets within said body to create corresponding diffracted output beams, said beam of light having a dimension in the direction of said acoustic energy column substantially the same as that of said character information column as represented by said acoustic energy packets,



repeating said introducing until completion of said pulsing so that each energy packet traveling out of the path of said light beam is replaced by another packet of the same frequency traveling into said path for producing a corresponding diffracted output beam, and directing all of the diffracted output beams to corresponding locations in a character reproduction plane, with diffracted beams corresponding to acoustic energy packets of the same frequency being directed to the same location in said plane, to produce an image of the corresponding portions of said character information column.

4,645,310

ZOOM LENS WITH MACROMECHANISM

Shinsuke Kohmoto, Tokyo, Japan, assignor to Asahi Kokag Kogyo Kabushiki Kaisha, Tokyo, Japan

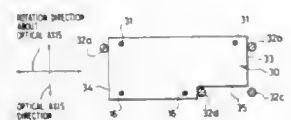
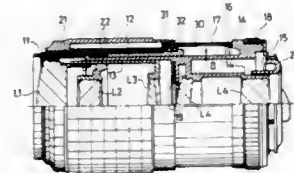
Filed Sep. 18, 1984, Ser. No. 651,570

Claims priority, application Japan, Sep. 21, 1983, 58-174882

Int. Cl.⁴ G02B 7/10

U.S. Cl. 350—430

3 Claims



1. In a zoom lens with a macromechanism in which a single operating ring is supported on a stationary lens barrel in such a manner that said operating ring is rotatable along a helicoid and movable along an optical axis of said zoom lens, a stop guide for regulating the focusing rotation range of said operating ring is provided between said stationary lens barrel and said operating ring, and zooming is achieved by moving said oper-

ating ring along said optical axis while focusing is achieved by rotating said operating ring, the improvement wherein:

a macrophotography guide is provided for said stop guide, which, when said operating ring is at the closest photographing distance end of said focusing rotation range and at an end corresponding to either the shortest or longest focal length linear extension range, permits said operating ring to further rotate for a closer photographing range, and said stop guide comprises:

a stop pin fixed to said operating ring, and a stop plate having stop pin rotation range regulating surfaces on both sides in a circumferential direction of said zoom lens and which is fixedly secured to said stationary lens barrel, said stop plate having a macrophotography guide cut for increasing a range of rotation of said stop pin for a closer photographing distance formed in at least one end portion of said stop plate located in a direction of said optical axis with said macrophotography guide cut being arranged circumferentially of said zoom lens, and

friction means for, when said stop pin moves relative to said macrophotography guide cut and along said macrophotography guide cut, increasing an amount of friction for rotation thereof.

4,645,311

SCANNING OBJECTIVE

Ernst Rothe, Munich, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Fed. Rep. of Germany

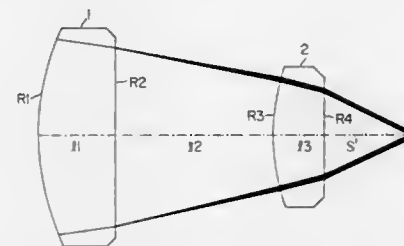
Filed May 31, 1983, Ser. No. 499,792

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220408

Int. Cl.⁴ G02B 9/06, 9/12, 13/18

U.S. Cl. 350—432

18 Claims



1. A scanning objective characterized by two lens means with positive power of refraction, of which the first lens means, as viewed in the direction of incidence of the beam includes an aspherical surface which is so constructed that in comparison with a spherical surface with the same vertex radius of curvature, the thickness of the lens means increases toward the outside and wherein the following values of curvatures ϕ_1 , ϕ_2 , ϕ_3 , and ϕ_4 of the lens surface and of the air spacing (l_2) of the two lens means as function of the intercept length s' with a focal distance f normalized to 1

s'	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
ϕ_1	0.85	0.8	0.75	0.7	0.65	0.6	0.55	0.47
ϕ_2	-0.25	-0.12	-0.06	-0.04	-0.05	-0.04	0.04	0.35
ϕ_3	1.15	1.1	1.0	0.8	0.6	0.35	0.27	0.25
ϕ_4	-0.3	-0.2	-0.22	-0.33	-0.5	-0.68	-0.85	-1.04
l_2	0.86	0.8	0.69	0.57	0.47	0.36	0.24	0.14

whereby the tolerances of the curvatures and of the air spacing amount each to about ± 0.25 ($l_2 > 0$) and by the following values of the thickness l_1 of the first lens means:

$l_1 = 0.35$ with tolerances of $+0.3$ and 0.2 of the thickness l_3 of the second lens means:

$l_2 = 0.25$ with tolerances of $+0.3$ and -0.2 , and of the indices of refraction n_1 , $n_3 = 1.7 \pm 0.2$.

4,645,312

PHOTOGRAPHIC LENS SYSTEM

Kazuo Ikari, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

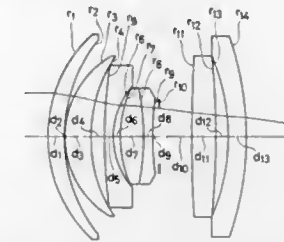
Filed Nov. 17, 1983, Ser. No. 552,965

Claims priority, application Japan, Nov. 24, 1982, 57-204603

Int. Cl.⁴ G02B 9/62

U.S. Cl. 350—464

7 Claims



1. A photographic lens system comprising a first positive meniscus lens component having a convex surface on the object side, a second positive meniscus lens component having a convex surface on the object side, a third negative meniscus lens component having a convex surface on the object side, a fourth lens component having positive refractive power, and a fifth lens component comprising a negative lens element and having positive refractive power as a whole, said negative lens element in said fifth lens component being arranged on the extreme image side and being a negative meniscus lens, and said lens system being so designed as to satisfy the following conditions (1), (2), (3) and (4):

$$1.5/f < 1/r_1 < 3.0/f$$

$$0 < 1/r_5 < 1.2/f$$

$$1.7 < (n_1 + n_2)/2$$

$$0.5 < |f_{5n}|/f < 7.0, f_{5n} < 0$$

wherein the reference symbol f represents focal length of the lens system as a whole, the reference symbol r_1 designates radius of curvature on the object side surface of said first lens component, the reference symbol r_5 denotes radius of curvature on the object side surface of said third lens component, the reference symbols n_1 and n_2 represent refractive indices of said first and second lens components respectively, and the reference symbol f_{5n} designates focal length of the negative element comprised in said fifth lens component.

4,645,313

LIGHT RADIATING DEVICE

Kei Mori, 3-16-3-501, Kaminoge Setagaya-ku, Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,656

Claims priority, application Japan, Jul. 1, 1983, 58-119867

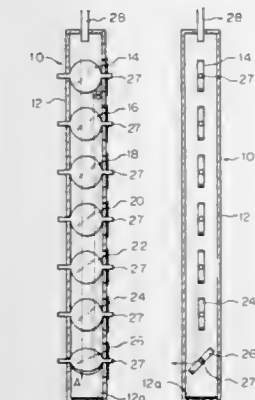
Int. Cl.⁴ G02B 26/08

U.S. Cl. 350—486

3 Claims

1. A light transmitting device for radiating light transmitted thereto from a light source to the ambience comprising an elongate transparent cylindrical tube which is supplied with light at one longitudinal end thereof, said cylindrical tube having a longitudinal axis, a plurality of partially reflecting plates disposed within said cylindrical tube, rotatable support means on said cylindrical tube for rotatably supporting said plates about diametrical axes which are perpendicular to and which intersect the longitudinal axis of said cylindrical tube, each of said plates being rotatable to positions such that the general plane of each plate is disposed at an acute angle relative to the longitudinal axis of said cylindrical tube such that each of said plates reflects a part of the light incident thereon laterally of the longitudinal axis of the cylindrical tube, said rotatable support means supporting said plates such that at least some of said diametrical axes are angularly offset relative to

other of said diametrical axes such that said plates reflect the light in different lateral directions, said plates having an oval



4,645,314

REFLECTOR TELESCOPE WITH UPRIGHT IMAGE

Wolfgang Schröder, Wöllstein, Fed. Rep. of Germany, assignor to Jos. Schneider Ptiische Werke Kreuznach GmbH & Co. KG, Kreuznach, Fed. Rep. of Germany

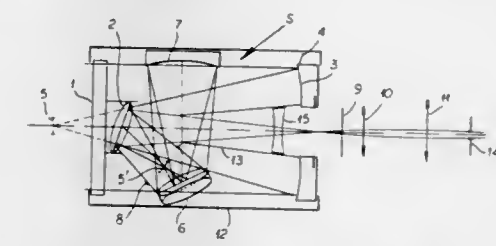
Filed Nov. 29, 1984, Ser. No. 676,041

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343219

Int. Cl.⁴ G02B 17/00, 21/00, 23/06

U.S. Cl. 350—504

18 Claims



1. A reflector telescope with an upright image, comprising: an annular concave mirror oriented along an optical axis of the telescope and receiving light rays from an object; a collector mirror positioned along said optical axis between said concave mirror and an entrance opening of said telescope for receiving light rays reflected from said concave mirror, said collector mirror being inclined to said optical axis for directing rays reflected therefrom to one side of the telescope;

a folding mirror at least one side of said telescope positioned to receive rays reflected from said collector mirror and inclined to said optical axis such that a bundle of rays reflected from said folding mirror are trained upon an opposite side of the telescope and said bundle is centered on a folding axis extending perpendicularly to said optical axis but laterally offset therefrom;

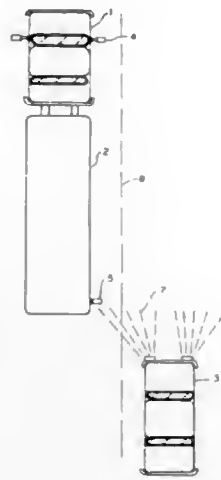
a concave reversing mirror on said opposite side of the telescope positioned to receive said bundle and reflect rays therefrom convergently to said folding mirror and thence to said collector mirror, whereby said collector mirror reflects the latter rays along said optical axis through said annular concave mirror; and

an ocular disposed along said optical axis behind said annular concave mirror for viewing of a real upright image of said object.

4,645,315
TRAILING DISTANCE AND SAFE PASSING INDICATOR FOR TRAILER

Joseph Morgavo, 520 E. 8th Ave., Munhall, Pa. 15120
Filed Nov. 15, 1985, Ser. No. 798,581
Int. Cl.⁴ G02B 5/08; G01C 3/00
U.S. Cl. 350—600

2 Claims



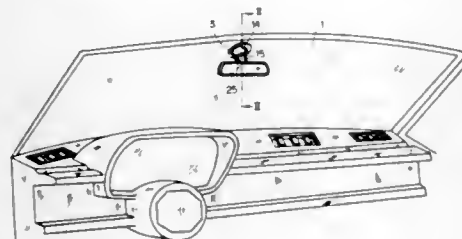
1. In combination with an automotive vehicle having a sideview mirror mounted on the right side thereof, alongside the driver, and having a trailer towed by the vehicle; the improvement for night time driving comprising a transparent reflector mounted outwardly of the right rear of said trailer, whereby the headlights of the overtaken vehicle will shine through said reflector and be observed by said right view mirror to indicate when it is safe to move from the passing lane to the driving lane.

4,645,316
REAR VIEW MIRROR ASSEMBLY
Yasuo Ohyama, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 19, 1985, Ser. No. 756,952
Claims priority, application Japan, Jul. 23, 1984, 59-111269[U]

Int. Cl.⁴ G02B 5/08, 7/18; B60R 1/04
U.S. Cl. 350—632

20 Claims



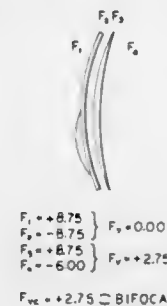
1. A rear view mirror assembly of a vehicle comprising:
a first base member secured to the vehicle, the first base member having a side portion with a first flange and a front portion with a second flange; and
a unit of the rear view mirror assembly comprising,
a second base member mounted on the first and second flanges of said first base member, the second base member having a hook and a mounting portion thereon,
a spring member mounted on the hook of said second base member and having an engagement means thereon, the spring member supporting a predetermined amount of a force on the hook of said second base member,
a mounting member having a first surface disposed on the

mounting portion of said second base member, the mounting member having a first aperture and a first socket portion disposed around the first aperture on a second opposite surface of said mounting member,
a support arm having a first end with an outer surface, an inner surface and an inner peripheral edge, and a second opposite end rotatably supporting a rear view mirror, the outer surface of said support arm mounted slidably on the first socket portion of said mounting member, the inner surface of said support arm having a second socket portion,
the inner peripheral edge defining a second aperture extending from the second socket portion of the inner surface to the outer surface of said support arm, a diameter of the second aperture of said support arm being greater than a diameter of the first aperture of said mounting member,
a second ball member mounted slidably on the second socket portion of the inner surface of said support arm, and
an engagement member inserted into the second aperture of said support arm and the first aperture of said mounting member, the engagement member having one end engaging with the engagement device of said spring member, and an opposite end of the engagement member connected to said second ball member, the engagement member supporting said second ball member, said support arm and said mounting member on said second base member through said spring member,
said unit of the rear view mirror assembly being united by said engagement member, and installed on said first base member.

4,645,317
EYEGLASS LENS MODULES AND METHOD
Philip M. Frieder, Miami, and Edward deRojas, Lauderhill, both of Fla., assignors to Optical Systems International Inc., Hialeah, Fla.

Filed Feb. 22, 1983, Ser. No. 468,700
Int. Cl.⁴ G02C 7/06, 7/08, 7/10
U.S. Cl. 351—164

9 Claims



1. A method for assembling an eyeglass lens having at least two corrections comprising the steps of:
selecting a first prescription lens component having a given positive or negative diopter correction, and any cylinder correction prescription on the rear ocular surface and a preselected front surface without cylinder corrections,
selecting a second lens component being essentially optically plano but having a performed prescription correction at a portion of the second lens component and having a preselected rear surface complementary with the front surface of the prescription lens,
and thereafter optically bonding the two lens components to each other, with the second lens component being the exterior portion of the lens, thereby positioning the performed prescription correction feature on the outer second lens component.

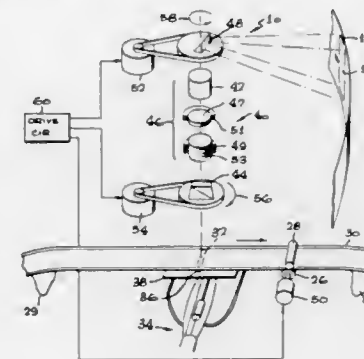
4,645,318
APPARATUS FOR PROJECTING A LARGELY 360° MOTION PICTURE IMAGE

Douglas Trumbull, Santa Monica, Calif., assignor to Showscan Film Corporation, Marina Del Rey, Calif.
Continuation-in-part of Ser. No. 659,266, Oct. 9, 1984, Pat. No. 4,560,260, which is a continuation of Ser. No. 412,040, Aug. 26, 1982, Pat. No. 4,477,160, which is a continuation-in-part of Ser. No. 885,901, Mar. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 713,658, Aug. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 626,965, Oct. 29, 1975, abandoned. This application Aug. 2, 1985, Ser. No. 762,199

Int. Cl.⁴ G03B 37/00

U.S. Cl. 352—69

4 Claims

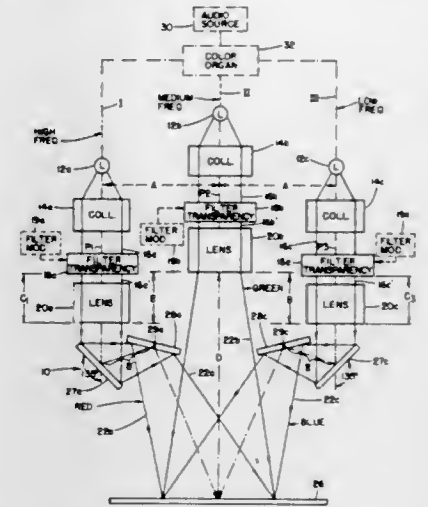


1. Apparatus for generating a largely 360° motion picture image that corresponds to a motion picture image on a strip of film, comprising:
a screen extending in largely a full circle about a predetermined substantially vertical axis;
a transport for moving an elongated film past a film projection location;
a light source located to direct concentrated light through said projection location;
an optical system for projecting an image of a limited area of said film lying at said projection location onto a limited area of said screen; and
means coupled to said optical system for repeatedly scanning said image around said screen as said film moves, to create the appearance of a motion picture image that largely encircles said vertical axis;
said optical system includes optical elements located to receive light passing through a largely slit-shaped area of film lying at said projection location and form a largely slit-like image on said screen, including a light deflector located on said vertical axis to deflect light from a direction along said axis to said screen, said light deflector rotatable about said axis;
said transport includes a film drive motor means for moving said film past said projection location;
said means for scanning includes a deflector rotating motor means for rotating said deflector about said axis; and including
a circuit for controlling said film drive motor means and said deflector rotating motor means so they normally move in synchronism, so that spaced portions of said film each representing a view looking in a predetermined compass direction, are normally imaged on the same location on the screen during a plurality of sequential complete scans of said screens;
said circuit also including means selectively operable to move one of said motor means at a different speed than is required for synchronism with the other motor means, whereby to slowly turn the background in the screen image around the screen.

4,645,319
COMPOSITE OPTICAL IMAGE PROJECTION SYSTEM
Denes Fekete, 8 Eagle La., Hauppauge, N.Y. 11788

Filed Apr. 3, 1985, Ser. No. 719,519
Int. Cl.⁴ G03B 21/10
U.S. Cl. 353—31

9 Claims



1. A composite optical image projection system comprising:
a first lamp for emitting light in a first optical path;
a first changeable optical filter-transparency disposed in said optical path for filtering said light emitted by said lamp;
a first projection lens disposed in said optical path for focusing the light from said filter-transparency as a first divergent beam of light cast as a first image on an image receiving surface;
a second lamp for emitting light in a second optical path;
a second changeable optical filter-transparency disposed in said optical path for filtering said light emitted by said second lamp;
a second projection lens disposed in said second optical path for focusing the light from said second filter-transparency as a second divergent beam of light;
a mirror assembly disposed in said second optical path, and arranged to reflect said second divergent beam of light and cast a second image in superimposition with said first image on said image receiving surface to form a composite colored image;
a third lamp for emitting light in a third optical path;
a third changeable optical filter-transparency disposed in said optical path for filtering said light emitted by said third lamp;
a third projection lens disposed in said third optical path for focusing the light from said third filter-transparency as a third divergent beam of light;
another mirror assembly disposed in said third optical path, and arranged to reflect said third divergent beam of light and cast a third image in superimposition with said first and second images on said image receiving surface so that said composite image is modified by said third image; means for modulating said first, second, and third beams of light so that said composite image varies in hue and intensity; and
wherein said first named and said other mirror assembly are each comprised of a fixed mirror disposed at an angle to the respective optical path and a movable mirror rotatably adjustable on an axis parallel to the plane of the respective fixed mirror and wherein the distance between the centers of said respective fixed and movable mirrors is a first short distance so that said first named and said other mirror assembly may be adjusted to superimpose said second and third images on said first image to form a single composite image.

4,645,320

CAMERA MOUNT FOR MOTOR VEHICLE

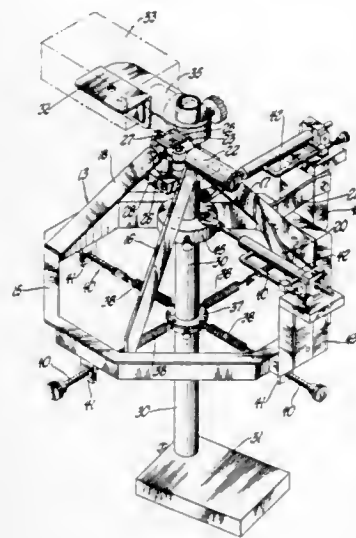
Duane D. Muelling, Milford; Ronald J. Willett, Pinckney, and Philip E. Nimmo, Fenton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1985, Ser. No. 811,452

Int. Cl.⁴ G03B 29/00

U.S. Cl. 354—81

3 Claims U.S. Cl. 354—82



1. A camera mount for a motor vehicle of the type having an unsprung mass with supporting wheels and a sprung mass, the unsprung mass being supported by the wheels on a road surface and the sprung mass being supported on the unsprung mass by a suspension system comprising vehicle spring elements and vehicle damping elements allowing relative rotation of the vehicle sprung mass with respect to the unsprung mass due to accelerational and gravitational forces, the camera mount comprising, in combination:

- a supporting frame rigidly supported within the motor vehicle sprung mass;
- a gimbal support on the supporting frame;
- a pendulum suspended from the gimbal support, the pendulum including camera support means and having a steady state position on a horizontal road surface in the absence of vehicle acceleration defining a level camera attitude with respect to the unsprung mass and the sprung mass;
- pendulum spring elements effective to exert a restoring force when the pendulum rotates from its steady state position with respect to the vehicle sprung mass; and
- pendulum damping elements effective to exert a damping force during pendulum rotation relative to the vehicle sprung mass, the pendulum spring elements and pendulum damping elements having spring and damping coefficients, respectively, of magnitude matched to those of the vehicle suspension system and effective, during rotations of the sprung mass relative to the unsprung mass due to accelerational or gravitational forces, to allow rotation of the pendulum through an equal and opposite angle, whereby the camera is maintained level with respect to the road surface regardless of vehicle accelerations due to cornering, stopping and increasing velocity or grade changes in the road surface from the horizontal.

4,645,321

HOLDING APPARATUS FOR CAMERA

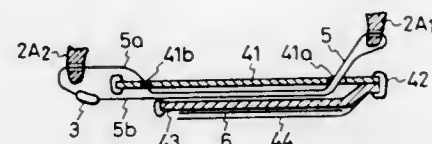
Susumu Fukita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1985, Ser. No. 797,525

Claims priority, application Japan, Nov. 20, 1984, 59-246534

Int. Cl.⁴ G03B 29/00

1 Claim



1. A holding apparatus for use with a camera or the like, comprising:

- a grip for holding a camera or the like, said grip being secured to the camera or the like and having an engaging portion at opposite ends thereof;
- a strap-like band having first and second ends, said ends being threaded through a hole in each said engaging portion;
- a fastener for fastening said first and second ends of said band;
- a back-of-the-hand supporting member including a back-of-the-hand supporting portion, a blind portion, and a transparent cover, said back-of-the-hand supporting portion formed with a hole at each end; and
- a transparent storing portion formed by said transparent cover and said blind portion, said transparent storing portion having a closed end portion at a first end thereof and an open end portion at a second end thereof and dimensioned to receive a card for displaying information, wherein one end of said band is threaded through the hole in a first end of said back-of-the-hand supporting portion, then through one of said engaging portions and back through the hole in said first end of said back-of-the-hand supporting portion,
- wherein both ends of said band are then directed to an open portion of a band storing portion so that the first end of said band is threaded through the hole provided in a second end of said back-of-the-hand supporting portion and then through the hole in the other of said engaging portions, and
- wherein the second end of said band is threaded through the open end portion of said band storing portion and fastened to said first end of said band with said fastener.

4,645,322

FILM COUNTER

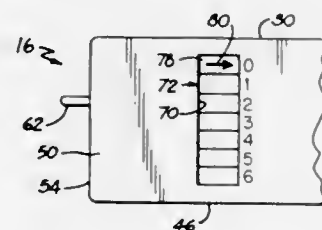
Joseph A. Stella, and Alfred E. Corrigan, both of Peabody, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 1, 1986, Ser. No. 857,949

Int. Cl.⁴ G03B 17/36, 17/50

U.S. Cl. 354—180

9 Claims



1. Apparatus for supporting a film cassette in position for the

sequential exposure of a plurality of instant type film units contained therein, said apparatus comprising:

- means for defining a housing having a first chamber, for receiving a film cassette containing a plurality of instant type film units, and a second chamber, for storing the film units subsequent to their exposure and prior to the processing of the same;
- means for advancing a film unit, subsequent to its photographic exposure, from said first chamber to said second chamber;
- supporting means located within said second chamber for supporting the exposed film units in a stack, said supporting means being adapted for movement in a first direction as the number of exposed film units supported thereby increases, and in a second direction as the number of exposed film units supported thereby decreases;
- means for defining an opening in an exterior wall of said second chamber;
- first means for light sealing said opening, said first light sealing means being coupled to said support means for progressive movement out of light sealing relation with said opening as said support means progressively moves in said first direction, and into light sealing relation with said opening as said support means moves in said second direction;
- second light sealing means coupled to said first light sealing means for progressively moving into and out of light sealing relation with said opening as said first light sealing means progressively moves out of and into light sealing relation with said opening; and
- indicia means carried by one of said first or second light sealing means for indicating the number of exposed film units located on said supporting means.

4,645,323

FILM PROCESSOR

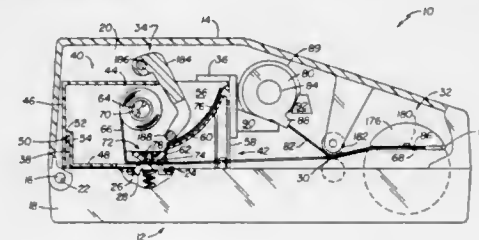
Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 17, 1986, Ser. No. 840,074

Int. Cl.⁴ G03D 5/06

U.S. Cl. 354—303

6 Claims



1. Apparatus for receiving a film cassette containing a roll of exposed, self-developing type film preparatory to processing the film, the roll of film being wound upon a rotatable film spool with a first end of the film being secured to the spool and its opposite second end being adapted to extend to the exterior of the film cassette via a film withdrawal slot, said apparatus comprising:

- a housing defining a lighttight enclosure in which photographically exposed film is adapted to be processed, said housing including a loading door providing access to the interior of said housing;
- first means within said housing for rotating the film spool within the film cassette containing the exposed roll of film;
- second means within said housing for rotating a spool having a length of flexible sheet material wound thereupon with a first end thereof secured to the spool, and a second free end, the sheet material being adapted to carry a coating of processing liquid on one side thereof prior to being laminated to the film;
- means for receiving the second ends of the film and sheet material, said receiving means being adapted to be rotated

in a direction so as to unwind the film and sheet material from their respective spools and wind them as a laminate upon said receiving means with the coating of processing liquid being an intermediate layer of the laminate;

a drive train continuously connecting said first and second rotating means and adapted to drive said first and second rotating means in a direction which will cause said second rotating means to rotate said receiving means in a direction so as to unwind the laminate from the receiving means and rewind the film and sheet material upon their respective spools when said loading door is closed, said drive train includes means for transferring torque to said first rotating means at a level sufficient to maintain tautness in the film being rewound but below that which would rotate said receiving means at a rate faster than said second rotating means rotates said receiving means.

4,645,324

PHOTOGRAPHIC PRINT MAKING AND DEVELOPING TRAY ASSEMBLY

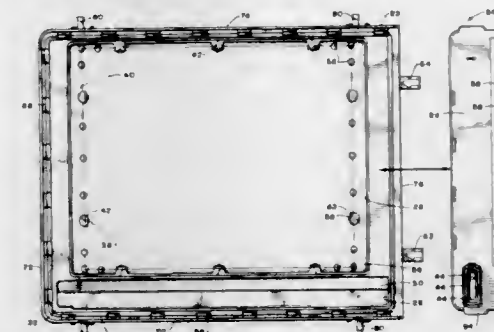
Stanley A. Wnukiewicz, Jr., Woodland Hills, Calif., assignor to 501 Daylab, Ltd., Chatsworth, Calif.

Filed Oct. 7, 1985, Ser. No. 784,770

Int. Cl.⁴ G03D 13/04

U.S. Cl. 354—312

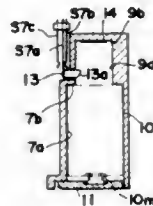
9 Claims



1. In combination with a photographic print making and developing tray having a tray housing, said tray housing defining an open box-like configuration comprising a bottom wall which has a peripheral edge to which is attached a side wall, said side wall enclosing an internal chamber, said side wall having an upper edge, said upper edge forming an access opening for said internal chamber, a cover connectable with said tray housing, said cover movable between a closed position and an open position, said closed position completely covering said access opening in a light-tight manner, said open position permitting unrestricted access into said internal chamber, the improvement comprising:

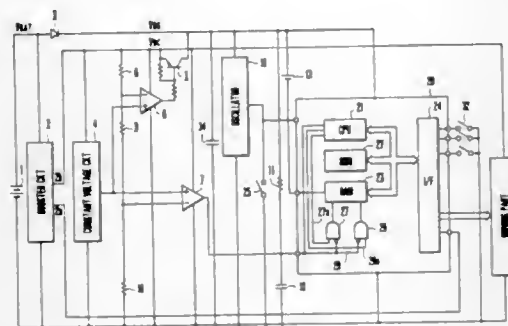
- a cover locking means for tightly securing said cover to said tray housing when said cover is in said closed position, said cover locking means being movable between a locked position and unlocked position, said locked position tightly securing said cover to said tray housing, said unlocked position permitting free movement of said cover to said open position;
- said cover locking means including a side rail assembly, said side rail assembly mounted in juxtaposition to said side wall of said tray housing, said side rail assembly including a plurality of parts interlocked together, said side rail assembly totally encompassing said tray housing, said side rail assembly being movable relative to said tray housing; and
- said tray housing including a series of spaced-apart openings formed within said side wall, said series of spaced-apart openings being located directly adjacent said upper edge, said side rail assembly including a plurality of spaced-apart tabs, a said tab to connect with a said opening, said tabs being located within said internal chamber.

4,645,325
ELECTRONIC INSTRUMENT WHICH SELECTIVELY RECEIVES DIFFERENT KINDS OF BATTERIES
 Norihiro Inoue, Nara; Shinji Tomimaga, Osaka; Masataka Kashima, Toyokawa, and Ikushi Nakamura, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Filed Jun. 3, 1985, Ser. No. 740,819
 Claims priority, application Japan, Jun. 4, 1984, 59-115202; Jun. 5, 1984, 59-115733; Oct. 16, 1984, 59-216772
 Int. Cl.⁴ G03B 17/00
 U.S. Cl. 354—484



1. An electronic instrument which is supplied with electric power from a battery, said instrument comprising:
 a battery chamber for selectively receiving first and second batteries which are different from each other in shape and output voltage, said battery chamber including terminal means for providing the battery power and a space which is commonly occupied by parts of said first and second batteries;
 means for determining the presence of said first or second battery received in said battery chamber and generating a signal representing the result of the determination;
 an electronic circuit operative at a given supply voltage; and
 a voltage converting means, connected between said terminal means of said battery chamber and said electronic circuit, for converting the output voltage of the battery to the given voltage in response to said signal.

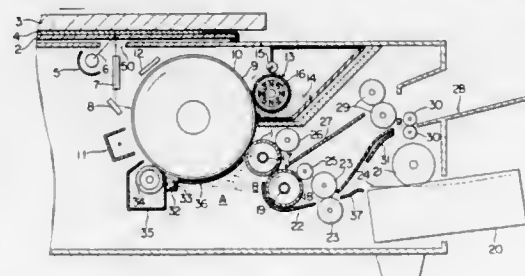
4,645,326
CAMERA WITH COMPUTER CIRCUIT
 Masayoshi Kiuchi, and Nobuyuki Suzuki, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 716,850, Mar. 28, 1985, abandoned.
 This application May 27, 1986, Ser. No. 868,891
 Claims priority, application Japan, Mar. 30, 1984, 59-64971; Mar. 30, 1984, 59-64973; Mar. 30, 1984, 59-64976; Mar. 30, 1984, 59-64977; Mar. 30, 1984, 59-64978
 Int. Cl.⁴ G03B 7/26; G06F 1/00
 U.S. Cl. 354—484



1. A camera, having a computer circuit for control over the operations of the camera, comprising:
 (a) a detection circuit for detecting a voltage applied to said computer circuit and producing an output when the voltage is below a predetermined value;
 (b) an inhibition circuit for inhibiting the operation of said

computer circuit in response to the output of said detection circuit; and
 (c) a delay circuit for delaying for a predetermined period of time the inhibiting action of said inhibition circuit on the operation of said computer circuit.

4,645,327
RECORDING APPARATUS HAVING WATER VAPOR REMOVING OR PREVENTING MEANS
 Kiyoshi Kimura; Yukio Okamoto; Tadashi Miwa; Masakazu Fukuchi; Noriyoshi Tarumi, and Kunio Ito, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
 Filed Feb. 22, 1984, Ser. No. 582,322
 Claims priority, application Japan, Feb. 23, 1983, 58-28904; Mar. 5, 1983, 58-36221; Mar. 5, 1983, 58-31716; Mar. 5, 1983, 58-31717; Mar. 5, 1983, 58-31718; Apr. 6, 1983, 58-50293
 Int. Cl.⁴ G03G 15/00
 U.S. Cl. 355—3 R

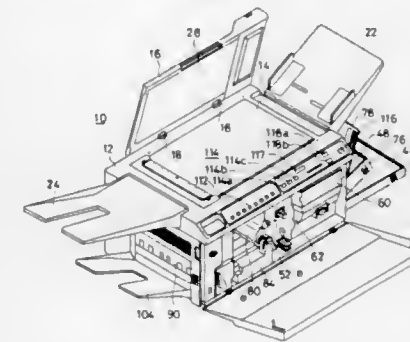


1. In a recording apparatus having an intermediate transfer member for transferring a developed electrostatic image formed on an image-carrier to a recording material, means for heating said intermediate transfer member so as to heat toner transferred on said intermediate transfer member from said image-carrier, means for pressing said recording material in contact with said intermediate transfer member, and means cooperating with said pressing means for heating said recording material prior to the contact point between said pressing means and said intermediate transfer member, said heated intermediate transfer member and heating means in cooperation with said pressing means being in proximity to said image-carrier and defining at least in part a space between said image-carrier and said contact point between said intermediate transfer member and said pressing means, wherein the improvement comprises a shielding member of porous metal positioned in said defined space for preventing water vapor generated from said recording material heated by said heated intermediate transfer member and said heating means in conjunction with said pressing means from reaching the surface of said image-carrier, said shielding member preventing water vapor and/or heat produced at said heating section for the recording material from reaching said image-carrier and having at least a trapping capability for condensing and trapping the water vapor.

4,645,328
APPARATUS FOR SCANNING AN ORIGINAL
 Kenhachi Shiraki; Shinichi Kikkawa; Takaharu Izawa; Yoshifumi Miyazaki; Torahiko Nonoue, and Etsuzo Moriki, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan
 Filed Jan. 23, 1985, Ser. No. 693,867
 Claims priority, application Japan, Jul. 18, 1984, 59-149917; Jul. 18, 1984, 59-149918
 Int. Cl.⁴ G03G 15/00
 U.S. Cl. 355—8

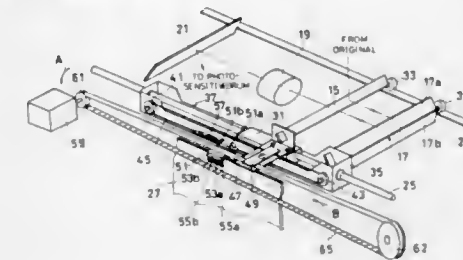
1. An apparatus for scanning an original comprising:
 an original table for placing an original,

a light source for exposing the original placed on said original table,
 a movable member which is moved correspondingly to relative movement between said original table and said light source and is reciprocally movable in a forward direction from a home position to a start return position and in a return direction from the start return position to the home position,
 detecting means disposed in the path of movement of said movable member for detecting an intermediate position of the movable member, the intermediate position being situated between the home and start return positions, the detecting means providing an output signal indicating when the movable member is in the intermediate position,



means for effecting movement of said movable member in the return direction over a predetermined distance measured from the intermediate position in the return direction of movement and in response to the output signal from said detecting means,
 braking means for braking the movement of said movable member after the member has moved over said predetermined distance, and
 data setting means for setting data related to said predetermined distance, wherein said data setting means changes said predetermined distance according to the speed at which said movable member moves in the return direction.

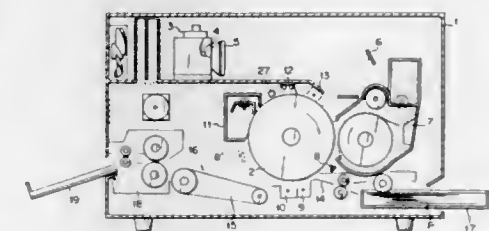
4,645,329
APPARATUS FOR SCANNING AN ORIGINAL
 Hiroshi Iwaki, Kasai, Japan, assignor to Sanyo Electric Co., Ltd., Japan
 Filed Jan. 23, 1985, Ser. No. 693,733
 Claims priority, application Japan, Apr. 20, 1984, 59-80527; Apr. 20, 1984, 59-80529
 Int. Cl.⁴ G03G 15/00
 U.S. Cl. 355—8



1. An apparatus for scanning an original comprising:
 a base body,
 a first carriage which is installed so as to be movable in the direction of scanning an original,
 a first movable mirror which is held on said first carriage and is for reflecting an image of the original,

a second movable mirror for reflecting again said image of the original reflected by said first movable mirror,
 a second carriage which is for holding said second movable mirror and is installed so as to be slidable in the same direction as that of said first carriage,
 a fixed mirror for reflecting said image of the original reflected by said second mirror toward a light receiving part,
 a lens of variable magnification which is installed between said fixed mirror and said second movable mirror and whose conjugate length is always constant,
 two pulleys which are installed separately from each other on said second carriage in the direction of movement thereof,
 a first flexible slender transmitting member which is set round said two pulleys, a part of which is fixed to said first carriage, and both ends of which are fixed to said base body,
 a motor having a rotary shaft,
 an idler which is installed free-rotatably on said base body, and
 second flexible slender transmitting member which is set between the rotary shaft of said motor and said idler and a part of which is fixed to said first carriage.

4,645,330
ELECTROPHOTOGRAPHIC DEVICE
 Mitsuaki Kobayama, Tokyo; Toshihiro Kasai, Yokohama; Haruhiko Ishida, Tokyo, and Takashi Shimazaki, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
 Filed Jul. 2, 1984, Ser. No. 627,299
 Claims priority, application Japan, Jul. 5, 1983, 58-121776
 Int. Cl.⁴ G03G 15/00
 U.S. Cl. 355—14 R

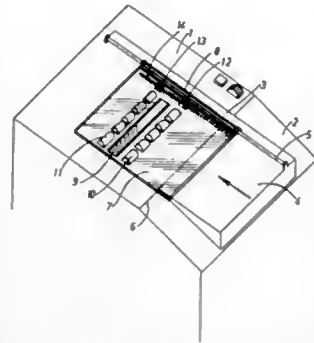


1. An electrophotographic device comprising:
 a photosensitive body movable in one direction and including a grounded conductive base body, a first photosensitive layer arranged above the base body and having a spectral sensitivity ranging from short to long wavelength region, and a second photosensitive layer coated on the first photosensitive layer and having a spectral sensitivity belonging to the short wavelength region; and
 an exposing means located opposite to the photosensitive body to expose all over the photosensitive body as it moves along the one direction, said exposing means including a first exposing unit having a spectral irradiation characteristic of long wavelength light, a second exposing unit having a spectral irradiation characteristic of short wavelength light, a driving means for selectively turning on the plural exposing units, a detector means for detecting the environmental temperature of said photosensitive body to generate a detection signal, and a control means connected to the driving means and serving to control the driving means to selectively turn on the first and second exposing units, responsive to the detection signal applied from the detector means.

4,645,331
DEVICE FOR TRANSLATIONALLY PASSING
MAGAZINES OR REVUES ON A COPIER APPARATUS
 Jean-Claude Berger, Issoudun, France, assignor to Mecilec S.A.,
 Paris, France

Filed May 16, 1985, Ser. No. 734,814
 Claims priority, application France, May 16, 1984, 84 07569
 Int. Cl.⁴ G03B 27/32, 27/62, 27/52
 U.S. Cl. 355—25

3 Claims



1. A device to translationally pass a document having multiple fastened sheets on a copier having a picture-taking assembly, removable upper drive means and non-removable lower drive means adapted to pass a single sheet, and a portion housing the picture-taking assembly, comprising:

an adapter element for placement on the portion of the copier housing having the picture-taking assembly, said adapter element comprising a longitudinal plate and a transverse portion extending transversely from said longitudinal plate, said transverse portion having a longitudinal cross-section of substantially triangular outline for forming a planar surface with the portion of the copier housing the picture-taking assembly;

a longitudinal slide bar positioned above and extending the length of said longitudinal and said transverse portion;

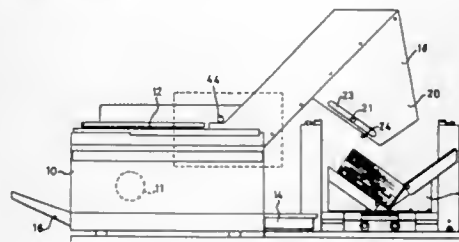
a transparent plate for bearing the document to be carried; and
 engagement means on one edge of said transparent plate for slideably engaging said slide bar, whereby the bottom of said transparent plate can engage the lower drive means of the copier and be driven thereby over the picture-taking assembly.

4,645,332
PHOTOCOPYING DEVICE
 Brian R. Malyon, Feltham, England, assignor to The British Library Board, London, England

Filed Aug. 15, 1985, Ser. No. 767,155
 Claims priority, application United Kingdom, Sep. 12, 1984, 8422997

Int. Cl.⁴ G03B 27/32, 27/52
 U.S. Cl. 355—25

4 Claims



1. A photocopying device for attachment to a photocopying

machine having a drum and a light path to permit copies to be made from a bound book, said device comprising:

a V-shaped book support for supporting a book in an open condition;

a scanning head with a light source for scanning a page of a book in the support;

means for mounting the scanning head on the photocopying machine;

means for focusing and directing light from the scanning head onto the drum of the photocopying machine, so that the focused light can reach the drum from the same direction as is taken by light in operation of the machine without the device;

a mirror arrangement which is movable between a first position in which it is interposed in the light path within the machine to direct the light from the light source to the drum, and a second position in which said mirror arrangement is removed from the light path to allow the machine to operate in its normal mode, without removing the device from said machine; and

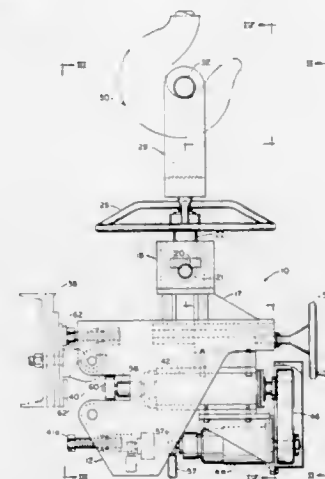
manually operable means connected to said mirror arrangement for manually moving said mirror arrangement between said first and second positions.

4,645,333
IMAGE FORMING APPARATUS
 Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 28, 1985, Ser. No. 738,251
 Claims priority, application Japan, Jun. 1, 1984, 59-112503
 Int. Cl.⁴ G03B 27/52

U.S. Cl. 355—30

9 Claims



1. An image forming apparatus having an image formation unit and a rack unit containing printed circuit boards for forming an image on a paper sheet, said image formation unit and said rack unit being disposed side by side, comprising:

a duct disposed in a groove at the bottom of the apparatus such that said rack unit communicates with a space located between said image formation unit and said rack unit; and

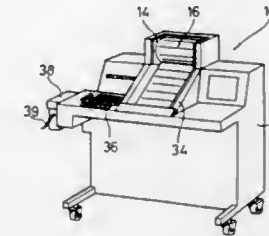
a fan unit, disposed in said duct, for supplying air for cooling said printed circuit boards, said fan unit having a cross-flow fan.

4,645,334
PRINTING AND TRIMMING APPARATUS
 Takeo Shimada, Tsutomu Kimura, and Ryoichi Hayashi, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 1, 1985, Ser. No. 782,249
 Claims priority, application Japan, Oct. 1, 1984, 59-205843
 Int. Cl.⁴ G03B 27/52

U.S. Cl. 355—40

4 Claims



1. A printing and trimming apparatus which enables the images of a negative film to be printed on photographic paper with a range of degrees of magnification, said apparatus comprising:

(a) trimming information memory means which stores an X-Y value signal for correcting the amount of offset of the center of a trimming designated image area on a negative film from the center of an image frame, a magnification signal which represents the appropriate degree of magnification relative to the size of the trimming designated image area, and an angle signal which represents an angle corresponding to the configuration of the trimming designated image area;

(b) means for reading out the trimming information from said memory means;

(c) variable-magnification optical means for changing the degree of magnification for printing;

(d) positional alignment means which moves the respective positions of an image frame and the photographic paper relative to each other in accordance with the X-Y value signal among said trimming information read out from said memory means so that the respective centers of the trimming designated image area and the photographic paper are aligned with the axis of the optical path of light for printing;

(e) optical means changing means which changes the degree of magnification for printing in accordance with the magnification signal among said trimming information read out from said memory means; and

(f) angle changing means which aligns the respective axes of the trimming designated image area and the photographic paper in accordance with the angle signal among said trimming information read out from said memory means.

4,645,335
FOCUS ADJUSTING MECHANISM IN EXPOSURE
OPTICAL APPARATUS
 Shun Kawata, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1985, Ser. No. 768,497
 Claims priority, application Japan, Aug. 28, 1984, 59-179019
 Int. Cl.⁴ G03B 27/52

U.S. Cl. 355—55

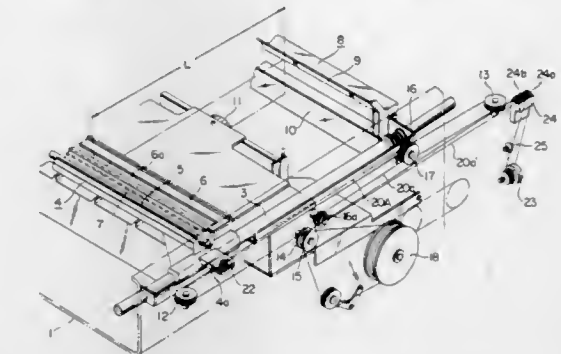
10 Claims

1. A device for adjusting a focusing condition of a scanning apparatus comprising:

a first table comprising an illuminating lamp for exposing an original and a first mirror,

a second table comprising a second mirror for reflecting a slit ray reflected by said first mirror to a predetermined position, said second table comprising at least one pulley, an adjusting screw rotatably mounted on a housing wherein said scanning apparatus is mounted, said adjusting screw

being exposed outside the housing, a wire member wound around a driving drum, a first portion of said wire member extending from said driving drum in a first direction and being fixed to said first table, said first portion being wound around said at least one pulley and around said adjusting screw, a second portion of said wire member



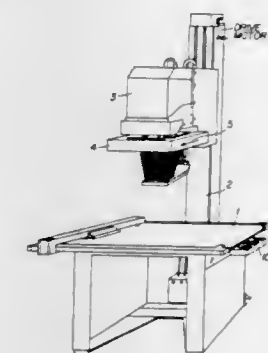
extending from said driving drum in a second direction and being wound around said at least one pulley and around said adjusting screw, locking means for selectively locking said wire member, whereby said second mirror is moved in absence of movement of said first mirror by rotating said adjusting screw after releasing said locking means.

4,645,336
METHOD AND APPARATUS FOR DETERMINING THE
TRIMMED IMAGES OF ORIGINALS FOR
REPRODUCTION ON PRINTING TECHNOLOGY
 Dieter Muehlenbruch, Stoltenberg, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany
 Continuation of Ser. No. 598,967, Apr. 11, 1984, abandoned.
 This application Jun. 11, 1986, Ser. No. 873,475
 Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314116

Int. Cl.⁴ G03B 27/52

U.S. Cl. 355—61

6 Claims



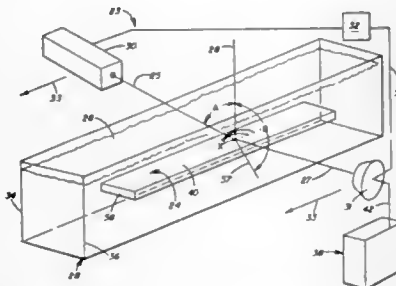
1. A method for producing reference markings on a mask in which an original is mounted so that it can be correctly positioned in an opto-electrical scanner comprising the steps of: mounting an original which is to be reproduced on a transparent or opaque substrate which forms the mask, placing said substrate and original on a holder of a projection table machine, angularly rotating said original and substrate to a desired position, marking a horizontal and a vertical line on said substrate which indicate the edges of material to be reproduced from said original, projecting a light beam through said original on to the table of said projection table machine and adjust-

ing the vertical position of said original and substrate so that the desired size of an image which is to be reproduced from said original is obtained, and removing said original and substrate from said holder so that it can be placed in said optoelectrical scanner.

4,645,337
SYSTEM FOR DETECTING VARIATIONS IN SURFACE COMPOSITION OF AN ARTICLE
 Robert J. Obenreder, Coraopolis, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
 Filed Oct. 31, 1984, Ser. No. 666,948
 Int. Cl.⁴ G01N 21/55

U.S. Cl. 356—128

6 Claims

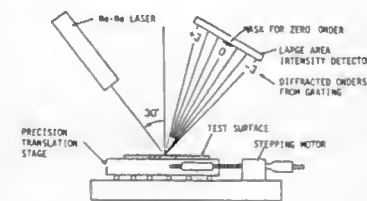


1. A method of detecting changes in the surface composition of an article wherein the surface of the article reflects light and the changes in the surface composition alters the index of refraction of the surface, comprising the steps of:
 contacting the surface of the article with a fluid medium having a refractive index substantially equal to bulk refractive index of the article;
 directing a beam of light through the medium onto the surface of an angle of incidence greater than zero to reflect a beam of light from the surface through the medium as a reflected beam of light; and
 monitoring intensity of the reflected beam of light to detect changes in the surface composition of the article.

4,645,338
OPTICAL SYSTEM FOR FOCUS CORRECTION FOR A LITHOGRAPHIC TOOL
 Anthony Juliana, Jr.; Milton R. Latta; Glenn V. Sincerbox, and Carlton G. Willson, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Apr. 26, 1985, Ser. No. 727,644
 Int. Cl.⁴ G01B 11/27

U.S. Cl. 356—150

6 Claims



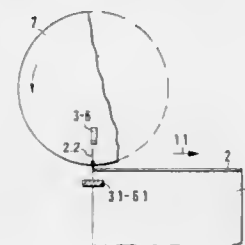
1. An optical system apparatus for focus correction for a lithographic tool, said apparatus comprising:
 (1) means for illuminating a periodic surface relief structure containing focus information which is on an object created in said lithographic tool, so that diffraction beams are generated,
 (2) means for translating the object orthogonally to the

periodic structure, to cause a change in the intensity of the diffracted beams,
 (3) means for detecting the intensity of said diffracted beams, and
 (4) means for determining the focus correction based upon the changes in the intensity of the diffracted beams.

4,645,339
APPARATUS FOR TESTING THE BASE-FOLDING OF BASES FORMED ON TUBE SECTIONS
 Richard Feldkämper, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
 Continuation-in-part of Ser. No. 208,634, Nov. 20, 1980, abandoned, which is a continuation of Ser. No. 9,174, Feb. 2, 1979, abandoned. This application Jul. 15, 1983, Ser. No. 513,959
 Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805212
 Int. Cl.⁴ B65H 43/08

U.S. Cl. 356—237

4 Claims



1. Apparatus for testing the base folding of bases formed on tube sections in the manufacture of sacks or bags, said apparatus comprising:
 transporting means for conveying the tube sections,
 photocells scanning the base folding for detecting inaccuracies in leading and trailing folded edges of the bases which are aligned perpendicular to the flattened tube sections, said photocells being directed perpendicular to the bases and being exposed to a light source projected from one side of the bases, and
 an arcuately curved template provided which rotates about its centre line of curvature at a circumferential speed corresponding to the transporting speed of the bases, said template covering the gaps between the successively conveyed bases, and the ends of said template overlap the base edges to be tested by an amount corresponding to a desired testing accuracy, a rotary axis of the template being at right-angles to the direction of a test light beam so that the photocells remain dark when the base is correctly formed.

4,645,340
OPTICALLY REFLECTIVE SPHERE FOR EFFICIENT COLLECTION OF RAMAN SCATTERED LIGHT
 Daniel J. Graham, Watertown, Mass., and Richard A. Mushlin, Ridgefield, Conn., assignors to Boston University, Boston, Mass.

Filed Jun. 1, 1983, Ser. No. 499,804

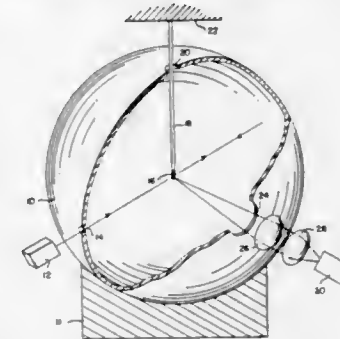
Int. Cl.⁴ G01J 3/44

U.S. Cl. 356—301

11 Claims

1. A device for Raman scattered light collection and analysis characterized by:
 a. an internally optically reflective sphere having an illuminating aperture and a detection aperture therein;
 b. means for placing a material sample entirely in the center of the sphere;
 c. means for illuminating the material sample through the illuminating aperture such that light is redirected through the sample with reflection from the sphere; and

d. detecting means for detecting Raman scattered light which is directed radially outward from the sample

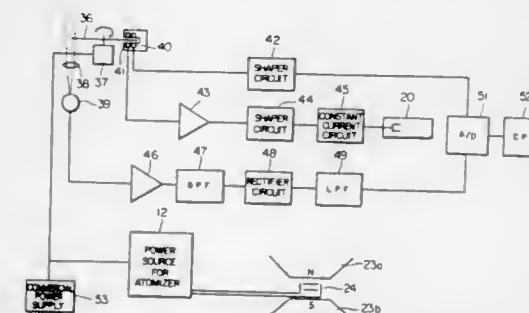


through the detection aperture toward the detecting means.

4,645,341
DOUBLE POLARIZED LIGHT BEAM SPECTROPHOTOMETER OF LIGHT SOURCE MODULATION TYPE
 Masataka Koga, Katsuta; Masatoshi Kitagawa, and Konosuke Oishi, both of Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Apr. 27, 1984, Ser. No. 604,939
 Claims priority, application Japan, Apr. 28, 1983, 58-73923
 Int. Cl.⁴ G01J 3/42; G01N 21/74

U.S. Cl. 356—307

16 Claims



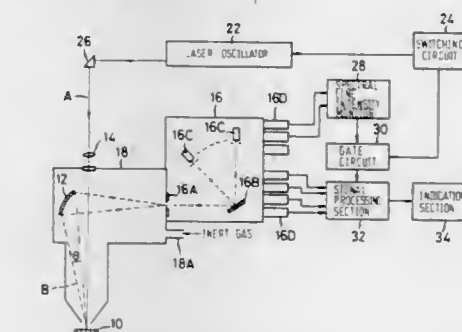
1. A double polarized light beam spectrophotometer system of a light-source modulation type operated from a power supply source, comprising:
 means for modulating light emitted by a light source;
 atomizing means positioned to receive said modulated light for generating an atom vapor of a specimen and for causing said modulated light to undergo atomic absorption of polarized light components of the modulated light as it passes through the atom vapor;
 optical means for selecting a wavelength of the light which has undergone atomic absorption in said atomizing means and for spatially separating the light of the selected wavelength into a pair of linearly polarized light beams;
 extracting means for alternately extracting said pair of the linearly polarized light beams separated by said optical means;
 photoelectric conversion means for receiving said pair of the linearly polarized light beams alternately extracted by said extracting means;
 signal means for providing signals at the modulation frequency corresponding to said pair of the linearly polarized light beams detected by said photoelectric conversion means;
 means for determining the light absorption of said specimen on the basis of the signals from said signal means; and
 synchronizing means for generating at least one synchro-

nous signal in phase synchronism with the alternate extracting operation of said extracting means, said light modulating means including means for modulating the light on the basis of said synchronous signal and said signal means including means for applying said signals to said determining means on the basis of said synchronous signal.

4,645,342
METHOD OF LASER EMISSION SPECTROSCOPIC ANALYSIS OF STEEL AND APPARATUS THEREFOR
 Wataru Tanimoto, and Kouzou Tsunoyama, both of Chiba, Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan
 Filed Dec. 18, 1984, Ser. No. 682,897
 Claims priority, application Japan, Oct. 5, 1984, 59-209096
 Int. Cl.⁴ G01N 21/63

U.S. Cl. 356—318

7 Claims



7. An apparatus for laser emission spectroscopic analysis of steel, wherein a light emitted when a laser beam irradiates the surface of the steel is spectrally separated and elements contained in the steel are quantitatively analyzed, comprising:
 laser oscillating means assembled thereto with a mode lock mechanism, for emitting an infrared pulse laser beam having an energy density of 2.0×10^9 W/mm² or more on the surface of a sample to turn a part of said sample to plasma;
 a focusing mirror for focusing a light emitted from the surface of the sample at a focusing solid angle of 16 degrees or more;
 a casing and means for introducing inert gas through an inert gas introducing port in said casing at a flow rate of at least 50 l/min for holding a path of said light emitted from the sample under an atmosphere of the inert gas in said casing;
 spectroscopic means wherein said light emitted from the sample whose image is formed at an inlet slit of the spectroscopic means by said focusing mirror is spectrally separated into spectral lines by a diffraction means;
 detecting means including a group of photoelectric signal transducing elements wherein preset spectral lines of target elements are converted into electric signals;
 a spectrum intensity monitor for monitoring an intensity of a preset spectral line or an intensity ratio between a pair of preset spectral lines;
 gate means to be opened during a period from 1.5 microsecond after the start of the irradiation by the laser beam up to 16 microseconds and when the intensity of the preset spectral line or the intensity ratio between the pair of preset spectral lines is within the preset range, so that an output from said spectroscopic means can be adopted in the analysis; and
 signal processing means for obtaining an analyzed value in response to a signal inputted from said spectroscopic means when said gate means is opened.

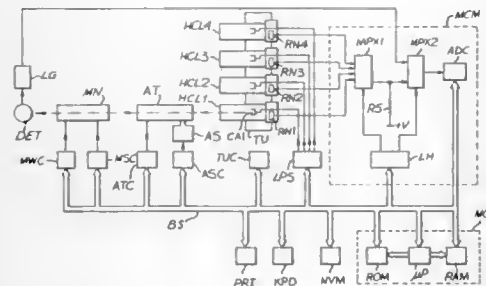
4,645,343 ATOMIC RESONANCE LINE SOURCE LAMPS AND SPECTROPHOTOMETERS FOR USE WITH SUCH LAMPS

Trevor J. Stockdale, and Peter Morley, both of Cambridge, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 436,205, Oct. 25, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 617,069. Claims priority, application United Kingdom, Nov. 11, 1981, 8133968; Jun. 6, 1983, 8315472; Jun. 6, 1983, 8315473; Jun. 6, 1983, 8315474

Int. Cl.⁴ G01J 3/42
U.S. Cl. 356—326

40 Claims



1. An atomic absorption spectrophotometer source lamp assembly comprising

lamp means for producing resonance line radiation characteristic of at least one atomic element, encoding means for representing at least said radiation, and connecting circuit means for connecting said encoding means to a circuit enabling identification of said at least one atomic element.

21. An atomic absorption spectrophotometer comprising source lamp assembly means for producing radiation characteristic of at least one atomic element, said source lamp assembly means including lamp means for producing resonance line radiation characteristic of said atomic element, encoding means for representing at least said radiation, and connecting circuit means for connecting said encoding means to a circuit enabling identification of said at least one atomic element,

measurement circuit means for identifying said atomic element, said measurement circuit means being connected to said encoding means through said connecting circuit means,

atomizer means for atomizing samples to be analyzed by said radiation,

monochromator circuit means for providing measurement wavelengths of said samples, said monochromator circuit means including a monochromator receiving radiation passed by said atomizer means,

detector means for detecting said measurement wavelengths, said detector means being connected to said measurement circuit means

microcomputer circuit means connected to elements of the spectrophotometer for controlling said spectrophotometer, said microcomputer means including microprocessor means for identifying said atomic element and for applying information to said monochromator circuit means, and

read-only memory circuit means for holding wavelength information associated with said atomic element, said wavelength information being applied to said monochromator circuit means by said microprocessor means.

4,645,344 OPTICAL DEVICE FOR AN EMISSION SPECTROMETER

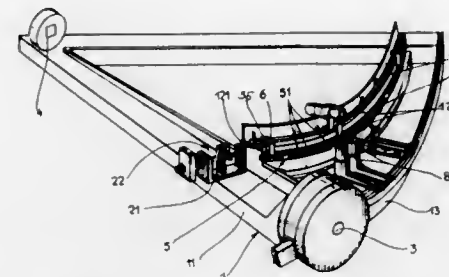
Alain Thevenon, Bretigny, France, assignor to Instruments, S.A., France

Continuation of Ser. No. 452,477, Dec. 23, 1982, abandoned. This application Jul. 26, 1985, Ser. No. 759,927

Claims priority, application France, Jan. 5, 1982, 82 00062 Int. Cl.⁴ G01J 3/04, 3/20

U.S. Cl. 356—328

5 Claims



1. An optical device having a Paschen-Runge arrangement for an emission spectrometer, comprising a frame, an inlet slit mounted on said frame to be illuminated by a bundle of polychromatic light, a concave diffraction grating mounted on said frame for diffracting a bundle of polychromatic light coming from said inlet slit and producing a number of monochromatic bundles at outlet points, outlet slit means for selecting said monochromatic bundles at said points, said outlet slit means being supported by cylindrical support bearings and two bar means, securing means holding said bar means in position, a flexible two part metal ribbon which defines said outlet slits at said points, said ribbon comprising two ribbon parts each connected, at one end thereof, to its respective bar means, said ribbon parts being connected, at their other ends, to each other by a tightening connection means, said inlet and outlet slits being located on the Rowland circle which is tangential to the diffraction grating.

4,645,345 ROTATION RATE MEASURING INSTRUMENT HAVING REDUCED REFLECTION INTERFERENCE

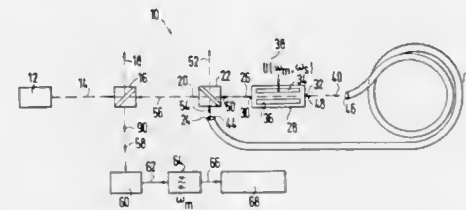
Günter Domann, Stuttgart, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1985, Ser. No. 734,007
Claims priority, application Fed. Rep. of Germany, May 17, 1984, 3418288

Int. Cl.⁴ G01B 9/02

U.S. Cl. 356—350

9 Claims



1. A rotation rate measuring instrument comprising, in combination:

a light source for providing an incident beam;
a plurality of beam splitters receiving said incident beam for providing a deviated beam and a transmitted beam;
a phase modulator in optical communication with said plurality of beam splitters, said phase modulator for receiving and modulating said transmitted beam at a combination of angular frequencies including ω_m and ω_s ;

an optical waveguide having a first end and a second end, said first end for receiving said deviated beam and said second end for receiving said modulated transmitted beam, said deviated beam transiting said optical waveguide and being modulated at a combination of angular frequencies including ω_m and ω_s , said modulated transmitted beam and said modulated deviated beam forming a composite beam, said phase modulator including a boundary at said first end and at said second end wherein a portion of said transmitted beam and a portion of said deviated beam are reflected and modulated at a combination of angular frequencies including ω_m and ω_s with said reflected beam component ω_m being set equal to zero;
a transducing means optically connected to said plurality of beam splitters for transforming said composite beam and said reflected beams to an electrical signal;
a filtering means electrically connected to said transducing means for blocking angular frequencies exclusive of ω_m ; and
an evaluating means electrically connected to said filtering means for determining a rotation rate wherein said reflected beams are blocked for reducing interference with said evaluating means.

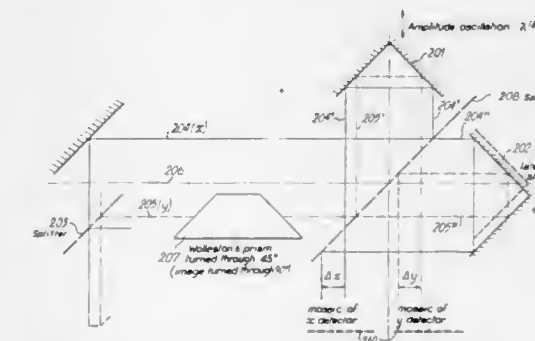
4,645,346 DEVICE FOR ANALYZING AND CORRECTING WAVEFRONT SURFACES IN REAL TIME

Jean-Claude Fontanella, Chatillon, France, assignor to Office National d'Etudes et de Recherche Aerospatiale, Chatillon, France

Filed May 8, 1985, Ser. No. 731,896
Claims priority, application France, May 11, 1984, 84 07370
Int. Cl.⁴ G01B 9/02

U.S. Cl. 356—353

5 Claims



1. Apparatus for the real-time detection and correction of phase distortions in a wavefront being imaged by an optical system, comprising:

(a) means responsive to the phase differences between different areas of said distorted wavefront for simultaneously generating in real time phase correction signals indicative of phase corrections for different areas of said distorted wavefront to achieve a corrected wavefront;
(b) phase corrector means arranged with said distorted wavefront incident thereon and being responsive to said phase correction signals for changing in real time phase differences between different areas of said distorted wavefront and for changing the shape of said distorted wavefront to achieve said corrected wavefront; and
(c) lateral shearing interferometer means arranged with said distorted wavefront incident thereon for determining relative phase differences between different areas of said distorted wavefront, and for generating signals indicative of said phase differences, said lateral shearing interferometer means including at least two reflecting dihedrons each having an aperture angle of 90°, said dihedrons having bisecting lines which cross at the center of the interferom-

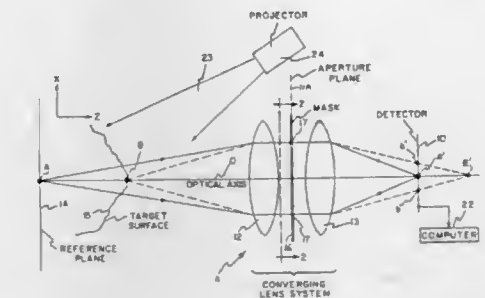
eter means for shifting one of the dihedrons through a predetermined distance parallel to the bisecting plane of the other dihedron, and means for vibrating said other dihedron parallel with its own bisecting plane.

4,645,347 THREE DIMENSIONAL IMAGING DEVICE

Marc Rioux, Ottawa, Canada, assignor to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada
Filed Apr. 30, 1985, Ser. No. 729,137
Int. Cl.⁴ G01B 11/24

U.S. Cl. 356—376

15 Claims



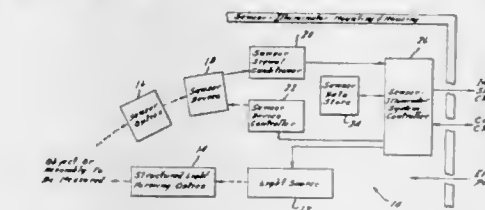
1. In an imaging device having a converging lens system defining an optical axis and a position sensitive light detector having a series of pixels extending in at least one direction X perpendicular to said axis, said lens system serving to simultaneously image a plurality of distributed points on a target surface onto the detector to generate first data on the coordinate of each said point in said X direction; a mask having at least two apertures spaced apart from each other in said X direction for forming on the detector discretized images of each said point to generate, by means of the spacing between said images, second data on the coordinate of each said point in the direction Z of said optical axis; and means for scanning said pixels to extract said first and second data for all said points.

4,645,348 SENSOR-ILLUMINATION SYSTEM FOR USE IN THREE-DIMENSIONAL MEASUREMENT OF OBJECTS AND ASSEMBLIES OF OBJECTS

Robert Dewar, Troy; Jeremy Salinger, Southfield; Thomas J. Waldecker, Ypsilanti, and Neil E. Barlow, Royal Oak, all of Mich., assignors to Perceptron, Inc., Farmington Hills, Mich.
Filed Sep. 1, 1983, Ser. No. 528,726
Int. Cl.⁴ G01B 11/24

U.S. Cl. 356—376

3 Claims

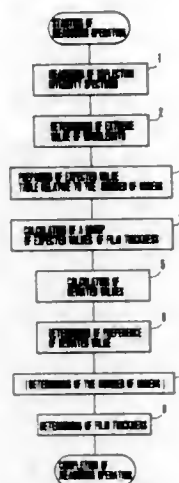


1. A triangulation-type sensor-illuminator assembly for generating image data usable by a machine vision computer to determine three-dimensional measurements of an object comprising:

a housing adapted for mounting to a test fixture supporting the object to be examined;
light source means fixedly mounted at a precise location and orientation within said housing for projecting onto said object a predetermined structured light pattern;

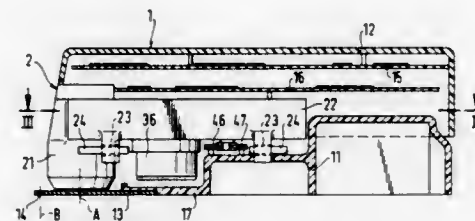
optical array sensor means for receiving the reflected light image off said object and producing electrical signals whose values are approximately proportional to the intensity of the light impinging upon said sensor means at each resolvable point in its array, said optical sensor means being fixedly mounted within said housing at a precise location and orientation relative to said light source means so that said sensor means obtains a perspective view of the image of said structured light pattern on said object; and control circuit means located within said housing and connected to said light source means and said optical sensor means and having stored therein for subsequent transfer to a machine vision computer to which said assembly may be connected, calibration data for said assembly comprising a list identifying with respect to each resolvable point in said sensor array the location in three-dimensional space relative to a reference point associated with said housing, the point at which said object must be located for such resolvable point to be illuminated by the reflected image of said structured light pattern.

4,645,349
METHOD OF MEASURING FILM THICKNESS
 Hidetoshi Tabata, Kawasaki, Japan, assignor to O R C Manufacturing Co., Ltd., Chofu, Japan
 Filed May 10, 1985, Ser. No. 732,709
 Claims priority, application Japan, Sep. 21, 1984, 59-198149
 Int. Cl.⁴ G01B 11/06
 U.S. Cl. 356—382 4 Claims



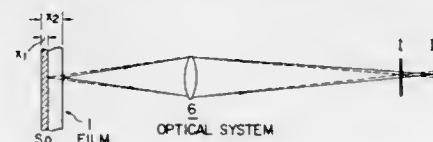
1. A method of measuring film thickness of the film layer on a certain material of which film thickness is to be measured by utilizing reflection interference, comprising the steps of: measuring a reflection intensity spectrum, determining extreme values of wavelength for said reflection intensity spectrum, preparing an expected value table of the reflection interference orders associated with said extreme values of wavelength, calculating a group of expected values of film thickness with reference to said expected value table, calculating deviated values among the values of film thickness in association with the group of expected values, determining the expected orders which minimize absolute values corresponding to said deviated values so as to determine true interference orders; and determining a required film thickness with reference to the thus determined interference orders.

4,645,350
DENSITOMETER
 Markus Weldmann, Niederglatt; Hans Ott, Regensdorf, and Wilhelm H. Koch, Otelfingen, all of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland
 Filed Aug. 8, 1985, Ser. No. 763,700
 Claims priority, application Switzerland, Aug. 8, 1984, 3802/84
 Int. Cl.⁴ G01J 3/51; G01N 21/47
 U.S. Cl. 356—418 8 Claims



1. A densitometer, comprising:
 a housing having a flat support surface and adapted to rest on a flat measuring surface;
 a measuring carriage movably mounted in said housing;
 a measuring head mounted on said carriage and movable therewith;
 a drive motor mounted on said carriage and movable therewith;
 means connected to said drive motor for moving said carriage so that said measuring head moves to and from a rest position to a working position, said means disposed so that said measuring head remains essentially motionless in the working position with the drive motor running; and
 a measuring diaphragm connected to said housing for positioning said housing on said measuring surface, said measuring diaphragm being visible to a user in the rest position of said measuring head, but being covered by said carriage in the working position of said measuring head.

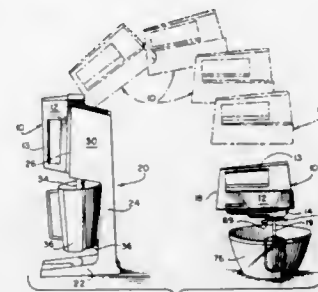
4,645,351
METHODS AND APPARATUS FOR DISCRIMINATING BETWEEN THE FRONT AND BACK SURFACES OF FILMS
 Yasuhiro Seto, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed May 23, 1984, Ser. No. 613,342
 Claims priority, application Japan, Jun. 1, 1983, 58-97577; Jun. 20, 1983, 58-110647; Jun. 30, 1983, 58-119827
 Int. Cl.⁴ G01N 21/00
 U.S. Cl. 356—443 6 Claims



1. An apparatus for discriminating between a front surface and a back surface of a developed film comprising:
 an optical system for focusing a picture pattern on the film disposed at a reference position of said optical system;
 a first sensor located at a focused position of the picture pattern of the film when said front surface of the film is at said reference position;
 a second sensor located at a focused position of the picture pattern of the film when said back surface of the film is at said reference position;
 first and second band-pass filters operatively connected to said first and second sensors for respectively extracting

outputs therefrom within predetermined frequency ranges;
 first and second rectifiers operatively connected to said first and second band-pass filters for respectively rectifying outputs therefrom;
 first and second integrators operatively connected to said first and second rectifiers for respectively integrating outputs therefrom; and
 a comparator operatively connected to said first and second integrators for comparing outputs therefrom, wherein an output of said comparator is a first value when said front surface of said film is at said reference position and is a second different value when said back surface of said film is at said reference position.

4,645,352
CONVERSION UNIT FOR A PORTABLE HAND-HELD APPLIANCE AND CONVERTIBLE MIXER COMBINATION UTILIZING SAME
 Bruno M. Valbona, Farmington; Bruno Satknnas, North Canton, and Stanley J. Brym, Torrington, all of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.
 Filed Sep. 11, 1985, Ser. No. 774,951
 Int. Cl.⁴ B01F 13/00
 U.S. Cl. 366—349 12 Claims

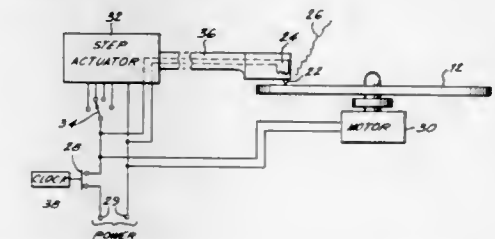


1. A conversion unit for converting a portable hand-held appliance of the type having a power unit with a housing enclosing a motor which is drivingly coupled to a power take-off means to a stationary drink mixer, said conversion unit comprising:
 a. a base with an upright standard extending upward from said base;
 b. power unit receiving means on the uppermost end of said standard for detachably and fixedly holding the appliance power unit;
 c. elongated stirring means for mixing substantially liquid compositions rotatably journaled to said power unit receiving means to extend toward said base; and
 d. coupling means connected to said stirring means and extending into said power unit receiving means for matingly engaging the appliance power unit power take-off means upon reception of the power unit within the power unit receiving means to provide a driving connection between said power unit and said stirring means.

4,645,353
SCENT CLOCK ALARM DEVICE
 James P. Kavoussi, 1401 - 80th St., Brooklyn, N.Y. 11228, and Louise D. Hartford, 391 Durant Ave., Staten Island, N.Y. 10308
 Filed Apr. 8, 1985, Ser. No. 720,528
 Int. Cl.⁴ G04B 47/00, 23/02
 U.S. Cl. 368—12 6 Claims

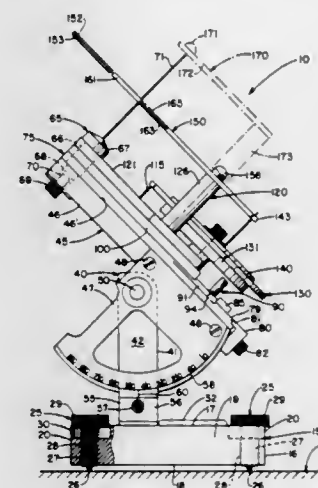
1. A scent clock alarm device, comprising in combination:
 (a) a fragrance containing medium which is a disc upon whose surface is impregnated at least one band of fragrant substance which is released upon the application of heat

whereby a different fragrance is obtained for each band to which said heat is applied;
 (b) means for converting said medium into an air-borne volatile substance; and,



(c) means for interfacing with a clock such that said conversion of said medium into an air-borne volatile substance commences at a predetermined time.

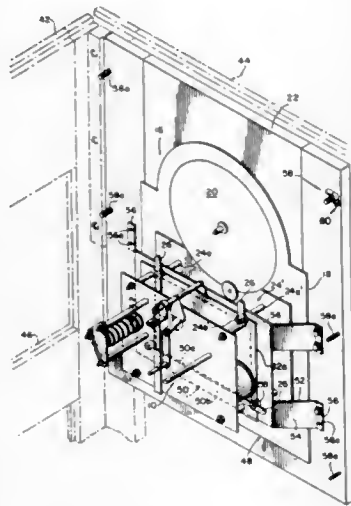
4,645,354
UNIVERSAL HELIOCHRONOMETER
 James R. Mercer, Akron, Ohio, assignor to J. R. Mercer P.E. Company, Akron, Ohio
 Filed Feb. 26, 1986, Ser. No. 833,536
 Int. Cl.⁴ G04B 19/26; G01C 17/34
 U.S. Cl. 368—15 24 Claims



1. A heliochronometer for providing accurate clock time readouts at any known latitude and longitude location on the earth comprising, base means to effect precision orientation and level mounting and having upstanding post means, latitude plate means adjustably angularly positionable relative to said post means for selecting a particular latitude, gnomon means extending upwardly from said latitude plate means, longitude plate means adjustably pivotally mounted about said gnomon means for effecting a longitude correction, time dial support means pivotally mounted about said gnomon means and having an arcuate time dial on which the shadow of said gnomon means is projected, and means interconnecting said longitude plate means and said time dial support means for adjusting the angular position of said time dial for daylight savings time and the equation of time.

4,645,355
MOUNTING SYSTEM FOR CLOCK MECHANISM
 Michael R. Peters, Germantown, Tenn., assignor to Pearl Enterprises, Inc., Memphis, Tenn.
 Filed Jul. 19, 1985, Ser. No. 756,720
 Int. Cl.⁴ G04B 37/00, 29/00
 U.S. Cl. 368—88

20 Claims



I. A system for mounting and supporting the working components and the dial mechanism of a clock as a self-contained assembly, comprising:

- a shaped mounting bracket having a substantially planar central portion and integrally-formed end portions angularly offset relative to said central portion;
- a clock movement adapted to be removably mounted on one side of said central portion of the mounting bracket, said movement having the working components of the clock assembled as a unit and including means for releasably attaching the unit to the bracket;
- a dial mechanism adapted to be mounted on the other side of the mounting bracket central portion, opposite from and in operative alignment with the clock movement;
- means attached to the dial mechanism and coaxing with the releasable attaching means of the clock movement for removably supporting the dial mechanism on the mounting bracket; and
- a platform on which the mounting bracket is attached by said end portions, with the movement and the dial mechanism supported on opposite sides of the bracket and detachable therefrom.

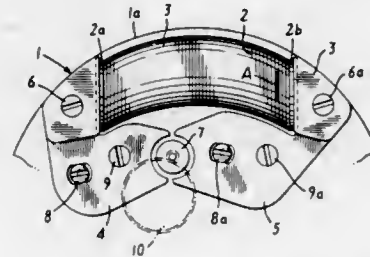
4,645,356
WRISTWATCH
 Eiichi Matsuura, Chiba, and Nobuo Tsukada, Tokyo, both of Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
 Continuation of Ser. No. 633,064, Jun. 20, 1984, abandoned, which is a continuation of Ser. No. 572,593, Jan. 19, 1984, abandoned, which is a continuation of Ser. No. 315,466, Oct. 27, 1981, abandoned, which is a continuation of Ser. No. 128,288, Mar. 7, 1980, abandoned, which is a continuation of Ser. No. 756,989, Jan. 5, 1977, abandoned, which is a continuation of Ser. No. 566,348, Apr. 9, 1975, Pat. No. 4,012,899. This application Aug. 8, 1985, Ser. No. 763,879
 Claims priority, application Japan, Apr. 23, 1974, 49-45789; Apr. 29, 1974, 49-40344

Int. Cl.⁴ G04F 5/00; H02K 7/00
 U.S. Cl. 368—160

8 Claims

1. In a wristwatch: a watch movement having an outwardly curved frame portion; and a micro motor mounted on said watch movement and configured in relation thereto to obtain

efficient space utilization of the space within the watch, said micro motor comprising a one-piece curved magnetic core mounted on the watch movement frame portion at the periphery thereof and being curved outwardly along substantially its entire length, the curved magnetic core having an outward side the curvature of which conforms to and extends along the outwardly curved frame portion to effectively eliminate wasted space which would otherwise exist between the core and watch movement if the core were straight rather than curved, and an inward side the curvature of which is the same as that of the outward side, a coil winding wound on said curved magnetic core along substantially the entire length thereof, a stator comprised of two stator pieces each connected



at one end to a respective end portion of said curved magnetic core to define therewith a magnetic flux path and having their other ends spaced apart and configured so as to form a rotor opening therebetween, each stator piece comprising a one-piece structure having a connecting portion connected to one of the end portions of the curved magnetic core, and a projecting portion projecting into the concavity defined by the curved inward side of the curved magnetic core and extending toward the projecting portion of the other stator piece, each projecting portion having a curved side edge portion the curvature of which conforms to and extends at least partly along the curved inward side of the curved magnetic core, and a rotor rotatably disposed in said rotor opening.

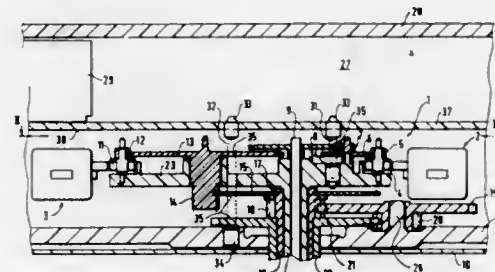
4,645,357
ELECTROPTICAL DETECTOR FOR DETERMINING THE POSITION OF THE TIME DISPLAY MECHANISM OF A TIMEPIECE

Jürgen Allgaier, Lauterbach; Wolfgang Ganter, and Hans Flaig, both of Schramberg, all of Fed. Rep. of Germany, assignors to Junghans Uhren GmbH, Schramberg, Fed. Rep. of Germany
 Filed Oct. 18, 1985, Ser. No. 789,157

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1984, 8432847[U]; Mar. 26, 1985, 3510861
 Int. Cl.⁴ G04C 9/00

U.S. Cl. 368—187

13 Claims



1. In a timepiece of the type comprising time display means, a gearworks including rotary wheel means for driving said display means, drive means for actuating said gearworks, and an optoelectrical detection means for detecting the time of day being displayed, the improvement wherein said optoelectrical detection means comprises beam directing means for directing

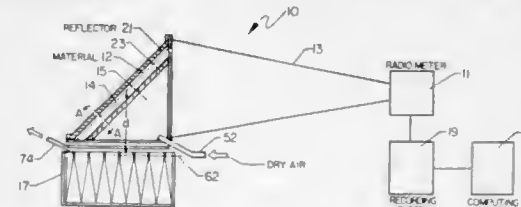
at least one beam of radiation toward said wheel means, and sensor means positioned for receiving said at least one beam, said wheel means comprising a plurality of wheels disposed inbetween said beam directing means and said sensor means for intersecting said at least one beam ahead of said sensor means in order to normally block said at least one beam from said sensor means, said plurality of wheel each including an orifice arranged to be periodically aligned with said at least one beam to permit the latter to be received by said sensor means at a predetermined rotational position of said plurality of wheels to provide an indication of the time being displayed, said plurality of wheels being driven incrementally, the diameter of the orifice in the most rapidly rotating one of such plurality of wheels being no larger than the distance which such orifice is rotated during each rotational increment, said plurality of wheels intersecting said beam such that said orifices in said plurality of wheels must be aligned simultaneously with such beam to actuate said sensor means.

4,645,358
MEASUREMENT APPARATUS AND PROCEDURE FOR THE DETERMINATION OF SURFACE EMISSIVITIES
 Hans-Juergen C. Blume, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Dec. 3, 1985, Ser. No. 804,040
 Int. Cl.⁴ G01J 5/00; G01N 25/00

U.S. Cl. 374—9

18 Claims



1. A method of determining the electromagnetic surface emissivity of a radiating material, independently of any other surface losses and in accordance with theoretical data derived for an ideal system free from all uncorrelated radiation, comprises the steps of:

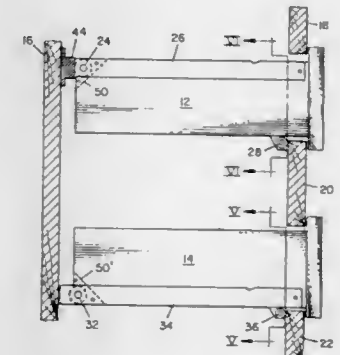
- providing a connected system that is closed with respect to all uncorrelated radiation sources outside the system and capable of stabilizing uncorrelated radiation within the system;
- isolating said radiating material under test in a preselected chamber in a test section maintained within the system;
- maintaining said material and the system in a humid-free state;
- isothermally stabilizing the material in the system;
- heating the material from a first point in time to a second point in time;
- measuring the physical temperature of the heated material at said first and second points in time;
- measuring the radiation energy emitted by the heated material in terms of brightness temperature at said first and second points in time and using the difference in radiation energy in terms of brightness temperature between said first and second points in time divided by the difference in the physical temperature of the heated material between said first and said second points in time as being indicative of the electromagnetic surface emissivity of the heated material.

4,645,359
SIMPLIFIED UNIVERSAL DRAWER GUIDING SYSTEM
 Gary W. Nelson, 22933 Hatteras St., Woodland Hills, Calif. 91367

Continuation-in-part of Ser. No. 642,420, Aug. 20, 1984, Pat. No. 4,580,851. This application Mar. 24, 1986, Ser. No. 843,197. The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.⁴ A47B 88/04; F16C 29/04
 U.S. Cl. 384—19

13 Claims



1. A simplified, universal drawer guide system in combination with a drawer and a cabinet comprising:

- a pair of rollers of relatively small vertical extents means for mounting said rollers near the front face of and within the cabinet to engage and support the lower edges of the drawer sides as the drawer is opened and closed;
- a pair of metal tracks, one mounted rigidly to the cabinet on each side of the drawer and extending for the length of the drawer;
- third and fourth rollers freely projecting at left and right side corner portions of said drawer at the rear thereof for engagement by and into the respective associated tracks; and
- left and right brackets having plates carrying the respective third and fourth rollers in cantilevered and sidewardly offset relation to the plates and to the drawer sides, the plates flatly engaging the drawer left and right side corner portions, each bracket including holding structure attached to the plate and engaging rear extent of the drawer and attached thereto, each of the third and fourth rollers freely and openly projecting sidewardly from its corresponding plate and outwardly from the drawer side;
- said mounting means including a pair of fixed identical brackets secured directly to said tracks for mounting the small rollers onto said tracks in directly supporting relation with the drawer under its right and under its left-hand sides just inside the front of the cabinet, each of said small rollers being substantially sidewardly offset from a downward continuation of the space between the drawer and cabinet;
- each of said left and right brackets including said holding structure being entirely confined at rearwardmost extent of the drawer.

4,645,360

PLAIN BEARINGS AND A METHOD FOR MANUFACTURING PLAIN BEARINGS

Barry J. Eastwood, Aylesbury, and David R. Eastham, Hemel Hempstead, both of England, assignors to AEPLC, Rugby, England

Filed Dec. 18, 1985, Ser. No. 810,419

Claims priority, application United Kingdom, Dec. 18, 1984, 59-31871

Int. Cl.⁴ F16C 17/00; B21D 53/10

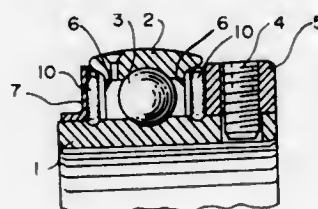
U.S. Cl. 384—129

14 Claims

1. A plain bearing comprising a metal backing, an aluminium based bearing alloy layer and a sacrificial overlay of pure tin applied directly to said bearing layer without a nickel interlayer, said bearing alloy comprising from 1 to 11% silicon by weight, from 8 to 35% tin by weight and from 0.2 to 3% copper by weight the balance being aluminium, said tin overlay being from 1 to 30 μ m in thickness.

13. A method of forming a plain bearing comprising a metal backing, a bearing alloy layer comprising, by weight, 1 to 11% silicon, 8 to 35% tin, 0.2 to 3% copper, the balance being aluminium, and pure tin sacrificial overlay; said method comprising the steps of providing a metal backing, bonding thereto said bearing alloy layer, and applying directly to said bearing alloy layer said tin overlay to a thickness of 1 to 30 μ m.

peripheral edges, the space for the balls between the inner and outer bearing rings being protected by sealing means mounted in said space inwardly of said side face of the outer ring against entrance of water and dirt, the improvement wherein said bearing comprises a first rigid substantially plane washer of considerable thickness secured to the outwardly projecting



end portion of said inner sleeve-shaped bearing ring, the outer periphery of said washer extending radially past said inner edge of said outer bearing ring, said washer overlying and adjoining at least a portion of the side face of said outer bearing ring, and a second protection means located inwardly of and adjacent said first washer within the space between said bearing rings.

4,645,363

PIVOTALLY MOUNTED GUIDE MEANS IN ENDLESS RIBBON CASSETTES

Lelf H. Andersson, Åtvidaberg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE84/00079, § 371 Date Oct. 10, 1984, § 102(e)

Date Oct. 10, 1984, PCT Pub. No. WO84/03475, PCT Pub.

Date Sep. 13, 1984

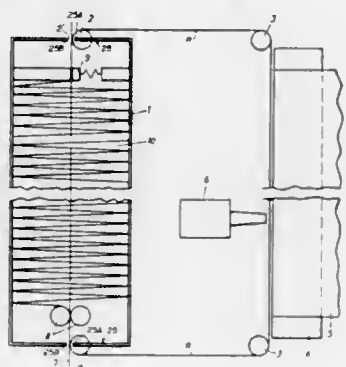
PCT Filed Mar. 6, 1984, Ser. No. 659,309

Claims priority, application Sweden, Mar. 7, 1983, 8301232

Int. Cl.⁴ B41J 35/02

U.S. Cl. 400—196.1

6 Claims



1. Pivotaly mounted guide means for an endless ribbon cassette having a ribbon magazine with opposite cover plates and an end wall between the cover plates, said guide means being pivotally mounted between the cover plates in a space in the end wall, said guide means comprising a substantially cylindrical guide body having a longitudinal axis and a longitudinal slot therein for receiving an edge portion of the end wall which bounds the space therein, said body having an outer cylindrical surface on which the ribbon passes during ribbon travel, said body having a surface at the bottom of the slot with a portion in pivotal contact with said edge portion of the end wall and wherein one of said portions includes two sloped surfaces which intersect along a line midway between end surfaces of the cylindrical body, said line of intersection of said two sloped surfaces constituting a pivot axis for said body on said edge portion of said end wall, said end surfaces of said body being confined between the cover plates for limiting longitudinal

4,645,362

BRUSH-TYPE SEALS

Sven E. V. Orte, Gothenburg, Sweden, assignor to SKF Industrial Trading and Development Co. B.V., Netherlands

Continuation of Ser. No. 341,506, Mar. 15, 1973, abandoned.

This application Dec. 17, 1974, Ser. No. 533,670

Claims priority, application Sweden, Mar. 17, 1972, 3430/72

Int. Cl.⁴ F16C 1/24

U.S. Cl. 384—485

23 Claims

1. In a ball bearing assembly of the type including an inner bearing ring and an outer bearing ring supporting a plurality of balls therebetween, said inner bearing ring being in the form of a sleeve which projects axially outwardly of a side face of the outer bearing ring, said face being defined by inner and outer

4,645,365

PAPER FEED CONTROL IN A PRINTER

Hiroji Iwai, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

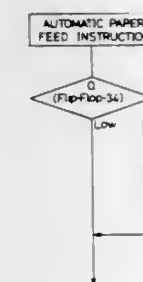
Filed Jan. 22, 1985, Ser. No. 693,458

Claims priority, application Japan, Jan. 25, 1984, 59-14154

Int. Cl.⁴ B41J 11/42, 23/32

U.S. Cl. 400—568

3 Claims



1. A paper feed control system in a printer which includes a platen, a paper feed drive motor and a transmission gear mechanism disposed between said paper feed drive motor and said platen for conducting automatic paper feed, wherein a manual paper feed can be conducted when said platen is manually rotated, said paper feed control system comprising:

manual paper feed detection means for detecting whether a manual paper feed operation is conducted;

temporary storage means for temporarily storing a detection output of said manual paper feed detection means;

determination means for determining the condition of said temporary storage means when an automatic paper feed instruction is developed; and

compensating drive means for rotating said platen in the reverse direction by a predetermined amount and, then, rotating said platen in the forward direction by said predetermined amount if said determination means determines that said manual paper feed detection means has detected a manual paper feed operation whereby prior to resuming automatic paper feed the platen is adjusted to reduce backlash error that is produced in conducting said manual paper feed.

4,645,366

CONTAINER WITH SUPERPOSED POLISHING AND APPLICATOR DEVICES

Walter Frohn, Geiseltalstrasse 100, D-8000 Munich 90, Fed. Rep. of Germany

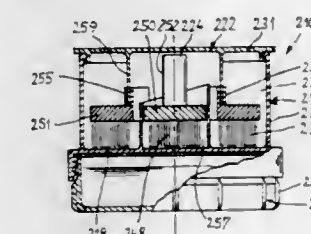
Filed Sep. 23, 1985, Ser. No. 779,233

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 8428327[U]; Nov. 20, 1984, 8434047[U]

Int. Cl.⁴ A46B 11/00; B65D 47/42

U.S. Cl. 401—123

10 Claims



1. A container for semi-solid materials comprising a container member to accommodate such material, a lid member adapted to be repeatedly placed on and taken off said container member, said lid member including a lid portion adapted to close a material removal opening of said container, an application device and a polishing device, said devices being adapted

movement of the body between the cover plates, said edge portion of the end wall being in said slot and preventing turning of the guide body around the longitudinal axis thereof.

4,645,364

INK RIBBON CARTRIDGE

Ryouhei Ohsaki, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

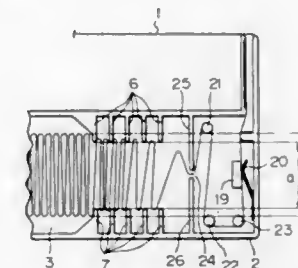
Filed Sep. 24, 1985, Ser. No. 779,791

Claims priority, application Japan, Sep. 26, 1984, 59-144210[U]

Int. Cl.⁴ B41J 32/02, 35/08

U.S. Cl. 400—248

5 Claims



1. An ink ribbon cartridge of the fan-folded type in which an ink ribbon is regularly folded to have a constant width length between adjacent folds of the ink ribbon with the ink ribbon received in an enclosing space of a cartridge casing, said ink ribbon cartridge comprising:

a cartridge casing having an enclosing space therein for receipt of regularly folded ink ribbon, said enclosing space including substantially parallel opposed walls with the constant lengths of ink ribbon between folds extending substantially perpendicular to said opposed walls, a pull-out port in communication with said enclosing space with a conveying path therebetween for passage of the ink ribbon out of said cartridge casing, and a take-in port in communication with said enclosing space for passage of the ink ribbon into said cartridge casing;

a pair of exit projections disposed within said cartridge casing positioned along said conveying path between said enclosing space and said pull-out port, said pair of exit projections extending in a direction which is generally perpendicular to said opposed walls of said enclosing space and defining therebetween a gap substantially smaller than the length between adjacent ribbon folds to form a conveying port for passage of the ink ribbon there-through;

a plurality of paws of spaced opposed projections extending in a direction which is perpendicular to said opposed walls of said enclosing space and positioned between said pair of exit projections and said enclosing space, each of said opposed spaced apart projections of a pair on one side of said conveying path being aligned with and forming a gap with a corresponding one of said opposed spaced apart projections of said pair on the other side of said conveying path for passage of folds of the ink ribbon, said gap being substantially larger than the spacing between said exit projections and slightly smaller than a distance between opposite ends of adjacent folds along the length of the ink ribbon received in said enclosing space and whereby the ink ribbon is prevented from falling down in the cartridge casing and the folding density is decreased in a direction towards the conveying port to reduce the load variation on the ink ribbon so that it can be stably pulled out of the cartridge casing.

to be accommodated in concealed positions in said lid member and able to be retracted from such concealed positions on a side of said lid portion remote from said container member, said polishing device including a handle and a softly yielding functional portion joined thereto, said lid member defining a chamber opening away from the container member and divided by a partition into an inner chamber and an outer chamber placed around the same, said inner and said outer chambers opening in the same direction, said application device being concealed in said inner chamber when not in use and said polishing device being concealed in said outer chamber when not in use.

4,645,367

WRITING IMPLEMENT VENTING SYSTEM

Otto Mutschler, Ludolf-Krehl-Strasse 21, and Albert Menrath, Kehler Weg 6, both of D-6900 Heidelberg, Fed. Rep. of Germany

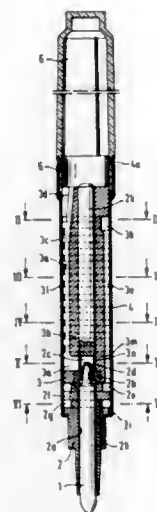
Filed Oct. 4, 1984, Ser. No. 657,600

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338227

Int. Cl.⁴ B43K 8/02, 7/08, 5/18

U.S. Cl. 401-199

5 Claims



1. A writing implement comprising

- (a) a writing element,
- (b) a retaining member holding the writing element,
- (c) a housing sleeve, and
- (d) a lamellate body providing a balanced ink feeding system connected to the retaining member for feeding ink to the writing element, the retaining member with the lamellate body being fluid-tightly fastened in the housing sleeve by frictional engagement therewith and the lamellate balanced ink feeding system body including
 - (1) a tubular member,
 - (2) two ink collecting chamber halves arranged on the tubular member, respective air inlet and outlet grooves conducting air to and from the two chamber halves, and a center air conducting groove between the air inlet groove and air outlet groove, the grooves extending parallel to each other,
 - (3) respective webs projecting from the tubular member for air-tightly separating the air inlet and outlet grooves from the center groove,
 - (4) a flange on the tubular member for closing respective front ends of the air inlet and outlet grooves adjacent the writing element,
 - (5) respective rear ends of the air inlet and outlet grooves remote from the writing element being in communication with the center air conducting groove through a transverse groove, and
 - (6) the transverse groove being in communication with an

ink flow control path, a capillary gap and an air passage groove.

4,645,368

QUICK DISCONNECT MECHANISM FOR SELECTIVELY SECURING A SHAFT TO A POWER TAKE-OFF END YOKE

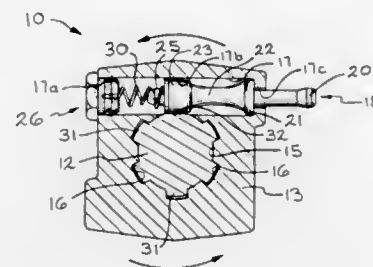
John D. Simpson, Thamesford, and Christopher C. Butler, Belle River, both of Canada, assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 24, 1986, Ser. No. 822,026

Int. Cl.⁴ B25G 3/00; F16D 1/00

U.S. Cl. 403-9

9 Claims



1. A quick disconnect mechanism for selectively securing a shaft to a power take-off end yoke adapted to rotate in one direction about an axis comprising:

a hub secured to the end yoke having a passageway formed therein co-axial with the axis of rotation of the end yoke and adapted to receive a portion of the shaft therein, said hub having an aperture formed therethrough extending in a direction generally perpendicular to the axis of rotation and extending at least partially through said passageway; means formed on said hub passageway and the shaft for preventing relative rotational movement therebetween while permitting relative longitudinal movement therebetween;

a groove formed in the exterior surface of the shaft extending in a direction generally perpendicular to the axis of rotation and adapted to be aligned with said hub aperture when the shaft is inserted in said hub passageway;

locking pin means disposed in said hub aperture for selectively extending into said hub passageway and said shaft groove to prevent the removal of the shaft from said hub passageway, said locking pin means including a head portion extending outwardly from said hub through one end of said aperture, said head portion being inclined away from the direction of rotation; and

end plug means for closing the other end of said aperture, said end plug means including a body portion having an enlarged diameter portion formed thereon having an outside diameter which is slightly larger than the inner diameter of said hub aperture, whereby said end plug means is retained within said aperture.

4,645,369

BALL TYPE UNIVERSAL JOINT AND METHOD OF MANUFACTURE

Frank Albert, Jr., 2897 Hetzel Dr., Parma, Ohio 44134
Division of Ser. No. 267,078, May 26, 1981, Pat. No. 4,501,511.

This application Dec. 3, 1984, Ser. No. 677,684

The portion of the term of this patent subsequent to Feb. 26, 2002, has been disclaimed.

Int. Cl.⁴ F16D 1/12, 3/23; F16C 11/06

U.S. Cl. 403-24

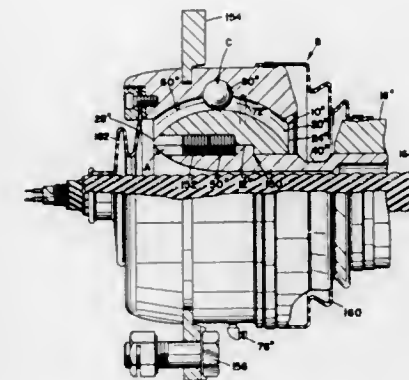
7 Claims

1. A cable termination joint construction for preventing relative axial rotation and permitting articulating movement

between a cable and an associated structure, the cable termination joint construction comprising:

a housing which is configured for mounting to an associated structure, the housing defining a first access opening for communication between the ambient atmosphere and a generally spherical interior cavity and a second access opening for communication between the interior cavity and an interior of the associated structure, the second access opening defines an enlarged member receiving passage extending therethrough into the housing cavity, the member receiving passage having a first transverse dimension which is at least as great as a corresponding dimension of the housing cavity and a second transverse dimension of different size generally orthogonal to the first transverse dimension, a housing axis being defined extending through the interior cavity and the first and second access openings;

a ball member, which defines an internal passage therethrough, mounted in the housing interior cavity with the member internal passage generally aligned with the housing axis, the ball member defines an exterior surface portion which as a first dimension that is commensurate with and less than the housing second access opening first



transverse dimension and a second dimension which is commensurate with and less than the housing second access opening second transverse dimension such that the member is dimensioned to be passed through the member receiving passage into the housing cavity;

a hollow shaft operatively connected with the member and extending through the first access opening, the hollow shaft defining an interior passage in communication with the ball member internal passage;

a cable termination device for receiving and anchoring a cable, the cable termination device being operatively connected with the hollow shaft, at least a portion of the cable passing from the cable termination device, through the shaft interior passage, through the ball member internal passage, through the housing second access opening, and into the associated structure;

means for preventing the ball member from undergoing rotational movement around the housing axis;

the ball member being mounted in the housing such that the hollow shaft is free to undergo non-rotational, articulating movement relative to the housing, whereby an attached cable is free to move relative to the housing but blocked from rotating relative to the housing.

171-154 O.G.-87-10

4,645,370

JOINT STRUCTURE FOR USE IN FOLDABLE BABY CARRIAGES

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

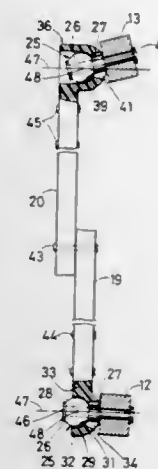
Filed Nov. 8, 1985, Ser. No. 797,000

Claims priority, application Japan, Nov. 19, 1984, 59-175442[U]

Int. Cl.⁴ F16C 11/06

U.S. Cl. 403-56

7 Claims



1. A joint structure using ball joints for use in foldable baby carriages in interconnecting first and second members (19, 20 and 12, 13) forming portions of a foldable baby carriage in such a manner that during the folding operation of said baby carriage, they are each turnable around two axes, a first axis (47) and a second axis (48) which intersects said first axis at a predetermined angle, said joint structure being characterized in that: said ball joint comprises a socket (29, 36) and an insert (25)

adapted to be received in said socket, which, when combined, constitute a ball articulation,

said socket comprises a bowl-like portion (30, 37) defined by concentric hemispherical inner and outer surfaces (30, 37 and 31, 38), the upper surface of said bowl-like portion being opened, and an attaching portion (33, 49) laterally extending from said bowl-like portion, the bottom of said bowl-like portion being formed with a lengthwise extending elongated opening (34, 41) having a width smaller than the diameter of said hemispherical inner surface,

said insert comprises a spherical head portion (26) formed to fit the hemispherical inner surface, and a shaft portion (27) radially extending from said spherical head portion,

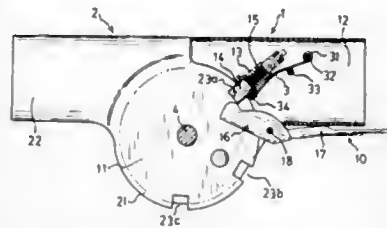
said socket is fixed to said first member (19, 20) through said attaching portion, while said insert is fixed to said second member (12, 13) through said shaft portion, with said spherical head portion received in the bowl-like portion of said socket and with said shaft portion extending through said elongated opening, and

the rotational movement of said shaft portion around its own axis within said elongated opening brings about a turning movement around said first axis (47) and its pivotal movement brings about a turning movement around said second axis (48).

4,645,371
SAFETY JOINT MECHANISM, PARTICULARLY FOR FOLDING LADDERS
 Chien-Yuan Wang, No. 25 Nanking East Road, Sec. 4, Taipei, Taiwan

Filed May 1, 1986, Ser. No. 857,972
 Int. Cl.⁴ F16C 11/00; E06C 7/50
 U.S. Cl. 403—93

3 Claims



1. A safety joint mechanism for folding ladders, comprising:
 - a first joint member including
 - a disk-shaped portion comprising a pair of spaced apart, symmetrically disposed circular plates,
 - a tubular portion extending from said disk-shaped portion and including a pair of opposing, spaced apart sides in each of which is formed a rectangular slot,
 - a pawl slidably supported in said slots, spring means for biasing said pawl in a first direction,
 - a pivotable operating lever including a manually actuatable handle portion and a pawl-actuating fork-shaped portion engageable with said pawl when said handle portion is actuated, for pushing said pawl opposite said first direction against the bias of said spring, and
 - a resilient leaf spring mounted on a rivet in said pair of sides of said tubular portion at a location between said slots and said handle portion and including a bent portion in the form of a lug being pressed closely against the side face of said pawl when the latter is in engagement with a notch and snap-engaging the terminal face of said pawl when the latter is being disengaged from such notch by said pawl-actuating portion,
 - a second joint member mounted to said first joint member for relative rotation about an axis of rotation, said second joint member comprising
 - a hollow flat locking disk element including a plurality of circumferentially spaced notches on its outer periphery,
 - said disk element disposed between said circular plates and being connected thereto by a pivot pin defining said axis of rotation, said pivot pin extending centrally through said disk element and said circular plates such that relative rotation between said disk element and said circular plates sequentially orients said pawl in alignment with said notches, and
 - a tubular portion extending from said disk element.

4,645,372
POWER TRANSMITTING COUPLING
 Tsunehiko Suzuki, Tokyo, Japan, assignor to Matsui-Walter-schild Ltd., Tokyo, Japan
 Filed Sep. 23, 1985, Ser. No. 779,268
 Claims priority, application Japan, Oct. 1, 1984, 59-204145; Jun. 3, 1985, 60-118949

Int. Cl.⁴ F16B 21/00

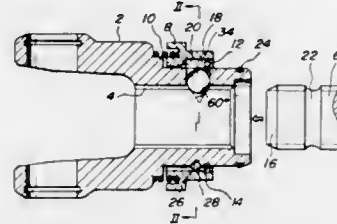
U.S. Cl. 403—325

9 Claims

1. A power transmitting coupling including a hub member and a shaft fitted axially and slidably but nonrotatably therein, and at least one detent ball accommodated in said hub member and partially extending into a ball setting groove of said shaft for preventing the shaft from removing from said hub member, said coupling comprising:
 - (a) slide means slidable on said hub member into (1) a ball holding position where said detent ball is partially extended into said ball setting groove of said shaft to hold

said shaft within said hub, and (2) a ball nonholding position where said detent ball does not hold said shaft within said hub, said slide means being formed in the form of a collar;

- (b) spring means for urging said slide means in one direction;
- (c) holding position holding means for holding said slide means at said ball holding position in cooperation with said spring means; and
- (d) nonholding position holding means for holding said slide means at said ball nonholding position in cooperation with



said spring means and releasing said slide means when said detent ball moves out of said ball setting groove, said nonholding position holding means including a C-shaped spring ring having a spring force contracting radially inwardly accommodated in a spring ring receiving groove formed in an inside of said collar, and a spring ring holding groove formed in a circumference of said hub member, and said holding position holding means including said C-shaped spring ring and a stopper groove whose sidewall on a side of the detent ball is very slightly inclined toward a bottom of the stopper groove.

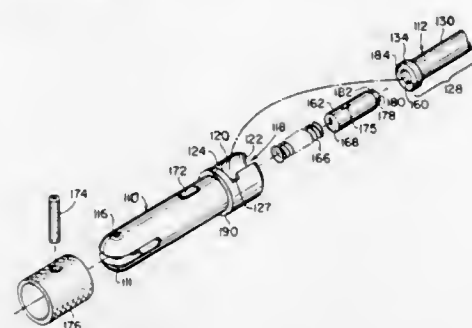
4,645,373
QUICK RELEASE CONNECTORS
 George W. Purdy, Spring Hill, Fla., assignor to G. Miller Machine Co., Inc., Ozone Park, N.Y.

Filed Oct. 28, 1985, Ser. No. 792,301

Int. Cl.⁴ F16D 1/00

U.S. Cl. 403—341

7 Claims



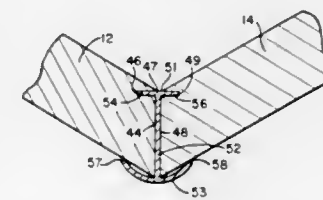
1. A two-part coupling comprising elongated male and female parts interengagable end to end, each having at one end means for attachment to a rope, line, guy, or stay, said female part having at its other end a receptacle open on both the circumferential surface and the longitudinal frontal end surface, and said male part having its other end a plug conforming in shape to said receptacle and adapted when said male and female parts are held with their axes parallel to each other to enter laterally into said receptacle and to extend longitudinally outward from the frontal end surface in relatively axially fixed position, a sleeve slidably mounted about said other end of said female part, said sleeve having a circumferential opening conforming to the circumferential opening of said receptacle and being freely rotatable between a first position in which said openings in said sleeve and receptacle are aligned to permit insertion of said plug in said receptacle and a second position

where said openings in said sleeve and receptacle are out of alignment said sleeve and female member being provided with cooperating means for preventing relative axial movement and for limiting the relative rotation of said sleeve and said female member, between said first position, and said second position, said cooperating means being operative to fix said sleeve in said second position against free rotation relative to said female part to thereby retain said plug in said receptacle.

4,645,374
PANEL AND CONNECTOR ASSEMBLY
 Arvid L. Erickson, 21365 Hamburg Ave., Lakeville, Minn. 55044, and Scott G. Erickson, 1017 Woodhill Cir., Dixon, Ill. 61021

Filed Jan. 31, 1986, Ser. No. 825,073
 Int. Cl.⁴ B25G 3/36; E04G 7/00
 U.S. Cl. 403—402

22 Claims



1. A panel and connector assembly comprising: a first panel having an outer surface, an inner surface, an end with a first beveled face extended from the inner surface toward the outer surface thereof, and a groove extended normal to said first beveled face adjacent the inner surface, a second panel having an outer surface, an inner surface, an end with a second beveled face extended from the inner surface toward the outer surface thereof, and a groove extended normal to said second beveled face adjacent the inner surface thereof, connector means joining said first panel to said second panel together in a fixed relationship relative to each other, said connector means having a flat web located between and in surface engagement with first and second beveled faces, lip means joined to said web extended into said grooves, and flange means joined to said web engageable with said first and second panels, said flange means comprising convex curved flanges joined to an outer edge of the web and extended in opposite directions therefrom at acute angles relative to said web, said flanges having outer edges located in engagement with the first and second panels whereby said lip means and flange means hold the faces in surface engagement with said web and fix the angular relationship between said first and second panels.

4,645,375
STATIONARY IMPACT ATTENUATION SYSTEM
 John F. Carney, III, Nashville, Tenn., assignor to State of Connecticut, Hartford, Conn.

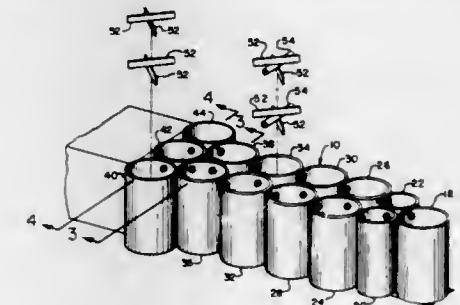
Filed May 23, 1985, Ser. No. 737,273
 Int. Cl.⁴ E01F 15/00

U.S. Cl. 404—6

10 Claims

1. A stationary impact attenuation system for reducing the severity of vehicular collisions occasioned by an errant vehicle striking an immovable object comprising:
 - a. support means located in juxtaposed relation to an immovable object and so as to lie between the immovable object and an oncoming errant vehicle, said support means being operative as a support structure;
 - b. impact attenuating means positioned in supported relation on said support means, said impact attenuating means being selectively operative to entrap an errant vehicle striking the stationary impact attenuation system at a first location and to redirect an errant vehicle striking the stationary impact attenuation system at a second location, said impact attenuating means including a plurality of

tubular members arranged in the form of a cluster and bracing means positioned in selective ones of said plurality of tubular members, said bracing means including a pair of compression means positioned in each of certain ones of said selective ones of said plurality of tubular members and a first and a second pair of tension means positioned in at least each of said certain ones of said selective ones of said plurality of tubular members, each of said of compression means being positioned in spaced relation one to another in each of said certain ones of said selective ones of said plurality of tubular members and so as to extend perpendicularly to the major axis of said plurality of tubular members, said first pair of tension means being positioned in each of said certain ones of said selective ones of said plurality of tubular members so as to straddle one of said pair of compression means positioned in each of said



- certain ones of said selective ones of said plurality of tubular members and so as to extend at an acute angle relative to said one of said pair of compression means, said second pair of tension means being positioned in each of said certain ones of said selective ones of said plurality of tubular members so as to straddle the other one of said pair of compression means positioned in each of said certain ones of said selective ones of said plurality of tubular members and so as to extend at an acute angle relative to said other one of said pair of compression means; and
- d. protective means positioned in juxtaposed relation to said impact attenuating means, said protective means being operative to prevent a buildup of snow and ice on the other components that comprise the stationary impact attenuation system.

4,645,376
FIREPROOF BOOM
 Wayne F. Simpson, Anchorage, Ak., assignor to Shell Western E&P Inc., Houston, Tex.

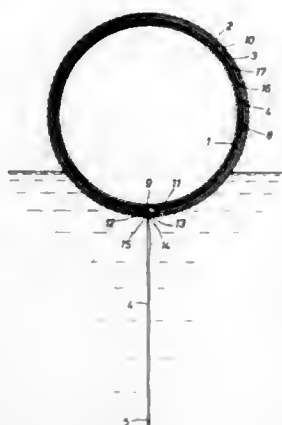
Filed Dec. 9, 1985, Ser. No. 806,575
 Int. Cl.⁴ E02B 15/04

U.S. Cl. 405—63

3 Claims

1. A fireproof boom for containing a flammable pollutant on a water surface comprising, a hollow flotation member susceptible to expanding and bursting with the application of heat, a heat-resistant, water-sorbent material surrounding the flotation member and extending into the water and functionable to perform an osmotic wicking action to draw water up into the heat-resistant material and around the flotation member, thereby positioning the water to form protective steam about the flotation member upon exposure of the boom to fire, and a

protective fence covering the heat-resistant, water-sorbent material, said protective fence being wire woven in continuous



spirals so that when the spirals are integrated with each other a mesh is formed.

4,645,377

METHOD OF CAUSING SEDIMENTATION OF SEDIMENTARY SOLID MATERIAL TRANSPORTED IN A BODY OF WATER, SUCH AS A LAKE, A SEA, OR AN OCEAN

Hans Vesterby, Frederikshavn, Denmark, assignor to Danmarks Geotekniske Institut, Lyngby, Denmark

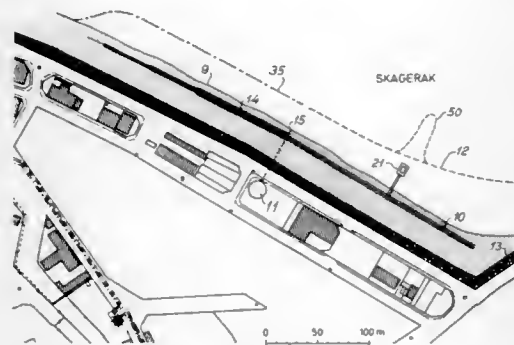
PCT No. PCT/DK83/00092, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01590, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 6, 1983, Ser. No. 611,950

Claims priority, application Denmark, Oct. 8, 1982, 4474/82 Int. Cl.⁴ E02B 3/06, 8/02, 11/00

U.S. Cl. 405—74

17 Claims



1. A method of settling sedimentary solid material which is suspended in and transported by a natural body of water having a porous substratum, said method comprising: establishing an underground drain juxtapositioned to and extending in substantially the same general direction of a borderline, between said body of water and a main land area, said drain being positioned below a mean upper surface level of said body of water; and reducing hydraulic pressure in said porous substratum of said body of water immediately below said mean upper surface water level thereof along a zone adjacent and corresponding to said drain by removing water from said drain, whereby sedimentary material is caused to settle in said zone of said substratum.

MOVABLE FORM FRONT FOR A TUNNEL-LINING FORM

Volker Hentschel, Dorsten, Fed. Rep. of Germany, assignor to Gochtief Ag Vorm. Gebr. Helfmann, Essen, Fed. Rep. of Germany

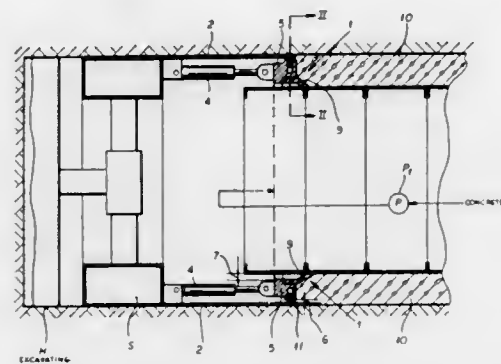
Filed Mar. 29, 1985, Ser. No. 717,824

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411857

Int. Cl.⁴ E21D 9/06, 11/10

U.S. Cl. 405—146

12 Claims



1. In a movable form front inserted between a shield of a tunnel excavator and a tunnel-lining form used for making a tunnel wall, said form front comprising an annular support positioned with clearance between said shield and said tunnel-lining form and having a lipped inner seal pressing on said tunnel-lining form, said lipped inner seal being attached adjacent an inner surface of said annular support to said annular support under tension, said annular support also having an outer seal held adjacent an outer surface of said annular support under pressure, the improvement wherein said outer seal is a circular seal which has a symmetrical cross section with respect to a central symmetry plane parallel to a plane of said annular support and has positioned in a circumferential circular groove provided in said outer surface of said annular support a tightening ring said tightening ring being divided into a plurality of clamp segments that are arranged along a bottom of said circular groove with circumferential clearance from each other, said segments being radially adjustable with the aid of a plurality of adjusting mechanisms, each of said adjusting mechanisms engaging at least one of said clamp segments.

4,645,379

PYRAMIDAL OFFSHORE STRUCTURE

R. LeRoy Grimsley, and Len J. Gawel, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation of Ser. No. 229,425, Jan. 29, 1981, Pat. No. 4,437,794. This application Oct. 3, 1983, Ser. No. 538,386

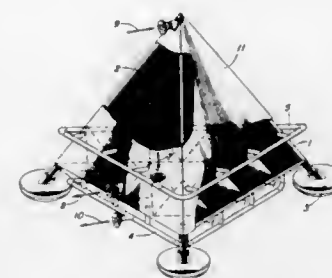
Int. Cl.⁴ B65G 5/00; E02D 29/00

U.S. Cl. 405—210

5 Claims

1. A tetrahedral underwater storage structure comprising (a) a self-supporting structure which is internally segmented wherein the segments define internal void areas having tetrahedron and hexahedron geometric configuration and wherein said segmented structure is formed from segment members of substantially equal length; and (b) a fluid impermeable covering over said internally segmented structure to form a total void area formed from

the internal tetrahedron and hexahedron void areas of (a), wherein,



(c) said cover is penetrated by inlet and outlet means for materials stored within said structure.

4,645,380

DOCKING SYSTEM

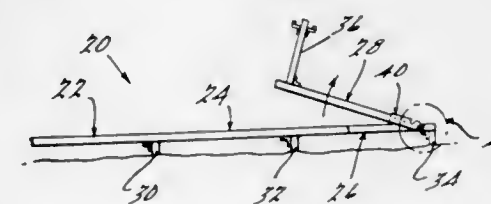
John L. Hambrick, Pleasant Ridge, and Ralph G. Poirot, Eastport, both of Mich., assignors to Meliss Company, Royal Oak, Mich.

Continuation of Ser. No. 578,311, Feb. 10, 1984, abandoned, which is a continuation of Ser. No. 360,459, Mar. 22, 1982, abandoned. This application May 2, 1985, Ser. No. 729,942

Int. Cl.⁴ E02B 3/20

U.S. Cl. 405—220

1 Claim



1. A portable docking system comprising: a first dock section having a pair of gooseneck retainers extending oppositely and laterally outwardly from a pair of side faces thereof, respectively, and a second dock section having an end face with a pair of U-shaped goosenecks extending longitudinally beyond said end face, said goosenecks opening in a direction away from the end face on said second dock section and being engageable with the gooseneck retainers of said first dock section, respectively, upon movement of said goosenecks in one direction toward said gooseneck retainer, further movement of said second dock section in said one direction effecting locking of said goosenecks in said gooseneck retainers.

4,645,381

BUILDING MATERIAL, ITS APPLICATION FOR EMBANKMENT, SURFACING, OR AS FOUNDATION MASS OVER A LOOSE GROUND, AND METHOD AND INSTALLATION FOR THE PRODUCTION OF SAID MATERIAL

Etienne Leflaive, 17 rue M. Voisin, 92330 Sceaux, and Claude Guignard, Sercy, 01630 St Genis Pailley, both of France

Continuation-in-part of Ser. No. 132,310, Mar. 19, 1980, abandoned. This application Oct. 4, 1985, Ser. No. 784,656

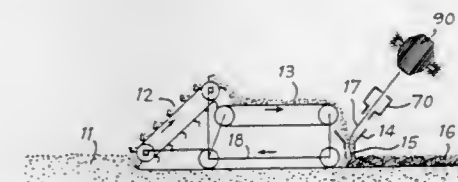
Int. Cl.⁴ E02D 3/00

U.S. Cl. 405—258

9 Claims

1. A building material comprising flexible tridimensional reinforcement means disposed in a mass of solid discrete particles of compact form with the reinforcement means contributing to creating cohesion within and between the different parts of the mass of particles, wherein said reinforcement means comprises at least one very long supple continuous linear

element distributed tri-dimensionally, in substantially even manner throughout the volume occupied by said mass of particles, without any bonding between said particles, between said



particles and said linear element and between contacting portions of the linear element to each other, said very long supple continuous linear element entwining said parts of said mass of particles so as to provide cohesion of the mass.

4,645,382

METHOD FOR THE ISOLATION OF POLLUTANTS IN SOIL STRATA

Rudolf Burkhardt, and Hansjürgen Hass, both of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 598,987, Apr. 11, 1984, abandoned.

This application Aug. 12, 1985, Ser. No. 765,555

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313034

Int. Cl.⁴ C09K 17/00; E02D 3/12

U.S. Cl. 405—264

8 Claims

1. A method for the isolation of ground-water-endangering pollutants in permeable soils by the installation of sealing barriers around the endangering zone, comprising joining vertical barriers which surround the polluted zone and extend to a depth that is polluted and largely prevent the passage of escaping ground water with a horizontal injected floor which seals as a bottom against water and liquid pollutants, said horizontal injected floor being substantially impermeable to water and liquid pollutants and being produced by the injection of a gel-forming mixture of alkali metal silicate, which contains at least one alkyl trialkoxysilane of the general formula $R-Si(OR')_3$, wherein R represents an alkyl moiety of 1 to 6 carbon atoms and R' represents identical or different alkyl moieties of 1 to 4 carbon atoms, which can be interrupted, if desired, by an oxygen atom, and/or contains hydrolysis products of at least one trialkoxysilane.

4,645,383

END MILLING CUTTER AND METHOD OF MAKING SAME

Harold W. Lindsay, 2451 NW. 30th, Portland, Oreg. 97210

Division of Ser. No. 736,947, May 22, 1985, Pat. No. 4,596,166.

This application May 23, 1986, Ser. No. 866,320

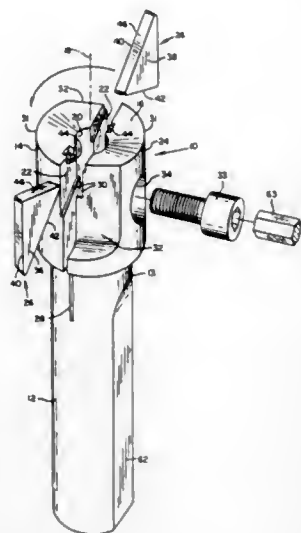
Int. Cl.⁴ B26D 1/00

U.S. Cl. 407—36

3 Claims

1. An end milling cutter, comprising: a shank having a generally cylindrical cutter head, the cutter head having an end face normal to the axis thereof; a cylindrical bore extending longitudinally inwardly of the cutter head from the end face, the bore being coaxial with the cutter head and being generally equal in length to the length of the cutter head; a pair of opposed slots formed in the cutter head, each of the slots extending longitudinally inwardly from the end face and generally radially from the cylindrical bore to the lateral surface of the cutter head, the pair of slots and the bore defining a pair of cooperating jaw elements in the cutter head, each of the jaw elements including a transversely-extending insert-supporting shoulder on at least one side of the slot, the shoulder extending from the core to the lateral surface of the cutter head; a cutting insert received in each of the slots, the insert having

at least three sides, the shoulder in each slot engaging and supporting one side of the insert received in the slot; a pair of pressed dimples, one on each of the jaw elements, the dimples extending inwardly of the cutter head from the end face thereof, each of the dimples extending in-



wardly of the slot on the other side thereof, each dimple engaging and supporting a second side of the insert received in the slot; and means to clamp the jaw elements together to retain the inserts within their respective slots.

4,645,384

INSERT CUTTER

Hiroshi Shimomura; Katsuyoshi Karino, both of Tokyo, and Kazuo Iizuka, Warabi, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

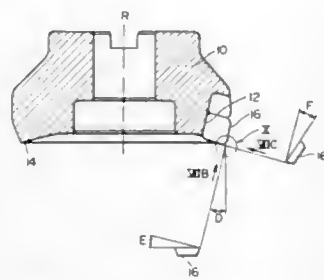
Filed May 8, 1986, Ser. No. 860,794

Claims priority, application Japan, May 25, 1985, 60-78220

Int. Cl.⁴ B23C 5/20

U.S. Cl. 407—42

3 Claims



1. An insert cutter for processing a metal workpiece comprising:

- a body of a generally circular cross-section having an axis of rotation therethrough, said body having at least one generally radially outwardly-opening recess disposed adjacent a forward end face thereof; and
- a cutter insert received in and secured to said recess, said insert comprising a generally polygonal plate having a front face, a rear face and a plurality of side faces, each corner portion of said plate where adjacent side faces intersect each other being removed to provide first and second corner faces, said first corner face and said second corner face being disposed adjacent each other, said plate having a plurality of main cutting edges each defined by said front face and a respective one of said side faces, a

plurality of auxiliary cutting edges each defined by said front face and a respective one of said first corner faces, and a plurality of corner cutting edges each defined by said front face and a respective one of said second corner faces, each side face serving as a flank of a respective one of said main cutting edges with a positive clearance angle A, each first corner face serving as a flank of a respective one of said auxiliary cutting edges with a positive clearance angle B, each second corner face serving as a flank of a respective one of said corner cutting edges with a positive clearance angle C, said clearance angles A, B and C being so selected as to satisfy $A < B < C$;

the disposition of said insert being such that one set of main, auxiliary and corner cutting edges thereof are indexed in their machining positions with predetermined true rake, inclination and corner angles, and such that an effective clearance angle of said indexed corner cutting edge with respect to said workpiece is generally equal to an effective clearance angle of said indexed main cutting edge with respect to said workpiece.

4,645,385

DEVICE FOR CLAMPING CUTTING INSERTS

Werner Keller, Im Krötenteich 2, 6967 Buchen, Fed. Rep. of Germany

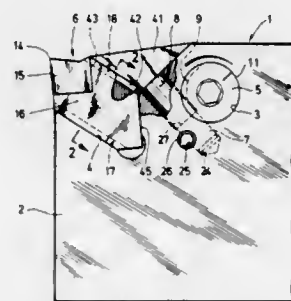
Filed Mar. 20, 1985, Ser. No. 714,105

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410779

Int. Cl.⁴ B26D 1/00; B23B 29/12

U.S. Cl. 407—105

2 Claims



1. A device for clamping comprising:

- a cutter support;
- a recess in said support;
- a cutting insert to be clamped in said recess of said support;
- a cam rotatably mounted in said cutter support;
- a clamping member mounted on the cutter support for pressing against said cutting insert in response to rotation of said cam, wherein said clamping member includes (1) a pin secured in a cantilevered manner in a bore of said cutter support such that the free end of said pin in displaceable transversely to its longitudinal axis towards said cutting insert by rotation of said cam, and (2) a clamping plate integral with said free end of said pin for engaging and securing the cutting insert in response to rotation of said cam;
- said bore for receiving said pin having a tapered diameter such that said free end of said pin is not supported by the surface of said bore;
- said cam comprising a generally cylindrical surface for rotating about its longitudinal axis, said cam including a grooved portion having a circumferential surface radius of varying magnitude and having sides that encompass the free end of said pin so that said cam is rotatably held in said cutter support;
- said cam being situated at approximately the same height as

that of said cutting insert relative to the lower surface of said cutter support; and said clamping plate having a free edge for providing a substantially linear transition from a cutting portion of said cutting insert to the upper edge of said cutter support, thereby insuring unhindered removal of chips flowing from said cutter member.

4,645,386

THREAD-CUTTING APPARATUS

Darrel E. Smith, Rockford, Ill., assignor to The Ingersoll Cutting Tool Company, Rockford, Ill.

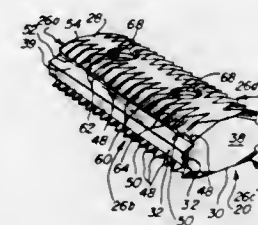
Continuation of Ser. No. 575,350, Jan. 31, 1984, Pat. No. 4,531,863. This application Jul. 29, 1985, Ser. No. 760,289

The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.

Int. Cl.⁴ B26D 1/00

U.S. Cl. 407—113

4 Claims



1. An indexable insert for mounting on a holder to form a continuous helical thread on a workpiece surface, the insert comprising:

- at least two rows of cutting teeth, each said row of cutting teeth including a substantially planar forward cutting surface and a grooved back surface intersecting said forward cutting surface to define a cutting edge, said grooved back surface having a plurality of parallel grooves therein defining a row of parallel ridges extending rearwardly of said forward cutting surface;
- a bore extending through said insert and located rearwardly of both of said two rows of cutting teeth;
- a substantially planar bottom locating surface substantially perpendicular to the axis of said bore;
- a pair of opposite, substantially parallel, substantially planar side locating surfaces, each being substantially perpendicular to said bottom locating surface and being substantially parallel to the axis of said bore; and
- substantially parallel forward and rear locating surfaces oriented perpendicular to said bottom and side locating surfaces;

each of said ridges being inclined with respect to said bottom locating surface.

4. Milling apparatus comprising:

- a plurality of indexable milling inserts;
 - a rotatable cutter body having a plurality of seats for supporting said inserts in predetermined positions; and
 - means for releasably attaching said inserts to said rotatable cutter body;
- each of said inserts comprising:
- at least two rows of cutting teeth, each said row of cutting teeth including a substantially planar forward cutting surface and a grooved back surface intersecting said forward cutting surface to define a cutting edge, said grooved back surface having a plurality of parallel grooves therein defining a row of parallel ridges extending rearwardly of said forward cutting surface;
 - a bore extending through said insert and located rearwardly of both of said two rows of cutting teeth;
 - a substantially planar bottom locating surface substantially perpendicular to the axis of said bore;
 - a pair of opposite, substantially parallel, substantially planar side located surfaces, each being substantially perpendicular

lar to said bottom locating surface and being substantially parallel to the axis of said bore; and substantially parallel forward and rear locating surfaces oriented perpendicular to said bottom and side locating surfaces; each of said ridges being inclined with respect to said bottom locating surface.

4,645,387

DRILL CHUCK FOR TAPPING AND DRILLING

Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sonthei, Fed. Rep. of Germany

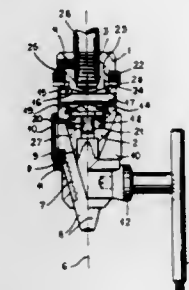
Filed Oct. 3, 1985, Ser. No. 783,763

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 8429380[U]

Int. Cl.⁴ B23B 39/14

U.S. Cl. 408—127

6 Claims



1. A chuck comprising:

- a rear chuck part centered on a rear axis and adapted to be secured to the spindle of a drill for rotation about the rear axis;
- a front chuck part centered on a front axis, one of the parts being formed with a screwthread centered on the respective axis and the other part having an annular face perpendicular to and centered on the respective axis and turned toward the one chuck part said annular face being integral with and fixed relative to said other part and spaced from the screwthread of said one part;
- means including a universal joint interconnecting the two parts for joint rotation about the rear axis with the front axis movable between a position on the rear axis and a position with the front axis intersecting and skew to the rear axis;
- jaws on the front chuck part
- means on the front chuck part for radially displacing the jaws relative to the front axis thereon and thereby clamping a tool at the front axis in the front part; and
- a locking ring threaded on the screwthread of the one part and having an end face centered on and perpendicular to the respective axis and confronting the annular face of the other part, the end face of the ring being flatly engageable with the annular face of the other part for holding the parts with the axes coaxial and nondisplaceable relative to each other.

4,645,388

RIGHT ANGLE EXTENSION DRILL

Johan Abrahamsen, 390 N. Burgher Ave., Staten Island, N.Y. 10310

Filed Nov. 21, 1985, Ser. No. 800,450

Int. Cl.⁴ B23B 45/14

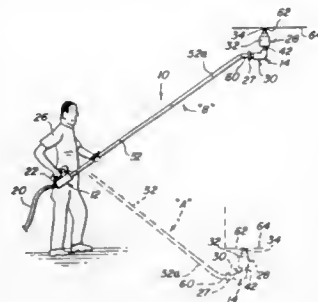
U.S. Cl. 408—127

5 Claims

1. A right angle extension drill which comprises:

- (a) a portable power unit;
- (b) an adjustable right angle drive unit removably connectable to said power unit so that said power unit can directly drive said right angle drive unit for drilling holes within various material;

- (c) at least one extension pole removably connectable between said power unit and said right angle drive unit, so that said right angle drive unit can reach a side of an overhead beam to drill a hole therein parallel ceiling; and
- (d) at least one additional extension pole being curved at its distal end which can be connected to said right angle



drive unit so that said right angle drive unit can also drill holes perpendicular to the ceiling form a first position above said ceiling, wherein there is formed an acute angle between the one extension pole and the drive unit, and a second position below said ceiling, wherein there is formed an obtuse angle between the one extension pole and the drive units.

4,645,389

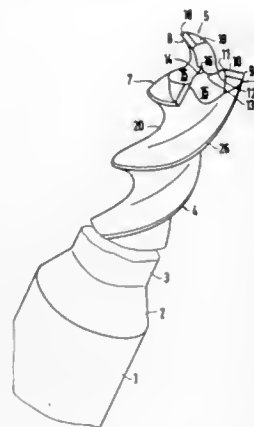
MULTIPLE-TOOTH DRILL BIT

Andreas Maier, Schwendi-Hörenhausen, Fed. Rep. of Germany, assignor to Hartmetallwerkzeugfabrik Andreas Maier GmbH & Co., Schwendi-Hörenhausen, Fed. Rep. of Germany
Filed Dec. 10, 1984, Ser. No. 679,750
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1983, 3344620

Int. Cl.⁴ B23B 51/02

U.S. Cl. 408—230

18 Claims



1. In a multiple-tooth drill bit for drilling holes into a workpiece, wherein the drill bit has a tip formed with at least three teeth the front end cutting edges of which extend generally radially of the core of the drill bit, a plane perpendicular to an axis of the drill bit extending through said tip, said cutting edge of each tooth having radially outer and inner cutting edge sections which meet at and diverge from a respective cutting point that is directed frontwardly of the drill bit, said outer section of each front end cutting edge of each tooth being inclined, as viewed from its laterally outwardmost tip toward its associated cutting point, in a direction toward said plane and frontwardly of the drill bit, and with said inner section of each front end cutting edge of each tooth being inclined, as viewed

from its associated cutting point toward said drill bit core, in a direction away from said plane and rearwardly of the drill bit, the improvement comprising that:

- (a) an auxiliary centering element in the form of a centering spur is provided at the front end of said drill bit core and axially thereof, said centering spur having a frontwardmost tip and a plurality of laterally outwardly and rearwardly inclined center cutting edges spaced from each other circumferentially of said centering spur and meeting at said frontwardmost tip, and
- (b) said inner section of said front end cutting edge of at least one of said teeth leads directly to and merges with an associated one of said center cutting edges of said centering spur.

4,645,390

CUTTING TOOL FOR MAKING HOLES

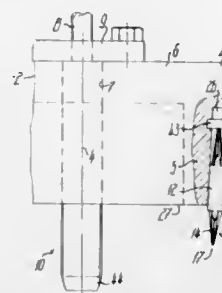
Ernst Pecha, Nuertingen; Rudolf Trost, Dettlingen/Erms; Rudi Gneiting, Frickenhausen-Linsenhofen, and Karl-Eberhard Dieterich, Huelben, all of Fed. Rep. of Germany, assignors to bielomatik Leuze GmbH & Co., Fed. Rep. of Germany
Filed Mar. 18, 1985, Ser. No. 712,995

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1984, 3411557

Int. Cl.⁴ B23B 51/05; B26B 9/02

U.S. Cl. 408—233

34 Claims



1. A rotary cutting tool for cutting holes in walls of thermoplastic material or the like, including containers, fuel tanks and the like, said cutting tool comprising:

- a tool body having a tool axis, said tool axis being a rotation axis, at least one cutting member comprising a scoring knife having a flattened shape in a direction radially to said rotation axis mounted on said tool body, said cutting member having a free end projecting in a direction substantially parallel to said rotation axis,
- a cutting edge at said free end positioned at a distance from the rotation axis for cutting a hole opening wall disk out of a wall by rotating and moving in a feed movement of a feed direction substantially parallel to the rotation axis as the cutting depth of a ring slot around the rotation axis in the wall progresses during rotation,
- a holding device for the cut wall disk mounted on said tool body, said holding device having a shaft for penetrating said wall disk without cutting off any cutting particles and engaging said wall disk with a predetermined friction for holding the wall disk to said tool, whereby said cutting edge cuts the ring slot without cutting off any cutting particles from the wall and the wall disk merely by disposing the material of the wall.

4,645,391

WORK SET UP METHOD AND APPARATUS

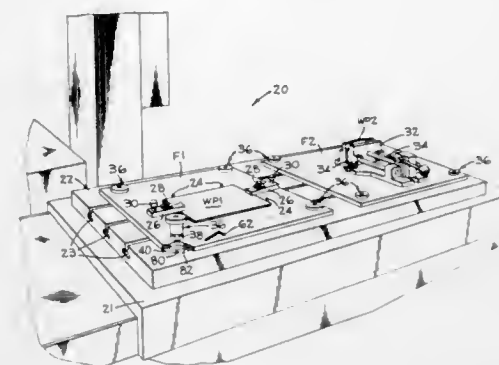
Joe E. Fallert, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 17, 1985, Ser. No. 735,024

Int. Cl.⁴ B23Q 3/06

U.S. Cl. 409—225

20 Claims



1. In a work set up apparatus for use with at least one machine tool associate with a work table having an upper surface and a tool for performing work on a workpiece, comprising: means defining a plurality of precisely located workpiece positioning and clamping holes in said work table; means defining fixture having a plurality of precisely located mounting holes therein spaced predetermined distances apart and adapted to be aligned with associated ones of said positioning and clamping holes; means for supporting at least one workpiece at a predetermined location in said fixture; and a plurality of quick connect ball lock means insertable into selected ones of said plurality of holes for aligning and locking said fixture and workpiece to said table at a predetermined precise location.

4,645,392

DECK FITTING

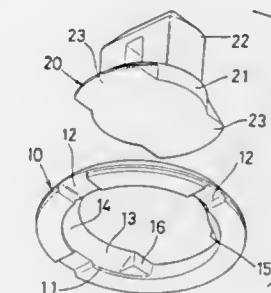
Hiroynki Takaguchi, Nagasaki, Japan, assignor to Taiyo Seiki Iron Works Co., Ltd., Osaka, Japan

Filed Apr. 22, 1985, Ser. No. 725,654

Int. Cl.⁴ B60P 7/08; B61D 45/00

U.S. Cl. 410—80

5 Claims



1. A deck fitting for positioning a container on a deck of a ship, comprising:
- a socket member formed with a substantially circular hole;
- a coupling member removably received in said hole;
- said socket member having a flange at the periphery of said hole, said flange extending all about said hole except for a single cutaway portion;
- said coupling member having a base portion turnable under said flange on said socket member and an engagement portion upwardly protruding from said base portion, said base portion having a pair of projections diametrically

formed on an outer periphery of said base portion, said projections being of such a size that said base portion can be inserted into said hole under said flange on said socket member through said cutaway portion;

said socket member being formed with a blocking projection on the undersurface of said flange for limiting the turn of said coupling member in one direction, said pair of projections being freely turnable under said flange until one of said pair of projections abuts said blocking projection while both of said pair of projections are under said flange.

4,645,393

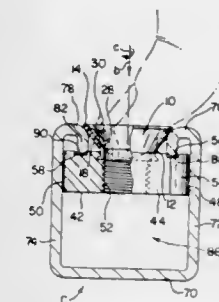
RETAINER FOR MECHANICAL FASTENER MEMBER

Donald L. Pletcher, Moraga, Calif., assignor to Midland-Ross Corporation, Cleveland, Ohio
Continuation of Ser. No. 323,732, Nov. 23, 1981, Pat. No. 4,486,133. This application Nov. 29, 1984, Ser. No. 676,052

Int. Cl.⁴ F16B 27/00

U.S. Cl. 411—84

5 Claims



1. In combination, a positioning device and a mechanical fastener member, said positioning device being adapted to maintain the fastener member in a located position in an apertured structural member, said positioning device comprising: an open ended, generally frusto-conical body having a side wall extending between a body first end and a body second end, said second end being spaced a predetermined distance from and having a predetermined greater cross-sectional dimension than said first end; an integral mounting bead extending circumferentially of said body adjacent said first end retainingly secured at one face of said mechanical fastener member so that said body extends outwardly therefrom in a direction generally normal thereto; cooperating integral stop means between said body and said fastener member for preventing rotation of said body with respect to said associated fastener member; and, said body being constructed from a resilient material for allowing said side wall to be selectively deformed.

4,645,394

FASTENER APPARATUS

Donald M. While, Dallas, and Edward C. Matza, Plano, both of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Sep. 9, 1983, Ser. No. 530,453

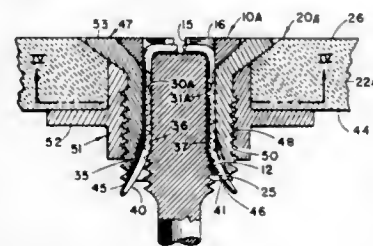
Int. Cl.⁴ F16B 39/06

U.S. Cl. 411—110

3 Claims

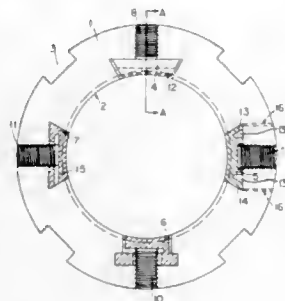
1. A fastener apparatus comprising:
- a first member having a cylindrical, externally threaded shaft having first and second elongated grooves formed thereon and extending along the shaft, the first member having first and second end portions; receiving structure having a first, outer surface area and a second surface area and having a threaded bore extending through the structure, communicating between the two surface areas, and adapted to receive the first member;
- a second member having first and second legs and a medial

portion, the first and second legs having respective distal and portions spaced from the medial portion, the first and second legs comprising means adapted to extend within respective ones of the elongated grooves and to engage the receiving structure upon the first member being threadingly engaged within the threaded bore, the medial portion comprising means adapted to extend across the first end portion of the first member; wherein the receiving structure comprises a first structure, comprising a sleeve member, and a second structure, the



first structure being connected to the second structure, and wherein the first member end portion is connected to a third, supporting structure and extends from the supporting structure to the receiving structure, the first member comprising means for maintaining the receiving structure in spaced relation to the third, supporting structure; the first structure having external threads, the second structure having a threaded bore for receiving the first structure, the first structure comprising means for effecting adjustment of the spacing between the second structure and the third structure.

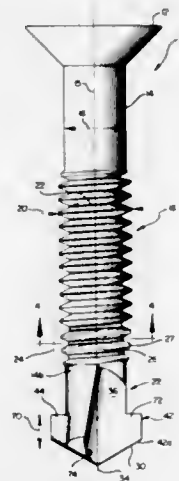
4,645,395
LOCKING NUT
Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden
Filed Sep. 4, 1984, Ser. No. 646,455
Claims priority, application Sweden, Nov. 23, 1983, 8306455
Int. Cl.⁴ F16B 39/12
U.S. Cl. 411-210 2 Claims



1. A nut adapted to be locked against rotation relative to a threaded member comprising a generally annular body portion having a threaded internal bore cooperating with the threaded member, means defining at least one recess in the body portion opening into said bore, an element separate from the nut having a thread portion corresponding to the nut threads engageable in said recess, means for displacing the element radially in said recess to a locking position wherein the thread portion of the element locks against said threaded member, said element including a body portion and flexible wing members elastically deformable upon actuation of said element to the locking position and operable upon release of said means to automatically effect displacement of said element in a direction out of contact with the threaded member when the displacing force is removed and, therefore, the elastic deformation ceases, said recess including tapered side walls converging toward the

portion of said recess opening into said bore and said flexible wing members being spaced from said body portion and having tapered outer surfaces complementing the tapered side wall of said recess whereby actuation of said means in one direction to move said element to a locking position effects inward displacement of said wing members and wherein said wing members expand outwardly upon release of said means thereby returning said element to its non-operative position wherein the locking effect ceases.

4,645,396
WOOD-METAL DRILL SCREW
Jon R. McCauley, Wabash, Ind.; Troy L. Smallwood, Campbellsville, Ky., and Paul Welliver, Decorah, Iowa, assignors to Textron Inc., Providence, R.I.
Filed Dec. 19, 1984, Ser. No. 683,382
Int. Cl.⁴ F16B 25/00
U.S. Cl. 411-387 13 Claims

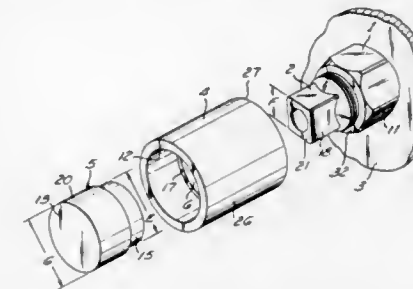


1. A screw adapted to fasten two or more juxtaposed workpieces comprising: a threaded shank defining an axis and a major thread diameter; a drilling tip including at least one cutting edge at a leading end thereof; and a material removing extension formed continuously with said cutting edge and extending the cutting edge in the radially outward direction at least as far as the radially outermost extent of said major thread diameter, said extension defining a relatively narrow dimension with respect to a circumference of said screw so as to be frangibly removable from said drilling tip in response to a predetermined force applied thereto.

4,645,397
TIRE THEFT PREVENTION DEVICE
Blair E. Howe, Costa Mesa, Calif., assignor to James Padelford, Anaheim, Calif.
Filed Sep. 24, 1984, Ser. No. 653,322
Int. Cl.⁴ F16B 37/14
U.S. Cl. 411-431 10 Claims

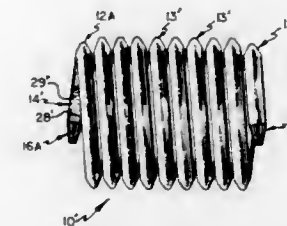
1. A tire theft prevention device for covering a tire lug nut and lug bolt where the lug bolt is of the type that has a threaded portion terminating in a protruding unthreaded portion having sides arranged parallel to the central axis of the bolt, said device comprising:
a locking cap having first and second ends, said first end being closed and said second end having an open cavity having inner sides, the inner sides of said cavity having at least some portions thereof which are sized and shaped to provide a secure axial friction fit with the unthreaded projection on the lug bolt when an axial force is directed onto said second end of said locking cap; and

a substantially tubular sleeve sized to surround the lug bolt, the lug nut, and the length of the locking cap, said sleeve being held in place by said locking cap and having a



thickness in relation to the brittleness of the material which forms the sleeve such that in order to remove the locking cap, the sleeve must be broken, so as to leave a visually detectable indication of tampering.

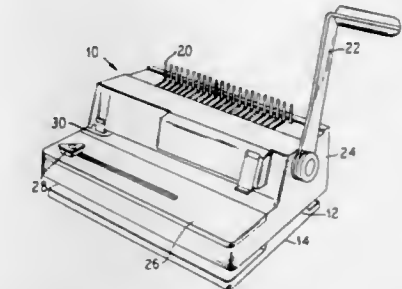
4,645,398
TANGLESS HELICALLY COILED INSERT
Frank J. Cosenza, Rolling Hills, and Albert K. Yamamoto, Huntington Beach, both of Calif., assignors to Rexnord Inc., Brookfield, Wis.
Continuation-in-part of Ser. No. 533,845, Sep. 15, 1983, abandoned. This application Dec. 30, 1985, Ser. No. 814,867
Int. Cl.⁴ F16B 37/12
U.S. Cl. 411-438 2 Claims



1. A helically coiled, wire-type screw thread insert adapted for installation into a workpiece having a tapped hole therein with a pre-determined thread pitch diameter, said insert comprising:

a substantially cylindrical body of helically wound wire; said body having a plurality of coils including a first free end coil, a second free end coil constructed identical to said first free end coil and at an opposite end of said body from said first free end coil, and means for preventing damage to the workpiece during installation therein and removal therefrom;
each of said free end coils having an outer thread pitch diameter which is less than the outer thread pitch diameter of said remaining coils extending between said free end coils, said outer thread pitch diameter of said free end coils being equal to or greater than the thread pitch diameter of the workpiece tapped hole;
said damage preventing means including each of said free end coils having a terminal end portion, each of said terminal end portions having a diminishing cross-sectional construction along a pre-determined length thereof which construction substantially maintains the original cross-section shape of the wire, and a tool gripping recess adjacent said terminal end portion;
said recesses being identical in construction, with one of said recesses receiving and gripping a portion of a tool during installation into the workpiece, and said other recess receiving and gripping a portion of a tool during removal from the workpiece.

4,645,399
COMBINED PUNCH AND BINDING MACHINE HAVING AN IMPROVED PRESSURE BAR ASSEMBLY
Roger M. Scharer, Des Plaines, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Nov. 5, 1985, Ser. No. 795,080
Int. Cl.⁴ B42C 1/00; B42B 4/00; B26D 5/00, 5/08
U.S. Cl. 412-16 9 Claims



1. A punch and binding machine which includes:
a frame;
a punch and binding mechanism carried on said frame;
said punch mechanism including a row of laterally aligned punch members for forming binding apertures in material to be punched and a pressure bar assembly for selectively actuating said punch members;
said pressure bar assembly including:
an elongated back plate member which defines: an actuator insert receiving aperture at each end thereof; a row of set pin receiving apertures; and a plurality of forwardly extending stripper plate engaging fingers;
an elongated unitary forward member for alignment with and securement to said back plate member, said forward member including: an actuator receiving recess at each end of said member for alignment with said back plate pin receiving apertures; forwardly extending housing means defining a row of elongated punch set pin receiving slots, each slot being aligned with and spaced from the back plate set pin apertures; and shoulder means for spacing said pin receiving slots from said back plate; and
leaf spring means mounted on said unitary member and overlying each of the slots therein so as to retain a set pin in an advanced or retracted position.

4,645,400
PRODUCT NEATENING SYSTEM
Timothy G. Mally, Oregon; Carroll P. Hartl; Daniel L. Orloff, both of Madison, and Robert V. Total, Sun Prairie, all of Wis., assignors to Oscar Mayer Foods Corp., Madison, Wis.
Continuation-in-part of Ser. No. 487,129, Apr. 21, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,649
Int. Cl.⁴ B65H 31/40
U.S. Cl. 414-28 6 Claims

1. An apparatus for neatening uneven stacks of foodstuff slices, comprising:
means for infeeding a flow of a plurality of stacks of generally horizontal oriented foodstuff slices to the apparatus;
reorienting means for receiving and reorienting the stacks of foodstuff slices from said infeeding means, said reorienting means including a plurality of outwardly projecting members that are longitudinally spaced along a rotating reorienting pathway, said longitudinal spacing between the projecting members being adequate to accommodate one of said stacks;
means for rotating said reorienting means and for moving said projecting members along the reorienting pathway from a location of generally horizontal infeed orientation to a location of generally vertical orientation and then to a location of generally horizontal outfeed orientation;

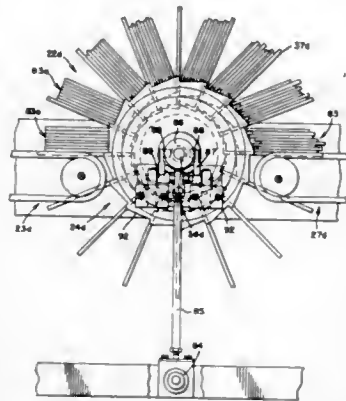
tamping means having a reciprocating shaker wheel that moves with the projecting members along said reorienting pathway, said shaker wheel having a surface that supports said stacks along at least a portion of said reorienting pathway; and

outfeed means for receiving the stacks of foodstuff from said projecting members at the location of generally horizontal outfeed orientation.

6. A method for neatening uneven stacks of foodstuff slices, comprising:

infedding a flow of a plurality of uneven stacks of generally horizontally oriented foodstuff slices;

receiving the flow of uneven stacks of infed foodstuff slices between a plurality of longitudinally spaced outwardly projecting members, each uneven stack being received between said spaced projecting members;



reorienting said stacks of infed food slices by rotating said plurality of longitudinally spaced outwardly projecting members along a rotating reorienting pathway, said reorienting step including rotating the plurality of outwardly projecting members and the stacks along the reorienting pathway from a generally horizontal infed orientation to a generally vertical orientation and then to a generally horizontal outfeed orientation and wherein said reorienting step includes supporting a peripheral edge of the slices with a reciprocating shaker member;

neatening each stack of infed slices during said reorienting step; and

outfeeding each neatened stack of foodstuff slices, said outfeeding step being from the generally horizontal outfeed orientation.

4,645,401

MAGNETIC DISC HANDLING SYSTEM

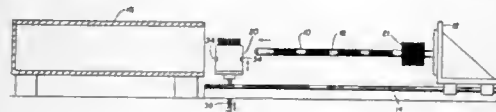
Allen B. Hopkins, Baldwinville, Mass., and John P. Dockx, Hooksett, N.H., assignors to Disc Technology Corporation, Billerica, Mass.

Filed Jun. 13, 1984, Ser. No. 620,116

Int. Cl. B65G 65/34

U.S. Cl. 414—222

13 Claims



1. A system for transferring magnetic discs to and from a processing chamber each disc having a central opening and a peripheral edge, comprising:

an elongated horizontal mandrel defining a longitudinal surface with a cross-sectional dimension smaller than the central opening so as to be insertable therethrough and having a plurality of circumferential grooves spaced

therealong each of the grooves being adapted to receive the edge of the central opening and retain a respective magnetic disc, and the grooves being spaced to maintain the discs in spaced non-touching relationship along the mandrel;

a cartridge carrier having a plurality of grooves each having confronting spaced walls and adapted to retain a respective magnetic disc through contact between the confronting spaced walls of the groove and the disc's peripheral edge, the grooves of the cartridge carrier being spaced the same as the spacing of the grooves of the mandrel and operative to maintain the discs in spaced relation and with aligned central openings;

first driver means for imparting motion to the mandrel on a first path defined co-axially along the mandrel's longitudinal axis;

second driver means for imparting motion to the cartridge carrier on a second path defined along an axis transverse to the first path;

said second means being operative to move the cartridge carrier containing the discs into alignment with the mandrel;

said first means being operative to move the mandrel through the aligned central openings of the magnetic discs retained within the cartridge carrier, with each groove of the mandrel in alignment with a respective disc within the cartridge carrier;

said second means being operative to move the cartridge carrier out of engagement with the discs to leave the discs retained in respective grooves of the mandrel; and

said first means being operative to move the mandrel and discs carried thereon into a processing chamber.

4,645,402

INTEGRATED CIRCUIT HANDLER AUTOMATIC UNLOAD APPARATUS

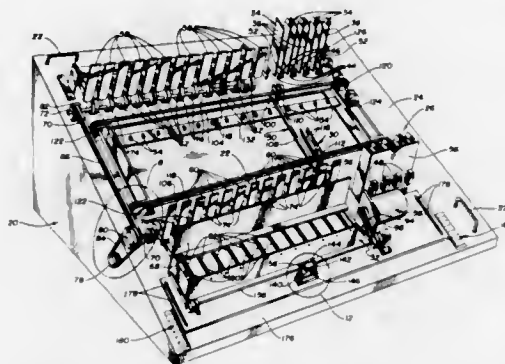
Ernest M. Gunderson, Minneapolis, Minn., assignor to Micro Component Technology, Inc., St. Paul, Minn.

Filed Dec. 13, 1985, Ser. No. 808,736

Int. Cl. B65G 47/06

U.S. Cl. 414—224

10 Claims



1. Apparatus for automatically positioning an integrated circuit device transport tube in registration with at least one chute discharging from a test site of an integrated circuit handler and, when the tube becomes full of devices discharged from the chute, presenting the full tube in an accessible fashion for retrieval by an operator of the handler, comprising:

(a) a hopper, spaced laterally from the at least one chute, for receiving at least one integrated circuit device transport tube;

(b) a shuttle configured to cradle a transport tube therein and disposed for movement between a first position, at which said shuttle is proximate said hopper for loading of a tube therein, and a second position at which the tube carried by said shuttle is laterally aligned with a chute;

- (c) an integrated circuit device loading station disposed above a shuttle cradled transport tube when said shuttle is in said second position, said station including clamping means for holding the tube in registration with the chute;
- (d) means for urging a tube, when it is cradled in said shuttle in its second position, upwardly into said clamping means; and
- (e) means for engaging one of opposite ends of the transport tube with the chute with which the tube has been registered.

4,645,403

DISCHARGE INSTALLATION FOR A SILO

Cornelis L. DeWit, 5, Bruggerhuis, 5595 XA Leende, Netherlands

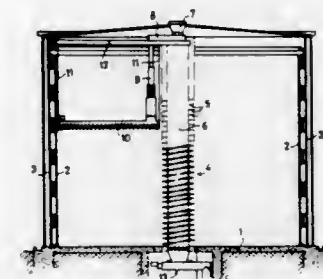
Filed May 1, 1985, Ser. No. 729,286

Claims priority, application Netherlands, May 2, 1984, 8401399

Int. Cl. B65G 65/38

U.S. Cl. 414—317

10 Claims



1. A discharge installation for a silo containing bulk material, comprising:

a column of collar plates disposed one above the other, adjacent plates merging into each other, each plate having a clearance toward the neighboring plate so that subsequent clearances form a mainly helical path, said collar plates enclosing a central space forming a vertical discharge duct, a rotating scraper device mounted substantially within said clearance and capable of traveling through said mainly helical path around said vertical discharge duct whereby clogging of the bulk material due to arching or caking in said clearances is avoided.

4,645,404

APPARATUS FOR REMOVING AN ADHERED FRAGILE FOOD PRODUCT FROM A SUPPORT SURFACE

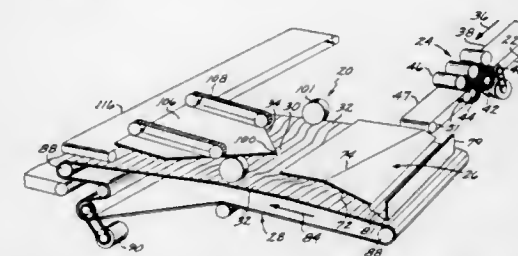
Davor Juravic, San Pedro, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Sep. 17, 1984, Ser. No. 651,488

Int. Cl. A47J 27/62

U.S. Cl. 414—417

6 Claims



1. Apparatus for removing a strip of food product from a horizontal support tray having an array of apertures there-through, the strip of food product having been previously deposited onto a flat surface of the tray and then processed on the tray, during which prior processing the underside of the

food product sticks to said flat surface of the tray, the apparatus comprising:

- first and second tray conveyor belts for supporting and moving the tray in a horizontal position along the longitudinal axis of the tray; and
- a releasing station interposed between the tray conveyor belts, the releasing station including at least one releasing roller that extends laterally across the side of the tray opposite the surface of the tray to which the food product is initially adhered, said releasing roller having protrusions thereon extending radially outwardly from said releasing roller and projecting vertically through the apertures of the tray to contact and lift the food product away from the tray as the tray passes said releasing roller and said releasing roller turns, and at least two back-up rollers that extend laterally across the surface of the tray opposite the side thereof to which the food product is initially adhered and displaced horizontally on opposite sides of said releasing roller along the direction of movement of the tray on said tray conveyor belt, the back-up rollers contacting the surface of the food product opposite the tray surface to which it is adhered thereby preventing gross vertical movement of the tray and the food product while allowing the strip of food product to be urged away from the tray by said releasing roller, thereby releasing at least a portion of the food product from the tray, with said tray being in substantial contact with the tray conveyor belts during release of the food product therefrom.

4,645,405

ROLL-OFF CONTAINER HANDLING MECHANISM

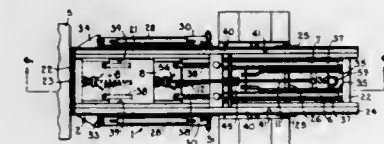
Angelo M. Cambiano, 1015 NE. 97th Pl., Kansas City, Mo. 64155

Filed May 1, 1985, Ser. No. 729,284

Int. Cl. B60P 1/28

U.S. Cl. 414—494

5 Claims



1. A roll-off container handling mechanism comprising:

- (a) a truck chassis having a rear end and opposite lateral sides;
- (b) an elongated container lift frame formed of laterally spaced and connected side rails and pivotally connected to said rear end of said chassis; said lift frame including a front end, a rear end, an upper side, and a lower side spaced below said upper side;
- (c) a hydraulic frame tilt ram pivotally connected between said chassis and said lift frame;
- (d) a stationary pulley having a first lateral axis of rotation mounted on said lift frame with said first axis positioned adjacent said lower side of said lift frame;
- (e) a planar slide plate mounted laterally across said lift frame adjacent said upper side and forward of said stationary pulley, extending between said side rails, and movable longitudinally along said lift frame; said plate including a slot formed longitudinally along said slide plate;
- (f) a pair of planar shields positioned vertically and in laterally spaced relation on said slide plate along said slot, each of said shields having an outer periphery;
- (g) a plurality of bars connected to and extending between said shields at the peripheries thereof;
- (h) a movable pulley having a second lateral axis of rotation and mounted on said slide plate in said slot between said shields and within said bars with said second axis positioned adjacent said upper side of said lift frame;

- (i) a pair of container lift rams mounted in laterally spaced relation on said lift frame and connected between said lift frame and said slide plate; and
- (j) a cable having a first end connected to said slide plate; said cable extending rearwardly, being reeved about said stationary pulley from top to bottom, extending forwardly from said stationary pulley, being reeved about said movable pulley from bottom to top, extending rearwardly past said rear end of said chassis, and terminating in a container connector at a second end of said cable.

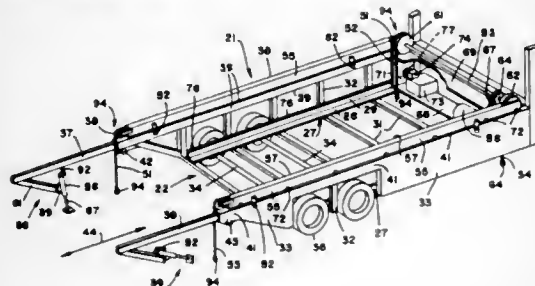
4,645,406

CONTAINER LOADER AND TRANSPORT ASSEMBLY
Augustus J. Cooper, 775 Crestmont Ave., Yuba City, Calif. 95991, and John S. Cooper, 10791 Peoria Rd., Browns Valley, Calif. 95918

Filed Jul. 17, 1984, Ser. No. 631,599
Int. Cl.⁴ B65G 67/02

U.S. Cl. 414—500

4 Claims



1. A container loader and transport assembly including an elongated bed having carriage support surfaces extending longitudinally along opposite sides of said bed, a wheel assembly mounted to said bed intermediate opposite ends thereof for rolling support of said bed, outrigger assemblies mounted to said bed for movement between an extended position outwardly of and longitudinally aligned with said support surfaces and a retracted position proximate said bed, carriage means mounted to said bed for movement on said support surfaces and said outrigger assemblies in said extended position, drive means coupled to move said carriage means along said support surfaces and said outrigger assemblies, lifting means mounted to said carriage means and formed for lifting and lowering of a container to and from a support surface and said carriage means with said container in a substantially horizontal orientation, wherein the improvement in said container loader and transport assembly comprises:

said support surfaces extending rearwardly of said wheel assembly;

said bed intermediate said support surfaces terminating proximate said wheel assembly to define with said support surfaces a rearwardly opening notch dimensioned to receive a front facing end of said container between said support surfaces and proximate said wheel assembly; and said carriage means is mounted for movement along said bed and said outrigger assemblies between a transport position at which said container means is positioned for support on said bed and a lifting and lowering position at which said front facing end is positioned in said notch, a rear facing end is positioned between said outrigger assemblies and said carriage is supported in part on said support surfaces of said bed and in part on said outrigger assemblies.

4,645,407

GRIPPER FOR A PROGRAMMABLE MANIPULATOR
Anthony M. Williams, Iver, England, assignor to EMI Limited, Hayes, England

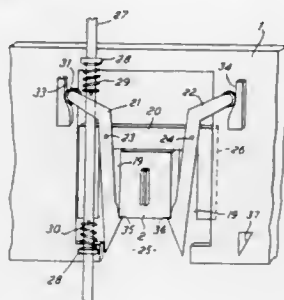
Filed Jun. 17, 1985, Ser. No. 744,947

Claims priority, application United Kingdom, Jun. 18, 1984, 8415498

Int. Cl.⁴ B25J 15/04

U.S. Cl. 414—730

6 Claims



1. A gripper system for a programmable manipulator, the system comprising a gripper arm; at least one article-handling finger element, the arm and the finger element having co-operable, inter-engageable formations whereby the finger element may be mounted detachably on the arm; and an assembly station arranged to hold the finger element releasably, the assembly station including a body member, a frame member displaceable with respect to the body member and latching means for holding the finger element releasably against the frame member;

whereby, in use, in a pick-up mode, movement of the gripper arm in one pre-arranged direction causes the co-operable inter-engageable formations of the gripper arm and of a finger element, held against the frame member, to become inter-engaged thereby mounting the finger element detachably on the arm, and thereby causes displacement of the frame member relative to the body member, said latching means being arranged to release the hold thereof on the finger element in response to displacement of the frame member, and, in a put-down mode, movement of the gripper arm in the reverse direction to said one predetermined direction causes a finger element, mounted detachably on the gripper arm, to cooperate with the latching means to be held thereby against the frame member, the co-operable, inter-engageable formations of the finger element and the gripper arm becoming disengaged.

4,645,408

UNCONTROLLED ANGULAR DISPLACEMENT COMPENSATING DEVICE FOR INDUSTRIAL ROBOT
Kenji Mizuno, Kani, Japan, assignor to Mizuno Tekko Kabushiki Kaisha, Kani, Japan

Filed Sep. 27, 1985, Ser. No. 781,038

Int. Cl.⁴ B66C 1/00

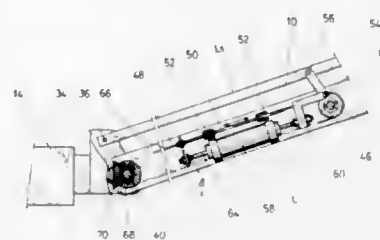
U.S. Cl. 414—733

1 Claim

1. An uncontrolled angular displacement compensating device for an industrial robot of a linkage type in which the robot hand is shifted by means of a linkage and the robot hand is turned through an angle of 90 degrees or 180 degrees through bevel gears mounted on a robot hand mounting link of the linkage and on a connecting member interconnecting the same link and the robot hand, respectively, said uncontrolled angular displacement compensating device comprising:

- (a) a first shaft fixedly mounted to a driving bevel gear;
- (b) a second shaft supported on said robot hand mounting link at a position spaced from said first shaft;
- (c) a pair of sprockets having the same pitch diameter and mounted on said first and second shafts, respectively;
- (d) an endless chain extended between said sprockets;

- (e) a correction lever rotatably mounted at the basal end thereof on said second shaft and pivotally joined at the free end thereof to an auxiliary link of a horizontal position maintaining linkage for maintaining the robot hand at a horizontal position; and



- (f) a fluid pressure cylinder pivotally joined at the rear end thereof through a connecting member to said correction link and connected at the free end of the piston rod thereof through a connecting member to the upper run of the endless chain.

4,645,409

OUTER ARM ASSEMBLY FOR INDUSTRIAL ROBOT
Robert H. Gorman, Clinton, Pa., assignor to American Cimflex Corporation, Pittsburgh, Pa.

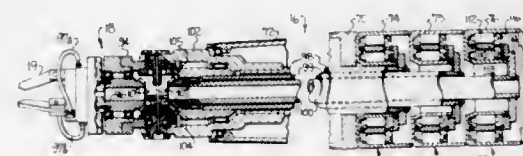
Continuation-in-part of Ser. No. 524,839, Aug. 19, 1983, Pat. No. 4,552,505, which is a continuation-in-part of Ser. No. 443,156, Nov. 19, 1982, which is a continuation-in-part of Ser. No. 346,222, Feb. 5, 1982, Pat. No. 4,424,473. This application Aug. 16, 1984, Ser. No. 641,717

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.⁴ B25J 9/00

U.S. Cl. 414—735

10 Claims



1. A three axis arm assembly for an industrial robot comprising
- a supporting housing,
 - a hand assembly including a frame member, a transverse wrist pin mounted to said frame member, and a wrist rotary member rotatably mounted with respect to said frame member,
 - a rotatably mounted first tubular member defining a central axis, with said wrist pin of said hand assembly being transversely mounted at one end thereof, such that rotation of said first tubular member causes said wrist pin and frame member to rotate about said central axis,
 - a second tubular member rotatably mounted coaxially within said first tubular member,
 - first gear means operatively interconnecting one end of said second tubular member and said frame member of said hand assembly, such that rotation of said second tubular member causes said frame member to pivot about the axis of said wrist pin,
 - a third tubular member rotatably mounted coaxially within said first tubular member,
 - second gear means operatively interconnecting one end of said third tubular member and said wrist rotary member

such that rotation of said third tubular member causes said wrist rotary member to rotate with respect to said frame member, and

drive means for selectively rotating each of said first, second, and third tubular members about the common central axis thereof and relative to each other, said drive means comprising first, second, and third electrical motors mounted to said supporting housing adjacent the ends of said tubular members opposite said hand assembly, with each motor including a rotor and a stator each disposed coaxially about said central axis and further including a tubular central opening extending coaxially therethrough, with at least two of said tubular members extending through said tubular central opening of at least one of said motors, and with one of either the rotor or stator of each motor being fixed to a respective one of the ends of said tubular members and the other of the rotor or stator being fixed to said supporting housing, and such that the motors are serially arranged along said central axis.

4,645,410

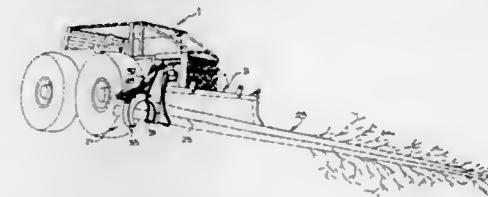
BLADE-EQUIPPED VEHICLE TREE GRIPPING MEANS
Armand Royer, Amos, Canada, assignor to Julien Royer, Quebec, Canada

Continuation of Ser. No. 617,461, Jun. 4, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 850,062

Int. Cl.⁴ B66C 3/00

U.S. Cl. 414—740

4 Claims



1. In a vehicle for working in a forest, having a pusher blade mounted at one end thereof lying in a plane normal to a longitudinal axis of the vehicle, and means for moving the pusher blade up and down relative to the vehicle, the improvement comprising:

tree gripping means mounted laterally, of said axis of the vehicle on one end of the pusher blade and extendable outwardly therefrom to pick up trees lying on the ground, said tree gripping means comprising a base mounted vertically upon said one end of the blade, said base having a lower portion forming a fixed jaw, and a movable jaw mounted by a pivot pin on the base above the portion of said base forming the fixed jaw, and

means for operating the tree gripping means to grip a tree lying on the ground, said operating means comprising an actuator for moving the movable jaw relative to the fixed jaw.

4,645,411

GRIPPER ASSEMBLY
Albert Madwed, 110 Wedgewood Dr., Easton, Conn. 06612
Filed Mar. 18, 1985, Ser. No. 712,809
Int. Cl.⁴ B65G 25/00

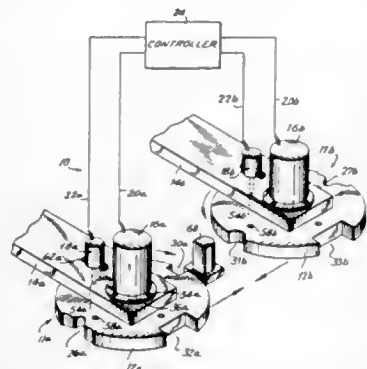
U.S. Cl. 414—753

9 Claims

1. In a gripper assembly for incorporation in a programmable machine and including a gripper and a coating gripper surface movable relative to each other by moving means into operative relation for gripping therebetween a selected one of a plurality of different shaped objects, the improvement comprising:

said gripper having a peripheral portion defining thereabout a plurality of different shaped object-receiving recesses in said peripheral portion;

means for supporting said gripper;
means for securing said gripper to said supporting means for relative rotation of said gripper between a plurality of positions corresponding to predetermined relative rotations of said gripper for relatively rotatively moving a selected one of said plural recesses into a selected one of



said plural positions for receiving in said selected recess at least a portion of an object substantially corresponding in shape to the shape of said selected recess; and means responsive to an electrical signal for predeterminedly rotating said gripper relative to said supporting means to selectively move one of said recesses to a selected one of said plural positions.

4,645,412 METHOD OF HANDLING A VEHICLE BODY DURING AN EQUIPPING OPERATION

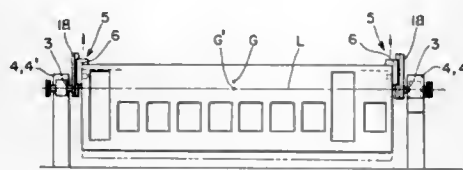
Yoshitada Fujita, Kobe; Sadashi Hanada, Miki; Yoshiaki Yamamoto, and Akira Nakabayashi, both of Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Continuation of Ser. No. 573,942, Jan. 26, 1984, abandoned. This application Jan. 29, 1986, Ser. No. 823,961

Claims priority, application Japan, Feb. 1, 1983, 58-15898
Int. Cl.⁴ B66F 7/28

U.S. Cl. 414—786

1 Claim



1. A method of handling a vehicle body during an equipping operation comprising the steps of:
supporting the vehicle body at opposite ends thereof by support means in such a manner that the vehicle body is movable in turning movement about an axis of shafts extending longitudinally substantially through the center of gravity of the vehicle body;
moving the vehicle body in turning movement about the axis of the shafts to any angular position, at which the vehicle body is fixed to perform equipping operations on both the interior and exterior thereof; and, while the vehicle body is supported by said supporting means,
adjusting the position of the vehicle body with respect to the shafts so that the center of gravity of the vehicle body remains coincident with the axis of the shafts as the center of gravity of the vehicle body changes during the equipping operation.

4,645,413 FRICTION PUMP

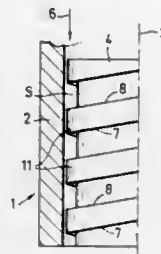
Günter Reich, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany
Filed May 15, 1984, Ser. No. 610,333

Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317868

U.S. Cl. 415—72

Int. Cl.⁴ F01D 1/36

9 Claims



1. A friction vacuum pump comprising:
pumping surfaces which include surface areas facing upstream as well as surface areas facing downstream with respect to the pumping direction, at least in a portion of the pumping surfaces, surface areas of different roughness being present, such that the roughness of the surface areas facing downstream is greater than the roughness of the surface areas facing upstream with respect to the pumping direction.

4,645,414 COMBINED VACUUM PUMP, BEARING AND SEAL ASSEMBLY

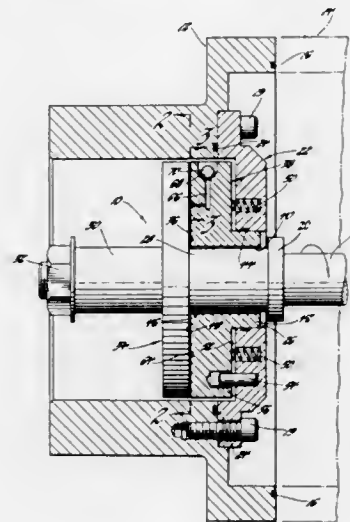
Arnold O. DeHart, Rochester, and James D. Symons, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1985, Ser. No. 742,425

Int. Cl.⁴ F04D 25/08

U.S. Cl. 415—83

3 Claims



1. A combination vacuum pump, low friction bearing and seal assembly for evacuating a vessel or the like and sealing the vessel against ingress of ambient air during operation of the pump, comprising:
a rotor member supported for unidirectional rotation about an axis relative to said vessel to operate said pump,
a stator member supported non-rotatably relative to said vessel and axially movable relative to said rotor member, said rotor and stator members further including axially confronting surfaces,

air inlet means providing for passage of air from said vessel between said confronting surfaces,
a first groove pattern defined about said axis in one of said confronting surfaces and oriented so as to force air from said vessel through said air inlet means in one radial direction when said rotor member is rotated in one direction,
a second groove pattern defined in one of said confronting surfaces substantially concentric to the first groove pattern and oriented oppositely thereto so as to force air from the ambient between said confronting surfaces in the opposite radial direction when said rotor member is rotated in said one direction, said second groove pattern terminating radially of said first groove pattern so as to define a radial space therebetween,
one-way air exit means providing for a low resistance passage of air to the ambient from an area located on the opposite side of said radial space from said second groove pattern, and,
preload means acting to bias said rotor and stator members axially toward one another with a predetermined force, whereby, when said rotor member is rotated during operation of said pump at a predetermined speed in said one direction, sufficient air is forced from the ambient between said confronting surfaces by said second groove pattern to space said surfaces axially apart against said preload means a distance sufficiently large to prevent direct contact therebetween to provide a low friction bearing, said axial spacing also being sufficiently small to allow said first groove pattern to force sufficient air from said vessel through said inlet means and to the ambient through said air exit means to substantially evacuate said vessel, while said spaced confronting surfaces also cooperate to provide a restriction with a high resistance to the passage of ambient air through said radial space to said air exit means, thereby substantially trapping said ambient air drawn in by said second groove pattern to maintain said axial spacing, with any ambient air passing through said restriction passing back to the ambient through said air exit means which thereby also cooperates to keep said evacuated vessel sealed from the ambient.

4,645,415 AIR COOLER FOR PROVIDING BUFFER AIR TO A BEARING COMPARTMENT

Edward J. Hovan, Manchester, Conn., and Joseph P. Zimonis, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

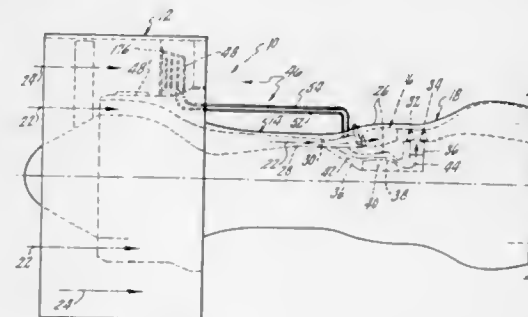
Division of Ser. No. 564,995, Dec. 23, 1983, Pat. No. 4,542,623.

This application Aug. 11, 1986, Ser. No. 895,521

Int. Cl.⁴ F02C 7/16; F01D 5/18

U.S. Cl. 415—115

4 Claims



2. For a gas turbine engine, a stator assembly which includes a heat exchanger having an airfoil shape for cooling hot, pressurized gases which comprises:
a primary pressure containment vessel including
a base section having an inlet duct and an outlet duct,
an airfoil section having
a leading edge,

a trailing edge,
a pair of curved sidewalls joined together at the leading edge and trailing edge leaving a cavity therebetween, and
at least one baffle joined to the sidewalls which extend in the cavity between the sidewalls to form a spanwisely extending passage bounded by the sidewalls and the baffle which is in flow communication with the outlet duct;
a secondary pressure containment vessel including an impingement tube disposed in the passage, the impingement tube being spaced from the baffle and the sidewall to form a convective heat transfer passage, the impingement tube having an interior in flow communication with the inlet duct for receiving the hot, pressurized gases and a plurality of holes extending from the interior through the impingement tube for discharging impingement flow against the sidewalls;

wherein heat is removed from the hot, pressurized gases as a result of the hot gases impinging against the sidewalls and is removed by convective heat transfer as the gases flow through the convective heat transfer passage toward the outlet duct in the base section of the primary pressure containment vessel.

3. A method of cooling hot, pressurized gases in a gas turbine engine having a flow path for cooling gases at a lower pressure and temperature than the hot, pressurized gases, comprising:

forming an airfoil shaped heat exchanger having a first pressure containment vessel formed by the sidewalls of the heat exchanger and at least one baffle extending between the walls to strengthen the first pressure containment vessel and to form a passage therein, the heat exchanger further having a secondary pressure containment vessel formed by an impingement tube disposed in the passage to form a convective flow passage between the impingement tube and the sidewalls and baffle;
flowing the cooling gases over the exterior of the airfoil shaped heat exchanger;
flowing the hot, pressurized gases to the impingement tube of the secondary pressure containment vessel;
flowing the hot, pressurized gases through the impingement tube to decrease the pressure of the gases and impinging the hot, pressurized gases against the sidewalls of the airfoil shaped heat exchanger to transfer heat from the hot, pressurized gases through the sidewalls to the cooling gases flowing over the sidewalls;
flowing the hot, pressurized gases through the convective heat transfer passage to transfer an additional amount of heat to the cooling gases flowing over the sidewalls;
flowing the cooled, pressurized gases to a location of the engine which advantageously uses the cooled gases.

4,645,416 VALVE AND MANIFOLD FOR COMPRESSOR BORE HEATING

Harvey I. Weiner, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1984, Ser. No. 667,031

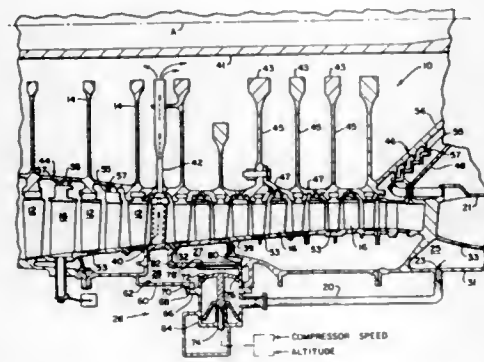
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.⁴ F04D 29/00

U.S. Cl. 415—115

2 Claims

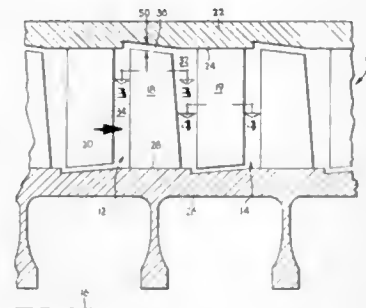
1. For a gas turbine engine having an engine case housing a compressor rotor having compressor blades extending in the bore of the engine case, means for selectively heating the bore to expand said compressor rotor so as to maintain a limited clearance of the tips of the said compressor blades, said means including a valve having a first and second position, the engine casing being enlarged to accommodate said valve and defining a manifold, connecting means for leading mid-stage compressor bleed air into said manifold and a higher stage compressor bleed air into said manifold, said valve interconnecting said

bore and said manifold for selectively injecting mid-stage compressor bleed air and a higher stage compressor bleed air into



said bore and control means for positioning said valve to said first position and alternately to said second position.

4,645,417
COMPRESSOR CASING RECESS
David C. Wisler, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Feb. 6, 1984, Ser. No. 577,398
The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.
Int. Cl.⁴ F01D 11/08
U.S. Cl. 415—170 R



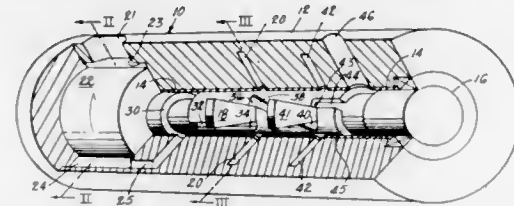
1. In a compressor of an axial flow turbomachine having an airfoil relatively rotatable with respect to a radially disposed surface, said airfoil being shroudless at its radially outer end, said surface bounding a flowpath for aft moving fluid, the improvement comprising:

a circumferentially extending recess in said surface, radially disposed relative to said airfoil with a clearance therebetween; wherein said recess includes a generally aft facing wall and a generally forward facing wall, said aft facing wall being oriented so as to provide a barrier to the forward flow of said fluid in said clearance, and said forward facing wall being oriented so as to provide an aerodynamically smooth transition from said recess into said flowpath.

4,645,418
FLUID PUMP
Arthur D. Siegel, Cheshire, Conn., assignor to Farrel Corporation, Ansonia, Conn.
Continuation of Ser. No. 535,809, Sep. 26, 1983, abandoned. This application Feb. 8, 1985, Ser. No. 699,501
Int. Cl.⁴ F04D 3/00; B29B 7/24
U.S. Cl. 415—199.5

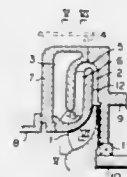
21 Claims
1. A pump for viscous fluid including a body having an inlet for supplying viscous fluid, a central cylindrical bearing and at least one concentric annular channel opening only at the bear-

ing, a relatively close fitting shaft rotatable in said bearing and having at least one radial blade complementary to the cross section of the channel and rotatably received in the channel, a first groove in the shaft extending generally axially from the inlet through the bearing to an area behind the blade considered in the direction of rotation of the shaft and blade and communicating with the channel, a second groove in the shaft



extending through the bearing from in front of the blade generally axially toward an outlet and communicating with the channel, said shaft and said bearing substantially closing said channel but for said opening provided by said first and second grooves, the fluid entering behind the blade through the first groove progressively filling the channel as the shaft and blade rotate and the advancing blade engaging and forcing the fluid in the channel through the second groove toward the outlet.

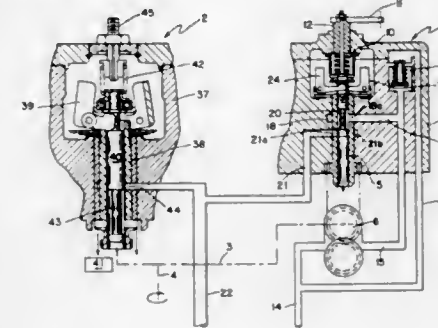
4,645,419
CENTRIFUGAL COMPRESSOR
Tai Furuya, Kanagawa, and Keiji Koike, Tokyo, both of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Aug. 12, 1985, Ser. No. 764,746
Claims priority, application Japan, Sep. 10, 1984, 59-188164; Sep. 12, 1984, 59-189660
Int. Cl.⁴ F04D 29/42
U.S. Cl. 415—210



1. A centrifugal compressor comprising:
(a) a casing;
(b) an impeller mounted on a rotatable shaft within said casing;
(c) a diffuser disposed within said casing downstream of said impeller;
(d) a diffusion channel disposed within said casing downstream of said diffuser;
(e) a plurality of first guide vanes disposed in said diffusion channel;
(f) a U-turn channel connecting said diffuser and said diffusion channel for conducting fluid from said U-turn channel being broader at its outlet than at its inlet;
(g) a collector in the form of a volute chamber, a flowing passage thereof being coupled to the outlet of said diffusion channel and terminating at a discharge port; and
(h) a plurality of second guide vanes disposed in said U-turn channel on the inner side wall thereof, each one of said plurality of second guide vanes having a height shorter than the width of the flow passage of said U-turn channel and each one of said plurality of second guide vanes extending in a direction along the flowing direction with an

inclination relative to the meridian direction such that the outlet angle thereof is smaller than the inlet angle thereof.

4,645,420
PROPELLER CONTROL SYSTEM
Timothy R. Warner, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Jun. 7, 1985, Ser. No. 742,315
Int. Cl.⁴ B64C 11/40
U.S. Cl. 416—48

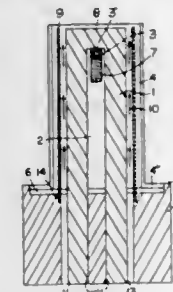


2 Claims
1. A system for controlling the pitch of a variable pitch propeller driven by a gas turbine engine comprising:
a propeller governor, including a booster pump, driven by the gas turbine engine, said booster pump having an inlet and an outlet;
a spool valve in said propeller governor having an inlet and an outlet;
a flyweight mechanism in said propeller governor for controlling the position of said spool valve as a function of engine speed;
a source of fluid under pressure in fluid communication with the inlet of said booster pump;
means for conveying fluid under pressure from the outlet of said booster pump to the inlet of said spool valve;
a propeller control mechanism for adjusting the pitch of the propeller;
means for conveying fluid, the pressure of which is modulated by movement of said spool valve in response to operation of said flyweight mechanism, from the outlet of said spool valve to said propeller control mechanism whereby propeller pitch is controlled; and
an overspeed governor driven by the gas turbine engine, said overspeed governor being in fluid communication with the outlet of said spool valve of said propeller governor and said propeller control mechanism to relieve pressure of the fluid supplied to it in the event that said propeller governor fails and is unable to control the pitch of the propeller.

4,645,421
HYBRID VANE OR BLADE FOR A FLUID FLOW ENGINE
Werner Huether, Karlsruhe, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany
Filed Jun. 2, 1986, Ser. No. 869,575
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1985, 3521782
Int. Cl.⁴ F01D 5/18
U.S. Cl. 416—92

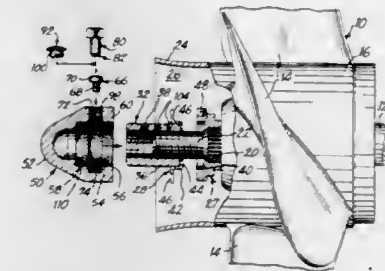
20 Claims
1. A blade for a fluid flow engine, comprising a blade foot, a ceramic hollow blade jacket having one end secured to said blade foot, a metallic blade core having a U-shaped configuration and including a crosspiece and legs spaced by a gap, said legs having first ends rigidly anchored to said blade foot and second ends interconnected by said crosspiece, a mounting member in said hollow jacket, said mounting member and said

hollow jacket forming an integral one-piece unit, said legs and crosspiece of said U-shaped blade core straddling said mounting member, so that said blade core can be inserted into said hollow blade jacket in the direction of a longitudinal blade axis, and a heat insulating member interposed between said cross-



piece and said mounting member for forming an intermediate bearing between said crosspiece and said mounting member, whereby said blade core can move independently of said blade jacket for compensating for different temperature coefficients of said blade jacket and of said blade core.

4,645,422
ANTI-THEFT DEVICE FOR MARINE PROPELLERS
Donald Brushaber, 211 Hayes Ct., Normandy Beach, N.J. 08739
Filed Dec. 6, 1985, Ser. No. 805,781
Int. Cl.⁴ B63H 1/20
U.S. Cl. 416—93 A



16 Claims
1. An anti-theft device for securing a marine propeller to a propeller shaft, against unauthorized removal, the propeller shaft having a forward support portion for receiving the hub of the propeller and a threaded end portion extending aft beyond the propeller hub for receiving a propeller nut which secures the propeller in place upon the propeller shaft, the propeller nut including an outer surface having a given overall diameter and a wrenching configuration on the outer surface, said anti-theft device comprising:

a spinner having a generally smooth-contoured outer surface and a generally cylindrical inner bore extending axially between a forward end and an aft end and having a diameter complementary to the overall diameter of the outer surface of the propeller nut so that the spinner may be slipped over the wrenching configuration of the propeller nut and placed in free-spinning relationship with the propeller nut, with the wrenching configuration enveloped within the spinner such that the spinner precludes wrenching access to the propeller nut;
an annular recess in the spinner communicating with the inner bore between the forward and aft ends of the inner bore and having a diameter greater than the diameter of the inner bore;
an access passage extending generally radially from the annular recess to the outer surface of the spinner;
a lock pin capable of alignment with the access passage and

having a projection receivable within the annular recess in the spinner; and
 an anti-tamper means for securing the lock pin to the propeller nut, against unauthorized removal, said anti-tamper means being capable of operation through the access passage in the spinner to enable the lock pin to be secured selectively to the propeller nut when the spinner is in said free-spinning relationship, with the projection entering the annular recess and capturing the spinner axially with respect to the propeller nut so as to secure the spinner against axial movement relative to the propeller nut and release of the spinner from the propeller nut, while enabling the spinner to spin freely upon the propeller nut, whereby unauthorized wrenching access to the wrenching configuration of the propeller nut is precluded.

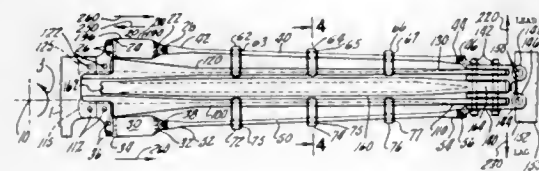
4,645,423
TENSION/COMPRESSION ROD ARRANGEMENT FOR DAMPING HELICOPTER ROTOR BLADE OSCILLATIONS

Donald L. Ferris, Newton, and David G. Matuska, Stratford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 29, 1985, Ser. No. 760,232
 Int. Cl.⁴ F03D 7/04

U.S. Cl. 416—140

7 Claims



1. Apparatus for damping blade lead/lag motion in a helicopter rotor system having a central hub (1), radial flexbeams (100, 120) attached at their root ends (115, 125) thereto, and blades (155) attached at their root ends (152) to the outboard ends (110, 130) of the flexbeams, comprising:

- at least one rigid link (50) radially extending the length of each flexbeam (100) and offset in the plane of lead/lag motion therefrom, said link (50) having an inboard end (52) and an outboard end (54);
 - a first attachment means for attaching the outboard end (54) of said link (50) to the outboard end (130) of the flexbeam;
 - a damping means (30) having an inboard end (34) and an outboard end (32) connected between the central hub (1) and the inboard end (52) of the link (50); and
 - a second attachment means for pivotally attaching the inboard end (52) of the link (50) to the outboard end (32) of the damping means,
- wherein bending of the flexbeam (100) caused by lead/lag movement of blade (155) will result in radial translation of the link (50) causing the damping means to react and damp out the radial translational movement of the link.

4,645,424
ROTATING SEAL FOR GAS TURBINE ENGINE
 Gary P. Peters, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

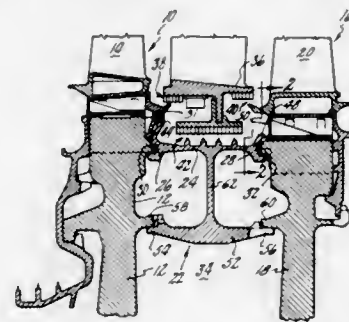
Filed Jul. 23, 1984, Ser. No. 633,723
 Int. Cl.⁴ F01D 5/06, 11/02

U.S. Cl. 416—198 A

4 Claims

1. For a gas turbine power plant comprising a first stage turbine having a first disk supporting a plurality of turbine blades and having a first axial projection, a second stage turbine having a second disk supporting a plurality of turbine blades and having a second axial projection, rotating sealing means for the cavity between said first disk and said second disk sealing against the working fluid of said turbines including an annular member having an I-beam shape in cross-section

and an upper flat contoured rim extending between and abutting said first disk and said second disk for transmitting the axial loads imposed by said turbine blades, and a lower convexed, contoured rim extending between said first disk and said second disk, the outer edges of said lower convexed, con-



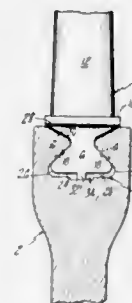
toured rim radially abutting the respective first axial projection and the second axial projection for transmitting the radial loads imposed by said turbine blades whereby a portion of the radial load is transmitted through said first disk and said second disk and the remaining portion is transmitted through the I-section of said I-beam shaped annular member.

4,645,425
TURBINE OR COMPRESSOR BLADE MOUNTING
 Robert L. Morrison, Jr., East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1984, Ser. No. 683,826
 Int. Cl.⁴ F01D 5/30

U.S. Cl. 416—215

3 Claims

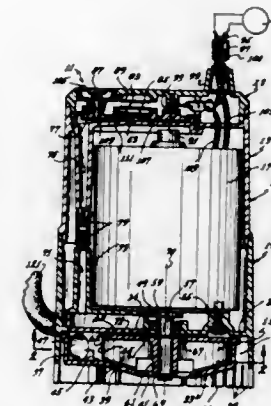


- 1. In a turbine or compressor blade and disk assembly, a disk having a circumferential groove in its periphery to receive the roots of the row of blades, said groove having circumferentially extending opposed sloping surfaces therein and a base surface also extending circumferentially,
- a blade having a root to fit in said groove, said root having opposed sloping surfaces to engage the sloping surfaces on the groove and thus be supported against radial outward movement relative to the disk, said root also having a base surface normally spaced from the base surface of the groove when the cooperating sloping surfaces are in contact, said blade having a platform adjacent to the root and overlying the disk, said platform extending substantially into contact with the platform on the adjacent blade and the platforms extending beyond the end surfaces of the root, and
- a rigid rib extending integrally from end-to-end of the base surface on the root in a position to and of a dimension to engage the base surface on the groove in a circumferential direction to hold the cooperating sloping surfaces in contact and prevent tipping of the blade in a circumferential direction.

4,645,426
BILGE PUMP
 E. Dale Hartley, 1706 Decker Rd., Malibu, Calif. 90265, and F. Scott Hartley, 60 Mansfield Ln., Camarillo, Calif. 93010
 Filed Apr. 24, 1985, Ser. No. 726,636
 Int. Cl.⁴ F04B 49/04

U.S. Cl. 417—38

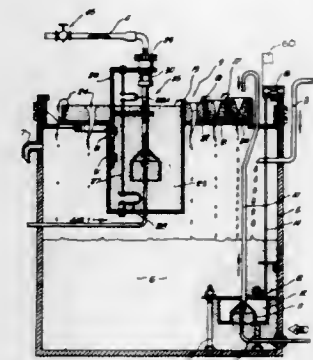
15 Claims



- 1. A pump having an inlet and operable in response to the level of liquid to be pumped wherein said level is variable, said pump comprising:
 - an impeller for pumping liquid, said impeller having a periphery and an inlet which is positionable to receive the liquid;
 - means for driving the impeller to cause the impeller to pump the liquid and to provide the liquid under pressure;
 - passage means for receiving the liquid under pressure from the impeller;
 - means for permitting the liquid to pass from the inlet side of the pump into the passage means when the impeller is not being driven by the driving means whereby the passage means receives liquid as the liquid level rises and also receives the liquid under pressure from the impeller;
 - means defining a sensing chamber which is open to the liquid at a location where it can receive the liquid under pressure from the impeller and where it can receive the liquid which passes into the passage means when the impeller is not being driven whereby gas in the sensing chamber can be compressed and the pressure of the gas increases with an increase in height of the level of the liquid;
 - said location being at least partially radially inwardly of said periphery;
 - means for providing a fluid path from the liquid being pumped radially inwardly of the periphery of the impeller to said location without passing around said periphery whereby the pressure sensed by the sensing chamber is less than the pressure at said periphery;
 - control means responsive to the pressure of the gas in the sensing chamber reaching about a first magnitude for causing said driving means to drive said impeller to pump the liquid into the passage means and responsive to the pressure in the sensing chamber dropping to a second magnitude to terminate the driving of the impeller by the driving means; and
 - the pumping of liquid by the impeller elevating the pressure of the gas in the sensing chamber to a magnitude which is above said first magnitude.

4,645,427
METERING PUMP ASSEMBLY
 William J. Stevens, 23/25 Woodstock St., Bondi Junction, Australia
 Continuation of Ser. No. 610,194, May 16, 1984, abandoned, which is a continuation of Ser. No. 366,316, Apr. 7, 1982, abandoned. This application Oct. 22, 1985, Ser. No. 789,361
 Claims priority, application Australia, Apr. 10, 1981, PE8407
 Int. Cl.⁴ F04F 1/18, 3/00
 U.S. Cl. 417—108

25 Claims

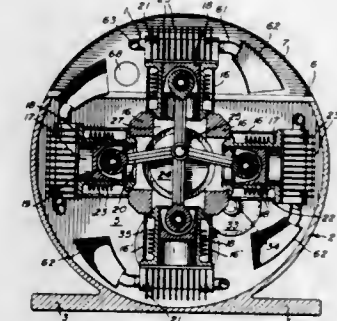


1. A constant output pump assembly comprising a pump chamber, means to supply liquid to said pump chamber, means to maintain a predetermined liquid level in said pump chamber, an airlift pump comprising a lift tube and adapted to deliver liquid from said pump chamber to an outlet means, and means to adjust the immersion depth of said lift tube in said chamber to thereby regulate the output of said pump.

4,645,428
RADIAL PISTON PUMP
 Manuel Arregui, P.O. Box 495, Prince Albert, Canada S6V 5R8; Rafael Diaz, Benito Guinea, 12-6°D, Vitoria-Alada, Spain; Vicente Gamon, Avda Iparralde No. 25-1°, Irun (Guipuzcoa), Spain, and Javier Yarza, 4-3°, Irun S.S., Spain
 Filed Oct. 31, 1985, Ser. No. 793,533
 Int. Cl.⁴ F04B 27/04

U.S. Cl. 417—273

3 Claims



1. A radial piston pump type air compressor comprising a casing having casing end walls, a rotor located within said casing and having one and another end, a rotor supporting shaft fixed to said rotor one end and journaled in one of said casing end walls, a boss fixed to the other casing end wall and rotatably supporting said rotor other end, said boss being cylindrical and defining a first axis co-axial with said rotor supporting shaft, said rotor including a plurality of radially-extending and equally-spaced cylinders offset one with respect to the other axially of said supporting shaft and each defining an outer end closed by a cylinder head; said cylinders rotatable

about said first axis; a cylindrical stud projecting from said boss in said casing and disposed along a second axis which is parallel to and eccentric from said first axis, a piston movable in each cylinder, a connecting rod pivotally connected to said piston at one end and to said cylindrical stud at its other end; said connecting rods pivotally mounted on said studs in side-by-side relation and each disposed in the central rotational plane of the associated cylinder; and intake check valve and a delivery check valve mounted in each cylinder head, an atmospheric air intake associated with said intake check valve, said air intake forming a scoop extending within the casing in the direction of rotation of its associated cylinder and flaring in said direction, said casing having openings for the admission therein of atmospheric air to be compressed and to be collected by said scoop, and compressed air conduits connected to said delivery check valve, extending within said rotor supporting shaft, and opening at the exterior of said casing, for the delivery of compressed air from said cylinders.

4,645,429

ROTARY COMPRESSOR

Kazutomo Asami; Fumiaki Sano, both of Shizuoka; Koji Ishijima, Fujieda; Fumio Wada, and Takuho Hirahara, both of Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

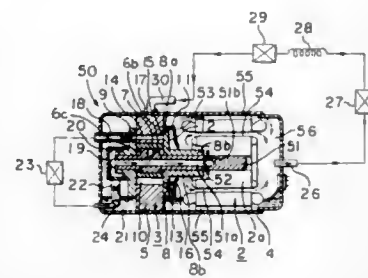
Filed Jun. 18, 1985, Ser. No. 746,123

Claims priority, application Japan, Jun. 25, 1984, 59-130522

Int. Cl. F04C 18/00, 29/02

U.S. Cl. 417-312

5 Claims



1. A rotary compressor comprising:

- (a) a housing comprising a cylindrical body, a first end plate, and a second end plate;
- (b) an electric motor disposed in said housing, said electric motor comprising:
 - (i) a stator coaxially disposed within said cylindrical body of said housing and separated therefrom by a first annular space and
 - (ii) a rotor coaxially disposed within said stator and separated therefrom by a second annular space;
- (c) said cylindrical body of said housing, said first end plate of said housing, and said electric motor defining a first end chamber;
- (d) a crank shaft coaxially disposed within a cylindrical bore within said rotor and projecting axially therefrom, said crank shaft comprising:
 - (i) a cylindrical body having a first end inside said rotor and a second end outside said rotor;
 - (ii) an eccentric support surrounding said cylindrical body;
 - (iii) an axial blind bore leading from said second end to a point within said rotor;
 - (iv) at least one radial bore leading from said axial blind bore to the outer surface of said eccentric support part; and
 - (v) a plurality of radial bores leading from said axial blind bore to the outer surface of said cylindrical bore within said rotor;
- (e) a piston surrounding said cylindrical body and said eccentric support part of said crank shaft;
- (f) an annular cylinder surrounding said piston, said annular

cylinder being mounted in said cylindrical body of said housing;

- (g) a main bearing surrounding and journaling said cylindrical body of said crank shaft between said rotor and said eccentric support part of said crank shaft, said main bearing comprising:
 - (i) a boss that extends into said rotor but that does not block said plurality of radial bores in said crank shaft and
 - (ii) a flange that makes sealing contact with said annular cylinder and sliding contact with said piston;
- (h) a silencing plate extending from said flange of said main bearing to said boss of said crank shaft;
- (i) said silencing plate, said boss of said main bearing, and said flange of said main bearing defining a silencing chamber;
- (j) said silencing plate, said electric motor, said boss of said main bearing, and said cylindrical body of said housing defining a central chamber;
- (k) an end bearing surrounding and journaling said cylindrical body of said crank shaft between said eccentric support part of said crank shaft and said second end of said crank shaft, said end bearing comprising:
 - (i) a boss that extends to said second end of said crank shaft and
 - (ii) a flange that makes sealing contact with said annular cylinder and sliding contact with said piston;
- (l) said piston, said annular cylinder, said main bearing, and said end bearing defining a compression chamber;
- (m) an oil sump plate making sealing engagement with said flange of said end bearing and surrounding said boss of said end bearing and said second end of said cylindrical body of said crank shaft;
- (n) said oil sump plate, said flange of said end bearing, said boss of said end bearing, and said cylindrical part of said crank shaft defining an oil sump chamber;
- (o) said second end plate of said housing, said cylindrical body of said housing, said oil sump plate, said flange of said end bearing, and said annular cylinder defining a second end chamber;
- (p) a condenser, a capillary tube, and an evaporator in fluidic series externally of said housing;
- (q) a heat exchanger positioned externally of said housing;
- (r) a first path of fluid communication leading from said first end chamber through said condenser, said capillary tube, and said evaporator to said compression chamber;
- (s) a second path of fluid communication leading from said compression chamber through said flange of said main bearing to said silencing chamber;
- (t) a third path of fluid communication leading from said silencing chamber through said flange of said main bearing, said annular cylinder, said flange of said end bearing, and said second end chamber to said heat exchanger;
- (u) a fourth path of fluid communication leading from said heat exchanger to said second end chamber, said fourth path of fluid communication terminating in an outlet located at a level that, during use of the rotary compressor, is beneath the surface of lubricant in said second end chamber;
- (v) a fifth path of fluid communication beginning with an inlet that surrounds and is spaced from said outlet of said fourth path of fluid communication, whereby, during use of the rotary compressor, lubricant in said second end chamber enters said inlet of said fifth path of fluid communication and is entrained in compressed gas entering said fifth path of fluid communication from said fourth path of fluid communication, said fifth path of fluid communication leading from said second end chamber to said oil sump chamber;
- (w) a sixth path of fluid communication leading from said oil sump chamber through said axial blind bore in said crank shaft and said at least one radial bore to lubricate the

interface between said eccentric support plate and said piston;

- (x) a seventh path of fluid communication leading from said oil sump chamber through said axial blind bore in said crank shaft, said plurality of radial bores, and between said rotor and said boss of said main bearing into said central chamber;
- (y) an eighth path of fluid communication leading from said central chamber through said second annular space to said first end chamber; and
- (z) a ninth path of fluid communication leading from said central chamber through said first annular space to said first end chamber.

4,645,430

WET MOTOR GEROTOR FUEL PUMP WITH SELF-ALIGNING BEARING

William A. Carleton, Pine City, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

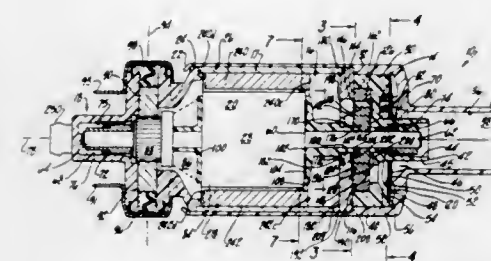
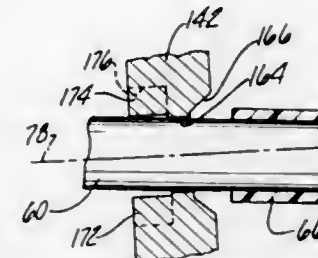
Continuation of Ser. No. 603,590, Apr. 25, 1984, abandoned.

This application Feb. 14, 1986, Ser. No. 829,559

Int. Cl. F04C 2/10; F16C 25/04; F04B 9/04

U.S. Cl. 417-359

5 Claims



1. A wet motor gerotor fuel pump for pumping fuel from a fuel source to an internal combustion engine comprising:

- a pump case having one end, an opposite end and a flow axis therethrough, said pump case further comprising an inlet end bore at said one end adapted to communicate with said fuel source;
- an inlet chamber adjacent said inlet end bore;
- a motor chamber located in said opposite end of said pump case;
- a pump chamber interposed said motor chamber and said inlet chamber;
- first means for sealing said pump case, said first means for sealing located at said opposite end of said pump case;
- inlet housing means mounted in said pump chamber, said inlet housing means comprising an annular hub protruding into said inlet chamber, said inlet housing means further comprising a gerotor cavity about a gerotor axis located parallel to and displaced a predetermined distance in an eccentric radial direction from said flow axis;
- outlet housing means having pump outlet means adapted to be communicated with said internal combustion engine

and further comprising a second means for sealing coupled to said first means for sealing;

electric motor means comprising armature means comprising an armature shaft having a shaft axis and a first and a second end rotatably supported, respectively, at said inlet housing means and said outlet housing means, said armature means further comprising drive hub means having first tang means extending in a first radial direction relative to said armature shaft; and

gerotor pump means located in said gerotor cavity, said gerotor pump means comprising an inner pump gear, an outer pump gear, and second tang means located on one of said inner and outer pump gears, said second tang means further extending in a second radial direction radially offset from said first radial direction and forming a driving connection with said first tang means such that said fuel pump pumps fuel from said fuel source into said inlet chamber, through said gerotor pump means past said electric motor means into said outlet housing means substantially along said flow axis to said internal combustion engine, said driving connection between said second tang means and said first tang means allowing for end-for-end self-alignment between said armature shaft and said one of said inner pump gear and said outer pump gear;

said outlet housing means further comprising:

- a cylindrical bore located in said outlet housing means, said cylindrical bore having a central axis;
- a self-aligning bearing bushing mounted in said cylindrical bore for positioning said second end of said armature shaft relative to said central axis of said cylindrical bore, said self-aligning bearing bushing comprising an annular body having an axis and a crowned periphery portion with said crowned periphery portion extending radially away from said axis, said crowned periphery portion being in contact with said cylindrical bore, said annular body being generally circular in cross-section; and a cylindrical bore axially aligned with said axis of said annular body, said cylindrical bore adapted to receive said second end of said armature shaft; and
- anti-rotation means coupling said self-aligning bearing bushing and said outlet housing means to prevent circumferential rotation of said self-aligning bearing bushing relative to said outlet housing means such that misalignment of said second end of said armature shaft relative to said central axis of said cylindrical bore in said outlet housing means is permitted by said crowned periphery portion of said self-aligning bearing bushing pivoting in said cylindrical bore of said outlet housing means in response to an axial alignment movement of said first end of said armature shaft at said inlet housing means while permitting said second end of said armature shaft to rotate within said cylindrical bore of said self-aligning bearing bushing.

4,645,431

HYDRAULIC PUMPING APPARATUS AND METHOD OF OPERATION

Larry K. Spencer, Dallas; Clyde D. Wilson, and Robert Vanlangendonck, both of Houston, all of Tex., assignors to Sigma Enterprises, Inc., Dallas, Tex.

Continuation of Ser. No. 595,274, Mar. 30, 1984, abandoned.

This application Jan. 16, 1986, Ser. No. 819,476

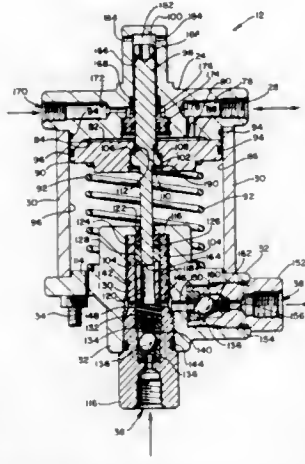
Int. Cl. F04B 9/12

U.S. Cl. 417-401

11 Claims

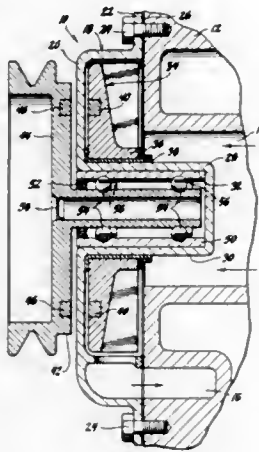
1. A hydraulically actuated pumping apparatus comprising a piston-driven, plunger-type injection pump in combination with a three-way normally closed pilot-operated relay valve, means adjustable during operation of said pumping apparatus

for controlling the flow of a pilot fluid to said relay valve, and means for venting said pilot fluid from said relay valve through



passageways in the plunger of said injection pump at the completion of each pumping stroke.

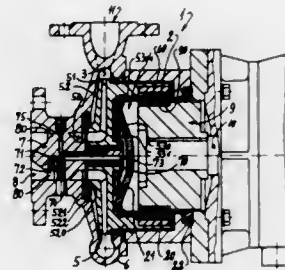
4,645,432
MAGNETIC DRIVE VEHICLE COOLANT PUMP
Robert P. Tata, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 14, 1986, Ser. No. 829,305
Int. Cl.⁴ F04B 17/00, 35/04
U.S. Cl. 417—420



1. An axially compact magnetic drive pump for use as a vehicle coolant pump, comprising,
a fixed fluid housing having a substantially planar wall of non-magnetic material with a cylindrical support extending from said fluid housing wall into the interior of said fluid housing, said cylindrical support having its axis oriented substantially perpendicular to said housing wall and having a closed outer cylindrical surface inside of said fluid housing and an inner cylindrical surface opening to the exterior of said fluid housing,
a pump impeller inside said fluid housing coaxially surrounding and radially and axially supported by the outer cylindrical surface of said cylindrical support, said impeller having a magnetic portion that is thereby located closely facing and parallel to the inside of said fluid housing wall,
a rotatable member sized so as to fit coaxially within said fluid housing cylindrical support and radially and axially supported by said cylindrical support inner surface, and,
a driving member having a substantially planar web with a magnetic portion, said driving member being attached to

said rotatable member so that said planar web is located closely facing and parallel to the outside of said fluid housing wall with its magnetic portion in opposition to said impeller magnetic portion so as to drive said impeller when said driving member rotates, said driving member, housing wall and pump impeller occupying a compact axial space by virtue of their relative location.

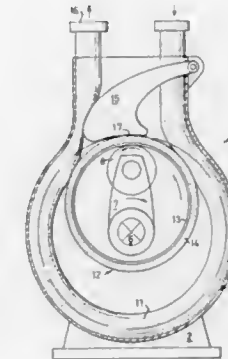
4,645,433
SEALING SHROUD CENTRIFUGAL PUMP
Ernst Hauenstein, Vordemwald, Switzerland, assignor to CP Pumpen AG, Zofingen, Switzerland
Filed Jul. 9, 1985, Ser. No. 753,140
Claims priority, application Switzerland, Jul. 16, 1984, 03451/84
Int. Cl.⁴ F04B 35/04; F04D 29/04
U.S. Cl. 417—420



1. A centrifugal pump for pumping a medium, comprising:
a pump housing having a drive side;
said pump housing being provided with a pump chamber;
said pump housing being provided with a suction connection and a pressure connection flow communicating with said pump chamber;
a sealing shroud arranged within said pump housing and sealing the drive side of said pump housing against the action of the pumped medium;
said sealing shroud containing a sealing shroud base and a sealing shroud wall protruding from said sealing shroud base;
a motor-driven first rotor equipped with permanent magnets and arranged at one side of said sealing shroud;
a second rotor equipped with permanent magnets and arranged at an opposite side of said sealing shroud;
a stationary axle;
a pump impeller mounted for rotation upon said stationary axle;
said pump impeller being mechanically connected with said second rotor;
said pump impeller having a rear side and a front side;
said rear side of said pump impeller confronting said sealing shroud base;
said front side of said pump impeller confronting said suction connection;
said stationary axle being secured in cantilever fashion in said suction connection;
said stationary axle being provided with an equalizing channel for equalizing pressure differences between said rear side and said front side of said pump impeller and thus reducing unwanted mechanical loading and which stationary axle extends from said suction connection to a rear part of said pump chamber located behind said rear side of said pump impeller;
means for only radially mounting said pump impeller upon said stationary axle;
said pump chamber including a front part surrounding said suction connection; and
said rear part of said pump chamber and said front part of

said pump chamber each being in flow communication with said suction connection and said pressure connection.

4,645,434
DEVICE IN A PERISTALTIC PUMP
Jan O. Bogen, Kvicksund, Sweden, assignor to Sala International AB, Sala, Sweden
PCT No. PCT/SE85/00145, § 371 Date Nov. 13, 1985, § 102(e)
Date Nov. 13, 1985, PCT Pub. No. WO85/04454, PCT Pub. Date Oct. 10, 1985
PCT Filed Mar. 29, 1985, Ser. No. 801,602
Claims priority, application Sweden, Mar. 30, 1984, 8401777
Int. Cl.⁴ F04B 43/12; F16K 15/03, 15/18; F16L 55/14
U.S. Cl. 417—476



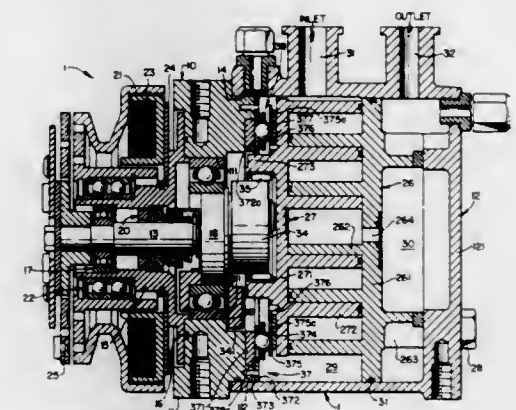
1. Device in a peristaltic pump with at least one pressure body (8) driven along a circular path, a support structure (9, 10) concentrically disposed around at least the major portion of said path and accommodating an elastic hose (11) which is exposed to a local compression against the support structure by the action of the pressure body in response to the displacement of said body along its circular path, and an annular member (12) incorporated between the pressure body (8) and the hose (11) while abutting with its inner circumference against the pressure body and with its outer circumference against the hose, towards which the annular member is locally pressed by the pressure body, characterized by a non-return valve (15) acting adjacent the end of the hose (11) connected to the pressure outlet (16) of the pump, at least part of the outer circumference of the annular member (12) together with the pressure body (8) constituting the operating means for said non-return valve, the non-return valve (15) being a flap with its free end reciprocating in relation to the pressure outlet end of the pump hose (11), said flap being pivotally journaled at its opposite end and presenting on its side facing the interior of the pump housing (1) a cam-profiled surface (17) for coacting with the outer circumference of the annular member (12).

4,645,435
ROTATION PREVENTING DEVICE FOR AN ORBITING MEMBER OF A FLUID DISPLACEMENT APPARATUS
Kazuo Sugimoto, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan
Continuation of Ser. No. 672,829, Nov. 19, 1984, abandoned.
This application Apr. 23, 1986, Ser. No. 854,702
Claims priority, application Japan, Nov. 19, 1983, 58-217108
Int. Cl.⁴ F01C 1/04, 21/02; F16C 19/16; F16D 3/04
U.S. Cl. 418—55

1. In a scroll type fluid displacement apparatus including a housing, a fixed scroll fixedly disposed within said housing and having an end plate from which a first wrap extends, an orbiting scroll having an end plate from which a second wrap extends, said first and second wraps interfitting at an angular and radial offset to form a plurality of line contacts to define at least one pair of sealed fluid pockets, driving means operatively connected to said orbiting scroll to effect the orbital motion of said orbiting scroll and rotation preventing/thrust

bearing means for preventing the rotation of said orbiting scroll during orbital motion to thereby change the volume of the fluid pockets, the improvement comprising:

said rotation preventing/thrust bearing means including a fixed ring attached to an inner surface of said housing, an orbital ring attached to an axial end surface of said end plate of said orbiting scroll and a plurality of balls, said fixed and orbital rings having a plurality of facing pockets within which said balls are disposed, each of said facing pockets having a base and a circumferential edge spaced from said base, said balls having an outer surface with a first area for contacting both said base of said pockets to

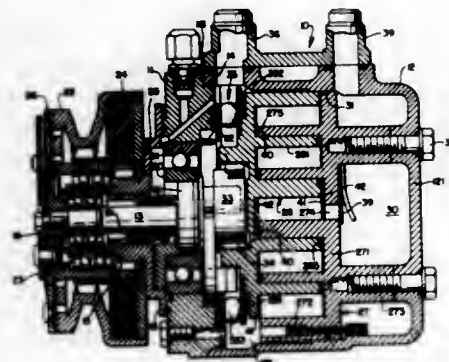


carry axial thrust load and said circumferential edge of said pockets to prevent rotation of said orbiting scroll and a second area, and retainer means for rotatably holding said balls, said retainer means including a plurality of ball receiving elements connected to one another, each of said ball receiving elements being spaced from said first area of the outer surface of said balls and extending over a sufficient amount of said second area of the outer surface of said balls to hold said balls in said retaining means while leaving a sufficient amount of said outer surface of said balls uncovered so that said balls rollingly contact said circumferential edges of the pockets within which they are received.

4,645,436
SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH IMPROVED ANTI-WEAR DEVICE
Seiichi Sakamoto, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan
Continuation of Ser. No. 697,746, Feb. 4, 1985, abandoned. This application Jun. 20, 1986, Ser. No. 878,529
Int. Cl.⁴ F04C 18/04, 27/00, 29/04
U.S. Cl. 418—55

1. In a scroll type fluid displacement compressor including a pair of scrolls each having a circular end plate and a spiral wrap extending from an axial end surface of said circular end plate, said pair of scrolls being maintained at an angular and radial offset so that said spiral wraps interfit to form a plurality of line contacts between their spiral curved surfaces to thereby seal off and define at least one pair of fluid pockets, a driving mechanism operatively connected to one of said scrolls to effect relative orbital motion with respect to the other of said scrolls to thereby change the volume of the fluid pockets, and an involute plate disposed on an axial end surface of the circular end plate of both said scrolls to cover the area on which contact is made by an axial end surface of the opposing spiral wrap, the improvement comprising a depressed portion formed at the entire center high pressure portion only of said end plates of both said scrolls to increase volumetric efficiency

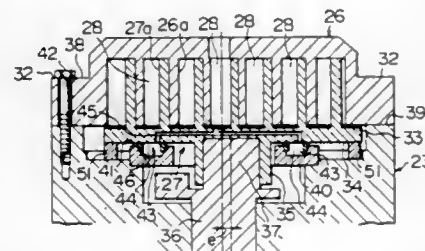
by compensating for thermal expansion, said depressed portion and said involute plate defining an axial air gap between an



inner end surface of said involute plate and a bottom surface of said depressed portion on both said scrolls.

4,645,437
SCROLL COMPRESSORS WITH ANNULAR SEALED HIGH PRESSURE THRUST PRODUCING MEMBER
Wataru Sakashita; Tsukasa Chiyoya, both of Fuji; Tsutomu Ichikawa, Fujinomiya, and Makoto Hayano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

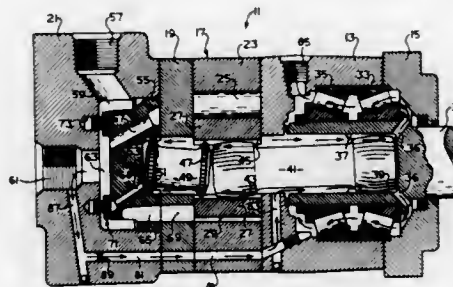
Filed Jun. 27, 1985, Ser. No. 749,449
Claims priority, application Japan, Jun. 27, 1984, 59-131197; Sep. 27, 1984, 59-200675
Int. Cl.⁴ F04C 18/04, 27/00; F16J 9/08, 15/34
U.S. Cl. 418-55 8 Claims



1. A scroll compressor including a casing, a frame provided in the casing, a motor and a compressor assembly mounted on opposite sides of said frame, said compressor assembly having a stationary scroll member and a movable scroll member respectively having spiral wraps engaging with each other so that the movable scroll member is driven by said motor eccentrically around the center of a spiroid spiral of said stationary scroll member, said movable scroll member having a planar portion with a lower surface facing said frame, said stationary scroll member having a peripheral portion secured to said frame, said scroll compressor further comprising:
an annular member formed adjacent said lower surface and separated therefrom by a gap, said annular surface having radially outer and inner walls and a bottom wall for defining an annular high pressure chamber therebetween, said radially outer and inner walls of said annular member having internal surfaces tapered radially outwardly and inwardly from said bottom wall, respectively;
passage means for supplying a portion of a quantity of compressible fluid delivered from said compressor assembly into said high pressure chamber for reducing a thrust force applied to said movable scroll member;
a radially outer resilient seal ring having at least one part of a radially outer surface thereof tapered to be slidable

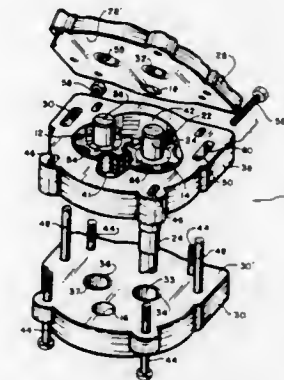
along said tapered outer wall of said high-pressure chamber; and
a radially inner resilient sealing ring having at least one part of a radially inner surface thereof tapered to be slidable along said tapered inner wall of said high-pressure chamber, said inner and outer sealing rings sealing said annular high-pressure chamber to said lower surface of said planar portion by closing said gap, each of said outer and inner resilient sealing rings including a sealing surface sealingly contacting said lower surface; and
means for maintaining said seal between said annular high-pressure chamber and said lower surface upon a change in the width of said gap, said maintaining means including diameter varying means for resiliently increasing and decreasing the diameters of said inner and outer sealing rings when said sealing rings slide along said respective tapered inner and outer walls.

4,645,438
GEROTOR MOTOR AND IMPROVED LUBRICATION FLOW CIRCUIT THEREFOR
Rohland A. Dahlquist, St. Louis Park, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 6, 1985, Ser. No. 795,590
Int. Cl.⁴ F01C 1/10, 21/04; F03C 2/08
U.S. Cl. 418-61 B 9 Claims



1. A rotary fluid pressure device of the type including housing means defining fluid inlet means and fluid outlet means; fluid energy-translating displacement means associated with said housing means and including at least one member having rotational movement relative to said housing means to define expanding and contracting fluid volume chambers during said rotational movement; valve means cooperating with said housing means to define a main fluid flow path providing fluid communication between said fluid inlet means and said expanding fluid volume chambers and between said contracting fluid volume chambers and said fluid outlet means; input-output shaft means supported for rotation relative to said housing means; means for transmitting torque from said member of said displacement means having rotational movement to said input-output shaft means; and means defining a lubrication flow path including said torque-transmitting means, characterized by:
(a) means providing restricted fluid flow and having an inlet in fluid communication with said main fluid flow path downstream and said contracting fluid volume chambers, at a location disposed between said valve means and said fluid outlet means and an outlet in fluid communication with said lubrication flow path;
(b) said restricted flow means being operable to communicate a generally constant fluid flow from its inlet to its outlet, despite variations in the pressure differential across said main fluid flow path and the rate of flow through said main fluid flow path.

4,645,439
ADJUSTABLE GEAR PUMP
Donald R. Way, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Nov. 25, 1985, Ser. No. 801,665
Int. Cl.⁴ F04C 11/00, 18/08
U.S. Cl. 418-104 5 Claims

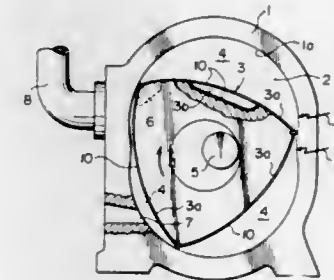


1. A gear pump, comprising:
a gear pump housing including a pair of housing members with a slider plate sandwiched therebetween said slider plate having an enlarged pocket therein cooperating with said housing members to define a pumping chamber, means forming an inlet port and an outlet port communicating with said pumping chamber, and means on said slider plate forming a pair of pressure faces disposed generally between said inlet and outlet ports;
a pair of pumping gears within said pumping chamber; means for rotatably supporting said pumping gears within said pumping chamber with a portion of the peripheral tips of said pumping gears respectively in relatively close running clearance with said pressure faces;
means for slidably adjusting the position of said slider plate relative to said housing members to selectively reduce the running clearance between said pumping gears and said pressure faces; and
further including means for interconnecting said housing members and extending through a slot formed in said slider plate, said slot being elongated in a direction permitting slider plate movement to increase and decrease said running clearance, said adjustment means being carried by said slider plate in bearing engagement with said interconnecting means for adjusting the position of said slider plate between said housing members.

4,645,440
ROTOR FOR ROTARY PISTON ENGINES
Yoshinori Murata, Hiroshima, and Yoshio Tanita, Nagoya, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jun. 25, 1985, Ser. No. 748,585
Claims priority, application Japan, Jun. 29, 1984, 59-98060[U]
Int. Cl.⁴ F01C 21/00
U.S. Cl. 418-178 2 Claims

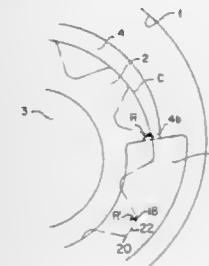
1. A substantially polygonal rotor for rotary piston engines, said rotor comprising a plurality of flanks, said flanks being coated with a modified fluorine resin including tetrafluoroethylene and a binder comprised of a polysulfone resin, the modified fluorine resin having a viscosity of from about 10⁴ poise to about 10⁵ poise in a molten state and a molecular weight of from about 1000 to about 10,000, said modified fluorine resin being applied to the rotor flanks and dried at a temperature not higher than 100° C. to form a coating adhered to the flanks,

said coating having a low surface hardness and sufficient surface adhesion to receive and retain deposits of unburnt residual



substances which are produced during operation of the engine to prevent carbon lock.

4,645,441
INTERNAL-GEAR PUMP WITH PARTITION PLATE HAVING A CHAMFERED EDGE
Ryoichi Shirai, Okazaki; Fumitomo Yokoyama, Anjo, and Koujiro Kuramochi, Okazaki, all of Japan, assignors to Aisin-Warner Limited, Anjo and Toyota Motor Corporation, Toyota, both of Japan
Filed Apr. 2, 1985, Ser. No. 719,013
Claims priority, application Japan, Apr. 12, 1984, 59-74463
Int. Cl.⁴ F04C 2/10
U.S. Cl. 418-126 4 Claims



1. A gear pump comprising:
a pump housing having a pump chamber, a fluid inlet and a fluid outlet;
an outer gear mounted for rotation within said pump chamber and having a first plurality of teeth on its inner surface;
an inner gear mounted in said pump chamber and inside of said outer gear, said inner gear being mounted for rotation about an axis off center with respect to said outer gear to define a generally crescent shaped space therebetween, said inner gear having, extending from its outer surface, a second plurality of teeth which mesh with said first plurality of teeth through a given angle of rotation, said first plurality of teeth being about two in number more than said second plurality of teeth, each tooth of said second plurality having a tip with curved edges and a top face extending therebetween; and
a crescent shaped partition plate integral with said housing and substantially filling said crescent shaped space, said partition plate having a convex outer surface, a concave inner surface and a flat end face adjacent said fluid inlet, said end face being a substantially radially extending surface joining said convex and concave surface, said end face and said concave inner surface meeting at an edge parallel to said axis, said edge having a machined chamfer for reducing the force per unit area of any impact between said second plurality of teeth and said concave surface, said chamfer having a radius of curvature greater than that of the edges of said second plurality of teeth and the

circumferentially extending width of said chamfer being substantially less than the circumferentially extending width of said top face.

4,645,442

SHELL FORMING APPARATUS

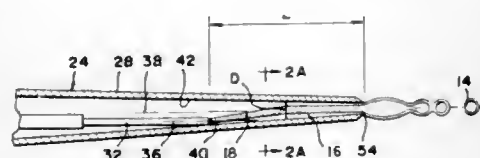
Taylor G. Wang, Glendale; Dan Granett, Los Angeles, and Wesley M. Akutagawa, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 2, 1983, Ser. No. 490,360

Int. Cl.⁴ B29B 9/00

U.S. Cl. 425—6

8 Claims



1. In a system for forming fluid-filled shells by the passage of an encapsulating fluid around an encapsulant fluid and into an environment where the encapsulating fluid becomes solid, the improvement of a nozzle assembly for controlling the passage of the fluids, comprising:

- an outer nozzle for passing encapsulating fluid, said outer nozzle having an inside and a tip;
- an inner nozzle for passing an encapsulant fluid, said inner nozzle having an end, and said inner nozzle end opening to the inside of said outer nozzle;
- a first source of an encapsulating fluid coupled to said outer nozzle at a location upstream of said end of said inner nozzle to flow said encapsulating fluid through said outer nozzle;
- a second source of an encapsulant fluid coupled to said inner nozzle to flow said encapsulant fluid therethrough and out of said end of said inner nozzle;
- the width of the inside of said outer nozzle being no more than about one millimeter near said tip of the outer nozzle, and said end of said inner nozzle lying behind the tip of said outer nozzle by a distance more than twice said inside diameter of said outer nozzle.

5. In a shell-forming system the improvement of a nozzle assembly comprising:

- outer and inner nozzles, said inner nozzle having an end lying within said outer nozzle and said outer nozzle having a tip lying downstream of said inner nozzle end, the tip of said inner nozzle lying upstream from the tip of said outer nozzle by a distance of more than twice the diameter of said outer nozzle at its tip;
- a first source of an encapsulating fluid coupled to said outer nozzle at a location upstream of said end of said inner nozzle to flow said encapsulating fluid through said outer nozzle;
- a second source of an encapsulant fluid which is different from said encapsulating fluid, coupled to said inner nozzle to flow said encapsulant fluid therethrough and out of said end of said inner nozzle;
- said outer nozzle having a minimum diameter of less than 0.7 millimeter between the end of said inner nozzle and the tip of said outer nozzle, said outer nozzle having an outer nozzle axis that passes through the center of said outer nozzle tip, said inner nozzle having an inner nozzle axis that passes through the center of said inner nozzle end, said axes being nonconcentric.

4,645,443 MOLD-THICKNESS ADJUSTING APPARATUS IN MOLD CLAMPING MECHANISM

Katasbi Aoki, Sakakimachi, Japan, assignor to Kabushiki Kaisha Aoki Seisakusho, Japan

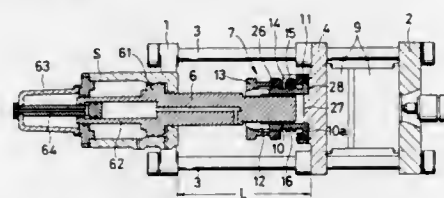
Filed Dec. 23, 1985, Ser. No. 812,195

Claims priority, application Japan, Dec. 29, 1984, 59-279153; Dec. 4, 1985, 60-186998

Int. Cl.⁴ B29C 45/80

U.S. Cl. 425—150

6 Claims



1. A mold-thickness adjusting apparatus in a clamping mechanism for molding synthetic resins in which a clamping plate is mounted on a plurality of tie bars provided over a pair of fixed plates on a machine bed, said clamping plate being connected to a clamping ram of a clamping cylinder said clamping cylinder, provided on one of said fixed plates, and a mold mounted on the other fixed plate, said apparatus comprising a connecting ring secured to a central portion of a back surface of the clamping plate, a connecting tube rotatably fitted in the connecting ring having an extreme end in contact with the back surface of the clamping plate, said connecting tube having a chuck portion provided at a rear end thereof, said chuck portion being movably threadedly engaged with an extreme end of a clamping ram, and a member adapted to reduce in diameter a chuck formed in the rear end of the connecting tube, said member connecting, said clamping plate and said clamping ram, and a gear for rotating said connecting tube to adjust a position of said clamping plate according to a mold-thickness, said gear being meshed with a circumferential portion of a shell of said connecting tube and said connecting ring.

4,645,444

MELT SPINNING APPARATUS

Erich Lenk, and Max Feth, both of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

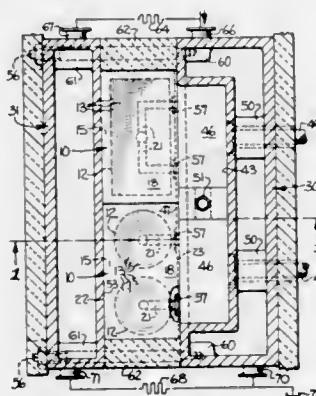
Filed Mar. 23, 1984, Ser. No. 593,034

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1983, 3310521

Int. Cl.⁴ D01D 4/08

U.S. Cl. 425—192 S

24 Claims



1. A melt spinning apparatus adapted for dividing a molten material into a plurality of streams to form synthetic filaments, and comprising

a spin block assembly having two opposite sides, said spin block assembly including a spin plate having a plurality of ducts extending therethrough, a tubular spin plate holder supportingly surrounding the periphery of said spin plate and defining cavity means communicating with one face of said spin plate for supplying said molten material to said ducts, and a casing substantially enclosing said holder, with said casing having flat opposite side surfaces which define at least a portion of said opposite sides of said spin block assembly,

heating jacket means substantially enclosing said spin block assembly, said heating jacket means including two separate heating chambers disposed adjacent respective ones of said sides of said spin block assembly, with each heating chamber including a side wall surface overlying and contacting the adjacent side of said spin block assembly, and means for releasably interconnecting said two heating chambers to permit selective relative movement with respect to each other and said side wall surfaces of said two heating chambers may be drawn toward each other to clampingly engage said two opposite sides of said spin block assembly therebetween and thereby avoid any air gap between each of the sides of said spin block assembly and the adjacent side wall surface of the heat chambers, and

a melt distribution block overlying said spin plate holder and casing, with said melt distribution block being disposed between said two heating chambers of said heating jacket means, and wherein said melt distribution block includes a threaded extension, and said spin plate holder is threadedly mounted on said extension so as to permit the separation thereof by rotation of said spin plate holder with respect to said threaded extension.

4,645,445

INJECTION DEVICE OF INJECTION MOLDING MACHINE

Yukio Takanashi, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

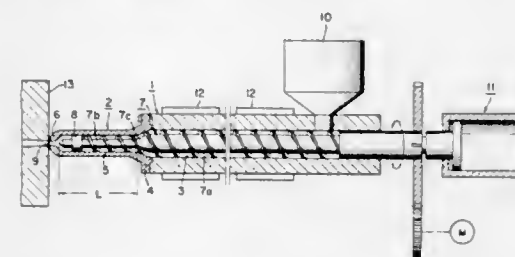
Filed Jan. 9, 1985, Ser. No. 689,960

Claims priority, application Japan, Jan. 12, 1984, 59-4065

Int. Cl.⁴ B29C 45/03, 45/50

U.S. Cl. 425—208

6 Claims



1. An injection molding device comprising a heating cylinder and a cylinder head in which a material to be injected into a mold is fed, screw means disposed in said heating cylinder and cylinder head to feed the material forwardly, and drive means for rotating and reciprocating said screw means, said cylinder head formed at a front end of said heating cylinder, downstream side thereof with respect to the material feed direction, said cylinder head consisting of a first portion continuously formed at the front end of said heating cylinder and having a frustoconical inner surface and a second portion continuously formed at a front end of said first portion of said cylinder head and having an inner diameter smaller than that of said heating cylinder, the inner surfaces of said heating cylinder and said first and second portions of said cylinder head being connected linearly smoothly with each other, said screw means consisting of a first screw portion having an outer diameter smaller than the inner diameter of said heating cylinder, a second screw portion having an outer diameter smaller than

the inner diameter of said first portion of said cylinder head, and a third screw portion having an outer diameter smaller than an inner diameter of said second portion of said cylinder head, a longitudinal length of said third screw portion being predetermined such that the front end of said third screw portion remains in said second portion of said cylinder head when said screw means is moved to a backward limit position thereof by said drive means.

4,645,446

INJECTION MOLDING MACHINE WITH SELF-CONNECTING EJECTION DEVICE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Continuation of Ser. No. 555,355, Nov. 28, 1983, Pat. No.

4,545,753. This application Aug. 22, 1985, Ser. No. 752,924

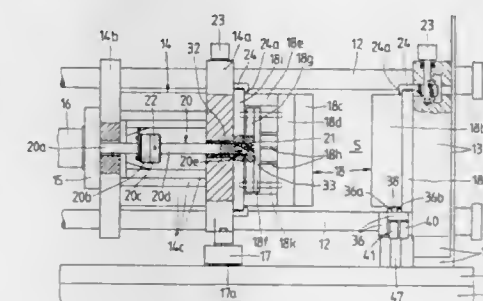
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3243991

The portion of the term of this patent subsequent to Oct. 8, 2002, has been disclaimed.

Int. Cl.⁴ B29C 1/00

U.S. Cl. 425—350

10 Claims



1. In a die closing unit of an injection molding machine which comprises a stationary die carrier plate and a movable die carrier plate adapted for the attachment thereto of the stationary and movable die halves of one of a plurality of interchangeable die assemblies, and which further comprises a die changing mechanism for the mechanical insertion of said die assembly into, and its removal from, the die closing unit in transfer movements along a transfer path which is oriented transversely to the center axis of the die closing unit along which the movable die carrier plate and an associated movable die half execute die opening and closing movements, and wherein the die changing mechanism includes transfer drive means for producing said transfer movements, and the movable die carrier plate and its associated movable die half define a device for ejecting the injection-molded parts from the movable die half in the open position of the die closing unit, said parts ejecting device including an ejection actuator and an ejector rod which are associated with the movable die carrier plate and arranged on the axially outer side thereof, the ejector rod being guided for ejection movements parallel to the center axis of the die closing unit and having a drive extremity pointing axially inwardly towards the movable die half, and wherein the parts ejection device further includes an ejector member forming part of the movable die half and being movable axially in relation thereto; in such a die closing unit, a mechanism for connecting the ejector member of said movable die half to the drive extremity of the ejector rod of the ejection actuator, said connecting mechanism comprising in combination:

stop-start means defined by the transfer drive means of the die changing mechanism for interrupting the transfer movements of a die assembly in a stop position which is located at a distance from an inserted position in which the die halves of the die assembly are transversely aligned with, and attachable to, their respective die carrier plates; a transverse mounting face on the axially inner side of the

movable die carrier plate and a cooperating transverse mounting face on the axially outer side of the associated movable die half, said mounting faces being arranged to remain substantially contiguous during the transfer movements of the die assembly;

an axial opening in the movable die carrier plate through which the ejector rod is movable from a retracted position in which its drive extremity is located axially outside said contiguous mounting faces to a connection position in which the drive extremity is located axially inside said contiguous mounting faces;

an axial recess in the mounting face of the associated movable die half so shaped that it accommodates the drive extremity of the ejector rod in its connection position, while permitting the die assembly to execute transfer movements between its stop position and its inserted position;

a first connecting member defined by the drive extremity of the ejector rod;

a second connecting member attached to the ejector member of the associated movable die half, said second connecting member being arranged within the axial recess of the movable die half and aligned axially with the first connecting member of the ejector rod, when the die assembly is in its inserted position; and wherein

the first and second connecting members are shaped to engage each other to produce an axial drive connection between the ejector rod and the ejector member of the movable die half, when the ejector rod is in its connection position and the die assembly moves from its stop position to its inserted position; and

the first and second connecting members disengage from each other, when the die assembly moves from its inserted position to its stop position.

4,645,447

SPLIT MOLD DEVICE FOR BLOW-MOLDING CROOKED ARTICLES

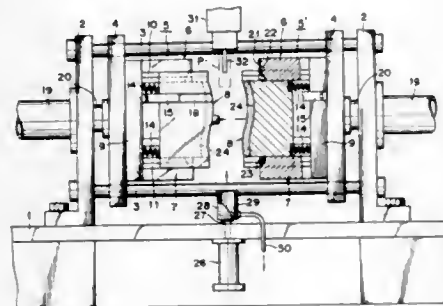
Ushigoro Sumitomo, No. 29-1, Puraza, Omiya-shi, Japan

Filed Jul. 17, 1985, Ser. No. 756,132

Int. Cl.⁴ B29C 47/18

U.S. Cl. 425-450.1

12 Claims



1. A split mold device for blow-molding a crooked article from a synthetic resin parison, comprising a pair of mounting plates having confronting surfaces and which are capable of relative movement in a horizontal direction, a pair of split molds mounted on the confronting surfaces of the mounting plates, each of said split molds having an upper member, a lower member and a centrally positioned main member, mounting means which mount the main member on the mounting plate separately from the upper and lower members and which urges the main member beyond the upper and lower member when the split mold device is in an open mold position, each of the three members of each split mold having a confronting surface with a recessed portion which forms, when the split mold device is closed and the confronting surface of each member of the split mold is in contact with the corresponding members of the other split mold, an upper portion, a lower portion and a main portion, respectively, of a

continuous vertically aligned crooked cavity in which the parison is blow molded; an opening in the body of the split mold providing communication between a source of compressed air for the blow molding step and one end of the crooked cavity; means for moving the mounting plates and the split molds mounted thereon horizontally from an open mold position to a first closed mold position where only the confronting surfaces of the main members of the split molds are in a contacting position; means including a current of air for inserting the parison into and partially through the crooked cavity in the main members while the split mold is in the first closed mold position; the means for moving the mounting plates being adapted to move the upper and lower split molds mounted thereon horizontally, while the main members remain in a closed position and a parison is positioned in the crooked cavity therein, to a second closed mold position, where the confronting surfaces of the upper and lower members of the split molds as well as those of the main members are in contacting positions; and means for blow molding the parison while the split mold is in the second closed mold position.

4,645,448

LASER EFFECTS SIMULATOR

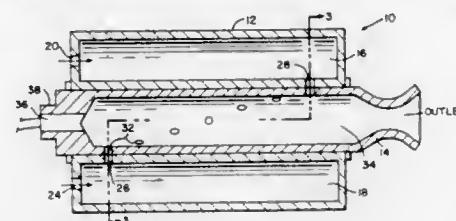
William F. Otto; Thomas G. Roberts; Andrew H. Jenkins, all of Huntsville, and Thomas E. Honeycutt, Somerville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 16, 1985, Ser. No. 808,967

Int. Cl.⁴ F23C 11/04

U.S. Cl. 431-1

2 Claims



1. A pulsed hot gas generator comprising:

- a first cylindrical housing having a pair of half-cylinder plenum chambers defined therein by outer and inner cylindrical sections that are joined by end sections and two lengthwise radial dividers to define said pair of half-cylinder plenum chambers for receiving first and second gases therein;
- a second cylindrical housing concentrically mounted in said first cylindrical housing for rotation therein, said second cylindrical housing having a chamber defining a combustion chamber;
- said first and second cylindrical housings having a plurality of matched ports therein, said ports of said first and second cylindrical housings disposed for aligned relation responsive to rotation of said second cylindrical housing, whereby responsive to the aligned relation of said ports, said first and second gases are directed into said combustion chamber;
- igniter means mounted at one end of said second cylindrical housing and in said combustion chamber for ignition of the mixture of said first and second gases; and,
- outlet means communicating into said combustion chamber to direct said first and second gases thereof responsive to the ignition, said outlet means being a nozzle at an end of said second cylindrical housing which is opposite said one end.

4,645,449

METHODS AND APPARATUS FOR BURNING FUEL WITH LOW NOX FORMATION

Robert E. Schwartz, and Roger K. Noble, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation of Ser. No. 731,080, May 6, 1985, Pat. No.

4,604,048. This application Apr. 21, 1986, Ser. No. 854,101

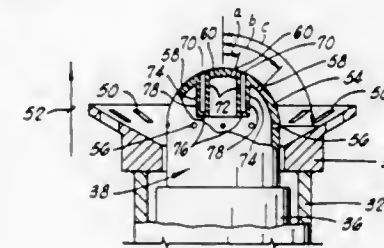
The portion of the term of this patent subsequent to Aug. 5, 2003,

has been disclaimed.

Int. Cl.⁴ F23D 15/02

U.S. Cl. 431-8

8 Claims



1. In a method of combusting a fuel-air mixture wherein fuel is discharged from at least one nozzle disposed within a burner housing, air introduced into said housing is mixed with the fuel and the resulting fuel-air mixture is ignited and combusted, the improvement whereby the formation of nitrogen oxides is inhibited comprising the steps of:

- discharging a first portion of said fuel from said nozzle through one or more orifices therein whereby said fuel mixes with air and provides an ignition zone adjacent said nozzle;
- discharging a second portion of said fuel from said nozzle through one or more additional orifices therein whereby said second portion of fuel is distributed in a turbulent pattern which causes said fuel to mix with a rate of air in excess of that required for the stoichiometric burning thereof and to burn in a primary combustion zone; and
- discharging the remaining portion of said fuel from said nozzle through at least one additional orifice surrounded by a fuel discharge recess whereby a high velocity jet of fuel substantially shielded by slower moving fuel is produced and said fuel is distributed within and downstream of said primary combustion zone, is mixed with air from said primary combustion zone which is diluted with combustion products and is burned in a secondary combustion zone substantially shielded from direct contact with incoming air by said primary combustion zone.

4,645,450

SYSTEM AND PROCESS FOR CONTROLLING THE FLOW OF AIR AND FUEL TO A BURNER

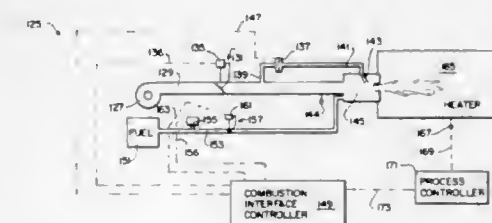
John S. West, Camp Hill, Pa., assignor to Control Technonics, Inc., Harrisburg, Pa.

Filed Aug. 29, 1984, Ser. No. 645,337

Int. Cl.⁴ F23N 1/02

U.S. Cl. 431-12

19 Claims



1. A flow controller system capable of controlling the flow of air and fuel to a burner in a plurality of operating modes throughout the firing range of the burner, wherein said air and

fuel are conducted to said burner by separate conduits fluidly connected to said burner, comprising:

- an air flow indicating means including a differential pressure sensing means fluidly connected across the air conduit and the burner for sensing the pressure drop of the air flow across the burner and generating a signal indicative of the rate of air flow into the burner;
- first and second valves for modulating the flow of air and fuel, respectively, to the burner which are fluidly connected upstream of the air flow indicating means;
- a fuel flow indicating means for generating a signal indicative of the rate of fuel flow into the burner, and
- a control means operatively and separately connected to both the first and second valves and the fuel and air flow indicating means for maintaining selected air and fuel flow rates throughout the firing range of the burner by comparison with precalibrated air and fuel flow ratios, wherein said control means is adjustable at all points throughout the firing range of the burner.

4,645,451

GAS BURNER FOR EXTERNALLY HEATING GLASS BODIES

Hartmut Schneider, Munich; Egon Lebetzki, Berghuelen, and Wolfram Vogt, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

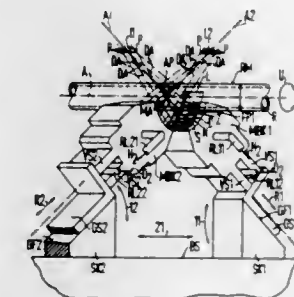
Filed Nov. 29, 1984, Ser. No. 675,999

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400710

Int. Cl.⁴ F23Q 9/00; C03B 27/00, 23/00

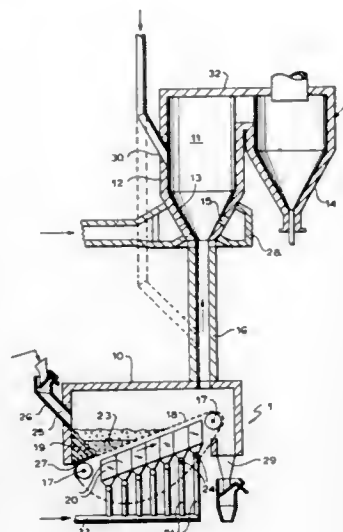
U.S. Cl. 431-278

17 Claims



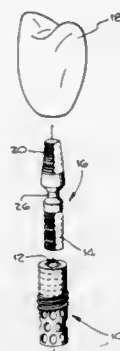
1. In a gas burner for externally heating glass bodies which are to be rotated relative to the burner on a rotational axis, said burner having a plurality of multi-jet gas port blocks with each block having a plurality of jets on a front surface around a block axis and means for mounting the blocks with the block axis of each block being on a separate radius extending from the rotational axis and with the jets facing the rotational axis and being at a given radial distance therefrom, said blocks being simultaneously displaced along the rotational axis, the improvements comprising the means for mounting enabling each of the multi-jet gas port blocks to be separately displaceable relative to one another along the rotational axis and to be displaceable relative to the rotational axis along the radial direction, and each of the jets on the front surface of each of the multi-jet blocks being directed to merge on a focal line lying beyond the rotational axis and at a definite distance in front of the front surface.

4,645,452
APPARATUS FOR THE CALCINATION OF A PULVERIZED MINERAL MATERIAL
 Jean-Pierre Henin, La Madeleine, and Philippe Niel, Lille, both of France, assignors to Fives-Cail Babcock, Paris, France
 Division of Ser. No. 665,625, Oct. 29, 1984, Pat. No. 4,601,657.
 This application Mar. 25, 1986, Ser. No. 843,501
 Claims priority, application France, Oct. 28, 1983, 83 17270
 Int. Cl.⁴ F27B 15/00
 U.S. Cl. 432—58 2 Claims



1. An apparatus for the calcination of a pulverized mineral material, which comprises the combination of
 - (a) a fuel gasification device including
 - (1) a hearth chamber,
 - (2) an elongated grate constituting the bottom of the chamber and comprising at least an end portion inclined in the direction of elongation of the grate and permitting the fluidized bed to be formed at a progressively variable depth,
 - (3) means for delivering pieces of a solid fuel to the grate to form a bed of the solid fuel pieces thereon, the delivery means being arranged to deliver the solid fuel at the deepest part of the bed,
 - (4) means for blowing air into the hearth chamber through the grate arranged to vary the flow of air per surface unit of the grate from one end of the grate to an opposite end thereof, whereby a fluidized bed of the solid fuel pieces is formed on the grate, and
 - (5) means for removing residual ashes from the bed from an upper end of the grate remote from the deepest bed part,
 - (b) a calcination device including
 - (1) a calcination chamber having a vertical axis and constituted by a cylindrical upper part and a lower part having an inverted frusto-conical wall defining openings therein,
 - (2) air distributing means surrounding the lower calcination chamber part and communicating with the calcination chamber through said openings,
 - (3) inlet means for delivering the mineral material into the calcination chamber, and
 - (4) outlet means for the calcined mineral material at an upper end of the calcination chamber, and
 - (c) a connecting conduit between the hearth chamber of the fuel gasification device and the calcination chamber connected to a lower end thereof.

4,645,453
BENDABLE ADAPTER FOR DENTAL IMPLANT
 Gerald A. Niznick, 18167 Chardon Cir., Encino, Calif. 91316
 Filed Sep. 19, 1985, Ser. No. 777,965
 Int. Cl.⁴ A61C 8/00
 U.S. Cl. 433—173 17 Claims



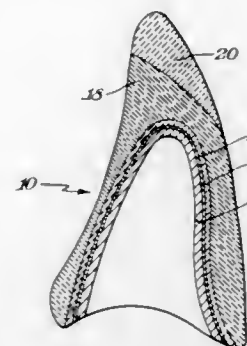
1. In a dental implant system:
 - (a) an anchor adapted to be secured to the bone tissue at the alveolar ridge of a subject with an orientation determined by case study;
 - (b) an adapter having two ends, one end being connected to the anchor and the other end projecting from the anchor; said adapter having a straight neck portion located adjacent the top of said anchor, and providing a transverse axis for bending of the projecting end to change the angularity of said projecting end from that of said connected end so that the attitude of said anchor can be selected to maximize retention without compromising desired positioning of a superstructure or a prosthesis adapted to be joined to said projecting end to achieve optimum esthetics and/or function and without distorting, weakening or breaking said neck portion or any other portion of said adapter.

4,645,454
PORCELAIN PRODUCTS AND METHODS
 Benjamin H. Amdur, Westwood; Edwin J. Riley, Milton, and Ralph B. Sozio, Boston, all of Mass., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.
 Filed May 8, 1985, Ser. No. 731,925
 Int. Cl.⁴ A61C 13/00
 U.S. Cl. 433—199.1 43 Claims

1. A premixed gel-like porcelain powder mix composition for use in the preparation of sintered porcelain products, which mix composition comprises:
 - (a) a porcelain powder; and
 - (b) an organic liquid binder admixed with the porcelain powder, the organic liquid binder having an index of refraction about the same as the index of refraction of the porcelain powder, to permit visualization of the true post-sintered color of the porcelain powder prior to heat sintering of the mix composition, the organic liquid binder consisting essentially of a material selected from the group consisting of:
 - (i) aryl-substituted alkanol,
 - (ii) alicyclic alcohol,
 - (iii) aryl alcohol,
 - (iv) alkyl ester of aryl acid,
 - (v) aryl ester of alkyl acid,
 - (vi) acyl-substituted alicyclic ketone,
 - (vii) alicyclic ketone,
 - (viii) benzyl ethyl ether,
 - (ix) diaryl ether,
 - (x) terpenoid alcohol,
 - (xi) tertiary aliphatic alcohol,

(xii) branched chain aliphatic keto alcohol, and combinations thereof.

4,645,455
UNIFORMLY FLUORESCING PORCELAIN DENTAL RESTORATIONS
 Peter Kosmos, Alsip, Ill., assignor to Austenal International, Inc., Chicago, Ill.
 Filed Aug. 19, 1983, Ser. No. 524,721
 Int. Cl.⁴ A61C 13/08
 U.S. Cl. 433—203.1 2 Claims



1. A porcelain veneered dental restoration having a substructure and an overlaying opaque layer, a body layer and an incisal layer, each of said layers containing an effective amount of a UV fluorescing agent, wherein said UV fluorescing agent is an inorganic pigment of the formula

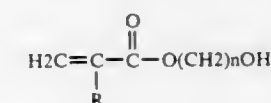


wherein

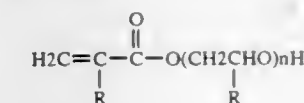
SE=at least one of the elements yttrium, gadolinium and lanthanum,
 Ce=cerium,
 Tb=terbium,
 Mn=manganese,
 A=0.005 to 0.1 mole fraction,
 B=0.005 to 0.1 mole fraction,
 C=0.001 to 0.025 mole fraction, and
 X=1.0—(A+B+C), and wherein said inorganic pigment is present at a level of from about 1.5 to 10 weight percent in the opaque layer, from about 0.05 to 0.5 weight percent in the body layer and from about 0.02 to 0.2 weight percent in the incisal layer.

4,645,456
ADHESIVE COMPOSITIONS FOR TOOTH ENAMEL
 Jack L. James, Long Beach, Calif., assignor to Lee Pharmaceuticals, Inc., South El Monte, Calif.
 Filed Aug. 26, 1985, Ser. No. 769,481
 Int. Cl.⁴ A61K 6/02
 U.S. Cl. 433—217.1 12 Claims

1. A method of bonding methacrylate and acrylate based dental adhesives and restoratives to tooth enamel which comprises first cleansing the enamel with an about 2–15% by weight aqueous solution of a strong inorganic or organic acid; followed by rinsing, drying, and application to the tooth enamel of a curable hydrophilic monomer primer consisting essentially of a member selected from the group consisting of:

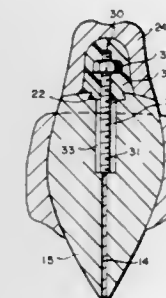


where
 R=H or CH₃
 n=1–8;
 monomers of the formula:



where
 R=H or CH₃
 n=2–8;
 the mono and di methacrylates or acrylates of glycerol; and acrylic or methacrylic acid.

4,645,457
ENDODONTIC MATERIAL AND METHOD
 Melvin Goldman, 770 Salisbury St., Worcester, Mass. 01609, and Dan Nathanson, 7 Field Rd., Lexington, Mass. 02173
 Filed Oct. 19, 1983, Ser. No. 543,314
 Int. Cl.⁴ A61C 5/08
 U.S. Cl. 433—220 11 Claims



1. A method for placing a crown on a tooth comprising: preparing the tooth to accept a coronal replacement, preparing the tooth to accept an anchor structure, flushing said prepared area with a chelating agent selected from the group consisting of citric acid and ethylenediaminetetraacetic acid, then flushing said prepared area with a solvent selected from the group consisting of sodium hypochlorite, surface active agents and emulsifiers, which solvent dissolves, dispenses or otherwise chemically removes organic debris, placing a luting agent in said prepared area, placing said anchor structure in said prepared area, contacting said anchor structure and the dentin of the tooth with a luting agent, forming a core around the exposed anchor portion, and installing a coronal replacement.

4,645,458
ATHLETIC EVALUATION AND TRAINING APPARATUS
 Jerry R. Williams, Prescott, Ariz., assignor to Harald Phillip, Beaverton, Oreg.
 Filed Apr. 15, 1985, Ser. No. 723,352
 Int. Cl.⁴ A63B 69/00
 U.S. Cl. 434—251 2 Claims

1. A method for testing and training an athlete comprising: measuring the length of time it takes an athlete to maneuver from a starting point to a reaction point; providing a plurality of lamps for indicating a selection of predetermined actions to be executed at said reaction point including a first lamp for indicating a right cut and a second lamp for indicating a left cut; energizing a selected one of said lamps to which the athlete must respond by observing said selected one of said lamps

and by responding thereto by completing the respective said cut; and



measuring the length of time it takes the athlete to complete the respective said cut after leaving said starting point.

4,645,459

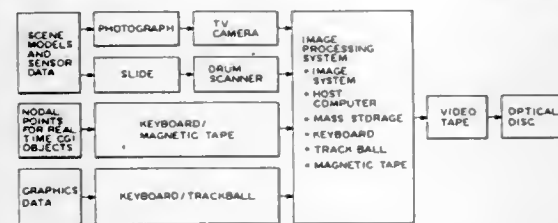
COMPUTER GENERATED SYNTHESIZED IMAGERY
Carl P. Graf, Forest Lake; Kim M. Fairchild; Karl M. Fant, both of Minneapolis; George W. Rusler, Roseville, and Michael O. Schroeder, St. Anthony, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 30, 1982, Ser. No. 403,386

Int. Cl.⁴ G06F 3/14

U.S. Cl. 434—43

46 Claims



1. A computer controlled imaging system responsive to the position and orientation of a scene recognition means comprising:

- a data base having a defined area with a digital three coordinate system and a library having a plurality of rectangular two dimensional image frames of electromagnetic spectrum band representation of images;
- said defined area part of said data base having scene composition data which defines the location and size of each of said image frames relative to said coordinate system;
- simulation means for supplying position vectors and rotational observation data defining the location and the field of view of said scene recognition means relative to said defined area coordinate system;
- interface means for receiving said observation data;
- field of view processor means associated with said interface means and said data base, said field of view processor means including a second three coordinate system and means for determining which of said image frames are included in said field of view and their respective ranges relative to said observation data and said frame data to compute four corner coordinates in said second three coordinate system which correspond to the defined area coordinates of the corners of each said included image frames;
- controller means connected to said field of view processor and including means to receive data therefrom; said data including the identity of said image frames included in said field of view, said ranges of said included image frames

and said coordinates of each of said included image frames;

said controller means being further connected to said library part of said data base;

processing channel means controlled by said controller means connected to said library part of said data base wherein said library part of said data base is connected between said controller means and said processing channel means, said channel means operating to map said included frames to the enclosed space defined by the corresponding ones of said corner coordinates; and

scene construction means connected to said processing channels for assembling an output scene based on said ranges of said included frames on a digital basis such that the included frame nearest said scene recognition means includes more distant ones of said included frames.

4,645,460

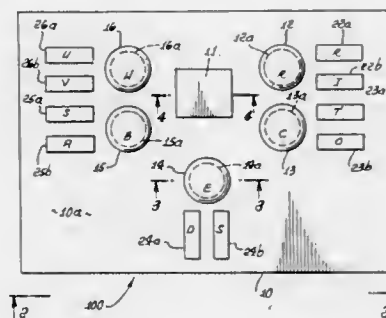
VERBAL VISION SYSTEM SPATIAL DESIGN MODEL
Eleanore K. Bregand, 5672 W. 78th St., Westchester, Calif. 90045

Filed Apr. 29, 1985, Ser. No. 728,561

Int. Cl.⁴ G09B 19/00

U.S. Cl. 434—81

6 Claims



- 1. A verbal vision system spatial design model, comprising
 - (a) a central block,
 - (b) five satellite blocks (i)-(v) spaced about the central block,
 - (c) and sub-satellite blocks (i')-(v') respectively spaced from and spatially associated with said (i)-(v) satellite blocks
 - (d) and a substantially horizontal support table supporting said (a), (b) and (c) blocks to have spacial associations,
 - (e) the central block being substantially cubical and extending to a higher level than the satellite and sub-satellite blocks,
 - (f) the satellite blocks being upwardly substantially spherical and arranged in first and second like pairs respectively at first and second opposite sides of the central block, each of the blocks of the first and second pairs located at substantially the same distance from the central block, and a fifth satellite block opposite and spaced from a third side of the central block, said fifth block located at substantially the same distance from the nearest blocks of the first and second pairs,
 - (g) said sub-satellite blocks arranged in first, second and third groups, the blocks in each group being alike, the first and second groups respectively located at the sides of the first and second satellite block pairs which are opposite the central block, the third group located at the side of the fifth satellite block which is opposite the central block.

4,645,461

METHOD FOR STRUCTURALLY DIFFERENTIATING POLYNOMIAL FUNCTIONS

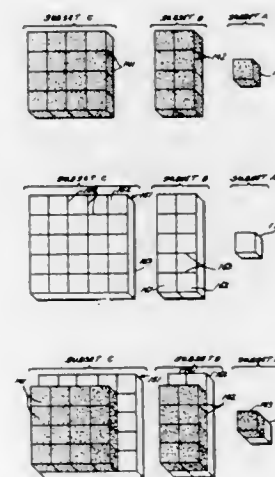
Vernon J. Mortensen, Coeur d'Alene, Id., assignor to Mortensen Educational Products, Inc., Chatsworth, Calif.

Filed Jan. 30, 1986, Ser. No. 825,141

Int. Cl.⁴ G09B 19/02

U.S. Cl. 434—188

8 Claims



1. A method for structurally differentiating between a plurality of ordered pairs of values, each ordered pair having a first value and a second value, the second value of each pair being a first degree polynomial function dependent upon said first value; said method using a plurality of parallelogrammic structural elements which are manipulated to provide a readily observable indication of the derivative being sought; the parallelogrammic structural elements having associated parallelogrammic values indicated by the size of the parallelogrammic structural elements; the method comprising:

- constructing a first set of parallelogrammic structural elements representative of a first ordered pair; said first set including a first order subset having at least one parallelogrammic first order structure having a first side with a first order dimension representing the first value of said first ordered pair, and having a second side equal to a first order coefficient of said polynomial function;
- further constructing said first set to include any constant subset having parallelogrammic elements with parallelogrammic value equal to a constant amount defined by said polynomial function;
- constructing a second set of parallelogrammic structural elements representative of a second ordered pair; said second set including at least one first order element having a first side with a first order dimension representing the first value of said first ordered pair, and having a second side with a length representative of a first order coefficient of said polynomial function;
- further constructing said second set to include any constant portion having parallelogrammic elements with parallelogrammic value equal to a constant amount defined by said polynomial function; and
- comparing said second set to said first set to provide a structural indication of the total differences between the first and second sets occurring as a result of the difference between the first value of the first ordered pair and the first value of the second ordered pair, thus indicating the differential of said polynomial function.

4,645,462

TROLLING MOTOR GUIDE

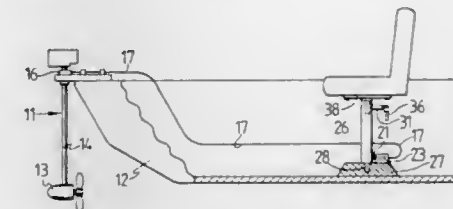
Hubert S. Fulton, 1400 Park Rd., Bessemer, Ala. 35023

Filed May 17, 1985, Ser. No. 735,152

Int. Cl.⁴ B63B 17/00

U.S. Cl. 440—6

3 Claims



2. Apparatus for controlling the angular position of a cable steerable trolling motor on a boat in accordance with the angular displacement of an occupant's seat comprising, in combination:

- (a) a pedestal carrying said seat and rotatably mounted to said boat;
- (b) steering means connected to said pedestal and said motor for registering the angular displacement of said pedestal from a predetermined position; and
- (c) means for connecting said seat to said pedestal whereby said seat releasably engages said pedestal for concomitant rotation therewith with said pedestal and said means for connecting said seat thereon are telescopically and rotatably connected and each having at least one aperture therein with said apertures being selectively aligned by relative rotation of said means for connecting and said pedestal with said means for connecting including a retractable radially extending pin urged toward insertion through said apertures.

4,645,463

MARINE OUTDRIVE APPARATUS

Howard M. Arneson, 6 Locksley Ln., San Rafael, Calif. 94901

Continuation of Ser. No. 712,337, Mar. 14, 1985, Pat. No.

4,544,362, which is a continuation of Ser. No. 359,007, Mar. 17,

1982, abandoned, which is a continuation-in-part of Ser. No.

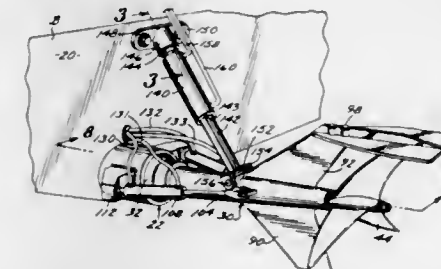
137,797, Apr. 7, 1980, abandoned. This application Jul. 19, 1985,

Ser. No. 757,043

Int. Cl.⁴ B63H 5/12

U.S. Cl. 440—57

49 Claims

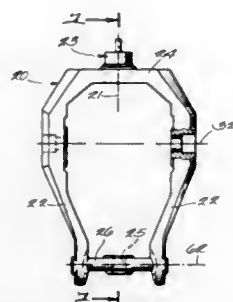


1. Marine outdrive apparatus for a boat having an inboard engine and a transom comprising: a support casing adapted to extend rearwardly from the transom; means on the rear end of the support casing for forming a ball-receiving socket; a propeller shaft carrier having a forward end and a rear end and provided with a hollow pivot ball mounted thereon at the forward end thereof, said ball being directly mounted within said socket and universally movable about a pivot point relative to the socket; a rotatable drive shaft in said support casing and adapted to be connected to said inboard engine; a propeller shaft journaled in said propeller shaft carrier; universal joint means interconnecting the drive shaft and the propeller shaft at

a location within the ball, the center of said universal joint means substantially coinciding with the pivot point of the ball, whereby the propeller shaft carrier and the propeller shaft can pivot laterally about a steering axis and up and down about a trim axis; a propeller mounted on the rear end of the propeller shaft for rotation therewith; and means coupled with the propeller shaft carrier for pivoting the same about the steering axis and about the trim axis.

4,645,464
STEERING AND TILTING MEANS FOR MARINE PROPULSION DEVICE
David E. Rawlings, Palatine, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 6, 1985, Ser. No. 698,873
Int. Cl.⁴ B63H 21/26
U.S. Cl. 440—57 29 Claims



1. A marine propulsion device comprising a gimbal housing adapted to be fixedly mounted on a boat transom, a gimbal ring pivotally mounted on said gimbal housing for pivotal movement relative to said gimbal housing about a generally vertical steering axis, said gimbal ring including a lower end, a support arm extending rearwardly from said lower end, and means for preventing deflection of said support arm, a propulsion unit extending rearwardly of said gimbal ring and being pivotally connected to said gimbal ring for pivotal movement relative to said gimbal ring about a generally horizontal tilt axis, said propulsion unit including a portion extending adjacent said support arm for lateral support thereby, and a hydraulic cylinder/piston assembly extending generally horizontally between said gimbal ring and said propulsion unit when said propulsion unit is in a normal running position and being pivotally connected between said gimbal ring and said propulsion unit for effecting pivotal movement of said propulsion unit relative to said gimbal ring about said tilt axis, said hydraulic cylinder/piston assembly having one end directly pivotally connected to said lower end of said gimbal ring for pivotal movement relative to said gimbal ring about a generally horizontal pivot axis.

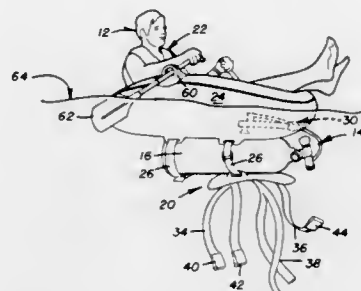
4,645,465
SCUBA GEAR WITH COMBINED FLOTATION AND TRANSPORT DEVICE
William L. Courtney, 3000 Steiner St., San Francisco, Calif. 94123

Filed Oct. 24, 1984, Ser. No. 664,238
Int. Cl.⁴ B63C 9/02

U.S. Cl. 441—40 8 Claims

1. Scuba gear for use by divers and the like for carrying a compressed air tank to provide an underwater source of air, comprising
backpack means for securing the tank to the diver, said backpack means comprising quick release means for permitting the diver to rapidly free himself of the tank,
a buoyancy compensator adapted for relatively close fitting engagement about the upper torso of the diver, said backpack means being adapted for firmly securing the tank on the upper torso of the diver while allowing said buoyancy compensator to be inflated and deflated on the diver, said

backpack means comprising a plurality of elongated straps adapted for passage around the upper torso of the diver, said quick release means being separately connected to said backpack means for releasable engagement with said elongated straps to secure said backpack means and the tank in place upon the diver's upper torso, said elongated straps being adapted for threaded passage through said vest type buoyancy compensator in order to permit said backpack means and said tank to be readily separated from the diver and said buoyancy compensator upon operation of said quick release means, said buoyancy compensator comprising inflatable means arranged adjacent the diver's waist and chest, said buoyancy compensator further comprising a flat panel covering a portion of the diver's back and interconnected with said inflatable means for securing them in place upon the divers upper torso, said back panel being formed with openings for receiving said elongated straps of said backpack means in order to permit secure attachment of said backpack means to the upper torso of



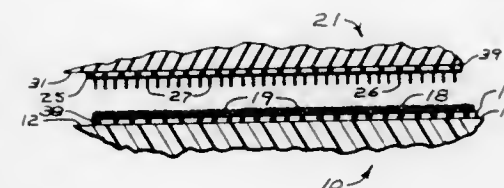
the diver, said openings in said back panel also being adapted for facilitating passage of said elongated straps therethrough to facilitate freeing the diver from the tank and said backpack,
an inflatable transport raft suitable for supporting the diver out of the water,
means for securing said transport raft to the tank, and
releasable means for maintaining said transport raft in compact and gathered form on the tank when deflated in order to facilitate the diver's underwater use of the tank with said deflated transport raft secured thereto, said releasable means being operable for allowing said transport raft to open as it is inflated, said transport raft thereupon providing flotation means for the tank when said quick release means is operated for freeing the tank from the diver, said inflated transport raft also providing transport means for the diver on the surface of the water.

4,645,466
SURFBOARD USER'S FOOT PIECE AND NEW COMBINATIONS THEREWITH
Dale E. Ellis, 5200 Montague St., Orlando, Fla. 32808
Filed Sep. 9, 1985, Ser. No. 773,603
Int. Cl.⁴ A63C 15/06

U.S. Cl. 441—74 10 Claims

1. An improved foot piece for use with a surfboard-type water craft that has a flat top surface which is equipped with a loop bearing surface component that is fixed thereto and has a generally planar outwardly and upwardly facing surface portion with a multitude of small, closely spaced, flexible loop elements, said foot piece being adapted to receive a surfboard user's foot and having a bottom surface which underlies the sole of a user's foot received thereby, said foot piece comprising a flat flexible surface component that is fixed to said bottom surface and has an outwardly and downwardly facing surface portion with a multitude of small, stiff, closely spaced and

outwardly projecting linear elements, each of said linear elements have a substantially uniform diametric dimension throughout its entire outwardly projecting length, said linear elements being engagable by said loop element when said downwardly facing surface portion is brought to bear against said upwardly facing surface portion, said linear elements being generally straight and oriented generally normal to said top surface where said downwardly facing surface portion



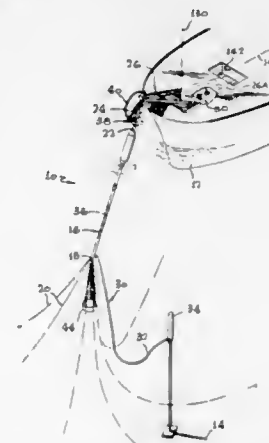
bears against said upwardly facing surface portion, and said outwardly and downwardly facing surface portion being free of hook-type elements that are engagable by said loop elements when said downwardly facing surface portion is brought to bear against said upwardly facing surface portion, whereby said loop bearing surface component resists movements of said foot piece in parallel with said top surface but avoids resistance to the withdrawal of said foot piece from said top surface when said linear elements are engaged by said loop elements.

4,645,467
DETACHABLE MOORING AND CARGO TRANSFER SYSTEM

Jack Pollack, Reseda, Calif., assignor to Amtel, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 603,434, Apr. 24, 1984. This application Apr. 5, 1985, Ser. No. 720,040
Int. Cl.⁴ B63B 21/52

U.S. Cl. 441—4 2 Claims



2. In an offshore terminal for mooring a vessel having bow and stern ends and which floats at the sea surface, and for transferring hydrocarbons between the vessel and a pipe at the sea floor, which includes a riser having a lower end anchored to the sea floor by a plurality of catenary chains or the like which permit the top of the riser to be pulled up and coupled to the vessel and which limit the depth of riser submersion when the riser is released from the vessel to sink, the improvement comprising:

a boom having inner and outer ends;
a connector frame for connecting the outer end of said boom to the top of the riser; and
means for pivotally mounting said boom about a largely vertical axis on a location inboard of said vessel near an end thereof for enabling said boom to move between a

deployed position wherein said outer end of said boom extends beyond said end of said vessel and a stored position wherein said outer end of said boom lies at a location inboard of said vessel and at an orientation largely 180° about said vertical axis from its orientation in the deployed position as seen in a plan view.

4,645,468
METHOD OF REMOVING HYDROCARBONS FROM VACUUM TUBES
Wiggert Kroontje, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 478,923, Mar. 25, 1983, Pat. No. 4,559,471. This application Oct. 2, 1985, Ser. No. 782,780
Claims priority, application Netherlands, Apr. 28, 1982, 8201750

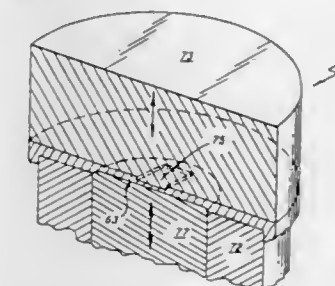
Int. Cl.⁴ H01J 9/385
U.S. Cl. 445—55 5 Claims



1. A method of removing hydrocarbons from an evacuated bulb, comprising the steps of:
heating an inorganic porous carrier charged with at least one transition metal material selected from the group consisting of elements of atomic numbers 23 to 29, 41 to 47 and 73 to 79 inclusive and oxides thereof to a temperature of about 22° C.—350° C. in the presence of said hydrocarbon to disintegrate said hydrocarbons into gases capable of being gettered and gettering said gases with an activated metallic getter.

4,645,469
BEAM SHAPING CRT ELECTRODE AND METHOD OF FABRICATING SAME
Floyd K. Collins, Seneca Falls, and Donald L. Say, Waterloo, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.
Division of Ser. No. 175,165, Aug. 4, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,839
Int. Cl.⁴ H01J 9/14

U.S. Cl. 445—49 3 Claims



1. A method for fabricating a configured beam shaping region in a CRT electron gun electrode member having a one-piece effectual portion evidencing upper and lower surfaces defining an elongated recess in the upper surface, the

recess having substantially sharp perimetrical edges in at least its central region, and a shallow depression in the lower surface, and a material thickness therebetween, said method comprising the steps of: coining an elongated recess inward from said upward surface; substantially simultaneously coining a substantially shallow depression of substantially circular or ovate shape inward from said lower surface in opposed orientation to said recess coining to expedite a flow of electrode material to the upper coining region thereby promoting the formation of substantially sharp perimetrical edges in at least the central region of said recess; and forming an aperture through the residual electrode material intermediate the bottoms of said coined recess and said coined depression to complete said beam shaping configuration.

4,645,470

DOLL HAVING CONCEALED POCKET IN THE LOCATION OF AN EAR

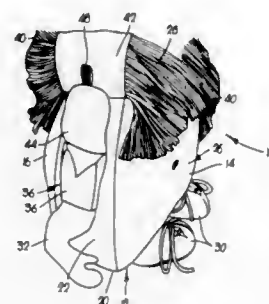
Duane C. Benton, Westwood Hills, Kans., assignor to The Trusty Doll Company, Kansas City, Mo.

Filed Mar. 11, 1985, Ser. No. 710,386

Int. Cl.⁴ A63H 3/00

U.S. Cl. 446—73

3 Claims



1. A doll having a polyhedral, stuffed body, the body having a front, a back, a top, a bottom and opposite sides and including:

a simulation of a face formed on said front, a pocket on the doll accessible from the exterior surface of the body and situated, in relation to said face, in the position of an ear of the doll having said face, the pocket representing the ear of the doll, said pocket including means providing ready access to the interior of said pocket for the placement of objects therein, said doll having means complementing the face and normally concealing the pocket.

4,645,471

BUSY BALL CHILD'S TOY

Donald E. Herring, Redondo Beach, and Raymond J. Gross, Culver City, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 7, 1985, Ser. No. 709,469

Int. Cl.⁴ A63H 1/00, 5/00

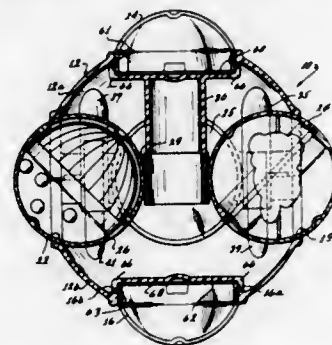
U.S. Cl. 446—258

17 Claims

1. A toy ball device comprising:

a generally hollow structure having a generally spherical outer surface; diametrically extending generally tubular post means within said generally spherical structure; a plurality of openings in said structure configured for forming socket means; a plurality of ball members configured for being received within said socket means with a portion thereof extending beyond the outer surface of said structure, said socket means and said post means being configured for captively retaining said ball members therein and for permitting rotation of said ball members with respect thereto, at least

one of said ball members being generally hollow and having an at least partially transparent surface; and



an amusement element generally contained within said at least one ball member.

4,645,472

TORQUE LIMITING CLUTCH

David C. Heidenreich, Middleburg Heights, Ohio, assignor to Power Transmission Technology, Inc., Copley, Ohio

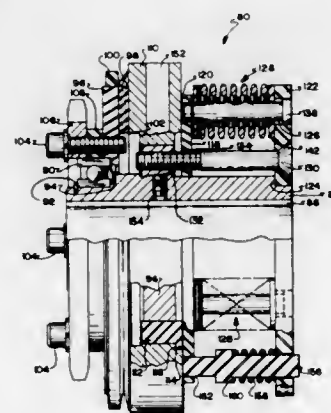
Continuation-in-part of Ser. No. 238,878, Mar. 6, 1981. This

application Feb. 5, 1982, Ser. No. 346,296

Int. Cl.⁴ F16D 7/02

U.S. Cl. 464—48

12 Claims



1. A torque limiting clutch, comprising:

an input hub; an output hub assembly; a friction disk and pressure plate in interconnection between said input hub and output hub assembly; and a plurality of spring assemblies in forceful operative engagement between said input hub and said pressure plate, each said spring assembly comprising: a pin having a head at a first end thereof; a spring maintained upon said pin; a retaining ring received within a groove at a second end of said pin for compressively retaining said spring upon said pin at a predetermined load be provision of washers between said spring and one of said ends; and a back plate received by said input hub, said back plate having a plurality of holes therein for receiving said first end of said pins, said back plate being maintained in fixed relation to said input hub.

4,645,473

TORQUE TRANSMITTING COUPLING WITH OBTUSE SCREW EDGE ANGLES

Masanori Mochizuki, 1-28, Yasunakacho 4-chome, Yao-shi, Osaka-fu, Japan

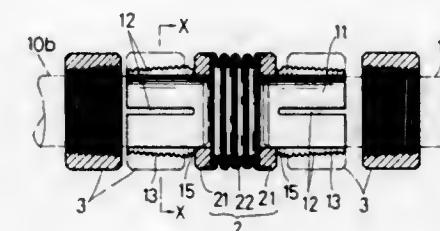
Filed Jun. 25, 1985, Ser. No. 748,562

Claims priority, application Japan, Jul. 12, 1984, 59-145505; Nov. 21, 1984, 59-246696; Feb. 26, 1985, 60-38451

Int. Cl.⁴ F16B 2/06; F16D 1/00, 3/50

U.S. Cl. 464—79

1 Claim



1. A shaft coupling with improved torque transmission properties comprising:

a joint element; two tapered elastic cylindrical screws with threads on outer surface thereof, each cylindrical screw having slits parallel thereto in the axial direction thereof, one of said screws being fixed to each side of said joint element; and two tightening nuts with threads on the inner surface thereof for fitting to said tapered screws, wherein the threads of said tapered screws and tightening nuts each define obtuse edge angles of 120° to 150°.

4,645,474

SEALING DEVICE FOR BEARING BUSHINGS PARTICULARLY FOR UNIVERSAL JOINTS

Armin Olschewski, Schweinfurt; Bernhard Bauer, Hassfurt, and Elisabeth Zirk, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

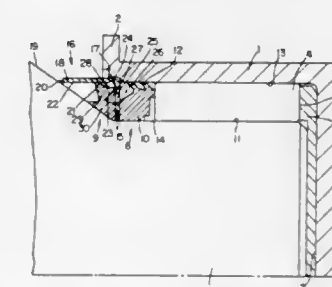
Filed Dec. 13, 1985, Ser. No. 808,820

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1984, 8437288[U]

Int. Cl.⁴ F16C 33/78; F16D 3/41

U.S. Cl. 464—131

4 Claims



1. A sealing system for bearing bushings (1) of cup-shape form having a pin (3) mounted on rolling elements (4) disposed in the space between the pin (3) and bushing (1) therein comprising an inner sealing ring (8) mounted on the pin (3) confronting one axial end of the rolling elements and having at least one outwardly directed sealing lip (12) engaging the bore surface (13) of the bushing, an outer sealing ring (9) mounted on the pin adjacent the inner sealing ring, a rigid retaining member (16) connected to the bushing adapted to fix the inner sealing ring in place in an axial direction and including a radially directed shank portion (15) disposed between the inner and outer sealing rings, said outer sealing ring having flexible lips (21, 23) engaging the retaining member, means defining cham-

4,645,475

INCREMENTALLY VARIABLE BICYCLE TRANSMISSION

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187, assignor to Royce H. Husted and Samuel Shiber, both of Mundelein, Ill.

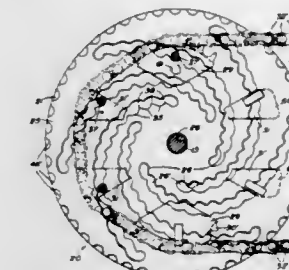
Continuation-in-part of Ser. No. 456,736, Jan. 10, 1983, Pat. No. 4,521,207, which is a continuation-in-part of Ser. No. 387,618, Jun. 11, 1982, Pat. No. 4,493,678, which is a continuation-in-part of Ser. No. 310,506, Oct. 13, 1981, abandoned. This application Aug. 21, 1984, Ser. No. 643,031

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.⁴ F16H 9/10, 9/24, 9/02, 55/30

U.S. Cl. 474—56

11 Claims



1. A variable sprocket comprising in combination:

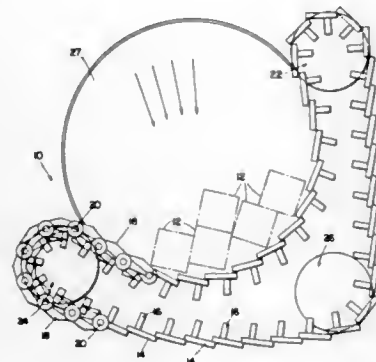
an axle, a drive flange mounted on said axle, an indexing flange rotatably mounted on said axle opposite of said drive flange and having a plurality of spiral-wavy-cams, two sprocket-segment-planets and at least two idler-planets connected to said flanges, coupling means for transmitting force between said sprocket-segment-planets and said drive flange, cam followers attached to said planets for engaging with and following said spiral-wavy-cams, said spiral-wavy-cams comprising a series of alternating depressions and hills which move said planets closer and further to and from said axle, respectively, as said planets slide along said spiral-wavy-cams, a chain made of links wrapping approximately one-half of the periphery of said variable-sprocket, said sprocket-segment-planet having means for positively engaging said chain, said means comprising at least one tooth having an incline at a point of contacting said chain, said incline being steep so as to prevent said chain from disengaging from said tooth while said tooth carries chain's load, the improvement wherein the geometrical location of said planets is slightly displaced toward the axle, relative to their theoretical position which corresponds to zero slack in said chain section which is trapped between said sprocket-segment-planets, so that when said sprocket-segment-planet engages with the chain it takes over the chain's load from the previously engaged sprocket-segment-planet allowing said previously engaged sprocket-segment-planet to disengage from the chain.

4,645,476
WORK CONVEYOR SPROCKET AND LINK ASSEMBLY
 Glenn G. King, Greencastle, Pa., and Francis X. Molloy, Hagerstown, Md., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Jun. 18, 1985, Ser. No. 746,137
 Int. Cl.⁴ F16H 7/02

U.S. Cl. 474—153

24 Claims



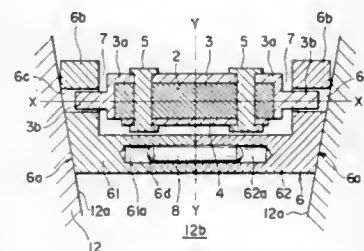
1. A sprocket, comprising:
 a disc-like body member having opposed sides and a plurality of radially extending teeth connected by arcuate root portions; and
 shoulder portions projecting from each side of the body member, the shoulder portions being disposed adjacent the teeth, the shoulder portions including flat surfaces intersecting at apexes, the apexes being disposed at the center of the teeth and the flat surfaces being disposed adjacent the tangent of the arcuate root portions, one apex being provided for each tooth.

4,645,477
V-BELT ASSEMBLY FOR TRANSMITTING POWER
 Susumu Okawa, Numazu; Izumi Ogino, and Shigeru Okuwaki, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 19, 1984, Ser. No. 683,486
 Claims priority, application Japan, Dec. 21, 1983, 58-239895
 Int. Cl.⁴ F16G 5/16

U.S. Cl. 474—201

14 Claims



1. A V-belt assembly trained over V-belt wheels for transmitting power comprising:
 a flexible endless belt;
 a plurality of rigid suspension members secured fixedly to the endless belt perpendicularly to the longitudinal direction of the endless belt and having pivotal projections extending from opposite sides thereof;
 a plurality of substantially U-shaped rigid transmission pieces having holes formed therein wherein said pivotal projections extending from the respective suspension members extend in sidewise directions and into said holes so as to allow for relative movement between each of said pivotal projections and said hole for engaging V-shaped

grooves of the V-belt wheels wherein a center axis of the pivotal projection passes through an approximately central portion of thickness of said endless belt and wherein each of said suspension members is substantially U-shaped so as to surround one bottom surface and opposite side surfaces of the endless belt and is secured fixedly to said endless belt; and

an opposed plate connected to each of said suspension members and positioned against a bottom surface of said endless belt opposite said one bottom surface.

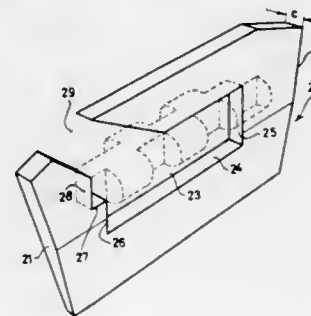
4,645,478
DRIVE BELT
 Martinus H. Cuypers, Eindhoven, Netherlands, assignor to Gayliene Investments Ltd., Great Britain
 Filed Aug. 17, 1984, Ser. No. 641,601

Claims priority, application Netherlands, Aug. 24, 1983, 8302959

Int. Cl.⁴ F16G 5/18

U.S. Cl. 474—201

7 Claims



1. Drive belt for driving a pulley or the like, comprising an endless carrier band supporting a plurality of plate-shaped transverse members each having a central recess for the band, each recess being bounded by a bottom edge supported inward of said carrier band, two upstanding side edges supported adjacent to the respective edges of said band, and at least one top edge portion supported outward of said carrier band; and each member further including an aperture for receiving means for maintaining the positions of the members relative to one another;
 the top edge of each recess, starting from one of the upstanding side edges extending over at least half the width of the carrier band and being connected to a narrow slot which opens into a top edge of each member which is outward of said carrier band and does not engage such pulley;
 the transverse members being configured so as to fit around the band with the slot alternately nearer to one or the other edge of the band.

4,645,479
METAL TRANSMISSION BELT
 Paul M. Bateman, Dryden, and John C. Warner, Trumansburg, both of N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 142,549, Apr. 21, 1980, abandoned.
 This application Dec. 7, 1981, Ser. No. 328,319

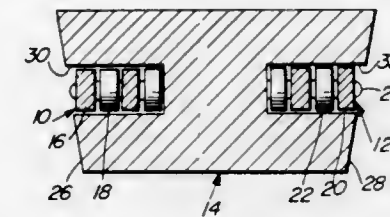
Int. Cl.⁴ F16G 5/16, 5/18

U.S. Cl. 474—242

1 Claim

1. An endless power transmission belt especially adapted for drivingly connecting at least a pair of pulleys in a pulley transmission and comprising the combination of metal links, pivot means and load blocks, the links being arranged in laterally arranged sets with the links of the next adjacent sets laced together and pivotably interconnected by said pivot means, said pivot means also joining corresponding laterally arranged sets to thus provide an integral chain with laterally spaced and

joined sets of links, and a metal load block located between each adjacent pivot means and substantially filling the space between each said adjacent pivot means, each load block having lateral edges shaped to frictionally engage the pulleys of a



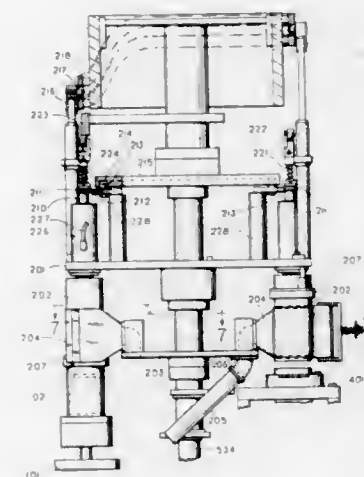
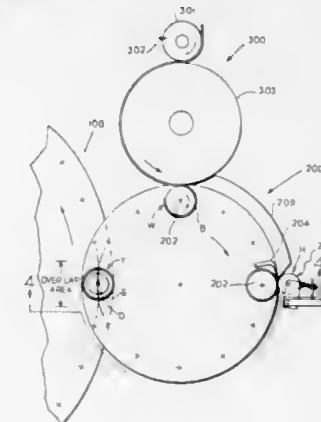
pulley transmission and a pair of cut-out slot-like openings intersecting and opening to opposite edges of said block and defining a generally centrally located block portion which spaces a lateral set of links and applies a load to at least one of the pivot means adjacent thereto.

4,645,480
METHOD AND APPARATUS FOR FABRICATING NESTABLE THERMOPLASTIC CONTAINERS
 Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 3, 1985, Ser. No. 772,085
 Int. Cl.⁴ B31B 1/90

U.S. Cl. 493—106

34 Claims



1. A method of fabricating a nestable container comprising the steps of:

(i) providing a first rotary turret, said first rotary turret having a vertically extending central axis and being rotat-

able in a first horizontal plane about said vertically extending central axis;

(ii) providing a plurality of cylindrical winding mandrels on said first rotary turret, each of said plurality of cylindrical winding mandrels having a substantially equal outside diameter and a vertically extending mandrel central axis and being rotatable about said vertically extending mandrel central axis, the vertically extending mandrel central axes of said cylindrical winding mandrels being equidistant from said vertically extending central axis of said first rotary turret;

(iii) providing a winding station adjacent a first of said plurality of cylindrical winding mandrels;

(iv) providing a seam-sealing station adjacent a second of said plurality of cylindrical winding mandrels;

(v) providing a second rotary turret, said second rotary turret having a second vertically extending central axis and being rotatable in a second horizontal plane about said second vertically extending central axis, said second horizontal plane being vertically displaced from said first horizontal plane;

(vi) providing a plurality of generally frustoconical container forming mandrels on said second rotary turret, each of said plurality of generally frustoconical container forming mandrels having a vertically extending container forming mandrel central axis, the vertically extending container forming mandrel central axes of said plurality of generally frustoconical container forming mandrels being equidistant from said second vertically extending central axis of said second rotary turret, each of said plurality of generally frustoconical container forming mandrels having a generally circular small end and a generally circular large end, said generally circular small end and said generally circular large end being vertically displaced from each other, said generally circular small end being closer to said first horizontal plane than said generally circular large end and having a diameter that is substantially smaller than said outside diameter of each of said cylindrical winding mandrels;

(vii) positioning said first rotary turret and said second rotary turret so that a third of said plurality of cylindrical winding mandrels has its vertically extending mandrel central axis nearly aligned with the vertically extending container forming mandrel central axis of one of said plurality of generally frustoconical container forming mandrels at a transfer station;

(viii) winding a rectangular blank of a semi-rigid heat-shrinkable thermoplastic material about said first of said plurality of cylindrical winding mandrels at a winding station, said winding station being adjacent said first of said plurality of cylindrical winding mandrels, the lineal dimension of said blank, in the horizontal direction, being slightly greater than the circumference of said first of said winding mandrels, so that said blank is wound into a wound cylinder with overlapping ends;

(ix) rotating said first rotary turret through a first portion of a circular arc to advance said first of said plurality of cylindrical winding mandrels to said seam-sealing station;

(x) sealing said overlapping ends of said wound cylinder to one another at said seam-sealing station;

(xi) rotating said first rotary turret through a second portion of said circular arc to advance said first of said cylindrical winding mandrels and said wound cylinder to said transfer station;

(xii) rotating said second rotary turret through a second circular arc to present one of said plurality of generally frustoconical container forming mandrels at said transfer station, said second circular arc being aligned with said circular arc at a first point and at a second point, said second point being spaced from said first point along said circular arc so that said first of said plurality of cylindrical winding mandrels and said one of said plurality of generally frustoconical container forming mandrels travel

nearly parallel to one another between said first point and said second point;
 (xiii) vertically transferring said wound cylinder from said first of said plurality of cylindrical winding mandrels to said one of said plurality of generally frustoconical container forming mandrels at said transfer station, said transferring step occurring over a finite period of time during which said vertically extending mandrel central axis and said vertically extending container forming mandrel central axis are approximately in vertical alignment; and
 (xiv) forming a nestable container from said transferred wound cylinder on said one of said plurality of generally frustoconical container forming mandrels.

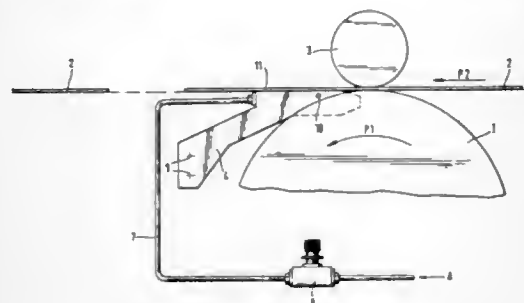
4,645,481

METHOD AND APPARATUS FOR PREVENTING CONTAMINATION BY SPLASHING GLUE IN A CARTON FORMING MACHINE

Hartmut Klapp, Kaarst, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany
 Filed Oct. 2, 1985, Ser. No. 783,378

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1984, 3436239

Int. Cl.⁴ B31B 3/62; B05C 11/06
 U.S. Cl. 493—150 8 Claims



3. In a strip gluing apparatus for a folding box forming machine, including a rotatable gluing disc having an axis of rotation, a gluing surface around the axis of rotation and two main sides perpendicular to the axis of rotation and immersible in a glue bath for adhering glue to the gluing surface, and means in said apparatus for conveying flaps of folding box blanks past the disc in a conveying direction perpendicular to the axis of rotation and with the disc therebelow to define a nip between the gluing disc surface and the blank with a wedge shaped area formed by layers of glue adhering to the gluing surface of the disc and the glue adhering to the blank, the improvement comprising means for blowing compressed air at the height of the nip and into the wedge-shaped area from a source at one main side of the gluing disc directing said compressed air to the other main side.

4,645,482

METHOD OF MANUFACTURING MEDICAL BAG

Takao Yoshida, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 595,335, Mar. 30, 1984, Pat. No. 4,600,613. This application Oct. 31, 1985, Ser. No. 793,681

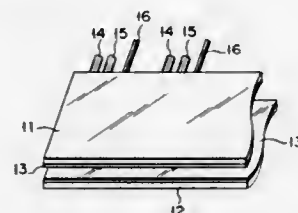
Claims priority, application Japan, Apr. 25, 1983, 58-72398 The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.⁴ B31B 39/66 14 Claims

1. A method of preparing a medical bag comprising a pair of heat-sealable soft plastic sheets which are heat-sealed at predetermined heat-sealing peripheral portions thereof, comprising the steps of:

preparing said pair of heat-sealable soft plastic sheets; coating a 0.05 to 1.5% by weight solution of a silicone resin

composition on substantially the entire surface of one side of each of said sheets, said silicone resin composition having at least partial crosslinkability; at least partially crosslinking said silicone resin composition coatings so as to convert said coatings into respective substantially non-flowable, substantially continuous layers



which respectively substantially cover said one side of each of each of said sheets; and superposing said pair of heat sealable sheets with said substantially continuous layers in face to face relationship and heat-sealing said peripheral portions of said sheets to provide said medical bag.

4,645,483

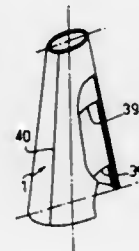
CONICAL BOBBIN AND METHOD OF FORMING SAME

Jean P. Briand, 53, rue de la Papeterie, Fontaine-les-Luxeuil, France 70800

Division of Ser. No. 381,741, May 24, 1982, Pat. No. 4,526,566. This application May 8, 1985, Ser. No. 720,491

Claims priority, application France, May 27, 1981, 81 10650

Int. Cl.⁴ B31C 7/02 12 Claims



1. A cone shaped bobbin formed of a blank formed of paper or cardboard material comprising a first semi-circular edge and a second semi-circular edge, each of said semi-circular edges having the same curvature as the other semi-circular edge with said blank being wound in a helical arrangement in which the large edge of the cone contains a larger number of layers of the blank than does the small end of the cone and in which the number of layers of the blank material progressively decreases from the lower end to the upper end and adhesive means securing the layers of the blank together.

4,645,484

METHOD FOR THINNING REGIONS OF PACKING MATERIAL TO FACILITATE PACKAGE ASSEMBLAGE

Jörgen Niske, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Oct. 29, 1985, Ser. No. 793,324

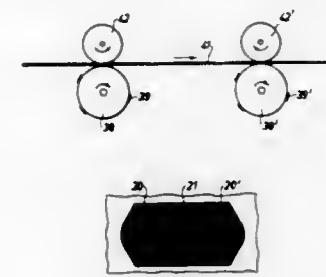
Claims priority, application Sweden, Nov. 5, 1984, 8405539

Int. Cl.⁴ B31B 1/25 8 Claims

8. A method for thinning preselected surface regions of a web according to a predetermined pattern comprising the steps of:

feeding the web between a first rotating die roll having first

raised surface portions generally corresponding with said predetermined pattern and a grinding roll, said raised surface portions urging said web against said first grinding roll which thins first surface zones on said web which overlap said preselected surface region; and feeding the web between a second rotating die roll having second raised surface portions generally corresponding



with said predetermined pattern and a second rotating grinding roll, while synchronizing the rotation of the first and second die rolls and while rotating the second grinding roll oppositely with respect to said first grinding roll, said second raised portions urging said web against said grinding roll which thins second surface zones on said web which overlap said first surface zones along said preselected surface regions.

4,645,485

CONTROL VALVE FOR SELF-EMPTYING CENTRIFUGE DRUM

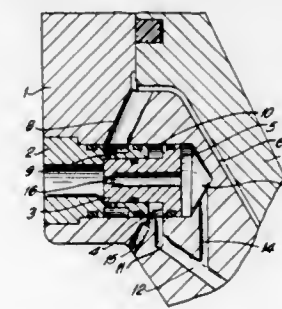
Willi Niemerg, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,483

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3443955

Int. Cl.⁴ B04B 11/04 6 Claims

U.S. Cl. 494—27 6 Claims



1. In a self-emptying centrifuge drum having an axially movable piston slide for opening and closing the drum, a closure chamber below the piston slide and receptive of closure fluid for closing the drum, a control valve for draining closure fluid out of the closure chamber to open the drum, the control valve including a first control chamber having an inlet receptive of a control fluid and a valve piston movable in response to the application of control fluid to the first chamber from a closing position wherein runoff bores from the closure chamber are blocked to an opening position wherein the runoff bores are unblocked to effect the draining of closure fluid from the closure chamber, the improvement wherein the control valve further comprises means responsive to the continued application of control fluid to the first chamber for moving the valve piston from the opening position to the closing position after a selected time delay.

4,645,486

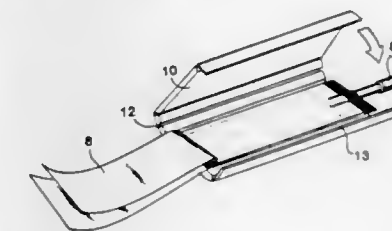
DEVICE FOR DRAWING AND PROCESSING BLOOD AND FOR ADMINISTERING LIQUID VIA PARENTERAL INJECTION

Charles B. Beal, Menlo Park; C. Bruce Fields, Pittsburg, and David L. Stewart, Montara, all of Calif., assignors to International Health Services, East Palo Alto, Calif.

Filed Jun. 11, 1984, Ser. No. 619,492

Int. Cl.⁴ A61N 1/00 6 Claims

U.S. Cl. 604—4 6 Claims



1. A separable device for altering the volume of a pouch means adapted for holding an injectable liquid, comprising hinged plate means, being adapted to be adhesively and releasably connected to said pouch means, said hinged plate means comprises, consecutively, a first flexion plate, a first adhesion plate flexibly connected to the first flexion plate, a second flexion plate fixedly connected to the first adhesion plate, a third flexion plate flexibly connected to the second flexion plate, a second adhesion plate flexibly connected to the third flexion plate, and a fourth flexion plate flexibly connected to the second adhesion plate, the first and fourth flexion plates each having a free edge, wherein the flexion plates are narrower and thinner than the adhesion plates, and the adhesion plates are adapted for adhesive connection to the pouch, whereby in a folded configuration said hinge plate means expands said pouch means, creating a partial vacuum therein, and in an unfolded configuration said hinged plate means compresses the pouch, expelling the liquid.

4,645,487

DEVICE FOR ADMINISTERING POWDERED SUBSTANCES

Nikolai M. Shishov; Vladimir E. Zelenetsky; Nadezhda A. Demina; Ivan M. Bondarev; Alexandr N. Cherny, all of Moscow; Anatoly G. Avxentiev, Belgorod-Dnestrovsky, and Evgeny E. Rylov, deceased, late of Moscow, all of U.S.S.R. (by Nina A. Rybakova, administratrix), assignors to Vsesojunznyi Nauchno-Issledovatel'skiy Institut Meditsinskikh Polimerov, Moscow, U.S.S.R.

Filed Jun. 5, 1984, Ser. No. 617,507

Int. Cl.⁴ A61M 13/00 8 Claims

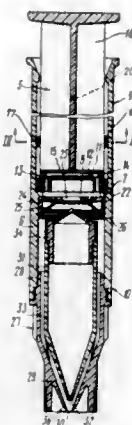
U.S. Cl. 604—58 8 Claims

1. A device for administering powdered substances into deep-seated cavities of a patient's organism, said device comprising:

a sprayer for spraying a powdered substance, a conveying line series-connected to said sprayer, said conveying line including a drain pipe and a catheter arranged coaxially inside of said drain pipe and adapted to be introduced into a deep-seated cavity of the patient's organism for spraying the powdered substance therein;

said sprayer including a cylindrical housing; a diametral partition located in said cylindrical housing and having a first opening; said diametral partition dividing said cylindrical housing into a delivery portion and a spraying portion having an outlet opening; a piston located in said cylindrical housing being movable up and down along said cylindrical housing; and a first valve mounted in said cylindrical housing; and

a second valve mounted on said piston;
a container for containing the powdered substance to be sprayed;
said container mounted within said cylindrical housing and being spaced from said cylindrical housing to define a clearance;



a second opening provided in said container and directed, upon mounting said container in said spraying portion, towards said conveying line, said second opening being coaxial with said conveying line for the delivery of powdered substance being sprayed to said catheter due to rarefaction developed at the outlet end of the sprayer.

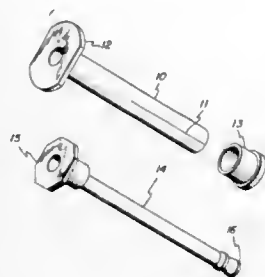
4,645,488

SYRINGE FOR EXTRUSION OF WETTED, PARTICULATE MATERIAL

Victor J. Matokas, Mountain Brook, Ala., assignor to Board of Trustees of the University of Alabama, Birmingham, Ala.
Continuation-in-part of Ser. No. 407,424, Aug. 12, 1982, abandoned. This application Nov. 30, 1983, Ser. No. 556,725
Claims priority, application New Zealand, Jul. 27, 1983, 205033

Int. Cl.⁴ A61M 31/00

U.S. Cl. 604—59



1. A dental restorative dispensing syringe for extruding a wetted particulate mass therefrom which comprises: (A) a barrel of flexible plastic material having at least one longitudinal slit therein at its open end in combination with (B) a piston slidable within the bore of said barrel providing a seal between said piston and the inside wall of the barrel along its entire length and having means for making positive engagement with (C) a plunger rod, the length of said slit being approximately equal to the length of the wetted particulate mass to be extruded therefrom and being operative to allow said barrel to expand under the influence of said wetted particulate mass when said piston is extruding said mass, thereby reducing barrel resistance.

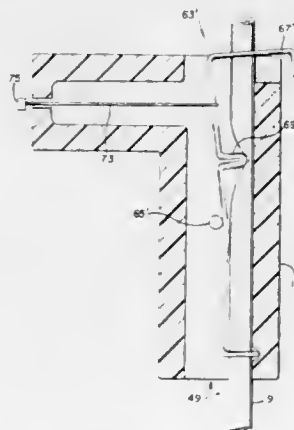
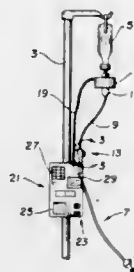
4,645,489 FLUID DELIVERY APPARATUS WITH SHAPE-MEMORY FLOW CONTROL ELEMENT

John F. Krumme, Woodside, and Darel E. Hodgson, Palo Alto, both of Calif., assignors to Beta Phase, Inc., Menlo Park, Calif.

Continuation of Ser. No. 445,390, Nov. 30, 1982, abandoned.
This application Apr. 29, 1985, Ser. No. 733,036
Int. Cl.⁴ A61M 5/00

U.S. Cl. 604—65

13 Claims



1. An intravenous flow controller for use in a gravity-fed intravenous liquid dispensing apparatus designed for intravenous administration of nutrients and medicaments at a preselected flow rate from a liquid reservoir at an upstream end thereof, downwardly along a flow path bounded over a portion of its length by a flexible intravenous tube, to a point of exit therefrom, said flow controller comprising:

flow-rate monitor and control means for monitoring the flow rate along said flow path and for producing in response to said flow rate an electrical valve control signal directly related to the difference between said flow rate and said preselected flow rate;

valve means disposed along said flow path and connected to respond to said electrical valve control signal by varying said flow rate in response thereto in direct relation to the magnitude of said valve control signal, said valve means comprising:

means for biasing said valve means to a closed position to prevent flow of liquid through the flexible intravenous tube,

a shape-memory valve actuator element connected to actuate said valve means and made of a material which has the intrinsic property of shape memory and transits between two different crystalline phases whenever its temperature passes through a certain region of transition temperatures, said actuator element having a first physical shape defined by a first set of dimensions at temperatures above said transition temperature and a second physical shape defined by a second set of dimensions at temperatures below said transition temperature, and transiting through a re-

gion of shapes intermediate said first and second shapes as its temperature passes through said region of transition temperatures, and causing flow rate along said flow path to vary in response to said transiting through said region of transition temperatures;

means to cause heating of said actuator element to change its temperature in direct relation to the magnitude of said valve control signal, whereby changes in physical shape of said actuator and, hence, flow rate are caused by changes in said valve control signal;

said shape memory valve actuator overcoming said biasing means and causing opening of said valve means to permit flow of fluid only upon heating of said actuator above a prescribed minimum temperature.

4,645,490

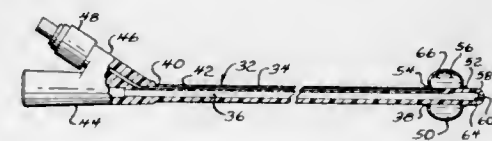
NEPHROSTOMY CATHETER WITH FORMED TIP

Helmut W. G. Rosenberg, McHenry, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 18, 1984, Ser. No. 683,056
Int. Cl.⁴ A61M 29/00

U.S. Cl. 604—103

1 Claim



1. A catheter, comprising:

an elongated shaft having a drainage lumen extending there-through, and an inflation lumen extending along the shaft; an elastic sleeve overlying a distal portion of the shaft; and means for bonding the sleeve to the shaft in spaced circumferential zones to define a cavity beneath the sleeve communicating with the inflation lumen, with the bonding means being radiopaque, wherein the bonding means comprises an adhesive impregnated with a radiopaque material.

4,645,491

SURGICAL NEEDLE

David Evans, 16 Wells Hill Ave., Toronto, Ontario, Canada (MSR 3A6)

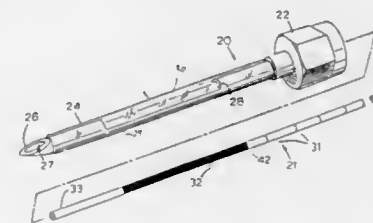
Filed Mar. 6, 1985, Ser. No. 708,634

Claims priority, application Canada, Mar. 9, 1984, 449239

Int. Cl.⁴ A61M 5/18

U.S. Cl. 604—158

13 Claims



1. Apparatus for use in accurately locating a catheter with respect to the outer surface of a patient's skin, the apparatus comprising:

a hollow surgical needle having an elongate stem portion of uniform inner and outer diameters defining a sharpened leading end and an opening at that end, a window formed through a portion of said stem with means for providing airtight separation between an interior of said stem visible through said window and an exterior of said stem, said window being of sufficient longitudinal extent that a part

of this portion will be inserted into the patient's skin when the needle is inserted to a required depth;

a flexible tubular catheter adapted to be slidably inserted in the hollow surgical needle and moveable through the needle to project out beyond said opening in the leading end of the needle, the catheter including a leading end and markings spaced along its length including a first marking which cooperates with said window to indicate alignment of said leading edge of said needle and said leading edge of said catheter;

whereby said needles can be inserted to a required depth and the leading end of the catheter can be inserted into and through the needle to a desired position with said first marking and said location indicating said alignment and with the markings being visible through the window, the markings being used as a guide to indicate the amount of catheter entered into the needle and so that one of the markings visible through the window can be used as a reference point to permit the catheter to be located in the same position relative to the skin surface after the needle has been removed.

4,645,492

CATHETER ANCHORING DEVICE

Vaughan B. Weeks, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

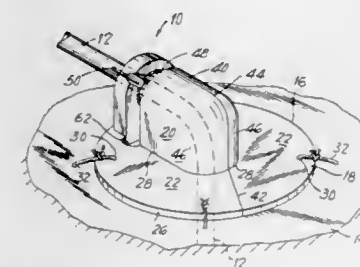
Continuation of Ser. No. 540,466, Oct. 11, 1983, abandoned.

This application Feb. 19, 1986, Ser. No. 830,917

Int. Cl.⁴ A61M 5/32

U.S. Cl. 604—174

4 Claims



1. A device for anchoring a catheter tube or the like to the skin of a patient, comprising:

a resiliently flexible pad adapted for attachment to the skin of a patient, said pad including a disk-like base portion with a bottom surface for positioning subjacent to the patient's skin, a top surface having a body portion extending therefrom and a peripheral edge extending between said top and bottom surfaces;

said pad having an arcuate passageway therethrough predeterminedly dimensioned for snugly receiving the catheter tube therein, said passageway length extending from a first port in said base portion to a second port in said body portion, said body portion being supported by said base portion substantially throughout said passageway length, said pad having an elongated slot extending through said base portion from said peripheral edge to said first port and from said first port to said second port, said slot including a portion communicating along the entire length of said passageway, said pad being manually spreadable along said slot for permitting external accessibility to said passageway for placement of said passageway about said tube and resiliently closeable for frictionally restraining the tube therein; and

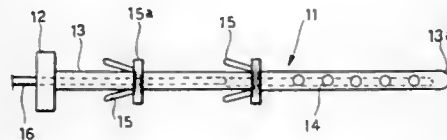
means for releasably locking said slit in a closed position, said means including an annular channel grooved into said body portion extending transversely to said slit adapted to accommodate an elongated flexible tie insertable within said channel and tightenable about said body portion, said base portion having a slot proximate to said annular chan-

nel for facilitating insertion of said tie into said channel and about said body portion.

4,645,493
CATHETER FOR MEDICAL-SURGICAL APPLICATION
 Ugo Ferrando, Giovanni Gardi, and Giustino Pagliano, all of Turin, Italy, assignors to N.U.S. S.r.l., Turin, Italy
 Continuation of Ser. No. 565,884, Dec. 27, 1983, abandoned.
 This application Oct. 21, 1985, Ser. No. 790,785
 Claims priority, application Italy, Jan. 7, 1983, 52816/83[U]
 Int. Cl.⁴ A61M 25/00

U.S. Cl. 604—174

3 Claims



1. A catheter for medical-surgical application, constructed of silicone material, comprising a hollow stem closed at one end and having an annular head at the other end, the stem having spaced along its length no more than two pairs of tongues also of silicone material for locking the catheter in position, each said pair comprising two diametrically opposed tongues that are inclined away from said closed end and have rounded free ends, and a plurality of drainage holes spaced apart lengthwise of the catheter and disposed between said closed end and said pair of tongues closest to said closed end, each said pair of tongues being secured to a ring which in turn is secured to the exterior of the hollow stem, each said ring being devoid of tongues between said two diametrically opposed tongues on each ring.

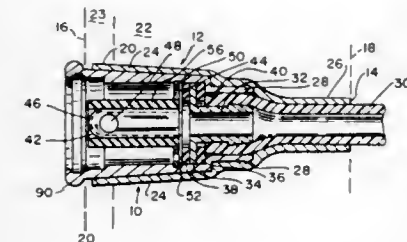
4,645,494
PERITONEAL DEVICE SYSTEM
 Jeffrey A. Lee, Maple Grove, and Felix J. Martinez, Plymouth, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Oct. 22, 1985, Ser. No. 790,092

Int. Cl.⁴ A61M 5/00

U.S. Cl. 604—175

6 Claims



1. A percutaneous implant device especially suitable for peritoneal dialysis applications, the device comprising:

- (a) a substantially rigid tubular percutaneous body of biologically compatible material which extends through the skin when implanted so as to provide means for accessing the peritoneal cavity through the interior of said device, said body having a distal end and proximal end, the proximal end being nearest the peritoneal cavity when implanted, said distal end including an outer flange about its circumference;
- (b) flexible subcutaneous catheter means in fluid-tight communication with the interior of said tubular body for providing fluid communication between an animal body exterior and said animal's peritoneal cavity;
- (c) cannula means for controlling flow through said tubular body, said cannula means including a rigid tubular mem-

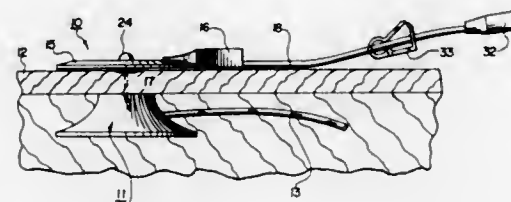
ber having a closed end and at least one opening in the side wall of said tubular member adjacent said closed end, said tubular member being positioned within said tubular body such that said closed end faces the distal end of said tubular body, the open end of said tubular member being in fluid-tight communication with said tubular body such that all fluid passing from the distal end to the proximal end of said tubular body must pass through said openings in said cannula means; and

- (d) flexible cannula sleeve means providing a normally closed seal over said cannula means side openings, said sleeve means including a tubular, flexible sleeve member having a smaller inside diameter than the outside diameter of said cannula tubular member, said sleeve member being positioned over and around said tubular member from the proximal end of said tubular member and distally so as to normally completely cover and seal said tubular member side wall openings; said cannula means, rigid tubular percutaneous body and flexible sleeve member being constructed and arranged such that pressure exerted on the distal end of said sleeve member will cause same to collapse downwardly and outwardly such that said sleeve member no longer provides a seal over said tubular member side wall openings, said flexible sleeve member being highly resilient so as to return to its original sealing position when such pressure is released.

4,645,495
VASCULAR ACCESS IMPLANT NEEDLE PATCH
 Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039
 Filed Jun. 26, 1985, Ser. No. 748,993
 Int. Cl.⁴ A61M 5/00

U.S. Cl. 604—180

21 Claims



- 1. A vascular access implant needle patch comprising a first transparent disc having a centrally disposed aperture; a needle having a passage for a flow of fluid therethrough, said needle having a main portion extending over said disc and an angled portion extending through said aperture of said disc;
- a second transparent disc secured to said first disc with said needle disposed therebetween; and
- a rigid housing secured to said discs to define a finger grip, said housing having said main portion of said needle encased therein.

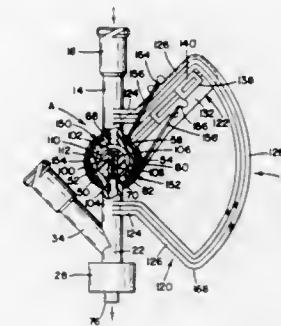
4,645,496
CONTINUOUS CATHETER FLUSHING FLOW CONTROL DEVICE
 Rolf A. Oscarsson, Hudson, Ohio, assignor to RAO Medical Devices, Inc., Hudson, Ohio
 Filed Jan. 9, 1986, Ser. No. 817,416
 Int. Cl.⁴ A61M 5/00; A61B 5/02

U.S. Cl. 604—248

31 Claims

- 1. A continuous catheter flushing flow control device comprising a body member having a cylindrical bore chamber and provided with a pair of diametrically opposite port openings in the cylindrical wall of said bore chamber, a stem member comprising a cylindrical drum element extending into and rotatively engaged in liquid tight relation with the cylindrical bore wall of said chamber, interengaging means on said body

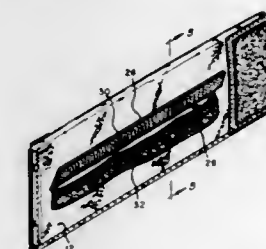
and stem members locking said drum element axially within the said chamber without hindering rotative movement of the stem member therewithin, said drum element having a diametrical passageway extending transversely therethrough for registering with and interconnecting said port openings in a first relative rotative flow controlling position of said members, flow restrictor means in said passageway comprising a capillary passage therein for restricting the flow of liquid through said passageway to a relatively slow capillary controlled rate, said drum element further having an arcuate groove extending circumferentially therearound through an angular extent sufficient to interconnect the said port openings,



4,645,498
HOT OR COLD COMPRESS WITH BLADDER ENCLOSURE
 Imogene Kosak, 1042 Shunpike Rd., Cape May, N.J. 08204
 Filed Feb. 19, 1985, Ser. No. 702,974
 Int. Cl.⁴ A61M 35/00

U.S. Cl. 604—289

1 Claim

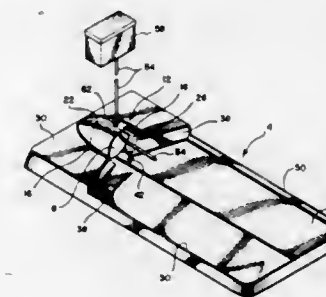


when the said members are relatively rotated to a second rotative flow controlling position angularly displaced around 90° from the said first relative rotative position thereof, to thereby form with the cylindrical wall of said bore chamber a single bypass passageway around the said diametrical passageway and the flow restrictor means therein, said arcuate groove and bypass passageway having a cross-sectional size throughout sufficient to permit a relatively large unrestricted flow of liquid through said bypass passageway from one to the other of said port openings, said members being biased so as to be normally held in their said flow restricting first relative rotative position.

4,645,497
COLONIC IRRIGATION BOARD
 Eldon L. Lowder, 7835 South 1300 E., Sandy, Utah 84092
 Continuation of Ser. No. 566,034, Dec. 27, 1983, abandoned.
 This application Dec. 23, 1985, Ser. No. 812,187
 Int. Cl.⁴ A61M 31/00

U.S. Cl. 604—276

6 Claims



- 1. A colonic board comprising an elongate support table having a width and length which enables a person to lie thereon, said table having an opening at a rear end thereof, the upper surface of the table in front of the opening being formed to slope downwardly and inwardly from the sides, and rearwardly into the opening, said table including an upwardly projecting lip formed at the edges of the table forwardly of the catch basin, to circumscribe the upper surface of the table, a catch basin formed integrally with the support table at said rear end of the table over the opening for receiving and

directing downwardly fecal matter, said catch basin including side walls disposed on each side of the opening, and a rear/top wall disposed at the rear of the opening and sloping substantially its entire length at an acute angle upwardly and forwardly over the opening so as to divert downwardly toward the opening fecal matter which may strike the wall, with the forward edges of side walls and rear/top wall defining a generally vertically oriented opening whose lower edge is adjacent the forward edge of the opening in the table, and tubular means for delivering liquid to the colon of a person lying on the table.

- 1. A compress comprising: a pair of elongated waterproof panels secured together around their extreme panel peripheries so as to form a hollow space therebetween; one of said panels being substantially waterproof and having an elongated opening therein providing communication to said hollow space; means carried by said one panel for closing said opening; the other of said panels also being substantially waterproof but having a substantially centrally located portion thereof formed of a porous fabric material to allow liquid which may be in said space to seep out through said fabric portion to the exterior of said compress; a totally waterproof flexible bladder means forming an enclosure secured to said one panel within said space, said bladder having a configuration complementary to said panels and having an access opening adjacent the opening in said one panel, said bladder means being so constructed and arranged so that it can either be filled and extended to fill said space or said bladder means can be collapsed and moved out of the way so that the space can be directly filled; hook fastener means carried by one of said panels and attachable to loop fastener means carried by the other of said panels so that said compress can be wrapped around a body member and secured thereto by attaching the hook and loop means together.

4,645,499

SURGICAL SPONGE

Vytantas R. Rupinkas, Lombard, Ill., assignor to The Kendall Company, Boston, Mass.

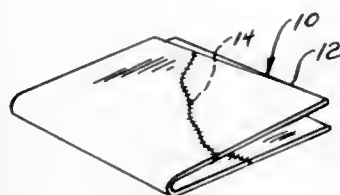
Continuation of Ser. No. 525,528, Aug. 22, 1983, abandoned.

This application Sep. 24, 1985, Ser. No. 779,541

Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—362

6 Claims



1. A surgical sponge, comprising, a sheet of absorbent material comprising hydroentangled fibers; and an elongated radiopaque element in the sheet, said fibers being hydroentangled about the element to retain it in place in the sheet such that the element is embedded inside of the sheet.

4,645,500

NON-RETURN VALVE ASSEMBLY

Peter L. Steer, Surrey, England, assignor to Craig Medical Products Limited, Reigate, England

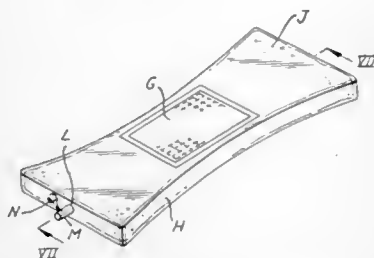
Filed Nov. 4, 1985, Ser. No. 794,880

Claims priority, application United Kingdom, Nov. 23, 1984, 8429645

Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—378

14 Claims



1. A non-return valve assembly which includes at least three layers, the layers being secured together, the first layer being a sheet or film of perforated material, the second layer being a sheet or film of material having cuts therein defining an array of flap valves, and the third layer being a material having holes therein, each hole being in registry with an associated flap valve and being of a size of accommodate the flap of said valve, whereby said flap valves can open into said holes in said third layer.

4,645,501

DISPOSABLE ABSORBENT GARMENT CONSTRUCTION

Richard K. Teed, Greenwood, S.C., assignor to Professional Medical Products, Inc., Greenwood, S.C.

Filed May 24, 1984, Ser. No. 613,242

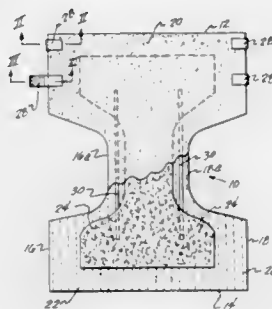
Int. Cl.⁴ A61F 13/16

U.S. Cl. 604—390

6 Claims

1. An improved disposable absorbent garment having opposed sides and ends to be located respectively between the legs and about the waist of a wearer, an inner moisture absorbent layer and an outer water-impervious unitary plastic sheet secured thereto, fastener tabs attached to opposite sides of the garment adjacent an end of the same, each tab having an adhesive

sively coated end portion for pressure attachment to the outer surface of the plastic sheet to secure the garment about the waist of the wearer, the outer surface of the unitary plastic sheet defining two sets of spaced parallel continuous raised ridges respectively extending generally parallel and perpendicular to the end edges of the garment to form a generally rectangular surface pattern therein, said tabs being located on the garment so that their adhesively coated end portions extend



generally parallel and perpendicular to the respective sets of ridges when attached to the outer surface of the plastic sheet, and said ridges defining a raised surface area of the sheet for contact with said adhesively coated end portions of the tabs to secure the same thereto during garment use while permitting the tab end portions to be readily peeled from the surface of the plastic sheet without damage thereto for subsequent adhesive repositioning of the same on the sheet.

4,645,502

TRANSDERMAL DELIVERY OF HIGHLY IONIZED FAT INSOLUBLE DRUGS

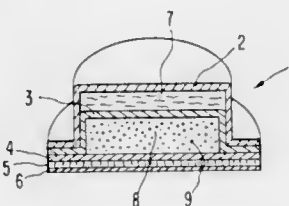
Robert M. Gale, Los Altos, and David J. Ensore, Sunnyvale, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed May 3, 1985, Ser. No. 730,713

Int. Cl.⁴ A61K 9/00

U.S. Cl. 604—896

13 Claims



1. A medical device for the transdermal delivery of a highly ionized, fat insoluble drug comprising, in combination:

- aqueous drug reservoir means comprising at least 50% water having said drug dissolved therein;
- receptacle means containing said reservoir means, said receptacle means being substantially impermeable to the contents of said reservoir means;
- highly permeable reservoir retaining means disposed over the skin proximal surface of said aqueous reservoir means;
- permeation enhancer delivery means for delivering a permeation enhancer to the skin through said aqueous reservoir means, said permeation enhancer delivery means being disposed in permeation enhancer transferring relationship to said aqueous reservoir means and comprising:
 - a source of permeation enhancer, and
 - permeation enhancer release rate controlling means disposed between said source of permeation enhancer and said aqueous reservoir means, said permeation en-

hancer release rate controlling means comprising a material permeable to said permeation enhancer and substantially impermeable to water and said drug; and e. means for maintaining said medical device in permeation enhancer and drug transmitting relationship to the skin.

4,645,503

MOLDABLE BONE-IMPLANT MATERIAL

Steve T. Lin, Hayward; Seshadri Conjeevaram, Stockton, and Don J. Henderson, Danville, all of Calif., assignors to Orthomatrix Inc., Dublin, Calif.

Filed Aug. 27, 1985, Ser. No. 769,940

Int. Cl.⁴ A61F 2/28

U.S. Cl. 623—16

16 Claims

1. A moldable bone-implant material comprising a cohesive mixture of hard filler particles and a biocompatible, biodegradable thermoplastic polymeric binder having fluid-flow properties at or below about 60° C.

4,645,504

IMPLANTABLE INFECTION BARRIER SEAL AND METHOD

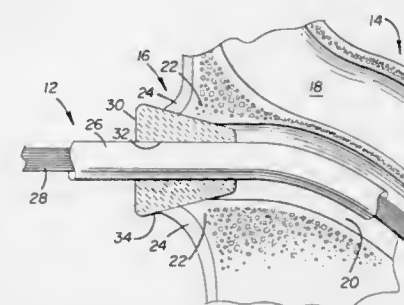
Charles L. Byers, Vacaville, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 24, 1985, Ser. No. 738,021

Int. Cl.⁴ A61F 2/18

U.S. Cl. 623—10

31 Claims



1. An implantable infection barrier seal for preventing the entry of pathogens into an anatomical body, said body defining an exterior where pathogens reside and an interior where pathogens are not endemic, said body interior including organic tissues, defining an opening, which are not inherently exposed to said exterior, a portion of said tissues being exposed to said exterior, comprising

an implantable infection barrier member shaped to fit within said opening and comprising an inert, biologically compatible material that is capable of being bonded directly to said exposed tissue portion so as to shield said body interior from said pathogens residing in said exterior, wherein said implantable infection barrier member comprises a porous ceramic material having a pore size in the range of from 50 to 400 micrometers.

4,645,505

WRIST IMPLANT

Alfred B. Swanson, 2945 Bonnell Ave., SE., Grand Rapids, Mich. 49506

Filed Mar. 7, 1985, Ser. No. 709,332

Int. Cl.⁴ A61F 2/42

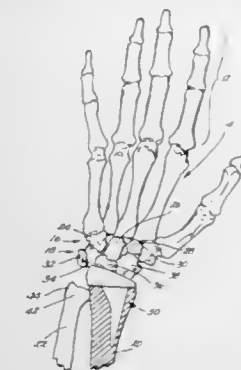
U.S. Cl. 623—21

29 Claims

1. A wrist implant for stabilizing the proximal carpal row and preventing ulnar migration thereof, said implant comprising:

- a rigid body defining a generally planar, radial surface having a generally teardrop shape and including an apex, curvilinear dorsal and palmar lateral edges and a semicircular medial edge;
- a generally triangular-shaped dorsal surface having a truncated apex and extending distally from the dorsal edge of said radial surface;
- a generally triangular-shaped palmar surface having a truncated apex and extending distally from said palmar edge of said radial surface, said dorsal surface and said palmar

surface joining to form a curved medial surface; and a carpal surface defining an elongated, smooth, cup-shaped, concave recess including a lunate surface, said recess configured and dimensioned to receive, at least partially encircle and constrain the carpal row lunate bone.



4,645,506

HIP JOINT ENDOPROSTHESIS WITH A STEM TO BE ANCHORED IN THE FEMUR

Helmut D. Link, Hamburg, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

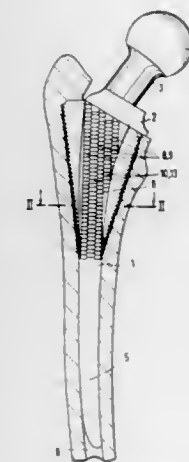
Filed Jun. 22, 1984, Ser. No. 623,785

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323131

Int. Cl.⁴ A61F 2/32

U.S. Cl. 623—23

11 Claims



1. A hip joint endoprosthesis, comprising:

- a downward-tapering stem having medial, lateral, anterior and posterior surface portions, and configured and dimensioned to have outer surfaces which are disposed against and anchored in a femur, said stem comprising:
 - a downward tapering main part having a predetermined length; and
 - a condyle head connected to said main part;
- a plurality of wedge pieces, said wedge pieces being provided on sides of said stem facing away from one another;
- guide means disposed on the opposing surface portions of said main part and configured to mate with and guide said wedge pieces for lengthwise movement along said main part and to prevent movement perpendicular to said

- lengthwise movement, said guide means having a converging portion which converges in the manner of a wedge at a wedge angle;
- (d) gripping surfaces disposed on each of said wedge pieces and formed for promoting adhesion to the inside of the femur; and
- (e) gripping means disposed on a portion of said guide means which forms said outer surfaces for producing an adhesive force against the inside of the femur.

4,645,507

PROSTHESIS

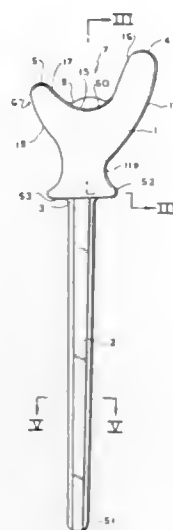
Eckart Engelbrecht, Hamburg; Elmar Nieder, Jork, and Arnold Keller, Kaihude, all of Fed. Rep. of Germany, assignors to GMT Gesellschaft für Medizinische Technik mbH and Waldemar Link GmbH & Co., both of Hamburg, Japan

Continuation of Ser. No. 414,441, Sep. 2, 1982, abandoned. This application Sep. 3, 1985, Ser. No. 771,489

Int. Cl.⁴ A61F 2/36

U.S. Cl. 623—23

28 Claims



1. An articular prosthesis for implanting in a region of a joint, where a natural joint socket has deteriorated to such an extent that it can no longer pivotally support a bone and where the natural joint socket is incapable of being replaced with an artificial joint socket, comprising: an elongated anchoring element sized so as to be secured in an intermedullary canal and formed at one end of said anchoring element is a substantially U-shape bearing element; said bearing element having a pair of protrusions forming leg portions of said U-shape and a base portion, disposed between said protrusions, forming a bearing surface; and said bearing surface being sized generally to cooperate with an edge face of a pelvis bone at a location other than the original joint between the pelvis and the femur and wherein said bearing surface of said base portion directly engages the edge face thereby permitting functional pivotal movement between the pelvis and femur.

4,645,508

ARTIFICIAL ANKLE JOINT

John J. Shorter, and Stanley T. Early, both of Basingstoke, England, assignors to Chas. A. Blatchford & Sons Limited, Hampshire, England

Filed Jul. 10, 1985, Ser. No. 753,639

Claims priority, application United Kingdom, Jul. 11, 1984, 8417630

Int. Cl.⁴ A61F 2/66

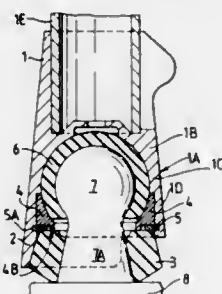
U.S. Cl. 623—48

12 Claims

1. An artificial leg having a shin member, a foot, and a ball

and socket joint connecting the shin member and foot, wherein:

- (i) the socket has main and subsidiary socket portions, the main socket portion having a first part which engages the ball or the elastic covering thereon if provided, and a second part integral with the first part, the second part extending beyond the first part and within which second part the subsidiary socket portion is received;
- (ii) the socket includes connecting means within the second part whereby the subsidiary socket portion is retained



within the second part of the main socket portion and whereby the main and subsidiary socket portions are together clamped on the ball or the elastic covering thereon if provided;

- (iii) the main socket portion is an outer upper socket portion enveloping an upper part of the ball and covering if provided, and the subsidiary socket portion is an inner, lower socket portion enveloping a lower part of the ball and covering if provided.

4,645,509

PROSTHETIC FOOT HAVING A CANTILEVER SPRING KEEL

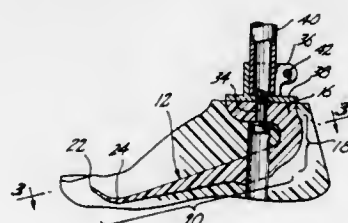
Donald L. Poggi, Bainbridge Island; Ernest M. Burgess, Mercer Island, David E. Moeller, Bainbridge Island, and Drew A. Hittenberger, Seattle, all of Wash., assignors to Model & Instrument Development Corporation, Seattle, Wash.

Filed Jun. 11, 1984, Ser. No. 619,190

Int. Cl.⁴ A61F 2/60

U.S. Cl. 623—55

26 Claims



1. A prosthetic foot comprising: a cantilever spring monolithic keel of hardened polymer having visco-elastic properties, and a cover encasing said keel, said keel having an attachment means adapted for connection to an upper prosthesis and having strain energy storing forefoot and heel portions, said heel portion being a curved, bendable transition that joins said forefoot portion to said attachment means and transfers loads therebetween, said attachment means, curved heel portion, and forefoot portion being shaped and dimensioned to have substantially uniform bending stress distribution and strain energy storage throughout said keel for storing strain energy associated with each footfall and returning such energy as footlift and thrust with the following footrise.

CHEMICAL

4,645,510

EXHAUST DYEING OF CELLULOSIC SUBSTRATES WITH REACTIVE DYES CONTROLLED SIMULTANEOUS ADDITION OF SALT AND ALKALI

Rolf Hasler, Bottmingen, Switzerland, and Francis Palacin, Riedisheim, France, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 24, 1985, Ser. No. 738,074

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420383

Int. Cl.⁴ D06B 23/28; D06P 3/60

U.S. Cl. 8—400

39 Claims

1. In a process wherein a textile material comprising cellulosic fibres is exhaust dyed with a reactive dyestuff in a dye-bath which also contains a salt and an alkali, the improvement which comprises adding the salt and the alkali simultaneously to the reactive dyestuff-containing dye-bath in specified quantities metered per unit time or per cycle of the dyeing machine so that a substantially constant percentage of the reactive dyestuff initially present in the dye-bath is adsorbed by the substrate per unit time or per cycle of the dyeing machine.

4,645,511

AFTERTREATMENT OF DYED OR PRINTED TEXTILES WITH A POLYMERIC POLYBASIC AMINO COMPOUND

Jürg Heller, Oberwil; Bruno Kissling, Hagendorf; Tibor Robinson, Basel, and Salvatore Valenti, Binningen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 24, 1984, Ser. No. 686,135

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1984, 3400051

Int. Cl.⁴ C09B 62/00

U.S. Cl. 8—549

31 Claims

1. A process for the dyeing or printing of hydroxy group- or nitrogen-containing textile fibres comprising the steps of

- (a) dyeing or printing the fibres with one or more direct dyestuffs which give a degree of exhaustion of 70 to 100% when dyed on cotton at the boil at 1/1 standard depth and which contain in their molecules at least one 5- or 6-membered heterocyclic aromatic ring substituted by 1 to 3 halogen atoms, and subsequently
- (b) treating the dyed or printed fibres at a pH of from 8 to 12 with a polymeric, polybasic amino compound (A) selected from the group consisting of
- (A1) the reaction product of an amine of formula III



III

or a polyalkylene polyamine of formula IV



IV

in which each

R, independently, in hydrogen or a C₁₋₁₀alkyl group unsubstituted or monosubstituted with hydroxy, C₁₋₄alkoxy or cyano,

n is a number from 0 to 100,

Z, or each Z, independently, when n > 0, is C₂₋₄alkylene or hydroxyalkylene

and X, or each X, independently, when n > 1, is —O—, —S— or —NR— where R is as defined above,

provided that the amine of formula IV contains at least one reactive —NH— or —NH₂ group, with cyanamide, dicyandiamide, guanidine or biguanidine or with co-reagents comprising at least 50 mole % cyanamide dicyandiamide, guanidine or biguanidine and up to 50 mole % of a dicarboxylic acid or mono- or di-ester thereof;

(A2) the reaction product of compound (A1) with an epihalohydrin or a precursor thereof;

(A3) the reaction product of compound (A1) with an organic compound (B) containing at least two groups capable of being split off as anions on reaction with (A1);

and (A4) the reaction product of an epihalohydrin or a precursor thereof with a polyalkylene polyamine.

4,645,512

CONTINUOUS PROCESS FOR REMOVING WATER-SOLUBLE PARTICLES FROM ORGANIC LIQUIDS

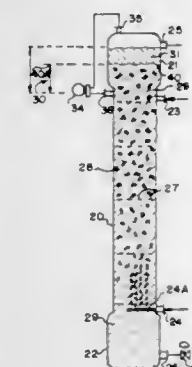
Dennis M. Johns, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 6, 1985, Ser. No. 730,531

Int. Cl.⁴ B01D 11/04

U.S. Cl. 23—293 R

8 Claims



1. A method for removing finely divided, water-soluble particles from a heavier-than-water water insoluble organic liquid containing the particles suspended therein, which liquid readily forms an emulsion with water, comprising:

- (a) introducing into an extraction zone containing therein a body of the organic liquid as a lower discrete layer and a body of water as an upper discrete layer thereover, a stream of the organic liquid containing the water-soluble particles suspended therein into an upper portion of the body of the organic liquid;
- (b) introducing a stream of water into a lower portion of the body of the organic liquid in the extraction zone as a discontinuous phase therein; and
- (c) withdrawing water from an upper portion of the extraction zone and withdrawing from a bottom portion of the extraction zone the organic liquid from which at least a portion of the particles have been removed, at respective rates which maintain a liquid-liquid interface between the body of water and the body of liquid in the upper portion of the extraction zone;

wherein said organic liquid is introduced and maintained as a continuous, non-dispersed phase and said stream of water is maintained as a dispersed phase while in the organic liquid; whereby water passes through the body of the organic liquid in countercurrent relationship thereto and dissolves said water soluble particles therein while passing therethrough.

4,645,513

PROCESS FOR MODIFICATION OF COAL

Katsuzo Kubota, Tokyo; Masayuki Nakai, and Shigeyoshi Ono, both of Sodegaura, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 540,831, Oct. 11, 1983, abandoned.

This application Jun. 21, 1985, Ser. No. 747,652

Claims priority, application Japan, Oct. 20, 1982, 57-182789; Mar. 7, 1983, 58-35928

Int. Cl.⁴ C10L 5/00

U.S. Cl. 44—10 H

13 Claims

1. A process for upgrading the characteristics of moisture containing coal which comprises drying coal until the water content reaches substantially zero, rapidly heating the dried coal to a molding temperature of from 200° to 400° C. within

a time of from 1 to 10 minutes, compression molding the dried coal under elevated pressure, oxidizing the molded coal and then steaming said oxidized molded coal in saturated moisture at from 80° C. to 150° C. from 2 to 8 hours to provide a dry upgraded coal having a decreased tendency to self-ignite and having a temperature for generation of 1% carbon dioxide of 115° C. or more, a compressive strength of at least 80 kilogram forth per centimeter (kgf/cm), and a bulk density of 1.1 grams per cubic centimeter (g/cm³).

4,645,514
COAL-AQUEOUS SLURRY
Robert H. Lane, Tustin, Calif., assignor to Oxco Fuel Company, Windsor, Conn.

Filed Jul. 21, 1983, Ser. No. 515,829
Int. Cl.⁴ C10L 1/32

U.S. Cl. 44—51

29 Claims

1. A coal-aqueous slurry consisting essentially of: particulate coal; water, a first surfactant having a hydrophilic portion comprising between about 40 and 150 ethylene oxide units; and a second surfactant having a hydrophilic portion comprising between about 4 and 40 ethylene oxide units, said first and second surfactants being present in the coal-aqueous slurry in amounts sufficient to disperse the particulate coal in the water and said first surfactant having a large number of ethylene oxide units relative to said second surfactant.

18. A method for forming coal-aqueous mixtures comprising the steps of: admixing particulate coal with ingredients consisting essentially of water, a first surfactant having a hydrophilic portion comprising between about 40 and 150 ethylene oxide units, and a second surfactant having a hydrophilic portion comprising between about 4 and 40 ethylene oxide units and said first surfactant having a large number of ethylene oxide units relative to said second surfactant.

27. The coal-aqueous slurry as defined in claim 1 wherein the first and second surfactants comprise a composition of the formula



wherein R is substituted or unsubstituted alkyl of from 1 to 18 carbon atoms; substituted or unsubstituted aryl or an amino group and n for the first surfactant is a relatively high integer and n for the second surfactant is a relatively low integer.

4,645,515
MODIFIED SUCCINIMIDES (II)
Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 12, 1985, Ser. No. 722,883
Int. Cl.⁴ C10L 1/22

U.S. Cl. 44—63

11 Claims

1. A polyamino alkenyl or alkyl succinimide wherein one or more of the nitrogens of the polyamino moiety is substituted with hydroxyalkylene carbonyl wherein said alkylene is a three or four carbon alkylene group or a three or four carbon alkylene group substituted with from 1 to 3 alkyl groups of from 1 to 2 carbons each.

4,645,516
ENHANCED GAS SEPARATION PROCESS
Kishore J. Doshi, Mahopac, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 24, 1985, Ser. No. 737,455
Int. Cl.⁴ B01D 53/22, 53/04

U.S. Cl. 55—16

19 Claims

1. In the process for the production of a desired product wherein a feed gas stream is treated to reduce its concentration of a component(s) harmful to a permeable membrane prior to said feed gas stream being contacted with said permeable membrane for the separation of components useful in said

production of said desired product from undesired impurities present therewith, the improvement comprising:

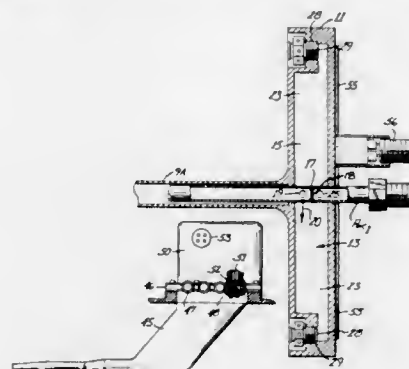
- passing said feed gas stream at an upper adsorption pressure to the feed end of an adsorbent bed in a pressure swing adsorption system capable of selectively adsorbing said harmful component(s) present therein, with unadsorbed useful components of said feed gas stream being withdrawn from the product end of the bed at said upper pressure level as a treated gas stream depleted of said harmful component(s);
- passing said treated gas stream essentially at said upper adsorption pressure to a separator zone containing a gas permeable membrane capable of selectively separating said useful components from said undesired impurities present therewith to provide non-permeate and permeate portions, the concentration of said harmful component(s) in said treated gas stream being at a desired residual level;
- separately withdrawing the non-permeate and the permeate portions of the treated gas stream from the separator zone, one such portion comprising a purified gas containing said useful components of the feed gas stream, the other such portion containing a substantial amount of the impurities content of said treated gas stream passed to the separator zone;
- passing said purified gas withdrawn from the separator zone for use in the production of said desired product, said purified gas, or a portion thereof, being first recycled to an adsorbent bed in said pressure swing adsorption system at a pressure lower than said upper adsorption pressure as a purge gas to remove said harmful component(s) from the bed where said harmful component(s) comprises product gas and/or a desirable reactant(s) in the production of desired product;
- discharging said gas stream containing a substantial amount of impurities to waste or other use, with said gas stream being recycled to an adsorbent bed in said pressure swing adsorption system at a pressure lower than said upper adsorption pressure as a purge gas to remove said harmful component(s) from the bed where said harmful component(s) does not comprise a desirable reactant(s) in the production of desired product, whereby undesired contact of the permeable membrane with harmful components of said feed gas stream is avoided.

4,645,517
DRAIN MANIFOLD FOR AIR DATA SENSOR
Floyd W. Hagen, Eden Prairie, and Richard V. DeLeo, Hopkins, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 20, 1985, Ser. No. 778,416
Int. Cl.⁴ B01D 19/00

U.S. Cl. 55—182

16 Claims



1. A drain manifold for an aircraft air data sensor providing at least one pressure signal, said drain manifold comprising:

a separate drain cavity defined in the manifold for each pressure signal; the cavity including means for connecting the cavity to the sensor to receive the fluid pressure signal from the air data sensor, and an outlet from the cavity; and at least one moisture accumulation chamber extending from the means for connecting in direction so water flows away from the means for connecting when the aircraft on which the drain manifold is mounted is on the ground, the accumulation chamber having means for removing water from such chamber associated therewith.

8. An improved unitized drain apparatus for a conduit of an air data sampling system for air vehicles for substantially separating water from the air in such a system independent of the spatial orientation of the system having:

first means for receiving air pressure signals from such a system and for substantially separating water particles from the received air pressure; second means for transferring air pressure signals having the water substantially separated therefrom to downstream portions of the air data sampling system; wherein the improvement comprises means for draining water from the unitized drain apparatus in at least two positions of spatial orientation substantially 180° from each other.

4,645,518
METHOD AND APPARATUS FOR REDUCING THE GAS CONTENT OF A LIQUID

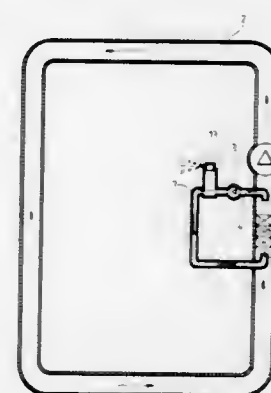
Franciscus Roffelsen, Helmond, Netherlands, assignor to Spiro Research B.V., Helmond, Netherlands
Filed May 23, 1985, Ser. No. 737,171

Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419305

Int. Cl.⁴ B01D 19/00

U.S. Cl. 55—203

34 Claims



1. A method of reducing the gas content of a liquid comprising propelling the liquid by a rotary pump, producing fine gas bubbles by cavitation on the low-pressure side of the pump blades, extracting a portion of the liquid from the suction side of the pump blades, concentrating the fine gas bubbles in the center of the flow of the liquid, and conducting the extracted portion of the liquid through a liquid stilling zone where the fine gas bubbles are separated from the liquid.

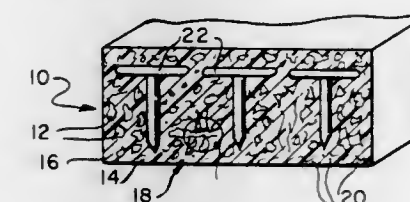
4,645,519
COMPOSITE DESICCANT STRUCTURE
Anthony V. Fraioli, Hawthorn Woods, and William W. Schertz, Batavia, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 617,781, Jun. 6, 1984, abandoned. This application Dec. 30, 1985, Ser. No. 814,583

Int. Cl.⁴ B01D 53/04

U.S. Cl. 55—208

15 Claims



1. A composite useful for dehumidifying purposes and comprising a matrix of a porous binder as a solid web containing a transition metal oxide having internal surfaces defining pores and a plurality of desiccant particles embedded in the matrix, the desiccant particles having diameters in the range of about 1–300 μm, constituting a major portion of the composite and being selected from the group consisting of silica gel, zeolite, alumina, activated carbon and mixtures thereof, the composite being in sheet-like form with exterior surfaces, a portion of the particles being below the exterior surfaces and covered by other particles, the transition metal oxide in the web being capable of transmitting moisture along the pore surfaces between desiccant particles and between the exterior surfaces and the desiccant particles.

4,645,520
FILTER ASSEMBLY FOR DUST REMOVAL FROM GASES, ESPECIALLY IN FLUIDIZED BED APPARATUS
Herbert Hüttlin, Daimlerstrasse 7, D-7853 Steinen, Fed. Rep. of Germany

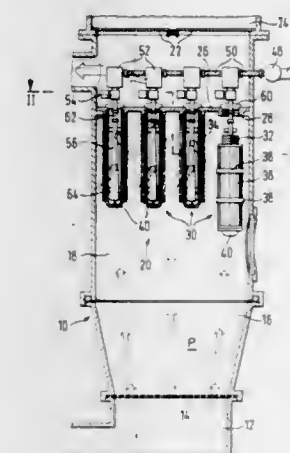
Filed Apr. 2, 1985, Ser. No. 718,889

Claims priority, application European Pat Off., Jul. 20, 1984, 84108620

Int. Cl.⁴ B01D 46/04

U.S. Cl. 55—302

36 Claims



1. A filter assembly for removal of dust from gases, comprising one or more filter cartridges, said filter cartridge being a substantially hollow tube which is closed at one end and open at the other end, comprising a filter hose, and a

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supporting ring, said supporting ring being located at the opened end of the filter cartridge; and one or more valves adapted for connection with a source of compressed gas; and for each filter cartridge

a hollow immersion tube, said immersion tube being suspended within the filter cartridge such that the axis of the immersion tube is substantially parallel to the axis of the filter cartridge, and such that one end of the immersion tube is close to the closed end of the filter cartridge, said immersion tube being connected at the end near the open end of the filter cartridge to one of the valves, said valve in the open position allowing gas to flow through the immersion tube; and

a dimensionally stable deflecting member positioned opposite the immersion tube at the closed end of the filter cartridge;

a bellows, said bellows being attached to the immersion tube near the end of the immersion tube to which the valve is connected in a manner such that gas flowing through the immersion tube will inflate the bellows and such that when inflated, the bellows presses against the interior walls of the filter cartridge, substantially closing off the open end of the filter cartridge.

4,645,521

PARTICULATE TRAP

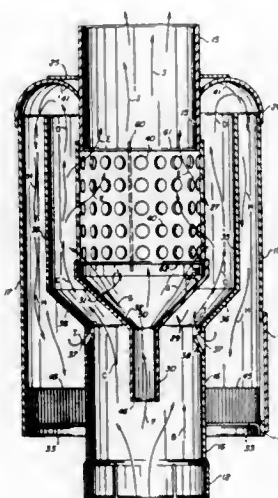
Charles W. Freesh, 2618 E. Elm St., Phoenix, Ariz. 85016

Filed Apr. 18, 1985, Ser. No. 724,675

Int. Cl.⁴ B01D 45/06

U.S. Cl. 55—309

13 Claims



1. A particulate trap including
 - (a) an inlet conduit for receiving a stream of gases containing particulate solids, said conduit having
 - (i) a wall generally circumscribing an inner space, and imaginary longitudinal axis generally parallel to said wall, and
 - (ii) a cross-sectional area generally represented by an imaginary plane perpendicular to said longitudinal axis and lying within said inner space circumscribed by said wall,
 - said gases axially moving through said inner space of said conduit in a selected direction of travel generally parallel to said axis;
 - (b) a gas processing chamber carried in said particulate trap in fluid communication with said inlet conduit for receiving gases therefrom, and gas processing chamber having
 - (i) a wall generally circumscribing an inner space, and imaginary longitudinal axis generally parallel to said wall of said processing chamber, and
 - (ii) a cross-sectional area generally represented by an imaginary plane perpendicular to said axis of said cham-

- ber and lying within said inner space circumscribed by said wall of said gas processing chamber,
- said cross-sectional area of said gas processing chamber being greater than said cross-sectional area of said inlet conduit;
- (c) a first hollow truncated cone-shaped member having a first end and a second end and interconnecting said inlet conduit and said gas processing chamber and
 - (i) including a wall circumscribing an inner space of said member, and
 - (ii) covering from said first end to said second end, said second end being connected to said wall of said inlet conduit and said first end being connected said wall of said gas processing chamber;
 - (d) an outlet conduit carried on said trap in fluid communication with said gas processing chamber to receive gases passing from said inlet conduit into and through said first cone-shaped member and said gas processing chamber, said outlet conduit having
 - (i) a wall generally circumscribing an inner space, and imaginary longitudinal axis generally parallel to said wall, and
 - (ii) a cross-sectional area generally represented by an imaginary plane perpendicular to said longitudinal axis of said outlet conduit and lying within said inner space circumscribed by said wall;
 - (e) a second hollow truncated cone-shaped deflector member having a first end and a second end and carried in said particulate trap in said inner space circumscribed by said walls of said inlet conduit, said first cone-shaped member and said gas processing chamber, said second cone-shaped member
 - (i) being spaced away from said walls of said inlet conduit, first cone-shaped member and gas processing chamber, and between said inlet and outlet conduits,
 - (ii) deflecting gases and particulate outwardly away from said second coneshaped member and inlet conduit toward said walls of said gas processing chamber and first cone-shaped member,
 - (iii) diverging from said first end to said second end, said first end being positioned between said inlet conduit and said second end, and
 - (iv) including an aperture formed through said first end and sized to permit a minor effective portion of gases and particulate solids from said inlet conduit to flow generally in said selected direction of travel through said aperture and said second cone-shaped member toward said outlet conduit,
 - said second cone-shaped member being shaped and dimensioned such that gases and particulate solids deflected therefrom must, after traveling outwardly toward said wall of said gas processing chamber and around said second cone-shaped member, generally travel away from said wall of said processing chamber and inwardly toward said longitudinal axis thereof to flow into said outlet conduit;
 - said flow of gases and particulate solids through said aperture and said processing chamber in said selected direction of travel toward said outlet conduit tending to inwardly draw away from said wall of said processing chamber gases traveling through said chamber after being deflected by said second coneshaped member toward said wall of said processing chamber and around said second deflector member;
 - (f) a particulate collection chamber having an outlet for gas; and,
 - (g) channel means interconnecting said processing chamber and particulate collection chamber such that a portion of said gases and particulate solids generally moving in said selected direction of travel adjacent said wall of said processing chamber after being deflected toward said wall of said processing chamber by said second cone-shaped member enters said channel means and flows into said

collection chamber and said portion of said gases exits through said outlet for gas.

4,645,522

PROCESS FOR SELECTIVELY SEPARATING PETROLEUM FRACTIONS

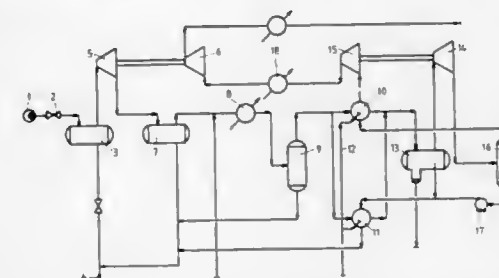
Nicholas G. Dobrowir, 27 Riverside Ave., N. Balwyn, Melbourne, Victoria, Australia

Filed Jun. 21, 1985, Ser. No. 747,303

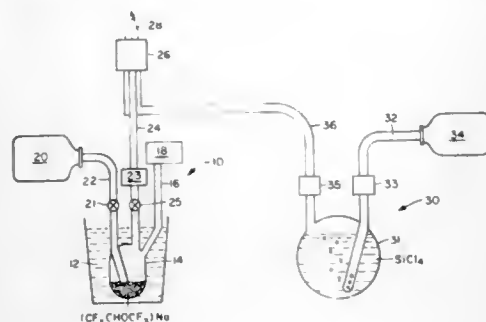
Claims priority, application European Pat. Off., Jun. 22, 1984, 84200921.9

Int. Cl.⁴ F25J 3/00

U.S. Cl. 62—18



(a) forming a vapor reaction mixture containing vapors of at least two vaporizable constituents which react together in the vapor phase to form a composition for a vapor-deposited glass, wherein one of the vaporizable constituents is a sodium fluoroalkoxide compound;



(b) initiating a chemical vapor deposition reaction in the vapor mixture to generate a particulate sodium-containing vapor deposition product, and collecting the vapor deposition product; and
(c) heating the vapor deposition product to at least partially sinter said deposition product to a sodium-containing glass product.

4,645,525 AZOLYOXY-CARBOXYLIC ACID AMIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Heinz Förster; Wolfgang Hofer; Volker Mues, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 132,055, Mar. 20, 1980, abandoned. This application Aug. 26, 1983, Ser. No. 526,518

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2914033; Feb. 6, 1980, 3004326

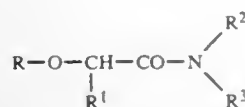
The portion of the term of this patent subsequent to Sep. 10, 2002, has been disclaimed.

Int. Cl.⁴ A01N 43/76, 43/78; C07D 263/38, 277/34

U.S. Cl. 71-88

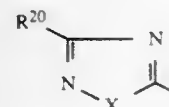
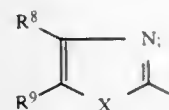
25 Claims

1. Azolyloxy-carboxylic acid amide compound of the formula



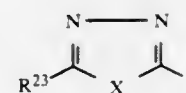
wherein

R is selected from the group consisting of the following azoly radicals:



and

-continued



in which

X is O or S,

R¹ is hydrogen,

R² is hydrogen, C₁-C₅-alkyl, cyanoethyl, C₁-C₄-alkoxy-ethyl, allyl, propargyl, 1-methyl-propargyl, 1,1-dimethyl-propargyl, cyclopentyl, cyclohexyl, or benzyl and

R³ is C₁-C₅-alkyl, C₁-C₄-alkoxy-ethyl, allyl, cyclohexyl, phenyl, or phenyl substituted 1 to 3 times by methyl, fluorine, chlorine, trifluoromethyl, cyano, nitro or methoxy, or

R² and R³, together with the nitrogen atom to which they are bonded, represent pyrrolidyl, monoalkyl- or dialkyl-pyrrolidyl with 1 to 3 carbon atoms per alkyl group, morpholinyl or dialkylmorpholinyl with 1 to 3 carbon atoms per alkyl group, piperidyl, monoalkyl-, dialkyl- or trialkyl-piperidyl with 1 to 3 carbon atoms per alkyl group, perhydroazepinyl (hexamethyleneimino radical), trimethyl-perhydroazepinyl, the heptamethyleneimino radical, 1,2,3,4-tetrahydroindolyl, monoalkyl-, dialkyl- or trialkyl-1,2,3,4-tetrahydroindolyl with 1 to 3 carbon atoms per alkyl group, perhydroindolyl, monoalkyl-, dialkyl- or trialkyl-perhydroindolyl with 1 to 3 carbon atoms per alkyl group, 1,2,3,4-tetrahydroquinolyl or 1,2,3,4-tetrahydro-isoquinolyl, monoalkyl-, dialkyl- or trialkyl-1,2,3,4-tetrahydro-quinolyl or -isoquinolyl with 1 to 3 carbon atoms per alkyl group, perhydroquinolyl or perhydro-isoquinolyl, monoalkyl-, dialkyl- or trialkyl-perhydroquinolyl or -perhydroisoquinolyl with 1 to 3 carbon atoms per alkyl group,

R⁸, R⁹, R²⁰ and R²³ which can be identical or different, individually represent hydrogen, chlorine, cyano, C₁-C₃-alkyl-carbonyl, C₁-C₃-alkoxycarbonyl, phenyl, phenyl monosubstituted or disubstituted by chlorine, methyl and halogenomethyl, phenylthio, C₁-C₄-alkylthio or C₁-C₄-alkoxy, C₁-C₄-alkylsulphonyl, C₁-C₄-alkyl, trifluoromethyl, trichloromethyl cyano-C₁-C₄-alkyl, benzylthio or phenoxymethyl.

23. Herbicidal composition comprising a herbicidally acceptable carrier and, in herbicidally effective amounts, an azolyloxy-carboxylic acid amide compound as claimed in claim 1.

4,645,526

HERBICIDAL AGENTS

Klaus Bauer, Rodgau; Hermann Bieringer, Eppstein/Taunus, and Hans Schumacher, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1985, Ser. No. 711,402

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409432

Int. Cl.⁴ A01N 43/28, 47/30

U.S. Cl. 71-88

4 Claims

1. A herbicidal agent which consists essentially of a combination of (a) ethyl 2-[4-(6-chlorobenzoxazolyl-2-oxy)-phenoxy]-propionate and (b) 3-(4-isopropyl-phenyl)-1,1-dimethylurea or 3-(3-chloro-4-methylphenyl)-1,1-dimethylurea, in a ratio by weight from 1:2 to 1:20.

4,645,527

HERBICIDAL ANTIDOTES

Kofi S. Amuti, and Philip B. Sweetser, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

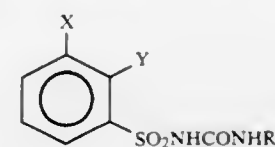
Filed Dec. 14, 1984, Ser. No. 681,963

Int. Cl.⁴ A01N 47/28, 47/36

U.S. Cl. 71-90

10 Claims

1. A herbicidal composition consisting essentially of an antidotally-effective amount of a compound of Formula I, or its agriculturally suitable salt



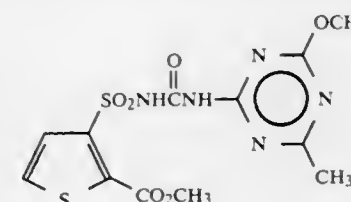
wherein

X is H, Cl, F or Br;

Y is Cl or SO₂NR¹R²;

R is H, C₁-C₆-alkyl, C₅-C₆-cycloalkyl, or C₂-C₄-alkyl substituted with C₁-C₂-alkoxy or C₁-C₂-alkylthio;

R¹ and R² are independently C₁-C₂-alkyl; provided that when Y is SO₂NR¹R², R is other than H or CH₃, and a sulfonyleurea herbicide of the formula



VIII

4,645,528

BENZOLACTAMSULTAMS

Hans-Joachim Diehr; Christa Fest, both of Wuppertal; Rolf Kirsten, Monheim; Joachim Kluth, Langenfeld; Klaus-Helmut Müller, Duesseldorf; Theodor Pfister, Monheim; Uwe Priesnitz, Solingen; Hans-Jochem Riebel, Wuppertal; Wolfgang Roy, Langenfeld; Hans-Joachim Santel, Cologne, and Robert R. Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1985, Ser. No. 769,280

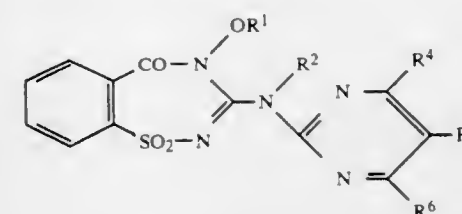
Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3517845

Int. Cl.⁴ C07D 417/12; A01N 47/44

U.S. Cl. 71-90

10 Claims

1. A benzolactam-sultam of the formula



Q is O or CH₂;
provided that:

- (a) A cannot be in the 4-position when R is in the 2-position of the thiophene ring; and
(b) one of R₃ or R₄ must be H.

4,645,530

HERBICIDAL SULFONAMIDES

Anthony D. Wolf, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 528,607, Sep. 6, 1983, Pat. No. 4,547,215, which is a continuation-in-part of Ser. No. 392,364, Mar. 24, 1983, abandoned. This application Aug. 28, 1985, Ser. No. 770,258

Int. Cl.⁴ A01N 47/36

U.S. Cl. 71-91

24 Claims

1. A herbicidal mixture consisting essentially of an effective amount of 2-[[[4-chloro-6-methoxy-2-pyrimidin-2-yl]aminocarbonyl]aminosulfonyl]benzoic acid ethyl ester and an effective amount of a second compound selected from 4-amino-6-tert-butyl-3-(methylthio)-as-triazin-5(4H)one; 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea; 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid; 3-isopropyl-1H-2,1,3-benzothiadiazin-4(3H)one-2,2-dioxide; 2-(2'-chlorophenyl)methyl-4,4-dimethyl-3-isoxazolidinone; 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide; and 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide.

4,645,531

ALKYL SULFONES

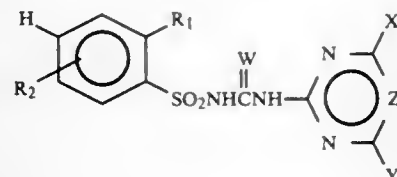
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 395,782, Jul. 12, 1982, which is a continuation-in-part of Ser. No. 227,886, Jan. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 134,287, Mar. 26, 1980, abandoned. This application Jan. 29, 1985, Ser. No. 696,201

Int. Cl.⁴ A01N 47/36; C07D 239/42, 251/42

U.S. Cl. 71-92

14 Claims

1. A compound of the formula:



where

- R₁ is R₃S(O)_n;
R₂ is H, F, Cl, Br, CH₃, OCH₃, CF₃, NO₂, CN or NH₂;
R₃ is C₃-C₄ alkenyl;
n is 0, 1 or 2;
W is O or S;
Z is CH or N;
X is CH₃, C₂H₅, CH₃O, C₂H₅O or CH₂OCH₃; and
Y is CH₃ or CH₂O;
and their agriculturally suitable salts; provided that
(1) when R₂ is CN, then R₂ is not meta to R₁; and
(2) when W is S, then n is 0 or 2.

4,645,532

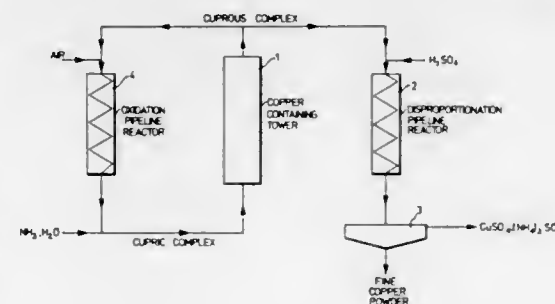
PRODUCTION OF FINE SPHERICAL COPPER POWDER

Vladimir N. Mackiw, Etobicoke; Alexander Nadezhdin, Edmonton, and Donald R. Weir, Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada
Continuation-in-part of Ser. No. 651,566, Sep. 18, 1984, abandoned. This application Oct. 15, 1985, Ser. No. 787,186
Claims priority, application United Kingdom, Sep. 30, 1983, 8326235

Int. Cl.⁴ B22F 9/00

U.S. Cl. 75-0.5 A

20 Claims



1. A process for the production of fine copper powder with particles having a size less than about 5 micrometers, the process comprising providing an ammoniacal cuprous salt solution, and neutralizing ammonia in said solution with acid in a substantially oxygen-free environment to produce substantially oxygen-free fine spherical copper powder.

4,645,533

TANTALUM POWDER AND METHOD OF MAKING

Tomoo Izumi, Fukushima, Japan, assignor to Showa Cabot Supermetals K. K., Tokyo, Japan

Filed Jan. 17, 1985, Ser. No. 692,084

Claims priority, application Japan, Jan. 18, 1984, 59-5653

Int. Cl.⁴ B22F 9/24

U.S. Cl. 75-0.5 AB

6 Claims

1. A method for producing tantalum powder, comprising the successive steps of: (1) reducing potassium fluorotantalate with metallic sodium in the presence of a diluent to yield unrefined tantalum powder; (2) washing the unrefined tantalum powder to yield tantalum powder; (3) heat-treating the tantalum powder; and (4) fine crushing the tantalum powder, wherein at least one boron component and at least one phosphorus component are used as dopant sources; and wherein the reducing of the potassium fluorotantalate (1) is conducted in the presence of both of said dopant sources, or the reducing of the potassium fluorotantalate is conducted in the presence of one of the dopant sources and the other of the dopant sources is brought into inseparable contact with the heat-treated tantalum powder.

4,645,534

PROCESS FOR CONTROL OF CONTINUOUS CASTING CONDITIONS

Renato D'Angelo, Guidonia Montecelio; Aldo Ramacclotti, Rome; Eugenio Repetto, Rome, and Pietro Tolve, Rome, all of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Oct. 22, 1985, Ser. No. 790,231

Claims priority, application Italy, Oct. 25, 1984, 49069 A/84

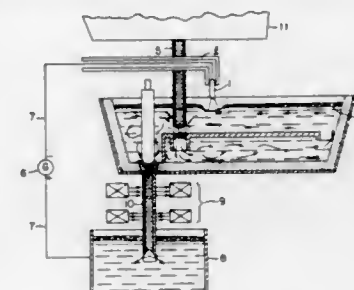
Int. Cl.⁴ C21C 5/52

U.S. Cl. 75-10.22

4 Claims

1. In a process for controlling continuous casting conditions, in which steel tapped from a furnace is run into a ladle, and from the ladle, at a continuous casting station, is discharged into at least one tundish from which it is transmitted to a continuous casting mold via a submerged nozzle; the improvement

comprising subjecting the molten steel in at least one of the ladle and tundish to radiation heating and convection heating from an electrical heating device by causing an electric current



to pass from said device through the liquid steel to a return located downstream of said device with respect to the direction of flow of the liquid steel.

4,645,535

METHOD FOR THE RECOVERY OF PRECIOUS METALS FROM ORES

Roger H. Little, 225 S. 2nd, Custer, S. Dak. 57830

Filed Aug. 15, 1985, Ser. No. 766,060

Int. Cl.⁴ C22B 11/04

U.S. Cl. 75-118 R

44 Claims

1. A process for the recovery of precious metals from ore containing the same comprising:
forming a lixiviant solution including a thiourea compound, urea and potassium lignin sulfonate;
exposing the ore to said lixiviant solution to extract the precious metals therefrom; and
recovering the dissolved precious metals from said solution.

4,645,536

PROCESSES FOR EXTRACTING FUNGI-TOXIC MATERIAL FROM WOOD MATERIAL OF A DECAY RESISTANT SPECIES

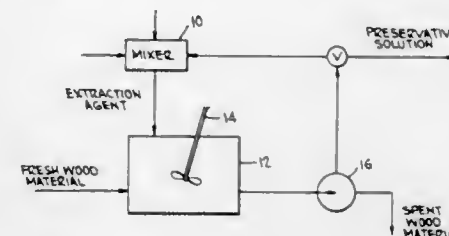
Robert A. Butler, New Brunswick, Canada, assignor to County Wood Products Ltd., New Brunswick, Canada

Filed Aug. 30, 1985, Ser. No. 771,408

Int. Cl.⁴ B05D 1/18; C09D 5/14

U.S. Cl. 106-15.05

11 Claims



1. A process for extracting fungi-toxic material from wood material of a species of wood which is resistant to fungi-growth, the process comprising providing a first quantity of the wood material, contacting said quantity with an extraction agent in an amount and for a time sufficient to extract essentially all fungi-toxic material in the wood material, separating the agent containing the fungi-toxic material from the wood material, contacting a second quantity of wood material with the separated extraction agent for a time sufficient to extract fungi-toxic material contained in the second quantity of wood material, and separating the extraction agent from the second quantity of wood material.

4,645,537

AQUEOUS RELEASE AGENTS

Karl-Josef Gardenier, and Wolfgang Heimbürger, both of Dueseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dueseldorf, Fed. Rep. of Germany
Division of Ser. No. 713,528, Mar. 19, 1985, Pat. No. 4,576,835.
This application Dec. 18, 1985, Ser. No. 810,802

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410957

Int. Cl.⁴ A23L 1/00; C08L 91/00; C09D 3/26; C09K 3/00

U.S. Cl. 106-243

4 Claims

1. An aqueous release agent for the antiadhesive surface finishing of tacky hot-melt adhesive pellets, granulates, cubes, flakes and the like, consisting essentially of an about 0.5 to about 25% by weight aqueous solution of (a) at least one aliphatic alcohol having at least 2 hydroxy groups and containing from 3 to 7 carbon atoms or (b) at least one aliphatic hydroxy dicarboxylic or tricarboxylic acid or water-soluble salt thereof, or (c) a mixture of (a) and (b) and from about 0.2 to about 15% by weight, based on the weight of the aqueous solution, of a water-insoluble salt of a C₁₂-C₃₆ saturated aliphatic or alicyclic mono- or dicarboxylic acid.

4. An aqueous release agent in accordance with claim 1 wherein from about 0.5 to about 10% by weight, based on the weight of the aqueous solution, of the calcium and/or aluminum salt of a C₁₄-C₂₂ saturated fatty acid is present as the water-insoluble salt of an aliphatic monocarboxylic acid.

4,645,538

ASPHALTIC COMPOSITIONS

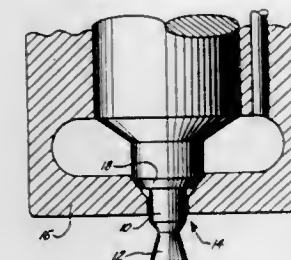
William E. Wright, and Edward F. Zaweski, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 686,083, Dec. 24, 1984, abandoned. This application May 31, 1985, Ser. No. 739,978

Int. Cl.⁴ C08L 95/00

U.S. Cl. 106-273 N

15 Claims



1. An asphaltic composition of enhanced utility for vehicular pavement which composition comprises a road paving grade of asphalt in admixture with at least one alkylene dithiocarbamate, said composition characterized by having a reduced increase in absolute viscosity to original absolute viscosity after thin film aging as measured by ASTM Test D 1754 at 140° F.

4,645,539

TRANSPARENT ISOINDOLINE PIGMENT HAVING A HIGH COLOR STRENGTH

Wolfgang Lotsch, Beindersheim, and Georg Henning, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jul. 26, 1984, Ser. No. 634,580

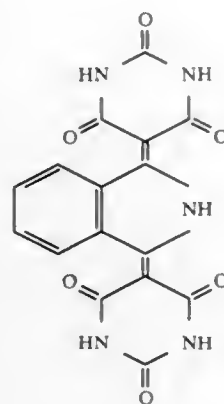
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1983, 3327564

The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.

Int. Cl.⁴ C09B 57/04; C09D 11/00, 239/62, 239/64
U.S. Cl. 106—288 Q 11 Claims

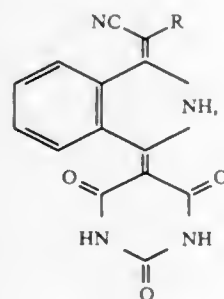
I. A transparent isindoline pigment having high color strength and containing

(a) a pigmentary form of the compound of the formula



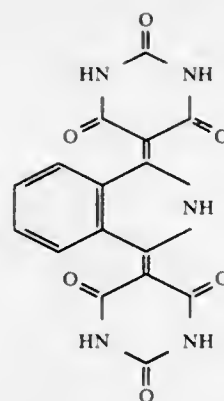
and

(b) from 2 to 50 % by weight, based on (I), of one or more isindoline pigments of the formula



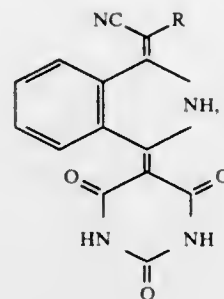
where R is —CN, —CONH₂, N—C₁–C₄-alkylcarbonyl, N-phenylcarbonyl, 2-quinazolinyl, 2-quinoxazolinyl or 2benzimidazolyl, and the phenyl radical in the phenylcarbonyl and/or the heterocyclic radicals stated for R are unsubstituted or substituted by chlorine, bromine, fluorine, nitro, carbonyl, N—C₁–C₄-alkylcarbonyl, N-phenylcarbonyl, C₁–C₄-alkyl, C₁–C₄-alkoxy, benzoylamino, C₁–C₄-alkanoylamino, C₁–C₄-alkoxycarbonyl or phenoxycarbonyl, where the pigment is obtained by heating a mixture of finely divided pigments (I) and (II) in an aqueous medium at from 70° to 150° C.

9. A process for the preparation of a transparent isindoline pigment having high color strength, wherein a mixture of
(a) the finely divided pigmentary form of the compound of the formula



and

(b) from 2 to 50 % by weight, based on (I), of one or more isindoline pigments of the formula



where R is —CN, —CONH₂, N—C₁–C₄-alkylcarbonyl, N-phenylcarbonyl, 2-quinazolinyl, 2-quinoxazolinyl or 2benzimidazolyl, and the phenyl radical in the phenylcarbonyl and the heterocyclic radicals stated for R are unsubstituted or substituted by chlorine, bromine, fluorine, nitro, carbonyl, N—C₁–C₄-alkylcarbonyl, N-phenylcarbonyl, C₁–C₄-alkyl, C₁–C₄-alkoxy, benzoylamino, C₁–C₄-alkanoylamino, C₁–C₄-alkoxycarbonyl or phenoxycarbonyl, is heated in water or in an aqueous medium, and the pigment is isolated.

4,645,540

CONTINUOUSLY OPERATING CENTRIFUGE

Günter Trojan, Bochum, Fed. Rep. of Germany, assignor to Hein, Lehmann AG, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 702,451

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1984, 3405752

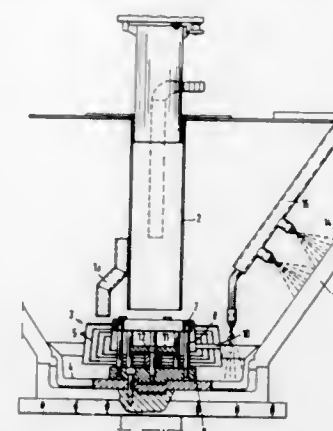
Int. Cl.⁴ C13F 1/06

U.S. Cl. 127—19

7 Claims

1. A continuously operating sugar centrifuge comprising:
a downwardly extending feed tube terminating at a lower end for discharging a flowable material to be centrifuged;
a centrifuge basket rotatable about an axis along which said feed tube extends and provided with:
a plate disposed immediately below said end of said feed tube for discharging said material outwardly,
an inner ring surrounding said plate and having a lower edge located below said plate at which said material, intercepted by said inner ring, is deflected outwardly, and
at least two further rings with downwardly divergent frusto-conical flanks coaxial with said inner ring and spaced from one another and from said inner ring, said further rings having upper edges lying above said lower edge of said inner ring and lower edges lying below said lower edge of said inner ring and wherein each more outwardly arranged ring of said further rings has an upper edge above

and a lower edge below the respective edges of the next most inwardly ring whereby respective streams of said material pass from said lower edge of said inner ring across a space between said inner ring and an innermost one of said further rings and from both said edges of each of said further rings centrifugally outwardly; and



a downwardly positioned steam inlet tube disposed eccentrically with respect to said axis and laterally spaced from said feed tube while opening downwardly into spaces between said rings for treating said streams with steam.

4,645,541

METHOD OF PRODUCING LEVEL OFF DP MICROCRYSTALLINE CELLULOSE AND GLUCOSE FROM LIGNOCELLULOSIC MATERIAL

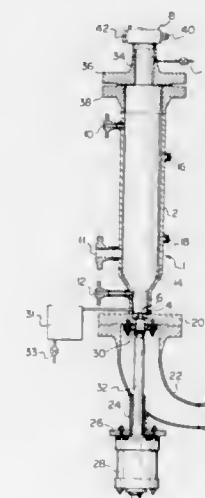
Edward A. DeLong, 439-22560 Wye Rd., Sherwood Park, Alberta T8A 4T6, Canada

Filed Dec. 4, 1985, Ser. No. 804,547

Int. Cl.⁴ C21B 1/36; C13K 1/00, 1/02

U.S. Cl. 127—37

10 Claims



1. A method of producing level off DP microcrystalline cellulose and glucose from lignocellulosic material, comprising:

(a) packing the lignocellulosic material in a divided, exposed, moist form in a pressure vessel having a valved outlet,
(b) with the valved outlet closed, rapidly filling the pressure vessel with steam at a pressure of 400–700 psi to bring, by means of the pressurized steam, substantially all of the lignocellulosic material to a temperature in the range 185°

to 240° C. in less than 60 seconds to thermally soften the lignocellulosic material into a plastic condition, and

(c) as soon as the said plastic condition has been attained, opening the valved outlet and explosively expelling the lignocellulosic material in the said plastic condition, from the pressure vessel through the outlet to atmosphere so that the said material issues from the outlet in particulate form with lignin therein rendered into particles substantially in the range 1 to 10 microns and separable from the cellulose and hemicellulose, the particulate lignin, hemicellulose and cellulose being together in dissociated form having the appearance of potting soil, a major portion of the lignin being soluble in methanol or ethanol and being thermoplastic, the cellulose being in the form of crystalline alpha cellulose microfibrils and suitable for digestion or conversion by micro-organisms and enzymes,

(d) separating the cellulose in the particulate material from the lignin and hemicellulose,

(e) soaking the separated cellulose in an acid solution of at least one acid selected from the group consisting of sulfuric acid, hydrochloric acid and sulfurous acid until the acid is distributed evenly throughout the cellulose, and then reducing the moisture content of the cellulose, leaving the cellulose impregnated with acid at a concentration in the range 0.05% to 2.0% of the weight of the cellulose,

(f) packing the acid-impregnated cellulose into a pressure vessel having a valved outlet,

(g) rapidly filling the pressure vessel with steam to a pressure in the range 300 psi to 700 psi to bring, by means of the pressurized steam, substantially all of the acid-impregnated cellulose to a temperature in the range of 185°–240° C. in less than 60 seconds, and thereby weaken by hydrolysis and thermal softening, the intramolecular bonds joining the glucose units to form the cellulose, then

(h) opening the valved outlet, and explosively expelling the acid-impregnated cellulose from the pressure vessel through the outlet to atmospheric pressure, thereby breaking the intramolecular cross-links in the cellulose to depolymerize the hydrolysed, acid-impregnated cellulose to produce a mixture of cellulose and a glucose solution therefrom, and thereby rapidly reducing the temperature of the extruded material to below 100° C. to prevent further depolymerization of the cellulose and degradation of the glucose, and then

(i) neutralizing the acidity of the glucose solution and residual cellulose.

4,645,542

METHOD OF PRESSURE PULSE CLEANING THE INTERIOR OF HEAT EXCHANGER TUBES LOCATED WITHIN A PRESSURE VESSEL SUCH AS A TUBE BUNDLE HEAT EXCHANGER, BOILER, CONDENSER OR THE LIKE

Terry D. Scharton, Santa Monica, and George B. Taylor, Culver City, both of Calif., assignors to Anco Engineers, Inc., Culver City, Calif.

Filed Apr. 26, 1984, Ser. No. 604,048

Int. Cl.⁴ B08B 3/12, 5/00, 9/02

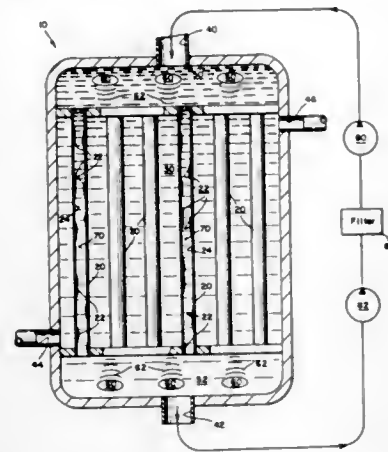
U.S. Cl. 134—1

48 Claims

1. In a tube bundle heat exchanger which includes a multiplicity of open ended heat exchanger tubes and where products of corrosion, oxidation, sedimentation and comparable chemical reactions adhere to the internal wall of the respective heat exchanger tubes, the heat exchanger being further characterized by a chamber which extends into one end of a group of open ends of the multiplicity of heat exchanger tubes, the method of removing the products of corrosion, oxidation, sedimentation and comparable chemical reactions which adhere to the internal wall of the respective heat exchanger tubes comprising:

a. placing at least one air-gun type pressure pulse shock wave source into said chamber such that the shock wave producing elements of the at least one air-gun type pres-

- sure pulse shock wave source face the open ends of the heat exchanger tubes which go into the chamber;
- b. filling said heat exchanger tubes with a liquid;
- c. activating said at least one air-gun type pressure pulse shock wave source to generate a repetitive series of explosive transient shock waves into said liquid within said heat exchanger tubes and from said liquid against the internal walls and against the adhered products of corrosion, oxidation, sedimentation and comparable chemical reactions;
- d. continuing the generation of repetitive, explosive, transient shock waves which are generated with pressure



between approximately 50 pounds per square inch and 5000 pounds per square inch which result in energy predominantly in the frequency range between 1 Hertz and 1,000 Hertz for each pulse to create transient shock waves which produce a pressure level of approximately 1/100th to 100 Bars in the liquid of Pressure at 1 meter; and

e. continuing the shock wave impact for approximately 1 to 24 hours whereby the impact of the repetitive explosive transient shock waves and resultant liquid motion serves to mechanically agitate, loosen and move the adhered products of corrosion, oxidation, sedimentation and comparable chemical reactions.

4,645,543

SUPERPLASTIC ALUMINUM ALLOY

Hideo Watanabe, Numazu; Koichi Ohori, and Yo Takeuchi, both of Susono, all of Japan, assignors to Mitsubishi Aluminum Kabushiki Kaisha, Japan

Filed Jan. 13, 1984, Ser. No. 570,497

Claims priority, application Japan, Feb. 28, 1983, 58-32599
Int. Cl.⁴ C22F 1/04

U.S. Cl. 148—2

11 Claims

10. A method of producing a superplastic aluminum base alloy exhibiting an elongation greater than 310% and consisting of, by weight, 3.5–6% Mg, 0.12–2% Cu, at least one of the following: 0.1–1% Mn, 0.05–0.35% Cr, 0.03–0.25% Zr, balance Al and incidental impurities, comprising the steps of direct-chill casting the alloy components to form an ingot, subjecting said ingot to homogenizing heat-treatment at a temperature of 450°–530° C. for to 48 hours, hot rolling the homogenized ingot at a temperature of 250°–530° C. and at a reduction rate greater than 30% to form a hot-rolled plate, cold rolling said plate at a reduction rate greater than 40% to form a cold-rolled superplastic alloy.

4,645,544

PROCESS FOR PRODUCING COLD ROLLED ALUMINUM ALLOY SHEET

Yoshio Baba, and Shin Tsuchida, both of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Tokyo, Japan
Filed Jun. 14, 1983, Ser. No. 504,261

Claims priority, application Japan, Jun. 21, 1982, 57-105472
Int. Cl.⁴ C22F 1/04

U.S. Cl. 148—12.7 A

6 Claims

1. A process for producing an aluminum-alloy cold-rolled sheet for forming, which comprises the steps of:
- (a) hot-rolling an aluminum-alloy ingot which consists essentially of from 0.1% to 2.0% manganese, from 0.1% to 2.0% magnesium, and from 0.1% to 0.5% silicon;
- (b) heat-treating the resulting aluminum-alloy sheet at a temperature of from 400° C. to 580° C. for a period of 5 minutes or less, followed by rapid cooling of the sheet at a rate of 10° C. per second or more down to a temperature of 150° C. or less;
- (c) holding the aluminum alloy sheet at a temperature of from 80° C. to 150° C. to form finely divided precipitates therein; and
- (d) cold-rolling said sheet at a rolling degree of 30% or more;
- said holding step (c) taking place after the heat-treating step (b) but not after the cold-rolling step (d).

4,645,545

SHAPE RETAINING BODIES OF SOLDER CONTAINING FLUX AND THEIR METHOD OF MANUFACTURE AND USE

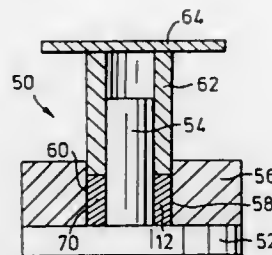
Louis Middlestadt, 90 Fisherville Ave., Apt. 505, Willowdale, Ontario, Canada M2R 3J9

Filed Jul. 23, 1985, Ser. No. 758,119

Int. Cl.⁴ B23K 35/34

U.S. Cl. 148—24

9 Claims



1. A method of forming a free standing body of self-fluxing solderable material into a predetermined shape which is complementary in shape to a solder site comprising the steps of:
- (a) mixing a predetermined quantity of dry finely divided metallic solder particles with a predetermined lesser quantity of a complementary dry finely divided particles of solder flux to form a homogenous mixture of particulate material wherein the homogenous mixture contains solder flux in the range of 0.25% to 30.0% by weight of the metallic solder particles,
- (b) placing a quantity of said homogenous mixture into a compression device having a predetermined shaped molding cavity, and
- (c) compressing said quantity of said homogenous mixture within said compression device to form a solid freestanding body of dry solderable material having a predetermined shape and outer surfaces wherein the solder flux is generally uniformly distributed throughout the solid body and along said outer surfaces thereof.

4,645,546

SEMICONDUCTOR SUBSTRATE

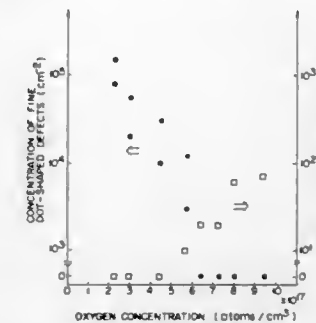
Yoshiaki Matsushita, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 12, 1985, Ser. No. 754,298

Claims priority, application Japan, Jul. 13, 1984, 59-145348
Int. Cl.⁴ H01L 21/324, 29/04

U.S. Cl. 148—33

9 Claims



1. A semiconductor device comprising a silicon semiconductor substrate whose oxygen concentration ranges between $3 \times 10^{17} \text{ cm}^{-3}$ to $7 \times 10^{17} \text{ cm}^{-3}$ and whose backside is provided with a gettering layer of a nonsingle crystalline silicon layer, the gettering layer having a stacking fault density greater than $3 \times 10^4 \text{ cm}^{-2}$.

4,645,547

LOSS FERROMAGNETIC MATERIALS AND METHODS OF IMPROVEMENT

Robert F. Krause, and Gary C. Rauch, both of Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

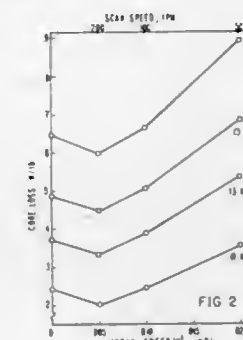
Filed Oct. 20, 1982, Ser. No. 435,822

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ H01F 1/04

U.S. Cl. 148—111

15 Claims



1. A process for improving the watt losses and reducing the permeability in a ferromagnetic sheet material, wherein said process comprises the steps of:
- repeatedly traversing a laser beam across the width of said ferromagnetic sheet at spaced intervals along the length of said ferromagnetic sheet;
- said laser beam rapidly heating narrow bands of said ferromagnetic sheet to a temperature below the solidus temperature of said material;
- immediately thereafter rapidly self-quenching said narrow bands of material so heated;
- and wherein plastic deformation is produced in said narrow bands, causing the AC watt losses and AC permeability of said ferromagnetic sheet to be reduced, and wherein said

AC permeability is reduced by between about 20 and about 52% at an induction of about 13 to about 17 kG.

4,645,548

PROCESS FOR PRODUCING NON-COMBUSTIBLE GYPSUM BOARD AND NON-COMBUSTIBLE LAMINATED GYPSUM BOARD

Takao Take, Chibashi; Katsuaki Kaneko, Ohmorinishi; Kokyo Kusunoki, Ushikumachi, and Toshinobu Ichiba, Ishiokashi, all of Japan, assignors to Onoda Cement Co Ltd, Yamaguchiken and Asahi Asbestos Co Ltd, Tokyoto, both of, Japan

Filed Feb. 5, 1985, Ser. No. 698,674

Claims priority, application Japan, Feb. 14, 1984, 59-25587;
Mar. 13, 1984, 59-47693

Int. Cl.⁴ B32B 31/06

U.S. Cl. 156—39

20 Claims



11. A process for producing a non-combustible laminated gypsum board which includes
- (1) preparing a mixture consisting essentially of
- (a) a powdery gypsum composed of 50 to 95 parts by weight of a hydraulic gypsum and 5 to 50 parts by weight of gypsum dihydrate
- (b) 0.5 to 30 parts by weight of fibers based on 100 parts by weight of said powdery gypsum
- (c) 0.1 to 2.0 parts by weight of a setting retarder for the hydraulic gypsum based on 100 parts by weight of said hydraulic gypsum, and
- (d) water sufficient to hydrate said hydraulic gypsum,
- (2) making said mixture into a sheet by a cylindrical gauze type sheet-making process,
- (3) laminating two or more of said green-sheets before said gypsum is said green sheet is completely hydrated,
- (4) molding the laminated sheets under a pressure of 30 to 500 Kg/cm² to thereby integrate them, and
- (5) setting and drying the resulting molded laminate.

4,645,549

COMPOSITE TAPES AND APPARATUS FOR WINDING COMPOSITE TAPES

Walter T. Lalor, 35 Park Lane, Godmanchester, Huntingdon, Cambridge, England

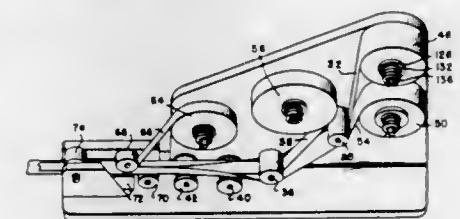
Continuation of Ser. No. 296,079, Aug. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 151,553, May 20, 1980, abandoned. This application Nov. 15, 1985, Ser. No. 798,157

Claims priority, application United Kingdom, Nov. 8, 1978, 7843610

Int. Cl.⁴ H01B 13/06

U.S. Cl. 156—54

1 Claim



1. A method for forming an insulated electrostatic screen for electrical coils comprising providing a supply of metalized foil, providing a supply of plastic insulating tape which is approxi-

mately twice the width of the metalized foil, passing foil and film from said supplies around roller means so that the metalized foil is sandwiched between said means and the insulating tape and is positioned centrally of the tape so that the edges of the tape extend outwardly beyond the film for the length thereof, maintaining the insulating tape under greater lengthwise tension than the film so that the side edges of the tape tend to curl up over the edges of the film, feeding the tape with the film so positioned thereon to and through folding means and progressively causing the edges of the insulating tape to be turned upwardly and to be folded over onto the foil as the tape and foil pass through the folding means, thereafter applying a self-adhesive plastic insulating tape over the folded-over edges of the first-mentioned tape and pressing the adhesive tape against the folded-over edges so that the adhesive and the first-mentioned tape are adhered together with the film covered completely thereby and collecting the resulting laminate comprising the fully insulated metalized film.

4,645,550

PROCESS FOR TREATING GLASS CONTAINERS FOR HEAT SEALING

Jean G. DuBois, "en Bagatelle", 71700-Tournus, France
Filed Mar. 27, 1985, Ser. No. 716,342
Int. Cl.⁴ B65B 7/00

U.S. Cl. 156—69

14 Claims

1. A method of treating a glass container having a rim of improving the adherence of a metallic foil heat seal comprising the steps of:

- applying at least to said rim at a temperature of 70°–150° C. a film of an aqueous composition containing at least one acrylic resin, at least one aminoplast resin, and a polymerization catalyst chosen from inorganic acids and organic acids, and
- drying said film.

4,645,551

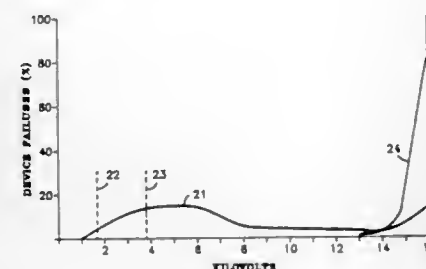
METHOD OF MAKING AN OCTOCOUPLER

Victor J. Adams, Tempe; James R. Black, and Horst A. Gempe, both of Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1984, Ser. No. 646,290
Int. Cl.⁴ B32B 31/26

U.S. Cl. 156—82

11 Claims



1. A method of making an improved optocoupler having a first conductive support member, a second conductive support member in a predetermined spaced apart relationship, an emitter device attached to a first portion of the first conductive support member, a detector device attached to a first portion of the second conductive support member, a coupling material encasing the emitter device, the detector device, and the first portion of the first and second conductive support member, the coupling material being electrically non-conductive and radiation conductive, and an encapsulating material encasing the coupling material, comprising the step of treating the surface of the coupling material so that active functional groups are formed on the surface which can subsequently react with the functionality present in the encapsulating material thereby

forming a bond between the coupling material and the encapsulating material.

4,645,552

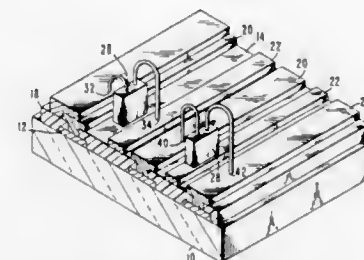
PROCESS FOR FABRICATING DIMENSIONALLY STABLE INTERCONNECT BOARDS

William A. Vitriol, Anaheim, and Raymond L. Brown, Riverside, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 19, 1984, Ser. No. 672,562
Int. Cl.⁴ B32B 31/26

U.S. Cl. 156—89

25 Claims



1. A process for fabricating an electrical interconnect board which includes:

- (a) providing a dimensionally stable insulating substrate having a conductive pattern formed thereon;
- (b) forming via holes in a pyrolyzable film that includes an inorganic filler material and an organic binder material;
- (c) transferring said film on top of said conductive pattern and the surrounding insulating substrate surface such that said film is adhered to and dimensionally fixed thereon;
- (d) heating said insulating substrate, said conductive pattern and said pyrolyzable film to a predetermined elevated temperature sufficient to drive off the organic binder material in said film and securely fuse the inorganic filler material contained therein as a uniform dimensionally stable dielectric layer covering said substrate surface and the conductive pattern formed thereon;
- (e) metallizing the top surface of said dimensionally stable dielectric layer with a predetermined metallization pattern; and
- (f) repeating steps (b) through (e) until the electrical interconnect board is complete.

4,645,553

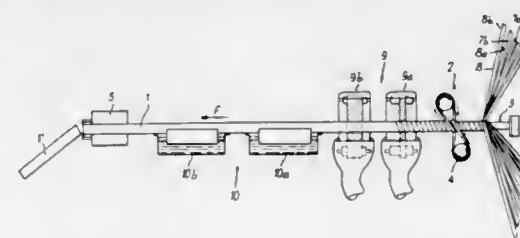
PROCESS AND APPARATUS FOR FORMING A MULTILAYER TUBE

Jean-Paul Languillat, Vallières par Thorigny sur Oreuse, France, assignor to L'Homme, S.A., Pont sur Yonne, France

Filed May 31, 1985, Ser. No. 739,927
Claims priority, application France, Jul. 3, 1984, 84 10498
Int. Cl.⁴ B32B 31/00

U.S. Cl. 156—153

20 Claims



1. Process for manufacturing a multilayer tube comprising: impregnating at least a strip of dense material with a thermosetting resin;

helically winding a plurality of strips of material including a last strip and a next-to-last strip in a forward direction around a mandrel into overlapping spirals to form a tube wherein at least said last strip is a strip of dense material and at least said next-to-last strip is selected from said at least a strip of dense material;

polishing the exterior surface of the tube;

coating the exterior surface of the tube;

drying the coated surface of the tube;

subjecting the dried, coated surface of the tube to pressure so as to calibrate the tube to have a circular cross-section so that the resultant tube exhibits minimal surface roughness and a permanent shape;

surface-coating the calibrated tube;

drying the surface of the surface-coated, calibrated tube; and

finish-polishing the dried, surface-coated, calibrated tube by shining to provide a smooth exterior surface.

4,645,554

APPARATUS AND METHOD FOR ADHERING SUCCESSIVE WEBS BY MEANS OF ADHESIVE APPLIED TO A PREDETERMINED SIDE THEREOF

Johann Wyser, Ligerz, Switzerland, assignor to Stork Brabant B.V., Netherlands

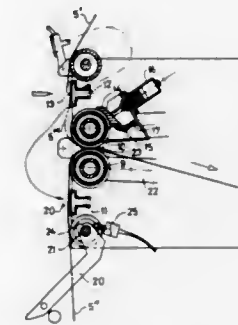
Filed Aug. 14, 1985, Ser. No. 765,715

Claims priority, application Netherlands, Aug. 14, 1984, 8402506

Int. Cl.⁴ B31F 5/00; B65H 19/00

U.S. Cl. 156—159

6 Claims



1. Device for adhering to each other of the trailing end of a first material web (the expiring web) with the leading end of a second material web (the fresh web), by applying adhesive to only one predetermined side of each of said webs, in which each web is guided along a respective guide roller which is located in a path from a supply roll to an operating place, the adherence being performed during standstill of the webs, the device comprising

two suction boxes each positioned along the path of a respective one of said webs for seizing said respective web by suction at a distance upstream with respect to the respective guide roller and each of said suction boxes being provided in its middle with an anvil which cooperates with a knife for accurately cutting perpendicularly through the respective seized web to form a respective cut edge of said web, and further comprising

means for clamping the expiring web between the guide rollers and means including said suction box corresponding to said fresh web for receiving said two cut edges of said two seized webs in abutting relation so as to permit applying a one-side sticking strip to said adhesive receiving sides of both of said seized webs, in which the distances between the clamping place of both guide rollers on the one hand and the respective anvils of both suction boxes (measured along the guide rollers) on the other hand, are equal to each other.

5. Method for operating a device for adhering to each other of the trailing end of a first material web (the expiring web)

with the leading end of a second material web (the fresh web), by applying adhesive to only one predetermined side of each of said webs, in which each web is guided a respective guide roller which is located in a path from a supply roll to an operating place, the adherence being performed during standstill of the webs, the device comprising

two suction boxes each positioned along the path of a respective one of said webs for seizing said respective web by suction at a distance upstream with respect to the respective guide roller and each of said suction boxes being provided in its middle with an anvil which cooperates with a knife for accurately cutting perpendicularly through the respective seized web to form a respective cut edge of said web, and further comprising

means for clamping the expiring web between the guide rollers and means including said suction box corresponding to said fresh web for receiving said two cut edges of said two seized webs in abutting relation so as to permit applying a one-sided sticking strip to said adhesive receiving sides of both of said seized webs, in which the distances between the clamping place of both guide rollers on the one hand and the respective anvils of both suction boxes (measured along the guide rollers) on the other hand, are equal to each other, said method comprising a preparatory phase and a performing phase with the following steps:

- (a) preparatory phase:
 - the vacuum in the suction boxes is switched on;
 - the fresh web is applied upon its respective suction box in which vacuum is supplied, after which the web is cut through upon the anvil in the middle of the box and the cut off portion is eliminated;
 - a one-sided sticking strip is positioned with its non-adhering face upon a vacuum applied auxiliary suction box;
- (b) performing phase:
 - the advance movement of the expiring web is stopped;
 - the expiring web is perpendicularly cut through upon the anvil in the middle of its respective suction box;
 - the expiring web is fixed by clamping said web between the guide rollers which are rendered stationary by a braking shoe;
 - the cut off free end of the expiring web is loosened from its respective suction box and swung over to the other suction box such that the cut edges of both web ends are laying in abutting relation against each other;
 - the preliminary adherence of the ends of both webs is performed by bringing the sticking strip in contact with the stationary web ends;
 - the rotation of the guide rollers clamped to each other is again permitted and the definite adherence of the web ends is achieved during the passage of the adherence location through the clamping place;
 - the vacuum is released, the guide rollers are rendered free and the web again moves normally.

4,645,555

HOT STAMPING METHOD

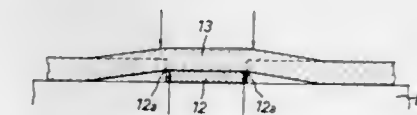
Kiyoshi Kuboyama, Tokyo, Japan, assignor to Asahi Screen Process Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,522

Claims priority, application Japan, Jan. 25, 1985, 60-11090
Int. Cl.⁴ B32B 31/00; B44C 1/16

U.S. Cl. 156—234

2 Claims



1. A hot stamping method comprising: a masking step in which certain characters, numerals and

patterns formed by a resinous masking layer are printed upon a surface of a base plate, said masking layer being made of a material which is non-adhesive to the surface of the base plate;

- a step of placing a foil sheet, comprising a foil layer having an adhesive layer and a backing, upon a surface of the masking layer and a surface of the base plate, and transferring said foil from said backing of the foil sheet to the surface of the base plate by means of heat and pressure; and
- a step of leaving the transferred foil from the backing upon the surface of the base plate and releasing the masking layer from the surface of the base plate to the overlying foil layer of the foil sheet, leaving portions of the foil in contact with the surface of the base.

4,645,556

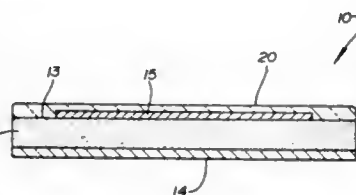
SUBSTRATELESS DECORATIVE EMBEDDED ARTICLE AND METHOD OF MAKING

Robert E. Waugh, Sun City Center, Fla.; Urban R. Nannig, North Kingstown, R.I., and Clyde R. Rockwood, Columbus, Ohio, assignors to The D. L. Auld Company, Columbus, Ohio. Continuation-in-part of Ser. No. 744,128, Jun. 12, 1985, Pat. No. 4,615,754. This application Jan. 21, 1986, Ser. No. 820,383. The portion of the term of this patent subsequent to Oct. 7, 2003, has been disclaimed.

Int. Cl.⁴ B60R 13/04

U.S. Cl. 156—242

12 Claims



1. A method of making a substrateless decorative article comprising the steps of:

- (a) providing a layer of pressure sensitive adhesive having a first surface,
- (b) placing a preformed decorative embedment on said first surface of said adhesive layer,
- (c) casting a curable liquid plastic resin onto said adhesive layer and over said embedment, and
- (d) curing said resin to harden it, encapsulating said embedment and forming a decorative article.

4,645,557

METHOD OF ESTABLISHING SEALED PIPE LENGTHS OF PLASTIC PIPES BY JOINING OF PIPE ELEMENTS, PARTICULARLY DISTRICT HEATING PIPE LENGTHS

Hans N. Pedersen, Kroger 4, Haldrup, DK-8700 Horsens, Denmark. Continuation of Ser. No. 476,864, Mar. 14, 1983, abandoned. This application Oct. 30, 1984, Ser. No. 666,310.

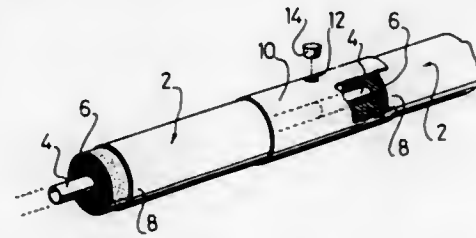
Int. Cl.⁴ B32B 31/04, 31/18

U.S. Cl. 156—250

7 Claims

1. A method of joining plastic pipes by welding, whereby juxtaposed ends of the plastic pipes are welded together along a peripheral annular welding zone presenting a discontinuous meeting area between continuous or uniform welding zone portions as extending to both sides of said meeting area, the method comprising the steps of drilling or cutting in the material of the pipe, in situ, an outwardly conical opening substantially covering the meeting area so as to expose effectively welded weld seam cross sections on a side of the opening, and closing the opening by a conical stopper of a plastic material by

heating a conical outer peripheral portion thereof and forcing the conical stopper into the opening to thereby endwise seal



each of said effectively welded weld seams individually as well as mutually.

4,645,558

FILM FEEDING APPARATUS

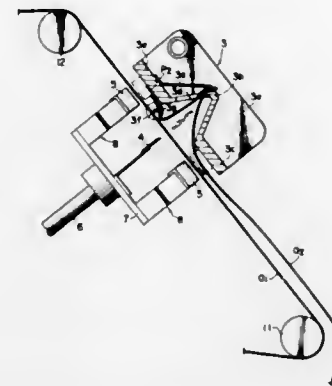
Minoru Sato, Funabashi, Japan, assignor to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan. Filed Aug. 10, 1984, Ser. No. 639,488.

Claims priority, application Japan, Nov. 10, 1983, 58-174546[U].

Int. Cl.⁴ B65H 19/18, 69/06

U.S. Cl. 156—351

7 Claims



1. A film feeding apparatus comprising a body which has a first film roll for feeding a first film with positioning registered marks and an auxiliary film roll for feeding a second film with positioning registered marks, and means for feeding the first film to a working machine through a conveying path, wherein said apparatus comprises a first sensor on the conveying path for detecting the end of the first film and a second sensor on the conveying path for detecting the positioning registered marks on the first film that are located adjacent to the terminal end of the first film, a film holder for holding the beginning end of the second film, said film holder comprising a pair of side plates which has therebetween a pressing plate with an intermediate V-shaped recess, said pressing plate being provided, in the V-shaped recess, with an elongated hole having a length corresponding to the width of the first and second films, said pressing plate having an elastic engaging means for holding the second film, a film pressing member comprising a rubber plate actuated by a pneumatic cylinder for pressing the first film against the second film, said film pressing member further including a leaf spring which elastically connects the rubber plate to the pneumatic cylinder and which is made of two bent leaves interconnected in the form of an ellipse, so that the leaf spring can be elastically deformed when the rubber plate comes into press contact with the film holder by the operation of the pneumatic cylinder, said film holder and said film pressing member being located on opposite sides of the conveying path so that the film pressing member comes away from and

close to the film holder, the first positioning registered marks of the second film being spaced from the beginning end thereof at a predetermined distance, said beginning end of the second film being provided with an adhesive tape which is partially adhered thereto, a cutter located in the vicinity of the film holder for cutting the first film in order to separate the first film from the first film roll, said pneumatic cylinder capable of actuating said film holder and/or said film pressing member to cause them to come close to each other in order to connect the first film to the second film by means of the adhesive tape at the beginning end of the second film and actuating the cutter to cut the first film by thrusting the cutter into the first film and entering the V-shaped recess of the film holder, wherein the first sensor detects the end of the first film and then the second sensor detects the first positioning registered marks, and timer means for controlling the time at which the cutter begins operating subsequent to the detection of the first positioning registered marks by the second sensor.

4,645,559

APPARATUS FOR BONDING SHEET-LIKE TEXTILE PIECES

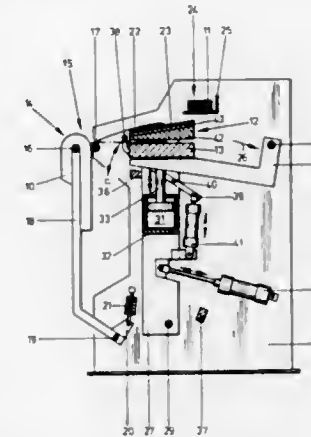
Albrecht Kaiser, Vlotho, Fed. Rep. of Germany, and Hans-Jürg Schöblich, Riehen, Switzerland, assignors to Herbert Kanne-gleser GmbH & Co., Vlotho, Fed. Rep. of Germany. Filed Feb. 1, 1985, Ser. No. 697,365.

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405505.

Int. Cl.⁴ B30B 15/30, 15/34

U.S. Cl. 156—583.1

11 Claims



1. An apparatus for bonding together first and second sheet-like textile pieces, especially those for outer garments, said textile pieces being bonded to one another between relatively movable press plates with the application of heat and pressure, a feeder station for manually laying the textile pieces to be bonded together on one another being disposed on an operator side of the apparatus, said apparatus being characterized by:

- (a) a top side of an upper press plate (12) having a layout surface (23) for first and second textile pieces (10, 11) to be bonded to one another,
- (b) means for moving the upper press plate towards and away from the operator side of the apparatus (arrow 26), and
- (c) a device (15) on the operator side of the apparatus, arranged in front of the layout surface, for holding a bundle of said first textile pieces to be individually laid onto said layout surface.

4,645,560

LIQUID ENCAPSULATION METHOD FOR GROWING SINGLE SEMICONDUCTOR CRYSTALS

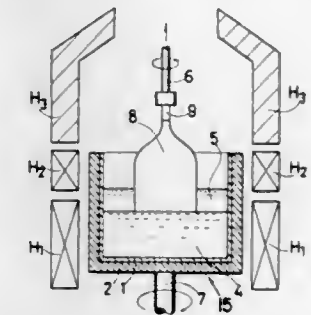
Kazuhisa Matsumoto; Hiroshi Morishita; Shinichi Akai, all of Itami, and Shintaro Miyazawa, Isehara, all of Japan, assignors to Sumitomo Electric Industries, Ltd. and Nippon Telegraph and Telephone, both of Japan.

Filed Aug. 24, 1984, Ser. No. 644,009

Claims priority, application Japan, Aug. 26, 1983, 58-154771. Int. Cl.⁴ C30B 15/22, 27/02.

U.S. Cl. 156—607

3 Claims



1. A liquid encapsulation method for growing single crystals of GaAs comprising the steps of:

- melting a semiconductor compound material and a liquid encapsulant material in a melt-heating zone of a crucible by applying heat to form a two-layered liquid, the two-layered liquid comprising a top layer of said liquid encapsulant material and a bottom layer of said semiconductor compound material;
- dipping a seed crystal into the two-layered liquid;
- growing a crystal from the semiconductor compound melt in a crystal-growth zone by pulling up and rotating the seed crystal;
- cooling the crystal in a temperature-controlled cooling zone above the crucible, the cooling zone being kept at a substantially uniform temperature distribution with a small temperature gradient to provide slow cooling;
- using a first heater to control the temperature in said melt-heating zone;
- using a second heater to control the temperature in said crystal growth zone; and,
- using a third temperature control means to control the temperature in said cooling zone and wherein the temperature gradients along the axis of the crystal are such that the temperature gradient between the surface of the liquid encapsulant and the cooling zone is 5° C./cm to 50° C./cm; and, the temperature gradient in the cooling zone is from about 0° C./cm up to 20° C./cm while the cooling zone temperature is controlled by said third temperature control means to 1000° C.—700° C.

4,645,561

METAL-POLISHING COMPOSITION AND PROCESS

William V. Rea, Toledo, Oreg., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 6, 1986, Ser. No. 816,592

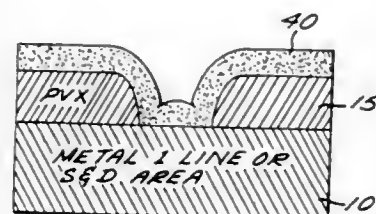
Int. Cl.⁴ B44C 1/22; B24B 1/00, 7/19; B24D 3/02. U.S. Cl. 156—636. 11 Claims.

1. A composition for polishing a metal surface comprising an aqueous suspension of:
 - (a) unlubricated aluminum oxide powder having a hexagonal crystal shape and a nominal particle size in the range of 1 to 10 microns; and
 - (b) colloidal aluminum oxide.
7. A process for polishing a metal surface comprising:
 - (a) mechanically rubbing the surface while
 - (b) contacting the surface with the composition of claim 1.

4,645,562
DOUBLE LAYER PHOTORESIST TECHNIQUE FOR
SIDE-WALL PROFILE CONTROL IN PLASMA ETCHING
PROCESSES

Kuan Y. Liao, Irvine; Kuang-Yeh Chang, Los Gatos, and Hsing-Chien Ma, Fremont, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 29, 1985, Ser. No. 728,012
 Int. Cl.⁴ B44C 1/22; C03C 15/00, 25/06; B29C 17/08
 U.S. Cl. 156—643 25 Claims



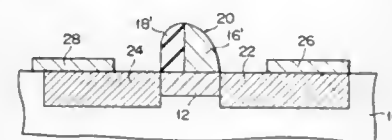
1. A process for forming a smoothly contoured via opening in protective surface layer used in semiconductor device fabrication including the steps of:

- directing a beam of etchant particles normal to a predefined surface area of said protective surface layer, and
- deflecting particles in the portion of said beam corresponding to the edge of said via opening to vary the amount and intensity of particles striking the protective sidewalls of said via opening, whereby said sidewalls are formed with a smoothly rounded contour to thereby receive smoothly contoured metal-over-insulator contacts at high yields.

4,645,563
METHOD OF MANUFACTURING GAAS FIELD EFFECT
TRANSISTOR

Toshiyuki Terada, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 17, 1985, Ser. No. 755,799
 Claims priority, application Japan, Sep. 29, 1984, 59-204416
 Int. Cl.⁴ H01L 21/306; B44C 1/22; C03C 15/00; C23F 1/02
 U.S. Cl. 156—643 9 Claims



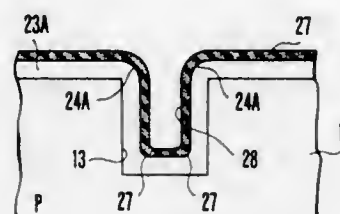
1. A method for manufacturing a GaAs field effect transistor, comprising the steps of:

- forming, on a gallium arsenide substrate involving an operational layer, a gate structure comprising a first layer which is conductive to serve as a gate layer of said transistor and a second layer which is insulative, each of said first and second layers being isotropically deposited and anisotropically etched and made to have a width substantially equal to an initial thickness with which it was initially deposited; and
- performing ion implantation with said gate structure used as a mask to provide in said substrate source and drain regions which are self-aligned with said gate structure, said source region being set adjacent to said gate layer, and said drain region being removed from the gate layer at a distance equal to the width of the insulative layer.

4,645,564
METHOD OF MANUFACTURING SEMICONDUCTOR
DEVICE WITH MIS CAPACITOR

Takashi Morie; Kazushige Minegishi, and Shigeru Nakajima, all of Kanagawa, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,860
 Claims priority, application Japan, Apr. 19, 1984, 59-79682
 Int. Cl.⁴ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
 U.S. Cl. 156—643 6 Claims



1. A method of manufacturing a semiconductor layer with a metal-insulator-semiconductor capacitor, comprising the steps of:

- forming a trench of a cross-sectionally rectangular shape in a major surface of a semiconductor substrate which has a predetermined conductivity type and which serves as one electrode of said capacitor;
- forming a doped semiconductor layer along at least side wall surfaces of said trench, the step of forming said semiconductor layer including the steps of depositing a semiconductor portion so as not to bury said trench with said semiconductor portion and etching at least a part of said semiconductor portion, said semiconductor layer being provided with an outer surface which is formed by deposition and etching, starting to extend in a rounded shape from major surface portions of said semiconductor substrate and extending substantially parallel to said side wall surfaces of said trench, and a recess, which is defined by said semiconductor layer, having round corners at the bottom;
- forming a dielectric insulating layer on an exposed surface including said major surface of said semiconductor substrate and said outer surface of said semiconductor layer; and
- forming a conductive layer on said insulating layer to bury said trench and serving as the other electrode.

4,645,565
MATERIAL IN SHEET FORM, CONVERTIBLE INTO A
FINISHED PRODUCT BY MOULDING-STAMPING OR
HEAT-SHAPING, COMPRISING REINFORCING FIBERS
AND A THERMOPLASTICS RESIN IN POWDER FORM,
AND PROCESS FOR PREPARING SAID MATERIAL

Antoine Vallee, Charavines, and Henri Cortinchi, St. Michel sur Orge, both of France, assignors to Arjomari-Prioux, Paris, France

Continuation of Ser. No. 449,871, Dec. 15, 1982, abandoned, which is a continuation of Ser. No. 258,417, Apr. 28, 1981, abandoned. This application Aug. 21, 1985, Ser. No. 767,673
 Claims priority, application France, Apr. 30, 1980, 80 09858
 Int. Cl.⁴ D21H 1/02 10 Claims

1. A process for preparing a homogeneous reinforced thermoplastic sheet using papermaking techniques which comprises the steps of:

- preparing a basic homogeneous mixture consisting essentially of from about 80 to 40% by weight of the basic mixture of a powdered thermoplastic resin having a particle size of up to about 500 microns and about 20 to 60% by weight fibers of the same average length selected from the

group consisting of mineral fibers, metallic fibers and synthetic organic fibers having a melting point at least about 50° C. higher than the melting point of the thermoplastic resin;

- adding about 5 to 25% by weight of the basic mixture of a polyolefin pulp having a specific surface area greater than about 1 m²/g; about 5 to 30% by weight of the basic mixture of a binding agent selected from the group consisting of latexes and polyvinyl alcohol fibers having a solubilizing temperature lower than 100° C. and about 0.2 to 10% by weight of the basic mixture of at least one flocculating agent;
- allowing the homogeneous mixture to flocculate;
- admitting the homogeneous mixture onto a wire screen as a single homogeneous layer;
- dewatering the homogeneous mixture;
- drying the resulting self-supporting homogeneous sheet to form a moldable reinforced thermoplastic sheet having a homogeneous composition.

4,645,566
PROCESS FOR PRODUCING ELECTROCONDUCTIVE
FILMS

Ippei Kato, Sunto; Masao Takasu, Fuji, and Nobuo Maruyama, Tokyo, all of Japan, assignors to Mushima Paper Co., Ltd., Shizuoka and Kureha Chemical Industry Co., Ltd., Tokyo, both of Japan

Filed Jan. 24, 1985, Ser. No. 694,638
 Claims priority, application Japan, Jan. 27, 1984, 59-11985;
 Nov. 15, 1984, 59-239561
 Int. Cl.⁴ D21H 5/18 12 Claims

1. A process for producing an electroconductive film having a volume resistivity in a fiber oriented direction of not more than 1 × 10⁸ ohm cm which comprises the steps of forming a wet web by papermaking, with a papermaking machine, from a paper stock obtained by mixing from 94.5% to 40% by volume of a thermoplastic synthetic pulp of a single thermoplastic synthetic resin with from 5% to 30% by volume of thermoplastic composite fibers comprising a first component having a lower melting point than that of said thermoplastic synthetic pulp and a second component having a higher melting point than that of said thermoplastic synthetic pulp, and from 0.5% to 30% by volume of electroconductive fibers; then heating and drying said wet web at a temperature of not less than the melting point of said first component and below the melting point of said thermoplastic synthetic pulp to melt the first component, thereby forming a base paper wherein the paper stock components are adhered to each other; and thereafter heating said base paper under pressure at a temperature of not less than the melting point of said thermoplastic synthetic pulp and below the melting point of said second component to melt the thermoplastic synthetic pulp, thereby forming a film having dispersed said second component and said electroconductive fibers therein.

4,645,567
FILTER MEDIA AND METHOD OF MAKING SAME

Kenneth C. Hou, Glastonbury, and Eugene A. Ostreicher, Farmington, both of Conn., assignors to Cuno, Inc., Meriden, Conn.

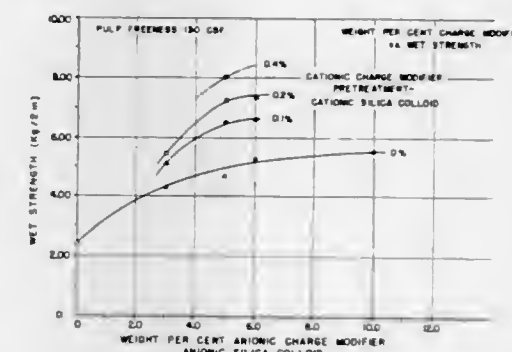
Continuation of Ser. No. 524,688, Aug. 19, 1983, abandoned, which is a continuation of Ser. No. 273,896, Jun. 15, 1981, abandoned, which is a division of Ser. No. 118,142, Feb. 4, 1980, Pat. No. 4,288,462. This application Apr. 11, 1985, Ser. No. 722,417
 Int. Cl.⁴ D21H 3/66, 3/78 5 Claims

1. A method for the preparation of a filter sheet having anionic electrokinetic capture potential for cationic submicronic proteinaceous contaminants comprising:

- providing a filter element composition consisting essentially of cellulose pulp filter elements and particulate filter

aid filter elements, wherein the composition has been treated by steps (1) and (2) as follows:

- depositing on at least one of the cellulose pulp filter elements or particulate filter aid filter elements, an amount of inorganic cationic colloidal silica charge modifier sufficient to render the surface of the filter elements receptive to the step (2) subsequent deposition of an inorganic anionic colloidal silica charge modifier, said depositing thereby forming treated filter elements; and subsequently



- depositing on either the treated cellulose pulp filter elements or the treated particulate filter aid filter elements an inorganic anionic colloidal silica charge modifier to thereby anionically charge modify the filter elements;

- felting the composition into a sheet; and
- drying said sheet sufficiently to form a filter sheet having a negative zeta potential and a wet strength of at least 2.5 kg/m, said drying being effected without decomposing or scorching the sheet.

4,645,568
PREPARATION OF CONCENTRATED, STABLE
WATER-IN-OIL EMULSIONS OF WATER-SOLUBLE OR
WATER-SWELLABLE POLYMERS

Armin Kurps, Boehl-Iggelheim; Hermann Fischer, Limburgerhof; Jürgen Hartmann, Ludwigshafen, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1985, Ser. No. 753,782
 Claims priority, application Fed. Rep. of Germany, Jul. 14, 1984, 3426080
 Int. Cl.⁴ C07B 5/00 8 Claims

1. A process for the preparation of a concentrated, stable water-in-oil emulsion of a water-soluble or water-swelling polymer by polymerization of one or more water-soluble ethylenically unsaturated monomers in a water-in-oil emulsion and removal of water from the water-in-oil polymer emulsion by azeotropic distillation, wherein the water is removed azeotropically from the water-in-oil polymer emulsion by passing in superheated vapor of an inert organic solvent which is immiscible with water.

4,645,569
PROCESS FOR PRODUCING ANHYDROUS ETHANOL

Toshiki Akabane, Yukigayaohsukamachi, and Arimasa Satoh, Funabashi, both of Japan, assignors to Shinneryoyu Kaihatsugijutsu Kenkyukumiai, Tokyo, Japan

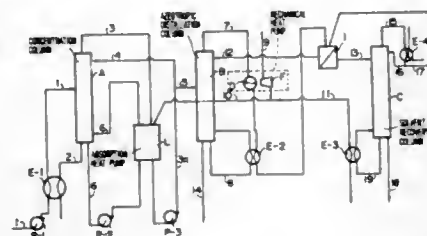
Filed Nov. 22, 1983, Ser. No. 554,314
 Claims priority, application Japan, Nov. 29, 1982, 57-208984
 Int. Cl.⁴ B01D 3/36, 1/28; C07C 29/82 1 Claim

1. A method for producing anhydrous ethanol by the distillation of ethanol from water, comprising the steps of:

- concentrating an ethanol-water mixture to form an

ethanol-water vapor by passing the mixture through a concentration distillation column including a bottoms liquid, the bottoms liquid of the concentration column being heated by an absorption heat pump and the ethanol-water vapor product from the concentration column being condensed in an evaporator provided in the absorption heat pump, a portion of the condensate being recycled to the concentration column and the remaining portion of the condensate being fed to an azeotropic distillation column;

- (b) azeotropically distilling said remaining portion of condensed water-ethanol product from the concentration column in an azeotropic distillation column including a bottoms liquid by adding an entrainer liquid to the azeotropic distillation column to form an azeotropic ternary vapor product of water, ethanol and entrainer;
- (c) compressing the azeotropic ternary vapor product using a mechanical heat pump including a compressor driven by a back pressure steam turbine to raise the pressure and temperature of the azeotropic ternary vapor product;
- (d) passing the compressed azeotropic ternary product in heat exchange relation with the bottoms liquid of the



- azeotropic distillation column to heat the bottoms liquid and condense the azeotropic ternary product;
- (e) supplying a portion of the back pressure steam exhausted from the mechanical heat pump to a regenerator provided in the absorption heat pump to provide the sole heat source for the absorption heat pump, the heat source serving to concentrate an absorbing solution previously diluted by absorption of a cooling medium vapor, both the absorbing solution and the cooling medium being circulated internally in the absorption heat pump and
- (f) recovering the entrainer from the azeotropic ternary product in a solvent recovery distillation column including a bottoms liquid, the bottoms liquid of the solvent recovery column being passed in heat exchange relation with another portion of the back pressure steam exhausted from the mechanical heat pump to effect the heating of the bottoms liquid,
- (g) utilizing live steam fed to a motor included in the mechanical heat pump as the sole heat source throughout all of the steps (a)-(f), and
- (h) recovering anhydrous ethanol from the azeotropic distillation column.

4,645,570 DISTILLATION OF HIGHER ALCOHOLS OF 6-20 CARBON ATOMS CONTAINING WATER AND METHANOL

Srinivasan Sridhar, and Manfred Hartmann, both of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 19, 1984, Ser. No. 662,922

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338439

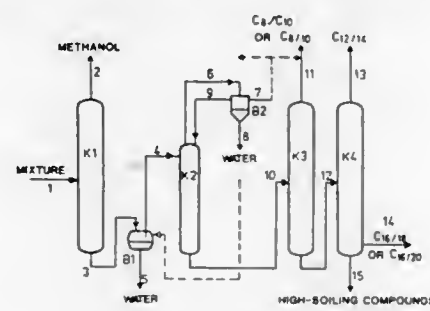
Int. Cl.⁴ B01D 3/36

U.S. Cl. 203-73

20 Claims

1. In a distillation process for working up a homogeneous aqueous feedstream consisting essentially of alcohols of 6-20 carbon atoms, water and methanol, the improvement which comprises separating a stream consisting essentially of methanol alone as overhead from the homogeneous, aqueous solution

in a first distillation column under a head pressure of 500-1,000 mbar; withdrawing a bottoms product from said first distillation column and passing said bottoms product to a first phase separator operating under atmospheric pressure wherein said bottoms product separates into an aqueous phase and an organic phase; mechanically separating the aqueous phase from the organic phase; passing the organic phase from the first phase separator into a second distillation column and dewater-



ing the organic phase by azeotropic distillation at 100-500 mbar; passing the overhead product from said second distillation column into a second phase separator wherein an aqueous phase and an organic phase are formed; separating the aqueous phase from the second phase separator at a temperature of 5°-95° C.; withdrawing the bottoms product from the second distillation column and passing same into a downstream distillation stage wherein the C₆-C₂₀ alcohols are separated.

4,645,571 METHOD AND APPARATUS FOR THE CONTINUOUS MONITORING OF SPECIFIC ELEMENTS IN MOLTEN SUBSTANCES CONTAINING SAME

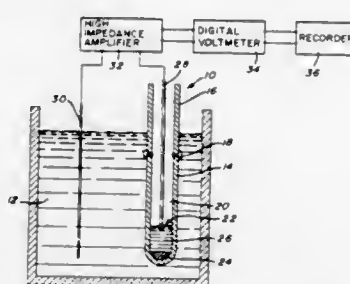
Alain Dubreuil, Montreal, and Arthur D. Pelton, Mount-Royal, both of Canada, assignors to La Corporation de l'Ecole Polytechnique, Montreal, Canada

Filed Nov. 23, 1984, Ser. No. 674,030

Int. Cl.⁴ G01N 27/30

U.S. Cl. 204-1 T

38 Claims



1. In a method for the continuous monitoring over a predetermined temperature range of a monovalent metal in a molten substance containing same by monitoring the electromotive force generated between the substance and a reference material separated from the substance by a solid electrolyte, the improvement wherein said reference material comprises a metal in liquid state and a salt component selected from the group consisting of (a) a combined salt of said metal of said reference material and a further monovalent metal, (b) a mixture of a first salt of said metal of said reference material and a second salt of said further monovalent metal, said first and second salts having a common anion, (c) a mixture of said first salt and said combined salt, and (d) a mixture of said second salt and said combined salt, said salt component being present in the form of a slurry containing a liquid phase in equilibrium with a solid phase over a predetermined temperature range,

said liquid phase containing said metal of said reference material and said further monovalent metal in ionic form and said solid phase containing said first salt, second salt or combined salt, said metal in liquid state and said solid and liquid phases of said slurry providing a three-phase equilibrium fixing an activity of said further monovalent metal.

12. A high temperature electrochemical probe for use as a reference electrode in the continuous monitoring over a predetermined temperature range of a monovalent metal in a molten substance containing same, which comprises a solid electrolyte defining a reference electrode compartment, a reference material contained in said reference electrode compartment, and an electrolytically inert electrode in contact with said reference material, said reference material comprising a metal and a salt component selected from the group consisting of (a) a combined salt of said metal of said reference material and a further monovalent metal, (b) a mixture of a first salt of said metal of said reference material and a second salt of said further monovalent metal, said first and second salts having a common anion, (c) a mixture of said first salt and said combined salt, and (d) a mixture of said second salt and said combined salt, wherein said metal of said reference material is in liquid state and said salt component is present in the form of a slurry containing a liquid phase in equilibrium with a solid phase over said predetermined temperature range, said liquid phase containing said metal of said reference material and said further monovalent metal in ionic form and said solid phase containing said first salt, second salt or combined salt, said metal in liquid state and said solid and liquid phases of said slurry providing a three-phase equilibrium fixing an activity of said further monovalent metal.

4,645,572

METHOD OF DETERMINING CONCENTRATION OF A COMPONENT IN GASES AND ELECTROCHEMICAL DEVICE SUITABLE FOR PRACTICING THE METHOD

Hiroshi Nishizawa, and Yoshihiko Mizutani, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

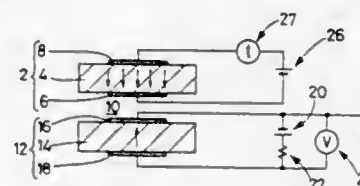
Filed Feb. 20, 1986, Ser. No. 831,707

Claims priority, application Japan, Feb. 23, 1985, 60-35124; Apr. 19, 1985, 60-85249

Int. Cl.⁴ G01N 27/58

U.S. Cl. 204-1 T

27 Claims



1. A method of determining the concentration of a component in a gas, by an electrochemical element which includes: an electrochemical pumping cell comprising a first solid electrolyte body, and a first and a second porous electrode disposed on the first electrolyte body; an electrochemical sensing cell comprising a second solid electrolyte body, and a third and a fourth porous electrode disposed on the second solid electrolyte body, said third electrode being positioned near said first electrode of the pumping cell; and diffusion-resistance means having a predetermined diffusion resistance to the molecules of said component in the gas in an external space, said diffusion-resistance means permitting the gas to diffuse therethrough with said diffusion resistance, for contact with said first and third electrodes of the pumping and sensing cells, the method comprising a step of controlling a pumping current to be applied to said pumping cell to effect an electrochemical pumping operation, so that an electromotive force which is induced on said sensing cell, according to the principle of a concentration cell, based on a partial pressure of said component in an atmosphere adjacent to said third electrode, coincides with a predetermined value, a step of detecting the controlled pump-

ing current, and a step of determining the concentration of said component in the gas, based on the detected pumping current, said method further comprising the step of:

applying an auxiliary pumping current between said third electrode of the sensing cell, and one of the other electrodes, for effecting an auxiliary pumping operation so as to change the partial pressure of said component in the atmosphere adjacent to said third electrode, in a direction in which the partial pressure of said component in an atmosphere adjacent to said first electrode is changed by said electrochemical pumping operation of said pumping cell.

17. An electrochemical device for determining the concentration of a component in a gas in an external space, including: an electrochemical pumping cell comprising a first solid electrolyte body, and a first and a second porous electrode disposed on the first solid electrolyte body; an electrochemical sensing cell comprising a second solid electrolyte body, and a third and a fourth porous electrode disposed on the second solid electrolyte body, said third electrode being positioned near said first electrode of the pumping cell and being electrically connected to said first electrode of the pumping cell, and diffusion-resistance means having a predetermined diffusion resistance to the molecules of said component in the gas in an external space, said diffusion-resistance means permitting the gas to diffuse therethrough with said diffusion resistance, for contact with said first and third electrodes of the pumping and sensing cells; means for applying a pumping current between said first and second electrodes of the pumping cell, to effect an electrochemical pumping operation, for controlling a partial pressure of said component in an atmosphere adjacent to said first electrode; and means for detecting a potential difference which is induced between said third and fourth electrodes, due to a difference between the controlled partial pressure of the component in said atmosphere adjacent to said third electrode, and a partial pressure of the component in said atmosphere adjacent to said fourth electrode, said pumping and sensing cells forming an electrochemical element, said electrochemical device comprising:

electrically resistant means which electrically separates said first and second solid electrolyte bodies from each other, said electrically resistant means having an opening which is located adjacent to at least one of said first and third electrodes and which permits said first and second solid electrolyte bodies to be electrically connected partially to each other, whereby said potential difference between said third and fourth electrodes is detected.

4,645,573 CONTINUOUS PROCESS FOR THE SEQUENTIAL COATING OF POLYESTER FILAMENTS WITH COPPER AND SILVER

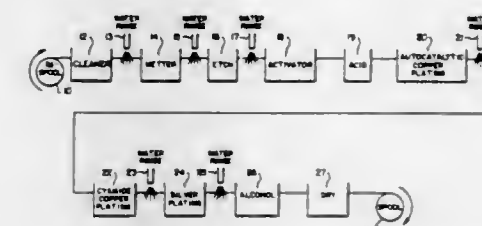
Ralph F. Orban, Columbus, Ohio, assignor to Material Concepts, Inc., Columbus, Ohio

Filed May 2, 1985, Ser. No. 729,773

Int. Cl.⁴ C23C 18/30

U.S. Cl. 204-14.1

6 Claims



1. A method of continuously coating polyester filaments in the form of multi-filament tows, roving, woven tape or fabric with metal comprising the steps of:
immersing said filaments in a cleaning solution,

rinsing said filaments with water,
immersing said filaments in a wetter solution containing alcohol, a detergent and an ethylene oxide and propylene oxide copolymer surfactant,
rinsing said filaments with water,
treating said filaments with an etching solution,
rinsing said filaments with water,
treating said filaments with an activator selected from the group consisting of palladium chloride and stannous chloride,
rinsing said filaments with acid,
coating said filaments with copper from an autocatalytic copper solution,
rinsing said filaments with water,
coating said copper coated filaments with additional copper from a copper cyanide bath,
rinsing said filaments with water,
coating said copper-coated filaments with silver from a silver cyanide bath,
rinsing said filaments with water,
rinsing said filaments with alcohol,
drying said filaments.

4,645,574
CONTINUOUS PROCESS FOR THE SEQUENTIAL COATING OF POLYAMIDE FILAMENTS WITH COPPER AND SILVER

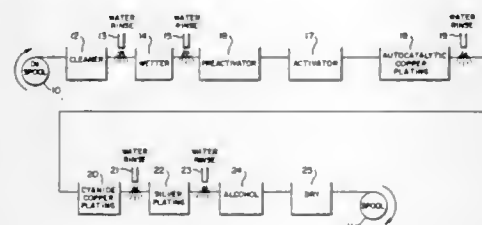
Ralph F. Orban, Columbus, Ohio, assignor to Material Concepts, Inc., Columbus, Ohio

Filed May 2, 1985, Ser. No. 729,827

Int. Cl.⁴ C23C 18/30

U.S. Cl. 204—14.1

4 Claims



1. A method of continuously coating polyamide filaments in the form of multi-filament tows, roving, woven tape or fabric with metal comprising the steps of:
immersing said filaments in a cleaning solution,
rinsing said filaments with water,
immersing said filaments in a wetter solution containing alcohol, a detergent and an ethylene oxide and propylene oxide copolymer surfactant,
rinsing said filaments with water,
treating said filaments with a pre-activator,
treating said filaments with an activator selected from the group consisting of palladium chloride and stannous chloride,
coating said filaments with copper from an autocatalytic copper solution,
rinsing said filaments with water,
coating said copper coated filaments with additional copper from a copper cyanide bath,
rinsing said filaments with water,
coating said copper-coated filaments with silver from a silver cyanide bath,
rinsing said filaments with water,
rinsing said filaments with alcohol,
drying said filaments.

4,645,575
PROCESS FOR THE CONTINUOUS ELECTRODEPOSITION OF METALS AT HIGH CURRENT DENSITY IN VERTICAL CELLS

Maurizio Podrini, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

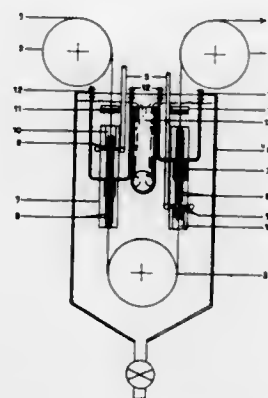
Filed Jul. 17, 1985, Ser. No. 756,093

Claims priority, application Italy, Jul. 24, 1984, 48617 A/84

Int. Cl.⁴ C25D 7/06

U.S. Cl. 204—28

2 Claims



1. In a process for the continuous electrodeposition of metals at high current density on metal strip in vertical cells, wherein the strip to be coated runs down a descending stretch and then up an ascending one in each of the treatment units and travels, in each stretch, through at least one electrolytic cell containing an electrolyte; the improvement comprising creating a partial vacuum in each cell by educting a flow of said electrolyte at one end of each cell in a vertical direction away from the cell, whereby the electrolyte for electrodeposition is forced to pass through each cell turbulently and vertically, the direction of flow of said electrolyte in the descending stretch being opposite that in the ascending one.

4,645,576
PROCESS FOR ISOLATING AND RECOVERING BUTENE-1 OF HIGH PURITY

Tetsuya Takezono, Kawasaki; Takaaki Amari, and Hirotsuke Imai, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

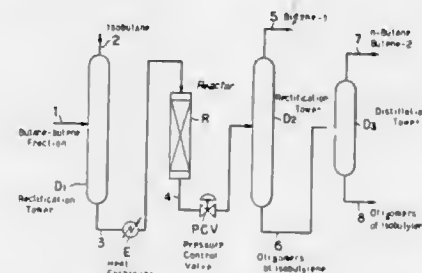
Filed May 10, 1984, Ser. No. 608,746

Claims priority, application Japan, May 17, 1983, 58-85018

Int. Cl.⁴ B01D 3/34

U.S. Cl. 203—30

11 Claims



1. A process for isolating and recovering butene-1 of high purity at a high yield, comprising the steps of:
subjecting a butane-butene fraction containing 0.1 to 7 wt% of isobutylene, 10 to 50 wt% of butene-1 and 5 to 20 wt% of isobutane to rectification to obtain a rectified butane-butene fraction having a reduced isobutane content of not more than 0.1 wt%;

continuously passing said rectified butane-butene fraction through a reactor packed with an extrusion molded silica-alumina catalyst at a temperature of from 0° C. to 100° C. and at a space velocity of liquid of from 0.1 to 100 hr⁻¹ under a pressure of from 1 to 50 atm. to polymerize isobutylene at a reaction velocity at least 50 times that of butene-1 to form oligomers of isobutylene in a hydrocarbon mixture, said extrusion molded silica-alumina catalyst having a surface area of 300 to 450 m²/g, a pore volume per unit weight of 0.6 to 0.9 ml/g and an alumina content of 20 to 50 wt%; and
rectifying the hydrocarbon mixture containing said oligomers and butane-butene to isolate butene-1 from the other C₄-hydrocarbons.

4,645,577
PRODUCTION OF CYANURIC ACID
Lester Friedman, Long Beach, and Jock A. Hamilton, Los Angeles, both of Calif., assignors to United Chemical Corporation, Los Angeles, Calif.

Filed Jan. 3, 1980, Ser. No. 109,358

Int. Cl.⁴ C25B 3/00; C07D 251/32

U.S. Cl. 204—62

10 Claims

1. A method for conversion of urea to cyanuric acid and cyclic intermediate compounds which comprises: exposing urea in substantially anhydrous molten liquid state to microwave electromagnetic radiation having a frequency from 900 to 3,000 kHz.

4,645,578
PROCEDURE FOR COPPER CHLORIDE AQUEOUS ELECTROLYSIS

Luis A. Suarez-Infanzon, Sextante 88, 28023 Madrid, and Eduardo D. Nogueira, Avda. del Mediterraneo 47, 28007 Madrid, both of Spain

Continuation of Ser. No. 713,454, Mar. 19, 1985, abandoned.

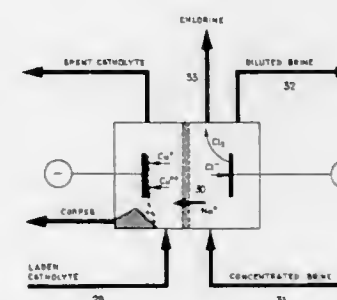
This application May 15, 1986, Ser. No. 864,558

Claims priority, application Spain, Mar. 27, 1984, 531.038

Int. Cl.⁴ C25C 1/12

U.S. Cl. 204—107

7 Claims



1. A process for electrolysis of aqueous copper chloride which comprises providing an electrolytic cell with a cationic permeable membrane selective to permit the flow of monovalent alkali metal cations but restrict the flow of other cations separating the cell into cathode and anode compartments; providing electrodes for the cell comprising a cathode for the cathode compartment and an anode for the anode compartment; providing and maintaining chloride solutions within the anode and cathode compartments; feeding an aqueous solution of copper chloride into the cathode compartment, while removing spent catholyte from the cathode compartment; feeding an aqueous solution of an alkali metal chloride into the anode compartment, while removing spent anolyte from the anode compartment; and applying and maintaining direct electric current; and voltage to the electrodes in order to promote the reduction of cupric ions on the cathode, the oxidation of chloride ions on the anode, and the transferring of alkali metal cations through the cationic permeable membrane separating

the cathode and anode compartments, thereby producing metallic copper at the cathode and chlorine gas at the anode.

4,645,579
PREPARATION OF AQUEOUS HYDROXYLAMINE SOLUTIONS

Franz-Josef Weiss, Neuhofen; Wolfgang Habermann, Mainz; Peter Hammes, Ruppertsberg; Elmar Frommer, Ludwigshafen; Erwin Thomas, Freinsheim, and Peter Thoma, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 24, 1984, Ser. No. 685,254

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347259

Int. Cl.⁴ B01D 13/02

U.S. Cl. 204—182.4

8 Claims

1. A process for the preparation of an aqueous solution of hydroxylamine from an aqueous hydroxylammonium salt solution by electrodialysis, the aqueous hydroxylammonium salt solution being fed into the middle zone of an electrolysis cell having anion selective membranes which is divided into a cathode zone, an anode zone and a middle zone by means of semipermeable membranes, and being electrolyzed, wherein the catholyte used is an aqueous alkali metal hydroxide solution containing a member selected from the group consisting of ammonia, primary, secondary or tertiary amines which possess alkyl radicals of 1 to 4 carbon atoms at the nitrogen atom which can have a hydroxy or alkoxy group as a substituent, cyclic amines and polyamines obtainable by reacting amines with ethylene imine, or mixtures thereof.

4,645,580
PROCESS FOR GALVANIC DEPOSITION OF A DISPERSION COATING, APPLICATION OF SAID PROCESS AND DEVICE FOR PERFORMING SAID PROCESS

Jean-Francois Paulet, Siblingen, Switzerland, and Heinz Steup, Donauessingen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

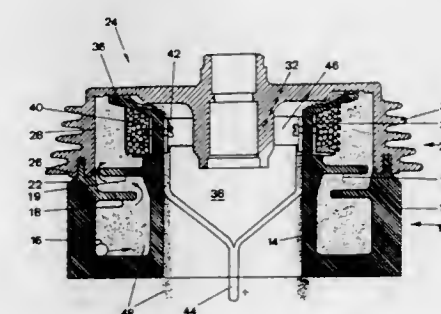
Filed Jan. 13, 1986, Ser. No. 818,482

Claims priority, application Switzerland, Jan. 17, 1985, 207/85

Int. Cl.⁴ C25D 17/00

U.S. Cl. 204—272

10 Claims



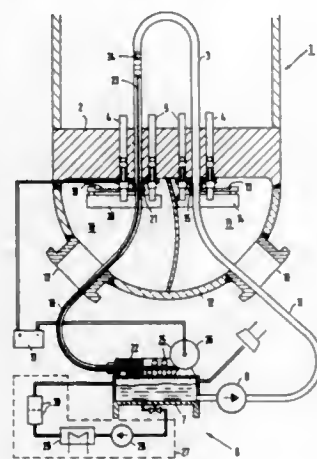
1. Device for galvanic deposition of a dispersion coating on a workpiece wherein said coating has a metallic matrix and fine-grained particles of hard material uniformly distributed therein which comprises an electrolyte container having a lower ring-shaped space and an upper ring-shaped space communicating therewith to provide an electrolyte path from the lower space to said upper space, an electrolyte supply pipe for feeding electrolyte tangentially to said lower space, at least two baffles in said electrolyte path from the lower to upper space for breaking the electrolyte turbulence, wherein said upper ring-shaped space is open downwards at the periphery and is delimited by the cylindrical or slightly conical inner face

of the workpiece as the outer wall, a ring-shaped anode secured to the inner wall of the upper ring-shaped space of the electrolyte container and conductor means for supplying said anode with electric current, and channels situated above the level of the cylindrical or slightly conical inner face of the workpiece leading from the upper ring-shaped space to the interior of the electrolyte container.

4,645,581
APPARATUS FOR ELECTROPOLISHING THE INNER SURFACE OF U-SHAPED HEAT EXCHANGER TUBES
Ludwig Voggenthaler, Regensburg; Hermann Opershall, Lauf, and Jakob Weber, Biersdorf, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,773
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1984, 3430384

Int. Cl.⁴ C25D 17/00
U.S. Cl. 204—275



1. Apparatus for electropolishing the inner surface of an U-shaped heat exchanger tube having open ends terminating respectively in two chambers formed in a bottom hemispherical shell of a heat exchanger, comprising respective manipulators formed with arms for positioning tube probes by remote control into the respective end openings of the heat exchanger tube in the respective chambers; respective adapters connected to hose connectors and carried at respective free ends of said manipulator arms, said adapters being pressable by said manipulators to the end openings of the heat exchanger tube through the intermediary of respective seals so as to align in the chambers the respective end openings of the U-shaped heat exchanger tube with respective hoses connected thereto by said hose connectors; an electrode connected to a negative pole of a d-c voltage source; a thrust cable formed as a smoothly jacketed copper cable and connected to the electrode for inserting the electrode through one of said hoses and the adapter associated therewith into the respective heat exchanger tube up to a given heat exchanger tube; a sealing device closing a free end of said one hose, said thrust cable extending through said sealing device; a feeding device connected to said sealing device for longitudinally feeding the thrust cable into the heat exchanger tube; and an electrolyte feed system connected to a free end of the other of said hoses for feeding electrolyte through the heat exchanger tube.

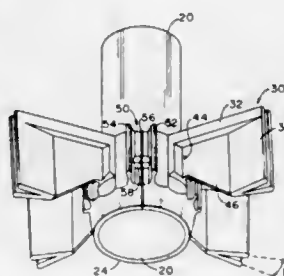
4,645,582
CURRENT DISTRIBUTION ASSEMBLY FOR ELECTRODE USED IN AN ELECTROLYTIC REDUCTION CELL

Robert L. Voegel, and Kenton B. Wright, both of Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 21, 1986, Ser. No. 796,868
Int. Cl.⁴ C25D 17/12

U.S. Cl. 204—286

32 Claims



1. An improved electrode assembly for use in a cell for the production of metal by electrolytic reduction in a molten salt bath comprising: a nonmetallic conductive electrode having a top surface; a central current carrying metallic support shaft received in a central bore in said electrode extending axially downward from said top surface; and metallic fin members extending radially from said central support shaft in said electrode, said metallic fin members comprising a plurality of gate members extending radially from said central shaft adjacent said top surface of said electrode and wing members extending from said gate members downwardly into said electrode from said top surface; said wing members each having tapered surfaces extending in a converging direction toward said central shaft to increase the surface area of electrical contact between said wing members and said nonmetallic conductive electrode at operating temperatures and to enhance the mechanical strength of said electrode assembly.

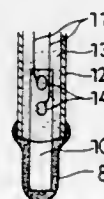
4,645,583
REFERENCE ELECTRODE

Tsuneo Shirai, 1-46-18 Chuo, Nakano-ku, Tokyo 164, and Koji Suzuki, Kawasaki, both of Japan, assignors to Kuraray Co., Ltd.; Showa Denko Kabushiki Kaisha and Tsuneo Shirai, all of Tokyo, Japan

Filed Mar. 5, 1986, Ser. No. 836,403
Claims priority, application Japan, Sep. 9, 1985, 60-199914
Int. Cl.⁴ G01N 27/30

U.S. Cl. 204—435

6 Claims

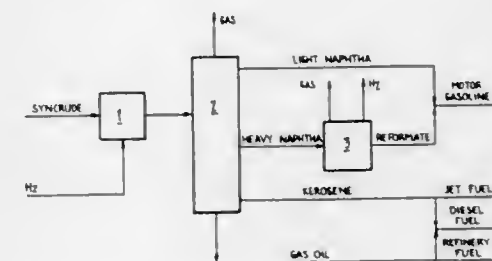


1. A reference electrode characterized in that it uses as an electrode membrane a membrane of a high polymer containing a salt which consists of a cation represented by the formula $(R_1 R_2 R_3 R_4 A)_+$ and an anion represented by the formula $(R_1' R_2' R_3' R_4' B)_-$ (wherein $R_1, R_2, R_3, R_4, R_1', R_2', R_3', R_4'$ each represent an alkyl group, a phenyl group or a phenyl group having a substituent).

4,645,584
MESOPHASE PITCH FEEDSTOCK FROM HYDROTREATED DECANT OILS
Rostislav Didchenko, Middleburg Heights, and Irwin C. Lewis, Strongsville, both of Ohio, assignors to Amoco Corporation, Chicago, Ill.
Continuation of Ser. No. 688,289, Jan. 7, 1985, which is a continuation of Ser. No. 637,684, Aug. 3, 1984, which is a continuation of Ser. No. 535,613, Sep. 26, 1983, which is a continuation of Ser. No. 487,591, Apr. 25, 1983, which is a continuation of Ser. No. 305,195, Sep. 24, 1981. This application Jul. 19, 1985, Ser. No. 756,929

Int. Cl.⁴ C10G 45/00, 45/72; C01C 1/00, 3/00
U.S. Cl. 208—40 4 Claims
1. A method for producing a feedstock for a mesophase pitch having a mesophase content of at least 70% by weight, comprising the steps of:
hydrotreating a decant oil until there is an increase from about 2 to about 3 hydrogen atoms per average molecule of the decant oil; and
distilling the hydrotreated decant oil to form a pitch.

4,645,585
PRODUCTION OF FUELS, PARTICULARLY JET AND DIESEL FUELS, AND CONSTITUENTS THEREOF
Noam White, Balacava, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia
Filed Feb. 27, 1985, Ser. No. 713,695
Claims priority, application Australia, Jul. 15, 1983, PG0301
Int. Cl.⁴ C10G 55/04, 55/06; C10C 4/04, 4/06
U.S. Cl. 208—58 18 Claims



1. A method of producing a fuel comprising:
hydroprocessing fused polynuclear aromatic compounds to produce a product rich in mononuclear cycloalkanes and mononuclear aromatics comprising a kerosene fraction, a distillate fraction, light gases, light naphtha having a boiling point less than about 65° C., indan, hydrindan, decalin, n-propylcyclohexane, n-butylcyclohexane and a naphtha fraction having a boiling range of about 180°-190° C.;
converting at least a portion of said product rich in mononuclear cycloalkanes and mononuclear aromatics into two-ring, non-fused cycloalkane compounds; and
mixing said two-ring non-fused cycloalkanes with at least one alkylated cycloalkane.

4,645,586
REFORMING PROCESS
Waldeen C. Buss, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 513,536, Jun. 3, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,163
The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.
Int. Cl.⁴ C10G 35/06

U.S. Cl. 208—65

21 Claims

1. A reforming process comprising:
(a) contacting a hydrocarbon feed with a first reforming catalyst at conditions which favor reforming to form a product stream, wherein said first reforming catalyst is bifunctional and comprises a metallic oxide support which

contains acidic sites having disposed therein a Group VIII metal; and
(b) contacting said product stream with a second reforming catalyst at conditions which favor reforming, wherein said second reforming catalyst is a monofunctional, non-acidic catalyst comprising a large-pore zeolite containing at least one Group VIII metal.

4,645,587
PROCESS FOR REMOVING SILICON COMPOUNDS FROM HYDROCARBON STREAMS
Peter Kokayeff, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Dec. 7, 1984, Ser. No. 679,302
Int. Cl.⁴ C10G 25/00, 29/04

U.S. Cl. 208—91 29 Claims
19. A process for removing silicon components from a hydrocarbon stream which comprises contacting said stream in a sorption zone with a sorbent selected from the group consisting of (1) a fresh sorbent comprising a mixture of a copper component and alumina which mixture has not previously been used to remove sulfur compounds from a hydrocarbon stream and (2) a regenerated sorbent prepared by burning carbonaceous material off a mixture of a copper component and alumina that has previously been used to remove sulfur components from a hydrocarbon stream under conditions such that carbonaceous material deposited on said mixture.

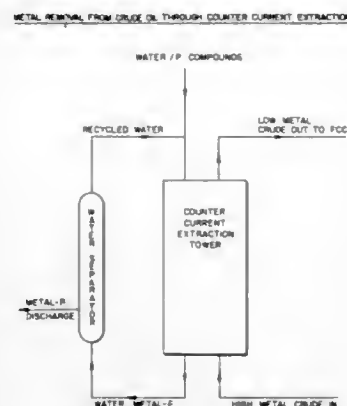
4,645,588
REFORMING WITH A PLATINUM-BARIUM-ZEOLITE OF L FAMILY
Waldeen C. Buss, Kensington, and Thomas R. Hughes, Orinda, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 344,570, Feb. 1, 1982, abandoned. This application Jun. 28, 1982, Ser. No. 392,907
Int. Cl.⁴ C10G 35/06

U.S. Cl. 208—138 18 Claims
1. A method of reforming hydrocarbons comprising contacting said hydrocarbons with a catalyst comprising:
(a) a zeolite of the L family;
(b) at least one Group VIII metal; and
(c) an alkaline earth metal selected from the group consisting of barium, strontium and calcium.

4,645,589
PROCESS FOR REMOVING METALS FROM CRUDE
Frederick J. Krambeck, Cherry Hill; Chiu T. Lam, Sewell, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 18, 1985, Ser. No. 789,218
Int. Cl.⁴ C10G 45/00, 17/00

U.S. Cl. 208—251 R 16 Claims
1. A process for removing metal from a metal-containing hydrocarbon oil which comprises:
(a) contacting a hydrocarbon oil phase containing at least one metal selected from the group consisting of vanadium and nickel with an aqueous phase of dissolved phosphorous compound capable of forming a compound or a complex with said metal, said aqueous phase containing from about 0.1 to about 20 parts by weight of water per part by weight of hydrocarbon oil contacted therewith, said contacting resulting in the removal of a substantial

quantity of the metal from the hydrocarbon oil phase to the aqueous phase; and,



(b) separating the metal-containing aqueous phase from the demetalated hydrocarbon oil phase prior to subjecting the latter to downstream catalytic processing.

4,645,590

VERTICAL TYPE SCREENING MACHINE FOR GRANULAR MATERIAL

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

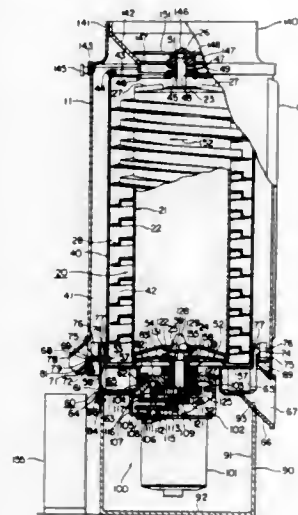
Filed Jun. 19, 1985, Ser. No. 746,288

Claims priority, application Japan, Dec. 11, 1984, 59-262517

Int. Cl.⁴ B07B 1/26

U.S. Cl. 209—304

23 Claims



12. A vertical type screening machine for granular material, comprising:

- a housing having a peripheral wall;
- a rotary drum assembly rotatably mounted within said housing, said drum assembly including a drum having a cylindrical circumferential surface and having a substantially vertical rotary axis, and a helical blade helically wound around the circumferential surface of said drum and secured thereto;
- cylindrical screen means disposed between said housing and said rotary drum assembly in substantially concentric relation to said drum, said screen means cooperating with the periphery wall of said housing to define therebetween a first chamber and cooperating with the cylindrical circumferential surface of said drum to define therebetween a second chamber;
- inlet means communicating with said second chamber for

allowing granular material to be screened to be supplied into said second chamber;

drive means drivingly connected to said rotary drum assembly for rotating the same to move the granular material supplied into said second chamber, radially outwardly towards said screen means, to thereby allow granular material having a relatively small size contained in the granular material to be screened, to be introduced into said first chamber through said screen means;

first outlet means communicating with said first chamber for allowing the granular material of relatively small size to be discharged out of said first chamber;

second outlet means communicating with said second chamber for allowing the remaining granular material within said second chamber to be discharged therefrom; and

said helical blade having an upper surface thereof which is stepped so as to have at least one riser surface portion and adjacent radially outward and inward tread surface portions connected to each other in a contiguous manner by said riser surface portion, in cross-section in a plane including the rotary axis of said drum, said radially outward tread surface portion being located below said radially inward tread surface portion.

4,645,591

SELF-CLEANING FLUID FILTER

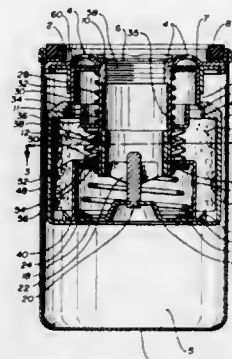
Benedict R. Gerulis, 1229 104th Way, Blaine, Minn. 55434

Filed Mar. 3, 1986, Ser. No. 835,538

Int. Cl.⁴ B01D 27/12

U.S. Cl. 210—108

20 Claims



1. A self-cleaning canister type filter for removal of particulate contaminants from a fluid, comprising:

- (a) a canister enclosure having an inner wall surface and having an inlet at its upper end for admitting pressurized contaminated fluid, and an outlet for discharging filtered fluid;
- (b) a filter element between said inlet and said outlet, for having a filtering surface closely spaced from said inner wall surface, for removing particulate contaminants from said fluid;
- (c) sump in the lower portion of said canister enclosure for accumulation of said particulate contaminants;
- (d) a central tubular cylinder communicating with said outlet and extending downwardly into said canister enclosure to comprise a sleeve valve cylinder having a plurality of ports therein leading from the downstream side of said filter element for passing said filtered fluid to said outlet;
- (e) a lower cylinder coaxial with and fixedly attached at its upper end to said sleeve valve cylinder;
- (f) a lower piston slideably mounted within said lower cylinder to move upwardly within said lower cylinder against a lower compression spring in response to increasing fluid pressure in said sump;
- (g) a sleeve valve piston fixedly attached to said lower piston by piston attachment means, and slideably mounted in said

sleeve valve cylinder to block fluid flow through said sleeve valve ports when unpressurized, and to be motivated upwardly by said lower piston to an uppermost position to open said sleeve valve ports for fluid flow therethrough;

- (h) an upper cylinder radially spaced from said central tubular cylinder, communicating with said filter inlet and extending downwardly therefrom;
- (i) a piston guide member enclosing the upper end of said filter element, vertically spaced from said upper cylinder, and having an opening for slideable movement of said upper piston therethrough; and
- (j) an upper piston slideably mounted in said upper cylinder and piston guide member to move increasingly downward against an upper compression spring in response to increasing inlet fluid pressure, to sequentially:
 - (i) compress filtered fluid within said filter element from downstream side of said filter element to loosen particulate contaminants from said filtering surface;
 - (ii) initiate flow of pressurized contaminated fluid past said filtering surface of filter element to scour said surface and seep particulate contaminants into said sump; and
 - (iii) permit sufficient flow of pressurized contaminated fluid into said sump to compress said lower piston upwardly against lower compression spring to expose said sleeve valve ports to allow flow of filtered fluid therethrough to pass to said outlet for discharge therefrom, and provide setting and storage of accumulated particulate contaminants within said sump.

4,645,592

REACTOR PIPING AND FLOW CONTROL SYSTEM

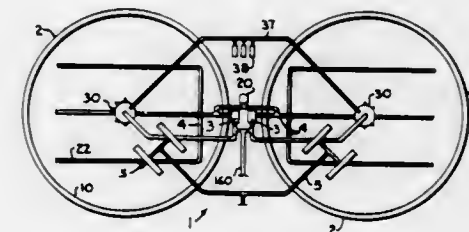
Glen R. Calltharp, 16006 Beckett La., Olathe, Kans. 66062; Kenneth L. Norcross, III, 4933 Wyandotte, Kansas City, Mo. 64112, and Dennis L. Nelson, 147 S. Normandy Dr., Olathe, Kans. 66061

Filed Sep. 20, 1985, Ser. No. 778,550

Int. Cl.⁴ B01D 21/02

U.S. Cl. 210—142

15 Claims



1. A wastewater treatment apparatus comprising: means designed for treating wastewater by processes including mixing wastewater with air in an aeration mechanism and alternatively being able to reverse flow through said mechanism to backflush said mechanism; said apparatus including:

- (a) a reactor vessel having upper and lower portions and being adaptable for holding a wastewater fluid therein;
- (b) a piping system associated with said vessel;
- (c) pumping means connected to said piping system; and
- (d) said piping system including:
 - (1) an untreated fluid distribution channel positioned in said vessel lower portion;
 - (2) a manifold having a modifiable flow path connecting said distribution channel with said pumping means;
 - (3) a wastewater inlet selectively flow connected to said vessel to allow untreated wastewater to enter said vessel; and
 - (4) said aeration mechanism adapted to utilize liquid mixed with air; said aeration mechanism being flow connected to said manifold such that said piping system is selectively configurable by adjustment of said modifiable flow path so that said pumping means pumps the fluid

being treated through the aeration mechanism wherein the fluid is mixed with air or so that said pumping means pumps the fluid in a backflushing direction through said mechanism to backflush said mechanism; and,

- (e) means for enabling alternatively: untreated wastewater to be distributed in said vessel lower portion; fluid may be withdrawn through said channel and circulated through said manifold by said pump means to said aeration mechanism; and fluid may be withdrawn from said vessel through said aeration mechanism and circulated through said manifold by said pump means so as to backflush said mechanism.

4,645,593

FLUID FILTERING DEVICE

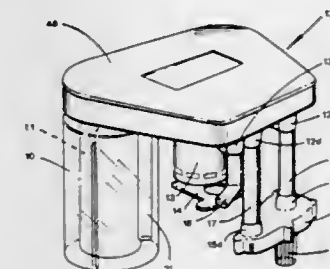
Thomas H. Dunk, 11529 Puritan, Brighton, Mich. 48116, and Nick A. Marinelli, 12854 Clyde Rd., Fenton, Mich. 48430

Filed Apr. 28, 1983, Ser. No. 489,368

Int. Cl.⁴ E04H 3/20

U.S. Cl. 210—169

14 Claims

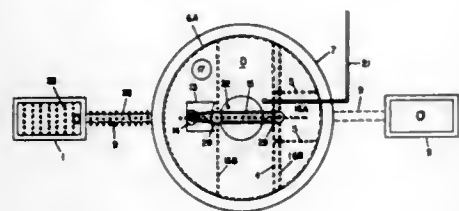


1. In a filtering apparatus, for removing foreign matter from a fluid provided in a tank (100) at a fluid level (101) and which can be mounted on a side (100a) of the tank, including filter means inside a container and pump means connected to conduit means for pumping and removing the fluid from the tank to the filtering means in the container and for recycling the filtered fluid from the container to the tank after removal of the foreign matter, wherein the pump means comprises:

- (a) pump impeller means (32) mounted in a pump housing (15, 15a) defining a chamber (30) submersible in the fluid in the tank;
- (b) a rotatable drive shaft (33) connected to the impeller means which has a length which can extend above the fluid level of the tank;
- (c) housing means (12) and support means (16) mounted on the housing means and supporting the drive shaft for rotation;
- (d) rotatable interconnected drive means, driven means (36, 40 and 41) in spaced relationship to each other and mounted on the housing means with the driven means mounted on the drive shaft;
- (e) a motor (13) mounted on the housing means so that when the apparatus is mounted on the tank it will be outside of the tank and includes a rotor shaft (13a) in spaced apart relationship to the drive shaft and connected to the drive means so as to rotate the drive means and thus the driven means, shaft and impeller means; and
- (g) said conduit means comprises a first conduit means (17, 43, 21, 53) separate from the drive shaft leading from the pump housing to the container (10, 54) containing the filtering means which filters the fluid pumped by the pump impeller means through the filter means and then through a second conduit means (18, 46, 50, 52) which will direct filtered fluid back to the tank.

4,645,594
CONVERTER FOR BIODEGRADABLE MATERIAL
 William J. Lingo, Sr., 4418 Procuniar Dr., Huber Heights, Ohio 45424

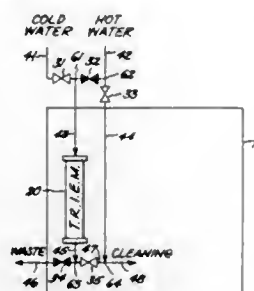
Continuation-in-part of Ser. No. 574,393, Jan. 27, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 724,861
 Int. Cl.⁴ C02F 11/04
 U.S. Cl. 210—170 7 Claims



1. An anaerobic digester system for biodegradable materials, comprising
 a closed digester tank having a predetermined volume, said tank including a gas collecting region at the top thereof above the normal liquid level of said tank and means for removing gases from said region,
 means providing an inlet means to and an outlet means from said digester tank,
 deflector means in said digester tank inhibiting direct flow from said inlet means to said outlet means,
 an input basin having a relatively small volume with respect to said tank,
 means connecting said input basin for gravity flow of contents by atmospheric pressure to said inlet means of said digester tank,
 an outlet basin having a volume no less than said input basin, means connecting said outlet means of said digester tank to said outlet basin,
 said outlet basin being located with its top approximately at the same level as the normal liquid level of said digester tank,
 whereby anaerobically digestible material may be loaded into said input basin and will proceed by gravity and atmospheric pressure into said digester tank, the effluent of digested material will flow into said outlet basin, and gases resulting from the digestion will rise through the material and agitate the same and then proceed to said gas collecting region.

4,645,595
WATER SOFTENING SYSTEM PARTICULARLY FOR INDIVIDUAL APPLIANCES
 Bang M. Kim, and Fred F. Holub, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
 Filed Nov. 23, 1984, Ser. No. 674,114
 Int. Cl.⁴ B01J 47/00

U.S. Cl. 210—181 5 Claims



1. A water softening system comprising:
 a thermally regenerable ion exchange material disposed in a removable, flow-through cannister;
 first valve and conduit means operable to direct cold water

from a cold water source through said ion exchange material;
 second valve and conduit means operable to mix hot water from a hot water source with cold water treated within said cannister, whereby a flow of warm, deionized water is producible; and
 third valve and conduit means operable to flush hot water through said thermally regenerable ion exchange material, whereby said ion exchange material is regenerated.

4,645,596
FILTER APPARATUS
 Soichi Kuwajima, Urawa, Japan, assignor to Nihon Schumacher Kabushiki Kaisha, Tokyo, Japan
 Filed Aug. 26, 1985, Ser. No. 769,425
 Int. Cl.⁴ B01D 29/32, 25/10

U.S. Cl. 210—193 5 Claims



1. A filter apparatus for filtering liquids, comprising:
 a filter tank;
 a plurality of filter cylinders supported vertically by a support plate for partitioning the filter tank into two spaces, in one said space a liquid to be filtered is fed and through the other said space a filtrate is discharged outwardly, each filter cylinder having a plurality of porous filter elements around which diatomaceous earth is drifted for filtering the liquids below the support plate;
 a spindle inserted into each filter cylinder for supporting the filter cylinder on the support plate, said spindle having a flange at its lower end for supporting the lowermost filter element;
 a support member with at least one opening for permitting filtrate to pass therethrough and disposed so as to cover a hole formed in the support plate, the upper end of the spindle passing through the hole being supported by the support member; and
 blind means having a predetermined length longer than a distance through which the surface of the liquid is moved vertically during a normal filter operation disposed under the support plate on each filter cylinder, so that the liquid to be filtered is prevented from passing through an upper region of the filter cylinder close to the support plate of the filter cylinder.

4,645,597
FILTER MEDIUM AND METHOD OF MANUFACTURING THE SAME
 Yoneji Wada, Tokyo, Japan, assignor to Origin Company Limited, Gifu, Japan
 Filed May 30, 1985, Ser. No. 739,370

Claims priority, application Japan, Jun. 7, 1984, 59-117293; Jun. 12, 1984, 59-120138; Nov. 12, 1984, 59-237754
 Int. Cl.⁴ B01D 35/06, 39/14

U.S. Cl. 210—222 11 Claims
 1. A filtering medium comprised of an elongated porous material folded along its longitudinal axis to define a recess within which are present particulate absorbing agents with said

elongated porous material being twisted about its longitudinal axis to enclose said particulate absorbing agents within said recess.

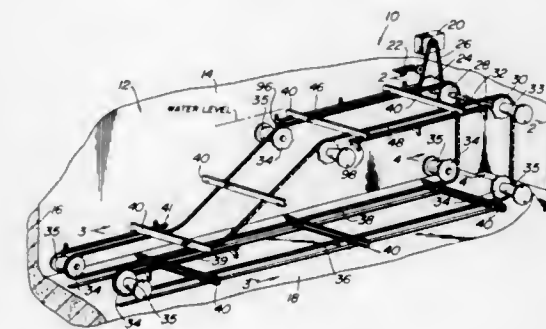
5. A method for the production of a filtering medium having particulate absorbing agents present therein comprising the steps of



(a) providing an elongated porous material folded along its longitudinal axis to define a longitudinal recess;
 (b) placing particulate absorbing agents within said recess; and
 (c) twisting said elongated porous material about its longitudinal axis to enclose said particulate material within said recess and to provide said filtering medium.

4,645,598
WATER TREATMENT PLASTIC PRODUCTS FOR RECTANGULAR CLARIFIERS
 Joseph R. Hanau, Norristown, Pa., assignor to The Budd Company, Troy, Mich.
 Filed Apr. 11, 1985, Ser. No. 722,047
 Int. Cl.⁴ B01D 21/04, 21/20

U.S. Cl. 210—232 10 Claims



1. In a rectangular water clarifier and sewage treatment system including a pair of side and end walls for overcoming high labor costs during assembly and disassembly of said system,

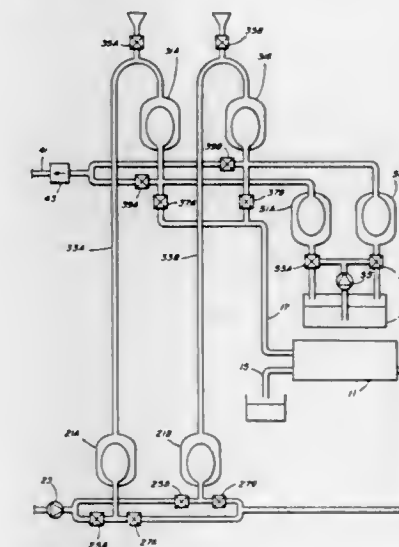
(a) a pair of plastic sprockets for driving said chains;
 (b) a pair of plastic driven chains;
 (c) track members;
 (d) a plurality of flight members secured to said drive chains and disposed to ride on said track members;
 (e) a telescoping non-metallic drive shaft connected between said pair of drive sprockets; and
 (f) non-metallic stub post spindles secured to said side walls with said sprockets drive shaft being freely rotatable thereon, said shaft including means for enabling ready removal from said stub post spindle during disassembly of said system to permit repair, removal and replacement of said sprockets and chains with a substantial reduction in man power requirements.

10. A stub post comprising means for connecting to a side wall of a tank for supporting an idler sprocket driven by a chain for eliminating the requirement for idler shafts to reduce the cost of a water clarifier and sewage treatment system including

(a) a main body;
 (b) a plastic shaft extending from said main body; and
 (c) a plastic collar surrounding said shaft;

(d) a plastic pin for fixing said collar to said shaft, and
 (e) said sprocket being supported to rotate freely on said bearing during operation.

4,645,599
FILTRATION APPARATUS
 Edward Fredkin, 166 Hyslop Rd., Brookline, Mass. 02146
 Filed Nov. 20, 1985, Ser. No. 800,029
 Int. Cl.⁴ B01D 13/00
 U.S. Cl. 210—416.1 3 Claims



1. Apparatus for reverse osmosis treatment of a source fluid, said apparatus comprising:

first and second work exchange vessels each of which is divided into at least two chambers by a compliant barrier which prevents fluid mixing between the chambers, one of said vessels being located substantially above the other;
 first fluid conduit means linking one of the chambers of said first vessel to one of the chambers of said second vessel;
 filling said first fluid conduit means, a working fluid which is substantially denser than said source fluid and thereby provides an increased static head pressure between said vessels relative to the static head pressure corresponding to said source fluid;

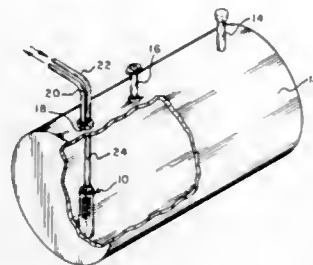
reverse osmosis means having a source fluid inlet, a by-product outlet, and a filtrate outlet;
 second fluid conduit means connecting another chamber of one of said vessels to the inlet of said reverse osmosis means and another chamber of the other of said vessels to the byproduct outlet of said filter;
 means operative during a first, low pressure phase for pumping source fluid into said another chamber of said one of said vessels thereby raising the mean height of said working fluid and driving byproduct fluid out of the said another chamber of said other vessel; and
 pump means operative during a second phase for pressurizing said second conduit means and making up fluid volume lost by filtrate passing through said reverse osmosis means, flow from the filter inlet to the byproduct outlet being driven by the increased static head pressure developed by the greater density of said working fluid.

4,645,600
IN-TANK FUEL FILTER
 Joseph J. Filippi, 501 B Lynn Ave., Vineland, N.J. 08360
 Filed Apr. 5, 1985, Ser. No. 720,352
 Int. Cl.⁴ B01D 27/08

U.S. Cl. 210—416.4 6 Claims
 1. An outside located field tank filter for connection to the

end of a supply line toward the bottom of a fuel tank comprising: means designed for providing continuous flow of fuel from said outside located field tank to a heating system, in the coldest of weather, including,

- an inlet tube connected to and extending downwardly from the supply line and communicating with the supply line, the tube being closed at the bottom end,
- a plurality of holes through the tube above and the lower end of the filter,
- a cylindrical fiber filter surrounding the inlet tube to trap and hold small particulate materials drawn toward the inlet tube with the fuel,



an imperforate cup extending from the bottom of the filter at least higher than the level of accumulation of water at the bottom of the tank, and surrounding the lower portion of the fibrous filter, the top of the cup and the inlet holes being relatively positioned to prevent flow directly, horizontally or from below the inlet tube, and a wire mesh screen covering the fibrous filter exposed above the cup having a mesh sized sufficient to substantially repel intrusion of water through the screen when the screen is coated with fuel.

4,645,601

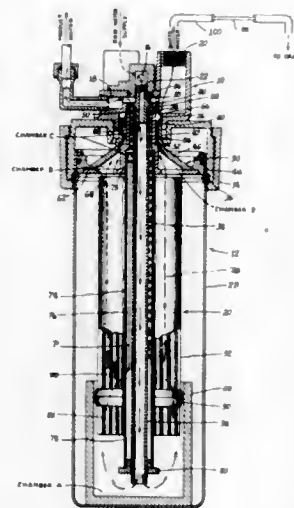
QUICK CHANGE REVERSE OSMOSIS ASSEMBLY

Perialwar Regunathan, Wheaton, and Jack W. Thomsen, La-Grange, both of Ill., assignors to Everpure, Inc., Westmont, Ill.

Filed Aug. 31, 1984, Ser. No. 645,854

Int. Cl.⁴ B01D 13/00

U.S. Cl. 210-433.2



1. In a reverse osmosis unit for use in a reverse osmosis system the combination comprising:

- a pressure vessel having a reverse osmosis module disposed therein;
- a closure member in permanent sealed relationship with the open end of said pressure vessel and having the reverse

osmosis module connected thereto, said closure member including first, second and third concentrically disposed tubular portions defining first, second and third openings; said first, second and third openings defining an inlet and two outlet fluid passages to lead to and from the reverse osmosis unit with which said closure member is associated;

said tubular portions of said closure member being adapted to be releasably inserted into a mating head member; and said pressure vessel, closure member and reverse osmosis module being an integral disposable unit.

4,645,602

PROCESS FOR PRODUCING REINFORCED MICROPOROUS MEMBRANE

Robert G. Barnes, Jr., 631 Brownstone Ridge, Meriden, and Mark T. Meyering, 144 Powder Hill Rd., Middlefield, both of Conn. 06450

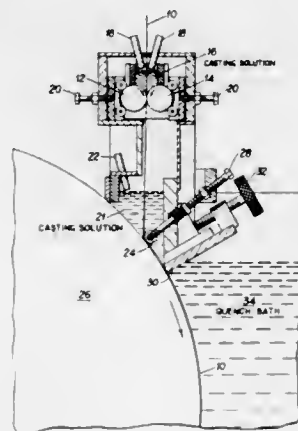
Continuation of Ser. No. 332,068, Dec. 18, 1981, abandoned.

This application Sep. 17, 1984, Ser. No. 651,376

Int. Cl.⁴ B01D 13/00

U.S. Cl. 210-490

7 Claims



1. A process for producing an integral single layer polymeric microporous filter membrane within which a reinforcing web is embedded, comprising:

- (a) preparing a first and second reservoir of a casting solution of a polymer in a solvent system comprising a mixture of at least one solvent and one non-solvent for the polymer, the amount of non-solvent being no greater than an amount required to induce nucleation of the solution to obtain a visible precipitate;
- (b) passing a reinforcing web through the first reservoir, completely surrounding the web with casting solution and depositing a sufficient amount of the solution onto the web to completely coat the web;
- (c) directly passing the coated web from step (b) through a calendaring means to simultaneously calendar both sides of the coated web under conditions sufficient to provide for the penetration of the solution into the web and to remove substantially all entrapped air from the web; and
- (d) passing the calendared reinforcing web from step (c) through the second reservoir, completely surrounding the web with casting solution and depositing a sufficient amount of the solution onto the web to again completely coat the web; and
- (e) passing the coated web from step (d) through a quenching bath comprising a non-solvent system for the polymer for a time sufficient to form micropores throughout the coatings to thereby form a single layer microporous filter membrane within which a reinforcing web is embedded.

7. An integral single layer polymeric microporous filter membrane within which a reinforcing web is embedded produced by the process of claims 1, 2 or 5.

4,645,603

LIQUID AERATION DEVICE AND METHOD

Gerald P. Frankl, 187 McCook Lake, Jefferson, S. Dak. 57038

Continuation-in-part of Ser. No. 849,965, Nov. 9, 1977,

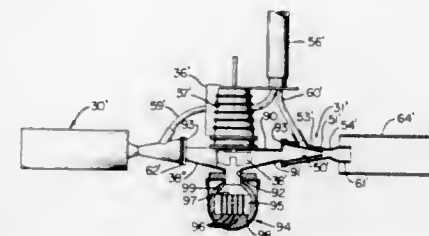
abandoned, and Ser. No. 673,797, Apr. 5, 1976, abandoned. This

application Jan. 5, 1984, Ser. No. 568,367

Int. Cl.⁴ C01F 3/26; B03C 1/02; B01F 5/02

U.S. Cl. 210-629

5 Claims



1. In the method for conversion of animal waste material into useful feed values wherein the animal waste material is flushed from a collection area to a separation stage whereby to separate liquid waste and fines of a selected size from the animal waste material, the steps comprising:

- advancing the separated liquid waste and fines from said separation stage to a waste treatment container;
- pumping the separated liquid waste and fines in said container under pressure through a submerged aeration chamber and creating a magnetic field in association with said aeration chamber to remove magnetizable particles from the liquid waste and fines as they are pumped into the aeration chamber;
- injecting air into the aeration chamber whereby to aerate the liquid waste and fines sufficiently to hydrolize the fines into single cell protein;
- advancing the intermixed air, liquid waste and fines from said aeration chamber through an open-ended mixer tube whereby to induce the introduction of additional liquid waste and fines into said tube under the influence of the reduced pressure of the intermixed air, liquid waste and fines as it exits from said aeration chamber into said mixer tube; and
- recycling the liquid waste and single cell protein from the waste treatment container for flushing additional animal waste from the collection area to the separation stage for introduction of the single cell protein into the animal waste material.

3. In apparatus for the conversion of animal waste in a confinement facility into useful feed values wherein said animal waste is flushed from the confinement facility with aerated liquid waste pumped from a waste treatment container and passed through a separation stage to remove moisture from the liquid waste together with solid fines contained in the liquid waste and the liquid waste and solid fines so removed being returned to said waste treatment container, a submersible air induction apparatus submerged in said waste treatment container for aeration of the liquid waste therein and hydrolization of the single cell protein in the fines present in the liquid waste so aerated, the combination therewith comprising:

- impeller means having an inlet end and a discharge end and magnet means having an open-ended inlet passage sleeve normal to and in communication with said inlet end intermediately between opposite ends of said sleeve whereby to create a magnetizable field across said inlet end to remove magnetizable particles from the liquid waste and solid fines in said container which are drawn through opposite ends of said inlet passage sleeve by said impeller means,
- at least one injector assembly at said discharge end of said impeller means having first and second hollow, generally conical members, said first member having an injector inlet end receiving the liquid waste and fines under pressure from said discharge end of said impeller means and generally nozzle-shaped discharge means for discharge of

the liquid waste and fines under pressure from a discharge end of said first member, said second member disposed in outer concentric surrounding relation to said discharge end of said first member including a venturi portion downstream of said first member continuing into an outwardly flowing expansion outlet, and air injecting means communicating with each said second member for introducing air into said second member, said discharge means creating a region of reduced pressure in said venturi portion to induce the flow of air from said air injecting means into and through said second member for intermixture with said liquid waste and fines whereby to aerate the liquid waste and fines sufficiently to hydrolize the fines into single cell protein,

an elongated, open-ended, hollow sleeve including means mounting one end of each said sleeve in proximity to said expansion outlet whereby to direct the intermixture of air, fines and liquid waste from said expansion outlet through said sleeve and discharge said intermixture of air, fines and liquid waste through an opposite end of said sleeve into said waste treatment container, and

means for recycling the liquid waste and single cell protein from the waste treatment container for flushing additional animal waste from the confinement facility to the separation stage for introduction of the single cell protein into the animal waste material.

4,645,604

PROCESS AND DEVICE FOR TREATING LIQUIDS WITH CATION EXCHANGERS AND ANION EXCHANGES

Friedrich Martinola, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

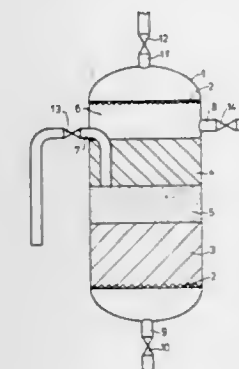
Filed Jun. 11, 1985, Ser. No. 743,460

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1984, 3422860

Int. Cl.⁴ B01J 49/00

U.S. Cl. 210-675

10 Claims



1. In the process for treating liquids in an ion exchange filter which contains the cation exchanger and anion exchanger in separate layers arranged one on top of the other, the cation exchanger being the lower layer and the anion exchanger being the upper layer, and in which the ion exchangers are loaded in an upward flow of liquid and the exhausted ion exchangers are regenerated and washed out separately, the improvement comprising the following measures:

- (a) separating the cation exchanger and anion exchanger from one another by a resin layer which does not participate in the ion exchange; the height of this layer being at least 30 mm greater than the height of the free space in the filter at the start of the loading operation, and being at least 100 mm;
- (b) when the upward-flow loading has ended, removing the anion exchanger from the filter, without whirling up the

separating layer and cation exchanger, regenerating and washing out the anion exchanger externally in a separate container, and regenerating and washing out in counter-current the cation exchanger which remains in the filter and is covered by the separating layer; and
(c) after the regeneration of the cation exchanger and anion exchanger, recycling the anion exchanger to the filter thereby again building up the anion exchanger layer without whirling up the separating layer and cation exchanger layer.

4,645,605

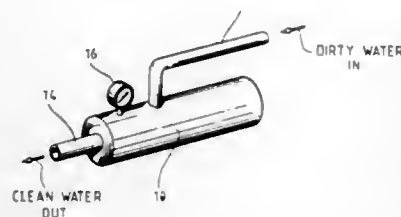
FILTRATION WITH BIOGENETIC SILICA
Robert L. Durham, SImonton, Tex., assignor to Agritec, Inc., Houston, Tex.

Filed Jul. 13, 1984, Ser. No. 630,482

Int. Cl.⁴ B01D 15/00, 53/04

U.S. Cl. 210—679

23 Claims



1. A filter medium for filtering fluid comprising, a closed container having an inlet and an outlet, biogenetic silica having a porosity of at least 50 percent by volume disposed in the closed container, and the inlet and the outlet arranged to direct flow of the fluid through the biogenetic silica.

4,645,606

MAGNETIC MOLECULAR AGGLOMERATE REDUCER AND METHOD

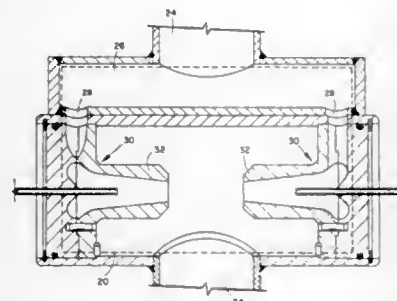
Clifford L. Ashbrook, Rte. 2, Box 439, Spicewood, Tex. 78669, and Douglas B. Scarborough, Rte. 27, Box 124-A-3, San Antonio, Tex. 78238

Filed Apr. 24, 1985, Ser. No. 726,429

Int. Cl.⁴ C02F 1/48, 1/78, 5/00

U.S. Cl. 210—695

7 Claims



1. A method for reducing agglomeration in fluids, comprising the steps of:
pumping a fluid through a first vortex nozzle;
simultaneously pumping a second fluid through a second vortex nozzle;
agitating the fluids by spraying the fluid exiting the first vortex nozzle against the fluid exiting the second vortex nozzle;
simultaneously magnetically affecting the fluids by a mag-

netic affecting means mounted in close proximity to the nozzles.

4,645,607

PROCESS FOR REDUCTION OR OXIDATION OF MATERIALS IN WATER SOLUTION BY PASSING A GAS THROUGH A CATALYST IMMERSSED IN SOLUTION IN THE PRESENCE OF ELECTRICALLY CONDUCTING BODIES

Jiri Divisek; Leander Fürst, both of Jülich; Bertel Kastening, Hamburg, and Harald Luft, Niederzier, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

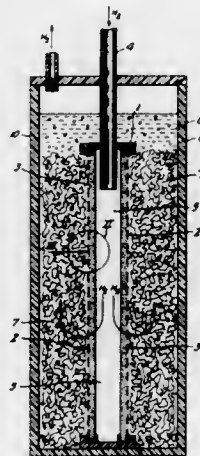
Continuation of Ser. No. 500,974, Jun. 3, 1983. This application Aug. 22, 1985, Ser. No. 768,175

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221306

Int. Cl.⁴ B01J 8/00

U.S. Cl. 210—719

11 Claims



1. Process for electroless reduction or oxidation of reducible or oxidizable materials in water solution comprising the step of passing a gaseous reducing or oxidizing agent through a porous catalyst layer immersed in said solution, said gaseous agent being thereby infused into said solution, which process also comprises the further steps of:

increasing the reaction speed by immersing in said solution at least in the region of infusion of said gas into said solution through said catalyst layer, bodies unattached mechanically with said catalyst layer, consisting of electrically conducting material, having a large surface of a kind increasing the effective surface for the conversion of dissolved material in solution and remaining distributed in the solution at least in said region, and
maintaining at least a portion of said bodies continually in direct or indirect electrically conducting contact with said catalyst layer whereby said gaseous agent is oxidized or reduced at said catalyst layer and a component of said material in solution is reduced or oxidized at said unattached bodies of electrically conducting material distributed in the solution, by the effect of redox potential difference, as a result of said bringing into electrical contact.

4,645,608

METHOD OF TREATING OIL CONTAMINATED CUTTINGS

Jerry J. Rayborn, Franklinton, La., assignor to Sun Drilling Products, Corp., Belle Chasse, La.

Filed Oct. 10, 1984, Ser. No. 659,521

Int. Cl.⁴ C09K 7/02; B08B 7/00

U.S. Cl. 252—8.51

5 Claims

1. A method of recycling oil from oil contaminated cuttings present in a drilling mud comprising the steps of:

- (a) separating the oil contaminated cuttings from the drilling mud;
- (b) contacting the oil contaminated cuttings with a detergent solution comprising C₂-C₁₀ alkanol as a solvent and an effective amount of a surfactant selected from the group consisting of alcohol ethoxylates, phenol ethoxylates, alkylphenol ethoxylates, amine ethoxylates, thioethers, and combinations thereof so as to wash the oil from the cuttings and into the detergent solution;
- (c) separating the washed cuttings from the detergent solution containing the removed oil; and
- (d) adding the detergent solution containing the removed oil back into the drilling mud.

4,645,609

SULFONATED ASPHALT/CAUSTICIZED LIGNITE BLEND

Bharat B. Patel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 23, 1985, Ser. No. 737,365

Int. Cl.⁴ C09K 7/02

U.S. Cl. 252—8.51

15 Claims

1. A water based well-working fluid comprising an aqueous fluid medium containing clay and a mixture of a sulfonated asphalt and a causticized lignite a weight ratio of said sulfonated asphalt prepared by sulfonating asphalt with a sulfonating agent selected from the group consisting of sulfur trioxide, fuming sulfuric acid, chlorosulfonic acid and concentrated sulfuric acid to said causticized lignite within the range of 3:1 to 1:1, said lignite not being present when said asphalt is sulfonated, said mixture being present in an amount sufficient to reduce foaming and plastic viscosity without significantly affecting lubricity.

4,645,610

METHOD FOR THE PREPARATION OF OLEFIN POLYSULFIDES, THE PRODUCTS OBTAINED AND THEIR UTILIZATION AS LUBRICANT ADDITIVES
Maurice Born, Nanterre; Guy Parc; Lucienne Briquet, both of Rueil Malmaison, and Daniel Paquer, Vandoeuvre, all of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

Filed Apr. 19, 1985, Ser. No. 725,278

Claims priority, application France, Apr. 20, 1984, 84 06278; Oct. 10, 1984, 84 15641

Int. Cl.⁴ C10M 135/00; C07C 149/00

U.S. Cl. 252—45

49 Claims

1. A method for the preparation of an olefin polysulfide, comprising the following steps:

- (1) reacting at least one compound chosen from sulfur monochloride or dichloride with at least one mono-olefin containing 2 to 5 carbon atoms, in a proportion of 1.5 to 2.5 moles of mono-olefin per mole of sulfur monochloride and/or dichloride, thereby forming an addition compound or adduct;
- (2) contacting said addition compound or adduct with at least one hydrocarbyl halide chosen from C₁ to C₁₂ alkyl, C₅ to C₁₂ cycloalkyl C₆ to C₁₂ arylalkyl chlorides, bromides and iodides, the proportion of said hydrocarbyl halide corresponding to 1-70% in gram-atoms of halogen with respect to the number of gram-atoms of halogen in the aggregate formed by said adduct and said hydrocarbyl halide, and with at least one sulfur compound selected

from the sulfides, hydrosulfides and polysulfides of alkali metals, ammonium or alkaline-earth metals used in a proportion of about 0.4 to 0.8 mole per gram-atom of halogen contained in the aggregate formed by said adduct and said hydrocarbyl halide, and a proportion of elemental sulfur of 0 to 7 gram-atoms per mole of said sulfur compound, in an aqueous medium; and

(3) heating the resultant mixture, separating it into an aqueous phase and an organic phase and recovering resultant olefin polysulfide from the organic phase.

14. An olefin polysulfide obtained by a method according to claim 1.

30. A lubricating composition comprising a major proportion of a mineral or synthetic lubricating oil and a minor proportion, sufficient to improve its extreme-pressure properties, of at least one olefin polysulfide according to claim 14.

4,645,611

DISPERSION

Frederick Campbell, Manchester; Peter K. Davies, Oldham, and John D. Schofield, Bury, all of England, assignors to Imperial Chemical Industries Plc, London, England

Filed Feb. 1, 1985, Ser. No. 697,570

Claims priority, application United Kingdom, Feb. 2, 1984, 8402801

Int. Cl.⁴ H01F 1/02; B01F 17/52

U.S. Cl. 252—62.51

10 Claims

1. A dispersion of finely divided particles of a magnetic material in an organic liquid containing a dispersant comprising an amine carrying a poly(carbonylalkyleneoxy) chain in which the alkylene groups contain up to 8 carbon atoms, or a salt thereof with an acid.

4,645,612

COMPOSITION BASED ON CALCIUM CHLORIDE HEXAHYDRATE FOR STORING HEAT USING A PHASE CHANGE AND PROCESS FOR ITS PREPARATION

Gaëtan della Faille d'Huyse, Brussels, and Louis Boxus, SINT-Stevens-Woluwe, both of Belgium, assignors to Solvay & Cie. (Société Anonyme), Brussels, Belgium

Filed Aug. 16, 1985, Ser. No. 766,417

Claims priority, application France, Aug. 27, 1984, 84 13329

Int. Cl.⁴ C09K 5/06

U.S. Cl. 252—70

7 Claims

1. A composition based on calcium chloride hexahydrate for storing heat using a phase change, characterised in that it contains, relative to the weight of anhydrous calcium chloride, from 2 to 15% by weight of a potassium nitrogen compound selected from the group consisting of potassium nitrate, potassium nitrate, and mixtures thereof, and from 2 to 15% by weight of ammonium chloride.

4,645,613

HEAT STORAGE COMPOSITION

Nathan A. Harvey, Holcomb, and Roland M. Avery, Jr., Pittsford, both of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Filed Jul. 15, 1985, Ser. No. 754,631

Int. Cl.⁴ C09K 5/06

U.S. Cl. 252—70

6 Claims

1. A fire-resistant storage container for protecting heat-sensitive objects that are damaged by temperatures above 125° F., a protective wall of said container having been prepared from a composition comprising the septahydrate of a salt selected from the group consisting of sodium carbonate and disodium phosphate and containing a lower hydrate of the same salt, said composition being substantially free of cementitious materials and thixotropic agents.

4,645,614

ELECTROVISCOUS LIQUIDS

John Goossens, Cologne; Günter Oppermann, Leverkusen; Wolfgang Grape, Cologne, and Volker Härtel, Germering, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Metzeler Kautschuk GmbH, Munich, both of, Fed. Rep. of Germany

Filed Jul. 9, 1985, Ser. No. 753,216

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1984, 3427499

Int. Cl.⁴ C09K 3/00

U.S. Cl. 252—75

17 Claims

1. An electroviscous suspension comprising more than 25% by weight of silica gel with a water content of from 1 to 15% by weight as the disperse phase and silicone oil as the liquid phase and also a dispersant, wherein the dispersant comprises a functional polysiloxane selected from the group consisting of an amino functional polysiloxane, a hydroxy functional polysiloxane, an acetoxy functional polysiloxane and an alkoxy functional polysiloxane, said polysiloxane having a molecular weight above 800.

4,645,615

FIRE-RESISTANT HYDRAULIC FLUID

Harry N. Drake, Fairless Hills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 27, 1986, Ser. No. 833,701

Int. Cl.⁴ C10M 105/74, 143/10

U.S. Cl. 252—78.5

9 Claims

9. A shear-stable hydraulic fluid composition comprising about 75 parts by weight of a tertiary-butylphenyl/phenyl phosphate and about 25 parts by weight of polyol ester of commercial grade pentaerythritol and C₅ to C₁₀ mixed fatty acids to form a base stock and about 0.5 parts by weight of a homopolymer of polystyrene having a molecular weight of about 235,000 to 245,000 and an effective quantity of a copper passivator, a rust inhibitor, an anti-oxidant, an antifoam and an acid acceptor.

4,645,616

DETERGENT POWDERS AND PROCESSES FOR PRODUCING THEM

Ian E. Niven, Liverpool, and Andrew W. Travill, Wirral, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 660,622, Oct. 15, 1984, abandoned.

This application Oct. 31, 1985, Ser. No. 793,469

Claims priority, application United Kingdom, Oct. 19, 1983, 8328017

Int. Cl.⁴ C11D 3/12, 7/20

U.S. Cl. 252—135

10 Claims

1. A process of manufacture of a detergent powder which comprises the steps of

- forming an aqueous crutcher slurry comprising a surfactant, a sodium aluminosilicate detergency builder and sodium silicate;
- adding an acid to the slurry in an amount equivalent to from 1.5 to 3 parts by weight of hydrogen chloride per 6 parts of sodium silicate having a sodium oxide to silica ratio of 1 to 1.6, and precipitating at least part of the sodium silicate;
- spray-drying the slurry to form a powder.

4,645,617

STRIPPING COMPOSITIONS WITH REDUCED VAPOR CONTAINING MECL₂, A WAX AND ETHYLENE OR PROPYLENE CARBONATE

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1986, Ser. No. 815,955

Int. Cl.⁴ C09D 9/00, 9/02; C11D 7/50; C23D 17/00

U.S. Cl. 252—165

3 Claims

1. An improvement composition useful for stripping paint

and varnish and polymeric resins from surfaces comprising a major portion of methylene chloride, 0 to 50% by wt. of a polar organic solvent, 0.5 to about 5.0% by wt. of a natural or synthetic wax and at least one of the following additive components in amounts of from 0.25 to about 5.0% by wt. each: ethylene carbonate or propylene carbonate.

4,645,618

WATER SOLUBLE FLOORS

Duk H. Lee, Wellesley; Susan Feierberg, Watertown, and Robert E. O'Brien, Belmont, all of Mass., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 638,387, Aug. 7, 1984, abandoned, which is a division of Ser. No. 352,209, Feb. 25, 1982, Pat. No. 4,522,742. This application Nov. 1, 1985, Ser. No. 794,257

Int. Cl.⁴ C09K 11/06

U.S. Cl. 252—301.17

20 Claims

1. A method of enhancing the production of autoradiographic images by radioactive emitters contained in an absorbent or adsorbent separation medium, comprising contacting the separation medium with a fluorographic compositions, which composition comprises at least two water soluble fluors, each fluor having a structure in accordance with the formula:



wherein F is a component which absorbs energy and emits electromagnetic energy, S is a component which makes the fluor water soluble, and B is a chemical bond or other component which bonds a component F with a component S, and x, y and z are from 1 to 10.

4,645,619

PROCESS FOR THE PREPARATION OF COLLOIDAL DISPERSIONS OF CHALCOGENS AND CHALCOGENIDE ALLOYS

Santokh S. Badesha, Pittsford, and Thomas W. Smith, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 28, 1985, Ser. No. 737,971

The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.

Int. Cl.⁴ B01J 13/00; G03G 15/08

U.S. Cl. 252—314

9 Claims

1. An improved process for the preparation of a stable colloidal dispersion of a selenium tellurium alloy, which comprises providing a solution with a polymer therein; adding to the solution a selenium ester and a tellurium ester; and subsequently subjecting the resulting mixture to a reduction reaction by adding thereto a reducing agent whereby there is generated selenium tellurium particles of a diameter of from about 0.01 microns to about 0.3 microns in solution.

4,645,620

INTERCALATION COMPOUNDS OF GRAPHITE

Israel Palchan, Givon 8/3, Givon; Dan Davidov, Neve/Sbanan 18, and Henry Selig, Ahad Ha'am 16, both of Jerusalem, all of Israel

Filed Dec. 22, 1983, Ser. No. 564,258

Claims priority, application Israel, Jan. 10, 1983, 67645

Int. Cl.⁴ H01B 1/06

U.S. Cl. 252—502

4 Claims

1. A graphite fluorine intercalation product of the formula C_xF wherein x ≧ 5.5, said product having a basal plane conductivity greater than 10⁵ cm⁻¹Ω⁻¹.

4,645,621

RESISTOR COMPOSITIONS

Kumaran M. Nair, East Amherst, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1984, Ser. No. 682,299

Int. Cl.⁴ H01B 1/04

U.S. Cl. 252—513

8 Claims

1. A thick film resistor composition for firing in a low oxygen-containing atmosphere comprising finely divided particles of (a) an anion-deficient semiconductive material consisting essentially of a refractory metal nitride, oxynitride or mixture thereof; and (b) a nonreducing glass having a softening point below that of the semiconductive material, both dispersed in (c) organic medium.

4,645,622

ELECTRICALLY CONDUCTIVE CERAMIC MATERIAL

Wulf Kock, Markdorf, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 4, 1985, Ser. No. 804,804

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1984, 3445251

Int. Cl.⁴ H01B 1/06

U.S. Cl. 252—521

3 Claims

1. Electrically conductive ceramic having the composition La_xCa_yMnO_{3+Δ} characterized by x=0.44 to 0.48, y=0.42 to 0.50 and the sum of the mol numbers of La and Ca is between 1 to 15% smaller than the mol number of Mn.

4,645,623

ALKYLARYL SULFONATE COMPOSITIONS

Michael J. Dolan, Town and Country; John N. Rapko, St. Louis, and William W. Morgenthaler, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 17, 1984, Ser. No. 682,130

Int. Cl.⁴ C11D 1/22

U.S. Cl. 252—558

13 Claims

1. An alkylbenzene sulfonate composition of improved aqueous solubility and detergency which comprises a low 2-phenyl alkylbenzene sulfonate and an effective amount of an alkylated diphenyl oxide sulfonate.

4,645,624

CONTAINMENT AND DENSIFICATION OF PARTICULATE MATERIAL

Eric J. Ramm, Lilli Pilli, and Alfred E. Ringwood, Redhill, both of Australia, assignors to Australian Atomic Energy Commission, Lucas Heights and The Australian National University, Acton, both of, Australia

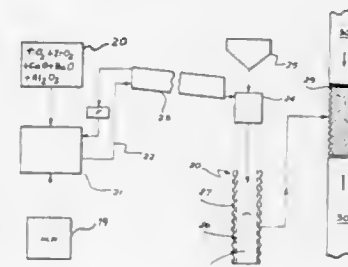
Continuation-in-part of Ser. No. 282,327, Jul. 10, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 524,841

Claims priority, application Australia, Aug. 30, 1982, PF5670

Int. Cl.⁴ G21F 9/16, 9/12

U.S. Cl. 252—628

26 Claims



1. An improvement in the method for forming solid block which includes synthetic rock in which radioactive waste is immobilized, the improvement comprising:

- preparing a supply material comprising a minor propor-

tion of radioactive waste and a material for forming the synthetic rock in sufficient quantity to immobilize said radioactive waste when the supply material is densified into a block;

(b) selecting a heat resistant steel container which is heat and corrosion resistant to contain the supply material during the method, the container having a side wall extending around an axis of the container and including a bellows-like structure for preventing gross outward deformation during the method;

(c) establishing a quantity of supply material in the container and arranging the container with the bellows-like structure free of surrounding

(d) applying and maintaining for an extended time pressure along the axial direction of the container to compress the supply material while applying heat to maintain an elevated temperature to cause densification and the formation of a block of synthetic rock including the radioactive waste; and

(e) either before or after said densification step, sealing the container with a cap whereby the sealed container is adapted to be placed in a suitable long term storage location.

16. A method of containing and densifying particulate supply material comprising radioactive waste and synthetic rock precursor material, the method comprising pouring the supply material into a heat resistant steel bellows container of generally cylindrical form with a side wall including a bellows-like formation and of heat and decay resistant material, closing the bellows container with a lid, placing the bellows container on an upwardly displaceable ram having a heat resistant surface portion, displacing the ram upwardly to press the bellows container against a fixed abutment with the bellows-like formation free of surrounding support, maintaining substantially axially pressure through the ram on the bellows container, applying heat and maintaining a sufficiently elevated temperature in the bellows container for a sufficient length of time to cause densification of said particulate supply material in the bellows container and axial compression of the bellows container, the arrangement being such that deformation of the bellows container occurs in its axial direction, and removing the bellows container after completion of the densification step.

4,645,625

DECONTAMINATION OF A RADIOACTIVE WASTE LIQUID BY ELECTRODIALYSIS

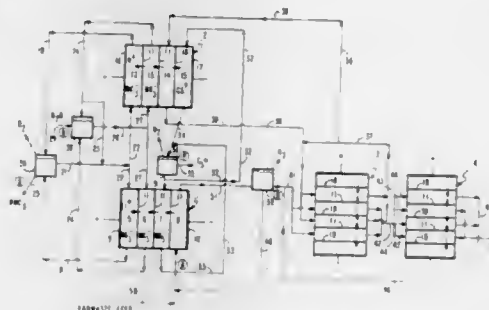
Jerry E. Lundstrom, Pelham, N.H., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Nov. 26, 1984, Ser. No. 675,052

Int. Cl.⁴ G21F 9/08

U.S. Cl. 252—631

11 Claims



1. An apparatus for the removal and recovery of acidic and radioactive components of a liquid waste stream comprising in combination a series of at least two electrodialysis units or stacks, each stack comprised of a cathode chamber at one terminal end, an anode chamber at the opposite terminal end,

said chambers containing respectively a cathode and anode electrode, a deacidification stack being the first stack in the series having all of its chambers being separated one from the other by separate anion selective membranes defining between said electrode chambers at least one neutral liquid chamber positioned adjacent to the cathode chamber, a primary desalting stack being the second stack in the series comprising a multi-chamber unit having a plurality of alternating salt diluting and salt concentrating chambers defined by alternating cation and anion selective membranes, means for introducing a liquid to be treated into the cathode chamber of said deacidification stack with exit means for withdrawal of said liquid, means for passing said withdrawn liquid into and out of the salt diluting chambers of said primary desalting stack, further means for introducing a liquid into and out of the concentrating and electrode chambers of said primary desalting stack and means for passing a direct electric current transversely across the membranes and chambers of each stack in the series.

4,645,626

PROCESS FOR THE PRODUCTION OF QUINAZARINE DERIVATIVES WHICH ARE DISUBSTITUTED IN THE 5- AND 8-POSITIONS BY HYDROXYL OR CHLORINE

Peter Bloch, Basel, Switzerland, and Jean-Marie Adam, Saint-Louis, France, assignors to Ciba-Geigy AG, Basel, Switzerland
Continuation of Ser. No. 639,972, Aug. 10, 1984, abandoned, which is a continuation of Ser. No. 255,070, Apr. 17, 1981, abandoned. This application Aug. 14, 1985, Ser. No. 765,621
Claims priority, application Switzerland, Apr. 22, 1980, 3106/80; Apr. 22, 1980, 3107/80

Int. Cl.⁴ C07C 50/24, 50/34

U.S. Cl. 260—383

7 Claims

1. A process for the production of 5,8-dichloro- or 5,8-dihydroxyquinazarine by reacting phthalic anhydride with p-chlorophenol, which process comprises reacting p-chlorophenol and phthalic anhydride in the stoichiometric ratio of 1:1 to 1:1.5 in oleum in the presence of B₂O₃, H₃BO₃ or boron halide, wherein oleum and phthalic anhydride are used in the weight ratio of 1:1 to 4:1 and boron compound, calculated as boron trioxide, and phthalic anhydride are used in the weight ratio of 1:2 to 1:4, carrying out the reaction in the temperature range from 180° to 220° C. either continuously or discontinuously, subsequently adding 50 to 70% oleum and/or chlorosulfonic acid to the reaction medium in an amount at least twice that of the oleum employed at the start of the reaction and chlorinating the boron complex of 1,4-dihydroxyanthraquinone obtained as intermediate, direct with isolation, without a chlorinating agent, in the same reaction medium and in the temperature range from 20° to 150° C., and either hydrolyzing the chlorinated product by diluting the acid medium in the temperature range from 70° to 110° C. and isolating the 5,8-dichloroquinazarine thereby obtained or by diluting the acid medium to a concentration of 80% H₂SO₄ to 25% oleum, in the temperature range from 140° to 220° C. and isolating the 5,8-dihydroxyquinazarine thereby obtained.

4,645,627

SALTS OF ACID ETHER SULPHATES AND A PROCESS FOR THE PREPARATION OF THESE SALTS

Nicolaas A. I. van Paassen, and Jacobus G. Verschuur, both of Bodegraven, Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 503,395, Jun. 10, 1983, abandoned.
This application Mar. 19, 1985, Ser. No. 713,649
Claims priority, application Netherlands, Jun. 12, 1982, 8202398

Int. Cl.⁴ C07C 87/00

U.S. Cl. 260—501.21

5 Claims

1. Water-dilutable and non-malodorous acid ether sulphate salts obtained by neutralizing acid sulfates having the formula R(OCH₂CH₂)_nOSO₃H, wherein n represents a number having an average value of 1 to 6 and R is an oleyl group or an

alkyl group having 8 to 16 carbon atoms, with tri-isopropanolamine.

4,645,628

PRODUCTION OF OPTICAL CABLE

Ronald Y. Gill, Essex, England, assignor to Telephone Cables Limited, England

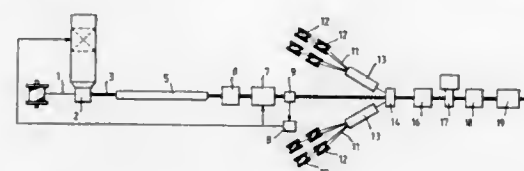
Filed Jul. 30, 1985, Ser. No. 760,674

Claims priority, application United Kingdom, Aug. 2, 1984, 8419751

Int. Cl.⁴ B29D 11/00; H01B 11/22

U.S. Cl. 264—1.4

9 Claims



1. A process for use in the production of an optical cable of the kind having a core of thermoplastics material which is extruded around at least one elongated electrical conductor and has a series of longitudinally extending channels at least one of which accommodates one or more optical fibres, characterised by the steps of:

- (i) cooling the core following the extrusion process;
- (ii) introducing the optical fibre or fibres within the respective channel or channels;
- (iii) passing the core with the optical fibres contained within the channel or channels through an induction heating unit which is energized so as to heat said conductor by an amount sufficient to soften at least the adjoining region of the surrounding core;
- (iv) subsequently twisting the core to cause the channels and the optical fibres contained therein to take up a helical or periodically reversing helical path; and
- (v) cooling the core once more to leave said channels extending in a helical manner about the core axis.

4,645,629

METHOD OF MANUFACTURING HEAT MOLDING GARMENTS

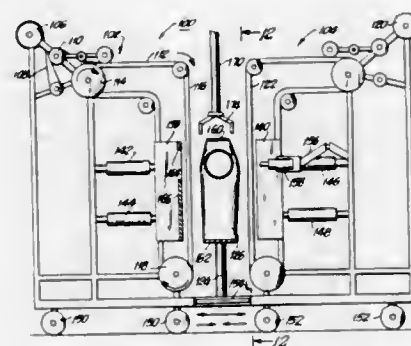
Brett Stern, 111 W. 28th St., New York, N.Y. 10001

Filed Jun. 14, 1985, Ser. No. 745,011

Int. Cl.⁴ B06B 3/00

U.S. Cl. 264—23

11 Claims



1. A method of manufacturing a garment, comprising the steps of:

- (a) feeding opposing sections of flat uncut thermosetting fabric material, in full, from bolts of such fabric material, to a heat molding section;
- (b) positioning the opposing sections of said flat uncut ther-

mosetting fabric material, in full, on either side of a male mold of the garment shape to be formed;

- (c) closing a pair of female mold sections onto the male mold to sandwich the fabric in the mold cavity formed between the male mold and the female mold section;
- (d) heat molding the opposing sections to form a three dimensional garment shape including heat molded three dimensional body contours; and
- (e) simultaneously with the heat molding, ultrasonically bonding and cutting about the periphery of the female sections to form the desired garment.

4,645,631

PROCESS FOR THE EXTRUSION OF COMPOSITE STRUCTURAL MEMBERS

Anton Hegenstaller, Mühlenstrasse 9, D-8891 Uterbernbach, and Xaver Spies, Kübbach/Unterbernbach, both of Fed. Rep. of Germany, assignors to Anton Hegenstaller, Unterbernbach, Fed. Rep. of Germany

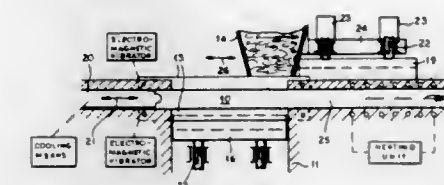
Filed Dec. 20, 1984, Ser. No. 684,013

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346469

Int. Cl.⁴ B29C 43/14

U.S. Cl. 264—69

16 Claims



4,645,630

PROCESS FOR THE PRODUCTION OF MICROCELLULAR OR FOAMED MOLDINGS AND COMPOUNDS CONTAINING ISOCYANATE-REACTIVE GROUPS SUITABLE FOR CARRYING OUT THIS PROCESS

Werner Raschofer, Cologne; Hans-Joachim Meiners, Leverkusen; Klaus Seel, Cologne, and Hans-Georg Wussow, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1984, Ser. No. 645,734

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333464

Int. Cl.⁴ B29C 67/22, 45/00; C08J 9/34; C08G 18/18

U.S. Cl. 264—54

9 Claims

1. A process for the production of a polyurethane-urea or polyurea-based microcellular or foam molding which comprises reacting in closed molds in accordance with the one-shot process

- (a) a polyisocyanate component containing aromatically bound isocyanate groups and selected from the group consisting of diisocyanates and polyisocyanates and
- (b) an isocyanate-reactive component which comprises at least one compound containing at least three aliphatic ether groups and n aliphatically bound isocyanate-reactive groups and is characterized by the following,
 - (i) at least 100/n percent of said aliphatically bound isocyanate-reactive groups are aliphatically bound primary or secondary amino groups,
 - (ii) at least 20% of the total number of aliphatically bound primary or secondary amino groups are modified amino groups selected from the group consisting of ammonium carbamate groups having a functionality of 2 in the isocyanate addition reaction and prepared by reacting aliphatically bound primary or secondary amino groups with carbon dioxide and ammonium carbonate and ammonium bicarbonate groups formed by the reaction of aliphatically bound primary or secondary amino groups with carbon dioxide and water,
 - (iii) at least 20% of the total number of said modified amino groups of (ii) being carbonate and/or bicarbonate groups,
 - (iv) the unmodified compounds containing ether groups but prior to containing ammonium carbamate, carbonate or bicarbonate groups having a molecular weight of from about 200 to 10,000 and
 - (v) from about 0.2 to 100% of the total number of isocyanate-reactive groups of component (b) being ammonium carbamate, carbonate or bicarbonate groups.

wherein n is a whole or fractional number from 2 to 4 and the ratio of component (a) to (b) is chosen to provide an isocyanate index of from 70 to 130.

4,645,632

BELT-TYPE PARTICLEBOARD PRESS WITH FLEXIBLE UPPER PLATEN

Friedrich Böttger, Haan, and Klaus Gerhardt, Rheurdt, both of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,757

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1984, 3413396

Int. Cl.⁴ B29C 43/22

U.S. Cl. 264—120

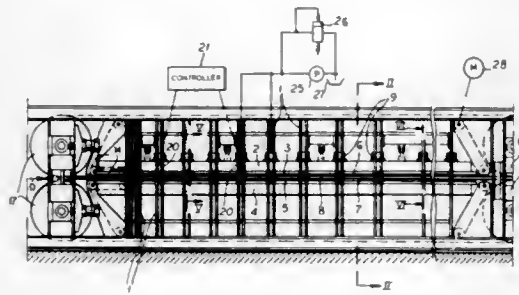
7 Claims

1. A method of operating a belt-type press for making particleboard, the press having:

- a longitudinal row of transverse frames;
- upper and lower vertically spaced and longitudinally extending press beams extending along and carried on the row of frames, the upper beam being at least limitedly vertically movable in the frames and the lower beam being generally stationary therein;
- upper and lower vertically spaced and heatable press platens carried on the beams, confronting each other, and forming a straight horizontal and longitudinal path;
- respective upper and lower belts having confronting parallel stretches lying between the platens and flanking the path; and
- a plurality of substantially identical and upright hydraulic rams engaged between the upper beam and the frames and

closely spaced in an upstream compression region of the press and relatively widely spaced in a downstream calibration region of the press; the method comprising the steps of:

- advancing the belts in a transport direction and thereby transporting a mat of particles and a thermally activatable binder through the press from the upstream region thereof to and through the downstream region thereof;
- heating the platens and thereby activating and softening the binder of the mat;
- hydraulically pressurizing the rams all with the same pressure and thereby compressing the mat between the belts with a high pressure in the upstream compression region



of the press and with a low pressure in the downstream calibration region of the press, the upper platen and beam having a downstream portion in the downstream region and an upstream portion in the upstream region, the upstream portions being elastically deflectable upward relative to the downstream portions on hydraulic pressurization of the rams all with the same pressure;

limiting downward displacement of the upstream portions of the upper platen and beam relative to the frames; and

limiting downward displacement of the downstream portions of the upper platen and beam relative to the frames by means of an abutment such that the thickness of the practiceboard as it exits the press is established by the abutment.

4,645,633

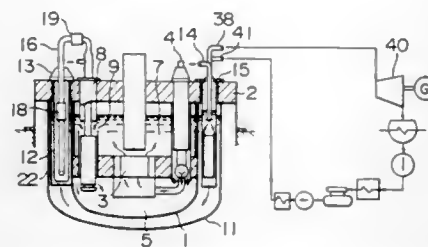
DOUBLE TANK TYPE FAST BREEDER REACTOR
Sadao Hattori, Nagoya, Japan, assignor to Central Research Institute of Electric Power Industry, Toshiba Corporation, Tokyo and Hitachi, Ltd., Kanagawa, both of, Japan

Filed Sep. 7, 1984, Ser. No. 648,264

Claims priority, application Japan, Sep. 8, 1983, 58-167126

Int. Cl.⁴ G21C 15/00; G21D 1/00

U.S. Cl. 376-179



1. A double tank type fast breeder reactor comprising:
- a reactor vessel containing a core and installations of a primary cooling system; and
 - a tank of a secondary cooling system located outside the reactor vessel containing circulation pumps of the secondary cooling system and steam generators alternately located in the tank, and a body of sodium serving as a secondary coolant located at outer peripheries of the circulation pumps and steam generators;

tion pumps and steam generators; said tank including an annular portion defined in the tank by walls of the tank and reactor vessel serving as a path of circulation of the secondary coolant.

4,645,634

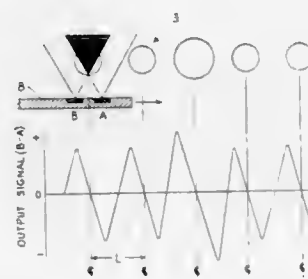
APPARATUS FOR MEASURING THE PITCH BETWEEN ADJACENT RODS IN A NUCLEAR FUEL ASSEMBLY
Ronald N. Roseveare, Evington, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 19, 1983, Ser. No. 562,878

Int. Cl.⁴ G21C 17/00

U.S. Cl. 376-245

7 Claims



1. Apparatus for measuring the pitch between adjacent rods in a row of spaced-apart rods in a nuclear fuel assembly, comprising:

- a support plate;
- a carriage;
- a wand, dimensioned to traverse the row of rods, extensibly appended from the carriage, the carriage being slidably mounted on the support plate for transversely moving the wand along the row of rods;
- a pair of spaced-apart, non-contacting proximity sensors, spaced apart less than the outside diameter of the rod of smallest diameter in the row of rods, attached to said wand to consecutively pass by each of the rods in the row of rods for generating a first and a second output signal, respectively, corresponding to each sensor's proximity to a rod as it passes by the rod; and
- means for measuring the linear movement of said carriage in transversely moving the wand along the row of rods to relate the position of said pair of spaced-apart, non-contacting proximity sensors to the output signals generated thereby.

4,645,635

METHOD AND APPARATUS FOR DETERMINING THE PROPERTIES OF WET STEAM

Peter S. L. Yuen; Philip Campbell; John L. Montin, and Keith H. Ardron, all of Pinawa, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

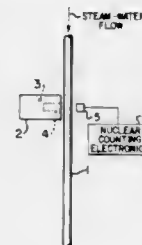
Filed Feb. 1, 1985, Ser. No. 697,401

Claims priority, application Canada, Sep. 6, 1984, 462592

Int. Cl.⁴ G21C 17/00

U.S. Cl. 376-245

17 Claims



1. An apparatus for determining a property of high pressure

wet steam in a metal pipe of a small cross-sectional area wherein the said property is related to the transmission characteristic of thermal/epithermal neutrons through the high pressure wet steam, comprising:

- a neutron beam extractor positioned near the exterior surface of the pipe to transmit a collimated beam of thermal/epithermal neutrons through the pipe, the said neutron beam extractor having a radioactive neutron source to emit neutrons of energies above thermal and epithermal range and source support means made of a neutron moderating material, the said source support means further having a chamber formed therein in which the radioactive neutron source is positioned and a straight collimating extraction hole of a small crosssection in the said neutron moderating material, the said extraction hole extending from the exterior surface of the source support means to near the chamber wherein the chamber and the extraction hole are spaced apart by a predetermined amount so that the fast neutrons emitted by the source will be moderated to become thermal/epithermal neutrons as they emerge into the extraction hole which will then collimate the thermal/epithermal neutrons into a beam,

thermal neutron detector positioned near the exterior surface of the pipe on the side opposite to the neutron beam extractor to receive the thermal/epithermal neutrons transmitted through the pipe and to generate an output proportional thereto, and

electronic counting means for processing the output of the thermal neutron detector to produce an indication of the property of the high pressure wet steam, the property being selected from a group consisting of the steam quality and the density.

4,645,636

MEASURING HEAD FOR DETERMINING THE PRESSURE OF FISSION GASES RELEASED INSIDE BARS OF NUCLEAR FUEL

Saverio Granata, Pisa, Italy, assignor to AGIP, S.p.A., Rome, Italy

Filed Apr. 11, 1984, Ser. No. 599,257

Claims priority, application Italy, Apr. 22, 1983, 20741 A/83

Int. Cl.⁴ G21C 17/00

U.S. Cl. 376-247

1 Claim



1. A device for measuring the pressure of released fission gases within a nuclear fuel bar having a high degree of irradiation, comprising:

- an outer cylindrical section having a sealed lower end adapted to be positioned on the fuel bar, and an open upper end;
- a metal bellows adapted at its lower end to the open upper end of said outer section and having a metal closure disc adapted to the upper end of said bellows said disc having a perforation at or near its center;
- an upper cylindrical section having a breadth less than said outer cylindrical section, a sealed upper end and an open

lower end adapted to be positioned on the top side of said metal closure disc so as to seal said perforation;

- a first inner cylindrical section adapted to be positioned within said outer cylindrical section, including: a U-shaped bracket adapted at its open upper end to the bottom side of said metal closure disc, and an elongated perforation means attached at its upper end to the closed lower end of said U-shaped bracket and extending downwardly to a point to the sealed lower end of said outer cylindrical section;
- a second inner cylindrical section, adapted to be positioned within said first inner cylindrical section, including: a second metal bellows sensitive to pressure variations attached at its lower end to the inside wall of said U-shaped bracket, and an iron core attached at its lower end to the upper end of said second metal bellows, the top end of said core being freely moveable and extending through said penetration in said metal closure disc and into said upper cylindrical section; and
- a differential transformer positioned externally to said upper cylindrical section for measuring movements of said iron core said movements resulting from puncturing the fuel bar with said elongated perforation means thereby allowing released fission gas from the fuel bar to enter said outer cylindrical section to compress said second metal bellows thereby moving said iron core.

4,645,637

MANIPULATOR FOR THE INSPECTION OF PRESSURE VESSELS OPEN AT THE TOP THEREOF

Rainer Bauer, Herzogenaurach, and Hans Kastl, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

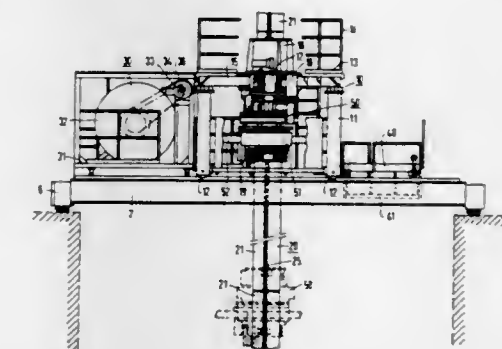
Filed Feb. 7, 1985, Ser. No. 699,086

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405851

Int. Cl.⁴ G21C 17/00

U.S. Cl. 376-249

7 Claims



1. Manipulator for carrying out measurements, tests, inspections and repairs in an open-top reactor pressure vessel disposed in a reactor building having an auxiliary bridge with main beams, comprising:

- a manipulator bridge disposed on and movable along the longitudinal direction of the auxiliary bridge;
- a table-type platform with a substructure disposed above said manipulator bridge;
- a bearing surface supported by said platform;
- a non-rotating boom supported by said bearing surface, said boom projecting into the pressure vessel for deposition therein, two guide rails diametrically disposed over the entire length of said boom, a channel having U-shaped cross-section being disposed over the entire length of said boom;
- a boom bearing including a substantially hollow cylindrical

part resting on said substructure, two roller guides diametrically disposed inside said cylindrical part for said guide rails, a retaining mechanism for axially positively fixing said boom in place;

a carriage including a length of tube enclosing said boom in the form of a sleeve braced against said boom, rollers guiding said tube along said guide rails, a fixed support ring fastened to said tube, a rotatable support ring mounted on said fixed support ring, a supporting member rotatably supported about said carriage on said rotatable support ring for accommodating measuring, testing, inspecting and repairing equipment, drives for said supporting member carried by said rotatable support ring, and a bracket;

a load lifting device moving said carriage along said boom, said load lifting device including two drivable cable drums tangential and symmetrical to said boom in vicinity of said platform and offset 90° relative to said U-shaped channel, said cable drums having axes parallel to the main beams of the auxiliary bridge below said platform in said substructure, cables wound on said drums, each cable having a free end fastened directly to said bracket of said carriage forming two independently drivable cable winches;

a horizontal guide track disposed in said manipulator bridge level with said substructure between said cable drums facing away from said U-shaped channel, a cable guide chain disposed on said guide track passing through said U-shaped channel and having an end fixed to said carriage;

power and control lines for said carriage and said supporting member disposed in said cable guide chain; and

a cable storage device disposed on the auxiliary bridge and coupled to said manipulator bridge in longitudinal direction of the auxiliary bridge, said cable storage device including a drivable cable drum for winding and unwinding said cable guide chain.

4,645,638 HANGING CORE SUPPORT SYSTEM FOR A NUCLEAR REACTOR

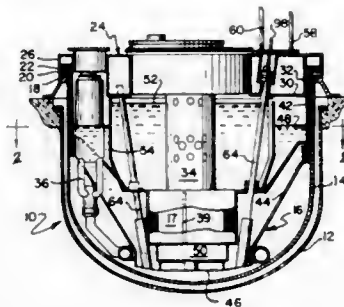
James P. Burelbach, Glen Ellyn; William J. Kann, Park Ridge; Yen-Cheng Pan, Naperville; James G. Saiveau, Hickory Hills, and Ralph W. Seldensticker, Wheaton, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1984, Ser. No. 604,200

Int. Cl.⁴ G21C 17/00, 13/00

U.S. Cl. 376-254

19 Claims



1. In combination with a nuclear reactor having a guard vessel disposed in a ground connected foundation, an open top reactor vessel having an uppermost portion closed by a deck, a pool of sodium coolant in the reactor vessel, and a core disposed in the coolant, the improvement comprising an integral core support platform underlying the core, and integral linkage means including a flange lying directly on the uppermost portion of the reactor vessel and lying directly under said deck, a skirt depending downwardly from the flange adjacent but independent of the reactor vessel, and beams between the

skirt and the support platform, the core support means operatively suspending the reactor core independently of the reactor vessel and said deck.

4,645,639 PUSHROD ASSEMBLY

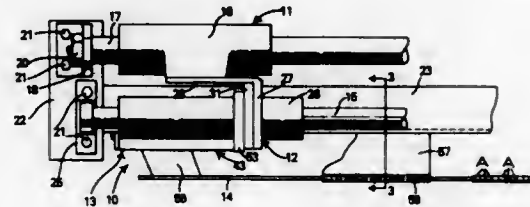
Jerry D. Potter, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1984, Ser. No. 595,231

Int. Cl.⁴ G21C 21/00; F16D 11/04; B65B 1/04, 5/10

U.S. Cl. 376-260

6 Claims



1. A pushrod assembly comprising: a frame, a shaft mounted on said frame, a carriage mounted on said shaft for reciprocal movement therealong, a pushrod mounted on said carriage and movable therewith for urging a load in a linear path, a magnet, means slidably mounted on said shaft for supporting said magnet, means for moving said supporting means, means for spacing said carriage from said magnet to establish a selected magnetic coupling force therebetween causing said carriage to follow said magnet upon movement of said supporting means away from said carriage, and means for adjusting the spacing between said magnet and said carriage for varying the magnetic coupling force therebetween, said carriage being decoupled from said supporting means upon encountering a resistance force exceeding said selected magnetic coupling force.

4,645,640 REFUELING SYSTEM WITH SMALL DIAMETER ROTATABLE PLUGS

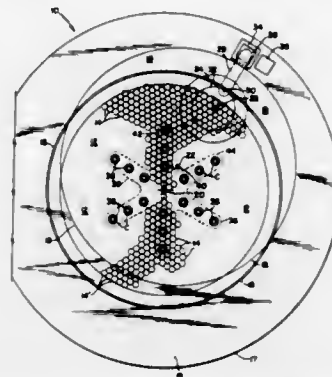
William C. Ritz, Greensburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1984, Ser. No. 578,337

Int. Cl.⁴ G21C 19/20

U.S. Cl. 376-264

3 Claims



1. In combination with a liquid-metal fastbreeder nuclear reactor comprising a reactor pressure vessel and closure head therefor, a reactor core barrel disposed within said reactor vessel and enclosing a reactor core having therein a large number of closely spaced fuel assemblies, and said reactor core barrel and said reactor core having an approximately concentric circular cross-sectional configuration with a geometric

center in predetermined location within said reactor vessel, the improved refueling system comprising:

a large controllably rotatable plug means comprising the substantial portion of said closure head, a reactor upper internals structure mounted from said large rotatable plug means, said large rotatable plug means having an approximately circular configuration which approximates the cross-sectional configuration of said reactor core barrel with a center of rotation positioned a first predetermined distance from the geometric center of said reactor core barrel so that said large rotatable plug means rotates eccentrically with respect to said reactor core barrel;

a small controllably rotatable plug means affixed to said large rotatable plug means and rotatable with respect thereto, said small rotatable plug means having a center of rotation which is offset a second predetermined distance from the rotational center of said large rotatable plug means so that said small rotatable plug means rotates eccentrically with respect to said large rotatable plug means;

fuel handling arm means of predetermined length rotatably affixed at one end to said small plug means and controllably rotatable about said one end thereof with respect to said small rotatable plug means with the center of rotation of said fuel arm handling means offset a third predetermined distance from the rotational center of said small plug means, and fuel transfer means affixed to said fuel arm handling means proximate the other end of said fuel arm handling means;

fuel transfer port means and spent fuel receiving means positioned in predetermined location within said reactor pressure vessel and exteriorly of said reactor core barrel, said fuel transfer port means operable to provide fresh fuel assemblies, and said spent fuel receiving means operable to receive spent fuel assemblies;

the predetermined dimensions and component positioning of said refueling system being such that when the rotational centers of said large plug means and said small plug means are on the same side with respect to the geometric center of said reactor core barrel and said fuel handling arm means is rotated to point generally away from the rotational center of said large plug means, said fuel transfer means can be positioned over said fuel transfer port means and said spent fuel receiving means; when the rotational centers of said large plug means and said small plug means are aligned with the geometric center of said reactor core barrel and on opposite sides thereof and said fuel handling arm means is rotated to point away from the geometric center of said reactor core barrel, said fuel transfer means extends at least over that individual fuel assembly which is positioned at the periphery of said reactor core; and the predetermined dimensions of said refueling system being such that by controlling the rotation of said large plug means and said small plug means and said fuel handling arm means, said fuel transfer means can be positioned over any of said individual fuel assemblies for replacement of the same.

4,645,641 PROCESS AND INSTALLATION TO SECURE A PRESTRESSED CONCRETE PRESSURE VESSEL SURROUNDED BY A REACTOR PROTECTION BUILDING AGAINST EXCESSIVE PRESSURE AND TO PREVENT THE RELEASE OF ACTIVITY TO THE ENVIRONMENT

Rainer Nicolai, Hassloch; Winfried Wachholz, Gornheimertal, and Ulrich Weicht, Weinheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

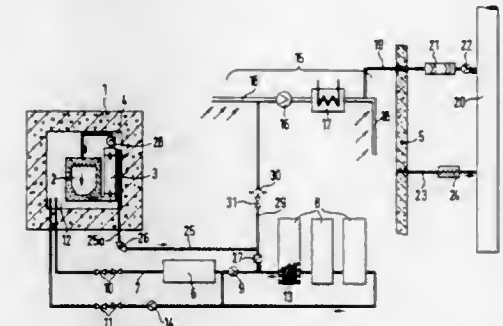
Filed Sep. 26, 1985, Ser. No. 780,272

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435256

Int. Cl.⁴ G21C 9/00

U.S. Cl. 376-283

16 Claims



1. An apparatus for securing against excessive pressure in a prestressed concrete pressure vessel surrounded by a reactor protection building in a nuclear reactor installation, wherein within the prestressed concrete pressure vessel is a gas cooled high temperature reactor equipped with a primary cooling loop at least one means for steam generation and steam blower means associated therewith, comprising:

an air circulation installation within the reactor protection building and connected to an exhaust stack outside the reactor protection building by a filter means for prevention of release of activities to the environment;

a first means for release of pressure within said pressure vessel when the pressure rises in said pressure vessel made up of means for operational cooling gas purification connected to the prestressed concrete pressure vessel, a first blower means for conveying cooling gas connected to said means for operational gas purification and vessel means for storage for cooling gas connected to said first blower means;

a second means for release of pressure within said pressure vessel when pressure reaches a first predetermined level, wherein said second means operates to bypass said means for operational cooling gas purification and is made up of at least one secondary discharge path each made up of a normally closed safety valve connected to said pressure vessel and automatically activated when said first predetermined level is reached, and a check valve connected between said safety valve and said vessel means, wherein said safety valve and said check valve make up the secondary discharge path; and

a third means for release of pressure within said pressure vessel when pressure reaches a second predetermined level, wherein said second predetermined level is higher than said first predetermined level, made up of a normally closed rupture disk means for opening at said second predetermined level connected in a discharge line, wherein said discharge line is connected at a first end to said secondary discharge path between said safety valve and said check valve and at a second end to said air circulation installation wherein said check valve operates to

prevent the emptying of cooling gas from said vessel means.

spaces bounded by one of said grids on one side, by one of said grids and end pieces on the other side, each of the said sleeves

4,645,642

HOLD DOWN DEVICE FOR A NUCLEAR REACTOR

Joseph Leclercq, Saint Didier au Mont D'or, and Michel Bonnamour, Lyons, both of France, assignors to Fragma, Courbevoie, France

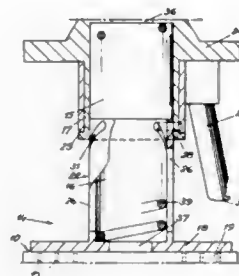
Filed Apr. 5, 1984, Ser. No. 596,951

Claims priority, application France, Apr. 13, 1983, 83 06033

Int. Cl.⁴ G21C 1/01

U.S. Cl. 376—364

10 Claims



1. In a nuclear reactor having an upper core plate, a lower core plate and a plurality of fuel assemblies disposed in mutually adjacent relation between said upper core plate and said lower core plate including first fuel assemblies separated by second fuel assemblies, a hold down device for each of said first fuel assemblies comprising means slidably received on said first assembly for vertical movement and arranged for abutment by said upper core plate, first resilient means between said first means and said fuel assembly for transmission of a hold down force from said upper core plate to said first fuel assembly, and at least two sets of second resilient means mechanically connected to said slidable means and each arranged to transmit a hold down force from said slidable means to one of said second fuel assemblies which is adjacent to the first fuel assembly provided with the hold down device.

4,645,643

NUCLEAR FUEL ASSEMBLY CONTAINING BURNABLE POISON

Joseph Leclercq, Saint Didier au Mont D'or, France, assignor to Fragma, Courbevoie, France

Filed Jan. 26, 1983, Ser. No. 461,051

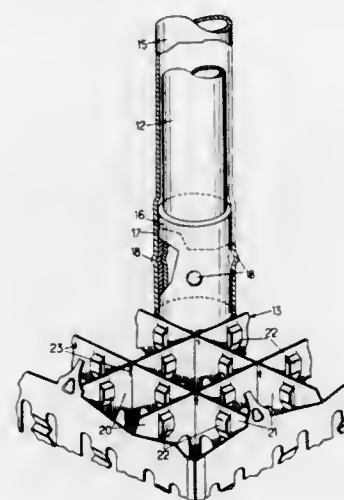
Claims priority, application France, Feb. 3, 1982, 82 01734

Int. Cl.⁴ G21C 3/32

U.S. Cl. 376—447

12 Claims

1. A nuclear fuel assembly for a nuclear reactor, comprising a frame having two end pieces, a plurality of parallel spacer tubes connecting said end pieces and a plurality of grids distributed along said tubes and defining passages distributed according to a regular pattern, a bundle of fuel elements each traversing one of said passages and parallel to said tubes, and sleeves containing a burnable neutron poison carried by said tubes in



being received on the associated said tube for free differential expansion thereon.

4,645,644

METAL ALLOY

Gerald J. Orlowski, 6702 E. Turquoise Ave., Scottsdale, Ariz. 85253

Continuation-in-part of Ser. No. 734,578, May 15, 1985,

abandoned. This application Dec. 23, 1985, Ser. No. 812,174

Int. Cl.⁴ C22E 30/00

U.S. Cl. 420—587

2 Claims

1. A metal alloy consisting essentially of 27–32% aluminum, 4–9% chromium, 12–17% copper, 8–13% magnesium, 6–11% manganese, 10–14% zinc, 3.9–4.1% titanium dioxide and 11–16% cast red brass based on the total weight of said alloy, said cast red brass consisting essentially of 78–97% copper, 1–7% tin, 1–7% lead and 1–7% zinc based on the total weight of said cast red brass.

4,645,645

OXYGENATOR HAVING AN IMPROVED HEAT EXCHANGER

Felix J. Martinez, Plymouth; Larry E. Fuller, Minnetonka, and Richard J. Irmeter, Minneapolis, all of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Apr. 4, 1985, Ser. No. 719,999

Int. Cl.⁴ A61M 1/16

U.S. Cl. 422—46

3 Claims

1. In a hollow fiber-type oxygenator having an enclosed heat exchanger section and gas exchanger section, said gas exchanger section comprising a first housing, a bundle of a multiplicity of hollow fibers for gas exchange, said hollow fibers being physically separated from one another and arranged side by side within said first housing, first and second wall portions liquid-tightly supporting said hollow fibers at the opposite end portions of said hollow fibers so that the ends thereof are left open, said first and second walls defining with said fibers a blood chamber and a gas exchanger, gas exchanger inlet and outlet means communicating with said gas exchanger chamber, and a first blood circulation opening in said housing providing communication with said blood chamber, the improvement comprising:

- (a) a heat exchanger section including second housing means in fluid tight communication with the end portions of said gas exchanger section adjacent said second wall, said second housing means having an interior and exterior;
- (b) a heat transfer fluid conduit having a cross-sectional configuration of at least two planar substantially parallel

opposing walls, said conduit including heat exchange fluid inlet and outlet means, said conduit being wound in a helix within said second housing means said helix and said heat exchange inlet and outlet means providing fluid communication through said conduit to the exterior of said second housing means;

(c) heat exchanger section core means within said second housing means arranged such that said conduit is helically surrounding and in contact with said core means substantially along the entire length of said conduit;

(d) said conduit further including a rib means along its length, said rib means comprising a plurality of parallel ribs about the external circumference of said conduit so as to increase the heat exchange surface area of said conduit; the cross-section of the conduit and rib means defining extended substantially planar surface regions which are

(b) a linkage group, and

(c) a plurality of haptens, said linkage groups (b) being a chain-like polymer having repeating functional units and having bound thereto said plurality of groups displaying chemiluminescence (a) and said plurality of haptens (c), and

(C) directions for carrying out said hapten luminescence immunoassay.

4,645,647

METHOD AND APPARATUS FOR CONTINUOUS FLOW ANALYSIS OF LIQUID SAMPLE

Kasumi Yoshida, Mito; Hideo Uchiki, and Tadafumi Kuroishi, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 442,671, Nov. 18, 1982, Pat. No. 4,520,108.

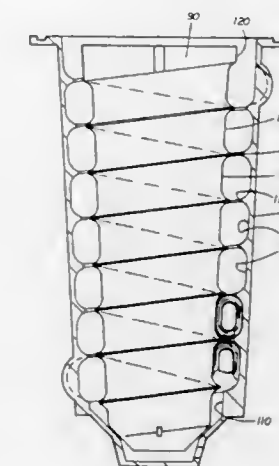
This application Mar. 25, 1985, Ser. No. 715,261

Claims priority, application Japan, Nov. 20, 1981, 56-185326

Int. Cl.⁴ G01N 21/08, 35/08

U.S. Cl. 422—81

8 Claims



generally parallel to a line drawn through centers of said conduit that form adjacent loops of said conduit

(e) said second housing means including an inner wall surface configured to define a helical recess region conforming to the helical conduit throughout its length such that the outer planar surface of the conduit and inner wall recess regions cooperate to define a low volume channel through which blood may pass from a blood inlet means in fluid tight communication with the interior of said second housing means to said gas exchanger section; and

(f) said core means including an external wall surface configured to define a helical recess region conforming to the helical conduit such that the inner planar surface of the conduit and external wall recess region provide a low volume channel through which blood may pass from said blood inlet means to said gas exchanger section.

4,645,646

LUMINESCENCE IMMUNOASSAY FOR HAPTENS AND CHEMILUMINESCENCE LABELLED HAPTEN CONJUGATES

André Gadow, Lubeck, and W. Graham Wood, Gross-Grönu, both of Fed. Rep. of Germany, assignors to Henning Berlin GmbH Chemie-und Pharmawerk, Berlin, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,194

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327327

Int. Cl.⁴ B65D 69/00; G01N 33/545

U.S. Cl. 422—61

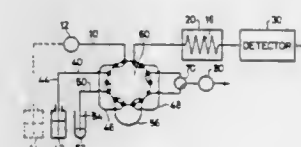
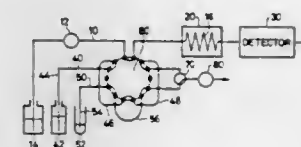
12 Claims

1. A test kit for hapten luminescence immunoassay consisting of as a merchantile unit

(A) an antibody specific to a hapten,

(B) a chemiluminescence labelled hapten conjugate including

(a) a plurality of groups displaying chemiluminescence,



1. An apparatus for flow analysis of a liquid sample, comprising: means for introducing a carrier liquid into a main single tubular conduit to form a carrier stream; a reagent metering pipe having a predetermined capacity; means for introducing a reagent liquid into the reagent metering pipe; a sample metering pipe having a predetermined capacity; means for introducing a sample liquid into the sample metering pipe; means for connecting the reagent metering pipe and the sample metering pipe with each other in series and for connecting the main conduit with the reagent metering pipe and the sample metering pipe so that the reagent liquid from the reagent metering pipe and the sample liquid from the sample metering pipe can be carried in series into the main conduit by directing the carrier liquid from said main conduit into the reagent metering pipe and the sample metering pipe; means for reacting said sample liquid with said reagent liquid; and means for detecting a reaction condition of said sample liquid with said reagent liquid.

4,645,648

SEALING SYSTEM IN A CHEMICAL APPARATUS BETWEEN AN ENCLOSURE OF BRITTLE MATERIAL AND METAL COMPONENTS

Henri Gongora, Lons; Henri Lalanne, and René Perono, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Nov. 23, 1983, Ser. No. 554,584

Claims priority, application France, Nov. 26, 1982, 82 19840

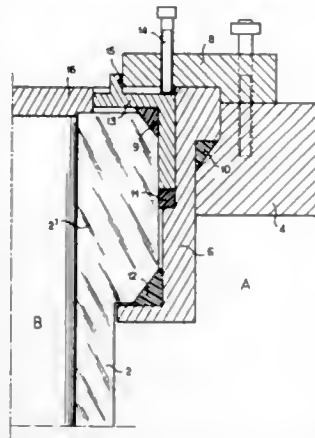
Int. Cl.⁴ F16L 49/00; B01J 19/02; B65D 53/00; F16J 15/00

U.S. Cl. 422—186

15 Claims

1. A sealing assembly for a reactor adapted to carry out a chemical reaction comprising a metal wall having an opening therein; a cylindrical enclosure made of brittle quartz or glass having a wall terminating at an open end thereof; said brittle

enclosure being disposed within said opening in said metal wall; a cylindrical metallic connection member disposed in sealing relationship with said opening in said metal wall and between said opening in said metal wall and said wall of said brittle enclosure and extending axially along a portion of said brittle enclosure wall to said open end; a first toroidal seal disposed at the exterior edge of said brittle enclosure wall adjacent to said open end; said first toroidal seal connecting and sealing said brittle enclosure open end to an interior surface of said metal connection member; a second toroidal seal axially removed from said first toroidal seal and fixed between the exterior surface of said brittle enclosure and an interior surface of said metal connection member for creating a seal connection therebetween; said interior surface of said connection member having a recess extending from said second toroidal seal to adjacent said first toroidal seal and in which said



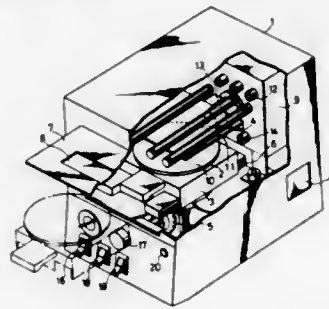
second toroidal seal is disposed; a compression flange disposed in the recess adapted to simultaneously compress said first and second toroidal seals into sealing relationship between said enclosure wall and said connection member; said second toroidal seal at about the mid-point of said extension of said connection member along said brittle enclosure wall at a distance of about 1 to 10 centimeters from said first toroidal seal; a portion of said brittle enclosure wall along which said connection member extends having an enlarged diameter; a third toroidal seal axially removed from said first and second toroidal seals and fixed between the exterior surface of said brittle enclosure wall and said interior surface of said metal connection member for creating a seal connection therebetween; said first and third toroidal seals disposed on oblique surfaces of said enlarged diameter wall; and said toroidal seals comprising a silicone core covered by polytetrafluoroethylene.

4,645,649
APPARATUS FOR CURING RESIN FILMS COATED ON DENTAL RESIN PROSTHESIS
Kunihiko Nagao, Ichikawa, Japan, assignor to G-C Dental Industrial Corp. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,479
Claims priority, application Japan, Apr. 27, 1981, 56-59832
Int. Cl.⁴ B01J 19/08, 19/12

U.S. Cl. 422—186.3 **2 Claims**
1. An apparatus for curing the coating of plastic prosthesis, comprising a casing, an ultraviolet lamp fixed in place within said casing to emit ultraviolet light towards dental prosthesis, a turntable slidable in or out of said casing, which is provided with an ascending and descending mechanism operable by a button outside said casing, a door attached to said casing provided with a viewing window, a curing chamber defined within said casing by a quartz partition plate arranged between said lamp and said turntable, a heater built in an air discharge port to feed directly into said curing chamber warm air regu-

lated to a given temperature, other air discharge port disposed in such a manner that cooling air is supplied directly to said



lamp and a driving motor for said turntable, and a single blowing fan designed to blow air to both said air discharge ports.

4,645,650
OBTAINING AQUEOUS SOLUTION FROM INSOLUBLE METAL OXIDE

Derek J. Fray, Trumpington, England, and Herbert A. Hancock, Dartmouth, Canada, assignors to National Research Development Corporation, London, United Kingdom
Filed Jul. 5, 1985, Ser. No. 751,859

Claims priority, application United Kingdom, Jul. 12, 1984, 8417811

Int. Cl.⁴ C01G 45/00 **19 Claims**
1. A method of obtaining an aqueous solution of a manganese compound from an insoluble manganese metal oxide, the manganese having a lower oxidation number in the solution than in the insoluble oxide, comprising treating the insoluble manganese oxide at about atmospheric pressure with an acid at a temperature of at least 80° C. in the presence of at least 1/2 part by mass of a carbonaceous material per part of the metal oxide.

4,645,651
METHOD OF PRODUCING VANADIUM COMPOUNDS FROM VANADIUM-CONTAINING RESIDUES
Reinhard Hähn, Schwabach-Limbach; Hans Hess, and Siegfried Sattelberger, both of Nuremberg, all of Fed. Rep. of Germany, assignors to GFE Gesellschaft für Elektrometallurgie mbH, Düsseldorf, Fed. Rep. of Germany
Filed Jan. 16, 1985, Ser. No. 692,022
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1984, 3402357

Int. Cl.⁴ C01G 31/00 **4 Claims**
U.S. Cl. 423—62
1. A method of recovering vanadium from a vanadium-containing solid petroleum residue which comprises the steps of: combining solid petroleum residue in a comminuted form with a superstoichiometric quantity of a mixture of sodium carbonate and sodium sulfate to form a composition; heating said composition to a temperature at least equal to a melting point thereof to form a melt of said composition and constituting a melt material therefrom; solidifying said melt material and breaking up and grinding said melt material; mixing said melt material with an aqueous phase comprising water or water containing sodium carbonate to leach said melt material and produce a vanadate solution; and precipitating at least one compound selected from the group which consists of ammonium polyvanadate, sodium ammonium vanadate and ammonium metavanadate from said vanadate solution.

4,645,652
METHOD FOR SCRUBBING SULFUR OXIDES AND NITROGEN OXIDES IN A FLUE GAS DUCT
Shiro G. Kimura, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1985, Ser. No. 802,926
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.⁴ B01J 21/00, 8/00; C01B 17/00 **4 Claims**
U.S. Cl. 423—235

1. A method of scrubbing nitrogen oxides and sulfur oxides from flue gas comprising the steps of: dispersing a dry alkaline powder into a flue gas duct carrying flue gas from a boiler and air preheater to remove nitrogen oxides and some sulfur oxides at a temperature of 250° to 500° F.; introducing an aqueous alkali slurry into the flue gas duct at a point downstream of the dry sorbent injection point, said aqueous alkali slurry simultaneously drying and absorbing additional sulfur oxides from the flue gas, directing the flue gas to a particulate collection device to remove the dry partially spent sorbent and flyash; and directing the flue gas to a stack.

4,645,653
METHOD FOR DRY FLUE GAS DESULFURIZATION INCORPORATING NITROGEN OXIDES REMOVAL
Shiro G. Kimura, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1985, Ser. No. 802,897
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.⁴ C01B 21/00, 17/00; B01J 8/00 **4 Claims**
U.S. Cl. 423—235

1. A process of removing nitrogen oxides and sulfur oxides from flue gas in a dry flue gas desulfurization process comprising the steps of: contacting flue gas from a boiler with a dry alkaline powder prior to the flue gas entering a spray absorber; to remove nitrogen oxides removing sulfur oxides from the flue gas stream containing the dry alkaline powder in a spray absorber; collecting dry particulate from the spray absorber; and directing the flue gas stream from the spray absorber through a particulate collector to remove the residual particulate.

4,645,654
REDUCING SULFUR CONTENT IN FLUE GASES PRODUCED BY COAL COMBUSTION
Virgil J. Barczak, Oklahoma City, Okla., assignor to Kerr-McGee Coal Corporation, Oklahoma City, Okla.
Filed Sep. 28, 1982, Ser. No. 425,262
Int. Cl.⁴ B01J 8/00; C01B 17/00 **23 Claims**
U.S. Cl. 423—244

1. A process for reducing the gaseous sulfur oxide content of flue gases comprising the steps of: burning in a combustion zone coal containing weakly bound cations of one of the alkali metal and alkaline earth metals or combinations thereof in ion exchangeable form thereby producing flue gases, the burning of such coal in the combustion zone causing a substantial portion of the sulfur dioxide in the coal to be converted to sulfates in a residue in the combustion zone thereby reducing the amount of gaseous sulfur dioxide in the flue gases produced in the combustion zone; recovering the sulfate containing residue from the combustion zone; contacting at least a portion of the flue gases with coal containing weakly bound cations of one of the alkali metal and alkaline earth metals or combinations thereof in ion exchangeable form in a scrubbing zone to sorb a portion of

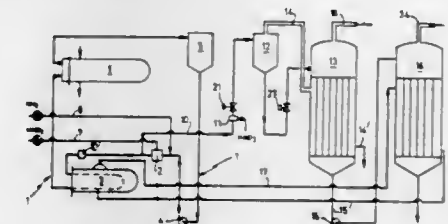
the sulfur dioxide in the contacted flue gases on the coal; and combusting in the combustion zone the coal contacted by the flue gases in the scrubbing zone.

4,645,655
PROCESS FOR THE PREPARATION OF ZEOLITE NU-27 USING TETRAMETHYLETHYLENEDIAMINE
Thomas V. Whittam, Darlington, England, assignor to Imperial Chemical Industries PLC, London, England
Filed Jun. 18, 1984, Ser. No. 621,728
Claims priority, application United Kingdom, Jul. 6, 1983, 8318336

Int. Cl.⁴ C01B 35/10 **2 Claims**
U.S. Cl. 423—277
1. A method of making zeolite Nu-27 which comprises reacting an aqueous mixture comprising at least one oxide X₂O₃, and optionally at least one oxide Y₂O₃, and a tetra-alkyl (normal) ethylene diamine, the mixture having the molar composition:
X₂O₃/Y₂O₃: at least 10
OH⁻/X₂O₃: 0.1 to 6.0
(M₁⁺+O⁺)/X₂O₃: 0.05 to 2.0
O⁺/(M₁⁺+O⁺): 0.1 to 1.0
H₂O/X₂O₃: 1 to 100
M₂Z/H₂O: 10⁻⁴ to 0.5,
where X is silicon and/or germanium, Y is one or more of aluminium, iron, chromium, molybdenum, arsenic, antimony, manganese, gallium or boron, M₁ and M₂ are alkali metal or ammonium or hydrogen, O is the aforesaid tetraalkyl compound and Z is a strong acid radical, the proportions of reaction components and reaction conditions being selected to produce Nu-27, in which the tetraalkyl ethylenediamine compound is tetramethylethylenediamine.

4,645,656
PROCESS AND APPARATUS FOR THE PRODUCTION OF AMMONIUM NITRATE
Roger V. Pouillart, Avenue de la Réforme, 32, 1080 Brussels, and Francis C. Van Hecke, Avenue de Tervuren, 183, 1040 Brussels, both of Belgium

Filed Feb. 1, 1984, Ser. No. 575,944
Claims priority, application Luxembourg, Feb. 8, 1983, 84636
Int. Cl.⁴ C06B 1/04 **9 Claims**
U.S. Cl. 423—396



1. A process for the production of ammonium nitrate by the neutralization reaction of nitric acid with ammonia, comprising the steps of: introducing ammonia and nitric acid to a reaction zone to produce an ammonium nitrate solution by the neutralization reaction thereof, the pressure in said reaction zone being greater than the vapor pressure of the ammonium nitrate solution; withdrawing and recycling a portion of said ammonium nitrate solution to said reaction zone; withdrawing the remaining portion of said ammonium nitrate solution from said reaction zone and introducing said portion into a separator to effect a first depressurization step such that steam is released from said portion and said portion is concentrated;

Paris, under No. 1-168 and novel serotype of the virus strain identified by means of the internal notation Brabant. 802, deposited at the Czechoslovak National Collection of Type Cultures of the Institute of Hygiene and Epidemiology in Prague under No. CNCTC. 18/82 and deposited at the Collection National d'Institut Pasteur, Paris, under I-202 and a vaccine carrier, the vaccine having after lyophilization, a virus content of at least $10^{4.0}$ EID₅₀ of each of the virus strains per dose.

4,645,666

VACCINE FOR BLUETONGUE DISEASE EMPLOYING PLATINUM COMPOUNDS

Jarue S. Manning, Davis, Calif., and Giorgio Poli, Milan, Italy, assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 8, 1982, Ser. No. 386,469

Int. Cl.⁴ A61K 39/12; C12N 7/06

U.S. Cl. 424—89 17 Claims

1. A method for preparing a vaccine by inactivating a non-enveloped virus which comprises:

contacting said virus with an inactivating amount of a cis-diamine chelated platinum halide and a small but effective amount of a non-ionic detergent for a sufficient time to inactivate said virus and retain intact virion particles for preparing said vaccine.

4. A method according to any of claims 1, 2 or 3, wherein said virus is a double stranded RNA virus.

13. A method for preparing a vaccine by inactivating a non-enveloped double-stranded RNA virus which comprises: contacting said virus with an aqueous medium containing an inactivating amount of cis-diamine chelated platinum halide and from about 0.001 to 0.75 weight percent of a non-ionic detergent for a sufficient time to inactivate said virus and retain intact virion particles.

4,645,667

ANTITUMOR AGENT AND PROCESS FOR MANUFACTURING SAID AGENT

Yoshiyuki Hashimoto, Sendai; Tomohiro Toida, Hachioji; Kazunori Sekine, Tokyo; Minoru Saito, Komae; Takuji Kawashima, Kawasaki, and Morio Kuboyama, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 566,074

Claims priority, application Japan, Dec. 27, 1982, 57-226682

Int. Cl.⁴ A61K 39/02, 35/78

U.S. Cl. 424—92 5 Claims

1. A process for preparing a substance having antitumor activity comprising the steps of:

(a) Culturing microorganisms selected from the group consisting of *Bifidobacterium infantis*, *Bifidobacterium longum* and mixtures thereof in a conventional medium for bifidobacteria until a sufficient number of cells are obtained, and separating cells of said microorganisms from said medium,

(b) heating said cells, suspended in a physiological saline solution, at 60° to 100° C. for 10 to 30 minutes, and separating said cells from said suspension in physiological saline solution,

(c) suspending said separated cells of step (b) in 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid buffer solution of about neutral pH containing 0.1 to 0.4% (w/v) of a surface active agent selected from the group consisting of polyethylene glycol p-isooctylphenyl ether, polyoxyethylene (20) Sorbitan mono-oleate, sodium dodecylsulfate and mixtures thereof, in a ratio of 15 to 20 ml per gram of said cells, maintaining said solution at 80° to 90° C. for 30 to 60 minutes to remove cellular substances, and separating said cells from said suspension in said buffer solution,

(d) suspending said separated cells of step (c) in a hydrophilic organic solvent selected from the group consisting of methanol, ethanol, propanol, acetone and mixtures thereof, at room temperature for 12 to 24 hours to remove

said surface active agent, and separating said cells from said suspension in said organic solvent,

(e) suspending said separated cells of step (d) in 2-amino-hydroxymethyl-1,3-propanediol or phosphate buffer solution of about neutral pH containing 0.05 to 0.2% (w/v) protease selected from the group consisting of trypsin, chymotrypsin, papain and mixtures thereof and ribonuclease in a concentration of 1/100 to 1/200 of said protease and deoxyribonuclease in a concentration of 1/1000 to 1/2000 of said protease, hydrolyzing the cellular protein and nucleic acid at about 37° C. for 14 to 24 hours, and separating said cells from said suspension in the last said buffer solution,

(f) suspending said separated cells of step (e) in 0.01N HCl of pH 2 to 3 containing 0.05 to 0.2% (w/v) of pepsin, hydrolyzing the cellular protein at about 37° C. for 14 to 24 hours, and separating said cells from said suspension in said 0.01N HCl solution,

(g) suspending said separated cells of step (f) in 2-amino-hydroxymethyl-1,3-propanediol or phosphate buffer solution of about neutral pH containing 0.05 to 0.2% (w/v) of pronase, hydrolyzing the proteinous substances at about 37° C. for 14 to 24 hours, and separating said cells from said suspension in the last said buffer solution,

(h) removing cellular lipids from said separated cells of step (g) with an organic solvent selected from the group consisting of methanol, ethanol, acetone and mixtures thereof, with a methanol-chloroform mixture or an acetone-chloroform mixture, and then with hexane or chloroform in sequence,

(i) suspending said cells from which the lipids were substantially removed in a 2-amino-hydroxymethyl-1,3-propanediol or phosphate buffer solution of about neutral pH containing 0.05 to 0.14% (w/v) of pronase, hydrolyzing the proteinous substances at about 37° C. for 14 to 24 hours, and separating said cells from said suspension in the last said buffer solution,

(j) suspending said separated cells from step (i) in a diluted sulfuric acid solution, heating from 10 to 20 minutes in boiling water, and separating said cells from said suspension in said diluted sulfuric acid solution,

(k) dialyzing said cells of step (j) using distilled water for 48 to 72 hours, and

(l) freeze-drying said dialyzed cells whereby cell walls having physical structural integrity without intracellular substances are obtained.

4,645,668

METHOD FOR THE PREVENTION AND TREATMENT OF SCARS WITH ENZYMES

Sheldon R. Pinnell, Durham, N.C., assignor to Biospecifics, NV, Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 520,203, Aug. 4, 1983, Pat. No. 4,524,065. This application Mar. 27, 1985, Ser. No. 716,742

Int. Cl.⁴ A61K 37/48

U.S. Cl. 424—94 10 Claims

1. A method for the dissolution of mammalian cicatrices which comprises administering an effective amount of an enzyme selected from the group consisting of elastase, papain, plasminogen activator, plasmin, mast cell protease and lysosomal hydrolase directly into the lesion.

4,645,669

CULTURING AND EMPLACEMENT OF DIFFERENTIATED CELLS IN VIVO

Lola C. M. Reid, Mt. Vernon, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Oct. 4, 1982, Ser. No. 432,552

Int. Cl.⁴ A61K 35/12

U.S. Cl. 424—95 22 Claims

1. A method for providing an improved in vivo site for promoting the growth of site-specific differentiated cells, com-

prising providing site-specific connective tissue-derived fibers comprising collagens, non-collagenous proteins and carbohydrates as a substrate for in vivo cell culture of site-specific differentiated cells at the site.

4,645,670

PROCESS FOR THE STABILIZATION OF HEMATIN

Harald Zilg, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,406

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311288

Int. Cl.⁴ A61K 35/14, 31/555

U.S. Cl. 424—101 5 Claims

1. A process for the stabilization of a hematin medicament, which comprises adding human serum albumin to hematin, wherein the weight ratio of hematin to albumin is from 1:25 to 5:1.

4,645,671

DERIVATIVES OF CLAVULANIC ACID THEIR PREPARATION AND THEIR USE

John B. Harbridge, Coulsdon, England, assignor to Beecham Group p.l.c., England

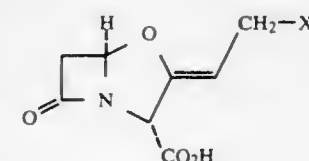
Division of Ser. No. 453,149, Dec. 27, 1982, Pat. No. 4,544,549, which is a division of Ser. No. 325,979, Nov. 30, 1981, abandoned. This application Jul. 15, 1985, Ser. No. 754,656

Claims priority, application United Kingdom, Dec. 9, 1980, 8039447; Jun. 12, 1981, 8118110

Int. Cl.⁴ A61K 35/00, 35/66, 35/74

U.S. Cl. 424—114 16 Claims

9. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof a synergistically effective amount of a compound of the formula (II):



a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof wherein X is tetrazolyl attached via a nitrogen atom, said tetrazolyl moiety being unsubstituted or substituted by a non-toxic carboxyl salt, an in-vivo hydrolyzable carboxyl ester of the formula (b), (c), (d) or (e):

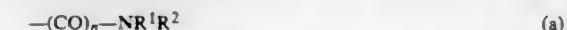


or



wherein R³ is hydrogen, methyl or phenyl; R⁴ is alkyl of 1 to 6 carbon atoms, phenyl, phenylalkyl of 1 to 3 carbon atoms in the alkyl moiety, alkoxy of 1 to 6 carbon atoms, phenoxy or phenylalkoxy of 1 to 3 carbon atoms in the alkyl moiety; or R³ and R⁴ are joined to form a 1,2-diphenylene or 3,4-dimethoxy-1,2-diphenylene moiety; R⁵ is methylene or ethylene; R⁶ and R⁷ are each methyl or ethyl; A¹ is alkyl of 1 to 6 carbon atoms unsubstituted or substituted by alkoxy of 1 to 7 carbon atoms; A² is alkenyl of 2 to 7 carbon atoms unsubstituted or substituted by phenyl; phenyl unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; and A³ is hydrogen; alkyl of 1 to 4 carbon atoms or phenyl unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4

carbon atoms; alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or aryl unsubstituted or substituted by hydroxy, halo, aryl, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, arylalkoxy of 1 to 6 carbon atoms in the alkyl moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms in the alkyl moiety, arylthio, amino, azido, mono-alkylamino of 1 to 6 carbon atoms in the alkyl moiety or di-alkylamino of 1 to 6 carbon atoms in each alkyl moiety; azido; isocyanato; cyano; nitro; bromo; chloro; or is a group of the sub-formula (a):



wherein n is zero or one; R¹ is hydrogen or alkyl of 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms or arylcarbonyl unsubstituted or substituted by one or more hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, aralkoxy of 1 to 10 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms in the alkyl moiety, arylthio, amino, alkyl-amino of 1 to 6 carbon atoms in the alkyl moiety or dialkyl-amino of 1 to 6 carbon atoms in each alkyl moiety; and R² is hydrogen, alkyl of 1 to 6 carbon atoms, or alkanoyl of 1 to 6 carbon atoms, or R¹ and R² is methyl substituted by carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms or arylcarbonyl; or when R² is not methyl, the R² moiety is substituted by hydroxy, halo, carboxy, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety, arylalkoxy of 1 to 6 carbon atoms in the alkoxy moiety, arylcarbonyl, alkylthio of 1 to 6 carbon atoms, arylthio, amino, alkylamino of 1 to 6 carbon atoms or di-alkylamino of 1 to 6 carbon atoms; or R¹ and R² are joined to form with the nitrogen atom to which they are attached, a 4-, 5- or 6-membered ring wherein the nitrogen atom is the only heteroatom and wherein aryl as used herein is phenyl, pyrrolyl, furyl, thienyl, indolyl, benzofuryl, or thionaphthyl, and an antibacterially effective amount of a cephalosporin, in combination with a pharmaceutically acceptable carrier.

4,645,672

PREPARATION OF IMPROVED BREAD WITH GAMMA-GLUTAMYL TRANSFERASE

Seijiro Inoue, Machida, and Shigenori Ota, Komae, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,920

Claims priority, application Japan, Jun. 17, 1983, 58-108847

Int. Cl.⁴ A21D 8/04; C12N 9/10, 9/20

U.S. Cl. 426—20 4 Claims

3. A composition for making bread which comprises wheat flour, salt, sugar, shortening and yeast food to which has been added γ -glutamyl transferase in an amount of 0.5 to 20 units per kg of the wheat flour.

4,645,673

FROZEN PIZZA WITH LOW FAT PASTRY CRUST

John H. Wilmes, Carpentersville, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Oct. 16, 1985, Ser. No. 787,899

Int. Cl.⁴ A21D 13/00

U.S. Cl. 426—94 2 Claims

1. A method of making a frozen pizza product comprising preparing a leavened dough containing a flour mixture comprising a mixture of first and second flours having a ratio of said first and second flours in the range 75:25 to 25:75, in which said first flour has a protein content between 11 and 13% and the second flour has a protein content between 7.5% and 10% by weight based on the weight of the flour, and kneading said

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dough; admixing with said dough solid fat pieces in an amount between 10 and 17% by weight based on the weight of all of the ingredients, said solid fat pieces having a melting point in the range 118°-130° F., and being in the form of flakes having a thickness in the range 0.01 to 0.3", and having a face dimension in the range 0.1 to 1.0", said admixing being sufficient to randomly disperse the solid fat pieces into the dough, but not sufficient for the fat pieces to lose their identity as solid fat pieces, shaping the dough into a desired pizza crust shape, baking said shell, applying pizza sauce to the upper face of said shell, and freezing the resulting pizza.

4,645,674

GLAZE COMPOSITION FOR BAKERY PRODUCTS

Keven W. Lang, RiverVale, N.J.; George M. Eberhardt, Sayville, N.Y.; William J. Entenmann, and Frank P. Shipman, both of Islip, N.Y., assignors to Entenmann's Inc., Bayshore, N.Y.

Filed Jul. 6, 1984, Ser. No. 628,534

Int. Cl. A21D 15/08

U.S. Cl. 426-94

8 Claims

1. A baked, bakery product selected from the group of breads, buns, rolls, pie, cakes and pastries having a glaze coating on the surface thereof said glaze coating being egg-free and fat-free and comprised, as applied, of water, a dextrin component having an average D.E. of from 5 to 20, a chemical preservative at a level of from 0.1 to 1.5% by weight of the glaze and an edible acid in an amount effective to lower the pH of the glaze to below about 6.0 and wherein said dextrin component is comprised of from 3 to 5 parts by weight of tapioca dextrin and 1 part by weight of corn maltodextrin.

4,645,675

STARCH-BASED DRY PRODUCT IN THE FORM OF FLAKES, BITS, OR GRAINS IN POROUS BAGS FOR MAKING DUMPLINGS

Gerhard Wilke, Hölderlinweg 1, 6900 Heidelberg, Fed. Rep. of Germany

Filed Oct. 24, 1984, Ser. No. 664,419

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338887

Int. Cl. A23L 1/214

U.S. Cl. 426-113

15 Claims

1. An instant, pouch dumpling product comprising:
(a) a water-permeable pouch; and
(b) a starch-based product of an irregular, slightly fibrous structure in the form of dry, pre-gelatinized, porous flakes, bits or grains with a thickened outer membrane skin which are instantly converted into ready-to-eat dumpling condition by introducing the dry starch-based product in the water-permeable pouch into hot water for only 1-2 minutes, the dry starch-based product being made by (i) forming a moist mixture from a starch-based starting material, the moist mixture having a moisture content of at least 20%; (ii) kneading said moist mixture; (iii) rolling said moist mixture into a film of paste of 1.8 mm to 3 mm; (iv) heating said paste film to a temperature and effected such that said thickened outer membrane skin is formed on the underside of the paste film while the paste film has a residual moisture of at least 20% and to maintaining said heating temperature to the paste film to cause rapid evaporation of at least a portion of the water present in the paste film while the paste film has a residual moisture of at least 20% such that the paste film is gelatinized and formed with pores; (v) drying said paste film and (vi) comminuting said paste film into said flakes, bits or grains of the starch-based product.

4,645,676

METHOD OF PRODUCING FILLER ADDED IN FOODS

Shuzo Nakazono, 4-2, Arato 3-chome, Chuo-ku, Fukuoka, Japan

Filed May 17, 1985, Ser. No. 735,215

Int. Cl. A23K 1/10; A23L 1/312

U.S. Cl. 426-417

2 Claims

1. A method for producing a filler suitable for addition to foods comprising:
preliminary boiling raw material ingredients comprising meat, internal organs, bones, and skins of animals, with steam to soften the tissues of the raw material,
charging the said material, after boiling, into an animal or vegetable oil contained in a cooker and preheated to a temperature of more than 80 degrees C.,
heating said material in said oil in said cooker under a first negative pressure in the range of 10 to 20 mm Hg below atmospheric pressure for a time sufficient to coagulate the water soluble protein and gelatinous substances in the material and to prevent dissolving and out flow of the water soluble protein and gelatinous substances from the material into said oil,
then continuing said heating in said cooker under a second negative pressure in the range of 740 to 750 mm Hg below atmospheric pressure for a period of time sufficient to cause the density of moisture in tissues of the material to become lower than the density of the oil,
then squeezing the oil from the material, and
then pulverizing the oil-squeezed material to produce said filler.

4,645,677

PROCESS FOR REMOVING FLATULENCE-CAUSING SUGARS FROM BEAN PRODUCTS

James T. Lawhon, College Station, and Edmund W. Lusas, Bryan, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Dec. 4, 1984, Ser. No. 677,811

Int. Cl. A23L 1/20

U.S. Cl. 426-431

1 Claim

1. A method of processing navy beans, including the steps of:
(a) grinding the beans to produce a particulate bean product;
(b) suspending the particulate bean product in water to produce a filterable feed, the water to bean product ratio being between approximately 10:1 and 60:1 by weight;
(c) ultrafiltering the filterable feed using an ultrafiltration membrane system which has a molecular weight cut-off between approximately 30,000 and 100,000 daltons, thereby producing a permeate and a retentate, the ultrafiltration comprising two sequential phases:
(i) a first phase in which water is added to the filterable feed at the same rate as permeate is being produced, until the total permeate produced is approximately 1.0 to 3.0 times the original volume of the filterable feed, and
(ii) a second phase in which no water is added to the filterable feed while ultrafiltration is continued, until the total volume of permeate produced is approximately 1.0 to 3.0 times the original volume of the filterable feed; and
(d) recovering the retentate.

4,645,678

SWEETENING AGENTS

Claude Nofre, Lyons, and Jean-Marie Tinti, Meyzieu, both of France, assignors to Universite Claude Bernard - Lyon 1, France

Filed Sep. 15, 1983, Ser. No. 532,499

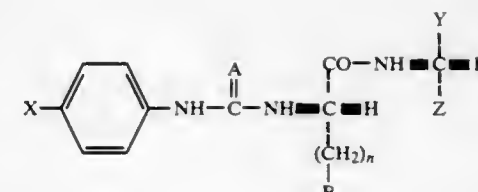
Claims priority, application France, Sep. 17, 1982, 82 15832

Int. Cl. A23L 1/236; C07C 149/43, 147/13, 127/00

U.S. Cl. 426-548

10 Claims

1. A sweetening compound having the formula:



wherein X is CN, COOC₁₋₃ alkyl, SO₂C₁₋₃ alkyl, SOC₁₋₃ alkyl, COC₁₋₃ alkyl, NO₂, F, Cl, SO₂NHC₁₋₃ alkyl or CONHC₁₋₃ alkyl;

A is oxygen or sulfur;

n is 0 or 1;

B is COOH;

Y is COOC₁₋₃ alkyl, CH₂OH, CHOHCH₃ or C₁₋₃ alkyl; andZ is C₁₋₅ n-alkyl, isobutyl, isopentyl, phenyl, cyclohexyl, benzyl, cyclohexylmethyl, CH₂C₆H₄OH, CH₂OC₁₋₄ alkyl, CH₂SC₁₋₄ alkyl, CH₂COOC₁₋₄ alkyl, CH₂CH₂SCH₃, CH₂CH₂SO₂CH₃, COOC₁₋₄ alkyl, COOC₃₋₇ cycloalkyl, CONHC₂₋₄ alkyl, CONHC₃₋₇ cycloalkyl or CONHCH₂COOCH₃.

4,645,679

PROCESS FOR MAKING A CORN CHIP WITH POTATO CHIP TEXTURE

William E. Lee, III; James M. Bangel; Robert L. White, and David J. Bruno, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Filed Dec. 24, 1984, Ser. No. 685,276

Int. Cl. A23L 1/10, 1/01

U.S. Cl. 426-560

11 Claims

1. A process for making corn chips comprising the steps of:
(a) comminuting hydrated corn having a moisture content of about 30% to about 40%;
(b) separately comminuting hydrated starch material, said starch material selected from the group consisting of dehydrated potatoes, tapioca starch, corn starch and mixtures thereof;
(c) mixing the corn and starch materials into a dough, the ratio of corn to starch material on a dry weight basis being from about 95:5 to about 80:20, said dough having a moisture content of about 30% to about 55%;
(d) extruding the dough with a cooking extruder to provide a dough residence time in said cooking extruder of from about 5 to about 15 minutes and a dough outlet temperature of from about 180° F. to about 190° F., the starch in said hydrated corn having a high degree of gelatinization and base solubility after extrusion;
(e) forming the dough into a sheet;
(f) cutting the sheet into segments; and
(g) deep-frying the segments.

4,645,680

METHOD FOR CHEESE COMPACTING

Gabriele Muzzarelli, via Marzabotto 116-41100, Modena, Italy

Division of Ser. No. 636,024, Jul. 30, 1984, Pat. No. 4,576,091.

This application Sep. 30, 1985, Ser. No. 781,415

Claims priority, application Italy, Aug. 5, 1983, 22438A/83

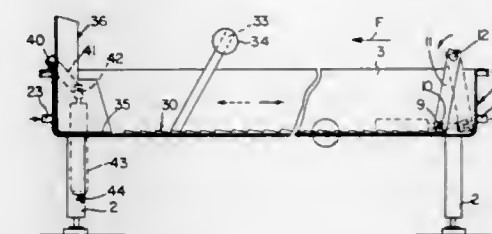
Int. Cl. A23C 19/00

U.S. Cl. 426-582

5 Claims

1. Method for compacting whole cheese, comprising the steps of
disposing the cheese upon a conveyor,
reciprocatingly moving the conveyor in first and second directions,
moving the cheese in the first direction by the conveyor moving in the first direction,
maintaining the cheese substantially in position under its

own inertia when the conveyor moves in the second direction,
conveying the cheese onto a bascule element,
rotating the bascule element about an axis to remove the cheese away from the conveyor, and



introducing a stream of water against the cheese moving along the conveyor in a direction substantially opposite to the direction of movement of the cheese along the conveyor, whereby the cheese is compacted by contact with the stream of water.

4,645,681

PROCESS FOR PREPARING TOFU

Ko Sugisawa; Yasushi Matsumura, both of Nara; Kazumitsu Taga, Neyagawa; Koji Sengoku, and Yoshiaki Nagatome, both of Nara, all of Japan, assignors to House Food Industrial Company, Limited, Higashiosaka, Japan

Filed Feb. 27, 1985, Ser. No. 706,333

Claims priority, application Japan, Mar. 15, 1984, 59-49593

Int. Cl. A23L 1/20

U.S. Cl. 426-634

10 Claims

1. A process for preparing Tofu which comprises forming curd by adding a coagulant to a solution selected from the groups consisting of soybean milk and an aqueous solution of isolated soybean protein, subjecting the curd to a crushing treatment which is carried out in the presence of a solution selected from the group consisting of soybean milk and an aqueous solution of isolated soybean protein to crush the curd into pieces having an average square of between 2 to 10 mm, adding a coagulant to the solution containing the crushed curd before, during or after the crushing treatment and then coagulating the solution containing the crushed curd and the coagulant by heating.

4,645,682

METHOD AND COMPOSITION FOR TREATMENT OF PLANTS

Charles D. Elmore, 570 Ridgewood Ave., Gainesville, Ga. 30503

Filed Sep. 30, 1983, Ser. No. 537,658

The portion of the term of this patent subsequent to Jan. 24, 2003, has been disclaimed.

Int. Cl. A01G 5/06; A01N 1/00, 3/00; A01B 79/00

U.S. Cl. 427-4

24 Claims

1. A method of protecting a plant from damage by weather induced stress comprising preparing a solution containing a quantity of vegetable dye effective for shading the leaves of the plant from the effects of sunlight, a quantity of anti-transpiration agent effective for limiting transpiration of water from the plant, a quantity of an agricultural fungicide effective for suppressing growth of fungus otherwise possibly damaging to the plant, and a quantity of complexed mineral micronutrients effective for promoting plant growth and function, and applying the solution to the plant.

4,645,683
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

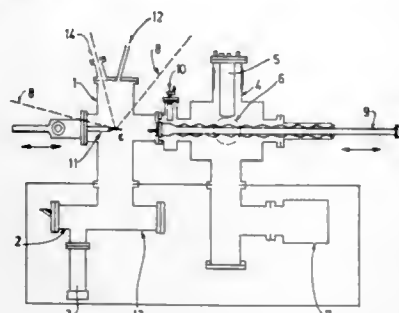
Serge Gourrier, Lognes, and Jean-Bernard Theeten, Ozoir-la-Ferriere, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1985, Ser. No. 784,011

Claims priority, application France, Oct. 9, 1984, 84 15484
 Int. Cl.⁴ H01L 21/318

U.S. Cl. 427—38

12 Claims



1. A method of manufacturing a semiconductor device in which method a surface of a gallium and arsenic containing substrate is treated in a first plasma containing hydrogen and then is coated with a layer of silicon nitride in a second plasma containing silicon and nitrogen, characterized in that,

- (a) arsenic is added to the first plasma,
- (b) during the treatment in the first plasma the substrate is heated at a temperature below 450° C. and
- (c) after this treatment but before the coating with the layer of silicon nitride the substrate is superficially converted into a surface layer of gallium- and arsenic nitrides in a third plasma containing nitrogen.

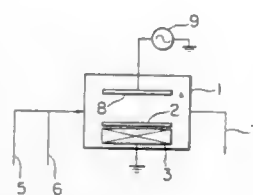
4,645,684
METHOD FOR FORMING DEPOSITED FILM
 Yoshiyuki Osada, Yokosuka; Hisanori Tsuda, Atsugi; Masafumi Sano, Kawasaki; Satoshi Omata, Tokyo; Katsuji Takasu, Asaka, and Yutaka Hirai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1985, Ser. No. 783,490

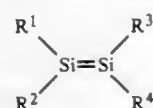
Claims priority, application Japan, Oct. 9, 1984, 59-210492
 Int. Cl.⁴ B05D 3/06

U.S. Cl. 427—38

7 Claims



1. A method for forming a deposited film, comprising subjecting a gas represented by the formula:



wherein R¹, R², R³ and R⁴ are the same or different and are each independently hydrogen or a hydrocarbon group, in a vacuum chamber housing a substrate therein, to at least one energy selected from the group consisting of plasma energy,

light energy and heat energy to hereby polymerize said gas and form a deposited film containing silicon on the substrate.

4,645,685
METHOD FOR PRODUCING AN OPTICAL RECORDING MEDIUM BY A CHALCOGENIDE SUBOXIDE

Yoichi Murayama, Tokyo, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

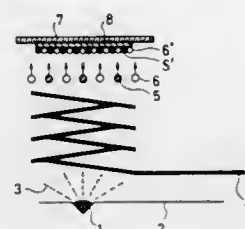
Filed Mar. 26, 1985, Ser. No. 716,007

Claims priority, application Japan, Mar. 26, 1984, 59-56232;
 Dec. 13, 1984, 59-264127

Int. Cl.⁴ B05D 3/06

U.S. Cl. 427—39

5 Claims



1. A method for manufacturing a recording medium characterized in that a film formed from a tellurium suboxide TeO_x (0 < x < 2) is formed on a substrate by causing a metal tellurium vapor to pass through oxygen gas in the form of a plasma.

4,645,686
METHOD FOR SMOOTHING MAGNETIC RECORDING MEDIA

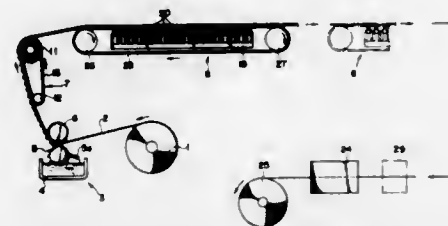
Hideo Suzuki, Higashi-kurume, Japan, assignor to Bellmatic, Ltd., Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,173

Int. Cl.⁴ B05D 3/14

U.S. Cl. 427—48

6 Claims



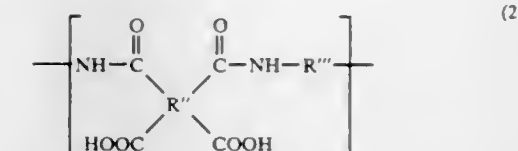
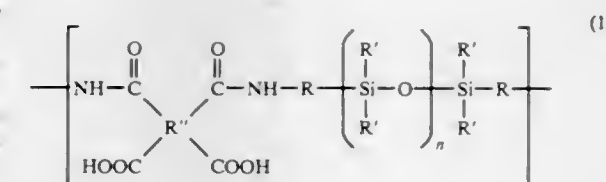
1. A method for obtaining a magnetic recording media comprising the steps of:

- delivering a nonmagnetic sheet having an upper surface from a feed roller to a coating device;
- applying a magnetic recording solution having magnetic particles therein to the upper surface of the nonmagnetic sheet in a non-uniform condition impressed according to a gravure printing pattern on a roller of the coating device;
- transferring the nonmagnetic sheet coated with the magnetic recording solution to a first means for magnetically smoothing gradually the magnetic recording solution on the upper surface of the nonmagnetic sheet, said first means rotating together with the nonmagnetic sheet coated with the magnetic recording solution so that the magnetic particles contained in the magnetic recording solution are partially smoothed out;

transferring the nonmagnetic sheet coated with the magnetic recording solution to at least a second means for magnetically smoothing gradually the magnetic recording solution on the upper surface of the nonmagnetic sheet, said second means applying magnetic force in spaced intervals

to the magnetic recording solution so that the magnetic particles contained in the magnetic recording solution are finally smoothed out;

drying the smoothed magnetic recording solution coated on the upper surface of the nonmagnetic sheet; whereby a magnetic recording media of high quality is obtained by the smoothing of the recording solution into a uniform condition such that the gravure printing pattern impressed thereon is removed therefrom.



4,645,687
DEPOSITION OF III-V SEMICONDUCTOR MATERIALS
 Vincent M. Donnelly, Berkeley Heights, and Robert F. Karlick, Jr., Plainfield, both of N.J., assignors to AT&T Laboratories, Murray Hill, N.J.

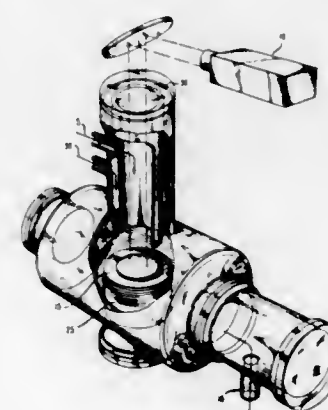
Continuation of Ser. No. 550,759, Nov. 10, 1983, abandoned.

This application Sep. 16, 1985, Ser. No. 778,274

Int. Cl.⁴ H01L 21/205

U.S. Cl. 427—53.1

11 Claims



1. A method for forming a device comprising the steps of forming a compound semiconductor region and completing said device wherein said compound semiconductor region is formed by causing decomposition in a deposition gas characterized in that said decomposition comprises a multiphoton absorption process induced by electromagnetic radiation of power densities in the range of 0.1 MW/cm² to 10 GW/cm².

4,645,688
COMPOSITION FOR PROTECTIVE COATING MATERIAL

Daisuke Makino; Hidetaka Sato; Hiroshi Suzuki; Shun-ichiro Uchimura, all of Hitachi, and Hiroshi Suzuki, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 568,284, Jan. 5, 1984, Pat. No. 4,511,705, which is a continuation of Ser. No. 366,146, Apr. 7, 1982, abandoned. This application Dec. 7, 1984, Ser. No. 679,460

Claims priority, application Japan, Apr. 14, 1981, 56-56538
 Int. Cl.⁴ B05D 5/12

U.S. Cl. 427—82

22 Claims

1. A method of protecting a semiconductor memory element of a semiconductor device, said device comprising said element, a layer containing an inorganic material encapsulating said element and a protective coating layer arranged between said element and said encapsulating layer, said method comprising coating said element with a protective coating layer comprising a polyamide acid having from 0.1 to 20 mole % of the recurring unit represented by formula (1) and 80 to 99.9 mole % of the recurring unit represented by formula (2), said polyamide acid being obtained by the reaction of a diaminosiloxane, an organic diamine containing no silicon and an organic tetrabasic acid dianhydride in the presence of an inert solvent,

wherein R is a divalent hydrocarbyl group; R' is a monovalent hydrocarbyl group; R'' is a tetravalent organic group; R''' is a divalent organic group which is a residue of an organic diamine containing no silicon; and n is an integer of 1 or more; and wherein said composition contains a combined amount of uranium and thorium of less than 1 part per billion.

4,645,689
DEPOSITION TECHNIQUE

Herbert M. Cox, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

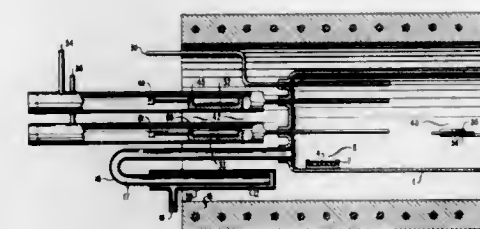
Continuation of Ser. No. 581,326, Feb. 17, 1984, abandoned.

This application Sep. 3, 1985, Ser. No. 771,172

Int. Cl.⁴ H01L 21/205

U.S. Cl. 427—87

28 Claims



1. A process for forming a device comprising the steps of forming at least one precursor gas flow, subjecting a substrate to said flow to deposit a material, and completing said device. characterized in that

at least one of said precursor gas flows is formed from at least one liquid source gas flow and at least one solid source gas flow, wherein said solid source gas flow is formed by subjecting a heated solid comprising a III-V semiconductor material that includes a constituent chosen from the group consisting of P and As to a chlorine entity containing gas flow, wherein said liquid source gas flow is formed by subjecting a liquid to a separate chlorine entity containing gas flow and wherein said liquid source gas flow is combined with said solid source gas flow after said heated solid is subjected to said chlorine entity containing gas flow.

4,645,690
METHOD OF MANUFACTURING A MAGNETIC MEDIA
 Shiro Murakami; Shigeo Fujii; Masayuki Nakao; Yoshio Igara-
 shi, and Juro Endo, all of Kumagaya, Japan, assignors to
 Hitachi Metals, Ltd., Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,405
 Claims priority, application Japan, Feb. 2, 1984, 59-17449;
 May 22, 1984, 59-103500

Int. Cl.⁴ G11B 5/84

U.S. Cl. 427—128 4 Claims
 1. A process for manufacturing magnetic recording media
 comprising the steps of:

sputtering a metal alloy comprised of nickel and cobalt as a
 thin film onto a non-magnetic substrate consisting essen-
 tially of an anodized aluminum alloy in an inert gas con-
 taining oxygen, said substrate being maintained at a tem-
 perature of from about room temperature to 300° C. dur-
 ing said sputtering step thereby forming an oxygen con-
 taining metal thin film comprised of oxygen and said metal
 alloy on said anodized aluminum alloy substrate; and
 heating said oxygen containing thin film and said substrate to
 evaporate the oxygen absorbed in said thin film during the
 sputtering step thereby forming a magnetic recording
 media with a metal alloy thin film on said substrate, said
 metal alloy thin film having a composition of less than 35
 atomic % nickel with the balance being substantially
 cobalt, said metal alloy thin film having a hexagonal close-
 packed crystalline structure wherein the C-axes of the
 cobalt-nickel crystals forming said structure are in the
 plane of said recording media.

4,645,691
METHOD FOR TREATING MATERIALS WITH
ORGANOPOLYSILOXANE COMPOUNDS
 Isao Ona, and Masaru Ozaki, both of Chiba, Japan, assignors to
 Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,603
 Claims priority, application Japan, Dec. 21, 1984, 59-271345

Int. Cl.⁴ B05D 1/12

U.S. Cl. 427—180 23 Claims

1. A method comprising applying to a solid material a com-
 position comprising an organopolysiloxane compound which
 contains at least one siloxane unit having the formula X_0R_1
 $3-\alpha)SiR'(Si(R)_2O(3-\beta)/2$ and at least one siloxane unit having
 the formula $R''(OC_3H_7)_2(OC_2H_5)_2OR'Si(R)_2O(3-\epsilon)/2$, any
 remaining siloxane units in the organopolysiloxane having the
 formula $R_3SiO(4-\delta)/2$ wherein, at each occurrence,

X denotes an alkoxy or alkoxyalkoxy radical having from 1
 to 4 carbon atoms,

R denotes a monovalent hydrocarbon or halogenated hydro-
 carbon radical having from 1 to 10 carbon atoms,

R' denotes an alkylene radical having from 2 to 10 carbon
 atoms,

R'' denotes a hydrogen atom or a monovalent organic radi-
 cal having from 1 to 5 carbon atoms,

a has a value of 2 or 3,

b has a value of 0, 1 or 2,

c has a value of from 0 to 50,

d has a value of from 0 to 50,

c plus d has a value of from 2 to 100,

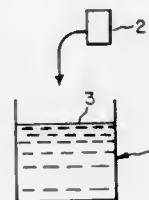
e has a value of 1 or 2, and

f has a value of from 0 to 3,

there being, per molecule of said organopolysiloxane com-
 pound, an average of at least one siloxane unit wherein b or e
 has a value of 2.

4,645,692
POLYVINYL FLUORIDE COATING PROCESS
 Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de
 Nemours and Company, Wilmington, Del.

Filed Feb. 20, 1986, Ser. No. 831,419
 Int. Cl.⁴ B05D 1/18, 3/02
 U.S. Cl. 427—318 3 Claims



1. A process for coating substrates by dipping a hotter sub-
 strate into a colder bath of polyvinyl fluoride dispersion in
 latent solvent,

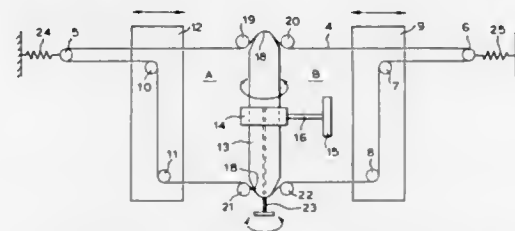
wherein the substrate is at a temperature in the range of
 120°–260° C. and the bath is at a temperature below 100°
 C.,

then removing the resulting coated substrate from the bath
 and curing the coating to a coalesced condition.

4,645,693
ASSEMBLY AND METHOD FOR
LANGMUIR-BLODGETT FILM PRODUCTION
 Gareth G. Roberts, Farnham Common; Brian Blackburn, Spen-
 nymoor; Michael C. Petty, High Shincliffe, and Brian Hol-
 croft, Newton Aycliffe, all of United Kingdom, assignors to
 Vickers Public Limited Company, London, England

Filed Nov. 12, 1985, Ser. No. 796,899
 Claims priority, application United Kingdom, Nov. 13, 1984,
 8428593

Int. Cl.⁴ B05C 3/12; B05D 1/20
 U.S. Cl. 427—402 6 Claims



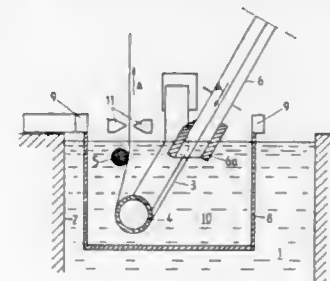
6. A method of forming a composite Langmuir-Blodgett film
 layer on a substrate comprising forming two monomolecular
 films on a subphase in a Langmuir trough while keeping said
 films separate by a fixed rigid barrier, surrounding each film by
 an individual flexible barrier fixed at its opposite ends respec-
 tively to opposite ends of said rigid barrier, maintaining each
 flexible barrier under tension about guide elements, adjusting
 the relative positions of said guide elements to effect controlled
 planar compression of said molecular films to uniform films
 one molecule thick, and alternately passing the substrate
 through said two films whereby said substrate receives layers
 from said two films in sequence.

4,645,694
PROCESS OF GALVANIZING FOR CONSECUTIVELY
PRODUCING TWO DIFFERENT COATINGS ON A
METAL BAND

Guy Gerard, Louvroil, France, assignor to Fabrique de fer de
 Maubeuge, Louvroil, France

PCT No. PCT/FR84/00176, § 371 Date Nov. 15, 1985, § 102(e)
 Date Nov. 15, 1985, PCT Pub. No. WO85/04427, PCT Pub.
 Date Oct. 10, 1985

PCT Filed Jul. 23, 1984, Ser. No. 804,657
 Claims priority, application France, Mar. 29, 1984, 84 04902
 Int. Cl.⁴ C23C 1/00; B05D 1/18
 U.S. Cl. 427—431 4 Claims



1. In a process for producing at least two metal band prod-
 ucts coated with different metal alloys on a single production
 line including a fixed tank of molten alloy through which a
 metal band passes,

the improvement which comprises, in order to change from
 a first to a second product, placing a removable tank of
 smaller volume than the fixed tank in the molten alloy of
 said fixed tank, said removable tank containing an alloy
 different from that contained in the fixed tank, and
 passing the metal band through a molten alloy in said remov-
 able tank, whereby different parts of said band are coated
 with different alloys.

4,645,695
RESINOUS COMPOSITION AND MOLDED ARTICLE
AND CONTAINER MADE THEREOF

Taichi Negi; Akihiko Kawasaki, and Kyoichiro Ikari, all of
 Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki,
 Japan

Filed Aug. 23, 1985, Ser. No. 768,745
 Claims priority, application Japan, Sep. 6, 1984, 59-187598
 Int. Cl.⁴ C08L 29/04; B65D 1/00

U.S. Cl. 428—35 17 Claims

1. A resinous composition which comprises (A) 95 to 50
 parts by weight of a saponified product of ethylene-vinyl
 acetate copolymer containing 20 to 60 mol % of ethylene and
 having a degree of saponification greater than 95%, and (B) 5
 to 50 parts by weight of a modified ethylene-vinyl carboxylate
 copolymer or a modified ethylene-acrylate copolymer, said
 copolymers each being modified by a C₃–C₁₀ α,β-unsaturated
 carboxylic acid or anhydride thereof therewith, wherein each
 of said modified copolymers contain 60 to 85 mol % of ethylene
 and 0.01 to 3 mol % of an α,β-unsaturated carboxylic acid or an
 anhydride thereof.

11. An impact resistant container of laminated structure
 formed by coextrusion of a resinous composition and one or
 more thermoplastic resins, said resinous composition compris-
 ing (A) 95 to 50 parts by weight of a saponified product of
 ethylene-vinyl acetate copolymer containing 20 to 60 mol % of
 ethylene and having a degree of saponification greater than
 95% and (B) 5 to 50 parts by weight of a modified ethylene-
 vinyl carboxylate copolymer, said copolymers each being
 modified by a C₃–C₁₀ α,β-unsaturated carboxylic acid or anhy-
 dride thereof therewith, wherein each of said modified copoly-
 mers contains 60 to 95 mol % ethylene and 0.01 to 3 mol % of
 an α,β-unsaturated carboxylic acid or an anhydride thereof.

4,645,696
TREATMENT FOR IMPROVING CELLULOSIC
INSULATION

Leonard D. Rood, 5764 Flintlock La., Columbus, Ohio 43213

Continuation of Ser. No. 474,790, Mar. 14, 1983, abandoned,
 which is a continuation-in-part of Ser. No. 412,318, Aug. 27,
 1982, abandoned, which is a continuation of Ser. No. 265,029,
 May 18, 1981, abandoned. This application Dec. 6, 1985, Ser.
 No. 810,565

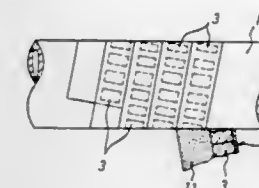
Int. Cl.⁴ A62C 1/00; A62D 1/00; B27N 9/00
 U.S. Cl. 428—35 16 Claims

1. An improved cellulosic insulation comprising:
 (a) shredded cellulosic fibers; and
 (b) a mixture of an inorganic fire retardant agent and an
 anti-static agent, said mixture being a solid particulate and
 adhered on said fibers.

4,645,697
TAPE FOR CORROSION PROTECTION
 Yutaka Torigoe, Kumagaya, Japan, assignor to Dainichi-Nippon
 Cables, Ltd., Amagasaki, Japan

Filed Oct. 31, 1985, Ser. No. 793,424
 Claims priority, application Japan, Oct. 31, 1984, 59-230924;
 Dec. 31, 1984, 59-279603; Dec. 31, 1984, 59-279604

Int. Cl.⁴ B32B 3/16 12 Claims



1. A tape for corrosion protection, in which a pressure sensi-
 tive adhesive is coated on one face of a plastic sheet, and pieces
 of galvanic sacrificial anode metal foil for cathodic protection
 are lined consecutively on a part of its adhesive face, a width
 of said metal foil being less than a width of said plastic sheet.

4,645,698
DEHYDRATING AND WATER-RETAINING SHEET
 Mamoru Matsubara, Yokohama, Japan, assignor to Showa
 Denko Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1985, Ser. No. 732,208
 Claims priority, application Japan, May 9, 1984, 59-90893
 Int. Cl.⁴ B32B 1/06; B65B 55/00; B65D 81/26, 85/00

U.S. Cl. 428—68 6 Claims

1. A dehydrating and water-retaining sheet comprising
 (a) a water-absorbing agent comprising a polymeric material
 capable of forming a hydrous gel,
 (b) a wetting agent having a water-absorbing property, and
 (c) a water-permeable membrane, in which the water-
 absorbing agent (a) and the wetting agent (b) are at least
 partially wrapped in the water-permeable membrane (c).

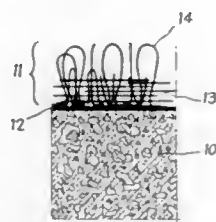
4,645,699
PILE CLEANING MATERIAL AND NEEDLING
METHOD OF MAKING SAME
 Jean-Louis Neveu, Beauvais, France, assignor to Spontex Incor-
 porated, Columbia, Tenn.

Filed Jun. 24, 1985, Ser. No. 748,017
 Claims priority, application United Kingdom, Jun. 27, 1984,
 8416344; European Pat. Off., Nov. 5, 1984, 84402208.7

Int. Cl.⁴ B32B 3/02 18 Claims

1. A cleaning material comprising a single non-woven web

of fibers having ends and/or loops protruding from one face thereof, said protruding fibers being obtained by needle-punch-



ing, said web containing a mixture of at least two fibers, one of which has a weight of at least 100 decitex, and the other a weight equal to or less than 30 decitex.

4,645,700

CERAMIC HONEYCOMB STRUCTURAL BODY

Tadaaki Matsuhisa, Kasugai, and Kiminari Kato, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

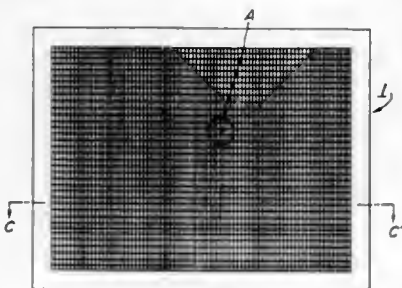
Filed Sep. 18, 1984, Ser. No. 651,860

Claims priority, application Japan, Oct. 7, 1983, 58-186880

Int. Cl.⁴ B32B 3/12

U.S. Cl. 428—116

5 Claims



1. A rotary regenerator-type ceramic heat exchanger comprising a ceramic honeycomb structural body having a plurality of cells of a rectangular cross section, wherein a pitch ratio between a short side and a long side of said rectangular cells is substantially $1:\sqrt{3}$.

4,645,701

CREDIT CARD CARBON COPY DEFACER

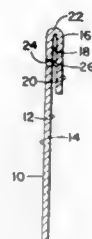
Scott F. Zarrow, 247 E. 27 St., Tulsa, Okla. 74114

Filed Feb. 24, 1986, Ser. No. 831,840

Int. Cl.⁴ B32B 3/04

U.S. Cl. 428—120

5 Claims



1. A credit card carbon paper defacer comprising: a unitary device of relatively thin, stiff material such as of plastic or metal having a first generally rectangular, flat, base portion dimensioned to fit in a billfold or shirt pocket of an user and an integral generally rectangular flap portion folded along one edge of said base portion to extend generally parallel to and spaced slightly from said base portion whereby a carbon paper can be received between

said flap portion and said base portion, one of said portions having at least one integral protrusion extending therefrom in the direction of the other portion and the other portion having a recess therein in alignment with said protrusion whereby when a carbon paper is positioned between said flap portion and said base portion said flap portion can be manually displaced towards said base portion, said protrusion forcing a segment of the carbon paper into said recess after which, if the carbon paper is manually pulled from said unitary device the portion of the carbon paper engaged by said protrusion will be torn away.

4,645,702

MAGNETIC RECORDING MEDIUM

Toshiyuki Asakura; Hiroaki Kobayashi, and Nobuaki Itoh, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 469,278, Feb. 24, 1983, abandoned.

This application Dec. 27, 1984, Ser. No. 685,965

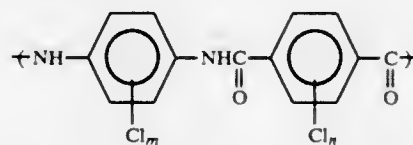
Claims priority, application Japan, Mar. 30, 1982, 57-51895; Sep. 8, 1982, 57-155158

Int. Cl.⁴ G11B 5/70

U.S. Cl. 428—141

8 Claims

1. An improvement in a magnetic recording medium which comprises the combination of a magnetic layer and a film of an aromatic polyamide having at least 50 mol % of recurring units represented by the following general formula:



wherein m and n are integers of form 0 to 4, with the proviso that the case where both m and n are 0 is excluded, and at least one high performance magnetic layer being composed of a metal or a metal compound vacuum-deposited on the aromatic polyamide film, said aromatic polyamide film having a density of from 1.400 to 1.490 g/cm³ in the state where the film is composed substantially solely of the aromatic polyamide, and the product of the thermal shrinkage factor and the thermal expansion coefficient in at least one direction in the plane of the film being in the range of from 1.0×10^{-7} to 1.0×10^{-4} , said combination of magnetic layer and film having substantial flatness and essentially no tendency to curl or wrinkle.

4,645,703

MAGNETIC RECORDING MEDIUM

Takashi Suzuki, Takatsuki; Kunio Hibino, Hirakata; Mikio Murai, Kawanishi; Shigeki Kawase, Toyonaka; Koichi Shinohara, Kobe, and Norimoto Nouchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 553,299, Nov. 18, 1983, abandoned.

This application Oct. 10, 1985, Ser. No. 786,348

Claims priority, application Japan, Nov. 19, 1982, 57-204042; Oct. 11, 1983, 58-189738

Int. Cl.⁴ G11B 5/72

U.S. Cl. 428—141

5 Claims

1. A magnetic recording medium comprising: a substrate of non-ferromagnetic characteristic, and

a ferromagnetic thin film, formed on said substrate, characterized by



protrusions of mountain-shape having 50–600 Å heights and distributed with numbers of 1×10^5 – 1×10^8 protrusions per 1 mm² on a surface of said ferromagnetic thin film, and a lubricant layer formed on said ferromagnetic thin film.

4,645,704

REFLECTING TEXTILE WEB AND METHOD FOR THE PRODUCTION THEREOF

Manfred Hellwig, Öhringen, Fed. Rep. of Germany, assignor to Konrad Hornschuch AG, Weissbach, Fed. Rep. of Germany

Filed Sep. 23, 1985, Ser. No. 778,907

Claims priority, application European Pat. Off., Mar. 8, 1985, 85102648

Int. Cl.⁴ B32B 1/00

U.S. Cl. 428—176

20 Claims

1. A reflecting flexible textile web comprising a textile support having metal coated on at least one side thereof, said textile support being chosen from the class consisting of a woven fabric, knitted fabric, non-woven fabric and thread ply sewn fabric, whose threads are coated with flame-retarding modified transparent plastic, characterized in that the metal coating is disposed substantially only in the region of the intersections of the threads of the textile support while the regions of the textile support disposed between the intersections are substantially free from the metal coating and thus permeable to light.

4,645,705

TRANSFER COUPON

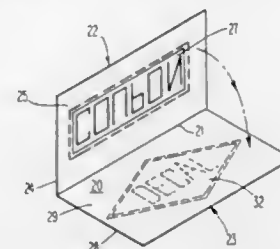
Thomas G. Abbott, Jr., Berwyn, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 30, 1982, Ser. No. 363,369

Int. Cl.⁴ B32B 3/18; B41M 3/12; B44C 1/16

U.S. Cl. 428—195

5 Claims



1. A promotional item comprising: (a) a substrate having on one surface thereof a transferable mirror image of a coupon; (b) a carrier having first and second opposed surfaces; and (c) a transferable decal applied to said second surface of the carrier sheet; wherein the first surface of the carrier is positionable to underlie the transferable image of the coupon and a decal receiving material is positionable to underlie the decal so that during a transfer process the decal is transferred to the decal receiving material and the coupon image is transferred to the first surface of the carrier to form a redeemable coupon.

4,645,706

TREATED CLOTH AND METHOD OF PREPARING SAME

June A. McClune, 104 Oak Hill Way, No. A, Los Gatos, Calif. 95030

Filed Feb. 28, 1986, Ser. No. 834,809

Int. Cl.⁴ B32B 3/00, 9/02; B05D 3/02, 5/04

U.S. Cl. 428—196

12 Claims

1. A method of treating a cloth to prevent lateral bleeding thereinto of a later applied oil-based paint, comprising: spraying at least that portion of the surface of the cloth which is to be painted with small droplets of a composition of matter consisting essentially of a hydrocarbon solvent having a boiling point range from above about 25° C. to below about 100° C. and a triglyceride ester having 30 to 70 carbon atoms, the amount of the composition of matter being such as to provide from about a 0.5 gram per square meter coating of the triglyceride ester to about a 3.5 grams per square meter coating of the triglyceride ester on said surface portion; and drying the sprayed surface portion for a sufficient time for the hydrocarbon solvent to vaporize prior to application of said oil-based paint thereto.

4,645,707

SEMICONDUCTOR DEVICES

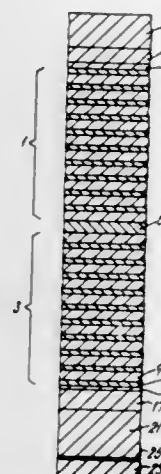
Richard A. Davies, Harrow, and Michael J. Kelly, London, both of England, assignors to The General Electric Company, p.l.c., England

Filed Nov. 19, 1985, Ser. No. 799,627

Int. Cl.⁴ B32B 7/02; H01L 27/12

U.S. Cl. 428—213

9 Claims



1. A semiconductor device exhibiting negative differential conductance, the device comprising two superlattices each comprising alternating layers of two different semiconductor materials such that there is a misalignment of energy band edges between each pair of adjacent layers with the layers of one of the materials constituting potential barriers to charge carriers passing through each superlattice, said superlattices being coupled to each other by a barrier layer of semiconductor material forming respective heterojunctions with the adjacent layers of the superlattices, said barrier layer having a lower transmission coefficient for said charge carriers than said layers of said one material, said superlattices defining the allowed energy levels of said charge carriers at either side of said barrier layer, and the value of a potential applied across said barrier layer determining the current-voltage characteristics of the device.

4,645,708

INTERNAL PROTECTIVE COATINGS FOR SENSITIVE RESINOUS LAMINAE

Donald G. LeGrand, Burnt Hills, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 13, 1984, Ser. No. 639,711
Int. Cl.⁴ B32B 27/08, 27/30, 27/36, 17/10

U.S. Cl. 428—215 16 Claims
1. A method for preventing damage in a laminate or multi-layer composite to a sensitive resinous lamina or layer by incompatible additives of adjoining plastic laminae or layers which method comprises:

- coating at least one surface of a sensitive resinous sheet with a polymerized cross-linkable protective coating mixture selected from the group consisting of an acrylic based copolymer containing at least a predominance of acrylic moieties or an amine-aldehyde resin;
- curing said polymerized crosslinkable protective coating mixture to form a cross-linked protective coating;
- positioning said sensitive resinous sheet so that said protective coating is interposed to separate the resulting sensitive resinous lamina or layer from the resulting adjacent plastic lamina or layer; and
- bonding said laminate or multi-layer composite.

4,645,709

COATED GLASS FABRIC

Robert J. Klare, Marietta, Ohio, assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1986, Ser. No. 867,158
Int. Cl.⁴ B32B 7/00

U.S. Cl. 428—251 4 Claims
1. A composite consisting of woven glass fabric which contains coatings in sequence of

- a silicone oil present on the glass fabric at a loading of between 3 and 20% by weight based on glass fabric;
- a particulate organic polymer or inorganic solid in which the particles are less than 0.3 micrometers, present at a loading of between 4 and 14% by weight based on glass fabric;
- a high molecular weight polytetrafluoroethylene having an SSG below 2.19, or
- an elastomeric fluoropolymer, or
- iii a coating made of ci followed by cii, wherein the total loading made up of coating (c) is between 25 and 200% by weight based on glass fabric.

4,645,710

FOAM LAMINATE STRUCTURES

Stacey A. Baitinger, Robert C. Brothers, and Kenneth T. Dishart, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 25, 1985, Ser. No. 780,075
Int. Cl.⁴ B32B 7/12, 3/26

U.S. Cl. 428—317.7 15 Claims
1. A laminate structure comprising a core in the form of a foamed polyurethane or polyisocyanurate resin and a facer material bonded to at least one face of the core with an adhesive material comprising a material having functional groups selected from acid groups, hydroxyl groups, amide groups and amine groups which groups are capable of interacting chemically with isocyanate groups in the polyurethane or polyisocyanurate resin, the peel strength of the bond between the core and the facer material being at least about 1.5 lbs./in.

4,645,711

REMOVABLE PRESSURE-SENSITIVE ADHESIVE TAPE

Louis E. Winslow, Stillwater, Minn.; Richard E. Bennett, Hudson, Wis., and Thomas S. Overstreet, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 26, 1985, Ser. No. 769,423
Int. Cl.⁴ C09J 7/02; B05D 5/10

U.S. Cl. 428—355 11 Claims
1. Pressure-sensitive adhesive tape comprising a backing sheet carrying a layer of pressure-sensitive adhesive comprising a copolymer of monomers comprising

- from 95 to 99.8 parts by weight of at least one terminally unsaturated vinyl monomer, 60 to 100 weight percent of said monomer being selected from the class of nontertiary alkyl acrylates wherein each alkyl group has at least half of its carbon atoms in a single chain and the average length of the alkyl chain is at least 4 and not more than 12, and
- from 0.2 to 5 parts by weight of at least one vinyl-unsaturated homopolymerizable emulsifier monomer which is a surfactant having both a hydrophobic and a hydrophilic moiety, contains at least 5 but not more than 40 carbon atoms, and is water-dispersible,

the total parts by weight of (a) plus (b) being 100, wherein the improvement comprises:

- the layer of pressure-sensitive adhesive comprises 5 to 50% by weight of tackifier resin selected from at least one of (a) hydrogenated rosin ester, (b) polyterpene, (c) polymerized alkyl styrene, and (d) polymerized petroleum-derived monomer resin.

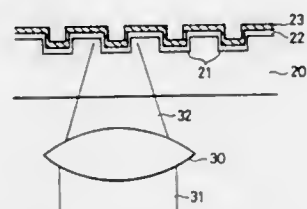
4,645,712

INFORMATION RECORDING MEDIUM

Masaji Ishigaki; Tetsu Ohishi; Nobuhiro Tokusyuku; Yoshie Kadera, all of Kanagawa, and Yukio Fukui, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1985, Ser. No. 795,453
Claims priority, application Japan, Nov. 9, 1984, 59-234953

Int. Cl.⁴ B32B 15/04; G01D 15/34
U.S. Cl. 428—433 7 Claims



1. An information recording medium comprising:
a substrate suitable for formation of said recording medium, and
a double layer formed on said substrate, said double layer including a highly transparent recording layer and a highly reflective layer, said highly transparent recording layer being a compound of Se and an element selected from the group consisting of Sb, In and Te admixed with a metal element having a highly optical absorption characteristic selected from the group consisting of Bi, Al, Ni, Cr, Co, Ti, Zr, Sn, Hf, Au, Ag, Zn, Pb, and Ta, so that a refractive index of said highly transparent recording layer is set so as to control a minimum value of a reflection factor of said double layer to a predetermined value.

4,645,713

METHOD FOR FORMING CONDUCTIVE GRAPHITE FILM AND FILM FORMED THEREBY

Jun Shioya; Yoichi Yamaguchi; Yoshinobu Ueba, and Hironaga Matsubara, all of Osaka, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 822,244

Claims priority, application Japan, Jan. 25, 1985, 60-10763; Nov. 22, 1985, 60-261383

Int. Cl.⁴ B05D 3/06
U.S. Cl. 428—457 13 Claims

1. A method for forming a conductive graphite film comprising the steps of forming a carbon film on substrate material heated to 1,000° C. or higher through a plasma discharge using hydrocarbon gas as raw material, said substrate material containing chrome or nickel, and subjecting said film to heat treatment at temperatures exceeding 1,500° C.

13. Conductive graphite film formed by means of a method comprising the steps of forming a carbon film on substrate material heated to 1,000° C. or higher through a plasma discharge using hydrocarbon gas as raw material, said substrate material containing chrome or nickel, and subjecting said film to heat treatment at temperatures exceeding 1,500° C.

4,645,714

CORROSION-RESISTANT SILVER MIRROR

John L. Roche, and George V. D. Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 24, 1984, Ser. No. 685,545
Int. Cl.⁴ B32B 15/08

U.S. Cl. 428—458 18 Claims



1. A highly reflective and corrosion-resistant mirror comprising in combination:
a. a polymeric substrate,
b. a thin, specularly reflective layer of silver overlying said substrate and bonded thereto,
c. at the surface of the silver layer that is distal to said substrate, sufficient bound mercaptide-type sulfur to bond with a substantial fraction of the available silver atoms, and
d. a thin protective layer of film-forming polymer overlying said distal surface and firmly adherently bonded thereto, at least one of said substrate and said film-forming polymer being transparent to visible light so that the specular surface of the silver can be seen therethrough.

4,645,715

COATING COMPOSITION AND METHOD

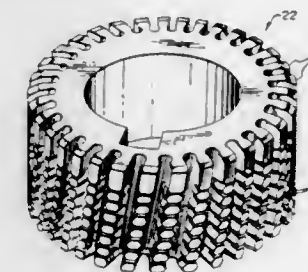
Stanford R. Ovsbinsky, Bloomfield Hills; John E. Keem, Grosse Pointe Park; James D. Flasek, Rochester; Richard C. Bergeron, Romulus, and John E. Tyler, Detroit, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 304,889, Sep. 23, 1981, abandoned. This application Mar. 17, 1982, Ser. No. 359,098

Int. Cl.⁴ B32B 9/00, 15/04
U.S. Cl. 428—469 30 Claims

1. A wear resistant coating formed on a substrate comprising a wear resistant layer of disordered material consisting of at least one transition metal selected from the group consisting of

hafnium, niobium, molybdenum, scandium, tantalum, titanium, vanadium, yttrium, and zirconium, and at least one nonmetallic



element selected from the group consisting of boron, carbon, nitrogen and oxygen.

4,645,716

FLAME SPRAY MATERIAL

John H. Harrington, Warwick, N.Y., and Saed Safai, Jupiter, Fla., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 9, 1985, Ser. No. 721,345
Int. Cl.⁴ B05D 1/08

U.S. Cl. 428—472 19 Claims

1. A flame spray material characterized by ability to produce thermally shock and erosion resistant coatings comprising a homogeneous ceramic composition consisting of:

- zirconium oxide containing up to about 10 percent of hafnium oxide based on the total weight of the zirconium oxide and hafnium oxide;
 - yttrium oxide;
 - titanium oxide;
 - organic binder in an amount up to about 10 percent by weight of the ceramic composition; and
 - incidental impurities in an amount up to about 1 percent by weight of the ceramic composition;
- the yttrium oxide being present in an amount between about 2 and 40 percent based on the total weight of the zirconium oxide, hafnium oxide, yttrium oxide and titanium oxide;
- the titanium oxide being present in an amount between about 6 and 30 percent based on the total weight of the zirconium oxide, hafnium oxide, yttrium oxide and titanium oxide; and
- the zirconium oxide being unstabilized when initially combined with the yttrium oxide and titanium oxide.

4,645,717

SOLUTION FOR USE IN IMPREGNATING PAPER FOR HIGH-PRESSURE ANTISTATIC LAMINATES

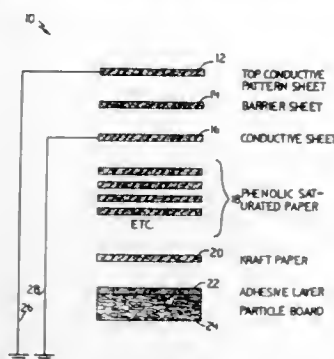
George R. Berbeco, West Newton, Mass., assignor to Charleswater Products, Inc., West Newton, Mass.

Division of Ser. No. 602,552, Apr. 20, 1984, Pat. No. 4,589,954, which is a division of Ser. No. 460,860, Jan. 25, 1983, Pat. No. 4,454,199, which is a continuation-in-part of Ser. No. 422,277, Nov. 17, 1982, Pat. No. 4,455,350. This application Feb. 4, 1986, Ser. No. 825,576

Int. Cl.⁴ B32B 27/08, 27/42
U.S. Cl. 428—503 13 Claims

1. A impregnating solution for use in impregnating a paper sheet material useful in the preparation of high-pressure laminates to impart electrical conductivity to the paper sheet material, which solution comprises 100 parts by weight of a curable thermosetting formaldehyde-type resin and an effective

amount of a catalyst, to effect curing of the resin under heat and pressure, and from about 10 to 90 parts by weight of alkyl-



allyl quaternary ammonium compound, to impart electrical conductivity to the sheet material after treatment and drying.

4,645,718

FERROUS SUBSTRATE WITH RUBBER ADHERENT METAL COATING AND METHOD OF MAKING THE SAME

Paul Dambre, Kemmel, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Oct. 8, 1985, Ser. No. 785,554

Claims priority, application United Kingdom, Oct. 23, 1984, 8426746

Int. Cl.⁴ B32B 15/20, 15/00; C25D 5/44; B60C 9/14
U.S. Cl. 428—625 24 Claims

1. A ferrous reinforcing substrate having a rubber adherent brass-alloy coating thereon of an improved porosity property in view of securing a more durable vulcanization bond between said substrate and rubber, the improvement wherein said coating has a compact structure substantially free from macropores and micropores characterized in that said coating comprises an amount of penetrated substrate iron of less than 0.5% of the coating weight, said penetrated substrate iron being predominantly non-solute iron.

15. A process for preparing a ferrous substrate with a thermally diffused rubber adherable brass alloy coating of compact structure, comprising the steps of:

- plating the substrate with a first layer of a brass alloy forming metal,
- plating on top thereof at least one additional layer of a brass alloy forming metal,
- transversely compressing said layers on said substrate to render them substantially free from pores before tarnishing and internal oxidation of the coating can occur,
- heating the substrate to produce an interdiffusion of the metal coatings so as to form said brass alloy coating, and
- optionally cold work finishing the thus coated and diffused substrate to a desired end size or shape.

4,645,719

SOFT MAGNETIC THIN FILM HAVING UNIAXIAL MAGNETIC ANISOTROPY

Hiroichi Naito, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 18, 1984, Ser. No. 621,770

Int. Cl.⁴ H01G 1/00

U.S. Cl. 428—626

1 Claim

1. A magnetic device comprising a substrate, a first thin film of a first permalloy material disposed on said substrate in the form of a plurality of small rectangular elements disposed in spaced parallel relation to each other in a uniform pattern to provide a plurality of small bar magnets due to shape anisotropy and a second film of a second permalloy material covering the remaining portion of said substrate and having uniaxial

anisotropy due to the shape anisotropy of the small rectangular elements.

4,645,720

ARMOUR-PLATE AND PROCESS FOR ITS MANUFACTURE

Hans Pircher, Mulheim an der Ruhr; Werner Bentz, Hattingen, and Alfred Tegethoff, Ratingen, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Dulsburg, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,037

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1983, 3340031

Int. Cl.⁴ F41H 5/04; C21D 9/42

U.S. Cl. 428—683

16 Claims

DOUBLE BOX



1. An armour plate comprising a two-layer bonded and heat-treated clad steel comprises an upper layer and a base layer wherein:

(a) said upper layer contains (in percent by weight)

0.30 to 0.80%	carbon
0.10 to 0.80%	silicon
0.40 to 1.20%	manganese
up to 0.015%	phosphorus
up to 0.015%	sulfur
0.20 to 2.80%	chromium
0.05 to 1.00%	molybdenum
0.01 to 0.05%	aluminum
up to 0.40%	nickel

remainder iron including unavoidable impurities;

(b) said base layer contains (in percent by weight)

0.17 to 0.40%	carbon
0.10 to 0.80%	silicon
0.40 to 2.00%	manganese
up to 0.025%	phosphorus
up to 0.025%	sulfur
0.10 to 1.50%	chromium
0.05 to 1.50%	molybdenum
0.01 to 0.05%	aluminum

remainder iron including unavoidable impurities, the carbon content of said upper layer being substantially higher than that of said base layer and the hardness of said base layer is at least 380 HB and wherein the difference in the hardness between said upper layer and said base layer is at least 130 HB, but not greater than 300 HB.

4,645,721

RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa, and Terumi Matsuda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jan. 13, 1986, Ser. No. 818,239

Claims priority, application Japan, Jan. 14, 1985, 60-5509; May 17, 1985, 60-106750; May 17, 1985, 60-106751

Int. Cl.⁴ G03G 5/16; B32B 9/00, 19/00

U.S. Cl. 428—690

10 Claims

1. A radiation image storage panel comprising a support, a phosphor layer which comprises a binder and a stimutable phosphor dispersed therein and a protective film, superposed in this order, characterized in that a thin film comprising an inorganic compound selected from the group consisting of inorganic nitrides, inorganic carbides, inorganic oxides, and inorganic fluorides, all having a property of being resistant to damage is provided on a surface of the panel.

4,645,723

PRODUCTION OF MAGNETIC RECORDING MEDIA POSSESSING A BACKING COATING, AND MAGNETIC RECORDING MEDIA THUS PRODUCED

Milena Melzer; Hermann Roller, both of Ludwigshafen; Norbert Schneider, Altrip; Horst Fitterer, Mannheim, and Wulf Münzner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 15, 1985, Ser. No. 702,250

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405960

Int. Cl.⁴ G11B 5/70

U.S. Cl. 428—694

4 Claims

1. A process for the production of a magnetic recording media by applying a magnetic layer, containing magnetic material finely dispersed in organic polymers, to one side of a flexible base, and applying a non-magnetizable backing coating, which is free of inorganic solids, to that side of the base which is opposite the magnetic layer, wherein, in order to form the backing coating, at least two polymers which are incompatible with one another are dissolved in a mixture of at least one low boiling solvent and at least one higher boiling solvent, the solution is applied in the form of a layer to the base, and the solvents are evaporated, with the proviso that the polymers are insoluble in the higher boiling solvent.

4,645,724

MAGNETIC RECORDING MEDIUM COMPRISING A SPECIFIC TYPE OF LUBRICANT

Kumiko Ojima; Tsunehide Naruse, and Yukio Matsumoto, all of Mito, Japan, assignors to Victor Company of Japan, Japan

Filed Jun. 3, 1985, Ser. No. 740,336

Claims priority, application Japan, Jun. 7, 1984, 59-115483

Int. Cl.⁴ G11B 5/70

U.S. Cl. 428—695

2 Claims

1. A magnetic recording medium which comprises a non-magnetic substrate and a magnetic recording layer made of a uniform dispersion of magnetic powder in a binder and formed on at least one surface of said substrate, said dispersion comprising, as a lubricant, a reaction product of a monobasic fatty acid and a monohydric alcohol reacted in a molar ratio of 1:0.3 to 1:0.8, said reaction product being substantially free of water, and being the reaction product of a fatty acid of the formula, RCOOH, in which R is a hydrocarbon group having from 8 to 18 carbon atoms, and a monohydric alcohol of the formula, R'OH, in which R' represents a hydrocarbon group having from 3 to 18 carbon atoms.

4,645,725

BATTERY COMPRISING DUAL TERMINAL BUSHINGS

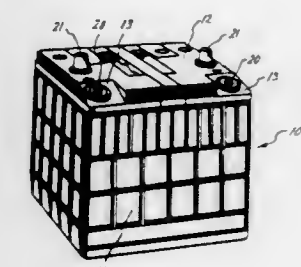
William H. Kump, Mendota Heights, and Joseph J. Jergl, Minneapolis, both of Minn., assignors to GNB Incorporated, Mendota Heights, Minn.

Filed Aug. 30, 1985, Ser. No. 770,946

Int. Cl.⁴ H01M 2/30

U.S. Cl. 429—179

13 Claims



1. A dual terminal, electric storage battery comprising:
(a) a container;

1. A photo-thermo-magnetic recording medium comprising:
a substrate;
a first magnetic layer which has a large coercive force and whose axis of easy magnetization is oriented in the direction perpendicular to the surface of the first layer; and
a second magnetic layer, said second layer being a composite layer formed of two or more magnetic thin films, the composition of each of the magnetic thin films differing from that of its adjacent magnetic thin film or films, said second layer having either or both of the polar Kerr rotation angle and the reflection factor larger than the polar Kerr rotation angle and the reflection factor, respectively, of said first layer, said second magnetic layer also having the same polarity of polar Kerr rotation as that of the first layer, the direction of its magnetic moment aligned in parallel with that of said first layer, a thickness permitting the transmittance of light therethrough and being magnetically coupled with the first layer by an exchange interaction therebetween;
said first and second magnetic layers being superimposed on the substrate in that order.

- (b) a cover;
 (c) a single pair of element posts in electrical communication with electrochemical components;
 (d) a single pair of terminal bushings substantially completely embedded in the cover, each of said bushings being electrically connected to one of said element posts and comprising,
 (i) a main body portion,
 (ii) a side terminal end, which side terminal end is mounted through an opening in an angled surface of said cover, which angled surface is at an angle acute to the plane generally contiguous to the top surface of said cover,
 (iii) a top terminal end, which top terminal end is mounted through an opening in said top surface of said cover on or in the vicinity of its longitudinal centerline,
 (iv) an element post end, and
 (v) a connecting arm extending sideways from said body portion to said side terminal end, and wherein said top terminal end, said body portion, and said element post end define a hole passing axially therethrough and adapted to receive therein one of said element posts;
 (e) a pair of side terminals in electrical communication with the side terminal ends of the bushings; and
 (f) a pair of top terminals in electrical communication with said top terminal ends of said bushings.

4,645,726

SOLID STATE LITHIUM BATTERY

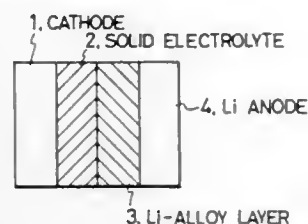
Masahiko Hiratani, Kokubunji; Katsuki Miyauchi, Hino; Yukio Ito; Keiichi Kanehori, both of Sayama; Fumiyoshi Kirino, Sugunami, and Tetsuichi Kudo, Setagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1985, Ser. No. 800,432

Claims priority, application Japan, Nov. 26, 1984, 59-248240
 Int. Cl.⁴ H01M 4/40, 6/18

U.S. Cl. 429—191

6 Claims



1. An all solid state lithium battery consisting of a cathode, a solid electrolyte and a lithium anode, said battery characterized in that a lithium alloy layer is formed between said solid electrolyte and said lithium anode.

4,645,727

COLORED TONER COMPOSITIONS COMPRISING DYE CHROMOPHORES

Beng S. Ong, Mississauga, and Walter Mychajlowski, Georgetown, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1986, Ser. No. 853,270

Int. Cl.⁴ G03G 9/00, 9/08

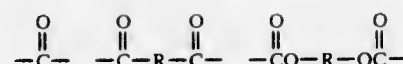
U.S. Cl. 430—106

62 Claims

1. A toner composition comprised of resin particles with covalently bonded polymeric dye chromophores, which resins are of the following formula:



wherein A is selected from the group consisting of alkylene and arylene; B is selected from the group consisting of



wherein R is an alkylene group, an arylene or polyether segment; D is selected from the group consisting of dioxyalkane and dioxyarene; x is a fraction number of 0.01 to 0.50; and y is a fraction number of 0.50 to 0.99, with x+y being equal to 1.

4,645,728

Patent Not Issued For This Number

4,645,729

METHOD FOR PREVENTING OFFSET IN ELECTROPHOTOGRAPHY

Nobuyasu Honda, Tenri; Masanori Fujii, Sakai, and Masahiko Kubo, Tenri, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 26, 1985, Ser. No. 780,191

Claims priority, application Japan, Sep. 29, 1984, 59-202976
 Int. Cl.⁴ G03G 13/14

U.S. Cl. 430—126

12 Claims

1. In an electrophotographic process, including the steps of developing a charged image on a photosensitive layer with a chargeable toner to form a toner image, transferring the toner image from the photosensitive layer to a receptor sheet, and fixing the toner image to the receptor sheet, the improvement which comprises using as the chargeable toner a toner comprising

- a fixing resin medium which is a copolymer of an aromatic vinyl compound and an ethylenically unsaturated carboxylic acid ester,
 - 0.5 to 7% by weight, based on the weight of the toner, of a hydroxycarboxylic acid complex salt, and
 - 1 to 25% by weight, based on the weight of the toner, of a releasing agent,
- and heat-fixing the toner image by contacting it with a hot roller, whereby the non-offset region is widened on the high temperature side such that offset is prevented.

4,645,730

LITHOGRAPHIC PRINTING PLATE WITH RESIN REINFORCED IMAGE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880, and Robert F. Cracia, Woodstock, Conn., assignors to Howard A. Fromson, Rockville, Conn.

Division of Ser. No. 471,621, Mar. 3, 1983, Pat. No. 4,501,810, which is a continuation of Ser. No. 307,355, Sep. 30, 1980, abandoned. This application Sep. 17, 1984, Ser. No. 651,353

Int. Cl.⁴ G03F 7/02

U.S. Cl. 430—155

8 Claims

1. Lithographic printing plate comprising a substrate having a hydrophilic surface, a coating on said surface of a water-soluble, light sensitive diazo material and a top coating comprising discrete oleophilic resin particles, said resin particle coating being:

- transparent to actinic light;
- sufficiently permeable to allow an aqueous developer to penetrate through to underlying diazo;
- insoluble in said developer
- capable of being coalesced after development of the plate; and
- nonfilm forming at room temperature.

4,645,731

DISTORTION RESISTANT POLYESTER SUPPORT FOR USE AS A PHOTOTOOL

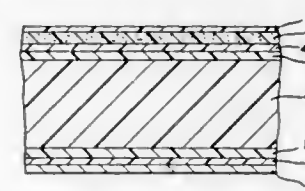
John H. Bayless, Hendersonville, N.C.; Neil I. Steinberg, Greer, S.C., and James H. Thirtle, Rochester, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1985, Ser. No. 813,969

Int. Cl.⁴ G03C 1/76

U.S. Cl. 430—271

10 Claims



1. A photosensitive element which limits dimensional change to no more than 0.001 inch per 24 inches within six hours after exposure to a 5% Relative Humidity change comprising a biaxially oriented polyester support of at least 0.008 inch in thickness bearing on both sides thereof a polymeric water-vapor barrier layer consisting essentially of at least 0.00001 inch thick of a copolymer of vinylidene chloride consisting essentially of 80 to 98% by weight of vinylidene chloride 1 to 19% by weight of an alkyl acrylate wherein alkyl is 1 to 4 carbon atoms, and 1 to 5% by weight of itaconic acid to which subsequently coated layers adhere, and on at least one side of said water-vapor barrier layer, a layer of a photosensitive material.

4,645,732

METHOD FOR MANUFACTURING TWO-SIDED CIRCUIT BOARD

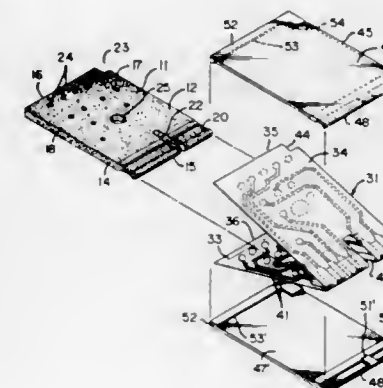
Walter M. Young, Largo, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 23, 1982, Ser. No. 452,536

Int. Cl.⁴ G03C 5/00

U.S. Cl. 430—314

3 Claims



1. Method of manufacturing a circuit board having circuitry on opposed surfaces which is interconnected by circuitry on at least one edge thereof, said method comprising the steps of: plating a dielectric substrate with metallic conductor on said opposed surfaces and said at least one edge thereof; covering said substrate with photoresist, said photoresist covering said metallic conductor plated thereon; placing a flexible artwork mask flushly against said opposed surfaces and said edge, said mask being folded to fit around said edge, said mask having an opaque pattern

thereon which corresponds to the desired circuitry, said mask being otherwise transparent; exposing said substrate and mask to light of a frequency which renders exposed photoresist insoluble; removing said mask from said substrate; washing away the unexposed photoresist to leave the desired circuitry, said circuitry being continuous around said edge.

3. The method of claim 1 which further comprises the steps of:
- electroplating said circuitry with successive platings of copper, nickel, and gold;
 - removing the remaining resist from said board;
 - etching away the plating outside said circuitry.

4,645,733

HIGH RESOLUTION PRINTED CIRCUITS FORMED IN PHOTOPOLYMER PATTERN INDENTATIONS OVERLAYING PRINTED WIRING BOARD SUBSTRATES

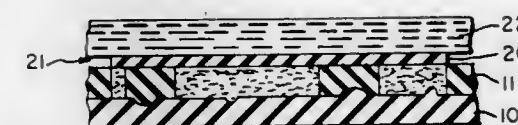
Donald F. Sullivan, 115 Cambridge Rd., King of Prussia, Pa. 19406

Continuation-in-part of Ser. No. 681,686, Dec. 14, 1984, which is a continuation-in-part of Ser. No. 550,379, Nov. 10, 1983, Pat. No. 4,528,259. This application Apr. 5, 1985, Ser. No. 720,354

Int. Cl.⁴ G03C 5/00

U.S. Cl. 430—314

9 Claims



1. The process of producing high resolution closely spaced printed circuits on a substrate which may have surface irregularities, comprising the steps of: forming a patterned polymer layer over said substrate having a substantially flat outer surface with conductor receiving indentations therein to a depth of at least 0.002 in. (0.005 cm), filling the indentations flush with the substantially flat outer surface with a conductive material defining circuit patterns on the substrate, and machining the substantially flat outer surface to remove a thin layer thereby to remove any spillover conductive material on the flat surface of the polymer layer to confine the conductive material within said indentations with the insulating polymer separating adjacent conductive areas.

4,645,734

COMPOSITE HAVING CONDUCTIVE LAYER ON RESIN LAYER AND METHOD OF MANUFACTURING

Mitsuyuki Takada; Atsushi Endo, and Hayato Takasago, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,588

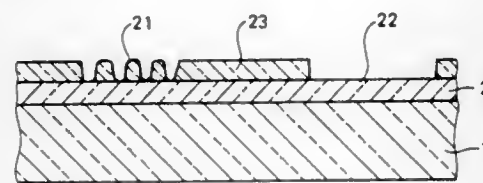
Claims priority, application Japan, Aug. 10, 1984, 59-168235
 Int. Cl.⁴ G03C 5/00

U.S. Cl. 430—315

9 Claims

1. A method of manufacturing a composite having a conductive layer on the surface of a resin layer, comprising the steps of: preparing a substrate having a main surface, forming on said main surface of said substrate a resin layer comprising a resin material, said resin material being selectively photoetchable at predetermined small areas distributed on said main surface and being settable after selective photoetching, selectively photoetching said resin material on the surface of said resin layer at predetermined small areas distributed on said main surface with a photomask having corresponding

photo patterns, to form unevenness including concavities formed as a result of said selective photoetching of said resin material,
setting said resin material of said resin layer having said unevenness formed on said main surface of said resin layer,



forming catalyst nuclei for electroless plating on said selectively photoetched surface having said unevenness of said resin layer, and
electroless plating a conductive metallic layer on said selectively photoetched surface having said unevenness having said catalyst nuclei formed.

4,645,735 SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING ULTRAVIOLET RAY ABSORBING POLYMER LATEX

Naohiko Sugimoto; Tetsuro Kojima, and Shingo Ishimaru, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 520,771, Aug. 5, 1983, abandoned. This application Mar. 13, 1985, Ser. No. 712,314

Claims priority, application Japan, Aug. 5, 1982, 57-136612 The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

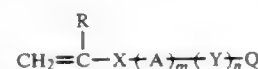
Int. Cl.⁴ G03C 1/84

U.S. Cl. 430—512

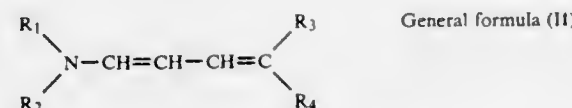
15 Claims

1. A silver halide photographic light-sensitive material, comprising:

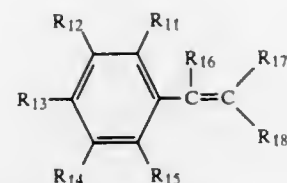
- a support base having provided thereon;
- a light-sensitive silver halide emulsion layer;
- a light-insensitive hydrophilic colloid layer; and
- a layer comprising an ultraviolet ray absorbing latex of an ultraviolet ray absorbing polymer or copolymer having a repeating unit derived from a monomer represented by the following general formula (I) and a hydrophilic colloid, wherein said layer is positioned between the support base and the light-sensitive silver halide emulsion layer or is a back layer positioned on the support base on the side opposite the side having the light-sensitive silver halide emulsion layer, the ultraviolet ray absorbing polymer latex being present in an amount in the range of 10 to 2,000 mg/m²:



wherein R represents a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms or a chlorine atom, X represents —CONH—, —COO— or a phenylene group, A represents a bonding group selected from an alkylene group having 1 to 20 carbon atoms and an arylene group having 6 to 20 carbon atoms, Y represents —COO—, —OCO—, —CONH—, —NH—, —CO—, —SO₂NH—, —NHSO₂—, —SO₂— or —O—, m and n each represents 0 or 1, and Q represents an ultraviolet ray absorbing group represented by the following general formula (II) or (III):



wherein R₁ and R₂ each represents a hydrogen atom, an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms, and R₁ and R₂ may be identical or different each other, but they do not represent hydrogen atoms at the same time, and R₁ and R₂ may be united by bonding wherein they represent an atomic group necessary to form a cyclic amino group, R₃ represents a cyano group, —COOR₅, —CONHR₅, —COR₅ or —SO₂R₅, and R₄ represents a cyano group, —COOR₆, —CONHR₆, —COR₆ or —SO₂R₆, wherein R₅ and R₆ each represents an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms or R₅ and R₆ may be united by bonding, wherein they represent an atomic group necessary to form a 1,3-dioxocyclohexane ring, a barbituric ring, a 1,2-diaza-3,5-dioxocyclopentane ring or a 2,4-diaza-1-alkoxy-3,5-dioxocyclohexene ring, but at least one of R₁, R₂, R₃ and R₄ is necessary to bond to the vinyl group through the bonding group;



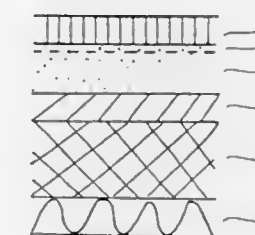
wherein R₁₁, R₁₂, R₁₃, R₁₄ and R₁₅ each represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 20 carbon atoms, an aryl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an alkylthio group having 1 to 20 carbon atoms, an arylthio group having 6 to 20 carbon atoms, an amino group, an alkylamino group having 1 to 20 carbon atoms, an arylamino group having 6 to 20 carbon atoms, a hydroxyl group, a cyano group, a nitro group, an acylamino group, a carbamoyl group, a sulfonyl group, a sulfamoyl group, a sulfonamide group, an acyloxy group or an oxycarbonyl group, and R₁₆ and R₁₇, R₁₂ and R₁₃, R₁₃ and R₁₄ or R₁₄ and R₁₅ may form a 5-member or 6-member ring by ring closure, R₁₆ represents a hydrogen atom or an alkyl group having 1 to 20 carbon atoms, R₁₇ represents a cyano group, —COOR₁₉, —CONHR₁₉, —COR₁₉ or —SO₂R₁₉, and R₁₈ represents a cyano group, —COOR₂₀, —CONHR₂₀, —COR₂₀ or —SO₂R₂₀, wherein R₁₉ and R₂₀ each represents an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms, but at least one of R₁₁, R₁₂, R₁₃, R₁₄, R₁₅, R₁₆, R₁₇ and R₁₈ is necessary to bond to the vinyl group through the bonding group wherein the repeating unit derived from a monomer unit represented by the general formula (I) comprises 50 to 100% by weight of the ultraviolet ray absorbing polymer latex.

4,645,736
WATERPROOF PHOTOGRAPHIC PAPER SUPPORT
Reiner Anthonen, Bramsche; Wieland Sack, Bissendorf; Heinz Trentmann, and Hans-Georg Wöllmer, both of Osnabrück, all of Fed. Rep. of Germany, assignors to Felix Schoeller Jr. GmbH & Co. KG, Osnabrück, Fed. Rep. of Germany
Continuation of Ser. No. 565,977, Dec. 27, 1983, abandoned.
This application Oct. 4, 1985, Ser. No. 783,810
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1983, 3300025

U.S. Cl. 430—538

Int. Cl.⁴ G03C 1/86

33 Claims



1. A waterproof, paper support material for photographic coatings comprising:

- a photographic base paper,
- a coating of electron beam radiation-hardened varnish on said paper for receiving the photographic coating thereon, said coating including C=C bonds before radiation hardening, and
- a barrier layer having a low permeability to acrylate monomer sufficient to substantially reduce the fogging of a photographic coating, when present, which fogging would otherwise result due to contact of said radiation hardened varnish and said base paper, said barrier layer being arranged between said paper and said varnish coating.

4,645,737
ENZYM/IMMUNOFLUORESCENT ASSAY FOR ANTI-TREPONEMAL ANTIBODIES
Stephen R. Coates, Lafayette, and Walter L. Binder, San Diego, both of Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 5, 1984, Ser. No. 586,538
The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.⁴ G01N 33/53, 33/534, 33/535, 33/571

U.S. Cl. 435—7

16 Claims

1. A method for the determination of anti-treponemal antibody in a test sample, comprising:

- providing a substrate for the anti-treponemal antibody; contacting said substrate with a test sample; treating said contacted substrate with labeled antihuman immunoglobulin antibody, said labeled antihuman immunoglobulin antibody selected from the group consisting of:
 - (a) a mixture comprising enzyme labeled antihuman immunoglobulin antibody and fluorescent labeled antihuman immunoglobulin antibody;
 - (b) antihuman immunoglobulin antibody labeled with an enzyme and a fluorescent label;
 - (c) fluorescent labeled antihuman immunoglobulin antibody to which enzyme labeled antibody against the animal species from which the antibody used in the fluorescent labeled antibody was derived is subsequently added; and
 - (d) enzyme labeled antihuman immunoglobulin antibody to which fluorescent labeled antibody against the animal species from which the antibody used in the fluorescent labeled antibody was derived is subsequently added;

analyzing of the treated substrate to determine if it has enzyme activity; and
determining the immunofluorescent pattern in substrates exhibiting enzyme activity.

4,645,738
METHOD FOR DIFFERENTIAL DIAGNOSIS OF T CELL LEUKEMIAS USING MONOCLONAL ANTIBODIES
Robert W. Knowles, New York; Bo Dupont, Harrison; Kazuyuki Naito, New York, all of N.Y., and Yasuo Morishima, Nagoya, Japan, assignors to Memorial Sloan-Kettering Institute Cancer Center, New York, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,977
Int. Cl.⁴ G01N 33/53, 33/554, 33/577

U.S. Cl. 435—7

7 Claims

1. Monoclonal antibody 3-3 (HB8369) and 3-40 (HB8368) not capable of immunological reaction with normal, human peripheral T or B blood cell antigens, normal human thymocyte antigens or normal, human bone marrow precursor cell antigens but capable of immunological reaction with separate and distinct T-ALL leukemia antigens (T-ALL) having molecular weights of approximately 35–40,000 KD and wherein said monoclonal antibodies are capable of distinguishing T-ALL leukemia from cutaneous T-cell lymphoma (CTCL), adult T cell leukemia (ATL) and T-cell chronic lymphocytic leukemia (T-CLL) and further capable of subsetting T-ALL leukemia into E-Rosette positive and E-Rosette negative cells.

4,645,739
PROCESS AND REAGENT FOR THE DETERMINATION OF N-CARBAMOYLSARCOSE WITH THE USE OF A NEW ENZYME

Rolf Deeg, Bernried; Albert Röder, Seeshaupt; Joachim Siedel, Bernried; Helmgard Gahl, Tutzing, and Joachim Ziegenhorn, Starnberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim Waldhof, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,072

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248145

Int. Cl.⁴ C12Q 1/26, 1/00, 1/34, 1/28

U.S. Cl. 435—25

12 Claims

1. A process for the determination of N-carbamoylsarcosine in a sample, comprising
reacting said sample with N-carbamoylsarcosine-amidohydrolase to give sarcosine; and determining the sarcosine formed as an indication that N-carbamoylsarcosine is present in the sample.
6. Substantially pure enzyme N-carbamoylsarcosine-amidohydrolase which catalyzes formation of sarcosine, carbon dioxide and ammonia from N-carbamoylsarcosine.

4,645,740
PROCESS FOR ENZYMATIC REPLACEMENT OF THE B-30 AMINO ACID IN INSULINS

Klaus Breddam, Glostrup; Jack T. Johansen, Rungsted Kyst, both of Denmark, and Fred Widmer, Bethesda, Md., assignors to Carlsberg Biotechnology Ltd. A/S, Copenhagen, Denmark
PCT No. PCT/DK 81/00074, 8371 Date Mar. 23, 1982, 8102(e) Date Mar. 23, 1981, PCT Pub. No. WO 82/00301, PCT Pub Date Feb. 4, 1982

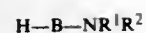
Continuation-in-part of Ser. No. 136,661, Apr. 2, 1980, Pat. No. 4,339,534, PCT filed Jul. 23, 1981, Ser. No. 364,856

Claims priority, application Denmark, Jul. 24, 1980, 3197/80
Int. Cl.⁴ C12P 21/04, 21/06

U.S. Cl. 435—71

12 Claims

1. A process for enzymatic replacement of the B-30 amino acid in insulins, characterized by reacting as substrate component the selected insulin Ins-X, wherein X represents the B-30 amino acid,
with an amine component selected from the group consisting of
(a) optionally N-substituted amino acid amides of the formula



wherein B is an amino acid residue and R^1 and R^2 are independently selected from the group consisting of hydrogen, amino, hydroxy, alkyl, cycloalkyl, aryl, heteroaryl and aralkyl or R^1 and R^2 together with the nitrogen atom form a heterocyclic group which may contain a further heteroatom, and

(b) amino acid esters of the formula



wherein B is an amino acid residue and R^3 represents alkyl, cycloalkyl, aryl, heteroaryl or aralkyl, in the presence of an L-specific serine or thiol carboxypeptidase enzyme in an aqueous solution or dispersion having a pH from about 7 to 10.5, thereby to form an insulin derivative
 $\text{Ins}-\text{B}-\text{NR}^1\text{R}^2$, $\text{Ins}-\text{B}-\text{B}-\text{NR}^1\text{R}^2$,
 $\text{Ins}-\text{B}-\text{OR}^3$, $\text{Ins}-\text{B}-\text{SR}^3$ or $\text{Ins}-\text{B}-\text{Ser}^3$.

4,645,741

MODIFIED LIPASE

Yuji Inada, Tokyo, Japan, assignor to Bellex Corporation, Tokyo, Japan

Filed Dec. 31, 1984, Ser. No. 687,635

Claims priority, application Japan, Jan. 17, 1984, 59-6129
 Int. Cl.⁴ C12P 7/64, 7/62; C12N 9/96, 9/20

U.S. Cl. 435-134 13 Claims
 1. A modified lipase, comprising lipase molecules which are partially substituted with an active derivative of a polyalkylene glycol having a hydrophobic group at the terminal end.

4,645,742

MATERIALS FOR DETERMINING FRUCTOSAMINE LEVELS IN BLOOD SAMPLES

John R. Baker, 25 Dell Avenue, Remuera, Auckland, New Zealand

Division of Ser. No. 450,149, Dec. 15, 1982. This application Jul. 18, 1984, Ser. No. 632,043

Claims priority, application New Zealand, Dec. 23, 1981, 199380

Int. Cl.⁴ G01N 33/66, 33/68

U.S. Cl. 436-15 3 Claims

1. A reagent for use in determining serum fructosamine levels in a blood sample or a sample derived from blood, comprising a sufficient amount of an alkaline buffer and nitro-blue tetrazolium to convert any fructosamine present in a sample to its active enol form and react over time after the buffer and nitro-blue tetrazolium have been added to the sample such that any colour change after an initial period of time is caused predominantly by glucose in the sample that is reacted or associated with an amine group of protein and has undergone a molecular re-arrangement to form fructosamine and not materially by any non-specific reducing substances which may be present in the sample.

2. A standard solution for use in determination of serum fructosamine levels in a blood sample or a sample derived from blood, said standard solution comprising an aqueous solution of a protein and 1-deoxy-1-morpholinofructose.

4,645,743

METHOD AND DEVICE FOR COLLECTING AND TESTING FOR FECAL OCCULT BLOOD

Josefina T. Baker, Cupertino, Calif.; Joseph F. Pagano, Paoli, Pa., and Ronald J. Schoengold, San Jose, Calif., assignors to SmithKline Diagnostics, Inc., Sunnyvale, Calif.

Filed Mar. 11, 1986, Ser. No. 838,856

Int. Cl.⁴ G01N 33/72

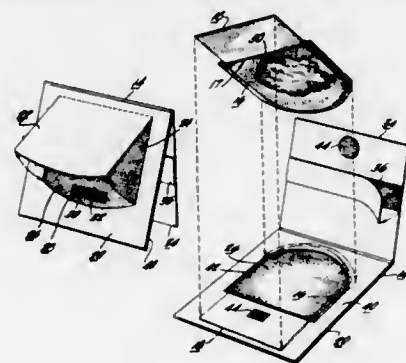
U.S. Cl. 436-66 8 Claims

1. A device for collecting and testing fecal occult blood comprising in combination:

(a) a fecal sampler comprising a wipe pad and an insert retained therein;

(b) a test slide comprising a front and rear panel, said front panel having means defining at least one aperture, said aperture being profiled to receive the wipe pad having a similar contour, sheet means carrying a test reagent between the front and rear panel for the reception of a fecal specimen, a hinged cover, having an open position and a closed position, to overlie a portion of the front panel and said aperture when in said closed position and flap means in the rear panel opposite said aperture and pivotable to expose the underside of the sheet, adhesive means positioned to contact and seal the wipe pad within said aperture when the cover is in said closed position whereby the insert which has a portion exposed beyond the closure line of the closed cover can be slidably removed from the sealed pad.

5. A method for determining the presence of fecal occult blood on a specimen test slide having a guaiac treated specimen



receiving sheet between a front and rear panel with openings in the front and rear panels and pivotable covers to cover said openings which comprises:

- obtaining a fecal specimen by direct wiping of the anal area with a fecal sampler which comprises a wipe pad and an insert;
- transferring said specimen to the receiving sheet by placing the smear from the wipe pad in direct contact with the sheet;
- closing the front cover of the test slide whereby the wipe pad is secured in the front opening and the insert has a portion exposed beyond the closure line;
- removing the insert which contains fecal fluids which passed through the wipe pad from the feces;
- opening the rear cover and applying a developing solution to the guaiac sheet at the corresponding opening in the rear panel, and if the test is positive,
- conducting a second confirmatory test specific for human hemoglobin on said insert, said sampler being free of guaiac.

4,645,744

UNIFIED TEST MEANS FOR ION DETERMINATION

Steven C. Charlton, Elkhart, Ind.; Roger L. Fleming, Niles, Mich.; Paul Hemmes, Elkhart, and Arthur L. Y. Lau, Mishawaka, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 493,983, May 12, 1983, abandoned. This application Jul. 2, 1985, Ser. No. 751,185

Int. Cl.⁴ G01N 21/78, 33/52

U.S. Cl. 436-74 34 Claims

1. A test means for determining the presence of an ion in an aqueous test sample, the test means comprising: a reagent layer composed of a substantially nonpolar, nonporous carrier matrix incorporated with

- an ionophore capable of forming a complex with a specific ion to be determined, and
- a reporter substance capable of interacting with the complex of the ionophore and the ion to produce a detectable response.

4,645,745

DIGESTION PROCESS

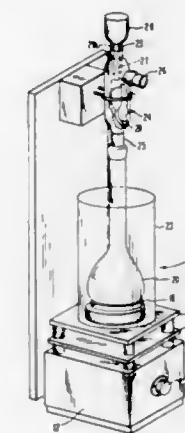
Clifford C. Hach, Loveland, Colo., assignor to Hach Company, Loveland, Colo.

Continuation-in-part of Ser. No. 583,984, Feb. 27, 1984, abandoned. This application Dec. 12, 1985, Ser. No. 807,537

Int. Cl.⁴ G01N 1/28, 33/00

U.S. Cl. 436-114

19 Claims



1. A process for digesting a sample of a material comprising the steps of:

- placing a weighed amount of a sample of a material in a digestion flask;
- adding concentrated sulfuric acid to said flask to form a digest;
- heating said digest at a temperature and for a time sufficient to char said sample and bring said digest to a boil at a temperature less than about 330° C.; and
- continuing to boil said digest at said temperature less than about 330° C., while simultaneously continuously adding a reagent solution to said digest, for a time sufficient to convert all nitrogen present in said sample to ammonium ions, said time being less than about 15 minutes, said reagent solution comprising hydrogen peroxide and concentrated sulfuric acid, and wherein said reagent solution enters said digest along an interior surface of said flask such that a slow continuous stream of said reagent solution is presented where said reagent solution meets said digest.

4,645,746

DIGESTION PROCESS

Clifford C. Hach, Loveland, Colo., assignor to Hach Company, Loveland, Colo.

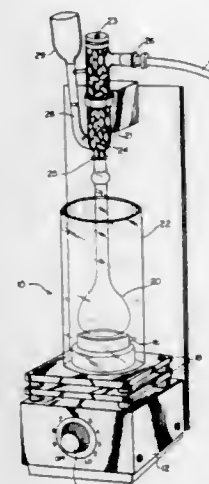
Filed Jan. 6, 1986, Ser. No. 816,371

Int. Cl.⁴ G01N 1/28, 33/00

U.S. Cl. 436-115 18 Claims

1. A process for digesting a material sample, the process comprising the steps of:

- placing a weighed amount of a material sample in a digestion flask;
- adding concentrated sulfuric acid to said flask to form a digest;
- heating said digest at a temperature and for a time sufficient to char said material sample and bring said digest to a boil at a temperature less than about 330° C.; and
- continuing to boil said digest at said temperature less than about 330° C., while simultaneously continuously adding



hydrogen peroxide to said digest and refluxing with a fractionating column in a manner such that water vapor is removed and hydrogen peroxide is returned to said digest, for a time sufficient to convert all nitrogen present in said material sample to ammonium ions, said time being less

than about 10 minutes, and wherein said hydrogen peroxide enters said digest along an interior surface of said flask such that a slow continuous stream of said hydrogen peroxide is presented where said hydrogen peroxide meets said digest.

4,645,747

SPECIFIC BINDING ASSAY TECHNIQUE

Michael Cais, Moshe Shimoni, and Abraham Baniel, all of Haifa, Israel, assignors to Technion Research & Development Foundation, Ltd., Technion City, Israel

Continuation-in-part of Ser. No. 124,691, Feb. 26, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,334

Claims priority, application Israel, Mar. 11, 1979, 56389
 The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.

Int. Cl.⁴ G01N 33/537, 33/538

U.S. Cl. 436-500 14 Claims

1. A specific-binding assay method for assaying a ligand in an aqueous medium, comprising the steps of:

- preparing a mixture of said aqueous medium with a reagent containing a labeled constituent, which constituent comprises a conjugate of (i) a gamma-labeling substance and (ii) a binding component which binds said ligand, to form a bound fraction and a free fraction of said labeled constituent, the quantity of said labeling substance in said bound fraction being proportional to the amount of said ligand in said aqueous medium;
- then contacting said mixture with a solvent medium which (i) has the property of selective extraction power toward said ligand and (ii) forms a separate phase from said aqueous medium, such that said free fraction is extracted into said separate phase; and thereafter
- determining the quantity of said gamma-labeling substance in either said bound fraction of said free fraction, wherein said solvent medium consists essentially of at least one selected from the group consisting of methyl isobutyl ketone, chloroform, dichloromethane, carbon tetrachloride, tert-amyl alcohol, benzyl alcohol, ethyl acetate, tert-butyl methyl ether, hexane, heptane and isooctane.

4,645,748

PROTEIN WHICH IS CHARACTERISTIC OF RHEUMATOID ARTHRITIS

Charles Hurwitz, 108 Mosher Rd., Delmar, N.Y. 12054; Carmen L. Rosano, 23 Nancy Dr., Troy, N.Y. 12180; Nourollah Parhami, 349 Torquay Blvd., Westmere, N.Y. 12203, and Karim Hechemy, 29 Pico Rd., Clifton Park, N.Y. 12065

Filed Feb. 1, 1985, Ser. No. 697,332

Int. Cl.⁴ G01N 33/53, 33/563, 33/564

U.S. Cl. 436—509

8 Claims

7. A method of detecting rheumatoid arthritis in a human which comprises incubating the serum from an individual under test with a composition containing a diagnostically effective amount of the F(ab)₂ fraction, the Fab fraction or a mixture of such fractions of an antibody to a rheumatoid arthritis factor, said factor, isolated from the sera of human rheumatoid arthritis patients and identifiable by the following characteristics:

- isoelectric pH range of 5.1 to 5.3
- precipitated from human serum in 0.02 molar acetate buffer at pH 5.5
- soluble in 0.026 molar ethylene glycol tetraacetic acid (EGTA) at pH 7.5
- present in euglobulin fraction of human sera
- molecular weight of about 135,000 as detected by sodium dodecyl sulfate polyacrylamide gel electrophoresis
- enlarges the size of the Clq precipitin ring in radial immunodiffusion
- inhibits the hemolytic activity of Clq
- inhibits the binding of Clq to fibronectin
- over 90% by weight of the total molecular weight is accounted for by the following amino acids:

Aspartic acid	Alanine
Threonine	Valine
Serine	Phenylalanine
Glutamic acid	Histidine
Proline	Glycine
Isoleucine	Cysteine
Leucine	
Tyrosine	
Lysine	
Arginine	

- nonreactive with antibodies to human IgG, IgA or IgM.

4,645,749

WATER SOLUBLE COMPOSITIONS FOR PREPARING ANALYTICAL SOLUTIONS

Cyril F. Drake, Harlow, United Kingdom, assignor to Standard Telephones and Cables, PLC, London, England

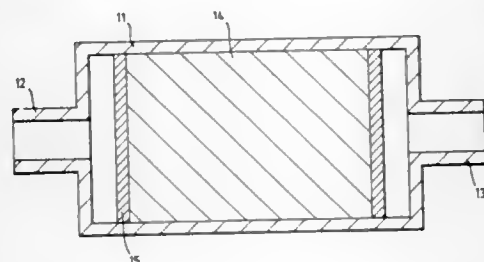
Filed Jun. 26, 1985, Ser. No. 748,983

Claims priority, application United Kingdom, Jul. 18, 1984, 8418297

Int. Cl.⁴ C03C 3/16

U.S. Cl. 501—45

7 Claims



1. A water soluble body for the preparation of an aqueous analytical solution of a trace concentration of a metallic ion by dissolution of the body at a substantially constant predeter-

mined rate, wherein said body consists of a water soluble glass composition incorporating phosphorus pentoxide as a glass forming oxide, wherein the glass incorporates glass modifying oxides including an oxide of said metal and calcium oxide, wherein the concentration of phosphorus pentoxide in the glass is between 38.5 mole percent and 45.9 mole percent, and wherein the calcium oxide concentration is between 33.7 mole percent and 51.5 mole percent such that, when contacted with pure water, the metallic ion is released at a rate of 0.01 to 100 micrograms per cm² per hour.

4. A body as claimed in claim 2 or 1 and comprising a plurality of platelets, wherein the ratio of the largest diameter to the thickness of said platelets is not less than 10:1.

5. A cartridge for the preparation of an analytical solution of a trace concentration of a metallic ion, the cartridge comprising an inert housing having an inlet and an outlet for the passage of water therethrough, a water soluble glass body disposed in the housing and adapted to release the metallic ion at a substantially constant predetermined rate on dissolution, and means for retaining the body in the housing, wherein said body consists of a water soluble glass composition incorporating phosphorus pentoxide as a glass forming oxide, wherein said glass incorporates an oxide of said metal and calcium oxide, wherein the concentration of phosphorus pentoxide in the glass is between 38.5 mole percent and 45.9 mole percent, and wherein the calcium oxide concentration is between 33.7 mole percent and 51.5 mole percent such that, when the glass is contacted with pure water, the metallic ion is released at a rate of 0.01 to 100 micrograms per cm² per hour.

7. A standard analytical solution of a trace quantity of a cation prepared from a glass body as claimed in claim 1 or from a cartridge as claimed in claim 5.

4,645,750

UREA REJUVENATION OF CATALYSTS

Donald F. Best, Mahopac, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 642,747, Aug. 21, 1984, abandoned,

which is a continuation of Ser. No. 250,568, Apr. 3, 1981,

abandoned. This application Oct. 24, 1985, Ser. No. 790,653

Int. Cl.⁴ B01J 29/38, 38/66, 23/96; C10G 47/02

U.S. Cl. 502—26

10 Claims

1. A process for the rejuvenation of a spent hydrocracking catalyst from a hydrocracking process, said hydrocracking catalyst comprising a base-unstable crystalline zeolitic aluminosilicate and a Group VIII noble metal hydrogenation component, which process comprises contacting said spent hydrocracking catalyst with an aqueous solution containing urea at a pH from about 5 to 9.5 and at a temperature high enough for the rejuvenation reaction to proceed wherein said temperature is between about 70° C. and about 100° C.

2. The process of claim 1 wherein said aqueous solution contains urea, and one or more members from the group consisting of ammonium hydroxide and ammonium salts.

3. The process of claim 1 wherein said aqueous solution contains urea and nitric acid.

4,645,751

REGENERATION OF NOBLE METAL-HIGHLY SILICEOUS ZEOLITE WITH SEQUENTIAL HYDROGEN HALIDE AND HALOGEN OR ORGANIC-HALOGEN COMPOUND TREATMENT

Sharon B. McCullen, Newtown, Pa.; Stephen S. Wong, Medford, and Tracy J. Huang, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 580,925, Feb. 16, 1984, abandoned.

This application Dec. 23, 1985, Ser. No. 814,082

Int. Cl.⁴ B01J 29/38, 38/44, 38/42; C10G 35/08

U.S. Cl. 502—37

20 Claims

1. A process for rejuvenating a steamed catalyst comprising an alumina binder and a highly siliceous zeolite having a framework silica-alumina ratio of at least about 20 containing ag-

glomerated noble metal selected from the group consisting of platinum, palladium, osmium, rhodium and ruthenium, which process comprises initially reducing the steamed, deactivated catalyst comprising an alumina binder, pretreating the reduced catalyst with a gas stream containing about 0.001 to 10 weight percent hydrogen halide and about 1 to 20 volume percent oxygen until breakthrough, redispersing noble metal throughout the catalyst by contacting the pretreated catalyst with a gas stream containing about 1 to 20 volume percent oxygen and about 0.001 to 10 weight percent X in the form of X₂ or X-containing organic material, where X is selected from the group consisting of F, Cl, Br and I, and subsequently reducing said catalyst.

3. The process of claim 1 wherein said catalyst is contacted with an oxygen-containing gas at elevated temperatures prior to the initial reduction in order to remove coke from the catalyst.

14. The process of claim 1 wherein said zeolite contains an additional metal selected from the group consisting of Group IB, Group IVB and Group VIIA metals.

4,645,752

HYDROCRACKING CATALYST AND PROCESS FOR MANUFACTURING THE SAME

Pierre Dufresne, Rueil-Malmaison; Christian Marilly, Houilles, and Dinh Chan Trinh, Le Vesinet, all of France, assignors to Institut Francais du Pétrole, Rueil-Malmaison, France

Filed Jun. 25, 1985, Ser. No. 748,809

Claims priority, application France, Jun. 25, 1984, 84 10105

Int. Cl.⁴ B01J 29/12, 29/22

U.S. Cl. 502—66

14 Claims

1. In a catalyst containing (a) a carrier comprising at least one zeolite, (b) at least one noble or non-noble metal from group VIII of the periodic classification of elements, and (c) at least one additional metal selected from the group consisting of tin, germanium and lead,

the improvement wherein said additional metal is introduced on the carrier as at least one organic compound selected from the group consisting of alkyl, cycloalkyl, aryl, alkyl-aryl, arylalkyl metals of tin, germanium and lead and the halogenated derivatives of said organic compounds.

4,645,753

DOPED ALUMINUM BORATE

Alex Zletz, Naperville; Larry C. Satek, Wheaton, and Jeffrey T. Miller, Naperville, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Mar. 13, 1985, Ser. No. 711,235

Int. Cl.⁴ B01J 21/02, 23/70

U.S. Cl. 502—202

7 Claims

1. A composition comprising a crystalline copper aluminum borate having the significant X-ray diffraction lines set forth in Table A and from about 0.05 to 50 wt % of at least one compound selected from the group consisting of an alkali metal and alkaline earth metal compound based on the weight of the copper aluminum borate.

4,645,754

SILVER CATALYST FOR PRODUCTION OF ETHYLENE OXIDE AND METHOD FOR MANUFACTURE THEREOF

Fumihide Tamura, Yokohama, and Minoru Saotome, Ebina, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 10, 1985, Ser. No. 786,329

Int. Cl.⁴ B01J 31/00, 21/18, 27/055, 2/08

U.S. Cl. 502—527

28 Claims

1. A silver catalyst having fine silver particles dispersed and deposited on the outer surface of a porous inorganic refractory carrier and on the inner wall surface of pores in said carrier and used for the production of ethylene oxide by catalytic vapor-phase oxidation of ethylene with molecular oxygen in the presence of a halogenated inhibitor, having silver and at least

one accelerator selected from the group consisting of alkali metals and alkali metal compounds deposited on said porous inorganic refractory carrier in the shape of Intalox saddles or Berl saddles, wherein said porous inorganic refractory carrier has a specific pore volume in the range of 0.06 to 1.0 cc/g, an outer peripheral length (A) in the range of 3 to 70 mm, an inner peripheral length (C) in the range of 1.5 to 68 mm, a thickness (W) in the range of 0.8 to 4 mm, an outside diameter (D) in the range of 0.5 to 20 mm, and a length (E) in the range of 0.5 to 65 mm.

4,645,755

FISH GROWTH HORMONE

Hiroshi Kawauchi, Iwate; Kazuo Yamaguchi, Sagami, and Kunikatsu Shirahata, Komae, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 719,888

Claims priority, application Japan, Apr. 6, 1984, 59-68670

Int. Cl.⁴ A61K 37/36; C07K 7/10

U.S. Cl. 514—12

4 Claims

1. A substantially pure fish growth hormone derived from *Oncorhynchus keta* which is a polypeptide having the following physicochemical properties:

- amino acid composition: as indicated in Table I;
- the sequences of 33 amino acids at the N-terminal and 23 amino acids at the C-terminal are as follows:
N-terminal: H₂N-Ile-Glu-Asn-Gln-Arg-Leu-Phe-Asn-Ile-Ala-Val-Ser-Arg-Val-Gln-His-Leu-His-Leu-Leu-Ala-Gln-Lys-Met-Phe-Asn-Asp-Phe-Asp-Gly-Thr-Leu-Leu-
C-terminal: -Met-His-Lys-Val-Glu-Thr-Tyr-Leu-Thr-Val-Ala-Lys-Cys-Arg-Lys-Ser-Leu-Glu-Ala-Asn-Cys-Thr-Leu-OH;
- molecular weight: about 22,000
- isoelectric point: 5.6–5.7;
- soluble in an alkaline aqueous solution and hardly soluble or insoluble in neutral and acidic aqueous solutions; and
- ultraviolet absorption spectrum: λ_{max} 277 (FIG. 1) and which is obtained by treating the pituitary gland of *Oncorhynchus keta* with a mixed solution of 35% hydrochloric acid and acetone (1:28), extracting the treated pituitary gland with 0.1M aqueous ammonium acetate solution (pH 9.0), subjecting the pituitary extracts to fractionation by Sephadex G-75 column and high pressure liquid chromatography, and freeze-drying active fractions having an ability to promote the growth of fish.

4,645,756

[α,ω-BIS(DIPHENYLPHOSPHINO)HYDROCARBON]-BIS[(THIOSUGAR)GOLD] AND BIS[(SELENOSUGAR)GOLD] DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

David T. Hill, North Wales, and Randall K. Johnson, Ardmore, both of Pa., assignors to Smith Kline Beckman Corporation, Philadelphia, Pa.

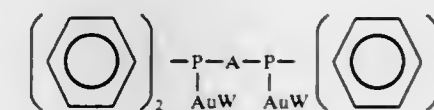
Filed Sep. 27, 1985, Ser. No. 781,438

Int. Cl.⁴ A61K 31/70; C07H 5/10

U.S. Cl. 514—24

17 Claims

11. A method of inhibiting the growth of animal tumor cells sensitive to a compound of the formula:



wherein:

A is (CH₂)_n or cis CH=CH;
n is 1 to 6; and

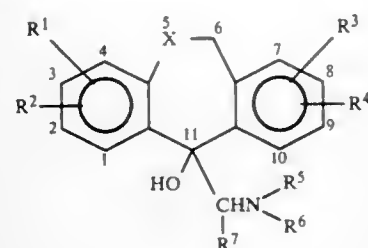
W is the same and is thiosugar or selenosugar, which comprises administering to an animal afflicted with said tumor cells, an effective, tumor cell growth-inhibiting amount of said compound.

4,645,757
AGENT FOR PREVENTING OR TREATING INFECTIONS IN HUMAN BEINGS AND ANIMALS
Wilhelm E. S. Hjertén, Uppsala, and Torkel M. Wadström, Knivsta, both of Sweden, assignors to Landstingens Inkopscentral Lic Ekonomisk Forening, Solna, Sweden
Continuation of Ser. No. 402,349, Jul. 27, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 575,160
Claims priority, application Sweden, Jun. 21, 1979, 7905523
Int. Cl.⁴ A61K 31/715, 31/72, 31/725

U.S. Cl. 514—54 15 Claims
1. A method for preventing or treating infections (A) that are present on the exterior of a human being or animal, and (B) that are caused by pathogenic microorganisms which have in their outer layer (a) pili, or (b) other surface structures exhibiting hydrophobic interaction, which method comprises administering to the site of the infection on the exterior of humans or animals a therapeutically effective amount of a physiologically acceptable polymer (1) that is based on one or more polysaccharides or derivatives thereof, and (2) that contains hydrophobic groups, (a) which are placed in branches projecting from the polymeric base skeleton, (b) which are straight, branched or ring-closed, saturated or unsaturated hydrocarbon chains containing at least 8 carbon atoms and at most 30 carbon atoms, and (3) having a molecular weight which is sufficiently high to prevent it from readily penetrating cellular membranes.

4,645,758
URINARY INCONTINENCE AMELIORATING DIBENZ-B,E--OXEPIN AND -THIEPIN DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR
Nils-Erik Willman, Alnarpsgatan 17, S-252 62 Helsingborg; Bengt C. H. Sjögren, Bygatan 39, S-260 40 Viken; Lenaart G. Nordh, Färjemansgatan 12, S-252 40 Helsingborg; Gustav L. Persson, Ängelholm, and Göran H. Sjöholm, Helsingborg, all of Sweden

Filed Jan. 17, 1986, Ser. No. 820,428
Claims priority, application Sweden, Jan. 22, 1985, 8500273
Int. Cl.⁴ A61K 31/335, 31/36, 31/38; C07D 337/12
U.S. Cl. 514—239 7 Claims
1. A dibenz(b,e)oxepin or dibenz(b,e)thiepin compound selected from the group consisting of those having the formula:



wherein

X is O or S,

R¹, R², R³ and R⁴ are the same or different and are each selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, lower alkoxy, lower alkylthio, lower alkylsulphonyl,

lower alkylsulphonyl, halogen, trifluoromethyl, trifluoromethylthio, lower dialkylsulphonamido, nitro, hydroxy, cyano, carbamyl, carboxy, lower alkoxy-carbonyl, amino, N-lower alkylamino, N,N-dilower alkylamino, lower acylamido, lower alkanesulfonamido and lower acyl; and, when on adjacent carbon atoms at the positions 2 and 3 and/or 8 and 9, two of the substituents R¹ and R² or R³ and R⁴ taken together may form a methylenedioxy group;

R⁵ and R⁶ are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, aralkyl, lower hydroxy-alkyl, lower aminoalkyl, lower alkylaminoalkyl, lower dialkylaminoalkyl, lower alkoxyalkyl and, taken together with the nitrogen atom, a 5- or 6-membered ring selected from pyrrolidine, piperidine, morpholine, piperazine, N-lower alkyl or N-hydroxy lower alkyl substituted rings such as N-alkyl piperazine or N-hydroxyalkylpiperazine or the like;

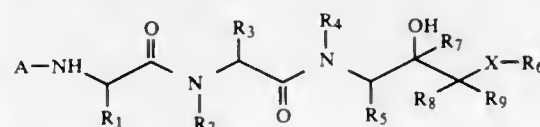
and R⁷ is hydrogen or lower alkyl; and enantiomers thereof;

and pharmaceutically acceptable acid addition salts of any of the foregoing.

6. Pharmaceutical composition useful for the amelioration of urinary incontinence containing as active ingredient one or more compound of claim 1 in an amount effective for such purpose together with a pharmaceutically acceptable carrier therefor.

4,645,759
RENIN INHIBITING COMPOUNDS
Jay R. Luly, Lake Bluff, John J. Plattner, and Joseph F. Delaria, both of Libertyville, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Continuation-in-part of Ser. No. 623,807, Jun. 22, 1984, abandoned. This application May 17, 1985, Ser. No. 735,491
Int. Cl.⁴ A61K 37/43; C07K 5/08

U.S. Cl. 514—18 15 Claims
1. A renin inhibiting compound of the formula:



wherein A is a N-protecting group; R₁ is arylalkyl; R₃ is lower-alkyl, arylalkyl, hydroxyloweralkyl, hydroxyarylalkyl, or imidazole-4-yl-loweralkyl; R₅ is loweralkyl, arylalkyl or cycloalkylalkyl; R₂, R₄, R₇, R₈ and R₉ are independently selected from hydrogen and loweralkyl; X is NH, O, S, SO or SO₂; and R₆ is loweralkyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl or an N-protecting group when X is NH.

4,645,760
ACTIVATED AMINOGLYCOSIDES AND AMINOGLYCOSIDE-AMINOCYCLITOLS PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE
Martha Pierson, Delmar, N.Y., assignor to Health Research Inc., Albany, N.Y.
Continuation-in-part of Ser. No. 403,703, Jul. 30, 1982, abandoned. This application Jul. 20, 1983, Ser. No. 516,117
Int. Cl.⁴ A61K 31/71; C07H 15/232

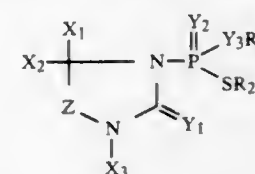
U.S. Cl. 514—39 13 Claims

7. An antibacterial composition of matter which has been oxygen radical-activated at at least one of the primary amino sites therefor produced by reacting neomycin B base with potassium superoxide in an aprotic or non-polar medium for from about 4 to about 6 days and isolating the agent produced.

4,645,761
ORGANOPHOSPHORUS COMPOUNDS AND INSECTICIDAL, MITICIDAL, NEMATOCIDAL OR SOIL PESTICIDAL COMPOSITIONS CONTAINING THEM
Takahiro Haga, Kusatsu; Tadaaki Toki, Otsu; Toru Koyanagi, Kyoto; Hiroshi Okada, Kusatsu; Kiyomitsu Yoshida, Kusatsu, and Osamu Imai, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Dec. 18, 1985, Ser. No. 810,266
Claims priority, application Japan, Dec. 27, 1984, 59-278481
Int. Cl.⁴ A01N 57/08; C07F 9/65

U.S. Cl. 514—94 23 Claims
1. An organophosphorus compound having the formula:



wherein each of X₁, X₂ and X₃ is a hydrogen atom; an alkyl, alkoxy or alkenyl group which may be substituted by halogen, alkoxy, alkylthio, cycloalkyl or phenyl; or a cycloalkyl group, each of Y₁, Y₂ and Y₃ is an oxygen atom or a sulfur atom, Z is a carbonyl group; and each of R₁ and R₂ is an alkyl group which may be substituted by halogen, alkoxy or alkylthio.

23. An insecticidal, miticidal, nematocidal or soil pesticidal method, which comprises applying an insecticidally, miticidally, nematocidally or soil pesticidally effective amount of an organophosphorus compound of the formula 1 as defined in claim 1 to a site to be protected.

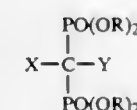
4,645,762
DIPHOSPHONIC ACID DERIVATIVES AND PHARMACEUTICAL PREPARATIONS CONTAINING SAME

Helmut Biere; Clemens Rufer, both of Berlin, and Irmgard Boettcher, Basel, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jul. 5, 1983, Ser. No. 511,116
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225469

Int. Cl.⁴ A61K 31/66; C07F 9/40
U.S. Cl. 514—108 23 Claims

1. A method of treating inflammation in a patient in need of such treatment comprising administering to the patient an anti-inflammatorily effective amount of a diphosphonic acid compound of the formula

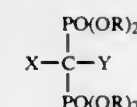


wherein

X is cyano, 2-cyanoethyl, or 3-amino-propyl and Y is H, or X and Y together represent (CH₃)₂NCH= and each R is independently hydrogen or alkyl of 1-4 carbon atoms, with the proviso that all four R's are not ethyl when X is cyano,

or a pharmaceutically acceptable salt thereof with a base.

9. A diphosphonic acid compound of the formula



wherein

X is cyano, 2-cyanoethyl, or 3-aminopropyl and Y is H, or X and Y together represent (CH₃)₂NCH=, each R is independently hydrogen or alkyl of 1-4 carbon atoms, with the proviso that all four R's are not ethyl when X is cyano, or a pharmaceutically acceptable salt thereof with a base.

4,645,763
6α-METHYL CORTICOIDS, THEIR PRODUCTION AND USE

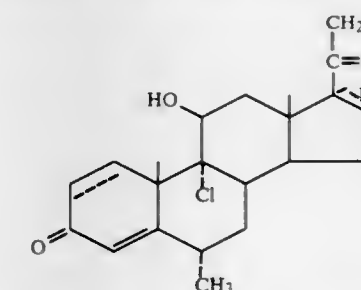
Klaus Annen; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert, and Hans Wendt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 22, 1983, Ser. No. 554,418
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1982, 3243482

The portion of the term of this patent subsequent to Nov. 26, 2002, has been disclaimed.
Int. Cl.⁴ A61K 31/56

U.S. Cl. 514—178 16 Claims

1. A 6α-methyl corticoid of the formula



wherein is a single bond, R is C₁₋₈-alkanoyloxy or benzoyloxy and X is chlorine, hydroxy, C₁₋₈-alkanoyloxy or benzoyloxy.

4,645,764
METHOD FOR PREVENTING BODY FAT DEPOSITION IN ANIMALS

Ronald T. Stanko, Pittsburgh, Pa., assignor to Montefiore Hospital, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 529,403, Sep. 6, 1983, Pat. No. 4,548,937, which is a continuation-in-part of Ser. No. 346,181, Feb. 9, 1982, Pat. No. 4,415,576, which is a continuation-in-part of Ser. No. 249,812, Apr. 1, 1981, Pat. No. 4,351,835. This application May 21, 1985, Ser. No. 736,234

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.⁴ A61K 31/19, 31/525

U.S. Cl. 514—251 8 Claims

1. A method for controlling the deposition of body fat in a living being which comprises administering orally to said living being a therapeutic mixture of pyruvate and dihydroxy-acetone in an effective amount to induce a weight loss or to reduce an expected weight gain from a given diet.

4,645,765

TETRACYCLO COMPOUNDS AND A
PHARMACEUTICAL COMPOSITION CONTAINING
THE SAME

Masanobu Kohsaka, Sakai; Hiroshi Terano, Toyonaka; Tadaaki Komori, Takatsuki; Morita Iwami, Takarazuka; Michio Yamashita, Takarazuka; Masashi Hashimoto, Takarazuka; Itsuo Uchida, Kyoto, and Shigehiro Takase, Nishinomiya, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 11, 1985, Ser. No. 743,616

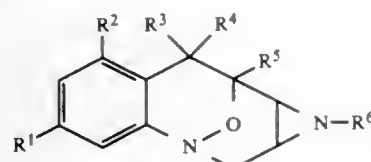
Claims priority, application United Kingdom, Jun. 25, 1984, 8416141; Apr. 24, 1985, 8510378

Int. Cl.⁴ A61K 31/535; C07D 498/18

U.S. Cl. 514—233

15 Claims

1. Tetracyclo compounds of the formula:



in which

R¹ is formyl, protected formyl, hydroxymethyl, protected hydroxymethyl, arylaminomethyl, carboxy, protected carboxy, aryliminomethyl, hydroxyiminomethyl, alkoxyiminomethyl, acyloxyiminomethyl, semicarbazonomethyl or arylsemicarbazonomethyl, R² is hydroxy, alkoxy or protected hydroxy, R³ is hydrogen and R⁴ is methyl, hydroxymethyl or protected hydroxymethyl, or R³ and R⁴ are combined together to form methylene or oxo, R⁵ is hydroxy, alkoxy or protected hydroxy, and R⁶ is hydrogen, imino-protective group or alkyl, and pharmaceutically acceptable salts thereof.

15. A method for treatment of infectious diseases in mammals which comprises administering to said mammal an effective amount of the tetracyclo compound of claim 1.

4,645,766

1,2-DIHYDRO-2-OXO-3-HYDROXYMETHYL
PYRIDINES, COMPOSITIONS AND USE

Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

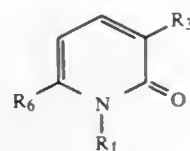
Filed Oct. 19, 1981, Ser. No. 312,576

Int. Cl.⁴ A61K 31/44; C07D 213/64

U.S. Cl. 514—345

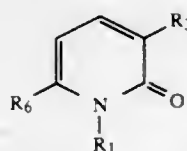
6 Claims

1. A compound of formula IV



wherein R¹ is hydrogen; wherein R³ is —CH₂OH; wherein R₆ is —CH₂C(CH₃)₂R₈, wherein R₈ is hydrogen, methyl or ethyl; or a pharmacologically acceptable salt thereof.

3. A method of treating adult-onset diabetes mellitus in a human suffering from said disease which comprises orally administering an amount of a compound of Formula IV



VI

wherein R₁, R₃ and R₆ are as defined in claim 1, or a pharmacologically acceptable salt thereof, effective to exert a predetermined systemic antihyperglycemic effect.

4,645,767

HYDROXYETHYL-AZOLE DERIVATIVES AND
FUNGICIDAL USE THEREOF

Graham Holmwood; Wolfgang Krämer, both of Wuppertal; Karl H. Büchel, Burscheld; Paul Reinecke, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,965

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334779

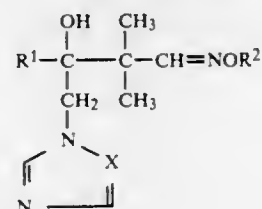
The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.

Int. Cl.⁴ A01N 43/50, 43/653; C07D 233/60, 249/08

U.S. Cl. 514—383

9 Claims

1. A hydroxyethyl-azole derivative of the formula



in which

R¹ represents alkyl with 1 to 6 carbon atoms or the grouping Ar—Y—,

Ar represents naphthyl, or represents phenyl which is unsubstituted, monosubstituted or polysubstituted by identical or different substituents selected from the group consisting of halogen; alkyl with 1 to 4 carbon atoms; alkoxy with 1 to 2 carbon atoms; alkylthio with 1 to 2 carbon atoms; nitro; halogenoalkyl; halogenoalkoxy, said halogenoalkyl and halogenoalkoxy having 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms; the —CH=—NOR² radical; unsubstituted phenyl; unsubstituted phenoxy; unsubstituted benzyl; unsubstituted benzyloxy; substituted phenyl; substituted phenoxy; substituted benzyl; and substituted benzyloxy, said substituted phenyl, substituted phenoxy, substituted benzyl and substituted benzyloxy being substituted by a substituent selected from the group consisting of halogen and C₁—C₂ alkyl,

X represents a nitrogen atom or the CH group,

Y represents a direct bond or the grouping —CH₂—, —CH₂CH₂—, —OCH₂—, —SCH₂—, —CH=CH— or —C≡C—, and

R² represents hydrogen, or represents C₁—C₆ straight-chain alkyl; C₁—C₆ branched chain alkyl; or represents C₂ to C₆ alkenyl; C₂ to C₆ alkynyl; or represents phenylalkyl which has 1 or 2 carbon atoms in the alkyl part and is unsubstituted or monosubstituted or polysubstituted by identical or different substituents on the phenyl, said substituents selected from the group consisting of halogen; alkyl with 1 to 4 carbon atoms; alkoxy with 1 to 2 carbon atoms; alkylthio with 1 to 2 carbon atoms; nitro; halogenoalkyl and halogenoalkoxy, said halogenoalkyl and halogenoalkoxy having 1 to 2 carbon atoms and 1 to 5 identical or

different halogen atoms; the —CH=—NOR² radical, unsubstituted phenyl; unsubstituted phenoxy; unsubstituted benzyl; unsubstituted benzyloxy; substituted phenyl; substituted phenoxy, substituted benzyl and substituted benzyloxy, said substituted phenyl, substituted phenoxy, substituted benzyl and substituted benzyloxy being substituted by a substituent selected from the group consisting of halogen and C₁—C₂ alkyl or R² represents

cycloalkylmethyl which has 5 to 6 carbon atoms in the cycloalkyl part and is unsubstituted or mono-, di- or tri-substituted by identical or different alkyl radicals with 1 to 3 carbon atoms, or an addition product thereof with an acid or metal salt.

8. A method of combating fungi which comprises administering to such fungi or a fungus habitat a fungicidally effective amount of a compound or addition product according to claim 1.

4,645,768

FORMULATIONS

Orest Olejnik, Gatley, England, assignor to Fisons plc, Ipswich, England

Continuation of Ser. No. 571,204, Jan. 16, 1984, abandoned. This application Jul. 11, 1985, Ser. No. 754,205

Claims priority, application United Kingdom, Jan. 21, 1983, 8301754

Int. Cl.⁴ A61K 31/330; C07C 87/28

U.S. Cl. 514—649

5 Claims

1. An aqueous solution containing 0.5% to 10% w/v of 4-(2-(6-(2-phenylethylamino)hexylamino)-ethyl)-1,2-benzenediol, or 4-[2-(6-(2-(4-chlorophenyl)ethylamino)hexylamino)-ethyl]-1,2-benzenediol, or a pharmaceutically acceptable acid addition salt of either thereof as active ingredient, and a physiologically acceptable acid, the solution having a pH greater than 1.5 and less than 3.5.

4,645,769

1-OXA-1-DETHIA-CEPHALOSPORIN COMPOUNDS
AND ANTIBACTERIAL AGENT COMPRISING THE
SAME

Seiji Shibahara, Machida; Tsuneo Okonogy, Yokohama; Yasushi Mural, Yokosuka; Shunzo Fukatsu, Tokyo; Taro Niida, Yokohama, all of Japan; Burton G. Christensen, Cliffside, N.J., and Tadashi Wakazawa, Yokohama, Japan, assignors to Merck & Co., Inc., Rahway, N.J.

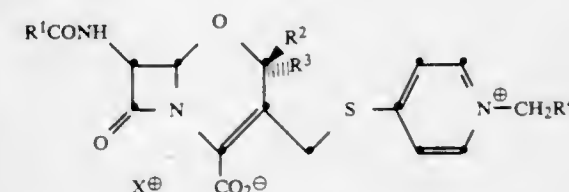
Filed Mar. 1, 1985, Ser. No. 705,799

Int. Cl.⁴ A01N 43/90; C07D 498/04

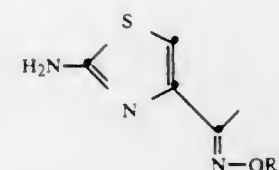
U.S. Cl. 514—210

4 Claims

1. A 1-oxa-1-dethia-cephalosporin compound represented by the general formula (I):



wherein R¹ is a group of the formula:



where R⁵ is a carboxymethyl group of a 2-carboxy isopropyl group, either one of R² and R³ is a hydrogen atom and the other a methyl group; R⁴ is a hydrogen atom, a methyl group,

a carboxyl group, or a monofluoromethyl group; X⁺ is a cation; and a pharmaceutically acceptable hydrate, salt or ester thereof.

4. A method of treating bacterial infection in a host comprising administering to said host an antibacterially effective amount of a compound of claim 1, either alone or as the active ingredient together with a pharmaceutically acceptable carrier.

4,645,770

AGENT FOR TREATING PARKINSON'S DISEASE OR
PARKINSONISM

Oleh Hornykiewicz, Vienna, Austria; Dieter Hinzen, Zornheim, and Günter Schingnitz, Bad Kreuznach, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Feb. 3, 1986, Ser. No. 825,519

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1985, 3503963; Mar. 6, 1985, 3507861

Int. Cl.⁴ A61K 31/55

U.S. Cl. 514—212

1 Claim

1. A method of treating Parkinson's disease or Parkinsonism, which comprises administering to a patient in need of such treatment a quantity of 2-amino-6-allyl-5,6,7,8-tetrahydro-4H-thiazolo[4,5-d]azepine, or a pharmaceutically acceptable acid addition salt thereof, sufficient to alleviate or remove the Parkinson's symptoms.

4,645,771

TETRAHYDROPYRIDINE DERIVATIVES

Stuart D. Mills, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 26,234, Apr. 2, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 428,822

Claims priority, application United Kingdom, Apr. 12, 1978, 14323/78; Oct. 12, 1978, 40272/78

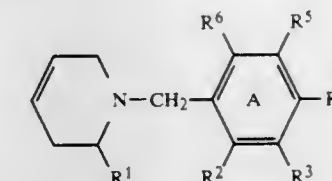
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.⁴ A61K 31/44

U.S. Cl. 514—277

4 Claims

1. A pharmaceutical composition for use in inhibiting the aggregation of blood platelets in a warm-blooded animal which comprises a therapeutically effective amount of a compound selected from the group consisting of a 1-benzyl-1,2,3,6-tetrahydropyridine derivative of the formula:



wherein R¹ is hydrogen or a methyl radical, R² is hydrogen, a halogeno or (1-4C)-alkyl radical, R⁴ is a halogeno, hydroxy or (1-4C)-alkylsulphonamido radical, and R³, R⁵ and R⁶ are hydrogen and the pharmaceutically acceptable acid-addition salts thereof; together with a pharmaceutically acceptable diluent or carrier.

4,645,772
LEVOROTATORY ENANTIOMERS OF DERIVATIVES
OF 5,6,13,13A-TETRAHYDRO-8H-DIBENZO
[A,G]QUINOLIZINE, PREPARATIVE PROCESS,
PHARMACEUTICAL COMPOSITIONS CONTAINING
THEM AND APPLICATION

Jean-Francois Stambach; Louis Jung, both of Strasbourg; Christiane Heitz; Claire Schott, both of Schiltigheim; Jean-Claude Stoclet, Strasbourg, and Fabienne Schutz, Molsheim, all of France, assignors to Urpha, Paris, France

PCT No. PCT/FR83/00251, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO84/02342, PCT Pub. Date Jun. 21, 1984

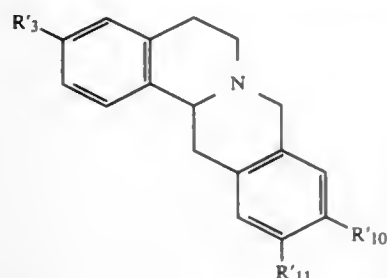
PCT Filed Dec. 14, 1983, Ser. No. 644,723

Claims priority, application France, Dec. 14, 1982, 82 20975
Int. Cl.⁴ C07D 471/22, 491/22; A61K 31/435

U.S. Cl. 514—280

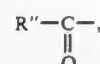
6 Claims

1. Levorotatory enantiomers of derivatives of 5,6,13,13a-tetrahydro-8H-dibenzo-[a,g]-quinolizine and their pharmaceutically acceptable salts which are competitive inhibitors of alpha-adrenergic receptors, having the formula III:



in which:

R'₃ is hydrogen, a cyclic or alkyl group or an —OR or —SR moiety wherein R is hydrogen, a cyclic or alkyl group or a group of formula:



wherein R'' is a phenylalkyl, alkyl or cyclic group, R'₁₀ and R'₁₁, which are identical or different, represent hydrogen, a cyclic-oxy, or alkoxy or hydroxy group, or R'₁₀ and R'₁₁ taken together form a group —O—(CH₂)_n—O— in which n is 1 to 3, provided that R'₃, R'₁₀ and R'₁₁ are not simultaneously hydrogen, further provided that when R'₁₀ and R'₁₁ are hydrogen, R'₃ is not an alkoxy group, and provided that when R'₃ is hydrogen, R'₁₀ and R'₁₁ are not methoxy or hydroxy, wherein alkyl designates a straight or branched aliphatic hydrocarbon group having 1 to 12 carbon atoms, and a cyclic group refers to a phenyl, benzyl, furan, pyridine, oxazole, cyclohexane, tetrahydrofuran, piperidine, or oxazolidine group.

4,645,773
β-CARBOLINE-3-OXADIAZOLYL DERIVATIVES, AND
THEIR USE AS PSYCHOTROPIC AGENTS

Mogens Engelstoft, Vaerloese; Tage Honoré, Maaloov; Frank Wätjen, Bajsvaerd; Erling N. Petersen, Glostrup, all of Denmark, and Andreas Huth, Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

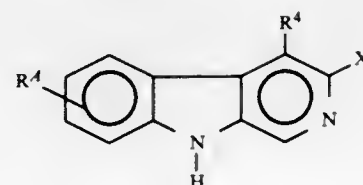
Filed May 15, 1985, Ser. No. 734,219

Claims priority, application Denmark, May 15, 1984, 2400/84
Int. Cl.⁴ A61K 31/395; C07D 471/04

U.S. Cl. 514—292

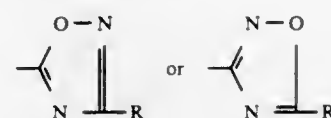
18 Claims

1. A β-carboline-3-oxadiazolyl of the formula



wherein

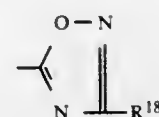
X is an oxadiazolyl group of the formula



wherein R is H, C₁₋₆-alkyl or C₃₋₇-cycloalkyl,

R⁴ is H, C₁₋₆-alkyl or C₁₋₆-alkoxyalkyl,

R⁴ is C₁₋₆-alkyl, hydroxy-C₁₋₆-alkyl; SCH₃; SC₂H₅; OR¹⁵; CH₂OR¹⁷; C≡C—CH₂N(CH₃)₂; or



R¹⁵ is C₁₋₆-alkyl, phenyl-C₁₋₃-alkyl, C₃₋₇-cycloalkyl or C₃₋₇-cycloalkenyl;

R¹⁷ is H, C₁₋₆-alkyl or phenyl;

R¹⁸ is C₁₋₆-alkyl, and

n is 1 or 2,

provided that X is not 3-ethyl-1,2,4-oxadiazole-5-yl when R⁴ is H and R⁴ is 5—CH₂OCH₃, 5—OCH₂C₆H₅, 6—SCH₃, 6—OCH₃ or 6—OCH₂C₆H₅.

14. A method of achieving a psychotropic effect comprising administering an amount of a compound of claim 1.

4,645,774
AMINOETHOXYBENZYLALCOHOL DERIVATIVES,
PROCESS FOR THEIR PREPARATION AND
PHARMACEUTICAL COMPOSITIONS CONTAINING
THEM

Édit Tóth; József Törley; Éva Pálosi; Szabolcs Szeberényi; László Szporny; Sándor Görög, and István Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Continuation of Ser. No. 565,834, Dec. 27, 1983, abandoned.

This application Dec. 2, 1985, Ser. No. 803,792

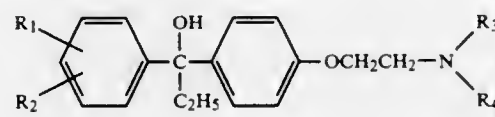
Claims priority, application Hungary, Dec. 28, 1982, 4184/82

Int. Cl.⁴ A61K 31/445; C07D 295/08

U.S. Cl. 514—317

7 Claims

1. A compound of the Formula (I)



wherein

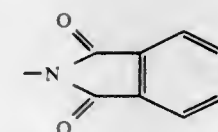
R₁ is hydrogen;

R₂ is halo, trihalomethyl, or C₁ to C₄ alkoxy; and

R₃ and R₄ together with the adjacent nitrogen atom form a piperidinyl, or pyrrolidinyl, group; or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

7. A method of inducing the polysubstrate liver monooxygenase enzyme system in a susceptible subject which comprises

administering to said subject an effective amount of the compound of the Formula (I) defined in claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.



4,645,775

POSITIVE INOTROPIC 3-NITRO-5-SUBSTITUTED
ESTER AND THIOESTER-1,4-DIHYDROPYRIDINES
Jürgen Stoltefuss, Haan; Fred R. Heiker; Gerhard Franckowiak, both of Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 15, 1985, Ser. No. 734,502

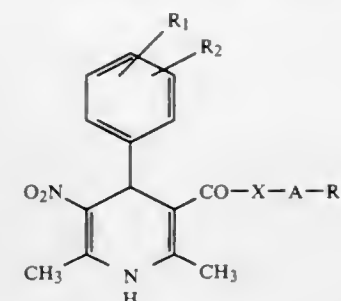
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1984, 3420784

Int. Cl.⁴ C07D 211/90, 401/12, 413/04; A61K 31/455

U.S. Cl. 514—352

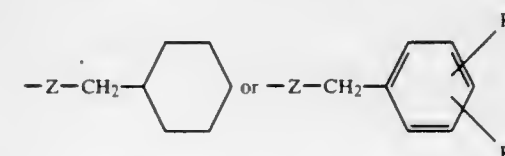
9 Claims

1. A 3-nitro-dihydropyridine derivative of the formula



in which

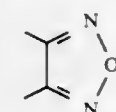
R₁ and R₂ each independently is hydrogen, C₁-C₄-alkyl, C₁-C₁₂-alkoxy, C₁-C₄-halogenoalkoxy, halogen, nitro, C₁-C₄-halogenoalkyl, C₁-C₄-halogenoalkylmercapto,



Z is oxygen or sulphur,

R₄ and R₅ each independently is hydrogen, C₁-C₄-alkyl, C₁-C₆-alkoxy, halogen, C₁-C₄-halogenoalkyl, C₁-C₄-halogenoalkoxy or nitro, or

R₁ and R₂, together with 2 C atoms of the phenyl ring form the ring



X is oxygen or sulphur,

A is a hydrocarbon radical with up to 12 C atoms which optionally contains one or two identical or different chain members from the group consisting of O, S and CO and/or which is optionally substituted by hydroxyl or aliphatic acyloxy with up to 4 C atoms,

R₃ is —O—COR₆, —S—CO—R₆, SH,

NH—COR₆, COOR₆, or CONR₇R₈,

R₆ is hydrogen or an aliphatic radical with up to 6 C atoms or a phenyl radical, and

R₇ and R₈ each independently is hydrogen or an aliphatic radical with up to 6 C atoms or a phenyl radical, or a physiologically acceptable salt thereof.

7. A composition exhibiting a positive inotropic activity comprising an amount effective thereof of a compound or salt according to claim 1 in admixture with a diluent.

4,645,776

N-(DICHLOROFLUOROMETHYLTHIO)-3,4-DIMETHYLMALEIMIDE AND ITS USE AS A FUNGICIDE
Engelbert Kühle, Bergisch-Gladbach; Wilfried Pailus, and Hermann Genth, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 9, 1985, Ser. No. 721,341

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415532

Int. Cl.⁴ C07D 207/448; B27K 3/38

U.S. Cl. 514—425

6 Claims

1. N-(Dichlorofluoromethylthio)-3,4-dimethylmaleimide.

4. A process for combating a fungi which comprises applying thereto or to its habitat a fungicidally effective amount of N-dichlorofluoromethylthio)-3,4-dimethylmaleimide.

4,645,777

PHOTOACTIVE BITHIENYL PESTICIDES

Susan E. Burkart, Trenton; Richard B. Phillips, Plainsboro, and David M. Roush, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

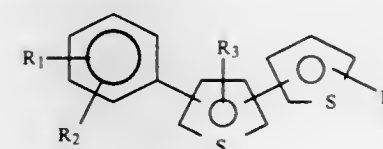
Filed Apr. 17, 1985, Ser. No. 724,224

Int. Cl.⁴ A01N 43/02

U.S. Cl. 514—444

6 Claims

1. A method for controlling insects or acarids which comprises applying to the locus where control is desired an insecticidally or acaricidally effective amount of about 50 to 750 g per hectare of at least one bithienyl compound of the formula



wherein

R₁ is selected from hydrogen, halogen, alkyl, haloalkyl, alkoxy, and haloalkoxy;

R₂ is selected from hydrogen and halogen;

R₃ is selected from hydrogen, alkyl, phenyl, and thienyl; and

R₄ is selected from hydrogen, halogen, alkyl, and haloalkyl.

4,645,778

2-(N-PYRROLIDINO)-3-ISOBUTOXY-N-SUBSTITUTED-PHENYL-N-BENZYL-PROPYLAMINES, THEIR PREPARATION AND PHARMACEUTICAL USE

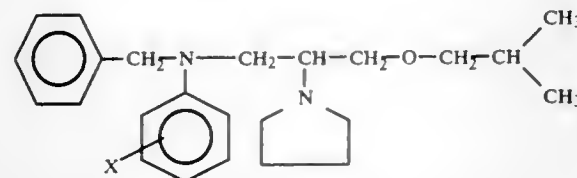
André J. Monteil, Chatel-Guyon; Jacques A. Simond, Les-Martres-De-Veyre, and Michel Combourieu, Aurillac, all of France, assignors to Riom Laboratoires C.E.R.M. "RL-Cerm" S.A., Riom, France

Filed Sep. 27, 1984, Ser. No. 654,921

Claims priority, application France, Sep. 27, 1983, 8315367
Int. Cl.⁴ C07D 207/06; A61K 31/40

U.S. Cl. 514-422

1. A compound of the formula:



wherein X represents halogen, hydroxy, alkoxy, alkyl or trifluoromethyl or wherein X₂ represents methylenedioxy, and pharmaceutically acceptable salts thereof.

4,645,779

DIALKYLAMINOALKOXYBENZYLALCOHOL DERIVATIVES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

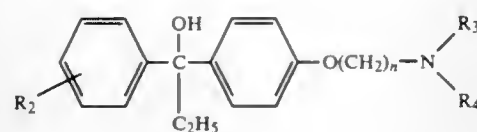
Édit Tóth; József Törley; György Fekete; László Szporny; László Vereczkey; Éva Pálosi; Imre Klebóvich; Pál Vittay; Sándor Görög, and István Hajdu, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Dec. 27, 1983, Ser. No. 565,913

Claims priority, application Hungary, Dec. 28, 1982, 4192/82
Int. Cl.⁴ C07C 87/30, 149/32

U.S. Cl. 514-648

1. A compound of the Formula (I)



wherein

R₂ is halogen, trihalomethyl, or C₁ to C₄ alkoxy;R₃ and R₄ independently stand for n-propyl or isopropyl; and

n is 2 or 3; or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

3. A pharmaceutical composition for the treatment of ethanolic intoxication which comprises a pharmaceutically effective amount of the compound of the Formula (I) as defined in claim 1, or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof, in combination with a pharmaceutically acceptable inert carrier.

4,645,780

NOVEL BIOCIDES EMPLOYING RESORCINOL DERIVATIVES

Hans Dressler, Monroeville, and Hans A. Ward, New Kensington, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

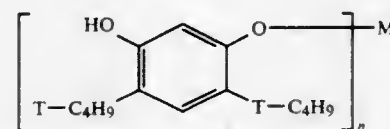
Filed Jan. 13, 1986, Ser. No. 817,984

Int. Cl.⁴ A01N 31/08, 57/00

U.S. Cl. 514-731

1. A method of protecting organic materials from fungi

and/or bacteria which comprises applying to said organic material a fungicidally and/or bactericidally effective amount of a compound of the formula:



wherein M is H, an alkali metal or alkali earth metal and n is an integer of 1 or 2.

4,645,781

BLENDS OF CYCLIC VINYL ETHER CONTAINING COMPOUNDS AND EXPOXIDES

Joseph V. Koleske, Charleston, W. Va., and George T. Kwiatkowski, Green Brook, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1983, Ser. No. 480,473

Int. Cl.⁴ C08F 2/50, 34/02, 234/02

U.S. Cl. 522-169

1. A composition suitable for photocopolymerization comprising:

(a) from about 5 to 95 parts by weight of a cyclic vinyl ether compound, said cyclic vinyl ether compound being a member selected from the group consisting of dihydropyranyl compounds, di-(dihydropyranyl) compounds, and mixtures of these;

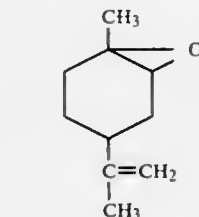
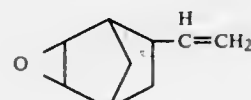
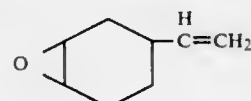
(b) from about 95 to 5 parts by weight of cycloaliphatic epoxide resins, said cycloaliphatic epoxide resins being a mixture of

(i) 3,4-epoxy-cyclohexylmethyl-3,4-epoxycyclohexane carboxylate,

(ii) bis(3,4-epoxycyclohexylmethyl)adipate, and

(iii) 2-(3,4-epoxycyclohexyl)-5,5-spiro-3,4-epoxycyclohexane-meta-dioxane;

(c) a vinyl cycloaliphatic monoepoxide, said vinyl cycloaliphatic monoepoxide being a member selected from the group consisting of the formulas:



and mixtures of these; and

(d) an amount of a photoinitiator effective to cure said composition.

4,645,782

PUTTY OR MASTIC

Cyril A. Redfern, London, England, assignor to Dixon International Limited, Pampisford, England

Filed Oct. 6, 1983, Ser. No. 539,592

Int. Cl.⁴ C09K 21/14; C09D 5/34

U.S. Cl. 523-179

19 Claims

1. A composition suitable for use as a putty or mastic comprising, a substantially uniformly dispersed solid phase comprising fine particles of solid intumescent material and a continuous phase comprising a solution of polyvinyl butyral in a volatile solvent therefor.

4,645,783

ADHESIVE COPOLYMER MICROSPHERES-CONTAINING AQUEOUS SUSPENSION AND METHOD FOR PRODUCING THE SAME

Toru Kinoshita, Tokyo, Japan, assignor to Sanyo Kokusaku Pulp Co. and Sainen Chemical Industry, Co., Ltd., both of Tokyo, Japan

Filed Feb. 8, 1985, Ser. No. 699,554

Int. Cl.⁴ C08L 00/00

U.S. Cl. 523-221

3 Claims

1. An aqueous suspension composition comprising:

(A) adhesive copolymer microspheres having an average particle diameter of 10-100μ prepared by aqueous suspension polymerization of 100 parts by weight comprising the following monomers (a), (b) and (c) in the presence of a protective colloid comprising casein as a main ingredient:

(a) from 70 to 99.9 percent by weight of at least one monomer selected from the group consisting of alkyl acrylate esters and alkyl methacrylate esters, in which said alkyl moiety has 4-12 carbon atoms,

(b) from 0.1 to 10 percent by weight of at least one α-monoolefin carboxylic acids, and

(c) from 0 to 29.9 percent by weight of at least one monomer other than the foregoing (a) and (b), selected from the group consisting of acrylates and methacrylates and

(B) homopolymer or copolymer microparticles having an average particle diameter of 0.1-4μ prepared by polymerization of 20-300 parts by weight of at least one monomer selected from the group consisting of acrylates and methacrylates in an aqueous medium.

4,645,784

MOULDED COMPOUNDING MIXTURES OF ADJUSTABLE DENSITY

Jean M. Lalancette, Sherbrooke, Canada, assignor to Societe Nationale de l'Amiante, Thetford-Mines, Canada

Continuation-in-part of Ser. No. 303,499, Sep. 18, 1981,

abandoned. This application Jul. 7, 1983, Ser. No. 511,626

Int. Cl.⁴ C08L 67/06, 63/00, 61/04

U.S. Cl. 523-400

5 Claims

1. A method for preparing a cured moulded article having a density of from 1.66 to 9.0 which comprises:

(a) selecting the desired density K of the moulded article between value of from 1.66 to 9.0;

(b) selecting a binding resin from the group consisting of phenolic resin, polyester resin and epoxy resin, the selected resin having a density R after curing between 0.8 to 1.5 and being in the amount A of from 4 to 70% by weight;

(c) determining the percentage of porosity Y in the cured moulded article under the moulding conditions to be used;

(d) selecting a high density substantially inert and water-insoluble filler having a density HD of above 3.2;

(e) selecting an intermediate density substantially inert and water-insoluble filler having a density ID of from 1.5 to 3.2 if desired;

(f) mixing the amounts of binding resin, high density filler and intermediate density filler according to the equation:

$$K = \frac{100 - Y}{\frac{A}{HD} + \frac{B}{ID} + \frac{C}{R}}$$

wherein:

K is the density of the cured mixture and has a value of from 1.66 to 9.0;

A is the percentage by weight of the high density substantially water-insoluble filler and has a value of from 10 to 90% by weight;

HD is the density of the filler of the high density filler and has a value above 3.2;

B is the percentage by weight of the intermediate density substantially water-insoluble filler and has a value of from 0 to 86%;

ID is the density of the filler of medium density and has a value of from 1.5 to 3.2;

C is the percentage by weight of the cured binding resin and has a value of from 4 to 70% by weight;

R is the density of the cured binding resin and has a value of from 0.8 to 1.5;

Y is the porosity of the end product expressed in % of the volume of the moulded product, and

(g) moulding and curing the mixture.

4,645,785

THERMOPLASTIC POLYOXYMETHYLENE MOLDING MATERIALS HAVING HIGH ABRASION RESISTANCE

Gerhard Heinz, Weisenheim; Wilhelm Schüette, Speyer, and Georg N. Simon, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 5, 1985, Ser. No. 795,127

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1984, 3441546

Int. Cl.⁴ C08K 5/34

U.S. Cl. 524-100

4 Claims

1. A thermoplastic polyoxymethylene molding material having high abrasion resistance, which comprises:

(A) from 40 to 94.7 parts by weight of a poly oxymethylene,

(B) from 5 to 50 part by weight of wollastonite,

(C) from 0.2 to 5 parts by weight of N-hydroxymethylmelamines in which some or all of the hydroxymethyl groups are etherified with alkanols, and at least one of,

(D) from 0.1 to 5 parts by weight of a silicone oil having a degree of polycondensation n of from 10 to 5,000 and

(E) from 0.1 to 10 parts by weight of polyethylene and/or copolymers of ethylene and α-olefins having a molecular weight of from 100,000 to 1,000,000,

the number of parts by weight of components A, B, C, D and E summing to 100.

4,645,786

AROMATIC POLYCARBONATES HAVING REDUCED COMBUSTIBILITY AND METHODS FOR THEIR PREPARATION

Joël Perthuis, and Pierre Poisson, both of Bernay, France, assignors to Atochem, France

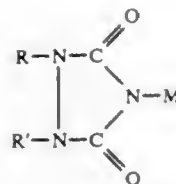
Filed Aug. 9, 1985, Ser. No. 764,291

Claims priority, application France, Aug. 30, 1984, 84 13417
Int. Cl.⁴ C08K 5/34

U.S. Cl. 524-106

12 Claims

1. Fire-resistive polycarbonate resin compositions comprising a polycarbonate resin and a small amount of a urazole salt effective to provide fire-resistance, the urazole salt having the formula:



wherein R and R' are the same or different and are hydrogen, an alkyl group having from one to six carbon atoms, phenyl, or halo-substituted phenyl and M is an alkali metal.

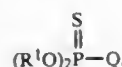
4,645,787
FLAME RETARDANT POLYPHENYLENE OXIDE THERMOPLASTICS

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

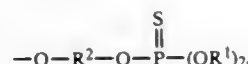
Filed Jul. 2, 1985, Ser. No. 751,096
Int. Cl.⁴ C00K 5/42, 5/49, 5/51

U.S. Cl. 524—122 **5 Claims**
1. Thermoplastic molding compositions comprising by weight

- (A) 100 parts of polyphenylene oxide
- (B) 20 to 300 parts of styrene resin,
- (C) an amount of organothiophosphate having the formula,



which is sufficient to provide from 0.5% to 5% by weight of phosphorous based on the weight of the thermoplastic molding composition and
(D) 0.2 to 10 parts of metal alkyl sulfonate salt, where R¹ is a C₍₁₋₁₃₎ monovalent hydrocarbon radical or substituted C₍₁₋₁₃₎ monovalent hydrocarbon radical, Q is a monovalent group selected from —OR¹ and



and R² is selected from divalent C₍₂₋₂₀₎ hydrocarbon radicals and substituted divalent C₍₂₋₂₀₎ hydrocarbon radicals.

4,645,788
CHLOROPRENE RUBBER COMPOSITION
Tadaoki Okumoto; Rikizo Nakata; Masayoshi Ichikawa, all of Kasagumura; Masaaki Tsuchihashi, and Koichi Sakai, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo and Toyoda Gosei Co. Ltd., Aichi, both of, Japan

Filed Dec. 6, 1985, Ser. No. 806,146
Claims priority, application Japan, Dec. 19, 1984, 59-268048
Int. Cl.⁴ C08K 5/10, 5/11; C08L 11/00; C08F 136/18

U.S. Cl. 524—308 **8 Claims**
1. A chloroprene rubber composition which comprises chloroprene rubber and at least one ester selected from the group of esters consisting of: (1) an ester obtained by reacting a polyoxyalkylene glycol or polyalkylene glycol having a molecular weight of 200 to 5,000 with an unsaturated fatty acid having 14 to 24 carbon atoms or a saturated fatty acid having 2 to 24 carbon atoms, (2) an ester obtained by reacting a polyoxyalkylene glycol or polyalkylene glycol having a molecular weight of 200 to 5,000 with an unsaturated fatty acid having 14 to 24 carbon atoms or a saturated fatty acid having 2 to 24 carbon atoms and a dicarboxylic acid having 2 to 10 carbon atoms or the reaction product obtained by polymerizing an unsaturated fatty acid having 14–22 carbon atoms to a polymerization degree of 2 or greater, (3) an ester obtained by reacting a polyoxyalkylene glycol or polyalkylene glycol having a mo-

lecular weight of 200 to 5,000 with an unsaturated fatty acid having 14 to 22 carbon atoms or a saturated fatty acid having 2 to 24 carbon atoms, a dicarboxylic acid having 2 to 10 carbon atoms or a reaction product obtained by polymerizing an unsaturated fatty acid having 14–22 carbon atoms to a polymerization degree of 2 or greater and a higher alcohol having 6 to 22 carbon atoms.

4,645,789
CROSSLINKED CARBOXYL POLYELECTROLYTES AND METHOD OF MAKING SAME

Shmuel Dabi, Highland Park, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 604,709, Apr. 27, 1984, abandoned. This application Aug. 29, 1985, Ser. No. 770,477
Int. Cl.⁴ C08K 5/05

U.S. Cl. 524—379 **24 Claims**
1. In a product for absorbing body fluids, an absorbent element comprising:

the reaction product of reactants comprising a water soluble carboxylic polyelectrolyte and a crosslinking agent comprising a water soluble, relatively low molecular weight compound containing at least two 1-aziridinyl groups, said reaction product having at least 25% of said carboxyl groups, on a molar basis, converted to the salt form.

4,645,790
CORROSION RESISTANT LUBRICANT COATING COMPOSITE

Gary T. Frey, 566 Cedarbrook Dr., Painesville, Ohio 44077; Douglas H. Strong, 7466 Mountain Park Dr., Mentor, Ohio 44060, and Janet B. Urbanski, 642 High St., Fairport Harbor, all of Ohio 44077

Division of Ser. No. 595,055, Mar. 30, 1984, Pat. No. 4,555,445. This application Aug. 26, 1985, Ser. No. 769,542
Int. Cl.⁴ C08K 3/34, 3/36, 5/54; C08L 23/08

U.S. Cl. 524—442 **8 Claims**
1. A smooth, uniform coating composition especially adapted for use as a topcoat composition on coated metal substrates, said coating composition providing corrosion resistance and enhanced torque control as a topcoat composition in heat cured condition, said coating composition comprising a particulate-metal-free blend in liquid medium of from about 0.25 to about 25 weight percent of polyethylene-containing copolymer dispersion components comprising an ethylene copolymer resin, from about 2 to about 25 weight percent silicate substance compatible in pH with said copolymer component in liquid medium without phase separation, and 0–25 weight percent of cure-stable, leach resistant coloring agent, basis total composition weight, wherein said copolymer of the copolymer dispersion component has a melting point above 50° C.

4,645,791
ENVIRONMENTALLY DURABLE ELASTOMER COMPOSITION WITH EXCELLENT LOW TEMPERATURE DYNAMIC PROPERTIES

Ares N. Theodore, Farmington Hills, and Paul C. Killgoar, Jr., Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 24, 1985, Ser. No. 747,625
Int. Cl.⁴ C08K 5/01

U.S. Cl. 524—490 **18 Claims**
1. An elastomer composition comprising a substantially homogeneous mixture of:
(a) 100 parts by weight of elastomer having a fully saturated backbone;
(b) curing agent for said elastomer in amount sufficient to crosslink said elastomer; and
(c) reinforcing particulate filler;
said composition further comprising at least 20 parts by

weight oil, substantially all oil included in said composition being selected from aliphatic oils and having a number of average molecular weight (M_n) of between about 250 and about 1500, and wherein at least 90% by weight of said oil boils above about 200° C.

4,645,792
NUCLEATING AGENTS FOR STEREOREGULAR ELASTOMERIC BUTENE-1 POLYMER COMPOSITIONS
Ananda M. Chatterjee, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 526,210, Aug. 24, 1983, abandoned, which is a continuation of Ser. No. 369,386, Apr. 19, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,855
Int. Cl.⁴ C08L 23/20

U.S. Cl. 524—490 **1 Claim**
1. The method for promoting crystallization from the melt of a stereoregular elastomeric homopolymer of butene-1 having reduced crystallinity due to enchainment syndiotactic and isotactic structures and having the following properties:

Solubility in refluxing diethyl ether, % wt	<10
Crystallinity, by X-ray diffraction (Form I), %	25–40
M_n	20,000–300,000
M_w	150,000–2,200,000
M_w/M_n	4–8
Melting Point, Form I, °C.	~100–118
Melting Point, Form II, °C.	~98–110
Time for Crystallization	~15–20 minutes
Temperature of Crystallization	~30–45° C.

characterized in that there is added to a composition comprising said stereoregular elastomeric polymer an amount in the range from about 0.01 to 1% by weight of a low molecular weight high density polyethylene nucleating agent having utility for both promoting rapid crystal nucleation in said stereoregular elastomeric polymer of butene-1 and forming a resultant composition with utility for forming a product with a uniform microstructure said high density polyethylene nucleating agent having a density of about 0.94 to 0.97 g/cc, a molecular weight in the range from 850 to 3000 and a melt index greater than 5000 dg/min.

4,645,793
EPDM ELASTOMERIC COMPOSITIONS
Walter Von Hellens, Bright's Grove; Sheikh A. H. Mohammed, Sarnia, both of Canada, and Robert Hallman, Medina, Ohio, assignors to Polysar Limited, Sarnia, Canada

Filed Dec. 19, 1985, Ser. No. 810,770
Int. Cl.⁴ C08K 5/01; C08L 7/00, 9/00, 9/06

U.S. Cl. 524—518 **13 Claims**
1. An elastomeric polymer composition comprising, as the sole polymeric elastomer components, at least one highly unsaturated rubbery polymer selected from the group consisting of polybutadiene, SBR, cis-1,4-polyisoprene and natural rubber and a high molecular weight EPDM polymer having a bound non-conjugated diene content of from about 6 to about 15 weight percent of the EPDM, the EPDM polymer constituting from about 10 to about 50 parts by weight per 100 parts by weight of total elastomers, said EPDM polymer having a Mooney viscosity (ML 1+8 at 100° C.) of greater than about 150 and an ethylene:propylene weight ratio of from about 50:50 to about 75:25.
2. The composition of claim 1 wherein the EPDM polymer is an oil extended EPDM polymer containing from about 50 to about 150 parts by weight per 100 parts by weight of EPDM polymer of naphthenic or paraffinic oil and the EPDM polymer constitutes from about 15 to about 40 parts by weight per 100 parts by weight of total elastomers.

4,645,794
QUATERNARY NITROGEN CONTAINING POLYVINYL ALCOHOL POLYMERS FOR USE IN SKIN CONDITIONING, COSMETIC AND PHARMACEUTICAL FORMULATIONS

Ronald I. Davis; Charalambos J. Phalagas, both of Wilmington, Del., and George R. Titus, Raleigh, N.C., assignors to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 540,041, Oct. 7, 1983, abandoned. This application Jul. 12, 1985, Ser. No. 755,593
Int. Cl.⁴ C08F 8/30, 8/32

U.S. Cl. 525—61 **18 Claims**
1. A quaternary nitrogen modified polyvinyl alcohol film forming polymer useful in skin conditioning, cosmetic, and pharmaceutical formulation which consists essentially of a preformed polyvinyl alcohol base chain with oxygen links on alternate carbon atoms and a molecular weight ranging from 2,000–200,000 having pendant groups of the general formula: —R—N⁺R₁R₂R₃A[−] which are linked directly to the polyvinyl alcohol chain through ether (—OCH₂R₄—) links, wherein R is selected from the group consisting of an alkylene, a hydroxy alkylene and an etheralkylene;
R₁, R₂ and R₃ are selected from the group consisting of alkyl or arylalkyl radicals having 1–20 carbon atoms,
R₄ is H, alkyl, aryl or arylalkyl having 1–22 carbon atoms or another oxygen link to the base chain, and
A[−], is an anion said polymers having a total nitrogen content ranging from 0.01–3% by weight.

4,645,795
VINYL CHLORIDE POLYMER COMPOSITION
Hideki Hosoi, Kobe; Toshihiko Hasegawa, Hyogo, and Taizo Aoyama, Himeji, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1985, Ser. No. 721,001
Claims priority, application Japan, Apr. 12, 1984, 59-74630
Int. Cl.⁴ C08L 51/04, 57/08

U.S. Cl. 525—83 **2 Claims**
1. A vinyl chloride polymer composition comprising
(A) 3 to 50 parts by weight of a grafted copolymer and
(B) 97 to 50 parts by weight of a vinyl chloride polymer, a total amount of said copolymer (A) and said polymer (B) being 100 parts by weight;
said grafted copolymer (A) comprising
(1) 50 to 80 parts by weight of a rubber copolymer and (2) 50 to 20 parts by weight of a grafting monomer, graft polymerized onto said component (1) a total amount of said component (1) and said component (2) being 100 parts by weight;
said component (1) comprising
(a) 60 to 90% by weight of a core rubber copolymer comprising 99 to 85% by weight of alkyl acrylate having an alkyl group of 2 to 8 carbon atoms, 1 to 15% by weight of conjugated diolefin and 0 to 5% by weight of polyfunctional cross-linking agent and
(b) 40 to 10% by weight of a surface rubber copolymer comprising 98 to 70% by weight of alkyl acrylate having an alkyl group of 2 to 8 carbon atoms, 2 to 30% by weight of conjugated diolefin and 0 to 5% by weight of polyfunctional cross-linking agent and being obtained by polymerizing said component (a) to give a core rubber copolymer and then polymerizing said surface rubber copolymer component (b) in the presence of said core rubber copolymer (a), and a ratio of conjugated diolefin to acrylate in said surface rubber copolymer (b) is larger than a ratio of conjugated diolefin to acrylate in said core rubber copolymer (a)
and said component (2) comprising
(i) 30 to 95% by weight of methyl methacrylate and
(ii) 70 to 5% by weight of at least one monomer selected from the group consisting of unsaturated nitrile, aromatic vinyl compound, alkyl acrylate having an alkyl group of 1

to 8 carbon atoms and alkyl methacrylate having an alkyl group of 2 to 4 carbon atoms.

4,645,796

POLYBLENDS OF STYRENE/ α -METHYLSTYRENE COPOLYMERS WITH REINFORCING INTERPOLYMERIZED STYRENE-GRAFTED RUBBER CONCENTRATES

Douglas E. Beyer, and Edward T. Carrington, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

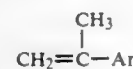
Continuation of Ser. No. 712,286, Mar. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 618,178, Jun. 7, 1984, abandoned. This application Mar. 14, 1986, Ser. No. 840,485
Int. Cl.⁴ C08L 45/00, 51/04, 55/02

U.S. Cl. 525—84

20 Claims

1. An impact resistant and heat distortion resistant and tough polyblend composition that is comprised of an admixture of:

- (a) between about 40 and 95 percent by weight, based on total weight of the polyblend, of a copolymeric product of copolymerization consisting of
(a') at least one isopropenyl aromatic monomer of the Formula:



wherein Ar is an aromatic radical which includes various alkyl- and halo-ring-substituted aromatic units of from 6 to about 10 carbon atoms; in copolymerized form with
(a'') at least one vinyl aromatic monomer of the Formula:

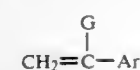


(II)

wherein Ar is an aromatic radical of the same description as that defined in connection with Formula (I) above; said copolymer containing between about 10 and about 70 mole percent based on total copolymer weight of at least one copolymerized monomer of said Formula (I); and

(b) as Component (b) thereof, between about 5 and about 60 percent by weight of a shell/core graft-copolymer as a grafted rubber concentrate material for said polyblend which graft copolymer is comprised of:

(b') between about 10 and about 75 weight percent in the exterior shell portion of its structure of an interpolymers of at least one monomer of the Formula:



(III)

wherein G is selected from the group consisting of hydrogen and methyl and Ar is an aromatic radical of the same description as that defined in connection with the above Formulae (I) and (II); said shell-providing interpolymers (b') being formed upon, about and with a substrate or backbone core portion of said graft-copolymer of

(b'') between about 90 and about 25 weight percent of an elastomeric, graftable natural or synthetic rubber which provides the core in said graft-copolymer grafted rubber concentrate material of said Component (b).

4,645,797

3-METHYLBUTENE-1 POLYMER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Yoshinori Suga, Tokyo; Eiji Tanaka, Kawasaki; Nobuo Enokido, Sagami, and Yasuo Maruyama, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

PCT No. PCT/JP85/00344, § 371 Date Feb. 24, 1986, § 102(e) Date Feb. 24, 1986, PCT Pub. No. WO86/00316, PCT Pub. Date Jan. 16, 1986

PCT Filed Jun. 18, 1985, Ser. No. 835,112

Claims priority, application Japan, Jun. 22, 1984, 59-128482
Int. Cl.⁴ C08L 23/20, 53/00

U.S. Cl. 525—191

7 Claims

1. A 3-methylbutene-1 polymer composition comprising:
(a) from 10 to 95% by weight of a 3-methylbutene-1 homopolymer, or a copolymer of 3-methylbutene-1 with other α -olefin having from 2 to 12 carbon atoms, which has a 3-methylbutene-1 content of higher than 90% by weight, and
(b) from 5 to 90% by weight of a copolymer of 3-methylbutene-1 with other α -olefin having from 2 to 12 carbon atoms, which has a 3-methylbutene-1 content of from 40 to 90% by weight.

4,645,798

BASIC DYEABLE ACRYLIC FIBER

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

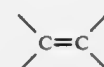
Filed Sep. 23, 1985, Ser. No. 779,020

Int. Cl.⁴ C08L 33/20, 25/06

U.S. Cl. 525—192

4 Claims

- (I) 1. An acrylic fiber comprising a copolymer of 35 to 98 percent by weight of acrylonitrile and 65 to 2 percent by weight, respectively, of one or more other monomers containing the



linkage and copolymerizable with acrylonitrile or a blend of such copolymers, said fiber being characterized in having partially sulfonated polystyrene dispersed therein in an amount sufficient to improve the basic dyeability of said fiber.

4,645,799

CURABLE COMPOSITION OF ELASTOMERIC VINYLIDENE FLUORIDE COPOLYMER

Hiroshi Wachi, Ebina; Seitoku Kaya, Yokohama, and Gen Kojima, Machida, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1985, Ser. No. 788,579

Claims priority, application Japan, Oct. 18, 1984, 59-217311
Int. Cl.⁴ C08F 14/00

U.S. Cl. 525—199

5 Claims

1. A curable composition comprising an elastomeric vinylidene fluoride copolymer, an organic peroxide and an accelerator selected from the group consisting of polyallyl, divinyl, polybutadiene and methacrylate compounds, characterized in that said copolymer contains unsaturated bonds introduced by reacting at 50°–120° C. an untreated elastomeric vinylidene fluoride copolymer dispersed in an aqueous medium, with an aqueous alkaline solution containing an onium compound selected from the group consisting of quaternary ammonium and quaternary phosphonium compounds.

4,645,800

ACYLLACTAM FUNCTIONAL MATERIALS

James D. Gabbert, St. Louis; Albert Y. Garner, Manchester, and Ross M. Hedrick, St. Louis, all of Mo., assignors to DSM Rim Nylon VOF, Netherlands

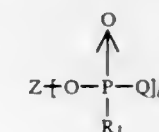
Continuation of Ser. No. 467,705, Feb. 18, 1983, which is a continuation-in-part of Ser. No. 374,852, May 4, 1982, which is a continuation of Ser. No. 274,330, Jun. 16, 1981, abandoned.
This application Jul. 3, 1985, Ser. No. 752,345

Int. Cl.⁴ C08F 8/30, 8/18, 8/40

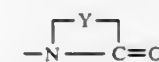
U.S. Cl. 525—340

43 Claims

1. Lactam functional material of the formula:



wherein,
Q is



with Y equal to C₃–C₁₁ alkylene;

b is an integer equal to 2 or more;

R₁ is an alkyl, aryl, aralkyl, halogen, alkoxy, aryloxy, aralkoxy or Q group; and

Z is a segment of: (1) a polyether provided said polyether is not solely polyarylene polyether; (2) a polyester containing polyether or polymeric hydrocarbon segments; (3) a hydrocarbon; (4) a polysiloxane; or (5) combinations thereof.

4,645,801

EPIHALOHYDRIN POLYMERS

James P. Barnhouse, North Ridgeville, Ohio, assignor to The BF Goodrich Company, Akron, Ohio

Filed Sep. 15, 1982, Ser. No. 418,312

Int. Cl.⁴ C08G 65/48, 65/24

U.S. Cl. 525—404

7 Claims

1. Composition that is devoid of an unsaturated component in the polymer chain comprising a saturated polymer selected from homopolymers of an epihalohydrin and copolymers of 5 to 90 weight parts of an epihalohydrin and 95 to 10 weight parts of an alkylene oxide selected from ethylene oxide and propylene oxide, an acid acceptor, and a curing agent consisting of an organic peroxide in sufficient amount to obtain a cured composition.

4,645,802

BLENDS OF BISPHENOL A POLYCARBONATE WITH POLY(ESTER-IMIDES) AND POLY(ESTER-IMIDE-AMIDES)

Winston J. Jackson, Jr., and John C. Morris, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1986, Ser. No. 818,302

Int. Cl.⁴ C08L 77/12, 67/02

U.S. Cl. 525—419

10 Claims

1. Composition comprising a blend of about 5–95% by weight of a polycarbonate of 4,4'-isopropylidenediphenol having an inherent viscosity of at least 0.3 and about 95–5% by weight of a polymer comprising repeating units from about 5–98 mol % trimellitic acid or anhydride and repeating units from 4-(aminomethyl)cyclohexanemethanol, the mol % of trimellitic acid or anhydride being no greater than the mol % 4-(aminomethyl)cyclohexanemethanol.

4,645,803

CURABLE EPOXY RESIN COMPOSITIONS

Dalip K. Kohli, Norwalk, and Michael M. Fisher, Ridgefield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,700

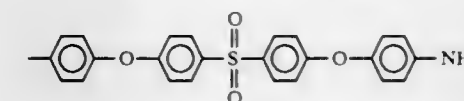
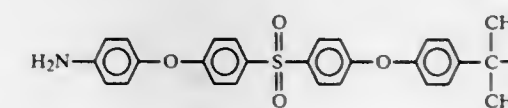
Int. Cl.⁴ C08G 59/50; C08L 63/00

U.S. Cl. 525—423

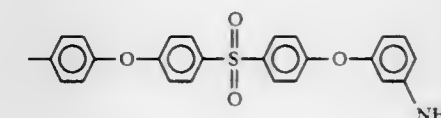
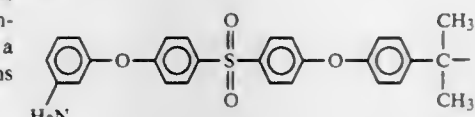
9 Claims

1. A fiber resin matrix composition which exhibits, upon curing, improved interlaminar toughness, compression strength and short beam shear strength under dry, wet and hot/wet conditions, said composition comprised of:

- (a) non-siliceous reinforcing filaments; and
(b) a heat-curable epoxy resin composition comprising:
(i) an epoxy resin or combination of epoxy resins having more than one epoxide group per molecule, and
(ii) an amount effective to promote cure of said epoxy resin of at least one amine-functional curing agent selected from those having the formulas:



and

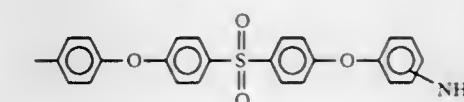
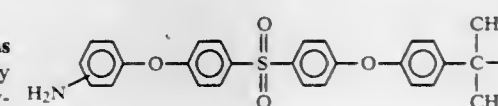
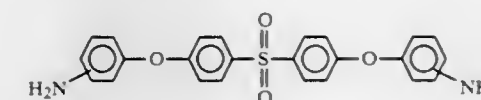


alone, or optionally in combination with;

- (iii) at least one other polyamine curing agent; and/or
(iv) a curing catalyst.

2. A fiber resin matrix composition which exhibits, upon curing, improved interlaminar toughness, compression strength and short beam shear strength under dry, wet and hot/wet conditions, said composition comprised of:

- (a) non-siliceous reinforcing filaments;
(b) a heat-curable epoxy resin composition comprising:
(i) an epoxy resin or combination of epoxy resins, and
(ii) an amount effective to promote cure of said epoxy resin of at least one amine functional curing agent selected from those having the formulas:



alone or optionally in combination with;
 (iii) at least one other polyamine curing agent; and/or
 (iv) a curing catalyst;
 said composition further comprising
 (c) a second homogeneous or heterogeneous polymer resin component blended and alloyed with components (a), (b)(i) and (b)(ii) in an amount sufficient to enhance toughness and resistance to failure under hot/wet stress conditions in composites produced from said compositions.

4,645,804

POLYCARBONATE/IMIDE HETERO GROUP CONDENSATION POLYMER BLENDS

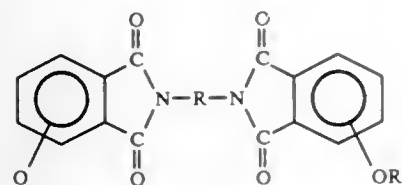
Daniel W. Fox, Pittsfield; Edward N. Peters, Lenox, and Gary F. Smith, Pittsfield, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 451,180, Dec. 20, 1982, Pat. No. 4,510,289, which is a continuation-in-part of Ser. No. 259,524, May 1, 1981, abandoned. This application Dec. 28, 1984, Ser. No. 687,551
 Int. Cl.⁴ C08L 69/00

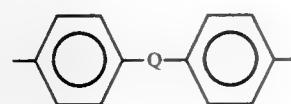
U.S. Cl. 525—433

11 Claims

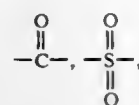
I. A thermoplastic resin composition comprising:
 (a) a mixed polycarbonate comprising units derived from a first dihydric phenol, which is a bis(hydroxyaryl) sulfone, and a second dihydric phenol, said first and second dihydric phenols being in a mole ratio of about 1:5 to 5:1; and
 (b) a thermoplastic condensation polymer which is a polyetherimide having repeating units of the formula:



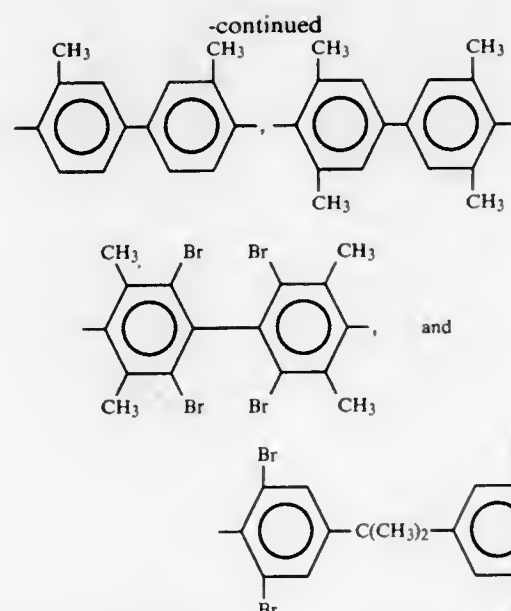
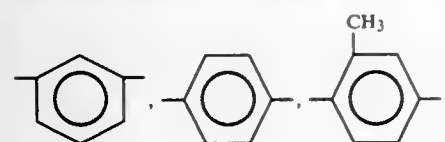
where R is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6-20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, C₂₋₈ alkylene terminated polydiorganosiloxane cycloalkylene radicals having from 2-20 carbon atoms, and (c) divalent radicals included by the formula



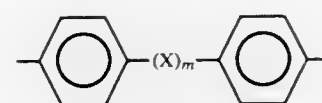
where Q is a member selected from the class consisting of —O—,



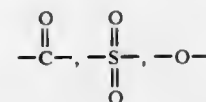
—S—, and —C_xH_{2x}—, and x is a whole number from 1 to 5, inclusive and R¹ is an aromatic radical having from 6-30 carbon atoms and is selected from the class consisting of (a) the following divalent organic radicals:



and (b) divalent organic radicals of the general formula



where X is a member selected from the class consisting of divalent radicals of the formulas —C_yH_{2y}—,



—O— and —S—, where m is 0 or 1, and y is a whole number from 1 to 5, said composition having been admixed to produce a compatible composition.

4,645,805

ADHESIVE COMPOSITION AND ADHESIVE FILM OR SHEET ON WHICH THE COMPOSITION IS COATED

Morio Gaku, Saitama; Nobuyuki Ikeguchi, Ibaraki, and Hidenori Kimbara, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,291

Claims priority, application Japan, Mar. 14, 1984, 59-48459; May 7, 1984, 59-90697

Int. Cl.⁴ C08L 67/02

U.S. Cl. 525—437

7 Claims

I. An adhesive composition consisting essentially of:
 (A) at least one cyanate ester compound selected from the group consisting of:

(i) polyfunctional aromatic cyanate ester monomers having the formula

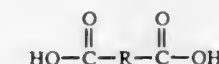


wherein n is an integer of 2-10 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring or said aromatic organic group;

(ii) homopolymer of (i) and
 (iii) copolymer of (i) and an amine, wherein the composition contains

(B) at least one essentially amorphous thermoplastic satu-

rated polyester resin, said saturated polyester resin consisting essentially of a condensate of an aromatic or aliphatic dicarboxylic acid of the formula



wherein R is an aromatic or aliphatic hydrocarbon radical or an acid anhydride of said aromatic or aliphatic dicarboxylic acid, and an aliphatic or alicyclic polyol.

4,645,806

USE OF CERTAIN POLYPHENYLENE OXIDES FOR THE PRODUCTION OF AROMATIC BLOCK POLYETHER-POLY(ESTER) CARBONATES BY THE INTERFACIAL PROCESS

Dieter Freitag; Ludwig Bottenbruch, both of Krefeld; Klaus G. Wilms, Dormagen, and Peter Tacke, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Dec. 9, 1985, Ser. No. 806,570

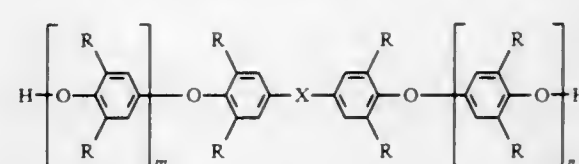
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1984, 3445440; Jul. 16, 1985, 3525337

Int. Cl.⁴ C08G 63/64; C08F 283/02

U.S. Cl. 525—462

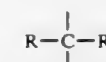
10 Claims

I. A process for the production of an aromatic block polyether-poly(ester) carbonate which comprises interfacial process for producing poly(ester) carbonates using a polyphenylene oxide corresponding to the following general formula:



wherein

R independently represents hydrogen or C₁-C₄ alkyl;
 X represents



wherein R is as defined above, —O—, —S— or —SO₂—;
 and
 m and n independently represent integers of from 1 to 200.

4,645,807

METHOD FOR FORMING NEW PRECERAMIC POLYMERS FOR SIC AND Si₃N₄/SIC SYSTEMS

Dietmar Seyferth, Lexington, Mass.; Timothy G. Wood, North Wales, Pa., and Yuan-Fu Yu, Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 18, 1985, Ser. No. 756,353

Int. Cl.⁴ C08F 283/00

U.S. Cl. 525—474

45 Claims

I. A method for preparing organosilicon polymers, wherein the method comprises:

(a) mixing an organopolysilane of the formula [i (RSiH)_x (RSi)_y]_n, where x+y=1, R is a lower alkyl group having from 1 to about 6 carbon atoms, a lower alkenyl group having 2 to about 6 carbon atoms, a substituted or unsubstituted lower aryl group having from 6 to about 10 carbon atoms, and n is an integer greater than 1; with at least a catalytic amount of an alkali metal amide or a silylamide in an organic solvent;

(b) allowing the mixture of step (a) to react at room temperature or above; and
 (c) quenching the reaction mixture with a reactive electrophile, thereby forming said organosilicon polymer.

4,645,808

PROCESS FOR PRODUCING OLEFIN POLYMER

Akinobu Shiga, Koganei; Toshio Sasaki, and Junpei Kojima, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 22, 1985, Ser. No. 725,499

Claims priority, application Japan, Apr. 26, 1984, 59-85597
 The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.⁴ C08F 4/64, 10/00

U.S. Cl. 526—119

9 Claims

I. A process for producing an olefin polymer which comprises homopolymerizing or copolymerizing an olefin in the presence of a catalyst system composed of an organoaluminum compound and a hydrocarbyloxy group-containing solid catalyst component which is prepared by reducing a titanium compound represented by the general formula Ti(OR)_nX_{4-n}, wherein R¹ is a C₁-C₂₀ hydrocarbon radical, X is halogen, and n is a number defined as 0 < n ≤ 4, with an organoaluminum compound represented by the general formula AlR²_mY_{3-m}, wherein R² is a C₁-C₂₀ hydrocarbon radical, Y is halogen, and m is a number defined as 1 ≤ m ≤ 3, subjecting the reduction product, which is a hydrocarbyloxy group-containing solid insoluble in hydrocarbon solvents and in which the hydrocarbyloxy group content is 0.3 to 2.5 moles per mole of titanium atoms, to a preliminary ethylene polymerization treatment, and treating the resultant solid in a state of slurry in a hydrocarbon solvent with an ether compound and titanium tetrachloride at a temperature of 30° to 100° C.

4,645,809

DIRECT METHOD FOR PREPARING SYNDIOTACTIC 1,2-POLYBUTADIENE

Anthony J. Bell, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 23, 1986, Ser. No. 821,583

Int. Cl.⁴ C08F 4/70

U.S. Cl. 526—140

32 Claims

I. A process for directly preparing syndiotactic 1,2-polybutadiene fibers comprising:

(1) preparing a monomer component solution by dissolving at least one member selected from the group consisting of liquid polymers and naphthenic oils in 1,3-butadiene monomer;
 (2) preparing a polymerization mixture by mixing said monomer component solution, a catalyst composition which is comprised of (a) a cobalt compound and (b) an organoaluminum compound, and carbon disulfide throughout a liquid medium; and
 (3) allowing said 1,3-butadiene to polymerize in said polymerization mixture into syndiotactic 1,2-polybutadiene fibers.

4,645,810

ADHESIVE BONDING

Eleonore Fischer, Frankfurt am Main, Fed. Rep. of Germany, assignor to USM Corporation, Flemington, N.J.

Filed Jul. 11, 1985, Ser. No. 753,887

Claims priority, application United Kingdom, Aug. 23, 1984, 8421412

Int. Cl.⁴ C08F 2/02

U.S. Cl. 526—204

9 Claims

I. An adhesive composition in two parts comprising:

(A) a first part which comprises:
 (A1) polymerisable acrylate ester monomer material; and
 (A2) a free radical initiator; and
 (B) a second part which comprises:

(B1) polymerisable acrylate ester monomer material;
(B2) a thiourea compound; and
(B3) in an amount from 0.1 to 10% by weight of the adhesive composition, an organic dibasic acid compound or the anhydride thereof which dibasic compound comprises succinic acid, succinic acid anhydride, maleic acid, maleic acid anhydride, o-phthalic acid, o-phthalic acid anhydride, o-tetrachlorophthalic acid or o-tetrachlorophthalic acid anhydride.

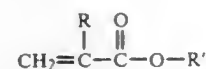
4,645,811

MATERIAL USED FOR OPTICAL DEVICES

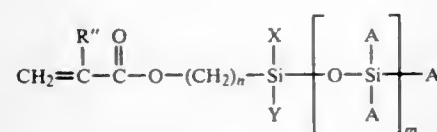
Joseph J. Falcetta, Arlington, Tex., and Wilhelm F. Kunzler, Fairport, N.Y., assignors to Oculus Contact Lens Company, Chicago, Ill.

Filed Apr. 2, 1984, Ser. No. 595,580
Int. Cl.⁴ C08F 30/08

U.S. Cl. 526—279 26 Claims
1. A solid proteinaceous inhibiting copolymer formed by reacting together: of from about 40 to about 90 parts by weight of one or more alkyl acrylate esters of the structure



wherein R is methyl or hydrogen and R' is an alkyl of 1 to 10 carbon atoms; of from about 10 to about 60 parts by weight of one or more organosiloxane esters of the structure



wherein X and Y are selected from the group consisting of an alkyl of 1 to 5 carbon atoms, a phenyl and a Z group, the Z group being of the structure



wherein A is selected from the group consisting of an alkyl of 1 to 5 carbon atoms and phenyl, R'' is selected from the group consisting of methyl and hydrogen, m is an integer from 1 to 5 and n is an integer from 1 to 3; and a mixture consisting essentially of from about 5.0 to about 10.0 parts by weight N-(1,1-dimethyl-3-oxobutyl)acrylamide; and of from about 1.5 to about 9.5 parts by weight of one or more acids selected from the group consisting of methacrylic and acrylic acid.

4,645,812

METHOD OF SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Helmut K. Maier, Golden Valley, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 470,512, Feb. 28, 1983, Pat. No. 4,532,314. This application Mar. 1, 1985, Ser. No. 707,336. The portion of the term of this patent subsequent to Jul. 30, 2002, has been disclaimed.
Int. Cl.⁴ C08F 2/20

U.S. Cl. 526—200 11 Claims
1. In a method of suspension polymerization of vinyl chloride or vinyl chloride and other monomers copolymerizable therewith, the improvement comprising employing an effective amount of hydroxypropyl guar having a molar substitution of at least 0.6 as a suspending agent and an effective quantity of a secondary suspending agent in combination with said hydroxypropyl guar.

Int. Cl.⁴ C08F 14/18

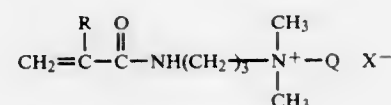
4,645,813

CATIONIC FLUORO POLYMERS

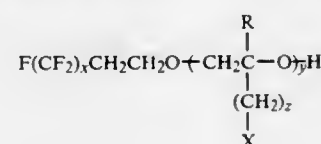
Dodd W. Fong, Naperville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 642,226, Aug. 20, 1984, abandoned. This application Oct. 10, 1985, Ser. No. 786,406
Int. Cl.⁴ C08F 14/18

U.S. Cl. 526—247 5 Claims
1. Polymers of a vinyl quaternary ammonium salt having the formula:



wherein Q is a quaternizing radical obtained from a perfluoro quaternizing agent having the formula:



wherein:

x is an integer or fractional integer having an average value between 2–12;
y is an integer or fractional integer having an average value between 1–20;
z is 1 or 2;
R is, individually, at each occurrence chosen from the group hydrogen or methyl; and
X is a halogen chosen from the group consisting of Cl, Br, I, and mixtures thereof.

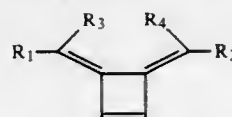
4,645,814

RING OPENING POLYMERIZATION OF 3,4-DIMETHYLENE CYCLOBUTENE AND DERIVATIVES THEREOF

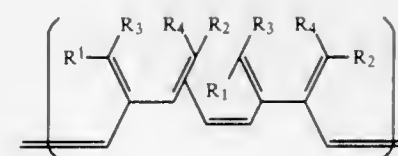
Robert H. Grubbs, S. Pasadena, and Tim M. Swager, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 7, 1985, Ser. No. 785,272
Int. Cl.⁴ C08F 28/06

U.S. Cl. 526—256 16 Claims
1. A method of polymerization comprising the steps of: reacting a cyclobutene monomer of the formula:



where R₁, R₂, R₃ and R₄ are individually selected from H, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, monocyclic aryl or R₃ and R₄ are combined to form a divalent CR₂⁵, O, N=R or S group where R⁵ is selected from H, alkyl or 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, with a mild ring opening, olefin metathesis catalyst to form a non-crosslinked soluble polymer containing repeating units of the formula:



4,645,815

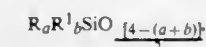
HEAT CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Larry N. Lewis, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

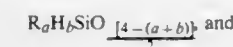
Filed Oct. 31, 1985, Ser. No. 793,395
Int. Cl.⁴ C08G 77/06

U.S. Cl. 528—15 4 Claims
1. A heat curable organopolysiloxane composition comprising:

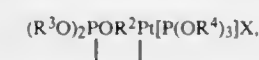
(A) an olefinically unsaturated organopolysiloxane having chemically combined structural units of the formula



(B) an organo hydrogen polysiloxane having chemically combined structural units of the formula



(C) an amount of platinum phosphite having the formula



which is effective as a platinum catalyst where R is a member selected from the class consisting of C₍₁₋₁₄₎ monovalent hydrocarbon radicals and substituted C₍₁₋₁₄₎ monovalent hydrocarbon radicals, R¹ is a C₍₁₋₁₀₎ olefinically unsaturated aliphatic radical, R² is a C₍₆₋₁₄₎ divalent aromatic hydrocarbon radical or substituted C₍₆₋₁₄₎ divalent aromatic hydrocarbon radical, R³ and R⁴ are each as defined by R, X is a halogen radical, a is a whole number having a value of 0 to 3 inclusive and b has an average value of 0.005 to 2.0 inclusive and the sum of a and b is equal to from 0.8 to 3 inclusive.

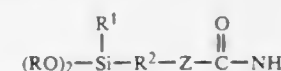
4,645,816

NOVEL VULCANIZABLE SILANE-TERMINATED POLYURETHANE POLYMERS

Eric R. Pohl, Tarrytown, and Frederick D. Osterholtz, Pleasantville, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,785
Int. Cl.⁴ C08G 18/38

U.S. Cl. 528—28 9 Claims
1. A process for producing vulcanizable, dihydrocarbyloxysilyl-terminated polyurethane polymers having terminal end-blocking units of the formula:

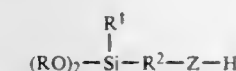


wherein

R is C₁–C₁₆ alkyl or C₆–C₁₂ aryl;
R¹ is C₁–C₄ alkyl;
R² is C₂–C₁₈ alkylene or C₆–C₁₈ arylene; and
Z is —O—, —S— or —NR³, wherein R³ is hydrogen,



or C₁–C₁₆ alkyl, aminoalkyl or diaminoalkyl, with the proviso that when Z is —O—, R² must be C₄–C₁₈ alkylene or C₆–C₁₈ arylene, which comprises reacting:
(a) the —NCO terminal groups of an isocyanate-terminated polyurethane prepolymer with
(b) at least a stoichiometric amount of silane monomer of the formula:



wherein R, R¹, R² and Z are as defined above.

4,645,817

PREPARATION OF HYDROXYL GROUP-CONTAINING ALKOXYLATION PRODUCTS OF ORGANIC CARBOXYLIC ACIDS

Joachim Probst, Leverkusen; Michael Sonntag, Odenthal; Roland Richter, Cologne, and Hanns P. Müller, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 11, 1985, Ser. No. 722,567
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1984, 3415531

Int. Cl.⁴ C08G 18/80, 18/16, 63/42; C08F 20/62
U.S. Cl. 528—45 10 Claims

1. A process for the preparation of a hydroxyl group-containing alkoxylation product of an organic carboxylic acid which comprises reacting an organic compound containing at least one carboxyl group with an alkylene oxide in an alkoxylation reaction in the presence of a phase transfer catalyst comprising a member selected from the group consisting of:

(a) tetraalkylphosphonium halides in which the sum of carbon atoms of the alkyl groups is at least 8,
(b) basic alkali metal compounds which have undergone crown ether complex formation and
(c) complexes of (i) basic alkali metal compounds and (ii) acyclic organic compounds containing at least 5 alkylene oxide units of the formula —R—O—, wherein R is C₁–C₄ alkylene, in the form of one or more polyether chains having at least three alkylene oxide units, containing a total of at least 40% by weight of alkylene oxide units within said one or more polyether chains having at least 3 alkylene oxide units and having a molecular weight of at least 238.

9. A process for the production of polyurethanes which comprises:

(a) preparing a hydroxyl group-containing alkoxylation product of an organic carboxylic acid in accordance with claim 1 and
(b) reacting the product of step (a) with an organic polyisocyanate.
10. The process of claim 9 wherein said organic polyisocyanate is blocked with a blocking agent for isocyanate groups.

4,645,818

HEAT-CURABLE EPOXIDE RESIN COMPOSITIONS

Christopher M. Andrews, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 11, 1985, Ser. No. 807,564

Claims priority, application United Kingdom, Dec. 22, 1984, 8432606

Int. Cl.⁴ C08G 59/44, 59/46
U.S. Cl. 528—93 20 Claims

1. A heat-curable composition comprising
(a) an epoxide resin and

(b) an effective amount of a urea of formula



VI

where

Ar represents an aromatic group which is linked through an aromatic carbon atom to the indicated nitrogen atom and is substituted by an amido group, and
 R^3 and R^4 each represent an aliphatic, cycloaliphatic, or araliphatic hydrocarbyl group, which may be substituted by a halogen atom or by a hydroxyl group, with the proviso that R^3 may alternatively represent a hydrogen atom, or R^3 and R^4 together with the indicated attached nitrogen atom represent a heterocyclic ring containing 3 to 5 carbon atoms, and optionally one oxygen atom, in the ring.

4,645,819

NON-CROSSLINKED POLYETHER-KETONES WHICH CAN BE PROCESSED BY A THERMOPLASTIC METHOD, AND THEIR PREPARATION

Hans-Josef Sterzel, Dannstadt-Schauernheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 25, 1985, Ser. No. 727,135

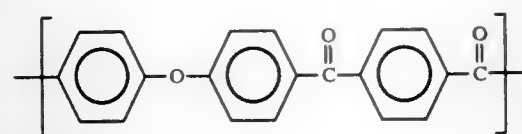
Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416455

Int. Cl.⁴ C08G 8/02, 14/00

U.S. Cl. 528—125

4 Claims

1. A polyether-ketone containing structural units of the formula



and having an intrinsic viscosity of from 0.4 to 1.6, measured in concentrated sulfuric acid at 25° C., which has a completely linear structure, and is heat-stable and free from crosslinking reactions during processing at from 390° to 420° C. said polyether ketone obtained by a polycondensation of terephthaloyl chloride or terephthaloyl fluoride with diphenyl ether in homogeneous phase at a reaction temperature not exceeding +10° C.

4,645,820

PARTIALLY CRYSTALLINE POLY(SULFONE ESTER) RESIN

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 4, 1985, Ser. No. 795,039

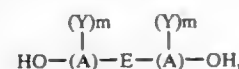
Int. Cl.⁴ C08G 75/00

U.S. Cl. 528—171

16 Claims

1. A moldable thermoplastic resin comprising the reaction product of about 50 mole % of a dihydric phenol, with from about 30 to about 45 mole % of recurring units a bis(α,α -disubstituted acetic acid) sulfone or its reactive derivative, and from about 5 to about 20 mole % of a 4,4'-benzophenone dicarboxylic acid or its reactive derivative.

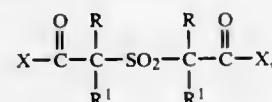
said dihydric phenol having the formula:



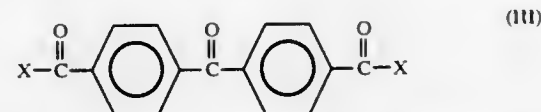
in which each A separately represents a phenylene group, a naphthalene group or a biphenylene group; E represents an alkylene group; an alkylidene group; hexafluoroisopropylidene; two or more alkylene groups connected by a group other than an alkylene or an alkylidene group; two

or more alkylidene groups connected by a group other than an alkylene or an alkylidene group; a cycloaliphatic group; two or more cycloaliphatic groups connected by a group other than an alkylene, an alkylidene or a cycloaliphatic group; or a cycloalkylidene group; each Y separately represents fluorine, chlorine, bromine, hydrogen, a monovalent hydrocarbon group or an oxy group; and wherein if A is a phenylene group m equals 4, if A is a naphthalene group m equals 6 and if A is a biphenylene group m equals 8;

said bis(α,α -disubstituted acetic acid) sulfone or its reactive derivative having the formula:



in which each R and R^1 separately represent methyl, ethyl or propyl with the proviso that R and R^1 on the same carbon atom cannot both be propyl and in which both X's represent hydroxy, methoxy or chlorine; and said 4,4'-benzophenone dicarboxylic acid or its reactive derivative having the formula:



in which both X's represent hydroxy, methoxy or chlorine.

4,645,821

PRECURSOR OF COPOLYPHTHALOCYANINE-IMIDE LATTICE, PREPARATION, AND THE RESULTANT LATTICE

Jean Malinge, Givors; Guy Rabilloud, Grenoble, and Bernard Sillion, Lyons, all of France, assignors to Centre d'Etude des Matériaux Organiques pour Technologies Avancées, Vernaison, France

Filed Jul. 25, 1985, Ser. No. 758,949

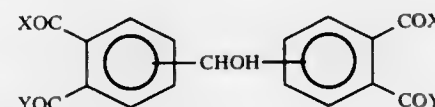
Claims priority, application France, Jul. 25, 1984, 84 11841

Int. Cl.⁴ C08G 73/06

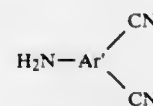
U.S. Cl. 528—331

20 Claims

1. An aromatic polyimide resin composition, obtained by condensing, at least one aromatic compound (A) of the general formula:



wherein X and Y are independently hydroxy, alkoxy, hydroxyalkoxy, or form together an oxygen atom, and (i) at least one aromatic amino-dinitrile (C) of the general formula:



wherein Ar' is a trivalent carbocyclic aromatic radical, the three valencies of which are positioned on separate carbon atoms, the two nitrile groups being in ortho-position with respect to each other; or (ii) a mixture of at least one aromatic amino-dinitrile (C) and at least one aromatic diamine (B) of the general formula:



wherein Ar is a divalent carbocyclic aromatic radical or a pyridine radical, the two valencies of which are positioned on separate carbon atoms and are not in ortho position with respect to each other.

4,645,822

POLYAMIDE STABILIZED AGAINST THE EFFECT OF LIGHT WITH MALEIC IMIDE CARBOXYLIC ACID CHLORIDE CHAIN TERMINATOR

Werner Nielinger, Krefeld; Wolfgang Stix, Neckarsteinach, and Ludwig Bottenbruch, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1985, Ser. No. 776,671

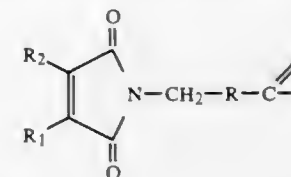
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435202

Int. Cl.⁴ C08G 69/28

U.S. Cl. 528—336

7 Claims

1. Thermoplastic polyamide with improved stability against reduction in molecular weight due to the effect of light, having as end groups maleic imides of the formula:



wherein

R represents a bond or R represents an alkyl radical with from 1 to 5 carbon atoms, a C_5 - C_{10} cycloalkyl radical or a C_6 - C_{12} aryl radical, and
 R_1 and R_2 are the same or different and represent a C_1 - C_4 alkyl.

4,645,823

POLYAMIDE PREPARATION FROM POLYCARBOXYLIC ACID AND POLYAMINE WITH CARBODIIMIDE CONDENSING AGENT

Hideo Ai; Akihiko Ikeda, and Yoshio Matsuoka, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1985, Ser. No. 774,751

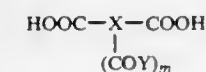
Claims priority, application Japan, Sep. 14, 1984, 59-193737

Int. Cl.⁴ C08G 69/28

U.S. Cl. 528—336

29 Claims

1. A process for preparing a polyamide which comprises polycondensing a dicarboxylic acid having the following general formula:



wherein

X is a group having a valence of (m+2), and is a C_6 - C_{20} carbocyclic group, a C_3 - C_{20} heterocyclic group, a C_2 - C_{20} alkyl group or a C_2 - C_{20} alkenyl group, the group having at least one carbon-carbon double bond in the position of conjugating to the carboxylic acid radical or the group having an α,β -unsaturated ketone structure;
Y is —OR or —NRR', wherein each of R and R' is independently a C_3 - C_{20} carbocyclic group, a C_1 - C_{20} heterocyclic group, a C_1 - C_{20} alkyl group or substituted group thereof having at least one substituent selected from the group consisting of a C_1 - C_{12} alkoxy group, a C_2 - C_{12} saturated acyl group, a C_2 - C_{12} saturated acyloxy group, a C_2 - C_{12} saturated

acylamino group, a C_2 - C_{12} dialkylamino group, a C_1 - C_{12} alkylthio group, a C_2 - C_{12} saturated acylthio group and a C_3 - C_{12} group having at least one silicon atom;

m is 0, 1 or 2; and

—COY is attached to any of the positions ortho, peri, β and γ with respect to the —COOH group,

with a diamine by using a carbodiimide as the condensing agent.

4,645,824

METHOD OF PREPARING HIGH MOLECULAR WEIGHT POLYIMIDE, PRODUCT AND USE

Abraham L. Landis, Northridge, and Arthur B. Naselow, Marina del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

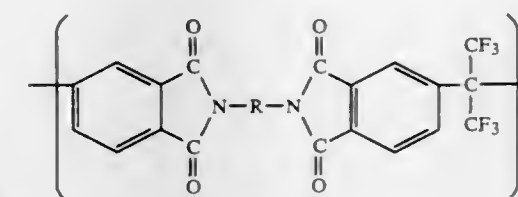
Filed Nov. 25, 1985, Ser. No. 801,433

Int. Cl.⁴ C08G 69/26

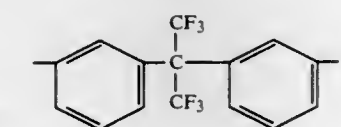
U.S. Cl. 528—353

15 Claims

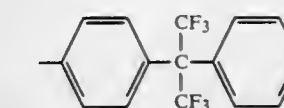
1. In a process for reacting substantially equal molar proportions of a first reactant which is 2,2-bis(3-aminophenyl)hexafluoropropane or 2,2-bis(4-aminophenyl)hexafluoropropane with a second reactant which is 4,4'-hexafluoroisopropylidene[bis(phthalic anhydride)] in a solvent for said reactants to prepare a polyimide having the recurring structural unit:



wherein R is:



II



III

the improvement which comprises using as said solvent, a solvent comprising cresol, said polyimide being soluble in said solvent.

4,645,825

FIBRES AND FILAMENTS OF POLYARYLENE SULPHIDES

Karsten Idel, Krefeld, and Bernd Willenberg, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1985, Ser. No. 761,364

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1984, 3428984; Aug. 7, 1984, 3428985; Aug. 7, 1984, 3428986; Jul. 20, 1985, 3526066

Int. Cl.⁴ C08G 75/14

U.S. Cl. 528—388

9 Claims

1. A fibre or filament of a polyarylene sulphide, characterised in that the polyarylene sulphide has a melt viscosity, η_m , of 20 to 500,000 Pa.s and a weight average of the relative molecular weight M_w (rel) of 25,000 to 500,000 wherein:

$$\lg \eta_m = 3.48 \times \lg M_w(\text{rel}) - 14.25 \pm 0.1.$$

4,645,826

PROCESS FOR PRODUCTION OF HIGH TO
ULTRA-HIGH MOLECULAR WEIGHT LINEAR
POLYARYLENESULFIDESYo Iizuka; Takao Iwasaki; Takayuki Katto, and Zenya Shiiki,
all of Fukushima, Japan, assignors to Kureha Kagaku Kogyo
Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1985, Ser. No. 746,252

Claims priority, application Japan, Jun. 20, 1984, 59-126725;
Sep. 8, 1984, 59-188533Int. Cl.⁴ C08G 75/14

U.S. Cl. 528—388

17 Claims

1. A process for producing a high molecular to ultra-high molecular weight linear polyarylenesulfide, which comprises: providing a prepolymer which is an arylenesulfide polymer having a melt viscosity of 5 to 3,000 poise measured at 310° C. and a shear rate of 200 sec⁻¹; placing the prepolymer in a solvent which consists essentially of a strongly alkaline mixture of an organic amide and 7 to 30% by weight of water; heating said prepolymer in said solvent at a temperature of from 245° to 290° C., whereby a mass is formed in a liquid-liquid two phase state wherein the prepolymer is present mostly in one of the two phases; maintaining the liquid-liquid two-phase state for 1 to 50 hours thereby to convert the prepolymer into an arylenesulfide polymer of a higher molecular weight; and recovering the arylenesulfide polymer of a higher molecular weight, the alkalinity of said strongly alkaline mixture being such that when diluted 10-fold with water, the pH thereof is 9.5 to 14.

4,645,827

GLYCOPEPTIDE ANTIBIOTIC L 17054

Adriano Malabarba, Milano; Paolo Strazzolini, Fiume Veneto;
Angelo Borghi, Milano; Bruno Cavalleri, Milano, and Caro-
lina Coronelli, Milano, all of Italy, assignors to Gruppo Lepe-
tit S.p.A., Milano, Italy

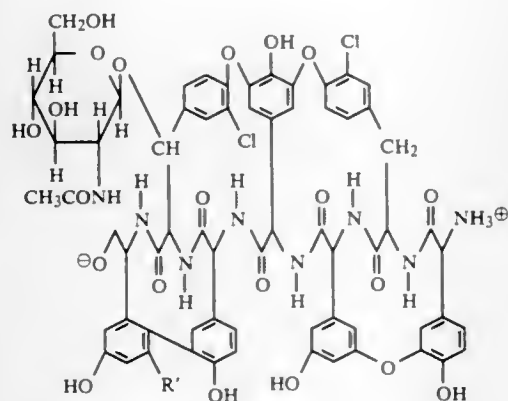
Filed Mar. 19, 1984, Ser. No. 591,096

Claims priority, application United Kingdom, Mar. 22, 1983,
8307847Int. Cl.⁴ C07C 103/52; C07H 17/08

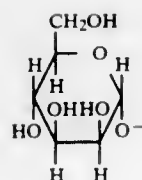
U.S. Cl. 530—322

2 Claims

2. Antibiotic L 17054 or a pharmaceutically acceptable salt thereof, which has the following formula, in the non-salt form:



wherein R' represents the group of formula



4,645,828

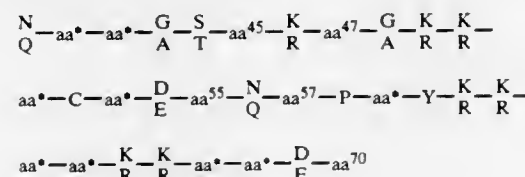
PLATELET RELATED GROWTH REGULATOR

Daniel R. Twardzik, Bainbridge Island, and George J. Todaro,
Seattle, both of Wash., assignors to ONCOGEN, Seattle,
Wash.Continuation-in-part of Ser. No. 592,969, Mar. 23, 1984,
abandoned. This application Mar. 15, 1985, Ser. No. 712,302Int. Cl.⁴ C07K 7/10

U.S. Cl. 530—324

4 Claims

1. A composition comprising a compound having the following amino acid sequence:



wherein:

aa* is V, L or I;
aa⁴⁵ is V, L, I, K or R;
aa⁴⁷ is N, O, S or T;
aa⁵⁵ is V, L, I, N or Q;
aa⁵⁷ is G, A, K or R; and
aa⁷⁰ is G, A, S or T,
or a fragment of at least 15 amino acids thereof.

4,645,829

METHOD FOR SEPARATING POLYPEPTIDES

Sa Van Ho, Maryland Heights, Mo., assignor to Monsanto
Company, St. Louis, Mo.

Filed Oct. 29, 1984, Ser. No. 665,689

Int. Cl.⁴ A23J 1/09; B01D 21/01

U.S. Cl. 530—344

25 Claims

1. A method of separating a first polypeptide fraction from a second polypeptide fraction of a mixed solution containing said fractions which comprises admixing at least one neutral polymer and at least one charged polymer with said solution, said charged polymer being soluble in said mixed solution and interacting with said first fraction to form an interaction product which precipitates from solution, said neutral polymer being soluble in said mixed solution and enhancing the effectiveness of said charged polymer in precipitating said first fraction.

4,645,830

STABLE COMPOSITION OF INTERLEUKIN-2 AND
ALBUMINMikura Yasushi; Asada Kensuke, both of Suita, and Toguchi
Hajime, Nishinomiya, all of Japan, assignors to Takeda
Chemical Industries, Osaka, Japan

Filed Apr. 8, 1985, Ser. No. 720,754

Claims priority, application Japan, Apr. 9, 1984, 59-71568;
Jan. 25, 1985, 60-13226; Feb. 25, 1985, 60-37184Int. Cl.⁴ A61K 45/02, 37/02

U.S. Cl. 530—351

16 Claims

1. A human interleukin-2 composition in the form of a lyophilizate which comprises in addition to human interleukin-2,

human serum albumin in a concentration of about 0.1 to 50 mg/ml as an aqueous solution, and, as a solution, is adjusted to have a pH between 3 to 6.

4,645,831

PROCESS FOR REMOVING UNDESIRABLE
CONSTITUENTS FROM WHEAT GLUTEN PRODUCTSJames T. Lawhon, College Station, Tex., assignor to The Texas
A&M University System, College Station, Tex.

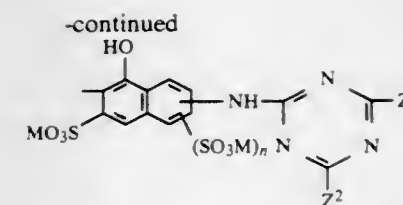
Filed Dec. 10, 1984, Ser. No. 679,818

Int. Cl.⁴ A23J 1/12

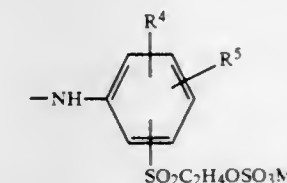
U.S. Cl. 530—374

27 Claims

1. A method of processing particulate wheat gluten products which contain wheat gluten proteins and undesirable flavor and color-causing components, including the steps of: suspending a particulate wheat gluten product in a solvent selected from the group consisting of aqueous alkali solutions, aqueous alcohol solutions, and mixtures thereof; extracting wheat gluten proteins from the suspension; dispersing the extracted wheat gluten proteins in a solvent to produce a filterable feed; ultrafiltering the filterable feed using an ultrafiltration membrane system which has a molecular weight cutoff which will pass the components of the extracted wheat gluten proteins which cause undesirable flavors and color but will retain the wheat gluten proteins, thereby producing a permeate and a retentate; and recovering the retentate.



wherein M represents hydrogen or alkali metal; R¹ represents hydrogen, chlorine, lower alkyl, lower alkoxy, nitro, carboxy; R² and R⁸ represent lower alkyl, lower alkoxy or sulfonic acid; R³, R⁷ and R⁹ represent hydrogen, lower alkoxy, lower alkoxy, acetylamino or sulfonic acid; R⁴ and R⁵ represent hydrogen, methyl, methoxy or sulfonic acid; R⁶ represents hydrogen, lower alkyl, lower alkoxy or sulfonic acid; Z¹ represents chlorine, fluorine, aliphatic or aromatic amino group, methoxy or phenoxy; Z² represents the same as Z¹ when Z³ represents



Z² represents chlorine or fluorine when Z³ represents aliphatic amino group, aromatic amino group except

4,645,832

CELLULOSE FIBER-REACTIVE DISAZO OR TRISAZO
DYES HAVING A TRIAZINE RING SUBSTITUTED BY
A(B-SULFATOETHYL) SULFONYLANILINO GROUPToshio Niwa, Kanagawa, and Yoshiaki Kato, Tokyo, both of
Japan, assignors to Mitsubishi Chemical Industries Limited,
Tokyo, Japan

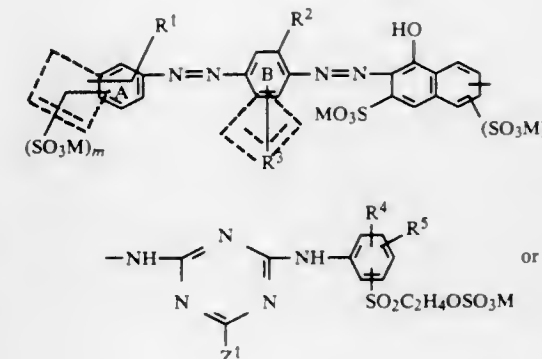
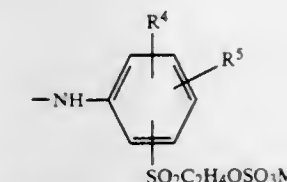
Filed Apr. 9, 1985, Ser. No. 721,514

Claims priority, application Japan, Apr. 9, 1984, 59-70549;
Apr. 25, 1984, 59-83569; Apr. 27, 1984, 59-85509Int. Cl.⁴ C09B 62/09, 62/453, 62/533; D06P 1/382

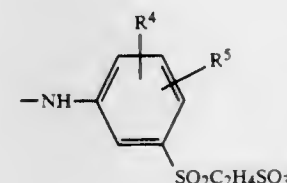
U.S. Cl. 534—637

6 Claims

1. A reactive azo dye represented by the following formula:

methoxy or phenoxy; Z³ is

aliphatic amino group, aromatic amino group except



methoxy, or phenoxy; m represents 1, 2 or 3; m' represents 2 or 3; n represents 0 or 1, and the rings A, B and C each represent a benzene ring or naphthalene ring, wherein the aliphatic and aromatic amino residue represented by Z¹, Z² and Z³ are —NH₂, alkylamino having 1 to 4 carbon atoms, ethanol-amino, β-cyanoethylamino, β-sulfoethylamino, —NHCH₂COOH, anilino or anilino substituted with sulfo, chlorine, lower alkyl, lower alkoxy, nitro or carboxyl.

4,645,833
METHOD FOR THE PREPARATION OF BORATE-CONTAINING, DISPERSIBLE, WATER-SOLUBLE POLYGALACTOMANNANS
 Friedrich Bayerlein; Peter-Paul Haberer, both of Krailling; Nikolaos Keramaris, Eichenau; Nikolaus Kottmair, Ganting, and Manfred Kuhn, Munich, all of Fed. Rep. of Germany, assignors to Sherex Chemical Co., Inc., Dublin, Ohio
 Filed Sep. 21, 1982, Ser. No. 420,684

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137537

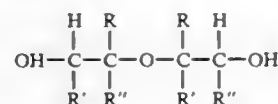
Int. Cl.⁴ C08B 37/00; C07H 1/00
 U.S. Cl. 536—17.1

6 Claims
 1. A process for the preparation of borate-containing, dispersible, water-soluble, polygalactomannan which comprises: obtaining polygalactomannan material from endosperm of legumes; soaking said polygalactomannan material in an aqueous alkaline solution containing 0.001 to 0.09 weight percent of borate ions, expressed as borax (Na₂B₄O₇·10H₂O), based upon the polygalactomannan, and 0.2 to 10 percent weight of hydroxyl ions, expressed as sodium hydroxide, based upon the polygalactomannan to thereby obtain a soaked material; and then subjecting said soaked material to mechanical treatment resulting in destruction of the cell structure of said polygalactomannan material.

4,645,834
SYNTHESIS OF HETEROCYCLIC AMINES VIA THE REACTION OF DIALKYLENE GLYCOL AND AMMONIA
 Dale D. Dixon, Kutztown, Pa.; Randall J. Daughenbaugh, Longmont, Colo., and Robert L. Fowlkes, Milton, Fla., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
 Continuation-in-part of Ser. No. 130,782, Mar. 17, 1980, abandoned. This application Apr. 8, 1982, Ser. No. 366,517

Int. Cl.⁴ C07D 265/30, 295/02

U.S. Cl. 544—106
13 Claims
 1. In a process for producing a heterocyclic amine by the reaction of a dialkylene glycol of the formula



where R, R', R'' may be identical or different each representing a hydrogen atom, alkyl or phenyl radicals, and ammonia in a fixed bed catalytic reactor said reactions being carried out in the presence of hydrogen and a hydrogenation-dehydrogenation catalyst the improvement which comprises:

passing the dialkylene glycol and ammonia downflow through said reactor at a temperature and pressure such that at least 1% of the dialkylene glycol is maintained in the liquid phase, said dialkylene glycol and ammonia being passed through said reactor at a rate such that the dialkylene glycol is present in said reactor as a discontinuous liquid phase; and said reactor being operated such that any heterocyclic amine formed during the reaction is predominately in the vapor phase; and continuously removing heterocyclic amine product from the reactor.

4,645,835
PROCESS FOR MAKING CHLOROISOCYANURIC ACIDS

Werner Pieper, Kerpen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
 Filed Jun. 24, 1985, Ser. No. 748,022

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424823

Int. Cl.⁴ C07D 251/28, 251/26

U.S. Cl. 544—190

3 Claims
 1. In the process for making mono, di- or tri-chloroisocyanuric acid by reacting an aqueous suspension of cyanuric acid while stirring with an alkali metal compound in the presence of gaseous chlorine at temperatures between 0° and 40° C. at a pH-value of less than 7, the improvement which comprises:
 (a) effecting the reaction in a system gastightly closed with respect to the outside;
 (b) establishing a chlorine gas atmosphere with a pressure of more than 500 millibars above the continuously renewed (by agitation) surface area of the cyanuric acid suspension, and maintaining the pressure during the reaction; and
 (c) using, as the alkali metal compound, an alkali metal hydroxide solution and metering it into the cyanuric acid suspension at a rate sufficient for the resulting reaction mixture always to present a pH of less than 7.

4,645,836
PROCESS FOR THE PREPARATION OF 6,7-DIHYDROXY-4-ALKYL-2(1H) QUINAZOLINONE-1-PROPIONIC ACIDS

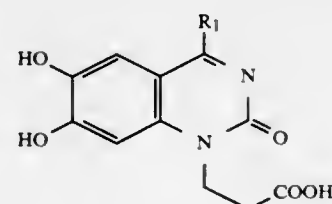
Richard A. Conley, Annandale, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Sep. 12, 1983, Ser. No. 531,138

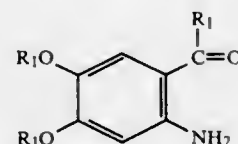
Int. Cl.⁴ C07D 239/80

U.S. Cl. 544—286

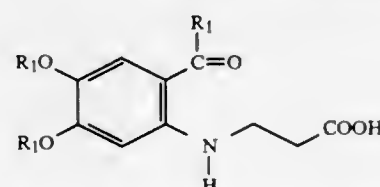
4 Claims
 1. A process for the preparation of compounds of the formula



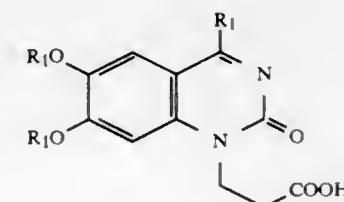
which comprises reacting an amino ketone of the formula



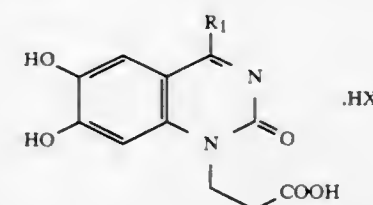
with acrylic acid to form a β -alanine of the formula



cyclizing the β -alanine with an alkali metal cyanate to give a quinazolinone of the formula



hydrolyzing the ether groups with a hydrohalo acid to form a salt of the formula



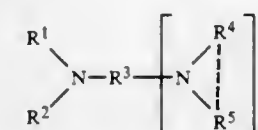
and treating the salt with water to form the free acid, wherein R₁ is lower alkyl and X is selected from hydrobromic acid and hydriodic acid.

4,645,837
CATALYST SYSTEM FOR AMINE TRANSALKYLATION
 Richard M. Laine, Palo Alto, Calif., and Youval Shvo, Tel Aviv, Israel, assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 288,966, Jul. 31, 1981, abandoned. This application Nov. 5, 1984, Ser. No. 668,298

Int. Cl.⁴ C07D 295/12, 295/02; C07C 87/127, 87/20
 U.S. Cl. 544—402

24 Claims
 1. In the catalytic exchange of organic groups, involving the breaking of Z—N bonds, between one or more molecular species



wherein R¹ and R² are the same or different monovalent organic groups bonded to the adjacent nitrogen atom by Z—N bonds, Z is a Group IV_a atom, n is zero or a positive integer, R³ is an organic group bonded to the adjacent nitrogen atom or atoms by Z—N bonds and is monovalent where n is zero and polyvalent where n is a positive integer, R⁴ and R⁵ are the same or different monovalent organic groups bonded to the adjacent nitrogen atom or atoms by Z—N bonds or together form a bivalent organic group bonded to the adjacent nitrogen atom or atoms by Z—N bonds, the improvement consisting essentially of conducting such catalytic exchange reaction under conditions substantially free of water and employing a homogeneous catalyst in the presence of an alcohol solvent and carbon monoxide, said catalyst being a Group VIII metal or mixed-metal complex or salt of said catalyst.

4,645,838
PYRAZOLOPYRIDINE COMPOUNDS, AND INTERMEDIATES, USEFUL AS ANXIOLYTIC AGENTS
 Thomas M. Bare, West Chester, and Anthony F. Heald, Glen Mills, both of Pa., assignors to ICI Americas Inc., Wilmington, Del.

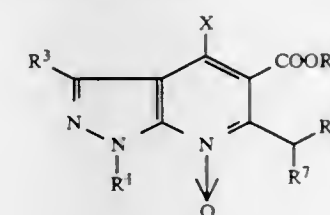
Division of Ser. No. 485,191, Apr. 15, 1983, Pat. No. 4,511,568. This application Jun. 25, 1984, Ser. No. 624,530

Claims priority, application United Kingdom, May 12, 1982, 8213700; Jan. 21, 1983, 8301676

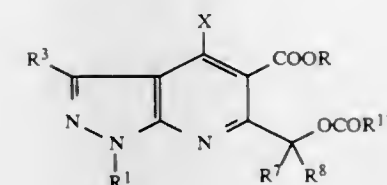
Int. Cl.⁴ C07D 491/22, 471/14

U.S. Cl. 546—84

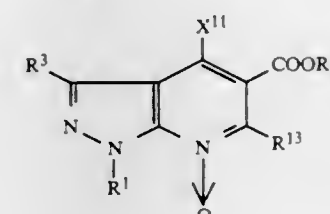
6 Claims
 1. A pyrazolopyridine compound of a formula selected from the group consisting of the following formulae (VII), (VIII), (XIIA), (XVI) and (XVII):



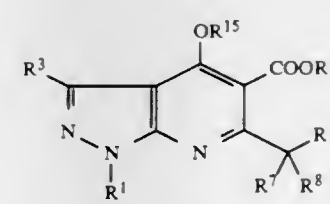
VII



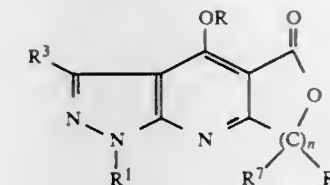
VIII



XIIA



XVI



XVII

wherein:

R is lower alkyl;
 R¹ is straight or branched chain alkyl of about 1 to 10 carbons; straight or branched chain alkyl of about 1 to 10 carbons independently substituted by 1 or 2 of hydroxy, alkoxy of about 1 to 6 carbons or oxo or such an alkyl group substituted by at least one halogen; cycloalkyl of about 3 to 8 carbons; cycloalkylalkyl of about 4 to 12 carbons; akenyl or alkynyl of about 3 to 10 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by one or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6

carbons; arylalkyl of about 7 to 2 carbons; or (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently one or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons;

R³ is hydrogen; or straight or branched chain alkyl of about 1 to 6 carbons;

R⁷ and R⁸ are independently hydrogen, straight or branched chain alkyl of about 1 to 6 carbons; aryl of about 6 to 10 carbons; aryl of about 6 to 10 carbons independently substituted by one or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons; arylalkyl of about 7 to 12 carbons; or (substituted aryl)alkyl of about 6 to 10 carbons in the aryl and about 1 to 4 carbons in the alkyl wherein the substitution is independently one or more of halogen, hydroxy, alkyl of about 1 to 6 carbons, fluoro-substituted alkyl of about 1 to 6 carbons or alkoxy of about 1 to 6 carbons;

R¹¹ is alkyl of about 1 to 12 carbon atoms;

R¹² is alkyl of about 1 to 6 carbon atoms;

R¹³ is hydrogen;

R¹⁵ is alkyl of about 1 to 6 carbon atoms;

R¹⁶ is —COOH or —CR⁷R⁸OH;

X is chloro or bromo; and

X¹¹ is alkoxy of about 1 to 6 carbon atoms.

4,645,839

SULPHUR DEHYDROGENATION PROCESS TO YIELD 5-METHYL-2-PYRIDONE

Walter M. Kruse, Wilmington, Del., and John F. Stephen, West Chester, Pa., assignors to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 450,780, Dec. 17, 1982, abandoned.

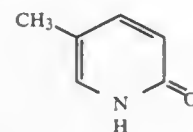
This application Apr. 22, 1985, Ser. No. 725,680

Int. Cl.⁴ C07D 211/86

U.S. Cl. 546—290

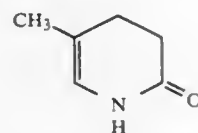
10 Claims

1. A method of producing 5-methyl-2-pyridone of the following formula (I):



which comprises:

(a) dehydrogenating 5-methyl-3,4-dihydro-2(1H)-pyridone of the following formula (II):



by reaction with sulphur at a temperature in the range of 130°–160° C. in the presence of an aromatic solvent wherein the molar ratio of sulphur/dihydropyridone of formula (II) is less than about 2:1; and

(b) recovering the resulting 5-methyl-2-pyridone of formula (I) from the reaction mixture by either:

- cooling the reaction mixture from the reaction temperature, allowing the pyridone of formula (I) to crystallize and filtering the reaction medium; or
- extracting the reaction mixture with water.

4,645,840

INTERMEDIATES FOR PREPARING 1,2-DIHYDROPYRIDO[3,4-B]-PYRAZINES

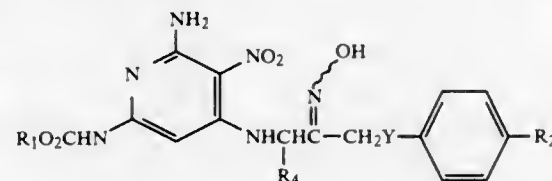
Carroll G. Temple; John A. Montgomery; Robert D. Elliott, and Glynn P. Wheeler, all of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Division of Ser. No. 716,945, Mar. 28, 1985, Pat. No. 4,600,716, which is a continuation-in-part of Ser. No. 362,480, Mar. 26, 1982, abandoned. This application Feb. 3, 1986, Ser. No. 825,625 Int. Cl.⁴ C07D 213/75, 213/61

U.S. Cl. 546—308

6 Claims

1. A compound having the formula:



wherein Y is CH₂ or N(CH₃); R₁ is a lower alkyl group; R₂ is a member selected from the group consisting of hydrogen, CH₃O or Cl, and R₄ is hydrogen or a lower alkyl group.

4,645,841

GUANIDINO-HETEROCYCLYL-PHENYL-AMIDINES AND SALTS THEREOF

Giuseppe Biatti, Milan; Enzo Cereda, Tortona; Arturo Donetti, Milan; Piero Del Soldato, Monza; Antonio Giachetti, and Rosamaria Micheletti, both of Milan, all of Italy, assignors to Istituto de Angeli, S.p.A., Milan, Italy

Division of Ser. No. 465,572, Feb. 10, 1983, Pat. No. 4,548,944.

This application Jun. 24, 1985, Ser. No. 748,309

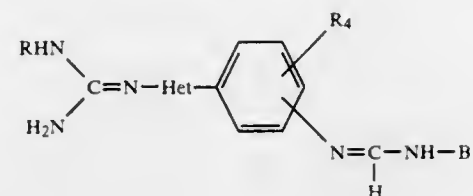
Claims priority, application Italy, Mar. 24, 1982, 20356 A/82 The portion of the term of this patent subsequent to Oct. 22, 2002, has been disclaimed.

Int. Cl.⁴ C07D 263/28, 277/48, 285/08, 285/12

U.S. Cl. 548—128

1 Claim

1. A compound of the formula



wherein R and R₁ are each independently hydrogen or alkyl or 1 to 4 carbon atoms;

R₄ is hydrogen, halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

B is cyano, acetyl, carboxy or carbamyl; and

Het is a thiazole, oxazole, 1,3,4-thiadiazole, 1,2,4-thiaz-diazole or 1,2,4-oxadiazole ring.

4,645,842

PYRROLE COMPOUNDS FOR DETECTING THE PRESENCE OF HYDROLYTIC ANALYTES

Paul F. Corey, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

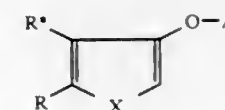
Filed Apr. 6, 1984, Ser. No. 597,336

Int. Cl.⁴ C07D 207/36

U.S. Cl. 548—541

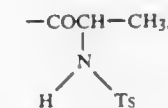
5 Claims

1. A compound having the structure



in which:

A is —COCH₃ or



where Ts is tosyl;

R is a lower alkyl group having 1 to 6 carbon atoms, phenyl or chlorophenyl;

R* is H or a lower alkyl group having 1 to 6 carbon atoms; and

X is NR', in which R' is H or a lower alkyl group having 1 to 6 carbon atoms.

4,645,843

PROCESS FOR THE PREPARATION OF N-ARYLHALOPYRROLID-2-ONES

Michael D. Broadhurst, Novato, and Richard D. Gless, Jr., Oakland, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

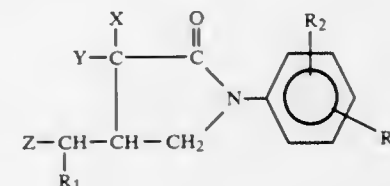
Continuation-in-part of Ser. No. 505,135, Jun. 16, 1983, abandoned. This application Feb. 25, 1985, Ser. No. 704,813

Int. Cl.⁴ C07D 207/26

U.S. Cl. 548—543

20 Claims

1. In a process for the preparation of N-arylhalopyrrolidones having the formula



in which

X is selected from the group consisting of hydrogen, chlorine, bromine and fluorine;

Y is selected from the group consisting of hydrogen, chlorine, bromine and fluorine;

Z is selected from the group consisting of chlorine and bromine;

R₁ is selected from the group consisting of hydrogen and C₁–C₄ alkyl;

R₂ is selected from the group consisting of hydrogen, C₁–C₄ alkyl, acetyl, chlorine, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, C₁–C₄ alkoxy, C₁–C₄ alkylthio, C₁–C₄ alkylsulfinyl, C₁–C₄ alkylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamido and 3-methylureido; and

R₃ is selected from the group consisting of hydrogen, C₁–C₄ alkyl, chlorine, and trifluoromethyl,

by internal cyclization of the corresponding N-2-alkenyl-α-haloamide in the presence of a copper-containing catalyst, the improvement comprising conducting the internal cyclization at a temperature of from about 50° to about 150° C. in the presence of an amine selected from the group consisting of:

(a) primary amines having the formula RNH₂, in which R is a straight- or branched-chain alkyl group having from 1 to 20 carbon atoms, optionally substituted by one hydroxy on a terminal carbon atom; and

(b) secondary amines having the formula R₁NHR₂, in which R₁ and R₂ are independently straight- or branched-chain

alkyl groups having from 1 to 20 carbon atoms, optionally substituted by one hydroxy per alkyl group on a terminal carbon atom, exclusive of branched-chain alkyl groups having the branching at the alpha-carbon atom.

4,645,844

FUNCTIONALLY SUBSTITUTED PHENOXYALKYL ALKOXYSILANES AND METHOD FOR PREPARING SAME

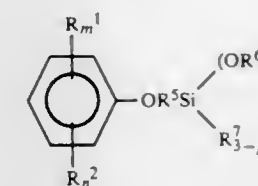
Abe Berger, Summit, and Irwin B. Silverstein, Piscataway, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J. Continuation of Ser. No. 414,163, Sep. 2, 1982, which is a division of Ser. No. 225,902, Jan. 19, 1981, which is a continuation-in-part of Ser. No. 64,712, Aug. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 900,197, Apr. 26, 1978, abandoned. This application Jul. 20, 1983, Ser. No. 515,410

Int. Cl.⁴ C07D 207/40; C07F 7/08, 7/10, 7/18

U.S. Cl. 548—545

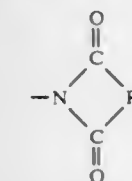
17 Claims

1. A silane represented by the general formula



where

R¹ is —NH₂, —NR⁸H, —NR², —



—CHO, —CN, —COR⁸, —COOR⁸, Cl, Br, I, alkenyl which contains from 2 to 10 carbon atoms, and —NO₂;

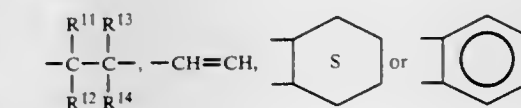
R² is alkyl, alkoxy or thioalkoxy and contains from 1 to 12 carbon atoms;

R⁵ is methylene or alkylene containing from 3 to 12 carbon atoms;

R⁶ and R⁷ are individually selected from the group consisting of alkyl, cyanoalkyl, alkenyl, cycloalkyl, aryl, alkaryl and aralkyl, wherein any alkyl group present as all or part of R⁶ and R⁷ contains from 1 to 12 carbon atoms;

R⁸ is selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl wherein any alkyl group contains from 1 to 12 carbon atoms;

R⁹ is



wherein

R¹¹ and R¹² are individually selected from the group consisting of hydrogen, chlorine, bromine, iodine and alkyl containing from 1 to 12 carbon atoms;

R¹² and R¹⁴ are individually selected from the group consisting of hydrogen and alkyl containing from 1 to 12 carbon atoms;

m is an integer equal to 1;

n is 0, 1 or 2;

p is 2 or 3;
with the proviso that if R¹ is —NH₂ or —NO₂, then n is 1 or 2.

4,645,845
**NOVEL OPTICALLY ACTIVE CHROMAN
DERIVATIVES, THEIR PREPARATION AND NOVEL
INTERMEDIATES**

Henning-Peter Gehrken, Lamsheim; Hansgeorg Ernst, Ludwigshafen, and Joachim Paust, Neuhausen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,365

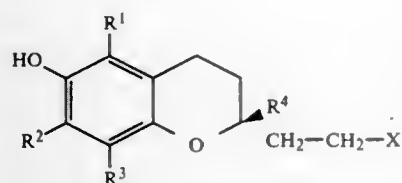
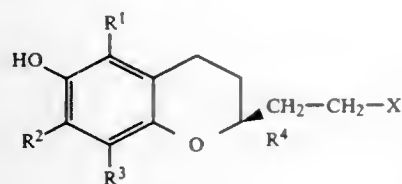
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309159

Int. Cl.⁴ C07D 311/72

U.S. Cl. 549—407

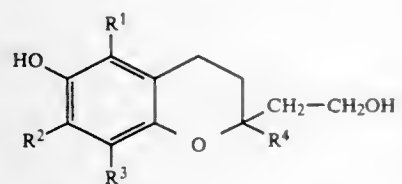
6 Claims

1. A process for the preparation of optically active chroman derivatives of formula (Ia) or (Ib)



wherein R¹, R², R³ and R⁴ are each independently a hydrogen atom or a C₁₋₄ alkyl group, and X is OH, said process comprising:

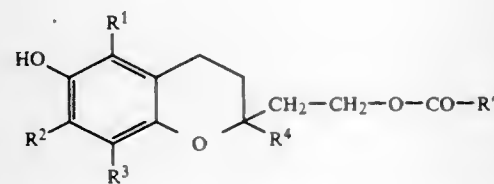
(i) selectively converting a racemate of the formula (I')



with a carboxylic acid of formula (II)



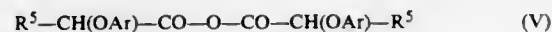
wherein R' is a C₁₋₄ alkyl group, or selectively converting a racemate of formula (I') with a lower alkyl ester of the said carboxylic acid of formula (II), to obtain an ester of formula (I'')



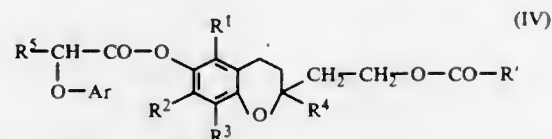
(ii) acylating the said ester of formula (I'') with an optically active carboxylic acid halide of formula (III)



wherein R⁵ is a C₁₋₃ alkyl group, Y is a chlorine atom or a bromine atom, and Ar is a phenyl group, a 1-naphthyl group or a 2-naphthyl group which are unsubstituted or substituted by no more than two substituents selected from the group consisting of C₁₋₄ alkyl groups, C₁₋₄ alkoxy groups, a chlorine atom, a bromine atom, a cyano group and an nitro group, or acylating the said ester of formula (I'') with a carboxylic anhydride of formula (V)



to obtain a chroman derivative of formula (IV),



(Ia) which consists of two diastereomeric esters;
(iii) resolving the two said diastereomeric esters by fractional crystallization to obtain pure diastereomers; and
(iv) hydrolyzing the said pure diastereomers to obtain the alcohols of formula (Ia) or (Ib).

4,645,846

SILANE COMPOSITIONS

(Ib) Ralph J. DePasquale; James M. Evans, both of Jacksonville, and Paul W. Kremer, Gainesville, all of Fla., assignors to SCM Corporation, New York, N.Y.

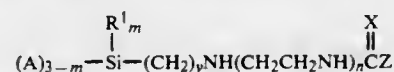
Filed Apr. 12, 1985, Ser. No. 722,325

Int. Cl.⁴ C07F 7/10, 7/18

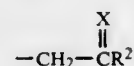
U.S. Cl. 556—419

24 Claims

I. A silane having the general formula:



wherein A is a hydrolyzable group, R¹ is selected from alkyl groups containing 1 to 3 carbon atoms, X is a chalcogen, m is 0 to 3, n is 0 to 3, y is 2 to 4, and Z is selected from saturated or unsaturated aliphatic or cycloaliphatic groups containing from 6 to 20 carbon atoms; NH-saturated aliphatic or cycloaliphatic groups containing 6 to 20 carbon atoms; NH-unsaturated aliphatic or cycloaliphatic groups containing 6-20 carbon atoms, —NH—NH₂, NH—(CH₂)_nN(R)₂, and



where R² is a saturated or unsaturated alkyl or haloalkyl group containing 1 to 20 carbon atoms.

4,645,847

**PHENYLENE GROUP-CONTAINING
ORGANOPOLYSILOXANES MODIFIED WITH
FUNCTIONAL GROUPS AND METHOD OF THEIR
PREPARATION**

Peter Panster, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 865,487

Claims priority, application Fed. Rep. of Germany, May 25, 1985, 3518880

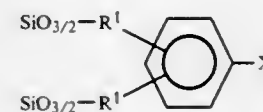
Int. Cl.⁴ C07F 7/08, 7/00, 7/28, 5/06

U.S. Cl. 556—9

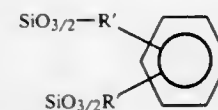
9 Claims

1. Phenylene group-containing organopolysiloxanes modified by incorporation of at least one functional group comprising

ing a plurality of identical or different units represented by the formula:



where in each case all three possible isomers in relation to the position of the SiO_{3/2}—R¹ substituents on the phenylene group can be present concurrently, in which the bridge groups R¹ represent the groups —CH₂—CH₂— or CH₃—CH<, and can be identical or different, X represents Cl, Br, CH₂Cl, P(C₆H₅)₂, CH₂P(C₆H₅)₂, and the free valences of the oxygen atoms are saturated by silicon atoms of other groups of



and/or by cross-linking bridge groups:



or



or



or



or



or



or



or



or



or



or



in which R' is a methyl or ethyl group, and/or by phenylene units of the general formula (1), in which the bridge groups R¹ have the same meaning as in formula (2) and can be identical or different, and the ratio of the sum of Si atoms of the units in formulas (1) and (2) to the bridge atoms silicon, titanium, zirconium, and aluminum can be 1:0 to 1:15.

4,645,848
**PHENYLENE GROUP-CONTAINING
ORGANOPOLYSILOXANES AND METHOD FOR THEIR
PREPARATION**

(I) Peter Panster, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 865,489

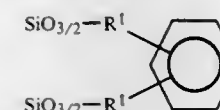
Claims priority, application Fed. Rep. of Germany, May 25, 1985, 3518879

Int. Cl.⁴ C07F 7/08, 5/06, 7/00, 7/28

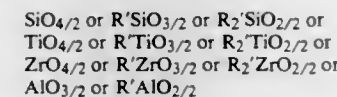
U.S. Cl. 556—9

10 Claims

1. A phenylene group-containing organopolysiloxane comprising a plurality of identical or different units represented by the structural formula:



where in each case all three possible isomers in relation to the position of the SiO_{3/2}—R¹ substituents on the phenylene group can be present concurrently, in which the bridge groups R¹ represent —CH₂—CH₂— or CH₃—CH< and can be identical or different, and the free valences of the oxygen atoms are saturated by silicon atoms of other groups of formula (1) and/or by cross-linking bridge groups:



in which R' is a methyl or ethyl group, and the ratio of the sum of the Si atoms in formula (1) to the bridge atoms silicon, titanium, zirconium, and aluminum can be 1:0 to 1:15.

4,645,849

**HYDROGENATION OF UNSATURATED
HYDROCARBONS WITH CYCLOMETALLATED
TRANSITION METAL CATALYSTS**

Larry N. Lewis, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

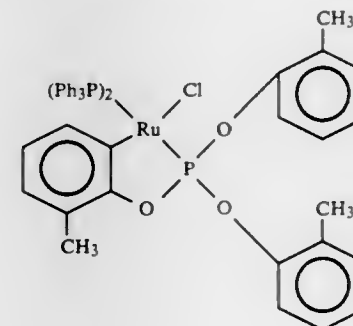
Filed Jan. 22, 1985, Ser. No. 693,412

Int. Cl.⁴ C07F 15/00, 7/08; C07C 5/05, 5/02

U.S. Cl. 556—16

14 Claims

14. A cyclometallated ruthenium complex of the formula



4,645,850

SILYL SUBSTITUTED CYCLOPENTADIENE, PROCESS FOR ITS PRODUCTION AND SYNTHETIC RESIN AND RUBBER MIXTURES CONTAINING IT

Ulrich Deschler, Hanau; Peter Panster, Rodenbach; Peter Kleinschmit, Hanau; Siegfried Wolff, Bornheim-Merten, and Ewe-Hong Tan, Wesseling, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 17, 1985, Ser. No. 756,088

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427922

Int. Cl.⁴ C07F 7/08, 7/18

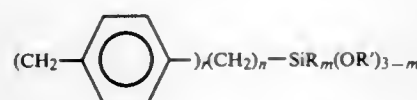
U.S. Cl. 556—431

17 Claims

1. A silyl substituted cyclopentadiene of the formula



in which A corresponds to



where

R and R' are the same or different and are C₁- to C₆-alkyl, C₅- to C₆-cycloalkyl, benzyl, phenyl, or substituted phenyl.

n is 1 to 3,
m is 0 or 1,

p is 1 or 2 with the proviso that when p is 2 A is the same or different and the total number of carbon atoms of the alkoxy or aryloxy groups does not exceed 36, and r is 0 or 1.

4,645,851

SELECTIVE PRODUCTION OF DIMETHYLDICHLOROSILANE

Christian Prud'Homme, Lyons, France, assignor to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

Filed Feb. 24, 1986, Ser. No. 832,078

Claims priority, application France, Feb. 22, 1985, 85 02549

Int. Cl.⁴ C07F 7/16

U.S. Cl. 556—472

32 Claims

1. A process for the preparation of dimethyldichlorosilane, which comprises reacting methyl chloride with a solid contact mass comprising silicon and a catalytically effective amount of copper or a copper compound, said copper catalyst comprising (i) from about 10 to 1,000 ppm of tin, antimony, or admixture thereof, or of a tin or antimony compound, or admixture thereof, and (ii) from about 0.01 to 2% by weight of at least one of the metallic additives barium and strontium, or compound thereof.

4,645,852

ONE STEP CONVERSION OF EPOXYALKANES TO ALKYL ESTERS OF ALKYL AND ARYL SULFONIC ACIDS

Lennon H. McKendry, and Richard C. Krauss, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

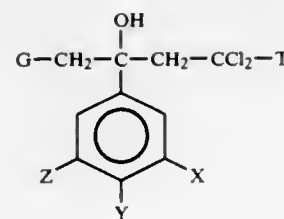
Filed Sep. 16, 1985, Ser. No. 776,244

Int. Cl.⁴ C07C 143/68, 33/22, 103/22

U.S. Cl. 558—49

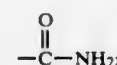
36 Claims

1. A method of preparing a 2-hydroxybutyl or 2-hydroxypentyl compound of the following formula:



wherein:

T is F, Cl, Br, CH₃, CF₃ or



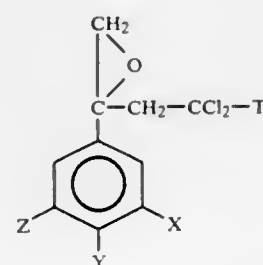
X, Y and Z are each independently H, F, Cl, Br, CH₃, C₂H₅, or CF₃, provided that when Y is other than H, at least one of X and Z must be other than H;

G is R¹SO₂O—; Br; Cl; F; or I; and

R¹ is C₁-C₁₈ alkyl; C₁-C₈ haloalkyl; C₃-C₆ cycloalkyl; benzyl; naphthyl; phenyl; monovalent radical of monocyclic heterocyclic ring having ring atoms selected from the group consisting of carbon and at least one of nitrogen, sulfur and oxygen; monovalent radical of bicyclic heterocyclic fused ring having a ring atoms selected from the group consisting of carbon and at least one of nitrogen, sulfur and oxygen; and any of phenyl, benzyl, naphthyl, said monocyclic heterocyclic radical or bicyclic heterocyclic fused ring radical in which up to three ring hydrogens have been replaced by substituent groups which may be the same or different and are selected from the group consisting of methyl, methoxy, substituted methoxy, methylthio, chloro, bromo, fluoro, CF₃ or nitro;

which comprises:

reacting during a reaction period at a temperature in the range of about 20° to about 120° C. in the presence of an organic solvent an epoxide compound of the following formula:



wherein:

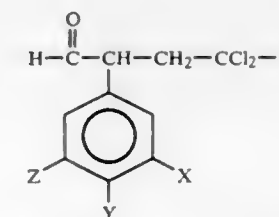
T, X, Y and Z are as defined hereinabove;

with a proton source that is strong enough to protonate and catalyze the opening of the oxirane ring of said epoxide compound;

and with a nucleophile, the nucleophile being an anion and is selected from the group consisting of R¹SO₂O[−]; Cl[−]; Br[−]; F[−]; or I[−];

wherein R¹ is defined hereinabove;

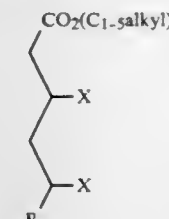
the nucleophile being present in sufficient amount that substantial reaction takes place at the reaction temperature sufficient to avoid formation of more than about 50 mole percent of the theoretical maximum amount of an aldehyde compound of the following formula:



wherein T, X, Y, and Z are as defined hereinabove;

and said proton source provided throughout the reaction period in an amount sufficient to catalyze ring opening and facilitate reaction to form the desired 2-hydroxybutyl or 2-hydroxypentyl compound.

which comprises the stereoselective reduction of a β-hydroxyketone of structural formula:



4,645,853

HINDERED PHENOLIC OXAMIDE COMPOUNDS AND STABILIZED COMPOSITIONS

John F. Stephen, West Chester, Pa.; Jerry H. Smith, and Makram H. Meshreki, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

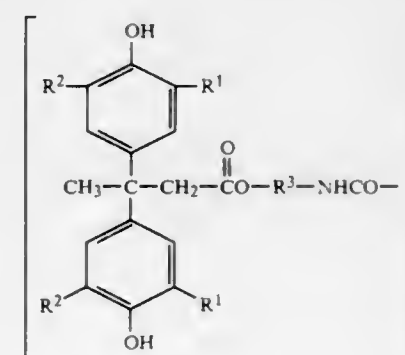
Filed Aug. 30, 1985, Ser. No. 771,496

Int. Cl.⁴ C07C 69/76; C08K 5/20

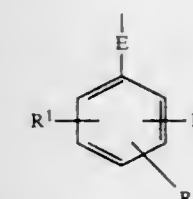
U.S. Cl. 560—58

15 Claims

1. A hindered phenolic compound derived from an oxamide and having the general formula:



wherein R¹ and R² are independently H or an alkyl group of from 1-8 carbon atoms with the proviso that when R¹ is H, R² is alkyl, and R³ is a divalent hydrocarbon radical containing from 1-12 carbon atoms.



wherein E is —CH=CH— or —CH₂—CH₂—; and R¹, R² and R³ are each selected from halo, C₁-4alkyl, C₁-4haloalkyl, phenyl with one or more substituents independently selected from halo, C₁-4alkyl, and C₁-4alkoxy, or R⁴O in which R⁴ is phenyl, haloalkyl, or substituted phenyl-C₁-3alkyl wherein the substituents are selected from halo and C₁-4haloalkyl; by treating compound 1 with between 0.1 and 0.8 molecular equivalents of a tri(C₁-4alkyl)borane, between 0.01 and 0.05 molecular equivalents of pivalic acid, and an alkali metal borohydride in a C₁-4alkanol solvent alone in or in combination with a solvent selected from a hydrocarbon, a halocarbon, and an ether at —100° C. to —50° C. for 30 minutes to 3 hours, followed by isolation of the product 2.

4,645,855

PREPARATION OF SUCCINIC ACID DIESTERS

Johannes G. Reuvers, Viernheim; Wolfgang Richter, Ludwigshafen, and Rudolf Kummer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 24, 1984, Ser. No. 644,496

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, 3332018

Int. Cl.⁴ C07C 67/03

U.S. Cl. 560—204

8 Claims

1. In a process for the preparation of succinic acid diesters by carbonylation of acrylic acid esters in the presence of alcohol, using a cobalt carbonyl complex as the catalyst and a heterocyclic nitrogen base as the promoter at 80°-200° C. and under a carbon monoxide pressure of 60-300 bar, the improvement which comprises:

carrying out the reaction in the presence of not less than 20% by weight, based on the amount of all the liquid constituents of the reaction mixture, of an inert liquid solvent selected from the group consisting of the succinic

4,645,854

PROCESS FOR PREPARING HMG-COA REDUCTASE INHIBITORS WITH A 3,5-DIHYDROXYPENTANOATE SUBUNIT

Thomas R. Verhoeven, Cranford; James M. McNamara, Rahway, and Meyer Slettinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 25, 1985, Ser. No. 725,891

Int. Cl.⁴ C07C 69/767

U.S. Cl. 560—60

4 Claims

1. A process for the preparation of a compound of structural formula:

acid diester formed in the reaction, aromatic hydrocarbons, C₆-to-C₁₂ alkanes and cycloalkanes, and keeping the concentration of the acrylic acid ester, for the predominant part of the reaction time, at below 15% by weight, again based on the amount of all liquid constituents.

4,645,856

PROCESS FOR THE PREPARATION OF PERDEUTERATED METHACRYLATES

Thomas Herold, Brensbach, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 15, 1985, Ser. No. 723,116

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414150

Int. Cl.⁴ C07C 67/00

U.S. Cl. 560—215 2 Claims

1. A process for the preparation of a perdeuterated methacrylate lower alkyl ester which comprises:

- reacting hexadeuteroacetone with trimethylsilyl cyanide to form 1,3-hexadeutero-2-(trimethylsiloxy)-2-cyano-propane,
- hydrolyzing said cyanopropane to form hexadeuteroacetone cyanohydrin,
- dehydrating said cyanohydrin to form pentadeuteromethacrylonitrile,
- hydrolyzing said nitrile to form hexadeuteromethacrylic acid, and
- esterifying said acid with a perdeuterated lower alkanol.

4,645,857

PROCESS FOR PREPARING INDOLINE-2-CARBOXYLIC ACIDS VIA

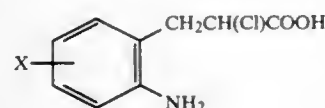
α-HYDROXY-2-NITROBENZENEPROPANOIC ACID
Michael W. Winkley, and Ronald J. McCaully, both of Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 700,371, Feb. 11, 1985, Pat. No. 4,585,879. This application Feb. 14, 1986, Ser. No. 829,674

Int. Cl.⁴ C07C 101/447

U.S. Cl. 562—456 2 Claims

1. A compound of the formula:



wherein X is hydrogen, chlorine, bromine, C₁₋₄ alkyl or C₁₋₄ alkoxy.

4,645,858

PENTANEDIOIC ACID DERIVATIVES

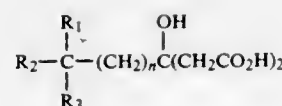
Harman S. Lowrie, Northbrook, and John S. Baran, Winnetka, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill. Continuation of Ser. No. 577,411, Feb. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 360,543, Mar. 22, 1982, abandoned. This application Oct. 10, 1985, Ser. No. 786,027

The portion of the term of this patent subsequent to Nov. 19, 2002, has been disclaimed.

Int. Cl.⁴ C07C 59/245

U.S. Cl. 562—582 4 Claims

1. A compound of the formula



wherein

- R₁, R₂, and R₃ are methyl and n is an integer from 10 to 12 inclusive.
- 3-Hydroxy-3-(11,11-dimethyldodecyl)glutaric acid, a compound according to claim 1.

4,645,859

METHODS FOR PURIFYING BIURET

James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 567,271, Dec. 30, 1983, and a continuation-in-part of Ser. No. 567,099, Dec. 30, 1983, and a continuation-in-part of Ser. No. 567,047, Dec. 29, 1983. This application Apr. 19, 1985, Ser. No. 725,304

The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.

Int. Cl.⁴ C07C 126/08

U.S. Cl. 564—38 31 Claims

1. A method for recovering purified biuret from an aqueous solution containing biuret and higher molecular weight urea condensation products which comprises (a) contacting said aqueous solution with the hydroxide ion form of an anion exchanger under conditions sufficient to retain at least a portion of said biuret on said anion exchanger and (b) contacting the resulting biuret-containing anion exchanger with an aqueous extractant under conditions sufficient to form a biuret-containing aqueous extract in which the relative proportion of said higher molecular weight urea condensation products to biuret is less than said relative proportion in said aqueous solution.

4,645,860

BIURET MANUFACTURE

James A. Green, II, Chino, and Donald C. Young, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 567,271, Dec. 30, 1983, Ser. No. 567,099, Dec. 30, 1983, Ser. No. 567,047, Dec. 30, 1983, and Ser. No. 725,304, Apr. 19, 1985. This application May 7, 1985, Ser. No. 732,175

Int. Cl.⁴ C07C 126/08

U.S. Cl. 564—73 34 Claims

1. A method for recovering biuret from an aqueous solution comprising urea and biuret which comprises (a) contacting said aqueous solution with the hydroxide ion form of an anion exchanger under conditions sufficient to retain at least a portion of said biuret on said anion exchanger, (b) contacting the resulting biuret-containing anion exchanger with an aqueous extractant under conditions sufficient to form a biuret-containing aqueous extract, and (c) contacting said biuret-containing extract with a biuret-containing anion exchanger under conditions sufficient to increase biuret concentration of said extract.

4,645,861

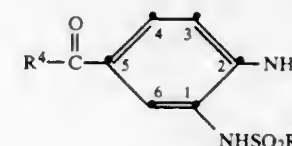
3-SULFONYLAMINO-4-AMINO PHENYL ACYL DERIVATIVES

Charles W. Ryan, and Bruce A. Slomski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind. Division of Ser. No. 373,944, May 2, 1982, Pat. No. 4,483,986. This application Apr. 25, 1986, Ser. No. 856,603

Int. Cl.⁴ C07C 143/74, 143/77

U.S. Cl. 564—99 4 Claims

1. A compound of the formula



wherein

- R⁴ is C₁-C₇ alkyl, C₃-C₇ cycloalkyl, C₃-C₇ cycloalkylmethyl, 1-(C₃-C₇ cycloalkyl)ethyl or benzyl;
- R¹ is C₁-C₅ alkyl or C₃-C₇ cycloalkyl.

4,645,862

ISOPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Saitama; Yasuhiro Komatsu, Niiza; Hiroyasu Koyama, Ageo; Reiko Kubota, Hasuda; Teruhito Yamaguchi, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nissin Flour Milling Co., Ltd., Japan

Continuation of Ser. No. 377,580, May 12, 1982, abandoned.

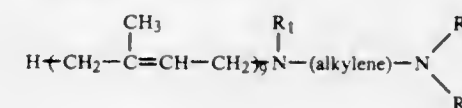
This application Apr. 15, 1985, Ser. No. 723,082

Claims priority, application Japan, May 18, 1981, 56-76158

Int. Cl.⁴ C07C 87/28, 87/48

U.S. Cl. 564—370 3 Claims

1. A compound of the formula



wherein R₁ and R₃ each is an unsubstituted benzyl group or a benzyl group substituted with up to 3 methoxy groups, R₂ is a hydrogen atom, and (alkylene) is a lower alkylene chain; or an acid addition salt thereof.

4,645,863

PROCESS FOR THE PREPARATION OF UNSATURATED ALCOHOLS AND/OR ESTERS THEREOF

Walter Rebafka, Hirschberg, and Helmut Nickels, Mutterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

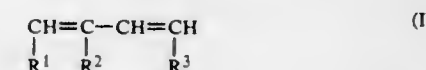
Filed Jan. 12, 1983, Ser. No. 457,464

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3200990

Int. Cl.⁴ C07C 29/04, 67/04, 69/145

U.S. Cl. 568—899 4 Claims

1. A process for the preparation of unsaturated alcohols and/or esters thereof by reacting conjugated dienes with water and/or aqueous lower aliphatic carboxylic acid solutions in the presence of a macroporous acid ion exchanger having an average pore diameter greater than 50 Angstrom, and a polar aprotic solvent, wherein a diene having the general formula I



in which R¹, R² and R³ represent hydrogen or a methyl group and R² also can represent an aliphatic hydrocarbon radical having 2 to 6 carbon atoms which may contain a double bond which is not in a conjugated position relative to the double

bonds of the diene, is reacted in a homogeneous or quasihomogeneous phase.

4,645,864

CATALYTIC CONVERSION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 493,192, May 10, 1983, Pat. No. 4,576,805, which is a continuation-in-part of Ser. No.

412,362, Aug. 27, 1982, abandoned, which is a continuation-in-part of Ser. No. 333,369, Dec. 22, 1981, abandoned. This application Jan. 8, 1986, Ser. No. 818,968

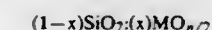
Int. Cl.⁴ C07C 11/20

U.S. Cl. 585—408

25 Claims



1. A process for converting a feedstock comprising organic compounds selected from the group consisting of alcohol, carbonyl, ether and mixtures thereof to conversion product comprising hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a porous inorganic crystalline composition of enhanced cation exchange capacity prepared by a method for increasing the total amount of lattice metal in the framework of a porous inorganic crystalline composition comprising 98 mole percent or more SiO₂ and 2 mole percent or less oxides of at least one initial lattice metal selected from those of Groups IIIB, IVB, VB, VIB, VIIIB, VIII, IIIA, IVA and VA of the Periodic Table of the Elements and having an anhydrous anionic framework molar composition expressed by the formula



wherein x is less than or equal to 0.02, M is said initial lattice metal and n is the valance of M, which method comprises

contacting said crystalline composition at a temperature of from about 100° C. to about 850° C. with a volatile compound comprising at least one metal to be coordinated in the framework of said crystalline composition for a time sufficient to increase the total amount of lattice metal in the framework of said crystalline composition wherein said total amount is greater than the amount of said initial lattice metal prior to said contacting, said volatile compound comprising said metal having a radius ratio of less than about 0.6 and a size and shape which permits said volatile compound to enter the pores of said crystalline composition at the contacting temperature, converting said volatile compound contacted inorganic crystalline composition to the hydrogen or hydronium form, and recovering said porous inorganic crystalline composition of enhanced cation exchange capacity.

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UMI

ELECTRICAL

4,645,865

HIGH TEMPERATURE PROTECTION SLEEVE

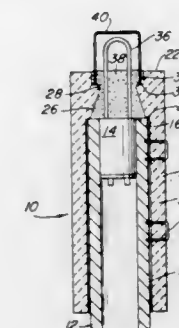
John E. Cassidy, Churchville, Pa., assignor to Electro Nite Co., Philadelphia, Pa.

Filed Jun. 29, 1984, Ser. No. 626,498

Int. Cl.⁴ H01L 35/02

U.S. Cl. 136—234

8 Claims



1. A sleeve for a repeating temperature sensing immersion probe, the sleeve supporting a temperature sensing device in a predetermined projecting relationship beyond the end of the probe, the sleeve comprising: a generally inert refractory sleeve for surrounding the temperature sensing device having an open end and an immersion end, the wall of the sleeve forming a cylindrical bore extending inwardly from said open end, an inwardly projecting shoulder formed at the opposite end of said cylindrical bore from said open end, a truncated cone shaped bore in axial alignment with said cylindrical bore, the base of said cone being adjacent to said shoulder, the opposite end of said cone from said base positioned adjacent to the immersion end of said sleeve, said shoulder forming a support for the body of the temperature sensing device with the sleeve such that the hot junction of the device projects through said cone shaped bore and beyond said immersion end of said sleeve by a predetermined relationship.

4,645,866

PHOTOVOLTAIC DEVICE AND A METHOD OF PRODUCING THE SAME

Yoshiteru Nitta, Shiga, Japan, assignor to Kyocera Corporation, Kyoto, Japan

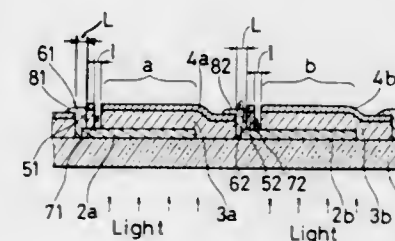
Filed Aug. 15, 1985, Ser. No. 766,133

Claims priority, application Japan, Aug. 18, 1984, 59-172222; May 31, 1985, 60-119335

Int. Cl.⁴ H01L 27/14, 31/18

U.S. Cl. 136—244

19 Claims



1. A photovoltaic device including a plurality of power generation regions electrically series connected one after another over one side of an insulative substrate, each said power generation region being composed of three layers comprising a lower electrode, an amorphous semiconductor, and an upper electrode laminated in that order, and said upper electrode of one of each pair of adjacent power generation regions being connected to said lower electrode of the other adjacent power generation region, said photovoltaic device being character-

ized in that an isolation wall defined by a vertical slot is provided at the end of the connection side of said power generation region and extended to the surface of said lower electrode so as to disconnect the amorphous semiconductor and upper electrode portion comprising said isolation wall located over said lower electrode at the end of said connection side, and wherein a conductive series electrical connection section is formed by filling electrically conductive material into a vertical gap formed between said upper electrode of said one of said pair of adjacent power generation regions and said isolation wall and said lower electrode at the other adjacent power generation region to thereby electrically connect said upper electrode to said lower electrode.

4,645,867

GUY WIRE DEAD END ASSEMBLY

Nick S. Annas, Red Hook, N.Y., assignor to Fargo Manufacturing Company, Inc., Poughkeepsie, N.Y.

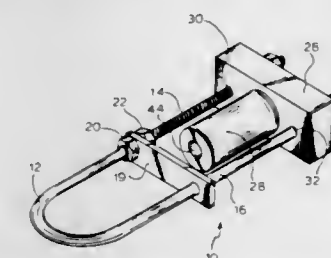
Continuation of Ser. No. 759,209, Feb. 10, 1984, abandoned.

This application Feb. 20, 1986, Ser. No. 833,415

Int. Cl.⁴ H02G 15/02

U.S. Cl. 174—79

13 Claims



1. A dead end assembly for use in association with a guy wire and the like for dead ending thereof, said assembly comprising: substantially U-shaped U-bolt member adapted to engage an anchor at the U-portion of the U-bolt member with said bolt having legs which include threaded end portions; yoke means having first and second openings to allow the passing through thereof of said respective threaded end portions and a third opening therethrough to allow a guy wire to pass freely therethrough; a cylindrical compression sleeve having an axial bore therethrough adapted to receive a guy wire and said sleeve being of a crimpable material adapted to fixedly engage a guy wire independently of said yoke such that the integrity of the yoke means is not compromised to accommodate the compression sleeve upon the crimping of said sleeve and said compression sleeve being positioned adjacent to and in abutting engagement with said yoke means whereupon movement of the yoke means causes corresponding movement of said sleeve and a compression and column loading by said sleeve on said yoke results; and nut means screw threaded on said end portion so as to capture said yoke means on the U-bolt member and prevent removal therefrom and upon a threading down of said nut means causes a drawing up of the yoke means and accordingly the compression sleeve which fixedly engages a guy wire causing a tensioning thereof when said U-portion is engaging an anchor.

4,645,868

ELECTRICAL TRANSMISSION LINE

Hirosuke Suzuki, Tokorozawa, Japan, assignor to Junkosha Company, Ltd., Tokyo, Japan

Filed Apr. 15, 1985, Ser. No. 723,521

Claims priority, application Japan, Apr. 18, 1984, 59-55977[U]

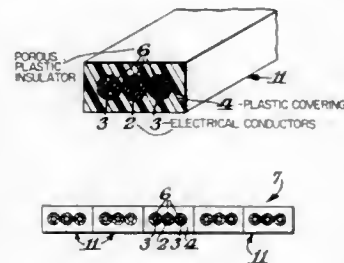
Int. Cl.⁴ H01B 7/08

U.S. Cl. 174—117 F

4 Claims

1. A high speed electrical transmission line comprising an

elongated signal conductor wire arranged in parallel relationship with two ground wires, one on either side of said signal conductor wire, all three wires being encased in an outer nonporous insulating covering jacket having generally a rect-

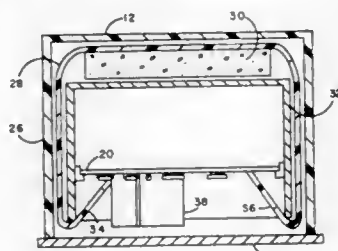


angular cross-section, and wherein each said wire is further individually encased within the outer jacket in an insulating inner covering of a porous resin material, wherein said porous resin has, in addition to the pores in the resin, a large number of through holes.

4,645,869
DIGITIZING TABLET
Lynn H. Rockwell, Mesa, and Gary S. Dukarich, Scottsdale, both of Ariz., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 9, 1985, Ser. No. 764,031
Int. Cl.⁴ G08C 21/00
U.S. Cl. 178—18

14 Claims

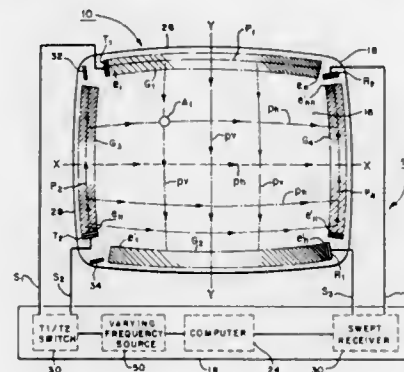


1. In a digitizer tablet having a stylus and a planar grid surface, a set of parallel grid conductors extending parallel and closely adjacent to the grid surface throughout a sensing region thereof, an operational circuit connected to the stylus and the grid conductors for driving one of the stylus and the set of grid conductors and sensing the resultant signals induced in the other of the stylus and grid conductors and generating location signals indicating the position of the stylus with respect to the grid surface, the improvement wherein the grid conductors depart from their parallel configuration in an unshielded transition region outside the sensing region and the digitizer table further includes a conductive plate defining part of a shield surrounding the operational circuit and excluding from the operational circuit radiation generated by the stylus or the grid conductors, the transition region being located outside the shield, and the grid conductors extending inside the shield for connection to the operational circuit, the conductive plate being disposed close enough to the grid conductors in the unshielded transition region to cause any coupling between the stylus and the conductors in the transition region to be negligible in comparison with their coupling in the sensing region.

4,645,870
TOUCH CONTROL SYSTEM FOR USE WITH A DISPLAY PANEL OR OTHER TOUCH CONTROLLED DEVICE
Robert Adler, Northfield, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 15, 1985, Ser. No. 787,392
Int. Cl.⁴ G08C 21/00; G06K 11/06
U.S. Cl. 178—19

12 Claims



1. In a touch control system for a display panel or other touch-controlled device which is capable of recognizing touch positions along a predetermined coordinate axis on a touch surface, the apparatus comprising:

- a substrate having a touch surface capable of propagating surface acoustic waves such that a touch on said surface causes a perturbation of a surface wave propagating through the region of the touch;
- input surface wave transducer means mechanically and acoustically coupled to said touch surface of said substrate and utilizable, when excited, for launching a multiplicity of different frequency surface acoustic waves on said touch surface along a first path on said surface; and
- means including a dispersive array of surface wave reflective elements formed on or in said touch surface of said substrate along said first path for deriving from said launched multiplicity of surface acoustic waves a plurality of different frequency wave components, each component being reflected from said array at a different location along the array, and for directing said components across said touch surface of said substrate in a progression of paths transverse to and intersecting said coordinate axis, each of said paths individually coordinating to a component of a predetermined different frequency.

4,645,871
NON-INTERFERING IN-BAND PROTOCOL-INDEPENDENT DIAGNOSTIC SCANNING IN A DIGITAL MULTIPOINT COMMUNICATION SYSTEM
Gordon Bremer; Thomas Armstrong, both of Clearwater; Kurt Holmquist, Largo, and Richard K. Smith, Seminole, all of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Jun. 17, 1985, Ser. No. 745,849
Int. Cl.⁴ H04L 9/00; G07D 7/00; G08B 5/22
U.S. Cl. 380—2

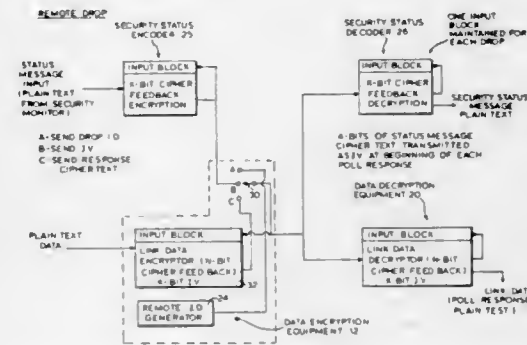
1 Claim

1. In a system for interchanging messages between a remote terminal at a first location and a master terminal at a second location, said messages being encoded by using the Data Encryption Standard, a method of monitoring the status of security devices disposed at said first location by a display device disposed at said second location comprising:

- sensing the status of said security devices at said first location;
- generating an initializing vector indicative of said status at said first location;

receiving plain text data from said remote terminal at said first location;

- encoding plain text data in accordance with said initializing vector to generate encoded data without adding any data signals indicative of said status to said plain text encoded data;
- transmitting the encoded data and said initializing vector from said first to said second location;

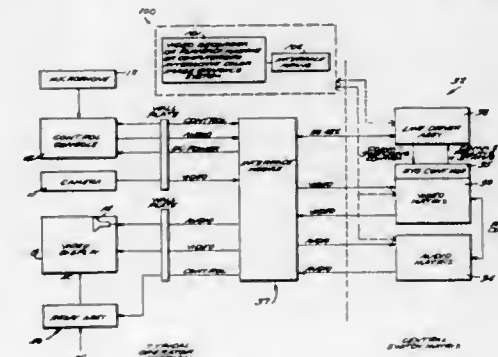


receiving said encoded data and said initializing vector at said second location;

- decoding the initialization vector to generate a received security message for said display device; and
- decoding said encoded data in accordance with said initializing vector to generate received plain text data whereby said plain text data contains no information regarding the status of said security devices.

4,645,872
VIDEOPHONE NETWORK SYSTEM
Norman J. Pressman, Baltimore, and John K. Frost, Lutherville, both of Md., assignors to John Hopkins University, Baltimore, Md.
Continuation of Ser. No. 364,451, Apr. 1, 1982, abandoned. This application May 6, 1986, Ser. No. 861,665
Int. Cl.⁴ H04M 11/00, 3/56; H04N 7/14
U.S. Cl. 379—54

28 Claims



21. A controlled access automated-switching conferencing system comprising:

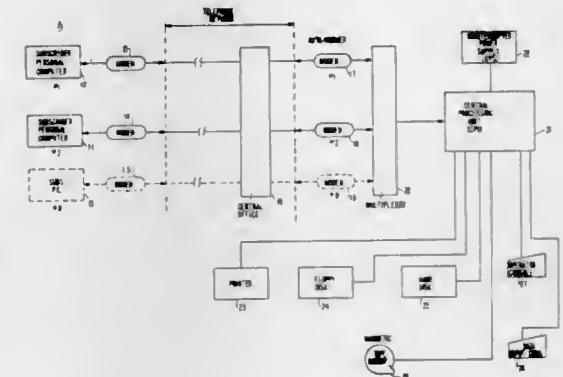
- a plurality of stations each including audio and video distinct inputs and audio and video distinct outputs;
- a control console disposed at each station, each console controlled by a station microprocessor at each station, and each said console including function and station selection members operatively interconnected to said station microprocessor;
- central automatic distinct audio and video switching means for switching said audio and video inputs so that they may be connected to any one or more of said audio and video

outputs, and establish a constant audio bridge when connecting any audio input to one or more audio outputs; central system control means for controlling said audio and video switching means in response to selections of function and station selection members associated with any of said control consoles, the central system control means detecting the selections by polling the control consoles at the stations to determine the status of said function and station selection members, said central system control means comprising a central microprocessor.

4,645,873
TRANSACTIONAL TELECOMMUNICATION SYSTEM
Marc Chomet, Huntington, N.Y., assignor to Teleuc Systems, Huntington, N.Y.

Filed Jan. 23, 1985, Ser. No. 694,134
Int. Cl.⁴ H04M 11/00
U.S. Cl. 379—93

10 Claims



1. A transactional system serving subscribers in a plurality of localities, comprising a national data base having a plurality of groups of addressed segments of data storage, each group storing data pertaining to an associated one of said localities, each group being addressable by a locality number, a plurality of access-number addressed segments of data storage, each assigned to one of said subscribers and storing a locality number for said one of said subscribers, means for linking said access-number addressed segments of data storage to said groups of locality number addressed segments of data storage, so that locality data stored in the group of locality number addressed segments of data storage associated with a subscriber's locality number is automatically addressed upon receipt of said subscriber's access number, wherein at least one of said localities comprises a plurality of sub-localities, wherein each of said locality numbers has a predetermined number of digits signifying said localities, and at least one additional digit for identifying respective sub-localities, wherein said locality numbers are zip code numbers, wherein said groups of addressed segments of data storage comprise classified ad sections, each having a respective number of ads stored therein, wherein said linking means comprises means for retrieving a subscriber zip code from said access number addressed segments of data storage in response to entry of said subscriber's access number, means for addressing groups of data storage segments using the retrieved zip code number and for counting the number of ads in any locality number addressed segments of data storage corresponding to localities having the same first 3 digits as said retrieved zip code, and means for transmitting to a subscriber controlled data access means the so counted ads, if said number of ads is less than

a predetermined maximum ad number, or transmitting only sub-locality ads in locality number addressed segments of data storage having zip codes having the same first 4 digits as said retrieved zip code, if the so counted number of ads exceeds said predetermined maximum number; and

said subscriber-controlled data access means comprising a plurality of subscriber units, each having a locality number corresponding to a geographic location thereof, each subscriber having an access number,

means for transmitting said access number to said national data base,

display means for displaying locality data received from said national data base, and

means for said national data base to receive and process said access-numbers.

4. A transactional system serving subscribers in a plurality of localities, comprising

a national data base having

a plurality of groups of addressed segments of data storage, each group storing data pertaining to an associated one of said localities, each group being addressable by a locality number,

a plurality of access-number addressed segments of data storage, each assigned to one of said subscribers and storing a locality number for said one of said subscribers,

means for linking said access-number addressed segments of data storage to said groups of locality number addressed segments of data storage, so that locality data stored in the group of locality number addressed segments of data storage associated with a subscriber's locality number is automatically addressed upon receipt of said subscriber's access number,

wherein said national data base is accessible by non-subscribers and comprises

access code generating means including a random number generator for generating an access-number for any non-subscriber who attempts to access said data base, and

means for storing the so generated access-number in one of said access number-addressed segments of data storage, wherein said non-subscriber further furnishes his home address to said national data base,

wherein said access number is mailed to said non-subscriber at said home address, whereby said non-subscriber becomes a subscriber; said transactional system further comprising

subscriber-controlled data access means, including a plurality of subscriber units, each having a locality number corresponding to a geographic location thereof, each subscriber having an access number,

means for transmitting said access number to said national data base,

means for transmitting data to said subscriber-controlled data access means,

display means for displaying locality data received from said national data base, and

means for said national data base to receive and process said access-numbers.

10. A transactional system serving subscribers in a plurality of localities, comprising

a national data base having

a plurality of groups of addressed segments of data storage, each group storing data pertaining to an associated one of said localities, each group being addressable by a locality number,

a plurality of access-number addressed segments of data storage, each assigned to one of said subscribers and storing a locality number for said one of said subscribers,

means for linking said access-number addressed segments of data storage to said groups of locality number addressed segments of data storage, so that locality data stored in the group of locality number addressed seg-

ments of data storage associated with a subscriber's locality number is automatically addressed upon receipt of said subscriber's access number,

subscriber controlled data access means having a plurality of subscriber units each having a locality number corresponding to its geographic location,

each subscriber having an access-number, wherein said data access means comprises means for transmitting said access-number to said national data base, and display means for displaying locality data received from said national data base,

a predetermined number of telephone lines linking said subscriber controlled data access means to said national data base,

wherein said national data base further comprises means for answering subscriber calls, means for assigning a process identification number to each received call, means for comparing the number of process identification numbers to said predetermined number of telephone lines, and means for commencing timing of said calls when said number of process identification numbers is equal to said predetermined number of telephone lines,

wherein said transactional system further comprises revenue-producing transactions and non-revenue transactions, and

wherein said means for commencing timing of said calls delays timing of said revenue-producing transactions relative to timing of said non-revenue producing transactions; and

means for transmitting data to said subscriber controlled access means, and

means for said national data base to receive and process said access-numbers.

4,645,874

MESSAGE ROUTING THROUGH DATA COMMUNICATION NETWORKS

Neal R. Fildes, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

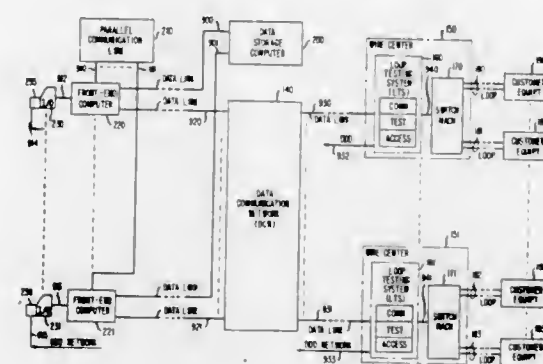
Filed Jul. 16, 1982, Ser. No. 399,187

Int. Cl.⁴ G06F 15/00

U.S. Cl. 379-93

MICROFICHE APPENDIX INCLUDED
(16 Microfiche, 923 Pages)

5 Claims



1. In a distributed data communication network for use in a telephone or general data transmission system, a method comprising the steps of

dynamically allocating a return path through said network for each message traversing said network from a message source coupled to said network,

storing a plurality of most recent return paths associated with said source in a message receiver,

transmitting return information to each said message from said receiver over the return path associated with said message, and

if said information is blocked by said network, alternatively transmitting said information over another of said recent return paths.

4,645,875

TELEPHONE ANSWERING PROGRAMMING DEVICES

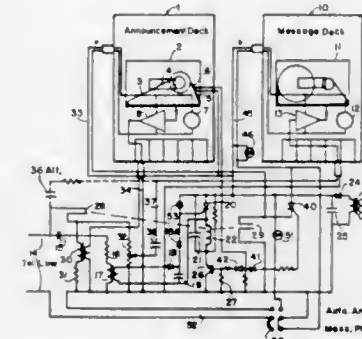
Leonard M. Todd, 424 W. 119th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 700,109, Jun. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 88,909, Nov. 12, 1970, abandoned. This application Jan. 12, 1979, Ser. No. 3,235

Int. Cl.⁴ H04M 1/64

U.S. Cl. 379-70

6 Claims



1. A telephone answering device coupled to a telephone line for reproducing an announcement and recording messages comprising a first tape recorder, an endless magnetic tape within said first tape recorder, a first short length of sensing tape on said endless tape located approximately at the conclusion of said announcement, a second longer length of sensing tape on said endless tape located at the conclusion of a message, a sensing tape switch adjacent said endless tape, a second tape recorder, first switching means latching on receipt of a ring up signal to establish line seizure and to start said first tape recorder, second switching means latching in response to a short impulse caused by the passage of said first short length of sensing tape across said sensing tape switch and starting said second tape recorder, third switching means activated by a longer impulse caused by the passage of said second longer length of sensing tape across said sensing tape switch to unlatch said first switching means, to release line seizure, to stop said first tape recorder and to unlatch said second switching means and stop said second tape recorder, restoring said device to standby condition.

4,645,876

PAY TELEPHONE

Robert V. Albertson, Wayzata, Minn., assignor to Burd, Bartz & Gutenkauf, Minneapolis, Minn.

Filed Feb. 11, 1985, Ser. No. 700,475

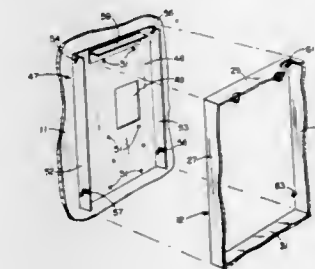
Int. Cl.⁴ H04M 17/00

U.S. Cl. 379-143

24 Claims

1. A coin controlled telephone comprising: a housing having an interior chamber, a telephone unit mounted on the housing, said telephone unit having digit control means operable externally of the housing and a hand piece including a transmitter and receiver, coin operated switch means mounted on the housing in said chamber, said housing having a slot for directing coins into the switch means, microprocessor means connected to the switch means and telephone unit for controlling the operation of the telephone unit in response to actuation of the switch means with at least one coin, a mount adapted to be secured to a stationary support, means releasably mounting the housing on the mount, said means releasably mounting the housing on the mount including slots and pin means locatable in the slots in said housing and mount said slots being inclined in a direction to locate the housing adjacent the support when

the housing is mounted on the support, and latch means for holding the housing in a non-releasable position on the mount,



said latch means being movable to a release position whereby the housing can be removed from the mount.

4,645,877

INTERFACE FOR CONNECTING STANDARD TELEPHONES TO PARTY LINES

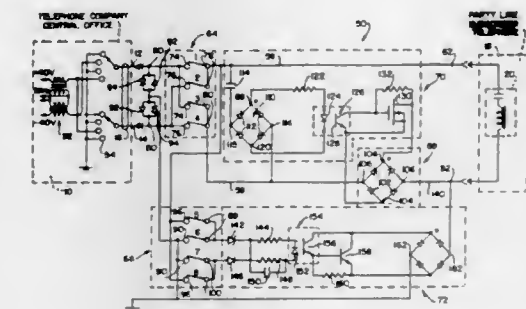
Leonard E. Curtin, Houston, Tex., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 620,737, Jun. 14, 1984, Pat. No. 4,587,380. This application Feb. 28, 1986, Ser. No. 834,810

Int. Cl.⁴ H04M 1/70, 3/16

U.S. Cl. 379-183

1 Claim



1. A method for connecting a standard telephone to a party line for use by one of a plurality of subscribers to the party line comprising:

(a) providing a party line interface for connecting a standard telephone designed for connection to a non-party line to a party line having a pair of lines for conducting audible frequency signals between a telephone central office and a party line subscriber whose telephone is selectively rung by the central telephone office by the application of a ringing signal to one side of a ringing circuit in the subscriber's telephone and ground to the other side of the ringing circuit, the ringing signal including a DC component of either a positive or negative polarity referenced with respect to ground and a time varying signal component applied to one of said pair of lines in said party line and a ground reference applied to the second of said pair of lines having:

(i) a signal path for conducting audible frequency signals having two lines with each line having an input terminal and an output terminal, said input terminals being respectively adapted to be connected to different lines of said pair of lines of said party line and said output terminals being respectively adapted to be connected to different lines of said standard telephone; and

(ii) programmable switching means coupled to said signal path for selectively applying said ringing signal received by said party line interface from said central telephone office to one of said output terminals for

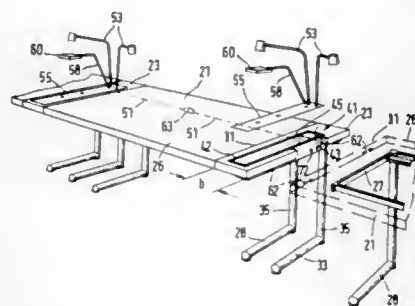
- application to a ringing mechanism within said standard telephone as a function of the polarity of said DC component and ground reference applied to said input terminals, said ringing signal being applied to said standard telephone by said interface only when one of said two polarities provided by said central office is applied to one of said pair of lines of the party line;
- (b) identifying the combination of a DC polarity applied to one of the lines of the party line as the ringing signal of the one subscriber;
- (c) programming the programmable switching means to cause the standard ringing signal to be passed by the interface when the ringing signal of the one subscriber is applied to the party line; and
- (d) connecting a standard telephone to the outputs of the interface.

4,645,878
ARRANGEMENT FOR HOLDING, ACCOMMODATING, INSTALLING AND CONNECTING ELECTRICAL APPARATUS FOR A CONFERENCE TABLE

Wilfried Hilger, Wiesbaden, and Oscar Müller, Massenbachhausen, both of Fed. Rep. of Germany, assignors to August Froscher GmbH & Co. K.G., Baden-Württemberg, Fed. Rep. of Germany

Filed Feb. 1, 1985, Ser. No. 697,137
 Claims priority, application Fed. Rep. of Germany, Feb. 1, 1984, 3403345

Int. Cl.⁴ H04M 3/56
 U.S. Cl. 379—202 21 Claims



1. In combination with a conference table having a top providing a writing surface for a user and opposite ends, an accessory unit disposed immediately adjacent one end of said conference table and comprising a top with a panel bearing electrical and electronic components including at least one microphone and receiving and transmitting communication apparatus, a space below said panel accommodating accessory elements for said components, means detachably supporting said accessory top approximately flush with said table top, and means for detachably electrically connecting said electrical and electronic components with electrical conductors extending lengthwise of said conference table.

4,645,879
CALL-ROUTING DEVICE

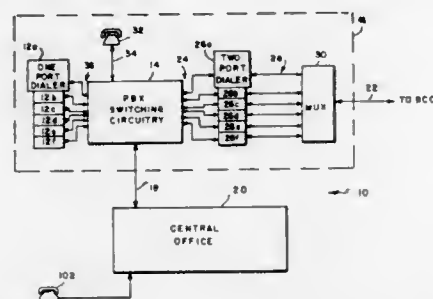
Richard M. Simmons, Cambridge, Mass., assignor to Telelogic, Inc., Somerville, Mass.

Filed Feb. 8, 1985, Ser. No. 700,020
 Int. Cl.⁴ H04M 1/27, 3/58

U.S. Cl. 379—355 4 Claims
 1. A telephone dialer for routing calls placed on a telephone system that includes a plurality of extension lines and a plurality of outside lines connected to facilities of common carriers and that further includes switching circuitry that makes connections between extension lines and between extension lines and outside lines, the switching circuitry being of the type that responds to a flashing signal from a called extension line by placing a calling extension line on hold and presenting a dial

tone to the called extension line, that thereafter connects the called line to a third line designated by signals from the called line, and that thereafter connects the calling line to the third line in response to a subsequent removal of an off-hook signal from the called extension line, the telephone dialer comprising:

- A. a dialer port, adapted for connection to an associated extension line, for receiving signals from the extension line and transmitting signals thereover;
- B. a ring detector connected to monitor signals received over the dialer port and generate a call signal when the dialer port carries ringing signals caused by the placing of a call from a calling extension to the dialer;
- C. a termination circuit operable to place a loop termination across the dialer port and thereby send an off-hook signal to the switching circuitry, the termination circuit further being operable to remove the loop termination from the dialer port and thereby interrupt the off-hook signal;
- D. a control circuit connected to receive call signals from



the ring detector, operate the termination circuit, and send and receive signals over the dialer port, the control circuit responding to call signals from the ring detector by operating the termination circuit to place a loop termination across the dialer port and by sending a dial tone to prompt a user at a calling extension to send dial signals that represent a destination code, the control circuit further detecting the dial signals from the calling extension and storing the destination code represented thereby, sending the flashing signal over the dialer port to cause the switching circuitry to put the calling extension on hold, selecting a common carrier over which to place the call dialed from the calling extension, sending signals necessary to place a call, over the selected common carrier, to the destination station indicated by the destination code, and operating the termination circuit to remove the termination loop from the dialer port so as to release the line connected to the destination station and cause the switching circuitry to connect that line to the calling extension line.

4,645,880
DISCONNECT CIRCUIT FOR USE BETWEEN TELEPHONE SWITCHING SYSTEMS

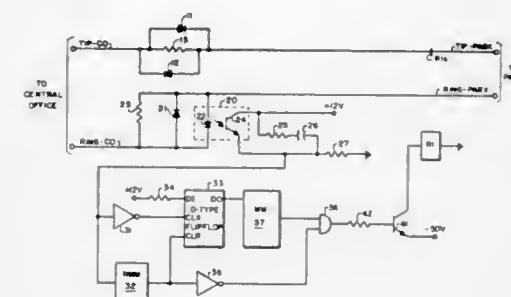
Robert W. Lembke, Plant City, and Howard J. Wiebeld, Valrico, both of Fla., assignors to GTE Communication Systems Corp., Northlake, Ill.

Filed Sep. 27, 1984, Ser. No. 655,139
 Int. Cl.⁴ H04M 3/12, 7/14

U.S. Cl. 379—191 16 Claims
 1. A disconnect circuit for use between first and second switching systems which are operative to open and close a current loop through each other and said disconnect circuit which is connected therebetween, said disconnect circuit comprising:

- current detection means connected to said first switching system and operative in response to said loop being open or closed to provide current detected signals of first and second characteristics, respectively;
- pulsing means connected to said current detection means

and operative in response to said current detected signal of a first characteristic to provide a disconnect control pulse of predetermined duration, and further operative in response to said current detected signal of a second characteristic to inhibit said disconnect control pulse for a predetermined time; and



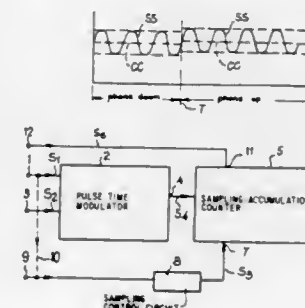
switching means connected to said pulsing means and to said second switching system, and operative in response to said disconnect control pulse to open said current loop for a predetermined time.

4,645,881
DC LEVEL TRIP DETECTOR

Loic LeToumelin, Roquefort les Pins; Franck Tollon, Saint Laurent du Var, and Yves Leduc, La Colle sur Loup, all of France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 19, 1984, Ser. No. 662,860
 Claims priority, application France, Oct. 19, 1983, 83 16647

Int. Cl.⁴ H04M 19/02; H04Q 3/00
 U.S. Cl. 379—252 19 Claims



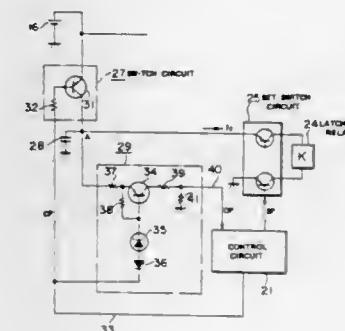
1. Method for detecting a transition of the direct current component of an alternating signal, characterized in that it includes establishing a threshold value (S2) above which the transition is considered to be significant, in generating at least one known cyclical signal (S5, S5') the frequency of which being large with respect to the frequency of said alternating signal (S1), in time modulating a binary signal (S4) with the difference between the alternating signal (S1), the threshold signal (S2), and said cyclical signal (S5, S5'), in generating a high speed clock signal (S6), in accumulating the pulses of the clock signal (S6) in the positive direction for the first logic level of the modulated signal (S4), and in a negative direction for the second level of this signal, in sampling the result of this accumulation over at least one period (P) of said alternating signal, and in generating an output signal (6) having a given logical level if the accumulation produces a residual value at the end of the last sampling period.

4,645,882
LATCHING RELAY DRIVE CIRCUIT FOR USE IN TELEPHONE SETS

Yasunobu Nakayama, Musashino, and Yasuji Sato, Hachioji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1985, Ser. No. 717,797
 Claims priority, application Japan, Jun. 29, 1984, 59-134580

Int. Cl.⁴ H04M 1/00 4 Claims



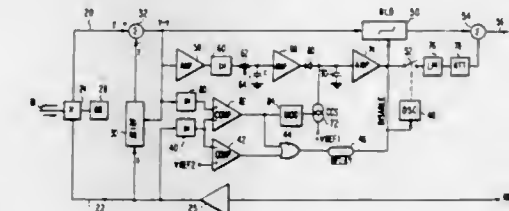
1. A latching relay drive circuit for use in a telephone set comprising:
 a source battery;
 switch means;
 a capacitor charged by said source battery when said switch means is closed;
 detecting means for detecting the fact that said capacitor is charged to a predetermined voltage;
 means responsive to the output of said detecting means, for discharging said capacitor to drive said latching relay; and
 means for opening said switch means when the voltage of said capacitor reaches said predetermined voltage.

4,645,883
DOUBLE TALK AND LINE NOISE DETECTOR FOR A ECHO CANCELLER

Otakar A. Horna, Bethesda; Edwin A. Stennett, Gaithersburg, both of Md., and Ferial T. El-Mokadem, Great Falls, Va., assignors to Communications Satellite Corporation, Washington, D.C.

Filed May 9, 1984, Ser. No. 608,628
 Int. Cl.⁴ H04B 3/20

U.S. Cl. 379—406 11 Claims



1. An echo canceller for removing echoes propagating from a receive line to a send line through a transmit/receive station, comprising:
 means for emulating an echo resulting from a signal on a receive line within a station;
 subtracting means for subtracting said emulated echo from a signal on said send line;
 means for measuring an average background noise on an output of said subtracting means;

a non-linear device connected to said output of said subtracting means for selectively, when enabled, attenuating low level signals on an input of said non-linear device; means for selectively injecting onto an output of said non-linear device, when enabled, a noise signal proportional to said measured background noise; and means for detecting a signal above a predetermined limit on said receive line and, in response to said detection, for enabling said non-linear device and said injecting means.

4,645,884

METHOD AND APPARATUS FOR INITIALIZING FILTER COEFFICIENTS IN AN ECHO CANCELLER
Bahman Barazeché, Paris; Roger P. J. Alexis, Neuilly-sur-Seine, and Loïc B. Y. Guidoux, Garancieres, all of France, assignors to Telecommunications Radioelectriques et Téléphoniques, Paris, France

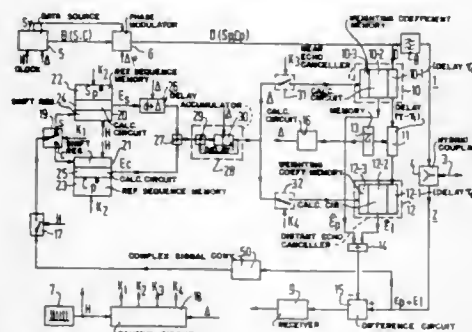
Filed Jan. 30, 1984, Ser. No. 574,805

Claims priority, application France, Jan. 31, 1983, 83 01457

Int. Cl.⁴ H04B 3/20

U.S. Cl. 379/406

6 Claims



1. For use in a data transceiver having a transmit path and a receive path and which includes an echo-canceller arrangement for cancelling an echo occurring in the receive path in response to transmission by said transceiver of a phase modulated digital signal applied to the transmit path, said echo comprising a substantially undelayed near echo signal and a delayed echo signal; said echo-cancelling arrangement operating at a given sample rate and comprising a near-echo canceller to which the transmitted signal is supplied and a distant echo canceller which measures a delay τ of the distant echo and to which the transmitted signal is supplied with a delay substantially equal to the measured distant echo delay τ , the near and distant echo cancellers each comprising a filter having adjustable weighting coefficients; a method for initializing the filter coefficients of the near and distant echo cancellers, comprising the steps of:

- application to and transmission by the transmit path of the transceiver of a digital training signal D comprising at least two consecutive training sequences each of which includes a pair of complementary sequences S and C of the same duration d, said sequences S and C having aperiodic autocorrelation functions whose main lobes have the same sign and whose sidelobes have substantially the same absolute value and opposite signals, each S and C sequence being followed by a time interval of a variable duration Δ determined from the measured distant echo delay τ so that the distant echo signal produced in response to an S or C sequence in each training sequence occurs during a following training sequence immediately after occurrence of a near echo signal in the receive path of the transceiver in response to one of the S and C sequences in the following training sequence;
- during each training sequence transmitted after the first training sequence, deriving correlation signals E_S and E_C respectively representing the correlation, between an echo signal received

in response to a transmitted S sequence and an echo signal received in response to a transmitted C sequence, respectively, which echo signals are sampled at said sample rate, and respective reference sequences S_p^* and S_c^* ; the reference sequence S_p^* representing, during said transmitted S sequence and the following time interval Δ , the conjugate value of said training signal D during said transmitted S sequence; and the reference sequence S_c^* representing, during said transmitted C sequence and the following time interval Δ , the conjugate value of said training signal D during said transmitted C sequence;

- delaying the correlation signal E_S by a delay $d + \Delta$, deriving the sum of said delayed correlation signal E_S and said correlation signal E_C , said sum of the correlation signals serially representing during a first interval thereof an impulse response of the echo path for application to the near echo canceller and serially representing during a second interval thereof an impulse response of the echo path for application to the distant echo canceller; and
- routing said sum of the correlation signals to the near echo canceller during said first interval of said sum of the correlation signals to control formation of the filter coefficients of the near echo canceller and to the distant echo canceller during said second interval of said sum of the correlation signals to control formation of the filter coefficients of the distant echo canceller.

4,645,885

ENDLESS CONVEYOR

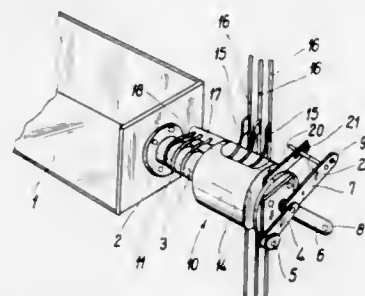
Hans R. Blesinger, Neustadt, Fed. Rep. of Germany, assignor to Bellheimer Metallwerk GmbH., Fed. Rep. of Germany
Filed May 7, 1985, Ser. No. 731,468

Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3417353

Int. Cl.⁴ B60L 5/38; B65G 17/18

U.S. Cl. 191—45 R

10 Claims



1. An endless conveyor including a plurality of load carriers which are movable along a closed track and maintain their orientation during circulation for the transportation and/or storage of goods, characterised in that said endless conveyor includes at least one sliding contact rail (16) and at least one current collector (10) arranged on at least one of said load carriers (1), said at least one current collector having an input part (3) with at least one connecting line (19) leading to said at least one load carrier (1) and a current collecting part (14) rotatably mounted relative to said input part (3), at least one resilient contact arm (15) engaging the sliding contact rail (16) and at least one sliding contact (18) in contact with an annular contact track (11) of the input part (3) arranged on the current collecting part (14) for each connecting line (19).

4,645,886

SWITCH FOR AUTOMATICALLY PROVIDING A SAFETY FUNCTION WHEN ITS CONTACTS ARE FUSED TOGETHER IN THE "ON" POSITION

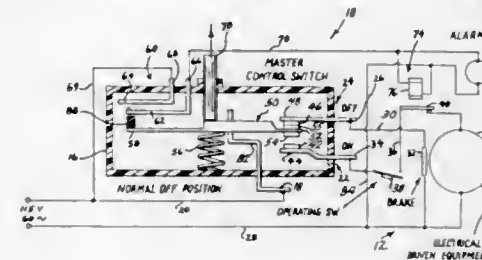
James E. Williams, Stamford, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 670,554, Nov. 9, 1984, abandoned. This application Apr. 2, 1985, Ser. No. 718,931

Int. Cl.⁴ H01H 9/00

U.S. Cl. 200—1 R

35 Claims



19. The method of operating an electrical switch for effecting a safety function when a movable contact welds to another contact in the closed position wherein a movable member carries the movable contact, said member being movable between an open and a closed position in response to operation of an actuator and in which the movable contact normally releasably engages another contact in the closed position comprising the steps of:

- arranging for the movable member to assume an abnormal position when the movable contact is welded to the other contact in the closed position and the actuator is operated to move the member to the open position, and
- sensing the abnormal position of said movable member for effecting a safety function due to such malfunction of the switch.

4,645,887

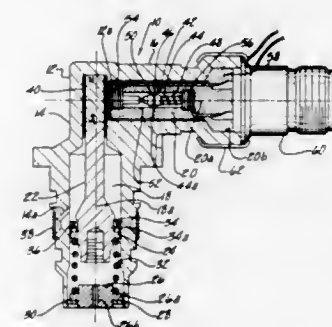
PRESSURE DIFFERENTIAL BYPASS SENSOR SWITCH
James C. Whiting, High Point, N.C., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Dec. 2, 1985, Ser. No. 803,299

Int. Cl.⁴ H01H 35/38

U.S. Cl. 200—82 E

16 Claims



1. A pressure differential sensor switch for use in a fluid circulating system, said pressure differential sensor switch being adapted to perform an electrical switching function when an excessive pressure differential develops between a high fluid pressure location in the system and a low fluid pressure location in the system, said pressure differential sensor switch comprising:

- a housing having a first passage with a central axis and a second passage, with a central axis said first passage having a first opening that is exposed to said high fluid pressure location and a second opening that is exposed to said low fluid pressure location, said central axis of said second

passage being disposed in a non-parallel orientation with respect to said central axis of said first passage; a reciprocable piston located in said first passage of said housing and reciprocable therein, said reciprocable piston being reciprocable in said first passage of said housing between a first piston location adjacent said first opening and a second piston location adjacent said second opening, said reciprocable piston having a first side that is exposed to the pressure at said high fluid pressure location through said first opening and a second side that is exposed to the pressure at said low fluid pressure location through said second opening;

biasing means located in said first passage of said housing and resiliently biasing said reciprocable piston toward said first piston location, the force exerted by said biasing means being sufficient to maintain said reciprocable piston at said first piston location when the differential in pressure between said pressure at said high fluid pressure location and said pressure at said low fluid pressure location is below a predetermined differential in pressure, the force exerted by said biasing means also being insufficient to maintain said piston at said first piston location when said differential in pressure exceeds said predetermined differential in pressure, whereby said reciprocable piston will move to said second piston location when said differential in pressure exceeds said predetermined differential in pressure;

a permanent magnet carried by said reciprocable piston and reciprocable therewith; and

an axial travel electrical switch located in said second passage of said housing, said axial travel electrical switch having a switching element that is movable only along said central axis of said second passage between a first position and a second position, one of said first position and said second position being a switch opened position and the other of said first position and said second position being a switch closed position, said switching element of said axial travel electrical switch being responsive to magnetic forces and being adapted to be moved by magnetic force from one of said first position and said second position to the other of said first position and said second position, said second passage being positioned relative to said first passage such that said permanent magnet acts magnetically on said switching element of said axial travel electrical switch to move said switching element of said axial travel electrical switch from said one of said first position and said second position to the other of said first position and said second position when said reciprocable piston moves in said first passage from said first piston location to said second piston location to move said permanent magnet that is carried by said reciprocable piston.

4,645,888

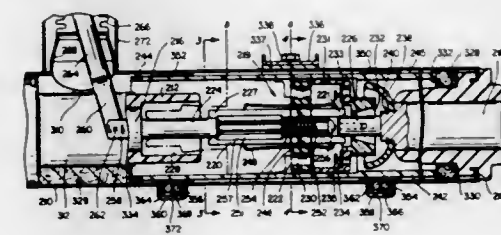
LOAD BREAK SWITCH WITH SAFETY MECHANISM
Philip Barkan, and David S. Gere, both of Stanford, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 598,558, Apr. 9, 1984, abandoned. This application Dec. 17, 1985, Ser. No. 810,882

Int. Cl.⁴ H01H 33/40, 33/54

U.S. Cl. 200—83 W

11 Claims



1. A switch comprising:

- (a) a sealed housing;
 (b) a pressurized insulating gas in the housing;
 (c) a bellows sealingly mounted to the housing;
 (d) an actuating arm having an operative position in which the arm is capable of opening and closing the switch, the actuating arm being sealingly mounted to the bellows and extending into the housing through the bellows;
 (e) low pressure biasing means for biasing the bellows in opposition to the gas pressure in the housing, wherein when the force of the gas on the bellows is greater than the force of the low pressure biasing means on the bellows, the arm is in its operative position; and
 (f) locking means for rendering the arm inoperative, the locking means being positioned so that when the force of the low pressure biasing means on the bellows is greater than the force of the gas on the bellows, the bellows is contracted by the low pressure biasing means and the arm is moved into a locked position.

4,645,889

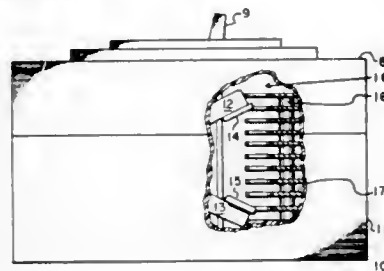
VARISTOR QUENCHED ARC CHUTE FOR CURRENT LIMITING CIRCUIT INTERRUPTERS
 Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Mar. 14, 1986, Ser. No. 839,397

Int. Cl.⁴ H01H 33/16

U.S. Cl. 200—144 AP

5 Claims



1. A composite arc chute assembly for current limiting circuit interruption devices comprising:
 a plurality of metal plates arranged in a stack for receiving an electric arc and having a predetermined spacing between each of said metal plates within the stack for receiving a corresponding plurality of arclets formed therein; and
 a plurality of varistor elements intermediate said metal plates and in electrical contact with said metal plates for receiving arc voltage generated across said plates from said electric arc and transferring arc current from said arclets to said varistors for dissipating energy, cooling and extinguishing said arc.

4,645,890

MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE ELECTRICAL CONTACT POSITIONED BY A CAMMING LEAF SPRING

Charles R. Paton, and Charles E. Haugh, both of New Brighton, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 19, 1985, Ser. No. 756,490

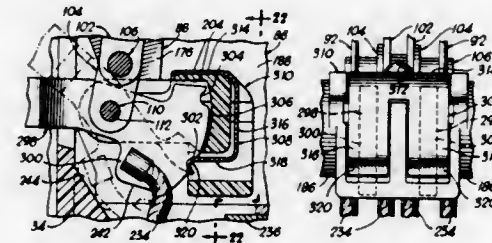
Int. Cl.⁴ H01H 3/38

U.S. Cl. 200—153 G

16 Claims

1. An electrical circuit breaker comprising:
 a movable electrical contact assembly having a contact member that includes a first electrical contact and is terminated by an end portion,
 a second electrical contact, and
 operating means for moving said electrical contact assembly and said first contact into a CLOSED position and an OPEN position relative to said second electrical contact,

said operating means comprising a rotatable cross-bar configured to receive the end portion of said contact member, said operating means further comprising spring means for releasably biasing the end portion of said contact member into driving engagement with said cross-bar for enabling rotational movement of said movable electrical contact assembly and first contact in unison with the rotational movement of said cross-bar during normal operation of the circuit breaker and for enabling rotational movement



of said movable electrical contact assembly and first contact substantially independently of the rotational movement of said cross-bar upon the occurrence of a fault current condition,
 said spring means comprising a leaf spring that is fastened to said cross-bar and has an outwardly projecting cam surface for engaging the end portion of said contact member and thereby applying spring force to said contact member and movable electrical contact assembly.

4,645,891

MOLDED CASE CIRCUIT BREAKER WITH A MOVABLE ELECTRICAL CONTACT POSITIONED BY A SPRING LOADED BALL

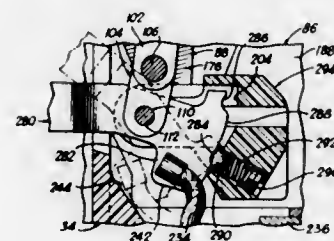
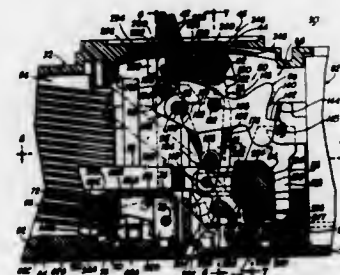
Joseph F. Changle, Scott Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 18, 1985, Ser. No. 756,488

Int. Cl.⁴ H01N 3/38

U.S. Cl. 200—153 G

16 Claims



1. An electrical circuit breaker comprising:
 a movable electrical contact assembly having a rotatable

4,645,893

METHOD FOR MANUFACTURING SPIRAL-WELDED STEEL PIPE

Yasumi Shimazaki, Kitakyushu; Yoshito Tsuyama, Tokyo; Hiroyo Haga, Sagami, and Manabu Hanzawa, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 507,225, Jun. 23, 1983, abandoned.

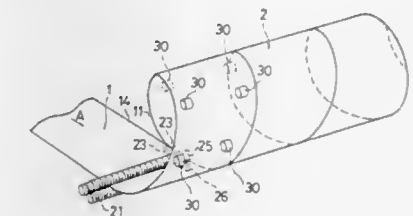
This application Sep. 30, 1985, Ser. No. 783,042

Int. Cl.⁴ B23K 11/06

U.S. Cl. 219—62

2 Claims

contact member that includes a first electrical contact and is terminated by an end portion having an arcuate cam surface,
 a second electrical contact, and
 operating means for moving said electrical contact assembly and said first contact into a CLOSED position and into an OPEN position relative to said second electrical contact, said operating means comprising a rotatable cross-bar configured to receive the end portion of said rotatable contact member,
 said operating means further comprising biasing means for releasably biasing the end portion of said rotatable contact member into driving engagement with said cross-bar for enabling rotational movement of said electrical contact member and first contact in unison with the rotational movement of said cross-bar during normal operation of the circuit breaker and for enabling rotational movement of said electrical contact member and first contact substantially independently of the rotational movement of said cross-bar upon the occurrence of a fault current condition,
 said biasing means comprising a compression spring and a ball that are disposed within and movable with said cross-bar with said ball disposed between said compression spring and the cam surface on the end portion of said rotatable contact member, said ball having an exposed spherical surface for engaging the cam surface on the end portion of said contact member and thereby transferring spring force from said compression spring to said rotatable contact member and electrical contact assembly.



4,645,892

SEALING ARRANGEMENT FOR MICROWAVE OVENS
 Jan A. C. Gustafsson, Norrköping, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

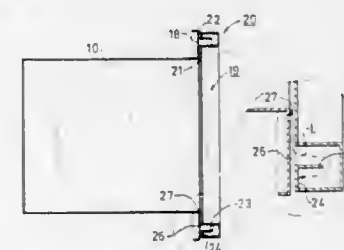
Filed Mar. 12, 1984, Ser. No. 588,413

Claims priority, application Sweden, Mar. 15, 1983, 8301397

Int. Cl.⁴ H05B 6/64

U.S. Cl. 219—10,55 D

13 Claims

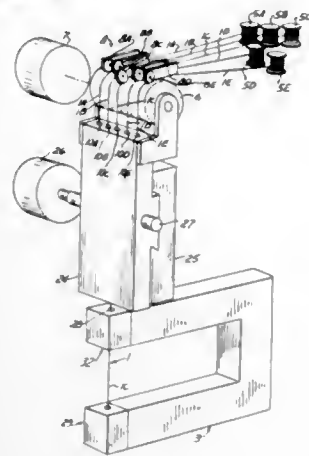


1. A sealing arrangement for a microwave oven having an oven cavity with an access opening closable by a door, the sealing arrangement extending around the access opening when the door is closed, said sealing arrangement comprising a circumferential oven wall portion surrounding said access opening, a circumferential rim of the door cooperating with said circumferential oven wall portion to define a gap having an inner end communicating with the oven cavity, and a choke formed by said rim, said choke having an input opening communicating with the gap and having a short-circuiting wall situated at a distance of approximately 1/4 wavelength, at the operating frequency, from the inner end of said gap, and having a plurality of circumferentially-spaced transverse slots formed in a wall thereof,

characterized in that the choke has a generally G-shaped profile, in that a partition wall forming the inner horizontal leg of the G bounds, on one side thereof, the input opening of the choke and is contiguous with a wall which both forms said short-circuiting wall and defines with the circumferential oven wall portion an outer end of said gap, and in that said transverse slots are formed in at least the partition wall.

1. A method of manufacturing spiral-welded steel pipe which comprises the steps of:
 continuously feeding strip in the longitudinal direction thereof and forming the strip into spiral pipe form;
 lapping one side edge of the strip on or under the other side edge thereof which has already been spirally formed to define a welding groove, and subjecting the lapped joint to electric resistance welding which forms a bead on the edges of the strips on the inside and outside of the formed pipe;
 pressing together the edges of the strip and formed pipe from outside and inside the formed pipe and reforming the bead formed on the edges of the strip on the inside and outside of the pipe during said electric resistance welding by providing a pair of pressure rolls each having a groove along the middle of the peripheral surface thereof, the groove having a shape which, together with said welding groove, provides a volume greater than the volume of molten steel at the joint, and applying the edges of the peripheral surface of each said pressure roll to the surfaces of the strips or opposite sides of the welding groove on the outside and inside of the formed pipe simultaneously with or immediately after said electric resistance welding for causing the molten steel of the electric resistance welded bead to be accommodated only in the grooves, whereby the formation of a step at the edges of the strip is prevented; and
 carrying out in-line submerged arc welding on the edges of the strip with the reformed bead on the inside and outside of the pipe.

4,645,894
TRAVELLING WIRE EDM APPARATUS PROVIDED WITH ELECTRODE WIRE CHANGER
 Benno I. Bonga, Crans, Switzerland, assignor to Charmilles Technologies S.A., Geneva, Switzerland
 Filed Mar. 27, 1984, Ser. No. 593,864
 Int. Cl.⁴ B23H 1/00, 7/10; B65H 49/00
 U.S. Cl. 219—69 W 4 Claims

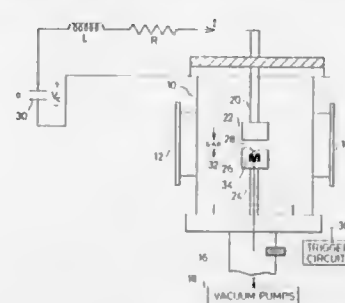


1. In a travelling wire EDM apparatus wherein a cut is effected in a workpiece by way of electrical discharges across a machining zone formed between an electrode wire and the workpiece, said apparatus having means for displacing said electrode wire longitudinally stretched between a pair of electrode wire guide members along an electrode wire threading axis through the workpiece, one of said electrode wire guide members being above said workpiece and the other below said workpiece, an electrode wire changer comprising a plurality of wire supply spools, a plurality of wire guide conduits each having an inlet and an outlet, means for selectively feeding each one of said wires from each one of said wire supply spools through a single one of said wire guide conduits, means for straightening each of said wires in its corresponding guide conduits, wire cut-off means disposed proximate said electrode wire guide member above said workpiece, and means for substantially aligning the outlet of a selected one of said wire guide conduits along the electrode wire threading axis through the workpiece, whereby the outlet of the selected one of said wire guide conduits is aligned with said threading axis for threading through the workpiece the wire in the selected one of said wire guide conduits, wherein said means for substantially aligning the outlet of the selected one of said wire guide conduits comprises a slide fixedly supporting said wire guide conduits, and means for controllably displacing laterally said slide to any one of a plurality of finite positions wherein the outlet of one of said wire guide conduits is aligned with said threading axis.

4,645,895
METHOD AND APPARATUS FOR SURFACE-TREATING WORKPIECES
 Raymond L. Boxman; Shmuel Goldsmith, both of Herzliya; Nissan Brosb, Petah Tikva; Shaul Shalev, Ganei Yehuda, and Hanan Yaloz, Ramat-Gan, all of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development, Tel Aviv, Israel
 Filed Apr. 3, 1985, Ser. No. 719,308
 Claims priority, application Israel, Apr. 12, 1984, 71530
 Int. Cl.⁴ B23K 9/04 37 Claims

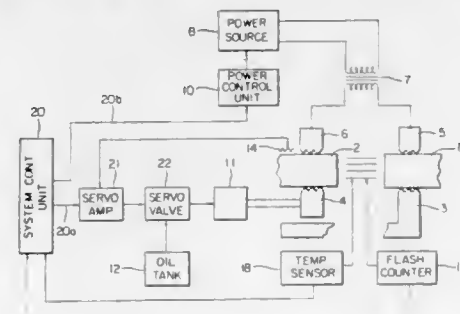
1. The method of surface treating a workpiece, characterized in applying one or more short-duration electrical pulses to

produce, for each pulse, a high-amplitude short-duration electrical discharge between said workpiece, serving as an anode,



and another material serving as a cathode, while said workpiece and cathode are in a vacuum ambient.

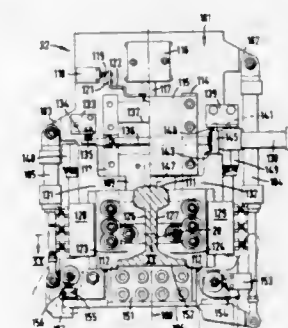
4,645,896
METHOD AND APPARATUS FOR FLASH WELDING
 Toshihiko Baba, Nishinomiya; Akiyoshi Uomori, Minoo, and Junji Miyata, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Oct. 26, 1984, Ser. No. 665,158
 Claims priority, application Japan, Oct. 28, 1983, 58-203314
 Int. Cl.⁴ B23K 11/04 10 Claims



1. A method for flash welding a pair of workpieces comprising the steps of:
 supporting the pair of workpieces to be welded with a predetermined distance therebetween, at least one of the workpieces being movable toward the other workpiece;
 applying a first predetermined voltage between the workpiece which is sufficient to generate flashes between the workpieces while moving at least one of the workpieces toward the other;
 sensing the temperature of the weld surfaces of the workpieces;
 decreasing said first predetermined voltage to a second predetermined voltage when the temperature of the weld surfaces of the workpieces has reached a predetermined temperature indicating that the weld surfaces are molten uniformly, said second predetermined voltage being lower than said first predetermined voltage but sufficient to maintain flashes between the workpieces;
 after the voltage has been decreased to said second predetermined voltage, initiating a count of the total number of flashes which are generated;
 rapidly upsetting the workpieces with an upsetting pressure sufficient to upset the workpieces when the total number of flashes has reached a predetermined number indicative of a condition suitable for the upsetting; and
 removing the upsetting force from the workpieces when the temperature of the weld has decreased to lower than the recrystallization temperature of the workpieces.

5. A flash welding apparatus comprising:
 means for supporting a pair of workpieces to be welded with a predetermined distance therebetween, at least one of the workpieces being movable toward the other workpiece;
 means for applying a first predetermined voltage sufficient to generate flashes between the workpieces across the workpieces;
 means applying a first force for moving at least one of the workpieces toward the other;
 means for sensing the temperature of the weld surfaces of the workpieces;
 means for decreasing said first predetermined voltage to a second predetermined voltage when the temperature of the weld surfaces of the workpieces has reached a predetermined temperature indicating that the weld surfaces are molten uniformly, said second predetermined voltage being lower than said first predetermined voltage but sufficient to maintain flashes between the workpieces;
 means for counting only after the voltage has been decreased to said second predetermined voltage the total number of flashes which are generated;
 means for decreasing said first force to a lower force and rapidly moving said movable workpiece toward said stationary workpiece and upsetting the workpiece with an upsetting pressure sufficient to upset the workpieces when the total number of flashes has reached a predetermined number indicative of a condition suitable for the upsetting; and
 means for removing the upsetting force from the workpieces when the temperature of the weld has decreased to lower than the recrystallization temperature of the workpieces.

4,645,897
METHOD AND APPARATUS FOR ALIGNING TWO WORKPIECES FOR WELDING AND FOR WELD UPSET REMOVAL
 Robert R. R. Gourlay, and Neill M. Sherriffs, both of Inverness, Scotland, assignors to A.I. Welders Limited, Scotland
 Filed Mar. 14, 1984, Ser. No. 589,426
 Claims priority, application United Kingdom, Mar. 14, 1983, 8306958; Dec. 21, 1983, 8333992
 Int. Cl.⁴ B23K 11/02 34 Claims

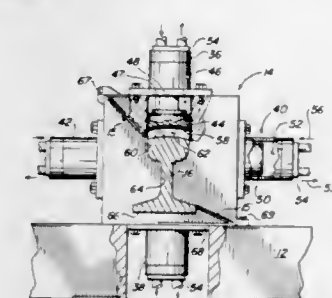


30. A method of removing weld upset from butt-welded material in bar form and of constant cross-section, before that butt-welded material is removed from a butt-welding machine in which the weld from which weld upset is to be removed is formed, wherein, after the weld is formed, a group of linked shear cutting tools is translated from a storage location to a region of the machine which surrounds the weld, the storage location being sufficiently remote from said region that, when stored there, as it was during welding, the group of shear cutting tools was shielded from weld spatter which is generated during welding and which adheres to anything in said region, the group then being inserted into a gap between heads of the machine in a direction transverse to the butt-welded

material and being assembled around the butt-welded material, between the weld and a movable head of the machine, to form a continuous frame therearound with a cutting edge of each tool located adjacent a correspondingly contoured surface portion thereof, whereafter the movable head is moved towards the weld so the resultant continuous frame is moved across the weld upset which is sheared from the butt-welded material by the cutting tools.

33. Apparatus for removing weld upset from butt-welded material in bar form and of constant cross-section before that material is removed from a butt-welding machine which typically comprises two spaced heads which are adapted to clamp a pair of work pieces whilst they are being welded together end to end to form said butt-welded material, the welded joint between the two work pieces being formed in the gap between the heads, the apparatus comprising a group of linked cutting tools which are adapted to be assembled around the butt-welded material between a movable one of the heads and the welded joint so as to form a continuous frame around the butt-welded material, the cutting tools being arranged so that each of their cutting edges is located adjacent a correspondingly contoured surface portion of the butt-welded material when the group of tools is assembled around said butt-welded material to form said continuous frame, and mechanical handling equipment operable to translate the group of tools from a storage location to a region of the machine which surrounds the welded joint, the storage location being sufficiently remote from said region that, when stored there, the tools are shielded from weld spatter which is generated during welding and which adheres to anything in said region, the mechanical handling equipment also being operable to insert the tools into said gap in a direction transverse to the butt-welded material, to present at least one of the tools to the butt-welded material and thereafter to assemble the tools around the butt-welded material to form said frame, to disassemble the tools from around the butt-welded material after weld upset has been removed, to remove said tools from within said gap and to translate said tools to said storage location.

4,645,898
POWDER WELDING OF TWO MEMBERS
 Aaron E. Prince, Jr., and Dale H. Pryor, both of Austin, Tex., assignors to Parker Kinetic Designs, Inc., Austin, Tex.
 Filed Apr. 24, 1985, Ser. No. 726,691
 Int. Cl.⁴ B23K 11/32 15 Claims



1. Method of welding two elongated metal members together comprising the steps of:
 forming a shaped passageway through a welding fixture; and, making said passageway complementary respective to the members to be joined; said passageway having a lengthwise axis and a perpendicular axis;
 arranging the members to be joined in confronting relationship and moving the confronting marginal ends of the members to be joined into the passageway and anchoring the members in fixed relationship respective to the fixture, with the confronting ends of the members being spaced from one another;
 forming radially spaced rams within the fixture and position-

ing the rams along the perpendicular axis respective to the lengthwise axis passageway, and placing the rams in communication with the passageway at a location where the members are to be joined;

selecting a powdered metal which can be fused into a mass which is compatible with the composition of the metal members and which can subsequently be forged into part of the joined members;

charging said powdered metal into an area formed between the spaced members and the rams;

attaching a source of current to each member so that current flow can occur from one member, across the powdered metal, and into the other member;

compressing the powder metal by moving the rams toward the members; thereby filling any void that may be present between the confronting faces of the members with compressed powder metal; and,

elevating the temperature of the powdered metal and the marginal ends of the members by applying said source of current to the members in an amount to cause the members and powdered metal to become welded together.

13. A rail welder fixture for welding two lengths of rail together, comprising:

a main body having a passageway formed therethrough through which two elongate rails can be extended to place the ends thereof into confronting relationship respective to one another; said passageway has a configuration which is complementary respective to the shape of the rails;

first and second anchoring means by which the rails can be releasably fixed respective to one another and to the fixture;

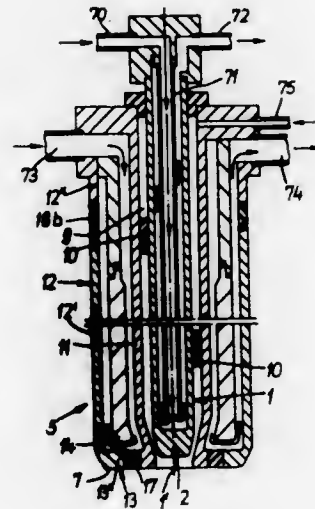
ram means for forcing powder metal into a medial part of the passageway; said ram means are radially arranged respective to one another and circumferentially arranged about the medial part of the passageway; said ram means have confronting faces; means forming insulation on the confronting faces of said ram means, the confronting faces of said ram means jointly define an area having the cross-sectional configuration of the rails when the rams are extended towards the longitudinal axis of the passageway;

means providing a source of welding current by which electrical energy can flow into one rail, through any powder metal which may be present between the rails, and into the other rail;

means for charging powder metal into the passageway at a location between the confronting faces of the ram means; whereby, metal powder can be charged into the area between the ram means, the ram means extended toward the rails, current applied to the rails, whereupon the powder metal becomes fused into and forms part of the rails.

means for charging powder metal into the passageway at a location between the confronting faces of the ram means; whereby, metal powder can be charged into the area between the ram means, the ram means extended toward the rails, current applied to the rails, whereupon the powder metal becomes fused into and forms part of the rails.

radially from, and arranged concentrically with respect to, said inner wall to define a coolant flow space between said inner and outer walls; a front end wall located in the vicinity of said torch output end, extending perpendicular to said longitudinal axis, and joining together said inner and outer walls; and electrical insulating means forming part of at least one of said inner and front end walls and composed of first and second separate insulating structures each extending entirely across its associ-



ated wall, said first structure forming part of said front end wall for electrically insulating said inner and outer walls from one another in the vicinity of said front end wall, and said second insulating structure forming part of one of said inner and outer walls at a location spaced from said front end wall.

4,645,900

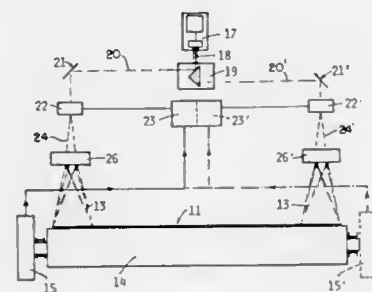
APPARATUS FOR CUTTING A MOVING MATERIAL WEB TO SHAPE BY BURNING WITH A LASER BEAM
Günter Heyden, Neuwied, Fed. Rep. of Germany, assignor to Winkler & Dünnebier, Maschinenfabrik und Eisengießerei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany
Filed Dec. 10, 1985, Ser. No. 807,317

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447405

Int. Cl.⁴ B23K 26/00

U.S. Cl. 219—121 LG

8 Claims



1. An apparatus for cutting a moving material web of paper, cardboard or the like to shape by burning with a deflectable

laser beam focused on the material web, characterized by: at least one frequency-dependent acousto-optical beam deflection means (23), means enabling control of said beam deflection means as a function of the movement of the material web to be cut; at least one deflection element (22), included as part of said beam deflection means, being disposed in the path of the laser beam (18, 20, 24); said means enabling control of said beam deflection means comprising a roller means (14) for conveying or guiding the material web to be cut, at least one pulse generator (15) coupled to said roller means for issuing an impulse as a function of predetermined, changeable circumferential angle sectors of the roller means, and means feeding a signal, corresponding to said impulse, to the beam deflection element (22), whereby the laser beam (24, 13) is deflected, as a function of the frequency-dependent acousto-optical beam deflection means, by a predetermined distance transversely to the direction of movement of the material web (11).

4,645,901

APPARATUS FOR AUTOMATIC CHANGING OF WELDING TORCHES IN AN INDUSTRIAL ROBOT WELDING SYSTEM

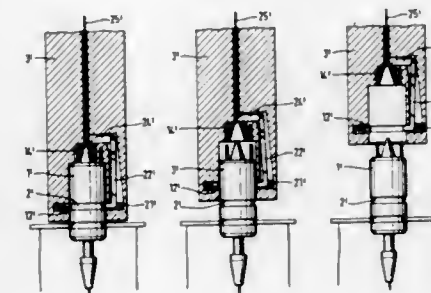
Wolfgang Scholz, Horb/Nordstetten; Herbert Gzik, Stuttgart; Hans J. Scholz, Ostildern, and Hubert Flaig, Stuttgart, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.v., Fed. Rep. of Germany

Filed Jun. 17, 1985, Ser. No. 745,179

Int. Cl.⁴ B23K 9/00

U.S. Cl. 219—125.1

7 Claims



1. An apparatus for automatic changing of welding torches in an industrial robot welding system, comprising:

an industrial robot;

at least one welding torch connected to the industrial robot;

each welding torch including a handle and an insert;

a source of welding current connected to each welding torch;

a hose assembly connected to each welding torch;

a surface for setting the welding torches aside;

a welding wire feed device for each welding torch for feeding welding wire through the welding torch;

a guide for the welding wire;

an interface situated in each welding torch for separating the welding torch handle from the welding torch insert, said interface having associated therewith a coupling for supplying welding wire and electrical current, a coupling for a coolant supply line, a coupling for a coolant return line and a coupling for supplying shielding gas; and

a wire cutting mechanism including a cutting lever, a wire cutter connected to the cutting lever and situated adjacent to the wire, and a return spring connected for biasing the cutting lever, which, upon separation of the welding torch handle, automatically severs the welding wire.

4,645,902

AUTOMATIC CIRCUMFERENTIAL WELDING APPARATUS

Yoshitaka Hayakawa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 29, 1985, Ser. No. 728,535

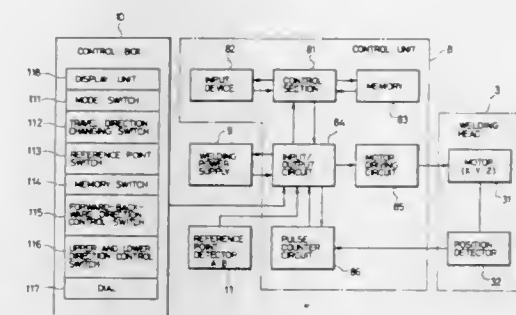
Claims priority, application Japan, Apr. 27, 1984, 59-84041

Int. Cl.⁴ B23K 9/12

U.S. Cl. 219—125.11

9 Claims

1. An automatic circumferential welding apparatus comprising: a guide arranged close to abutted ends of cylindrical objects; a welding head driven along said guide and equipped with a welding torch so as to apply arc welding along a circumference defined by said abutted ends while moving in a clockwise and a counter-clockwise direction around respective semicircumferential paths around said circumference; a welding power supply for supplying welding current to said welding torch; means for moving said welding head along said semicircumferential paths around said circumference and said welding torch in a direction perpendicular to said circumference; position detecting means for detecting the positions of said welding torch as it travels along said semicircumferential paths; control means for storing positions detected by said position detecting means, said control means comprising a memory for storing welding conditions established for the stored positions; and a control box having operational keys, a display unit connected to said control means, a travel direction

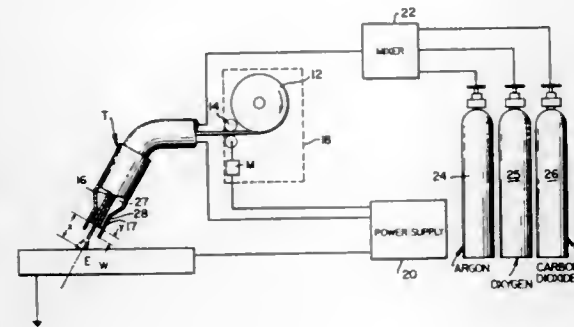


control means for directing the welding direction of said welding head, mode selecting means for causing said welding head to be moved in at least a teaching mode wherein the welding head is taught positions to be traveled during a welding operation or a regenerative mode wherein the welding head is caused to be moved to the taught positions, a memory control means for causing said memory to store positions taught in said teaching mode, a moving means activation means for selectively activating said moving means, and a reference point setting means for moving said welding head to reference points in plural welding directions and resetting said position detecting means.

4,645,903
GAS METAL ARC WELDING PROCESS
 Joseph De Vito, Ashtabula; Kevin A. Lyttle, Mentor; Ronald D. Sutton, Ashtabula; Alan J. Westendorf, Shaker Heights, all of Ohio; Nils E. Larson, and Gerald D. Uttrachi, both of Ridgefield, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 5, 1984, Ser. No. 627,833
 Int. Cl.⁴ B23K 9/16, 35/38
 U.S. Cl. 219—137 R

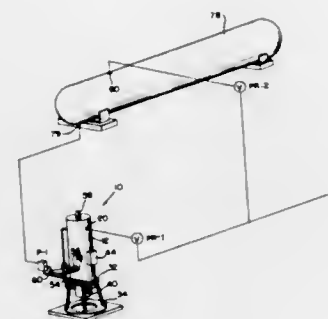
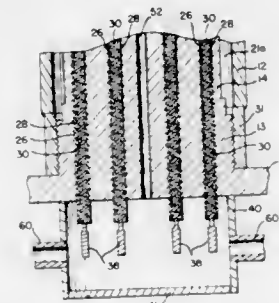
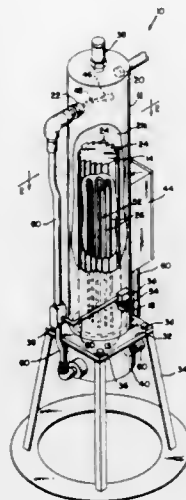
4 Claims



1. A gas metal arc welding process in which an arc is formed between a consumable wire electrode and a workpiece comprising the steps of:

- (a) maintaining a constant potential between said consumable wire electrode and said workpiece in a range of between 29 and 40 volts;
- (b) feeding said consumable wire electrode through a welding torch contact tip toward said workpiece to establish a metal deposition rate of between 10 and 25 lbs./hr. with the metal transfer occurring axially through the arc in a fine droplet form;
- (c) maintaining the welding torch contact tip at a predetermined height above the workpiece so as to provide an electrode extension of between $\frac{1}{8}$ -1 $\frac{1}{8}$ inches; and
- (d) shielding the arc with a protective gas mixture consisting of argon, oxygen and carbon dioxide in the following proportion by volume:
 oxygen: 1-2%
 carbon dioxide: 8-15%
 balance argon.

tric resistance heating elements cast in-situ within the core to provide an interface between the heating elements and the liquefied gas and to provide intimate contact of the core with the exterior of the heating elements;



4,645,904
LIQUEFIED GAS VAPORIZER UNIT
 Dennis P. Moraski, and Bryon L. Sadler, both of King County, Wash., assignors to Sam Dick Industries, Inc., Seattle, Wash.
 Filed May 17, 1985, Ser. No. 735,824
 Int. Cl.⁴ F17C 7/02; F2411 1/16

U.S. Cl. 219—275

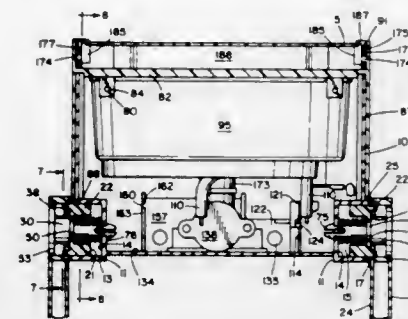
30 Claims

1. A compact liquefied gas vaporizer for controlled vaporization of liquefied gas, comprising:
 a hollow pressure vessel having a liquefied gas inlet and a gas vapor outlet;
 an elongated, one-piece, heat-conductive core mounted within the pressure vessel, the core having multiple elec-

at least one temperature-sensing passageway in the core holding a temperature-sensing means; and
 control means connected to the electric resistance heating elements and the temperature-sensing means for regulating the supply of power to the electric resistance heating elements.

4,645,905
FOLDABLE HOUSEHOLD APPLIANCE
 Wong K. Ming, Kowloon, Hong Kong, assignor to Dart Industries, Inc., Northbrook, Ill.
 Filed Feb. 27, 1985, Ser. No. 705,091
 Int. Cl.⁴ E05D 11/10; F24H 1/20
 U.S. Cl. 219—297

21 Claims

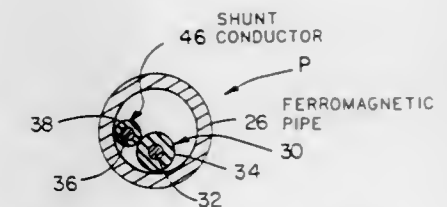
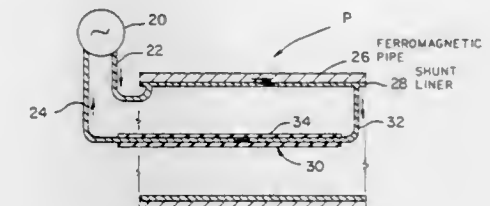


1. A foldable household appliance comprising a support and a body pivotally connected thereto, further comprising a first appliance part comprising one of said body and said support, having a first hinge member having a side wall and a back wall forming a bore having an axis, a second appliance part comprising the other of said body and said support, said second appliance part having a second hinge member rotatable about said axis relative to said first appliance part, said second hinge member adjacent to said first hinge member and having a partition having a passage therethrough in alignment with said bore, a locking member, adapted to be received by said bore in a slidable engagement therewith along said axis, and having a contact surface adapted to allow movement of said locking member along said axis between a first position and a second position upon the application of force thereto, means to substantially prevent rotation about said axis of said locking member relative to said bore, an axle extending through said passage in said second hinge member, and adapted to engage said locking member to allow axial movement of said locking member thereby, said axle manually movable between an initial position corresponding to said first position of said locking member, and a final position corresponding to said second position of said locking member, said axle having a bearing surface slidably engaging said second hinge member adapted to substantially prevent movement of said axle relative to said second hinge member in a direction transverse to said axis, said axle adapted to engage said locking member such that movement of said locking member relative to said axle is substantially prevented in a direction transverse to said axis, said axle rotatable about said axis with respect to at least one of said second hinge member and said locking member, interlocking means comprising a depression on one of said second hinge member and said locking member and a projection on the other of said second hinge member and said locking member, adapted to be in mutual engagement when said locking member is in said first position, and adapted to be mutually disengaged when said locking member is in said second position, biasing means biasing said interlocking means in mutual engagement, whereby said first appliance part and said second appliance part are locked together in an initial rotational position when said interlocking means is biased in mutual engagement, and whereby said first appliance part and said second appliance part can be unlocked by moving said axle from said initial position to said final position to disengage said interlocking means, thereby allowing said body and

said support to be pivoted about said axis relative to one another out of said initial rotational position.

4,645,906
REDUCED RESISTANCE SKIN EFFECT HEAT GENERATING SYSTEM
 Chandrakant M. Yagnik, Austin, and David C. Goss, San Marcos, both of Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.
 Filed Mar. 4, 1985, Ser. No. 707,959
 Int. Cl.⁴ F16L 53/00; H05B 3/00
 U.S. Cl. 219—301

9 Claims



1. A skin effect heat generating pipe for use with a low frequency alternating current power source comprising:
 a ferromagnetic pipe having a thickness substantially greater than the penetration depth of current of the frequency of the power source, said pipe having first and second ends, said first end of said ferromagnetic pipe being connectable to a first terminal of the power source;
 a shunt conductor comprising a conductive layer applied to and in electrical contact with the inner surface of said ferromagnetic pipe substantially throughout the length of said shunt conductor, and shunt conductor and said pipe forming a parallel resistance circuit, where said shunt conductor and said pipe each are capable of conducting substantial current;
 a return electrical conductor installed in said ferromagnetic pipe, said return conductor having a first and a second end, said first end of said return conductor being electrically connected to the second end of said ferromagnetic pipe and said second end of said return conductor being connectable to a second terminal of the power source, said return conductor being electrically insulated from said ferromagnetic pipe at all points away from said return conductor first end;
 whereby heat is generated in said pipe and said shunt conductor in response to the flow of current from the power source through the parallel electrical circuit formed by said pipe and said shunt conductor which is returned to the power source via said return conductor.

4,645,907
ELECTRIC HOT WATER HEATER
 Lewis L. Salton, 1365 York Ave., New York, N.Y. 10021
 Filed Jul. 12, 1985, Ser. No. 754,461
 Int. Cl.⁴ H05B 3/02

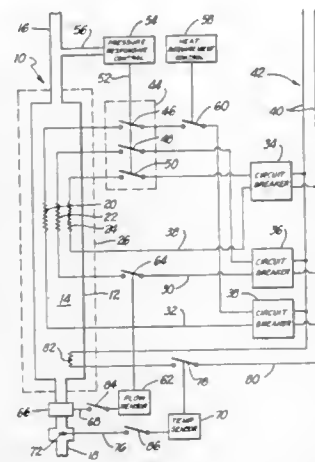
U.S. Cl. 219—309

4 Claims

1. An electric hot water heater having a housing provided with an inlet and an outlet, electric resistance means located

within said housing between said inlet and said outlet so that water flowing through said housing will flow past said resistance means, switch means for controlling the flow of current to said resistance means and line means for connecting said switch means and said resistance means means so that said switch means may be used to regulate the flow of current through said resistance means in which the improvement comprises:

- said resistance means comprises a plurality of separate resistance elements,
- said switch means comprises a plurality of separate switches, each of said switches corresponding to one of said resistance elements,



pressure responsive means for operating all of said switches so as to concurrently close all of said switches upon a decrease in the pressure within said housing past a predetermined value and so as to concurrently open all of said switches upon an increase in pressure within said housing past said predetermined value,

- a plurality of separate circuit breaker means, each of said circuit breaker means corresponding to one of said switch means and one of said resistance means, said line means connecting each of said switch means and it corresponding resistance means in series across the breaker means corresponding to them, and
- a separate supply circuit means for supplying power to each said breaker means.

4,645,908 RESIDENTIAL HEATING, COOLING AND ENERGY MANAGEMENT SYSTEM

Richard D. Jones, Springfield, Va., assignor to UHR Corporation, Alexandria, Va.

Filed Jul. 27, 1984, Ser. No. 635,140
Int. Cl.⁴ F24D 11/02

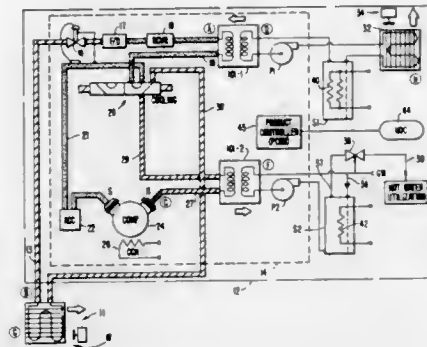
U.S. Cl. 219—378

8 Claims

1. A method of controlling a space conditioning system to modify the temperature of a space within a structure wherein the system includes a thermal storage mass, means for selectively transferring heat between the storage mass and the ambient atmosphere, and means for selectively transferring heat between the storage mass and the space, the method comprising the steps of

- establishing a set point temperature at which the space is to be maintained,
- establishing a temperature range within which the thermal storage mass temperature is to be maintained to permit conditioning of the space using the thermal storage mass, conditioning the thermal storage mass by transferring heat between the storage mass and the ambient atmosphere whenever the temperature of the storage mass degrades beyond the established range,

investigating the temperature of the space at selected times, and conditioning the space by transferring heat between the



thermal storage mass and the space when the temperature of the space differs from the set point by a selected amount without regard to whether the space conditioning time is during an on-peak or off-peak interval.

4,645,909

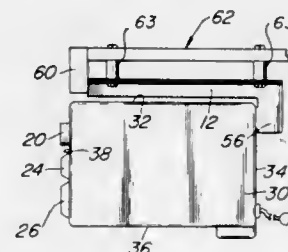
TOASTER AND OVERHEAD SUPPORT

Matthew A. Thoben, Atlanta, Ga.; Earl Clowers, Jackson, Tenn.; Guy Cibi, Atlanta, Ga.; Dean Ball, Gainesville, Ga.; Jack L. McCurdy, Lawrenceville, Ga., and Al S. Rummelsburg, Eastchester, N.Y., assignors to Kidde Consumer Durables Corp., Bronx, N.Y.

Filed Jun. 1, 1984, Ser. No. 618,962
Int. Cl.⁴ H05B 1/02

U.S. Cl. 219—411

5 Claims



1. Toaster, comprising:

- (a) a frame,
- (b) a shelf for supporting a food article mounted on the frame so as to be moveable between a first horizontal heating position and a second horizontal delivery position, the shelf maintaining a horizontal position while moving through the heating and delivery positions,
- (c) heater means disposed within the frame for heating a food article,
- (d) means disposed within the frame for sensing IR radiated by the food article, sensing the ambient temperature within the frame and compensating for the ambient temperature so as to provide an output signal that is indicative of the actual surface temperature of the food article,
- (e) means for activating said heater means,
- (f) means coupled to receive said output signal for deactivating said heater means when the surface temperature of the food article exceeds a preselected threshold,
- (g) overhead support means adapted to be secured to and below a supporting surface, and
- (h) mating structure on said overhead support means and said frame for securing said frame to said overhead support means below said supporting surface.

4,645,910

STEAM RESPONSIVE THERMOSTATIC CONTROL ARRANGEMENT FOR ELECTRIC KETTLES

K. N. Singh Chhatwal, Bolton, Canada, assignor to Algonquin Mercantile Corporation, Toronto, Canada

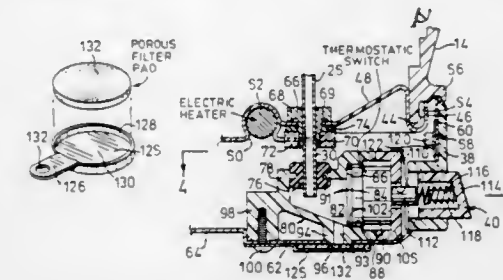
Filed Oct. 15, 1985, Ser. No. 787,606

Claims priority, application Canada, Aug. 30, 1985, 489758

Int. Cl.⁴ H05B 1/02; A47J 27/21; F24H 1/20

U.S. Cl. 219—437

11 Claims



1. In an electric kettle having a conduit for ducting steam produced by boiling water in the kettle to a location adjacent a thermostatic switch of the kettle adapted to cut power to the kettle upon sensing steam temperature, the improvement which comprises:

- means defining a steam exit from said location to the exterior of the kettle, a metal cap external to the kettle and spanning the exit, the metal cap supporting a porous, absorbent filter pad through which the steam exiting from said location must pass.

4,645,911

HEATING DEVICE FOR RADIATION HEATING UNITS HEATED BY ELECTRIC ENERGY

Julius Husslein, Vachendorf, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Stuttgart, Fed. Rep. of Germany

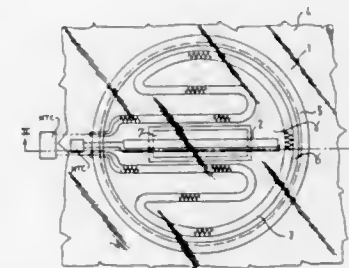
Filed Feb. 25, 1985, Ser. No. 705,090

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406604

Int. Cl.⁴ H05B 3/68

U.S. Cl. 219—464

13 Claims



1. Heating device, comprising a pot-shaped heating unit support, at least two radiation heating units heated by electric energy and disposed in said heating unit support, at least one of said heating units being a high-temperature radiation heating element and at least one of said heating units being a normal-temperature radiation heating element, said normal-temperature heating element being exposed to ambient air, an enclosure surrounding said high-temperature radiation heating element, a protective gas disposed in said enclosure, said enclosure and said normal-temperature radiation heating element being mutually spaced apart defining an unobstructed space therebetween, and a planar support surface defining a single heating zone disposed above both of said heating units for supporting containers for food to be heated.

4,645,912

PIPELINE HEATED BY A DIAGONAL FEEDING, BAND-FORM, ELECTRICAL HEAT-GENERATING APPARATUS

Masao Ando, Yokohamashi, and Akito Iwasaki, Chibashi, both of Japan, assignors to Chisso Engineering Company Ltd., Tokyo, Japan

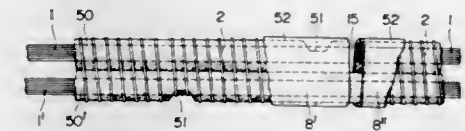
Filed Mar. 12, 1984, Ser. No. 588,309

Claims priority, application Japan, Mar. 16, 1983, 58-43597; Jun. 23, 1983, 58-113438; Jul. 14, 1983, 58-128669

Int. Cl.⁴ H05B 3/08

U.S. Cl. 219—541

10 Claims



1. A plurality of band-form electrical heat generating units connected in series

- (a) each band-form, electrical heat-generating unit having:
 - (1) two parallel electrodes, each of which is in a form of wire having a cross-sectional area of 1 to 5 mm² and has a length of several meters to several decimeters, and an interval therebetween of several mm to several cm,
 - (2) a plurality of separate resistance units extending between said two parallel electrodes over the length of the electrodes so that a parallelogram is formed by said two electrodes and the outermost two of said resistance elements, and
 - (3) an electrical feeding point on each electrode, said feeding points being located diagonally with respect to each other on said parallelogram formed by said two electrodes and the outermost two of said resistance elements, and
- (b) electrical means which connect each band-form electrical heat generating unit in series with the next adjacent band form electrical heat-generating unit at the adjacent electrical feeding points.

4,645,913

PLANAR HEATING ELEMENT

Hans Oppitz, Mils, Austria, assignor to Eltac Nogler & Daum KG, Innsbruck, Austria

Continuation of Ser. No. 549,613, Nov. 7, 1983, Pat. No.

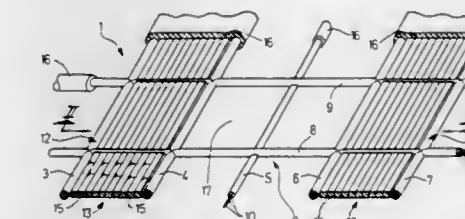
4,518,851. This application Mar. 25, 1985, Ser. No. 715,352

Claims priority, application Austria, Nov. 11, 1982, 4094/82

Int. Cl.⁴ H05B 3/34

U.S. Cl. 219—549

13 Claims



1. A planar heating element having a positive temperature coefficient, which comprises a plurality of spaced electric current supply lines constituted by contact bands and a planar support therefor equally flexible in all directions. The planar support being constituted by a net composed of strands, the contact bands being in operative connection with the support strands, and the support strands including an ion-free, electrically conductive synthetic resin whose electrical resistance has a positive temperature coefficient.

4,645,914

CARD READER

Tomiyasu Hiraishi, Kochi, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

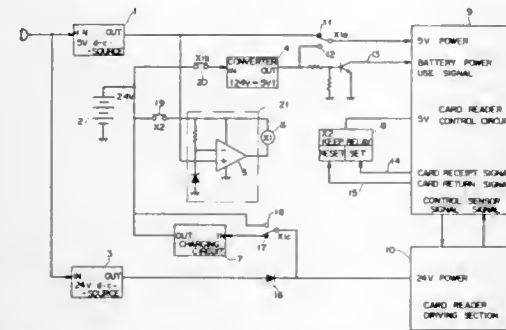
Filed Mar. 18, 1985, Ser. No. 712,448

Claims priority, application Japan, Mar. 16, 1984, 59-38743[U]

Int. Cl.⁴ G06K 5/00

U.S. Cl. 235—380

3 Claims



1. A card reader capable of conveying a card inserted therein to a predetermined position for accessing the card with respect to the data on the card, comprising non-volatile storage means adapted to be set when the inserted card is conveyed to the predetermined position and reset when the card is returned to its original position, power failure detecting means for detecting power failure when said non-volatile storage means is set, and driving means for returning the inserted card to its original position in response to an output generated from the power failure detecting means.

4,645,915

BAR CODE READER

Lodewijk J. Van Ruyven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

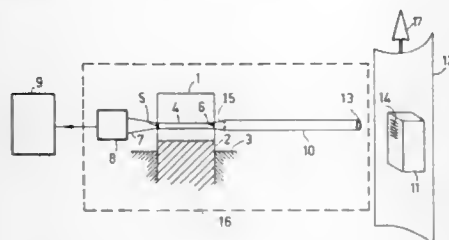
Filed Sep. 12, 1984, Ser. No. 649,635

Claims priority, application Netherlands, Sep. 14, 1983, 8303168

Int. Cl.⁴ G06K 7/10

U.S. Cl. 235—473

6 Claims



1. A bar code reader comprising:
a semiconductor laser diode having first and second opposite end faces, said laser diode emitting light from the end faces;
an optical waveguide having a first end optically coupled to the first end face of the laser diode; and
a detector for detecting light from the laser diode, said detector having an input optically coupled to the second end face of the laser diode.

4,645,916

ENCODING METHOD AND RELATED SYSTEM AND PRODUCT

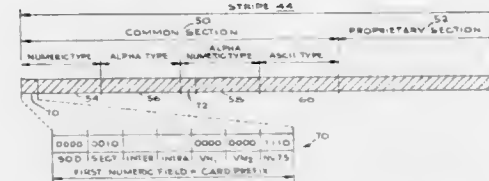
Ronald J. Raisleger, Torrance, Calif., assignor to Eltrax Systems, Inc., Stillwater, Minn.

Filed Sep. 9, 1983, Ser. No. 531,164

Int. Cl.⁴ G06K 19/06

U.S. Cl. 235—494

45 Claims



1. The method of encoding information for recording on a magnetic medium comprising the steps of:
organizing data by type of information content into data types, the data types differing from each other in the minimum number of bits required to uniquely represent the data of a given type;
encoding the data in each type in binary code by assigning codes thereto having a number of bits corresponding to said minimum number for that type, there being at least two different types of data encoded with two sets of codes differing from each other in the number of bits for each set; and
recording the encoded data on the magnetic medium in discrete storage areas segregated by type and in a predetermined order.

4,645,917

SWEPT APERTURE FLYING SPOT PROFILER

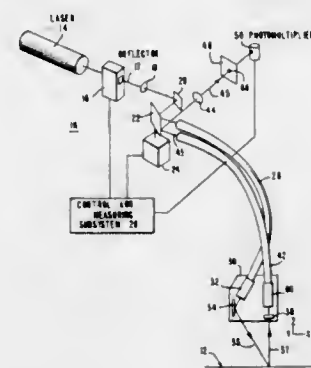
Carl M. Penney, Schenectady, N.Y.; Robert N. Roy, and Bradley S. Thomas, both of Altamonte Springs, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed May 31, 1985, Ser. No. 739,632

Int. Cl.⁴ G01B 11/00; G01C 3/20

U.S. Cl. 250—201

25 Claims



1. A system for determining profile information from a surface of an object comprising:
(a) an optical beam source for generating an optical beam for application to the surface;
(b) an X-scanner operable under the control of a scan drive signal with reference marks to sweep said beam across the surface in an X direction;
(c) a sensor adapted to sense reflected optical energy corresponding to an image of said beam reflected from the surface, said sensor having a sensor output;
(d) an optical shield generally shielding said sensor and having an aperture through which the reflected optical energy may pass; and

(e) a subsystem for measuring and control and connected to said sensor and to said X-scanner, said subsystem having a location storage circuit adapted to receive a location input indicative of the current location of said beam and to receive a store input dependent on said sensor output, said store input causing said location storage circuit to store its location input when the image of said beam at said optical shield becomes centered on said aperture, and wherein said image location output is indicative of profile information of said surface.

4,645,918

INSTRUMENTS FOR MEASURING LIGHT PULSES CLOCKED AT HIGH REPETITION RATE AND ELECTRON TUBE DEVICES THEREFOR

Yutaka Tsuchiya; Musubu Koishi, and Akira Takeshima, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Hamamatsu, Japan

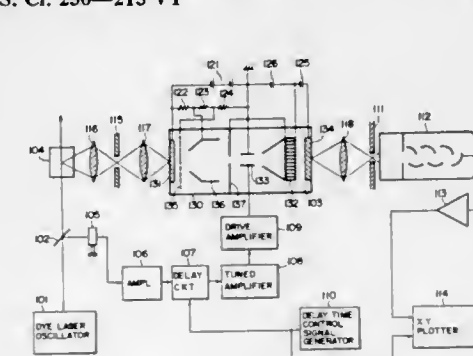
Filed Dec. 1, 1983, Ser. No. 557,252

Claims priority, application Japan, Dec. 7, 1982, 57-214143; Jan. 21, 1983, 58-9040; Jan. 21, 1983, 58-9041

Int. Cl.⁴ H01J 31/50

U.S. Cl. 250—213 VT

16 Claims



1. An instrument for measuring light pulses generated at a high repetition rate comprising:
a streaking camera including

a streaking tube, said streaking tube having an envelope with first and second ends and a longitudinal axis, a photocathode located adjacent the first end of said envelope, a phosphor layer located adjacent the second end of said envelope and a pair of deflection electrodes located within said envelope interposed between said photocathode and phosphor layers;
optical means for receiving said light pulses and directing said light pulses to said photocathode;
a synchronizing signal generator for generating synchronizing signals synchronized with said light pulses;
a delay time control signal generator for generating a control signal;
a delay circuit having a first input coupled to the output of said synchronizing signal generator and a second input coupled to the output of said delay time control signal generator, said delay circuit successively delaying said synchronizing signals for predetermined intervals in accordance with said control signal; and
deflection voltage generating means coupling the output of said delay circuit across said deflection electrodes, electrons emitted from said photocathode traversing said envelope in the direction of said longitudinal axis and being deflected by the voltage across said deflection electrodes to form a streaking image on said phosphor layer which varies with respect to time and extends in a transverse direction perpendicular to said longitudinal axis;
sampling means positioned adjacent said phosphor layer and extending perpendicular to said transverse direction, said sampling means sequentially picking up different portions

of said streaking image after said electrons have been deflected by said deflection electrodes;
a photoelectron multiplier tube having a photocathode for converting the streaking image portions picked up by said sampling means into corresponding electric signals and for multiplying said signals; and
an output device coupled to the outputs of said photoelectron multiplier tube and said delay time control signal generator for displaying the output of said photoelectron multiplier tube as a function of the output of said delay time control signal generator.

4,645,919

PHOTOSENSITIVE MOTION DETECTOR APPARATUS

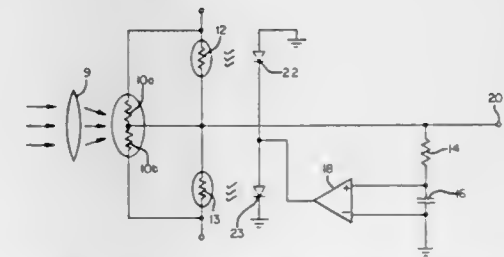
Robert E. McCaleb, 5704 NE. 36th Ave., Portland, Ore. 97211

Filed Feb. 4, 1985, Ser. No. 698,228

Int. Cl.⁴ H01J 40/14

U.S. Cl. 250—214 B

4 Claims



1. In a photosensitive motion detector apparatus having first and second photosensitive devices in series and having a common connection, an operational amplifier having at least two inputs and an output, a low-pass filter having at least three terminals, a first light emitting unidirectional current device, an output terminal, said common connection being connected to said output terminal and to one of said at least three terminals of said low-pass filter, a second of said at least three terminals being connected to one of said at least two inputs of said operational amplifier, and a third of said at least three terminals being connected to another of said at least two inputs of said operational amplifier, said output of said operational amplifier being connected to said first light emitting unidirectional current device, and said second photosensitive device receiving substantially all the light output of said light emitting unidirectional current device and substantially no light from other sources, the improvement comprising:

a. said first photosensitive device having a first substantially identical photosensitive device in parallel therewith;
b. said second photosensitive device having a second substantially identical photosensitive device in parallel therewith;
c. said first substantially identical photosensitive device being in series with said second photosensitive device and said second substantially identical photosensitive device being in series with said first photosensitive device;
d. said first light emitting unidirectional current device having a second substantially identical unidirectional current device in parallel therewith, but in opposite polarity thereto and having a second common connection therewith connected to said output of said operational amplifier; and
e. said second photosensitive device and said first substantially identical photosensitive device being closely optically coupled to said first and said second substantially identical light emitting unidirectional current devices, respectively.

4,645,920
EARLY FAULT DETECTION IN AN OPTO-MATRIX TOUCH INPUT DEVICE

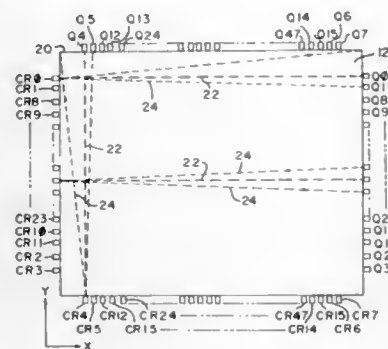
Arthur B. Carroll, Georgetown, and John K. Carstedt, Round Rock, both of Tex., assignors to Carroll Touch, Inc., Round Rock, Tex.

Filed Oct. 31, 1984, Ser. No. 666,949

Int. Cl.⁴ G01V 9/04; H01J 40/14

U.S. Cl. 250—221

5 Claims



1. An opto-matrix touch input device comprising: a four-sided frame; optical emitters disposed in two adjacent sides of said frame; optical detectors disposed in the two sides of said frame opposite said emitters, corresponding emitters and detectors forming an emitter detector pair; sequencing means for sequentially activating said optical emitters and associated optical detectors; means for sampling the amount of light received by said detectors and producing an analog electrical signal indicative of the amount of light received by the detectors; converter means for converting said analog signal representing the light received by said detectors to a digital value; and processor means connected to said converter means and said sequencing means for comparing the digital value corresponding to the output of an optical detector to a digital reference value thereby indicating the degradation or failure of individual emitter detector pairs.

4,645,921
APPARATUS FOR TESTING ROD-SHAPED PRODUCTS OF THE TOBACCO PROCESSING INDUSTRY

Uwe Heitmann, Hamburg; Peter Pinck, Gross-Hansdorf; Elke Köhler, Hamburg; Berthold Maiwald, Schwarzenbek, and Uwe Marsau, Dassendorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,129

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339187

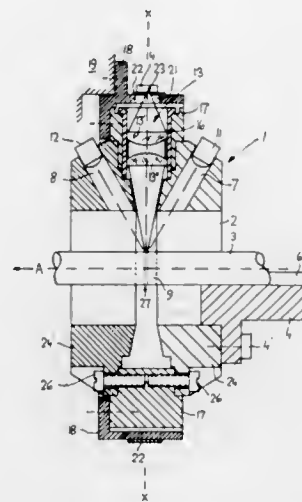
Int. Cl.⁴ G01N 9/04; G06M 7/00; H01J 40/14

U.S. Cl. 250—223 R

22 Claims

1. Apparatus for scanning the external surface of a moving rod-shaped product of the tobacco processing industry for the presence or absence of defects, especially for scanning the circumferentially complete annular external surfaces of a series of coaxial cigarettes, comprising guide means defining a predetermined course along which the product moves axially; a support surrounding a portion of said course; illuminating means including at least one ring-shaped group of light emitting devices carried by said support and arranged to direct light against the external surfaces of successive increments of the product so that such external surfaces reflect light into a predetermined plane; an annulus of diaphragms spacedly sur-

rounding said course and being disposed in the path of propagation of light which is reflected into said plane; means for focusing reflected light upon said diaphragms, comprising optical elements each arranged to focus light which is reflected by arcuate sections of annular surfaces of successive incre-



ments of the product; and a light-sensitive detector disposed immediately behind each of said diaphragms, as considered in the direction of propagation of reflected light, to be exposed to light passing through the respective diaphragm and reflected by predetermined portions of the annular surfaces of successive increments of the product.

4,645,922
INTEGRATING SPHERE ARRANGEMENT FOR PRODUCING SIZE-CORRECTED COLOR SIGNALS

Christopher M. Welbourn; Martin P. Smith, both of Maidenhead, and Andrew D. G. Stewart, Reading, all of England, assignors to Spandrel Establishment, Vaduz, Liechtenstein

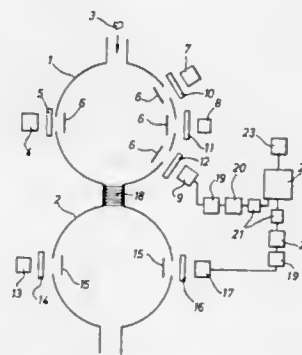
Filed Oct. 4, 1985, Ser. No. 784,623

Claims priority, application United Kingdom, Oct. 5, 1984, 8425274

Int. Cl.⁴ G01J 3/50, 1/04

U.S. Cl. 250—226

24 Claims



1. Apparatus for producing signals responsive to the colour of each of a succession of objects being examined, comprising: an integrating cavity; means for feeding the objects one by one through the integrating cavity; means for illuminating with light the interior of the integrating cavity whereby the light strikes a surface in the integrating cavity before striking the object being examined; means associated with the integrating cavity for producing an absorption signal responsive to the reduction in visible

light flux of at least one particular colour or band of colours due to the presence of the object in the integrating cavity; means for producing a size signal responsive to the size of the object being examined; and means responsive to said absorption signal and said size signal for correcting said absorption signal in accordance with the size of the respective objects and thereby producing a corrected colour signal responsive to the colour of the said objects being examined.

4,645,923
METHOD AND DEVICE FOR COUPLING AN OPTICAL SIGNAL FROM A FIRST LIGHT GUIDE INTO A SECOND LIGHT GUIDE

Cornelis M. De Blok, Ak Zoeterwoude, and Pieter Matthijsse, Ab Bergschenhoek, both of Netherlands, assignors to Staat der Nederlanden (Staatsbedrijf der Posterijen, Telegrafie en Telefonie), The Hague, Netherlands

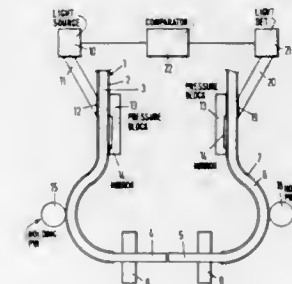
Filed Oct. 5, 1984, Ser. No. 658,297

Claims priority, application Netherlands, Oct. 6, 1983, 8303432

Int. Cl.⁴ H01J 5/16; G02B 6/26

U.S. Cl. 250—227

18 Claims



1. An apparatus for injecting light into a mono-mode optical fiber, which fiber comprises a core (20) surrounded by a plurality of circumferential portions, including a first circumferential portion closest to the core and constituted by a cladding (2) having an index of refraction lower than that of said core and a second circumferential portion which immediately surrounds said first circumferential portion and is constituted by a buffer (3), said apparatus comprising: light source means (21) for producing an optical signal; light conducting means (11) for transferring said optical signal from said light source means into said fiber, said light conducting means having (a) an end surface in contact with a said circumferential portion of said fiber at a straight section of said fiber, and (b) an index of refraction which is less than the index of refraction of said circumferential portion of said fiber with which said end surface is in contact.

4,645,924
OBSERVATION APPARATUS WITH SELECTIVE LIGHT DIFFUSION

Akiyoshi Suzuki, Tokyo, and Hideki Ina, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,123

Claims priority, application Japan, Dec. 1, 1982, 57-210987

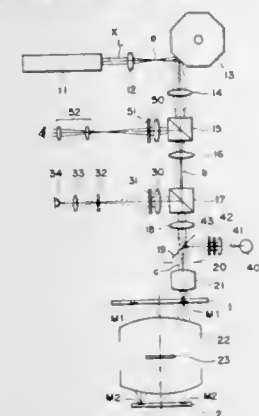
Int. Cl.⁴ H01J 3/14

U.S. Cl. 250—236

24 Claims

1. An apparatus comprising: a light source for producing a laser beam; optical condensing means for constituting a condensing optical path to condense the laser beam onto an object; scanning means for deflecting the laser beam to scan the object therewith;

means for observing the object; means for receiving the beam reflected by the object and producing an electric signal; and



means for diffusing the laser beam before scanning when the object is observed through said observing means.

4,645,925
REFERENCE MARK CODING SYSTEM

Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

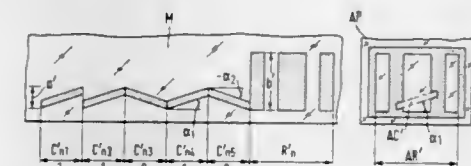
Filed Feb. 29, 1984, Ser. No. 584,829

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308813

Int. Cl.⁴ H01J 3/14

U.S. Cl. 250—237 G

10 Claims



1. In a measuring instrument of the type comprising a measuring scale which defines a graduation which extends along a measuring direction and a plurality of identical reference marks positioned alongside the graduation; a scanning unit comprising means for scanning the graduation and means for generating reference signals in response to the reference marks; and means for utilizing the reference signals; the improvement comprising:

a plurality of code marks, each associated with a respective one of the reference marks and positioned between a pair of adjacent reference marks, each code mark comprising at least one code mark segment, each code mark segment defining a surface zone which is homogeneously continuous in the measuring direction, the code mark segments of each code mark positioned adjacent to one another, without gaps therebetween in the measuring direction, and individual ones of the code mark segments being positioned relative to one another in the direction transverse to the measuring direction in accordance with information encoded by the code mark segments.

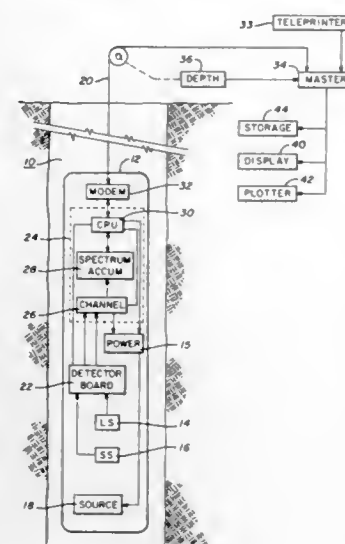
4,645,926

METHOD FOR INDUCED GAMMA RAY LOGGING

Russel R. Randall, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 10, 1985, Ser. No. 722,095
Int. Cl.⁴ G01T 5/10

U.S. Cl. 250—256

13 Claims



1. In a nuclear well logging operation, a method for determining a parameter responsive to the condition of a borehole traversing a subsurface earth formation, comprising the steps of:

- cyclically irradiating said subsurface earth formation with bursts of high energy neutrons;
- detecting for one or more burst cycles the impingement of gamma radiation upon a first gamma radiation detector means during and between each of said bursts;
- determining first count of detected impingements of primarily inelastic gamma radiation upon said first detection means; and
- normalizing said first count to remove the effects upon said first count of variations in said bursts of high energy neutrons, said normalized first count producing said parameter responsive to said condition of said borehole.

4,645,927

CLAY TYPE AND VOLUME EVALUATION

Darwin V. Ellis, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Nov. 12, 1985, Ser. No. 797,139
Int. Cl.⁴ G01V 5/14

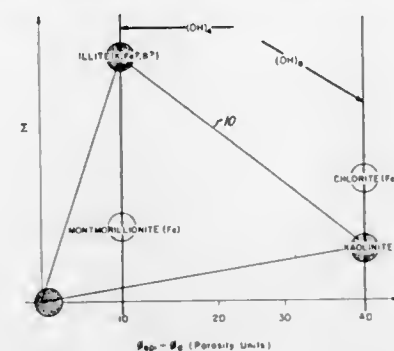
U.S. Cl. 250—269

22 Claims

1. A method of evaluating the clay content of an earth formation, comprising:

- deriving a first measurement of formation porosity by use of a neutron-type porosity measurement technique;
- deriving a second measurement of formation porosity by use of a density-type porosity measurement technique;
- combining said first and second porosity measurements to derive a measurement of the porosity difference between said measurements, said porosity difference being functionally related to the volume and hydroxyl type of the clay content of the formation;
- deriving a measurement of a characteristic of the formation that is functionally related to clay type; and

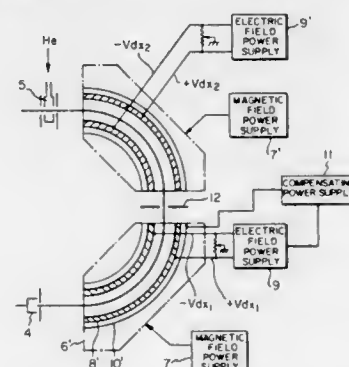
combining said porosity difference measurement and said formation characteristic measurement to derive an indication of at least one of the clay type and the relative volume of the clay content of the formation.



SWEEPING METHOD FOR SUPERIMPOSED-FIELD MASS SPECTROMETER

Motohiro Naito, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan
Filed Jun. 10, 1985, Ser. No. 743,016
Claims priority, application Japan, Jun. 19, 1984, 59-125745
Int. Cl.⁴ H01J 49/26, 49/32

U.S. Cl. 250—282 3 Claims



1. A sweeping method for detecting daughter ions originating from parent ions by the use of a mass spectrometer having a rear stage having superimposed fields that consist of a magnetic field B and an electric field E perpendicular to the magnetic field, the mass spectrometer also having at least another electric field in a front stage in front of said rear stage having said superimposed fields, said sweeping method comprising the steps of:

- (a) detecting reference ions having known mass and known energy;
- (b) finding the voltage V_{dx2} necessary to produce the electric field in said front stage and the voltage V_{dx1} necessary to produce the electric field of the superimposed fields in said rear stage when the reference ions are detected;
- (c) varying the voltages necessary to produce the electric field in said front stage and the electric field of the superimposed fields in said rear stage while maintaining the intensity of the magnetic field of the superimposed fields constant to detect unknown ions;
- (d) finding the voltage V_{dx2}' necessary to produce the electric field in said front stage and the voltage V_{dx1}' necessary to produce the electric field of the superimposed

fields in said rear stage when the unknown ions are detected; and
(e) determining the mass and energy of the unknown ions from the voltages V_{dx1} , V_{dx2} , V_{dx1}' , V_{dx2}' .

4,645,929

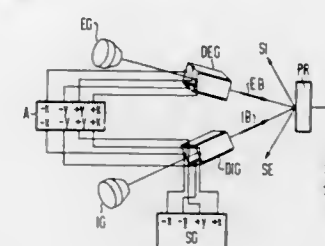
METHOD AND APPARATUS FOR THE COMPENSATION OF CHARGES IN SECONDARY ION MASS SPECTROMETRY (SIMS) OF SPECIMENS EXHIBITING POOR ELECTRICAL CONDUCTIVITY

Rolf V. Criegern, Geretsried, and Ingo Weitzel, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jan. 31, 1985, Ser. No. 696,774
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1984, 3403254

Int. Cl.⁴ G01N 23/00

U.S. Cl. 250—307

14 Claims



1. A method of compensating charges in secondary ion mass spectrometry, comprising the steps of:
focusing an ion beam and an electron beam to approximately the same diameter;
directing the ion beam and the electron beam to approximately the same point on a surface of a specimen; and
scanning the ion beam and the electron beam synchronously over an area of the specimen.

4,645,930

MOTION DETECTOR

Hermann Zierhut, Munich, Fed. Rep. of Germany, assignor to Richard Hirschmann Radiotechnisches Werk, Esslingen, Fed. Rep. of Germany
Filed Dec. 24, 1984, Ser. No. 685,076
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1983, 3346699

Int. Cl.⁴ G01J 5/08

U.S. Cl. 250—342

11 Claims

1. A motion detector responsive to incident radiation, comprising:

- a box having a pair of opposite ends, and two pairs of opposing walls extending between said ends, an inlet opening for said incident radiation being provided generally at one of said ends, at least one of said pairs of walls being provided internally with reflecting surfaces;
- focusing optics including a concave mirror mounted in said box at the other of said ends and being concave in the direction of said one of said ends;
- radiation sensing means ahead of said one of said ends of said box having an optical axis generally directed toward said other end of said box for outputting a signal representing motion in horizontal and vertical sensing field planes from which said incident radiation enters said box through said opening and is reflected toward and focussed upon said radiation sensing means by said optics and said reflecting surfaces; and
- at least two reflectors independent of said walls for radiation each from an respective one of said field planes flanking an aperture through which said radiation is focussed upon

said radiation sensing means, said reflectors diverging away from said optical axis of said radiation sensing means

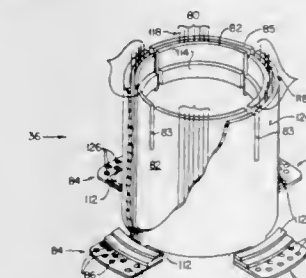


4,645,931

DETECTOR DEWAR ASSEMBLY

William R. Gordon, Burlington; Peter N. Nicholson, Dracut, both of Mass., and John E. Six, Nashua, N.H., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 15, 1985, Ser. No. 711,944
Int. Cl.⁴ G01J 1/00

U.S. Cl. 250—352 25 Claims



1. Dewar apparatus for housing an electromagnetic radiation detector assembly in a vacuum and which provides a means for electrical connection between detector elements of said radiation detector assembly and other signal processing subassemblies external to said apparatus, said apparatus comprising:

- A. an outer container, said outer container cylindrical in shape;
- B. an inner container having an end surface at a first end of said inner container, said inner container cylindrical in shape;
- C. means for mounting said inner container in said outer container in a substantially concentric arrangement;
- D. detector means mounted on said end surface of said inner container;
- E. a substantially circular disc assembly having
 - (i) an opening for enabling placement of said disc assembly around said inner container,
 - (ii) a first side and a second side,
 - (iii) an outside diameter which allows placement of said disc assembly within said outer container, and
 - (iv) means for providing electrical connection from said

first side of said disc assembly to said second side of said disc assembly;

F. electrical conductor means for connecting said detector means to said means for providing electrical connection, said conductor means located between said detector means and said first side of said disc assembly;

G. a cap assembly having a cylindrical shape, said cap assembly placed around said inner container and mounted on said second side of said disc assembly at a location between said means for providing electrical connection and said opening of said disc assembly; and

H. means for mounting said disc assembly to said outer container so as to form a vacuum chamber bounded by said means for mounting, said outer container, said disc assembly and said cap assembly.

4,645,932 DIODES WITH CHEMICALLY SENSITIVE LUMINESCENCE

Arthur B. Ellis, Madison, Wis., and Michael K. Carpenter, Warren, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 18, 1985, Ser. No. 712,799
Int. Cl.⁴ G01N 27/12

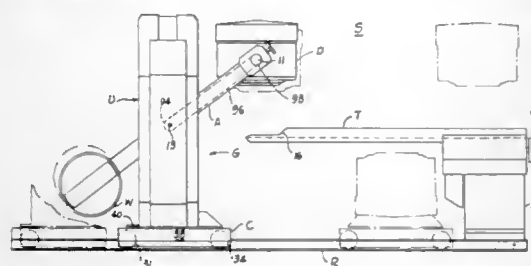
U.S. Cl. 250—361 R 20 Claims
1. An apparatus for detecting the presence of chemical compounds comprising

- (1) a photoluminescent semiconductor having a metal coating on a radiation emitting surface of said semiconductor, the height of the Schottky barrier of the diode varying when hydrogen is absorbed into the metal layer,
- (2) a source of actinic radiation which can impinge on said radiation emitting surface of the semiconductor, and
- (3) a means for detecting changes in the characteristics of the radiation emitted from said radiation emitting surface.

4,645,933
EMISSIVE COMPUTED TOMOGRAPHY
Michael R. Gambini, Wallingford; Ronald J. Martone, Cheshire; Donald S. Kearns, Farmington; Gary W. Enos, Guilford, all of Conn.; Rudi Franke, and Herbert Schoeppy, both of Espelkamp, Fed. Rep. of Germany, assignors to Picker International, Inc., Highland Heights, Ohio
PCT No PCT/US8200813 8 371 Date Jul. 29, 1983, § 102(e)
Date Jul. 29, 1983

PCT filed Jul. 29, 1983, Ser. No. 522,309
Int. Cl.⁴ G01T 1/164, 1/166

U.S. Cl. 250—363 S 11 Claims



1. A medical diagnostic mechanism comprising:
 - (a) an elongated structure defining a gantry travel path;
 - (b) a gantry mounted on said structure for movement along the path of travel;
 - (c) drive means connected to the gantry for driving the gantry along its path of travel;
 - (d) a nuclear camera detector orbitally mounted on the gantry and positionable spaced from the gantry and proximate a patient for conducting nuclear medical diagnostic studies, and
 - (e) means for facilitating rotation of at least a portion of said gantry and of said detector about an axis transverse to said travel path.

4,645,934 PROCESS FOR EXAMINING A FLAT RADIOGRAPH OF AN OBJECT AND IONIZATION CHAMBER FOR PERFORMING THE PROCESS

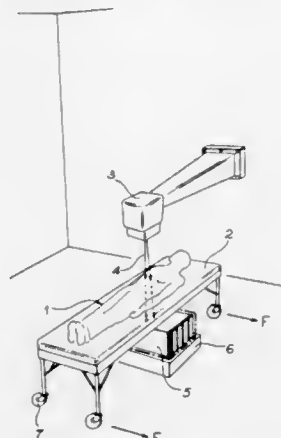
Robert Allemand, Saint Ismier; Jean-Jacques Gagelin, Vinay, and Gaëtan Pleyber, Domene, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Jan. 3, 1984, Ser. No. 567,528

Claims priority, application France, Jan. 4, 1983, 83 00034
Int. Cl.⁴ G01T 1/18

U.S. Cl. 250—374

1 Claim



1. A process for the examination of a flat radiograph of an object comprising the steps of providing an ionizing radiation source of the type in which detection on a collecting electrode of the latent image of the object formed takes place in an ionization chamber by the different electrical charges produced in the volume of the chamber under the influence of the impact of the radiation flux which has traversed the object; producing an electrical field between an anode and a cathode at opposite ends of said chamber to establish an ion migration speed; deducing a latent image along X and Y coordinates, with the X coordinate corresponding to the direction of ion migration produced by said electrical field in said chamber and to the displacement direction of the object from the arrival time of the corresponding charge on the collecting electrode, said ion migration being at a substantially constant and continuous speed, and with the perpendicular Y coordinate corresponding to the displacement of the object from the location of impact of the same charge on the collecting electrode; continuously irradiating the object; and moving the object relative to the ionization chamber in the direction of the X coordinate and at a speed equal to the constant and continuous migration speed of the ions formed in the electrical field thereof, to thereby superimpose the different instantaneous latent images into a single image.

4,645,935 METHOD AND APPARATUS FOR MEASURING THERMAL NEUTRON ABSORPTION CROSS-SECTION

George N. Salaita, Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1984, Ser. No. 672,427

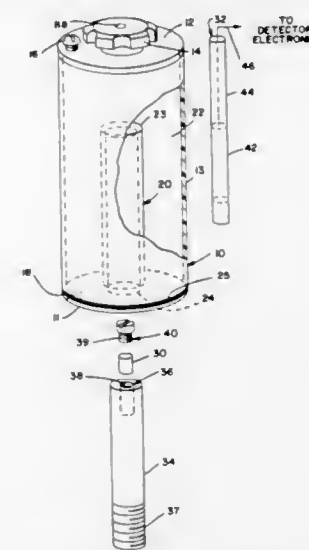
Int. Cl.⁴ G01N 23/09, 23/10

U.S. Cl. 250—390

18 Claims

1. Apparatus for measuring the thermal neutron absorption cross-section of a geologic sample comprising:
 - a means for holding a geologic sample having an axis, having an outer surface defining an inner cavity, said outer surface having a pocket protruding into said inner cavity along said axis;
 - means for positioning a source of thermal neutrons within said pocket; and

a thermal neutron detector positioned along a line parallel to said axis outside of said cavity and outside of said pocket;



a water tank surrounding said means for holding a geologic sample, said means for positioning, and said detector.

4,645,936 MULTI-DENOMINATION CURRENCY VALIDATOR EMPLOYING A PLURAL SELECTIVELY-PATTERNED RETICLE

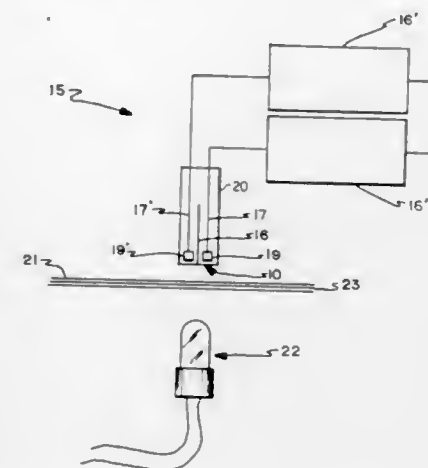
Robert L. Gorgone, Mentor, Ohio, assignor to Ardac, Inc., Eastlake, Ohio

Filed Oct. 4, 1984, Ser. No. 657,671

Int. Cl.⁴ G06K 5/00

U.S. Cl. 250—556

9 Claims



1. Currency validation apparatus, comprising:
 - a housing;
 - a reticle maintained at an end of said housing and having a plurality of reference patterns thereon, one such pattern for each of an equal plurality of currency denominations to be validated by the apparatus; and
 - a plurality of photodetectors maintained within said housing, one such photodetector uniquely associated with each of said reference patterns.

4,645,937 METHOD AND APPARATUS FOR DETECTING THE DISTANCE BETWEEN AN OBJECT AND AN ULTRASONIC OBJECTIVE

Abdullah Atalar, Ankara, Turkey; Herbert Fischbach, Nauborn, and Dieter Huelsmann, Solms, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

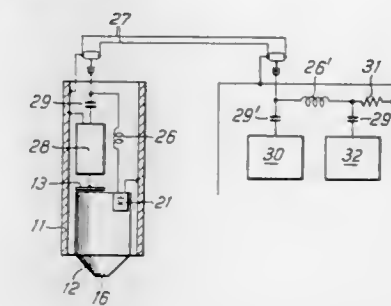
Filed Nov. 13, 1984, Ser. No. 670,914

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340646

Int. Cl.⁴ G01V 9/04

U.S. Cl. 250—561

8 Claims



1. A method of detecting a distance between a surface of an object and an ultrasonic objective so as to prevent mutual contact comprising the steps of:

- (a) reflecting light from said surface;
- (b) permitting transmission of said reflected light past said ultrasonic objective only when said distance is greater than a predetermined distance;
- (c) converting said reflected and transmitted light into an electric signal having a level indicative of the intensity of said reflected and transmitted light; and
- (d) generating an indication when said level of said electric signal falls below a predetermined threshold.

4,645,938 PROCESS FOR ANALYZING A ROW TRANSFER PHOTOSENSITIVE DEVICE WHILE ACCOMODATING PARASITIC CHARGES

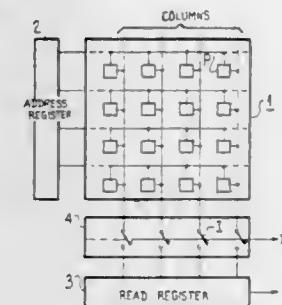
Louis Brissot, St. Egreve; Jean-Luc Berger, and Yvon Cazaux, both of Grenoble, all of France, assignors to Thomson - CSF, Paris, France

Filed Dec. 16, 1983, Ser. No. 562,443

Claims priority, application France, Dec. 28, 1982, 82 21866
Int. Cl.⁴ H04N 3/14

U.S. Cl. 250—578

5 Claims



1. A process for the analysis of a row transfer photosensitive device having a photosensitive area of M rows of N photosensitive photo-MOS elements, each having a grid and controlled by means of a polarization voltage applied to the grid, corresponding photosensitive elements of the different rows being

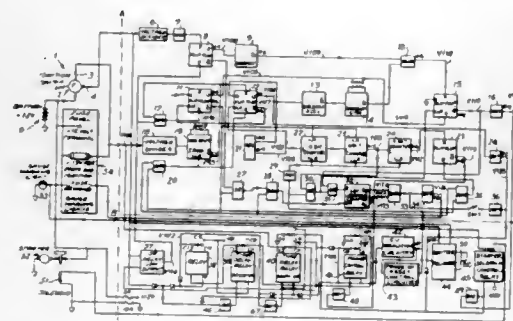
connected in parallel by conductive columns to a memory, said memory periodically transferring to a read register signal charges on the columns after transfer from the photosensitive elements in a chosen row, and also transferring to an evacuation drain parasitic charges which are on the columns before the signal charges arrive from the photosensitive elements, wherein the process consists of temporarily modifying the storage capacity of the photosensitive elements in the chosen row by either reducing or increasing the polarization voltage of the grids in the time interval beginning after the evacuation of parasitic charges of the conductive columns to the memory and ending with transfer of the signal charges of the photosensitive elements in the chosen row from columns to the memory so that the photosensitive elements can store charges during said time interval.

4,645,939
AUTOMOTIVE DEVICE FOR INHIBITING ENGINE IGNITION

Ronald J. Robinson, 70 Partridge Rd., Pinehurst, Mass. 01866
Filed Aug. 8, 1985, Ser. No. 763,649
Int. Cl.⁴ B60R 25/04

U.S. Cl. 307—10 AT

11 Claims



1. An automotive device for preventing activation of a starter by an activator in response to untimely operation of an ignition switch following controlled dimming of a gauge warning light, wherein said ignition switch has an OFF position and first and second active positions, comprising:

- (a) port means (A—A) for electrically connecting said device to said starter, said gauge warning light, and said ignition switch;
- (b) first analog circuit means (44) for supplying a voltage to said gauge warning light;
- (c) first digital circuit means (12,19) connected to said ignition switch for outputting a first control signal to said first analog circuit means such that a constant voltage is supplied to said gauge warning light in response to said ignition switch being turned to said first active position;
- (d) variable timing means (21) for outputting timing signals to said first digital circuit means such that said first control signal is supplied to said first analog circuit means for a variable length of time;
- (e) second analog circuit means (50) connected to said first analog circuit means for producing a gradual decrease in the voltage supplied by said first analog circuit means in response to the end of said first control signal;
- (f) second digital circuit means (13,14) connected to said first digital circuit means for outputting a second control signal having a duration equal to a predetermined window of time at a predetermined time following the end of said first control signal;
- (g) third digital circuit means (8,9) connected to said ignition switch for outputting a third control signal having a duration less than said window of time in response to said ignition switch being turned to said second active position;
- (h) third analog circuit means (45) connected to said activa-

tor (51) and having first and second operative states wherein said starter is respectively activated and reactivated; and

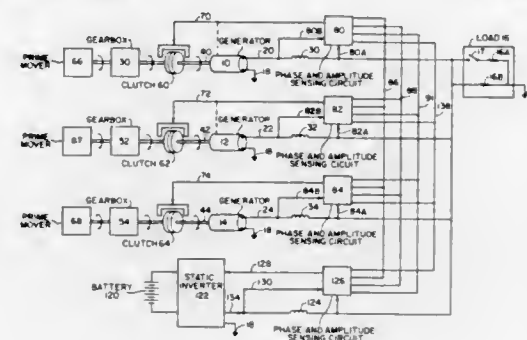
- (i) fourth digital circuit means (10,15,16) connected to said third analog circuit means and to said second and third digital circuit means such that said starter (52) is activated only in response to the concurrence of said second and third control signals.

4,645,940
INTERRUPT-FREE, UNREGULATED POWER SUPPLY
Max M. Wertheim, Huntington, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 423,684, Sep. 27, 1982, abandoned. This application Dec. 13, 1985, Ser. No. 808,725
Int. Cl.⁴ H02J 1/00, 9/00

U.S. Cl. 307—66

4 Claims

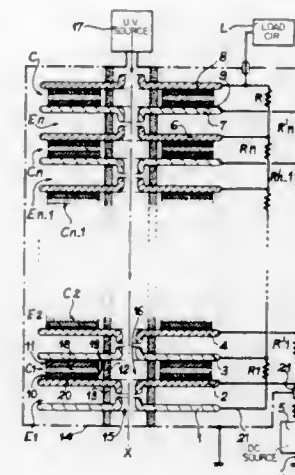


1. An interrupt-free power supply comprising at least two AC voltage sources of equal frequency, each having a set of output terminals, at least one of the terminals being grounded;
- a number of inductors equal to the number of AC voltage sources, each coupling the ungrounded output terminal of a corresponding one of said AC voltage sources to a common load, whereby the power delivered to the common load by each of said AC voltage sources is related to a voltage phase angle across its associated inductor;
- a number of feedback circuit means equal to the number of AC voltage sources, each of said feedback circuit means including phase comparator means for sensing the phase difference between the load voltage and the voltage at the ungrounded output terminal of each of said AC voltage sources to provide a phase control feedback signal for controlling the phase of the associated AC voltage source, whereby if the phase of all of said AC voltage sources, with the exception of one of said AC voltage sources, is constrained to zero with respect to that of said load, only said one of said AC voltage sources not so constrained delivers load current in proportion to a sine of the phase angle between the output terminal of said one of said AC voltage sources and said load;
- safety backup means comprising a battery-energized static inverter having a set of output terminals, at least one of the terminals being grounded;
- additional feedback circuit means including phase comparator means for sensing the phase difference between the load voltage and the voltage at the ungrounded output terminal of said static inverter to provide a phase control feedback signal for controlling the phase of said static inverter, said additional feedback circuit means being connected in common with said number of feedback circuit means; and
- an additional inductor coupling the output terminal of said static inverter to said load, whereby upon failure of all said AC voltage sources, said static inverter supplies a reduced load.

4,645,941
PULSE GENERATOR
André Nicolas, Asnières les Dijon, France, assignor to Commissariat à l'Energie Atomique, France
Filed Aug. 14, 1985, Ser. No. 765,444
Claims priority, application France, Aug. 14, 1984, 84 12787
Int. Cl.⁴ H02M 3/18

U.S. Cl. 307—110

7 Claims

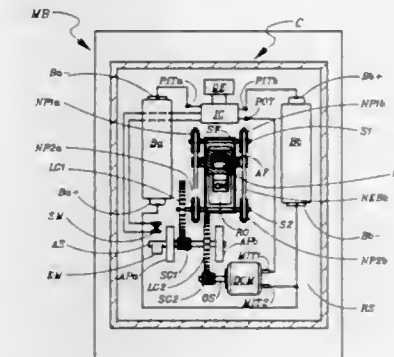


1. A pulse generator having a succession of spark gap switches ranging from rank 1 to rank n, each having first and second electrodes, the first electrode of each spark gap switch being connected by a first resistor to the first electrode of the following spark gap switch of said succession, for spark gap switches of rank 1 to n—1, the second electrode of each spark gap switch being connected by a second resistor R₁ to the second electrode of the following spark gap switch of said succession, for spark gap switches of rank 1 to n—1, the second electrode of each spark gap switch also being connected to a capacitor to the first electrode of the following spark gap switch of said succession, for spark gap switches of rank 1 to n—1, said generator being supplied by a d.c. voltage source connected by a second resistor of a common point between the second electrode of the spark gap switch of rank 1 and the second resistor connecting said second electrode of the spark gap switch of rank 1 to the second electrode of the spark gap switch of rank 2, the second electrode of the spark gap switch of rank n being connected to a second coating of an output capacitor, a first resistor connecting the first electrode of the spark gap switch of rank n to the first coating of the output capacitor, the output voltage being available on said first coating, wherein the electrodes of the spark gap switches are parallel conductor plates forming a stack, the capacitors comprising at least two planar conductive coatings which, for each capacitor, are respectively in contact with the second electrode of the corresponding spark gap switch of said succession and to the first electrode of the following spark gap switch in said succession, two facing electrodes of two successive spark gap switches being separated by an insulating spacer and the electrodes of the same spark gap switch also being separated by an insulating spacer, the electrodes and capacitors being located in a tight enclosure containing a gas, the electrodes having aligned openings, along an axis passing through the stack, the triggering of the spark gap switch being brought about by ultraviolet radiation applied by a source to one of the openings.

4,645,942
CLOCK WITH PROGRAMMABLE ACTUATOR MEANS
Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010
Filed Apr. 4, 1985, Ser. No. 719,723
Int. Cl.⁴ H01H 7/16

U.S. Cl. 307—140

29 Claims



17. A clock-actuated power control arrangement comprising:

- power control means having a movable control lever protruding from a surface and operative, by way of its physical position in respect to this surface, to affect the flow of power between a voltage source and a load; and
- programmable actuator means mountable onto said surface, said programmable actuator means having: (i) clock-means for keeping track of time-of-day, (ii) programming input means respective of programming instructions to establish a program based in part on said time-of-day, (iii) actuation means physically connectable with and operable to move said control lever in accordance with said program, and (iv) energy source independent of said voltage source and operable to provide operating power to said clock-means and said actuation means.

4,645,943
SPACE-AVING BACK-UP POWER SUPPLY
John W. Smith, Jr., Dallas; Francis A. Scherpenberg, Carrollton; Ching-Lin Jiang, and Michael L. Bolan, both of Dallas, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Oct. 15, 1984, Ser. No. 660,937

Int. Cl.⁴ H02J 9/02

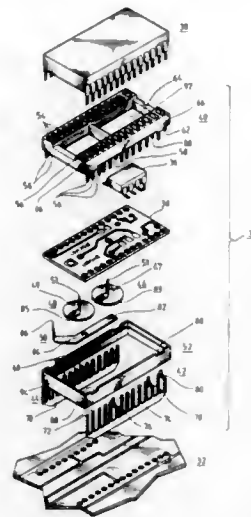
U.S. Cl. 307—150

9 Claims

1. Socket apparatus for use in an electronic system having a primary power supply node and having electrical nodes other than said power supply node, the apparatus being configured to receive in a vertically-stacked separable relationship a socket pluggable package containing an integrated circuit, the apparatus comprising:

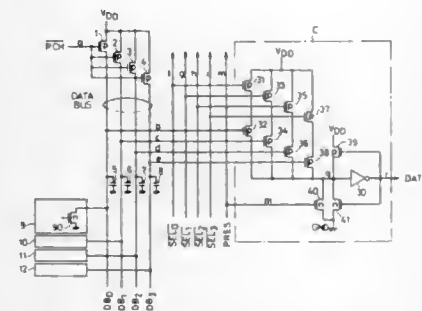
- support structure having first and second sides;
- a plurality of sockets supported from the first side of said support structure for removably making electrical connection to the electrical terminals of said socket-pluggable integrated circuit package;
- a plurality of pins supported from the second side of said support structure, said pins being configured for making electrical connection to said primary power supply node and to selected ones of said other electrical nodes of the electronic system, wherein a first set of said pins is electrically connected directly to certain corresponding ones of said sockets, and wherein a second set of pins is not directly connected to corresponding ones of said sockets, and wherein the pin connected to said primary power supply is in said second set;
- one or more batteries supported from said structure; and
- electronic circuit means supported from said support struc-

ture and coupled to said sockets and to said plurality of pins for automatically coupling either the primary power supply or at least one of said batteries to said integrated circuit as the source of energy therefor, said electronic



circuit means including comparator and switching means for selecting as the source of energy whichever of the primary power supply or battery has the highest voltage, and for providing power to said integrated circuit even if the said primary power supply becomes short-circuited.

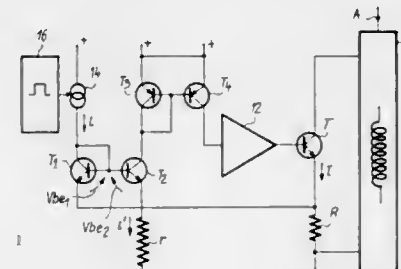
4,645,944
MOS REGISTER FOR SELECTING AMONG VARIOUS DATA INPUTS
Masaru Uya, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 4, 1984, Ser. No. 647,016
Claims priority, application Japan, Sep. 5, 1983, 58-163504
Int. Cl.⁴ H03K 17/693
U.S. Cl. 307-243 7 Claims



1. A multiple input MOS register comprising:
a plurality of series connections, each including a first MOS transistor of a first conductivity type and a second MOS transistor of said first conductivity type coupled in series with each other by connecting a drain of said first MOS transistor to a source of said second MOS transistor, a source of said first MOS transistor being connected to a first constant voltage point and a drain of said second MOS transistor being connected to a common connection point, a gate of each said first MOS transistor being connected to a respective selection signal input and a gate of each said second MOS transistor being connected to a respective data input terminal so that said selection signal

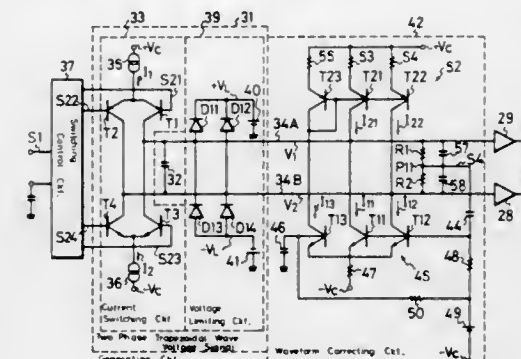
inputs and data inputs are connected in parallel to respective series connections;
a third MOS transistor of a second conductivity type having a drain which is coupled to said common connection point, a source which is coupled to a second constant voltage point and a gate which is coupled to a preset signal line;
a first inverter having an input terminal connected to said common-connection point and an output terminal connected to an external output terminal; and
a second inverter having an input terminal connected to said output terminal of said first inverter and having an output terminal connected to said input terminal of said first inverter.

4,645,945
SWITCHING CONTROL CIRCUIT FOR A POWER TRANSISTOR
Jean de Sartre, Meylan, France, assignor to Thomson-CSF, Paris, France
Filed Mar. 14, 1985, Ser. No. 711,762
Claims priority, application France, Mar. 16, 1984, 84 04112
Int. Cl.⁴ H03K 17/60, 3/26, 3/33
U.S. Cl. 307-254 2 Claims



1. A switching control circuit for a power transistor having an emitter, a base, and a collector, said power transistor being in series with an essentially inductive load, comprising:
a generator for generating square waves of variable width;
a first resistor having a first value,
a second resistor having a higher value than that of said first resistor,
first and second current mirror circuits, each circuit comprising a first transistor connected as a diode said first transistor having an emitter, a base and a collector and a second copying transistor having an emitter, a base and a collector, the two transistors being of the same NPN or PNP type in the same current mirror circuit and of a type opposite those of the other current mirror circuit, the base of said first transistor being coupled to the base of said second transistors,
said first resistor being connected between the emitter of the power transistor and said second resistor which is connected to the emitter of the copying transistor of the first current mirror circuit; the first transistor of the first current mirror circuit having its emitter connected to the emitter of the power transistor and having its collector in series with a current source controlled on or off by said square wave generator; the copying transistor of said first current mirror circuit having its collector connected to the collector of the first transistor of said second current mirror circuit; the emitters of said first and second transistors of said second current mirror circuit being connected together and the emitter of said first transistor of the first mirror being disconnected from the emitter of the second transistor of the first mirror circuit, and the collector of the second transistor of said second current mirror being connected to an input of a current amplifier whose output is connected to the base of the power transistor.

4,645,946
TWO PHASE TRAPEZOIDAL SIGNAL GENERATING CIRCUIT
Fumio Ishikawa, and Kuninobu Tanaka, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 31, 1984, Ser. No. 615,542
Claims priority, application Japan, May 31, 1983, 58-96381
Int. Cl.⁴ H03K 5/08, 5/00
U.S. Cl. 307-261 7 Claims

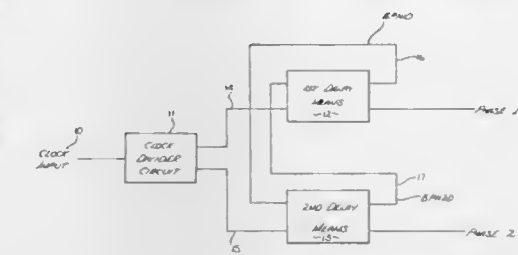


1. A two phase voltage signal generating circuit for generating a pair of trapezoidal wave signals of phases opposite to each other comprising:
(A) an input terminal supplied with an input pulse signal;
(B) a capacitor having a first and second terminal;
(C) first and second voltage limiting circuits connected to the first and second terminals of the capacitor respectively for limiting the voltage at each end of said capacitor within a predetermined voltage range;
(D) a current control circuit connected to said input terminal for supplying a first and second voltage to the first and second terminals of the capacitor, respectively, the first and second voltage being of opposite polarity in response to said input pulse signal to generate said pair of trapezoidal wave voltage signals at both ends of said capacitor;
(E) a detecting circuit connected to said first and second terminals of the capacitor and responsive to both said trapezoidal wave voltage signals for detecting a change in the intermediate voltage of said pair of trapezoidal wave voltage signals; and
(F) a symmetry control circuit connected to said first and second terminals of the capacitor and to an output of said detecting circuit and responsive to said detecting circuit for controlling said first and second voltage such that said pair of trapezoidal wave voltage signals become substantially symmetrical to each other.

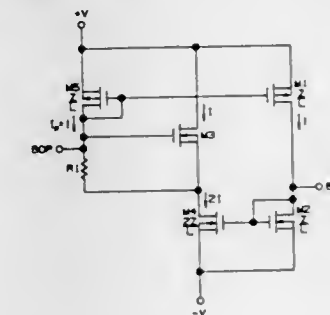
4,645,947
CLOCK DRIVER CIRCUIT
Jan Prak, Los Gatos, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Dec. 17, 1985, Ser. No. 810,036
Int. Cl.⁴ H03K 5/13
U.S. Cl. 307-269 14 Claims

1. A clock driver circuit for producing non-overlapping output signals, said circuit comprising:
a frequency divider means coupled to a first clock signal, said frequency divider means having as outputs second and third clock signals;
a first delay means generating fourth and fifth signals;
a second delay means generating sixth and seventh signals; said first delay means coupled to said second clock signal and said seventh signal, said first delay means introducing a delay between a falling edge of said sixth signal and a rising edge of said fourth signal;

said second delay means coupled to said third clock signal and said fifth signal, said second delay means introducing



4,645,948
FIELD EFFECT TRANSISTOR CURRENT SOURCE
Bernard L. Morris, Allentown; Jeffrey J. Nagy, Whitehall Township, Lehigh County, and Lawrence A. Walter, Lower Macungie Township, Lehigh County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 1, 1984, Ser. No. 656,343
Int. Cl.⁴ H03K 3/01, 17/687, 3/26
U.S. Cl. 307-296 R 22 Claims

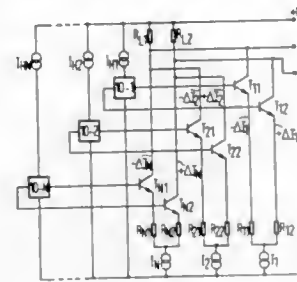


1. An integrated circuit comprising a current source adapted to provide a controlled current to at least one device, characterized in that
said current source comprises a reference field effect transistor having a gate electrode connected to a source electrode by means of a reference resistor, means for causing a reference current to flow through said reference resistor in proportion with the current that flows through the channel of said reference transistor, and means for causing said controlled current to be proportional to said reference current, wherein said current source obtains a desired variation in said reference current as a function of temperature by selecting the magnitude of at least one of: the threshold of said reference transistor (Vt); the gain of said reference transistor (β); and the channel current (I) flowing in said reference transistor.

4,645,949
CIRCUIT ARRANGEMENT FOR ENHANCING THE UTILIZABLE HALL-SIGNAL OF HALL SENSOR
Gerhard Gehring, Unterbaching B. München, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 281,212, Jul. 7, 1981. This application
Apr. 4, 1984, Ser. No. 596,564
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026226
Int. Cl.⁴ H03K 17/90, 19/18
U.S. Cl. 307-309 4 Claims

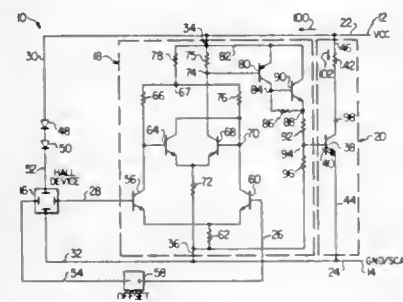
1. Circuit for enhancing the utilizable Hall signal of a Hall

sensor, comprising N Hall generators being operated with impressed constant control current and having Hall signal paths, N respective voltage to current converters each having



an output and each being coupled to the respective Hall signal path of a different one of said Hall generators, and a common output connected to each of said outputs of said respective voltage to current converters.

4,645,950
TWO-LEAD HALL EFFECT SENSOR
Fernando D. Carvajal, McKinney, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 13, 1985, Ser. No. 734,014
Int. Cl.⁴ H03K 17/90
U.S. Cl. 307—415 8 Claims



1. A magnetic field sensor having first and second terminals, comprising:
 - a Hall effect device for producing a voltage in response to a magnetic field;
 - a comparator connected to receive the voltage produced by said Hall effect device for producing a first voltage in response to the presence of a magnetic field above a predetermined threshold strength and a second voltage in the absence of said magnetic field strength;
 - a current sink connected between said first and second terminals controlled by said comparator for sinking a current from said first terminal in response to said first voltage and not in response to said second voltage;
 - a current supply connected to the first terminal for supplying operating current at least to said Hall effect device and a return line connected to the second terminal from said Hall effect device;
 - whereby the presence of a magnetic field above said predetermined threshold causes an increased current to be drawn through said first terminal, the increased current being substantially equal to the current which is sunk by said current sink.
5. A method of sensing a magnetic field with a two-terminal device, said device having a combined supply and sensing terminal and a voltage reference terminal comprising:
 - producing a first voltage in response to a magnetic field above a predetermined level;

producing a second voltage in response to the absence of the magnetic field above the predetermined level;

converting the first voltage to a first current drawn through the supply and sensing terminal; and

converting the second voltage to a second current drawn through the supply and sensing terminal;

wherein the steps of producing the first and second voltages further include the steps of:

raising the voltage on a first voltage line above the voltage to a second voltage line in response to the presence of the magnetic field;

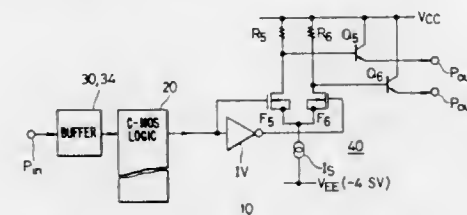
raising the voltage on the second voltage line above the voltage on the first voltage line in response to the absence of the magnetic field;

comparing the voltage on the first voltage line to the second voltage line;

generating the first voltage in response to the first voltage line being at a higher potential than the second voltage line;

and generating the second voltage in response to the second voltage line being at a higher potential than the first voltage line.

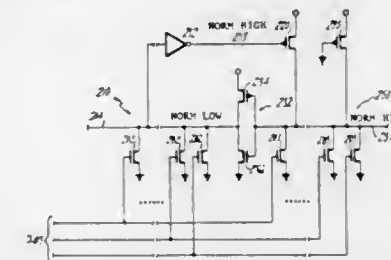
4,645,951
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A C-MOS INTERNAL LOGIC BLOCK AND AN OUTPUT BUFFER FOR PROVIDING ECL LEVEL SIGNALS
Akira Uragami, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 31, 1984, Ser. No. 646,110
Claims priority, application Japan, Aug. 31, 1983, 58-157817; Aug. 31, 1983, 58-157818; Aug. 31, 1983, 58-157819
Int. Cl.⁴ H03K 17/12, 19/01
U.S. Cl. 307—446 14 Claims



1. A semiconductor integrated circuit comprising:
 - (1) an internal logic block including a plurality of C-MOS elements;
 - (2) an input terminal;
 - (3) an output buffer circuit connected between said internal logic circuit and said output terminal;
 - (4) a first power source terminal receptive of a ground potential as a first power source voltage; and
 - (5) a second power source terminal receptive of a negative voltage as a second power source voltage,
 wherein said internal logic circuit and said output buffer circuit are operative with said negative voltage, wherein said output buffer circuit has an input terminal receptive of an output signal of said internal logic circuit, wherein said output buffer circuit includes means for generating an output signal at an ECL level at said output terminal in response to receiving the output signal of said internal logic circuit, wherein said means of said output buffer circuit includes an emitter-follower transistor having its emitter connected with said output terminal and its base responsive to the output signal of said internal logic circuit as well as a semiconductor amplifying element having its input electrode responsive to the output signal of said internal logic circuit and its output electrode connected through a load resistor with said ground potential so that the base of said emitter-follower transistor is driven by the signal of said output electrode of said semiconductor amplifying element, wherein said means of said output buffer circuit fur-

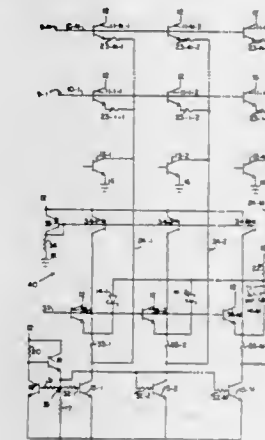
ther comprises a second emitter-follower transistor having its emitter coupled with a second output terminal and its base coupled with a second semiconductor amplifying element, wherein said second semiconductor amplifying element is differentially coupled with said first semiconductor amplifying element, and wherein said first and second semiconductor amplifying elements comprise a pair of MOS transistors.

4,645,952
HIGH SPEED NOR GATE
Hiep van Tran, Carrollton, Tex., assignor to Thomson Components-Mostek Corporation, Carrollton, Tex.
Filed Nov. 14, 1985, Ser. No. 797,546
Int. Cl.⁴ H03K 19/01, 19/013
U.S. Cl. 307—448 2 Claims



1. A NOR gate comprising at least two input terminals, a first group of transistors of predetermined type, each having a first current capacity, and a second group of transistors, each having a second current capacity, in which:
 - each of said at least two input terminals is connected to one of the gates of the transistors of said first group and also to one of the gates of the transistors of the second group;
 - said first group of transistors is connected in parallel between an output node; and a first current supply terminal;
 - and
 - said output node has pulling means, having a predetermined pulling means current capacity connected thereto, for maintaining said output node in a default voltage state;
 - said second group of transistors, having said predetermined type, are connected in parallel between an intermediate node and said first current supply terminal;
 - a first inverter, having a first inverter trip point, is connected between said output node and said intermediate node, with a first inverter input connected to said output node and a first inverter output connected to said intermediate node said first inverter having a first inverter pulling current capacity at its output;
 - a second inverter, having a second inverter trip point, a second inverter input and a second inverter output, has said second inverter input connected to said intermediate node;
 - a pulling transistor, having a pulling current capacity, is connected between a second current supply terminal and said output node, with a pulling gate connected to said second inverter output, said first current capacity, second current capacity, pulling means current capacity and first inverter pulling current capacity being related to one another and to said first and second inverter trip points by the conditions that:
 - said first current capacity is sufficiently greater than said pulling means current capacity that, when both said pulling means and one of said first group of transistors are conductive, the voltage on said output node is closer to the voltage of said first current supply terminal, and larger than the voltage at which the first inverter trip point occurs; and
 - said second current capacity is sufficiently greater than said first inverter pulling capacity that, when one of said second group of transistors and said first inverter are pulling toward opposite current terminals, the voltage on said intermediate node is closer to the voltage of said first current supply terminal than the voltage at which said

4,645,953
CURRENT SOURCE WHICH SAVES POWER IN PROGRAMMABLE LOGIC ARRAY CIRCUITRY
Sing Y. Wong, Sunnyvale, Calif., assignor to Monolithic Memories, Inc., Santa Clara, Calif.
Filed Jul. 3, 1984, Ser. No. 627,401
Int. Cl.⁴ H03K 19/177, 19/02
U.S. Cl. 307—466 19 Claims

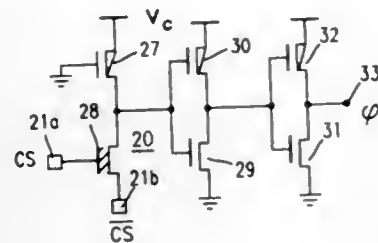


1. A programmable logic array circuit comprising:
 - a plurality of input terminals for receiving a plurality of input signals;
 - product term means having a product output lead for providing an output signal in response to said plurality of input signals;
 - a current source for providing current to said product term means; and
 - disable means for selectively and permanently disabling said current source.

4,645,954
ECL TO FET INTERFACE CIRCUIT FOR FIELD EFFECT TRANSISTOR ARRAYS
Stanley E. Schuster, Granite Springs, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 21, 1985, Ser. No. 789,884
Int. Cl.⁴ H03K 19/092, 5/13
U.S. Cl. 307—475 4 Claims

1. An interface circuit for driving an FET logic circuit from a bipolar transistor logic circuit comprising:
 - dual rail input terminals for receiving complementary clocking logic levels from said bipolar transistor logic circuit;
 - a small signal multiplier having an output and comprising an FET amplifier having an input FET transistor connected through its source and gate to said dual rail input terminals producing an FET logic level in response to said complementary clocking logic levels; and
 - a FET dynamic sense amplifier having a first input connected to a reference voltage level provided by said bipolar transistor logic circuit, Vref, a second input connected to a logic output connection of said bipolar transistor logic circuit, ECL1 and a clocking input connected to said small signal multiplier output, said dynamic sense ampli-

fier providing complementary FET logic levels which are determined by the difference of voltage potential between



circuit supplies an output, a first output terminal supplied by said first increase-detecting flip-flop means, a decrease-detecting flip-flop means which is set when the second decision AND circuit supplies an output, a second output terminal supplied by said decrease-detecting flip-flop means, a NOR circuit which is supplied with the outputs of the increasing-detecting flip-flop means and the decrease-detecting flip-flop means, and a third output terminal supplied by the NOR circuit for generating an output when there is no output at either the first or second output terminals.

4,645,956

CURRENT LIMITER FOR POWER LINE COMMUNICATION AMPLIFIER

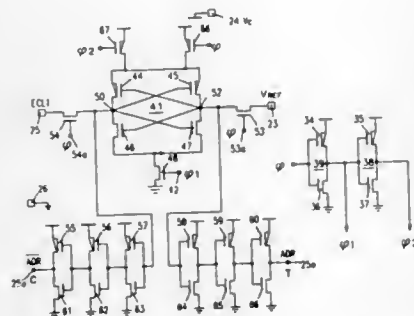
Kenneth C. Shuey, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 11, 1984, Ser. No. 649,461

Int. Cl.⁴ H03K 17/60, 3/26

U.S. Cl. 307—562

11 Claims



said first and second inputs of Vref and ECL1, respectively.

4,645,955

SIGNAL CONVERSION CIRCUIT FOR PHOTODIODE ARRAY

Katsunori Ueno, Yokosuka, Japan, assignor to Fuji Electric Corporate Research & Development, Ltd., Yokosuka, Japan

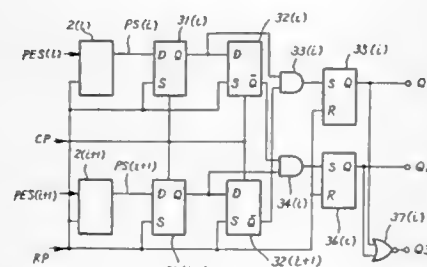
Filed Sep. 28, 1984, Ser. No. 656,091

Claims priority, application Japan, Dec. 13, 1983, 58-234831

Int. Cl.⁴ H03K 5/26

U.S. Cl. 307—518

5 Claims



1. A circuit arrangement for comparing two variable width input signals and providing a first output when the first exceeds the second by at least a prescribed amount and a second output when the second exceeds the first by at least a prescribed amount comprising a first input terminal for receiving the first of the two input signals, a second input terminal for receiving the second of the input pulses, a clock terminal for receiving a series of clock pulses, first pulse-width difference detecting circuit means supplied by the first terminal and the clock terminal, second pulse-width difference detecting circuit means supplied by the second terminal and the clock terminal, first and second decision AND circuits, each receiving signals from both the first and second pulse-width difference detecting circuit means for deciding whether the widths of the original input signals differ by more than a prescribed amount and generating an output only when they do, an increase-detecting flip-flop means which is set when the first decision AND

1. An apparatus for limiting an output current of a power amplifier which has a modified phase modulated signal at its input, comprising:

first means for providing a first signal, said first signal being representation of said output current;
second means for providing a second signal, said second signal being representative of a reference magnitude;
means for comparing said first signal and said second signal, said comparing means being configured to provide a third signal, said third signal being indicative of a first occurrence when said first signal exceeds said second signal; and
means for altering a phase modulated signal as a function of said third signal, said altering means providing said modified phase modulated signal at an output which is connected as an input to said power amplifier, said altering means comprising an exclusive-OR gate having as its inputs said phase modulated signal and said third signal.

4,645,957

NORMALLY-OFF SEMICONDUCTOR DEVICE WITH LOW ON RESISTANCE AND CIRCUIT ANALOGUE

Bantval J. Baliga, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 455,174, Jan. 3, 1983, Pat. No. 4,506,282.

This application Dec. 24, 1984, Ser. No. 685,632

Int. Cl.⁴ H03K 17/56

U.S. Cl. 307—570

5 Claims

1. A normally-off, gate controlled electrical circuit with low on-resistance, comprising:

a junction field-effect transistor adapted for operation in a bipolar mode having source, drain, and gate electrodes;
a bipolar transistor having collector, emitter, and base electrodes;
interconnection means for ohmically connecting said source electrode to said collector electrode; and
impedance means electrically interposed between said gate and base electrodes for ensuring turn on of said bipolar

transistor after turn on of said junction field effect transistor;

said drain electrode and said emitter electrode being adapted to carry load current through the electrical circuit when the circuit is in its current conductive state, and said gate

connected to a collector of one of said pair of emitter coupled transistors;
wherein said signal propagation delay time is variably set at a value according to said selected level of voltage.

4,645,959

LITHIUM-SULFUR HEXAFLUORIDE MAGNETOHYDRODYNAMIC POWER SYSTEM

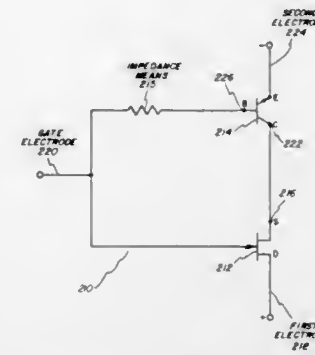
Flavio Dobran, 21st & Broadway, Long Island City, N.Y. 11106

Filed Aug. 14, 1985, Ser. No. 741,548

Int. Cl.⁴ H02N 4/02

U.S. Cl. 310—11

7 Claims



electrode being adapted to receive control signals to control the conductivity state of the circuit, said control signals when received being of a potential sufficient for causing said junction field-effect transistor to operate in a bipolar mode and assume a low on-resistance state.

4,645,958

VARIABLE DELAY GATE CIRCUIT

Hirokazu Suzuki, Yamato; Takehiro Akiyama; Teruo Morita, both of Kawasaki; Hirofumi Takeda, Yokohama, and Hikotaro Masunaga, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

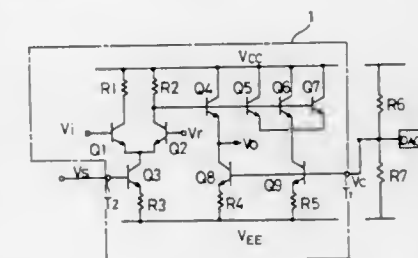
Filed Dec. 10, 1984, Ser. No. 679,998

Claims priority, application Japan, Dec. 9, 1983, 58-232531; Jul. 20, 1984, 59-149587

Int. Cl.⁴ H03K 5/13, 5/159

U.S. Cl. 307—597

18 Claims



1. A gate circuit device having a variable signal propagation delay time for respective digital input and output signals, said device comprising:

a digital gate circuit having a pair of emitter coupled transistors and a constant current source transistor connected to the emitter side of said emitter coupled transistors, wherein said digital input signal is provided to a base of a first one of said pair of emitter coupled transistors, and said pair of emitter coupled transistors are turned oppositely ON and OFF by high and low logic states of said digital input signal; and

terminal means for applying a selected level of voltage to the base of said constant current source transistor, for thusly controlling the value of a constant current which said constant current source transistor causes to flow;
an output terminal for outputting said digital output signal with respective high and low logic states according to the logic state of said digital input signal and said signal propagation delay time, said output terminal being operatively

1. A method to operate a two-phase flow magnetohydrodynamic electric power generation system with liquid lithium and gaseous sulfur-hexafluoride flowing through a diverging channel, with side electrodes to remove the electric current generated in the flowing liquid lithium, across the applied magnetic field that is perpendicular to both the flow velocity and electrodes, with sulfur-hexafluoride dispersed in the form of small bubbles and reacting with liquid lithium that forms a continuous phase to conduct the current between the electrodes so as to produce a near isothermal two-phase flow mixture and providing for an expansion of lithium across the magnetic field in the generator.

4,645,960

FERRO-FLUID BEARING

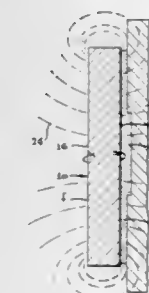
George J. Hoffman, Malibu, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 62,197, Jul. 30, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,628

Int. Cl.⁴ F16C 39/06

U.S. Cl. 310—90.5

6 Claims



1. A ferro-fluid bearing for supporting a circularly cylindrical shaft comprising:
a circularly cylindrical shaft;

a permanent magnet bearing structure forming a circular cylindrical bore for surrounding said circularly cylindrical shaft, the diameter of said circularly cylindrical bore being larger than the outer diameter of said shaft, said bearing structure having the same poled radially directed internal magnetization along the entire length of said bore and around the entire circumference of said bore so there exists at substantially all regions of the surface of said bore the same pole face producing radially directed magnetic flux at said pole face and thence into the region between said pole face and said shaft;

a ferro-fluid between the surface of said bore of said bearing structure and said shaft.

4,645,961

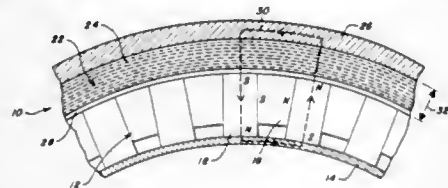
DYNAMOELECTRIC MACHINE HAVING A LARGE MAGNETIC GAP AND FLEXIBLE PRINTED CIRCUIT PHASE WINDING

Herbert Malsky, Belmont, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 5, 1983, Ser. No. 482,180
Int. Cl.⁴ H02K 21/14

U.S. Cl. 310—156

20 Claims



1. A dynamoelectric machine having a large magnetic gap and printed circuit phase windings, comprising:
 - a first ring of a material defining a closed highly-permeable magnetic path;
 - a permanent magnet assembly having permanent magnets circumferentially mounted to the first ring for providing permanent magnetic poles of alternating polarity;
 - a second ring of a material defining a closed highly-permeable magnetic path disposed coaxially with the first ring and defining a magnetic gap between the end of the permanent magnets remote from the first ring and the confronting surface of the second ring;
 - a printed circuit phase winding positioned entirely in said magnetic gap for providing electromagnetic poles that are cooperative with the permanent magnet poles for producing torque;
 - said printed circuit phase winding includes a lamination of a preselected number of flexible printed circuit phase windings selectively aligned mechanically and interconnected electrically to provide a winding assembly having at least one phase;
 - each of said flexible printed circuit phase windings includes an array of mechanically adjacent and serially electrically connected printed circuit coils having a common phase.

4,645,962

SLIP RING ASSEMBLY AND METHOD OF MAKING

Jerry H. Freeman, Mt. Prospect, Ill., assignor to ROL Industries Inc., Chicago, Ill.

Filed Sep. 28, 1984, Ser. No. 656,071
Int. Cl.⁴ H01R 39/08

U.S. Cl. 310—232

4 Claims

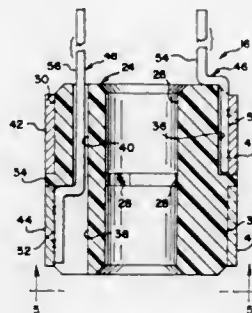
1. A slip ring assembly for mounting on a rotatable rotor shaft of an electrical apparatus having relatively fixed brush means, comprising:
 - an electrically non-conductive one-piece injection molded body defining an axial bore for receiving said rotor shaft therein, said body defining first and second axially spaced

outer peripheral surfaces separated by a relatively enlarged circumferential land,

said first peripheral surface including a first axially extending channel, said second peripheral surface including a second axially extending channel;

first and second electrically conductive annular slip ring members respectively positioned on said first and second peripheral surfaces of said body, said slip ring members being positioned for electrical contact with said brush means; and

first and second electrically conductive terminals, said first terminal being electrically joined to said first slip ring member and extending from within said first channel outwardly of an end of said body adjacent said first slip ring member,



said second terminal being electrically joined to said second slip ring member and extending from within said second channel, through said body inwardly of said first slip ring member, and outwardly of said end of said body,

said molded body defining an axially extending internal passage positioned inwardly of said first slip ring member, said second terminal extending through said internal passage and being electrically insulated from said first annular slip ring member by an integral portion of said one-piece body which said portion is positioned between said second terminal and said first annular slip ring member, said second axially extending channel having a radially inward surface which is radially aligned and generally contiguous with a radially inward surface of said axially extending internal passage, said radially inward surface of said second channel being spaced inwardly of at least a portion of said second terminal.

4,645,963

ROTATING-FIELD MACHINE WITH BELL-SHAPED ROTOR HUB AND ROTATABLE STATOR AND CONTROL ELEMENT

Kurt Plackner; Rudolf Schamberger, both of Nuremberg, Fed. Rep. of Germany, and Max Kirchpfering, deceased, late of Nuremberg, Fed. Rep. of Germany (by Martha M. Kirchpfering, Stefan Kirchpfering, Klaus Kirchpfering, heirs), assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 5, 1986, Ser. No. 826,110

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1985, 3504613

Int. Cl.⁴ H02K 5/00, 5/22

U.S. Cl. 310—266

11 Claims

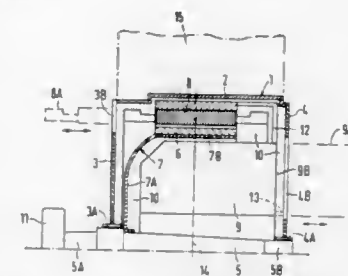
1. A rotating-field machine connectable to a torque converter, said rotating-field machine comprising:
 - a stator housing;
 - a rotor shaft;
 - bearing means including a first bearing and a second bearing attach to said housing and to said shaft for rotatably supporting said shaft in said housing, said first bearing and said second bearing being spaced from one another along said shaft, said shaft having an extension couplable to the converter, said extension being located on a side of said

first bearing opposite said second bearing, said shaft having a section of reduced diameter in a region about said second bearing, said second bearing having a smaller diameter than said first bearing;

a rotor;

a bell-shaped rotor hub having a base portion rigidly coupled to said shaft in an area thereof juxtaposed to said first bearing, said hub having a flange portion attached to said base portion, said flange portion supporting said rotor and projecting towards said second bearing from said base portion;

a stator; and



an electronic control element operatively connected to at least one of said rotor and said stator, said control element annularly surrounding said shaft between said hub and said second bearing, said control element being disposed partially within said hub and having an end portion projecting outside of said hub, said end portion being mechanically coupled to said stator, whereby said control element is supported by said stator, said stator and said control element being rotatably mounted in said housing, said housing being provided with end bells having means for permitting access to said stator and said control element for service, inspection and repair work, said means for permitting including closable openings in said end bells.

4,645,964

VIBRATION WAVE MOTOR

Akira Hiramatsu, and Hitoshi Mukohjima, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

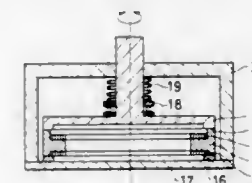
Filed Mar. 28, 1985, Ser. No. 717,435

Claims priority, application Japan, Apr. 2, 1984, 59-65399

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—323

10 Claims



1. A vibration wave motor comprising:
 - (a) a ring-shaped vibration member having an outer peripheral portion of a first thickness and an inner peripheral portion of a second thickness, said vibration member having electrostrictive means provided on a first surface of said inner peripheral portion and on a second surface of said inner peripheral portion which is opposite to said first surface;
 - (b) means for applying periodic signals having different phases respectively to said electrostrictive means provided on said first and second surfaces so that a travelling vibration wave is generated on a surface of said outer peripheral portion; and
 - (c) a movable member contacting said surface of said outer peripheral portion in said vibration member, said movable member being rotated by the travelling vibration wave.

4,645,965

CYLINDER PRESSURE TRANSMITTER FOR AN INTERNAL COMBUSTION ENGINE

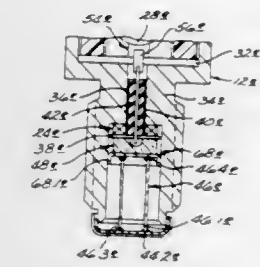
Jude V. Paganelli, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1984, Ser. No. 665,340

Int. Cl.⁴ H01L 41/08

U.S. Cl. 310—338

20 Claims



1. A device for providing an electrical signal corresponding to pressure in a cylinder of an internal combustion engine during normal running operation of the engine comprising piezoelectric means for providing an electrical signal in response to application of pressure, and means for mounting the piezoelectric means to be responsive to pressure in a cylinder of the engine, the mounting means including a metal body having a chamber opening at one end of the body accommodating the piezoelectric means therein, having means for mounting the body in an engine well communicating with the cylinder, and having diaphragm means secured over the chamber opening at said one body end to be responsive to variations in fluid pressure in the engine cylinder to transfer forces to the piezoelectric means to provide said electrical signals corresponding to said cylinder pressure variations while shielding the piezoelectric means from the environment in the cylinder, characterized in that the metal body has a rim around said chamber opening at said one body end, and the diaphragm means comprises a cup-shaped metal member having a flexible bottom and a side wall, the member having said side wall fitted slidably over said body rim and having a weld between the side wall and said body extending around the open chamber end securing the member in precisely predetermined position relative to the piezoelectric means while permitting said flexible bottom to be responsive to variations in cylinder pressure to transfer pressure forces to the piezoelectric means to provide said electrical signals.

4,645,966

DISPLAY TUBE WITH FLUID COOLED WINDOW

Johannes van Esdonk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 468,027, Feb. 18, 1983, abandoned.

This application Jun. 12, 1986, Ser. No. 873,865

Claims priority, application Netherlands, Mar. 19, 1982, 8201136

Int. Cl.⁴ H01J 7/26, 29/86; H04N 5/74

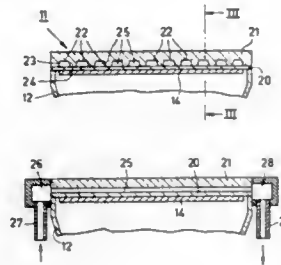
U.S. Cl. 313—24

9 Claims

1. A display tube comprising a glass envelope having a substantially rectangular display window supporting a luminescent screen and including a cooling arrangement for trans-

ferring heat away from the screen, said cooling arrangement comprising:

- (a) first and second substantially rectangular transparent plates having facing sides with substantially flat surfaces, the facing side of the first plate including a plurality of longitudinally oriented grooves extending into said flat surface, the facing sides of said plates being in substantial contact with each other and being sealed together to form



- the display window, whereby each groove of the first plate forms a separate conduit with the facing surface of the second plate for carrying a coolant;
- (b) coolant supply means attached to one end of the display window for supplying the coolant to respective ends of the conduits; and
- (c) coolant receiving means attached to another end of the display window for receiving the coolant from respective ends of the conduits.

4,645,967

ELECTRODELESS LOW-PRESSURE GAS DISCHARGE LAMP

Anton J. Bouman, Eindhoven, Netherlands; Heiner Köstlin, Aachen-Schleckheim, Fed. Rep. of Germany, and Wiggert Kroontje, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

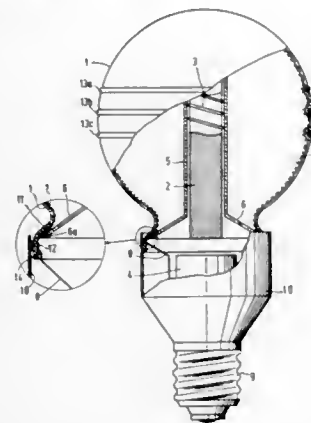
Filed Feb. 5, 1985, Ser. No. 698,300

Claims priority, application Netherlands, Feb. 9, 1984, 8400409

Int. Cl.⁴ H05B 41/16, 41/24

U.S. Cl. 313-248

3 Claims



1. An electrodeless low-pressure gas discharge lamp comprising a glass lamp vessel which is provided with a sealing member connected by means of sealing material to the wall of the lamp vessel in a vacuum-tight manner, which lamp includes a core of magnetic material having arranged therearound a winding connected to an electrical supply unit for producing a high frequency magnetic and electric field within the lamp vessel, the inner wall of the lamp vessel being provided with a transparent electrically conducting layer which is electrically connected by means of a lead-through conductor to a conduc-

tor located outside the lamp vessel, characterized in that the sealing member is slightly recessed into the lamp vessel, the lead-through conductor being an electrically conducting layer which is located on the inner wall of the lamp vessel and extends as far as a wall portion of the lamp vessel located outside the sealing member.

4,645,968

VIBRATION CONTROL OF COLOR PICTURE TUBE SHADOW MASK

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, Princeton, N.J.

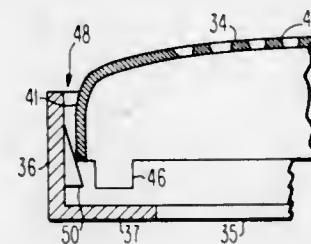
Continuation of Ser. No. 610,480, May 15, 1984, abandoned.

This application May 27, 1986, Ser. No. 867,618

Int. Cl.⁴ H01J 29/80

U.S. Cl. 313-407

4 Claims



1. In a color picture tube including an evacuated envelope having a substantially rectangular faceplate panel with major and minor axes and wherein a central longitudinal axis of said tube passes through the center of said faceplate perpendicular to the major and minor axes, said faceplate panel including a substantially rectangular shadow mask welded at various points to a substantially rectangular peripheral frame mounted within said envelope, said frame having a flange approximately paralleling the central longitudinal axis, the improvement comprising

shims being laterally positioned along the periphery of said frame between mask-to-frame weld points on adjacent sides of said mask adjacent each corner and being located between said mask and said flange, and said shims being attached only to said frame, whereby the resonant frequency of said mask is raised.

4,645,969

SKIN TANNING FLUORESCENT LAMP CONSTRUCTION UTILIZING A PHOSPHOR COMBINATION

Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,623

Int. Cl.⁴ H01J 1/62, 63/04

U.S. Cl. 313-487

10 Claims

1. An improved skin tanning fluorescent lamp having a sealed transparent envelope enclosing means to generate a low pressure mercury discharge within said envelope, and a coating contained within said envelope for conversion of at least a portion of the radiation emitted from said discharge to skin tanning radiation, the improved coating comprising a phosphor combination including a first phosphor which converts

said radiation to skin tanning radiation in the 320-400 nanometer spectral region and a second phosphor to produce visible

that when said conducting means are connected to an electrical source, said lighting means are illuminated without any electrically conductive means being visible adjacent or around said lighting means.

4,645,971

X-RAY IMAGE INTENSIFIER AND APPLICATION TO A DIGITAL RADIOLOGY SYSTEM

Jean Ricodeau, Egrevé, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 23, 1984, Ser. No. 603,244

Claims priority, application France, Apr. 29, 1983, 83 07183

Int. Cl.⁴ H01J 31/50, 40/18

U.S. Cl. 313-527

16 Claims



radiation in the red color region of the visible spectrum for better color rendition by the composite lamp emission.

4,645,970

ILLUMINATED EL PANEL ASSEMBLY

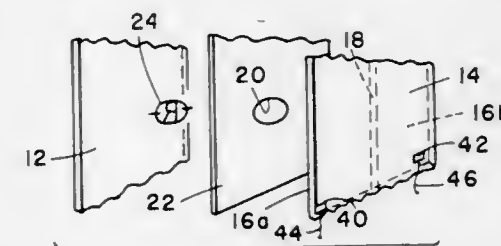
Michael D. Murphy, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Nov. 5, 1984, Ser. No. 668,412

Int. Cl.⁴ H05B 33/26, 33/22

U.S. Cl. 313-509

37 Claims



1. A panel assembly for displaying illuminated indicia, insignia or designs comprising:

- a pair of sheet-like panels, at least one of which includes a transparent area therein;
- lamination means intermediate said panels for bonding said panels together, said lamination means being transparent after lamination;
- a transparent electrically conductive coating on one surface of at least one of said panels, said one surface facing inward of said assembly;
- electroluminescent lighting means for illuminating an area of said assembly when an electrical voltage is applied thereto, said lighting means being formed in a desired configuration between said panels in registry with said transparent area of said one panel, and having a surface contacting said transparent electrically conductive coating;
- a metallic layer intermediate said lighting means and said one panel which includes said transparent area and covering at least a portion of said lighting means such that it is visible through said transparent area of said one panel, said metallic layer being at least partially reflective of light incident thereon;
- conducting means positioned away from said lighting means for conducting electricity to said electrically conductive coating whereby said panels and lamination means form a laminated assembly with said lighting means therein such

4,645,972

LOW PRESSURE DISCHARGE LAMP

Takeda Takao, Chigasaki; Yamazaki Hitoshi, Yokohama; Nakano Shizuo, Kamakura; Yamamoto Kouzi, Kanagawa; Ito Hiroshi, Meguroonmachi, and Imai Jun, Hiratsuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP84/00079, § 371 Date Feb. 26, 1985, § 102(e)

Date Feb. 26, 1985, PCT Pub. No. WO85/04048, PCT Pub.

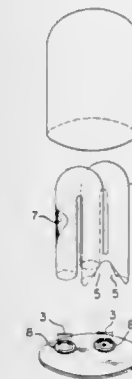
Date Sep. 12, 1985

PCT Filed Mar. 2, 1984, Ser. No. 708,081

Int. Cl.⁴ H01J 61/34, 61/70

U.S. Cl. 313-634

5 Claims



1. A low pressure discharge lamp of double tube construction comprising:

- an outer bulb containing one open end with the remainder of the bulb being completely closed;
- an end plate placed in sealing relationship with the open end of said outer bulb;

a plurality of electrodes mounted on said end plate and sealed thereto;
a gas contained within the volume defined by said outer bulb and said end plate;
an inner tube including a plurality of light transmitting tubes, each having an open end which receives therein one of said electrodes and which is adhesively bonded to and supported by the surface of said end plate;
each of said light transmitting tubes restricting an electric discharging path;
each of said light transmitting tubes having at least one opening in communication with said volume and having a part of an end other than said open end in contact with and supported by said end plate;
said tubes being connected to each other by melt-bonding at a part of the edge portion of said opening.

4,645,973

HYPERFREQUENCY ENERGY PLASMA TORCH

Guy Salinier, Paris, and Jean-Paul Bossard, Fontenay-le-Fleury, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude, Paris, France

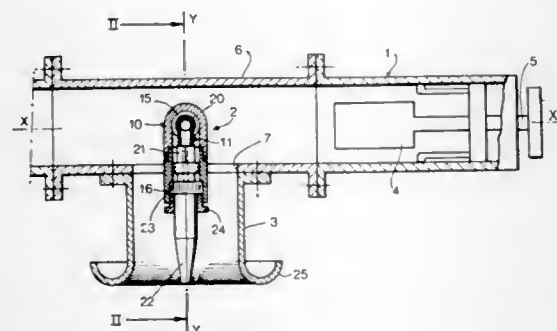
Filed Oct. 2, 1984, Ser. No. 656,909

Claims priority, application France, Oct. 3, 1983, 83 15713

Int. Cl.⁴ H01J 7/46, 7/24

U.S. Cl. 315—39

11 Claims



1. A microwave plasma torch for creating a plasma jet, comprising: a waveguide for connection to a microwave generator, said waveguide having lateral walls and defining an opening in a first said wall and a lateral orifice in a second said wall adjacent said first wall; a gas supply conduit in the waveguide, the gas supply conduit having a generally T-shape defining a stem, a first upper branch and a second upper branch; said stem of said supply conduit constituting a downstream part of said supply conduit which extends through said opening with clearance and has an open outlet end and is connected to a discharge nozzle, said first upper branch extending on a first side of said stem, through said lateral orifice without clearance and being adapted to be connected to a source of said gas, and said second upper branch being in alignment with said first branch, on a second side of said stem opposite to said first side, and extending to an end portion adjacent a third said lateral wall of said waveguide which is opposed to said second wall; and means closing said end portion of said second upper branch.

4,645,974
DISCHARGE TUBE LIGHTING SYSTEM FOR USE IN A VEHICLE

Toshiyasu Asai, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

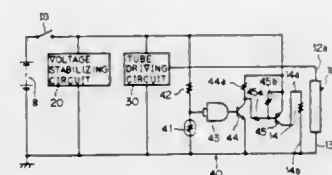
Filed Aug. 10, 1984, Ser. No. 639,431

Claims priority, application Japan, Sep. 27, 1983, 58-178813

Int. Cl.⁴ H01J 7/44, 17/34, 19/78, 29/96; H01K 1/62

U.S. Cl. 315—50

8 Claims



1. A discharge tube lighting system for use in a vehicle comprising:
a battery having a grounded terminal;
a tube driving circuit connected to said battery for generating an A.C. voltage;
a tube element having a pair of electrodes at opposite ends thereof for receiving said A.C. voltage thereacross and enclosing inactive gas therein for emitting light when electrically driven by said A.C. voltage;
a heat generating element having a grounded terminal and being made of electrically conductive material and being provided longitudinally on an outer surface of said tube element, for heating said inactive gas,
said heat generating element being shaped in a rectangular film form and spaced apart from said electrodes of said tube element so that electric fields are provided between the heat generating element and said electrodes; and
a heater driving circuit connected to said battery for generating a D.C. voltage, and for electrically driving said heat generating element by said D.C. voltage to heat said inactive gas at a starting period of electrically driving said tube element.

4,645,975

COMPOSITE LIGHT PICKUP DEVICE

Allen H. Meitzler, Ann Arbor, and George S. Saloka, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 4, 1984, Ser. No. 647,331

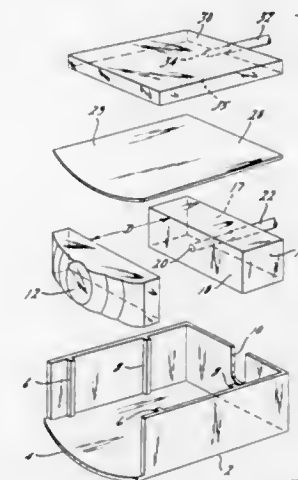
Int. Cl.⁴ B60Q 1/02

U.S. Cl. 315—82

4 Claims

1. A passive composite light pickup device for use in a head-lamp control system of an automotive vehicle including:
a first lens element means oriented to collect light directed from a narrowly defined range of angles towards the front of the vehicle;
a second means formed of a light transparent material containing a light activated phosphor dye and having at least one transparent surface attached to said first means and disposed for collecting ambient light directed from a fairly wide range of angles from above the vehicle;
a pair of fiber optic transmission line respectively associated

with said first and second means for coupling a portion of the light collected from said first and second means to



respective light sensors within said system, remote from said composite pickup device.

4,645,976

DISCHARGE LAMP CIRCUIT WITH PROTECTED PTC RESISTOR

Meerten Luursema, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

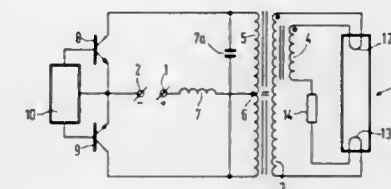
Continuation of Ser. No. 679,175, Dec. 7, 1984, abandoned. This application Apr. 21, 1986, Ser. No. 856,846

Claims priority, application Netherlands, Dec. 16, 1983, 8304333

Int. Cl.⁴ H05B 37/02

U.S. Cl. 315—106

10 Claims



1. An electrical device for igniting and supplying a gas and/or vapor discharge lamp provided with at least two pre-heatable electrodes comprising: a transformer with at least two windings, means for supplying electric energy to the transformer via a first winding, while in the operating condition one end of a series arrangement is connected to a first connection point of the first winding, said series arrangement at least comprising a first electrode of the lamp, a second winding of the transformer, a resistor having a positive temperature coefficient and a second lamp electrode, the second winding of the transformer being fed back negatively with respect to the first winding and being situated together with the resistor having a positive temperature coefficient in that part of the series arrangement between the lamp electrodes, and means connecting a second connection point of the first winding of the transformer to the other end of the series arrangement.

4,645,977

PLASMA CVD APPARATUS AND METHOD FOR FORMING A DIAMOND LIKE CARBON FILM

Hideo Kurokawa, Katano; Tsutomu Mitani, Neyagawa, and Taketoshi Yonezawa, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

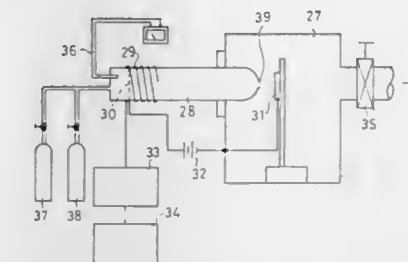
Filed Nov. 29, 1985, Ser. No. 803,001

Claims priority, application Japan, Aug. 31, 1984, 59-181748; Nov. 29, 1984, 59-252205; Dec. 6, 1984, 59-258038; Aug. 20, 1985, 60-182018

Int. Cl.⁴ H01J 7/24

U.S. Cl. 315—111.21

19 Claims



1. A Plasma CVD apparatus comprising:
a first vacuum enclosure provided with a plasma generating means for producing plasma gas from reactive gas or mixed gas of reactive gas and inert gas,
an accelerating means for accelerating at least ions in said plasma against a substrate,
a second vacuum enclosure which is connected to said first vacuum enclosure in a manner that said plasma gas can flow into said second vacuum enclosure for containing said substrate therein.

4,645,978

RADIAL GEOMETRY ELECTRON BEAM CONTROLLED SWITCH UTILIZING WIRE-ION-PLASMA ELECTRON SOURCE

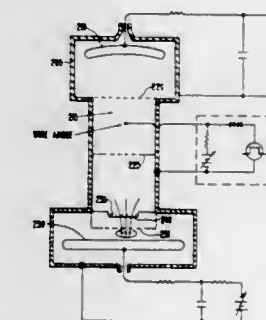
Robin J. Harvey, Thousand Oaks, and Hayden E. Gallagher, Malibu, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1984, Ser. No. 621,579

Int. Cl.⁴ H01J 7/24

U.S. Cl. 315—111.81

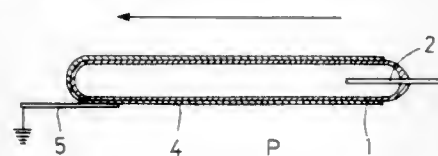
22 Claims



1. An electron-ion plasma source employing radial geometry, comprising:
a gas envelope, adapted to contain a gas under relatively low pressure;
cathode electrode disposed within said gas envelope and comprising a substantially cylindrical emissive surface;
an array of wire anodes;
substantially cylindrical grid disposed within said gas envelope between said cathode and said array of wire anodes;
means for selectively coupling an ionization potential to said array of wire anodes.

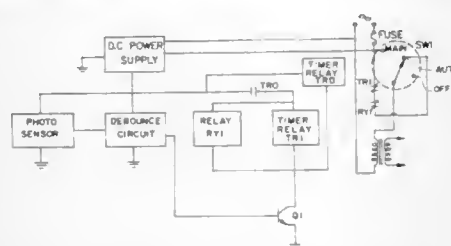
array of wire anodes, whereby upon application of said potential to said wire anodes, said gas is ionized in the region adjacent said wire anodes;
means for providing a large potential difference between said cathode and said grid member, whereby ions are extracted through said grid means to bombard said cathode, causing emission of electrons therefrom which are accelerated by said large potential difference through said grid.

4,645,979
DISPLAY DEVICE WITH DISCHARGE LAMP
Shing C. Chow, 12A Suffork Road, Kowloon, Hong Kong
Filed Feb. 22, 1984, Ser. No. 582,623
Claims priority, application Japan, Aug. 21, 1981, 56-131801
Int. Cl.⁴ G09G 3/10; H01J 61/06
U.S. Cl. 315-169.1



- 1 Claim
1. A discharge lamp type display device, comprising, in combination:
(a) at least one discharge lamp, including, in combination:
(1) a discharge tube constructed from a dielectric material; and
(2) a pair of electrodes disposed within the discharge tube, the tube being elongated and having a pair of spaced ends, an exterior surface being formed between the ends of the tube, one of the said electrodes being a projecting electrode extending longitudinally into the tube from and terminating adjacent to a respective one of the ends of the tube, and the other of the electrodes being a film of electrically conductive, light transmissive material deposited on the exterior surface of the tube and covering all of the exterior surface of the tube only from adjacent the projecting electrode to the other of the end of the tube; and
(b) power supply means connected to at least one of the pair of electrodes for applying a driving signal across the electrodes, and including adjusting means for selectively varying the voltage and frequency of the driving signal and variably controlling a region of the tube which is illustrated to sweep from the one end of the discharge tube to the other of the ends thereof.

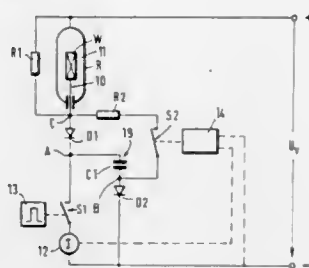
4,645,980
LIGHTING SYSTEM HAVING PHOTSENSING TIMING SWITCH CIRCUIT
Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan
Filed Aug. 10, 1982, Ser. No. 406,982
Int. Cl.⁴ H05B 37/02
U.S. Cl. 315-159



- 2 Claims
1. In a controlled lighting system having at least one lighting apparatus set for illuminating a given area, means for supplying power to the at least one lighting apparatus set and control

circuit means for controllably coupling the means for supplying power to said at least, one lighting apparatus set, wherein said control circuit means includes light sensing means responsive to ambient light for developing a control signal whenever intensity of the ambient light reaches a given level and remains at that level or becomes less, delay circuit means coupled to said light sensing means and responsive to the control signal therefrom for developing a delayed control signal indicating that the intensity of ambient light has remained at or below said given level for a predetermined interval, making the system nonresponsive to short term ambient light intensity variations, power switching means coupled to said delay circuit means and responsive to the delayed control signal therefrom for switching ON power from said means for supplying power to said at least one lighting apparatus set, timing circuit means coupled to said delay circuit means and responsive to the delayed control signal therefrom for providing a predetermined time interval and producing a further control signal upon expiration of the predetermined interval, said power switching means being coupled to said timing circuit means and responsive to the further control signal for switching OFF power from said means for supplying power to said at least one lighting apparatus set upon expiration of the predetermined interval and for switching OFF power to said at least one lighting apparatus set upon disappearance of the delayed control signal in response to said light sensing means determining that intensity of the ambient light has exceeded the given level and said delay circuit determining that the intensity has been exceeded for the given time interval, an alarm circuit means responsive to an output from said timing circuit means for providing an alarm in advance of expiration of the predetermined time interval, a cord having a receptacle on an end thereof, said sensing means including a light responsive component carried by said receptacle, wherein said delay circuit means comprises a debounce circuit, and wherein said power switching means comprise relay means.

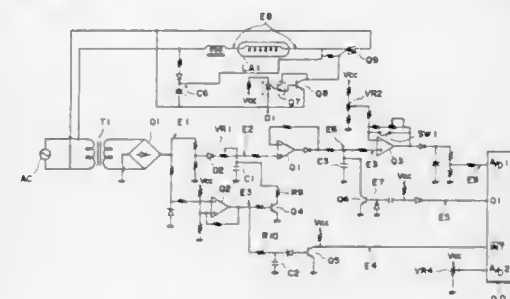
4,645,981
PROCESS AND APPARATUS FOR THE SURFACE TREATMENT OF WORKPIECES BY GLOW DISCHARGE
Siegfried Strömke, Fichtenhain 6, D-5135 Selfkant 4, Fed. Rep. of Germany
Filed Jun. 15, 1984, Ser. No. 620,919
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1983, 3322341
Int. Cl.⁴ H05B 37/00, 39/00, 41/14
U.S. Cl. 315-227 R



- 16 Claims
1. An apparatus for treating the surfaces of workpieces by applying voltage pulses for igniting and temporarily maintaining a glow discharge between a workpiece disposed in a receptacle and a counterelectrode comprising:
a first resistor connected across said workpiece and counterelectrode;
a pulse controllable first switch connected in series with the resistor and with the glow discharge path between the workpiece and the counterelectrode;
a voltage supply connected across said glow discharge path and said first switch;
a capacitor circuit having a first pole coupled to said first

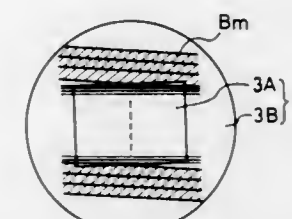
switch and chargeable from said voltage supply through said first resistor when said first switch is opened;
a second switch connected in series with the second pole of said capacitor circuit and said glow discharge path, the closing of said first switch followed by the closing of said second switch after said capacitor circuit is charged causing a voltage across said glow discharge path sufficient to ignite said glow discharge.

4,645,982
LOAD CONTROL UNIT IN AN IMAGE FORMING APPARATUS
Yoshiaki Takayanagi, Ichikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 7, 1983, Ser. No. 549,459
Claims priority, application Japan, Nov. 15, 1982, 57-200070; Jan. 10, 1983, 58-2402
Int. Cl.⁴ G05F 1/00; H05B 37/02, 39/04, 41/36
U.S. Cl. 315-307



- 25 Claims
1. A load control unit comprising:
a load operable according to an amount of power supplied thereto;
means for detecting a power supply voltage for operating said load; and
control means for effecting a digital processing to control the amount of power supplied to said load;
said control means comprising means for converting the voltage detected by said detecting means into a digital value, and said control means being operable to form logarithmic data corresponding to the digital value from said converting means and to determine the amount of power to be supplied in accordance with the logarithmic data.

4,645,983
IMAGE TUBE CIRCUIT
Tomonori Nagasawa, and Hisashi Ushijima, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 24, 1985, Ser. No. 790,977
Claims priority, application Japan, Nov. 29, 1984, 59-252140
Int. Cl.⁴ H01J 29/56
U.S. Cl. 315-370

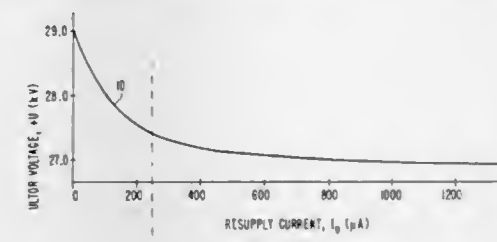


- 6 Claims
1. An apparatus for controlling the deflection of an electron beam in an image pick-up tube of the type including a target

having a portion constituting a raster image area, an electron gun for generating the electron beam, deflection means for use in causing the generated electron beam to scan said target in accordance with a deflection signal, and means for focusing said generated electron beam at said target and being influenced by said deflection signal, said apparatus further comprising:

means for generating a periodic saw-tooth waveform signal having a first portion of each period adapted for causing said beam to scan said raster image area on said target at a first scan velocity and a second portion of each period for causing said beam to scan an over-scan area on said target located outside of said raster image area at a second scan velocity faster than said first scan velocity;
average signal level changing means operative during scanning of said over-scan area for changing the average signal level of the second portion of said saw-tooth waveform signal relative to the average signal level of the first portion of said saw-tooth waveform signal; and
means for supplying the output of said average signal level changing means to said deflection means as said deflection signal therefor, said average signal level of the first portion of said saw-tooth waveform signal being such as to achieve focusing of said electron beam at said target when scanning said raster image area, while the changed average signal level of said second portion of the saw-tooth waveform signal is such as to defocus the electron beam when scanning said over-scan area of said target.

4,645,984
DIODE MODULATOR WITH RASTER WIDTH REGULATION
Hugh F. Sutherland, II, Indianapolis, Ind., and David W. Luz, Albuquerque, N. Mex., assignors to RCA Corporation, Princeton, N.J.
Filed Dec. 24, 1985, Ser. No. 813,159
Int. Cl.⁴ H01J 29/56
U.S. Cl. 315-371



- 17 Claims
1. A raster width control circuit comprising:
a high voltage generator for generating an ultor voltage to accelerate an electron beam of a picture tube, said high voltage generator drawing a resupply current in accordance with beam current loading by said picture tube;
deflection means for generating line and field deflection currents in respective line and field deflection windings to enable said electron beam to scan a raster;
means for modulating the amplitude of said line deflection current;
means for generating a sense voltage representative of said resupply current; and
means responsive to said sense voltage and coupled to said modulating means for generating a nonlinear correction signal to provide modulation of the amplitude of said line deflection current for a given change in beam current loading that is greater within a first range of normal beam current loading levels, than within a second range of levels.

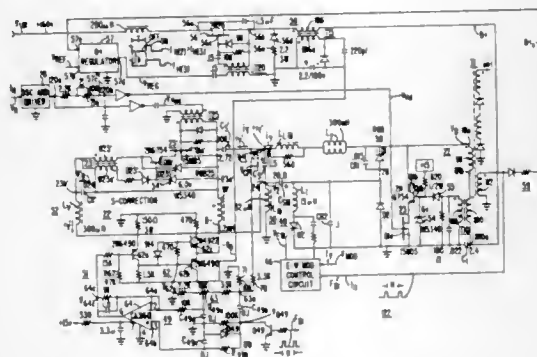
4,645,985

S-CORRECTION CIRCUIT FOR A VIDEO DISPLAY
Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 26, 1986, Ser. No. 833,028
Int. Cl. H01J 29/56

U.S. Cl. 315—371

20 Claims



1. A deflection apparatus for generating a deflection current in a deflection winding, said apparatus being capable of generating said deflection current at any frequency selected from a range of frequencies such that S-correction is automatically provided at the selected frequency, comprising:

- a source of an input signal at a frequency that is related to the selected frequency;
- switching means responsive to said input signal and coupled to said deflection winding for producing said deflection current at the selected frequency;
- an S-capacitance for developing a parabolic voltage that is coupled to said deflection winding to provide S-correction, such that the value of the S-capacitance that substantially contributes to providing said S-correction remains substantially unchanged at any selected frequency within said range; and
- a source of current for generating a generally sawtooth first current that is coupled to said S-capacitance to control the amplitude of said parabolic voltage, said first current having an amplitude that is proportional to the selected frequency such that when the selected frequency changes, S-correction is automatically maintained by a corresponding change in the amplitude of said first current.

4,645,986

DEFLECTIONAL SYSTEM FOR A TELEVISION SET COMPRISING A POWER TRANSISTOR
Joachim G. Melbert, Steinhöring, and Eduard Sawicki, Munich, both of Fed. Rep. of Germany, assignors to SGS Halbleiter-Bauelemente GmbH, Grafting, Fed. Rep. of Germany

Filed May 30, 1985, Ser. No. 739,367
Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420312

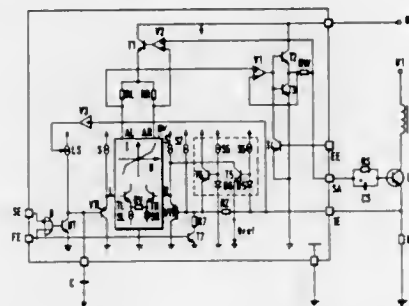
Int. Cl. H01J 29/70, 29/72

U.S. Cl. 315—387

15 Claims

1. A deflectional system of a television set comprising:
- a power transistor supplying a deflecting current increasing in ramp-shaped manner to a deflection coil;
 - sensor means coupled to said power transistor for producing an actual-value signal which is proportional to the instantaneous value of the current flowing in the main path of the power transistor;
 - pulse source means for periodically supplying switching-on pulses of a duration corresponding to the ramp length of the deflecting current; and
 - a driving circuit means receiving the switching-on pulses at a first input and the actual-value signal at a second input and having an output which is coupled to the base of the power transistor, with the driving circuit means applying

an increasing switched-on base current to the power transistor during the switching-on pulse duration, said switched-on base current being controlled by the driving circuit means, during the entire increase thereof and in response to the actual-value signal, to a value which maintains the power transistor in the saturated state with only a slight degree of saturation, and with the driving circuit applying to the base of the power transistor, after termina-



tion of the switching-on pulse, a switching-off base current which decreases rapidly in relation to the increase of the switched-on base current and finally changes polarity and which effects a rapid return of the power transistor from the saturation state into the blocking state, the driving circuit controlling the steepness of the switching-off base current proportionally to the actual-value signal occurring at the end of the switching-on pulse.

4,645,987

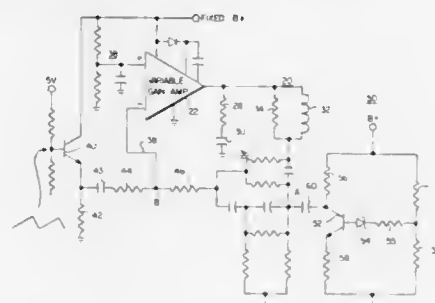
VERTICAL COMPENSATION CIRCUIT UTILIZING VARIABLE GAIN AMPLIFIER
Terence J. Kiteley, Schaumburg, and Sudthichard Vasavanonda, Morton Grove, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 12, 1985, Ser. No. 808,206

Int. Cl. H01J 29/70, 29/72

U.S. Cl. 315—389

5 Claims



1. A television receiver including a source of B+ operating voltage, a CRT and means for producing a raster on said CRT, said B+ operating voltage being subject to change with changes in the beam current in said CRT;
- vertical deflection means including means for developing a vertical drive signal for producing said raster in response to a constant amplitude PWM signal developed by said television receiver, the height of said raster being substantially independent of variations of said B+ operating voltage;
 - means for compensating for the changes in the vertical size of said raster with changes in said B+ operating voltage comprising:
 - variable gain amplifier means;
 - means applying said vertical drive signal to said variable gain amplifier means for changing the amplitude of said

vertical drive signal as a function of the gain of said variable gain amplifier means; and

means for changing the gain of said variable gain amplifier means as a function of changes in said B+ operating voltage.

4,645,988

TEMPERATURE COMPENSATED DRIVE CIRCUIT FOR CRT G2 GRID

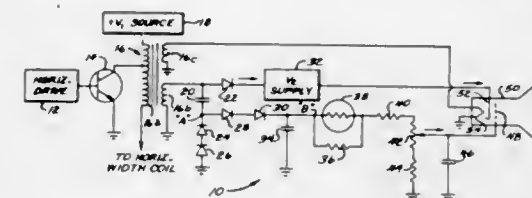
George R. Gawell, Mount Prospect; Richard J. Steinmetz, Elk Grove Village, and Leroy A. Sutton, Wheeling, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 11, 1985, Ser. No. 808,303

Int. Cl. H01J 29/52

U.S. Cl. 315—401

10 Claims



1. For use with a video display having a high voltage section supplying a high voltage signal to a cathode, filament and G2 grid of a CRT, wherein said high voltage section has a negative temperature coefficient, a temperature compensated G2 grid drive circuit comprising:

- an input terminal for receiving said high voltage signal; and
- temperature compensating means coupled between said input terminal and the G2 grid of said CRT, said temperature compensating means having a slightly positive temperature coefficient for maintaining the brightness of said video display substantially constant by driving the G2 grid for compensating for variations with temperature in said high voltage signal supplied to said cathode, filament and G2 grid.

4,645,989

FREQUENCY SWITCHING CIRCUIT FOR MULTIPLE SCAN RATE VIDEO DISPLAY APPARATUS

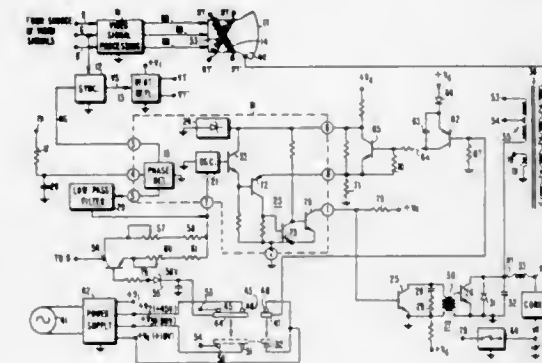
Robert A. Barnes, Bainbridge, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 21, 1984, Ser. No. 581,513

Int. Cl. H01J 29/70, 29/76

U.S. Cl. 315—411

4 Claims



1. A multiple scan rate deflection circuit for a video display apparatus comprising:
- a line deflection oscillator selectively operable at first and second rates;
 - a source of first voltage;
 - a source of second voltage;

a line deflection winding;

a line deflection output stage incorporating output switching means coupled to said line deflection winding;

switch means having first and second positions, said first position causing said oscillator to operate at said first rate and causing said source of first voltage to be coupled to said output transistor, said second position causing said oscillator to operate at said second rate and causing said source of second voltage to be coupled to said line deflection output stage;

first means coupled to said oscillator for controlling the conduction of said output switching means to generate scanning current in said line deflection winding; and

second means coupled to said switch means and said conduction controlling means for causing said output switching means to be substantially nonconductive for a predetermined period of time when said switch means changes states between said first and second positions.

4,645,990

HIGH VOLTAGE CONTROL CIRCUIT FOR VIDEO DISPLAY APPARATUS

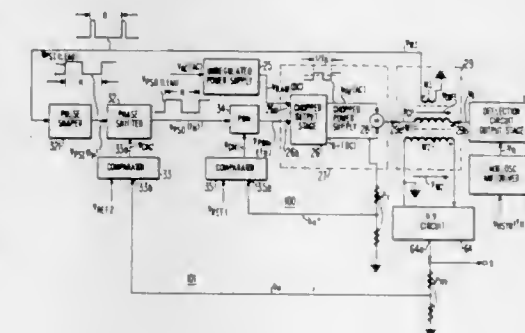
Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 30, 1985, Ser. No. 760,458

Int. Cl. H01J 29/70

U.S. Cl. 315—411

17 Claims



1. A high voltage power supply comprising:
- a source of an input signal at a deflection rate;
 - a deflection winding;
 - a deflection circuit output stage responsive to said input signal for producing a deflection current in said deflection winding and a deflection rate output voltage;
 - means for producing first and second voltages that are coupled to said output stage such that said first voltage controls the amplitude of said deflection current; and
 - means responsive to said output voltage of said output stage and to said second voltage for producing said high voltage therefrom, wherein a given variation in said second voltage is capable of varying said high voltage without substantially affecting the amplitude of said deflection current.

4,645,991

APPARATUS FOR REMOVING TORQUE RIPPLES IN DIRECT-CURRENT MOTORS

Itsuki Ban, 3-50-18, Higashi Oizumi, Nerima-ku, Tokyo, and Akihiro Nakajima, 9-8 Ichibayamatocho, Tsurumi, Yokohama, Kanagawa, both of Japan

Division of Ser. No. 360,439, Mar. 22, 1982. This application Feb. 4, 1985, Ser. No. 698,080

Claims priority, application Japan, Mar. 22, 1981, 56-43201;

Apr. 1, 1981, 56-47238; Apr. 30, 1981, 56-64282

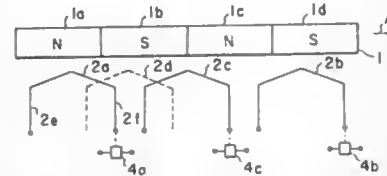
Int. Cl. H02P 5/16

U.S. Cl. 318—331

8 Claims

1. An apparatus for removing torque ripples for a direct-cur-

rent motor having Y-connected armature coils with one terminal of each coil connected to a commutator segment to which only said one terminal is connected, said segments together with a pair of brushes comprise a commutator for said motor, said apparatus comprising: a detector for detecting counter-electromotive forces in said direct-current motor; a transistor for controlling electric current flowing through the armature



coils; a power supply for supplying a current to said transistor; a resistor connected in series with said direct-current motor; and an operational circuit for detecting a voltage drop generated across said resistor and for controlling an input applied to a base of said transistor to render the predetermined reference voltage proportional to the product of said counter-electromotive forces and said voltage drop generated across said resistor.

4,645,992 ELECTRONICALLY CONTROLLED SERVMOTOR LIMIT STOP

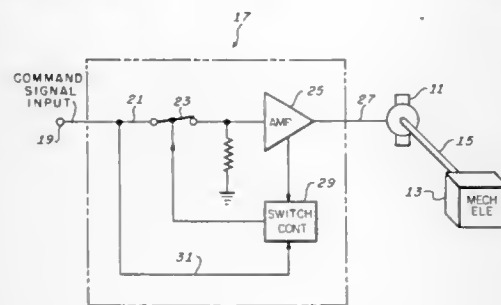
Roger L. Ritenour, Charlottesville, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,706

Int. Cl.⁴ G05F 1/08

U.S. Cl. 318-469

7 Claims



1. A drive circuit for a servomotor operating in a servosystem employing mechanical travel limit stops comprising: means for receiving command signals; means coupled to said receiving means and having output means for coupling to said servomotor for amplifying said command signals; means coupled to said amplifying means for monitoring current to said servomotor; means coupled to said monitor means for identifying servomotor overload currents; means coupled between said receiving means and said amplifying means and further coupled to said identifying means for terminating command signals to said amplifying means when a servomotor overload current is identified; and means coupled to said receiving means and said terminating means for restoring command signals to said amplifying means when a reverse direction command signal which exceeds a preselected threshold level is received.

4,645,993 POSITION CONTROL METHOD

Akira Naito; Tetsuji Kodama; Hideki Tsuruse, and Hironobu Tsutsumi, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

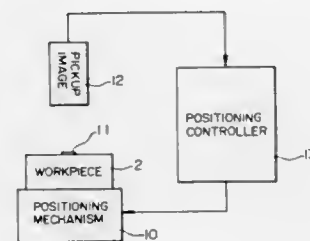
Filed Mar. 11, 1985, Ser. No. 710,269

Claims priority, application Japan, Mar. 9, 1984, 59-45009

Int. Cl.⁴ G05B 19/42

U.S. Cl. 318-568

4 Claims



1. A position control method, comprising the steps of: providing a two-dimensional mark on an object to be positioned; scanning said mark and an adjacent area with a television camera; extracting from an output of said television camera positions of corners of said mark; calculating a center point of said mark from said positions of said corners; calculating an amount of deviation of said center point from a reference point; and correcting a position of said object by an amount of said deviation.

4,645,994 SPACE-REFERENCED, RATE-STABILIZED MULTIPLE-GIMBAL-PLATFORM SYSTEM

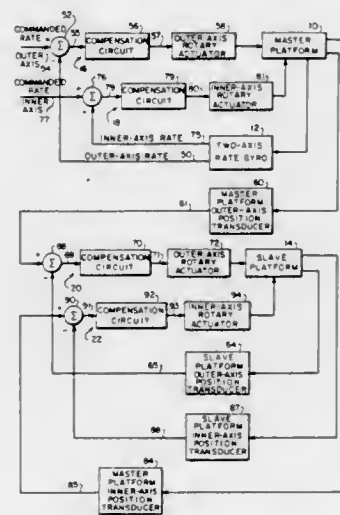
Vincent Giancola, Brea, and Edward M. Borseth, Claremont, both of Calif., assignors to General Dynamics, Pomona, Calif.

Filed Apr. 29, 1985, Ser. No. 728,622

Int. Cl.⁴ B64C 17/06

U.S. Cl. 318-649

14 Claims



1. A space-referenced, rate-stabilized gimbal platform system, comprising
a master gimbal having a master platform that is pivotable with respect to a first axis;
a gyroscope mounted to the master platform;
a slave gimbal having a slave platform for supporting directional apparatus, wherein the slave platform is pivotable with respect to a second axis that is parallel to the first axis;

an angular rate servo loop system for rate stabilizing the master platform with respect to the first axis; and an angular position servo loop system for stabilizing the slave platform with respect to the second axis in accordance with the position of the master platform with respect to the first axis to thereby cause the orientation of said directional apparatus to track the orientation of the gyroscope with respect to the first and second axes.

4,645,995 BATTERY CHARGER FOR PLURAL CELL HOLDING MODULES

Jacquelyn B. Terrell, and Ferdinand H. Mullersman, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

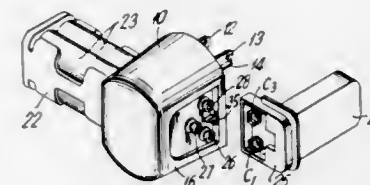
Continuation of Ser. No. 133,820, Mar. 25, 1980, abandoned.

This application May 4, 1984, Ser. No. 608,254

Int. Cl.⁴ H02J 7/00; H01M 10/46; H01H 61/00

U.S. Cl. 320-2

20 Claims



1. A battery charger comprising:

a housing having first and second sets of external terminals located for simultaneous connection to the corresponding terminals of separate external battery circuits to be charged, said external terminals each including means for releasably supporting a respective battery circuit when the corresponding terminals of said battery circuit are connected for charging;

a transformer inside the housing comprising a core member having a frame extending therearound, a primary winding and two secondary windings each having a pair of end terminals, such terminals being connected internally of the housing to separate ones of a respective set of external terminals;

blade connectors electrically connected to said primary winding and extending to said housing for acceptance by an external electrical receptacle, and

a ground pin connector adapted for acceptance by the external electrical receptacle, said ground pin connector being mechanically affixed to said core frame and extending therefrom through said housing, said connectors being adapted to support said charger and said external battery circuits when said connectors are disposed in the receptacle.

2. A battery charger comprising a charger housing having two opposed, generally parallel sides for the mounting of separate battery modules holding cells to be charged, said sides having recessed module-receiving surfaces, first and second external terminals on each of said recessed surfaces for connection to mating terminals of the battery module, said terminals being formed to releasably support the module connected thereto,

a transformer at the interior of said housing having a core member, a primary winding and at least one secondary winding wound on said core member, said secondary winding having end terminals connected respectively to the external terminals on at least one of said sides,

a pair of blade connectors electrically connected to said primary winding extending from a side of said housing intermediate said opposed sides for acceptance by the line contacts of an electrical receptacle, said blade connectors being spaced apart in the direction of spacing between said opposed sides, and a grounding pin affixed to said trans-

former core member and extending therefrom through said housing for acceptance by the ground contact of the electrical receptacle.

4,645,996 RECHARGEABLE BATTERY AND ELECTRICAL CIRCUIT FOR CHARGING THEREOF

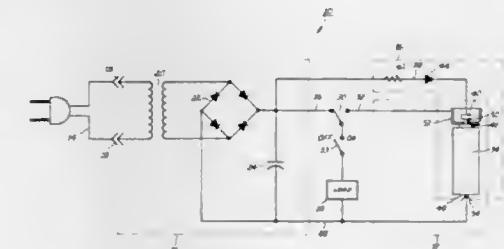
Kenneth E. Toops, Gainesville, Fla., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1985, Ser. No. 791,497

Int. Cl.⁴ H02J 7/00; H01M 14/00

U.S. Cl. 320-2

3 Claims



1. A nickel-cadmium rechargeable cell for use in an energy-using device having at least one charging terminal contact for recharging said cell, said energy-using device adapted to alternatively receive either a standard cylindrical AA, AAA, C or D size non-rechargeable cell having a pair of power terminal contacts spaced apart by a standard distance, said rechargeable cell comprising:

a hollow cylindrical cell container one end of which provides an axially facing negative power terminal contact; a cell cover disposed at the other end of said cylindrical cell and electrically insulated from said container and said cover cooperating with said container to seal the interior of said cell from the environment external thereto, said cover having a positive power terminal contact surface spaced apart from said negative power terminal contact by a distance equal to said standard distance, said cover further having a terminal extension carried by said cover and extending axially away from said cell container, said terminal extension having a terminal extension charging contact surface adapted to engage said charging terminal contact of said energy-using device, said surface spaced apart from said negative power terminal contact by a distance greater than said standard distance.

4,645,997 TRANSIENT FREE SOLID STATE AUTOMATIC POWER FACTOR CORRECTION

James S. Whited, Radford, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Mar. 13, 1985, Ser. No. 711,170

Int. Cl.⁴ G05F 1/70; H02J 3/18

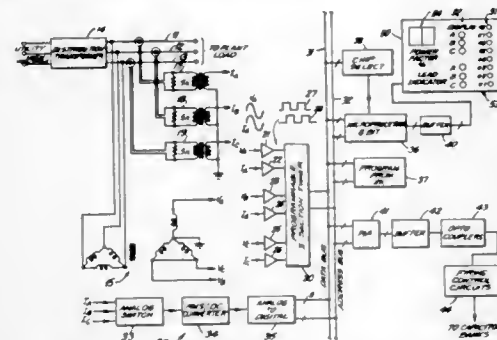
U.S. Cl. 323-211

16 Claims

1. A transient free automatic power correction factor device for a multiphase alternating current source having a plurality of power lines which comprises:

first means for detecting the current of each phase of the power lines of the alternating current source;
second means for detecting the voltage of each phase of the power lines of the alternating current source;
third means, responsive to said first means and said second means, for providing a count indicating the phase difference between current and voltage and for converting the count into a plurality of time dependent signals;
microprocessor means, responsive to said third means, for executing instructions for converting the time dependent signals into degrees, for converting the degrees into a cosine value, to provide a power factor value signal;

a plurality of banks of delta connected capacitors responsive to switching signals for adding or removing capacitance to or from the power lines of the alternating current source in response to the switching signals; and solid state switching means responsive to said power factor



value signal for supplying said switching signals to said capacitors when, for any voltage, said voltage on said capacitors equals said voltage on the associated power line, whereby banks of capacitors can be added or subtracted at any time without creating any current surge or electrical transient.

4,645,998

CONSTANT VOLTAGE GENERATING CIRCUIT

Hirofumi Shinohara, and Katsuki Ichinose, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

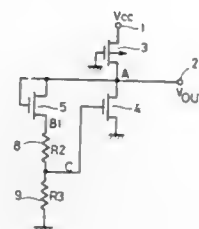
Filed Aug. 29, 1985, Ser. No. 770,426

Claims priority, application Japan, Oct. 26, 1984, 59-226293

Int. Cl.⁴ G05F 3/20

U.S. Cl. 323—313

8 Claims



1. A constant voltage generating circuit comprising: a power supply terminal adapted to be connected to a power supply means, means for applying a reference potential, a voltage output terminal for providing regulated constant voltage, pull-up means connected between said power supply terminal and said voltage output terminal for pulling up output voltage, pull-down means connected between said reference potential supply means and said voltage output terminal and having a control terminal for pulling down output voltage, and at least two resistance means connected in series between said reference potential supply means and said voltage output terminal, a node between said at least two resistance means being connected to said control terminal of said pull-down means; a ratio of the impedance of one of said resistance means connected to said voltage output terminal to the impedance of said another one of said resistance means connected to said reference potential supply means being

controlled in an inverse relation to any change of voltage of said power supply means.

4,645,999

CURRENT MIRROR TRANSIENT SPEED UP CIRCUIT

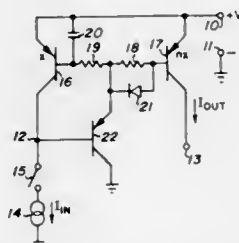
Tamas S. Szepesi, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 7, 1986, Ser. No. 827,049

Int. Cl.⁴ G05F 3/20

U.S. Cl. 323—315

6 Claims



1. In a current mirror having a diode coupled input transistor driving an output transistor in response to a current input signal, means for speeding up the turn on of output current and for providing substantial transient overshoot in response to a turn on of said current input signal comprising: means for coupling said current input signal directly to said output transistor; and means for delaying the turn on of said input transistor.

4,646,000

METHOD AND APPARATUS FOR MEASURING SOIL SALINITY

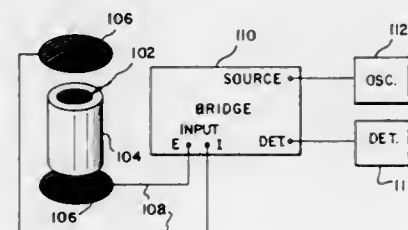
Robert H. Wills, Ely, Vt., assignor to The Yellow Springs Instrument Company, Yellow Springs, Ohio

Filed Nov. 8, 1984, Ser. No. 669,693

Int. Cl.⁴ G01R 27/26

U.S. Cl. 324—61 R

15 Claims



1. A method for measuring soil salinity comprising the following steps: measuring the real part of the low frequency electric permittivity (ϵ') of a soil sample; determining the salinity of said soil sample based on the measured real part of the low frequency electric permittivity (ϵ'); and registering the salinity of said soil sample.

4,646,001

RESISTIVE WEAR SENSORS

David G. Baldwin, and Albert E. S. White, both of Swansea, Wales, assignors to Morganite Electrical Carbon Limited, Morriston, Wales

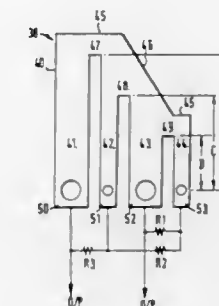
Filed Nov. 9, 1984, Ser. No. 669,889

Claims priority, application United Kingdom, Nov. 21, 1983, 8331027; Aug. 9, 1984, 8420250

Int. Cl.⁴ G08B 21/00; B60T 17/22; G07C 5/08

U.S. Cl. 324—65 P

3 Claims



1. A resistive wear sensor comprising: (i) a base having a top side and an underside; (ii) output connector means attached to extend from the underside of said base and for connection to an external detection circuit; (iii) electrically conductive linkage means mounted on the top side of said base in a position to be worn and extending to a given height above the top side of said base, said linkage means being electrically serially connected between said output connector means; and, (iv) resistor means mounted on said base in a position protected from wear, said resistor means being electrically serially connected directly between said output connector means and in parallel with said linkage means; whereby wear of the sensor to said given height cuts said linkage means to produce an abrupt, discrete change in the resistance of the sensor between said output means, wherein said linkage means is an inverted soft metal U-shaped link, the resistor means is a resistor formed on the underside of said base and the height of the U-shaped link above the top side of said base sets the wear indication height for the sensor, and wherein said output connector means are a pair of headed pins passing through said base, said U-shaped link is rivetted to said pin heads and said resistor is printed on the underside of said base between said pins.

4,646,002

CIRCUIT FOR HIGH IMPEDANCE BROAD BAND PROBE

Alfons A. Tuszyski, Burnsville, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed May 10, 1984, Ser. No. 608,782

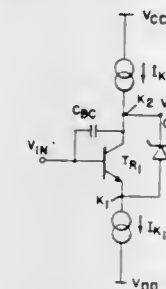
Int. Cl.⁴ G01R 31/02

U.S. Cl. 324—72.5

9 Claims

1. A high impedance broadband probe for use in making electrical measurements comprising an active circuit element having a substrate and layers corresponding to an emitter, base and collector and with a base-to-substrate capacitance C_{BS} and with a base-to-emitter capacitance C_{BE} , the improvement comprising means for reducing C_{BE} by providing a circuit having gain (K_1) at the emitter of the active element to be very close to but less than one and a positive number, and means for reducing base-to-collector capacitance (C_{BC}) having means for maintaining the gain of the collector (K_2) to be generally

equally to gain (K_1) and means for providing a DC voltage source with low AC impedance between the collector and



emitter which maintains the emitter and collector gains generally equal thereby reducing the C_{BC} .

4,646,003

METER TESTING DEVICE

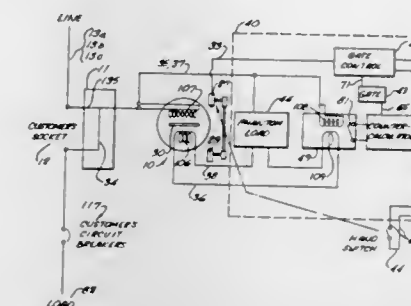
Charles E. Phillips, Alhambra, and Alan M. Hood, San Dimas, both of Calif., assignors to Southern California Edison Company, Inc., Rosemead, Calif.

Continuation of Ser. No. 354,149, Mar. 5, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 693,811

Int. Cl.⁴ G01R 35/04

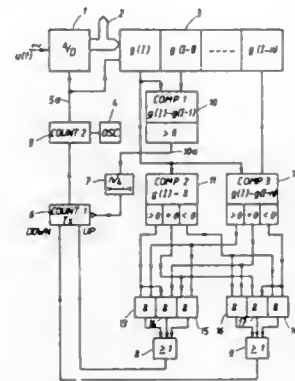
U.S. Cl. 324—74

14 Claims



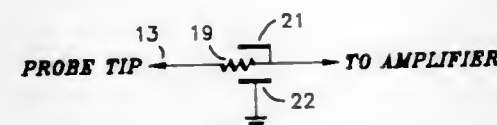
1. A self-contained portable apparatus for testing the accuracy of watt-hour meter at its operational site, the meter having contacts for connection with electrical power line terminals, and having contacts for connection with electrical load terminals, the meter being adapted for connection with said terminals, comprising: a. a phantom load means, said phantom load means being adapted for connection with said electric power line terminals and said electric load terminals at the meter operational site, the phantom load means being a low load representative of a higher load and including a loading transformer; b. watt transducer means electrically connected with said loading transformer whereby the loading transformer generates a prescribed current to the meter and the watt transducer, thereby simulating a higher watt load than actually applied to said transducer and meter; and c. calculating means for comparing over a time period, the watt-hours from the phantom load means through the watt transducer relative to the watt-hours from the phantom load means through the meter for providing information representative of the accuracy of the meter, said information being obtained from said calculating means.

4,646,004
PHASE-LOCKED SAMPLING OF A PERIODIC SIGNAL
 Nils Brandt, and Anders Karlsson, both of Västerås, Sweden,
 assignors to ASEA Aktiebolag, Västerås, Sweden
 Filed Jun. 12, 1985, Ser. No. 743,928
 Claims priority, application Sweden, Jun. 15, 1984, 8403225
 Int. Cl.⁴ G01R 23/14
 U.S. Cl. 324—79 R



1. A method for phase-locked sampling during measurement of a periodically varying quantity $u(t)$ with a nominal frequency f_m , the sampling being intended to take place n times per period with a sampling frequency of $f_s = n \cdot f_m$, the last $n+1$ measured sampled digital values $g(1), g(2), \dots, g(n)$ being stored in a shift register, the method being characterized in that the sampling frequency f_s is varied around $f_s = n \cdot f_m$ so that it will be adapted to the periodicity of the quantity to be measured in such a way that phase-locked sampling is obtained, the adaptation being based on the result of a comparison of the sampled data of $g(1)$ and $g(n)$ according to the following:
 the sampling frequency is increased if $g(1) \leq 0$ and $g(n) - g(1-n) \leq 0$, provided that $g(1)$ and $g(n) - g(1-n)$ are not both $= 0$, and
 the sampling frequency is reduced if $g(1) \geq 0$ and $g(n) - g(1-n) \geq 0$, provided that $g(1)$ and $g(n) - g(1-n)$ are not both $= 0$, and
 the sampling frequency is retained unchanged if any one of the following conditions is met
 both $g(1)$ and $g(n) - g(1-n)$ are zero,
 $g(1)$ is positive and $g(n) - g(1-n)$ is negative, and
 $g(1)$ is negative and $g(n) - g(1-n)$ is positive.

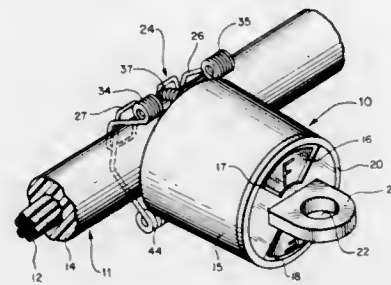
4,646,005
SIGNAL PROBE
 Carl R. Ryan, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
 Filed Mar. 16, 1984, Ser. No. 590,097
 Int. Cl.⁴ G01R 1/30, 31/02
 U.S. Cl. 324—123 R



1. A signal measuring probe comprising:
 measuring tip means for receiving a signal;
 an amplifier coupled to said tip means;
 a body housing said amplifier and said tip means, said body being an antenna providing a ground reference for said probe; and
 frequency compensation means for compensating said signal, said frequency compensation means being determined

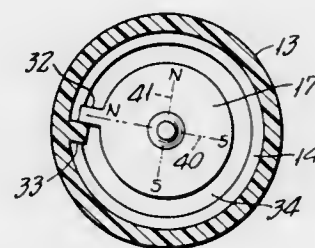
by said measuring tip means placement with respect to said body housing.

4,646,006
CLAMP MECHANISM FOR POWER LINE MOUNTED MONITORING DEVICE
 Edmund O. Schweitzer, Jr., 2433 Center St., Northbrook, Ill. 60062
 Filed Jun. 28, 1984, Ser. No. 625,528
 Int. Cl.⁴ G01R 1/22; A47F 13/06; H01F 17/06
 U.S. Cl. 324—127



1. An automatic clamping mechanism for mounting a circuit condition monitoring device to an electrical cable, comprising:
 a housing for the monitoring device;
 a pair of clamp members projecting in generally parallel-spaced relationship from spaced locations on said housing;
 at least a portion of the projecting end of each of said clamp members being pivotal toward the other of said clamp members, so that each of said members encircle at least a portion of the cable when the cable is positioned between said inwardly pivoted members;
 biasing means associated with each of said clamp members for biasing said projecting portions toward each other; and
 trigger means including an elongated laterally deformable trigger member extending between said projecting portions for maintaining a spacing between said projecting portions greater than the diameter of the conductor, said trigger member being longitudinally non-compressible in the absence of a lateral deformation to prevent said projecting portions from pivoting toward each other, but longitudinally compressible upon lateral deformation resulting from lateral engagement with the conductor to allow said clamp members to encircle the conductor.

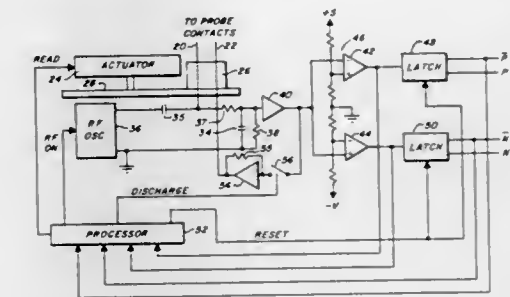
4,646,007
TACHOMETER INDICATOR WITH UNCOMPENSATED MAGNETIC RETURN TO ZERO
 Thomas G. Faria, 17 Park Dr., Waterford, Conn. 06385
 Filed Mar. 25, 1985, Ser. No. 715,409
 Int. Cl.⁴ G01R 1/20
 U.S. Cl. 324—146



1. An electrical indicator for providing analog readings as a function of signals furnished to sine and cosine windings, said indicator comprising in combination a permanently magne-

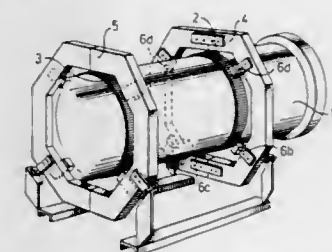
tized rotor disposed within the confines of a bobbin on and about which are disposed sine and cosine windings, a pointer operatively coupled to said rotor and rotatable with said rotor between a zero position and a maximum indicating position, a projection formed on said rotor, a stop member carried by said bobbin in the path of said rotor projection as said rotor rotates, said stop being located along with said pointer relative to said rotor projection such that said projection engages said stop when said pointer is at said zero position, and a second permanent magnet disposed in magnetically coupled relation to said rotor and in fixed position in said indicator for urging said rotor toward the pointer zero position against said stop whenever said pointer is within the first half of its full scale rotation when said sine and cosine windings are deenergized.

4,646,009
CONTACTS FOR CONDUCTIVITY-TYPE SENSORS
 Roy Mallory, Bedford, Mass., assignor to ADE Corporation, Newton, Mass.
 Continuation of Ser. No. 379,563, May 18, 1982, abandoned.
 This application Apr. 22, 1985, Ser. No. 725,160
 Int. Cl.⁴ G01R 31/26
 U.S. Cl. 324—158 R



1. A semiconductor wafer conductivity-type detector system comprising:
 contacts for providing electrical and mechanical contact with a wafer and including an axially extending sharp tip portion adapted to provide such contact;
 means for selectively applying said contacts to a location on a semiconductor wafer;
 said contacts including an axially extending and sharp tip portion of greater hardness than said wafer which tip portion contacts said wafer at said location;
 means for sensing charge across said contacts as applied to said wafer whereby wafer charge is measured at said location;
 means for providing accelerated discharge through said contacts of the wafer charge at said location as sensed across said contacts by applying a charge having a polarity opposite the polarity of the charge sensed across said contacts; and
 means for determining wafer conductivity type of a discharged wafer through said contacts at said location.

4,646,010
FLUIDICALLY MOUNTED APPARATUS FOR MEASURING THE TORQUE IN A SHAFT
 Karl Byström, Sollentuna; Erik Karlsson, Vällingby; Gunnar Kihlberg, Sollentuna, and Henry Reit, Stockholm, all of Sweden, assignors to Jungner Marine AB, Solna, Sweden
 PCT No. PCT/SE84/00233, § 371 Date Feb. 22, 1985, § 102(e)
 Date Feb. 22, 1985, PCT Pub. No. WO85/00220, PCT Pub. Date Jan. 17, 1985
 PCT Filed Jun. 20, 1984, Ser. No. 709,688
 Int. Cl.⁴ G01L 3/10; G01B 7/30
 U.S. Cl. 324—208



1. Apparatus for measuring the torque in a rotatable shaft, said apparatus comprising:
 (a) two rotors which, in use, are mounted on and axially

1. In a system for diagnosing an internal combustion engine having a starter and a starter operation sensor, the improvement comprising:
 a starter operation diagnosing circuit responsive to output voltage of said starter operation sensor and to engine speed for signaling a condition of operation of said starter, said diagnosing circuit producing an output signal when said output voltage exceeds a predetermined range;
 means for generating a second voltage dependent on the engine speed;
 a signal generating circuit responsive to said second voltage for producing a fail-safe signal in dependency on a magnitude of said second voltage; and
 gate means responsive to said fail-safe signal and to said output signal of said diagnosing circuit for providing a signal to operate the engine.

spaced on the rotatable shaft, each one of said two rotors comprising:

- (i) a carrying band which, in use, circumferentially surrounds the rotatable shaft;
 - (ii) a folded cog band which, in use, circumferentially surrounds said carrying band, said folded cog band being made of magnetic material, being attached to said carrying band, and comprising a plurality of uniformly spaced cogs;
 - (iii) means for connecting the ends of said carrying band to form a ring surrounding the rotatable shaft;
 - (iv) two axially spaced rows of guide members extending radially inwardly from the radially inward surface of said carrying band;
 - (v) an inflatable hose disposed between said two axially spaced rows of guide members; and
 - (vi) means for inflating said inflatable hose with a fluid to thereby expand said inflatable hose both against the external circumference of the rotatable shaft and against the internal circumference of said carrying band, thereby fixing said folded cog band on the rotatable shaft, and
- (b) two stators axially spaced relative to the rotatable shaft, each one of said two stators being fixed relative to said rotatable shaft and, in use, being located radially outwardly of and surrounding a corresponding one of said two rotors, each one of said two stators comprising means for generating electrical signals which depend on the angular position of the corresponding one of said two rotors relative to said each one of said two stators.

4,646,011

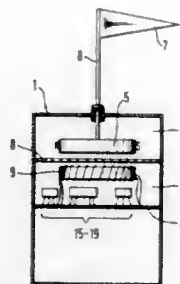
ELECTRONIC ANGULAR POSITION TRANSMITTER WITH TOROIDAL CORE AND ROTATABLE MAGNET
Werner Wallrafen, Kelkheim/Ruppertsheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 28, 1984, Ser. No. 675,572

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1983, 3345791

Int. Cl.⁴ G01B 7/30; G01W 1/00; G01R 33/04
U.S. Cl. 324—208

3 Claims



3. In a contactless electronic angular-position transmitter for a rotatable mechanical member, in particular a weather vane, having a magnet coupled to said mechanical member and which is rotatable in proportion to the angle to be measured and having two sensor elements arranged at right angles to each other to be acted on by a magnetic field produced by the rotatable magnet so as to produce one electric signal each, each signal being a measure of one of two magnetic field components which are oriented at right angles to each other, the improvement comprising

a toroidal core of a magnetic field detector developed in accordance with the flux-gate principle, and wherein a field produced by said magnet is substantially stronger than the earth's magnetic field, each of the two sensor elements comprises at least one sensor coil wound about said toroidal core in a diametrical plane, said magnet being rotatable in a plane parallel to a plane of

said core for magnetic interaction with the sensor coil in each of said sensor elements,

said toroidal core and said rotatable magnet are positioned in a closed inner space which is substantially shielded from the terrestrial magnetic field, said transmitter further comprising

an exciter coil disposed on said core, an electric circuit coupled to said sensor coils, and a housing of magnetically shielding material enclosing said space, and wherein at least a part of said electric circuit is positioned within said closed inner space for evaluation of the signal of said sensor coils and for feeding said exciter coil, and wherein said rotatable magnet is positioned in a closed-off subdivision of said space, and wherein

said electric circuit includes means for extracting a second harmonic component of a signal induced in a sensor coil for determination of angular position of the rotatable member.

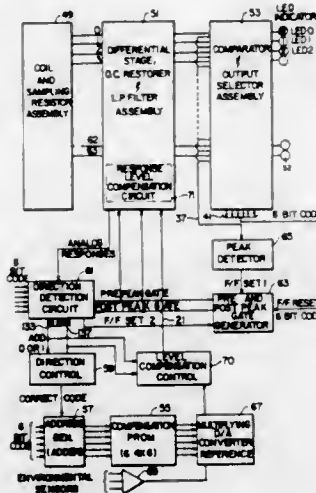
4,646,012

DIGITAL, ELECTROMAGNETIC ROD POSITION INDICATOR WITH PRECISELY CONTROLLED TRANSITIONS BETWEEN DIGITAL STATES
Michal M. Feilchenfeld, Churchill, and Charles G. Geis, N. Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 24, 1984, Ser. No. 573,459

Int. Cl.⁴ G01B 7/14; G01N 27/72; G08C 19/06; G01F 25/00
U.S. Cl. 324—208

15 Claims



1. Apparatus for detecting the location of the end of an elongated, longitudinally movable magnetically permeable member comprising:

a plurality of spaced, discrete electrical coils through which the elongated member passes in moving longitudinally; an alternating current source electrically coupled to each of said coils;

output signal generating means connected to said coils which responds to the change in impedance thereof as the end of said magnetically permeable, elongated member passes through each coil by generating a coded digital output signal representative of the location of the end of said magnetic permeable elongated member relative to said coils, said output signal changing from one digital value to the next as the end of said elongated member passes one of said coils;

means for storing a compensation signal for each of said coil locations;

means responsive to the digital output signal generated by the digital output signal generating means for selecting the appropriate stored compensation signal for the coil being approached by the end of said elongated member; and

means for applying said selected compensation signal to the digital output signal generating means to adjust the location relative to the coil being approached at which the digital output signal changes from one value to the next.

4,646,013

METHOD AND APPARATUS FOR EDDY CURRENT TESTING BY AT LEAST TWO DIFFERENT FREQUENCY SIGNALS

Bengt H. Törnblom, Vikhus, Rytterne, S-725 92 Västerås, Sweden

PCT No. PCT/SE84/00175, § 371 Date Nov. 13, 1984, § 102(e) Date Nov. 13, 1984, PCT Pub. No. WO84/04596, PCT Pub. Date Nov. 22, 1984

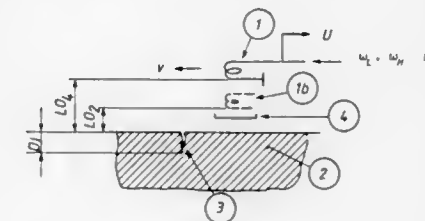
PCT Filed May 10, 1984, Ser. No. 680,258

Claims priority, application Sweden, May 16, 1983, 8302738

Int. Cl.⁴ G01N 27/90; G01R 33/12

U.S. Cl. 324—225

5 Claims



1. A method for testing electrically conducting test objects for defects therein, comprising:

exciting a transducer with signals of different frequencies to induce eddy currents in said test object;

deriving at least two test signals from said transducer such that the quotient of said at least two test signals is substantially constant as a function of the distance of said transducer from the surface of said test object;

selecting one transducer frequency excitation to produce a current penetration depth less than a specified penetration depth;

selecting the lowest transducer excitation frequency to provide a current penetration depth at least three times greater than the depth of a second specified detection depth; and

detecting a defect by forming a quotient between said at least two test signals, thereby determining such defects with small angle relationships between the fault vector and the lift-off vector.

4,646,014

HALL EFFECT FIELD SENSOR CIRCUIT WITH TEMPERATURE COMPENSATION USING OP AMPLIFIER

Hannspeter Eulenberger, Aachen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,587

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235188

Int. Cl.⁴ G01R 33/06; G01N 27/72; H03K 17/90, 19/18

U.S. Cl. 324—251

11 Claims

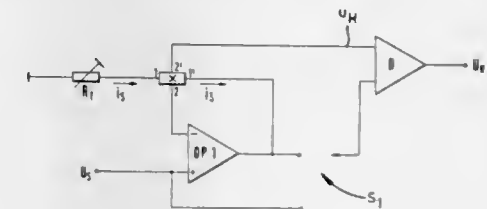
1. A magnetic field sensing circuit comprising:

a Hall effect magnetic field sensor having a drive current path with respective input and output drive-current-path terminals, the input path terminal being connected to a drive current source, said drive-current-path extending between said input path terminal and said output path terminal on opposite sides of said path, and a first signal voltage terminal and a second signal voltage terminal at opposite sides thereof across said path and connected to said sensor, said first signal voltage terminal being physi-

cally on the Hall effect sensor between the input and output path terminals of said path;

a substantially temperature-independent input resistor connected to the input terminal of said path in series with said drive current source;

an operational amplifier having an inverting input connected to said first signal voltage terminal, a noninverting input connected to a source of a constant input voltage source, and an output connected to the output terminal of said path, whereby a drive current is generated in said path of a magnitude determined by the input voltage of said input



voltage source, the input resistance and the partial resistance of said path depending upon the location of said first signal voltage terminals between the input and output terminals of said path so that a temperature change in the sensor changes the drive current and compensates for the temperature dependency of a Hall voltage tapped at said second signal voltage terminal;

a differential amplifier having one input connected to said second voltage terminal and a second input connected to the output of said operational amplifier for providing at its output a temperature-compensated Hall voltage.

4,646,015

FLUX GATE SENSOR WITH IMPROVED SENSE WINDING GATING

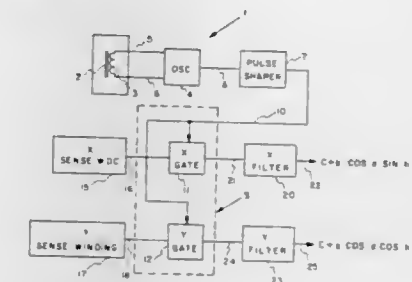
Alan C. Phillips, Los Altos, Calif., assignor to Etak, Inc., Menlo Park, Calif.

Filed Nov. 28, 1984, Ser. No. 675,827

Int. Cl.⁴ G01R 33/04

U.S. Cl. 324—253

10 Claims



1. A flux gate sensor comprising:

a saturable magnetic core; a drive winding wrapped about said core; a sense winding wrapped about said core; switching means coupled to said drive winding and a source of a predetermined potential for driving said core into saturation, said switching means including means responsive to a predetermined change in the magnitude of current in said drive winding when said core becomes saturated for driving said core out of saturation; a node located in said switching means having a potential which is driven toward said predetermined potential when said core is driven out of saturation; means coupled to said node which is responsive to said change in potential at said node when said core is driven

out of saturation for providing a gate control signal having a predetermined period; and
gating means coupled to said sense winding which is responsive to said gate control signal for providing an output from said sense winding during said predetermined period.

4,646,016

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD HAVING A SERIES OF SHAM POLARIZING CYCLES FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE

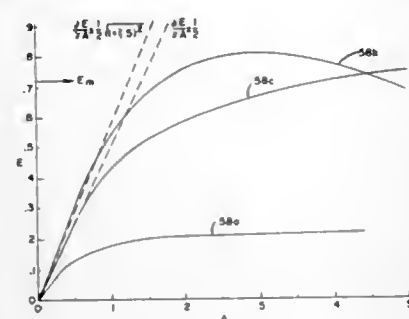
Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 18, 1985, Ser. No. 761,128

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—303

32 Claims



I. Method for reducing the effects of both precessing and non-precessing residual polarization in nuclear magnetic logging (NML) operations so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) of relatively high strength at an angle to the earth's field (B_e), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (i) Establishing a series of alternative Q values associated with integers M_1, M_2, \dots, M_o where M_1 is 1 and M_o is greater than two, for a coil circuit of the polarizing and detection circuitry, said first Q value for said coil circuit where $M_1=1$ being of a value that maximizes NML response after termination of the polarizing field (B_p) and ring down of said coil circuit have occurred, said M_2, \dots, M_o remainder Q values each being an artificially high value greater than said first Q value and not equal to each other but wherein said M_2, \dots, M_o remainder Q values also permit the coil circuit to alternately ring at higher frequencies than related to said first Q value, for aiding non-precessing components of residual polarization to precess;
- (ii) Before beginning a present-in-time collection cycle, reorienting the protons of fluids of said common interval by a sham polarizing field of less strength than that of the polarizing field (B_p), said sham polarizing field having a slow-rising amplitude vs. time turn-on segment so as to reorient non-precessing components of residual polarization associated with the prior-in-time collection cycle about the magnetic lines of said sham polarizing field, while simultaneously scattering precessing components of

said residual polarization associated with the prior-in-time collection cycle;

- (iii) Terminating the sham polarizing field of step (ii) after a short duration and permitting the coil circuit to ring at one of said M_2, \dots, M_o remainder Q values and generate an oscillating magnetic field that causes certain non-precessing components of the residual polarization to precess;
- (iv) Repeating steps (ii) and (iii) but permitting the coil circuit to ring at another of said M_2, \dots, M_o remainder Q values and generate another oscillating magnetic field that causes other non-precessing components of the residual polarization to precess;
- (v) Then performing the present-in-time collection cycle wherein the polarizing field of strength (B_p) also has a slow-rising amplitude vs. time turn-on segment and high magnetic strength whereby final precessing components of residual polarization previously non-precessing are scattered prior to detection of the present-in-time NML signal and said logging operations can be swiftly and accurately carried out without need of a depolarization period between the present-in-time and prior-in-time collection cycles.

4,646,017

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME COLLECTION CYCLE AS WELL AS REDUCE TUNING ERRORS DURING RING DOWN

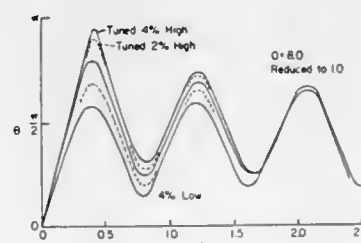
Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,230

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—303

16 Claims



1. Method for reducing the effects of residual polarization as well as mitigating tuning errors during ring down as nuclear magnetic logging (NML) operations occur so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) at an angle to the earth's field (B_e), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (i) establishing an artificially high Q' value for the polarizing and detection circuitry that is greater than the normal Q value which maximizes NML precessional signal response wherein said artificial Q' value coincides with the zero crossing point of a portion of a present-in-time NML signal of interest, said portion being associated with a prior-in-time polarizing period that because of its characteristics is most likely to influence the NML signal generated in the present-in-time collection cycle of interest, said

zero crossing point identifying phase reversal of said portion of said NML signal;

- (ii) positioning the polarizing and detection circuitry within the wellbore adjacent to a common depth interval;
- (iii) repetitively polarizing proton of fluids within said common interval by a polarizing field (B_p) to define a series of collection cycles that includes said present-in-time and prior-in-time collection cycles, during each collection cycle said polarizing field realigning dipole moments of the fluid nuclei and forming a nuclear polarization at an angle to the earth's field;
- (iv) terminating each polarizing period after a known time duration by cutting off the polarizing field and permitting a coil circuit of said polarizing and detection circuitry to ring at said higher artificially higher Q' value;
- (v) after ringing said coil circuit at said higher artificially higher Q' value for a limited time, establishing a lower Q value for said coil circuit and permitting ringing to continue at said lower Q value wherein the effect due to tuning errors is reduced but wherein the reduction of residual polarization due to phase cancellation is maintained;
- (vi) detecting the precessing nuclear polarizations of the series of collection cycles as a series of NML signals, said series of collection cycles includes said present-in-time and said prior-in-time collection cycles whereby the present-in-time NML signal is not influenced by said signal portion generated by the residual polarization because of phase cancellation therewith whereby said logging operations can be swiftly and accurately carried out without need of a depolarization period between said next-in-time and prior-in-time collection cycles.

4,646,018

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD HAVING SHAM POLARIZING CYCLES FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE AS WELL AS REDUCE TUNING ERRORS DURING RING DOWN

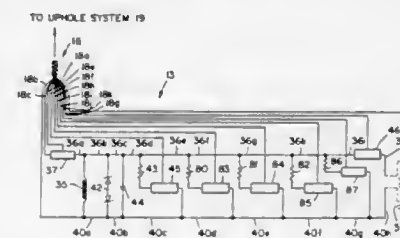
Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,231

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—303

19 Claims



1. Method for reducing the effects of both precessing and non-precessing residual polarization as well as tuning errors during ring down as in nuclear magnetic logging (NML) operations occur so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) of relatively high strength at an angle to the earth's field (B_e), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (i) Establishing a series of alternative Q values associated

with integers M_1, M_2, \dots, M_o where M_1 is 1 and M_o is greater than two for a coil circuit of the polarizing and detection circuitry, said M_1 first Q value for said coil circuit being of a value that maximizes NML response after termination of the polarizing field (B_p) and ring down of said coil circuit have occurred, said M_2, \dots, M_o remainder Q values each being an artificially high value greater than said M_1 first Q value and not equal to each other but wherein said M_2, \dots, M_o remainder Q values also permit the coil circuit to alternately ring at higher frequencies than related to said M_1 first Q value, for aiding non-precessing components of residual polarization to precess;

- (ii) Before beginning a present-in-time collection cycle, reorienting the protons of fluids of said common interval by a sham polarizing field of less strength than that of the polarizing field (B_p), said sham polarizing field having a slow-rising amplitude vs. time turn-on segment so as to reorient non-precessing components of residual polarization associated with the prior-in-time collection cycle about the magnetic lines of said sham polarizing field, while simultaneously scattering precessing components thereof;
- (iii) Terminating the sham polarizing field of step (ii) and permitting the coil circuit to ring at one of said M_2, \dots, M_o remainder Q values and generate an oscillating magnetic field that causes certain non-precessing components of the residual polarization to precess;
- (iv) Dynamically altering said coil circuit by establishing a low Q value for said circuit and permitting ringing in accordance with step (iii) to continue at said low Q value wherein the error field component due to tuning error is reduced but wherein the field still causes non-precessing components of the residual polarization to precess;
- (v) Repeating steps (ii)-(iv) but permitting the coil circuit to alternately ring in step (iii) at another of said M_2, \dots, M_o remainder Q values;
- (vi) Then performing the present-in-time collection cycle wherein the polarizing field of strength (B_p) also has a slow-rising amplitude vs. time turn-on segment and high magnetic strength whereby final precessing components of residual polarization previously non-precessing are scattered prior to detection of the present-in-time NML signal and said logging operations can be swiftly and accurately carried out without need of a depolarization period between the present-in-time and prior-in-time collection cycles.

4,646,019

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD HAVING A SHAM POLARIZING CYCLE FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE AS WELL AS REDUCE TUNING ERRORS DURING RING DOWN

Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,232

Int. Cl.⁴ G01R 33/20

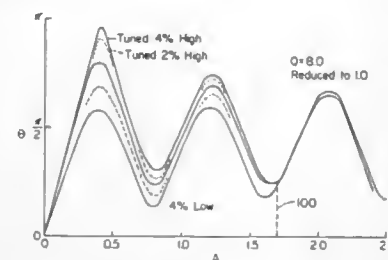
U.S. Cl. 324—303

17 Claims

1. Method for reducing the effects of both precessing and non-precessing residual polarization as well as tuning errors during ring down as nuclear magnetic logging (NML) operations occur so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) of relatively high strength at an angle to the earth's field

(B₀), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (I) establishing alternative Q values for a coil circuit of the polarizing and detection circuitry, at least a first Q value for said coil circuit being of a value that maximizes NML response after termination of the polarizing field (B_p) and ring down of said coil circuit have occurred, and a second Q value being an artificially high Q' value greater than said first Q value but wherein said artificial second Q' value also permits the coil circuit to alternately ring, for aiding non-precessing components of residual polarization to precess;
- (II) before beginning a present-in-time collection cycle, reorienting the protons of fluids of said common interval by a sham polarizing field of less strength than that of the polarizing field (B_p), said sham polarizing field having a slow-rising amplitude vs. time turn-on segment so as to reorient non-precessing components of residual polarization associated with the prior-in-time collection cycle about the magnetic lines of said sham polarizing field, while simultaneously scattering previously precessing components;



- (III) terminating the sham polarizing field of step (II) and permitting the coil circuit to ring at said higher frequency associated with said second artificially high Q' value and generate an oscillating magnetic decaying field that causes the non-precessing components of the residual polarization to precess about the earth's field (B₀);
- (IV) during sham ring down, altering said coil circuit by establishing a low Q value for said circuit and permitting ringing in accordance with step (III) to continue at said low Q value wherein the error field component due to tuning error is reduced but wherein the field still causes non-precessing components of the residual polarization to precess;
- (V) then performing the present-in-time collection cycle wherein the polarizing field of strength (B_p) also has a slow-rising amplitude vs. time turn-on segment and high magnetic strength whereby precessing components of the residual polarization that were previously nonprecessing, are scattered prior to detection of a present-in-time NML signal and said logging operations can be swiftly and accurately carried out without need of a depolarization period between the present-in-time and prior-in-time collection cycles.

4,646,020

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE

Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,264

Int. Cl. G01R 33/20

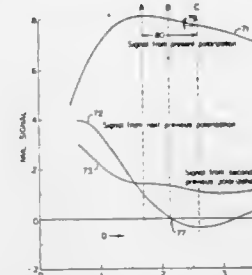
U.S. Cl. 324—303

35 Claims

1. Method for reducing the effects of residual polarization in nuclear magnetic logging (NML) operations so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conven-

tional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) at an angle to the earth's field (B₀), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (i) establishing an artificially high Q' value for the polarizing and detection circuitry that is greater than that which maximizes NML precessional signal response after termination of a polarization field but wherein said artificial Q' value coincides with the zero crossing point of a portion of a present-in-time NML signal of interest, said portion being associated with a prior-in-time polarizing period that because of its characteristics is most likely to influence the NML signal generated in the present-in-time collection cycle of interest, said zero crossing point identifying phase reversal of said portion of said NML signal;



- (ii) positioning the polarizing and detection circuitry within the wellbore adjacent to a common depth interval;
- (iii) repetitively polarizing proton of fluids within said common interval by a polarizing field (B_p) to define a series of collection cycles that includes said present-in-time and prior-in-time collection cycles, during each collection cycle said polarizing field realigning dipole moments of the fluid nuclei and forming a nuclear polarization at an angle to the earth's field;
- (iv) terminating each polarizing period after a known time duration by cutting off the polarizing field at a cutoff rate;
- (v) detecting the precessing nuclear polarizations of the series of collection cycles as a series of NML signals, said series of collection cycles includes said present-in-time and said prior-in-time collection cycles whereby the present-in-time NML signal is not influenced by said signal portion generated by the residual polarization because about as much as is in phase therewith as is of opposite phase, whereby said logging operations can be swiftly and accurately carried out without need of a depolarization period between said next-in-time and prior-in-time collection cycles.

4,646,021

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD HAVING SLOWLY RISING POLARIZING FIELD TURN-ON SEGMENTS FOR RAPIDLY DISPERSING PRECESSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE

Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,441

Int. Cl. G01R 33/20

U.S. Cl. 324—303

24 Claims

1. Method for reducing the effects of precessing residual polarization in nuclear magnetic logging (NML) operations so

4,646,022

COMPUTER-LINKED NUCLEAR MAGNETIC LOGGING TOOL AND METHOD HAVING A SHAM POLARIZING CYCLE FOR RAPIDLY DISPERSING COMPONENTS OF RESIDUAL POLARIZATION ASSOCIATED WITH A PRIOR-IN-TIME NML COLLECTION CYCLE

Robert J. S. Brown, Seal Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 31, 1985, Ser. No. 761,624

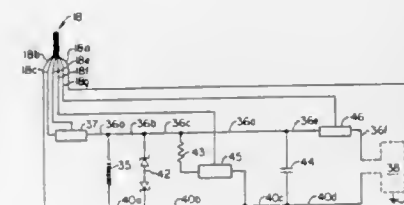
Int. Cl. G01R 33/20

U.S. Cl. 324—303

26 Claims

that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) at an angle to the earth's field (B₀), and after the polarizing field has been cut off, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (i) identifying which of the time durations of the polarizing periods of a series of collection cycles to be normalized to a given depth interval is most likely to generate precessing residual polarization that will affect the NML signal of a subsequent collection cycle and defining the most likely period as being associated with a prior-in-time collection cycle and defining the affected subsequent cycle as the present-in-time collection cycle;
- (ii) positioning the polarizing and detection circuitry within the wellbore adjacent to a common depth interval;
- (iii) repetitively polarizing protons of fluids within said common interval by a polarizing field (B_p), said polarizing field (B_p) having a slow-rising amplitude vs. time turn-on



- segment, over at least the polarizing period associated with the present-in-time collection cycle, said repetitive polarizations defining the polarizing periods of the series of collection cycles that includes both the present-in-time collection cycle and the prior-in-time collection cycle of step (i), whereby during each collection cycle said polarizing field realigns dipole moments of the fluid nuclei and forms a nuclear polarization at an angle to the earth's field;
- (iv) terminating each polarizing period after a known time duration by cutting off the polarizing field at a cutoff rate; and
- (v) detecting the precessing nuclear polarizations of the series of collection cycles as a series of NML signals, said series of collection cycles includes said present-in-time and said prior-in-time collection cycles whereby a detected NML signal associated with the present-in-time collection cycle is not influenced by precessing residual polarization initially in evidence at the start of the present-in-time polarizing period because the slow-rising turn-on segment of the polarizing field causes the precessing residual polarization to undergo reorientation to a direction that is parallel to said polarizing field, and subsequent be scattered by precession about that field whereby said logging operations can be swiftly and accurately carried out without need of a depolarization period between said next-in-time and prior-in-time collection cycles.

1. Method for reducing the effects of both precessing and non-precessing residual polarization in nuclear magnetic logging (NML) operations so that a series of collection cycles normalized to a common depth interval can be carried out more swiftly and accurately than in conventional NML operations, wherein the common depth interval lies within an earth formation penetrated by a wellbore adjacent to NML polarizing and detection circuitry positioned within the wellbore under control of NML computer-linked controller and recording system at the earth's surface, and wherein entrained fluids with the common depth interval are repetitively polarized with a polarizing field (B_p) of relatively high strength at an angle to the earth's field (B₀), and after the polarizing field has been cutoff, NML signals from precessing protons of fluid nuclei within the formation are detected, comprising:

- (I) establishing alternative first and second Q values for a coil circuit of the polarizing and detection circuitry, said first Q value for said coil circuit being of a value that maximizes NML response after termination of the polarizing field (B_p) and ring down of said coil circuit have occurred, said second Q value being an artificially high Q' value greater than said first Q value but wherein said artificial second Q' value also permits the coil circuit to alternately ring for aiding non-precessing components of residual polarization to precess;
- (II) before beginning a present-in-time collection cycle, reorienting the protons of fluids of said common interval by a sham polarizing field of less strength than that of the polarizing field (B_p), said sham polarizing field having a slow-rising amplitude vs. time turn-on segment so as to reorient non-precessing components of residual polarization associated with the prior-in-time collection cycle about the magnetic lines of said sham polarizing field, while previously precessing components of said residual polarization, are scattered thereby;
- (III) terminating the sham polarizing field of step (II) after a short duration and permitting the coil circuit to ring at said higher frequency associated with said second artificially high Q' value and generate an oscillating magnetic field that causes the non-precessing components of the residual polarization to precess about the earth's field (B₀);
- (IV) then performing the present-in-time collection cycle wherein the polarizing field of strength (B_p) also has a slow-rising amplitude vs. time turn-on segment and high magnetic strength whereby precessing components of the residual polarization that were previously non-precessing are scattered prior to detection of a present-in-time NML signal and said logging operations can be swiftly and accurately carried out without need of a depolarization period between the present-in-time and prior-in-time collection cycles.

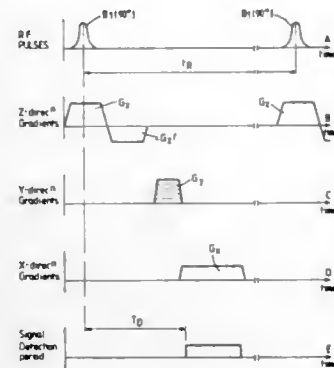
4,646,023

NUCLEAR MAGNETIC RESONANCE IMAGING
 Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Ltd., Wembley, England
 Filed Jun. 10, 1985, Ser. No. 742,922
 Claims priority, application United Kingdom, Jun. 13, 1984, 8415078

Int. Cl.⁴ G01R 33/20

U.S. Cl. 324—309

5 Claims



1. An NMR chemical shift imaging method wherein: a plurality of experiments are performed each comprising: preferentially exciting nuclear spins in a selected region of a body, applying a magnetic field gradient to include the excited spins, and collecting data representing the resultant encoded spins; and the data collected during all the experiments is processed to recover spatial and chemical shift image information, characterized in that: a number of experiments with different encoding gradients are performed to provide spatial image information; and each of said number of experiments is repeated for each of a number of different delay times between excitation and data collection to provide chemical shift image information.

4,646,024

TRANSVERSE GRADIENT FIELD COILS FOR NUCLEAR MAGNETIC RESONANCE IMAGING

John F. Schenck, Schenectady; Moayyed A. Hussain, Menands, and William A. Edelstein, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,174

Int. Cl.⁴ G01R 33/08

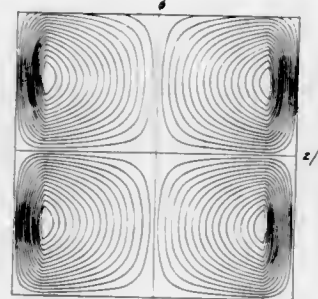
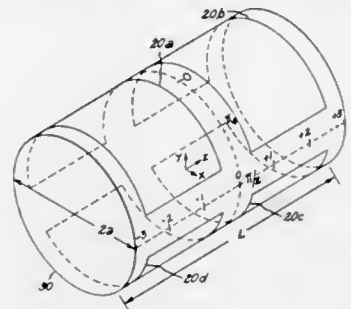
U.S. Cl. 324—318

6 Claims

1. A transverse gradient coil, especially a coil for use in nuclear magnetic resonance imaging systems, said gradient coil comprising:

a cylindrical coil form of nonmagnetic material; and four winding loop sets disposed in both radially and longitudinally symmetric positions on said cylindrical coil form, each of said loop sets having a saddle shape configuration: said loop sets being configured to substantially produce a surface current density vector $\vec{A}(\phi, z) = k\sigma_\phi(z) \cos \phi \hat{\phi} + k\sigma_z(z) \sin \phi \hat{z}$, where \hat{z} is a normalized measure of the position on said coil form along the axis of said cylinder, said z being normalized with respect to the radius of said cylinder, and where ϕ is a measure of azimuthal position and where $\hat{\phi}$ and \hat{z} are unit vectors in the azimuthal and longitudinal directions respectively, said $\sigma_\phi(z)$

and said $\sigma_z(z)$ having shapes defined substantially as follows:



$$\sigma_\phi(z) = \begin{cases} -K_1 & a \leq z < b \\ +K_2 & b < z < c \\ -K_1 & c \leq z < d \\ 0 & z < a, z \geq d \end{cases}$$

$$\sigma_z(z) = \begin{cases} -M_1z + b_1 & a \leq z < b \\ +M_2z + b_2 & b \leq z < c \\ -M_1z + b_3 & c \leq z < d \\ 0 & z < a, z \geq d \end{cases}$$

and in which k is an arbitrary constant and in which:

$$\int_a^b \sigma_\phi(z) dz + \int_c^d \sigma_\phi(z) dz = - \int_b^c \sigma_\phi(z) dz,$$

$\sigma_z(z)$ being a mathematically continuous function.

4,646,025

MAGNETIC PROBE EXPLORATION DEVICE FOR DETERMINING RESIDUAL FOSSIL MAGNETIZATION OF WELL HOLE ROCKS

Jean-Pierre H. Martin, Colombes; Jean-Pierre A. Pozzi, Bellevue, and Damien M. Despax, Paris, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed May 8, 1985, Ser. No. 732,019

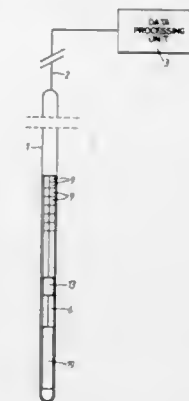
Claims priority, application France, May 15, 1984, 84 07502
 Int. Cl.⁴ G01U 3/26; G01R 33/035

U.S. Cl. 324—346

8 Claims

1. Magnetic exploration apparatus for a well hole, comprising a probe for magnetic measurements (1), of a shape which is generally elongated along an axis, which contains a means for vectorial measurement of a magnetic field (20) and which is movable along the well hole to record, continuously as a function of the depth, certain magnetic properties of the rocks through which the well hole passes, a data processing unit (3) disposed on the surface above the well hole, and an electrical

cable (2) connecting the probe to the processing unit to convey to the latter the data acquired by the probe, in which an upper part of the probe contains means connected between the cable and measuring devices in the probe for converting electrical values (5) and a lower part of the probe forms a cryostat (6) maintained at a superconductivity temperature and containing at least one cryogenic magnetometer arranged as a gradiometer, characterized in that the said cryostat (6) contains three magnetometers (10, 11, 12) arranged as gradiometers relative to the axial direction of the probe, in that the probe (1) also contains a means for measuring the magnetic susceptibility of



the rocks (21) and in that the processing unit (3) comprises an integrator (81) for carrying out mathematical integration of the data supplied by the magnetometers arranged as gradiometers, a multiplier (76) for generating the product of the data received by means for vectorial measurement of the magnetic field (20) and the magnetic susceptibility measured by the said means for measuring the magnetic susceptibility, and a subtractor (83) for deducting this product from the result of the integration supplied by the integrator (81) in order to obtain data relating to the residual magnetization of the rocks and in particular to reversals of this magnetization.

4,646,026

METHOD AND APPARATUS FOR MEASURING RESISTIVITY OF AN EARTH FORMATION

Roland E. Chemali, Austin, and William C. Dirk, Goforth, both of Tex., assignors to Gearhart Industries, Inc., Fort Worth, Tex.

Continuation of Ser. No. 499,273, May 31, 1983, abandoned.

This application Oct. 10, 1985, Ser. No. 786,184

Int. Cl.⁴ G01V 3/18

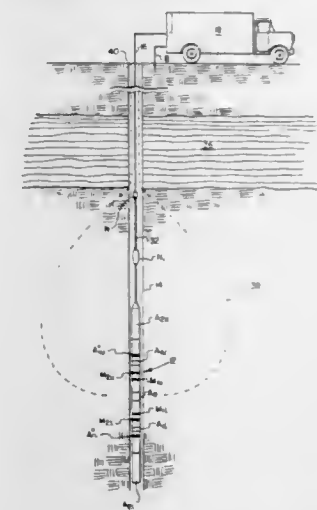
U.S. Cl. 324—373

18 Claims

7. Apparatus for correcting anomaly induced errors in resistivity measurements of an earth formation traversed by a borehole in which the resistivity measurement is accomplished utilizing voltage measurements between a sonde suspended in said borehole from a conductive cable and a first reference electrode disposed above said sonde, comprising:

means for emitting a first focusing current from said sonde at a selected frequency;
 a second reference electrode disposed between said first reference electrode and said sonde;
 means for measuring a first voltage induced by said first focusing current between said anode and said second reference electrode;
 means for emitting a second focusing current from said sonde at a frequency substantially below said selected frequency;
 means for measuring a second voltage induced by said second focusing current between said second reference electrode and said first reference electrode;
 means for combining said first voltage and said second voltage wherein said resultant voltage is a corrected measure-

ment of the voltage measurement between said sonde and said first reference electrode; and



means for combining said resultant voltage with said resistivity measurement to correct said resistivity measurement.

4,646,027

ELECTRON BEAM ACCELERATOR WITH MAGNETIC PULSE COMPRESSION AND ACCELERATOR SWITCHING

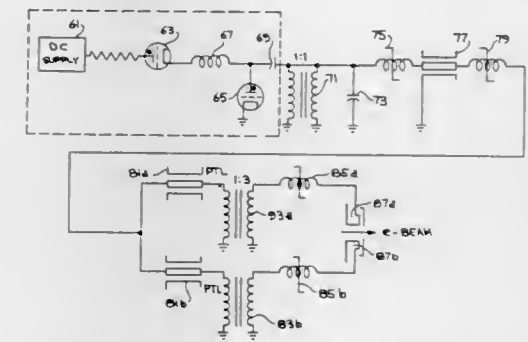
Daniel L. Birx, Brentwood, and Louis L. Reginato, Orinda, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1984, Ser. No. 592,302

Int. Cl.⁴ H05H 1/46

U.S. Cl. 328—233

8 Claims



1. Apparatus capable of acceleration of electrons to energies of at least 1 MeV at currents of at least 100 A over a time interval of at most 1 μsec. and pulse repetition rates of up to 20 kilohertz, the apparatus comprising:

an electron beam injector for generating focused beam of electrons of energy substantially ≥ 0.1 MeV;
 a plurality of substantially identical accelerator modules, each module serving to receive the beam of electrons and to increase their kinetic energies by substantially 0.1–1.0 MeV, each module having a module axis that is coaxial with the axis of the electron beam injector, each accelerator module comprising:
 a toroid of ferromagnetic material, with the axis of the toroid being coaxial with the electron beam injector axis and with the inner diameter of the toroid being sufficient to allow the electron beam produced by the electron beam

injector to pass through the hollow center of the toroid along the toroid axis;

a hollow cylindrical electrical conductor, with cylinder axis coaxial with the toroid axis, adjacent to the toroid and making at least one complete turn around the toroid generator, for thereby transporting a voltage pulse about the toroid and abruptly changing the magnetic induction of the toroid ferromagnetic material; and

a pulse-forming network, electrically connected with the cylindrical electrical conductor and operatively associated with the electron beam injector, for generating a voltage pulse of duration of $\leq 1 \mu\text{sec.}$ of 0.1–1.0 megavolt maximum voltage, in timed relationship with production of an electron beam by the electron beam injector, and for delivering this voltage pulse to the cylindrical electrical conductor;

with the pulse-forming network comprising:

initial pulse generation means, having an output terminal, to produce a voltage pulse of time duration no more than 50 microseconds and voltage substantially $\geq 10 \text{ kV}$ at the output terminal; and

a magnetic compression network with an input terminal and an output terminal coupled to the output terminal of the initial energy storage means, for receiving at its input terminal the ≥ 1 microsecond voltage pulse from the initial energy storage means and for producing at its output terminal a $\geq 100 \text{ kV}$ voltage pulse of duration $\leq 1 \mu\text{sec.}$ with substantially a ≥ 5 nanosecond rise time and fall time, the network comprising:

a grounded capacitor coupling the output terminal of the initial energy storage means to ground;

a first saturable inductor having two ends and having inductances satisfying $L(\text{unsat.})/L(\text{sat.}) \geq 100$, connected to one initial energy storage means output terminal at the first end of the inductor;

a water-filled pulse transmission line having two ends and having impedance of substantially ≥ 0.1 ohms, connected at one end to the second end of the first saturable inductor;

a second saturable inductor having two ends and having inductances satisfying $L(\text{unsat.})/L(\text{sat.}) \geq 100$, connected at one end to the second end of the water-filled pulse transmission line;

two substantially identical water-filled pulse transmission lines of equal length, connected at one end of each of these two transmission lines to the second end of the second saturable inductor;

two substantially identical voltage step-up transformers, each being coupled at its input terminal to the second end of one of the second or third, respectively, pulse transmission lines; and

two substantially identical saturable inductors, each being coupled at one end to the output terminal of the second or third, respectively, voltage step-up transformer and each having inductances satisfying $L(\text{unsat.})/L(\text{sat.}) \geq 100$, with the second end of each of the third and fourth saturable inductors being connected to separate electrical conductors that each contain two or more loops around the toroid of the accelerator module.

4,646,028

GaAs MONOLITHIC MEDIUM POWER AMPLIFIER
Charles D. Palmer, Fairview, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1984, Ser. No. 644,410
Int. Cl.⁴ H03F 3/16

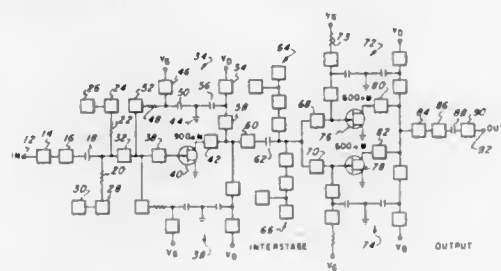
U.S. Cl. 330—277

6 Claims

1. An improved microwave power amplifier comprising a GaAs substrate and an integrated circuit formed on the substrate, said integrated circuit containing:
 - (a) an RF input terminal for receiving RF energy;
 - (b) a load matching circuit means operatively connected to the RF input terminal for matching a load circuit impedance to that of the input terminal;
 - (c) first and second biasing circuits each physically located

on opposite sides of transistor amplifiers for selective connection to a biasing power source for biasing the transistor amplifiers from either side of the integrated circuit to a operating point:

- (d) a transistor operatively connected to the load matching means and first biasing circuits for forming a first stage amplifier;



4,646,029

VARIABLE-GAIN AMPLIFYING CIRCUIT
Yasuji Kamata, Hitachi, and Kazuo Kato, Toukai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

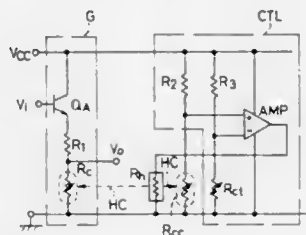
Filed Jul. 2, 1985, Ser. No. 751,136

Claims priority, application Japan, Jul. 2, 1984, 59-136683

Int. Cl.⁴ H03G 3/30

U.S. Cl. 330—283

4 Claims



1. A variable-gain amplifying circuit comprising:
 - a heating resistor;
 - first and second heat-sensitive resistances coupled thermally to said heating resistor;
 - an amplifier including: a transistor having an emitter, a collector and a base, said emitter being connected through a resistance with said first heat-sensitive resistance and said collector connected with a power supply; an input terminal for feeding an input signal to the base of said transistor; and an output terminal for extracting an output signal from a connecting point of said resistance and said first heat-sensitive resistance; and
 - an amplifier having an input terminal and an output terminal, said input terminal being fed with a voltage drop which is established in said second heat-sensitive resistance, wherein an output signal which is delivered out of said output terminal is supplied as a heating current to said heating resistor.

4,646,030

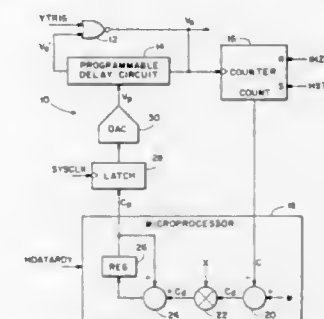
TRIGGERED FREQUENCY LOCKED OSCILLATOR HAVING PROGRAMMABLE DELAY CIRCUIT
Allen L. Hollister, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 3, 1986, Ser. No. 835,583

Int. Cl.⁴ H03K 3/03; H03L 7/00

U.S. Cl. 331—1 A

13 Claims



1. A triggered, frequency-locked oscillator comprising:
 - signal inverting means enabled by a trigger signal for producing an output signal by inverting an input signal when enabled by said trigger signal and for producing said output signal of a constant state when not enabled by said trigger signal;
 - means for delaying said output signal by an adjustable delay time, thereby to produce said input signal applied to said signal inverting means such that when said signal inverting means is enabled by said trigger signal, said output signal oscillates periodically at a frequency determined by the duration of the delay time; and
 - means responsive to said output signal for increasing said adjustable delay time when the frequency of said output signal is greater than a predetermined level and for decreasing said adjustable delay time when the frequency of said output signal is less than said predetermined level.

4,646,031

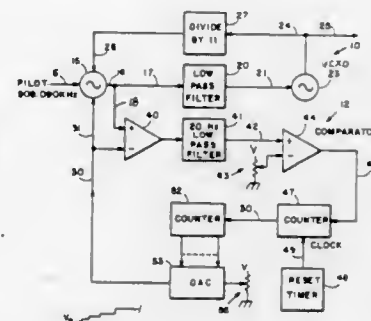
NARROWBAND PHASE-LOCK LOOP CIRCUIT WITH AUTOMATIC CONVERGENCE
Raymond D. Fast, 206-932 Robinson St., Coquitlam, B.C., Canada (V3J 7R8), and Brian A. Murray, 1502-9304 Salish Ct., Burnaby, B.C., Canada V3J 7C5

Filed Feb. 7, 1985, Ser. No. 698,992

Int. Cl.⁴ H03L 7/08

U.S. Cl. 331—25

11 Claims



1. Phase-lock loop apparatus comprising:
 - a voltage controlled oscillator (VCO) having input and output terminals and providing an output signal whose frequency is controlled by an external voltage applied to said input terminal;
 - phase detector means being responsive to said VCO output

signal and to an input reference signal for producing an output signal;

low-pass filter means coupling to said input terminal of said VCO low frequency signal components in the output signal of said phase detector means;

sweep means providing a sweep signal to said phase detector means for biasing said VCO to vary said VCO output frequency at a variable rate over a band of frequencies including the frequency of said input reference signal;

said phase detector means producing output signal corresponding to the phase difference between said pair of input signals thereto when the loop comprising said VCO, said detector means, and said filter means is locked; said phase detector means output signal also being a relatively constant amplitude beat frequency signal having a frequency corresponding to the difference between the frequencies of said pair of input signals to said phase detector means when the loop is not locked; and wherein said sweep means is responsive to said beat frequency signal from said phase detector means for sweeping said VCO at a variable sweep rate.

4,646,032

CONTROLLED OSCILLATOR HAVING RANDOM VARIABLE FREQUENCY

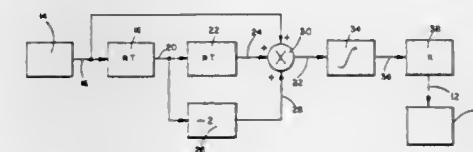
Charles E. Wheatley, III, Chino; Charles G. Mosley, Irvine, and Eugene V. Hunt, El Toro, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 22, 1980, Ser. No. 191,648

Int. Cl.⁴ H03B 29/00

U.S. Cl. 331—78

14 Claims



1. Apparatus for generating an oscillatory output signal, comprising:
 - an oscillator having means associated therewith for controlling and varying the frequency of said oscillatory output signal in response to variations of an oscillator input control signal; and
 - means for generating said oscillator input control signal, comprising:
 - a binary random number generator generating a first sequence of pulses having a constant magnitude and randomly varying polarity;
 - a first time delay device operating on said first sequence of pulses to produce a second sequence of pulses delayed in time from said first sequence of pulses;
 - a second time delay device operating on said second sequence of pulses to produce a third sequence of pulses delayed in time from said second sequence of pulses;
 - means for forming the algebraic sum of said first sequence of pulses, minus twice said second sequence of pulses, and said third sequence of pulses;
 - means for accumulating a running sum of the sequential instantaneous values of said algebraic sum; and
 - means for scaling the magnitude of said running sum to form said oscillator input control signal.

4,646,033

CRYSTAL CONTROLLED OSCILLATOR

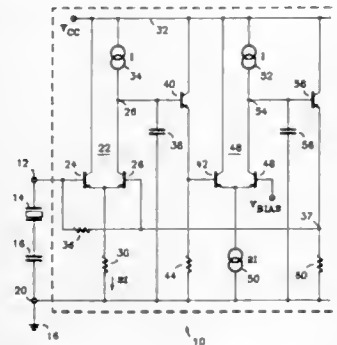
Goeffrey W. Perkins, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1986, Ser. No. 847,414

Int. Cl.⁴ H03B 5/36

U.S. Cl. 331—116 R

11 Claims



1. A crystal controlled oscillator, comprising:
a first amplifier having an input to which is coupled a crystal resonator and an output; and
an oscillation sustaining feedback loop coupled between said output and input of said first amplifier means for sustaining oscillations of the oscillator, said feedback loop including first integrator means coupled to said output of said first amplifier, a second amplifier having an input and an output, means coupling said input of said second amplifier to said output of said first amplifier, second integrator means coupled to said output of said second amplifier, and means for coupling said output of said second amplifier to said input of said first amplifier.

4,646,034

VERY HIGH FREQUENCY QUARTZ OSCILLATOR

Jacques Chauvin, Sartrouville, and Patrice Canzian, Argenteuil, both of France, assignors to Compagnie d'Electronique et de Piezo-Electricite, Argenteuil, France

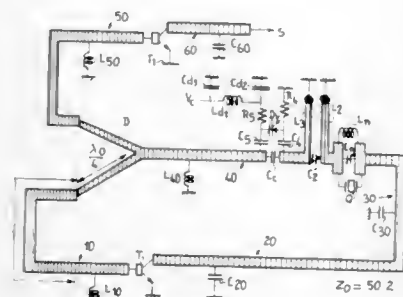
Filed Oct. 11, 1984, Ser. No. 659,891

Claims priority, application France, Oct. 14, 1983, 83 16384

Int. Cl.⁴ H03B 5/36

U.S. Cl. 331—116 R

9 Claims



1. A very high frequency quartz oscillator having a direct frequency of at least one GHz, comprising an amplifier and a feedback loop including a quartz crystal, the given resonance frequency of which is selected to constitute the oscillator frequency, the amplifier having a gain such that when operating in an open loop, the Barkhausen gain condition is met, and the quartz crystal being compensated at the said frequency (f_0) by a parallel circuit comprising at least an inductor, the feedback loop also comprising a filter connected in series which prevents frequencies lower than the said resonance frequency (f_0), the amplifier being a transistor mounted to form a common emitter circuit with said filter, wherein the feedback loop is so

designed that at the said resonance frequency, on the one hand, said feedback loop is impedance matched so that the combination of the quartz crystal and compensating parallel circuit is also impedance matched and, on the other hand, that it presents a phase shift equal to 0 modulo $2k\pi$, and wherein the said oscillator further comprises a power divider for dividing part of the signal of the feedback loop in order to inject it into an output amplifier.

4,646,035

HIGH PRECISION TUNABLE OSCILLATOR AND RADAR EQUIPPED WITH SAME

Pierre Chapelle, Montrouge, France, assignor to Thomson-CSF, Paris, France

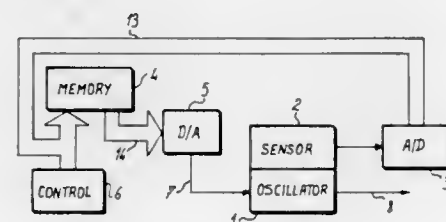
Filed Jan. 10, 1985, Ser. No. 690,257

Claims priority, application France, Jan. 13, 1984, 84 00501

Int. Cl.⁴ H02B 23/00

U.S. Cl. 331—177 R

7 Claims



1. A high frequency generator comprising:
a controllable oscillator;
temperature sensors thermally connected to said oscillator having an output;
an analog to digital converter connected to said oscillator's output and driven thereby and further connected to said temperature sensors for converting the output of said temperature sensor to a digital signal;
a permanent non-volatile memory having the address bus and the data bus connected to said analog to digital converter for storing the digital signal produced by said analog to digital converter;
a digital to analog converter coupled to said permanent non-volatile memory;
connecting means for coupling said controllable oscillator to said digital to analog converter thereby providing the stored signal values in said non-volatile memory sufficient to control said oscillator at the desired frequency for each working temperature.

4,646,036

SIGNAL ATTENUATION CIRCUIT

Mark J. Brown, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1985, Ser. No. 812,883

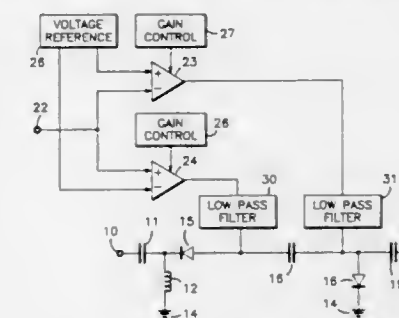
Int. Cl.⁴ H01P 1/22

U.S. Cl. 333—81 R

10 Claims

1. A circuit for attenuating an RF signal in response to a voltage level of a control signal, the circuit comprising:
a first PIN diode having an anode and a cathode, a first one of the anode and cathode of said first PIN diode being adapted to transport the RF signal;
a second PIN diode having an anode and a cathode, a first one of the anode and cathode of said second PIN diode being adapted to receive a common potential, and a second one of the anode and cathode of said second PIN diode being coupled to a second one of the anode and cathode of said first PIN diode;
a first differential amplifier having first and second signal inputs and an output, the first signal input of said first amplifier being adapted to receive a first reference potential, the second signal input of said first amplifier being

adapted to receive the control signal, and the output of said first amplifier being coupled to one of the anode and cathode of said first PIN diode;
a second differential amplifier having first and second signal inputs and an output, the first signal input of said second amplifier being adapted to receive a second reference potential, the second signal input of said second amplifier being adapted to receive the control signal, and the output



of said second amplifier being coupled to the second one of the anode and cathode of said second PIN diode;
means, coupled to said first differential amplifier, for setting a gain parameter of said first differential amplifier at a first predetermined level; and
means, coupled to said second differential amplifier, for setting a gain parameter of said second differential amplifier at a second predetermined level.

4,646,037

FILTER CONTACT AND ITS USE IN ELECTRIC CONNECTORS

Jean-Pierre Turolla, Issy les Moulineaux, and Simone Belin, Talant, both of France, assignors to LCC-CICE Compagnie Europeenne de Composants Electroniques, Courbevoie, France

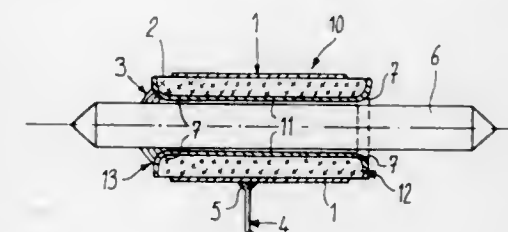
Filed May 22, 1985, Ser. No. 736,844

Claims priority, application France, May 25, 1984, 84 08251

Int. Cl.⁴ H03H 7/01; H02H 9/04

U.S. Cl. 333—182

4 Claims



1. A filter contact comprising:
an electric contact including a metal rod;
a tubular filter element surrounding said rod, said tubular filter element having a major internal face defined by the length of said element and the inside radius of said tubular filter element and a major external face defined by the length of said element and the outside radius of said element;
a first electrode provided on said external face;
a second electrode provided on said internal face wherein said second electrode is electrically connected to said electric contact and wherein said second electrode is electrically insulated from said first electrode;
wherein said tubular element includes a tubular varistor and wherein said second electrode includes at least one extended portion which substantially extends from near at

least one end of said internal face so as to cover at least one end surface of said tubular varistor; and
wherein said at least extended portion of said second electrode forms with said at least one end surface a rounded profile with each of said at least one extended portions having a substantially constant thickness.

4,646,038

CERAMIC RESONATOR FILTER WITH ELECTROMAGNETIC SHIELDING

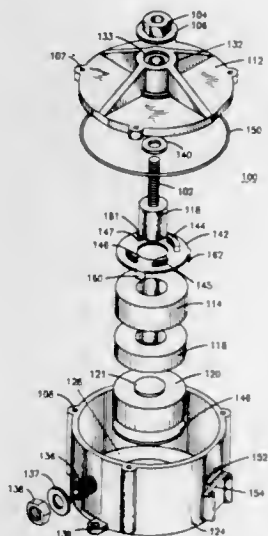
Ronald J. Wanat, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1986, Ser. No. 849,098

Int. Cl.⁴ H01P 1/207, 7/10

U.S. Cl. 333—202

24 Claims



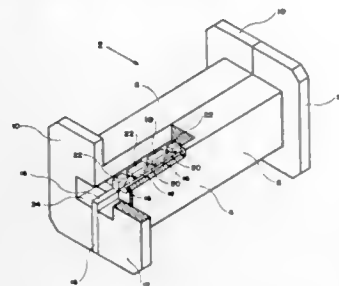
1. A radio frequency (RF) filter comprising:
resonating means having top and bottom surfaces and being comprised of a ceramic material having a predetermined thermal conductivity and a predetermined rate of change of resonant frequency with temperature;
first and second compensating means being disposed above and below the resonating means, respectively, and each having top and bottom surfaces, the bottom surface of the first compensating means and the top surface of the second compensating means being thermally coupled to the top and bottom surfaces of the resonating means, respectively, and the first and second compensating means being comprised of a dielectric material having a rate of change of resonant frequency with temperature opposite in polarity to said predetermined rate of change, and the dielectric material of the first and second compensating means further having a thermal conductivity greater than the thermal conductivity of air;
first and second shield means being comprised of a metallic material and being thermally coupled to and disposed above and below the first and second compensating means, respectively, for producing a low-loss electromagnetic path above and below said resonating means; and
housing means being comprised of a metallic material having an electrical conductivity less than that of the metallic material of said first and second shield means and further including top, bottom and side surfaces;
input coupling means and output coupling means disposed on the side surface of said housing means opposite to said resonating means and at a pre-selected distance from one another for coupling respective input and output signals to said RF filter; and
said housing means substantially enclosing and retaining the resonating means between the first and second compensating

ing means and the first and second shield means, the top and bottom surfaces of the housing means being thermally coupled to first and second shield means, respectively, whereby a low thermal resistance path is produced between the resonating means, first and second compensating means, first and second shield means and the housing means for conducting away from said resonating means heat dissipated therein thereby minimizing the temperature rise of said resonating means due to power dissipation.

4,646,039
LOW PASS FILTERS WITH FINITE TRANSMISSION ZEROS IN EVANESCENT MODES
Abdelmegid K. Saad, Cambridge, Canada, assignor to Com Dev Ltd., Cambridge, Canada
Filed Nov. 2, 1984, Ser. No. 667,822
Claims priority, application Canada, May 28, 1984, 455286
Int. Cl.⁴ H01P 1/211

U.S. Cl. 333—210

10 Claims



1. A waveguide lowpass filter operating in at least two evanescent modes, said filter comprising a waveguide, with a single row of successive ridges located along a length of said waveguide, with spaces between said ridges, said ridges being associated with parallel capacitance, said spaces being associated with series inductance in one mode, each ridge having a top-loading mounted thereon so that series capacitance can occur, in another mode in parallel to said series inductance, between the top-loading on successive ridges.

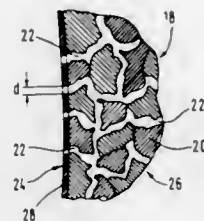
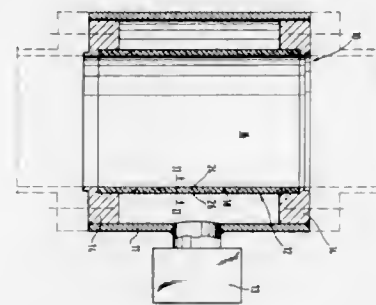
4,646,040
GAS PERMEABLE SINTERED WAVEGUIDE WALL
Wilhelm Spensberger, Munich, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany
Filed Jul. 1, 1985, Ser. No. 750,885
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427283

U.S. Cl. 333—239

8 Claims

1. A hollow waveguide element for a gas-filled waveguide system for electromagnetic waves of predetermined nominal wavelength, comprising a wall defining a cavity and having an inner side and an outer side, and consisting at least partially of a sintered material, said wall, at least at its inner side, adjoining a cavity of an electrically conductive material, said sintered material being provided with pores passing from the inner side

to the outer side of said wall defining the cavity, said pores having a maximum dimension at the inner side of the wall

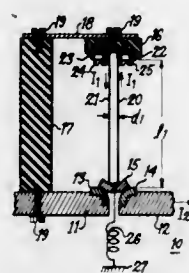


which is small relative to the nominal wavelength of the waveguide system.

4,646,041
HIGH SPEED CONTACT DRIVER FOR CIRCUIT INTERRUPTION DEVICE
Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.
Filed Dec. 30, 1985, Ser. No. 814,865
Int. Cl.⁴ H01H 77/10

U.S. Cl. 335—195

11 Claims

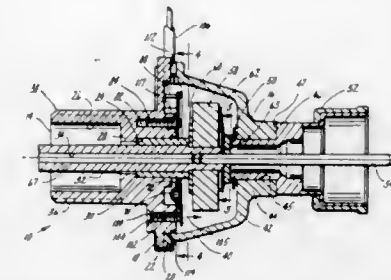


1. A high speed contact driver for electric circuit interruption comprising:
a pair of first and second electrical conductors each fixedly attached at one end to an insulated support and arranged side by side, and extending proximate each other;
a bridging contact carried by said electrical conductors at an opposite end thereof to electrically connect said conductors in series, said bridging contact being electrically connected between a pair of fixed contacts; and
terminal means for supplying a predetermined current pulse to said conductors at said one end for electrodynamic repulsion of said conductors away from each other to separate said bridging contact from said fixed contacts upon command.

4,646,042
SPEED AND DISTANCE SENSOR
Robert W. Eshelman, Ann Arbor, Mich., assignor to Hi-Stat Manufacturing Co., Inc., Sarasota, Fla.
Filed Feb. 8, 1985, Ser. No. 699,754
Int. Cl.⁴ H01H 9/00

U.S. Cl. 335—205

30 Claims

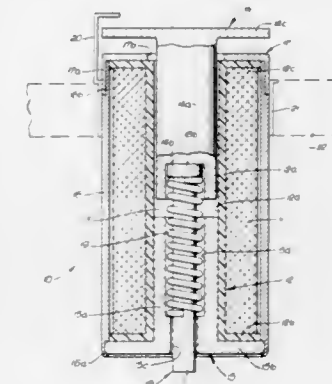


1. A speed and distance sensor comprising an input shaft for providing speed and distance input, a magnet which is rotated by said input shaft and which is polarized at regular circumferential intervals to create a varying external magnetic field adjacent the magnet as it rotates, a switch which is adjacent said magnet and which is responsive to rotation of said magnet to be alternately opened and closed by the varying magnetic field from the rotating magnet, in which said magnet and said switch are enclosed by a housing comprising two housing parts which are assembled together, and including positionable means within said housing operable via positioning means at the exterior of the housing for cooperatively relating said switch and magnet in a desired magnetic coupling relationship within the housing to yield a desired duty cycle characteristic of operation of said switch by said magnet.

4,646,043
SOLENOID HAVING A PLUNGER NON-FIXEDLY ADJOINING AN END OF THE ARMATURE
Jerzy Hoffman, Marina Del Rey, Calif., assignor to Wavecom, Northridge, Calif.
Filed Mar. 27, 1985, Ser. No. 716,677
Int. Cl.⁴ H01K 7/08

U.S. Cl. 335—255

5 Claims



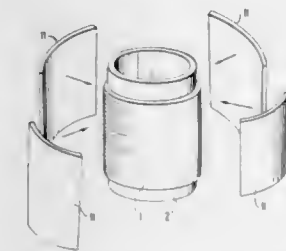
1. A solenoid comprising:
a coil wound about a plastic bobbin, said bobbin having a cylindrical interior cavity,
a magnetically attracted armature extending moveably into one end of said cavity, the plastic surface of said bobbin cavity serving as the bushing for said armature,
a plug fixedly held within the other end of said cavity, a plunger moveably extending through an axial bore in said plug, one end of said plunger non-fixedly adjoining the

end of said armature within said cavity, the other end of said plunger extending outwardly of said plug, and
bias means within said cavity for biasing said plunger and said armature in a direction opposite the direction of movement magnetically imparted to said armature by said coil.

4,646,044
BOBBINLESS SOLENOID COIL
Kazuo Kuno, and Masahiro Kinugasa, both of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1985, Ser. No. 712,484
Claims priority, application Japan, Mar. 19, 1984, 59-51126
Int. Cl.⁴ H01F 5/00

U.S. Cl. 335—299

8 Claims

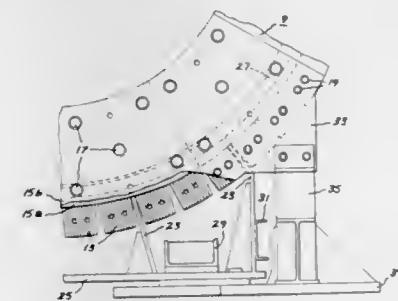


1. A large diameter, high amperage bobbinless solenoid coil, comprising:
(a) a cylindrically wound conductor coil (1),
(b) a plurality of support cylinder sectors (11) assembled to define a support cylinder having an equal plurality of axial seam lines and disposed surrounding the coil and in intimate heat transfer contact therewith, and
(c) means for rigidly joining the assembled support cylinder sectors together along the seam lines, whereby the support cylinder absorbs and dissipates heat generated by the high amperage current flowing through the conductor coil and withstands the radially outwardly directed electromagnetic forces generated during the operation of the coil.

4,646,045
APERTURE SIZED DISC SHAPED END CAPS OF A FERROMAGNETIC SHIELD FOR MAGNETIC RESONANCE MAGNETS
Madabushi V. Chari, Burnt Hills; Ahmed K. Kalafala, Albany; John D'Angelo, Clifton Park, and Michael A. Palmo, Jr., Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 25, 1985, Ser. No. 715,435
Int. Cl.⁴ H01F 7/00

U.S. Cl. 335—301

8 Claims



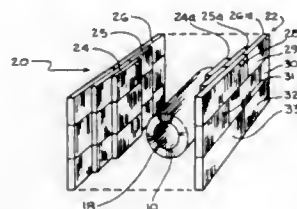
1. A shield for a cylindrical magnet, the magnet defining an axially extending bore containing the working area of the magnet, said shield comprising:

a cylindrical shell of magnetic material surrounding the MR magnet, the cylindrical shell situated so that the longitudinal axis of the shell is coaxial with the magnetic axis of the MR magnet; and
two disc shaped end caps of magnetic material secured to either end of the cylindrical shell, said end caps each defining a central aperture extending longitudinally through each disc, the radial extent of the apertures sized so that the perturbation of the field in the working area of the MR magnet due to the cylindrical shell is compensated.

4,646,046
SHIELDED ROOM CONSTRUCTION FOR CONTAINMENT OF FRINGE MAGNETIC FIELDS
Robert M. Vavrek, and Nancy S. Grigsby, both of Waukesha, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1984, Ser. No. 673,692
Int. Cl.⁴ H01F 7/00
U.S. Cl. 335—301

26 Claims



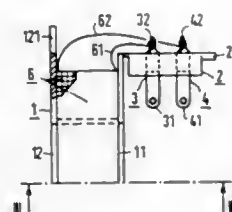
1. A shielded room for containing a fringe magnetic field generated by a magnet housed therein, comprising:
a shield composed of a material suitable for containment of the fringe field, said shield including at least one wall section having different thicknesses in some regions thereof than in others, wherein the thickness of said wall section is determined by the strength of the fringe magnetic field to be contained by a given region of said wall section, the minimum wall section thickness being selected so as not to exceed by a substantial amount the thickness required to contain the fringe field without saturating the material, thereby to minimize the total the total quantity of material in said shield.

4,646,047
ELECTRICAL COIL FORM WITH CONNECTOR PINS
Guenther Horn, Wolfgang Pieper, both of Wuerzburg, and Heribert Roeser, Mainbernheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Sep. 27, 1985, Ser. No. 781,072
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1984, 3435887

Int. Cl.⁴ H01F 15/10, 27/30
U.S. Cl. 336—192

7 Claims



1. In a coil form having a U-shaped cross section winding space radially open to the outside and bounded axially by end flanges connected to the coil form; an integrally molded plastic

bracket hinge-mounted to one of the end flanges which can be pivoted over the winding space; and a plurality of single-component connector pins with external connector pins projecting radially outward from the plastic bracket for connection of external leads and internal terminals projecting radially inward for connecting a plurality of coil winding ends with said plastic bracket being hinged to provide an initial pivoting away from the winding space to facilitate connection of the coil winding ends to the internal terminals and a subsequent pivoting in the opposite direction along with the connected coil ends into a locking engagement with the other end flange while maintaining connection with the coil ends, the improvement comprising said plastic bracket having radially penetrating access openings into which the plurality of single component connector pins are inserted, each of said pins having a respective internal terminal penetrating from the outer surface of the plastic bracket until each pin contacts a transversely aligned spacer portion overhanging each respective radial access opening against the outer side of the plastic bracket, ensuring a strain-relieved positioning; before connecting each said internal terminal projecting from the plastic bracket to one of the coil winding ends, each internal terminal being twisted in an axially concentric fashion through a circumferential angle facing the plastic bracket inserted portion immediately above the access opening while retaining a flat tongue-shaped external plug-in terminal.

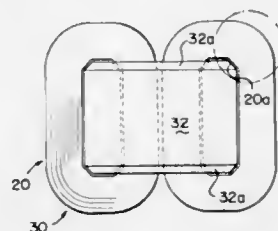
4,646,048
CORE AND WINDING ASSEMBLY WITH RELIEVED CORE EDGES AND METHOD OF MANUFACTURE THEREOF

Robert H. Hunt, Newton, and Willi Klappert, Hickory, both of N.C., assignors to General Electric Company, King of Prussia, Pa.

Filed Apr. 29, 1985, Ser. No. 728,435
Int. Cl.⁴ H01F 27/24

U.S. Cl. 336—213

7 Claims



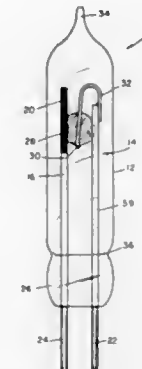
1. A transformer core and winding assembly comprising:
A. a generally rectangular magnetic core including a pair of opposed, essentially straight winding legs of generally rectangular cross-section interconnected by a pair of opposed yokes to provide a closed magnetic circuit and to define a core window, each winding leg having an inner surface bordering said core window, an outer surface generally parallel to said inner surface, and two lateral surfaces disposed transversely of said inner surface; said inner surface being generally disposed in a first plane, said outer surface in a second plane, and said lateral surfaces in third and fourth planes that intersect said first plane in a pair of inner edge regions and intersect said second plane in a pair of outer edge regions, at least one of said winding legs being corner-relieved in said two inner edge regions and in said two outer edge regions; and
B. a coil having a generally rectangular opening corresponding in cross-sectional shape to the cross-sectional shape of said one winding leg, said coil being disposed about said one leg with the corners of said coil opening accommodated in intimate, essentially conforming relationship with said one winding leg at said corner-relieved edge regions.

4,646,049
GLOW DISCHARGE STARTER CONTAINING THORIUM FOR IMPROVING DARK STARTING

Michael R. Kling, and John W. Shaffer, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed Nov. 20, 1985, Ser. No. 799,880
Int. Cl.⁴ H01H 61/00

U.S. Cl. 337—27

17 Claims



1. A glow discharge starter comprising an hermetically sealed envelope containing an ionizable medium, a bimetallic electrode and a counter electrode located within said envelope, a pair of lead-in conductors passing through one end of said envelope for electrically connecting said electrodes, and a spot of dried paste disposed on a surface within said envelope, said dried paste comprising a mixture of thorium, hydrophobic fumed silica and a binder, the quantity of said thorium being sufficient to reduce the dark effect by improving the dark starting performance of said glow discharge starter.

4,646,050
GLOW DISCHARGE STARTER
Michael R. Kling, Lycoming, Pa., and Emery G. Audesse, Beverly, Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Nov. 20, 1985, Ser. No. 799,881
Int. Cl.⁴ H01H 61/00

U.S. Cl. 337—27

15 Claims



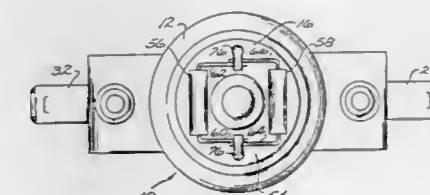
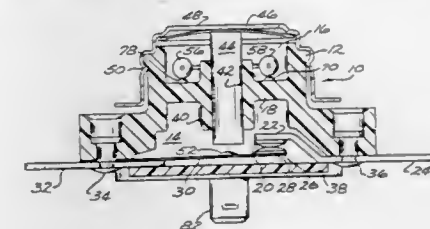
1. A glow discharge starter comprising an hermetically sealed, thin-walled envelope of vitreous material having a wall thickness less than about 0.025 inch and having a press seal located at one end thereof and containing an ionizable medium; a pair of non-segmented electrical conductors extending through said press seal and terminating in a spaced relationship to form a pair of electrodes within said envelope, said electrodes being held in said spaced relationship substantially by said press seal, at least one of said electrodes having a bimetallic element secured thereto, said bimetallic element being de-

formable by heat from the glow discharge into engagement with the other of said electrodes.

4,646,051
THERMOSTATIC ELECTRIC SWITCH AND THERMAL BIASING ASSEMBLY THEREFOR
Vicki V. Ruszczyk, and Youn H. Ting, both of Lexington, Ky., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 670,182, Nov. 13, 1984, Pat. No. 4,591,820.
This application Nov. 27, 1985, Ser. No. 802,489

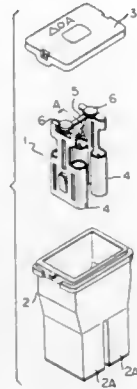
Int. Cl.⁴ H01H 61/02, 37/52
U.S. Cl. 337—107

14 Claims



1. In a thermostatic electric switch having a housing formed with a switch chamber, stationary and movable contact means disposed in the chamber, the movable contact means adapted to move into and out of engagement with the stationary contact means, terminal means electrically connected to the stationary contact means and the movable contact means to form a circuit, the housing having a recessed end portion, a motion transfer member movably received in an aperture in the housing, the member extending from the movable contact means into the recessed end portion, a thermostatic member disposed at the recessed end portion, the member movable on the occurrence of selected thermal conditions between a first configuration and a second configuration, the motion of the member being transferred to the movable contact means through the motion transfer member, a metallic cap member received over the recessed end portion, the improvement comprising a thermal biasing assembly received in the recessed end portion of the housing, the assembly comprising a pair of generally cylindrical resistors, the resistors having first and second leads extending from opposite ends of the resistors, a pair of connector elements having an end, the distal end of a lead of each resistor electrically connected to the end of one connector element and the distal end of the other lead of each resistor electrically connected to the end of the other connector element, the resistors engaging the stop surface to locate the thermal biasing assembly in a selected heat transfer position relative to the member whereby the effective calibration of the thermostatic member can be effectively modified by choosing a particular value of resistance for the pair of resistors.

4,646,052
SLOW BLOW FUSE
 Katsumi Matsunaga, and Yoshitsugu Tsuji, both of Mie, Japan,
 assignors to Sumitomo Wiring System, Ltd., Nie, Japan
 Filed Dec. 24, 1985, Ser. No. 813,076
 Int. Cl.⁴ H01H 85/04
 U.S. Cl. 337-166 4 Claims

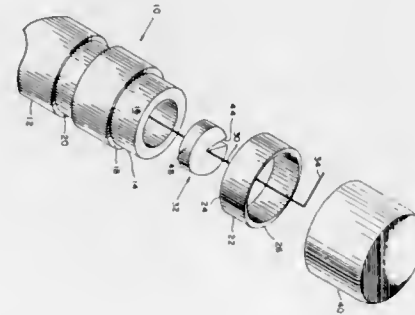
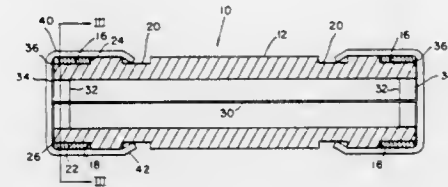


1. A slow blow fuse comprising:
 a fuse element section having opposite ends;
 a pair of electrical terminals each of which is integrally formed with a respective one of said opposite ends of said fuse element section, said fuse element section and electrical terminals comprised of a metal having a high melting point; and
 a heat accumulator secured to each of said opposite ends of said fuse element section in a heat transfer relationship therewith for absorbing heat at said opposite ends of said fuse element, said heat accumulators being aluminum.

4,646,053
ELECTRIC FUSE HAVING WELDED FUSIBLE ELEMENTS
 Jerry L. Mosesian, Newburyport, Mass., assignor to Gould Inc., Rolling Meadows, Ill.
 Filed Dec. 30, 1985, Ser. No. 814,561
 Int. Cl.⁴ H01H 85/16 4 Claims

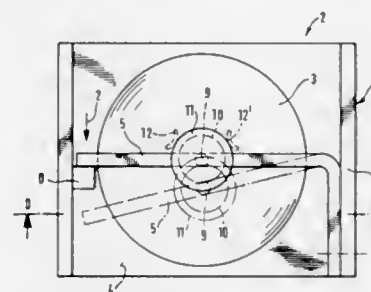
1. An electric fuse which comprises:
 a. a tubular casing of insulating material having a predetermined outside diameter and open ends, said casing including a pair of annular sections of reduced diameter, one of said annular sections being immediately adjacent each of said open ends, the transition between said outside diameter of said casing and each of said sections of reduced diameter defining an annular shoulder which is substantially perpendicular to the longitudinal axis of said casing, each of said shoulders facing in the direction of its respective open end;
 b. a pair of metal contact rings each having an outside diameter substantially the same as the outside diameter of said casing and an inside diameter substantially the same as said annular sections of reduced diameter, one of said rings being press fit onto each of said annular sections of reduced diameter, a first axial end of each of said rings engaging the annular shoulder of its respective section of reduced diameter, and a second axial end of each of said rings being substantially coplanar with one of said open ends of said casing;
 c. a fusible element in the form of a wire extending from one open end of said casing to the other end thereof, one end of said wire being bent into engagement with and welded into electrically conductive relationship with the second axial end of one of said rings, and the other end of said wire being bent around and welded into electrically conductive relationship with the second axial end of the other

of said rings, said welded connections being substantially diametrically opposed from one another, whereby a substantial portion of the length of said fusible element is spaced from the inner wall of said casing;
 d. a pair of terminal caps each having an inside diameter substantially the same as the outside diameter of said metal



- contact rings, one of said caps being permanently secured to and closing each of the ends of said casing, said caps extending along the fuse casing axially beyond said annular shoulders; and
 e. means for establishing a substantially impermeable barrier of insulating material within said fuse casing between the respective terminal caps.

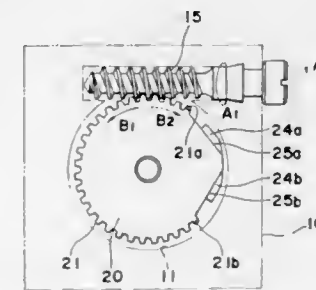
4,646,054
THERMAL SWITCH
 Helmut Bayer, Vienna, Austria, assignor to Electrovac, Fabrikation Elektrotechnischer Spezialartikel GmbH, Vienna, Austria
 Filed Jun. 12, 1985, Ser. No. 743,945
 Claims priority, application Austria, Jun. 15, 1984, 1966/84
 Int. Cl.⁴ H01H 37/70, 37/52 6 Claims



1. A thermal switch for breaking an electrical circuit to prevent overheating, comprising
 a switch compartment,

- a bimetallic thermocouple capable of displacement in response to temperature in said switch compartment,
 a leaf spring having a leg capable of movement between a stressed and an unstressed position, said movement of said leg being in a plane perpendicular to the direction of displacement of said thermocouple,
 a movable contact mounted on said leg of said leaf spring, and
 a second contact in electrical contact with said movable contact when said leg is in its stressed position, said second contact not being in electrical contact with said movable contact when said leg is in its unstressed position, whereby said thermocouple causes said leg of said leaf spring to move into its unstressed position and break the electrical contact between said first and second contacts when the temperature rises above a predetermined value.

4,646,055
ROTARY TRIMMER POTENTIOMETER
 Hiroyuki Watanabe, and Fumitoshi Masuda, both of Fukui, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
 Filed Aug. 29, 1985, Ser. No. 770,853
 Claims priority, application Japan, Sep. 1, 1984, 59-183498; Sep. 1, 1984, 59-183499; Sep. 1, 1984, 59-183500
 Int. Cl.⁴ H01C 10/32 3 Claims

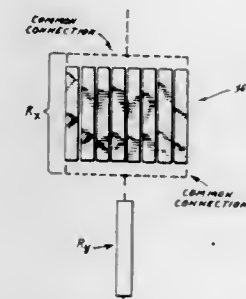


1. A rotary trimmer potentiometer which comprises:
 a housing;
 a resistance element housed within the housing and having first and second opposite ends;
 a spur gear rotatably housed within said housing;
 a worm gear mounted in said housing in engagement with said spur gear for rotating the latter when said worm gear is turned;
 a resilient wiper means housed within said housing for rotation together with said spur gear and positioned between said spur gear and said resistance element for sweeping contact with said resistance element when said spur gear is rotated between first and second positions corresponding to said first and second ends of said resistance elements, respectively, said resilient wiper means applying a resiliency to said spur gear to urge the latter in one direction generally away from said resistance element; and
 said spur gear having first and second toothless areas defined at a portion of the toothed periphery thereof which corresponds in position to said first and second opposite ends of said resistance element, respectively, said first and second toothless areas each having a flat portion and a tapered face extending therefrom, said flat portion of said first and second toothless areas cooperating with said worm gear when said spur gear is in said first and second portions, respectively, to define stop elements for limiting the rotary motion of said spur gear, said tapered surfaces of said first and second toothless areas cooperating with said worm gear when said spur gear is in said first and second positions, respectively, to displace said spur gear in a direction opposite to said one direction against the resiliency of said wiper means, said spur gear when so dis-

placed against the resiliency of said wiper means disengaging from said worm gear.

4,646,056
MATCHING OF RESISTOR SENSITIVITIES TO PROCESS-INDUCED VARIATIONS IN RESISTOR WIDTHS

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.
 Division of Ser. No. 765,809, Aug. 15, 1985, Pat. No. 4,586,019, which is a division of Ser. No. 423,255, Sep. 24, 1982, Pat. No. 4,565,000. This application Feb. 24, 1986, Ser. No. 831,870
 Int. Cl.⁴ H01C 10/00 1 Claim

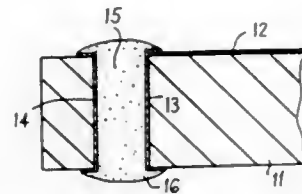


1. In the art of making integrated-circuit chips having resistors thereon, a method of controlling the resistance ratio between a first resistor and a second resistor on the integrated-circuit chip, wherein said first resistor is formed as a single element would have a sensitivity of resistance change due to changes in width which is substantially less than the corresponding sensitivity of said second resistor, said resistance ratio being controlled by matching the sensitivity of said first resistor to changes in resistance due to changes in width to the corresponding sensitivity of said second resistor by a process wherein said first resistor is divided into a plurality of parallel-connected sections having a total width providing the same resistance as said single element but presenting an increased number of side edges relative to said single element to provide that the composite sensitivity of said parallel-connected resistor sections is increased and made at least substantially equal to said sensitivity of said second resistor;
 the improved method comprising the steps of:
 calculating the ratio of (1) said sensitivity of said second resistor to (2) said sensitivity of said hypothetical single-element first resistor; and
 setting the number of side edges to be presented by said parallel-connected sections to be at least substantially equal to twice said ratio.

4,646,057
METHOD OF MAKING CHIP RESISTORS AND IN THE CHIP RESISTORS RESULTING FROM THE METHOD
 Quentin M. Reynolds, Guildford, United Kingdom, assignor to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany
 Filed Feb. 15, 1985, Ser. No. 702,021
 Claims priority, application United Kingdom, Feb. 15, 1984, 8403968

- Int. Cl.⁴ H01G 1/14 13 Claims
9. A chip resistor having
 an elongated substrate (11) of a predetermined length, which defines two substrate ends, said chip resistor having two end terminations, comprising
 a through-hole (13) formed adjacent, but inwardly of the ends of the substrate at the positions of the end terminations;
 a layer of resistive material (12) on the surface of the sub-

strate (11) and extending in the region of the end terminations; and a coating (14) of electrically conductive material extending through the through-holes inwardly of the ends of the



substrate and electrically connected to the layer of resistive material, and over the zones of the substrate surfaces immediately adjacent the through-hole while leaving the ends or edge surfaces of the substrate free from electrically conductive material.

4,646,058

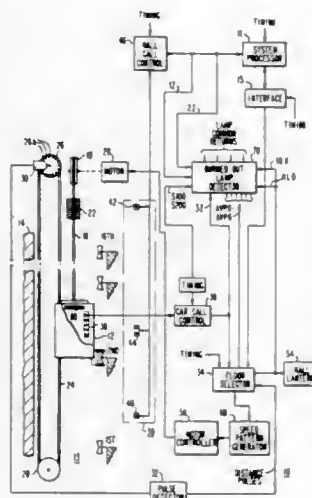
ELEVATOR SYSTEM WITH LAMP FAILURE MONITORING

Alan F. Mandel, Mt. Lebanon; Kenneth M. Eichler, North Versailles, both of Pa., and William H. Moore, Bridgewater, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 5, 1985, Ser. No. 741,420
Int. Cl.⁴ B66B 3/00

U.S. Cl. 187—100

6 Claims



1. An elevator system, comprising:
a building having a plurality of floors,
an elevator car mounted for movement in said building to serve the floors,
at least one lamp associated with each floor, with each of said lamps having first and second terminals,
first means for selectively energizing the first terminals of said lamps, with the second terminals of said lamps being connected to a common return,
current detector means for detecting the magnitude of the current flowing in said common return,
second means for determining when only the lamp, or lamps, associated with only one of said plurality of floors, should be energized,
and burned-out lamp detector means responsive to said current detector means and said second means, storing an indication of a burned-out lamp, including the floor number associated with the lamp, when current flow in the common return is less than a predetermined value at a

time when a lamp, or lamps, associated with only a single floor should be energized.

4,646,059

SOLID-STATE INFORMATION DISPLAY APPARATUS FOR AUTOMOBILE VEHICLE

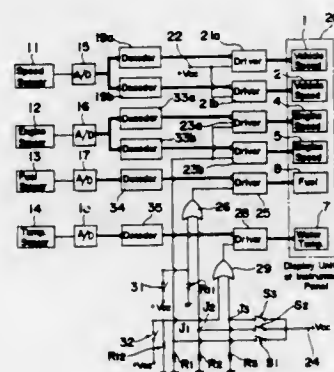
Tadashi Iwamoto, and Shizuo Sumida, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 351,360, Feb. 23, 1982, abandoned.
This application Nov. 20, 1984, Ser. No. 673,221

Claims priority, application Japan, Feb. 26, 1981, 56-27698
Int. Cl.⁴ B60Q 1/00

U.S. Cl. 340—52 F

3 Claims



1. An information display apparatus for a vehicle for indicating the status of parameters which altogether represent the condition of the vehicle being operated, which apparatus comprises, in combination:

- a first display unit including at least one first detecting means for detecting a change in a running speed of the vehicle and for generating an output signal indicative of such change in said vehicle running speed, a first indicator, and a first driving means electrically connected between said first indicator and said first detecting means for driving said first indicator, said first driving means causing said first indicator to present a visual indication of said change in said vehicle running speed;
- a second display unit including at least one second detecting means for detecting a change in an amount of fuel remaining in a fuel tank of the vehicle or a temperature of coolant used to cool an engine of the vehicle and for generating an output signal indicative of such change in said remaining fuel amount or coolant temperature, a second indicator, a second driving means electrically connected between said second indicator and said second detecting means for driving said second indicator, and a manually operated switch means connected to said second driving means for causing said second driving means to cause said second indicator to present a visual indication of said change in said remaining fuel amount or coolant temperature;
- a third display unit including at least one third detecting means for detecting a change in an engine speed of said vehicle engine and for generating an output signal indicative of such change in said engine speed, a third indicator, a third driving means electrically connected between said third indicator and said third detecting means for driving said third indicator, an additional manually operated switch means connected to said third driving means for causing said third driving means to cause said third indicator to present a visual indication of said change in said engine speed; and
- an emergency output generator means electrically connected to said second detecting means for generating an emergency output signal when said output signal from

said second detecting means deviates from a predetermined value, said second driving means being enabled so as to generate said emergency output signal in response to said emergency output signal from said emergency output generating means regardless of the position of said manually operated switch;

wherein said emergency output generating means comprises a comparator means which is electrically connected to said second detecting means, and a gating circuit electrically connected between said comparator means and said second driving circuit, said gating circuit being enabled only when said output signal from said second detecting means deviates from said predetermined value, so as to allow the passage of said emergency output signal there-through to said second driving means;

wherein said apparatus further comprises a power source, wherein said manually operated switch means and said additional manually operated switch means each comprise a switch having one terminal connected to said power source and having another terminal connected to a resistor connected to a ground, said another terminal of said switch of said manually operated switch means being connected to said second driving means and said another terminal of said switch of said additional manually operated switch means being connected to said third driving means;

and wherein said gating circuit comprises an OR gate having inputs connected to an output of said comparator means and said another terminal of said switch of said manually operated switch means and having an output connected to said second driving means.

4,646,060

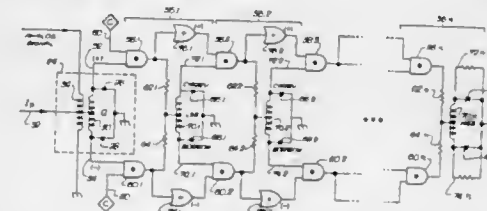
SUPERCONDUCTING ANALOG-TO-DIGITAL CONVERTER WITH BIDIRECTIONAL COUNTER

Richard R. Phillips, Gardena; Robert D. Sandell, Manhattan Beach, and Arnold H. Silver, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 7, 1984, Ser. No. 648,868
Int. Cl.⁴ H03M 1/12

U.S. Cl. 340—347 AD

13 Claims



1. A superconducting analog-to-digital converter, comprising:

- a double-junction superconducting quantum interference device (SQUID) having first and second Josephson junctions and a center-tapped load inductance;
- means for applying a constant gate current to the center of the load inductance;
- means for applying a bidirectionally varying analog signal current to the load inductance, wherein positive incremental changes in the analog signal current result in the generation of voltage pulses across the first junction, and negative incremental changes in the analog current signal result in the generation of voltage pulses of the same polarity across the second junction; and
- means for counting the voltage pulses generated across the first and second junctions, to determine the corresponding digital equivalents of the changes in the analog signal current.

4,646,061

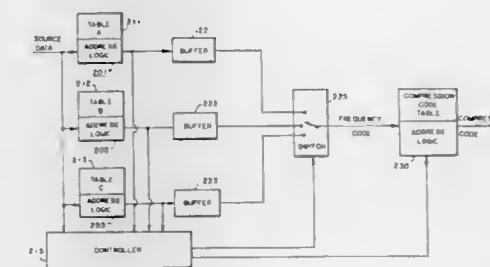
DATA COMMUNICATION WITH MODIFIED HUFFMAN CODING

Robert E. Bledsoe, Miami, Fla., assignor to Racial Data Communications Inc., Fort Lauderdale, Fla.

Filed Mar. 13, 1985, Ser. No. 711,325
Int. Cl.⁴ H03M 7/42

U.S. Cl. 340—347 DD

5 Claims



1. An apparatus for providing compression of data, comprising:

- first frequency coding means for assigning a first code representing approximate frequency of use of symbols of said data;
- second frequency coding means for assigning a second code representing approximate frequency of use of symbols of said data;
- said first and second frequency coding means assigning said first and second codes according to statistics on frequency of use of symbols for two distinct types of data;
- input means for providing data for compression to said first and second frequency coding means;
- compression means for compressing one of said first and second codes;
- switching means for selecting one of said first and second codes for compression by said compression means; and
- control means, for determining which of said first and second frequency coding means provides better data compression and for controlling said switching means so that it selects the frequency coding means which provides better data compression.

4,646,062

KEY INPUT DEVICE

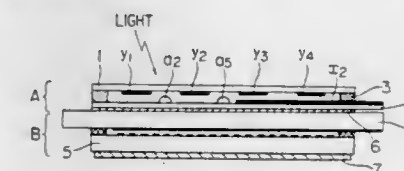
Kazuhiro Arakawa, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,437

Claims priority, application Japan, Aug. 2, 1983, 58-142161
Int. Cl.⁴ G06F 3/02; G08C 1/00

U.S. Cl. 340—365 R

14 Claims

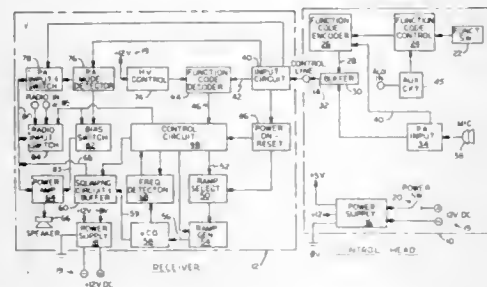


1. A key input device comprising:

- a first plate member having an inner and an outer wall, said first plate member made of a transparent member having an electrical insulation property;
- first electrode means made of a conductor and formed on said inner wall of said first plate member;
- a second plate member having an inner and an outer wall and being oriented substantially parallel to said first plate member so as to sandwich said first electrode means, said second plate member being made of a transparent member

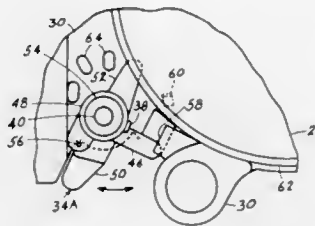
having an electrical insulation property, said outer wall defining a light incident side;
second electrode means made of a conductor and formed on said inner wall of said second plate member, each said inner wall of said plate members facing each other; and a focusing means provided by a projecting member made of a transparent member, said projecting member being formed on one of said inner walls, said inner wall being on the plate member not including the light incident side.

4,646,063
ELECTRONIC SIREN WITH REMOTE MULTIPLEXED CONTROL HEAD
William H. Carson, Oaklandon, Ind., assignor to Carson Manufacturing Co., Indianapolis, Ind.
Filed May 11, 1983, Ser. No. 493,644
Int. Cl.⁴ G08B 3/00
U.S. Cl. 340—384 E 29 Claims



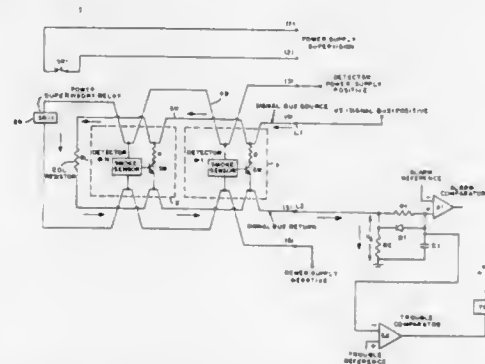
1. In remote control electronic siren apparatus:
 - (a) a control module including function switch means for generating a selected one of a predetermined plurality of parallel binary coded function switch signals, and encoding means connected to said function switch means to receive said function switch signals for generating in response thereto a corresponding one of a plurality of sequentially occurring serial coded pulse signals;
 - (b) a receiver module located remotely from said control module;
 - (c) transmission line means in the form of a single conductor control line for connecting said receiver module to said control module to conduct said serial coded pulse signals from said control module to said receiver module;
 - (d) decoding means constituting a portion of said receiver module, said decoding means receiving said serial coded pulse signals and producing in response thereto corresponding static parallel output signals;
 - (e) siren signal generating means constituting a portion of said receiver module, said siren signal generating means being responsive to said static parallel output signals for generating a corresponding predetermined plurality of variable frequency signals having frequency envelopes corresponding to predetermined siren formats;
 - (f) power amplifier means constituting a portion of said receiver module, said power amplifier means being responsive to said variable frequency signals to drive a loudspeaker generating high volume audible signals corresponding thereto; and
 - (g) a power amplifier bias switch constituting a portion of said receiver module, said power amplifier bias switch automatically altering the biasing current of said power amplifier in response to the presence or absence of a signal provided by said control module via said transmission line.

4,646,064
VOLUME CONTROL DEVICE FOR RINGER
Jerry D. Palmer; Robert J. Janus, both of Corinth, and Larry D. Lambert, Burnsville, all of Miss., assignors to ITT Corporation, New York, N.Y.
Filed Dec. 13, 1984, Ser. No. 681,167
Int. Cl.⁴ G10K 1/36; G08B 3/00
U.S. Cl. 340—392 15 Claims



1. A volume control device for a ringer having a gong, means for vibrating the gong to produce a sound, and a frame for supporting the gong and the vibrating means, said volume control device comprising:
 - means for damping vibrations of said gong, said damping means comprising a damping element and a pivot upstanding from said frame, said damping element being pivotable about said pivot and extending outward from said pivot a sufficient distance to contact said gong;
 - means for urging said damping element away from said frame to bring said damping element into contact with a rim of said gong to absorb vibrations thereof; said urging means upstanding in a fixed position from said frame and being spaced apart from said damping element prior to a rotation of said damping element about said pivot bringing said damping element into contact with said urging means, the amount of said urging being dependent upon rotation of said damping element about said pivot; and
 - means fixedly positioned relative to said frame for guiding said damping element between a rim of said gong and said frame to said urging means during a rotation of said damping element about said pivot.

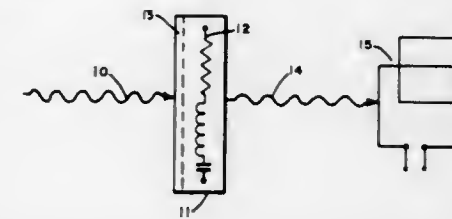
4,646,065
FAULT-TOLERANT CONTROL SYSTEM
Elias E. Solomon, P.O. Box 2777, Duxbury, Mass. 02331
Filed Aug. 27, 1984, Ser. No. 644,511
Int. Cl.⁴ G08B 29/00
U.S. Cl. 340—511 23 Claims



1. A fault tolerant control system having an input sensing network for sensing signals from one or more detectors in which said detectors are disposed in a parallel array, said sensing network comprising, a linear element, a non-linear

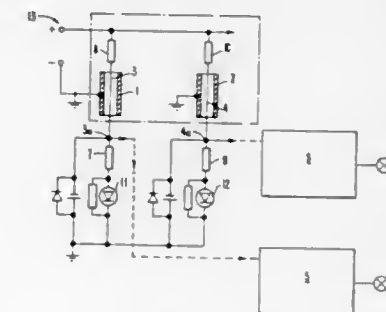
element, means disposing the linear and non-linear elements in parallel, means coupling signals from at least one said detector to the sensing network to provide a signal having a maximum voltage established by the non-linear element, said linear element providing a linear change in voltage with current until the voltage of the non-linear element is reached whereby said voltage then is controlled by said non-linear element and means coupled from said parallel disposed linear and non-linear elements for detecting said voltage signal.

4,646,066
ENVIRONMENTAL INDICATOR DEVICE AND METHOD
Ray H. Baughman, Morris Plains; Ronald L. Elsenbaumer, Morristown; Zafar Iqbal, Morristown; Granville G. Miller, Morristown, and Helmut Eckhardt, Madison, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jun. 27, 1985, Ser. No. 749,326
Int. Cl.⁴ G08B 13/18, 21/00
U.S. Cl. 340—540 46 Claims



1. An indicator device comprising a target that has a tuned electrical circuit and that includes an element having an electrical property that, in response to a particular environmental parameter, changes in a predetermined fashion, whereby the response of the target to an electromagnetic interrogation signal, having a frequency in the microwave range or lower, can be related to the exposure of the target to the parameter.

4,646,067
SECURITY BAR RACK
Werner Marzluf, Rheinstetten, and Günter Ott, Waldbronn, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Hellmut Geiger GmbH & Co. KG., Karlsruhe, Fed. Rep. of Germany
Filed Jul. 11, 1983, Ser. No. 512,762
Int. Cl.⁴ G08B 13/00
U.S. Cl. 340—550 4 Claims



1. A security bar rack for installation in an inlet or outlet of a facility such as a water treatment plant or a power station, said security bar rack comprising:
 - a plurality of conductive hollow tubes connected to ground;
 - a plurality of conductive sensor elements having uninsulated external surfaces, each said sensor element being stretched within a respective said hollow tube and extending throughout the entire height thereof, and each said sensor

element having an input and having an output separate from the outputs of the other sensor elements, each said sensor element comprising a single uninterrupted electrically conductive line between said input and said output; power supply means connected to said inputs of said sensor elements for powering said sensor elements and providing voltage of a given value to said outputs of said sensor elements;

a plurality of separate monitoring circuits, each said monitoring circuit being connected to said output of a single respective said sensor element and forming means for generating an indication of a change in the dielectric condition of the geometric assembly of said respective sensor element and the respective said hollow tube as a function of a change of said given voltage at said output;

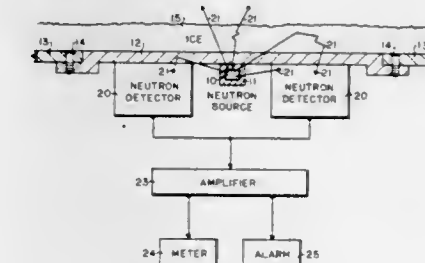
a plurality of first signal elements, each said first signal element being connected to a single respective said monitoring circuit for generating an alarm signal indicative of the respective said change in dielectric condition;

a plurality of second signal elements, each said second signal element being connected to said output of a single respective said sensor element and forming means to produce a detectable signal representative of the existence of said given voltage at said output at all times during which the respective said sensor element is powered and in a state of readiness capable of indicating said change in dielectric condition; and

each said second signal element being connected in parallel to the respective said monitoring circuit and first signal element;

thereby forming a linear arrangement of independent pairs of first and second signal elements.

4,646,068
ICE MONITORING SYSTEM USING NEUTRON MODERATION
Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402
Continuation-in-part of Ser. No. 340,809, Jan. 19, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,618
Int. Cl.⁴ G08B 21/00
U.S. Cl. 340—580 4 Claims



1. A process for measuring basis weight of a layer of a hydrogenous material, comprising the steps of:
 - mounting a source of fast neutrons and a detector of slow neutrons proximate to each other on one side of a mounting plate whereby the fast neutrons are moderated and scattered by the layer of hydrogenous material which is proximate to the other side of the mounting plate and detecting a portion of the moderated and scattered neutrons by the detector whereby an electrical amplitude corresponding to the basis weight of the hydrogenous material is generated for measurement thereof.

4,646,069

FLUID DETECTION SYSTEM

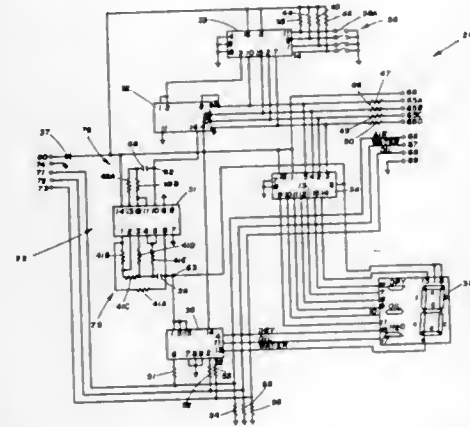
Raymond J. Andrejasic, Carmel, and Roy E. Kidd, Clayton, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 24, 1985, Ser. No. 747,714

Int. Cl.⁴ G01B 21/00

U.S. Cl. 340—603

1 Claim



1. An apparatus for detecting the presence of fluids comprising:
 - a plurality of probes for detecting the fluid state of their environment;
 - means for producing a plurality of digital probe signals, each signal corresponding to a binary number, one number uniquely associated with each of said probes;
 - a plurality of comparator means for comparing said probe signals to a predetermined probe identifier and for producing a status signal indicative of the fluid environment of the probe upon reception of the probe signal corresponding to the identifier, one of said comparator means being associated with each of said probes; and
 - output means responsive to the probe signals and the status signals for producing an indication of the detected fluid state correlated with each of said probes, said means including at least two segmented electronic number displays, at least one of said displays responsive to said probe signal for displaying said numbers corresponding to said probes and another of said displays having at least three horizontal segments and wherein the different probe status conditions are indicated by activating a different one of said horizontal segments.

4,646,070

OIL DETERIORATION DETECTOR METHOD AND APPARATUS

Seishi Yasuhara, Yokosuka; Hiroshi Kobayashi, Yokohama; Toru Kita, Yokosuka, and Hideyuki Saito, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Japan

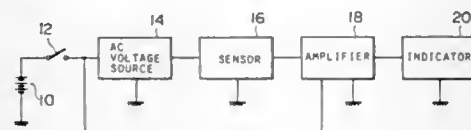
Filed Nov. 12, 1982, Ser. No. 441,035

Claims priority, application Japan, Nov. 17, 1981, 56-182996

Int. Cl.⁴ G08B 21/00

U.S. Cl. 340—603

13 Claims



1. An apparatus for detecting the degree of deterioration of

lubricating oil used in an internal combustion engine, comprising:

- (a) an AC voltage source for generating an AC voltage of a predetermined frequency ranging from about 50 KHz to about 500 KHz;
- (b) a sensor including a pair of spaced apart electrodes dipped into the lubricating oil while the oil is in the internal combustion engine, the electrodes and the oil between them forming a sensor capacitor having a capacity that varies as a function of the lubricating oil dielectric constant, circuit means for connecting said sensor capacitor to said AC voltage source and for generating an output having a value corresponding to the lubricating oil dielectric constant; and
- (c) an indicator connected to be responsive to said output for indicating oil deterioration degree corresponding to the output of said sensor, said indicator being arranged to indicate that the oil deterioration degree is relatively low and high in response to the impedance between the electrodes being respectively relatively high and low, whereby the indicator response is independent of temperature of the oil for oil temperatures above a predetermined level corresponding with operation of the internal combustion engine.

4,646,071

INFRARED-RAY SENSITIVE ALARM DEVICE BUILT INTO ELECTRONIC EQUIPMENT

Mamoru Goda, Akasbi, Japan, assignor to Coney Onkyo Company, Ltd., Kobe, Japan

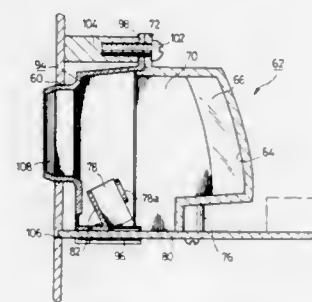
Filed Apr. 15, 1985, Ser. No. 723,470

Claims priority, application Japan, May 7, 1984, 59-66840[U]

Int. Cl.⁴ G08B 13/18

U.S. Cl. 340—693

3 Claims



1. An alarm device built into the cabinet of a utilization device having an opening; comprising a reflector having at least one focus, an inlet window fitting in said opening and facing said reflector, an infrared ray detector disposed at the focus of said reflector and between said window and said reflector, and a cover wall disposed between said window and said reflector for enclosing said detector to prevent its erroneous operation.

4,646,072

LOCKING MEANS FOR GARAGE DOOR ACTUATOR SIGNAL TRANSMITTERS

George W. Hughes, 1421 Bringham, Houston, Tex. 77020

Filed May 6, 1985, Ser. No. 731,150

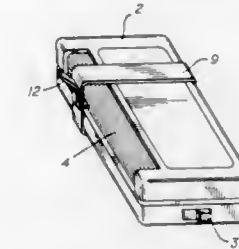
Int. Cl.⁴ H04Q 9/14

U.S. Cl. 340—696

1 Claim

1. A locking means for garage door actuator signal transmitters, comprising a housing enclosing a transmitter, a manually operable first switch in said housing, a strap embracing said housing, a lever pivotally mounted on said strap, a manually movable member hingedly mounted on said housing forming a

second switch, adapted to close a circuit through the signal transmitter when said switches are in closed position, said



movable member of said second switch having means to receive the extended end of said lever when in an open position.

4,646,073

INPUT-OUTPUT COORDINATE TRANSFORMING METHOD AND APPARATUS FOR INPUT-INTEGRATED DISPLAY

Yasushi Fukunaga, and Ryo Fujita, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

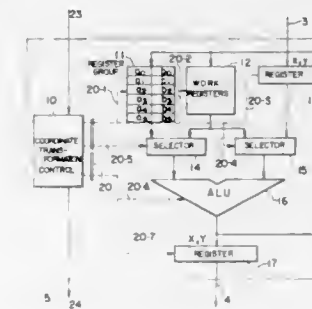
Filed Mar. 29, 1984, Ser. No. 594,687

Claims priority, application Japan, Apr. 1, 1983, 58-55022

Int. Cl.⁴ G09G 3/02

U.S. Cl. 340—709

6 Claims



4. An input-integrated display apparatus, comprising:
 - a display device including display means and a display control circuit for supplying to said display means a display control signal for displaying a point in accordance with input signals representative of coordinates of said point to be displayed through said display means;
 - input coordinate designating means including a tablet on which the point to be displayed is designated by an operator, said tablet being physically connected with a display screen of said display means and integrally combined therewith, said coordinate input designating means including means for supplying coordinate signals representative of coordinates of the point designated by the operator in response to the designation of said point; and
 - coordinate transformation means for converting the coordinates represented by the input coordinate signals supplied from said input coordinate designating means into corresponding coordinates on a display screen of said display means, and for supplying signals representative of transformed coordinates to said display device, said coordinate transformation means including input register means for storing the input coordinate information supplied from said input coordinate designating means, temporal storage means for temporary storage of data, output register means for storing the coordinate information to be supplied to said display means, and a control circuit, wherein said control circuit includes:
 - means for loading coordinate information of a plurality of predetermined reference coordinates in said output regis-

ter means sequentially and supplying the loaded information to said display device, means for receiving sequentially from said input coordinate designating means through said input register means the information of coordinates of points on said tablet in response to designations of the operator, said points being designated such that each of said points coincide with each of the reference points on said display device having said reference coordinates as viewed by the operator, means for calculating constants of predetermined coordinate transforming expressions on the basis of said plurality of the reference coordinates and the corresponding coordinates from said input coordinate designating means and for storing the calculated constants in said temporal storage means, and means for subsequently transforming coordinates included in information loaded in said input register means from said input coordinate designating means by using coordinate transforming expressions in which said constants stored in said temporal storage means are employed, and for loading information as to the transformed coordinates in said output register means.

4,646,074

DOT MATRIX DISPLAY WITH DRIVER CIRCUIT ON THE SAME PLANE

Shintaro Hashimoto, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

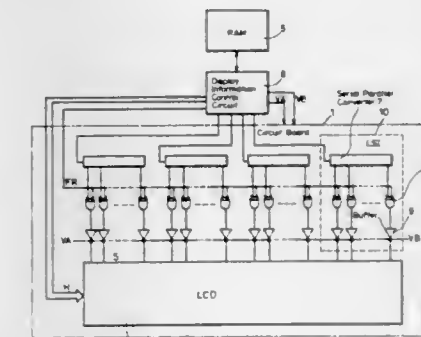
Filed Feb. 7, 1984, Ser. No. 577,799

Claims priority, application Japan, Feb. 10, 1983, 58-21346

Int. Cl.⁴ G09G 3/02

U.S. Cl. 340—718

4 Claims



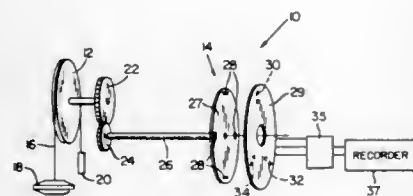
1. A dot matrix display device that displays display information stored in a memory, comprising:
 - driving control means for producing a plurality of control signals, said plurality of control signals including, a plurality of serial data signals, each of said plurality of serial data signals representing display information read out of the memory, a common signal and a frame inversion signal;
 - a circuit board;
 - a plurality of display elements mounted to said circuit board and responsive to said common signal and having circuit terminals; and
 - driving means, responsive to said plurality of control signals and connected to said circuit board, for driving said plurality of display elements to display information read out of the memory, said driving means comprising:
 - a plurality of serial to parallel data converters converting said serial data signals into a plurality of parallel data signals,
 - gating means, operatively connected to said serial to parallel data converters, for gating each of said plurality of parallel data signals with said frame inversion signal to produce a plurality of gate output signals, and
 - signal buffer means, operatively connected to said gating means, for producing a segment signal from each of said plurality of gate output signals, said segment signals

- (a) storing a lock combination information code in each of the multiple memory levels;
- (b) applying a key operation select information code and a key combination information code to the security device;
- (c) selecting one of the memory levels having stored therein a lock combination information code;
- (d) comparing combination information from the selected lock combination information code with combination information dependent upon the key combination information code and generating a first opening compare signal if said combination information from the selected lock combination information code corresponds to said combination information code;

a plurality of patterned discs, each of which is mounted for rotation with a respective one of the dials, each disc having sectors of different radiant energy attenuating proper-

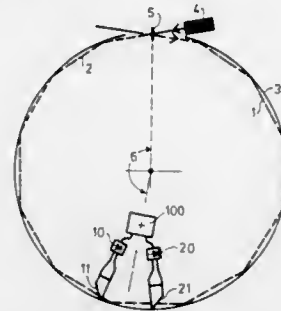
ties so that radiant energy directed to the disc is encoded by the sector pattern;
 first means for directing radiant energy to each of the discs one at a time in succession;
 second means for directing the encoded radiant energy from each disc to a single sensor location;
 a sector detector disposed at the sensor location so that each detector sector receives a portion of the encoded radiant energy from the second means and produces a detector sector output signal indicative of the intensity of the received radiant energy; and
 third means for processing the detector sector output signals to produce dial reading output signals indicative of the angular position of each of the discs.

4,646,085
SHAFT POSITION ENCODER APPARATUS WITH LOGIC AND DECODER
 Henry L. Mathis, Aloha, Oreg., assignor to Leupold & Stevens, Inc., Beaverton, Oreg.
 Filed Aug. 2, 1985, Ser. No. 761,778
 Int. Cl.⁴ G08C 19/16
 U.S. Cl. 340—870.19



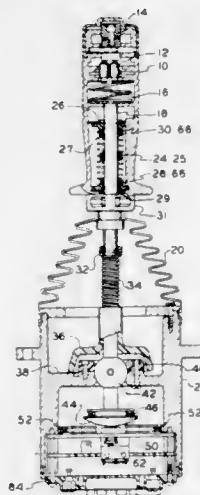
1. Shaft position encoder apparatus, comprising:
 input means including a plurality of pulse sources spaced about the axis of a shaft, for producing by said sources a group of encoder pulses for each measured change in the revolution of said shaft, with the sequence of the pulses corresponding to the direction of rotation of said shaft;
 rotation position detector means for detecting the rotational position of the shaft connected to the pulse terminals of said input means, and for producing detector output pulses at detector output terminals corresponding to said pulse terminals in response to receipt of said encoder pulses;
 rotation direction sensor means for determining the direction of rotation of said shaft having a plurality of stages whose inputs are connected to different detector output terminals of said rotation position detector means, and having a common output connected to the outputs of said stages to produce an output signal indicating the direction of rotation of said shaft;
 rotation detector means for producing an output pulse when said shaft is rotating by detecting changes in the voltage level of the detector output terminals of said rotation position detector means; and
 output means for producing two output indicator signals indicating the two opposite directions of rotation of the shaft and the position of the shaft in response to the output signal of said rotation direction sensor means and the output pulse of said rotation detector means.

4,646,086
ARRANGEMENT FOR DATA TRANSMISSION BETWEEN TWO MUTUALLY ROTATABLE PARTS
 Thomas Helzel, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Dec. 31, 1984, Ser. No. 688,100
 Claims priority, application Fed. Rep. of Germany, Jan. 7, 1984, 3400361
 Int. Cl.⁴ G08B 1/00
 U.S. Cl. 340—870.29



1. An arrangement for data transmission between two mutually rotatable parts, one of which carries transmitting means (4) and the other receiving means, wherein the receiving means comprises at least two photodiode transducers (10, 20) which receive signals whose phase angles and/or amplitudes changes in opposite directions upon rotation of the parts, in which the photodiode transducers (10, 20) are each followed by a channel which includes a limiter-amplifier (14, 24) whose output signals are fed to the inputs of an OR circuit (30) whose output signal (s₀) forms the output signal of the receiving arrangement.

4,646,087
INDUCTIVELY COUPLED POSITION DETECTION SYSTEM
 Douglas D. Schumann, 1407 Flanders Rd., Southington, Conn. 06489
 Filed Nov. 3, 1983, Ser. No. 548,410
 Int. Cl.⁴ G08C 19/06
 U.S. Cl. 340—870.31



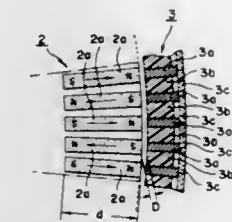
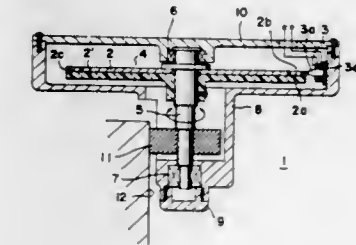
1. Non-contacting apparatus for generating electrical signals commensurate with the position of a moveable member comprising:

a plurality of sensor coils, said sensor coils each having an axis;
 means supporting said sensor coils in a spacially displaced generally co-planar relationship with the axes thereof being substantially parallel and being substantially perpendicular to said plane, one of said coils being located in each quadrant of an X-Y coordinate system, a fifth axis generally parallel to said coil axes passing through the intersection of the X and Y axis of said coordinate system;
 magnetic field producing means, said field producing means including a drive coil having an axis, said drive coil axis being substantially parallel to said fifth axis when said field producing means is in a neutral undeflected position, said field producing means being at least in part moveable with respect to and without physical contact with said sensor coils about said fifth axis to vary the magnetic coupling between said field producing means drive coil and each of said sensor coils, the magnetic field produced by said field producing means drive coil partly encompassing all of said sensor coils at least in the neutral position of said field producing means;
 means for generating an alternating excitation voltage for said field producing means;
 means applying said alternating excitation voltage to said field producing means drive coil;
 means coupling the moveable member the position of which is of interest to said field producing means whereby changes in the magnetic coupling between said field producing means drive coil and said sensor coils will be commensurate with movements of the member;
 first switch means, said first switch means being electrically coupled to first ends of a first and a second of said sensor coils, said first and second sensor coils lying in adjacent quadrants of said coordinate system;
 second switch means, said second switch means being electrically coupled to first ends of the third and fourth of said sensor coils, said third and fourth sensor coils lying in adjacent quadrants of said coordinate system;
 means electrically connecting the second end of the first of said sensor coils to the second end of the third of said sensor coils;
 means electronically connecting the second end of the second of said sensor coils to the second end of the fourth of said sensor coils;
 means responsive to said alternating excitation voltage for providing a pair of out-of-phase switch means control signals;
 means delivering said control signals to said switch means whereby said switch means will be closed in synchronism with the induction of voltages in said sensor coils; and
 means responsive to the voltages passed by said switch means when in the closed state for providing a pair of output signals which in combination are indicative of the direction and amount of deflection of said field producing means relative to said fifth axis.

4,646,088
MAGNETIC ENCODER SYSTEM
 Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Japan
 Filed Jun. 29, 1983, Ser. No. 509,258
 Claims priority, application Japan, Jul. 5, 1982, 57-115355
 Int. Cl.⁴ G08B 21/00; G01P 3/44
 U.S. Cl. 340—870.31

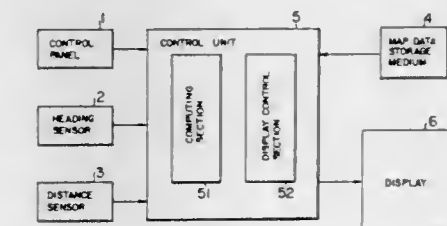
1. A magnetic encoder system comprising:
 a substantially flat rotary disk, said disk having formed thereon a succession of radially elongated discrete magnetic encoding units, each of said radially elongated discrete magnetic encoding units consisting of a discrete pair of radially separated opposed magnetic poles (N,S), said units having radial lengths greater than the thickness of said disk; and
 a magnetic sensing head juxtaposed with said disk for successively sensing said encoding units as the disk is rotated

to measure an angular displacement thereof, such of said encoding units, with said opposed magnetic poles extend-



ing substantially in alignment with a radial direction of said disk.

4,646,089
TRAVEL GUIDANCE SYSTEM FOR VEHICLES
 Kazunori Takanabe, Kazugai; Masaki Yamamoto, Nagoya; Kenzo Ito, Okazaki, and Hiroshi Fujinami, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
 Filed Jan. 6, 1984, Ser. No. 568,794
 Claims priority, application Japan, Jan. 17, 1983, 58-5531
 Int. Cl.⁴ G08G 1/12; G01C 21/00
 U.S. Cl. 340—995



1. A travel guidance system for vehicles including:
 a heading sensor for detecting a direction of movement of a vehicle;
 a distance sensor for detecting a distance traveled by said vehicle;
 a map data storage medium preliminarily storing map data;
 a control unit for receiving a heading signal from said heading sensor and a distance signal from said distance sensor to successively compute a present position of said vehicle and for generating video signals corresponding to display data including map data from said map data storage medium and data of said present position; and
 a display having first and second display portions and responsive to said video signals from said control unit to display on said first display portion a map and a present position mark, in which:
 said map data storage medium comprises means for preliminarily storing administrative division name data and landmark data; and
 said control unit comprises:
 landmark display means for: (1) determining a landmark closest to said present position, (2) causing a position of

1. The method of operating a four quadrant monopulse radar, where the signals received at each quadrant are represented by A, B, C and D, to resolve two sources of received

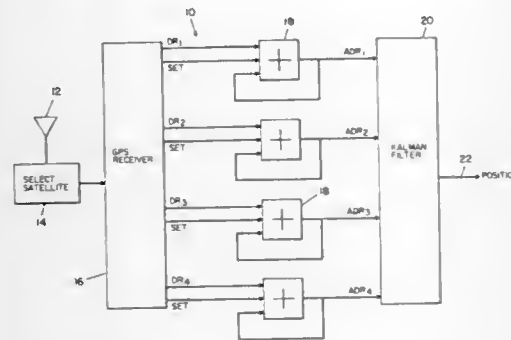
signals when such sources are within the sum beam of such radar, such method comprising the steps of:

- separately quadrature detecting signals received at each one of the four quadrants to produce eight video signals, associated pairs of such signals being representative of the real and imaginary parts of a corresponding one of the signals A, B, C and D;
- forming the monopulse ratios $Y = [(A+C)-(B+D)] / (A+B+C+D)$, $P = [(A+B)-(C+D)] / (A+B+C+D)$ and $\Delta = [(A+D)-(B+C)] / (A+B+C+D)$ and the monopulse sums, $S = (A+B+C+D)$;
- forming the complex conjugates Y^* , P^* , Δ^* and S^* ; and
- processing the monopulse ratios Y , P , Δ and S along with the complex conjugate to solve the identity:

$$r_1/r_2 = \frac{1}{2}[(r_1 + r_2)(r_1 \pm r_2)^2]^{1/2}$$

where r_1 is the yaw monopulse ratio of one of the sources of signals received and r_2 is the yaw monopulse ratio of the second of the sources of signals received.

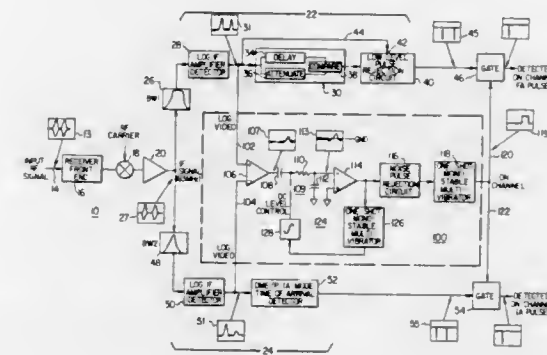
4,646,096
ENHANCED GLOBAL POSITIONING SYSTEM
DELTA-RANGE PROCESSING
 Alison Brown, Simi Valley, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
 Filed Oct. 5, 1984, Ser. No. 659,231
 Int. Cl.⁴ G01S 5/02
 U.S. Cl. 342-357 13 Claims



5. Apparatus for enhancing the information received from a global positioning system which includes a plurality of satellites each transmitting at least two carrier frequency signals, comprising:

- means for selecting a plurality of satellites whose transmitted signals are to be received;
- means for storing;
- means for setting each means for storing to zero;
- means for receiving said carrier frequency signals from said selected satellites;
- means for measuring the phase of said carrier frequency signals received from said selected satellites;
- means for measuring changes in phase of said carrier frequency signals over a predetermined time interval;
- means for placing said measured changes in phase in said means for storing over said time interval to create a Delta-Range measurement for each selected satellite;
- means for accumulating said Delta-Range measurement by adding the above mentioned accumulated Delta-Range information for each satellite to said Delta-Range measurement;
- filter means for processing said accumulated Delta-Range information for each selected satellite for producing an output representing position information.

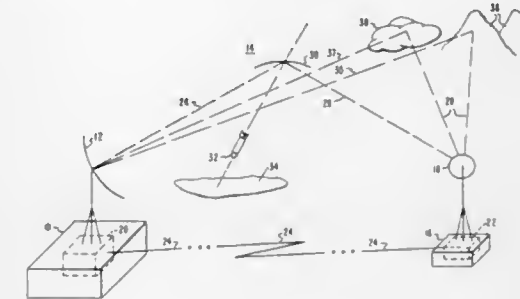
4,646,097
OFF-CHANNEL FREQUENCY DISCRIMINATOR
CIRCUIT FOR USE IN A PRECISION DISTANCE
MEASURING EQUIPMENT (DME/P) RECEIVER
 Dennis D. King, Sandy, Utah, assignor to E-Systems, Inc., Dallas, Tex.
 Filed May 6, 1985, Ser. No. 730,559
 Int. Cl.⁴ G01S 1/08
 U.S. Cl. 342-95 15 Claims



1. A precision distance measuring equipment (DME/P) receiver for use in a pulse-type time-of-arrival detection system for detecting an RF signal including at least one pulse, comprising:

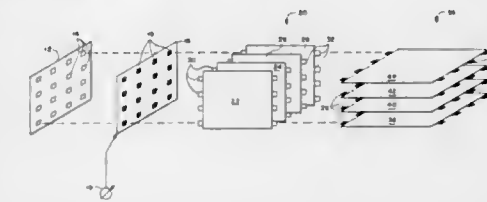
- means for receiving said RF signal and in response thereto generating an IF signal;
- first signal processing means including a wideband filter, of bandwidth BW1, for receiving said IF signal and in response thereto generating a wideband (FA) mode signal proportional to the logarithm of said IF signal as filtered by the wideband filter;
- second signal processing means including a narrowband filter, of bandwidth BW2, for receiving said IF signal and in response thereto generating a narrowband (IA) mode signal proportional to the logarithm of said IF signal as filtered by the narrowband filter, the bandwidth BW2 of said narrowband filter being within the bandwidth BW1 of said wideband filter;
- discriminator means for receiving said FA and IA mode signals from said first and second signal processing means, respectively, and in response thereto generating a control signal when said pulse has a frequency within said bandwidth BW1 but outside said bandwidth BW2, said control signal representing an "off-channel" condition; and
- gating means for receiving said control signal from said discriminator means, and in response thereto inhibiting further processing of said FA and IA mode signals in said receiver during said off-channel condition.

4,646,098
PHASE COHERENT DECOY RADAR TRANSMITTER
 John Mattern, Catonsville, and Don G. Kadron, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Aug. 11, 1978, Ser. No. 932,993
 Int. Cl.⁴ G01S 7/38
 U.S. Cl. 342-14 17 Claims



1. A decoy radar transmitter governed by a control signal derived from a main radar transmitter to emit radiation which is phase coherent with the carrier frequency content of the radar transmissions of said main radar transmitter.

4,646,099
THREE-DIMENSIONAL FOURIER-TRANSFORM
DEVICE
 John T. Apostolos, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
 Filed Sep. 28, 1983, Ser. No. 536,591
 Int. Cl.⁴ H01Q 3/22
 U.S. Cl. 342-375 3 Claims



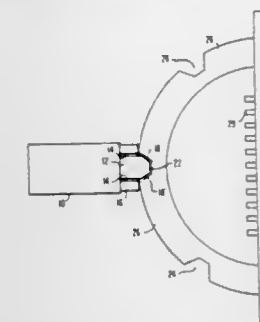
1. A three-dimensional Fourier-transform device comprising:

- a plurality of first two-dimensional delay lines and a plurality of second two-dimensional delay lines, each first delay line having a plurality of first input ports at an input end thereof and a plurality of first output ports at an output end thereof, each second delay line having a plurality of second input ports at an input end thereof and a plurality of second output ports at an output end thereof, each delay line being configured for constructive interference at positions on the output end thereof corresponding to spatial-frequency components in groups of input signals applied to its input ports, the first output ports being organized in rows and columns, the second input ports being organized in corresponding rows and columns, all output ports on the same first delay line being in the same column and all first output ports on the same positions on different first delay lines being in the same row, all second input ports on the same second delay line being in the same row, and all second input ports in the same positions on different second delay lines being in the same column, each first output port being connected to apply signals thereon to the second input port of the corresponding row and column, a signal path thereby being provided between each first input port and each second output port, the delay lines having a linear relationship between temporal

frequency and the time required for a signal of that temporal frequency to propagate from a first input port to a second output port; and

- a frequency translator associated with each first input port, each frequency translator having an input port and having an output port connected to apply signals thereon to its associated first delay-line input port, the frequency translator translating in frequency signals at its input ports by an amount that sweeps repetitively at a rate corresponding to the linear delay-line relationship between delay and frequency so that all signals of a given frequency arriving at the input port of the frequency translator within a given sweep result in signals that arrive at one or more second delay-line output ports substantially simultaneously, the signals at the second output ports thereby constituting a three-dimensional Fourier transformation of the signals at the input ports of the frequency translators.

4,646,100
LATCH ASSEMBLY FOR PHASED ARRAY RADAR
ANTENNA
 Forrest E. England, Arnold, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
 Filed Apr. 26, 1985, Ser. No. 727,964
 Int. Cl.⁴ H01Q 1/02, 1/12
 U.S. Cl. 343-757 7 Claims



1. An improved latch assembly which operates with a positionable radar antenna to fixedly retain said radar antenna in any one of several predetermined positions, a positionable ring member affixed to said radar antenna, a plurality of detent means provided in the outer surface of said ring member and operable to cooperate with said latch assembly to fixedly retain said ring member and thus said antenna in any one of said predetermined positions, said latch assembly comprising a latch pin member having a leading end section conformed to interfit into any of said detent means provided in said ring member, housing means in which said latch pin member slidably interfits to restrain said latch pin against appreciable rotation, and controllable spring-actuated means for moving said latch pin member into detent-contacting position to lock said antenna against rotation and also to move said latch pin member away from detent-contacting position to free said antenna for rotation, said improved latch assembly comprising:

- an elongated body member having a leading end section tapered to interfit into said detent means without jamming, the side portions of said body member dimensioned to freely slidably interfit into said housing member, the trailing end portion of said body member adapted to receive and retain a connector portion of said actuating means to controllably reciprocate said elongated body member within said housing member both into and out of contact with a predetermined one of said detents, and a surface portion of said body member being recessed to form a ledge which gradually tapers from a location intermediate the ends of said elongated body member;
- a wedging member having a tapered wedge-like configuration which slidably interfits with said gradually tapered

ledge of said body member, the trailing end portion of said wedging member adapted to receive and retain said connector portion of said actuating means to cause said wedging member to be reciprocated with said body member; and said controllable spring-actuated means operable to move said wedging member laterally an amount sufficient to slidingly contact the sides of said housing member and then to move said elongated body member into locking engagement with a predetermined one of said detents to effect a controlled wedging of said latch assembly in said housing to prevent any rotation of said antenna because of clearances between said elongated body member and said housing, and said controllable spring-loaded actuating means also operable to be retracted to retract said controllable wedging member and to move said elongated body member away from said contacted detent to permit rotation of said ring member and said antenna.

4,646,101

ANTENNA SUPPORT

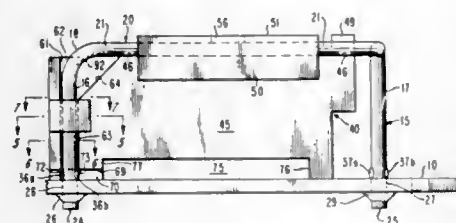
Joseph D. Mathis, Naperville, Ill., assignor to AT&T Information Systems, Holmdel, N.J.

Filed Dec. 19, 1985, Ser. No. 811,063

Int. Cl.⁴ H01Q 1/12

U.S. Cl. 343—878

5 Claims



1. An antenna support for use with a wire rod antenna comprising a vertical arm and a horizontal arm joined by an "L" bend, said support being a unitary member constituted of insulative synthetic resinous material and comprising, as integral parts thereof, the following, a longitudinally extending horizontal central block having formed therein a vertical passage for reception therein of said antenna's vertical arm so that said antenna will be restrained in translation relative to said block in the longitudinal and lateral horizontal coordinates of said block, guide means disposed on top of said block to one longitudinal side of said passage and defining along the top a longitudinally extending guideway for seating therein of said antenna's horizontal arm, and detent means at the top of said block for snap-fitting said horizontal arm into said guideway and for thereafter releasably locking said horizontal arm in seated relation in said guideway so as to restrain said antenna against horizontal angular movement thereof relative to said block.

4,646,102

DEPLOYABLE ANTENNA REFLECTOR APPARATUS

Tadayoshi Akaeda; Yuko Yamamoto, both of Yokohama, and Katsuki Kanaoka, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1985, Ser. No. 780,888

Claims priority, application Japan, Sep. 28, 1984, 59-201901

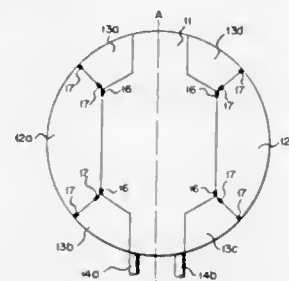
Int. Cl.⁴ H01Q 15/20

U.S. Cl. 343—915

10 Claims

1. A deployable antenna reflector apparatus, comprising: a cross-shaped first reflector portion which is a part of a divided disk-shaped reflector and which extends in a longitudinal direction to a peripheral portion of said reflector; a pair of second reflector portions which are parts of said divided disk-shaped reflector and are axially supported

opposite to each other at two sides of said first reflector portion so as to be biased to open and to be deployable; two pairs of third reflector portions which are parts of said divided disk-shaped reflector and which are axially supported opposite to each other at two sides of each of said pair of second reflector portions so as to be biased to open and to be deployable;



a first locking mechanism for holding said pair of second reflector portions in a folded state; second locking mechanisms for holding said two pairs of third reflector portions in a folded state; and a releasing mechanism for releasing said second locking mechanisms subsequently after said pair of second reflector portions begin to deploy when said first locking mechanism is released.

4,646,103

OPTICAL RECORDING METHOD

Hisataka Sugiyama, Kokubunji; Kazuo Shigematsu, Saitama; Takeshi Maeda, Kokubunji; Atsushi Saitoh, Ichikawa, and Wasao Takasugi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

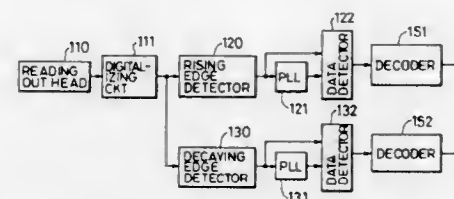
Filed Feb. 26, 1986, Ser. No. 832,887

Claims priority, application Japan, Mar. 20, 1985, 60-54438; Mar. 22, 1985, 60-55832

Int. Cl.⁴ G01D 15/14; G11B 21/10, 7/00

U.S. Cl. 346—1.1

4 Claims



4. A reproducing method for optical recording in which information is reproduced from a reproduced signal expressive of edges of the information recorded on a recording medium; comprising:

the step of detecting signals respectively corresponding to the front edge and rear edge of the information recorded on the recording medium; the step of regenerating timing signals respectively from said signals corresponding to said front edge and rear edge; and the step of reproducing data by the use of said timing signals.

4,646,104

FLUID JET PRINT HEAD

Hilarion Braun, Xenia, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

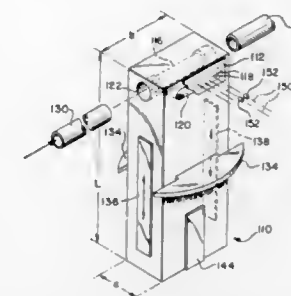
Continuation-in-part of Ser. No. 390,105, Jun. 21, 1982, abandoned, and a continuation-in-part of Ser. No. 771,467, Aug. 30, 1985, Pat. No. 4,583,101, which is a continuation of Ser. No. 453,082, Dec. 27, 1982, abandoned. This application Sep. 17, 1985, Ser. No. 777,102

The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.

Int. Cl.⁴ G01D 15/18; H01L 41/08

U.S. Cl. 346—1.1

39 Claims



18. A method for stimulating the break up of a fluid stream emanating from at least one orifice communicating with a fluid reservoir in a fluid jet print head, comprising:

- providing an elongated print head which defines the reservoir and the orifice at one end thereof,
- applying fluid under pressure to said reservoir so as to produce fluid flow through the orifice,
- supporting said print head at points in a plane substantially equidistant from the ends of the elongated print head and normal to the direction of elongation of the print head, and
- by means of piezoelectric transducers bonded to the exterior thereof, alternately elongating and contracting said print head substantially at the resonant frequency of said print head, whereby said print head is supported in a nodal plane and said stream is stimulated to break up into drops.

4,646,105

LIQUID JET RECORDING METHOD

Tokio Matsumoto, Tokyo; Seiichi Aoki, Kawasaki; Hiroto Matsuda, Yokohama; Masami Ikeda, Machida; Haruyuki Matsumoto, Tokyo, and Asao Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 704,150, Feb. 21, 1985, abandoned, which is a continuation of Ser. No. 390,022, Jun. 18, 1982, abandoned. This application Jan. 2, 1986, Ser. No. 815,676

Claims priority, application Japan, Jun. 29, 1981, 56-101032; Jul. 10, 1981, 56-108726

Int. Cl.⁴ G01D 15/18

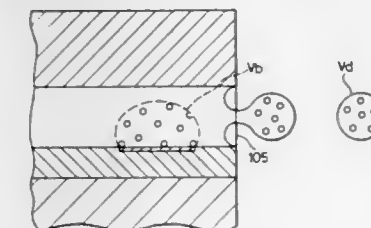
U.S. Cl. 346—1.1

7 Claims

1. A liquid jet recording method for projecting droplets of liquid, the method comprising the steps of:

- providing a liquid jet recording head having an inlet, an orifice from which droplets of liquid are projected, a liquid flow path between the inlet and the orifice, and an electro-thermal transducer for heating liquid in a heat acting section of the liquid flow path;
- repeatedly applying a driving signal to said electro-thermal transducer to generate heat in the heat acting section, thereby creating vapor bubbles in the liquid therein to repeatedly project droplets of liquid from the orifice and creating residual bubbles in the liquid therein which remain in the liquid flow path after the vapor bubbles collapse;

supplying liquid to the inlet of the liquid flow path to replace the liquid projected as droplets from the orifice; and controlling the amount of heat generated by the electro-thermal transducer substantially to prevent the accumula-



tion of residual bubbles in the liquid flow path by providing droplets large enough to promote flow of the residual bubbles downstream from the heat acting section as droplets are projected from the orifice.

4,646,106

METHOD OF OPERATING AN INK JET

Stuart D. Howkins, Ridgefield, Conn., assignor to Exxon Printing Systems, Inc., Brookfield, Conn.

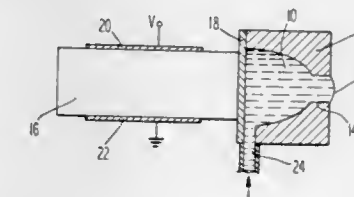
Continuation-in-part of Ser. No. 336,603, Jan. 4, 1982, Pat. No. 4,459,601, which is a continuation-in-part of Ser. No. 229,994, Jan. 30, 1981, abandoned, and a continuation-in-part of Ser. No. 384,131, Jun. 1, 1982, Pat. No. 4,509,059. This application Feb. 3, 1984, Ser. No. 576,582

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.⁴ G01D 15/18

U.S. Cl. 346—1.1

16 Claims



11. A method of operating a demand ink jet comprising an ink jet chamber and an orifice adapted to be filled with ink so as to form a meniscus in the orifice and eject droplets of ink from the said meniscus, said chamber having a Helmholtz resonant frequency in excess of 10 KHz, said method comprising the following steps:

- increasing the pressure within the chamber;
- moving the meniscus forward through the orifice in response to the increase in pressure so as to form a droplet;
- moving the droplet away from the meniscus in response to the increase in pressure so as to eject a droplet at a predetermined velocity; and
- repeating the aforesaid steps so as to eject additional droplets having substantially said predetermined velocity for frequencies of droplet ejection over a range from zero to 5 KHz.

4,646,107

XY PLOTTER APPARATUS

Takanori Shimizu, and Masahiko Ikeda, both of Hiratsuka, Japan, assignors to Pilot Man-nen Hitsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 612,024, May 18, 1984, abandoned.

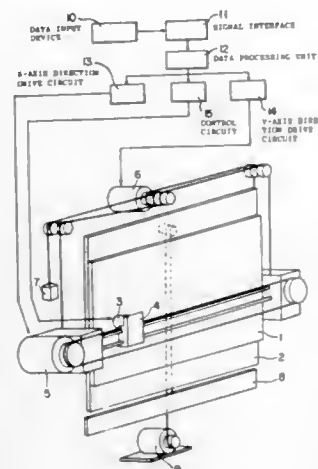
This application Jan. 2, 1986, Ser. No. 815,316

Claims priority, application Japan, May 21, 1983, 58-89659

Int. Cl.⁴ G11B 9/00; G01D 15/16

U.S. Cl. 346—74.2

15 Claims



1. An XY plotter apparatus comprising:

- a magnetic panel having two plates of which one at least is transparent and a sealing dispersion liquid which dispersedly suspends fine magnetic particles between said two plates,
- a writing tool for applying a magnetic field to display a figure on said magnetic panel, which has an electromagnet having at least a core and a coil,
- a writing tool driving device which drives said writing tool to a prescribed position by contacting said writing tool with said magnetic panel,
- a control means which controls the driving of said writing tool driving device and the current for said writing tool, and
- an erasing magnetic field generating device, wherein said writing tool is kept in contact with said magnetic panel by a spring, and wherein said control means includes a data processing unit, an X direction drive circuit, a Y direction drive circuit, a current ON/OFF switch for said coil of said electromagnet and a control circuit for said current ON/OFF switch, and wherein the data comprising the X-axis and Y-axis coordinate signals corresponding to a figure to be displayed and control data for said current ON/OFF switch are inputted to said data processing unit so that, the X-axis and Y-axis coordinate signals are fed to said writing tool driving device and the control data is inputted to said control circuit, and wherein a signal for switching said current ON/OFF switch from an ON state to an OFF state is generated by said control circuit while said writing tool moves from the position where the specified display is completed to a position for starting next display.

4,646,108

METHOD FOR MAGNETOGRAPHIC PRINTING, AND MAGNETOGRAPHIC PRINTING MACHINE

Christophe Guerin, Belfort, France, assignor to Cii Honeywell Bull (Societe Anonyme), Paris, France

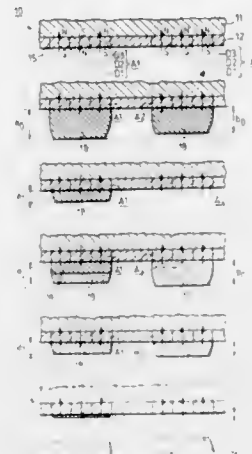
Filed Jul. 30, 1985, Ser. No. 760,480

Claims priority, application France, Aug. 1, 1984, 84 12191

Int. Cl.⁴ G01D 15/12

U.S. Cl. 346—74.7

22 Claims



3. A magnetographic printing machine for printing on a printing medium an image in two preselected colors, said machine comprising:

- a recording element having a magnetic recording surface;
- magnetic recording means including a plurality of magnetic heads and pulse means for selectively transmitting electric pulses to each of said magnetic heads, said magnetic heads being adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to form a set of magnetized points on said surface which define a latent magnetic image, said points all having the same size and each point comprising a number k, which equals at least two, of contiguous elementary magnetic domains, said domains all having the same intensity of magnetization;
- drive means for effecting a relative displacement between the recording element and the magnetic recording means;
- current controlling and inverting means for selectively reversing the direction of current of the pulses transmitted to each of said magnetic heads such that the magnetized points formed on the recording surface are either of a first type in which the elementary domains all have the same magnetic polarity, or of a second type in which the magnetic polarity alternates from one domain to an adjacent domain;
- first applicator means for depositing on said recording surface a first developer in powder form having the color of one of the preselected colors;
- second applicator means disposed downstream, with respect to the direction of displacement of said surface, of the first applicator means for depositing on said surface a second developer in powder form having the color of another of said preselected colors, said first and second developers being of a type which remain applied only to the magnetized points of said surface, said first and second developers including magnetic particles and having practically the same physical properties with the exception of their color and of their magnetic characteristics;
- first retouching means disposed between said first and second applicator means and arranged to withdraw said first developer from the recording surface except at the magnetized points of the second type;
- second retouching means disposed downstream of said second applicator means and arranged to withdraw said

second developer from said surface except at the magnetized points of the first type, such that each of the points of the first type is covered with a single layer of said second developer, while each of the points of the second type is covered with a single layer of said first developer, said two developers thus forming an image in powder in two colors on the recording surface; and means for transferring said image in powder onto said printing medium.

4,646,109

AUTOMATIC DRAFTING MACHINE HAVING AIR BLOWER MEANS FOR HOLDING PAPER DOWN

Akio Toyama; Shuso Matsumoto, and Kazunori Tada, all of Tokyo, Japan, assignors to Mutoh Industry Ltd., Tokyo, Japan

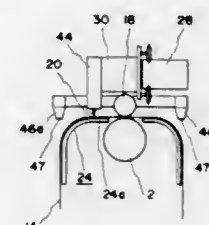
Filed Jun. 6, 1985, Ser. No. 741,891

Claims priority, application Japan, Jun. 27, 1984, 59-96391[U]

Int. Cl.⁴ G01D 15/24; B65H 29/24, 20/00

U.S. Cl. 346—134

5 Claims



1. An automatic drafting machine comprising:

- paper supporting plate-shaped guide means extending in the direction of the path of paper through the machine and having a forward and rearward edge;
- drive rollers at at least one position along the opposite longitudinal edges of said guide means on which paper being guided along the guide means engages and means for driving said drive rollers;
- pinch rollers in resilient contact with said drive rollers for holding the paper against said drive rollers;
- a drawing head movable transversely to the direction of movement of said paper and having a writing implement thereon for engagement with the paper; and
- air blowing means adjacent the forward and rearward edges of said guide means for directing air downwardly against the paper being guided for holding the paper against the guide means at said forward and rearward edges.

4,646,110

LIQUID INJECTION RECORDING APPARATUS

Masami Ikeda; Seichi Aoki, both of Machida; Akio Saito, Zama; Tadayoshi Inamoto, Hiratsuka, and Katsuyuki Yokoi, Sagami-hara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,412

Claims priority, application Japan, Dec. 29, 1982, 57-231522; Dec. 29, 1982, 57-231523

Int. Cl.⁴ G01D 15/18

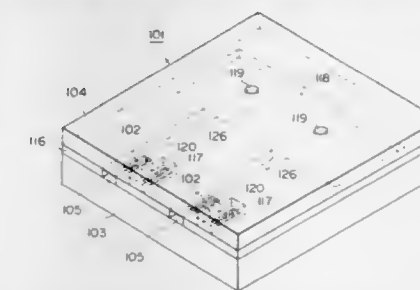
U.S. Cl. 346—140 R

15 Claims

1. A liquid injection recording apparatus comprising:

- an orifice for discharging liquid and forming flying drops of liquid,
- a liquid flow area communicating with said orifice, liquid drop forming means in said liquid flow area for generating energy to create pressure in said liquid flow area to discharge flying drops of liquid from said orifice, at least one side chamber disposed to the side of said liquid flow area and in communication therewith through a passage opening only to said side chamber and said liquid flow area, and
- bubble generating adjusting means in said side chamber for

generating a bubble in said side chamber having a controlled size to control the pressure in said liquid flow area



via said passage so as to control the size of the discharged drop of liquid.

4,646,111

INK DOT PRINTER

Masashi Shimamoto; Yoshihiro Torisawa; Hisashi Nishikawa, and Mitsuharu Endo, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

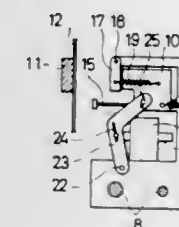
Filed Mar. 21, 1986, Ser. No. 842,279

Claims priority, application Japan, Mar. 22, 1985, 60-57753

Int. Cl.⁴ G01D 15/16

U.S. Cl. 346—140 R

11 Claims



1. An ink dot printer for forming an image by spattering the ink in dots from the tips of recording electrodes on a recording medium by the agency of an electric field produced between the recording electrodes and an opposite electrode disposed opposite to the recording electrodes with the recording medium provided therebetween, comprising: a carriage capable of reciprocating along the longitudinal direction of the opposite electrode; a printing head holding the recording electrodes, having openings for exposing the tips of the recording electrodes, and mounted on the carriage; and a cap attached to the carriage so as to be moved to close or open the openings of the printing head.

4,646,112

ELECTROGRAPHIC STYLUS RECORDING APPARATUS

Earl K. Hoyne, Fridley; Charles K. Nordeen, St. Paul, both of Minn., and James D. Young, Cazenovia, N.Y., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1986, Ser. No. 837,414

Int. Cl.⁴ G01D 15/06

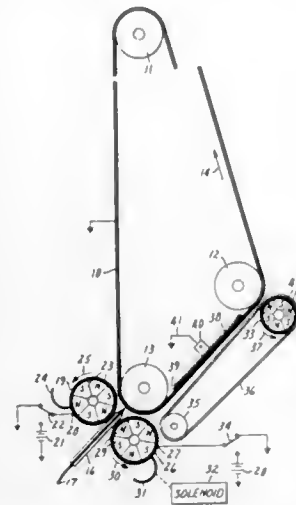
U.S. Cl. 346—153.1

7 Claims

- 1. An electrographic magnetic stylus recording apparatus for use with magnetically attractable toner powder including: a stylus array having an upstream side and a downstream side, each styli of said stylus array adapted for receiving electrical signals;
- a first rotatable, cylindrical sleeve positioned on the upstream side of said stylus array and adapted for connection to a d.c. voltage;
- a second rotatable, cylindrical sleeve positioned on the

downstream side of said stylus array and adapted for connection to a d.c. voltage, each of said first and second rotatable, cylindrical sleeves disposed transversely of the styli of said stylus array;

- a first and second non-rotatable magnetic roll positioned within said first and second rotatable, cylindrical sleeves, respectively, each presenting alternate magnetic poles at its periphery with like magnetic poles presented to opposite sides of said stylus array;
- a receptor recording belt adapted for upstream to downstream movement relative to said stylus array and spaced



from said stylus array for providing a recording region, said stylus array positioned transversely to the movement of said receptor recording belt; and

a roller positioned on the side of said receptor recording member opposite said recording region and engaged by said receptor recording belt for a portion of the circumference of said roller, each of said first and second rotatable, cylindrical sleeves positioned near said receptor recording belt at said roller, each of said first and second magnetic rolls presenting directly opposite said receptor recording belt one of its magnetic poles that are adjacent its magnetic pole of said like magnetic poles.

4,646,113

HEAT-SENSITIVE RECORDING SHEET

Akira Igarashi, Kensuke Ikeda, and Kenji Ikeda, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 15, 1986, Ser. No. 863,479

Claims priority, application Japan, May 16, 1985, 60-104684
Int. Cl.⁴ B41M 5/18

U.S. Cl. 346—209

5 Claims

1. A heat-sensitive recording sheet comprising a colorless or pale-colored electron donating colorless dye precursor, an electron accepting compound which forms color when reacted upon heating with the colorless dye precursor and a heat-fusible substance, wherein the electron accepting compound is 1,4-bis(p-hydroxycumyl)benzene and the heat-fusible substance is 1-p-ethylphenoxy-2-phenoxyethane.

4,646,114

INTEGRATED CIRCUIT ZENER DIODE

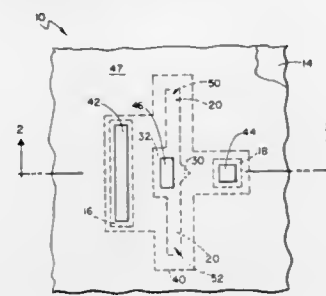
Charles L. Vinn, Milpitas, and David J. Harris, San Jose, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 31, 1984, Ser. No. 687,894

Int. Cl.⁴ H01L 29/00

U.S. Cl. 357—13

5 Claims



1. A subsurface Zener diode comprising:

- (a) a semiconductor;
- (b) spaced apart cathode and first anode regions of opposite type conductivity formed in the semiconductor, such regions having opposing surface portions, one of the spaced apart regions having an opposing surface portion thereof formed with a portion which protrudes towards the opposing surface portion of the other one of the spaced apart regions;
- (c) a second anode region laterally spaced from the cathode and first anode regions, the first and second anode regions being disposed along a first axis, the cathode region being disposed between the first and second anode regions and being elongated along a second axis intersecting the first axis, with ends of such elongated cathode region extending beyond the first and second anode regions; and
- (d) a buried region, having conductivity type the same as the first and second anode regions, disposed beneath a surface of the semiconductor, such buried region extending laterally through the first and second anode regions and cathode region, such buried region being elongated along the second axis and having an end which extends beyond a corresponding one of the ends of the elongated cathode region.

4,646,115

SEMICONDUCTOR DEVICES HAVING FIELD-RELIEF REGIONS

John M. Shannon, Whyteleafe; John A. G. Slatyer, Crawley, and David J. Coe, East Grinstead, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 672,022, Nov. 16, 1984, abandoned.

This application May 1, 1986, Ser. No. 859,852

Claims priority, application United Kingdom, Dec. 20, 1983, 8333818

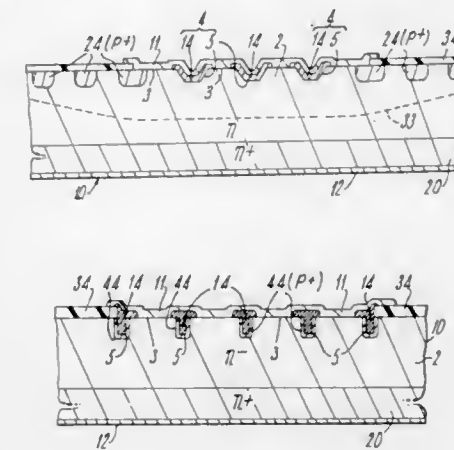
Int. Cl.⁴ H01L 29/80

U.S. Cl. 357—15

12 Claims

1. A semiconductor device comprising a semiconductor body having a body portion of one conductivity type, unipolar barrier-forming means for forming an active barrier with said body portion at a plurality of separate areas, and closely-spaced surface-adjacent field-relief regions which protrude to a depth in the body below the active barrier, the separate areas of the active barrier being located between the closely-spaced field-relief regions, and the field-relief regions being sufficiently closely spaced such that depletion layers extending in the body portion from neighboring field-relief regions merge together under reverse-bias of the active barrier to provide the device with an improved voltage blocking characteristic, and said field-relief regions comprising layer means of a different material from that of the body portion and from that of the unipolar barrier-forming means provided at least in the area of

the field-relief regions for enabling the field-relief regions to restrict the flow of minority carriers into the body portion under forward-bias of the active barrier, said layer means



comprising a material selected from the group consisting of a dielectric material, a semi-insulating material, and a metal-based material.

4,646,116

SEMICONDUCTOR DEVICE HAVING AN ELECTROLUMINESCENT DIODE

Jacques J. Varon, Troan; Marie-José Martin, and Marc Mahieu, both of Caen, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

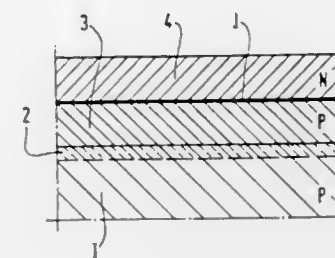
Filed Nov. 28, 1984, Ser. No. 675,483

Claims priority, application France, Nov. 30, 1983, 83 19109

Int. Cl.⁴ H01L 33/00

U.S. Cl. 357—17

4 Claims



1. A semiconductor device including an electroluminescent diode having a narrow spectral range, which comprises a monocrystalline substrate of a III-V compound of a first conductivity type, a first epitaxial layer of a III-V compound of a first conductivity type formed on said substrate, a second epitaxial layer of a III-V compound of a second conductivity type formed on said first epitaxial layer, an electroluminescent p-n junction formed between said epitaxial layers, a thin layer having a crystal structure disturbed by boron impurities formed at the surface of the substrate that interfaces said first epitaxial layer to avoid parasitic radiation generated by the substrate, and electrode means for contacting said electroluminescent diode.

4,646,117

POWER SEMICONDUCTOR DEVICES WITH INCREASED TURN-OFF CURRENT RATINGS AND LIMITED CURRENT DENSITY IN PERIPHERAL PORTIONS

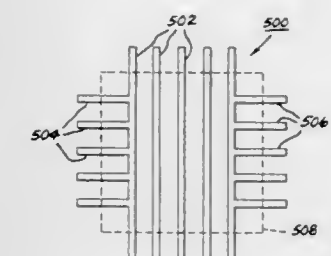
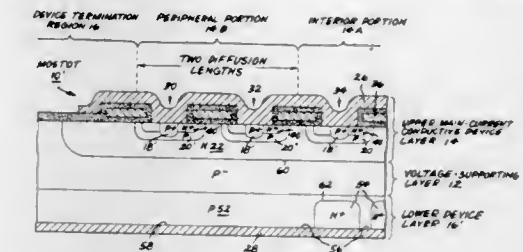
Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1984, Ser. No. 678,530

Int. Cl.⁴ H01L 29/78

U.S. Cl. 357—23.4

20 Claims



1. In a gate turn-off semiconductor device including a voltage-supporting layer, an upper device layer overlying said voltage-supporting layer, a lower device layer underlying said voltage supporting layer, a multiplicity of main device current conducting cells formed in said upper layer and a common gate structure for turning off the flow of main device current in said cells; the improvement wherein:

said upper device layer is formed having an interior portion containing a first plurality of said cells, a termination region laterally surrounding said interior portion, and a peripheral portion intermediate said interior portion and said termination region, said peripheral portion containing a second plurality of said cells and having a lateral width in excess of approximately two on-state diffusion lengths of majority carriers in said voltage-supporting layer, and at least one of said upper and lower device layers being structured to limit the main device current density in said peripheral portion to no more than 125 percent of the average main current density in said interior portion, thereby enabling the portion of said gate structure associated with said second plurality of cells to effectively contribute to reliable turn-off of the main device current.

4,646,118

SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 13, 1984, Ser. No. 681,290

Claims priority, application Japan, Dec. 13, 1983, 58-233554

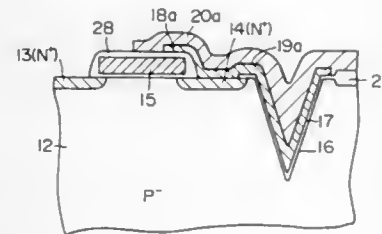
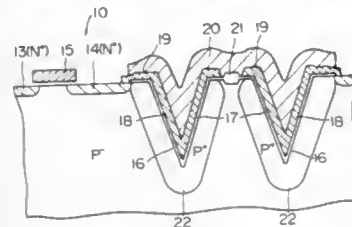
Int. Cl.⁴ H01L 29/78, 27/02

U.S. Cl. 357—23.6

17 Claims

7. A semiconductor memory device comprising a plurality of memory cells provided with a semiconductor substrate of a first conductivity type having a semiconductor layer formed thereon of a conductivity type opposite to said first conductivity type, each said memory cell including:

- a groove in said semiconductor layer and a first insulation film on the surface of said groove;
- a transfer gate transistor having a drain region and a source region formed in said semiconductor layer with a channel region therebetween, and a gate formed on a gate insulation film on said channel region;
- a capacitor including
- a first conductive layer on said first insulating film, said first conductive layer being electrically coupled to said source region of said transfer gate transistor, and



said semiconductor memory device further comprising means for reversely biasing a PN junction formed by said semiconductor layer and said substrate of opposite conductivity types to form a depletion region extending under each said transfer gate transistor and at least a part of said groove of each said memory cell.

17. The semiconductor memory device of claim 7, 8, 9 or 10, each said memory cell comprising a second insulation film on said first conductive layer and a second conductive layer on said second insulation film, wherein the capacitance of each said capacitor is effectively provided by said first and second conductive layers as separated by said second insulation layer.

4,646,119

CHARGE COUPLED CIRCUITS

Walter F. Kosonocky, Somerset, N.J., assignor to RCA Corporation, Princeton, N.J.

Division of Ser. No. 106,381, Jan. 14, 1971, abandoned. This application Jan. 31, 1972, Ser. No. 222,143

Int. Cl.⁴ H01L 29/78

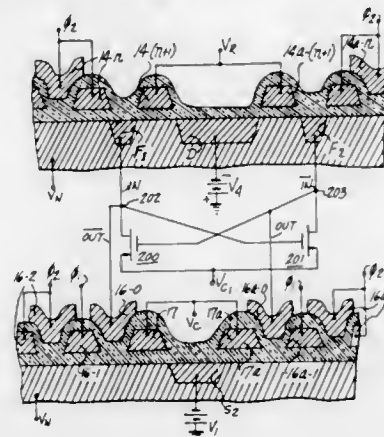
U.S. Cl. 357—24

23 Claims

1. In a charge coupled circuit, in combination: a substrate formed of a semiconductor material of one conductivity type;
- first and second spaced regions at a surface of said substrate, both formed of a semiconductor material of a conductivity type different than that of said substrate and said second region comprising an electrically floating region;
- means for maintaining said first region at a potential such that it is available as an acceptor of minority charge carriers;
- a control electrode spaced from said substrate and extending between said regions for controlling the flow of minority charge carriers from said second to said first region;
- means for storing a minority carrier surface charge at the surface of said substrate adjacent to said second region;
- means coupled to the portion of said substrate between the location of said stored minority carrier surface charge and

said second region for transferring at least a portion of said minority carrier surface charge to said second region;

an output terminal connected to said second region at which a signal may be sensed; and



means for applying a signal to said control electrode of a sense to cause any charge present at said second region to pass to said first region and said second region thereupon to become reset to a reference voltage level.

4,646,120

PHOTODIODE ARRAY

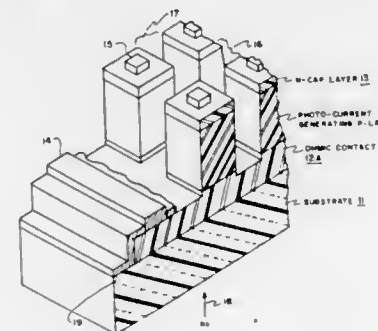
Michael Hacskeylo, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1985, Ser. No. 714,423

Int. Cl.⁴ H01L 27/14, 31/00

U.S. Cl. 357—30

9 Claims



1. In an image detector system having an array of diode detectors, sensitive to light in a given frequency band, mounted on a thick high resistance substrate transparent to light in said band; the improvement wherein:

- said array comprises three thin superposed coextensive layers of epitaxially grown semiconductive material doped to provide a different conductivity in each of said layers;
- the second or center layer of said three layers being formulated to provide energy-band gaps which highly absorb energy in said selected band thereby generating therein a high density of photocurrent in response to said radiation;
- a first or top layer of said three layers doped to provide current carriers having a conductivity opposite to said second layer, thereby forming a photodiode;
- a third or bottom layer of said three layers doped to have the same conductivity type but greater conductivity than said second layer thereby providing good ohmic contact between all points on the adjacent surface of said second layer;
- said first and third layers being formulated to be transparent

to energy in said selected band, and each having a broad surface spaced from said second layer;

an array of equally spaced ohmic metal contacts arranged in rows and columns attached to said broad surface of said first layer; and

said three layers defining at least two series of grooves with a groove between every adjacent parallel pair of said rows and columns of said contacts, the grooves in different series intersecting, and said grooves penetrating the full depth of said first and second layers plus a very small fraction of said third layer, whereby said contacts are mounted on isolated portions of said first and second layers connected only through said third layer.

4,646,121

THYRISTOR WITH A SELF-PROTECTION FUNCTION FOR BREAKOVER TURN-ON FAILURE

Tsunee Ogura, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

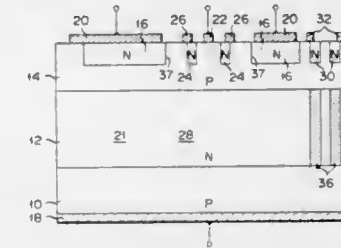
Filed May 13, 1983, Ser. No. 494,367

Claims priority, application Japan, Jun. 30, 1982, 57-112943

Int. Cl.⁴ H01L 29/74, 29/167

U.S. Cl. 357—38

19 Claims



1. A thyristor with a self-protection function for a breakover turn-on failure comprising:

- a main thyristor region;
- gate means for causing said main thyristor region to be turned on in response to an annular shaped gate signal; and
- a first amplifying gate region serving as an auxiliary thyristor and provided in a region except an intermediate region between said gate means and the end of said main thyristor region facing said gate means, a minority carrier lifetime of said first amplifying gate region being longer than that of a region under said main thyristor region and said gate means so that when an overvoltage is applied to said thyristor in the absence of a gate signal at the gate portion, said first amplifying gate region is first turned on to permit said main thyristor region to be turned on.

4,646,122

SEMICONDUCTOR DEVICE WITH FLOATING REMOTE GATE TURN-OFF MEANS

Shin Kimura, Hiroshi Fukui, Hisao Amano, Tsutomu Yatsuo, Saburo Oikawa, and Takahiro Nagano, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1984, Ser. No. 585,606

Claims priority, application Japan, Mar. 11, 1983, 58-39001; Apr. 11, 1983, 58-64103

Int. Cl.⁴ H01L 29/74

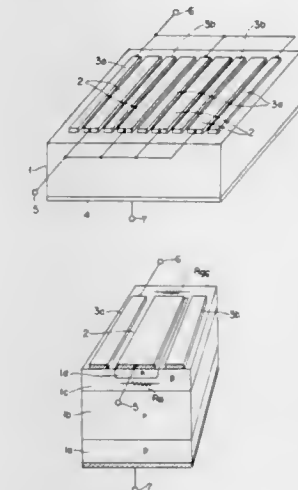
U.S. Cl. 357—38

7 Claims

1. A semiconductor device comprising:
- a semiconductor substrate having at least three semiconductor layers, adjacent ones of said semiconductor layers being different in conductivity type from each other, a first one of said semiconductor layers being formed of at least one strip-shaped region, a second one of said semiconductor layers being exposed to a first principal surface of said semiconductor substrate together with said first semiconductor layer in such a manner that said first semi-

conductor layer is surrounded by said second semiconductor layer;

- a first and a second external terminal coupled to said semiconductor substrate for allowing a main current to flow through said semiconductor device when said first and second external terminals are coupled respectively to predetermined power supplies;
- a first main electrode kept in ohmic contact with said strip-shaped region and connected to said first external terminal;
- a second main electrode kept in ohmic contact with a semiconductor layer and connected to said second external terminal, said semiconductor layer being exposed to a second principal surface of said semiconductor substrate;
- a control electrode having a first control electrode portion and a second control electrode portion, said first and second control electrode portions being disposed along



the lengthwise direction of said strip-shaped region and kept in ohmic contact with said second semiconductor layer, on one and the other sides of said strip-shaped region viewed in the direction of the width of said strip-shaped region, respectively;

- a control terminal connected directly to said second control electrode portion for providing a control signal to control the main current flow through said device; and
- turn-off control means for drawing out current during a final stage of turn-off of the main current flow through said device comprising said first control electrode portion making exclusive ohmic contact to the second semiconductor layer, being free of all direct connections to external or internal points, and being exclusively coupled through the resistance of the second semiconductor layer to the control terminal of the second control electrode portion.

4,646,123

LATCHUP-PREVENTING CMOS DEVICE

William T. Lynch, Summit, and Louis C. Parrillo, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 540,624, Oct. 11, 1983. This application Apr. 21, 1986, Ser. No. 857,391

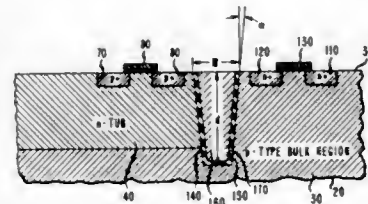
Int. Cl.⁴ H01L 27/02, 29/06

U.S. Cl. 357—42

12 Claims

1. A device, comprising:
- a semiconductor substrate which includes first and second regions extending from a surface of said substrate, the conductivity type of the second region being opposite to that of the first region; and
- said first and second regions including, respectively, first and second field effect transistors, the channel conductivity

type of said first transistor and of said second transistor being opposite, respectively, to the conductivity type of said first region and of said second region, characterized in that said device further comprises a trench containing a composition comprising polysilicon, extending from said surface



into said substrate between said first and second transistors, said trench including a sidewall which, in cross-section, is substantially linear and forms an angle with a perpendicular drawn to said surface at the intersection of said sidewall and said surface which ranges from about 5 degrees to about 10 degrees.

4,646,124

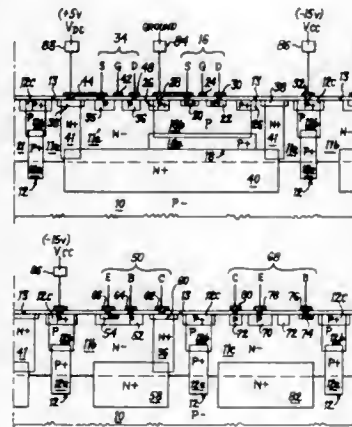
LEVEL SHIFTING BIMOS INTEGRATED CIRCUIT
Michael J. Zunino, Shrewsbury, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 30, 1984, Ser. No. 635,867

Int. Cl.⁴ H01L 27/02, 27/04

U.S. Cl. 357—43

4 Claims



1. A level shifting BIMOS integrated circuit comprising a silicon substrate of P-type, an N-type epitaxial layer having been grown on a face of said substrate, electrical components formed in said epitaxial layer including a complementary pair of MOS transistors and at least one bipolar transistor, said pair of MOS transistors being formed in a first pocket of said epitaxial layer and said bipolar transistor being formed in a second pocket of said epitaxial layer, a system of P-type isolation walls extending from the surface of and through said epitaxial layer to said P-type substrate and surrounding and defining said epitaxial pockets, an N-type basket in said first pocket comprised of an N-type buried layer formed at said substrate face and partially into said first pocket under said pair of MOS transistors and an N-type plug at least partially around said pair of transistors extending downward through epitaxial layer to said N-type buried layer, the N-channel transistor of said MOS pair including a P-type well region extending from the outer surface of and through said epitaxial layer to said N-type buried layer so that said N-type buried layer is located between said

P-type well region and said P-type substrate to electrically isolate one from the other; and a plurality of conductive members overlying said epitaxial layer, one of said conductive members contacting said N-type plug and being adapted for connection to one source of DC voltage, and another and separate of said conductive members contacting said system of P-type isolation walls and being adapted for connection to a source of another DC voltage.

4,646,125

SEMICONDUCTOR DEVICE INCLUDING DARLINGTON CONNECTIONS

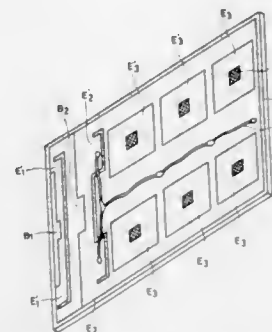
Yoshio Takagi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,715

Int. Cl.⁴ H01L 27/02, 23/48, 27/10, 29/40

U.S. Cl. 357—46

4 Claims



1. A semiconductor device including a plurality of transistors connected in a Darlington configuration, comprising: a semiconductor substrate, a common collector layer of a first conductivity type deposited on said semiconductor substrate, a plurality of base regions of a second conductivity formed on said common collector layer, corresponding to said plurality of transistors, said plurality of base regions being independent from each other, a plurality of emitter regions of the first conductivity type each formed on each of said plurality of base regions, so that said plurality of transistors are structured, a metallization layer interconnecting base and emitter regions of different ones of said plurality of transistors such that said plurality of transistors are in a Darlington configuration, and a conductor wire connected between a portion of the metallization layer formed on the base region of the transistor of the last stage and a portion of the metallization layer formed on the emitter region of the transistor of the stage preceding the last stage to electrically bypass resistance inherent in the metallization layer.

4,646,126

SEMICONDUCTOR DEVICE

Tetsuya Iizuka, Funabashi, Japan, assignor to Kabushiki Kaisha Toshiha, Kawasaki, Japan

Filed Aug. 8, 1984, Ser. No. 638,782

Claims priority, application Japan, Oct. 7, 1983, 58-187927

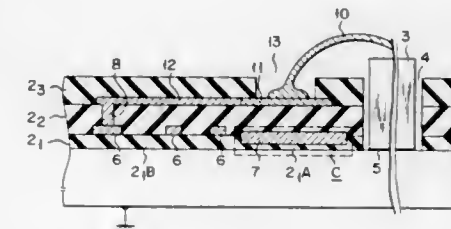
Int. Cl.⁴ H01L 27/02

U.S. Cl. 357—51

10 Claims

1. A semiconductor device comprising: a semiconductor substrate; an IC chip mounted directly on a first region of said substrate; a first insulation film formed on said substrate, said first insulation film having one region thinner than any other region;

an interconnection wiring layer serving as a power line formed on said one region of said first insulation film, said first insulation film and said interconnection wiring layer and said substrate forming a capacitor to serve as a filter for reducing noise coming from said power line; a second insulation film formed on said interconnection wiring layer;



a conductive bonding layer for forming an electrical connection for said IC chip, said conductive bonding layer being formed on said second insulation film above said interconnection wiring layer; and means for connecting said IC chip and said conductive bonding layer.

4,646,127

SCRAP-LESS TAPING SYSTEM FOR IC LEAD-FRAMES

Robert V. Barnhart, York, Pa., assignor to GTE Products Corporation, Stamford, Conn.

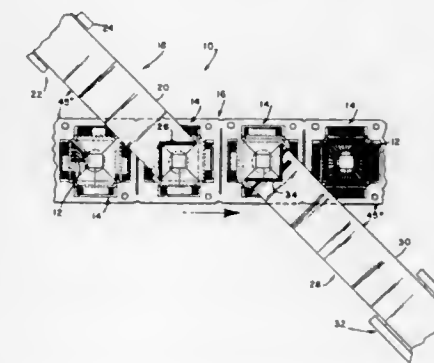
Division of Ser. No. 772,231, Sep. 3, 1985, Pat. No. 4,597,816.

This application Feb. 24, 1986, Ser. No. 831,890

Int. Cl.⁴ H01L 23/48

U.S. Cl. 357—70

2 Claims



1. An integrated circuit lead-frame comprising a plurality of adjacent lead-in connectors extending from four directions inwardly toward a center, said lead-in connectors being maintained in a substantially planar fashion by means of a first right angled segment of tape being applied to two adjacent portions of said lead-in connectors and a second right angled segment of tape being applied to the two adjacent portions of said lead-in connectors opposite to the portions secured by said first segment.

4,646,128

HIGH-DENSITY ELECTRONIC PROCESSING PACKAGE—STRUCTURE AND FABRICATION

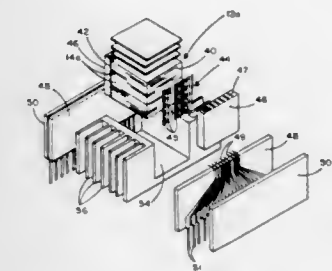
John C. Carson, Corona del Mar, and Stewart A. Clark, Irvine, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Division of Ser. No. 517,221, Jul. 25, 1983, Pat. No. 4,525,921, which is a continuation-in-part of Ser. No. 282,459, Jul. 13, 1981, abandoned, which is a continuation of Ser. No. 187,787, Sep. 16, 1980, abandoned. This application Apr. 8, 1985, Ser. No. 720,902. The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.⁴ H01L 23/48

U.S. Cl. 357—74

14 Claims



1. A high-density electronic package comprising: a plurality of integrated-circuit-providing semiconductor substrates of substantially identical dimensions stacked and secured together to form a multiple layer structure having the shape of a rectangular parallelepiped, at least one surface of which provides an access plane end perpendicular to the planes of the layers; the access plane end of each substrate having a multiplicity of closely-spaced electrical contact points provided by the ends of the metal leads formed as part of the integrated circuitry on the substrate; insulation layers between adjacent substrates to insulate the body of each substrate from adjacent substrates in the stack; and insulation covering the entire access plane end of the stacked substrates except for the contact points thereon, and so formed as to prevent current leakage between the contact points and the access plane ends of the substrates; the electrical contact points on the access plane ends of the stacked substrates extending through the insulation in order to be individually accessible for contact with electrical conductors external to the stacked substrates.

4,646,129

HERMETIC POWER CHIP PACKAGES

Alexander J. Yerman, Scotia, and Constantine A. Neugebauer, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 529,295, Sep. 6, 1983, abandoned. This application Jun. 11, 1986, Ser. No. 872,792

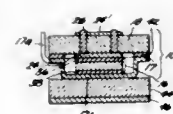
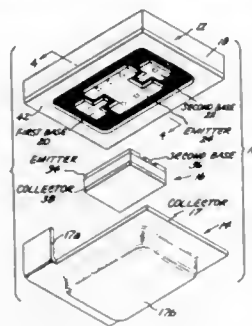
Int. Cl.⁴ H01L 23/12, 23/02, 23/08, 23/10

U.S. Cl. 357—74

11 Claims

1. A hermetic power chip package, comprising: an upper package section comprising a dielectric plate, at least a first electrode bonded to a lower surface of said plate and a first metallic lead bonded to an upper surface of said plate, at least one conducting-through hole in said dielectric plate electrically interconnecting said first electrode and said first metallic lead, and a metallic sealing ring bonded to the lower side of said plate and encompassing said first electrode; said first electrode bonded to said dielectric plate so as to hermetically seal said conducting-through hole; a power chip including at least a first terminal located on an upper side thereof and bonded to said first electrode of

said upper package section and further including a single terminal on a lower side thereof; and
a package lower section comprising a power chip lower electrode in sheet form bonded to said single terminal on



the lower side of said power chip, said power chip lower electrode also being bonded to said metallic sealing ring of said upper package section so as to hermetically enclose said power chip.

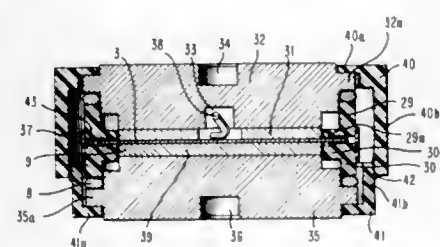
4,646,130 SEMICONDUCTOR DEVICE FOR CURRENT RECTIFICATION

Helmut Creutz, Zirndorf, Fed. Rep. of Germany, assignor to Semikron Gesellschaft für Gleichrichterbau und Elektronik m.b.H., Nuremberg, Fed. Rep. of Germany
Filed Mar. 8, 1984, Ser. No. 587,574

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308661

Int. Cl.⁴ H01L 23/36; H02G 13/08
U.S. Cl. 357-79

21 Claims



1. Semiconductor device comprising a semiconductor disk;
an insulating body surrounding the semiconductor disk like a circle wherein the insulating body comprises n pieces for forming said circle, where n is equal to or larger than three and wherein the n pieces for forming said circle are connected like a chain via n-1 flexible connecting extensions formed in each case on the outside of the pieces for forming said circle;
a recess provided at the inner jacket face of the insulating body and closed into itself and formed for engaging and mechanically fixing the edge zone of the semiconductor disk, where the semiconductor disk is at its edge zone directly supported and embedded in the recess of the insulating body and where the insulating body is formed at the sides, regions of the inner jacket face adjacent to the recess such as to accept a contacting element structure attached on the two sides of the semiconductor disk;

a gate electrode disposed at the semiconductor disk;
a lead for the gate running from the outside of the insulating body through the insulating body; and
a rotary and curved end spring piece pressure contacting the gate electrode and connected to the lead.

4,646,131 RECTIFIER DEVICE

Nobutada Amagasa; Ryoji Takatani, both of Kobe; Hiroshi Inoo, Amagasaki; Kazuichi Suzuki, and Mitsuo Kiriya, both of Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

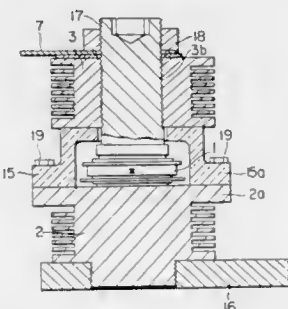
Filed Nov. 18, 1983, Ser. No. 553,395

Claims priority, application Japan, Jan. 28, 1983, 58-13387; Jan. 28, 1983, 58-13388

Int. Cl.⁴ H01L 23/42, 39/02

U.S. Cl. 357-79

3 Claims



1. A rectifier device comprising a first radiating fin, a flat type semiconductor element which is disposed in contact with one surface of said first radiating fin, a substantially cylindrical insulating envelope which surrounds said flat type semiconductor element and one side of which is coupled with said first radiating fin, a second radiating fin which is coupled with another side of said insulating envelope opposite said one side, and a through conductor which threadably extends through a central part of said second radiating fin and which lies in contact with said flat type semiconductor element, such that said flat type semiconductor element is completely enclosed by said first and second radiating fins, said through conductor and said insulating envelope.

4,646,132 IC SOCKET HAVING A BACKUP POWER CELL AND CIRCUIT

Michiaki Kuwabara, Tokyo, and Hiromasa Hayashi, Kamakura, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 9, 1983, Ser. No. 550,046

Claims priority, application Japan, Nov. 10, 1982, 57-197116

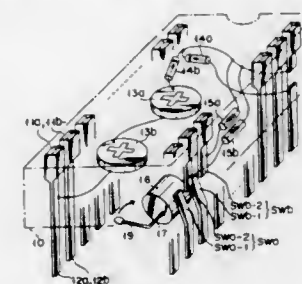
Int. Cl.⁴ H01L 23/16; G11C 7/00

U.S. Cl. 357-80

10 Claims

1. An integrated circuit socket for connecting an integrated circuit to a printed circuit board, comprising:
an insulator consisting of an insulating material and serving as a base for an integrated circuit;
a plurality of contact portions of a conductive material arranged in said insulator and adapted to receive external leads of an integrated circuit, said contact portions including a first contact portion adapted to connect to a memory write line in an integrated circuit and a second contact portion adapted to connect to a chip select line in an integrated circuit;
board mounting portions of a conductive material arranged in said insulator in correspondence with said contact portions and adapted to connect to corresponding receiving portions arranged in a printed circuit board, said board mounting portions including a first board mounting por-

tion corresponding to said first contact portion and a second board mounting portion corresponding to said second contact portion;
a power cell built into said insulator;
a power backup circuit connected to said contact portions and said board mounting portions and supplying power from said power cell as backup power for said integrated circuit;
a first switch disposed between said first contact portion and said first board mounting portion, said first switch being operable between a first position in which said first



- contact portion and said first board mounting portion are electrically connected and a second position in which said first contact portion and said first board mounting portion are electrically disconnected; and
a second switch disposed between said second contact portion and said second board mounting portion, said second switch being operable between a first position in which said second contact portion and said second board mounting portion are electrically connected and a second position in which said second contact portion and said second board mounting portion are electrically disconnected.

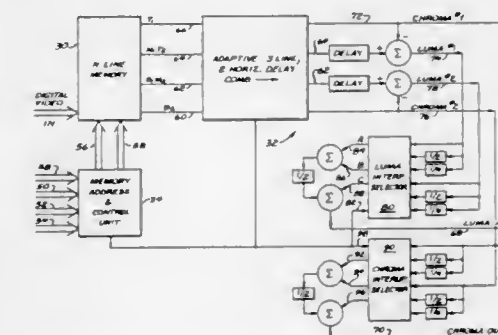
4,646,133 ADAPTIVE COMB FILTER AND INTERPOLATOR

David L. Blanchard, Lake Zurich, and Paul A. Snopko, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 18, 1984, Ser. No. 683,437

Int. Cl.⁴ H04N 9/78, 9/64
U.S. Cl. 358-11

19 Claims



6. In a television receiving system for receiving and displaying television video signals formatted for display, a combined comb filter and interpolator with scan rate conversion comprising:
receiving means for receiving television video signals;
memory means for storing ones of said television video signals formatted for display at a first rate;
control means for selectively addressing said stored video signals and outputting said video signals at a second rate greater than said first rate in response to timing information coordinated with said received formatted video signals for processing selected stored video signals to pro-

vide a plurality of progressive video signals for comb filtering and interstitial video signal generating;
comb filter means for receiving said plurality of progressive video signals for comb filtering said plurality of progressive video signals to produce separated chroma and luma signals; and
interpolator means for interpolating said chroma and luma signals to produce interstitial video signals for display.

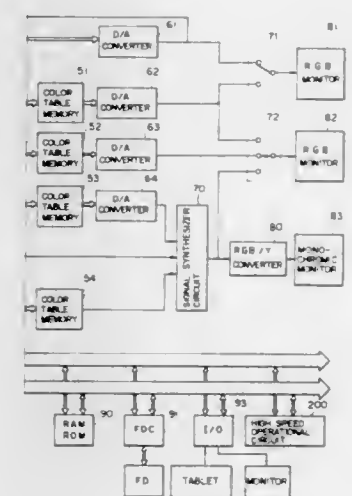
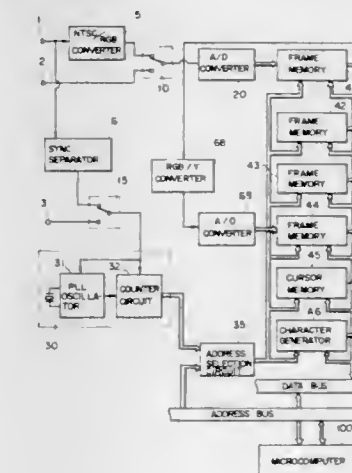
4,646,134 APPARATUS FOR ENCODING IMAGE SIGNAL

Kousuke Komatsu; Tsutomu Miyauchi; Ikuno Misao, all of Kanagawa; Mutsumi Kimura; Tadashi Fujiwara, both of Tokyo; Yoshio Tsuchida, and Junko Kuroiwa, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1985, Ser. No. 713,612
Claims priority, application Japan, Mar. 21, 1984, 59-53961; Apr. 14, 1984, 59-75371; Apr. 28, 1984, 59-87404

Int. Cl.⁴ H04N 11/02, 11/04, 11/20
U.S. Cl. 358-11

13 Claims



1. An apparatus for encoding video data comprising
(a) memory means for storing input video data having a plurality of image areas;
(b) detector means for detecting each of said image areas;
(c) means for encoding image areas detected by said detector means sequentially to geometric command data; and
(d) means for detecting a pair of vertexes whose binding segment of a line is only in an unencoded area;

wherein any other vertex in the encoded area between said pair of vertexes is ignored by said means for encoding when said pair of vertexes are detected.

4,646,135

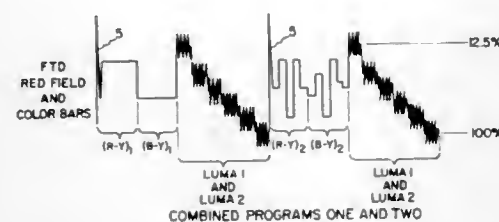
SYSTEM FOR ALLOWING TWO TELEVISION PROGRAMS SIMULTANEOUSLY TO USE THE NORMAL BANDWIDTH FOR ONE PROGRAM BY CHROMINANCE TIME COMPRESSION AND LUMINANCE BANDWIDTH REDUCTION

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,535
Int. Cl.⁴ H04N 11/06, 7/08, 7/04

U.S. Cl. 358—12

24 Claims



1. A method of compressing two video signals for two television programs, respectively, into the bandwidth normally allowed for one television program, each said video signal including chrominance, luminance and synchronization information, said method comprising the steps of:

sending, to a receiving site, time-compressed chrominance information for the first and second television programs for alternate lines of each image frame for each program, respectively, during the inactive video time for each of said alternate lines; and
sending, to said receiving site, bandwidth-reduced luminance information for both programs during the active video time for each line of each frame for each program, respectively.

4,646,136

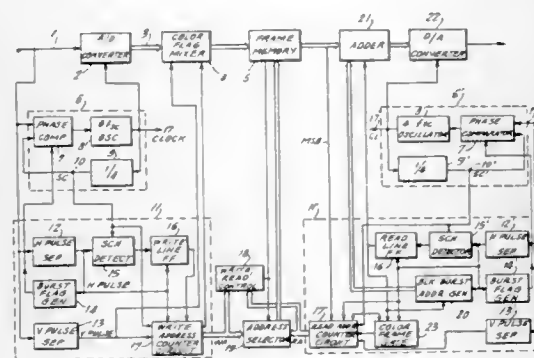
TELEVISION SIGNAL SYNCHRONIZING APPARATUS WITH SYNC PHASE CONTROL FOR VIDEO SIGNAL

Toshitake Kouyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 5, 1984, Ser. No. 658,351
Claims priority, application Japan, Oct. 6, 1983, 58-187324
Int. Cl.⁴ H04N 9/44, 9/475

U.S. Cl. 358—19

4 Claims



1. A television signal synchronizing apparatus comprising:

means for generating write-in addresses in synchronism with an input television signal;
means for storing a video signal of said input television signal at memory locations determined by said write-in addresses;
means for generating read-out addresses in synchronism with a read-out reference signal, said read-out addresses controlling the reading out of said video signal from said storing means;
means for producing a phase signal indicating a phase relationship between a horizontal sync signal of said reference signal and a color subcarrier of said reference signal;
means for producing a forced clear pulse in accordance with said horizontal sync signal and a vertical sync signal of said read-out reference signal, and said phase signal; and
means for clearing said read-out address generating means in response to said forced clear pulse.

4,646,137

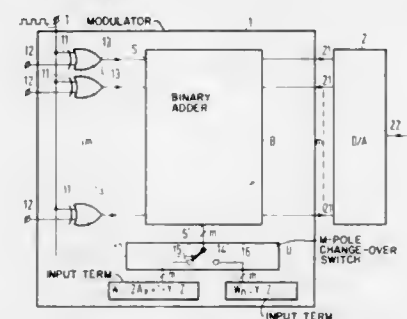
METHOD OF PRODUCING A MODULATED CHROMINANCE SIGNAL WITH SUPPRESSED CARRIER AND COLOR CARRIER MODULATOR FOR PERFORMING THE METHOD

Arthur Heller, Eichenried; Friedrich Gierlinger, Markt Indersdorf, and Alfred Schaumberger, Olching, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1984, Ser. No. 638,133
Int. Cl.⁴ H04N 11/06

U.S. Cl. 358—23

4 Claims



1. A method of producing a modulated chrominance signal with suppressed carrier comprising:
generating a carrier frequency signal;
generating a digital modulating colour information signal comprising a sequence of digital amplitude values, each of said values encoded into m bits; said modulating signal having a repetition frequency an integral multiple of said carrier frequency signal, and being phase locked thereto;
inverting during one half of said carrier frequency signal each of said m bits of digital amplitude values, and not inverting said m bits of digital amplitude values during the remaining half of said carrier;
adding during said one half cycle to said digital amplitude values a digital value proportional to $W_i = 2A_x + 1 + Y - Z$ to said inverted digital amplitude values;
adding during said remaining half of said carrier to said noninverted digital amplitude values a digital value proportional to $W_n = Y - Z$; and
converting said digital values obtained from adding said proportional values W_i, W_n with said digital amplitude values to an analog voltage, whereby a full carrier suppressed chrominance signal is produced, full carrier suppression being derived for an input amplitude value of A_x which differs from the drive mean input value 2^{m-1} by Y, and the output signal in response to said value A_x differs from the output value produced by said drive mean value 2^{m-1} by an amount Z.

4,646,138

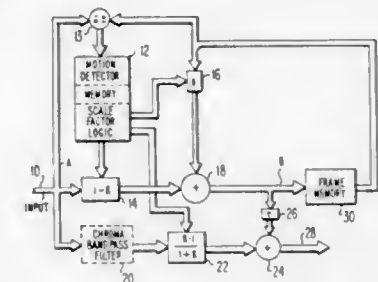
VIDEO SIGNAL RECURSIVE FILTER WITH LUMA/CHROMA SEPARATION

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 25, 1985, Ser. No. 715,811
Int. Cl.⁴ H04N 9/64

U.S. Cl. 358—36

16 Claims



1. A recursive filter system, for processing video signals including luminance and chrominance components and noise, which video signal is formatted in frame periods, comprising:
a recursive filter for combining a portion of current video signal with a portion of combined signal from previous frames of video signal and which develops a processed video signal wherein the amplitude of said noise is reduced, and the amplitude of one of the processed luminance and chrominance components of said video signal is substantially reduced with respect to the amplitude of the other of said processed luminance and chrominance components; and
signal cancelling means for combining a portion of current video signal with a portion of said processed video signal from said recursive filter to substantially cancel the one of said processed luminance and chrominance components which is substantially reduced and developing an output signal wherein the signal-to-noise ratio of the other of said luminance and chrominance components is enhanced with respect to current video signal.

4,646,139

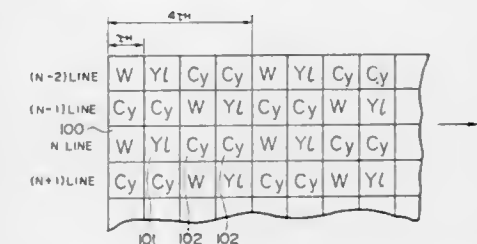
COLOR IMAGE PICKUP APPARATUS WITH COLOR FILTER ARRAY COMPRISING FILTER ELEMENTS OF THREE DIFFERENT COLORS ARRANGED TO PROVIDE REDUCED FOLDING DISTORTION

Masahiro Takei, Yokohama, and Susumu Kozuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1984, Ser. No. 606,536

Claims priority, application Japan, May 9, 1983, 58-81103
Int. Cl.⁴ H04N 9/077, 9/07

U.S. Cl. 358—44

15 Claims



1. A color filter comprising a plurality of first, second and third filter domains, wherein said first, second and third filter domains each transmit a respective one of three kinds of light each having a different color spectral characteristic, said filter domains being arranged in a matrix consisting of rows and columns, and wherein said filter domains are repeatedly arranged in an order of a first, a second, a third, and a third

domain in a predetermined row, while said filter domains are repeatedly arranged in an order of a third, a third, a first, and a second domain in rows which are adjacent said predetermined row.

4,646,140

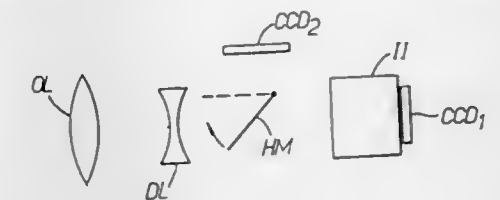
TELEVISION CAMERAS

Philip C. Bailey, Chelmsford, and Vaughan N. Kitchin, Colchester, both of United Kingdom, assignors to English Electric Valve Company Limited, Chelmsford, England
Filed Sep. 24, 1985, Ser. No. 779,463

Claims priority, application United Kingdom, Sep. 25, 1984, 8424225

Int. Cl.⁴ H04N 9/09, 7/18, 5/38
U.S. Cl. 358—50

7 Claims



1. A television camera comprising
a single objective lens structure for receiving light from a scene;
first and second solid state image sensors;
an image intensifier interposed between only said first image sensor and said objective lens; and
light switching means for switching the light received by said objective lens to either said first or said second image sensor in accordance with the ambient light conditions.

4,646,141

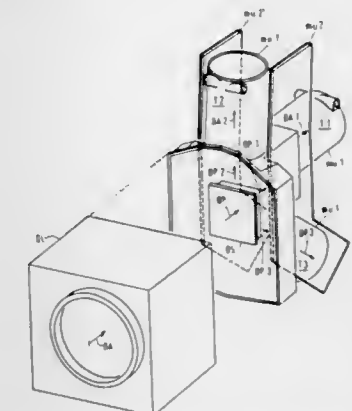
TELEVISION CAMERA

Franciscus W. A. Timmermans, and Bernardus A. Kuiper, both of Breda, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 11, 1985, Ser. No. 721,970
Claims priority, application Netherlands, Jan. 28, 1985, 8500219

Int. Cl.⁴ H04N 9/09, 5/30
U.S. Cl. 358—50

8 Claims



1. A television camera comprising at least one pick-up tube, a dual mu-metal shielding against magnetism provided at the pick-up tube and having first and second shielding members, and an objective lens, the pick-up tube being arranged in the camera in an optical path subsequent to the lens, characterized in that the camera which is in the form of a colour television camera comprising a plurality of pick-up tubes, comprises at

least one pick-up tube having a single mu-metal shielding in addition to the at least one pick-up tube having the dual mu-metal shielding, the axial axis of the at least one pick-up tube with the dual mu-metal shielding extending, when the optical axis of the objective lens extends substantially horizontally, substantially in a vertical direction and the axial axis of the at least one pick-up tube with the single mu-metal shielding extending substantially in a horizontal direction.

4,646,142
METHOD AND APPARATUS FOR ALIGNING SOLID-STATE IMAGERS

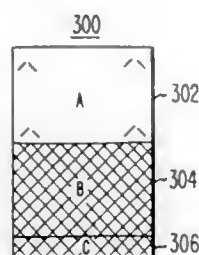
Peter A. Levine, Trenton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 26, 1984, Ser. No. 654,557

Int. Cl.⁴ H04N 9/09, 904

U.S. Cl. 358—50

19 Claims



15. A solid-state imager comprising:
a thinned semiconductor substrate having selective doping therein and an electrode structure thereon for defining a photosensitive imaging area on one side thereof; and
a light-blocking alignment pattern on a side of said substrate opposite said one side and located within the boundaries of said photosensitive imaging area.

4,646,143
VIDEO PROJECTOR TYPE TELEVISION RECEIVER
Toshiro Watanabe, Zusbi; Minoru Ohzeki, Yokobama, and Takashi Toyama, Kokubunji, all of Japan, assignors to Sony Corporation, Tokyo, Japan

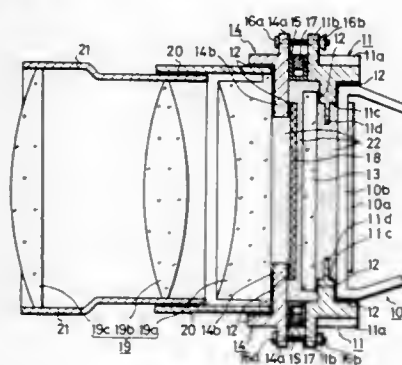
PCT No. PCT/JP83/00464, § 371 Date Aug. 27, 1984, § 102(e) Date Aug. 27, 1984, PCT Pub. No. WO84/02583, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 28, 1983, Ser. No. 645,818
Claims priority, application Japan, Dec. 28, 1982, 57-231151

Int. Cl.⁴ H04N 5/74

U.S. Cl. 358—60

12 Claims



1. A video projector type television receiver comprising:
a color cathode ray tube;
a prism plate located adjacent an image surface of said color cathode ray tube;

a projector lens located adjacent a side of said prism plate opposite said cathode ray tube; and
a transparent liquid injected into a first space between said color cathode ray tube and said prism plate and a second space between said prism plate and said projection lens.

4,646,144
METHOD AND APPARATUS FOR REPRODUCING COLOR SEPARATION PICTURE IMAGE

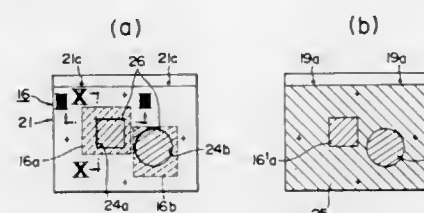
Akira Ishida; Akira Yumen, and Naotada Saito, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan
Filed Sep. 11, 1985, Ser. No. 774,646

Claims priority, application Japan, Feb. 9, 1985, 60-22792; Feb. 9, 1985, 60-22793; Feb. 9, 1985, 60-22795

Int. Cl.⁴ H04N 1/46

U.S. Cl. 358—75

15 Claims



1. A method for producing a color separation picture image with an electronic color scanner by trimming desired areas of an original picture, comprising the steps of:

covering undesired areas of said original color picture with a mask sheet having a surface with a high reflection coefficient;

photoelectrically scanning said mask sheet and said original color picture with a first light source cooperating with a first photoelectrical converting means and a second light source cooperating with a second photoelectrical converting means, wherein

- (i) said first photoelectrical converting means outputs a signal for recording a color separation produced picture image by scanning said original color picture; and
(ii) said second photoelectrical converting means outputs a signal based on the light reflecting from the surface of the mask sheet;

converting said surface reflecting signal from said second photoelectrical converting means into a binary signal of a first or second level with a level comparator; and
controlling a scanning recording means such that when said binary signal is a first level indicating the presence of an area of said reflecting mask sheet, a photosensitive material is exposed with a predetermined level of light, and when said binary signal is a second level indicating an area in which said reflecting mask sheet does not exist, said photosensitive material is exposed with said signal from said first photoelectrical converting means for recording said color separation reproduced picture image.

8. An apparatus for recording color separated picture images of original pictures and trimming mask patterns, comprising:
a trimming mask sheet comprising a material having a high reflection coefficient which covers portions of said original color picture and remaining areas which are to be eliminated when

a first photoelectrical converting means for outputting a color separated picture image signal by photoelectrically scanning said first original picture;
a second photoelectrical converting means for outputting signals based on the presence or absence of said trimming mask having a high reflection coefficient by scanning photoelectrically said original picture;
a comparator for converting said signals from said photoelectrical converting means into binary signals; and
a scanning means at the recording side which scans and

records color separated picture images by scanning and exposing a photosensitive material at locations on said recording side corresponding to said trimming mask areas having high reflective coefficient with a light intensity of a predetermined level and at locations corresponding to the unmasked areas with a light intensity based on the signal from said first photoelectrical converting means; said areas of the mask sheet having high reflective coefficient being discriminated from the unmasked areas by the level of the binary signals from said comparator.

4,646,145
TELEVISION VIEWER REACTION DETERMINING SYSTEMS

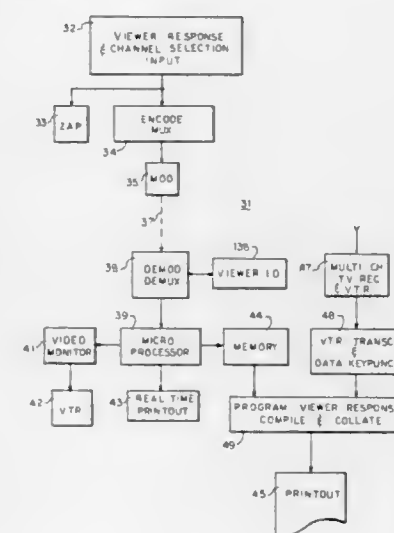
Penelope C. Percy, and Roger D. Percy, both of Seattle, Wash., assignors to R. D. Percy & Company, Seattle, Wash.

Filed Apr. 7, 1980, Ser. No. 138,058

Int. Cl.⁴ H04N 7/10

U.S. Cl. 358—84

81 Claims



1. In a method of determining viewer reaction to video programs including persons displayed by different video display sets, the improvement comprising in combination the steps of:

providing switching devices for receiving different reactions to said programs;
employing said switching devices for distinctly indicating different viewer reactions to said programs;
generally classifying part of said viewer reactions as reactions to unspecified displayed persons;
gathering said viewer reactions; and
identifying said unspecified persons from said gathered viewer reactions.

4,646,146
SURVEILLANCE CAMERA DEVICE WITH AUTOMATICALLY CONTROLLED SHUTTER
Frederick DeHubry, Überlingen, and Günter Knon, Munich, both of Fed. Rep. of Germany, assignors to Dedo Weigert Film GmbH, Munich, Fed. Rep. of Germany
Filed Jan. 3, 1985, Ser. No. 688,616

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1984, 3427115

Int. Cl.⁴ H04N 5/225, 7/18

U.S. Cl. 358—108

7 Claims

1. A surveillance device for monitoring and registering the servicing of vehicles, and in particular fast-moving vehicles, aircraft and the like, having a camera, a shutter and means for

automatically operating said shutter as a function of the image detected by said camera, characterized by:

- said camera being a video camera;
a shutterless main objective which is so arranged that an intermediate image is generated between said video camera and said main objective;
a transmission optic element between said main objective and said video camera, for transmitting said intermediate

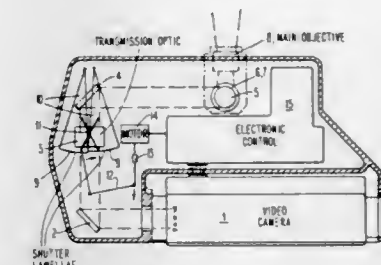


image to said video camera, said automatically operated shutter being positioned to control the image transmission from said optic element to said camera; and
said shutter being a cat's eye shutter comprising two shutter lamellae, a swiveling, suspended arm (10) corresponding to each of said shutter lamellae and mounting means for mounting each of said lamellae on a respective one of said arms, and crossarms connecting said arms to each other.

4,646,147
METHOD AND APPARATUS FOR SCRAMBLING AND UNSCRAMBLING TELEVISION SIGNALS
H. Eckhard Krüger, Sorsum, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany
Filed Nov. 21, 1984, Ser. No. 673,740

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343307

Int. Cl.⁴ H04N 7/167, 7/16; H04K 1/00

U.S. Cl. 380—14

21 Claims

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

7. Apparatus for scrambling both the sound and composite video signals of television transmissions comprising:
means for converting sound and composite video analog signals separately into sound and composite video multibit digital signals;
logic circuit means for scrambling said sound and composite video digital signals of each television field separately in response to a set of multibit digital key signals corresponding to each television field to produce scrambled sound and composite video scrambled digital signals by scrambling both sound and composite video multibit signals signal by signal in bit-parallel fashion with respective multibit key signals of said set in unchanged time sequence both for said sound and for said composite video multibit digital signals;
means for converting said sound and composite video scrambled digital signals into analog signals to produce sound and composite video scrambled analog signals, and
means for interleaving said sets of multibit digital key signals in portions of respective vertical blanking intervals of said scrambled composite video analog signals.

4,646,148
PROCESS OF COMPRESSING A SUCCESSION OF
DIGITAL DATA AND DEVICE FOR CARRYING OUT
THE SAME

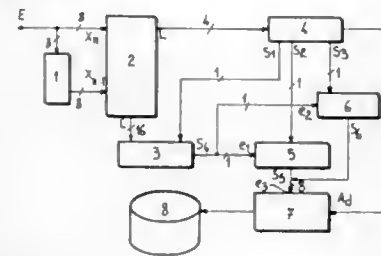
Jean Lienard, Meudon la Foret; Xavier Denoize, Paris, and Diane Dessales-Martin, Clamart, all of France, assignors to Thomson-CGR, Paris, France

Filed Nov. 14, 1984, Ser. No. 671,489

Claims priority, application France, Nov. 15, 1983, 83 18132
 Int. Cl.⁴ H04N 7/12, 1/40, 1/417

U.S. Cl. 358—135

14 Claims



1. A process of compressing a succession of binary digital data present in the form of fixed format words representing positive integers of an interval $[0, N]$, comprising the step of subtracting each word from the preceding one in such a way as to obtain each time a difference of variable format comprising a sign bit, wherein said sign bit is suppressed from the said difference, for at least certain absolute values of difference, if the absolute value of said difference is higher than the value of the preceding word when it is comprised in the first half of the said interval, or if the absolute value of the said difference is higher than the value of the difference between the number N and the value of the preceding word when it is comprised in the second half of the said interval, and wherein the thus compressed data are transferred towards a memory.

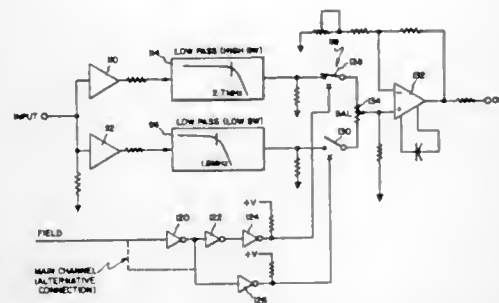
4,646,149
ALTERNATE FIELD LUMINANCE ENHANCEMENT IN
A SPECTRUM CONSERVING TELEVISION SYSTEM
 Robert J. Wojnarowski, Ballston Lake, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,560

Int. Cl.⁴ H04N 7/04, 11/06

U.S. Cl. 358—143

11 Claims



11. A television bandwidth compression system which allows two television programs to simultaneously utilize the bandwidth normally allowed for one television program, said television bandwidth compression system comprising:

a transmitter connected to receive a video signal from each of first and second program sources, each said video signal including luminance and synchronization and timing signals, and providing an output signal wherein the luminance information for both program sources is sent during the active video time for each line of each image for each

program, respectively, said luminance information being in the form of interlaced high and low bandwidth-limited luminance signals for alternating fields of each program in a manner such that when a high bandwidth-limited luminance signal is transmitted for one program, a low bandwidth-limited luminance signal is transmitted for the other program so that the total bandwidth for the luminance signals is not exceeded; and

a receiver connected to receive the output signal from said transmitter and including selecting means for generating a synchronization signal and selecting the luminance information for either one of said first and second program sources, and means for synthesizing a composite video signal from said selected luminance information and said generated synchronization signal.

4,646,150
APPARATUS AND METHOD FOR STEREO TELEVISION
SOUND

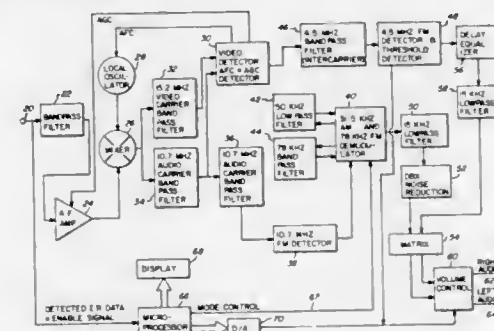
Clyde Robbins, Maple Glen, and Daniel J. Marz, Holland, both of Pa., assignors to General Instrument Corporation, New York, N.Y.

Filed Jan. 3, 1986, Ser. No. 816,133

Int. Cl.⁴ H04N 7/04

U.S. Cl. 358—144

12 Claims



1. Apparatus for receiving and reproducing stereo television sound characterized by a transmitted audio signal comprising a main carrier signal, frequency modulated in accordance with a composite modulation function having a first component comprising the sum of first and second stereophonically related audio signals, and a second component comprising a double sideband suppressed carrier signal, formed by amplitude modulating a first subcarrier having a frequency $2f_H$ in accordance with the difference between said stereophonically related audio signals, where f_H is the horizontal scanning line frequency associated with the horizontal synchronization signal of a transmitted television signal, said apparatus comprising:

input means responsive to a transmitted television signal for developing a first signal corresponding to said composite modulation function;
 intercarrier detector means coupled to receive said first signal for detecting the portion thereof corresponding to the first component of the composite modulation function and producing a first audio output signal comprising the sum of said stereophonically related audio signals;
 independent FM detector means coupled to receive said first signal for detecting the portion thereof corresponding to the second component of the composite modulation function and producing a second audio output signal comprising the difference of said stereophonically related audio signals; and
 means coupled to receive said first and second audio output signals for producing therefrom a first channel audio output and a second channel audio output.

4,646,151
TELEVISION FRAME SYNCHRONIZER WITH
INDEPENDENTLY CONTROLLABLE INPUT/OUTPUT
RATES

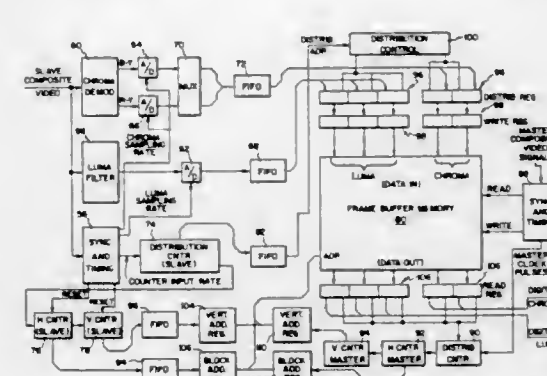
Kenneth B. Welles, II, Schenectady; Robert J. Wojnarowski, Ballston Lake, and Charles W. Eichelberger, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,601

Int. Cl.⁴ H04N 5/04, 9/64

U.S. Cl. 358—149

8 Claims



1. A frame synchronizer for use in a television system in which the input and the output sampling rates are different but the output sampling rate is locked to timing pulses associated with a master signal, said frame synchronizer comprising:
 a source of slave composite video signals including chrominance, luminance and synchronization signals;
 chrominance separator means coupled to said source of slave composite video signals for separating the chrominance signal from said slave composite video signals and providing digital representations of said chrominance signal;
 luminance filter means coupled to said source of slave composite video signals for separating the luminance signal from said slave composite video signals and providing digital representations of said luminance signal;
 slave synchronization means coupled to said source of slave composite video signals and responsive to the synchronization signals for providing slave distribution signals and slave horizontal and vertical address signals;
 first-in, first-out memory means respectively coupled to each of said chrominance separator means, said luminance filter means and said slave synchronization means, for temporarily storing said digital representations of chrominance and luminance signals and for temporarily storing said slave distribution signals and said slave horizontal and vertical address signals;
 input register means coupled to said first-in, first-out memory means and responsive to said slave distribution signals for accumulating chrominance and luminance data;
 master synchronization means for providing master distribution signals and master horizontal and vertical address signals; and
 output register means coupled to said master synchronization means and responsive to said master distribution signals for receiving and sequentially reading out digital representations of chrominance and luminance signals; and
 frame buffer memory means coupled between said input and output register means and responsive to said write and read control signals for writing data at addresses corresponding to said slave horizontal and vertical address signals from said input register means and for reading data at addresses corresponding to said master horizontal and vertical address signals to said output register means in response to the master horizontal and vertical address signals.

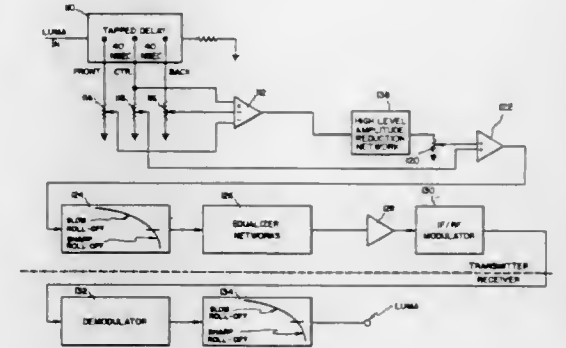
4,646,152
SHARPNESS ENHANCED EQUAL BANDWIDTH
LUMINANCE BANDWIDTH COMPRESSION SYSTEM
 Charles W. Eichelberger, Schenectady; Robert J. Wojnarowski, Ballston Lake, and Theodore G. Mihran, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1985, Ser. No. 697,600

Int. Cl.⁴ H04N 5/14, 5/38

U.S. Cl. 358—166

12 Claims



1. Circuitry for enhancing the sharpness of bandwidth compressed television signals comprising:
 a television transmitter including linear phase delay and edge peaking means for receiving luminance signals of bandwidth compressed television signals and providing an edge peaked luminance output signal, and first low pass filter means connected to said linear phase delay and edge peaking means for providing a filtered edge peaked luminance output signal; and
 a television receiver including a second low pass filter means connected to receive luminance signals of bandwidth compressed television signals from said television transmitter.

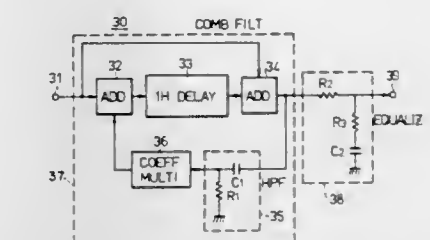
4,646,153
NOISE REDUCTION CIRCUIT FOR A VIDEO SIGNAL
 Hisatoshi Fukuda, and Mitsuo Fujita, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 28, 1984, Ser. No. 675,516

Claims priority, application Japan, Nov. 28, 1983, 58-223753
 Int. Cl.⁴ H04N 5/213; H04B 1/10

U.S. Cl. 358—167

10 Claims



1. A noise reduction circuit for a video signal, said noise reduction circuit comprising:
 an input terminal for receiving an input video signal;
 a feedback type comb filter in which an output signal of a delay circuit which delays said input video signal by one or two horizontal scanning periods, is fed back to an input side of said delay circuit through a feedback path, said feedback path comprising a filter circuit having such a filtering characteristic that said feedback type comb filter

has a predetermined envelope characteristic in a frequency characteristic of said feedback type comb filter and a coefficient multiplier which are coupled in series; and an equalizer circuit supplied with an output signal of said feedback type comb filter, said equalizer circuit having a frequency characteristic complementary to the predetermined envelope characteristic in the frequency characteristic of said feedback type comb filter.

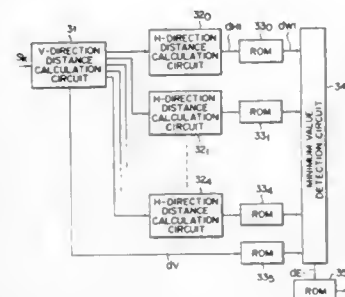
4,646,154 DIGITAL SUPERIMPOSED EDGE GENERATION APPARATUS

Nobutaka Shinohara, Shuji Hirakawa, Akihiko Minami, and Koichi Tanaka, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
PCT No. PCT/JP83/00204, § 371 Date Apr. 3, 1984, § 102(c) Date Apr. 3, 1984

PCT Filed Jun. 24, 1983, Ser. No. 599,614
Claims priority, application Japan, Aug. 3, 1982, 57-135413
Int. Cl.⁴ H04N 5/262

U.S. Cl. 358—183

10 Claims



1. A digital superimposed edge generation apparatus comprising:

means for obtaining a vertical distance between an input digital superimpose key signal and a raster position, said vertical distance obtaining means including a plurality of one horizontal period delay means for delaying the digital superimpose key signal by a period of one raster scan in the horizontal direction, each of horizontal period delay means being serially connected with each other;

means for obtaining a horizontal distance between the digital superimpose key signal and the raster position in correspondence with the vertical distance obtained from said vertical distance obtaining means, said horizontal distance obtaining means having a plurality of serially connected 1-pixel delay means for delaying the key signal delayed by the vertical distance obtaining means by a period corresponding to one picture element dot; and

means for obtaining a Euclidean distance between the digital superimpose key signal and the raster position based on the values of the vertical and horizontal distances.

4,646,155 IMAGE READER FOR IMAGE PROCESSING APPARATUS

Hideyuki Miyazawa, Kawasaki, and Eiji Kamizyo, Zama, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 18, 1985, Ser. No. 756,314
Claims priority, application Japan, Jul. 18, 1984, 59-147659; Aug. 14, 1984, 59-168908

Int. Cl.⁴ H04N 3/14

U.S. Cl. 358—213

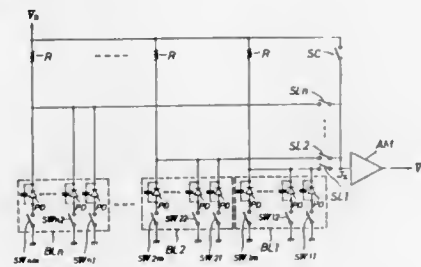
7 Claims

1. An image reader in which a plurality of light-sensitive cells arranged in an array in a line image sensor are divided into a predetermined number of blocks, and blocks are sequentially selected to sequentially drive the light-sensitive cells in each of

the blocks to produce image signals, said image reader comprising:

a means for supplying power;

block selector means associated in one-to-one correspondence with the blocks for selecting one of the blocks at a time; and



charging means for rapidly charging the light-sensitive cells in each selected block by way of a charge switch connected between common junction of outputs of the respective blocks and said means for supplying power; said charging means being constructed to operate in such a manner as to rapidly charge any of the light-sensitive cells after a signal read period assigned to said light-sensitive cell has expired.

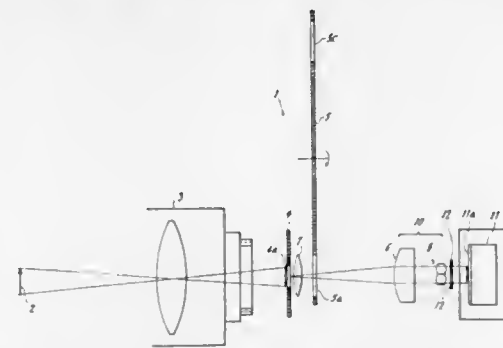
4,646,156 HIGH-SPEED VIDEO CAMERA AND METHOD OF HIGH-SPEED IMAGING USING A BEAM SPLITTER

Jiro Iizuka, and Akira Ozu, both of Tokyo, Japan, assignors to Victor Company of Japan, Japan

Filed Nov. 18, 1985, Ser. No. 799,164
Claims priority, application Japan, Nov. 19, 1984, 59-243593
Int. Cl.⁴ H04N 5/225

U.S. Cl. 358—225

11 Claims



1. A high-speed video camera comprising:

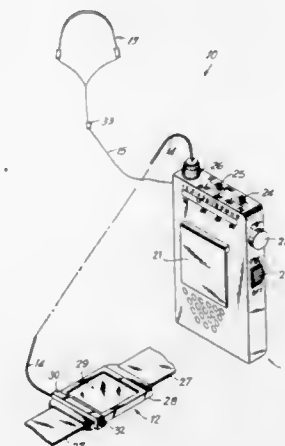
- a main lens for producing a light beam of a taking object;
- a first shutter means for selectively transmitting said light beam from said main lens;
- beam splitting means responsive to said light beam from said first shutter means for producing a plurality of substantially identical light beams;
- a second shutter means for transmitting said plurality of light beams in sequence in synchronism with said first shutter means; and
- image pickup means responsive to said plurality of light beams passed through said second shutter means.

4,646,157 POCKET TELEVISION RECEIVERS

Yoichi Wakai, and Hiroyuki Chihara, both of Suwa, Japan, assignors to Seiko Epson Kabushiki Kaisha, Japan
Filed May 4, 1983, Ser. No. 491,483
Claims priority, application Japan, May 6, 1982, 57-65958[U]
Int. Cl.⁴ H04N 7/00

U.S. Cl. 358—236

17 Claims

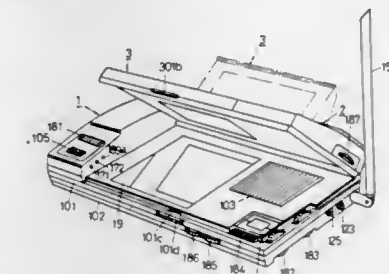


4,646,158 LIQUID CRYSTAL TELEVISION RECEIVER

Hideshi Ohno, Sayama; Akira Tsuzuki, Tokyo; Toshiaki Oguchi, Kodaira; Shigeru Futami, Tokorozawa; Masaru Yoshida, Higashimurayama; Satoshi Kimura, Sayama; Hiroyuki Uematsu, Higashimurayama; Kouichi Nakajima, Tokyo; Katuo Matsuyama, Tokyo; Hiroya Sakamoto, Tokyo; Yasuhiko Takayama, Koganei; Osamu Matsumura, Chofu, and Toshio Sakaguchi, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Oct. 3, 1985, Ser. No. 783,564
Claims priority, application Japan, Oct. 5, 1984, 59-209473
Int. Cl.⁴ H04N 5/64

U.S. Cl. 358—236

6 Claims



1. A liquid crystal television receiver comprising:

a first housing containing a television receiving circuit including, a tuner, a video and sound intermediate frequency signal processing circuit, and an electroacoustic transducer for converting an aural signal to sound, manipulating means for operating the television receiving circuit, a battery for driving the television receiving circuit, and a mirror mounted on an upper portion thereof;

a second housing pivotally connected to the first housing including, a liquid crystal display panel, and a driving and controlling circuit for the liquid crystal display panel; and

a third housing pivotally connected to the second housing including a light emitting element, and a driver for the light emitting element.

1. A pocket television receiver comprising:

a receiver body, said body including circuits for processing a received broadcast signal and outputting an audio signal and a video signal, and a power source for energizing electrical elements of said pocket television receiver;

a display device including a liquid crystal display panel and driving circuits therefor, said display device being sized to fit on a person's wrist and having a plurality of contact holes on a surface of the display device;

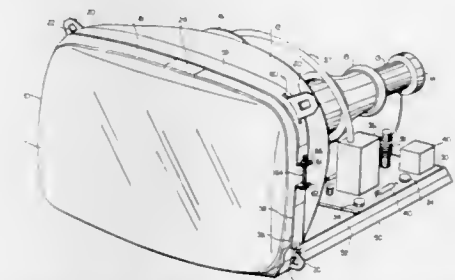
a first electrical cable connecting said receiver body with said display device, the first cable having a first end and a second end, the first end terminating in a connector including connecting pins adapted to engage the plurality of contact holes and locking means for releasably locking the connector pins in the contact holes, said first cable carrying said video signal and a driving voltage from said power source to said liquid crystal display panel and said driving circuits therefor, said liquid crystal display panel visibly displaying the video signal; wherein said display device includes a case, said liquid crystal display panel being mounted to said case, wherein the plurality of contact holes are on a top surface of the display device and the connector is a U-shaped member having two legs and a connecting bar with the legs being adapted to receive the sides of the display device therebetween and the connecting pins extend from the connecting bar substantially parallel to and in substantially the same direction as the legs, the locking means including a mechanical latch for releasably engaging said connector with said case.

4,646,159 UNITARY CRT DISPLAY ASSEMBLY

Gregory J. Beaumont, Arlington Heights; Casimir J. Duval, Addison; Frank N. Kula, Downers Grove, and Michael S. Tamkin, Northbrook, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Mar. 27, 1984, Ser. No. 593,751
Int. Cl.⁴ H04N 5/064

U.S. Cl. 358—254

8 Claims



1. A unitary CRT display assembly adapted for ready installation in a cabinet comprising:

a CRT having a faceplate structure including mounting ears in an anti-implosion means affixing the mounting ears to the faceplate;

a chassis and a chassis mounting pan separate from said

CRT, said chassis mounting pan being supported from said CRT faceplate structure for enabling small movements thereof in said cabinet; cabinet support means for firmly supporting said chassis mounting pan in position in said cabinet; means including a strap having slots, with said mounting ears protruding through said slots when said strap is in engagement with said faceplate structure for supporting said chassis mounting pan from said CRT faceplate structure for installation into said cabinet; and tension adjustment means on said strap.

4,646,160

FACSIMILE APPARATUS

Yoshio Iizuka, Kawasaki; Shigeo Matsunaga, Yokohama, and Satoshi Ogawa, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP83/00281, § 371 Date Mar. 14, 1984, § 102(e) Date Mar. 14, 1984, PCT Pub. No. WO84/01074, PCT Pub. Date Mar. 15, 1984

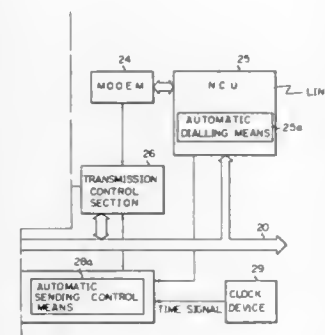
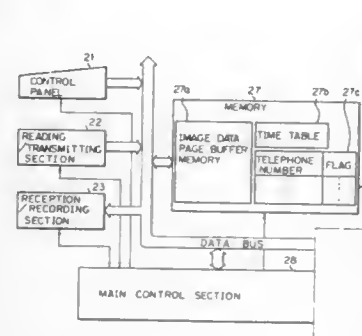
PCT Filed Aug. 30, 1983, Ser. No. 598,334

Claims priority, application Japan, Aug. 30, 1982, 57-150380; Aug. 30, 1982, 57-150381; Aug. 30, 1982, 57-150382

Int. Cl.⁴ H04N 1/32

U.S. Cl. 358—257

22 Claims



1. A facsimile apparatus for communication image data with at least one external apparatus, comprising network control means for controlling connection with a line to said at least one external apparatus, automatic dialing means arranged in said network control means, first memory means for storing said image data in correspondence to the pages thereof, means for inputting external apparatus number data for identifying each said external apparatus for said communicating and time data specifying the time of said communicating of the respective image data, second memory means for storing said external apparatus number data and the time data, clock means for generating a time signal, and automatic sending control means for comparing the time

data stored in said second memory means with each said time signal from said clock means, and, upon detecting each coincidence therebetween, for supplying the respective external apparatus number data stored in said second memory means to said network control means to cause said automatic dialing means thereof to connect the line with the respective external apparatus corresponding to said external apparatus number data, and to cause the respective image data to be communicated with the respective external apparatus.

4,646,161

AUTOMATIC WHITE BALANCE CONTROL CIRCUIT

Satoshi Tsuchiya, Minoru Aoyagi, and Yasunobu Kuniyoshi, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

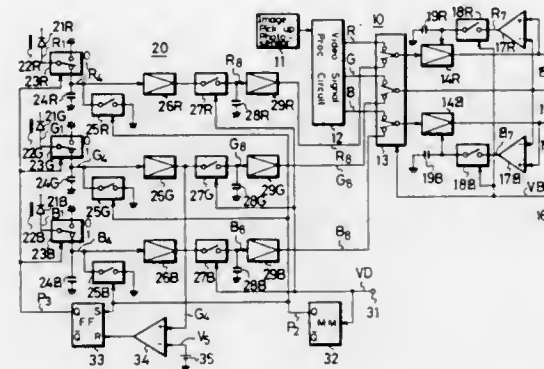
Filed Sep. 10, 1985, Ser. No. 774,584

Claims priority, application Japan, Sep. 11, 1984, 59-190269

Int. Cl.⁴ H04N 9/64, 9/04, 9/07

U.S. Cl. 358—29

13 Claims



1. An automatic white balance control circuit comprising: main photo-sensing means for providing a color video signal; video signal processing means for deriving from said color video signal three primary color signals including a green color signal; level adjusting means for controlling the levels of said three primary color signals in respect to each other; three external light sensing elements having respective spectral characteristics which are the same as those of said main photo-sensing means in respect to the three primary colors corresponding to said three primary color signals, respectively; three capacitors for converting output currents from said three external light sensing elements to respective voltages; voltage comparator means for comparing, with a reference voltage, the voltage across at least one of said capacitors corresponding to green light; means for initiating charging of said three capacitors by the output currents of the respective three external light sensing elements at a predetermined time in a repetitive operating cycle of the circuit, and for stopping the charging of said three capacitors in response to an output from said voltage comparator means indicating a predetermined relation of said voltage across at least said one capacitor to said reference voltage; three sample-and-hold circuits operative upon said stopping of the charging for sampling and holding voltages from said three capacitors, respectively; and control means responsive to the sampled-and-held voltages to provide control signals by which said level adjusting means controls the relative levels of said three primary color signals for maintaining a level ratio of 1:1:1 therebetween for achieving white balance.

4,646,162

DRIVING DEVICE FOR FACSIMILE APPARATUS

Takaji Sue, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

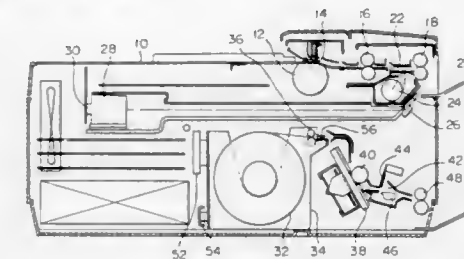
Filed Feb. 9, 1984, Ser. No. 578,395

Claims priority, application Japan, Feb. 14, 1983, 58-22465

Int. Cl.⁴ H04N 1/10

U.S. Cl. 358—293

9 Claims



1. A driving device for a facsimile apparatus which includes document conveying means for conveying a document, paper conveying means for conveying a recording paper, and paper cutting means for cutting the recording paper, said driving device comprising:

first drive means operatively connected to the document conveying means and the paper cutting means to drive the document conveying means and the paper cutting means such that the document is conveyed in a first mode of operation and the recording paper is cut in a second mode of operation; and

second drive means operatively connected to the paper conveying means to drive the paper conveying means such that the recording paper is conveyed in a first mode of operation and pulled back in a second mode of operation;

each of the first and second drive means comprising a reversible motor, said first mode of operation being a forward rotation and said second mode of operation being a reverse rotation.

4,646,163

ION PROJECTION COPIER

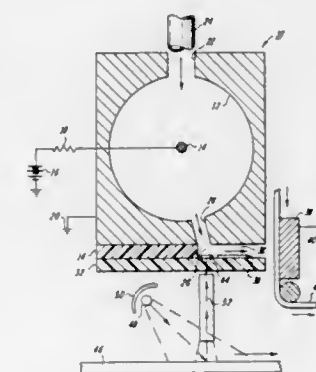
Hsing C. Tuan, and Malcolm J. Thompson, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 7, 1985, Ser. No. 784,293

Int. Cl.⁴ G01D 15/06

U.S. Cl. 358—300

14 Claims



1. A fluid jet assisted ion projection copier including means for projecting ions upon a charge receptor surface, said means for projecting comprising an ion generator, an inlet channel and an outlet channel connected to said ion generator, a source of transport fluid in communication with said inlet channel for delivering transport fluid to move ions through said outlet channel, and modulation means located adjacent said outlet channel for controlling the passage of ions therethrough, and

means for projecting incremental images of light and dark areas of an original to be copied, said ion projection copier characterized by comprising

a writing head mounted upon said means for projecting ions and adjacent to said outlet channel said writing head including thin films elements integrally formed thereon including an array of modulating electrodes elongated in the direction of fluid flow, an array of photosensors, one photosensor being associated with each modulating electrode, and a bias potential bus for charging selected ones of said modulating electrodes in response to the state of illumination on selected ones of said photosensors.

4,646,164

IMAGE DISPLAY APPARATUS

Hiroto Kishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 509,767, Jun. 30, 1983, abandoned.

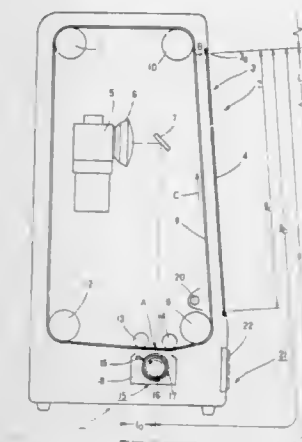
This application Dec. 13, 1985, Ser. No. 808,373

Claims priority, application Japan, Jul. 7, 1982, 57-118098

Int. Cl.⁴ H04N 1/23, 1/29; G01D 15/06, 15/14

U.S. Cl. 358—300

5 Claims



1. An image display apparatus comprising:

a casing;
an image bearing web in the form of an endless belt in said casing, said image bearing web including a photoconductive layer;
a plurality of support members for movably supporting said image bearing web;
drive means for moving said image bearing web along said support members;
image formation means for forming a visible image on said image bearing web; and
a display station for allowing observation of the visible image on the image bearing web which is adapted to move within said casing;

wherein said image formation means is located outside a display area of said display station and the length of an imaging area of said image bearing web measured along the path of movement thereof to be used for the formation of one complete image by said image formation means and the display of the complete image at said display station is equal to the full length of said image bearing web measured along the path of movement thereof times the reciprocal of a non-integer to cause successive complete images to be formed at slightly different parts of said image bearing web.

4,646,165

CHROMINANCE SIGNAL RECORDING APPARATUS UTILIZING DIGITAL SAMPLING AND QUANTIZING TECHNIQUES

Akira Hirota, Chigasaki, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Japan

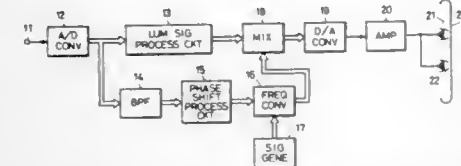
Filed Nov. 19, 1984, Ser. No. 673,133

Claims priority, application Japan, Nov. 21, 1983, 58-219155; Nov. 21, 1983, 58-219156

Int. Cl.⁴ H04N 9/493

U.S. Cl. 358—310

8 Claims



1. A carrier chrominance signal recording apparatus comprising:

digital color signal producing means for sampling a carrier chrominance signal at a sampling frequency which is four times a chrominance subcarrier frequency, and then quantizing the sampled signal so as to produce a first digital color signal;

a phase shift processing circuit for subjecting said first digital color signal to a phase shift process so as to produce a second digital color signal related to a carrier chrominance signal in which the phase of a chrominance subcarrier is equivalently and successively shifted by approximately 90° in a predetermined direction for every one horizontal scanning period, at least the sequence of sampled data in each data set which is constituted by four or two consecutive sampled data of said first digital color signal being successively rearranged by said phase shift process for each horizontal scanning period so that identical data sequences occur with a period of four horizontal scanning periods;

frequency converter means for converting the output second digital color signal of said phase shift processing circuit into a frequency converted digital color signal which is in a low-frequency range;

a digital-to-analog converter for obtaining an analog frequency converted carrier chrominance signal by subjecting the frequency converted digital color signal to a digital-to-analog conversion; and

recording means for recording the analog frequency converted carrier chrominance signal on a recording medium.

4,646,166

VIDEO STILL IMAGE STORAGE SYSTEM WITH HIGH RESOLUTION

Lionel Arlan, Middlesex County, Mass., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 25, 1984, Ser. No. 634,153

Int. Cl.⁴ H04N 9/491

U.S. Cl. 358—310

8 Claims

1. In combination:

apparatus for supplying video signals having serial-in-time segments cyclically descriptive of first, second and third color component image fields, each segment comprising a succession of digitized pixel values;

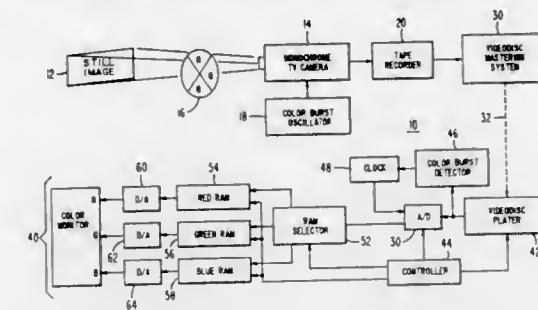
first, second and third random-access memories, each having respective storage locations sufficient in number to store the pixels of any image field;

means for writing the successive digitized pixel values of the video signal segment descriptive of said first color component image field into said first random-access memory;

means for writing the successive digitized pixel values of the video signal segment descriptive of said second color

component image field into said second random-access memory;

means for writing the successive digitized pixel values of the video signal segment descriptive of said third color component image field into said third random-access memory;



means for repeatedly field scanning the storage locations of said first, second and third random-access memories parallelly-in-time to supply respective read-outs;

means for converting the read-outs of said first, second and third random-access memories to red, green and blue video signals.

4,646,167

TIME CODE DECODER

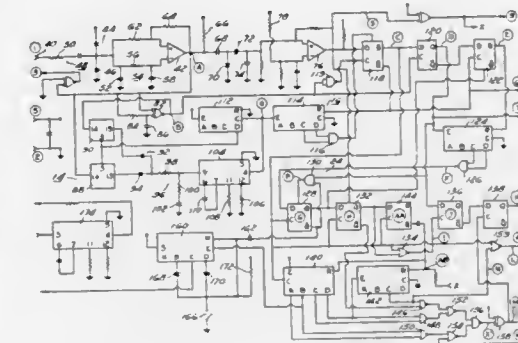
Henry M. Denecke, 629 W. Knoll Dr., Los Angeles, Calif. 90069

Filed May 24, 1985, Ser. No. 738,032

Int. Cl.⁴ G11B 27/02, 15/18

U.S. Cl. 360—14.3

17 Claims



1. A device for enabling detection of an electronic binary arithmetic time code word pre-recorded on each frame of a videotape, adapted to enable decoding of an input time code signal from the videotape over a wide dynamic range without a wideband amplifier or strict phase shift frequency input requirements, to lock onto and track input frequencies within the range of the input time code signal rapidly, over a wide range, from a small fraction to a large multiple, of normal videotape running speed and over a wide range of signal distortion, for enabling frame-accurate and difficult-to-read time code decoding, and for generating a unitary clock frequency to detect a valid sync word in the time code, to detect any error in the sync word decoded and prevent the reading of invalid time code, to detect the direction of running of the videotape, and to count the number of pulses in the time code decoded, to enable loading of valid time code and prevent loading of invalid time code, comprising:

(a) means for receiving an input time code signal from the videotape, adapted to be operable over a wide dynamic range without a wideband amplifier or strict phase shift frequency input requirements;

(b) means for locking onto and tracking signals within the range of the input time code signal, adapted to be operable

rapidly, over a wide range, from a small fraction to a large multiple, of normal videotape running speeds and over a wide range of signal distortion, for enabling frame-accurate and difficult-to-read time code decoding, and further adapted to generate a unitary clock frequency, connected to the input signal receiving means;

(c) means for detecting a valid sync word in the time code signal, adapted to detect any error in the time code signal, and to prevent the reading of invalid time code, connected to the input signal receiving means and the signal locking and tracking means;

(d) means for detecting the direction in which the videotape is running, connected to the valid sync word detecting means; and

(e) means for counting the number of pulses in the time code, for detecting any error in the time code, and for enabling loading of valid time code and preventing loading of invalid time code, connected to the input signal receiving means; and

(f) means for initiating the process of counting the time code pulses up, connected to the sync word detecting means and the counting means.

4,646,168

PERPENDICULAR MAGNETIC RECORDING METHOD

Yoshiaki Sonobe, and Toshiyuki Suzuki, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

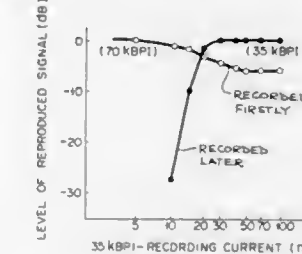
Continuation of Ser. No. 537,561, Sep. 30, 1983, abandoned. This application Mar. 28, 1986, Ser. No. 845,488

Claims priority, application Japan, Oct. 4, 1982, 57-174307

Int. Cl.⁴ G11B 5/02

U.S. Cl. 360—18

16 Claims



1. A method for recording signals on a magnetic recording medium, comprising the steps of:

first recording a first signal on a first area of the recording medium with a first linear recording density; and

subsequently recording a second signal on a second area of the recording medium with a second linear recording density, the first area being under the influence of the recording magnetic field generated during recording of the second signal,

the recording medium having perpendicular magnetic anisotropy,

the second linear recording density being .15 or more kilobits per inch lower than the first linear recording density, and a recording current of the second signal being 30 or more mA.

4,646,169

MAGNETIC RECORDING DEVICE

Yoshihide Shimpuku, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 591,563, Mar. 20, 1984, abandoned.

This application Mar. 5, 1986, Ser. No. 838,392

Claims priority, application Japan, Mar. 30, 1983, 58-52503

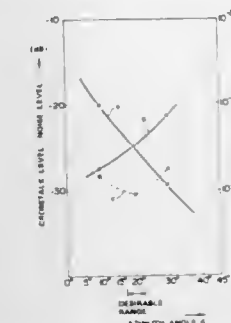
Int. Cl.⁴ G11B 5/02

U.S. Cl. 360—21

3 Claims

1. Apparatus for recording digital data on a magnetic recording medium in a plurality of successive parallel recording tracks formed in adjoining relation to respective neighboring

tracks, in which upon reproduction a signal representing the digital data reproduced from one said track is subjected to crosstalk from signals reproduced from tracks adjacent thereto and is further subject to digital errors at a block error rate corresponding to a bit rate of recording of said digital data in said tracks, said apparatus comprising first and second mag-



netic heads for alternately recording said digital data in successive ones of said tracks and having first and second azimuth angles equal to $+\theta$ and $-\theta$, respectively, where, in order to minimize the combined effect of said crosstalk and said block error rate, angle θ is selected to satisfy the relation $16^\circ \leq \theta \leq 22^\circ$.

4,646,170

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING A DIGITAL SIGNAL WITH A STATIONARY HEAD

Masaharu Kobayashi, Hiroo Okamoto, and Takao Arai, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

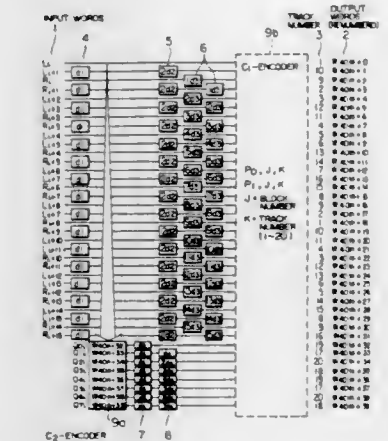
Filed Jul. 22, 1985, Ser. No. 757,448

Claims priority, application Japan, Jul. 23, 1984, 59-151210

Int. Cl.⁴ G11B 5/02, 5/09; G06F 11/10

U.S. Cl. 360—22

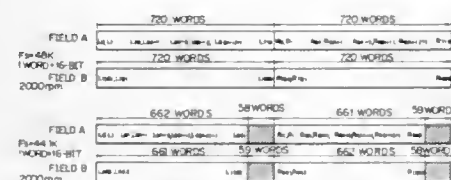
9 Claims



1. In a stationary multi-track head type PCM recorder having an A/D converter for sampling an analog signal and converting the analog signal to a digital signal, a signal processing circuit including data delay and encoder means for adding parity words and a predetermined signal to said digital signal of each of a predetermined number of samples to form a frame for error detection and correction, and multi-track heads for recording an output of said signal processing circuit on a plurality of tracks of a recording tape in parallel in a tape transport direction and reproducing the signals recorded on the recording tape;

a digital signal recording method for reducing incorrectabil-

10 Claims

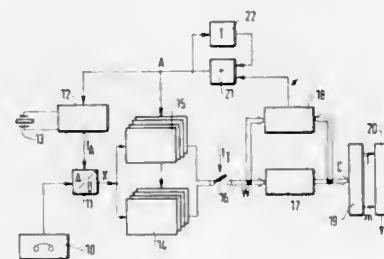


20 Claims

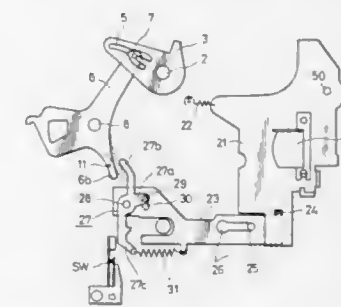
(a) computer controlling the operation of a record playback

[illegible]

7 Claims



4 Claims



1. A magnetic tape reproducing apparatus, comprising:
a pair of rotatably supported reel bases which can each operationally engage a respective reel of a cassette pack;
a reproduction head and head shifting means supporting said reproduction head for movement toward and away from a reproduction position in which said reproduction head engages a tape within a cassette pack having reels operatively engaging said pair of reel bases, said head shifting means including means for resiliently urging said reproduction head toward said reproduction position;
mechanical detecting means operationally coupled to one of said reel bases for detecting a stationary condition thereof;
a mode selection switch which, when actuated, electrically selects a predetermined mode of operation of the apparatus;
switching means supported for reciprocal movement and operationally coupled to said head shifting means, said

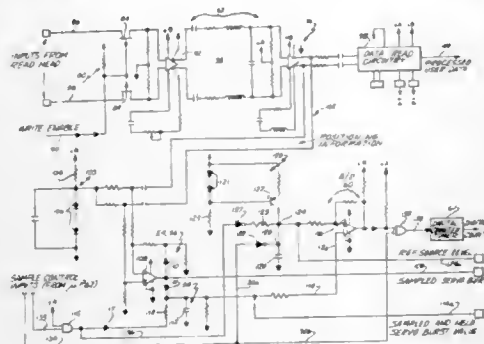
4,646,175
METHOD AND APPARATUS FOR POSITIONING
TRANSDUCERS BY DIGITAL CONVERSION OF
ANALOG-TYPE SIGNALS

Edmund L. Sokolik, Warren, and Francis Lum, Ann Arbor, both of Mich., assignors to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Apr. 5, 1984, Ser. No. 597,012
 Int. Cl.⁴ G11B 21/08, 21/10

U.S. Cl. 360—78

29 Claims



23. Apparatus for decoding positioning information recorded upon storage media, comprising: means for reproducing said recorded information by providing signals representative thereof; means for sampling the magnitude of said representative signals at predetermined times when at least recording-track identification information or recording track-following information is expected to be reproduced; means for storing the samples of signals produced by said means for sampling; and means for producing a count value having a known proportionality to the signals sampled and stored, said count value thereby comprising an encoded representation of at least one of said recorded track-identification or track-following information.

4,646,176
RECORDING AND REPRODUCING APPARATUS
INCLUDING A CASSETTE LOADING DETECTING
DEVICE

Motohiro Shimaoka, and Yukio Saito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

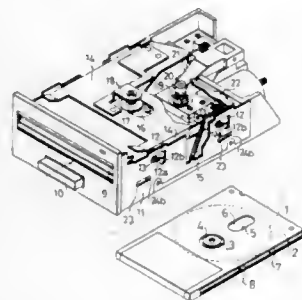
Filed Dec. 21, 1983, Ser. No. 563,872

Claims priority, application Japan, Dec. 21, 1982, 57-192129[U]

U.S. Cl. 360—97

Int. Cl.⁴ G11B 17/04

6 Claims



1. A recording and reproducing apparatus having a front opening for insertion of a disk cartridge to be loaded or unloaded to or from an operative position for recording and reproducing in the apparatus, comprising:
 a cartridge holder for receiving a disk cartridge inserted

therein, said cartridge holder being movable to or from the operative position;
 a movable cam having an inclined portion in abutting engagement with a portion of said cartridge holder so that said cam is moved as said cartridge holder is moved to the operative position;
 locking means including a lock portion on said cam which locks said cam from moving so to hold said cartridge holder in an unloaded state if said disk cartridge is not fully inserted in the apparatus; and
 detector means for detecting when a disk cartridge has been inserted to a predetermined position in said cartridge holder and for thereupon releasing said locking means to unlock said cam thereby allowing said cartridge holder to be moved to the operative position.

4,646,177
AUTOMATIC TAPE THREADING SYSTEM FOR USE IN
A TAPE TRANSPORT SYSTEM

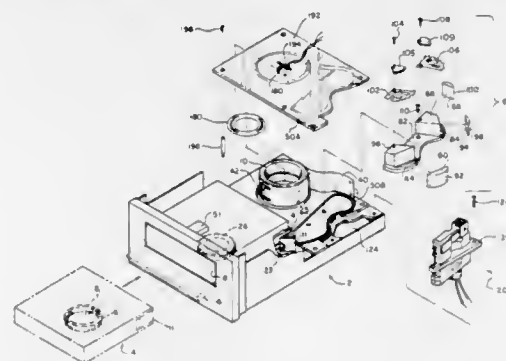
Platter Sanford, Boulder; Larry R. Gadsby, Littleton, and Robert T. Heath, Denver, all of Colo., assignors to Electronic Processors, Inc., Englewood, Colo.

Filed Nov. 25, 1983, Ser. No. 554,934

Int. Cl.⁴ G11B 15/66; G03B 1/04

U.S. Cl. 360—95

10 Claims



1. A tape transport device for use with cartridge including a single reel carrying a tape of a given width and having a central drive hub, including in combination a frame; a hub driving mechanism for a cartridge reel drive hub, said hub driving mechanism support by said frame; a base plate supported by said frame; a driven take-up hub having a leader of a given width which is wider than said tape, and a web surface for winding said leader and said tape, said take-up hub supported by said frame; a transducer, said transducer supported by said base plate and located intermediate said cartridge drive hub and said take-up hub, said transducer having transducing surface portions; a first fixed bearing-guide member having curved surface portions, and a second fixed guide-member having curved surface portions, said first and second fixed bearing-guide members supported by said base plate and bracketing said transducer and positioned so that a plane tangent to said curved surface portions of both said bearing-guide members will intersect said transducer behind said transducing surface portions; and a cover plate spaced apart from and substantially parallel to said base plate, said cover plate and said base plate sandwiching said transducer and said first and second fixed bearing-guide members thereinbetween, wherein the improvement comprises:

a substantially continuous sinuous tape threading path, of definite length, including structure defining a pair of tracks in said base plate and said cover plate, which tracks from an open channel having a given width which is greater than the width of said tape and less than the width of said leader, said substantially continuous tape threading path being intermediate said cartridge drive hub and said

take-up hub and winding past said curved surface portion of said first fixed bearing-guide member without making contact therewith, past said transducer without making contact with said transducing surface portions, and past said curved surface portions of said fixed second bearing-guide without making contact therewith; and
 tape transducing path of definite length and structure and different from said threading path, said tape transducing path being intermediate said cartridge drive hub and said take-up hub and running substantially tangentially from said cartridge drive hub to said first fixed bearing-guide member, wrapping around and making contact with a portion of said curved surface portions of said first fixed bearing guide member and then running tangentially from said first fixed bearing-guide member to said transducer, wrapping around and making contact with said transducing portions of said transducer and then running tangentially from said transducer to said second fixed bearing-guide member, wrapping around and making contact with a portion of said curved surface portions of said second fixed bearing-guide member, and then running tangentially from said second fixed bearing-guide member to said web of said take-up hub.

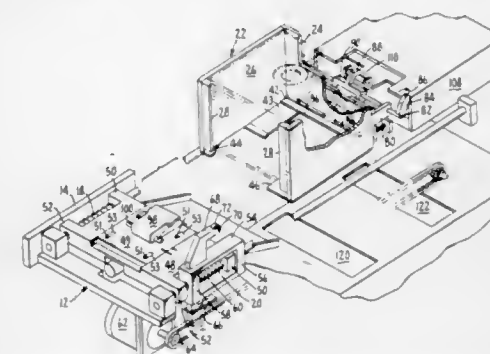
4,646,178
TRANSPORT FOR OPEN OR CLOSED FLAP DISKETTES
 Ford Garratt, and Steven Thompson, both of Scotts Valley, Calif., assignors to Mountain Computer Incorporated, Scotts Valley, Calif.

Filed Feb. 19, 1985, Ser. No. 703,034

Int. Cl.⁴ G11B 5/012

U.S. Cl. 360—98

6 Claims



1. In combination with a hopper for receiving a plurality of diskettes in stacked relationship, said hopper having front and rear containment walls, means for supporting a stack of diskettes in said hopper including first, second and third support means, each support means having a support surface, said first support means being located at the front of said hopper and having a support surface set below the front containment wall to define a front slot therebetween, said second support means being located at the rear of said hopper and having a support surface set below the rear containment walls to define a rear slot for receiving the edge of a diskette therethrough, the support surface of said third support means being located below and extending to the rear of the support surface of said first support means;

means aligned with said front slot for engaging and rearwardly pushing the bottom diskette from beneath said stack through said rear slot until the front edge of said diskette falls from the support surface of said first support means onto the support surface of said third support means;

and a diskette transport mechanism for transporting a diskette supported upon said second and third support means to a work station, said mechanism including a clamp for engaging a diskette supported on the support surfaces of said second and third support means, and means for mov-

ing said clamp to transport the lowermost diskette beneath said first support means to a work station.

4,646,179
FLEXIBLE MAGNETIC DISC, POSITIONING
APPARATUS AND METHOD PERMITTING IMPROVED
HEAD CONTACT

Yasuo Nagashima, Kaisei, and Akira Kasuga, Odawara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 22, 1984, Ser. No. 613,066

Claims priority, application Japan, May 23, 1983, 58-89099

Int. Cl.⁴ G11B 5/016, 5/012, 23/03, 5/54

U.S. Cl. 360—99

12 Claims



1. Apparatus for recording or playback of information on a magnetic recording material comprising, in combination:
 a small-sized, flexible magnetic disc including a circular base sheet of an elastic material having a surface coated with a film of said magnetic recording material to form a recording surface;
 a magnetic head assembly including a magnetic head positioned, in operation, in contact with the recording surface for performing the recording or playback of said information; and
 a regulator plate positioned, in operation, on the other surface of said base sheet, said regulator plate having a main surface formed thereon to be, in operation, closely adjacent to the other surface of the base sheet to maintain at least a portion of said magnetic disc at a predetermined level in a direction perpendicular to the recording surface of the disc, said main surface having a recess formed oppositely to said magnetic head;
 means for positioning said magnetic head so that it is protruded, in operation, beyond the predetermined level into the recess at least by an amount which is substantially equal to a total thickness of said disc, wherein, assuming that said magnetic disc has a total thickness of t millimeters (mm) and a Young's modulus of E grams per square millimeter (g/mm^2), a product of the Young's modulus E by the third power of the total thickness t , Et^3 , lies in a range between a lower limit of 2.5 g.mm and an upper limit of 36 g.mm inclusive of the lower and upper limits.

4,646,180
FLOATING HEAD SLIDER
 Yasuo Ohtsubo, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

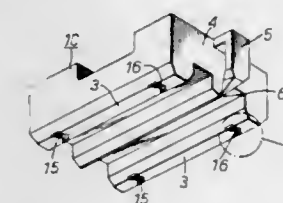
Filed Sep. 14, 1983, Ser. No. 532,101

Claims priority, application Japan, Sep. 30, 1982, 57-171728

Int. Cl.⁴ G11B 17/32

U.S. Cl. 360—103

11 Claims



1. A floating head slider having a magnetic head for transducing information at a magnetic recording surface during

relative movement between the magnetic head and the recording surface, there being a floatation gap between said magnetic head and said recording surface, said floating head slider comprising:

- a magnetic slider body including first, second and third depending, longitudinally extending members, being essentially parallel to the direction of said relative movement, each having first and second ends, each having a peripheral surface closest to said recording surface, generally parallel and laterally spaced apart, with said first and third members being exterior to said second member, said peripheral surface of at least said two exterior members having at said peripheral surfaces, air bearing surfaces, and at said first and second ends of said members grooves are formed at said air bearing surfaces to provide air pressure-raising mechanisms; and
- a magnetic head aligned with said second member.

4,646,181

MAGNETIC HEAD RETAINING DEVICE

Masamichi Morigaki, Kusatsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

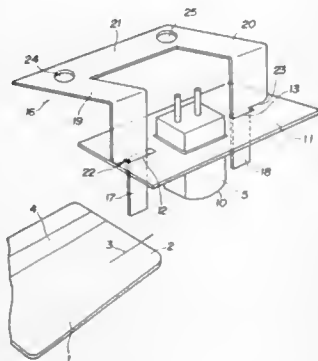
Filed May 11, 1984, Ser. No. 609,135

Claims priority, application Japan, May 12, 1983, 58-71250[U]

Int. Cl.⁴ G11B 5/48, 25/04

U.S. Cl. 360—104

7 Claims



1. A magnetic head retaining device, comprising:

- a support member having fixedly secured thereto a magnetic head having a detecting surface which contacts a magnetic recording medium moving in one direction relative thereto and at least a pair of support holes provided downstream and upstream to the magnetic head relative to the motion of the magnetic recording medium on an imaginary line passing through the magnetic head in parallel to the direction of the motion of the magnetic recording medium; and
- a mounting member having at least a pair of leg portions inserted through the corresponding support holes so that said support member is tiltable about said imaginary line, spring portions for biasing the leg portion downwards relative to the plane of the support member and toward said magnetic recording medium, and a mounting end portion for fixedly securing the mounting member, each of the leg portions having a step which restricts the upward motion of the support member relative to said leg portions, thereby biasing said detecting surface of said magnetic head into contact with said magnetic recording medium.

4,646,182

CARRIAGE ASSEMBLY FOR A MAGNETIC DISC MEMORY APPARATUS

Hiroshi Sakurai, Tokyo, Japan, assignor to Tokico Ltd., Kanagawa, Japan

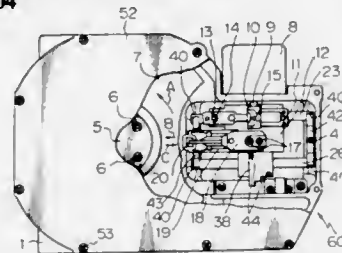
Filed Jun. 26, 1984, Ser. No. 624,964

Claims priority, application Japan, Jun. 30, 1983, 58-119436

Int. Cl.⁴ G11B 5/48

U.S. Cl. 360—104

5 Claims



1. A carriage assembly for a magnetic disc memory apparatus including at least one magnetic head to read from or write in a corresponding track of a rotating magnetic disc, a carriage carrying said magnetic head, and guide rod means guiding translation of said carriage to position said magnetic head onto a desired track of the magnetic disc, the improvement comprising:

- said guide rod means being a plurality of rod shaped parallel guide members;
- at least one annular bearing slidably mounted on one of said guide members, said bearing disposed in a through hole in said carriage, said through hole having a diameter which is larger than the outer diameter of said bearing; and
- at least one annular elastic member disposed between said bearing and said through hole in said carriage for elastically supporting said bearing in said carriage.

4,646,183

TRACKING HEAD SUSPENSION FOR TAPE DECK

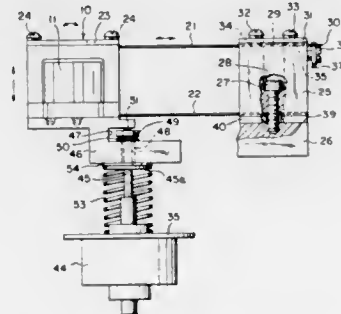
William D. Cohen, Huntington, N.Y., assignor to North Atlantic Industries, Inc., Hanppauge, N.Y.

Filed May 11, 1984, Ser. No. 609,307

Int. Cl.⁴ G11B 5/55, 21/08, 5/56, 21/24

U.S. Cl. 360—106

9 Claims



1. In a tape deck for reading or writing multi-track record tapes having recording surfaces, a transducer head, means for supporting the tape to be driven past the head for data interchange and means to effect track selection by relative positioning movement between the head and the tape transversely across the recording surface, the invention comprising:

- a pair of parallel spaced apart leaf springs disposed in parallel planes both perpendicular to the recording surface of the tape at the transducer head;
- support means attached to corresponding ends of both leaf springs;

means to secure the ends of the leaf springs remote from said support means to the head at spaced apart points to support the head in recording proximity to the tape; means to displace the head selectively across the surface of the tape, thereby flexing the leaf springs to constrain the head to move in a plane parallel to the plane of the recording surface of the tape with a component of motion transverse with respect to the direction of tape movement while constraining the head against turning movement, and means to adjustably turn the head about an axis perpendicular to the plane containing the recording surface of the tape to align the head precisely with the direction of tape movement comprising means to change the effective length of at least one of the leaf springs between the head and the support means.

4,646,184

MAGNETIC HEAD FOR RECORDING AND REPRODUCTION

Tadahiko Goto, Kitakyushu, and Hideo Abe, Iruma, both of Japan, assignors to Ye Data Inc., Tokyo, Japan

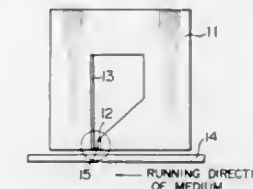
Filed Sep. 21, 1984, Ser. No. 653,094

Claims priority, application Japan, Sep. 21, 1983, 58-173140; Oct. 20, 1983, 58-195347

Int. Cl.⁴ G11B 5/12

U.S. Cl. 360—110

16 Claims



1. A magnetic head used for both magnetic recording and reproduction thereof, comprising a magnetic head body with a gap portion, wherein the portion of said body on one side of said gap is a trailing edge side and the portion of the body on the other side of said gap is a front edge side, both edges being defined with reference to the running direction of a medium in proximity to said head, and wherein said gap has an internal portion with two substantially opposed sides, one internal side being on said trailing edge side and one internal side being on said front edge side, and wherein a first material having a larger saturated magnetic flux density than that of said body is applied to one or both sides of said gap portion, at least one of said sides of said internal portion said gap being provided with a second material having a smaller saturated magnetic flux density than said body.

4,646,185

MAGNETIC HEAD ASSEMBLY INCLUDING A LEAF SPRING

Toshinori Watanabe, Oaza-Sanashi, and Ichiro Noguchi, Koide, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Dec. 3, 1984, Ser. No. 677,191

Claims priority, application Japan, Dec. 2, 1983, 58-227851

Int. Cl.⁴ G11B 5/27

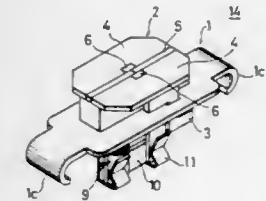
U.S. Cl. 360—121

2 Claims

1. A magnetic head comprises:

- a head assembly including a central read/write core having a pair of depending first legs, a pair of erase cores disposed on both sides laterally of said read/write core, and an erase yoke having a pair of second legs disposed in magnetic contact with said pair of erase cores, respectively;
- a spring member for mounting the components of said head assembly including a planar body having a central slot through which said depending first legs of said read/write core are inserted from one side of said planar body, a pair

of lateral slots on both sides of said central slot through which said pair of second legs are inserted, respectively, from the other side of said planar body and fitted in magnetic contact with said erase cores, and a pair of arms on opposite ends of said planar body; and



a case including means for receiving said arms of said spring member to fix said head assembly mounted on said spring member in position within said case.

4,646,186

CASSETTE TAPE RECORDER WITH PLURAL TAPE GUIDE STRUCTURE

Tatsuhiko Tsuchiya, and Norimasa Komatsu, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Japan

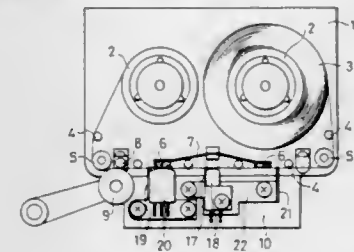
Filed Oct. 24, 1983, Ser. No. 544,611

Claims priority, application Japan, Oct. 22, 1982, 57-159051[U]; Oct. 22, 1982, 57-159052[U]

Int. Cl.⁴ G11B 15/60

U.S. Cl. 360—130.21

6 Claims



1. In a cassette tape recorder in which a cassette is inserted having a pair of reels and a magnetic tape wound from one reel onto the other reel, wherein the magnetic tape is wound to run in one running direction in recording and playback modes, and a portion of the running magnetic tape is arranged to run in the one running direction from an upstream side past an open portion in a front face of the cassette to a downstream side thereof, said open portion of the cassette being located adjacent a head base having a combined recording/playback and erase head thereon for recording and reproducing on and from the running magnetic tape,

the improvement comprising:

- (a) a first tape guide member adjacent said combined head on said head base, both being positioned facing opposite a downstream side of said front face of the cassette;
- (b) a second tape guide member on said head base positioned facing opposite a central portion of the front face of the cassette;
- (c) a third tape guide member on said head base positioned facing opposite an upstream side of said front face of the cassette;
- (d) said first, second, and third tape guide members being spaced substantially equally apart from each other, whereby the magnetic tape can be stably guided at three symmetric points across the front face of the cassette, and each having an inner guide surface for guiding the running magnetic tape and a pair of upper and lower guide projections one on each side of the inner guide surface which are spaced apart a respective tape guide width accommodating

at least the width of the magnetic tape for limiting transverse movement of the magnetic tape relative to the inner guide surface;

- (e) said head base being movable a prescribed distance toward said front face of the cassette in the recording and playback modes such that said first, second, and third tape guide members and said combined head are in operative contact with the running magnetic tape; and
- (f) said head base being movable a prescribed distance away from said front face of the cassette in a high speed mode where the magnetic tape is wound at a higher speed, and said tape guide members being positioned relative to each other such that in said high speed mode only said first and third tape guide members are in guiding contact with the magnetic tape.

4,646,187

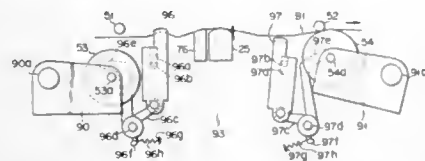
CASSETTE TAPE RECORDER

Seiji Tomita, Yokosuka; Kaoru Morinaga, and Yoshihiro Kotoda, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation of Ser. No. 419,603, Sep. 17, 1982, abandoned. This application May 6, 1985, Ser. No. 731,000

Claims priority, application Japan, Nov. 25, 1981, 56-188894
Int. Cl.⁴ G11B 15/60

U.S. Cl. 360—130.21

12 Claims



1. A cassette tape recorder for recording and playing back from a cassette tape arranged in a package to have a tape surface, accessible through a plurality of head insertion openings including a first, central opening, and second and third openings respectively located on upstream and downstream ends of the first opening with no other openings therebetween, comprising:

tape drive means for driving a magnetic tape at normal speed in one of forward and reverse directions;

forward/reverse switching means connected to the tape drive means for switching the driving of the magnetic tape at normal speed between the forward and reverse directions;

head means for recording, playing back, and erasing on the on the magnetic tape, including a record/playback head, and an erase head, rigidly coupled to the record/playback head, the head means being movable in a direction towards and away from the tape surface and adapted to be inserted into the first head insertion opening;

first and second tape guide means, each disposed adjacent to a respective side of the head means, the first tape guide means located to be inserted into the second head insertion opening, and the second tape guide means located to be inserted into the third head inserting opening and each tape guide means supported so as to be movable between a first position in which the guide means is protruding through a respective opening and in guiding contact with the tape, to guide the tape and a second position in which the guide means is spaced from the tape, each of the tape guide means including a pair of upstanding spaced-apart guide flanges which have inner surfaces that define therebetween a recessed guide surface, the tape being in guiding contact with the guide surface of a respective one of the tape guide means when the guide means is in the first position, the pair of guide flanges thereby guiding respective edges of the tape; and

tape guide drive means, operatively interlocked to the forward/reverse switching means, for displacing one of the tape guide means to the first position, and for displacing the other of the tape guide means to the second position, the tape guide drive means displacing said one and an-

other tape guide means in response to the tape being driven in one of the forward and reverse direction upon operation of the forward/reverse switching means.

4,646,188

VTR TAPE CASSETTE

Shinichiro Kato; Teruo Chiba, and Tadao Igarashi, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

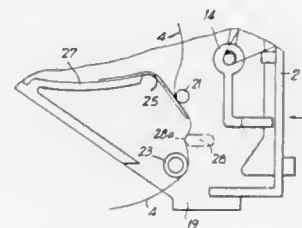
Filed Feb. 9, 1983, Ser. No. 465,283

Claims priority, application Japan, Feb. 9, 1982, 57-16663[U]

Int. Cl.⁴ G11B 15/43, 23/4

U.S. Cl. 360—132

5 Claims



1. A tape cassette comprising:

a housing;

a pair of tape reels rotatably mounted in said housing in co-planar, side-by-side relation;

a tape wound on said reels with a length of said tape extending between said reels;

said housing having an opening extending adjacent each of said reels and through which said length of the tape passes for exposure outside of said housing;

a pair of spaced guide pins mounted in said housing between each of said reels and said opening and being engageable with said length of the tape for defining a straight path for the tape between each pair of guide pins;

a resilient strip within said housing associated with at least one of the pairs of said guide pins, said strip having one end secured to said housing and another end which is free and is resiliently urged to project across said straight path defined by the associated guide pins for contacting one face of the tape and deflecting the contacted tape from said straight path so long as said contacted tape is under a tension insufficient to overcome the resilient urging of said strip; and

a drag member fixedly located in said housing to be engaged by the other face of said tape between said free end of the resilient strip and one of said associated guide pins and located proximate said free end of said resilient strip, such that when said tape is deflected from said straight path by said resilient strip said drag post and said resilient strip cooperate to provide a tortuous path for the tape when the latter is deflected from said straight path by said resilient strip.

4,646,189

MAGNETIC TAPE CASSETTE WITH DOOR OPENING MECHANISM

Shin Sasaki; Tsuneo Nemoto, both of Miyagi; Shuichi Yamashina, and Hiroyuki Uchida, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1984, Ser. No. 679,240

Claims priority, application Japan, Dec. 13, 1983, 58-234887

Int. Cl.⁴ G11B 23/02

U.S. Cl. 360—132

3 Claims

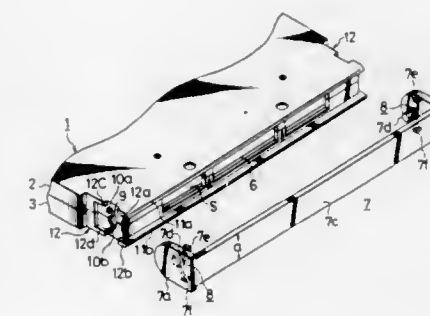
1. A magnetic tape cassette comprising:

a casing including spaced, parallel walls and a peripheral wall therebetween for containing a magnetic tape, said casing having a substantially straight side along which said peripheral wall has an opening for access to the tape in said casing, said peripheral wall having end portions substantially at right angles to said straight side at opposite ends of the latter, and said parallel walls having edge

portions projecting beyond said peripheral wall along said straight side;

a lid member including an elongated plate portion dimensioned to extend along said straight side of the casing and to fit closely between said projecting edge portions, and ears projecting from opposite ends of said plate portion at right angles to the latter for disposition against said end portions of the peripheral wall;

cooperatively engageable means for connecting each of said ears with the adjacent one of said end portions of the peripheral wall, each of said cooperatively engageable means including a pivot pin and an aperture in which said pin is loosely received to permit pivoting of said lid member relative to said casing about an axis which is parallel with said straight side and bodily displacement of said lid member relative to said casing in directions at right angles to said axis, said lid member being movable, by a combination of said pivoting and said bodily displacement, between a closed position in which said plate portion is between said edge portions, and closely adjacent to said peripheral wall at said straight side for closing said opening therein and an opened position in which said plate portion of the lid member is disposed at the outside of one of said parallel walls of the casing adjacent the respective edge portions, said aperture having substantially the con-



figuration of an isosceles triangle having a vertex in which the respective pivot pin engages in said closed position of the lid member, with said pivot pin moving out of said vertex for accommodating movement of said plate portion from between said edge portions in the course of movement of the lid member to said opened position; and biasing means connected between said casing and said lid member for pivotally urging the latter to a neutral pivoted position in which said plate portion is centered between said edge portions of the parallel walls and acting bodily on said lid member in said neutral pivoted position to urge said plate portion toward said straight side of the peripheral wall, said biasing including a coil spring member associated with each of said engageable means and having a coil portion disposed on the respective pivot pin and arm portions normally extending in opposed, substantially axially aligned directions from said coil portion and being resiliently angularly displaceable relative to each other from said normally extending directions, and anchor means on each said ear and said adjacent end portion of the peripheral wall above and below said aperture receiving the respective pivot pin for engagement by said arm portions of the coil spring member, said anchor means above and below the aperture being substantially along a straight line in said close position of the lid member.

4,646,190

MAGNETIC TAPE CASSETTE HAVING AUTOMATIC BRAKE

Hiroshi Meguro, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

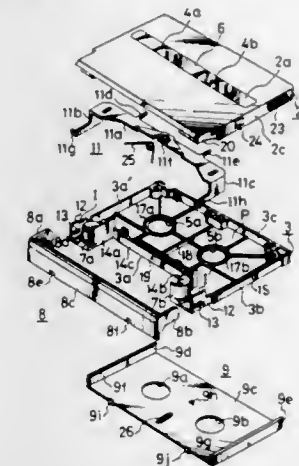
Filed Nov. 7, 1984, Ser. No. 669,160

Claims priority, application Japan, Nov. 9, 1983, 58-174093[U]; Apr. 6, 1984, 59-51080[U]

Int. Cl.⁴ G11B 23/04, 15/32

U.S. Cl. 360—132

6 Claims



1. A magnetic tape cassette comprising:

a hollow casing formed with an access opening therein; tape transport means including a pair of reel hubs rotatably mounted within said casing in spaced-apart relation to each other for supporting a magnetic tape wound thereon, said tape transport means defining a tape run adjacent to said opening;

lid means;

mounting means mounting said lid means movably on said casing between a closed position wherein said lid means covers said opening, thereby affording protection to said tape, and an open position wherein said lid means uncovers said opening, thereby exposing said tape for cooperation with recording-reproducing apparatus; and

unitary brake means elongated in a direction parallel to said tape run and mounted within said casing movably between a braking position wherein said brake means locks said hubs against rotation and a releasing position wherein said brake means releases said hubs for rotation;

said lid means being engageable with said brake means and in moving from said closed position to said open position effecting linear movement of said brake means from said braking position to said releasing position and in moving from said open position to said closed position effecting linear movement of said brake means from said releasing position to said braking position.

4,646,191

RECORDING TAPE CASSETTE

Shinichi Goto, Kyoto, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 553,071, Nov. 18, 1983, abandoned.

This application May 5, 1986, Ser. No. 861,656

Claims priority, application Japan, Nov. 20, 1982, 57-175774[U]

Int. Cl.⁴ G11B 23/02; G03B 1/04

U.S. Cl. 360—132

4 Claims

1. A recording tape cassette comprising

a cassette body including a top section and a bottom section together forming a tape chamber, the combined sections forming right and left side walls and a front face, said side walls extending parallel with each other and perpendicu-

VOL

1075

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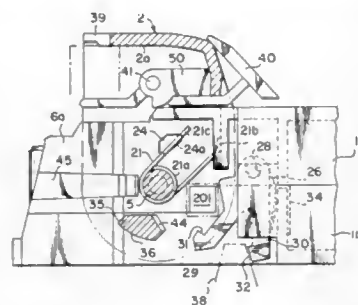
1987

UMI

lar to a vertical plane of said front face, each side wall having a front, stepped recessed portion;

a front lid member for covering said front face of said cassette body including a front plate and right and left side arms which project away from opposite ends of said front plate of said lid member, rotatably mounted on said cassette body, supported respectively by said right and left arm members on said right and left side walls of said cassette body so as to rotate between a closed position whereby the lid member closes the front face of said cassette body and an open position whereby the lid member opens the front face of said cassette body, said stepped recessed portions of said respective side walls of said cassette body and said side arms of said front lid member defining respective spaces therebetween when said lid member is in said closed position;

a resilient spring member accommodated in at least one of said spaces defined by said respective stepped recessed portions of said side walls of said cassette body and corre-



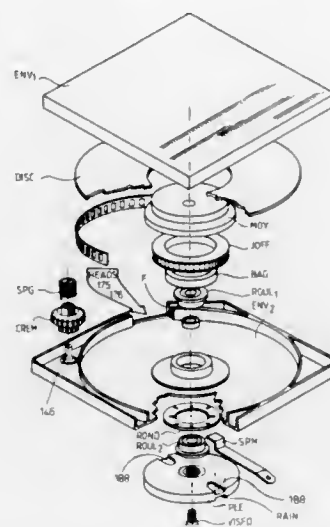
sponding arm of said front lid member, said resilient spring member having a first end engaged in a slot in a front surface of a first spring bearer on said respective stepped recessed portion of said respective side wall and a second end engaged with a second spring bearer provided on an inside wall of a corresponding side arm of said front lid member such that said front lid member is exerted to rotate to a closed position; and

a temporary receiving member formed on said respective side arm of said front lid member forward to said first spring bearer for temporarily receiving said first end of said resilient spring member before said front lid member is mounted in said cassette body, whereby said first spring bearer is provided on said stepped recessed portion of said respective side wall for engaging with said first end of said resilient spring member upon assembly of said front lid member in position in said cassette body thereby causing said first end of said resilient spring member to be displaced from said temporary receiving member to said first spring bearer.

4,646,192
MAGNETIC DISC CARTRIDGE HAVING IMPROVED DISC BRAKE
Jacques Droux, and Albert Langrenne, both of Paris, France, assignors to CII-Honeywell Bull (Societe Anonyme), France
Filed Dec. 20, 1982, Ser. No. 451,596
Claims priority, application France, Dec. 23, 1981, 81 24057
Int. Cl.⁴ G11B 23/03, 5/012, 5/016; B65D 85/30
U.S. Cl. 360—133 23 Claims

1. In combination, a magnetic disc cartridge, a magnetic disc memory unit having head means for transducing magnetic data of a disc of the cartridge, the memory unit having a disc drive shaft, the cartridge being selectively inserted into a receptacle of the unit, and including: a shell within which the disc is mounted, the shell having first and second end walls generally parallel to each other and faces of the disc, as well as a side wall including an opening, a door for closing the opening while the cartridge is not in the memory unit, the door being opened and the head means being inserted through the opening while

the cartridge is inserted in the receptacle, means for coupling the drive shaft to the disc so the disc is turned by the drive shaft while the cartridge is inserted in the receptacle, the coupling means including: (a) a hub mounted in proximity to the first wall and having an axis of rotation at right angles to the parallel walls, the hub carrying the disc so the disc is coaxial with the axis, and (b) a drive connection for the hub extending through the second wall to the drive shaft, the second wall including an annular segment extending coaxially with the axis toward the first wall; first and second spaced bearings for the drive connection, the bearings being mounted coaxially with the axis so the disc is between them, the bearings being carried by only one of the end walls within and on opposite ends of the annular segment for precisely positioning the disc relative to the head means while the cartridge is in the receptacle and the disc is being turned by the drive shaft, the coupling means further including a drive platter mounted in the cartridge in



proximity to the second wall coaxially with the axis and having an aperture engaged by a drive post of a drive disc connected to the memory unit drive shaft while the cartridge is inserted into the receptacle, the drive platter carrying the drive connection and abutting with the bearing at the end of the segment remote from the first wall, brake means in the cartridge engaging the drive platter while the cartridge is outside of the receptacle for preventing turning thereof and the disc, the brake means including a radially extending leaf spring mounted on the first wall so it has a free end engaging another aperture in the drive platter while the cartridge is outside of the disc memory unit, and means mounted on the disc memory unit for releasing said brake means while the cartridge is inserted into the receptacle, the means for releasing said brake means including another post fixedly mounted on the memory unit for engaging the leaf spring in proximity to the free end thereof to lift the free end out of the another aperture while the cartridge is in place in the receptacle.

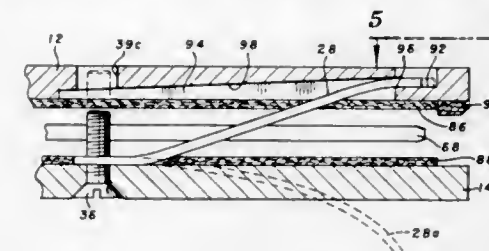
4,646,193
DISK CARTRIDGE ASSEMBLY
Louis G. Gitzendanner, Oklahoma City, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.
Filed Feb. 21, 1985, Ser. No. 703,859
Int. Cl.⁴ G11B 23/03 13 Claims

U.S. Cl. 360—133 13 Claims

1. An information storage apparatus including: an information storage medium and a housing enclosing said medium, said housing including first and second housing sections opposed to one another, and a connecting means for maintaining said housing sections in an axial alignment

with one another and for urging said housing sections toward one another in the axial direction to a closed position;

a retaining means comprising a first lining means at the inside surface of said first housing section and a second lining means at the inside surface of said second housing section, said first and second lining means engaging the medium at opposite sides thereof over a substantial portion of the

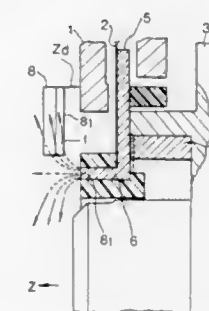


medium surface area whenever the housing is in the closed position, and thereby substantially preventing any movement of the medium with respect to the housing;

said connecting means being flexible in the axial direction to permit movement of said sections axially away from one another to disengage said retaining means from said storage medium and permit movement of said medium with respect to the housing.

4,646,194
PG YOKE POSITION DETECTING APPARATUS
Shigekazu Nakamura; Osamu Kitazawa; Masao Nakamori, and Yoshiyuki Ohzeki, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan
Filed Jan. 13, 1986, Ser. No. 818,379
Claims priority, application Japan, Jan. 13, 1985, 60-15426; Jan. 31, 1985, 60-15427
Int. Cl.⁴ G11B 5/012 8 Claims

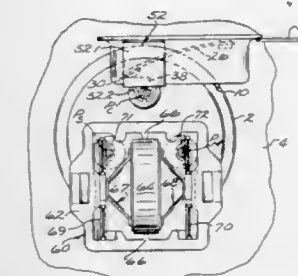
U.S. Cl. 360—137 8 Claims



1. A PG yoke position detecting apparatus for detecting a rotation reference position of a PG yoke used in detecting a rotation reference position of a recording medium, said apparatus comprising a magnetoresistance element for detecting the PG yoke, said magnetoresistance element being disposed in a plane lying substantially parallel to a plane in which the recording medium rotates, said magnetoresistance element being located outwardly of a circle described by revolution of an end face of the PG yoke and spaced away from the PG yoke end face a prescribed small distance along a rotational axis of the recording medium.

4,646,195
MOTOR PROTECTOR PARTICULARLY SUITED FOR USE WITH COMPRESSOR MOTORS
Richard J. Lisauskas, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation-in-part of Ser. No. 551,619, Nov. 14, 1983. This application Oct. 11, 1984, Ser. No. 659,732
The portion of the term of this patent subsequent to Feb. 12, 2002, has been disclaimed.
Int. Cl.⁴ H02H 7/08 9 Claims

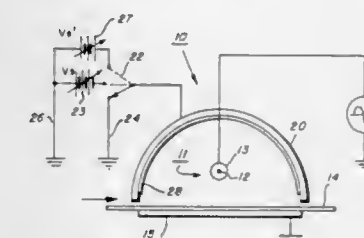
U.S. Cl. 361—25 9 Claims



1. A motor protector particularly adapted for use with compressors having a compressor shell and at least three electrically and thermally conductive pins electrically separated from one another and from the shell extending through the shell, the pins electrically connected to the windings of a motor disposed within the shell, the first pin connected to a start winding, the second pin connected to a main winding and the third pin connected to a common connection between the start and main winding, the first and second pins adapted to be connected to motor starting means having pin receiving terminals, the motor protector comprising a movable and a stationary electrical contact, the movable contact adapted to move into and out of engagement with the stationary contact, a snap acting thermostatic element operatively connected to the movable contact to move the movable contact upon selected thermal conditions between the contacts engaged position and the contacts disengaged position, terminal means attached to the protector comprising a metallic electrically and thermally conductive mounting bracket having two opposite ends, one end connected to the protector in good heat transfer relation therewith and the other end formed into a female connector configuration adapted to be received on the third pin, the bracket adapted to suspend the protector on the third pin so that it is thermally separated from the motor starting means, a direct metal to metal heat conductive path extending from the main and start windings through the third pin, through the mounting bracket to the protector.

4,646,196
CORONA GENERATING DEVICE
Louis Reale, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 1, 1985, Ser. No. 750,845
Int. Cl.⁴ H01T 23/00 10 Claims

U.S. Cl. 361—230 10 Claims



1. A corona generating device for depositing a negative

charge on an imaging surface carried on a conductive substrate held at a reference potential comprising;
 at least one elongated conductive corona discharge electrode supported between insulating end blocks,
 means to connect said electrode to a corona generating potential source, at least one element adjacent said corona discharge electrode capable of adsorbing nitrogen oxide species generated when said corona discharge electrode is energized and capable of desorbing nitrogen oxide species when said electrode is not energized, said at least one element being coated with a substantially continuous tin conductive dry film of aluminum hydroxide to neutralize the nitrogen oxide species when generated.

4,646,197

TANTALUM CAPACITOR LEAD WIRE

James Wong, Wayland, Mass., assignor to Supercon, Inc., Shrewsbury, Mass.

Filed Dec. 23, 1985, Ser. No. 812,140
 Int. Cl.⁴ H01G 1/14, 9/00; B21C 1/00

U.S. Cl. 361—307

15 Claims



11. A lead for a tantalum powder capacitor, said lead having a diameter of less than 1 mm and comprising a core of niobium (including alloys thereof) and a surface layer of grain stabilized tantalum, the tantalum surface layer having a radial thickness less than 0.30 mm.

4,646,198

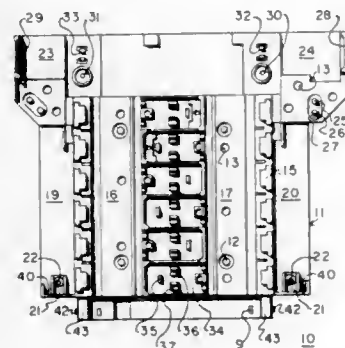
MOLDED CASE CIRCUIT BREAKER MODULAR SUPPORT ASSEMBLY

Joseph F. Rich, New Britain; Robert J. Sabatella, Southington, both of Conn., and George L. Shuttleworth, Amsterdam, N.Y., assignors to General Electric Company, New York, N.Y.

Filed Nov. 27, 1985, Ser. No. 802,347
 Int. Cl.⁴ H02B 1/04

U.S. Cl. 361—346

9 Claims



1. A circuit breaker support saddle comprising:
 a one-piece first molded plastic support member having first linear parallel surfaces for supporting circuit breaker power bus conductors and at least one additional linear

parallel surface outboard of said first linear parallel surfaces for supporting neutral terminal conductors;
 a support post at one end of each said at least one additional linear parallel surface for receiving openings through said neutral terminal conductors for fastening said neutral terminal conductors to said molded plastic member;
 a pair of tubular extensions integrally formed within said plastic member at one end for receiving fastening means for attaching said plastic member to a metal enclosure and for electrically isolating said fastening means from said power bus conductors;
 a plurality of circuit breaker support hooks integrally formed inboard of said at least one additional linear parallel surface for receiving a plurality of molded case circuit breakers in fixed relation between said circuit breaker power conductors and said neutral terminal conductors; and
 a pair of first inverted U-shaped plastic rails integrally formed within said plastic member and extending from said one end for receiving complimentary inverted auxiliary U-shaped rails integrally formed within one end of an auxiliary molded plastic member to provide added length to said first plastic member, said first plastic rails including a first projection or a first slot integrally formed on a side of each of said first rails snappingly engaging an auxiliary projection or an auxiliary slot integrally formed on a side of each of said auxiliary U-shaped rails.

4,646,199

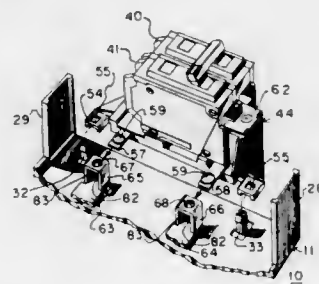
ADAPTER FOR MOLDED CASE CIRCUIT BREAKER SUPPORT SADDLE

Andre J. M'Sadoques, Southington, and John A. Morby, Farmington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Nov. 27, 1985, Ser. No. 802,349
 Int. Cl.⁴ H02B 1/04

U.S. Cl. 361—353

9 Claims



1. A plastic molded case main circuit breaker and adapter on a circuit breaker support saddle comprising:
 a plastic circuit breaker support saddle;
 a unitary plastic support on said support saddle said support having a pedestal integrally formed thereon and extending in a vertical direction from a top surface of said support and abuttingly receiving said first main circuit breaker and said pedestal having means providing electrical connection with said first main circuit breaker;
 a pair of plastic slotted attachment means extending from one end of said support and integrally formed with said support and receiving a pair of posts integrally formed on a top surface of said support, said top surface of said pedestal being coextensive with a first step formed on a first side of said first main circuit breaker and connecting said support to one end of said plastic molded case circuit breaker support saddle;
 terminal means extending from said one end of said support in electrical connection with main terminal lugs located on said one end of said circuit breaker support saddles; and
 retainer means attached to a post on said pedestal and having first extension means overlapping said first step formed on

said first main circuit breaker one end to prevent said first main circuit breaker from being removed from said support.

4,646,200

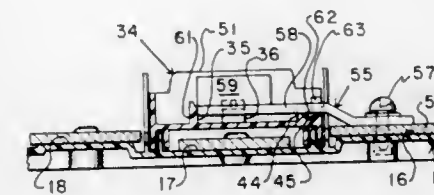
CIRCUIT BREAKER SUPPORT SADDLE WITH REMOVABLE PHASE BARRIERS

Andre J. M'Sadoques, Southington; Joseph F. Rich, New Britain, both of Conn., and George L. Shuttleworth, Amsterdam, N.Y., assignors to General Electric Company, New York, N.Y.

Filed Nov. 27, 1985, Ser. No. 802,348
 Int. Cl.⁴ H02B 1/04

U.S. Cl. 361—355

6 Claims



1. A modular phase barrier assembly including a molded plastic circuit breaker support saddle comprising:
 a molded plastic circuit breaker support saddle having insulative phase barrier members thereon supporting main bus conductors and branch strap conductors;
 each phase barrier member comprising a molded plastic support defining a top surface, a bottom surface and a pair of opposing ends, said plastic support having access means through both of said surfaces for passage of a molded case circuit breaker connector stab;
 a plurality of planar walls integrally formed within said plastic support and extending upwards from said top surface to provide electrical insulation between a plurality of branch strap conductors when mounted on said top surface;
 a plurality of post means integrally formed within said plastic support for guiding and supporting said branch strap conductors on said top surface;
 rail means integrally formed within said plastic support and extending from said bottom surface and attaching said plastic support to corresponding support track means extending from a top surface of said plastic circuit breaker support saddle, said rail means and said track means further provide electrical insulation between said main bus conductors and said branch strap conductors; and
 a step integrally formed at one of said support ends for receiving an end integrally formed in a separate plastic support whereby a plurality of said plastic supports and said separate plastic supports can be abuttingly assembled together on said plastic circuit breaker support saddle.

4,646,201

FLUORESCENT LIGHT MOUNTING SYSTEM

David R. Lerner, 290 Collins Ave., Mount Vernon, N.Y. 10552

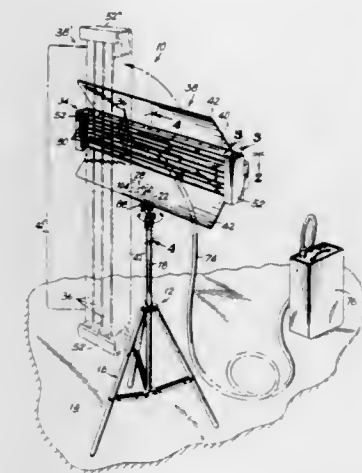
Filed Dec. 14, 1984, Ser. No. 681,936
 Int. Cl.⁴ H02B 1/10

U.S. Cl. 361—377

7 Claims

1. An ultrahighlight fluorescent light system comprising in combination,
 a stand member adapted to set upon a horizontal surface, said stand member having a top end portion,
 light reflector means associated with illumination means having a plurality of elongated fluorescent light tubes arranged in parallel relationship and being mounted on an elongated mounting means,
 a source of electrical power,

electrical cable means and receptacle means connected to said illumination means,
 electrical cable connecting means for connecting said electrical cable means and receptacle means with said source of electrical power,
 said elongated mounting means being a housing having an elongated mounting member with opposed receptacles capable of holding said fluorescent light tubes in said parallel relationship,
 an upright first post having opposed upper and lower ends, said lower end being connected to said top end portion of said stand member,
 a second post having opposed first and second ends, said first end being connected to said upper end of said first post and said second end being removably connected to said mounting means,
 first swivel means for pivotably connecting said lower end of said first post and said top end portion of said stand member, wherein said first post can be selectively positioned over 360° on a plane approximately parallel with the horizontal surface, said first swivel means including first locking means for removably clamping and unclamping said first post at and from a first selected position,

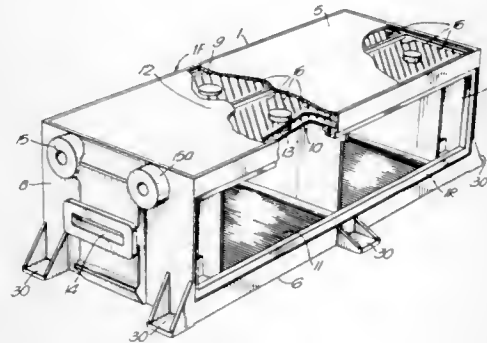


second swivel means for pivotably connecting said first end of said second post and said mounting means, wherein said mounting means can be selectively positioned over 360° on a plane generally perpendicular to said second post, said second swivel means including second locking means for clamping and unclamping said mounting means at and from a second selected position,
 rotating means for connecting said first end of said second post with said first post, wherein said second post can be selectively positioned on a plane generally perpendicular to a horizontal surface over approximately 180° measured between opposed positions of said second post generally parallel with the horizontal surface, said rotating means including third locking means for removably clamping and unclamping said second post at and from a third selected position, and
 said elongated mounting member having a length that extends perpendicular to said second post, said elongated mounting member comprising a pair of mounting portions approximately equal in said length, and a hinge member rotatably joining said pair of mounting portions; wherein said pair of mounting portions are movable between a fully extended position to said length and a folded position wherein each of said pair of mounting portions are folded in adjacent relationship.

4,646,202
CABINET FOR ELECTRONIC APPARATUS
 Sidney J. Hook, West Wittering; Philip Tittler, and Gerald D. Walley, both of Preston, all of England, assignors to British Aerospace PLC, London, England
 Division of Ser. No. 667,257, Nov. 1, 1984, abandoned. This application May 9, 1986, Ser. No. 861,747
 Claims priority, application United Kingdom, Nov. 2, 1983, 8329269

Int. Cl.⁴ H05K 7/20
 U.S. Cl. 361—382

10 Claims

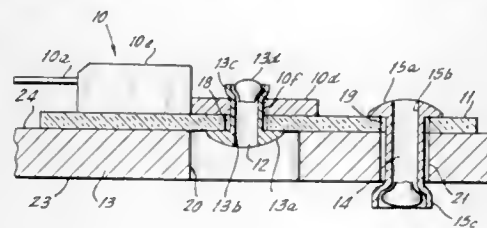


1. A cabinet for electronic apparatus mounted on a plurality of board members having spaced edge regions adapted for thermal conduction, said cabinet being suitable for permanent mounting in a structure, and comprising:
 parallel spaced side walls and parallel spaced end walls forming an open mouthed cabinet;
 guide means extending transversely across the inner sides of said spaced side walls for slidably receiving and locating the edge regions of the board members when the latter are inserted through the open mouth of said cabinet, said guide means effecting a good thermal path between said side walls and the board members;
 intermediate wall means providing a first fluid cavity between it and said side walls, said intermediate wall means having inlet and outlet means for allowing a first fluid to flow through said first cavity for cooling purposes; and
 outer wall means providing a second fluid cavity between it and said intermediate wall means, said outer wall means having an inlet and outlet means for allowing a second fluid to flow through said second cavity for cooling purposes.

4,646,203
MOUNTING STRUCTURE FOR SEMICONDUCTOR DEVICES
 Dat V. Ngo, Allentown, and Elliot G. Jacoby, Glenside, both of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Feb. 6, 1985, Ser. No. 698,770
 Int. Cl.⁴ H05K 7/20
 U.S. Cl. 361—388

21 Claims



1. A mounting structure for a power semiconductor device in a wall box voltage control device; said semiconductor de-

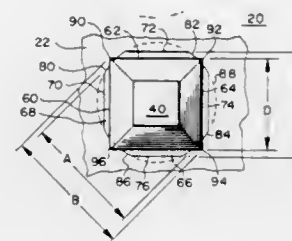
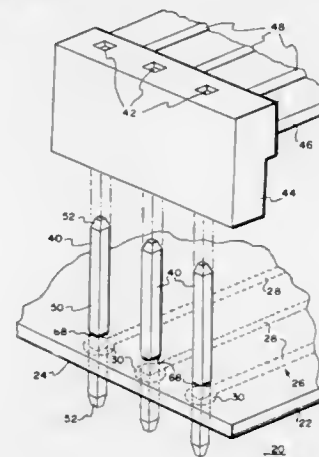
vice having a flat electrically and thermally conductive mounting surface; said flat conductive mounting surface having a first opening extending therethrough with an axis perpendicular to said flat mounting surface; said mounting structure comprising:
 a thin, mechanically rigid insulation sheet which is coextensive with at least a portion of said flat mounting surface;
 a heat sink having a flat surface which is coextensive with at least a portion of said insulation sheet;
 first and second metallic fasteners;
 said insulation sheet having second and third laterally spaced openings therethrough; said heat sink having fourth and fifth openings therethrough;
 said first second, and fourth openings being aligned with one another; said first fastener extending through said first and second openings and applying a compressive force only between said semiconductor device and insulation sheet to press together their engaging surfaces;
 said first fastener extending into said fourth opening but being spaced from the walls of said fourth opening and thereby being electrically insulated from said heat sink;
 said third and fifth openings being aligned with one another; and
 said second fastener extending through said third and fifth openings and applying a compressive force only between said insulation sheet and said heat sink to press together their engaging surfaces.

4,646,204
HOLE GEOMETRY FOR PRINTED CIRCUIT BOARDS
 Eric A. Brauer, Danville, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 10, 1986, Ser. No. 827,705
 Int. Cl.⁴ H05K 1/18

U.S. Cl. 361—403

8 Claims



1. A printed circuit board (PCB) for use with a plurality of substantially rigid, conductive connector stakes having a longitudinal body portion with a rectangular cross section bounded by a set of four sides intersecting at the respective corners; said PCB comprising:
 a substantially planar non-conductive substrate member

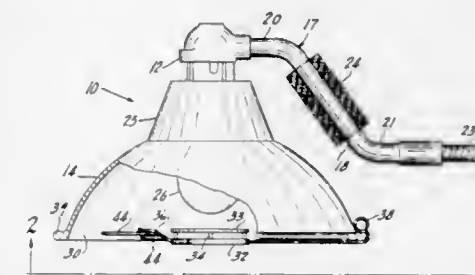
having an equal plurality of through holes for receiving said connector stakes; said non-conductive substrate member being provided with conductive pads encircling each of said through holes therein; said through holes having a substantially octagonal cross-section defined by two pairs of oppositely-disposed side walls and two pairs of oppositely-disposed corner walls; said through holes being dimensioned to receive said connector stakes without substantial mechanical interference between said sides of said connector stakes and the respective adjacent side walls of said through holes, and to produce mechanical interference between said corners of said connector stakes and the associated adjacent corner walls of said through holes, when said connector stakes are inserted into said holes with said sides thereof disposed parallel to said respective side walls of said holes; said interference serving to mechanically secure said connector stakes to said PCB.

4,646,205
EXAMINING LAMP
 Michael J. Schumaker, Milwaukee, Wis., assignor to Adjustable Fixture Company, Milwaukee, Wis.

Filed Oct. 4, 1985, Ser. No. 784,487
 Int. Cl.⁴ F21V 9/02

U.S. Cl. 362—2

3 Claims

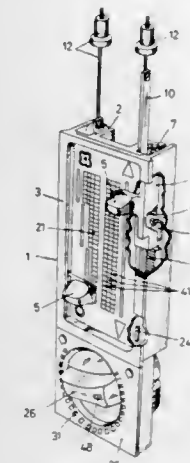


1. A medical examining lamp including a generally parabolic reflector having a peripheral margin and a socket mounted within the reflector for receiving an incandescent lamp, the reflector having a blue surface coating for color correcting the light emanating from the incandescent lamp and for reflecting the corrected light onto a patient, shield means having a periphery smaller than the peripheral margin of the reflector, mounting means supporting said shield means in a spaced relation to the peripheral margin of said reflector and in an opposed relation to the expected location of an incandescent lamp in said socket to permit the passage of reflected color corrected light between said shield means and said peripheral margin but preventing the projection of uncorrected light directly from said incandescent lamp onto such a patient, said shield means including first and second plates, coupling means for mounting said first plate in an opposed, generally parallel, spaced apart relation to said second plate, said first plate being disposed closer to the expected location of said incandescent lamp than said second plate and shielding said second plate from the heat generated by said incandescent lamp, the gap between said plates insulating the second plate from the heat of said first plate whereby said second plate remains relatively cooler.

4,646,206
CONTROL UNIT
 Karl-Heinz Bauer, and Reinhold Wolf, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,487
 Claims priority, application Fed. Rep. of Germany, Oct. 10, 1983, 3336828; Mar. 14, 1984, 3409260
 Int. Cl.⁴ F21V 8/00; G05G 1/00
 U.S. Cl. 362—32

27 Claims



1. A control apparatus of the type having at least one setting member for setting heating, cooling or ventilating systems in motor vehicles said control apparatus comprising an oblong body, at least one sliding member slidable along said oblong body on a sliding path, in said oblong body, said sliding member including a U-shaped slide and a control lever, said control lever projecting from said slide and from said oblong body, said U-shaped slide including a slide base, a first toothed rack connected to said slide base forming a first leg of the U-shaped slide and at least two holding members, each of said two holding members having a projecting toe, the two holding members being connected to said slide base for collectively forming a second leg of the U-shaped slide, the U-shaped slide being positioned around a projecting portion of the oblong body with the two projecting toes slidably engaging a surface of the projecting portion of the oblong body between the two projecting toes and the slide base thereby holding the U-shaped slide to the oblong body, and transmission means for operatively connecting said slide member with said setting member, and further characterized in that said transmission means comprises a step down unit having a fixed second toothed rack molded to said body and at least one gear in functional connection with the first and second and make toothed racks, and an adjusting means for coupling said at least one gear and said setting member, said at least one gear being operatively connected between the first and second toothed racks.

4,646,207
MOTOR VEHICLE LIGHTING SYSTEM INCLUDING A SEALED LENS MEMBER AS PART THEREOF
 Robert E. Levin, Hamilton, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

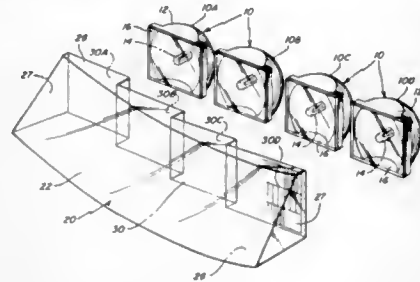
Filed Apr. 10, 1984, Ser. No. 598,614
 Int. Cl.⁴ B60Q 1/04

U.S. Cl. 362—80

13 Claims

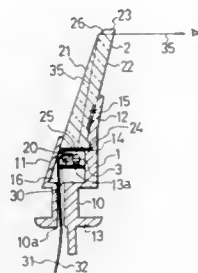
1. A lighting system for providing forward illumination for a motor vehicle and adapted to be mounted in a recess or the like within a front, contoured surface of said motor vehicle, said system comprising:
 at least one hermetically sealed lighting module including a

reflector, a lamp capsule mounted within said reflector, and an optically clear cover sealed to said reflector; a lens assembly comprising a hollow, enclosed single piece lens member having a front, clear surface positioned to coincide with said front contoured surface of said vehicle so as to enhance the aerodynamic performance of said lighting system, a rear lensing portion positioned in a substantially vertical orientation non-parallel to and



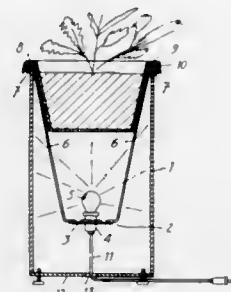
spaced from said front surface, and side walls for enclosing said member to provide a sealed, dirt-free member, substantially all of a light modifying lensing function of said lens assembly being provided solely by said rear lensing portion; and means for mounting said lens member so as to be spaced in front of said lighting module is said recess forward of said lighting module such that the light emitted by said module will pass through said lens member.

4,646,208
VEHICLE TOP MARK
Ken-ichi Hayashi, Inazawa; Kunikazu Hirozawa, Hashima, and Masahiro Kotaki, Nishio, all of Japan, assignors to Toyota Gosei Co., Ltd., Nishikasugai, Japan
Filed Dec. 12, 1985, Ser. No. 808,838
Claims priority, application Japan, Dec. 15, 1984, 59-190411
Int. Cl.⁴ B60R 13/04
U.S. Cl. 362—80 3 Claims



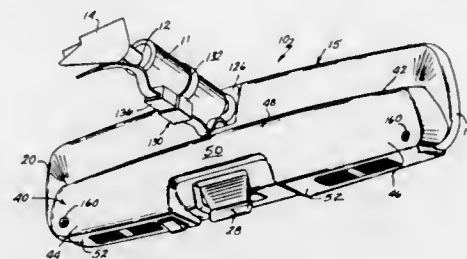
1. A vehicle top mark comprising:
a base adapted to be fixed to the body of a vehicle,
a light-transmitting body standing on said base, and
a light source built into said base,
said light-transmitting body having an upper end which has an inclined surface that is inclined upward from front to back, so that light, which passes upwards through said light-transmitting body from said light source, is totally reflected at said inclined surface and goes into the back of said light-transmitting body.

4,646,209
ILLUMINATED STANDING SUPPORT FOR PLANT AND FLOWER BOXES AND OTHER RECIPIENTS
Paul Jansen, Otterstraat 95, 2300 Turnhout, Belgium
Filed Apr. 5, 1985, Ser. No. 720,603
Claims priority, application Belgium, Apr. 9, 1984, 2/60389
Int. Cl.⁴ F21P 1/02
U.S. Cl. 362—122 9 Claims



1. An illuminated stand comprising:
a stand of translucent material having an upper edge,
a holder supported by the stand, comprising a plurality of wires, each wire having a hooked upper end for engaging over the upper edge of the stand, and a lower end comprising, together with the lower ends of others of the wires, a support for a fitting,
a fitting for a lamp secured to the holder, and
a lamp installed in the fitting, the lamp being positioned on a central axis of the stand.

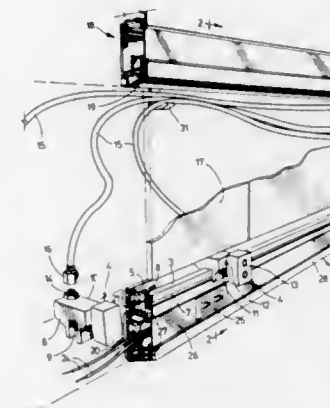
4,646,210
VEHICULAR MIRROR AND LIGHT ASSEMBLY
Brian I. Skogler, Holland; Eldon J. Nyhof, Zeeland, and William L. Katsma, Caledonia, all of Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed Jun. 20, 1984, Ser. No. 622,678
Int. Cl.⁴ B60Q 1/00
U.S. Cl. 362—142 42 Claims



1. A rearview mirror vehicle lighting assembly comprising:
a rearview mirror case having a back, top, bottom and end edges and including a mirror element, said case back being spaced from said mirror element and having at least one opening therethrough into said space between said mirror element and case back, and means for supporting said assembly in a vehicle;
lighting means for illuminating areas adjacent said assembly;
housing means accessible from and secured to the exterior of said rearview mirror case for supporting said lighting means, said housing means including closure means for covering said opening in said case back and support means projecting through said opening in said case back for supporting said lighting means within said space, said housing means being removable as a unit with said support means from the rear of said case such that said lighting

means are easily accessible for repair purposes outside said case; and
light directing means for directing said light from said lighting means outwardly of said assembly, said light directing means including an opening through said housing means for allowing light to pass out of said assembly.

4,646,211
SERVICE OUTLET WALL AND RAIL SYSTEM FOR USE THEREON
Dennis J. Gallant, Cincinnati, Ohio, and Eugene H. Fullenkamp, Batesville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Filed Nov. 19, 1984, Ser. No. 672,434
Int. Cl.⁴ F21S 3/00
U.S. Cl. 362—149 80 Claims

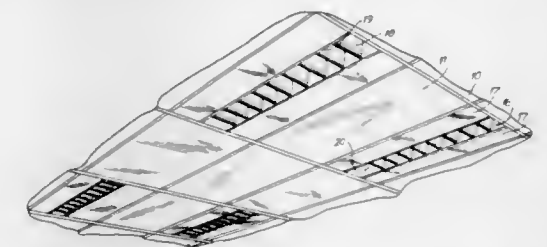


1. A vertical service outlet wall comprising:
(a) at least one generally planar vertical wall member;
(b) at least one service outlet;
(c) at least one generally linear section of said wall member defining first guide surface means arranged to receive and movably support said at least one service outlet;
(d) at least one service conduit connecting said at least one service outlet to a service source and being of a length sufficient to accommodate movement of said at least one service outlet to different portions along said linear section;
(e) means for housing said at least one service conduit connecting said at least one service outlet to a service source, said housing means being adjacent said at least one generally linear section and being configured to conceal and protect said at least one service conduit; and
(f) said at least one service outlet including second guide surface means mateable with and movable along said first guide surface means so that said at least one service outlet is movable along said at least one generally linear section to permit placement of said at least one service outlet at different positions along said at least one generally linear section and to simultaneously reposition said at least one service conduit connected to said at least one service outlet within said housing to maintain said at least one service conduit in a concealed and protected condition.

4,646,212
RECESSED LIGHTING FIXTURE
Noel S. Florence, New York, N.Y., assignor to Lightolier Incorporated, Secaucus, N.J.
Filed Nov. 15, 1985, Ser. No. 798,469
Int. Cl.⁴ F21S 1/02
U.S. Cl. 362—150 12 Claims

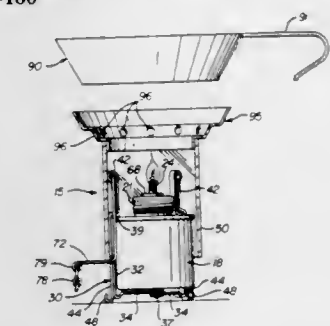
1. A lighting fixture comprising an elongate housing generally rectangular in plan, said fixture including vertically directed end faces, mounting means on the exterior surface of said end faces, said mounting means being in the form of an

inverted U, a pair of laterally, outwardly projecting horizontally directed tile support flanges extending substantially the length of said housing between said end faces, said flanges



being disposed at the lowermost portion of said housing, said flanges being adapted to support the edge portions of ceiling tiles.

4,646,213
COLLAPSIBLE LANTERN
Michael W. Fanelli, 47 W. Ridgeway Rd., Dayton, Ohio 45459, and Edward R. Masters, 321 Volusia Ave., Dayton, Ohio 45409
Continuation-in-part of Ser. No. 619,580, Jun. 11, 1984, Pat. No. 4,520,431. This application May 24, 1985, Ser. No. 738,245
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.⁴ F21L 19/00
U.S. Cl. 362—180 18 Claims

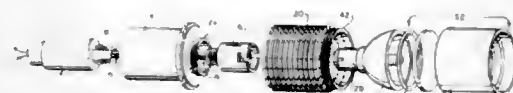


13. A collapsible lantern comprising a container adapted to receive a liquid fuel and having means defining a top opening, a wick element extending from within the container upwardly through the opening, closure means for closing the top opening and for supporting the wick element, an annular transparent globe of sufficient size to surround the container, means mounted on the container and supporting the globe for movement between a lower collapsed position surrounding the container and an upper extended position surrounding the wick element, an annular support member mounted on the globe and having circumferentially spaced openings outboard of the globe, and the annular support member includes means for supporting a cup or pan for heating or cooking when the globe is above the collapsed position.

4,646,214
MINIATURE COAXIAL LIGHTING ASSEMBLY
Ronald J. Mendleski, 1651B 18th St., Santa Monica, Calif. 90404
Filed Jan. 9, 1986, Ser. No. 817,499
Int. Cl.⁴ F21V 9/00, 29/00; A47G 33/16
U.S. Cl. 362—294 17 Claims

1. A versatile miniature coaxially-configured lighting assembly for architectural quality illumination and display purposes in residential and commercial environments, comprising,
(a) a cylindrical base body, at least partially enclosing lamp connector means, said base body having an enclosed rear

- end, an outer cylinder wall region, and a front end having a forward-extending, outside-threaded, coaxial tubular flange,
- (b) a tubular midsection body having a rear end inside-threaded to mate with the outside-threaded flange at the front end of said base body, an outer wall region, an inner wall region, and a front end having a forward-extending, outside-threaded, coaxial tubular flange,
- (c) a low voltage prefocused reflector type lamp located within the front end of said midsection body, electrically and mechanically engaging the lamp connector means,



- (d) a tubular barrel having a rear end inside-threaded to mate with the outside-threaded flange at the front end of said midsection body, an outer wall region, an inner wall region, and a front end,
- whereby said midsection body may be removably coupled in coaxial relationship with said base body by threading onto the front end of the base body, and whereby said barrel may be removably coupled in coaxial relationship with said midsection body by threading onto the front end of the midsection body.

4,646,215

LAMP REFLECTOR

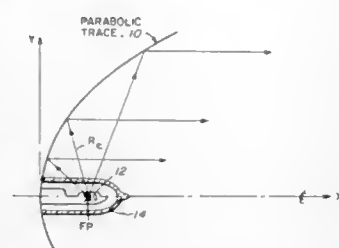
Robert E. Levin, S. Hamilton, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Aug. 30, 1985, Ser. No. 770,900

Int. Cl.⁴ F21M 3/18; F21V 7/08

U.S. Cl. 362-296

8 Claims



1. A lamp comprising:

a source of light enclosed in a transparent, walled envelope having a wall thickness T and an index of refraction n ; and a reflector having a reflective surface for collimating the light rays from said source of light located within said reflector and possessing a predetermined shape which compensates for the light ray refraction caused by said walled envelope as said light from said source of light passes therethrough to thereby provide optimum light output from said lamp, said light ray refraction compensation being provided by said reflective surface of said reflector and not by the utilization of open spaces or the like therein, said shape of said reflective surface being defined by Equations A, B and C below:

$$K = (T/\tan H)(1 - \sin H/\sqrt{n^2 - \cos^2 H});$$

$$dy/dx = \tan H/2; \text{ and}$$

$$y = [x - f + K(H)] \tan H.$$

wherein

K is the axial displacement of said light rays for said envelope having said refractive index, n ;

H is the angle of a light ray from an axis originating at a point on the center line of the axis of said reflector as it enters said envelope;

T is said envelope wall thickness;

dy/dx is the instantaneous slope of the reflector surface required to achieve a collimated beam; and

f is the distance from the origin of coordinates to the axial center of said source of light.

4,646,216

PLEATED LAMPSHADE COVER AND THE METHOD OF MAKING IT

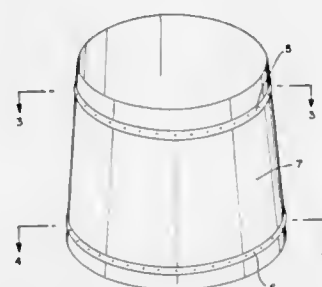
Catherine S. Chong, and Andrew K. Chong, both of 1632 Hemstock Ave., Wheaton, Ill. 60187

Filed Feb. 25, 1985, Ser. No. 704,863

Int. Cl.⁴ F21V 1/06

U.S. Cl. 362-352

2 Claims



I. An accordion-pleated lampshade cover comprising: a cover material folded to form accordion-pleats along its length, said material being stiff enough to keep its shape; at least one circumferential elastic band in a stretched position on the lampshade, said band having even interval markings made along its stretched length wherein said markings could be grouped variably, such markings used as points of attachment to inner spokes of the accordion-pleats of the cover, said elastic band being attached to the wrong side of and spaced from the edge of the material.

4,646,217

MULTIPLE OUTPUTS SWITCHING POWER SUPPLY

Giuseppe Baroni, and Gianpaolo Montorfano, both of Milan, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

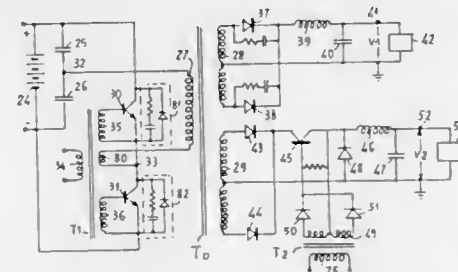
Filed Sep. 13, 1985, Ser. No. 775,863

Claims priority, application European Pat. Off., Oct. 18, 1984, 84112556

Int. Cl.⁴ H02M 3/335

U.S. Cl. 363-17

5 Claims



A.

B.

C.

1. A multiple output switching power supply having a main output and at least an auxiliary output and comprising: a transformer having a primary winding, a main output

secondary winding and at least an auxiliary output secondary winding;

first switching means for controlling the current flowing in said primary winding;

rectifying and filtering means connected at the output of said main output secondary winding;

second switching means for controlling the current flowing in said auxiliary output secondary winding and coupled to said auxiliary output;

an oscillator for delivering clock blanking pulses having a preestablished period;

a first pulse width modulation control circuit coupled to said oscillator, and to said second switching means, said first pulse width modulation control circuit responsive to the voltage detected at said auxiliary output and to said clock blanking pulses to switch on said second switching means at the termination of said blanking pulses and to switch off said second switching means after a time interval which is less than said period as a function of

said voltage detected at said auxiliary output;

delay means connected to receive said clock blanking pulses and provide as an output, delayed blanking pulses; and,

a second pulse width modulation circuit, responsive to the voltage detected to said main output and to said delayed blanking pulses to switch on said first switching means at the termination of said delayed blanking pulses and to switch off said first switching means after a time interval, less than said period as a function of the voltage detected at said main output.

4,646,218

SELF-ADJUSTING SWITCHED MODE POWER SUPPLY

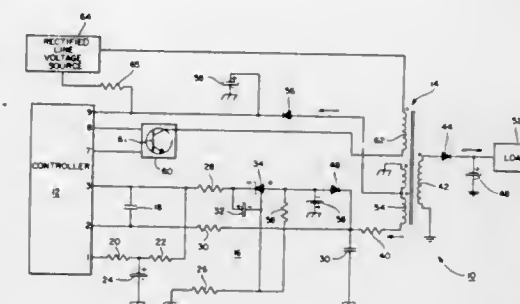
Kenneth C. Scholer, Dundee, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 23, 1985, Ser. No. 726,261

Int. Cl.⁴ H02M 3/335

U.S. Cl. 363-21

5 Claims



1. In a switched mode power supply including a switching transformer having a primary winding and a secondary winding, wherein the base current in a switching transistor connected in series with said primary winding regulates the energy stored in said primary winding for inducing an output voltage across said secondary winding, a self-adjusting control circuit comprising:

an integrated circuit controller connected to said switching transistor for providing a drive signal to the base thereof for controlling the current therein, said integrated circuit controller further providing a first reference voltage output signal;

feedback means coupled to said primary winding and responsive to the current therein for generating a feedback signal representing said output voltage;

automatic comparison means coupled to said integrated circuit controller and to said feedback means for comparing said reference voltage output signal and said feedback signal and for providing an error signal to said integrated circuit controller when the difference between said reference voltage output signal and said feedback signal ex-

ceeds a predetermined voltage value in regulating the operation of said integrated circuit controller; and impedance matching means for coupling said automatic comparison means to said integrated circuit controller.

4,646,219

INTRINSICALLY SAFE POWER SUPPLY WITH A CURRENT REGULATOR

Wolfgang Röhl, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 706,915, Feb. 28, 1985, abandoned.

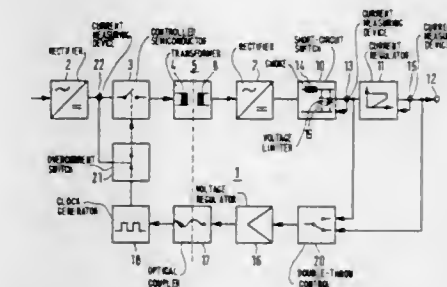
This application Nov. 4, 1985, Ser. No. 794,962

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3150398

Int. Cl.⁴ H02M 3/335

U.S. Cl. 363-21

3 Claims



1. In an intrinsically safe power supply arrangement of the type having an input and an output, the output connectable to a load; a transformer having a primary winding and a secondary winding, the secondary winding being coupled to the output of the power supply arrangement; a rectifier, disposed between the primary winding of the transformer and the input of the power supply arrangement, for converting an AC input current into a DC current; a clock generator for generating a clock signal; a controlled semiconductor, coupled to the clock generator and coupled between the rectifier and the primary winding of the transformer, for periodically interrupting the DC current in response to the clock signal; and a short-circuit switch disposed between the secondary winding of the transformer and the output of the power supply arrangement and controllable in response to predetermined limits, the improvement comprising:

- a choke, coupled between the secondary winding of the transformer and the short-circuit switch, for limiting the rate of current rise;
- a voltage limiter coupled to the choke, the voltage limiter suppressing voltage spikes occurring at the choke and, in conjunction with the choke, safety controlling critical transients in the event of a short circuit; and
- a current regulator, coupled between the voltage limiter and the output of the power supply arrangement, for limiting the current provided at the output of the power supply arrangement, the current regulator having
 - (1) a retrogressive current-voltage characteristic such that the current and voltage appearing at the output of the power supply arrangement drop with increasing load, starting out from a limit value of current and voltage; and
 - (2) a delay stage for producing a time-delayed rise of a selectable combination of current and voltage at the output of the power supply arrangement after a short circuit at the output of the power supply arrangement is removed.

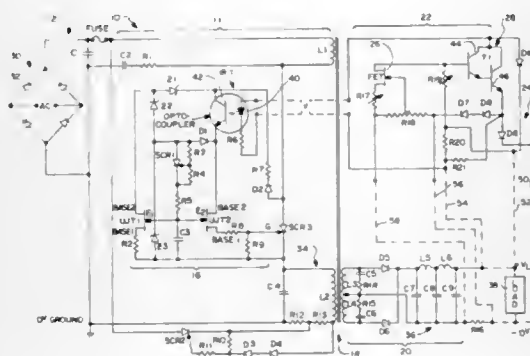
4,646,220

DC POWER SUPPLY WITH COMPENSATED CURRENT REFERENCE

Kim Dao, 12 Nace Ave., Piedmont, Calif. 94611
Filed Jun. 7, 1984, Ser. No. 618,219
Int. Cl.⁴ H02M 3/315

U.S. Cl. 363—28

18 Claims

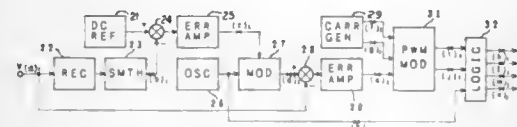


1. A power supply for providing a DC output voltage to a load comprising:
voltage input means for providing input voltage;
charge buildup and transfer means for building up and transferring an output to a load;
switch means for selectively interconnecting the voltage input means and the charge buildup and transfer means;
trigger means for triggering the switch means to interconnect the voltage input means and the charge buildup and transfer means;
sensing means for sensing current in response to the DC output voltage across the load;
a compensated current reference means for providing a current reference;
said sensing means having means for comparing the current sensed by the sensing means to the current reference; and
signal means for providing a signal based on the comparison between the current sensed and the current reference to the trigger means so as to modify the triggering of the switch means and the interconnection of voltage input means and the charge buildup and transfer means.

4,646,221
CONTROL CIRCUIT FOR INVERTER
Yoshihiro Sekino, Tokyo; Masayuki Aoki, and Nobuhiro Hotaka, both of Nagano, all of Japan, assignors to Shinano Electric Co., Ltd., Tokyo, Japan
Filed May 30, 1985, Ser. No. 739,235
Claims priority, application Japan, May 31, 1984, 59-112724
Int. Cl.⁴ H02M 1/12

U.S. Cl. 363—41

2 Claims



1. An inverter comprising:
input means for receiving DC power from a DC power source;
a converter circuit including plural semiconductor switch elements which are switch-controlled by control signals to convert DC power from said input means to a pulse-width modulated AC output;
a filter which extracts a fundamental frequency from the

pulse-width modulated AC output and provides the extracted fundamental as an inverter output; and
a control circuit having an input for receiving the inverter output and generating said control signals for controlling the switch elements of said converter circuit, said control circuit including: (a) a DC reference voltage source, (b) converter means for rectifying said inverter output into a DC signal, (c) means, responsive to a difference between said DC signal voltage and said DC reference voltage, for generating a sine wave which is amplitude-modulated responsive to said difference, (d) means for generating a signal responsive to the difference between the amplitude-modulated (Am) sine wave and said inverter output voltage, and (e) means for pulse width modulating a carrier in response to the difference between said AM sine wave and said inverter output voltage; and
logic means for generating said control signals in response to said pulse width modulated carrier.

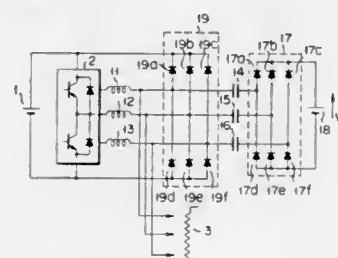
4,646,222

INVERTER PROVIDED WITH AN OVERVOLTAGE CLAMPING CIRCUIT

Chihiro Okado; Kazushi Ichimura, and Tatsuaki Ambo, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation of Ser. No. 511,929, Jul. 8, 1983, abandoned. This application Jan. 9, 1986, Ser. No. 817,173
Claims priority, application Japan, Jul. 15, 1982, 57-123657; Aug. 4, 1982, 57-136038
Int. Cl.⁴ H02H 7/122

U.S. Cl. 363—56

14 Claims



1. An overvoltage suppressing apparatus, comprising:
a voltage source inverter having switching transistors, recirculating diodes connected across current paths of the switching transistors, and an output terminal;
at least one reactor having an input terminal connected to the output terminal of said voltage source inverter and an output terminal to be connected to the primary side of a boosting transformer;
a clamping circuit including a diode for clamping an output voltage at the output terminal of said reactor to a first predetermined potential so that a potential on said output terminal of said reactor does not exceed said first predetermined potential; and
at least one capacitor having one end connected to the output terminal of said reactor and another end coupled to a second predetermined potential, said capacitor and said reactor forming a resonant circuit which limits changes in potential between said first and second predetermined potentials on said output terminal to a resonance curve defined by said resonant circuit.

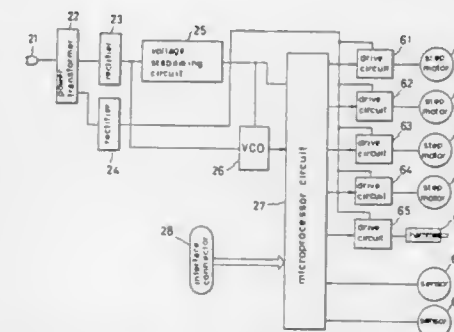
4,646,223

DRIVE CONTROL SYSTEM FOR ELECTRIC EQUIPMENT

Hiroshi Sekiguchi, Tokyo, Japan, assignor to Kanars Data Corporation, Japan
Filed May 23, 1984, Ser. No. 613,519
Claims priority, application Japan, May 30, 1983, 58-95573
Int. Cl.⁴ G05B 19/00

U.S. Cl. 364—130

2 Claims

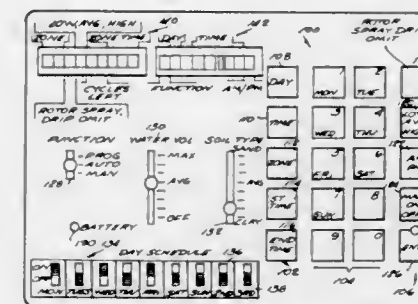


1. An electric equipment drive control system comprising an electric equipment and a drive control equipment for controlling the drive of the electric equipment by using a microcomputer, wherein said drive control equipment is provided with a pulse signal generator for generating a pulse signal having a predetermined frequency when the power voltage at said electric equipment presents a predetermined voltage, for generating a pulse signal having a higher frequency when said power voltage is higher than said predetermined voltage, and for generating a pulse signal having a lower frequency when said power voltage is lower than said predetermined voltage, wherein said drive control equipment is provided with a microcomputer for receiving the pulse signal as clock signal output from said pulse signal generator, for executing a program prepared with a prerequisite that the voltage at said power source is said predetermined voltage, and for determining the timing and time interval to apply a current to each circuit in said electric equipment, and wherein said drive control equipment is provided with a drive circuit for turning on and off the connection of each circuit in said electric equipment and said power source on the basis of the timing and time interval determined by the microprocessor.

4,646,224
SPRINKLER CONTROLLER WHICH COMPUTES SPRINKLER CYCLES BASED ON INPUTTED DATA
David P. Ransburg; Douglas C. Fletcher, both of Peoria, Ill., and Sven E. Wahlstrom, Palo Alto, Calif., assignors to L. R. Nelson Corporation, Peoria, Ill.
Filed Dec. 5, 1983, Ser. No. 558,043
Int. Cl.⁴ G05B 11/01; A01G 27/00

U.S. Cl. 364—143

56 Claims



1. Apparatus for controlling an irrigation system having a

plurality of irrigation zones each having applicator means and means for selectively providing water to said applicator means in response to a control signal, said apparatus comprising:
data entry means for manually entering prior to irrigation data related to conditions in each of said zones with respect to the amount of water needed to be applied and the soil water infiltration rate;
processing means responsive to said data entry for performing the following functions: (1) accepting said conditions entered prior to irrigation with said data entry means, (2) determining for each zone the number of cycles and the length of time in each cycle that said applicator means applies water so that (a) the amount of water applied during each cycle does not exceed the amount of water the soil can absorb during that cycle and (b) the total amount of water needed in that zone is applied, and (3) organizing said number of cycles and said length of time for all of said zones to create an application program; and
means responsive to said organizing function of said processing means for generating said control signals for said zones in accordance with the application program.

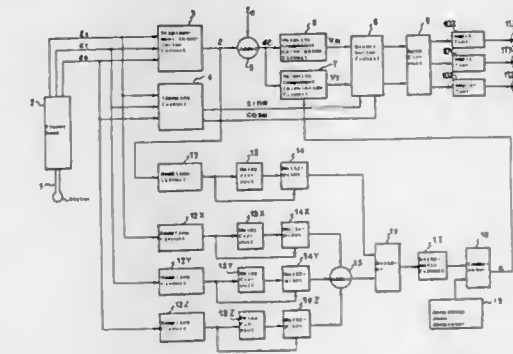
4,646,225

ADAPTIVE FEED RATE CONTROLLER FOR TRACER HEAD

Hitoshi Matsuura, Hachioji, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
PCT No. PCT/JP84/00072, § 371 Date Nov. 5, 1984, § 102(e) Date Nov. 5, 1984, PCT Pub. No. WO84/03466, PCT Pub. Date Sep. 13, 1984
PCT Filed Feb. 28, 1984, Ser. No. 673,747
Claims priority, application Japan, Mar. 4, 1983, 58-35589
Int. Cl.⁴ G05B 19/18, 21/02, 19/25, 19/33

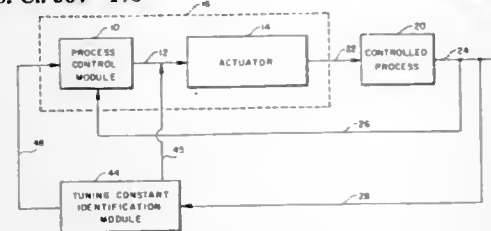
U.S. Cl. 364—167

6 Claims



1. Tracer control equipment which performs tracer control according to displacement signals ϵ_x , ϵ_y , and ϵ_z in the X-, Y- and Z-axis directions which are provided from a tracer head having a stylus for tracing the surface of a model, for correspondingly shaping a workpiece, comprising
sampling circuits for sampling the displacement signals ϵ_x , ϵ_y and ϵ_z and a composite displacement signal $\sqrt{\epsilon_x^2 + \epsilon_y^2 + \epsilon_z^2}$, respectively, at regular time intervals during tracing of said surface of said model by said stylus, and for providing respective outputs,
calculating means for receiving said outputs of said sampling circuits and for calculating a value corresponding to the angle between displacement vectors of the stylus at the current and the previous sampling of said sampling circuits, based on the current and previous values of said outputs of the sampling circuits, and for providing a corresponding output, and
control means for receiving said output of said calculating means and for controlling whether a feed rate of the tracer head with respect to the workpiece is decreased, depending upon said output from the calculating means.

4,646,226
SYSTEM AND PROCESS FOR IDENTIFYING AND UPDATING TUNING CONSTANTS
 William S. Moon, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.
 Continuation of Ser. No. 461,787, Jan. 28, 1983, abandoned. This application Oct. 31, 1985, Ser. No. 794,256
 Int. Cl.⁴ G05B 11/01, 13/02, 13/00
 U.S. Cl. 364—176 10 Claims



1. A process for determining tuning constants of a process control loop, the loop including at least a process control module coupled to transmit control input signals to a system actuator having non-linear characteristics, to establish a target value of the actuator, the actuator being coupled to a controlled process which produces outputs, the process comprising:

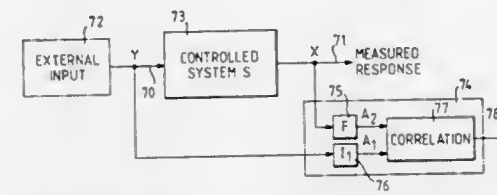
- making a series of changes to the target value of the actuator;
- measuring changes in the output of the controlled process resulting from the changes in the actuator target value;
- applying a first transformation to equations which describe characteristics of the actuator having non-linear characteristics and the controlled process to obtain a set of piecewise linear equations wherein the outputs of the controlled process are linear functions of the control input signals to the actuator in mutually disjoint regions;
- applying linear identification to the piecewise linear equations by utilizing the measured changes in the controlled process and the series of changes to the actuator target value to determine parameters of the piecewise linear equations;
- applying an inverse transformation of the first transformation to the parameters to obtain the tuning constants; and
- applying the tuning constants to the control module.

4,646,227
CONTROL SYSTEMS
 Malcolm J. Corbin, Farnham, and John G. Jones, Esher, both of United Kingdom, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

Filed Feb. 7, 1984, Ser. No. 577,885
 Claims priority, application United Kingdom, Feb. 7, 1983, 8303324

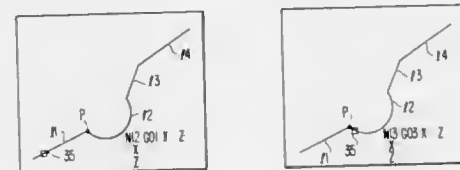
Int. Cl.⁴ G05B 9/02
 U.S. Cl. 364—184 5 Claims
 2. A control system monitor for a control system in which the application of an input control signal is designed to result in an output signal having a known relationship to the input control signal, the monitor comprising:
 plural means for receiving corresponding input and output signals from points in the system;
 plural means for detecting increments in said input and output signals by continuously band limiting each signal,

detecting peak values of said band limited signals and correlating corresponding peak values; and



means for examining the correlation to indicate a system failure if a predetermined correlation level is not satisfied.

4,646,228
GRAPHIC DISPLAY DEVICE
 Yoshiaki Ikeda, Hachioji, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan
 PCT No. PCT/JP83/00347, § 371 Date Jun. 14, 1984, § 102(e) Date Jun. 14, 1984, PCT Pub. No. WO84/01634, PCT Pub. Date Apr. 26, 1984
 PCT Filed Oct. 14, 1983, Ser. No. 621,915
 Claims priority, application Japan, Oct. 16, 1982, 57-181596
 Int. Cl.⁴ G05B 23/02, 19/405
 U.S. Cl. 364—192 4 Claims



1. A graphic display device which prepares graphic data representing a tool locus, using graphic form generating means, from an NC machining program and displays the tool locus on a display screen, said device comprising:
 graphic data storage means for storing the graphic data;
 program storage means for storing an NC machining program related to each graphic form represented by the graphic data with respect to a starting point of the graphic form;
 cursor move command input means for inputting a cursor move command;
 cursor control means for responding to the cursor move command from said cursor move command input means by accessing the graphic data stored in said graphic data storage means and displaying a cursor along the tool locus; and
 program display control means for responding to the passage of the cursor across each starting point stored in said program storage means by reading out of said program storage means the NC machining program stored therein corresponding to the starting point and displaying the program on the display screen.

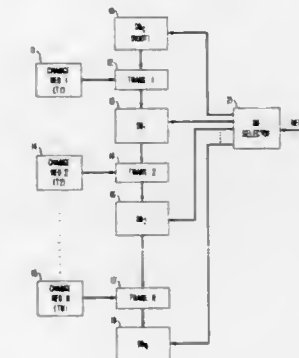
4,646,229
TIME-ORDERED DATA BASE
 Gerald C. Boyle, Piscataway, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Nov. 15, 1982, Ser. No. 441,731
 Int. Cl.⁴ G06F 15/40

U.S. Cl. 364—200 10 Claims
 1. An electronic data base system comprising a plurality of data records, at least some of said records including pointers to a plurality of others of said records,
 means for selectively accessing each of said data records,

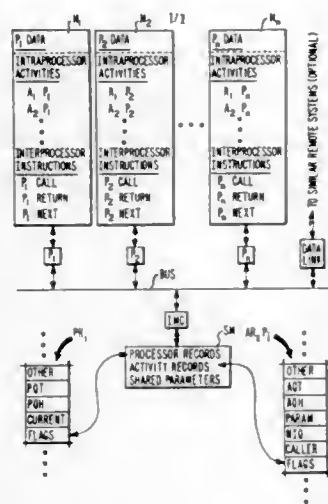
means for representing a plurality of time-dependent versions of each of said data records, said time-dependent versions comprising a single version of said data base and the incremental changes to said current version, and means, utilizing said accessing means and responsive to said time-dependent record versions, for making transactions against a consistent, time-dependent version of said data base representing the state of physical entities at some future time.

7. The method of assigning physical facilities to a plurality of users for future use comprising the steps of

(1) creating a current version of a data base including a record to represent each of said physical facilities and the current assignments to each of said physical facilities to



queue until the activity is executed once for each of its callers as pointed to by its activity queue, provided that if said single activity calls another activity then, executing said single activity only up to the point where the call occurs; and

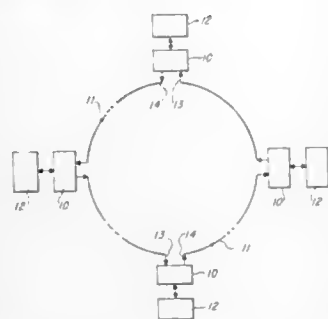


proceeding in the same fashion, in each processor, with the execution of all other activities as pointed to by the processor's processor queue.

4,646,232
MICROPROCESSOR WITH INTEGRATED CPU, RAM, TIMER, BUS ARBITER DATA FOR COMMUNICATION SYSTEM
 Ki S. Chang; Michael W. Patrick; Stephen P. Sacarisen, and Mark A. Stambaugh, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Filed Jan. 3, 1984, Ser. No. 567,596
 Int. Cl. G06F 13/00

U.S. Cl. 364—200

14 Claims



1. A digital data communications system comprising:
 - (a) a signal path,
 - (b) a plurality of stations connected in said signal path, each station receiving digital data from the path and transmitting digital data to said path, each said station comprising:
 - (i) a main processor containing a main CPU, a main memory, and peripheral I/O devices, and having a system bus interconnecting said CPU, main memory, and peripheral I/O devices;
 - (ii) a single-chip microprocessor device containing a local CPU, a local read/write memory, local address/data bus means interconnecting said local CPU and local read/write memory, a timer having at least one count register accessed by said local bus means, and a bus

arbitrer coupled to and controlling access to said local bus means;

said local CPU including an ALU, a plurality of registers, input/output port means, an instruction register, a control ROM having an input coupled to the instruction register, internal CPU bus means interconnecting inputs and outputs of the ALU with said registers and said input/output port means, and interrupt means for the local CPU; said input/output port means being coupled to said local bus means;

- (iii) coupling means connecting said system bus to said local bus means, said main CPU accessing said local read/write memory and said local CPU accessing said main memory via said coupling means,
- (iv) receiving means having an input coupled to said signal path and an output coupled to said local bus means, and transmitting means having an output coupled to said signal path and an input coupled to said local bus means,
- (v) transmit/receive control means responsive to receipt of data from said signal path in said receiving means to directly access said local read/write memory via said local bus means for writing received data to the local read/write memory and reading transmit data from the local read/write memory via said local bus means.

4,646,233

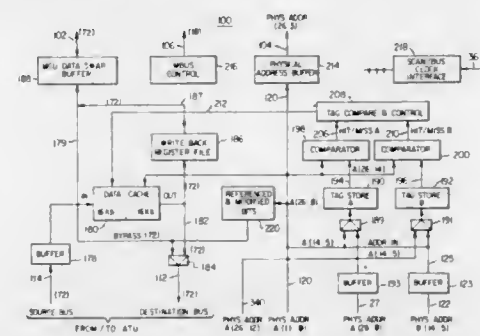
PHYSICAL CACHE UNIT FOR COMPUTER

James R. Weatherford, 5500 Knights Ct., Lake Dallas, Tex. 75065; Arthur T. Kimmel, 4322 Windward Cir., Dallas, Tex. 75252, and Steven J. Wallach, 7314 Westerway, Dallas, Tex. 75248

Filed Jun. 20, 1984, Ser. No. 622,562
 Int. Cl. G06F 13/00

U.S. Cl. 364—200

3 Claims



1. A physical cache unit for use in a synchronous computer, which operates at a clock rate having a selected, repetitive clock period and including a main memory in which operands are referenced by physical addresses, a central processor which references operands by logical addresses and an address translation unit for converting physical addresses into physical addresses wherein each physical address includes a tag and a tag index, the physical cache unit comprising:
 - a cache store for storing a plurality of operands therein, said cache store connected to exchange operands with said main memory in said central processor, wherein at least two operands can be read from said cache store during one of said clock periods,
 - a first tag store having stored therein a tag and a tag index respectively for each of a plurality of said physical addresses, each stored tag index corresponding to respective operands stored in said cache store, said first tag store connected to receive physical addresses from said address translation unit, said first tag store for producing a corresponding tag for the tag index input thereto as a part of a physical address during one of said clock periods when

the tag index input thereto was previously stored in said first tag store,

a second tag store similar to said first tag store and having stored therein the same tags and tag indexes for said plurality of physical addresses, said second tag store connected to receive physical addresses from said address translation unit, said second tag store for producing the corresponding tag for each tag index input thereto as a part of a physical address during the same clock period when said first tag store produces a tag, when the tag index input to said second tag store was previously stored in said second tag store, said first and second tag stores for receiving different ones of said physical addresses during one said clock period,

means for comparing the tag produced by said first tag store with the tag of the physical address input thereto to produce a hit or miss output by a comparison of the tag produced by said first store with the tag of the physical address input to said first tag store, and for comparing the tag produced by said second tag store with the tag of the physical address input thereto to produce a hit or miss output by a comparison of the second store produced tag with the tag of the physical address input to said first tag store, and

means responsive to said hit output from said means for comparing for reading from said cache store the operands corresponding to the physical address input to the tag stores and for transferring the operands read from said cache store to said central processor wherein said cache store is read at least twice during the one of said clock periods when said first and second tag stores receive said different ones of said physical addresses.

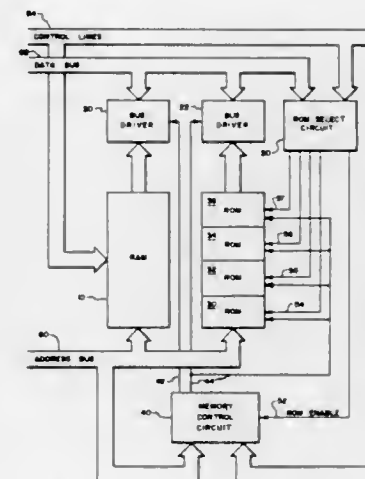
4,646,234

ANTI-PIRACY SYSTEM USING SEPARATE STORAGE AND ALTERNATE EXECUTION OF SELECTED PROPRIETARY AND PUBLIC PORTIONS OF COMPUTER PROGRAMS

J. Leonard Tolman, Provo, and Joseph J. Ekstrom, Lindon, both of Utah, assignors to Brigham Young University, Provo, Utah
 Filed Feb. 29, 1984, Ser. No. 584,713
 Int. Cl. G06F 1/00, 5/00; H04L 9/00

U.S. Cl. 364—200

10 Claims



1. In a computer system having first and second electronic memory means which together are used to store a program comprising executable instructions, a method of protecting against unauthorized duplication of selected proprietary portions of said program, the method comprising the steps of:
 - pre-storing in said first memory means prior to distribution to a system user said selected proprietary portions of said executable program, whereby said selected proprietary

portions of said program are not readily susceptible to access and duplication by a system user;

pre-storing prior to distribution to a system user the remaining portion of said executable program on an external storage medium, said external storage medium being available for access and use by system users; and

when running said executable program in its entirety on said computer system, said computer system automatically performing the steps of:

- (a) loading said remaining portion of the executable program from said external storage medium to said second memory means;
- (b) commencing with execution, in turn, of each instruction contained in said second storage means until instructed to transfer to said first storage means;
- (c) thereafter executing, in turn, the selected proprietary portions of said program stored in said first memory means;
- (d) thereafter returning to said second memory means and continuing with execution of said remaining portions of the program; and
- (e) repeating steps (a)-(d) until said program is completely executed.

4,646,235

COMPUTER NETWORK HAVING A HOST-LOCAL FILE I/O OPERATION

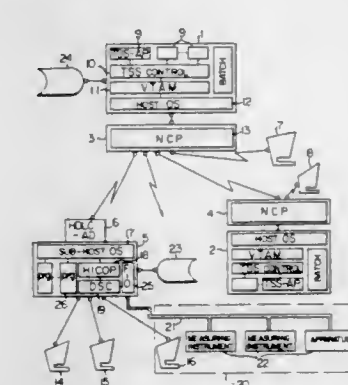
Toshio Hirose, Machida; Masaru Ohki, Kodaira; Shigeru Motobayashi, Chofu, and Yutaka Kuwahara, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,193

Claims priority, application Japan, Jul. 20, 1982, 57-126341
 Int. Cl. B06F 13/14

U.S. Cl. 364—200

26 Claims



1. A data processing system using a plurality of input/output devices comprising:
 - a first computer; and
 - a second computer connected through a network to said first computer and connected to a plurality of input/output devices including at least one operator-controlled input/output device, said first computer having means for requesting one of said input/output devices for data transfer and said second computer including:

- (1) operator-controlled designation means for designating an input/output device, of said input/output devices which is different from the input/output requested by said first computer, as an input/output device to perform said data transfer with said first computer; and
- (2) control means connected to said first computer, said requested input/output device and said designated input/output device, and having output processing means for receiving from said first computer an output data stream including output data and having a format for said requested input/output device in response to an output

request issued by said first computer, for reformatting the received output data stream to produce reformatted data for said designated input/output device, and for outputting said reformatted output data to said designated input/output device; and thereafter, for inputting said reformatted output data from said designated input/output device in response to a signal from said requested input/output device, for reformatting said reformatted output data to produce an output data stream having a format for said requested input/output device and for outputting the produced data stream to said requested input/output device; and input processing means for inputting from said requested input/output device an input data stream including input data and having a format for said first computer in response to a signal from said requested input/output device, for reformatting the received input data stream to produce reformatted data for said designated input/output device, and for outputting said reformatted data to said designated input/output device, and thereafter, for inputting said reformatted input data from said designated input/output device in response to an input request issued by said first computer, for reformatting said reformatted data to produce an input data stream having a format for said first computer, and for outputting the produced data stream to said first computer.

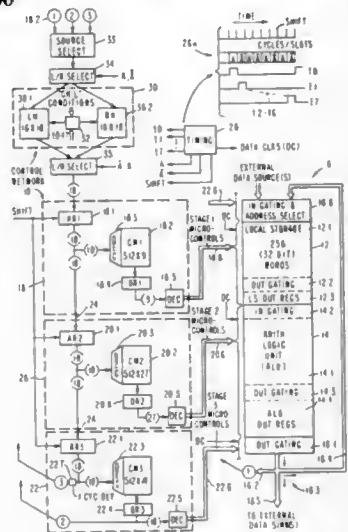
4,646,236 PIPELINED CONTROL APPARATUS WITH MULTI-PROCESS ADDRESS STORAGE

Peter N. Crockett, Highland; Robert P. Jewett, Poughkeepsie; Arthur J. Scriver, Wappingers Falls, and Thomas A. Tucker, Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 255,074, Apr. 17, 1981, abandoned.
This application Jan. 23, 1984, Ser. No. 573,225
Int. Cl.⁴ G06F 3/04

U.S. Cl. 364-200

8 Claims



1. A pipelined processor for executing processes for one or more activity levels for each of a plurality n of channels of a data processor, wherein an activity level is an independent task of a channel that may be executed concurrently with other tasks of the channel, comprising,

a plurality m of processor stages, including a first stage and a last stage, means interconnecting the stages to perform successive steps of executing a process for a channel, each stage including a control memory for controlling the execution of the process, means interconnecting the stages to form a pipeline for data, and means interconnecting the

stages for shifting a control memory address from the first stage through the last stage in step with the execution of the corresponding process, wherein the improvement comprises, means for establishing time division slots, designated minor cycles, for operations for each channel in a predetermined sequence of channels an address storage array for holding an address for each activity level of each channel process, and means for fetching an address for each processes in a fixed sequence of said channels and supplying the process address to the control memory for the first stage, wherein said means for supplying address signals to said control memories comprises: means in said address storage array for storing at least n address functions for addressing locations in said control memories; means for reading said address functions out of said address storage array cyclically for each of the minor cycles; address functions successively read out of said address storage array being associated with successive ones of said n channel processes and means for applying each address function read out of said array serially, in successive minor cycles, to said control memories, whereby different ones of said control memories hold address functions for different processes, means for cyclically entering addresses into said array according to operations to be performed and in a predetermined sequence that includes each process, a cycle of n channel processes being designated a major cycle.

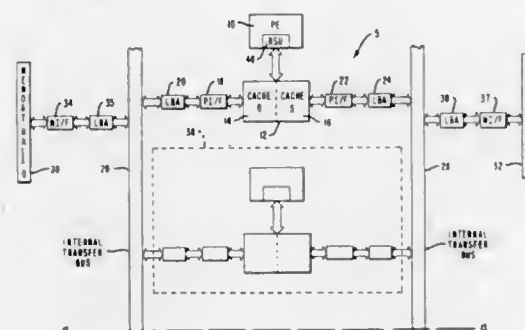
4,646,237 DATA HANDLING SYSTEM FOR HANDLING DATA TRANSFERS BETWEEN A CACHE MEMORY AND A MAIN MEMORY

Jerrold L. Allen, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 5, 1983, Ser. No. 558,249
Int. Cl.⁴ G06F 13/00, 12/00

U.S. Cl. 364-200

5 Claims



1. A data handling system comprising:

- a data processing means;
- a first cache memory means for storing data having even numbered addresses;
- a second cache memory means for storing data having odd numbered addresses;
- a data transmitting means connected between said data processing means and said first and second cache memory means, said data transmitting means for transmitting data having even numbered addresses between said data processing means and said first cache memory means and for transmitting data having odd numbered addresses between said data processing means and said second cache memory means;
- a first main memory means for storing data having even numbered addresses;

- a first data transfer bus means connected between said first cache memory means and said first main memory means for transferring data with even numbered addresses between said first cache memory means and said first main memory means;
- a first control means for controlling said second data transfer bus means;
- a second main memory means for storing data having odd numbered addresses;
- a second data transfer bus means connected between said second cache memory means and said second main memory means for transferring data with odd numbered addresses between said second cache memory means and said second main memory means;
- a second control means for controlling said second data transfer bus means such that the data transfers between said second cache memory means and said second main memory means are independent from the data transfers between said first memory means and said first main memory means.

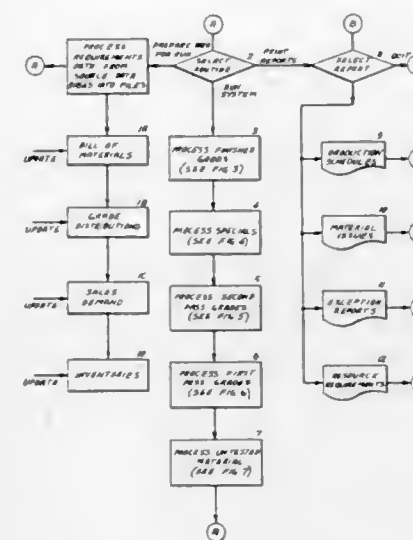
4,646,238 MATERIAL REQUIREMENTS PLANNING SYSTEM AND PROCEDURES FOR USE IN PROCESS INDUSTRIES

William H. Carlson, Jr., Milton, Mass., and Paul H. Shafer, San Jose, Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Oct. 26, 1984, Ser. No. 665,036
Int. Cl.⁴ G06F 15/00

U.S. Cl. 364-403

10 Claims



1. In combination in a system for controlling the flow of a plurality of products and components thereof through the assembly and testing procedures of a manufacturing operation comprising plural sequential process steps, including the development of an assembly and test schedule for the successive periods of a forward planning time frame, and wherein the products are arranged in families comprising different grades meeting respective performance specifications corresponding to different quality ratings, said system including data file means for storing information representing the inventory status of each product grade and the expected demand for each product grade during each of said periods, said system being of the type which is arranged to make calculations with respect to such stored information so as to determine the net requirements for each product grade during each of said successive time periods;

that improvement to such system wherein said data file means stores grade distribution information giving the co-product yield for each grade of each product family

from testing the common component of the product family; and said system further comprising means to calculate, based on said grade distribution information, the number of such common components to be tested for each of said periods in order to meet the net requirements projected for the co-product grades for those periods.

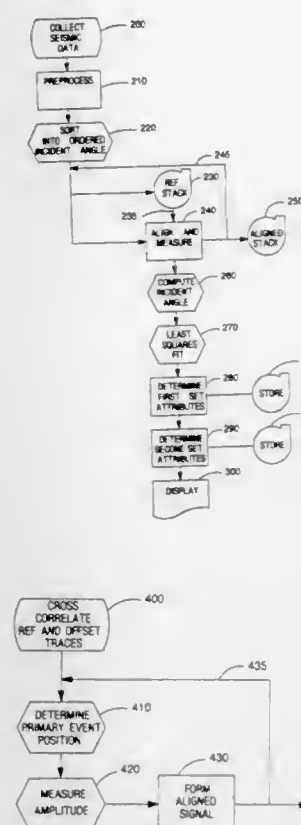
4,646,239 METHOD OF SEISMIC EXPLORATION INCLUDING PROCESSING AND DISPLAYING SEISMIC DATA TO QUANTITATIVELY DISTINGUISH AMONG SEISMIC EVENTS

John H. Bodine, Jonathan Bork, both of Tulsa; Richard M. Alford, Broken Arrow; James H. Wright, and Leon A. Thomson, both of Tulsa, all of Okla., assignors to Standard Oil Company, Chicago, Ill.

Filed Jul. 20, 1984, Ser. No. 632,780
Int. Cl.⁴ G01V 1/34, 1/36

U.S. Cl. 364-421

31 Claims

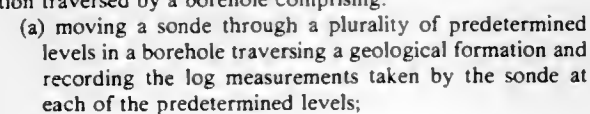


1. A method of seismic exploration including processing a plurality of seismic signals to quantitatively distinguish among seismic events, comprising the steps of: obtaining an incident angle ordered gather of seismic signals; obtaining a measure of the reflection coefficient as a function of incident angle for selected seismic events within the incident angle ordered gather of seismic signals; and developing sets of attributes descriptive of variations in the amplitude of the seismic signal as a function of incident angle from the reflection coefficient to quantitatively distinguish among seismic events.

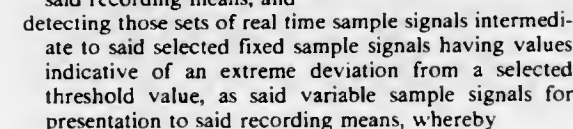
19. A method for aligning and obtaining a measure of seismic signal amplitude of seismic signals as a function of incident angle for selected seismic events comprising the steps of: sorting offset seismic signals into gathers of ordered incident angle; forming a reference seismic signal from the incident angle gather of offset seismic signals;

27. The method of claim 26 further including:
varying the intensity of the color assigned to each attribute
as a function of the magnitude of each attribute.

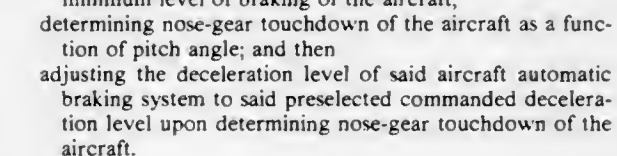
24 Claims



11 Claims

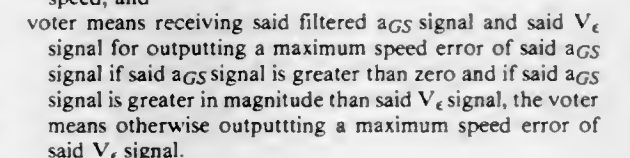


5 Claims



- means adapted to receive a signal θ representative of aircraft pitch attitude;
- means adapted to receive a signal ϕ representative of aircraft roll attitude;
- means adapted to receive signals a_x, a_y, a_z representative of aircraft longitudinal, lateral, and normal acceleration, respectively;
- means for producing a signal a_{GSL0} representative of the groundspeed rate of said aircraft due to the longitudinal acceleration of said aircraft, where:

$$a_{GS,N} = a_z \cos \phi \sin \theta;$$



77 Claims

means for determining the speed, position and direction of travel of said vehicle;

means responsive to said storing means and to said determining means for defining safe approach boundaries between said vehicle and said obstacles as a function of the location and physical characteristics of said obstacles and for dynamically altering the sizes and shapes of said safe approach boundary as a function of the speed, position and direction of travel of the vehicle with respect to the obstacle; and

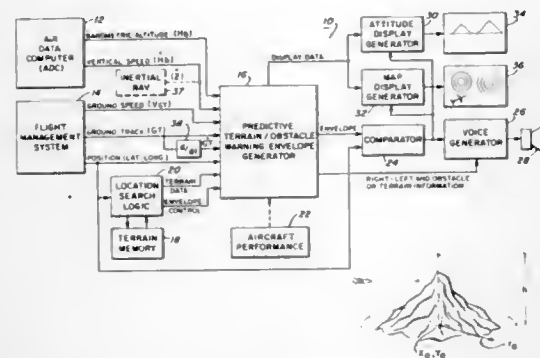
means responsive to said determining means and to said

defining means for generating a warning when the distance between the vehicle and the obstacle is less than the distance defined by the safe approach boundary.

48. A warning system for providing a warning to the operator of a vehicle a predetermined time prior to a projected impact with an obstacle, comprising:

means for storing data representative of the location and boundaries of the obstacles;

means for determining the velocity, direction of travel and position of the vehicle;

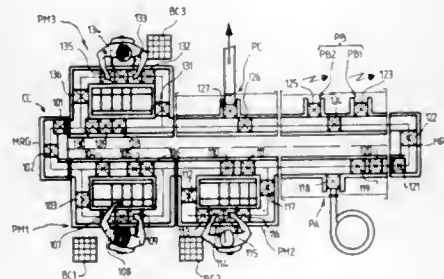


means responsive to said data storing means and to said determining means for defining warning boundaries between the vehicle and said obstacles, said warning boundaries being a function of the location and boundaries of said obstacles and the velocity of said vehicle said boundary defining means including means for dynamically altering the shapes of said warning boundaries as a function of the direction of travel of the vehicle with respect to the obstacle; and

means for generating a warning when one of said boundaries is penetrated.

4,646,245
MODULAR INSTALLATION FOR ASSEMBLING AND/OR MACHINING PARTS, WITH WORK STATIONS INCLUDING KEYBOARD-DISPLAY DEVICES
 Maurice Prodel, 153, rue de Verdun - Carlepont, and Jacques Prodel, 120, rue de Cuts - Carlepont, both of 60170 Ribecourt, France

Filed Jun. 18, 1984, Ser. No. 621,479
 Claims priority, application France, Jun. 17, 1983, 83 10059
 Int. Cl.⁴ G06F 15/46
 U.S. Cl. 364-468 13 Claims



1. A modular flexible manufacturing installation, comprising:

(a) a closed loop main conveyor, adapted to convey part-carrying pallets each comprising means for encoding modifiable data; and

(b) a plurality of work stations, each adapted to exchange pallets with said main conveyor, wherein said plurality of work stations comprise:

(i) a plurality of automatic work stations for performing an

automatic manufacturing task on the part or parts carried by each pallet; and

(ii) a plurality of manual work stations adapted to enable an operator to perform a manual manufacturing task on the part or parts carried by each pallet,

wherein some of said work stations have direct access to said main conveyor, wherein other of said work stations comprise an auxiliary conveyor disposed parallel to said main conveyor, wherein said other of said work stations comprises manual work stations,

wherein each work station comprises:

(i) read means for reading a pallet data code on said pallets before performing said manufacturing task on said pallet;

(ii) means for indicating that said manufacturing task is completed;

(iii) write means for changing said pallet data code after said manufacturing task has been performed; and

(iv) a local data processor unit comprising:

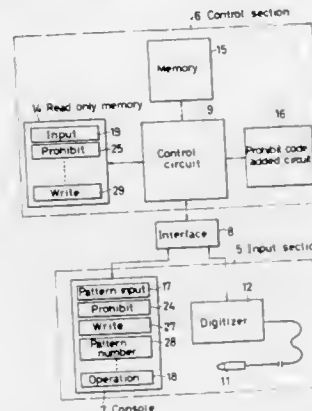
(a) an input/output interface connected to said read means, said indicating means, and said write means of said work station; and

(b) memory means containing a table of pairs of pallet data codes, each pair of codes comprising an admission code identifying a pallet authorized for processing in said work station, and a destination code to be given to said pallets after said manufacturing task at said work station has been completed for identifying the destination of said pallet to another work station,

wherein parts carried by said pallets are subjected to a predetermined sequence of manufacturing tasks before reaching an outlet station in response to the instructions contained in the tables of said memories of said local data processor units of said plurality of work stations.

4,646,246
SEWING MACHINE INPUT DEVICE HAVING SCALING PROHIBIT FUNCTION
 Tomoaki Kinoshita, Kunio Takano, and Osamu Tachikawa, all of Chofu, Japan, assignors to Tokyo Juki Industrial Co., Ltd., Chofu, Japan

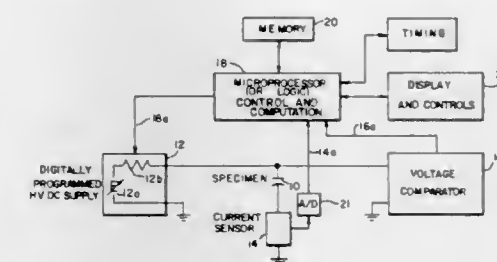
Filed Jul. 30, 1985, Ser. No. 760,611
 Claims priority, application Japan, Jul. 31, 1984, 59-160780
 Int. Cl.⁴ D05B 3/00; G06F 15/46
 U.S. Cl. 364-470 9 Claims



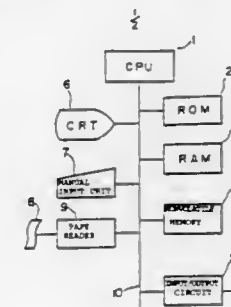
1. An input device for recording stitching patterns for an electronically controlled sewing machine, comprising inputting means for inputting the coordinates of a stitching pattern; electronic storage means for storing stitching pattern coordinate values control means capable of distinguishing between first and second operating modes; associating means responsive to said control means for associating a scaling prohibition signal with selected stitch pattern coordinates; and activating means for switching between said first and second operating

modes; wherein during said first operating mode, input coordinates are written by said control means to said storage means without ordering the association of a scaling prohibition signal with the input coordinates and wherein during said second operating mode, said control means orders the association of a scaling prohibition signal with the input coordinates prior to writing said coordinate values to said storage means.

4,646,248
INSULATION ANALYZER APPARATUS AND METHOD OF USE
 Peter H. Reynolds, Ambler, Pa., assignor to James G. Biddle Company, Blue Bell, Pa.
 PCT No. PCT/US81/01647, § 371 Date Jul. 28, 1983, § 102(e)
 Date Jul. 28, 1983, PCT Pub. No. WO83/02162, PCT Pub. Date Jun. 23, 1983
 PCT Filed Dec. 14, 1981, Ser. No. 527,551
 Int. Cl.⁴ G01R 19/00, 31/12
 U.S. Cl. 364-483 8 Claims



4,646,247
NUMERICAL CONTROL APPARATUS WITH GRAPHIC STORED STROKE LIMIT CHECK FUNCTION
 Toshiaki Otsuki, Hino, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
 PCT No. PCT/JP84/00316, § 371 Date Feb. 12, 1985, § 102(e)
 Date Feb. 12, 1985, PCT Pub. No. WO85/00063, PCT Pub. Date Jan. 3, 1985
 PCT Filed Jun. 16, 1984, Ser. No. 705,427
 Claims priority, application Japan, Jun. 16, 1984, 58-107624
 Int. Cl.⁴ G06F 15/46
 U.S. Cl. 364-474 7 Claims



1. A numerical control apparatus for use in a machine tool having a limited tool movable range defined by its own structure, only where a tool mounted thereon is movable, comprising:

a graphic display unit for displaying a locus of a tool;

means for inputting a stored stroke limit range representative of a limit of the limited tool movable range of said machine tool;

storage means for storing the stored stroke limit range entered by said input means and an NC machining program;

graphic processing means for reading out the stored stroke limit range and the NC machining program from said storage means, and for causing said graphic display unit to display the stored stroke limit range and to draw the locus of the tool; and

stored stroke limit determining means for determining whether or not the locus of the tool falls within the stored stroke limit range, for stopping the drawing of the locus of the tool and for causing an error message to be displayed on said graphic display unit when the locus of the tool falls outside the stored stroke limit range, so that the NC machining program is prevented from containing an instruction for moving the tool mounted on said machine tool outside of the limited tool movable range of said machine tool.

4,646,249
IMAGE PROCESSING SYSTEM
 Hiroshi Tanioka, Tokyo; Tadashi Yamakawa, Yokohama; Yutaka Inoue, Urawa; Masao Hosaka, Sagami-hara; Toshiaki Yagasaki, Hino; Nobuhiro Kasama, Yokohama, and Mitsuru Kurata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Jun. 11, 1984, Ser. No. 619,112
 Claims priority, application Japan, Jun. 16, 1983, 58-108489; Jul. 26, 1983, 58-136204; Jul. 26, 1983, 58-136205
 Int. Cl.⁴ G03G 15/00; G06F 15/66
 U.S. Cl. 364-518 36 Claims

1. An image processing system for forming copy images comprising:

a screen display on an original presser plate;

a first mode for performing image processing with respect to the screen display on an original presser plate;

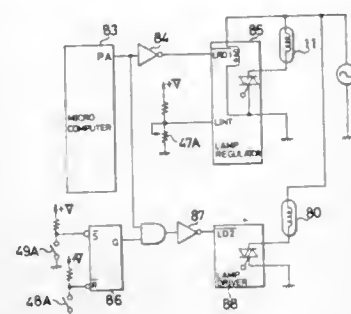
a second mode for performing image processing with respect to a hard copy original;

high gradient processing means for performing the image processing with a relatively high gradient;

low gradient processing means for performing the image processing with a relatively low gradient; and

switching means for switching said high gradient processing means and said low gradient processing means wherein

said switching means switches a developing bias voltage, whereby said low gradient processing means and said high



gradient processing means are switched by said switching means in accordance with the first and second modes.

4,646,250

DATA ENTRY SCREEN

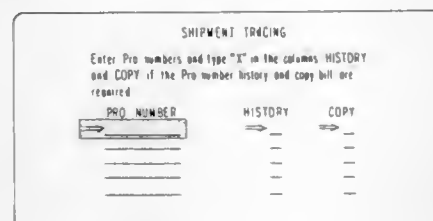
John F. Childress, Lewisville, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 18, 1984, Ser. No. 662,163

Int. Cl.⁴ G06F 3/14

U.S. Cl. 364—518

5 Claims



1. In an interactive data entry system wherein a user is presented with a data entry screen which includes a display of mandatory and optional data entry fields, the method for identifying to the user only those fields in which data must be entered, said method comprising the steps of initially displaying the formatted data entry screen to the user with only said mandatory data entry fields highlighted, checking the correctness of data entered by the user in both said mandatory and optional data entry fields, and if an error is detected in the data entered in either said mandatory or optional data entry fields, processing and redisplaying the incorrectly entered data with highlighting.

4,646,251

COMPUTER GRAPHICS, PARAMETRIC PATCH PARALLEL SUBDIVISION PROCESSOR

Alan B. Hayes; Russell A. Brown; Thomas W. Jensen, and Bruce K. Madsen, all of Salt Lake City, Utah, assignors to Evans & Sutherland Computer Corporation, Salt Lake City, Utah

Filed Oct. 3, 1985, Ser. No. 783,492

Int. Cl.⁴ G06F 15/66

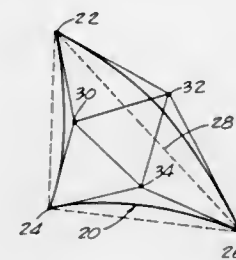
U.S. Cl. 364—518

19 Claims

1. A system for subdividing parametric patches defined by initial control points to attain control points for subpatches in accordance with established subdivision equations, comprising:

means for supplying signals representative of said initial control points for a patch to be subdivided; a plurality of processors for executing said subdivision equations connected to receive said signals representative of said initial control points for a patch to be subdivided; means for controlling said processors to selectively process

said signals representative of said initial control points to provide resultant signals representative of control points for subpatches; and



means for receiving said resultant signals from said processors.

4,646,252

COLOR FILM INSPECTION METHOD

Takaaki Terashita, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

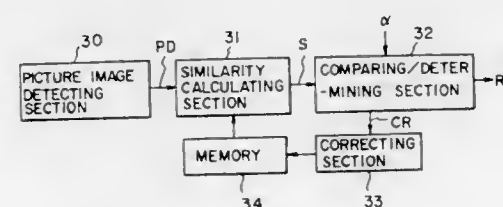
Filed Oct. 25, 1983, Ser. No. 545,196

Claims priority, application Japan, Nov. 11, 1982, 57-198230

Int. Cl.⁴ G02B 27/02; G06K 9/68; G01J 3/46

U.S. Cl. 364—525

12 Claims



1. A color film inspection method wherein picture images on an elongated or disk type color film are displayed on a displayed unit at the time of printing so that the color and density thereof are evaluated for correction, which comprises the steps of:

comparing image densities of two picture images of two frames of said color film; determining a degree of similarity of said two picture images in accordance with said comparison; classifying said picture images into a plurality of groups in accordance with the determined degree of similarity; automatically displaying only a limited number of images, said limited number of images corresponding to representative images from each of said groups which are separated in accordance with their similarity; estimating color/density of a displayed picture image by observing it; and correcting a picture image corresponding to said displayed picture image according to said estimation.

4,646,253

METHOD FOR IMAGING ELECTRICAL BARRIER LAYERS SUCH AS PN-JUNCTIONS IN SEMICONDUCTORS BY MEANS OF PROCESSING PARTICLE-BEAM-INDUCED SIGNALS IN A SCANNING CORPUSCULAR MICROSCOPE

Hans Rehme, Zorneding, and Helmut Schink, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

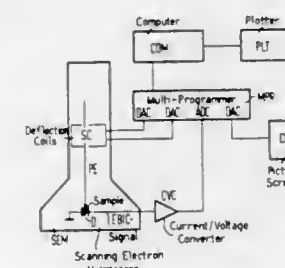
Filed Apr. 12, 1984, Ser. No. 599,713

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313597

Int. Cl.⁴ H01J 37/26; G01N 23/22

U.S. Cl. 364—527

7 Claims



1. In a method for imaging electrical barrier regions including pn-junctions in semiconductors by means of processing particle beam induced signals in a scanning corpuscular microscope, the improvement comprising the steps of:

determining a point P(x,y) estimated to be a center of curvature of a first portion of a profile of the barrier region and then scanning along a first line between said point P(x,y) and a shortest path from said point P(x,y) and a point H lying on the electrical barrier region profile to be located so that particle beam induced signals are generated along this line scan;

selecting a second point P(x+Δx, y+Δy) in close proximity to the point P(x,y) and scanning along a second line containing said second point and a shortest path from said second point to a point on the barrier region profile at least in a vicinity of point H;

comparing the particle beam induced signals resulting along the second line to the particle beam induced signals generated along the first scanning line to determine whether the selected point P(x,y) is substantially a center of curvature for the portion of the barrier region being determined; and analyzing other portions of the barrier region by repeating the foregoing steps.

4,646,254

NOISE THRESHOLD ESTIMATING METHOD FOR MULTICHANNEL SIGNAL PROCESSING

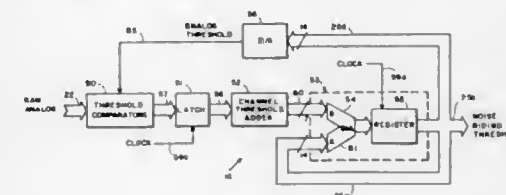
Michael O'Connor, Cupertino; Randall L. Jackson, Fremont, and David P. Marple, Palo Alto, all of Calif., assignors to GTE Government Systems Corporation, Stamford, Conn.

Continuation of Ser. No. 659,056, Oct. 9, 1984, abandoned. This application Aug. 4, 1986, Ser. No. 892,453

Int. Cl.⁴ H04B 15/00; G06F 15/20; G06G 7/19

U.S. Cl. 364—574

4 Claims



1. A signal processing method for determining a noise

threshold signal for a plurality of N analog channels such that the signal level of X analog channels is above the level of the noise threshold signal and the signal level of N-X analog channels is below the level of the noise threshold signal, said processing method comprising the steps of:

- (1) comparing the signal level of each N analog channels with the signal level of an applied feedback signal and providing at separate outputs during selected intervals of time: a first state binary signal if the signal level of the corresponding analog channel is above the signal level of the feedback signal, and a second state binary signal if the signal level of the corresponding analog channel is below the signal level of the feedback signal;
- (2) adding the number of first state binary signals during each selected interval of time and scaling said added number during each selected interval by a predetermined scaling function to produce a scaled binary signal;
- (3) generating a digital noise threshold signal during each selected interval of time by adding said scaled binary signal to the digital noise threshold signal from the previous selected interval of time;
- (4) converting said digital noise threshold signal into a corresponding analog noise threshold signal and feeding back said analog noise threshold signal (which is said applied feedback signal) for comparison with each of said N channels during the next selected time interval; and,
- (5) repeating steps (1)-(4) so that the signal level X analog channels is above the noise threshold level and the signal level of N-X analog channels is below the noise threshold level.

4,646,255

GYRO SIMULATOR

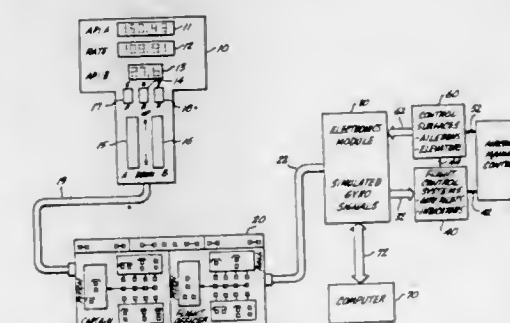
Philip C. Ebert, Lynnwood, and Lawrence E. Holliday, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 2, 1983, Ser. No. 490,655

Int. Cl.⁴ G06F 15/06

U.S. Cl. 364—578

21 Claims



1. For use in testing an aircraft having control surfaces deployable in response to manual control column and automatic flight control system commands, a gyro simulator for simulating the pitch, roll and azimuth signals normally produced by the aircraft's onboard gyro system, the simulator comprising:

command input means selectively operable in a manual or a dynamic mode; said command input means operable in the manual mode to produce command signals corresponding to a manually controlled change of a selected one of the simulated pitch, roll and azimuth signals; said command input means operable in the dynamic mode to permit controlled changes in the simulated pitch, roll and azimuth signals as a function of aircraft control column and flight control system commands; command responsive means including input means for inputting;

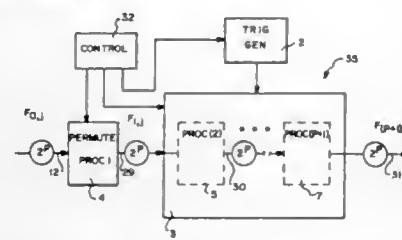
(a) signals representative of the status of the aircraft's control surfaces;
(b) a command airspeed value; and
(c) the command input means produced command signals; memory means for storing the equations of flight of the aircraft under test, and logic means responsive to said input means and said memory means for producing said simulated pitch, roll and azimuth signals.

4,646,256
COMPUTER AND METHOD FOR THE DISCRETE BRACEWELL TRANSFORM
Ronald N. Bracewell, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Mar. 19, 1984, Ser. No. 590,885
Int. Cl.⁴ G06F 15/31

U.S. Cl. 364—725

43 Claims



1. A method of performing a discrete transform on an input sequence of N input data values, $F_{0,j}$, where N is equal to 2^P , where P is a positive integer and where j has values from 0 to N-1, comprising,

permuting in permuting means the input sequence, $F_{0,j}$, with a bisecting permutation to form a permuted sequence, $F_{1,j}$, processing in processing means said permuted sequence in P subsequent stages s where s has values from 2 to P+1, where the outputs from one stage form the inputs for the next stage and where each stage calculates N values of $F_{s,j}$ as a function of direct values from the previous s-1 stage, as a function of values from the previous s-1 stage multiplied by cosine factors to form cosine terms, and as a function of values from the previous s-1 stage multiplied by sine factors to form sine terms whereby the transformed data values, $F_{P+1,j}$, are provided from the P+1 stage.

4,646,257
DIGITAL MULTIPLICATION CIRCUIT FOR USE IN A MICROPROCESSOR
Daniel L. Essig; Luat Q. Pham; Joe F. Sexton, all of Houston, Tex., and Graham S. Tubbs, Tempe, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 3, 1983, Ser. No. 538,634
Int. Cl.⁴ G06F 7/52

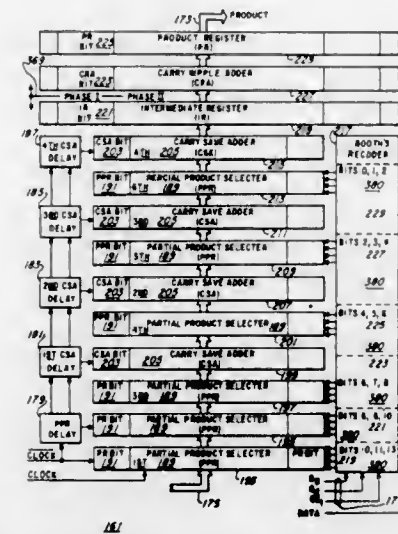
U.S. Cl. 364—760

14 Claims

1. A digital multiplication circuit comprising:
a Booth recoder means for recoding a multiplier into N Booth operation sets where N is a positive integer that equals one half the number of bits in the multiplier;
a plurality of N partial product selector means having inputs and outputs connected in cascade arrangement from output to input with the Nth output being an intermediate output of the digital multiplication circuit, the cascade arrangement being N multiplicand sets of M bits in length and each member of the plurality of N partial product selector means being connected to a member of the N operation sets for implementing the recoded Booth operation set on a multiplicand set and where M is a positive integer;

summation means for summing the contents of the plurality of N partial product selector means the summation means

including a second plurality of summing means with predetermined members of the second plurality of summing means being located between predetermined members of the plurality of N partial product selector means; and domino means, operatively connected to the plurality of partial product selector means, for generating a plurality of evaluation pulses with each single evaluation pulse of

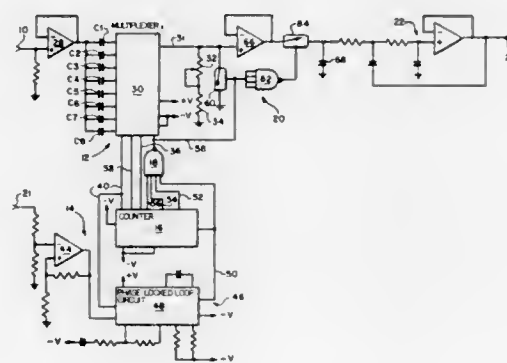


the plurality of evaluation pulses being generated to represent a worse case signal propagation time delay through a predetermined partial product selector means and connected to evaluate the predetermined member of the plurality of partial product selector means to provide outputs therefrom of each single partial product selector means when evaluated.

4,646,258
SAMPLED N-PATH FILTER
Saul Miodownik, Bronx, N.Y., assignor to Memorial Hospital for Cancer and Allied Diseases, New York, N.Y.
Continuation of Ser. No. 454,774, Dec. 30, 1982, abandoned.
This application Oct. 4, 1985, Ser. No. 785,095
Int. Cl.⁴ H03H 19/00

U.S. Cl. 364—825

13 Claims



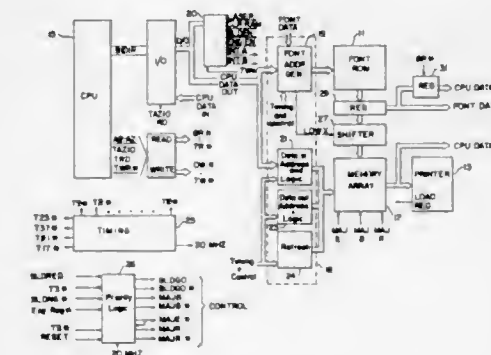
1. A sampled N-path filter, comprising:
(a) an N-path filter having N filter sections and means for connecting each filter section periodically into an input signal path through the N-path filter; and
(b) sampling means connected to the input signal path through the N-path filter during only a portion of each period each filter section of the N-path filter is connected into the input signal path through the N-path filter for

sampling any signal then on the input signal path through the N-path filter.

9. A sampled N-path filter, comprising:
(a) means for generating clock pulses;
(b) a coder having a recycling binary counter producing at discrete ports of the counter binary signals corresponding to the number of clock pulses;
(c) a decoder gate means connected to the counter ports corresponding only to some, lower order binary count signals for producing a sampling signal for an interval after each full zero count of the lower order binary count signals;
(d) an N-path filter having an input port for receiving an input signal to be filtered, N-filter sections, and switching means responsive to sufficient higher order binary signals at corresponding ports of the counter to switch successively each filter section into an input signal path through the filter; and
(e) a sample and hold network having means for holding the successive filtered input signals from each path connected through the N-path filter and switch means responsive to the sampling signal for connecting the signal holding means to the N-path filter signal paths.
10. A sampled N-path filter, comprising:
(a) an input port for receiving a signal to be filtered;
(b) a number N of capacitors connected at one side thereof in parallel to the input port;
(c) a resistor grounded on one side thereof;
(d) a multiplexer connected to the other sides of the capacitors and the resistor for successively connecting each capacitor to the resistor;
(e) means for generating clock pulses;
(f) a recycling binary counter receiving the clock pulses and having discrete output lines for indicating on a first set of the output lines lower order counts of the clock pulses and on a second set, higher order counts of the clock pulses, the second set of output lines being connected to the multiplexer for triggering its successive connection of the capacitors to the resistor;
(g) a gate connected to the first set of output lines and responsive to each full zero count thereon for generating a sampling signal; and
(h) a sample and hold-network means responsive to each sampling signal for signal-holding connection to the other side of the resistor.

4,646,259
STRIP MAP MEMORY CONTROLLER
Andrew J. Lincoln, Concord; Robert Osborn, Arlington, both of Mass., and Geoffrey A. Dreher, Nashua, N.H., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 14, 1983, Ser. No. 551,141
Int. Cl.⁴ G06F 3/12, 12/00, 15/00
U.S. Cl. 364—900

13 Claims



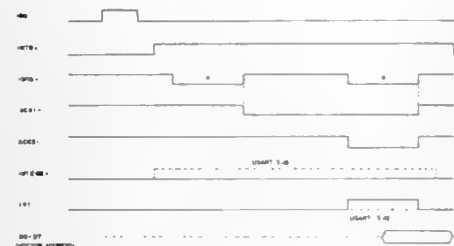
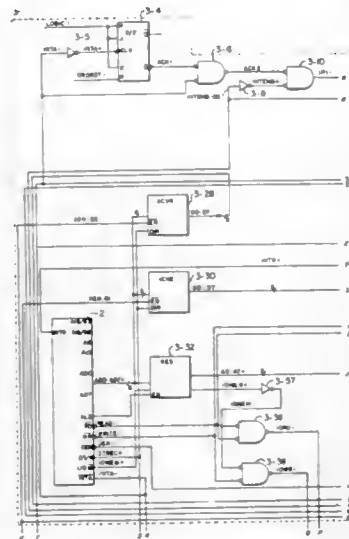
1. Apparatus for transferring character data to a printer

means in response to a load request from the printer means comprising:

- a font memory means for storing character data and character parameters including character height, character width and character address and for outputting said data and parameters in response to address control signals;
a strip map memory means for receiving character data from said font memory means in response to write address signals, and a major build signal for storing said data in a plurality of scan lines and for reading out said data in response to read address signals and a major engine signal;
a font address counter means connected for being loaded with an input from said font memory means in response to a first load control signal and for addressing said font memory means;
a character height counter means connected for being loaded with a character height count from said font memory means in response to a second load control signal, and for decrementing said count in response to a decrement control signal;
first logic means connected to said character height counter means for generating a build-over control signal in response to a selected count of said height counter means and for generating a build request signal in response to a build enable signal;
a character width counter means connected for being loaded with a character width from said font memory means in response to a third load control signal and for enabling receiving of a new character width from said font memory means in response to said decrement control signal;
detector means receiving inputs from said character width counter means for detecting a count indicative of the completion of writing character data comprising a single scan line into said strip map memory means and for producing an increment control signal and said decrement control signal;
a Y origin register means for receiving a Y origin write address;
an X origin register means for receiving an X origin write address;
a Y counter means connected to receive said Y origin write address and for supplying Y write addresses to said strip map memory means;
an X counter means connected to receive said X origin write address from said X origin register and for supplying X write addresses to said strip map memory means in response to said decrement control signal;
priority logic means for producing a build-go signal, said major engine signal and said major build signal in response to said build request signal and an engine request signal, and for inhibiting the production of a major build signal if an engine request signal is present;
second logic means for producing said first, second and third load control signals in response to said build-go signal and for enabling loading of the character height to said height counter means, the character width to said width counter means and the character data address to said font address counter means;
an X read address counter means for providing read address signals corresponding to the address of a selected location to be read in a row of said strip map memory means;
Y read address counter means for providing read address signals corresponding to the address of a selected scan line in said strip map memory means;
means producing a second increment control signal for incrementing said Y read address counter means after every scan line and for resetting said X read address counter means;
third logic means for generating said engine request signal in response to an engine enable signal and a said load request from said printer means;
means for generating an interrupt signal in response to said second increment control signal and said build-over control signal; and

central processor means for reading said character parameters, generating and supplying said Y origin address to said Y origin register, a said X origin address to said X origin register, and for selectively generating said build enable signal for supply to said first logic means and said engine enable signal for supply to said third logic means in response to said interrupt signal, thereby respectively activating (1) the writing of a character to said strip map memory means without further intervention of said processor means and (2) the reading of a character out of said strip map memory means to said printer means without further intervention of said processor means.

4,646,260
DATA COLLECTION TERMINAL HIGH SPEED COMMUNICATION LINK INTERRUPT LOGIC
 Dennis W. Chasse, Nashua, N.H.; David R. Bourgeois, Framingham, and Todd R. Comins, Chelmsford, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
 Filed Oct. 3, 1983, Ser. No. 538,697
 Int. Cl.⁴ G06F 13/14, 15/00
 U.S. Cl. 364-900 **14 Claims**



1. A data collection terminal comprises:
 a microprocessor means;
 a plurality of first devices and at least one second device, each of said plurality of first devices and said at least one second device being coupled to a respective one of a plurality of interrupt request signal lines, one of said plurality of first devices and said at least one second device generating one of a plurality of interrupt request signals on said one of said plurality of interrupt request signal lines when said one of said plurality of first devices and said at least one second device requires said microprocessor means to process an interrupt;
 interrupt controller means coupled to said each of said plurality of interrupt signal lines for receiving said one of said

plurality of interrupt request signals and generating a microprocessor interrupt signal, said each of said plurality of interrupt signal lines being coupled to said interrupt controller means establishing a predetermined priority in accordance with a terminal of said interrupt controller means to which said each of said plurality of interrupt signal lines is coupled;

said microprocessor means being coupled to said interrupt controller means for receiving said microprocessor interrupt signal and generating a first and a second occurrence of an interrupt acknowledge signal when said microprocessor means is ready to process the interrupt;
 said interrupt controller means being coupled to said microprocessor means to receive said interrupt acknowledge signal for generating a plurality of cascade signals on first occurrence of said interrupt acknowledge signal when said one of said plurality of first devices and said at least one second device generates said one of said plurality of interrupt request signals, said interrupt controller means generating a first plurality of vector address signals on second occurrence of said interrupt acknowledge signal when said one of said plurality of first devices generated said interrupt request signal;

said one of said at least one second device including selection means for generating an enable signal thereby enabling said one of said at least one second device to generate said one of said plurality of interrupt request signals;

said selection means being coupled to said interrupt controller means to receive a first plurality of said plurality of cascade signals when said one of said at least one second device generated said interrupt request signal and on receipt thereof to address said one of said at least one second device and to generate said enable signal on said second occurrence of said interrupt acknowledge signal, said one of said at least one second device generating a second plurality of vector address signals on receipt of said enable signal and said second occurrence of said interrupt acknowledge signal;

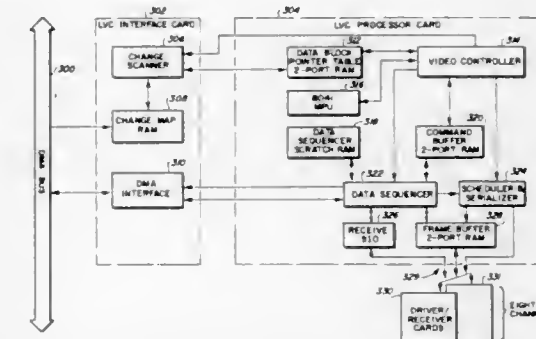
said microprocessor means receiving said first vector address signals from said interrupt controller means when said one of said plurality of first devices generated said interrupt request signal and said second vector address signals from said one of said second devices when said one of said at least one second device generated said interrupt request signal for branching to a microprogram to process the interrupt.

4,646,261
LOCAL VIDEO CONTROLLER WITH VIDEO MEMORY UPDATE DETECTION SCANNER
 Ed C. Ng, San Jose, Calif., assignor to Motorola Computer Systems, Inc., Cupertino, Calif.
 Filed Sep. 27, 1983, Ser. No. 536,912
 Int. Cl.⁴ G06F 3/153; G09G 1/14

U.S. Cl. 364-900 **2 Claims**

1. A data processing system comprising:
 a central processor;
 a central memory for storing information in the form of instructions and data, said memory comprising a plurality of change detect blocks;
 a communications controller;
 bus means coupled to said processor, memory, and controller for conducting address, data, and control information;
 a terminal coupled to said bus means and communicating with said central processor and central memory through said communications controller, said terminal comprising a video display which is segmented into at least two independent display segments, each segment having at least one change detect block assigned to it; and
 change detect circuitry coupled to said communications controller for detecting any change in the data stored in a change detect block assigned to said terminal, and for

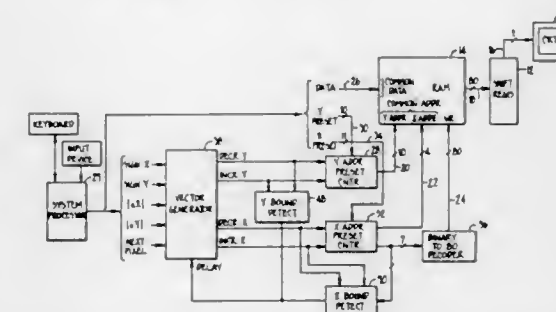
transmitting the changed data to said terminal, said change detect circuitry comprising:
 memory means comprising a change map, said change map comprising a plurality of memory storage locations, one for each of said change detect blocks;
 address monitoring means for monitoring the address corresponding to any memory write operation to one of said



change detect blocks of said central memory corresponding to one of said display segments of said terminal and for causing a status indication to be stored in the one of said memory storage locations corresponding to said one change detect block; and
 means responsive to said status indication for transmitting to said one display segment of said terminal the data in said one change detect block.

4,646,262
FEEDBACK VECTOR GENERATOR FOR STORAGE OF DATA AT A SELECTABLE RATE
 David M. Smith, Saratoga, Calif., assignor to Ramtek Corporation, Santa Clara, Calif.
 Continuation of Ser. No. 515,946, Jul. 20, 1983, abandoned. This application Jan. 23, 1986, Ser. No. 821,742
 Int. Cl.⁴ G06F 9/20

U.S. Cl. 364-900 **8 Claims**



1. An apparatus for high speed storage of data at designated locations within an array of locations in memory comprising memory means having a plurality of storage sites for storing the data, wherein each storage site corresponds to a different one of the locations in the array of locations, and wherein the storage sites are addressable in blocks of storage sites, each block having a unique address, and further wherein each storage site within an addressed block of storage sites can be individually enabled to store data when that block of storage sites is being addressed, wherein the memory means responds at a memory write access rate to an addressing of a block of storage sites for writing data therein, and responds at a write enable rate to an enabling of a storage site for writing data therein, the

write enable rate being greater than the memory write access rate;
 address generator means coupled to the memory means for addressing blocks of storage sites which contain the designated locations and for enabling storage sites within the addressed blocks which correspond to the designated locations, wherein the address generator means are controllable to enable the storage sites at a rate of operation corresponding to either the memory write access rate or the write enable rate; and
 control means coupled to the address generator means for controlling the rate of operation of the address generator means, wherein the control means controls the address generator means to operate at the memory write access rate for a predetermined period of time whenever the address generator means addresses a new block of storage sites, and controls the address generator means to operate at the write enable rate whenever the address generator means enables storage sites within a block of storage sites which is currently being addressed, so that the data are stored in the memory means at the highest rate at which the memory means is capable of responding.

4,646,263
READING AND/OR WRITING APPARATUS INCLUDING A REMOVABLE MEMORY-CONTAINING CASSETTE
 Georges Le Mouellic, Sevres; Jean-Paul Brun, Argenteuil, and Jean C. Gidrol, Fourqueux, all of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, Paris, France

Filed Jul. 5, 1984, Ser. No. 627,975
 Claims priority, application France, Jul. 7, 1983, 83 11356
 Int. Cl.⁴ G11C 5/04, 19/08

U.S. Cl. 365-1 **9 Claims**

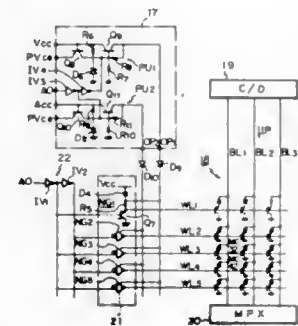


1. System constituted of an apparatus, particularly for reading and/or writing, and at least one removable cassette, particularly containing a memory, for such an apparatus, said apparatus comprising a housing for at least partially receiving the cassette and two electrical connector elements, including a plurality of cooperating contacts, provided respectively on the apparatus and on the cassette and being of pin and socket type respectively, said system comprising: (a) guide and drive means for guiding and driving the cassette in said housing, said guide and drive means comprising a trough provided on one surface of the cassette, said trough comprising a first, rectangular trough portion extending in a direction of movement of the cassette and a second trough portion opening into said rectangular portion and extending in the direction at an angle with respect to the latter, said guide means further comprising a guide member and a drive member, projecting inside the housing, for cooperating respectively with said first and second

trough portions, said guide and drive means being adapted to occupy at least a first, guide position in which the cassette can, without risk of jamming against the walls of the housing, be inserted partially into the housing or extracted from said housing when the cassette is only already partially withdrawn therefrom and in which the two connector elements are not then respectively again or any longer in cooperation, and a second, locking position in which the cassette is inserted and locked in the housing in an operational position with the two connector elements coupled to one another, and (b) a single actuating lever supporting said drive member and including one end which is actuatable from outside the apparatus, said lever extending partly into the housing and being movable in rotation, in a plane parallel to the surface of the housing bearing the said drive member and said guide member, around a fixed axis of rotation to cause the guide and drive means to move between the first and the second positions thereof, said drive member being affixed to said actuating lever so as to possess a component of movement at least in the direction of rectilinear movement of the cassette, due to which component of movement the movement of the cassette is effected in a rectilinear path such that the two connector elements are separated or brought together while being held in a definite relative position, parallel to one another without the possibility of being mutually skewed.

4,646,264
PROGRAMMABLE READ-ONLY MEMORY DEVICE
Yasuro Matsuzaki, Tama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

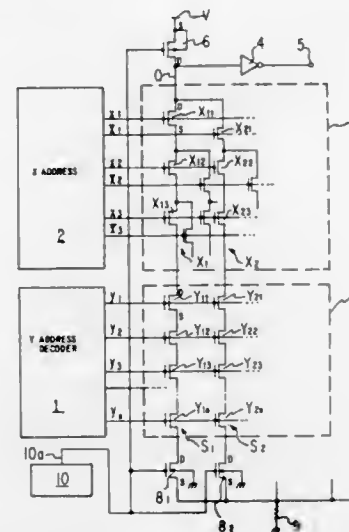
Filed Jun. 20, 1983, Ser. No. 505,957
Claims priority, application Japan, Jun. 28, 1982, 57-109917
Int. Cl.⁴ G11C 11/40
U.S. Cl. 365—104 11 Claims



1. A programmable read-only memory device operatively connected to receive a word line selecting address signal, comprising:
word lines;
bit lines intersecting said word lines;
memory cells operatively connected at the intersections of said word lines and said bit lines, the writing of information into one of said memory cells being effected by selecting corresponding ones of said word lines and bit lines connected to said one of said memory cells into which information is to be written by rendering the potential of said corresponding one of said word lines low, and by applying a write-in current to said corresponding one of said bit lines; and
a pull-up circuit, operatively connected to said word lines and operatively connected to receive the word line selecting address signal, for pulling up the potential of non-selected word lines, and applying a high voltage to every other one of said non-selected word lines, said high voltage being equal to or higher than the voltage applied to a selected bit line when a write-in operation is effected.

4,646,265
SERIAL ROM DEVICES
Takashi Takamizawa, Ichikawa, and Motomu Hashizume, Tokyo, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 28, 1985, Ser. No. 695,776
Claims priority, application Japan, Feb. 22, 1984, 59-32231
Int. Cl.⁴ G11C 17/00
U.S. Cl. 365—104 3 Claims

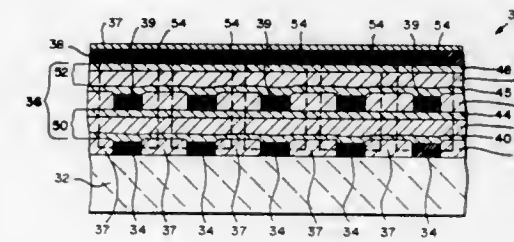


2. A serial read-only-memory device, comprising:
(a) a matrix of memory cells (S) wherein each memory cell unit (S1, S2) includes a plurality of serially-connected FET's (Y11, Y12) which store information in a manner of logic "1" or "0";
(b) X and Y address decoder means (1, 2, 3) coupled to said matrix of memory cells, for selecting a memory cell in said matrix;
(c) a first switching means (6) connected between said matrix of memory cells and an output line (5) and operative to have the matrix of memory cells connected to or disconnected from the output line (5) in response to a control signal phi;
(d) a second switching means (8) connected between said matrix of memory cells and ground and operative to have the FET's forming the respective final-stage memory cells of the individual memory cell unit (S1, S2) connected to or disconnected from ground in response to said control signal phi; and
(e) means for supplying said control signal phi to said first and second switching means, whereby a portion of said matrix containing said selected memory cell is precharged and remaining portion is not precharged.

4,646,266
PROGRAMMABLE SEMICONDUCTOR STRUCTURES AND METHODS FOR USING THE SAME
Stanford R. Ovshinsky, Bloomfield Hills; Robert R. Johnson, Franklin; Vincent D. Cannella, Birmingham, and Zvi Yaniv, Southfield, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 28, 1984, Ser. No. 655,961
Int. Cl.⁴ G11C 17/00
U.S. Cl. 365—105 86 Claims
1. A solid state semiconductor device having at least two terminals and a plurality of layers of semiconductor material to provide a plurality of interacting semiconductor functions, said device being programmable in a first condition in which the electrical impedance between said two terminals is relatively high in both directions, a second condition in which the electrical

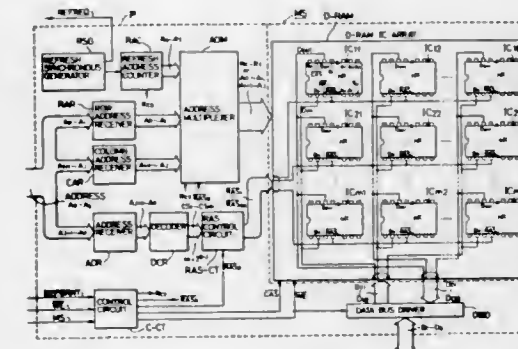
cal impedance between said two terminals is relatively high in one direction and relatively low in the opposite direction, a third condition in which the electrical impedance between said



two terminals is relatively high in said opposite direction and relatively low in said one direction, and a fourth condition in which the electrical impedance between said two terminals is relatively low in both said directions.

4,646,267
SEMICONDUCTOR MEMORY
Katsuhiro Shimohigashi, Murashimurayama; Hiroo Masuda, Kodaira; Kunihiko Ikuzaki, Tokyo, and Hiroshi Kawamoto, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 756,707, Jul. 19, 1985, Pat. No. 4,592,022, which is a division of Ser. No. 638,982, Aug. 8, 1984, Pat. No. 4,539,658, which is a division of Ser. No. 377,958, May 13, 1982, Pat. No. 4,472,792. This application Apr. 22, 1986, Ser. No. 854,502
Claims priority, application Japan, May 13, 1981, 56-70733
Int. Cl.⁴ G11C 11/40, 13/00
U.S. Cl. 365—189 19 Claims

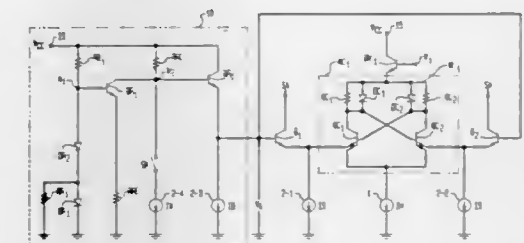


1. A semiconductor memory comprising:
at least one pair of data lines;
word lines arranged so as to traverse said data lines;
memory cells coupled in association with said data and word lines, each of said memory cells having a series connection of an MISFET and a capacitor;
a sense amplifier for amplifying a difference between signal levels appearing on said pair of data lines when the stored signal of the memory cell is read out, said sense amplifier comprising first and second circuits;
said first circuit including a pair of cross-coupled N-channel MISFETs coupled to said pair of data lines for bringing about a differential amplification operation, and an N-channel MISFET coupled on the source side of said cross-coupled N-channel MISFETs for controlling the differential amplification operation of said cross-coupled N-channel MISFETs;
said second circuit including a pair of cross-coupled P-channel MISFETs coupled to said pair of data lines for bringing about a differential amplification operation, and a P-channel MISFET coupled on the source side of said

cross-coupled P-channel MISFETs for controlling the differential amplification operation of said cross-coupled P-channel MISFETs; and
means for supplying first and second timing signals to the gates of said controlling N-channel and P-channel MISFETs, respectively so that the differential amplification operation of said cross-coupled N-channel MISFETs is started at a time different from the time when the differential amplification operation of said cross-coupled P-channel MISFETs is started.

4,646,268
SEMICONDUCTOR BIPOLAR MEMORY DEVICE OPERATING IN HIGH SPEED
Kazuo Kuno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1984, Ser. No. 661,206
Claims priority, application Japan, Oct. 13, 1983, 58-191471
Int. Cl.⁴ G11C 7/00
U.S. Cl. 365—179 8 Claims

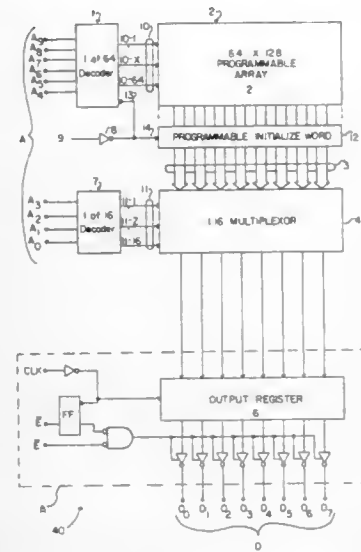


6. A memory device comprising a plurality of memory cells each including first and second transistors forming a flip-flop circuit, a first parallel circuit of a first resistor and a first diode provided as a load of said first transistor, and a second parallel circuit of a second resistor and a second diode provided as a load of said second transistor, a third transistor having an emitter connected to an emitter of said first transistor to form an emitter-coupled logic, a fourth transistor having an emitter connected to an emitter of said second transistor to form an emitter-coupled logic, and a read/write control circuit including a voltage producing section producing a voltage supplied to said third and fourth transistors, said voltage producing section including a fifth transistor of an emitter-follower type supplying said voltage to said third and fourth transistors with a low output impedance, said voltage taking an intermediate level between potentials appearing at bases of said first and second transistors, whereby one of said third and fourth transistors is turned ON in response to data stored in a selected memory cell.

4,646,269
MULTIPLE PROGRAMMABLE INITIALIZE WORDS IN A PROGRAMMABLE READ ONLY MEMORY
Sing Y. Wong, Sunnyvale, and Johnny Chen, Milpitas, both of Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Sep. 18, 1984, Ser. No. 652,352
Int. Cl.⁴ G11C 8/00
U.S. Cl. 365—230 4 Claims
1. A memory circuit having a plurality of N address input terminals, where N is a positive integer, for receiving address input signals, having M data output terminals, where M is a positive integer, for providing M bit data output words, and having K initialize input terminals, where K is a positive integer, comprising:
means for storing X M-bit data words, where X is a positive integer, wherein said means for storing provides an M-bit data word on said data output terminals in response to said address input signals; and

means for providing L initialize data output words where L is an integer greater than one, said means having K initialize input leads each connected to an associated one of said



initialize input terminals, wherein said means provides one of said L initialize output words on said data output terminals in response to signals received on said initialize input leads.

4,646,270

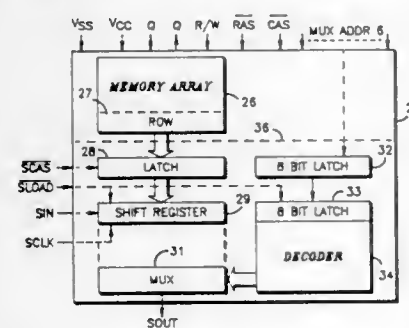
VIDEO GRAPHIC DYNAMIC RAM

Donald J. Voss, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1983, Ser. No. 532,330
Int. Cl.⁴ G11C 13/00

U.S. Cl. 365—230

14 Claims



1. A monolithic memory capable of providing output data at a high speed, comprising: a memory array; a latch capable of latching a plurality of data bits, the latch being coupled to the memory array for temporarily storing data from the memory array; a shift register capable of storing a plurality of data bits, the shift register being coupled to the latch for receiving the data temporarily stored in the latch; and a multiplexer coupled to the shift register for selecting a predetermined data bit from the shift register and for sequentially coupling the data out of the shift register to an output pin of the memory commencing with the predetermined data bit while data is simultaneously written/read into or out of the memory array.

4,646,271
CONTENT ADDRESSABLE MEMORY HAVING DUAL ACCESS MODES

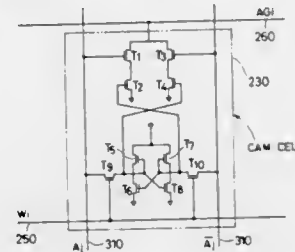
Kunio Uchiyama, Kokubunji, and Tadahiko Nishimukai, Sagami-hara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,611

Claims priority, application Japan, Dec. 23, 1983, 58-242012
Int. Cl.⁴ G11C 13/00

U.S. Cl. 365—49

4 Claims



1. A content addressable memory device comprising:
a content addressable memory array having word coincidence lines, word selection lines and data lines;
a random access memory array having word selection lines and data lines; and
means responsive to a control signal for selecting either the word coincidence lines or the word selection lines of said content addressable memory array and for connecting the selected lines to the word selection lines of said random access memory array.

4,646,272

DATA I/O CIRCUIT WITH HIGHER INTEGRATION DENSITY FOR DRAM

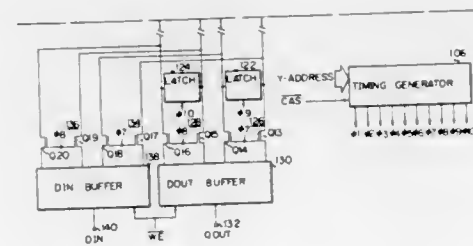
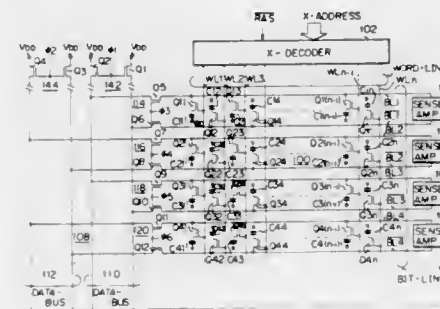
Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1985, Ser. No. 706,944

Claims priority, application Japan, Mar. 2, 1984, 59-38758
Int. Cl.⁴ G11C 7/00, 11/24

U.S. Cl. 365—233

5 Claims



1. A data input/output circuit for serially accessing N-bit data (N ≥ 4) for a DRAM circuit, comprising:

- a first data bus composed of a pair of conductors for transferring data;
- a second data bus composed of a pair of conductors for transferring data;
- a first precharge circuit for charging said first data bus in response to a first timing control signal;
- a second precharge circuit for charging said second data bus in response to a second timing control signal;
- a first group of N/2 switches independently controllable by a group of third timing control signals, respectively, said switches of the first group being coupled between respective bit lines and said first data bus for transferring 1-bit information on said bit lines to said first data bus in response to the respective third timing control signals;
- a second group of N/2 switches independently controllable by a group of fourth timing control signals, respectively, said switches of the second group being coupled between the respective bit lines and said second data bus for transferring 1-bit information on said bit lines to said first data bus in response to the fourth timing control signals;
- a first latch circuit for latching and amplifying the information on said first data bus under the control of a fifth timing control signal;
- a second latch circuit for latching and amplifying the information on said second data bus under the control of a sixth timing control signal;
- third switch means for selectively issuing output information of said first latch circuit under the control of a seventh timing control signal;
- fourth switch means for selectively issuing output information of said first latch circuit under the control of an eighth timing control signal;
- a data output buffer for converting the output information from said third or fourth switch means into 1-bit information and issuing the same under the control of one logic level of an enable signal; and
- a timing signal generator circuit for generating said first, second, fifth, sixth, seventh, eighth timing control signals and said groups of third and fourth timing control signals.

4,646,273

METHOD AND APPARATUS FOR EVALUATING FLOW CHARACTERISTICS OF FLUID BEHIND PIPE

Norman R. Carlson, Houston, and James M. Johnston, Santa Fe, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

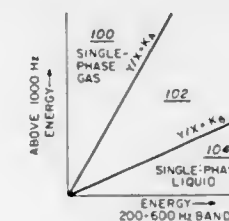
Continuation of Ser. No. 436,235, Oct. 25, 1982, abandoned.

This application Sep. 23, 1985, Ser. No. 779,180

Int. Cl.⁴ E21B 47/00; G01V 1/00

U.S. Cl. 367—32

4 Claims



1. A method of qualitatively evaluating the nature of the phase of fluid flow within a vertical channel behind a pipe traversing earth formations to determine if said fluid flow is single-phase gas, single-phase liquid or a multi-phase combination flow, comprising the steps of:
measuring the acoustic energy resulting from said flow of fluid within a channel behind said pipe;
separating said measured acoustic energy into a plurality of frequency groups;
comparing the acoustic energy of a first frequency group, said first group consisting essentially of measured acoustic energy having frequencies within the range from approxi-

mately 200-600 Hz, to a second frequency group, said second group consisting essentially of measured acoustic energy having frequencies above approximately 1000 Hz, to determine a ratio of acoustic energy between said frequency groups; and
producing a signal in response to said ratio indicative of the nature of said fluid flow indicating if said flow is single-phase gas, single-phase liquid or a multi-phase combination flow.

4,646,274

METHOD AND APPARATUS FOR CORRECTING DISTORTED SEISMIC DATA

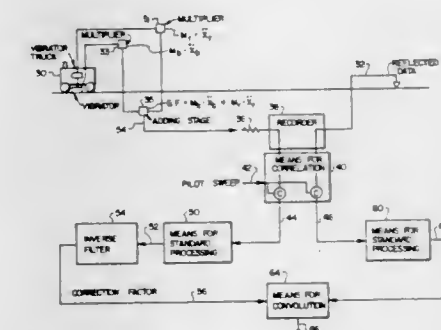
David R. Martinez, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1983, Ser. No. 564,104

Int. Cl.⁴ G01V 1/28

U.S. Cl. 367—41

13 Claims



1. The method of correcting distorted seismic data obtained by applying seismic energy to the earth's surface and recording a wave trace representative of the resultant reflected seismic energy comprises the steps of:

- recording a signal representing the ground force produced by the application of said energy wherein said ground force signal is derived from mass and acceleration parameters of an acoustic source used to produce said seismic energy;
- correlating said ground force signal with a preselected signal pulse and correlating said reflected seismic wave trace with said preselected signal pulse in order to provide time compressed versions of said ground force signal and said reflected seismic wave trace respectively;
- processing said time compressed ground force signal by means of a preselected technique and processing said reflected seismic wave trace by means of said preselected technique in order to remove distortion therefrom;
- deriving a correcting filter representing an inverse function of said processed ground force signal; and
- convolving said correcting filter with said processed reflected seismic wave trace in order to provide a corrected seismic output.

4,646,275

DYNAMIC RANGE COMPRESSION FOR VARIABLE AREA OR WIGGLE TRACE DISPLAY METHOD AND APPARATUS

Kenneth R. Smith, Milpitas, Calif., assignor to Geometrics, Inc., Sunnyvale, Calif.

Filed Jun. 11, 1984, Ser. No. 618,988

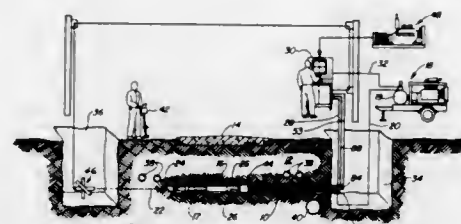
Int. Cl.⁴ G01V 1/00; H03G 3/00

U.S. Cl. 367—67

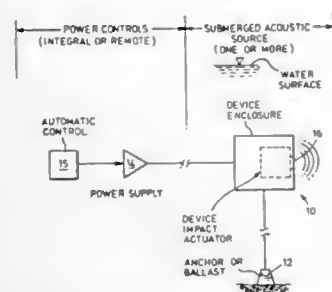
8 Claims

4. In a reflection seismograph, an automatic gain control system comprising means for receiving an input signal from data acquisition means and providing an output signal for translation to display means comprising a first multiplier cir-

11 Claims

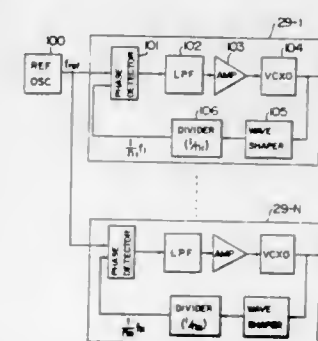


18 Claims



10 Claims

14 Claims



23 Claims

1. Apparatus for differential decoding of data read from a medium encoded in a fixed block code comprising a plurality of symbols, each symbol having a plurality of symbol positions,

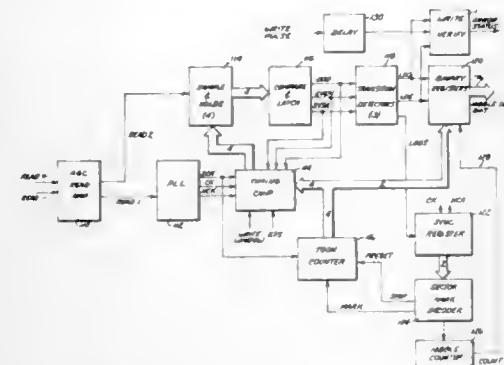
each symbol position comprising a hole or a space, there being a predetermined number, n , of holes in a predetermined subset, m , of the symbol, the apparatus comprising:

counter means for counting symbol positions within a symbol;

a predetermined number, p , of sample and hold means responsive to read signals read from the fixed block encoded medium, wherein p is greater than or equal to n and less than m ;

means responsive to the counter means for triggering said predetermined number, p , of successive of said plurality of sample and hold means at successive positions of said subset, beginning at the first position of the subset;

comparator means for determining the comparative strength



of the signals contained in said plurality of sample and hold means;

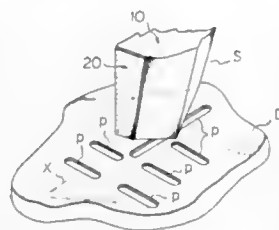
trigger means responsive to the counter means and said comparator means for triggering the then lowest-valued signal containing of said plurality of sample and hold means at further successive positions of said subset until and including the last position of said subset when a read signal contains a higher-valued signal than the signal in said then lowest-valued signal containing sample and hold means; and

p address means responsive to said counter means and to said trigger means for determining and remembering the symbol position address within said subset at which a corresponding one of said sample and hold means was triggered.

4,646,282
STYLUS FOR CAPACITY CHANGE DETECTION TYPE DISC SYSTEM
 Hideaki Mizuno, Tokyo, and Keiichiro Doi, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Apr. 6, 1984, Ser. No. 597,769
 Claims priority, application Japan, Apr. 8, 1983, 58-61910
 Int. Cl.⁴ C23C 11/00; G11B 7/00
 U.S. Cl. 369—126

12 Claims



1. A stylus for a capacity change detection type disc system for reproducing information signals from a track which is

formed on a surface of a disc as a geometrical arrangement of pits corresponding to the information signals, comprising:

a stylus body portion having a slide surface slidably engageable with the track on the disc surface and made of a material which has the property that it is graphitizable when subjected to ion implantation; and

an electrode portion provided on said stylus body portion having an intersecting relationship with said slide surface for detecting the information signals recorded on the track in the disc surface as a capacitance variation between the electrode portion and said pits and being formed integrally with said material of the stylus body portion by implantation of ions into said material, said electrode portion having graphitization concentrated most in the vicinity of the surface of said electrode portion and less concentrated in a portion remote from said surface and which varies continuously depthwise from said vicinity of said surface to said remote portion, said continuous depth-wise variation being obtained by implanting ions onto said stylus body portions and controlling the implantation by varying the ion acceleration voltage and the dose rate such that the approximated gradient of said continuous depth-wise variation is smaller than the approximated gradient which results from a single dose of implantation of ions.

4,646,283
OBJECTIVE LENS DRIVING APPARATUS FOR OPTICAL DISC PLAYER

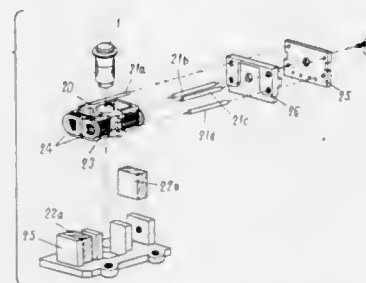
Masashi Ito, Settsu; Hiroshi Yasuda, Katano; Hiroyuki Nakamura, Kobe, and Toshiki Matsuno, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP84/00275, § 371 Date Jan. 29, 1985, § 102(e) Date Jan. 29, 1985, PCT Pub. No. WO84/04841, PCT Pub. Date Dec. 6, 1984

PCT Filed May 29, 1984, Ser. No. 700,818
 Claims priority, application Japan, May 31, 1983, 58-97111; May 31, 1983, 58-97112; May 31, 1983, 58-97121; Jun. 28, 1983, 58-117601

Int. Cl.⁴ G11B 7/08
 U.S. Cl. 369—256

25 Claims



1. An objective lens driving apparatus for an optical disc player, comprising a base, a holder holding an objective lens, a supporting means for movably supporting said holder on said base, and a driving means for driving said holder both in a focussing direction corresponding to the optical axis of said objective lens and in a tracking direction substantially traverse to the focussing direction, said supporting means including at least four parallel linear members which are fixed at one of their ends to said base and at their other end to said holder, each said linear member being resilient in the focussing direction and in the tracking direction, so as to make said holder freely movable in the focussing direction and in the tracking direction, whereby all of said respective linear members themselves flex in the driving direction of said driving means to allow said holder to move when said holder is driven by said driving means in the focussing direction and in the tracking direction.

4,646,284
HIGH DENSITY INFORMATION RECORD MEDIUM USING CARBON BLACK PARTICLES SURFACE-TREATED WITH SILICONE OIL
 Toshiaki Hamaguchi; Kazuhira Namikawa; Mutsuaki Nakamura; Akio Kuroda, and Toshio Akai, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Japan
 Filed Sep. 11, 1985, Ser. No. 774,800

Claims priority, application Japan, Sep. 12, 1984, 59-189748
 Int. Cl.⁴ C09C 1/56; H01B 1/06
 U.S. Cl. 369—276

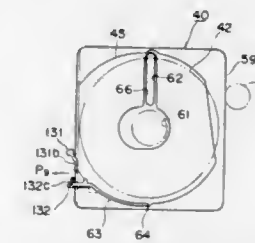
5 Claims

1. A high density information signal recording medium of an electrostatic capacitance type in which signal information is recorded as geometric variations, the medium consisting of a conductive resin composition comprising a vinyl chloride resin, 5 to 30 parts by weight of carbon black particles individually having a coating of a silicone oil used in an amount of 0.1 to 10 wt% of the carbon black particles, and from 0.1 to less than 0.5 parts by weight of a silicone oil lubricant, both based on 100 parts by weight of the vinyl chloride resin.

4,646,285
SHUTTER PLATE CONTROL DEVICE IN A DISC PLAYBACK DEVICE
 Mikio Ogusu, Hamamatsu; Kazuo Urata; Takuya Tamaru, both of Hamakita, and Yasubiko Kamoshita, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 30, 1985, Ser. No. 781,751
 Claims priority, application Japan, Oct. 3, 1984, 59-150100
 Int. Cl.⁴ G11B 17/24, 23/04
 U.S. Cl. 369—291

6 Claims



1. A shutter plate control device in a disc playback device including a disc magazine case housing a disc and a main body having a loading device for loading this disc magazine case from an eject position to the main body and ejecting the disc magazine case from the main body to the eject position comprising:

an aperture formed in the disc magazine case for exposing the disc housed in the disc magazine case to a pickup head;

a shutter plate provided in the disc magazine case for opening and closing said aperture;

a shutter lever provided on the shutter plate;

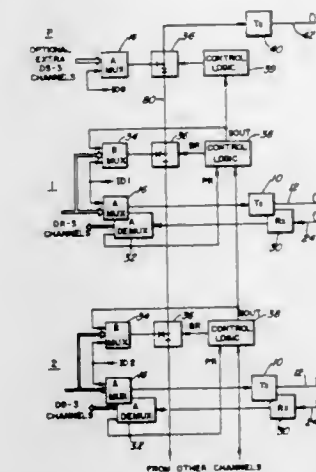
an opening member provided in the main body and engaging with the shutter lever in loading of the disc magazine case to move the shutter plate in a direction for opening the aperture; and

a closing member provided in the main body and engaging with the shutter lever in loading of the disc magazine case to be displaced by the shutter lever and thereby permit the shutter lever to pass by without moving the shutter plate while engaging with the shutter lever in ejecting of the disc magazine case to move the shutter plate in a direction for closing the aperture.

4,646,286
COMMUNICATIONS SYSTEM WITH PROTECTION SWITCHING AND CHANNEL IDENTITIES
 David I. Reid, Edmonton; John C. Ellison, and Malcolm C. Betts, both of Sherwood Park, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
 Filed Aug. 2, 1985, Ser. No. 761,925
 Int. Cl.⁴ H04J 3/14

U.S. Cl. 370—16

17 Claims



1. In a communications system comprising communications channels extending between first and second locations, the channels comprising at least one forward channel for carrying traffic in normal operation from the first location to the second location, a protection channel for carrying the traffic of a forward channel in the event of a fault on the forward channel, and at least one reverse channel for carrying signals from the second location to the first location, a method of controlling routing of traffic to the protection channel comprising the steps of:

detecting at the second location a fault on a forward channel;

transmitting an indication of the fault via a reverse channel from the second location to the first location;

in response to the fault indication, supplying traffic of the forward channel having the fault to the protection channel, the traffic supplied to the protection channel including an identity of the forward channel having the fault; and

at the second location, replacing the traffic of the forward channel having the fault with the traffic supplied via the protection channel in dependence upon the channel identity in the traffic on the protection channel.

4,646,287
IDLE PERIOD SIGNALLING IN A PACKET SWITCHING SYSTEM
 Mikiel L. Larson, St. Charles, Ill.; Anne A. Robrock, Milan, Italy, and Wing N. Toy, Glen Ellyn, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Dec. 7, 1984, Ser. No. 679,456
 Int. Cl.⁴ H04Q 11/04; H04J 3/24

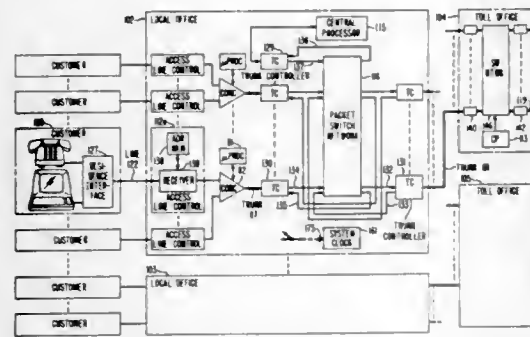
U.S. Cl. 370—60

40 Claims

1. A packet switching system having a first and a second portion thereof interconnected for communication by a communication link, comprising:

means associated with the first portion for transmitting on the link idle code when packets are not being transmitted

thereon and further for occasionally transmitting on the link a packet of a first type; and

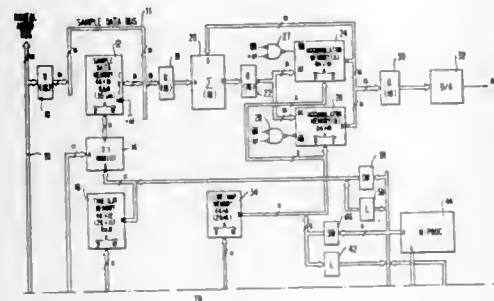


means associated with the second portion for discarding both idle code and packets of the first type received on the link.

4,646,288
MULTI-LINE ACCUMULATOR/MULTIPLEXER
Jerry L. Shumway, Rockville, Md., assignor to Denro Laboratories, Inc., Gaithersburg, Md.
Filed Jan. 31, 1985, Ser. No. 696,838
Int. Cl.⁴ H04Q 11/04

U.S. Cl. 370—62

10 Claims



1. A circuit for receiving a plurality of data distributed sequentially in time throughout a corresponding sequence of time slots within a frame, and for processing at least said plurality of data during a plurality of time slots in a subsequent frame, each datum of said plurality of data being received by said circuit during a respective assigned time slot within said sequence of time slots, said circuit comprising:

sample data memory means having sequential storage locations, at least one for each datum, for storing said plurality of data received by said circuit, each datum being stored in a sequential storage location in correspondence to the sequence in which it was received;

time slot memory means having storage locations, one for each time slot in said subsequent frame, for storing control information identifying each datum of said plurality of data to be processed during each respective time slot in said subsequent frame; and

control means connected to said sample data memory means and producing control outputs for enabling said sample data memory means to store said each datum as it is received during and in accordance with its respective assigned time slot, said control means being connected to said time slot memory means so as to provide said control outputs thereto;

said time slot memory means being responsive to said control outputs for sequentially reading out to said sample data memory means, during each respective time slot, said control information identifying said each datum to be processed during said each respective time slot;

said sample data memory means being responsive to said

control information for reading out, during said each respective time slot, said each datum to be processed during said each respective time slot;

said circuit further comprising accumulator means for accumulating, during said each respective time slot, said each datum read out from said sample data memory means during said each respective time slot of said frame with those data read out from said sample data memory means during corresponding time slots of previous frames.

4,646,289
SIGNAL MULTIPLEXING CIRCUIT
Nicholas Tsiakas, Kanata; Stephen K. Sunter; Ronald G. Wellard, both of Nepean, and Lawrence H. Sasaki, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

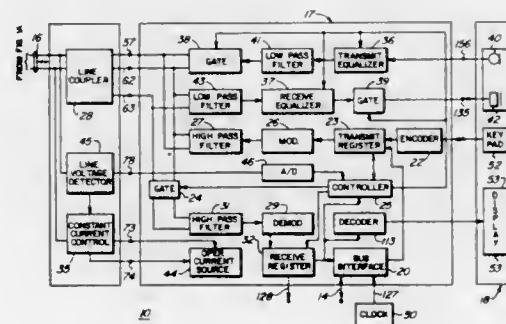
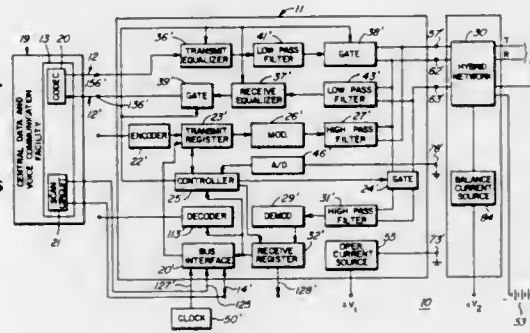
Filed Dec. 6, 1984, Ser. No. 678,883

Claims priority, application Canada, Jun. 29, 1984, 457836

Int. Cl.⁴ H04J 3/12

U.S. Cl. 370—76

16 Claims



1. A signal multiplexing circuit selectively operable as a line card interface for a digital access circuit of a central data and voice communication facility and as a station set interface for a data and voice station, and which is controllably operable for bidirectional communication between the line card interface and addressable ones of a plurality of station interface interconnected via a two wire telephone line, comprising:

line sampling means responsive to a carrier signal for detecting an active line state in the presence of the carrier signal on the telephone line and an inactive line state in the absence thereof;

transmit register means responsive to a data message bit field input thereto for storing the bits until the occurrence of a predetermined inactive line state;

controller means operably responsive to data message bit fields input thereto and to the detected inactive line state for enabling a serial data bit output of the transmit register means;

modulator means having an input coupled to the serial data

bit output for modulating a high band carrier signal and outputting the modulated high band signal on the telephone line; and

equalizer means having analog signal receiving and transmitting paths including respective automatic gain control circuits connected between the telephone line and corresponding signal inputs and outputs for controlling signal gains, and gate means for selectively enabling and disabling the receiving and transmitting paths in response to predetermined ones of the data message bit fields input to the controller means.

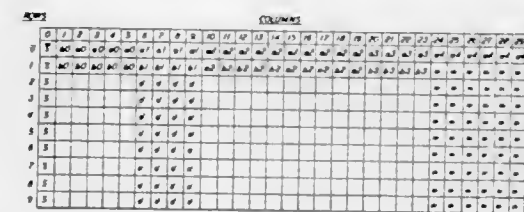
4,646,290
DATA TRANSMISSION METHOD AND APPARATUS
Michael T. Hills, Silver Spring, Md., assignor to National Information Utilities Corp., McLean, Va.

Filed Aug. 3, 1984, Ser. No. 637,208

Int. Cl.⁴ H04J 3/22, 3/00

U.S. Cl. 370—84

66 Claims



1. A method for transmitting data from a first location to at least one receiver location comprising the steps of: receiving a plurality of data messages of varying bit rates at said first location;

organizing said data messages into a multiframe matrix, said matrix including a plurality of columns, each column representing a period of time, and a plurality of rows, each row representing a frame of said matrix, individual characters of said data messages being selectively inserted into said columns of said matrix in real time;

transmitting over a transmission medium, for each successive frame of said matrix, the characters in successive columns at a defined bit rate greater than the bit rates of any of said data messages; and

decoding at each receiver location the transmitted matrix, messages which are addressed to a receiver location being available for display at said receiver location.

4,646,291
SYNCHRONIZATION APPARATUS IN TRANSMITTING INFORMATION ON A SIMPLEX BUS

Carl-Gunnar E. Perntz, Huddinge, and Sture G. Roos, Bergshamra, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00163, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/03936, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 26, 1983, Ser. No. 574,105

Claims priority, application Sweden, Apr. 26, 1982, 8202577

Int. Cl.⁴ H04J 3/06

U.S. Cl. 370—85

4 Claims

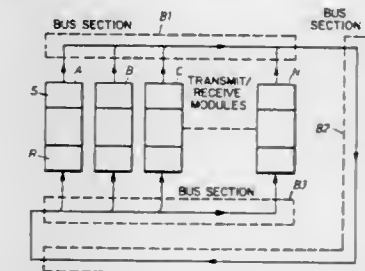
1. In a synchronization apparatus in a telecommunication system of the time division multiplex type, in which information is transmitted in assigned time slots in one-way data transmission between a plurality of equal transmitter/receiver modules (A-N) connected to a common bus, for enabling transmission through the bus from arbitrary transmitters (S) to arbitrary receivers (R) in adjacent time slots without time difference between transmission sequences in respective time slots, the improvement in which:

said bus is divided into first, final and intermediate sections; said transmitters (S) being connected in a given order to said first section (B1), each module having a transmitter

output and bus input with a predetermined distance therebetween so that a fixed time delay is obtained which is the same for each module, there being a total fixed time delay through said first bus section (B1) dependent on the number of modules (A-N) connected thereto;

said receivers (R) being connected to said final bus section (B3) in the same order as the transmitters, each module having a bus output and receiver output with a predetermined distance therebetween so that a fixed time delay is obtained which is the same for each module, the total fixed time delay through said final section (B3) being dependent on the number of modules (A-N) connected thereto;

said intermediate section (B2) having variable length and extending from the last connected transmitter (S) to the first connected receiver (R), the length of said intermediate section, in relation to the size of said fixed time delays, being adjusted to give a selectable, predetermined total time delay between transmitter and receiver in the same



module; each of said modules (A-N) including a clock signal unit (CL) common to the associated transmitter and receiver, said clock signal unit sending, apart from internal clock signals (CS) each time the module is selected as master, a frame synchronizing pulse (FS) once per frame to an input of said bus via a bus transmitter (BS), said frame synchronizing pulse (FS) for synchronizing remaining slave modules being sent in parallel with the data in parallel with the data information from the associated transmitter, and a time slot memory (TM) storing data which is written in and read out from and to the bus under control of signals from a control memory (CM) connected to the address inputs of the time slot memory (TM) as well as clock signals, data information being read out to the bus via a first latch circuit (L1) and the bus transmitter (BS), and data being written in to the time slot memory (TM) from the bus via a bus receiver (BR) and a second latch circuit (L2), said read-out and write-in respectively being controlled by signals from the common clock signal unit (CL).

4,646,292
LINK CONTROLLER
David S. Bither, Marlborough, Mass., assignor to Aetna Telecommunications Laboratories, Westboro, Mass.
Filed Oct. 1, 1985, Ser. No. 782,681
Int. Cl.⁴ H04J 3/02

U.S. Cl. 370—85

13 Claims

1. A system for controlling message transmission timing on a network by a plurality of nodes comprising:

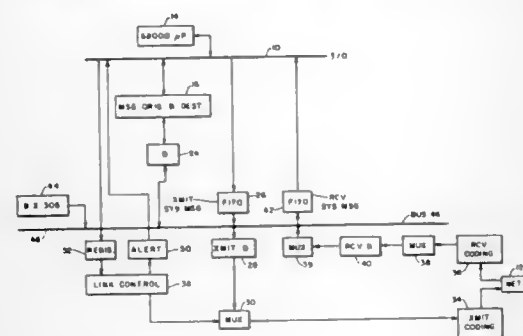
means associated with each node for sending a message having beginning and ending portions over said network;

means associated with each node for providing said message signals with a variable time duration ranging between a preset maximum and a nonzero minimum;

means associated with each node for receiving all messages on said network;

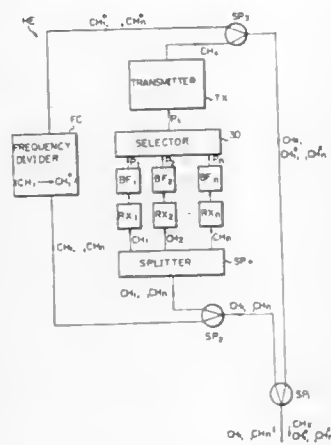
means associated with each node for counting messages on the network from received messages to provide a repeating sequence of count values;

means associated with each node for enabling the sending of messages by that node at a count value unique to that node; and



means associated with each node for delaying the enablement of message sending a predetermined delay after receiving the ending portion of the message occurring in count value next preceding the count value unique to that node.

4,646,293
MULTIACCESS COMMUNICATIONS SYSTEM
Hiromi Okada, Nishinomiya; Yoshiro Nakanishi, Osaka, and Yoshifumi Nomura, Kobe, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 672,484
Claims priority, application Japan, Nov. 19, 1983, 58-217083
Int. Cl.⁴ H04J 1/10
U.S. Cl. 370—85 20 Claims

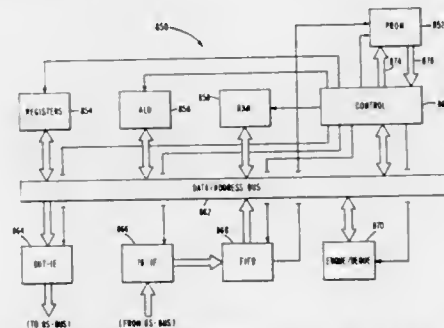


1. A multiaccess communications system for a communications network in which a plurality of nodes are connected to a head end by a common multichannel transmission path to perform wideband transmission of packets between the nodes, comprising:

- means for selectively causing each of the plurality of nodes to select an unoccupied one of a plurality of first channels of said transmission path to send a packet toward the head end over the selected unoccupied channel;
- means in the head end for temporarily storing the packets received over the first channels and for sequentially transmitting the packets in the order of completion of the storage toward the plurality of nodes over a second channel, the second channel having line speed which is substantially equal to the product of the line speed of the first channels and the number of the first channels; and
- wherein each of the plurality of nodes comprises means

for fetching from the second channel a packet which is meant therefor.

4,646,294
HIGH-SPEED QUEUE SEQUENCER FOR A BURST-SWITCHING COMMUNICATIONS SYSTEM
Mark Eliscu, Needham; Stanford R. Amstutz, Andover, and Pamidimukkala M. V. Rao, Boston, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Aug. 2, 1985, Ser. No. 762,642
Int. Cl.⁴ H04J 6/00
U.S. Cl. 370—94 15 Claims

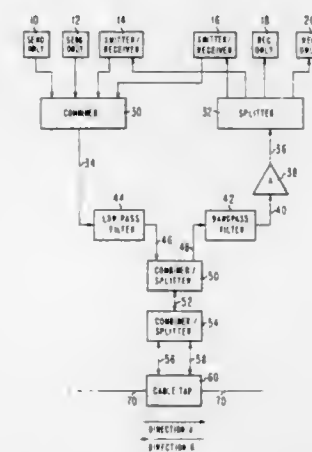


1. A high-speed queue sequencer for use in a switch of a burst-switching communications system, a burst being a plurality of bytes, said system including a plurality of switches interconnected by time-division multiplexed communications links, each link having a plurality of frames within each second of time, each frame having a plurality of channels, each channel having communications capacity for the transmission of one byte, a byte being a predetermined number of bits, a bit being one binary digit, said system including a plurality of ports, each port being a component of a switch, said switch including a queue sequencer and at least one switching processor, said queue sequencer and switching processor(s) being coupled via a queue-sequencer bus, said queue sequencer comprising:

- a data/address bus;
- control means coupled with said data/address bus for controlling said queue sequencer, said control means including stored-program memory and execution means and queue-memory means for storing administrative information pertaining to bursts passing through said link switch;
- enqueue/dequeue means coupled with said data/address bus, said enqueue means for performing the administration required for placing a burst on an output queue, said output queue being a list which indicates those bursts awaiting assignment to an output channel in a communications link, said dequeue means for assigning the highest priority burst on an output queue to an idle output channel of said communications link and removing said assigned burst from said output queue, said enqueue/dequeue means operating substantially in parallel with and independently of said control means;
- request-holding means coupled with said data/address bus, for receiving requests from said switching processor(s), determining the priority of each request, storing said pending requests within priority classes, and outputting said requests within each priority class in the same time order as received, said request-holding means operating substantially in parallel with and independently of said control means;
- input-interface means coupled between said queue-sequencer bus and said request-holding means, for providing an interface between said queue sequencer and said switching processor(s), said input-interface means having the ability to receive a request from a switching processor of said switch and to transmit said request to said request-holding means, said input-interface means operating substantially in parallel with and independently of said control means; and

- output-interface means coupled between said data/address bus and said queue-sequencer bus, for providing an interface between said queue sequencer and said switching processor(s), said output interface means having the ability to transmit a buffer address to a switching processor, said output-interface means operating substantially in parallel with and independently of said control means;
- whereby said queue sequencer operates substantially in parallel with and independently of said switching processor(s), and said queue sequencer acts on behalf of all switching processors of said switch.

4,646,295
FREQUENCY-DIVISION MULTIPLEX COMMUNICATIONS SYSTEM HAVING GROUPED TRANSMITTERS AND RECEIVERS
Philip C. Basile, Gloucester County, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Feb. 4, 1985, Ser. No. 697,834
Int. Cl.⁴ H04J 1/00; H04N 1/00
U.S. Cl. 370—123 7 Claims

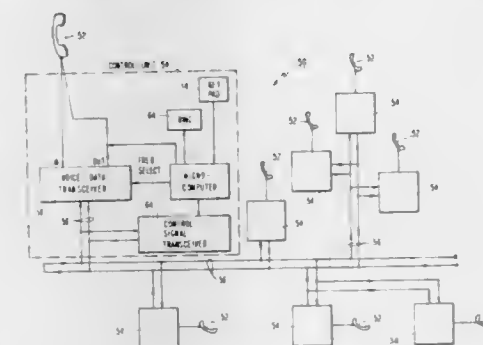


1. A communications system comprising a multiplicity of communications terminals, said terminals including receive-only terminals having receivers, send-only terminals having transmitters, and transceivers having both a transmitter and a receiver; and a bus to which said terminals are coupled for purposes of intercommunication; wherein said multiplicity of terminals are partitioned into a plurality of groups, each of said groups comprising:

- a plurality of fixed frequency receivers each tuned to receive signals modulating a single, different carrier frequency, wherein all of the carrier frequencies to which said plurality of receivers are tuned are closely spaced within a narrow frequency band, said narrow frequency band being exclusive among all of said groups;
- a plurality of transmitters for transmitting signals on a carrier frequency, each of said plurality of transmitters adapted to transmit on all of the carrier frequencies within all of said narrow frequency bands of said system;
- first combining means for combining the output signals of said plurality of transmitters;
- a first filter coupled to said first combining means for passing only those signals having a carrier frequency not substantially higher than the highest carrier frequency transmitted by said transmitters;
- means for coupling the signals passed by said first filter to said bus and for receiving signals transmitted along said bus;
- a second filter coupled to said coupling means for passing only those signals received from said bus having carrier frequencies not substantially outside said narrow frequency band; and

means for coupling the signals passed by said second filter to each of said plurality of receivers.

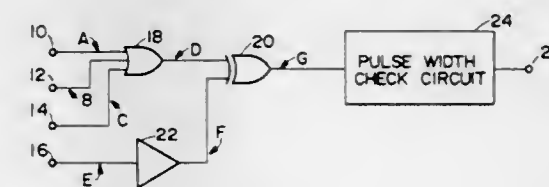
4,646,296
DISTRIBUTED TELEPHONE SYSTEM
Chauncey I. Bartholet, Scarsdale, and Joseph Hardy, Bedford, both of N.Y., assignors to Bard Technologies, Bedford, N.Y.
Filed Jul. 9, 1984, Ser. No. 628,744
Int. Cl.⁴ H04J 1/10
U.S. Cl. 370—124 20 Claims



19. A method for distributing processing throughout a telephone system of the type including plural telephone units connected to one another via plural voice channels and at least one control channel, said plural voice channels communicating voice signals between said plural telephone units, said control channel communicating control signals between said plural telephone units, each of said plural telephone units having a respective memory, said method comprising the steps, performed at each of said plural telephone units, of:

- (1) selecting one of said plural voice channels in response to information stored in said telephone unit memory designating which of said voice channels are already being used for communicating voice signals;
- (2) transmitting control signals on said control channel designating said voice channel selected by said selecting step;
- (3) inhibiting said transmitting step (2) whenever signals are already present on said control channel;
- (4) transmitting and receiving voice signals on said selected voice channel;
- (5) continuously monitoring said control channel; and
- (6) updating the information stored in said telephone unit memory in response to control signals monitored by said monitoring step (5).

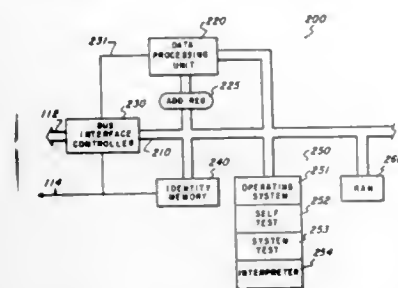
4,646,297
SKEW DETECTOR
Steven R. Palmquist, Beaverton, Oreg.; Kentaro Takita, Tokyo, and Kazumi Hasegawa, Kanagawa, both of Japan, assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Mar. 28, 1984, Ser. No. 594,187
Claims priority, application Japan, Apr. 8, 1983, 58-62052
Int. Cl.⁴ H04M 3/22
U.S. Cl. 371—1 7 Claims



1. A skew detector comprising:
OR gate means receiving a plurality of logic signals,

exclusive-OR gate means receiving an output signal from said OR gate means and a reference logic signal, and means for checking the pulse width of the output signal from said exclusive-OR gate means for detecting the skew between said plurality of logic signals and said reference logic signal.

4,646,298
SELF TESTING DATA PROCESSING SYSTEM WITH SYSTEM TEST MASTER ARBITRATION
 Gerald E. Laws, and Keith E. Diefendorff, both of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Filed May 1, 1984, Ser. No. 605,751
 Int. Cl.⁴ G06F 11/00
 U.S. Cl. 371-16 21 Claims

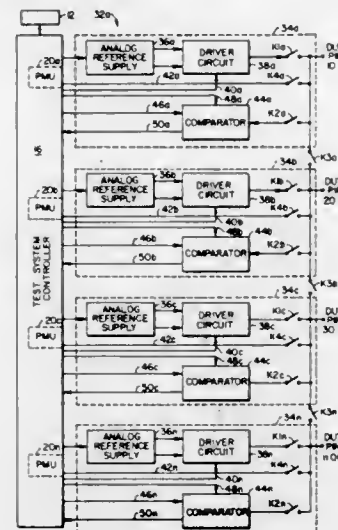


1. A self testing data processing system comprising:
 a communications bus having a plurality of connection slots, each connection slot having a unique electrically readable slot number, said communications bus for bidirectional communications between said slots;
 a plurality of intelligent data processing circuits, each intelligent data processing circuit connected to one of said slots and having an identity memory means and a testing means, said identity memory means having identity data indicating said intelligent data processing circuit can be a system test master and self test data indicating whether or not said intelligent data processing circuit has passed a circuit self test, said testing means including at least one processor means for performing general data processing tasks under program control, and having a circuit testing means coupled to the identity memory means for self testing said intelligent data processing circuit and loading data into said identity memory means indicative of whether or not said intelligent data processing circuit has passed said circuit self test, a master arbitration means coupled to said communications bus for reading said identity memory means of other slots and deferring system test control if said intelligent data processing circuit has failed its circuit self test or if said identity memory means of any lower slot number has identity data indicating it can be a system test master and self test data indicating it has passed its circuit self test, and system test master means coupled to said communications bus for controlling system test if system test control is not deferred.

4,646,299
METHOD AND APPARATUS FOR APPLYING AND MONITORING PROGRAMMED TEST SIGNALS DURING AUTOMATED TESTING OF ELECTRONIC CIRCUITS
 John Schinabeck, Pleasanton, and James R. Murdock, San Jose, both of Calif., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.
 Continuation-in-part of Ser. No. 518,499, Aug. 1, 1983, abandoned. This application May 17, 1984, Ser. No. 611,445
 Int. Cl.⁴ G01R 31/28
 U.S. Cl. 371-20 21 Claims

1. A method for applying and monitoring a test signal at a node of a device under test including digitally programmed

source means having a preselected programmed voltage-current characteristic defined by not-to-exceed voltage rail and current rail levels switchably connected by a first switch means to the node for supplying a test signal to the node and comparison means switchably connected by a second switch means to the node, the method comprising the steps of:
 connecting the test signal to the node;

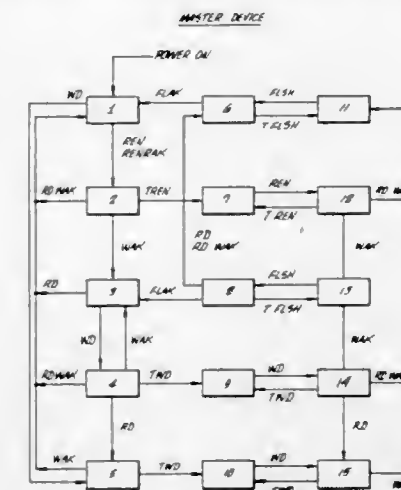


comparing the test signal with a preselected programmed reference level;
 providing an indication of the relative magnitude of the test signal with respect to the preselected programmed reference level; and
 providing a preselected programmed constant signal in the event that the test signal has a predetermined relationship with respect to the programmed reference level.

4,646,300
COMMUNICATIONS METHOD
 William R. Goodman, Palo Alto; Richard B. Mayfield, Saratoga; Ted Tawshunsky, Cupertino, and Fredrick L. Zardiackas, Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.
 Filed Nov. 14, 1983, Ser. No. 551,297
 Int. Cl.⁴ G06F 11/14
 U.S. Cl. 371-33 9 Claims

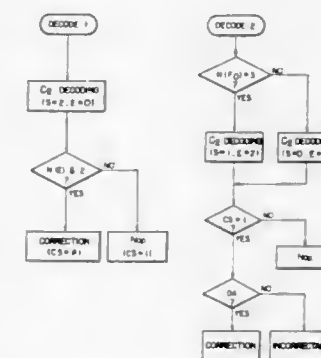
1. A communication method for transferring messages over an error-prone channel, comprising the steps of,
 communicating between a plurality of master communications devices and a plurality of slave communications devices over a communications link a plurality of messages that may comprise protocol code and data; and each of said messages comprising one of a WD, RD, REN, RENRAK, RDWAK, WAK, FLAK, and FLSH protocol codes,
 transmitting four master message from one of said plurality of master communications devices to one of said plurality of slave devices, and each of said four master messages includes one of said WD, REN, RENRAK or FLSH protocol codes, and each of said four master messages has one code that may have multiple meanings, and each of said four master messages may further include data for further processing by said slave communication device,
 transmitting four slave messages from one of said plurality of slave communications devices to one of said plurality of master communications devices, and each of said four slave messages includes one of said RD, RDWAK, WAK and FLAK protocol codes, and each of said four slave

messages has one code that may have multiple meanings, and each of said four slave messages may further include



data for further processing by said master communications device.

4,646,301
DECODING METHOD AND SYSTEM FOR DOUBLY-ENCODED REED-SOLOMON CODES
 Hiroo Okamoto; Masaharu Kobayashi, both of Yokohama; Hiroyuki Kimura, Kanagawa; Takaharu Noguchi, and Takao Arai, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Oct. 26, 1984, Ser. No. 665,378
 Claims priority, application Japan, Oct. 31, 1983, 58-202602
 Int. Cl.⁴ G06F 11/10
 U.S. Cl. 371-37 11 Claims



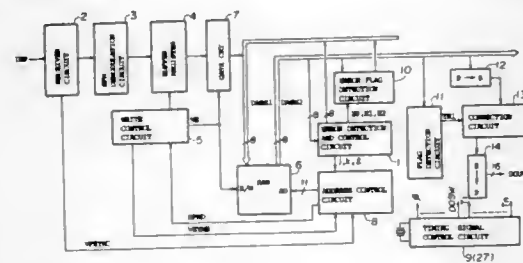
means which counteracts the spring force of said spring means.

4,646,303 DATA ERROR DETECTION AND CORRECTION CIRCUIT

Sadayuki Narusawa, and Norio Tomisawa, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Aug. 24, 1984, Ser. No. 643,951
Claims priority, application Japan, Oct. 5, 1983, 58-186105; Nov. 25, 1983, 58-221789

Int. Cl.⁴ G06F 11/08
U.S. Cl. 371—38

5 Claims



1. A data error detection and correction circuit for detecting and correcting data errors in a group of data using Reed-Solomon codes comprising:

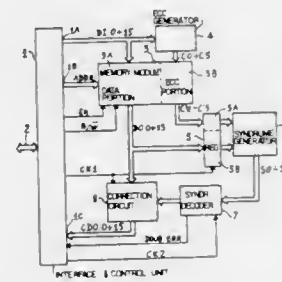
- memory means for storing said group of data;
- a syndrome calculation circuit for receiving the group of data and for producing syndromes S_i (i is a positive integer) from said group of data;
- an internal data bus coupled to the syndrome calculation circuit;
- first data conversion means coupled to the internal data bus for converting data on said internal data bus into logarithmic data;
- multiplier-divider means, coupled to the first data conversion means, for operating on the data on said internal data bus by addition and subtraction operations of said logarithmic data;
- second data conversion means, coupled to the multiplier-divider means, for antilogarithmically converting data from said multiplier-divider means;
- addition and subtraction means, coupled to the second data conversion means and the internal data bus, for operating on the data from said second data conversion means and supplying resulting data to said internal data bus;
- a first error detection circuit, coupled to the internal data bus, for detecting whether a single error exists in said group of data in accordance with said syndromes and said resulting data on said internal data bus to generate a first error detection signal by means of determinations whether $S_1 S_1 = S_0 S_2$, $S_2 S_2 = S_1 S_3$, $S_1 \neq 0$, $S_2 \neq 0$, $S_3 \neq 0$ and $S_4 \neq 0$;
- a first error location detection circuit, coupled to the internal data bus, for detecting a location where the single error exists at the time said first error detection circuit detects the single error and producing a first error location signal;
- address control means for addressing said memory means in accordance with said first error detection signal and said error location signal to read an error data therefrom; and
- a data correction circuit, coupled to the internal data bus and coupled to receive data from the memory means, for adding one of said syndromes on said internal data bus to said error data outputted from said memory means to thereby produce corrected data to replace said error data.

4,646,304 SINGLE ERROR CORRECTION CIRCUIT FOR SYSTEM MEMORY

Paolo Fossati, Cinisello Balsamo, and Paolo Melloni, Milan, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy
Filed May 10, 1985, Ser. No. 732,775
Claims priority, application European Pat. Off., May 26, 1984, 84106012

Int. Cl.⁴ G06F 11/00, 11/10
U.S. Cl. 371—38

4 Claims



1. An improved single error correction circuit for a memory system including:

- interface and control means (1) for allowing a correct information exchange with other system units and for controlling said system memory;
- a memory module (3) having a first memory portion (3A) for storing a plurality of data words each data word being constituted by N data bits and a second memory portion (3B) for storing a plurality of error correcting codes, each one of said correcting codes being associated with a corresponding one of said data words in said first memory portion;
- error correcting code generation means (4) for generating a correcting code associated with each data word to be stored in said second memory portion;
- error syndrome generation means (6) receiving a data word and the related correcting codes respectively read out from said first and second memory portions and for generating an error syndrome indication based thereon wherein the improvement consists in that said correction circuit comprises:
- a plurality of registers (8) arranged in a number J of banks ranging from 1 to N , the registers in each bank having preestablished equal bit capacity K comprised between N and 1 and the sum of the bit capacity of J registers, one for each bank, being equal to N , each bank having a number of registers equal to its capacity plus one, each bank receiving in input a different portion of a data word read out from said first memory portion and storing in one of its registers said data word portion as read out from said first memory portion and in the remaining registers all the possible bit configurations obtained from said data word portion by inverting one data bit, and
- syndrome decoding means (7) receiving an error syndrome indication and generating a plurality of control signals, one for each of said plurality of registers, said control signals selecting and enabling at the same time one register in each bank to output the data word portion or bit configuration stored therein.

4,646,305 HIGH SPEED DATA MODEM USING MULTILEVEL ENCODING

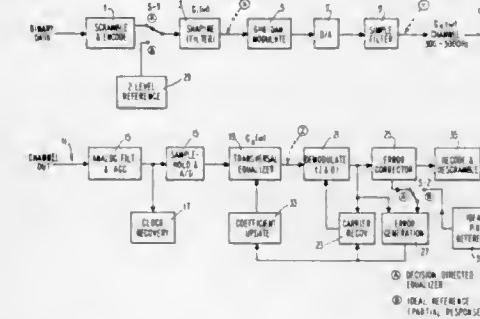
Steven A. Tretter, Silver Springs; Robert P. Redick, Chevy Chase; Richard L. Stuart, Columbia; Paul E. Treynor, New Carrollton, and David Gordon-Smith, Columbia, all of Md., assignors to Case Communications, Inc., Columbia, Md.

Filed Sep. 26, 1983, Ser. No. 535,636

Int. Cl.⁴ H04L 5/12; G06F 11/10

U.S. Cl. 371—43

17 Claims



1. A system for communicating data in a data stream comprised of binary bits, at data rates up to at least 14,400 bits per second over a band limited communication channel, said system comprising a transmitter for encoding and transmitting bits over said channel and a receiver for receiving and decoding bits received from said transmitter over said channel, said transmitter comprising means for encoding data bits, said means for encoding comprising:

- means for grouping sequences of five bits from the bit stream as bauds;
- means for locating the identical sequence of five bits corresponding to each baud in a constellation of the 32 possible sequences of five bits, said constellation being divided into four quadrants, the first and second bits of each of the eight groupings of bits in each quadrant being identical, and the four groups of the quadrants, each comprising the eight possible sequences of the latter three bits of each said baud, being symmetrical;
- means for encoding the first two bits of each baud such that identification of the baud with one of said four quadrants is possible at said receiver;
- means for generating a quadrature amplitude modulated (QAM) signal, said signal varying in dependence on the location of the encoded first two bits and the latter three bits within said constellation; and
- means for transmitting the generated QAM signal over the band limited communications channel; and
- said receiver comprising means for receiving the QAM signal from the communications channel, and means for reconstituting the individual bauds therefrom to generate the original bit stream, including means for decoding the first two bits.

4,646,306 HIGH-SPEED PARITY CHECK CIRCUIT

Harold L. Davis, The Colony, and Douglas P. Sheppard, Grapevine, both of Tex., assignors to Thomson Components - Mosstek Corporation, Carrollton, Tex.

Filed Dec. 26, 1984, Ser. No. 686,331

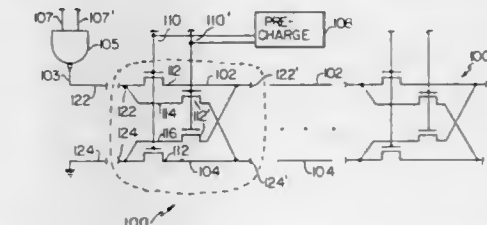
Int. Cl.⁴ G06F 11/10

U.S. Cl. 371—49

5 Claims

1. A parity-forming integrated circuit for placing an output voltage on at least one output terminal (122', 124') in response to an input voltage (103) passing along a data-dependent path (102, 104; 114, 116) to said output terminal; in which a cascaded plurality of path-inversion circuits (100) are provided, each of which has a pair of upper (122) and lower (124) input terminals,

a pair of data terminals (110, 110'), and a pair of upper (122') and lower (124') output terminals connected to said input terminals (122, 124) along a selected one of two separate alternative paths, said selected alternative path depending on a data state applied to said data terminals (110, 110'); whereby a first upper voltage input terminal (103, 122) in a first of said cascaded plurality of path-inversion circuits is connected by a data-dependent path (102, 104; 114, 116) to one of a pair of last upper and lower output terminals (122', 124'); in which said input voltage is controlled, after signals on all the data lines (110, 110') of said plurality of path-inversion



circuits (100) are stable, from an initial ground state value to a non-zero value and applied to said first voltage input terminal (103) by voltage input and timing means (105); and in which said pair of last upper and lower output terminals is connected to an output sense amplifier (200) for amplifying a signal on said pair of last upper and lower output terminals to produce an output signal (236, 238) in a data state dependent on said data-dependent path (102, 104; 114, 116).

4,646,307 MEMORY CONTENTS CONFIRMATION

Kosuke Nishimura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1984, Ser. No. 623,190

Claims priority, application Japan, Jun. 22, 1983, 58-114004

Int. Cl.⁴ G06F 11/16

U.S. Cl. 371—53

4 Claims



1. A method for confirming the contents of a battery backup RAM in an electronic apparatus comprising the steps of:

- determining the contents of the RAM upon receiving a power-off command to disconnect power from the apparatus;
- storing the result of the determination in a specific area of the RAM;
- disconnecting power from the apparatus and placing said apparatus in a standby mode;
- re-determining the contents of said RAM upon receiving a check-contents command after power has been restored to the apparatus;
- comparing the result of the re-determination with the result stored in said specific area;
- indicating a normal condition when both said results are identical; and
- indicating a fault condition and resetting the contents of the RAM when both said results are not identical.

$6 \times 10^{-3} \text{ cm to } 8 \times 10^{-2} \text{ cm.}$

4,646,314

HIGH-POWER LASER HAVING AN UNSTABLE OPTICAL RESONATOR

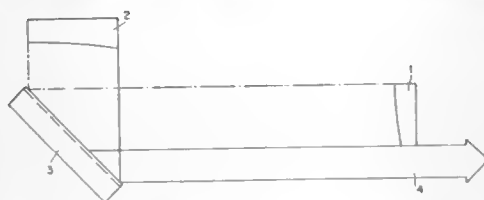
Hans Opower, Kralling, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau-Main, Fed. Rep. of Germany
Continuation of Ser. No. 602,223, Apr. 19, 1984. This application
Apr. 7, 1986, Ser. No. 848,915

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315620

Int. Cl.⁴ H01S 3/08

U.S. Cl. 372—95

6 Claims



1. A high-power laser having an excitation chamber with an unstable optical resonator, said resonator being limited by mirrors having cylindrical curvature, the first and second of said mirrors defining the unstable optical resonator, and each of said mirrors having a plane of curvature which is parallel to the plane of curvature of the other, said first and second mirrors respectively having a convex and concave curvature, and a third cylindrical mirror concavely curved in a plane perpendicular with respect to said first and second mirrors at an angle of 45° or less to an optical axis of said resonator to attain a linear polarized beam.

4,646,315

ARC FURNACE BURNER CONTROL METHOD AND APPARATUS

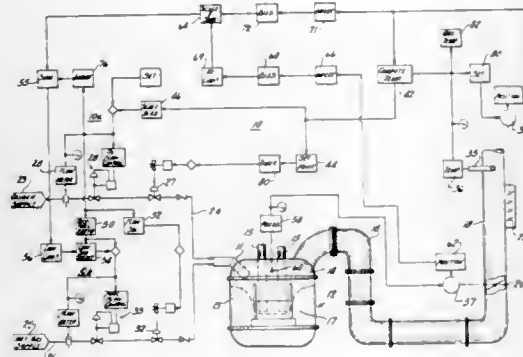
Dennis L. Hixenbaugh, Pittsburgh, and Ronald C. Gossar, Trafford, both of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1984, Ser. No. 657,745

Int. Cl.⁴ F27D 17/00

U.S. Cl. 373—2

23 Claims



1. An electric arc furnace having at least one electrode and a burner, first supply means for supplying an oxygen containing gas to said burner, second supply means for supplying a fuel gas to said burner, an exhaust gas conduit connected to said furnace, first damper means for controlling the flow of dilution air into said exhaust conduit,

second damper means connected in said conduit for controlling the flow rate of exhaust gases therethrough, first means coupled to the first damper means for sensing the position thereof, second means coupled to the second damper means for sensing the position thereof, temperature sensing means coupled to the exhaust conduit for sensing the temperature therein, pressure sensing means coupled to the furnace for sensing the pressure therein, a first control means coupled to said first supply means and to said temperature sensing means and said first means for initiating and controlling the flow of oxygen containing gas in relation to the temperature in said conduit and the position of said first damper means, a second control means coupled to said second supply means and to said second means and said pressure sensing means for initiating and controlling the flow of fuel gas in relation to the flow rate of oxygen containing gas, the position of said second damper means and the pressure within said furnace.

4,646,316

ELECTRIC CONNECTING DEVICE FOR CONTACTING A MOLTEN METALLIC MASS

Jacques Michelet, Longeville-les-Metz, and Ghislain Maurer, Metz, both of France, assignors to Irsid, Saint-Germain-en-Laye, France

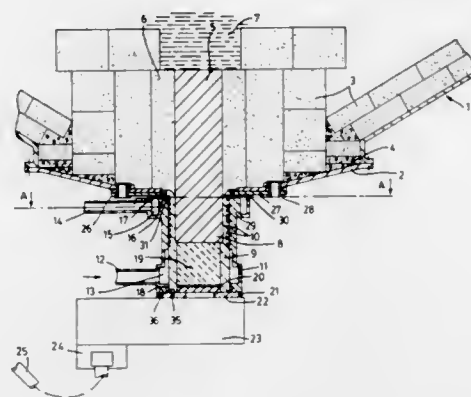
Filed Jun. 27, 1985, Ser. No. 749,235

Claims priority, application France, Jun. 27, 1984, 84 10482

Int. Cl.⁴ H05B 7/00

U.S. Cl. 373—72

11 Claims



1. Electrical connecting device to be located in the wall of a metallurgical container, in contact by one of its ends with a molten metallic mass within said container and connected by its other end to an electrical supply source, said device comprising

- (a) an elongated metallic body (5) for emplacement through said container wall (2) in such manner that one of its ends contacts said molten metallic mass (7) and that its other end constitutes a terminal portion (8) projecting to the outside of said container;
- (b) a sleeve (9) of good heat and electrical conducting material surrounding and being in contact with only said terminal portion (8) of said metallic body, said sleeve being connected to an electrical supply source; and
- (c) means for cooling said sleeve (9) by circulation of a cooling fluid.

4,646,317

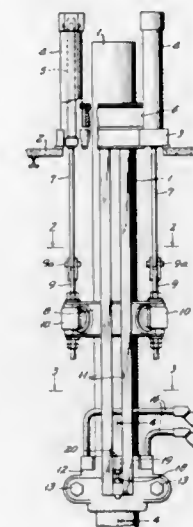
ELECTRODE HOLDER SYSTEM FOR ELECTROTHERMIC SMELTING FURNACES

Knut Evensen, Oslo, Norway, assignor to Elkem a/s, Oslo, Norway
Continuation-in-part of Ser. No. 554,896, Nov. 25, 1983, Pat. No. 4,543,656. This application Jul. 8, 1985, Ser. No. 752,896
The portion of the term of this patent subsequent to Sep. 24, 2002, has been disclaimed.

Int. Cl.⁴ H05B 7/10

U.S. Cl. 373—101

5 Claims



1. An electrode holding system for electrothermic smelting furnace comprising:
 - (a) a suspension frame resting entirely on top of a smelting furnace;
 - (b) two vertical rails suspended at their upper ends from said suspension frame, said rails being parallel to an electrode;
 - (c) stopper means connected to the lower end of said vertical rails;
 - (d) an electrode frame;
 - (e) releasable clamping means connected to said electrode and to said electrode frame;
 - (f) current clamping means conducting current to said electrode, connected to said electrode, wherein said current clamping means is a pressure ring and a current clamp, said stopper means representing the lowest limit for downward movement of said current clamping means; and
 - (g) hydraulic means connected to said electrode frame and to said suspension frame for moving said electrode up and down.

4,646,318

CRUCIBLE FURNACE WITH ADJUSTABLE ELECTRODES

Friedrich Nordmeyer, Mettmann; Eckard Schunk, Düsseldorf, both of Fed. Rep. of Germany; Frank Winter, and Clive L. Jackson, both of Wrexham, both of United Kingdom, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed May 24, 1985, Ser. No. 737,415

Claims priority, application Fed. Rep. of Germany, May 24, 1984, 3419681

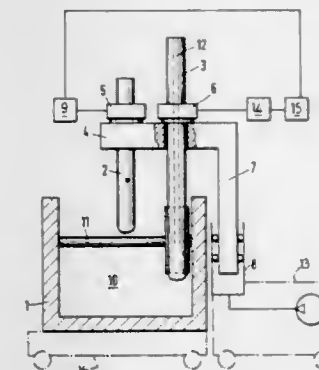
Int. Cl.⁴ H05B 7/101

U.S. Cl. 373—105

8 Claims

1. A crucible furnace comprising:
 - (a) a furnace vessel;
 - (b) a supporting arm disposed above said furnace vessel;
 - (c) a graphite electrode mounted in said supporting arm for vertical movement relative thereto;
 - (d) first means for moving said graphite electrode vertically

relative to said supporting arm into and out of said furnace vessel;
(e) a metal contact electrode mounted in said supporting arm for vertical movement relative thereto;
(f) second means for moving said metal contact electrode



vertically relative to said supporting arm into and out of said furnace vessel;
(g) a vertical guide column on which said supporting arm is mounted; and
(h) third means for moving said vertical guide column vertically relative to said furnace vessel.

4,646,319

BIDIRECTIONAL BUS COUPLER PRESENTING PEAK IMPEDANCE AT CARRIER FREQUENCY

Joseph C. Engel; Dirk J. Boomgaard, both of Monroeville, and Leonard C. Vercellotti, Oakmont, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1985, Ser. No. 706,079

Int. Cl.⁴ H04L 5/14

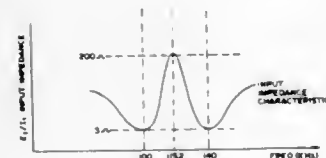
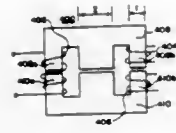
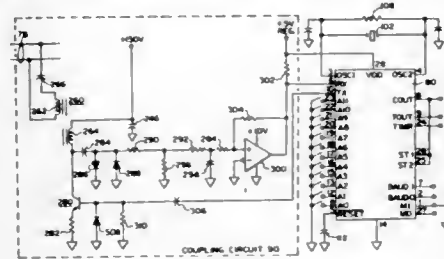
U.S. Cl. 375—7

32 Claims

4. A bidirectional coupling circuit for use in a communication and control system in which high frequency carrier signals are transmitted in both directions over a common network line, comprising a transformer having first and second windings and core means for inductively coupling said windings, said core means comprising a pair of opposed, E-shaped core sections of ferrite material and having an air gap between the opposed leg portions thereof, means connecting said first winding to said common network line, means for tuning said first and second windings to the frequency of said high frequency carrier, amplifier means connected to said second winding for amplifying a high frequency signal received over said common network line, and drive means connected to said second winding and supplying a high frequency carrier signal thereto for transmission over said common network line.

7. A bidirectional coupling circuit for use in a communication and control system in which high frequency carrier signals are transmitted in both directions over a common network line, comprising a transformer having first and second windings and core means for inductively coupling said windings, means connecting said first winding to said common network line, means for tuning said first and second windings to the frequency of said high frequency carrier, amplifier means connected to said second winding for amplifying a high frequency signal received over said common network line, wherein said amplifier means includes operational amplifier means having one input connected to said second winding and another input connected to a point of fixed potential, said operational amplifier developing a received carrier signal of predetermined amplitude in the output thereof in response to a signal developed across said second winding of predetermined minimum signal strength, and driver means connected to said second winding for supplying a high frequency carrier signal thereto for transmission over said common network line.

26. In a communication and control system of the type in which two-way communication between a master controller and a plurality of remote stations is accomplished by means of high frequency carrier signals transmitted over a common network line, the combination of, means at each of said remote stations for transmitting plural bit high frequency carrier messages to and receiving plural bit high frequency carrier mes-



sages from said common network line, a bidirectional coupling circuit connecting said transmitting and receiving means of each of said remote stations to said common network line, each of said coupling circuits having a high input impedance at said carrier frequency and having a low input impedance at frequencies spaced on either side of said carrier frequency to minimize reception of signals on either side of said carrier frequency.

4,646,320

AUTOMATIC DIGITAL STRAPPING APPARATUS FOR DATA MODEMS

Vedavalli G. Krishnan, Miami Lakes, Fla., assignor to Racal Data Communications Inc., Fort Lauderdale, Fla.

Continuation of Ser. No. 363,202, Mar. 29, 1982, abandoned.

This application Jun. 14, 1985, Ser. No. 744,891

Int. Cl.⁴ G06F 13/00

U.S. Cl. 375—8

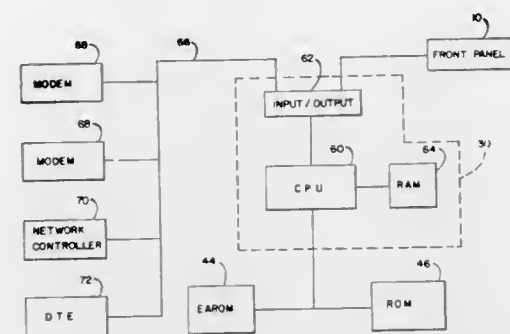
2 Claims

1. A data modem, comprising:
 - an option microprocessor for use in establishing a configuration of said modem;
 - input means, coupled to said option microprocessor and coupled to a control panel for receiving input signals from said control panel and for providing said input signals to said option microprocessor;
 - a nonvolatile alterable memory, coupled to said option microprocessor, for storing information for use by said option microprocessor in establishing a custom modem configuration;
 - a fixed read only memory, coupled to said option processor,

for permanently storing information for use by said option microprocessor in establishing a default modem configuration;

a first random access memory coupled to said option microprocessor for storing one of said modem configurations; loading means, coupled to said option microprocessor and responsive to said input means, for loading information stored in one of said fixed read only memory and said nonvolatile alterable memory into said random access memory to establish information in said first random access memory to define said modem configuration, said loading means including means for first attempting to load said custom configuration information from said nonvolatile memory and in the absence of configuration information in said nonvolatile memory for attempting to load said default modem configuration information from said fixed read only memory;

keying means, coupled to said input means, for receiving a key code and comparing said key code to a predetermined



code prior to accepting input from said control panel, and further including means for inhibiting said loading means from accepting input from said control panel if said key code is different than said predetermined code;

modem configuring means, coupled to said random access memory, for configuring said modem in response to information stored in said random access memory;

a second random access memory;

a plurality of control microprocessors for controlling a corresponding plurality of modem functions, each of said control microprocessors coupled to said second random access memory;

means for transferring portions of said modem configuration information from said first random access memory to said second random access memory for use by said plurality of control microprocessors; and

display means situated on an outer surface of said modem, for displaying information indicative of the configuration of said modem.

4,646,321

INTERPOLATION PULSE DURATION MODULATED ADDER

Allan M. Berlinsky, Randolph, N.J., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 31, 1984, Ser. No. 646,345

Int. Cl.⁴ H03K 1/18, 7/08, 9/08; G06F 7/38

U.S. Cl. 375—22

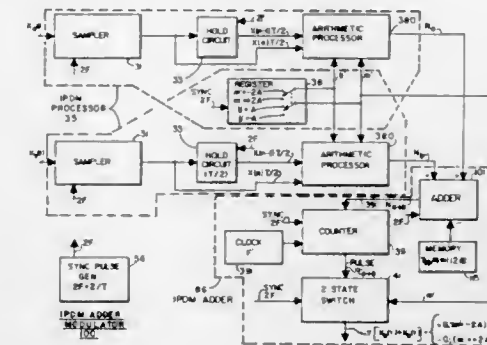
12 Claims

1. An adder for providing a pulse duration modulated signal of the sum of a first and second signal comprising:
 - first and second input signals;
 - first and second means providing first and second numerical values representing the times of intersection of said first and second input signals, respectively, with a triangular signal generated within each of said first and second means;
 - said times of intersection being measured from each successive peak value of said triangular signal;

a synchronizing pulse generator for providing synchronizing pulses at times corresponding to the peak values of said triangular signal;

a memory means providing a third numerical value equal to one-quarter the number of units of time corresponding to the period of said triangular signal;

adding means summing the first and second numerical values and subtracting therefrom said third numerical value to provide a fourth numerical value output;



a counter responsive to each said synchronizing pulses to input to said counter the fourth numerical value provided by said adding means;

a source of clock pulses of higher frequency than said synchronizing pulses providing pulses to said counter;

said counter providing an output pulse each time that the count provided by said fourth numerical value is counted by said clock pulses; and

a two-state switch responsive to the output pulses of said counter to provide a change in the output state of said switch at each occurrence of said output pulses.

4,646,322

ADAPTIVE DELTA MODULATION CODEC

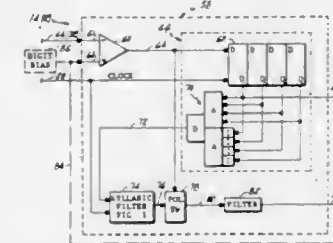
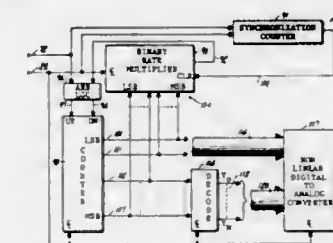
Stephen D. Flanagan, Santa Monica, and John C. Gord, Venice, both of Calif., assignors to Telex Computer Products, Inc., Tulsa, Okla.

Filed Dec. 19, 1983, Ser. No. 562,623

Int. Cl.⁴ H03M 7/38

U.S. Cl. 375—27

4 Claims



1. A syllabic filter for changing the amplitude of a voice approximation signal provided by a continuously variable slope delta modulation (CVSD) codec in each sample interval, by an amount proportional to a difference magnitude between the voice approximation signal and an actual voice signal

received by the codec, as indicated by the coincidence of a first logic state of a coincidence signal bit provided by the codec in successive sample intervals, the filter comprising:

counter means, responsive to the coincidence signal bit and to a binary rate signal bit, for providing a syllabic signal having a syllabic count in each sample interval between a minimum count, corresponding to low coincidence of the coincidence bit first logic state, and a maximum count corresponding to a high coincidence thereof, said syllabic count increasing by one in the presence of the coincidence signal bit first logic state and decreasing by one in the presence of a first logic state of said binary rate signal bit, said count remaining constant in the simultaneous presence and, alternately, in the simultaneous absence of the coincidence signal bit first logic state and said binary rate signal bit first logic state;

binary rate multiplier means, for providing said binary rate signal bit first logic state to said counter means, periodically, at a variable frequency which increases with an increasing syllabic count value;

signal decode means, for decoding said syllabic count into first and second state signals in each sample interval, said first state signal identifying a highest whole range exceeded by said syllabic count from among a plurality of sequential, equal increment syllabic count value ranges between said minimum value and said maximum value, said second state signal identifying the incremental syllabic count value above the highest whole range identified by said first state signal;

first converter means, for providing a first analog signal in each sample interval at an amplitude proportional to said highest whole range identified by said first state signal, said first converter means increasing said first analog signal amplitude, non-linearly, in increasingly greater magnitude increments and, alternately, decreasing said first analog signal amplitude in increasingly lesser magnitude increments, in succeeding sample intervals, in response to said first state signal indicating a highest whole range which is higher or lower, respectively, in said sequence of value ranges;

second converter means, for providing a second analog signal in each sample period at an amplitude proportional to said incremental syllabic count value identified by said second state signal, and for changing said second analog signal amplitude linearly, upward and downward, in response to said second state signal indicating a higher syllabic count value and a lower syllabic count value, respectively; and

integrator means, for adding said first analog signal amplitude to said second analog signal amplitude in each sample period, to provide the sum signal amplitude thereof as the codec voice approximation signal amplitude.

4,646,323

METHOD AND SYSTEM FOR DIGITAL DATA TRANSMISSION

Karl Meinzer, 38 Hobenweg, 3550 Marburg-1, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,249

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1982, 3237619

Int. Cl.⁴ H04L 27/00

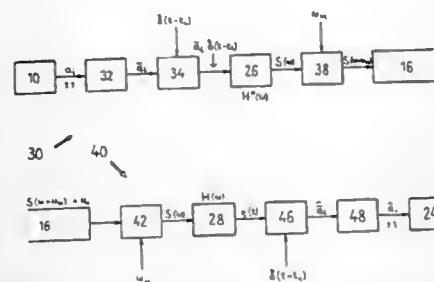
U.S. Cl. 375—37

22 Claims

1. A method for digital transmission of pulses of a predetermined duration including the steps of:

- (a) transmitting a data stream from a transmitter having a narrow band signal spectrum including the steps of modulating said data stream by an approximating Delta function; and,
- (b) recovering said data stream by demodulating said narrow band signal spectrum by an approximate Delta function at a receiving end, said steps of transmitting and recovering (1) using periodical zeros of an autocorrelation function of

said narrow band signal spectrum, and (2) limiting the effective duration of said autocorrelation function, said



effective duration being less than a predetermined multiple of said pulse duration.

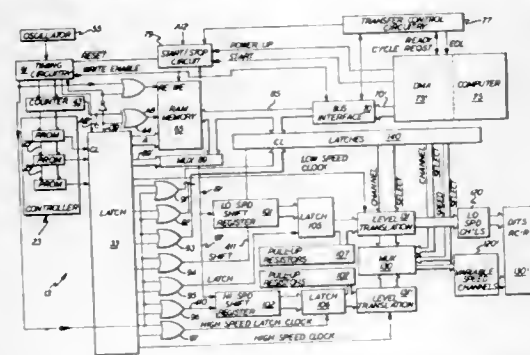
4,646,324 DIGITAL INFORMATION TRANSFER SYSTEM (DITS) TRANSMITTER

Rocco V. Albano, Granby, and Ronald G. Durej, Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 11, 1985, Ser. No. 700,434
Int. Cl.⁴ H04K 1/10

U.S. Cl. 375—38

1 Claim



1. A method for producing words of information at a predetermined number of parallel output channels of a digital transmitter, each of the words being serially output at a selected one of said output channels, said method comprising the steps of: receiving said information in parallel from an established data base for storage in a memory means for receiving said information; carrying said information on a bus means for carrying said information to said memory means in order temporarily to hold said information for reapplication onto said bus means; selecting corresponding bits of information from a plurality of words applied onto said bus means, with a multiplexer means for selecting bits of information from said bus means; applying a predetermined number of said words onto said bus means to permit the selection of corresponding bits of said words by said multiplexer means with a controller means for controlling the operation of said digital transmitter; receiving said predetermined number of corresponding bits of information from said multiplexer means for producing said corresponding bits of said words for serial output at said parallel channels with a shift means for receiving said bits of information; and repeatedly receiving said corresponding bits of words from said shift means and latching them with respect to respective ones of said output channels, until each of the bits in each of said words has been produced at one of said output channels.

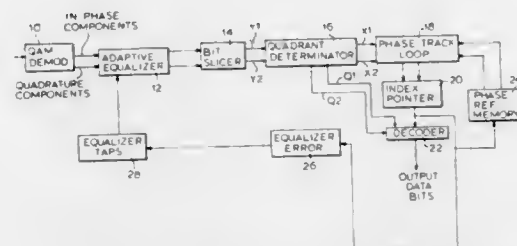
4,646,325 INDEX DECODER FOR DIGITAL MODEMS

Edward S. Zuranski, Largo, and Kenneth Martinez, Pinellas Park, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Apr. 15, 1985, Ser. No. 723,264
Int. Cl.⁴ H04L 5/12, 23/02

U.S. Cl. 375—39

3 Claims



1. In a digital modem for receiving QAM signals having in-phase and quadrature components which may be represented as points disposed at two radial distances from an origin and in four quadrants of a signal constellation, a decoder section comprising: an adaptive equalizer with adjustable taps for equalizing the received signal; quadrant detecting means for determining a quadrant corresponding to an equalized signal and for generating a quadrant signal indicative of said quadrant; intermediate signal generating means for generating an intermediate in phase and an intermediate quadrature signal corresponding to said equalized signal, said intermediate signals being disposed in a preselected quadrant; index pointer means for generating an index pointer corresponding to said intermediate signals; decoder means for generating output binary bits corresponding to said index pointer and said quadrant signal, said decoder means having a look-up table; an error signal generator for generating a control signal in accordance with said index pointer; and an equalizer tap adjuster for adjusting said taps in accordance with said control signal.

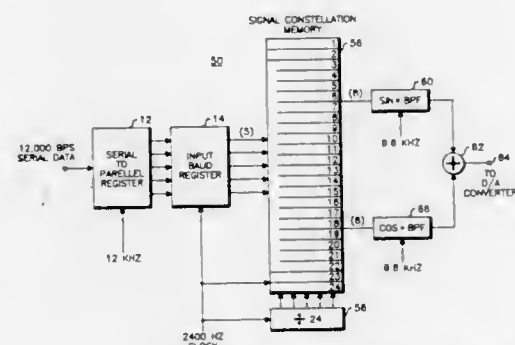
4,646,326 QAM MODULATOR CIRCUIT

Charles A. Backof, Jr., Hoffman Estates, Ill., and Mark E. Huntzinger, Sharon, Mass., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 20, 1983, Ser. No. 543,740
Int. Cl.⁴ H04L 27/00

U.S. Cl. 375—39

9 Claims



1. A circuit for modulating data in accordance with a predetermined modulation scheme, said circuit comprising: (a) means for inputting data at a predetermined rate;

(b) means for storing and retaining said inputted data for a predetermined period; (c) memory means having first and second outputs and being coupled to said storage means, for storing multiple versions of a signal constellation, said signal constellations containing precomputed representations of every possible value of said inputted data wherein each of said multiple versions is related to each other according to a predetermined phase relationship; (d) first and second processing means coupled to said first and second outputs of said memory means, respectively, for processing said precomputed data to produce output signals, said processing means being configured to provide a predetermined impulse response in quadrature with respect to each other, chosen in accordance with a predetermined modulation scheme; and (e) means coupled to said first and second processing means for combining the output signals therefrom and providing an output signal.

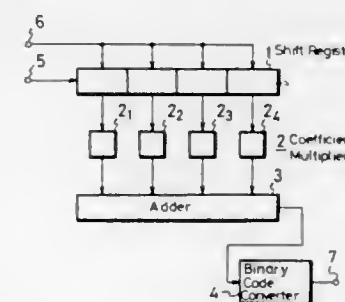
4,646,327 WAVEFORM SHAPING APPARATUS

Yuichi Kojima, Tokyo; Etsumi Fujita, Kanagawa, and Yasuhiro Hideshima, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 2, 1985, Ser. No. 761,905
Claims priority, application Japan, Aug. 23, 1984, 59-175702
Int. Cl.⁴ H04L 25/49

U.S. Cl. 375—60

6 Claims



1. A waveform shaping apparatus comprising: a shift register having a clock input terminal, a data input terminal and a plurality of data output terminals; a plurality of coefficient multipliers having respective input and output terminals, said input terminals of the coefficient multipliers being connected to respective data output terminals of said shift register, each of said coefficient multipliers using a 2's-complement binary code offset within a predetermined range from a normal 2's-complement binary code; adder means supplied with output signals from said output terminals of said coefficient multipliers to produce a summing output; and code converter means receiving said summing output for converting the same to a natural binary code or a 2's-complement binary code.

4,646,328 FRAME ALIGNMENT LOSS AND RECOVERY DEVICE FOR A DIGITAL SIGNAL

Armand J. Riou, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

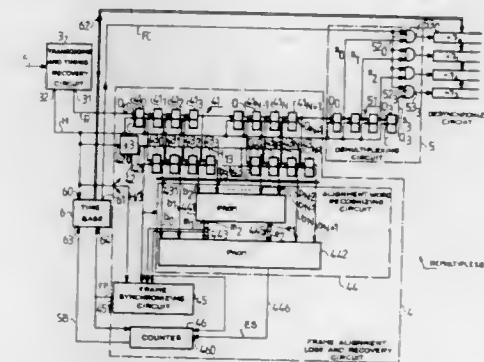
Filed Jul. 18, 1985, Ser. No. 756,228
Claims priority, application France, Jul. 20, 1984, 84 11607
Int. Cl.⁴ H04L 7/04

U.S. Cl. 375—114

13 Claims

1. A frame alignment loss and recovery device for a digital

signal having a periodic frame alignment word having N predetermined bits, where N is an integer, said device comprising a shift register having N+2 stages for receiving said digital signal under the control of a clock signal recovered from said digital signal, means for extracting (N+2)-bit words from said shift register at a frequency equal to one third of said clock signal, means for comparing each of said extracted words with first, second and third predetermined words, each of said predetermined words having N+2 bits, said first, predetermined word including N last bits respectively identical to



said N alignment word bits, said second predetermined word including N central bits respectively identical to said N alignment word bits, and said third predetermined word including N first bits respectively identical to said N alignment word bits, and means connected to said comparing means for deriving a frame synchronization pulse in phase with the start of an alignment word contained in an extracted word, said extracted word having bits at the same locations in the word that are identical to bits at the same location in one of said three predetermined words.

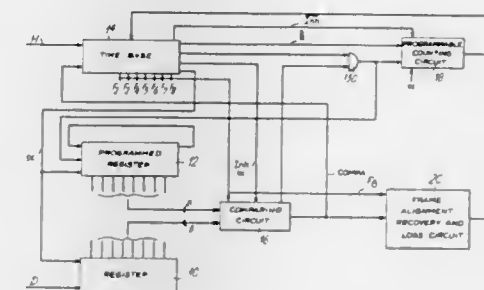
4,646,329 RECOVERY OF FRAME ALIGNMENT WORD HAVING BITS DISTRIBUTED IN A DIGITAL TRANSMISSION SIGNAL

Alain Bojarski, 38, rue de Kerangarou, 22700 Perros Guirec, France

Filed Apr. 22, 1985, Ser. No. 725,572
Claims priority, application France, Apr. 20, 1984, 84 06324
Int. Cl.⁴ H04L 7/00

U.S. Cl. 375—116

6 Claims



4. A device for recovering a frame alignment word having bits distributed in a digital transmission signal, said frame alignment word having a predetermined number N of bits distributed in a frame of said digital signal, said frame being divided into M consecutive sectors having ranks 1, 2, ..., (1-M), M, each of said sectors being divided into first and second parts, said first part being a heading including a predetermined number of alignment bits, the heading bits of all said consecutive sectors

in said frame placed end to end forming said frame alignment word, said second part being a bit packet corresponding to digital signal information, said device comprising:

- a time base source for periodically deriving a sector frequency with which said sectors are transmitted in said digital signal and at a frame frequency, a sequence of signals determining M consecutive time slots, each of said time slots being equal in length to a sector,
- a first N-bit shift register controlled by said time base responsive to said digital signal and timed at said sector frequency for progressively storing bit groups taken from said digital signal, each of said bit groups having a number of digital signal consecutive bits equal to said number of bits in each heading,
- a second N-bit shift register having stored said frame alignment word and looped back on itself for deriving all N-1 circular permutations of said alignment word under the control of said time base, said circular permutations being of ranks 1...k... (N-1),
- comparing means connected to said first and second shift registers and controlled by said time base source for comparing bit-by-bit a binary word derived from said first register with said alignment word and said circular permutations thereof, the binary word derived from said first register having an increasing length up to a maximum length equal to that of said frame alignment word, and
- storing means connected to said comparing means and controlled by said time base source for storing rank k of one of said circular permutations for which an identity is detected by said comparing means between contents of said first and second registers,
- the sector frequency of said time base source being inhibited by said comparing means once said identity is detected, said sector frequency being inhibited during one of said consecutive time slots positioned in rank M of said frame and remaining inhibited for a number of time slots equal to said rank k of said stored permutation whereby frame alignment is recovered.

4,646,330

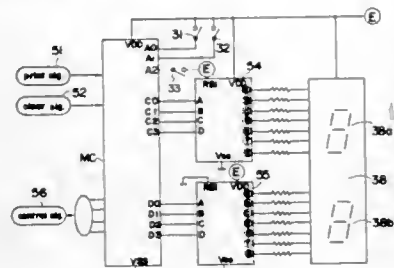
PRESET COUNTER APPARATUS FOR COPYING MACHINES AND THE LIKE

Masamichi Sugiura, and Tsuneo Kitagawa, both of Aichi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Dec. 3, 1981, Ser. No. 327,020

Claims priority, application Japan, Dec. 5, 1980, 55-172227; Dec. 8, 1980, 55-173706; Dec. 8, 1980, 55-173707; Dec. 17, 1980, 55-179257

Int. Cl.⁴ G07C 3/00; G03G 15/00
U.S. Cl. 377-15

18 Claims



1. A preset counter apparatus for copying machines and the like comprising:
 - display means for displaying a set numerical value;
 - key input means for increasing or decreasing the set numerical value;
 - timer means started initially by an ON input of the key input means for measuring predetermined periods of time and producing signals;
 - first control means, being activated by a signal from the timer means after every lapse of a period of time set on the

timer means, for changing the set numerical value by 1 while a continuous ON input is being given by the key input means; and

- second control means, being activated by the signal from the timer means after every lapse of a period of time, for shortening the period of time of the timer means and for starting the timer means with a shortened period of time, said second control means managing the shortening of the period of time at least several times with progressively lesser periods of time from an initial period of time until the period of time becomes a predetermined minimum period of time.

4,646,331

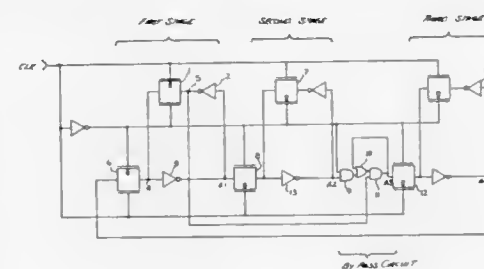
ELECTRONIC STATIC SWITCHED-LATCH FREQUENCY DIVIDER CIRCUIT WITH ODD NUMBER COUNTING CAPABILITY

Glenn L. Ely, San Jose, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Apr. 1, 1985, Ser. No. 718,171
Int. Cl.⁴ H03K 21/00

U.S. Cl. 377-47

3 Claims



1. An electronic static switched-latch odd frequency divider circuit comprising:

- (a) a first stage comprising a first transmission gate coupled to and controlled by a clock signal, said first transmission gate having an input and an output and transmitting signals therethrough when said clock signal has a first level, and a first switched-latch means coupled to the output of the first transmission gate, the input of said first transmission gate providing the input of said first stage and the output of said first switched latch means providing the output of said first stage;
- (b) a second stage comprising a second transmission gate coupled to and controlled by said clock signal, said second transmission gate having an input and an output and transmitting signals therethrough when said clock signal has a second level, and a second switched-latch means coupled to the output of the second transmission gate, the input of said second transmission gate providing the input of said second stage and the output of said second switched-latch means providing the output of said second stage the input of the second stage being coupled to the output of the first stage;
- (c) bypass circuit means coupled to the output of the second stage for selectively inverting the output of the second stage in a manner which alternates between two even frequency divider modes resulting on average in the desired odd division; and
- (d) a third stage comprising a third transmission gate coupled to and controlled by said clock signal, said third transmission gate having an input and an output and transmitting signals therethrough when said clock signal has said second level, and a third switched-latch means coupled to the output of the third transmission gate, the input of said third transmission gate providing the input of said third stage and the output of said third switched-latch means providing the output of said third stage the input of

the third stage being coupled to the output of the bypass circuit means, and the output of the third stage being coupled to the input of the first stage.

4,646,332

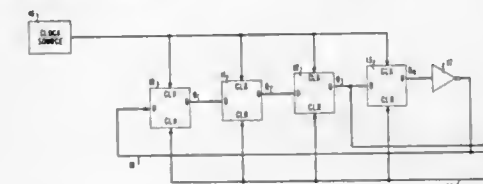
TWISTED RING COUNTER WITH RECOVERABLE DISALLOWED STATES

Michael E. Sajor, Hackettstown, and Asadollah Seghatoleslami, Haworth, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 8, 1985, Ser. No. 720,807
Int. Cl.⁴ G11C 19/00

U.S. Cl. 377-124

5 Claims



1. In a multi-stage twisted ring counter for recurrently operating through a predetermined normal sequence of counting steps, each step comprising a different binary state pattern having no more than one stage in a binary one state adjacent to no more than one stage in a binary zero state,

means for detecting occurrence of a predetermined binary state pattern for a plurality, less than all, of stages of said counter and which state pattern is common to all possible operating sequences of said counter, whether normal or abnormal, and

means, responsive to said detecting means in the next one of said steps after detecting said common pattern, for setting said counter to a predetermined state of all stages thereof which is one step in a normal cyclic sequence of operation.

4,646,333

CT SCANNER

Tadatoki Yoshida, Ootawara, and Kouji Natori, Tochigi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

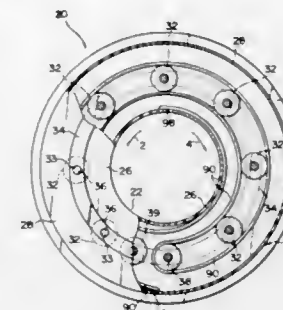
Filed Jul. 27, 1984, Ser. No. 635,205

Claims priority, application Japan, Jul. 29, 1983, 58-137601

Int. Cl.⁴ H05G 1/06

U.S. Cl. 378-4

8 Claims



1. A CT scanner for producing transverse layer images of a patient comprising:
 - a rotating frame having a hole which permits insertion of the patient, and which can rotate around the patient;
 - a stationary base for supporting the rotating frame;
 - a radiation source mounted on said rotating frame for exposing fan-shaped radiation beams on the patient;
 - a radiation detector set on the rotating frame for detecting the fan-shaped radiation beams permeating the patient;

a power source securely set at the stationary base for generating a first voltage power;

a high voltage generator built on the rotating frame for transforming a first voltage power to a second voltage power larger than the first voltage power and for impressing the second voltage power on the radiation source;

a cable member for conducting the first voltage power from the power source to the high voltage generator; and

a cable-handling device for handling the cable member to permit the rotation of the rotating frame, the cable-handling device comprising a ring-shaped housing having an outer peripheral member and an inner peripheral member for holding the cable member wound between the outer peripheral member and the inner peripheral member, either of which is disposed on and rotatable with the rotating frame and the other of which is fixed at the stationary base; the cable-handling device also comprising a plurality of rollers each having a rotating shaft and being arranged in the housing in its circumferential direction, with the axis of the roller aligned with that of the housing, the cable member being wound around the inner peripheral member of the ring-shaped housing at least once in a first direction, wound about half the periphery of a prescribed one of the rollers, and wound at least once around the outside of the rollers in a second direction opposite to the first direction, and the end portions of the cable member facing the outer and inner peripheral members being fixed thereto; the cable-handling device further comprising a ring-shaped coupling member extending about the inner peripheral member of the ring-shaped housing, which is in engagement with the shafts of the rollers to position the rollers in the housing so as to surround the inner peripheral member, the ring-shaped coupling member being freely movable relative to the outer and inner peripheral members, and an auxiliary roller having a rotating shaft, arranged in the housing with the axis of the auxiliary roller aligned with that of the housing, and engaged with the ring-shaped coupling member, the auxiliary roller defining the locus of the cable member between the auxiliary roller and the prescribed one of the rollers.

4,646,334

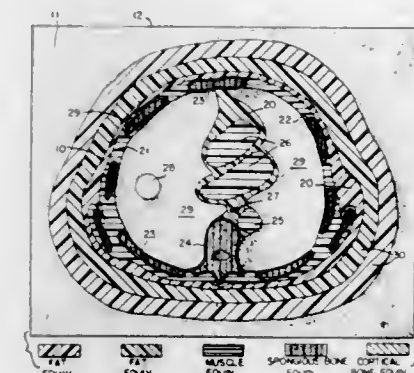
RADIOGRAPHIC TEST PHANTOM FOR COMPUTED TOMOGRAPHIC LUNG NODULE ANALYSIS

Elias A. Zerhouni, 4201 Thoroughgood La., Virginia Beach, Va. 23455

Continuation-in-part of Ser. No. 445,462, Nov. 10, 1982. This application Jan. 14, 1986, Ser. No. 818,804

Int. Cl.⁴ G03B 42/02
U.S. Cl. 378-18

9 Claims



9. In a method for evaluating a computed tomograph scan of a nodule in a lung of a human or non-human animal comprising generating a computer tomograph of a transverse section of said animal containing lung and nodule tissue, generating a second computer tomograph of a test phantom comprising a

device which simulates said transverse section of said animal, the tissue simulating portions of said device being constructed of materials having radiographic densities substantially identical to those of the corresponding tissue in said simulated transverse section of said animal and having voids therein which simulate, in size and shape, the lung cavities in said transverse section and which contains a test reference nodule constructed of a material of predetermined radiographic density which simulates in size, shape and position within a lung cavity void of said test phantom the nodule in said transverse section of said animal and comparing the respective tomographs.

4,646,335

APPARATUS FOR X-RAY PHOTOGRAPHY OF THE AREA OF THE DENTITION AND OF THE JAWS

Erkki Tammisalo; Heikki Kanerva, both of Turku; Jaakko Aarnio, Helsinki; Markku Wederhorn, Espoo, and Kai Laner, Helsinki, all of Finland, assignors to Orion-Yhtymä, Helsinki, Finland

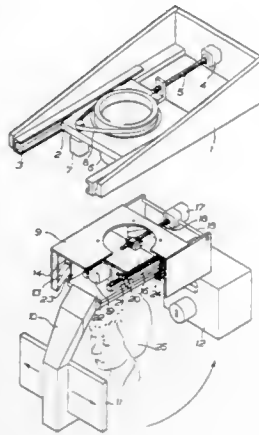
Filed Jan. 31, 1985, Ser. No. 696,691

Claims priority, application Finland, Jan. 2, 1984, 840413

Int. Cl.⁴ A61B 6/14

U.S. Cl. 378—38

10 Claims



1. An apparatus for X-ray photography of the area of dentition and the jaws, said apparatus comprising:
 - a stationary frame part;
 - a bearing part supported in the frame part and movable in relation thereto;
 - a support arm mounted for rotational movement in relation to said bearing part;
 - a source of means for rotating said arm for X-rays provided at one end of the support arm;
 - a movable X-ray film provided at the other end of the support arm; the movements of the support arm and the film being synchronized so that, during the movement, an image of an area of desired shape, e.g., is obtained on the film;
 - structural parts for mounting the support arm in relation to the bearing part;
 - means provided in said structural parts and enabling the support arm to be tilted about an axis, said axis being located at the level of the patient's head and being perpendicular to the axis of rotation.

4,646,336

LASER GENERATOR

Ryoji Koseki, Buena Park, Calif., assignor to Amada Engineering Service Co., Inc., La Mirada, Calif.

Filed Jan. 8, 1986, Ser. No. 817,052

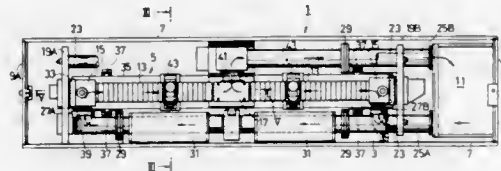
Int. Cl.⁴ H01S 3/22

U.S. Cl. 372—58

1. A laser generator comprising:

17 Claims

a support base which supports both an output mirror assembly and a rear mirror assembly in the laser generator; a first flow control unit mounted at one end of said support base, a second flow control unit mounted at the opposite end of said support base, and a manifold block mounted substantially dead center on said support base;



an integrated discharge device having a laser tube integrally connected between each flow control unit and the manifold block; and said integrated discharge device provided in a freely mountable and dismountable manner on said base.

4,646,337

Patent Not Issued For This Number

4,646,338

MODULAR PORTABLE X-RAY SOURCE WITH INTEGRAL GENERATOR

Brian Skillicorn, Sunnyvale, Calif., assignor to Kevex Corporation, Foster City, Calif.

Filed Aug. 1, 1983, Ser. No. 519,402

Int. Cl.⁴ H05G 1/34, 1/32, 1/10, 1/02

U.S. Cl. 378—110

23 Claims



1. A modular portable x-ray source with integral generator system for generating continuous x-rays of regulated intensity and energy level, said system comprising:
 - an x-ray tube having a cathode and a grounded anode emitting x-rays as a consequence of bombardment of an accelerated electron beam emitted by said cathode,
 - a direct current high voltage power supply including a high voltage step-up transformer having coaxially wound primary and secondary windings and a ceramic ferrite core coaxial therewith, and a voltage multiplier of plural cascaded capacitors and diodes for generating a directly controllable continuous, smoothly variable direct current high voltage from a low voltage externally supplied from

a low voltage direct current supply, said direct current high voltage being directly connected and applied without external cables across said cathode and anode to generate x-rays of predetermined, substantially constant energy level,

unitary housing means including a molded solid block of rigid cured plastic resin material in which substantially all air pockets and other voids have been removed, said block having an electrostatic outer shield coating, said block defining a well in which said x-ray tube is removably mountable and wherein the cathode thereof is connectable to the voltage multiplier of said direct current high voltage power supply and said block encapsulating said primary and secondary windings of said transformer and said voltage multiplier, said ceramic ferrite core being external to said block and passing through an opening defined therethrough which is coaxial with said primary and secondary windings, thereby facilitating differential thermal expansion of said core relative to said block without damage to said core.

4,646,339

ROTATING X-RAY MASK WITH SECTOR SLITS

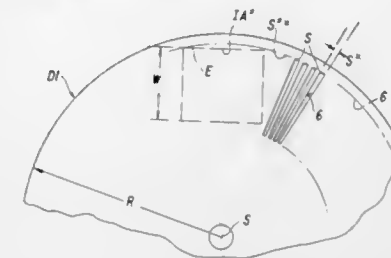
Richard E. Rice, Arlington, Mass., assignor to John K. Grady, Littleton, Mass.

Filed Jun. 11, 1985, Ser. No. 743,386

Int. Cl.⁴ G21K 5/10, 1/04

U.S. Cl. 378—146

7 Claims



1. An X-ray system for examining a subject comprising:
 - an X-ray source directing a fan-shaped beam of X-radiation through a subject position;
 - an X-ray receptor with an image area in the beam beyond the subject position; and
 - a rotating disk of radio-opaque material between the X-ray source and subject position, the disk having a plurality of spaced, sector-shaped X-ray slits, whose sides are radial lines of the disk, in groups of more than one slit transmitting X-radiation in narrow moving beams radially spanning the receptor image area while scanning the image area during rotation of the disk;
- the dimensions of the system falling within the following ranges of dimensionless ratios:
 - (1) DW/RL is less than 0.5;
 - (2) D/L is greater than 0.15;
 - (3) LS^*N/WD is greater than 0.15 and less than 0.6 wherein
 - D is the distance of the disk from the X-ray source,
 - W is the width of the X-ray image area spanned by the narrow beams,
 - R is the radius of the disk,
 - L is the distance between the X-ray source and the receptor,
 - S^* is the radially outermost slit width in the X-ray beam, and
 - N is the number, greater than one, of slits whose beams simultaneously intersect the outer edge of the image area,
- so that the quantity of scattered X-rays relative to X-rays forming an image at the receptor is minimized and X-ray scatter is substantially uniform throughout the image area.

4,646,340

SCATTER RADIATION GRID DRIVE

Manfred Bauer, Brunsbek, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

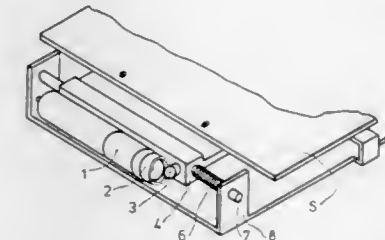
Filed Apr. 30, 1984, Ser. No. 605,532

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316003

Int. Cl.⁴ G21K 1/04; G03B 41/16

U.S. Cl. 378—155

2 Claims



1. A device for reducing scattered radiation comprising:
 - a scatter grid;
 - a lever arm having first and second opposite ends, the first end being pivotally connected to the scatter grid;
 - a roller rotatably connected to the second end of the lever arm;
 - a cam having a surface; and
 - means for pressing the roller against the cam surface by applying a force to the first end of the lever arm;
- characterized in that:
 - the roller has a radius, and the lever has a length between the first and second ends which is equal to or only slightly larger than the radius of the roller; and
 - the cam surface has a slope which changes discontinuously at a point where the roller has a maximum displacement against the pressing means.

4,646,341

CALIBRATION STANDARD FOR X-RAY FLUORESCENCE THICKNESS

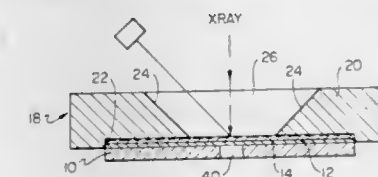
Paul Finer, Roslyn Heights; Robert O. Wahl, Sound Beach, and William Silverman, Melville, all of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Mar. 28, 1985, Ser. No. 716,986

Int. Cl.⁴ G01N 23/06; G01B 15/02; G01D 18/00

U.S. Cl. 378—207

7 Claims



1. A calibration standard for X-ray fluorescence thickness measuring equipment comprising
 - a supporting foil of a first metal having a small diameter bore therethrough,
 - a first layer of uniform known thickness of a second and different metal deposited on one surface of said supporting foil and overlying the bore therein,
 - a housing member disposed in perimetrical secured relation with the marginal edges of said supporting foil and overlying said first layer deposited thereon,
 - said housing member including an inwardly directed bore that terminates in an aperture adjacent the surface of said first layer for selective exposure of the portion of said first layer overlying the small diameter bore in the supporting foil to incident X-radiation.

4,646,342

TEST TRUNK ACCESS CONTROLLER

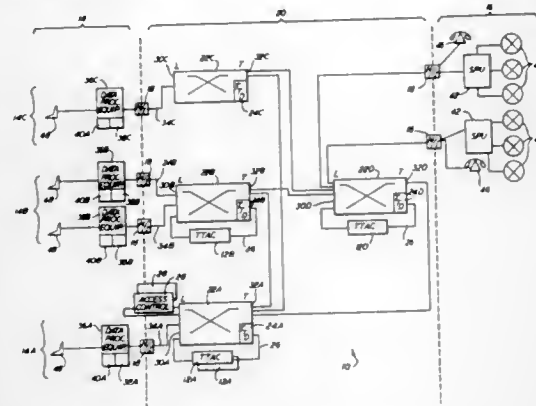
Franklin Hargrave, Newtown; David A. Zeller, Jr., Brookfield; Mark G. Smith, Naugatuck; William L. Hull, III, Southbury; and Francisco A. Middleton, Newtown, all of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Sep. 11, 1985, Ser. No. 774,783

Int. Cl.⁴ H04Q 9/00

U.S. Cl. 379—24

10 Claims



1. A test trunk access controller comprises: means for accessing a first subscriber line via a test trunk device in response to a signal from a second subscriber line said means including a test trunk interface device, said test trunk interface device being connected to said test trunk line including tip, ring, sleeve and ground wires; a first modem, said first modem being connected to said second subscriber line; and a test trunk interface controller, said test trunk interface controller being connected to said first modem and to said test trunk interface device.

4,646,343

ROBBERY-REPELLING ALARM SYSTEM

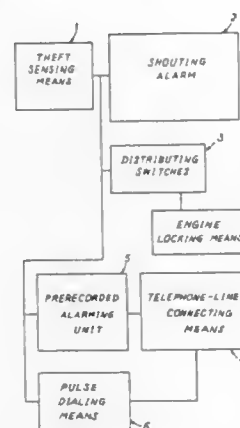
Yung-Shen Chen, 10-4 Fl., 62, Chang Chun Rd., Taipei, Taiwan

Filed Apr. 14, 1983, Ser. No. 484,861

Int. Cl.⁴ H04M 11/04

U.S. Cl. 379—40

8 Claims



1. A robbery-repelling alarm system for an automobile comprising: theft sensing means composed of a group of sensing switches connected in parallel, a group of sensing switches connected in series, a silicon-controlled rectifier connected between a power source and both groups of sensing switches; a shouting alarm which comprises a driving

motor for driving a prerecorded cassette tape, a magnetic head receiving signals from said cassette tape, first amplifying transistors and a final amplifier amplifying signals from the magnetic head and a pair of loudspeakers for producing human warning speech from signals from the final amplifier; several distributing switches connected to the power source and means for locking the engine of the automobile in response to operation of said distributing switches, wherein the locking means comprises a relay and a contactor breaker actuating an ignition coil of the engine ignition system; and a telephone dialing alarm which comprises a prerecorded alarming unit, a pulse dialing means and means for connecting the prerecorded alarming unit and the pulse dialing means to a telephone line, wherein the prerecorded alarming unit and pulse dialing means both use a second cassette tape of which one end is transparent with several opaque zones thereon to produce dialing pulses for an emergency call and the remaining tape is prerecorded with an alarm message for reporting an intrusion or asking for help from relevant sources; wherein the shouting alarm, locking means and telephone dialing alarm are triggered by said theft sensing means.

4,646,344

MOBILE RADIO SET

Bruno Goldhorn, Keltern-Dietlingen, and Rolf Stapelfeldt, Remchingen-Singen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

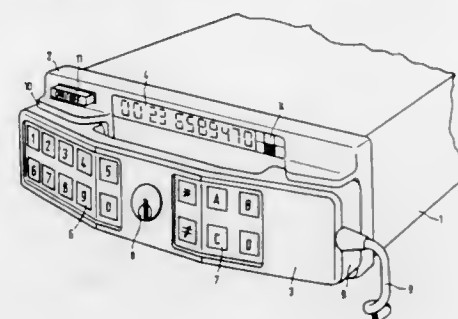
Filed Mar. 20, 1985, Ser. No. 713,963

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410477

Int. Cl.⁴ H04M 11/00; H04Q 7/04

U.S. Cl. 379—58

7 Claims



1. Mobile radio set, comprising a handset cradle and a handset having an earpiece and a mouthpiece on a side facing said handset cradle and a keypad on the other side facing away from said handset cradle, characterized in that the handset cradle (10, 13) is mounted across the front panel (2, 12) of a rectangular-parallelepiped-shaped case, said case housing a transmitter and a receiver and insertable into the dashboard of an automobile, and that the handset (3) comprises means at its earpiece and its mouthpiece (5) for locking said handset to the front panel so as to rest across the latter, and that the keys (6, 7) are readable and operable in this position of the handset (3), and further characterized in that a lock (8) with which the set can be locked up is fitted in the handset (3) with an end portion protruding into an opening of said handset on said side facing away from said cradle.

4,646,345

AUTOMATIC UNIT ID FOR QUASI-TRANSMISSION TRUNKED SYSTEMS

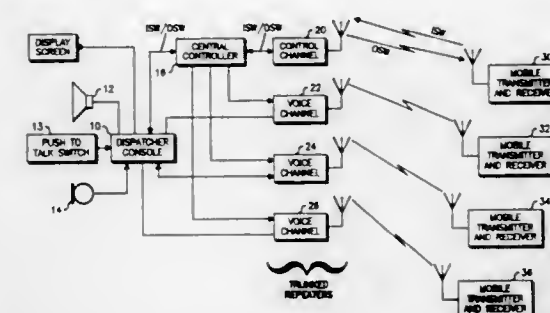
Kenneth J. Zdunek, Schaumburg; Bruce D. Heyman, Algonquin, and Michael D. Sasuta, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 9, 1986, Ser. No. 872,360

Int. Cl.⁴ H04Q 7/04

U.S. Cl. 379—62

11 Claims



1. A two-way trunked communication system including a central control station and a plurality of remote units, each remote unit having a unique, permanent identification code (ID) for identifying the remote unit and at least one group to which it belongs, and comprising:

request making means in each remote unit for making a request on a first channel for the use of another channel and including in the request the ID of the requesting unit and the ID of the called unit or group, said request being made before each transmission on another channel; first responding means in the control station for receiving said request and, if a channel is available, making a grant of the use of that channel, the grant being transmitted on the first channel and including the ID's of the requesting unit and the called unit or group, and the assigned channel information; channel switching means in each remote unit for responding to said grant by switching to the granted channel; timing means in the central control station for timing a predetermined period at the end of each transmission; and channel reserving means in the central control station for reserving said granted channel for the exclusive use of the requesting and called units during said timed period.

4,646,346

INTEGRATED MESSAGE SERVICE SYSTEM

William D. Emerson, Boulder; Deborah J. Hill, Denver; Karen C. Loeb, Englewood; Albert Mizrahi; Charles T. Schlegel, both of Boulder, all of Colo., and Lowell C. Scott, Old Bridge, N.J., assignors to AT&T Company and AT&T Information Systems Inc., both of Holmdel, N.J.

Filed Jan. 22, 1985, Ser. No. 693,334

Int. Cl.⁴ H04M 3/50

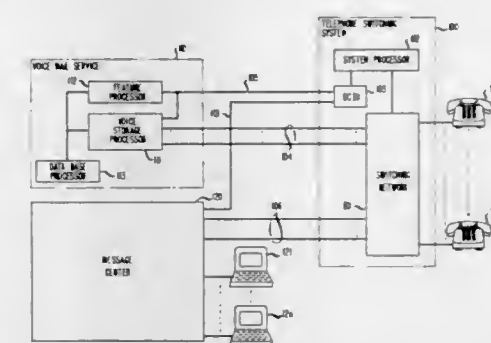
U.S. Cl. 379—214

17 Claims

11. In a business communication system which comprises a telephone communication system and a plurality of message service systems, wherein said message service systems are each connected to said telephone communication system by communication lines which provide each user on said telephone communication system with dial access to said message service systems, a method of providing an integrated message notification service comprising the steps of:

storing in a central memory data relating to message status whenever a user accesses any of said plurality of message service systems to either create a message in said message service system or access a message stored in said message service system; and transmitting to a user in response to said user accessing one

of said message service systems said message status data associated with said accessing user to indicate the location



of all messages for said accessing user in all of said plurality of message service systems.

4,646,347

RINGING SIGNAL REFORMATTING CIRCUIT

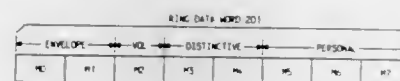
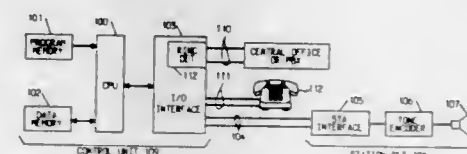
Thomas C. Liu, Atlantic Highlands, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Holmdel, N.J.

Filed May 2, 1985, Ser. No. 729,955

Int. Cl.⁴ H04M 1/72

U.S. Cl. 379—375

12 Claims



10. A ringing signal reformatter comprising means for detecting ringing signals having one or more ringing bursts, means for counting the number of ringing bursts in the detected ringing signal, and means for generating a code representing a modified ringing signal having a predetermined number of bursts and a predetermined on/off timing in response to all detected ringing signals having the same number of ringing bursts.

4,646,348

BLEND CONTROL FOR LOW VOLTAGE STEREO DECODERS

William B. Jett, Jr., San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 18, 1985, Ser. No. 756,159

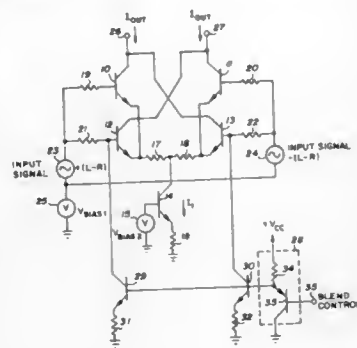
Int. Cl.⁴ H04H 5/00

U.S. Cl. 381—10

4 Claims

1. A stereo blend control circuit for producing an output level related to a d-c control, said circuit comprising: first and second transistors forming a first differential pair, said first pair having input and output terminals; third and fourth transistors forming a second differential pair, said second pair having input and output terminals; means for providing a constant tail current commonly to said first and second pairs; means for cross coupling the output terminals of said first

and second pairs whereby the combined output currents equal said tail current and differential signal inputs to said pairs cancel;
means for providing a common direct current bias voltage to the input terminals of both of said pairs;
resistive means coupled in series with the input terminals of said first pair;



control current biasing means coupled to said input terminals of said first pair whereby a current is passed through said resistive means to develop an offset bias that is a function of said control current; and
means for varying said control current whereby said pairs produce cancelling outputs for zero control current and maximum output for maximum control current.

4,646,349

EQUIPMENT FOR THE STEREPHONIC SOUND REPRODUCTION IN A TELEVISION RECEIVER

Bernhard Puls, Mitterfels, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

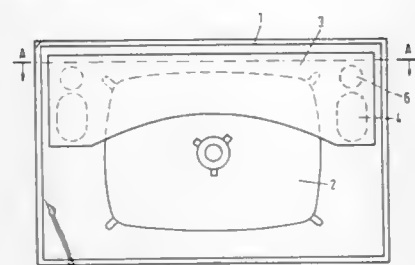
Filed Feb. 11, 1985, Ser. No. 700,378

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1984, 3405128

Int. Cl.⁴ H04R 5/00

U.S. Cl. 381-24

3 Claims



1. A stereophonic sound reproduction system for use in a television receiver, said television receiver comprising a cabinet containing a picture tube having an arcuate portion, said system comprising:
at least a loudspeaker for reproducing a low frequency band;
a crossover network connected to said loudspeaker;
a unitary, elongated enclosure containing said loudspeaker and said crossover network, said enclosure formed so that when installed in said cabinet, it straddles and conforms to said arcuate portion of said picture tube.

4,646,350

SHOE WITH AUDIBLE MESSAGE

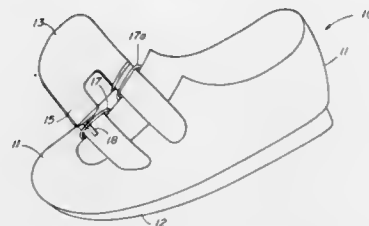
Vijay K. Batra, 4 Daybreak, Turkey Hill Village, Wayland, Mass. 01778

Continuation-in-part of Ser. No. 592,513, Mar. 23, 1984, and a continuation-in-part of Ser. No. 568,743, Jan. 6, 1984. This application Sep. 19, 1984, Ser. No. 652,006

Int. Cl.⁴ G10L 5/00

U.S. Cl. 381-51

6 Claims



1. A shoe having a stored audible message comprising a shoe having a sole and an upper, said upper being adapted to be fastened by means of a shoe closure member when said closure member is positioned against a portion of said upper,
an electrical circuit mounted on said shoe and adapted to deliver an electric signal corresponding to a predetermined audible message,
an audio speaker mounted on said shoe and adapted to receive said electric signal and to convert said signal into audible sounds,
switching means mounted on said closure member adapted to switch said circuit between an on condition and an off condition as said closure member is fastened to said upper and released from said upper,
whereby said audible message is turned on and off as said shoe is fastened and opened.

4,646,351

METHOD AND APPARATUS FOR DYNAMIC SIGNATURE VERIFICATION

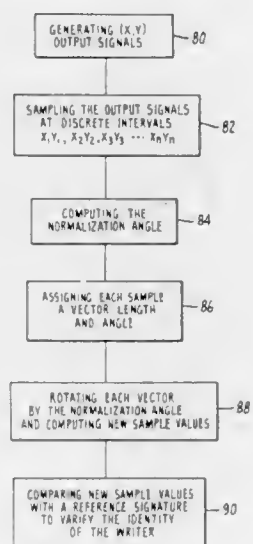
Einar L. Asbo, Mill Valley, and Hardy Tichenor, San Rafael, both of Calif., assignors to Visa International Service Association, San Mateo, Calif.

Filed Oct. 4, 1985, Ser. No. 784,187

Int. Cl.⁴ G06K 9/00

U.S. Cl. 382-3

9 Claims



1. In a signature verification system including a stylus capa-

ble of sensing pressure in two orthogonal (x,y) directions and generating signals proportional thereto, a method of normalizing the signals generated by the stylus such that the result is insensitive to the rotational position of the stylus with respect to the writer's grip comprising the steps of:

generating first and second distinct trains of output signals each of which is proportional to the forces exerted on the stylus in one of two orthogonal (x,y) directions;
sampling the first and second trains of output signals at discrete intervals during a signature;
computing an angle representative of the average direction of the signature;
normalizing each sample by said computed angle; and
comparing the normalized samples with a reference signature to verify the identity of the writer.

4,646,352

METHOD AND DEVICE FOR MATCHING FINGERPRINTS WITH PRECISE MINUTIA PAIRS SELECTED FROM COARSE PAIRS

Koh Asai, Hiroyuki Izumisawa, Katsuaki Owada, Seiichiro Kinoshita, and Shunji Matsuno, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

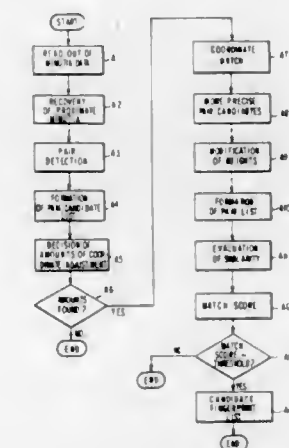
Filed Jun. 28, 1983, Ser. No. 508,759

Claims priority, application Japan, Jun. 28, 1982, 57-111114; Jun. 28, 1982, 57-111115; Jun. 28, 1982, 57-111116; Jun. 28, 1982, 57-111117; Jun. 28, 1982, 57-111118; Jun. 28, 1982, 57-111119; Jun. 29, 1982, 57-112216; Jun. 29, 1982, 57-112217; Jun. 29, 1982, 57-112218; Jun. 29, 1982, 57-112219

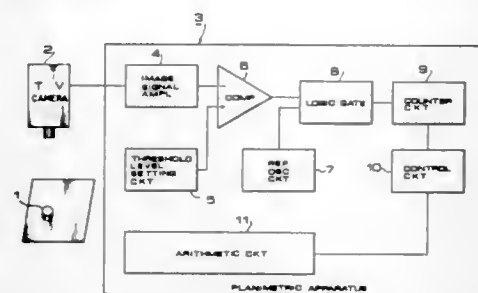
Int. Cl.⁴ G06K 9/68

U.S. Cl. 382-5

10 Claims



4,646,354
AREA MEASURING APPARATUS USING TELEVISION
 Akira Naito; Tetsuzi Kodama; Hideki Tsuruse; Hironobu Tsutsumi, and Hiroshi Ushio, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed Oct. 25, 1984, Ser. No. 664,747
 Claims priority, application Japan, Oct. 26, 1983, 58-200438
 Int. Cl.⁴ G06K 9/00
 U.S. Cl. 382—28 11 Claims

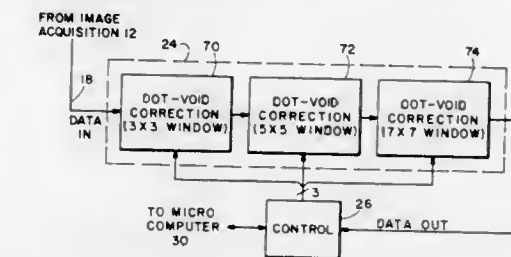


1. An area measuring apparatus for measuring the area of an object of measurement by the use of an image signal obtained by taking the object with a TV camera, comprising:
 a threshold of a level between the signal level of a component of the image signal corresponding to the object of measurement and the signal level of a component of the image signal corresponding to a background against which the object of measurement is placed;
 a comparator which compares the image signal with the threshold and provides binary output signals of different levels corresponding to a component of a level higher than the threshold and a component of a level lower than the threshold respectively;
 a reference oscillation circuit which generates a clock signal of a predetermined frequency;
 a gate circuit which allows the passage of the clock signal only when the level of the binary signal corresponds to either one of said two levels;
 a counter circuit which counts the pulses of the clock signal transmitted thereto through the gate circuit; and
 an arithmetic circuit which stores the pulse count counted by the counter circuit and corresponding to a single frame of the image signal and computes the area of the object of measurement on the basis of the pulse count corresponding to the single frame;
 said arithmetic circuit computing the difference between the pulse count counted by the counter circuit with the presence of the object of measurement and the pulse count counted by the counter circuit in the absence of the object of measurement.

4,646,355
METHOD AND APPARATUS FOR INPUT PICTURE ENHANCEMENT BY REMOVAL OF UNDERSIRED DOTS AND VOIDS
 Bruce E. Petrick, Lake Oswego, and Perry E. Wingfield, Tigard, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
 Filed Mar. 15, 1985, Ser. No. 712,306
 Int. Cl.⁴ G06K 9/40; H04N 1/40
 U.S. Cl. 382—54 7 Claims

4. Apparatus as in claim 3 wherein;
 each window means includes memory means for storing the data value of K adjacent pixels in L adjacent rasters where K and L are positive integer values of three or greater, and where the K-pixel by L-pixel window is no larger than the size of the smallest designated information ele-

ment size, and in each larger window means K and L are positive integer values at least one of which is at least one



larger than the corresponding K and L value of the preceding smaller window.

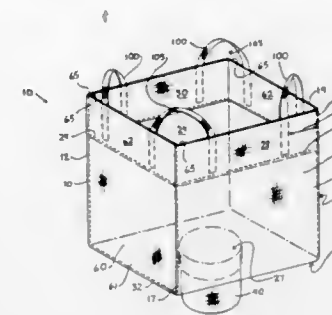
4,646,356
METHOD FOR CONVERTING A BIT MAP OF AN IMAGE TO A RUN LENGTH OR RUN END REPRESENTATION
 Karen L. Anderson, Peekskill; Joan L. Mitchell, Ossining; William B. Pennebaker, Carmel, and Gerald Goertzel, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Jun. 29, 1984, Ser. No. 626,494
 Int. Cl.⁴ G06K 9/36
 U.S. Cl. 382—56 10 Claims

LOOKUP TABLE FOR IMAGE BYTES
 (PREVIOUS BIT WHITE)

00	W0000000	ROUTINE TO SCAN WHITE BYTES
01	W0000001	ROUTINE TO CONVERT '00000001' PATTERN
02	W0000010	ROUTINE TO CONVERT '00000010' PATTERN
03	W0000011	ROUTINE TO CONVERT '00000011' PATTERN
04	W0000100	ROUTINE TO CONVERT '00000100' PATTERN
05	W0	TRELLIS ROUTINE (WHITE ENTRY)
06	W0000110	ROUTINE TO CONVERT '00000110' PATTERN
...
F9	W11111001	ROUTINE TO CONVERT '11111001' PATTERN
FA	W0	TRELLIS ROUTINE (WHITE ENTRY)
FB	W11111011	ROUTINE TO CONVERT '11111011' PATTERN
FC	W11111100	ROUTINE TO CONVERT '11111100' PATTERN
FD	W11111101	ROUTINE TO CONVERT '11111101' PATTERN
FE	W11111110	ROUTINE TO CONVERT '11111110' PATTERN
FF	W11111111	ROUTINE TO SCAN BLACK BYTES

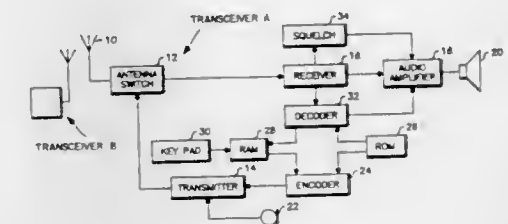
1. A computerized method for converting an image stored as a bit map in binary form to a run representation form, said bit map having a plurality of lines, said method comprising the steps of:
 (a) segmenting a first of said lines of said bit map into units of equal numbers of bits for use as lookup table indices;
 (b) creating a lookup table which contains, for each possible unit used as an index value, the address of a conversion routine which converts said unit to run representation form;
 (c) converting said first line of said image to run representation form by the steps of:
 (1) using a first unit of said lines as an index into said lookup table to access the conversion routine corresponding to such unit;
 (2) selecting a conversion routine according to said lookup table contents;
 (3) executing the selected conversion routine to convert said unit to run representation form;
 (4) storing any resulting run representations in a run representation buffer, as a count value; and
 (5) repeating said steps (1), (2), (3) and (4) for successive units until all of the units in said first line have been stored in run representation form in said run representation buffer; and
 (d) repeating the steps of segmenting and converting for successive lines to the end of the image.

4,646,357
TRANSPORT BAG FOR PARTICULATE MATERIAL
 Peter J. Natrass, Barrington Hills, Ill., assignor to Bulk Lift International, Incorporated, Carpentersville, Ill.
 Filed Mar. 11, 1985, Ser. No. 710,481
 Int. Cl.⁴ B65D 33/14, 33/36, 88/16, 88/54
 U.S. Cl. 383—20 20 Claims



19. A bulk material transport bag including a U-shaped member, a pair of oppositely disposed side panels secured to said U-shaped member to provide said bag with a horizontal rectangular cross section having four corners, and a lifting loop secured adjacent to each corner of said bag, wherein:
 a. said U-shaped member has a first side section and a second side section, and a discharge outlet section between said first side section and said second side section;
 b. a first side fold section is secured in said first side section and a second side fold section is secured in said second side section—with said first side fold section and said second side fold section being oppositely disposed from said discharge outlet section;
 c. a side panel fold section is secured in each of said pair of side panels;
 d. said first side fold section, said second side fold section and said side panel fold sections are substantially similar and form a top of said bag;
 e. a pair of lifting loop slots is in each of said first side fold section, said second side fold section and said side panel fold sections—each of said slots being adjacent to a corner;
 f. said lifting loop is secured at each lifting loop end thereof through a pair of said lifting loop slots adjacent to each of said four corners of said bag at said top to provide four of said lifting loops;
 g. each of said lifting loops is secured at each lifting loop end thereof through an adjoining pair of said lifting loop slots with a lifting section of each of said lifting loops exposed above said top;
 h. said oppositely disposed side panels are joined by a simple seam to said U-shaped member to leave a side selvage of up to about three percent of a width of said bulk material transport bag in order to provide strength therefor;
 i. said bulk material transport bag has a safety factor of about five;
 j. each of said lifting loop ends is held in said bag at a distance from said corner by cross stitching;
 k. said cross stitching holds said lifting loop end of said lifting loop in said bag at said distance, said distance being equal to about ten to about thirty percent of a width of said bag, said width being measured from one of said corners to an adjacent one of said corners;
 l. all of said fold sections are substantially identical;
 m. each of said lifting loop ends extends from a top of said bag down each of said fold sections for loop attachment distance about fifty to eighty five percent of a width of said fold section; and
 n. each of said lifting loops has a twist therein.

4,646,358
SIGNALING ARRANGEMENT FOR TWO-WAY RADIO COMMUNICATION
 Charles W. Shanley, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Fla.
 Continuation of Ser. No. 576,690, Feb. 3, 1984, abandoned. This application Jul. 7, 1986, Ser. No. 882,448
 Int. Cl.⁴ H04B 7/00; H04Q 7/00
 U.S. Cl. 455—35 7 Claims



1. A method of coded squelch operation of radio transceivers in a two-way radio communication system comprising the steps of:
 entering a code representation of a squelch code of a second transceiver into a first memory of a first transceiver;
 retrieving said code representation of said squelch code of said second transceiver from said first memory of said first transceiver;
 modulating a transmitter signal of said first transceiver with said squelch code of said second transceiver;
 retrieving a code representation of a squelch code of the first transceiver from a second memory of the first transceiver; and
 modulating said transmitter signal of said first transceiver with the squelch code of the first transceiver
 receiving and decoding said squelch code of said second transceiver from said transmitter signal of said first transceiver at said second transceiver;
 comparing and correlating said decoded squelch code of said second transceiver with a representation of the squelch code of said second transceiver stored in a first memory in said second transceiver;
 receiving and decoding said squelch code of said first transceiver from said transmitter signal of said first transceiver at said second transceiver, and storing a representation of said squelch code of said first transceiver decoded from said transmitter signal of said first transceiver in a second memory of said second transceiver if said decoded squelch code of said second transceiver and said representation of the squelch code of said second transceiver stored in the first memory in said second transceiver are appropriately correlated, and
 after the end of said transmitter signal of said first transceiver, retrieving said representations of said squelch codes of said first and second transceivers stored in the first and second memories in said second transceiver and modulating a transmitter signal of said second transceiver with said squelch codes of said first and second transceivers if said decoded squelch code of said second transceiver and said representation of the squelch code of said second transceiver stored in the first memory in said second transceiver are appropriately correlated.

4,646,359

METHOD AND APPARATUS FOR CONTROLLING THE CARRIER OF AN AMPLITUDE-MODULATED TRANSMITTER

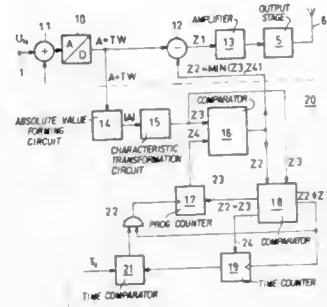
Andreas Furrer, Mönthal, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland
Filed Apr. 26, 1985, Ser. No. 727,430

Claims priority, application Switzerland, May 10, 1984, 2303/84

Int. Cl.⁴ H03F 3/38; H04B 1/03

U.S. Cl. 455—108

8 Claims



1. A method for controlling the carrier of an amplitude-modulated transmitter, herein a control signal dependent on the dynamic range of a useful low-frequency signal is derived from the useful low-frequency signal and is amplified by means of a switching amplifier and used for modulating a transmitter output stage, the mean carrier amplitude of the transmitter being controlled by a dynamic-range-dependent control signal, comprising:

- periodically sampling the amplitude of the useful signal and converting the sampled signal into digital amplitude values;
- allocating each of the digital amplitude values a digital carrier-control value determined by a fixed carrier-control characteristic with a certain slope and adding said digital carrier-control value to the respective digital amplitude value to produce a sum; and
- amplifying said sum as a dynamic-range-dependent digital control-signal value by means of a digital switching amplifier;
- allocating a digital carrier-characteristic value to each of the digital amplitude values in accordance with the determination of the predetermined carrier-control characteristic;
- determining the carrier control value as the difference between a fixed, digital carrier value and a dynamic-range-dependent digital carrier-reduction value;
- comparing the carrier-characteristic value with a digital memory content;
- using the carrier-characteristic value as a new memory content and as carrier-reduction value when the carrier-characteristic value is smaller than the respective memory content; and
- maintaining the memory content constant for a fixed delay time, incrementing the memory content step by step after the delay time has elapsed, and using the memory content as the carrier-reduction value when the carrier-characteristic value is a greater than the respective memory content.

4,646,360

CONSTANT BANDWIDTH RF FILTER WITH IMPROVED LOW FREQUENCY ATTENUATION

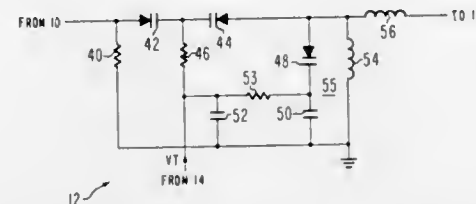
Max W. Muterspaugh, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 587,117, Mar. 7, 1984, abandoned. This application Dec. 31, 1985, Ser. No. 815,135

Int. Cl.⁴ H04B 1/26; H03H 7/01

U.S. Cl. 455—195

10 Claims



1. A circuit coupled between a source and a load, said circuit comprising:
- a first coil having a first end coupled to a point of reference potential and having a second end;
 - a first varactor having a first end coupled to said point of reference potential and having a second end coupled to said second end of said first coil at a junction for forming a parallel tuned circuit;
 - a second coil having a first end coupled to said junction and a second end coupled to said load and having substantially no mutual inductive coupling to said first coil;
 - a second varactor having a first end coupled to said junction and a second end coupled to said source; and
 - means for applying a tuning voltage to said varactors.

4,646,361

OPTICAL STAR REPEATER

Takeshi Usui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,643

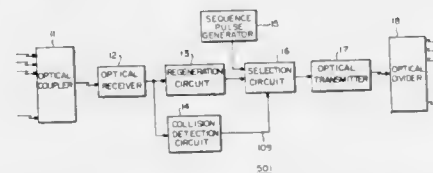
Claims priority, application Japan, Mar. 10, 1983, 58-39880

The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.

Int. Cl.⁴ H04B 9/00

U.S. Cl. 455—601

11 Claims



1. An optical star repeater for use in an optical star network, comprising:
- a photoelectric transducer for coupling optical signals from a plurality of receiving paths into a coupled optical signal and for converting said coupled optical signal into an electrical signal;
 - means for regenerating the electrical signal from the photoelectric transducer to produce a regenerated electrical signal;
 - means for detecting a collision of the optical signals from said plurality of paths from the electrical signal;
 - signal generator means for generating a fixed signal;
 - selecting means, responsive to the detecting means, for selecting said fixed signal in response to a collision indication and for selecting the regenerated electrical signal when no collision is detected;

means for converting the selected signal from the selecting means into an output optical signal; and

means for transmitting the output optical signal into a plurality of transmitting paths;

wherein said photoelectric transducer comprises an optical coupler for coupling together said optical signals from said plurality of receiving paths to provide said coupled optical signal, and an optical receiver for receiving said coupled optical signal,

wherein said optical signals comprise optical code pulse signals and said coupled optical signal comprises coupled optical code pulse signals, and said optical receiver com-

prises a photodetector connected to the optical coupler to receive the coupled optical code pulse signals and an amplifier connected to said photodetector and operable to generate said electrical signal, and

wherein said electrical signal comprises a series of pulses corresponding to the received coupled optical code pulse signals, said detecting means being operable to detect leading and trailing edges of said pulses for generating a data collision indication responsive to the detection of a plurality of consecutive leading or trailing edges.

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DESIGN PATENTS

GRANTED FEB. 24, 1987

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PATENT NO.
288,433

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DESIGNS

FEBRUARY 24, 1987

288,380

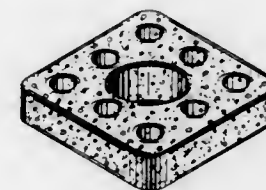
CEREAL PIECE

Charles R. Eldred; Robert E. Lowe, and Elizabeth L. Walker, all of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jul. 23, 1984, Ser. No. 633,304

Term of patent 14 years

U.S. Cl. D1—128



288,381

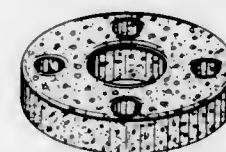
CEREAL PIECE

Charles R. Eldred; Robert E. Lowe, and Elizabeth L. Walker, all of Battle Creek, Mich., assignors to General Foods Corporation

Filed Jul. 23, 1984, Ser. No. 633,306

Term of patent 14 years

U.S. Cl. D1—128



288,382

SHOE/BOOT HEEL PROTECTOR

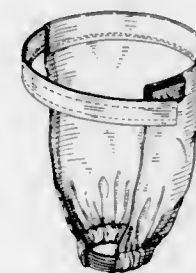
Joan E. Birchwood, 120 Rosedale Valley Road, Apartment 505, Toronto, Ontario, Canada (M4W 1P8)

Filed Nov. 8, 1983, Ser. No. 549,863

Claims priority, application Canada, Aug. 25, 1983, 25-08-83-5

Term of patent 14 years

U.S. Cl. D2—314



288,383

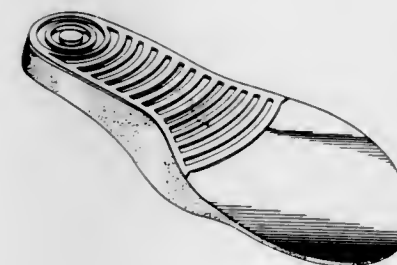
SHOE INSOLE

James C. Autry, Dallas, Tex., assignor to Autry Industries, Inc., Dallas, Tex.

Division of Ser. No. 519,524, Aug. 1, 1983. This application Apr. 17, 1986, Ser. No. 852,930

Term of patent 14 years

U.S. Cl. D2—318



288,384

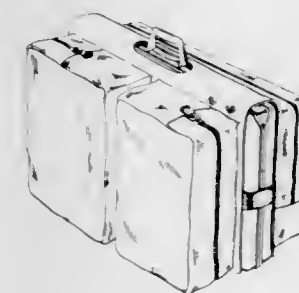
COMBINED TRAVEL BAG AND BRIEFCASE

George G. Lycan, Manhattan Beach, Calif., assignor to Sadelbagz, Inc., Asheville, N.C.

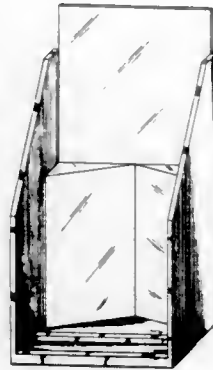
Filed Apr. 16, 1984, Ser. No. 600,999

Term of patent 14 years

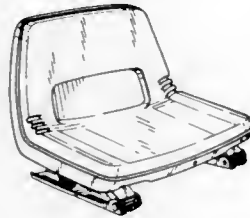
U.S. Cl. D3—48



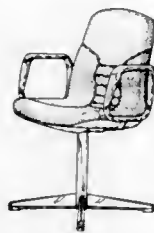
288,385
MIRROR ASSEMBLY
Stephen M. Hewitt, 346 N. Park Ave., Indianapolis, Ind. 46202
Filed Sep. 24, 1984, Ser. No. 653,370
Term of patent 14 years
U.S. Cl. D6—302



288,386
VEHICLE SEAT
Shungo Yorozu, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1984, Ser. No. 632,633
Claims priority, application Japan, Feb. 17, 1984, 59-5793
Term of patent 14 years
U.S. Cl. D6—356



288,387
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Dec. 19, 1983, Ser. No. 563,043
Claims priority, application The Hague, Jul. 21, 1983, DM/002710
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



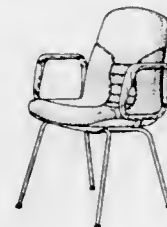
288,388
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Dec. 19, 1983, Ser. No. 563,049
Claims priority, application The Hague, Jul. 21, 1983, DM/002710
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



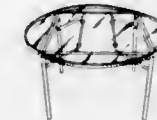
288,389
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Dec. 27, 1983, Ser. No. 565,748
Claims priority, application The Hague, Jul. 21, 1983, DM/002710
The portion of the term of this patent subsequent to Sep. 11, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



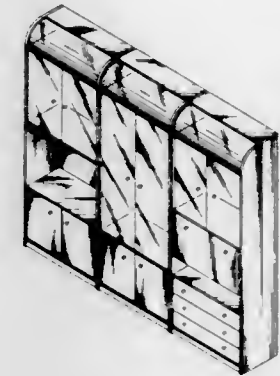
288,390
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Dec. 19, 1983, Ser. No. 563,041
Claims priority, application The Hague, Jul. 21, 1983, DM/002710
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—379



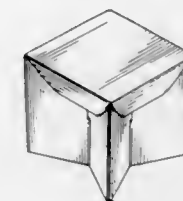
288,391
FOLDABLE TABLE
Donald B. Colby, Sarasota, Fla., assignor to Lee L. Woodard, Inc., Owosso, Mich.
Filed Aug. 16, 1984, Ser. No. 641,208
Term of patent 14 years
U.S. Cl. D6—429



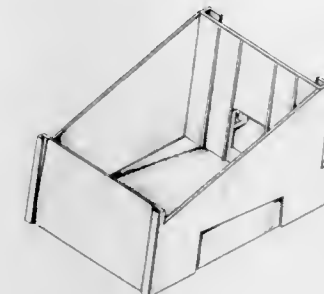
288,393
MULTIPLE CABINET UNIT
Philippe J. Mottais, Beaufort, N.C., assignor to Atlas Design Corp., Beaufort, N.C.
Filed Aug. 3, 1984, Ser. No. 637,311
Term of patent 14 years
U.S. Cl. D6—436



288,392
COLLAPSIBLE TABLE OR SIMILAR ARTICLE
Krister P. Olmon, 1426-1/2 S. Bronson Ave., Los Angeles, Calif. 90019
Filed Apr. 23, 1984, Ser. No. 602,824
Term of patent 14 years
U.S. Cl. D6—429



288,394
POINT OF SALE DISPLAY MODULE
Stanton J. Canter, Carversville, Pa., assignor to Diversified Group, Inc., Telford, Pa.
Filed Feb. 14, 1984, Ser. No. 580,110
Term of patent 14 years
U.S. Cl. D6—475



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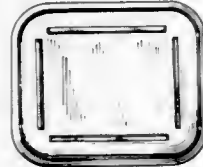
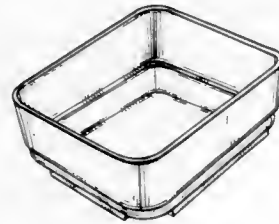
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288,395
DISH

Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands

Filed Jun. 4, 1984, Ser. No. 616,582
Term of patent 14 years

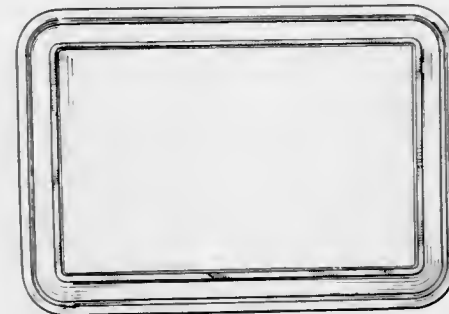
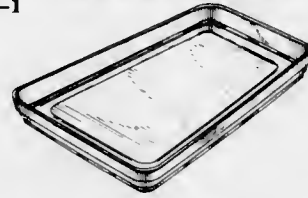
U.S. Cl. D7-1

288,396
PLATE

Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands

Filed Jun. 4, 1984, Ser. No. 616,583
Term of patent 14 years

U.S. Cl. D7-1

288,397
DEMITASSE CUP

Steve A. Unger, Manilus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,091
Term of patent 14 years

U.S. Cl. D7-9



288,398

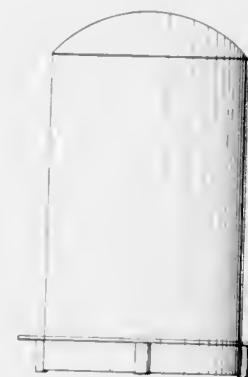
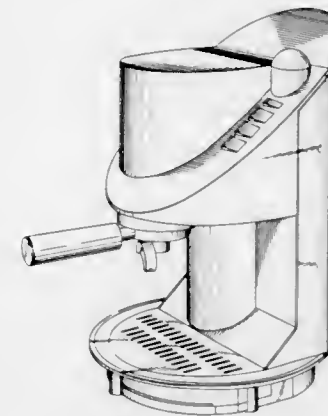
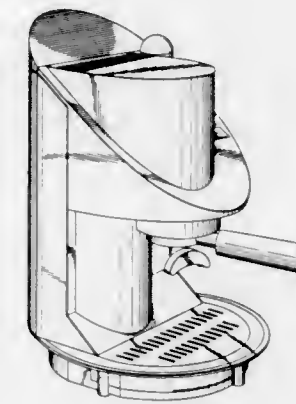
ESPRESSO COFFEE MACHINE

Bruno Rossio, Milan; Giuseppe Bossi, Legnano, and Francesco Roggero, Milan, all of Italy, assignors to Rancilio Roberto S.p.A., Milan, Italy

Filed Sep. 18, 1984, Ser. No. 651,763

Claims priority, application Italy, Apr. 5, 1984, 21452/84[U]
Term of patent 14 years

U.S. Cl. D7-309



288,399

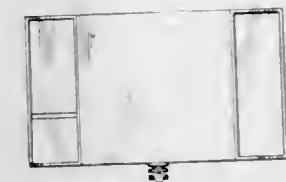
BEVERAGE AND ACCESSORIES DISPENSER

Lloyd T. Berg, 41 Westmere Dr., Des Plaines, Ill. 60016, and Stephen A. Flowers, 8508 W. Lisa La., Hickory Hills, Ill. 60457

Filed May 10, 1984, Ser. No. 608,665

Term of patent 14 years

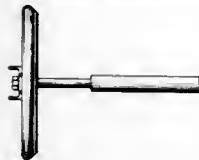
U.S. Cl. D7-313



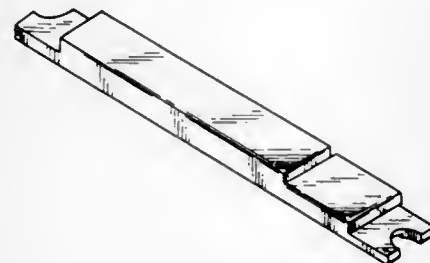
288,400
CUTTING INSTRUMENT HANDLE
Mark Vosbikian, Medford, N.J., assignor to Hardware & Industrial Tool Co., Inc., Cinnaminson, N.J.
Filed Nov. 7, 1984, Ser. No. 669,220
Term of patent 14 years
U.S. Cl. D8—1



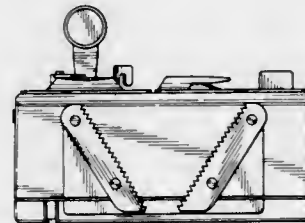
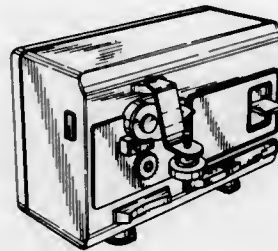
288,401
TINELESS RAKE
Leonard J. Lukowski, 78540 Kidder Rd., Romeo, Mich. 48065
Filed Dec. 31, 1984, Ser. No. 687,959
Term of patent 14 years
U.S. Cl. D8—1



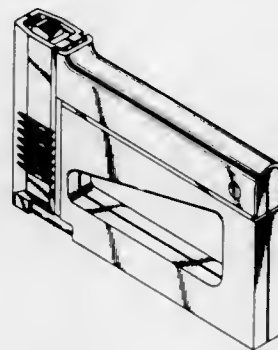
288,402
PLUG PULLER FOR REPAIRING AUTOMOTIVE GENERATORS
James D. Bonbright, 19480 8th St. East, Sonoma, Calif. 95476
Filed Mar. 5, 1984, Ser. No. 586,230
Term of patent 14 years
U.S. Cl. D8—14



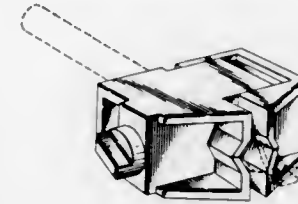
288,403
CAN OPENER
Norman A. Steinkamp, La Grange Park, and Richard K. Thomas, Elk Grove Village, both of Ill., assignors to John Zink Company, Tulsa, Okla.
Filed Dec. 19, 1984, Ser. No. 683,533
Term of patent 14 years
U.S. Cl. D8—36



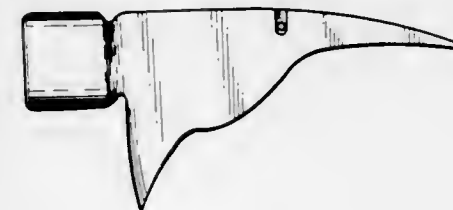
288,404
MANUAL STAPLER
Robert I. Somers, and Lawrence E. House, both of Raleigh, N.C., assignors to Black & Decker, Inc., Newark, Del.
Filed Apr. 2, 1984, Ser. No. 595,605
Term of patent 14 years
U.S. Cl. D8—49



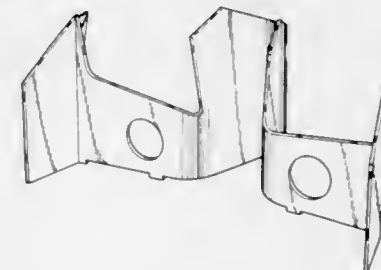
288,405
DRILL CLAMP
Leo Klapperich, Wehr, Fed. Rep. of Germany, assignor to Werkzeug GmbH, Bundesrepublik, Fed. Rep. of Germany
Filed Jun. 26, 1984, Ser. No. 624,998
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1984, 5 MR 255
Term of patent 14 years
U.S. Cl. D8—72



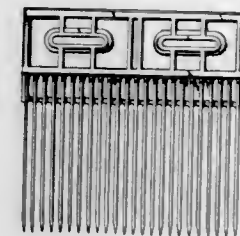
288,406
HEAD FOR CARPENTER'S HAMMER
Michael A. Santos, 27801 Fairview Ave., Hayward, Calif. 94542
Filed Apr. 16, 1984, Ser. No. 601,072
Term of patent 14 years
U.S. Cl. D8—78



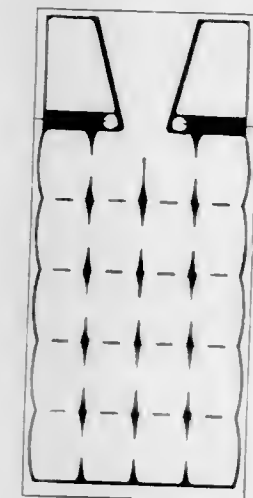
288,407
REINFORCEMENT BAR SUPPORT CHAIR
John W. St. Alban, Adelaide, Australia, assignor to The Reinforcement Bar Spacer Co. Pty Ltd, Holden Hill, Australia
Filed Aug. 8, 1984, Ser. No. 638,899
Claims priority, application Australia, Jun. 4, 1984, 7694/84
Term of patent 14 years
U.S. Cl. D8—354



288,408
TRANSFER COMB MODULE FOR AN ENDLESS CONVEYOR BELT
Robert H. Bode, and William P. Hidden, both of Wenham, Mass., assignors to The Cambridge Wire Cloth Company, Cambridge, Md.
Filed Feb. 6, 1984, Ser. No. 577,367
Term of patent 14 years
U.S. Cl. D8—499



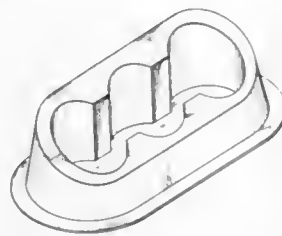
288,409
BAG FOR FREEZING LIQUIDS
Henrik Mikkelsen, Naerum, Denmark, assignor to Jan Folkmar, Denmark
Filed Dec. 9, 1983, Ser. No. 559,715
Claims priority, application Denmark, Jun. 16, 1983, 592/83
Term of patent 14 years
U.S. Cl. D9—305



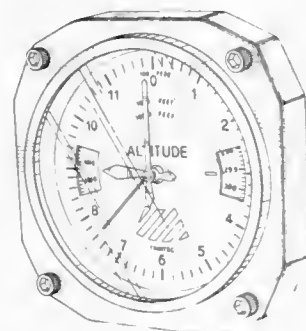
288,410
DESK TOP DECORATION OR CONTAINER FOR
HOLDING PENCILS AND THE LIKE
Christopher S. Crowell, Old Lyme, Conn., assignor to Structural
Graphics Inc., Essex, Conn.
Filed Apr. 19, 1984, Ser. No. 601,980
Term of patent 14 years
U.S. Cl. D9—335



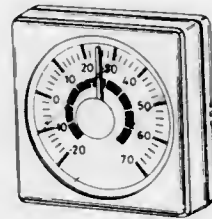
288,411
BOTTLE HOLDER
Vincent F. Castellanet, Boxford, Mass., assignor to The Gillette
Company, Boston, Mass.
Filed Jun. 29, 1984, Ser. No. 626,528
Term of patent 14 years
U.S. Cl. D9—455



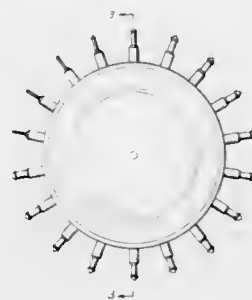
288,412
ALTIMETER CLOCK
Brendon G. Nunes, 580 Eyer Dr. Unit 56, Pickering, Ontario,
Canada (L1W 3B7)
Filed Jul. 18, 1984, Ser. No. 631,884
Term of patent 14 years
U.S. Cl. D10—6



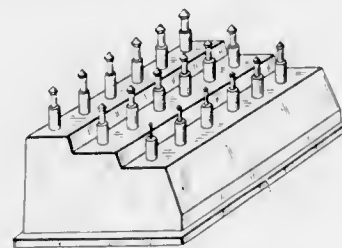
288,413
THERMOMETER FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manu-
facturing Company, Tokyo, Japan
Filed Sep. 25, 1984, Ser. No. 654,644
Claims priority, application Japan, Apr. 18, 1984, 5915649
Term of patent 14 years
U.S. Cl. D10—57



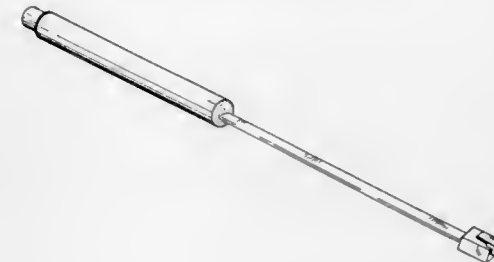
288,414
DIAMOND GAUGE
Saul M. Finkler, East Meadow, N.Y., assignor to Centennial
Jewelers, Inc., New York, N.Y.
Filed May 10, 1984, Ser. No. 608,889
Term of patent 14 years
U.S. Cl. D10—64



288,415
DIAMOND GAUGE SET
Saul M. Finkler, East Meadow, N.Y., assignor to Centennial
Jewelers, Inc., New York, N.Y.
Filed May 10, 1984, Ser. No. 608,890
Term of patent 14 years
U.S. Cl. D10—64



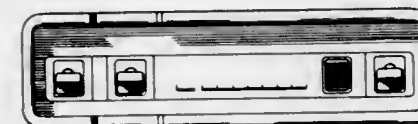
288,416
TELEPHONE LINE TEST LIGHT OR SIMILAR
APPARATUS
Robert P. Romano, Glen Ridge, N.J., assignor to Comus Inter-
national, Inc., Nutley, N.J.
Filed Apr. 13, 1984, Ser. No. 599,814
Term of patent 14 years
U.S. Cl. D10—78



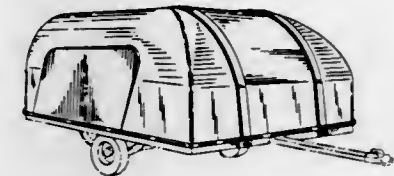
288,417
FACE PANEL FOR FLUID LEVEL MONITOR
James B. Morrison, 431 S. Erie, Wichita, Kans. 67211
Filed Apr. 16, 1984, Ser. No. 600,780
Term of patent 14 years
U.S. Cl. D10—103



288,418
POLICE RADAR WARNING RECEIVER
Robert E. Dilgard, Jr., Cincinnati, Ohio, assignor to Cincinnati
Microwave, Inc., Cincinnati, Ohio
Filed Sep. 28, 1984, Ser. No. 655,867
Term of patent 14 years
U.S. Cl. D10—104



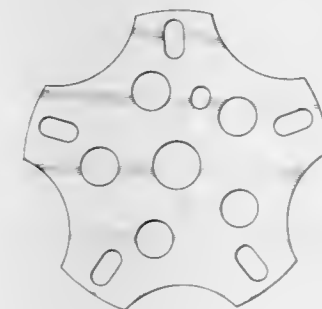
288,419
COVER FOR A SNOWMOBILE TRAILER OR SIMILAR
ARTICLE
Arnold W. Read, and Mark K. Read, both of Webster, N.Y.,
assignors to Web Trailers, Inc., Webster, N.Y.
Filed Apr. 23, 1984, Ser. No. 602,907
Term of patent 14 years
U.S. Cl. D12—106



288,420
SEAT SHAFT FOR BICYCLES
Henri Juy, Dijon, France, assignor to Etablissements le Sim-
plex, France
Filed May 9, 1984, Ser. No. 608,558
Claims priority, application France, Sep. 11, 1983, 834158
Term of patent 14 years
U.S. Cl. D12—119



288,421
BICYCLE SPROCKET
Stanley C. Hess, Moorpark, Calif., assignor to B.M.X. Products,
Inc., Moorpark, Calif.
Filed May 18, 1984, Ser. No. 611,828
Term of patent 14 years
U.S. Cl. D12—123



288,422

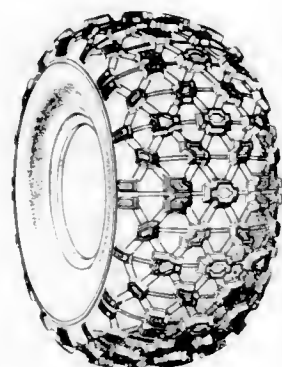
VEHICLE TIRE

Toshinori Furusawa, Izumi-Ohtsu, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Izumi-Ohtsu, Japan

Filed Nov. 28, 1984, Ser. No. 675,582

Claims priority, application Japan, Jul. 20, 1984, 59-30650
Term of patent 14 years

U.S. Cl. D12-136



288,424

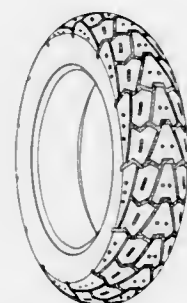
MOTORCYCLE TIRE

Takao Kamiyo, Osaka, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jan. 3, 1985, Ser. No. 688,625

Claims priority, application Japan, Oct. 31, 1984, 59-45256
Term of patent 14 years

U.S. Cl. D12-146



288,423

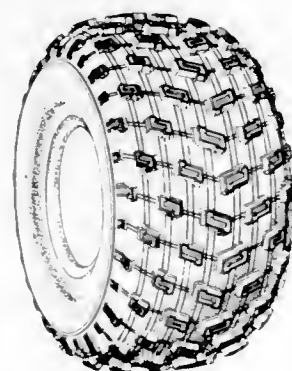
VEHICLE TIRE

Toshinori Furusawa, Izumi-Ohtsu, and Hitoo Umemoto, Kishiwada, both of Japan, assignors to The Ohtsu Tire & Rubber Co., Ltd., Izumi-Ohtsu, Japan

Filed Nov. 30, 1984, Ser. No. 676,989

Claims priority, application Japan, Jul. 20, 1984, 59-30651
Term of patent 14 years

U.S. Cl. D12-136



288,425

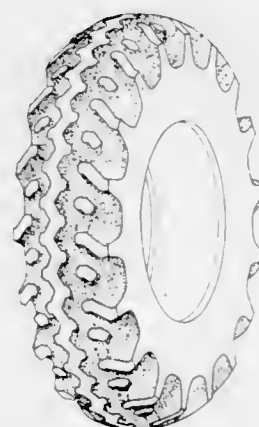
TIRE

Richard M. Beeghly; William P. Cundiff, both of Cumberland, Md.; William H. Legas, Garrett, Pa.; Lawrence B. Hurst, Jr., La Vale; Robert L. Crump, Cumberland, both of Md., and Robert E. Boore, Hyndman, Pa., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 5, 1984, Ser. No. 668,127

Term of patent 14 years

U.S. Cl. D12-146



288,426

AUTOMOBILE TIRE

Tadahiro Konishi, and Koichi Misaka, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Sep. 10, 1984, Ser. No. 648,939

Claims priority, application Japan, Jul. 30, 1984, 59-32482
Term of patent 14 years

U.S. Cl. D12-147



288,429

DASHBOARD COVER

Paul D. Cornwell, Littleton, Colo., assignor to Import Auto Products, Ltd., Denver, Colo.

Filed May 14, 1984, Ser. No. 610,232

Term of patent 14 years

U.S. Cl. D12-192



288,430

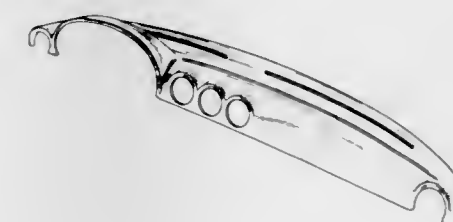
DASHBOARD COVER

Paul D. Cornwell, Littleton, Colo., assignor to Import Auto Products, Ltd., Denver, Colo.

Filed May 14, 1984, Ser. No. 610,234

Term of patent 14 years

U.S. Cl. D12-192



288,427

BEADLOCK FOR INFLATABLE TIRES

Mason C. Winfield, Orchard Park, N.Y., assignor to Astronics Corporation, Orchard Park, N.Y.

Filed Feb. 22, 1985, Ser. No. 704,490

Term of patent 14 years

U.S. Cl. D12-153



288,428

REAR BUMPER

Björn E. A. Envall, Vänersborg, Sweden, and Giorgetto Giugiaro, Turin, Italy, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden

Filed Apr. 24, 1984, Ser. No. 603,947

Claims priority, application Sweden, Oct. 26, 1983, 83-2778
Term of patent 14 years

U.S. Cl. D12-169



288,431

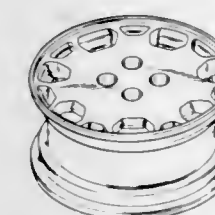
AUTOMOBILE WHEEL

Tomoyuki Arai, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1984, Ser. No. 632,624

Term of patent 14 years

U.S. Cl. D12-211



VOL

1075

ISS

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24

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288,432
VEHICULAR BATTERY CHARGER OR SIMILAR
ARTICLE

Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc.,
Schaumburg, Ill.

Filed Aug. 3, 1984, Ser. No. 637,441
Term of patent 14 years

U.S. Cl. D13—5

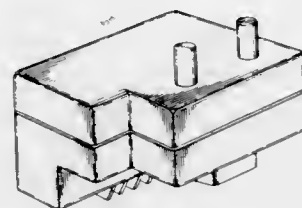


288,434
HOUSING FOR ELECTRICAL CIRCUIT WHICH
PROVIDES AN INTERFACE BETWEEN A COMPUTER
AND A TELEVISION SET, OR THE LIKE

Rob J. Gemmell, Santa Clara, Calif., assignor to Apple Com-
puter, Inc., Cupertino, Calif.

Filed Apr. 20, 1984, Ser. No. 602,652
Term of patent 14 years

U.S. Cl. D13—11

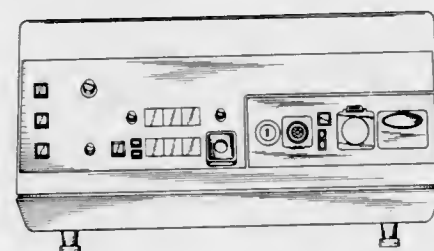


288,435
LASER CABINET

Howard M. C. Tanner, Salt Lake City, Utah, assignor to HGM,
Inc., Salt Lake City, Utah

Filed Feb. 6, 1984, Ser. No. 577,494
Term of patent 14 years

U.S. Cl. D13—19

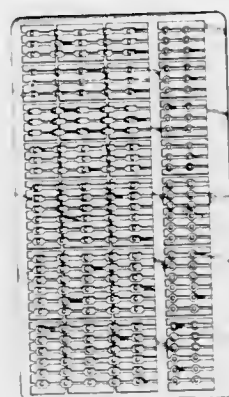


288,436
FRAME OF DUAL IN LINE PACKAGE PADS UTILIZED
TO REPLACE DAMAGED PADS ON PRINTED CIRCUIT
BOARDS

Linus E. Wallgren, Rockville, Md., assignor to Pace, Incorpo-
rated, Laurel, Md.

Filed Feb. 21, 1984, Ser. No. 582,028
Term of patent 14 years

U.S. Cl. D13—99

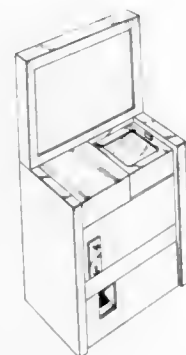


288,433
MACHINE FOR CLEANING BOWLING BALLS AND
SHOES

Remo N. Picchietti, Sr., Bannockburn, Ill., assignor to DBA
Products Co., Inc., Lake Bluff, Ill.

Filed Jul. 3, 1984, Ser. No. 627,601
Term of patent 14 years

U.S. Cl. D32—6



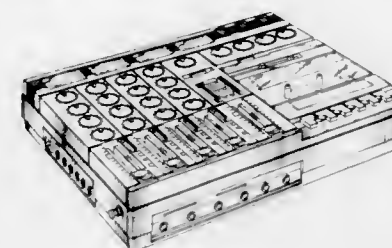
288,437
AUDIO MIXER

Masafumi Itoh, Tokyo; Sigeru Hasegawa, Kodaira; Haruki
Takita, Hachiohji; Junko Suzuki, Tokyo, and Kouji Suzuki,
Tokorozawa, all of Japan, assignors to Teac Corporation,
Musashino, Japan

Filed Apr. 2, 1984, Ser. No. 595,740

Claims priority, application Japan, Dec. 27, 1983, 58-56364
Term of patent 14 years

U.S. Cl. D14—5



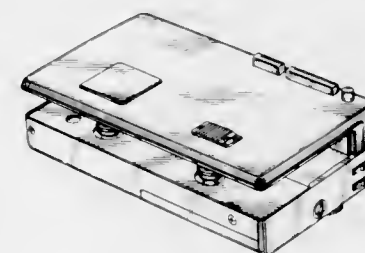
288,438
CASSETTE PLAYER

Jun Ishii, Tokyo, and Tokuzo Yamamoto, Yokohama, both of
Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki,
Japan

Filed Apr. 18, 1984, Ser. No. 601,449

Claims priority, application Japan, Oct. 26, 1983, 58-46217
Term of patent 14 years

U.S. Cl. D14—6



288,440
CASSETTE TAPE PLAYER

Mamoru Sakamoto, Gunma, Japan, assignor to Sanyo Electric
Co. Ltd. and Tokyo Sanyo Electric Co., Ltd., both of Tokyo,
Japan

Filed Jun. 15, 1984, Ser. No. 621,054

Claims priority, application Japan, Dec. 16, 1983, 58-54432
Term of patent 14 years

U.S. Cl. D14—6



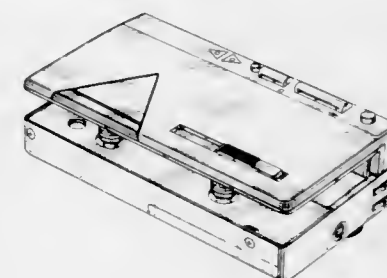
288,439
CASSETTE PLAYER

Jun Ishii, Tokyo, and Tokuzo Yamamoto, Yokohama, both of
Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki,
Japan

Filed Apr. 18, 1984, Ser. No. 601,450

Claims priority, application Japan, Oct. 19, 1983, 58-45047
Term of patent 14 years

U.S. Cl. D14—6



288,441
TUBULAR TELEPHONE UNIT

Michel R. Lalonde, Laval des Rapides, Canada, assignor to
Bell-Canada, Montreal, Canada

Filed Nov. 22, 1985, Ser. No. 806,190

Term of patent 14 years

U.S. Cl. D14—55



VOL
1075

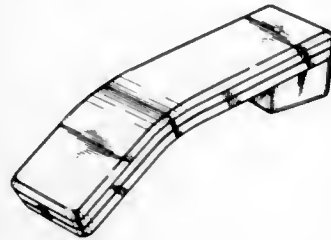
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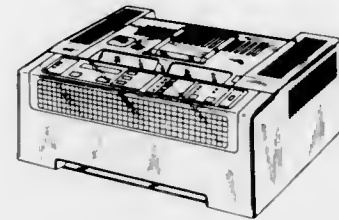
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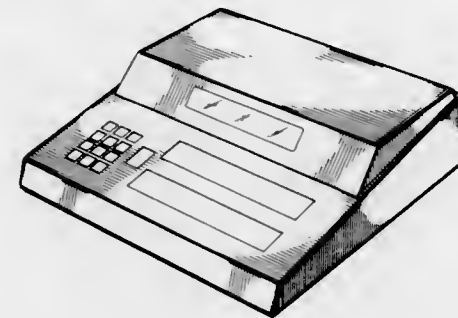
288,442
TELEPHONE HANDSET
 Michael Brown, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada
 Filed Feb. 1, 1985, Ser. No. 697,537
 Term of patent 14 years
 U.S. Cl. D14—63



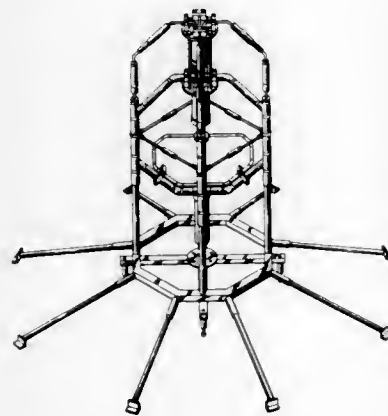
288,444
FACSIMILE TRANSMITTER
 Akltaka Takeuchi, Kodaira; Takeshi Abe, Tokyo; Hiroshi Endo, Yokohama; Hideyasu Shimizu, Yokohama, and Shinichiro Tsunematsu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Apr. 20, 1984, Ser. No. 602,389
 Claims priority, application Japan, Nov. 21, 1983, 58-50304
 Term of patent 14 years
 U.S. Cl. D14—94



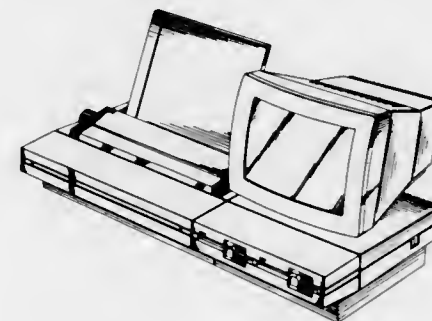
288,445
TERMINAL HOUSING
 Gordon E. Sylvester, Jamaica, N.Y.; Alvin R. Tilley, Redbank, N.J., and Robert R. Wyckoff, Aurora, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
 Filed Jul. 9, 1984, Ser. No. 629,236
 Term of patent 14 years
 U.S. Cl. D14—106



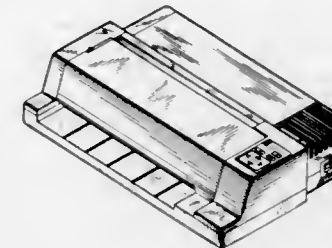
288,443
HIGH FREQUENCY PULSED DOPPLER RADAR ANTENNA
 Alan R. Carr, 2425 Kenwood Dr., Boulder, Colo. 80303
 Filed Jul. 13, 1984, Ser. No. 630,654
 Term of patent 14 years
 U.S. Cl. D14—86



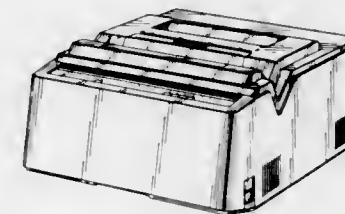
288,446
WORD PROCESSOR SYSTEM WITH A CRT DISPLAY AND PRINTER
 William G. Moggridge, Palo Alto, Calif., assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Filed Jul. 5, 1984, Ser. No. 627,843
 Term of patent 14 years
 U.S. Cl. D14—106



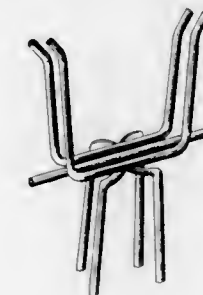
288,447
PLOTTER
 Hiroshi Otsuka, Suwa, Japan, assignor to Seiko Epson Kabushiki Kaisha, Japan
 Filed Jun. 28, 1984, Ser. No. 625,393
 Claims priority, application Japan, Feb. 6, 1984, 59-4031
 Term of patent 14 years
 U.S. Cl. D14—107



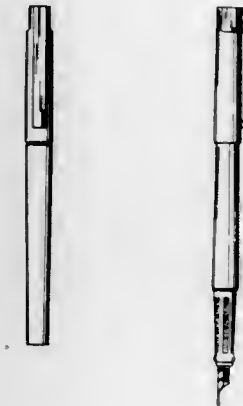
288,448
PRINTER FOR ELECTRONIC COMPUTERS
 Shinichi Hiroki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
 Filed Feb. 22, 1984, Ser. No. 582,559
 Claims priority, application Japan, Aug. 30, 1983, 58-37548
 Term of patent 14 years
 U.S. Cl. D14—111



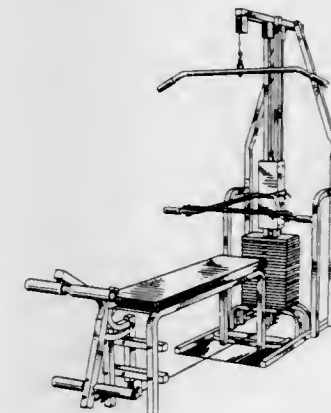
288,449
POMPON MAKER
 Ethel Collins, 16080 Thiesen Rd., Belgrade, Mont. 59714
 Filed May 21, 1984, Ser. No. 612,370
 Term of patent 14 years
 U.S. Cl. D15—78



288,450
WRITING INSTRUMENT
 Pierre Regnault, Valence, France, assignor to Etablissements Regnault, Valence, France
 Filed Nov. 9, 1984, Ser. No. 669,868
 The portion of the term of this patent subsequent to Feb. 17, 2001, has been disclaimed.
 Term of patent 14 years
 U.S. Cl. D19—49



288,451
PHYSICAL EXERCISER
 William F. Irvine, and George Monize, both of 1450 South Service Road, Oakville, Ontario, Canada (L6L 5T7)
 Filed Jul. 31, 1984, Ser. No. 636,285
 Claims priority, application Canada, May 14, 1984, 14-05-84-1
 Term of patent 14 years
 U.S. Cl. D21—195



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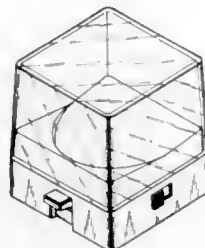
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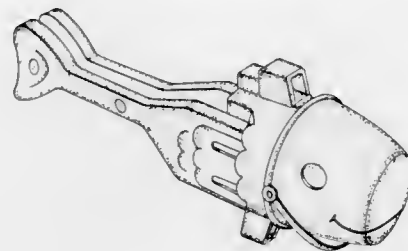
1987

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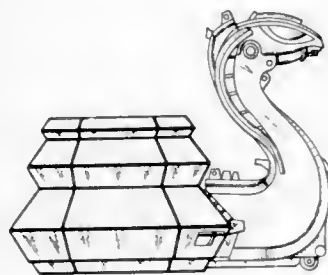
288,452
GAME HOUSING
 Tosbiaki Takizawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
 Filed Mar. 26, 1984, Ser. No. 593,400
 Term of patent 14 years
 U.S. Cl. D21—12



288,455
SAND TOY
 Martin Blumenthal, 99 Longview Ave., Chatham, N.J. 07928
 Filed Sep. 19, 1983, Ser. No. 533,368
 Term of patent 14 years
 U.S. Cl. D21—120



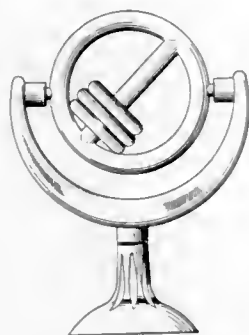
288,453
SIMULATIVE TOY FORTRESS
 Akira Takasaka, Tokyo, Japan; Michael Nuttall, South Pasadena, and Herbert Weiland, San Pedro, both of Calif., assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
 Filed Aug. 9, 1984, Ser. No. 639,926
 Claims priority, application Japan, Feb. 10, 1984, 59-4653
 Term of patent 14 years
 U.S. Cl. D21—59



288,456
PLUSH DOLL
 Rebecca Williams, Mansfield, Mass., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
 Filed Jan. 23, 1984, Ser. No. 572,763
 Term of patent 14 years
 U.S. Cl. D21—159



288,454
SPINNING SUCTION TOY
 Paul Thom, Quincy, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
 Filed Dec. 31, 1984, Ser. No. 688,005
 Term of patent 14 years
 U.S. Cl. D21—65



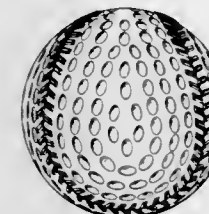
288,457
DOLL
 Virgilio Perez B., 16791 Redwood Way, Bonaventure, Fort Lauderdale, Fla. 33316
 Filed Jul. 26, 1984, Ser. No. 634,705
 Term of patent 14 years
 U.S. Cl. D21—159



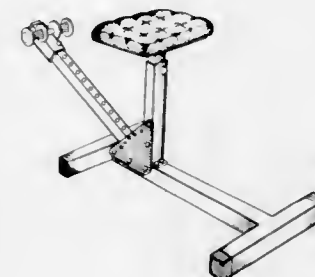
288,458
CLOTHED DOLL
 Cathy S. Belue, 5157 N. Umberland Rd., Birmingham, Ala. 35210, and Sandra J. Tucker, 4500 Swallow Pl., Birmingham, Ala. 35213
 Filed Jun. 7, 1984, Ser. No. 618,454
 Term of patent 14 years
 U.S. Cl. D21—171



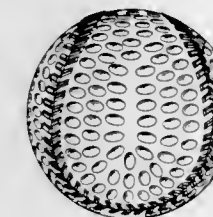
288,461
BALL FOR USE IN SPORTS
 Masakazu Hirai, Matsudo, Japan, assignor to Nagase Gomukogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 13, 1984, Ser. No. 589,144
 Term of patent 14 years
 U.S. Cl. D21—205



288,459
ABDOMINAL-BACK EXERCISER
 Minchy Lee, Fl. 4, No. 8-3, Alley 1, Lane 770, Min Shen E. Road, Taipei, Taiwan
 Filed Jul. 16, 1984, Ser. No. 631,147
 Term of patent 14 years
 U.S. Cl. D21—191



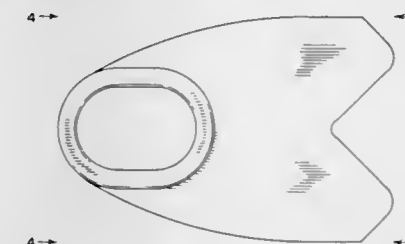
288,462
BALL FOR USE IN SPORTS
 Masakazu Hirai, Matsudo, Japan, assignor to Nagase Gomukogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Mar. 13, 1984, Ser. No. 589,145
 Term of patent 14 years
 U.S. Cl. D21—205



288,460
PHYSICAL EXERCISER
 Hank Hsu, No. 60, Ping An Lane, Fu Hsing Rd., Lu Kang Chen, Taiwan
 Filed Aug. 17, 1984, Ser. No. 641,919
 Term of patent 14 years
 U.S. Cl. D21—198

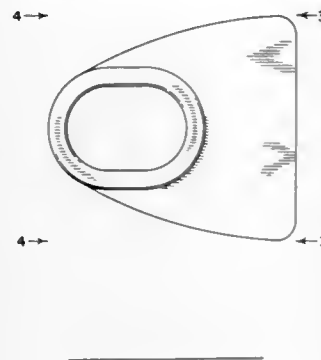


288,463
BECKET
 Mark J. Udelhofen, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
 Filed Jun. 17, 1985, Ser. No. 745,101
 Term of patent 14 years
 U.S. Cl. D21—254

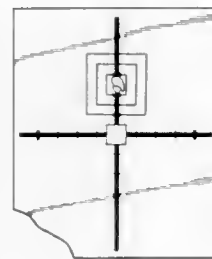


288,464
BECKET

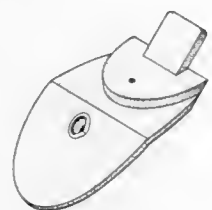
Mark J. Udelhofen, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jun. 17, 1985, Ser. No. 745,102
Term of patent 14 years
U.S. Cl. D21—254



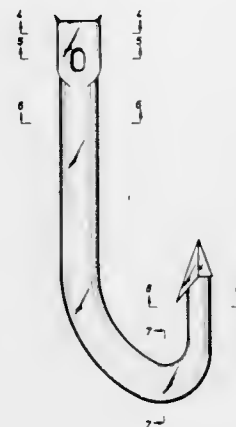
288,465
HUNTING TARGET
Keith L. Darnall, 1270 SE. Laura Pl., Gresham, Ore. 97030,
and Gary A. Hudson, P.O. Box Y, Scappoose, Ore. 97056
Filed Jan. 30, 1984, Ser. No. 574,858
Term of patent 14 years
U.S. Cl. D22—15



288,466
FISHING LURE BILL
James R. Gowing, Altus, Ark., assignor to Ebsco Industries, Inc., Birmingham, Ala.
Filed Aug. 10, 1984, Ser. No. 639,507
Term of patent 14 years
U.S. Cl. D22—28



288,467
TRANSPARENT FISHING HOOK
Gary L. Sitton, P.O. Box 3543, Beaumont, Tex. 77704
Filed Apr. 2, 1984, Ser. No. 595,898
Term of patent 14 years
U.S. Cl. D22—30

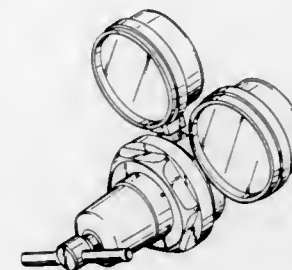


288,468
COMBINED HOLDER FOR KEYS AND PROTECTIVE SPRAY
Armin Rüttinger, Bergwaldweg 6, D-8999 Scheidegg, Fed. Rep. of Germany
Filed Jul. 9, 1984, Ser. No. 626,293
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, MRIV/3941
Term of patent 14 years
U.S. Cl. D22—117

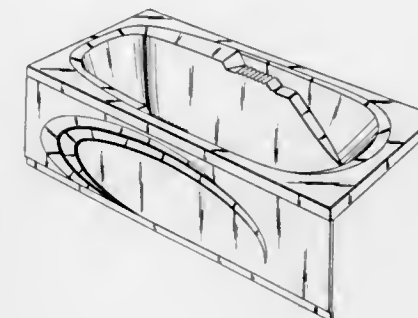


288,469
REGULATOR

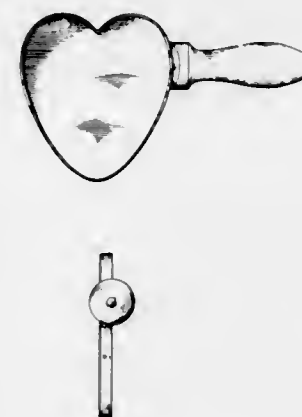
David A. Pryor, Denton, Tex., assignor to Victor Equipment Company, Denton, Tex.
Filed Apr. 5, 1984, Ser. No. 597,224
Term of patent 14 years
U.S. Cl. D23—21



288,470
BATHTUB
Harvey E. Diamond, 12953 Woodbridge St., Studio City, Calif. 91604
Filed Jan. 20, 1984, Ser. No. 572,645
Term of patent 14 years
U.S. Cl. D23—55

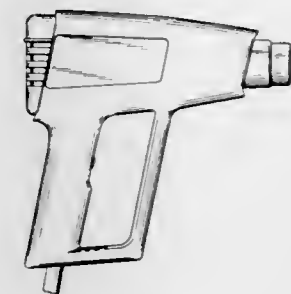


288,471
HANDLE FOR A TOILET SEAT OR THE LIKE
Jay R. Gladstone, 343 Johnston Dr., Watchung, N.J. 07060
Filed Apr. 2, 1984, Ser. No. 595,831
Term of patent 14 years
U.S. Cl. D23—71

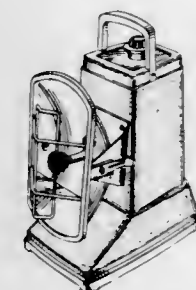


288,472
HOT AIR GUN

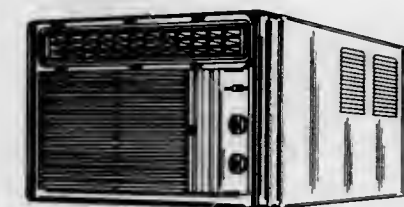
David C. Miller; Robert E. Dawson, both of Ridgefield, and Thomas J. Pendleton, Wilton, all of Conn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 8, 1984, Ser. No. 639,306
Term of patent 14 years
U.S. Cl. D23—77



288,473
RADIANT HEATER
Frank T. Schmidt, Mulvane; John T. Cherryholmes, Potwin, and Benjamin C. Baugh, Wichita, all of Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Feb. 6, 1984, Ser. No. 577,188
Term of patent 14 years
U.S. Cl. D23—124



288,474
AIR CONDITIONER
Masao Miyake; Nobuo Takaishi, and Shinichi Yokoyama, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 2, 1984, Ser. No. 667,566
Claims priority, application Japan, Nov. 17, 1984, 59-20280
The portion of the term of this patent subsequent to Feb. 24, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—143



288,475

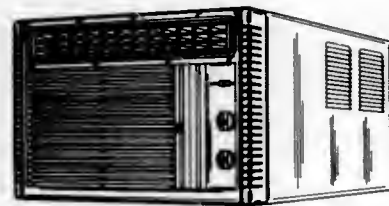
AIR CONDITIONER

Masao Miyake; Nobuo Takaishi, and Shinichi Yokoyama, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Nov. 2, 1984, Ser. No. 667,591

Claims priority, application Japan, Nov. 17, 1984, 59-20279
The portion of the term of this patent subsequent to Feb. 24, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D23—143



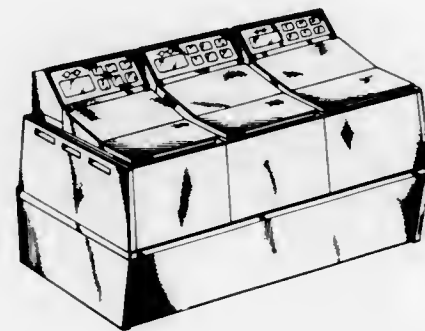
288,477

HEATED WATER BATH FOR CONDITIONING DENTAL HYDROCOLLOIDS

Don D. Porteous, 8890 Regent St., Los Angeles, Calif. 90034
Filed Feb. 6, 1984, Ser. No. 577,558

Term of patent 14 years

U.S. Cl. D24—10



288,476

GAS FILTER

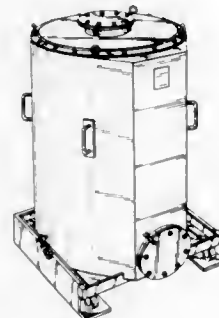
Guido Ebnoether, Urdorf, Switzerland, assignor to LUWA AG, Zürich, Switzerland

Filed Sep. 17, 1984, Ser. No. 651,115

Claims priority, application Switzerland, Mar. 23, 1984, DM/003 554

Term of patent 14 years

U.S. Cl. D23—149



288,478

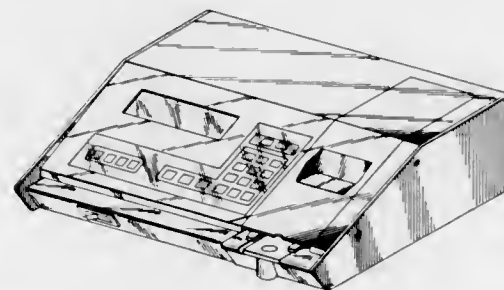
CLINICAL CHEMISTRY ANALYZER

Scott W. Carlson, Blaine; Walter L. Sembrowich, Shoreview; Mark B. Knudson, Arden Hills; Richard L. Little, New Hope; Ronald E. Eibensteiner, Arden Hills; Logan W. Johnson, Edina, and Roger L. Funk, Cedar, all of Minn., assignors to SenTech Medical Corporation, Arden Hills, Minn.

Filed Jun. 21, 1984, Ser. No. 622,983

Term of patent 14 years

U.S. Cl. D24—17



288,479

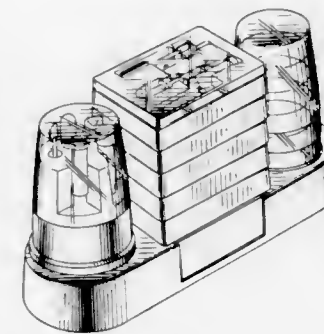
DIAGNOSTIC TEST KIT

Edward F. Covell, Glen Cove, N.Y., and Raymond C. Shaw, Fairfield, Conn., assignors to Tambrands Inc., Lake Success, N.Y.

Filed Aug. 8, 1984, Ser. No. 638,730

Term of patent 14 years

U.S. Cl. D24—17



288,481

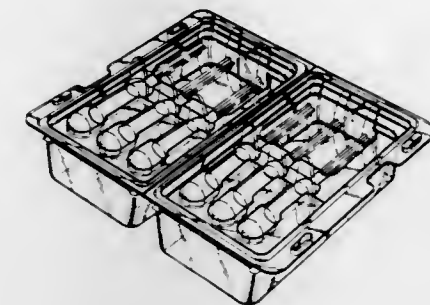
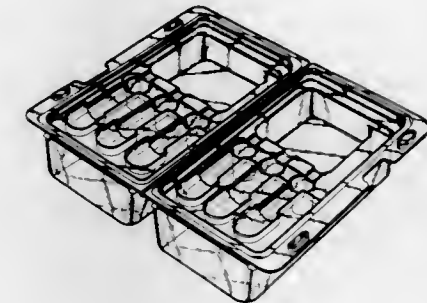
HINGED CONTAINER FOR SYRINGES

Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Filed Apr. 9, 1984, Ser. No. 597,896

Term of patent 14 years

U.S. Cl. D24—31



288,480

BLOOD FILTER

John L. Vcelka, Zion, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 374,541, May 3, 1982, abandoned, and Ser. No. 374,544, May 3, 1982, abandoned. This application May 2, 1983, Ser. No. 490,705

Term of patent 14 years

U.S. Cl. D24—21

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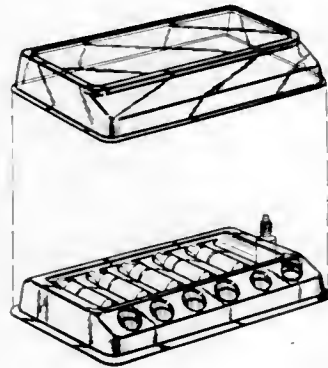
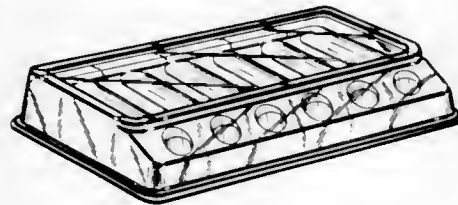
UMI

288,482
COMBINED CONTAINER AND DISPLAY CASE FOR
DENTAL BOTTLES

William J. Blatherwick, Hamilton Square; Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, all of N.J., assignors to Johnson & Johnson Dental Products, East Windsor, N.J.

Filed Nov. 5, 1984, Ser. No. 668,524
Term of patent 14 years

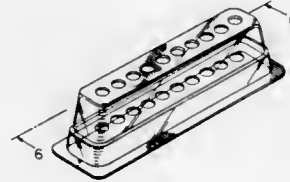
U.S. Cl. D24—31



288,484
TUBE RACK
Vance Mitchell, Irvine, Calif., assignor to ICI Scientific, Inc., Fountain Valley, Calif.

Filed Jul. 30, 1984, Ser. No. 636,097
Term of patent 14 years

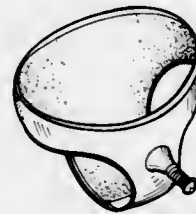
U.S. Cl. D24—32



288,485
SANITARY GARMENT
Benjamin Denno, 20300 Roseland, Southfield, Mich. 48076

Filed Apr. 23, 1984, Ser. No. 603,044
Term of patent 14 years

U.S. Cl. D24—51



288,486
ICE CREAM STAND
Robert G. Skinner, 2550 Pine Island Road, N.W., Cape Coral, Fla. 33909

Filed Jun. 29, 1984, Ser. No. 626,233
Term of patent 14 years

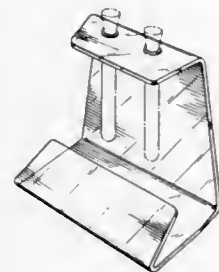
U.S. Cl. D25—10



288,483
STAND FOR TEST TUBES OR THE LIKE
David L. Mora, 3718 Berwick Dr., Flintridge, Calif. 91011

Filed Jun. 4, 1984, Ser. No. 617,121
Term of patent 14 years

U.S. Cl. D24—32



288,487
DOOR
Arthur M. Tofani, 2092 Harts La., Conshohocken, Pa. 19028

Filed Aug. 14, 1984, Ser. No. 640,613
Term of patent 14 years

U.S. Cl. D25—48



288,488
DOOR
Arthur M. Tofani, 2092 Harts La., Conshohocken, Pa. 19028

Filed Aug. 24, 1984, Ser. No. 643,864
Term of patent 14 years

U.S. Cl. D25—48



288,489
DOOR
Arthur M. Tofani, 2092 Harts La., Conshohocken, Pa. 19028

Filed Aug. 29, 1984, Ser. No. 645,345
Term of patent 14 years

U.S. Cl. D25—48



288,490
PARASOL
Bernard Giraudet, Cross Vallier, 42430-St. Just en Chevalet, France

Filed Apr. 16, 1984, Ser. No. 600,477

Claims priority, application France, Oct. 14, 1983, 833760
Term of patent 14 years

U.S. Cl. D25—56



288,491
PERFUME/ATOMIZER
Francois X. Speitel, Coulaines, France, assignor to Societe Teleplastics Industries S.A., Parigne l'Eveque, France

Filed Aug. 23, 1984, Ser. No. 643,750

Claims priority, application Hague, Mar. 2, 1984, DM003501
Term of patent 14 years

U.S. Cl. D28—91.1

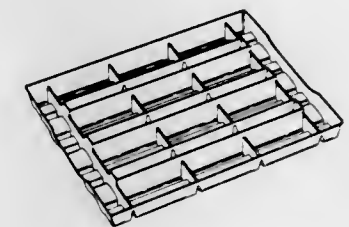


288,492
DEVICE FOR SCRAPING LIQUID OFF ROLLERS
Oskar L. Rolin, 11, Carn Court, North Drive, Brighton, E. Sussex, BN2HR, England

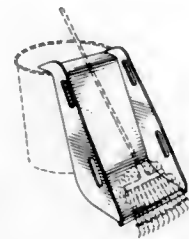
Filed Nov. 19, 1984, Ser. No. 673,058

Claims priority, application Sweden, May 28, 1984, 84-1651
Term of patent 14 years

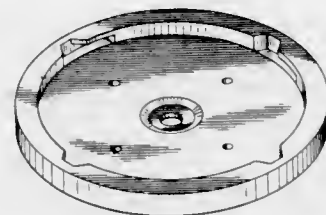
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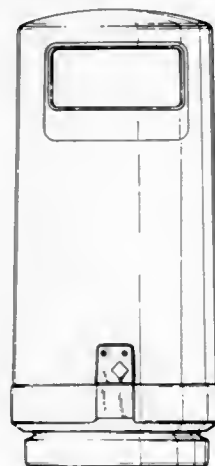
288,493
RUBBISH SCOOP
 Gabriel A. Lopez, 144 W. Las Flores, Arcadia, Calif. 91006
 Filed Jul. 18, 1984, Ser. No. 631,908
 Term of patent 14 years
 U.S. Cl. D34—1



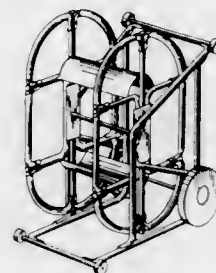
288,495
BASE FOR SUPPORTING A REFUSE RECEPTACLE OR THE LIKE
 Michael J. Young, 5309 Annette, and James Bentley, 3305 Starburst Ct., both of Bakersfield, Calif. 93309
 Filed Aug. 9, 1984, Ser. No. 639,237
 Term of patent 14 years
 U.S. Cl. D34—10



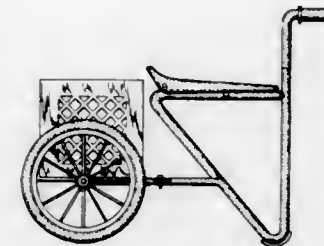
288,494
BIN
 T. Eric Palmer, Lythan St. Annes, United Kingdom, assignor to Glasdon Limited, United Kingdom
 Filed Oct. 23, 1984, Ser. No. 667,118
 Claims priority, application United Kingdom, Apr. 24, 1984, 1019236
 Term of patent 14 years
 U.S. Cl. D34—5



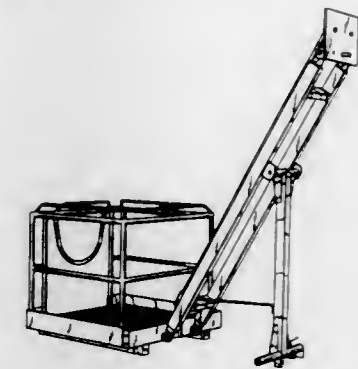
288,496
MOBILE HOSE REEL
 Alan Brownlie, Skaneateles, N.Y., assignor to Jeffrey B. Volk, Rochester, N.Y.
 Filed Apr. 18, 1984, Ser. No. 601,429
 Term of patent 14 years
 U.S. Cl. D34—17



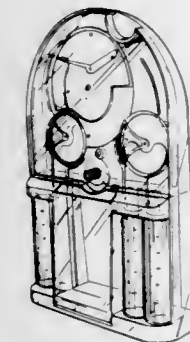
288,497
CART
 Roger J. Morrisette, P.O. Box 1399, Southbridge, Mass. 01550
 Filed Jul. 27, 1984, Ser. No. 635,008
 Term of patent 14 years
 U.S. Cl. D34—24



288,498
LIFTING APPLIANCE
 Lennart Järnum, Helsingborg, Sweden, assignor to AB Järnkons-
 struktioner, Helsingborg, Sweden
 Filed May 10, 1984, Ser. No. 608,773
 Claims priority, application Sweden, Nov. 11, 1983, 83-2965
 Term of patent 14 years
 U.S. Cl. D34—28



288,499
COIN SORTING BANK
 Yiu-Kwong Wan, Kowloon, Hong Kong, assignor to Chan Lam, Kowloon, Hong Kong
 Filed Mar. 26, 1984, Ser. No. 593,098
 Claims priority, application United Kingdom, Feb. 1, 1984, 1017611
 Term of patent 14 years
 U.S. Cl. D99—36



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A.I. Welders Limited: *See*—
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- Abbott Laboratories: *See*—
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- Abbott, Thomas G., Jr., to Scott Paper Company. Transfer coupon. 4,645,705, Cl. 428-195.000.
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- Albe, Kunihiro; Matsumura, Yoshitake; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha. Learning control system for controlling an automotive engine. 4,644,920, Cl. 123-479.000.
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- Adams, Samuel G., to Bristol-Myers Company. Label assembly with verifying means and method of making and using. 4,645,239, Cl. 283-70.000.
- Adams, Victor J.; Black, James R.; and Gempe, Horst A., to Motorola, Inc. Method of making an octocoupler. 4,645,551, Cl. 156-82.000.
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- Adler, Robert, to Zenith Electronics Corporation. Touch control system for use with a display panel or other touch controlled device. 4,645,870, Cl. 178-19.000.
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- Ahmad, Shamim; Kraus, Larry A.; and Staab, Paul C., to B.F. Goodrich Company, The. High performance tire and tread compound for it. 4,644,988, Cl. 152-209.00R.
- Ai, Hideo; Ikeda, Akihiko; and Matsuoka, Yoshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyamide preparation from polycarboxylic acid and polyamine with carbodiimide condensing agent. 4,645,823, Cl. 528-336.000.
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- Akabane, Toshiaki; and Satoh, Arimasa, to Shinnenryoyu Kaihat-sugijutsu Kenkyukumiai. Process for producing anhydrous ethanol. 4,645,569, Cl. 203-19.000.
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- Akai, Shinichi: *See*—
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Arrigoni, John P.; and Carlson, Kenneth C., to United Technologies Corporation. Hand operated grinding wheel with surface area and depth control. 4,644,701, Cl. 51-241.00S.

Arrow International, Inc.: See—
Johans, Thomas G., 4,644,960, Cl. 128-786.000.

Arterburn, Robert B., to Gates Rubber Company. The Hose with coextruded cover consisting of multiple foamed or nonfoamed layers. 4,644,977, Cl. 138-137.000.

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Take, Takao; Kaneko, Katsuaki; Kusunoki, Kokyo; and Ichiba, Toshiro, 4,645,548, Cl. 156-39.000.

Asahi Glass Company, Ltd.: See—
Wachi, Hiroshi; Kaya, Seitoku; and Kojima, Gen, 4,645,799, Cl. 525-199.000.

Asahi Kasei Kogyo Kabushiki Kaisha: See—
Ai, Hideo; Ikeda, Akihiko; and Matsuoka, Yoshio, 4,645,823, Cl. 528-336.000.

Asahi Kasei Kogyo Kabushiki Kaisha: See—
Kohmoto, Shinsuke, 4,645,310, Cl. 350-430.000.

Asahi Screen Process Insatsu Kabushiki Kaisha: See—
Kuboyama, Kiyoshi, 4,645,555, Cl. 156-234.000.

Asai, Koh; Izumisawa, Hiroyuki; Owada, Katsuaki; Kinoshita, Seiichi; and Matsuno, Shunji, to NEC Corporation. Method and device for matching fingerprints with precise minutia pairs selected from coarse pairs. 4,646,352, Cl. 382-5.000.

Asai, Toshiyasu, to Nippondenso Co., Ltd. Discharge tube lighting system for use in a vehicle. 4,645,974, Cl. 315-50.000.

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Minamida, Kazukiyo; and Asai, Yoshiharu, 4,645,019, Cl. 177-25.000.

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Asami, Kazutomo; Sano, Fumiaki; Ishijima, Koji; Wada, Fumio; and Hirahara, Takuo, to Mitsubishi Denki Kabushiki Kaisha. Rotary compressor. 4,645,429, Cl. 417-312.000.

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Asbo, Einar L.; and Tichenor, Hardy, to Visa International Service Association. Method and apparatus for dynamic signature verification. 4,646,351, Cl. 382-3.000.

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Brandt, Nils; and Karlsson, Anders, 4,646,004, Cl. 324-79.00R.

Ashbrook, Clifford L.; and Scarborough, Douglas B. Magnetic molecular agglomerate reducer and method. 4,645,606, Cl. 210-695.000.

Ashby, Robert E., to Moore Business Forms, Inc. Continuous, filled envelope assembly with non-marginal spaced feed holes. 4,645,123, Cl. 229-69.000.

Ashiba, Masahiro: See—
Inoue, Masaru; and Ashiba, Masahiro, 4,645,042, Cl. 188-319.000.

Astbury, Brian R.: See—
Pamplin, John W.; and Astbury, Brian R., 4,644,769, Cl. 72-43.000.

AT&T Bell Laboratories: See—
Boyle, Gerald C., 4,646,229, Cl. 364-200.000.

Cox, Herbert M., 4,645,689, Cl. 427-87.000.

Fildes, Neal R., 4,645,874, Cl. 379-93.000.

Gartside, Charles H., III, 4,645,298, Cl. 350-96.230.

Henein, Gerard E.; Hepplewhite, Ralph T.; and Schwartz, Bertram, 4,645,116, Cl. 228-123.000.

Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., 4,645,523, Cl. 65-3.110.

Larson, Mikiel L.; Robrock, Anne A.; and Toy, Wing N., 4,646,287, Cl. 370-60.000.

Lynch, William T.; and Parrillo, Louis C., 4,646,123, Cl. 357-42.000.

Morris, Bernard L.; Nagy, Jeffrey J.; and Walter, Lawrence A., 4,645,948, Cl. 307-296.00R.

Sajor, Michael E.; and Seghatoleslami, Asadolah, 4,646,332, Cl. 377-124.000.

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Emerson, William D.; Hill, Deborah J.; Loeb, Karen C.; Mizrahi, Albert; Schlegel, Charles T.; and Scott, Lowell C., 4,646,346, Cl. 379-214.000.

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Mathis, Joseph D., 4,646,101, Cl. 343-878.000.

AT&T Information Systems Inc.: See—
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Liu, Thomas C., 4,646,347, Cl. 379-375.000.

AT&T Laboratories: See—
Donnelly, Vincent M.; and Karlick, Robert F., Jr., 4,645,687, Cl. 427-53.100.

AT&T Technologies, Inc.: See—
Atteberry, Jack H.; and Clark, Rupert D., 4,644,639, Cl. 29-589.000.

Atalar, Abdullah; Fischbach, Herbert; and Huelsmann, Dieter, to Ernst Leitz Weitzlar GmbH. Method and apparatus for detecting the distance between an object and an ultrasonic objective. 4,645,937, Cl. 250-561.000.

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Dean, Barry D., 4,645,820, Cl. 528-171.000.

Martinez, David R., 4,646,274, Cl. 367-41.000.

Zupanick, Joseph E., 4,645,144, Cl. 244-113.000.

Atochem: See—
Perthuis, Joel; and Poisson, Pierre, 4,645,786, Cl. 524-106.000.

Atteberry, Jack H.; and Clark, Rupert D., to AT&T Technologies, Inc. Method of supporting an article. 4,644,639, Cl. 29-589.000.

Aubourg, Peter L.; and Carrick, John W. Rotatable building frame. 4,644,707, Cl. 52-65.000.

Audesse, Emery G.: See—
Kling, Michael R.; and Audesse, Emery G., 4,646,050, Cl. 337-27.000.

Audet, Gerard. Razor holder. 4,644,645, Cl. 30-41.000.

Aughton, John E., to Crosfield Electronics Limited. Light beam-splitter. 4,645,302, Cl. 350-173.000.

August Froscher GmbH & Co. K.G.: See—
Hilger, Wilfried; and Muller, Oscar, 4,645,878, Cl. 379-202.000.

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Austenal International, Inc.: See—
Kosmos, Peter, 4,645,455, Cl. 433-203.100.

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Ramm, Eric J.; and Ringwood, Alfred E., 4,645,624, Cl. 252-628.000.

Australian National University, The: See—
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Automated Machinery Systems, Inc.: See—
Bennison, Michael N., 4,644,885, Cl. 112-262.200.

Automation Associates, Inc.: See—
Lawrence, David M., 4,644,865, Cl. 102-430.000.

Automotive Products plc: See—
Bass, Richard A., 4,645,041, Cl. 188-218.0XL.

Avant Incorporated: See—
Lovell, Walter C., 4,644,766, Cl. 70-276.000.

Avco Corporation: See—
Warner, Timothy R., 4,645,420, Cl. 416-48.000.

Avery, Roland M., Jr.: See—
Harvey, Nathan A.; and Avery, Roland M., Jr., 4,645,613, Cl. 252-70.000.

- Avxentiev, Anatoly G.: See—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Avxentiev, Anatoly G.; and Rylov, Evgeny E., deceased, 4,645,487, Cl. 604-58.000.
- B.F. Goodrich Company, The: See—
Ahmad, Shamim; Kraus, Larry A.; and Staab, Paul C., 4,644,988, Cl. 152-209.00R.
- Baba, Takeshi; Iwasa, Hiroki; Nagasaka, Chikao; and Ohmi, Kyoze, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Rotary indicating device, 4,645,299, Cl. 350-99.000.
- Baba, Toshihiko; Uomori, Akiyoshi; and Miyata, Junji, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for flash welding, 4,645,896, Cl. 219-100.000.
- Baba, Yoshio; and Tsuchida, Shin, to Sumitomo Light Metal Industries. Process for producing cold rolled aluminum alloy sheet, 4,645,544, Cl. 148-12.70A.
- Babcock & Wilcox Company, The: See—
Roseveare, Ronald N., 4,645,634, Cl. 376-245.000.
- Bach, Hartwig C., to Monsanto Company. Basic dyeable acrylic fiber, 4,645,798, Cl. 525-192.000.
- Backof, Charles A., Jr.; and Huntzinger, Mark E., to Motorola Inc. QAM modulator circuit, 4,646,326, Cl. 375-39.000.
- Bacon, David D.: See—
Bacon, Donald V.; and Bacon, David D., 4,644,653, Cl. 30-272.00R.
- Bacon, Donald V.; and Bacon, David D. Reciprocating knife, 4,644,653, Cl. 30-272.00R.
- Badesha, Santokh S.; and Smith, Thomas W., to Xerox Corporation. Process for the preparation of colloidal dispersions of chalcogens and chalcogenide alloys, 4,645,619, Cl. 252-314.000.
- Baer, Thomas M.: See—
Kafka, James D.; and Baer, Thomas M., 4,646,308, Cl. 372-25.000.
- Bailey, Ben J.: See—
Bailey, Roy E.; and Bailey, Ben J., 4,644,830, Cl. 81-58.200.
- Bailey, Philip C.; and Kitchin, Vaughan N., to English Electric Valve Company Limited. Television cameras, 4,646,140, Cl. 358-50.000.
- Bailey, Roy E.; and Bailey, Ben J. Ratchet wrench, 4,644,830, Cl. 81-58.200.
- Baltinger, Stacey A.; Brothers, Robert C.; and Dishart, Kenneth T., to Du Pont de Nemours, E. I., and Company. Foam laminate structures, 4,645,710, Cl. 428-317.700.
- Baker CAC: See—
Ali, Syed Z., 4,645,179, Cl. 251-327.000.
- Baker, John R. Materials for determining fructosamine levels in blood samples, 4,645,742, Cl. 436-15.000.
- Baker, Josefina T.; Pagano, Joseph F.; and Schoengold, Ronald J., to SmithKline Diagnostics, Inc. Method and device for collecting and testing for fecal occult blood, 4,645,743, Cl. 436-66.000.
- Bakker, Harry J.: See—
Feikema, Roger; and Bakker, Harry J., 4,645,011, Cl. 172-15.000.
- Baldwin, David G.; and White, Albert E. S., to Morganite Electrical Carbon Limited. Resistive wear sensors, 4,646,001, Cl. 324-65.00P.
- Baliga, Bantval J., to General Electric Company. Normally-off semiconductor device with low on resistance and circuit analogue, 4,645,957, Cl. 307-570.000.
- Ball, Dean: See—
Thoben, Matthew A.; Clowers, Earl; Cihl, Guy; Ball, Dean; McCurdy, Jack L.; and Rummelsburg, Al S., 4,645,909, Cl. 219-411.000.
- Bamfords International Limited: See—
Robb, John, 4,644,739, Cl. 56-341.000.
- Ban, Itsumi; and Nakajima, Akihiro. Apparatus for removing torque ripples in direct-current motors, 4,645,991, Cl. 318-331.000.
- Ban, Tatsuzo, to Toyohashi Braided Rope Industrial Co., Ltd. Method of connecting a fishing net, 4,644,679, Cl. 43-7.000.
- Bangel, James M.: See—
Lee, William E., III; Bangel, James M.; White, Robert L.; and Bruno, David J., Jr., 4,645,679, Cl. 426-560.000.
- Baniel, Abraham: See—
Cais, Michael; Shimoni, Moshe; and Baniel, Abraham, 4,645,747, Cl. 436-500.000.
- Baran, John S.: See—
Lowrie, Harman S.; and Baran, John S., 4,645,858, Cl. 562-582.000.
- Barazech, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., to Telecommunications Radioelectriques et Telephoniques. Method and apparatus for initializing filter coefficients in an echo canceller, 4,645,884, Cl. 379-406.000.
- Barczak, Virgil J., to Kerr-McGee Coal Corporation. Reducing sulfur content in flue gases produced by coal combustion, 4,645,654, Cl. 423-244.000.
- Bard Technologies: See—
Bartholet, Chauncey I.; and Hardy, Joseph, 4,646,296, Cl. 370-124.000.
- Bare, Thomas M.; and Heald, Anthony F., to ICI Americas Inc. Pyrazolopyridine compounds, and intermediates, useful as anxiolytic agents, 4,645,838, Cl. 546-84.000.
- Barkan, Philip; and Gere, David S., to Raychem Corporation. Load break switch with safety mechanism, 4,645,888, Cl. 200-83.00W.
- Barlow, Neil E.: See—
Dewar, Robert; Salinger, Jeremy; Waldecker, Thomas J.; and Barlow, Neil E., 4,645,348, Cl. 356-376.000.
- Barmag Barmer Maschinenfabrik AG: See—
Bauer, Karl; and Hanisch, Michael, 4,644,622, Cl. 28-271.000.
- Barmag Barmer Maschinenfabrik Aktiengesellschaft: See—
Lenk, Erich; and Feth, Max, 4,645,444, Cl. 425-192.00S.
- Barnes, Anthony J.; and Stracey, Russell J., to Alcan International, Ltd. Forming of metal articles, 4,644,626, Cl. 29-421.00R.
- Barnes, Frank S., to University Patents, Inc. Resonant pile driving system, 4,645,016, Cl. 173-134.000.
- Barnes, Robert A., to RCA Corporation. Frequency switching circuit for multiple scan rate video display apparatus, 4,645,989, Cl. 315-411.000.
- Barnes, Robert G., Jr.; and Meyering, Mark T. Process for producing reinforced microporous membrane, 4,645,602, Cl. 210-490.000.
- Barnhart, Robert V., to GTE Products Corporation. Scrap-less taping system for IC lead-frames, 4,646,127, Cl. 357-70.000.
- Barnhouse, James P., to BF Goodrich Company, The. Epihalohydrin polymers, 4,645,801, Cl. 525-404.000.
- Baroni, Giuseppe; and Montorfano, Gianpaolo, to Honeywell Information Systems Italia. Multiple outputs switching power supply, 4,646,217, Cl. 363-17.000.
- Bartholet, Chauncey I.; and Hardy, Joseph, to Bard Technologies. Distributed telephone system, 4,646,296, Cl. 370-124.000.
- Barton, Thomas G.; and Fox, Edward S., to Pyroplasma International N.V. Plasma pyrolysis waste destruction, 4,644,877, Cl. 110-250.000.
- BASF Aktiengesellschaft: See—
Gehrken, Henning-Peter; Ernst, Hansgeorg; and Paust, Joachim, 4,645,845, Cl. 549-407.000.
- Heinz, Gerhard; Schuette, Wilhelm; and Simon, Georg N., 4,645,785, Cl. 524-100.000.
- Kurps, Armin; Fischer, Hermann; Hartmann, Jurgen; and Hartmann, Heinrich, 4,645,568, Cl. 203-14.000.
- Lotsch, Wolfgang; and Henning, Georg, 4,645,539, Cl. 106-288.00Q.
- Melzer, Milena; Roller, Hermann; Schneider, Norbert; Fitterer, Horst; and Munzner, Wulf, 4,645,723, Cl. 428-694.000.
- Rebafka, Walter; and Nickels, Helmut, 4,645,863, Cl. 568-899.000.
- Reuvers, Johannes G.; Richter, Wolfgang; and Kummer, Rudolf, 4,645,855, Cl. 560-204.000.
- Sterzel, Hans-Josef, 4,645,819, Cl. 528-125.000.
- BASF Aktiengesellschaft: See—
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- Basile, Philip C., to RCA Corporation. Frequency-division multiplex communications system having grouped transmitters and receivers, 4,646,295, Cl. 370-123.000.
- Bass, Richard A., to Automotive Products plc. Brake discs, 4,645,041, Cl. 188-218.00X.
- Batchelor, Robert B., to American Motors Corporation. Transfer case for vehicle drivetrains, 4,644,822, Cl. 74-695.000.
- Bateman, Charles D.; and Grove, Michael M., to Sundstrand Data Control, Inc. Terrain advisory system, 4,646,244, Cl. 364-461.000.
- Bateman, Paul M.; and Warner, John C., to Borg-Warner Corporation. Metal transmission belt, 4,645,479, Cl. 474-242.000.
- Batra, Vijay K. Shoe with audible message, 4,646,350, Cl. 381-51.000.
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Sump, Kenneth R., 4,644,942, Cl. 623-16.000.
- Baudot, Claude; and Contini, Vincent, to Constructions Metalliques Filled. Prefabricated modular building element and a building comprising such elements, 4,644,708, Cl. 52-79.900.
- Bauer, Bernhard: See—
Olschewski, Armin; Bauer, Bernhard; and Zirk, Elisabeth, 4,645,474, Cl. 464-131.000.
- Bauer, Helmut; and Reuter, Karl F., to General Motors Corporation. Bumper-radiator grill assembly, 4,645,250, Cl. 293-115.000.
- Bauer, Karl; and Hanisch, Michael, to Barmag Barmer Maschinenfabrik AG. Apparatus for air entangling a plurality of advancing yarns, 4,644,622, Cl. 28-271.000.
- Bauer, Karl-Heinz; and Wolf, Reinhold, to Preh Elektrofeinmechanische Werke Jakob Prah Nachf. GmbH & Co. Control unit, 4,646,206, Cl. 362-32.000.
- Bauer, Klaus; Bieringer, Hermann; and Schumacher, Hans, to Hoechst Aktiengesellschaft. Herbicidal agents, 4,645,526, Cl. 71-88.000.
- Bauer, Manfred, to U.S. Philips Corporation. Scatter radiation grid drive, 4,646,340, Cl. 378-155.000.
- Bauer, Rainer; and Kastl, Hans, to Kraftwerk Union Aktiengesellschaft. Manipulator for the inspection of pressure vessels open at the top thereof, 4,645,637, Cl. 376-249.000.
- Bauer, Willi: See—
Dassler, Armin A.; and Bauer, Willi, 4,644,672, Cl. 36-134.000.
- Baughman, Ray H.; Elsenbaumer, Ronald L.; Iqbal, Zafar; Miller, Granville G.; and Eckhardt, Helmut, to Allied Corporation. Environmental indicator device and method, 4,646,066, Cl. 340-540.000.
- Baumann, Hanns U., to Sharon K. Baumann Trust. Omniform building system, 4,644,709, Cl. 52-79.140.
- Bavis, Edward F. Modular conveyor system for drive-in banks and the like, 4,645,035, Cl. 186-37.000.
- Baxter Travenol Laboratories: See—
Kamen, Dean L., 4,645,175, Cl. 251-9.000.
- Bayer Aktiengesellschaft: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90.000.
- Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,645,525, Cl. 71-88.000.
- Freitag, Dieter; Bottenbruch, Ludwig; Wilms, Klaus G.; and Tacke, Peter, 4,645,806, Cl. 525-462.000.
- Goossens, John; Oppermann, Gunter; Grape, Wolfgang; and Hartel, Volker, 4,645,614, Cl. 252-75.000.

- Holmwood, Graham; Kramer, Wolfgang; Buchel, Karl H.; Reinecke, Paul; and Brandes, Wilhelm, 4,645,767, Cl. 514-383.000.
- Idel, Karsten; and Willenberg, Bernd, 4,645,825, Cl. 528-388.000.
- Kuhle, Engelbert; Paulus, Wilfried; and Genth, Hermann, 4,645,776, Cl. 514-425.000.
- Martinsola, Friedrich, 4,645,604, Cl. 210-675.000.
- Nieler, Werner; Stix, Wolfgang; and Bottenbruch, Ludwig, 4,645,822, Cl. 528-336.000.
- Probst, Joachim; Sonntag, Michael; Richter, Roland; and Muller, Hanns P., 4,645,817, Cl. 528-45.000.
- Rasshofer, Werner; Meiners, Hans-Joachim; Seel, Klaus; and Wussow, Hans-Georg, 4,645,630, Cl. 264-54.000.
- Stoltefuss, Jurgen; Heiker, Fred R.; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,645,775, Cl. 514-352.000.
- Bayer, Helmut, to Electrovac, Fabrikation Elektrotechnischer Spezialartikel GmbH. Thermal switch, 4,646,054, Cl. 337-348.000.
- Bayerlein, Friedrich; Haberer, Peter-Paul; Keramaris, Nikolaos; Kottmair, Nikolaus; and Kuhn, Manfred, to Sherex Chemical Co., Inc. Method for the preparation of borate-containing, dispersible, water-soluble polygalactomannans, 4,645,833, Cl. 536-17.100.
- Bayless, John H.; Steinberg, Neil I.; and Thirtle, James H., to Du Pont de Nemours, E. I., and Company. Distortion resistant polyester support for use as a phototool, 4,645,731, Cl. 430-271.000.
- Bays, F. Barry, to Concept, Inc. Vacuum sleeve for a surgical appliance, 4,644,951, Cl. 128-305.000.
- BBC Brown, Boveri & Company Limited: See—
Furrer, Andreas, 4,646,359, Cl. 455-108.000.
- Beal, Charles B.; Fields, C. Bruce; and Stewart, David L., to International Health Services. Device for drawing and processing blood and for administering liquid via parenteral injection, 4,645,486, Cl. 604-4.000.
- Beard, James R., to Sea Hawk Corporation. Reinforced support structure for upright highway marker, 4,645,168, Cl. 248-548.000.
- Beaumont, Gregory J.; Duval, Casimir J.; Kula, Frank N.; and Tamkin, Michael S., to Zenith Electronics Corporation. Unitary CRT display assembly, 4,646,159, Cl. 358-254.000.
- Bebber, Hans J.; Rosner, Heinrich-Otto; and Tomalla, Gebhard, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Plasma torch with hollow fluid cooled nozzle, 4,645,899, Cl. 219-121.0PN.
- Becker, Herbert: See—
Bruse, Kurt; Jurgens, Gerhard; and Becker, Herbert, 4,645,233, Cl. 280-808.000.
- Bedell, John R.; Hemmat, Naim S.; and Jeges, Paul, to Allied Corporation. Inline winder with take-up web, 4,644,999, Cl. 764-463.000.
- Beecham Group p.l.c.: See—
Harbridge, John B., 4,645,671, Cl. 424-114.000.
- Behrens, Hermann-Josef, to International Standard Electric Corporation. Airborne set for a two-way distance-ranging system, 4,646,091, Cl. 342-47.000.
- Behringwerke Aktiengesellschaft: See—
Zilg, Harald, 4,645,670, Cl. 424-101.000.
- Beiter, Werner. Nock for arrows of sport and hunting bows, 4,645,211, Cl. 273-416.000.
- Belin, Simone: See—
Turolla, Jean-Pierre; and Belin, Simone, 4,646,037, Cl. 333-182.000.
- Bell, Anthony J., to Goodyear Tire & Rubber Company, The. Direct method for preparing syndiotactic 1,2-polybutadiene, 4,645,809, Cl. 526-140.000.
- Bellex Corporation: See—
Inada, Yuji, 4,645,741, Cl. 435-134.000.
- Belheimer Metallwerk GmbH: See—
Blesinger, Hans R., 4,645,885, Cl. 191-45.00R.
- Bellmatt, Ltd.: See—
Suzuki, Hideo, 4,645,686, Cl. 427-48.000.
- Bender, Richard; Bendler, Helmut; Penner, Horst; and Sander, Reinhold, to Dynamit Nobel Aktiengesellschaft. Electric detonator, 4,644,863, Cl. 102-202.500.
- Benderoff, Lawrence. Security door, 4,644,688, Cl. 49-67.000.
- Bendix France: See—
Meynier, Guy, 4,645,038, Cl. 188-71.900.
- Bendler, Helmut: See—
Bender, Richard; Bendler, Helmut; Penner, Horst; and Sander, Reinhold, 4,644,863, Cl. 102-202.500.
- Bennett, Richard E.: See—
Winslow, Louis E.; Bennett, Richard E.; and Overstreet, Thomas S., 4,645,711, Cl. 428-355.000.
- Benning, Friedrich, to Deere & Company. Arrangement of a container on a vehicle, 4,645,221, Cl. 280-5.00A.
- Benning, James M. Racing-type horseshoe, 4,645,008, Cl. 168-11.000.
- Bennison, Michael N., to Automated Machinery Systems, Inc. Method of and apparatus for set-back tipping of neckties, 4,644,885, Cl. 112-262.200.
- Benson, David K.: See—
Tracy, C. Edwin; Benson, David K.; and Ruth, Marta R., 4,645,308, Cl. 350-357.000.
- Benton, Duane C., to Trusty Doll Company, The. Doll having concealed pocket in the location of an ear, 4,645,470, Cl. 446-73.000.
- Bentz, Werner: See—
Pircher, Hans; Bentz, Werner; and Tegethoff, Alfred, 4,645,720, Cl. 428-683.000.
- Berbeco, George R., to Charleswater Products, Inc. Solution for use in impregnating paper for high-pressure antistatic laminates, 4,645,717, Cl. 428-503.000.
- Berchem, Rutger, to Berchem & Schaberg GmbH. Method of making a low-alloy forging, 4,644,776, Cl. 72-364.000.
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Berchem, Rutger, 4,644,776, Cl. 72-364.000.
- Berger, Abe; and Silverstein, Irwin B., to M&T Chemicals Inc. Functionally substituted phenoxyalkyl alkoxysilanes and method for preparing same, 4,645,844, Cl. 548-545.000.
- Berger, Isaac. Compact portable exercising apparatus, 4,645,204, Cl. 272-137.000.
- Berger, Jean-Claude, to Mecilec S.A. Device for translationally passing magazines or revues on a copier apparatus, 4,645,331, Cl. 355-25.000.
- Berger, Jean-Luc: See—
Brissot, Louis; Berger, Jean-Luc; and Cazaux, Yvon, 4,645,938, Cl. 250-578.000.
- Berger, John G.; and Emmons, David J., to University of Minnesota, Regents of the. Page turning device, 4,644,675, Cl. 40-531.000.
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- Kiuchi, Masayoshi; and Suzuki, Nobuyuki, 4,645,326, Cl. 354-484.000.
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- Chapelle, Pierre, to Thomson-CSF. High precision tunable oscillator and radar equipped with same. 4,646,035, Cl. 331-117.00R.
- Chari, Madabushi V.; Kalafala, Ahmed K.; D'Angelo, John; and Palmo, Michael A., Jr., to General Electric Company. Aperture sized disc shaped end caps of a ferromagnetic shield for magnetic resonance magnets. 4,646,045, Cl. 335-301.000.
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- Charles C. Worth Corporation: See—
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- Charles Stark Draper Laboratory, Inc., The: See—
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- Charleswater Products, Inc.: See—
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- Chasse, Dennis W.; Bourgeois, David R.; and Comins, Todd R., to Honeywell Information Systems Inc. Data collection terminal high speed communication link interrupt logic. 4,646,260, Cl. 364-900.000.
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- Chauvin, Jacques; and Canzian, Patrice, to Compagnie d'Electronique et de Piezo-Electricite. Very high frequency quartz oscillator. 4,646,034, Cl. 331-116.00R.
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- Choma, Alvin A.; and Edwards, Timothy R., to Tractech, Inc. Differential apparatus with side-gear-centered center cam. 4,644,818, Cl. 74-650.000.
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- Chong, Andrew K.: See—
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- Chouinard, Michael J. Method and apparatus for disassembly of a spot-welded structure. 4,644,656, Cl. 30-362.000.
- Chow, Shing C. Display device with discharge lamp. 4,645,979, Cl. 315-169.100.
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- Chureau, Bernard, to Societe Anonyme Recherche, Montage, Production "Polygines". Baiting machine for trawl line fishing using entire fishes. 4,644,677, Cl. 43-4.000.
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- Graber, Alfred, 4,645,128, Cl. 239-223.000.
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- Citizen Watch Co., Ltd.: See—
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- Clarion Co., Ltd.: See—
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- Clark, Rupert D.: See—
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- Cloud, Ernest. Trap hauling and ejecting method. 4,644,682, Cl. 43-100.000.
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- Coates, Stephen R.; and Binder, Walter L., to American Hoechst Corporation. Enzyme/immunofluorescent assay for anti-treponemal antibodies. 4,645,737, Cl. 435-7.000.
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- Coffy, Rene L., to Aerospatiale Societe Nationale Industrielle. Flexible girder with high energy absorption, and landing gear and tail skid for an aircraft equipped with such a girder. 4,645,143, Cl. 244-100.00R.

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Cook, Robert F.: See—
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Coppola, Peter J., to Jet Spray Corp. Syrup sensor for dispensing machine. 4,645,095, Cl. 222-64.000.

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Corey, Paul F.; Ward, Frederick E.; Yip, Kin F.; and Yip, Meitak T., to Miles Laboratories, Inc. Pyrrole compounds for detecting the presence of hydrolytic analytes. 4,645,842, Cl. 548-541.000.

Cornell Research Foundation, Inc.: See—
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Butler, Robert A., 4,645,536, Cl. 106-15.050.

Courtney, William L. Scuba gear with combined flotation and transport device. 4,645,465, Cl. 441-40.000.

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Cozzens, Brian E.; Hopkins, John R.; and Thakrar, Anil C., to AMP Incorporated. Sealed insulation displacement connector. 4,645,285, Cl. 339-96.000.

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Hauenstein, Ernst, 4,645,433, Cl. 417-420.000.

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Craig Medical Products Limited: See—
Steer, Peter L., 4,645,500, Cl. 604-378.000.

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Creutz, Helmut, to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H. Semiconductor device for current rectification. 4,646,130, Cl. 357-79.000.

Criegern, Rolf V.; and Weitzel, Ingo, to Siemens Aktiengesellschaft. Method and apparatus for the compensation of charges in secondary ion mass spectrometry (SIMS) of specimens exhibiting poor electrical conductivity. 4,645,929, Cl. 250-307.000.

Crockett, Peter N.; Jewett, Robert P.; Scriver, Arthur J.; and Tucker, Thomas A., to International Business Machines Corp. Pipelined control apparatus with multi-process address storage. 4,646,236, Cl. 364-200.000.

Crosfield Electronics Limited: See—
Aughton, John E., 4,645,302, Cl. 350-173.000.

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Van Den Brekel, Jacques; Crothers, Carlyle W.; and Squires, Dale B., 4,645,114, Cl. 228-56.300.

Cuisinarts, Inc.: See—
Williams, James E., 4,645,886, Cl. 200-1.00R.

Culley, Paul R., to Texas Instruments Incorporated. Video display controller system with attribute latch. 4,646,077, Cl. 340-748.000.

Cunningham, Gail M., to General Motors Corporation. Quick connect tube coupling. 4,645,245, Cl. 285-321.000.

Cuno, Inc.: See—
Hou, Kenneth C.; and Ostreicher, Eugene A., 4,645,567, Cl. 162-181.600.

Currier, Edward J.: See—
Bregman, Arie P.; Collette, Ronald J.; and Currier, Edward J., 4,645,180, Cl. 251-360.000.

Curtin, Leonard E., to Harris Corporation. Interface for connecting standard telephones to party lines. 4,645,877, Cl. 379-183.000.

Curtis, Edwin. Aircraft duct gimbaled joint. 4,645,244, Cl. 285-114.000.

Custom Automation, Inc.: See—
Palazzolo, Francis V.; and Polachowski, Wayne T., 4,645,056, Cl. 193-35.00A.

Cuyper, Martinus H., to Gayliene Investments Ltd. Drive belt. 4,645,478, Cl. 474-201.000.

Cycles Peugeot: See—
Fourrey, Francois; and Perrissin-Fabert, Jean, 4,645,263, Cl. 297-366.000.

D.A.R. Tech Limited: See—
Archibald, David W., 4,645,191, Cl. 270-39.000.

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Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,645,556, Cl. 156-242.000.

Dabi, Shmuel, to Personal Products Company. Crosslinked carboxyl polyelectrolytes and method of making same. 4,645,789, Cl. 524-379.000.

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Daihatsu Motor Company, Ltd.: See—
Inoguchi, Kenichi; Iwakura, Yoichi; and Umehara, Jun, 4,644,919, Cl. 123-438.000.

Daikin Industries, Ltd.: See—
Sugimoto, Takayuki; Okuzawa, Yoshiyuki; and Suzuki, Nobuo, 4,644,756, Cl. 62-160.000.

Daimler-Benz Aktiengesellschaft: See—
Albrecht, Wilhelm; Wurz, Dieter; Peitsmeier, Karl; Waldschutz, Heinz; Ruckert, Walter; Kuhn, Klaus; and Patzelt, Helmut, 4,644,817, Cl. 74-552.000.

Dainichi-Nippon Cables, Ltd.: See—
Torioe, Yutaka, 4,645,697, Cl. 428-43.000.

Dainippon Screen Mfg. Co., Ltd.: See—
Ishida, Akira; Yumen, Akira; and Saito, Naotada, 4,646,144, Cl. 358-75.000.

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Smith, John W., Jr.; Scherpenberg, Francis A.; Jiang, Ching-Lin; and Bolan, Michael L., 4,645,943, Cl. 307-150.000.

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Simpson, John D.; and Butler, Christopher C., 4,645,368, Cl. 403-9.000.

D'Angelo, John: See—
Chari, Madabushi V.; Kalafala, Ahmed K.; D'Angelo, John; and Palmo, Michael A., Jr., 4,646,045, Cl. 335-301.000.

D'Angelo, Renato; Ramacciotti, Aldo; Repetto, Eugenio; and Tolve, Pietro, to Centro Sperimentale Metallurgico S.p.A. Process for control of continuous casting conditions. 4,645,534, Cl. 75-10.220.

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Duri, Antonino, 4,644,773, Cl. 72-135.000.

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Vesterby, Hans, 4,645,377, Cl. 405-74.000.

Danna, Joseph J.: See—
Acklin, John R.; Bush, Lee W.; Danna, Joseph J.; Devitt, John L.; and Rauh, George A., 4,645,094, Cl. 222-52.000.

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Yates, Jan B.; and Lubbers, Lawrence M., 4,644,938, Cl. 128-26.000.

Dao, Kim. DC power supply with compensated current reference. 4,646,220, Cl. 363-28.000.

Dart Industries, Inc.: See—
Ming, Wong K., 4,645,905, Cl. 219-297.000.

Dassler, Armin A.; and Bauer, Willi, to Puma AG Rudolf Dassler Sport. Outer sole for an athletic shoe having cleats with exchangeable gripping elements. 4,644,672, Cl. 36-134.000.

Daughenbaugh, Randall J.: See—
Dixon, Dale D.; Daughenbaugh, Randall J.; and Fowlkes, Robert L., 4,645,834, Cl. 544-106.000.

Davern, John W.; and Cook, Daniel D., to Gemcor Engineering Corp. Riveting machine. 4,645,112, Cl. 227-112.000.

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Palchan, Israel; Davidov, Dan; and Selig, Henry, 4,645,620, Cl. 252-502.000.

Davies, Peter K.: See—
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Davis, Richard E., to S.M.S. Industries, Inc. Lopper with bypassing blades. 4,644,652, Cl. 30-252.000.

Davis, Ronald L.; Phalangas, Charalambos J.; and Titus, George R., to ICI Americas Inc. Quaternary nitrogen containing polyvinyl alcohol polymers for use in skin conditioning, cosmetic and pharmaceutical formulations. 4,645,794, Cl. 525-61.000.

Dawson, James W., to Brunswick Corporation. Transmitter rod. 4,644,680, Cl. 43-18.100.

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Kleykamp, Donald L., 4,644,874, Cl. 105-377.000.

Dean, Barry D., to Atlantic Richfield Company. Partially crystalline poly(sulfone ester) resin. 4,645,820, Cl. 528-171.000.

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Dedo Weigert Film GmbH: See—
DeHubry, Frederick; and Knon, Gunter, 4,646,146, Cl. 358-108.000.

Deeg, Rolf; Roder, Albert; Siedel, Joachim; Gaulh, Helmgard; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Process and reagent for the determination of N-carbamoylsarcosine with the use of a new enzyme. 4,645,739, Cl. 435-25.000.

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Benning, Friedrich, 4,645,221, Cl. 280-5.00A.

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Goumy, Daniel; and Defrancq, Charles, 4,644,995, Cl. 164-159.000.

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Deschler, Ulrich; Panster, Peter; Kleinschmit, Peter; Wolff, Siegfried; and Tan, Ewe-Hong, 4,645,850, Cl. 556-431.000.

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Bevilaqua, Paul M.; and Dehart, John H., 4,645,140, Cl. 244-12.100.

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Del Laboratories, Inc.: See—
Ferrari, Luigi M., 4,644,966, Cl. 132-73.000.

DeLeo, Richard V.: See—
Hagen, Floyd W.; and DeLeo, Richard V., 4,645,517, Cl. 55-182.000.

della Faille d'Huyse, Gaetan; and Boxus, Louis, to Solvay & Cie. (Societe Anonyme). Composition based on calcium chloride hexahydrate for storing heat using a phase change and process for its preparation. 4,645,612, Cl. 252-70.000.

Dellaria, Joseph F.: See—
Luly, Jay R.; Plattner, John J.; and Dellaria, Joseph F., 4,645,759, Cl. 514-18.000.

DeLong, Edward A. Method of producing level off DP microcrystalline cellulose and glucose from lignocellulosic material. 4,645,541, Cl. 127-37.000.

Delotto, Romeo: See—
Alluto, Luigi; Delotto, Romeo; and Orlandin, Vanis, 4,645,124, Cl. 236-20.00A.

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Biatti, Giuseppe; Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; Giachetti, Antonio; and Micheletti, Rosamaria, 4,645,841, Cl. 548-128.000.

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Duplatre, Raymond; and De Luca, Paul V., 4,645,284, Cl. 339-94.00A.

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Denoize, Xavier: See—
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Guin, Carmen N.; and Hood, Sammy, 4,644,883, Cl. 112-121.290.

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Despax, Damien M.: See—
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Devine, Thomas M., Jr., to General Electric Company. Composite rotary anode for X-ray tube and process for preparing the composite. 4,645,121, Cl. 228-194.000.

De Vito, Joseph; Lytle, Kevin A.; Sutton, Ronald D.; Westendorf, Alan J.; Larson, Nils E.; and Utrachi, Gerald D., to Union Carbide Corporation. Gas metal arc welding process. 4,645,903, Cl. 219-137.00R.

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Acklin, John R.; Bush, Lee W.; Danna, Joseph J.; Devitt, John L.; and Rauh, George A., 4,645,094, Cl. 222-52.000.

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Bloomquist, Eric R.; and Dhital, Rajiv K., 4,644,721, Cl. 52-456.000.

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- Didchenko, Rostislav; and Lewis, Irwin C., to Amoco Corporation. Mesophase pitch feedstock from hydrotreated decant oils. 4,645,584, Cl. 208-40.000.
- Diefendorff, Keith E.: See—
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- Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Benzolactamsultams. 4,645,528, Cl. 71-90.000.
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- Dieterich, Karl-Eberhard: See—
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- Dieterich Standard Corp.: See—
Coleman, Darrel F.; Kalin, Horst W.; and Verhaagen, Donald R., 4,645,242, Cl. 285-158.000.
- Dietz, Wolfgang F. W., to RCA Corporation. S-correction circuit for a video display. 4,645,985, Cl. 315-371.000.
- DiMarco, Mario: See—
Anderson, Jane E.; Swartz, Harold L.; and DiMarco, Mario, 4,644,662, Cl. 33-366.000.
- Dionex Corporation: See—
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Katayama, Toshikazu; Shibata, Tsugio; and Arimune, Hisao, 4,645,722, Cl. 428-694.000.
- Dirk, William C.: See—
Chemali, Roland E.; and Dirk, William C., 4,646,026, Cl. 324-373.000.
- Disc Technology Corporation: See—
Hopkins, Allen B.; and Dockx, John P., 4,645,401, Cl. 414-222.000.
- Dishart, Kenneth T.: See—
Baitinger, Stacey A.; Brothers, Robert C.; and Dishart, Kenneth T., 4,645,710, Cl. 428-317.700.
- Dittmar, Wilfried: See—
Franz, Reinhard; Dittmar, Wilfried; Scheidegger, Christian; and Frohlich, Roland, 4,644,840, Cl. 84-1.010.
- Divisek, Jiri; Furst, Leander; Kastening, Bertel; and Luft, Harald, to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Process for reduction or oxidation of materials in water solution by passing a gas through a catalyst immersed in solution in the presence of electrically conducting bodies. 4,645,607, Cl. 210-719.000.
- Dixon, Dale D.; Daughenbaugh, Randall J.; and Fowkes, Robert L., to Air Products and Chemicals, Inc. Synthesis of heterocyclic amines via the reaction of dialkylene glycol and ammonia. 4,645,834, Cl. 544-106.000.
- Dixon International Limited: See—
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- Djordjevic, Ilija, to Stanadyne, Inc. Fuel injection pump with spill control mechanism. 4,644,924, Cl. 123-506.000.
- Dobran, Flavio. Lithium-sulfur hexafluoride magnetohydrodynamic power system. 4,645,959, Cl. 310-11.000.
- Dobrowir, Nicholas G. Process for selectively separating petroleum fractions. 4,645,522, Cl. 62-18.000.
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- Dr. Ing. H.C.F. Porsche Aktiengesellschaft: See—
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- Dr. Ing. Rudolf Hell GmbH: See—
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- Dr. Johannes Heidenhain GmbH: See—
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- Dolan, Michael J.; Rapko, John N.; and Morgenthaler, William W., to Monsanto Company. Alkylaryl sulfonate compositions. 4,645,623, Cl. 252-558.000.
- Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Ryssel, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, to Andreas Stihl. Lubricating-oil pump arrangement for a motor-driven apparatus. 4,644,658, Cl. 30-381.000.
- Dolinar, Blair E., to Dow Chemical Company, The. Dunnage material. 4,644,733, Cl. 53-472.000.
- Domann, Gunter, to Standard Elektrik Lorenz Aktiengesellschaft. Rotation rate measuring instrument having reduced reflection interference. 4,645,345, Cl. 356-350.000.
- Donetti, Arturo: See—
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- Donnelly Corporation: See—
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- Skogler, Brian I.; Nyhof, Eldon J.; and Katsma, William L., 4,646,210, Cl. 362-142.000.
- Donnelly, Vincent M.; and Karlicek, Robert F., Jr., to AT&T Laboratories. Deposition of III-V semiconductor materials. 4,645,687, Cl. 427-53.100.
- Dorman, Frank D.: See—
Thompson, Roby C.; Erdman, Arthur G.; and Dorman, Frank D., 4,644,943, Cl. 128-92.0YY.
- Dornier System GmbH: See—
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- Doshi, Kishore J., to Union Carbide Corporation. Enhanced gas separation process. 4,645,516, Cl. 55-16.000.
- Dow Chemical Company, The: See—
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- Dolinar, Blair E., 4,644,733, Cl. 53-472.000.
- Johns, Dennis M., 4,645,512, Cl. 23-293.00R.
- McKendry, Lennon H.; and Krauss, Richard C., 4,645,852, Cl. 558-49.000.
- Vivian, Thomas A., 4,645,617, Cl. 252-165.000.
- Dowell Schlumberger Incorporated: See—
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- Downing, Donald M. Upright golf bag support. 4,645,152, Cl. 248-96.000.
- Doyle, John E., to FMC Corporation. Hinged strain cell mounting apparatus. 4,644,785, Cl. 73-151.000.
- Doyle, Reba L. Pet carrier. 4,644,902, Cl. 119-19.000.
- Drake, Cyril F., to Standard Telephones and Cables, PLC. Water soluble compositions for preparing analytical solutions. 4,645,749, Cl. 501-45.000.
- Drake, Harry N., to FMC Corporation. Fire-resistant hydraulic fluid. 4,645,615, Cl. 252-78.500.
- Dreher, Geoffrey A.: See—
Lincoln, Andrew J.; Osborn, Robert; and Dreher, Geoffrey A., 4,646,259, Cl. 364-900.000.
- Dreier, Ernst: See—
Lahodny, Johann; and Dreier, Ernst, 4,644,953, Cl. 128-305.000.
- Dresser Industries, Inc.: See—
Carlson, Norman R.; and Johnston, James M., 4,646,273, Cl. 367-32.000.
- Randall, Russel R., 4,645,926, Cl. 250-256.000.
- Dressler, Hans; and Ward, Hans A., to Koppers Company, Inc. Novel biocides employing resorcinol derivatives. 4,645,780, Cl. 514-731.000.
- Droux, Jacques; and Langrenne, Albert, to CII-Honeywell Bull (Societe Anonyme). Magnetic disc cartridge having improved disc brake. 4,646,192, Cl. 360-133.000.
- DSM Rim Nylon VOF: See—
Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., 4,645,800, Cl. 525-340.000.
- DuBois, Jean G. Process for treating glass containers for heat sealing. 4,645,550, Cl. 156-69.000.
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- Freeman, Jerry H., to ROL Industries Inc. Slip ring assembly and method of making. 4,645,962, Cl. 310-232.000.
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- Frick, Richard H.: See—Morris, Marion C.; Hill, Randolph J.; Frick, Richard H.; and Kons, Hugo L., 4,645,135, Cl. 242-67.10R.
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- Frieder, Philip M.; and deRoja, Edward, to Optical Systems International Inc. Eyeglass lens modules and method. 4,645,317, Cl. 351-164.000.
- Friedman, Lester; and Hamilton, Jock A., to United Chemical Corporation. Production of cyanuric acid. 4,645,577, Cl. 204-62.000.
- Friedrich Deckel Aktiengesellschaft: See—Geiger, Michael, 4,645,173, Cl. 248-680.000.
- Fritz Gegauf AG Bernina Nähmaschinen Fabrik: See—Lahodny, Johann; and Dreier, Ernst, 4,644,953, Cl. 128-305.000.
- Frolich, Roland: See—Franz, Reinhard; Dittmar, Wilfried; Scheidegger, Christian; and Frolich, Roland, 4,644,840, Cl. 84-1.010.
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- Frost, John K.: See—Pressman, Norman J.; and Frost, John K., 4,645,872, Cl. 379-54.000.
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- Fuchs, Francis J., Jr. Shell forming apparatus and process. 4,644,775, Cl. 72-348.000.
- Fugate, Jimmy D. Extension handle for wrenches. 4,644,600, Cl. 7-166.000.
- Fuji Electric Corporate Research & Development, Ltd.: See—Ueno, Katsunori, 4,645,955, Cl. 307-518.000.
- Fuji Jukogyo Kabushiki Kaisha: See—Abe, Kunihiko; Matsumura, Yoshitake; and Morozumi, Takurou, 4,644,920, Cl. 123-479.000.
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- Igarashi, Akira; Ikeda, Kensuke; and Ikeda, Kenji, 4,646,113, Cl. 346-209.000.
- Nagashima, Yasuo; and Kasuga, Akira, 4,646,179, Cl. 360-99.000.
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- Seto, Yasuhiro, 4,645,351, Cl. 356-443.000.
- Shimada, Takeo; Kimura, Tsutomu; and Hayashi, Ryoichi, 4,645,334, Cl. 355-40.000.
- Sugimoto, Naohiko; Kojima, Tetsuro; and Ishimaru, Shingo, 4,645,735, Cl. 430-512.000.
- Terashita, Takaaki, 4,646,252, Cl. 364-525.000.
- Fujii, Masanori: See—Honda, Nobuyasu; Fujii, Masanori; and Kubo, Masahiko, 4,645,729, Cl. 430-126.000.
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- Fujii, Tadaaki: See—Ohe, Takeshi; Fujii, Tadaaki; and Koike, Ichiro, 4,645,025, Cl. 180-79.100.
- Fujikin International, Inc.: See—Ogawa, Hiroshi; Sonoda, Yoshiteru; and Dohi, Ryosuke, 4,645,176, Cl. 251-129.080.
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- Fujisawa Pharmaceutical Co., Ltd.: See—Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, 4,645,765, Cl. 514-233.000.
- Fujita, Etsumi: See—Kojima, Yuichi; Fujita, Etsumi; and Hideshima, Yasuhiro, 4,646,327, Cl. 375-60.000.
- Fujita, Mitsuo: See—Fukuda, Hisatoshi; and Fujita, Mitsuo, 4,646,153, Cl. 358-167.000.
- Fujita, Ryo: See—Fukunaga, Yasushi; and Fujita, Ryo, 4,646,073, Cl. 340-709.000.
- Fujita, Yoshitada; Hanada, Sadashi; Yamamoto, Yoshiaki; and Nakabayashi, Akira, to Kawasaki Jukogyo Kabushiki Kaisha. Method of handling a vehicle body during an equipping operation. 4,645,412, Cl. 414-786.000.
- Fujitsu Limited: See—Iizuka, Yoshio; Matsunaga, Shigeo; and Ogawa, Satoshi, 4,646,160, Cl. 358-257.000.
- Matsuzaki, Yasuhiro, 4,646,264, Cl. 365-104.000.
- Suzuki, Hirokazu; Akiyama, Takehiro; Morita, Teruo; Takeda, Hirofumi; and Masunaga, Hikotaro, 4,645,958, Cl. 307-597.000.
- Takemae, Yoshihiro, 4,646,118, Cl. 357-23.600.
- Fujiwara, Tadashi: See—Komatsu, Kousuke; Miyauchi, Tsutomu; Misao, Ikuo; Kimura, Mutsumi; Fujiwara, Tadashi; Tsuchida, Yoshio; and Kuroiwa, Junko, 4,646,134, Cl. 358-11.000.
- Fukami, Tadashi: See—Odaka, Kentaro; Fukami, Tadashi; and Ozaki, Shinya, 4,646,171, Cl. 360-32.000.
- Fukatsu, Shunzo: See—Shibahara, Seiji; Okonogy, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Niida, Taro; Christensen, Burton G.; and Wakazawa, Tadashi, 4,645,769, Cl. 514-210.000.
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- Fukuda, Hisatoshi; and Fujita, Mitsuo, to Victor Company of Japan, Ltd. Noise reduction circuit for a video signal. 4,646,153, Cl. 358-167.000.
- Fukuda, Toshiyuki: See—Machara, Kazuo; and Fukuda, Toshiyuki, 4,644,758, Cl. 62-234.000.
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- Fukushima, Takeo: See—Yanagi, Kenichi; Makihara, Katsumi; Fukushima, Takeo; Hashimoto, Osamu; and Iida, Sachihiko, 4,644,667, Cl. 34-54.000.
- Fullenkamp, Eugene H.: See—Gallant, Dennis J.; and Fullenkamp, Eugene H., 4,646,211, Cl. 362-149.000.
- Fuller, Larry E.: See—Martinez, Felix J.; Fuller, Larry E.; and Irmiter, Richard J., 4,645,645, Cl. 422-46.000.
- Fulton, Hubert S. Trolling motor guide. 4,645,462, Cl. 440-6.000.
- Funamoto, Takao: See—Haramaki, Takashi; Shiota, Katsuhiko; Kokura, Satoshi; Funamoto, Takao; and Tomita, Akira, 4,645,119, Cl. 228-183.000.
- Furrer, Andreas, to BBC Brown, Boveri & Company Limited. Method and apparatus for controlling the carrier of an amplitude-modulated transmitter. 4,646,359, Cl. 455-108.000.
- Furst, Leander: See—Divisek, Jiri; Furst, Leander; Kastening, Bertel; and Luft, Harald, 4,645,607, Cl. 210-719.000.
- Furubotten, Douglas S. Camp chair that converts to a hand truck. 4,645,262, Cl. 297-129.000.
- Furuya, Tai; and Koike, Keiji, to Ebara Corporation. Centrifugal compressor. 4,645,419, Cl. 415-210.000.
- Fusaro, Louis V. Auto travel ski bag. 4,644,986, Cl. 150-52.00R.
- Futami, Shigeru: See—Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.
- Fuyuki, Akira: See—Murai, Masayoshi; and Fuyuki, Akira, 4,644,635, Cl. 29-568.000.
- G-C Dental Industrial Corp.: See—Nagao, Kunihiko, 4,645,649, Cl. 422-186.300.
- G. D. Searle & Co.: See—Lowrie, Harman S.; and Baran, John S., 4,645,858, Cl. 562-582.000.
- G.D. Societa per Azioni: See—Seragnoli, Enzo, 4,645,063, Cl. 198-450.000.
- G. Miller Machine Co., Inc.: See—Purdy, George W., 4,645,373, Cl. 403-341.000.
- G. Siempekkamp GmbH & Co.: See—Bottger, Friedrich; and Gerhardt, Klaus, 4,645,632, Cl. 264-120.000.

- Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., to DSM Rim Nylon VOF. Acylactam functional materials. 4,645,800, Cl. 525-340.000.
- Gaddy, James L.; and Clausen, Edgar C. Method of recovering hydrochloric acid from a product comprised of sugars and concentrated hydrochloric acid. 4,645,658, Cl. 423-488.000.
- Gadow, Andre; and Wood, W. Graham, to Henning Berlin GmbH Chemie-und Pharmawerk. Luminescence immunoassay for haptens and chemiluminescence labelled hapten conjugates. 4,645,646, Cl. 422-61.000.
- Gadsby, Larry R.: See—Sanford, Platter; Gadsby, Larry R.; and Heath, Robert T., 4,646,177, Cl. 360-95.000.
- Gagelin, Jean-Jacques: See—Allemand, Robert; Gagelin, Jean-Jacques; and Pleyber, Gaetan, 4,645,934, Cl. 250-374.000.
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- Gale, Robert M.; and Enscore, David J., to ALZA Corporation. Transdermal delivery of highly ionized fat insoluble drugs. 4,645,502, Cl. 604-896.000.
- Gallagher, Daniel M., to Rayflow Corp. Solar heater control. 4,644,935, Cl. 126-437.000.
- Gallagher, Hayden E.: See—Harvey, Robin J.; and Gallagher, Hayden E., 4,645,978, Cl. 315-111.810.
- Gallant, Dennis J.; and Fullenkamp, Eugene H., to Hill-Rom Company, Inc. Service outlet wall and rail system for use thereon. 4,646,211, Cl. 362-149.000.
- Gambini, Michael R.; Martone, Ronald J.; Kearns, Donald S.; Enos, Gary W.; Franke, Rudi; and Schoeppey, Herbert, to Picker International, Inc. Emissive computed tomography. 4,645,933, Cl. 250-363.00S.
- Gamm, Robert J., to Kangaroos U.S.A. Inc. Rearwardly opening pocketed athletic shoe. 4,644,673, Cl. 36-136.000.
- Gamon, Vicente: See—Arregui, Manuel; Diaz, Rafael; Gamon, Vicente; and Yarza, Javier, 4,645,428, Cl. 417-273.000.
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- Garabedian, George; and DeLuca, Robert A., to Stone & Webster Engineering Corp. Double tube helical coil steam generator. 4,644,906, Cl. 122-32.000.
- Garbade, Rolf; Kahle, Hans J.; Schreier, Hans H.; and Jabbusch, Wolfgang, to Pontech Gesellschaft für Technologische Entwicklungen mbH. Process and device for recording the weight of refuse material as the material is emptied into a refuse collecting vehicle. 4,645,018, Cl. 177-6.000.
- Garcia, Christian: See—Charvet, Jean-Louis; and Garcia, Christian, 4,644,989, Cl. 152-451.000.
- Gardenier, Karl-Josef; and Heimbürger, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Aqueous release agents. 4,645,537, Cl. 106-243.000.
- Gardi, Giovanni: See—Ferrando, Ugo; Gardi, Giovanni; and Pagliano, Giustino, 4,645,493, Cl. 604-174.000.
- Garheime, Jacob W., Jr. Surveillance and weapon system. 4,644,845, Cl. 89-41.050.
- Garner, Albert Y.: See—Gabbert, James D.; Garner, Albert Y.; and Hedrick, Ross M., 4,645,800, Cl. 525-340.000.
- Garratt, Ford; and Thompson, Steven, to Mountain Computer Incorporated. Transport for open or closed flap diskettes. 4,646,178, Cl. 360-98.000.
- Garrett Corporation, The: See—Ross, David F.; and Lyon, Craig A., 4,645,032, Cl. 181-250.000.
- Way, Donald R., 4,645,439, Cl. 418-104.000.
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- Gartside, Charles H., III, to AT&T Bell Laboratories. Optical fiber cable. 4,645,298, Cl. 350-96.230.
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- Gates Rubber Company, The: See—Arterburn, Robert B., 4,644,977, Cl. 138-137.000.
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- Gavin, James R.; and Phillips, Nicholas, to Mobil Oil Corporation. Dispensing carton and blank therefor. 4,645,108, Cl. 225-103.000.
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- Gearhart Industries, Inc.: See—Chemali, Roland E.; and Dirk, William C., 4,646,026, Cl. 324-373.000.
- Gebr. Bode & Co. GmbH: See—Schindehutte, Manfred, 4,644,692, Cl. 49-213.000.
- Gebr. Isringhausen: See—Mischer, Hans-Peter, 4,645,169, Cl. 248-550.000.
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cable and cross-mesh in elongated precast concrete plank. 4,644,727, Cl. 52-687.000.

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Kavoussi, James P.; and Hartford, Louise D., 4,645,353, Cl. 368-12.000.

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Palmquist, Steven R.; Takita, Kentaro; and Hasegawa, Kazumi, 4,646,297, Cl. 371-1.000.

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Hosoi, Hideki; Hasegawa, Toshihiko; and Aoyama, Taizo, 4,645,795, Cl. 525-83.000.

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Takamizawa, Takashi; and Hashizume, Motomu, 4,646,265, Cl. 365-104.000.

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Hauenstein, Ernst, to CP Pumpen AG. Sealing shroud centrifugal pump. 4,645,433, Cl. 417-420.000.

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Paton, Charles R.; and Haugh, Charles E., 4,645,890, Cl. 200-153.00G.

Hauni-Werke Korber & Co. KG.: See—
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Kuwabara, Michiaki; and Hayashi, Hiromasa, 4,646,132, Cl. 357-80.000.

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Terada, Takami; and Hayashi, Masayuki, 4,645,159, Cl. 248-429.000.

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Hazue, Masaaki: See—
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Heald, Anthony F.: See—
Bare, Thomas M.; and Heald, Anthony F., 4,645,838, Cl. 546-84.000.

Health Research Inc.: See—
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Hehl, Karl. Injection molding machine with self-connecting ejection device. 4,645,446, Cl. 425-350.000.

Heide, Ulf B., to Technical Manufacturing Corporation. Honeycomb tabletop. 4,645,171, Cl. 248-637.000.

Heidenreich, David C., to Power Transmission Technology, Inc. Torque limiting clutch. 4,645,472, Cl. 464-48.000.

Heiker, Fred R.: See—
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von Bernuth, Hans-Dietrich; and Heine, Franz, 4,645,030, Cl. 180-333.000.

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Oelschlag, Hans H., 4,645,033, Cl. 182-6.000.

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Stambach, Jean-Francois; Jung, Louis; Heitz, Christiane; Schott, Claire; Stoclet, Jean-Claude; and Schutz, Fabienne, 4,645,772, Cl. 514-280.000.

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Young, Niels O., 4,644,851, Cl. 92-127.000.

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Heller, Jurg; Kissling, Bruno; Robinson, Tibor; and Valenti, Salvatore, to Sandoz Ltd. Aftertreatment of dyed or printed textiles with a polymeric polybasic amino compound. 4,645,511, Cl. 8-549.000.

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Lin, Steve T.; Conjeevaram, Seshadri; and Henderson, Don J., 4,645,503, Cl. 623-16.000.

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Herring, Donald E.; and Gross, Raymond J., to Mattel, Inc. Busy ball child's toy. 4,645,471, Cl. 446-258.000.

Hess, Hans: See—
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Hidaka, Yoshiaki; Araki, Junichi; and Tamura, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Cylindrical block for internal combustion engine. 4,644,911, Cl. 123-52.00M.

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Hight, Margaret A.: See—
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Hill, David T.; and Johnson, Randall K., to Smith Kline Beckman Corporation. [α,ω-bis(diphenylphosphino)hydrocarbon]bis(thiosugar)gold and bis(selenosugar)gold derivatives, pharmaceutical compositions and method of use. 4,645,756, Cl. 514-24.000.

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Morris, Marion C.; Hill, Randolph J.; Frick, Richard H.; and Kons, Hugo L., 4,645,135, Cl. 242-67.10R.

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Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, 4,645,684, Cl. 427-38.000.

Hiraishi, Tomiyasu, to Omron Tateisi Electronics Co. Card reader. 4,645,914, Cl. 235-380.000.

Hirakawa, Osamu: See—
Umeha, Genkichi; Urano, Shigeru; Hirakawa, Osamu; and Takegushi, Shunsuke, 4,644,912, Cl. 123-90.340.

Hirakawa, Shuji: See—
Shinohara, Nobutaka; Hirakawa, Shuji; Minami, Akihiko; and Tanaka, Koichi, 4,646,154, Cl. 358-183.000.

Hirakawa, Tadashi; Sasahige, Hiroaki; and Okawa, Haruo, to Mitsubishi Jukogyo Kabushiki Kaisha. Lower roll apparatus for single facer. 4,644,896, Cl. 118-44.000.

Hiramatsu, Akira; and Mukohijima, Hitoshi, to Canon Kabushiki Kaisha. Vibration wave motor. 4,645,964, Cl. 310-323.000.

Hirano, Tomiyasu: See—
Monta, Shuji; Sato, Katsujiro; Asaka, Yoshio; Harada, Isao; and Hirano, Tomiyasu, 4,644,914, Cl. 123-90.550.

Hirata, Terutaka: See—
Tamura, Hisashi; Hirata, Terutaka; Odohira, Tetsu; and Ogawa, Tadashi, 4,644,798, Cl. 73-708.000.

Hiratani, Masahiko; Miyauchi, Katsuki; Ito, Yukio; Kanehori, Keiichi; Kirino, Fumiyoshi; and Kudo, Tetsuichi, to Hitachi, Ltd. Solid state lithium battery. 4,645,726, Cl. 429-191.000.

Hirosawa, Toshio; Ohki, Masaru; Motobayashi, Shigeru; and Kuwahara, Yutaka, to Hitachi, Ltd. Computer network having a host-local file I/O operation. 4,646,235, Cl. 364-200.000.

Hiroshi, Ito: See—
Takao, Takeda; Hitoshi, Yamazaki; Shizuo, Nakano; Kouzi, Yamamoto; Hiroshi, Ito; and Jun, Imai, 4,645,972, Cl. 313-634.000.

Hirota, Akira, to Victor Company of Japan Ltd. Chrominance signal recording apparatus utilizing digital sampling and quantizing techniques. 4,646,165, Cl. 358-310.000.

Hirozawa, Kunikazu: See—
Hayashi, Ken-ichi; Hirozawa, Kunikazu; and Kotaki, Masahiro, 4,646,208, Cl. 362-80.000.

Hitachi Chemical Company, Ltd.: See—
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,645,688, Cl. 427-82.000.

Hitachi Construction Machinery Co., Ltd.: See—
Tanaka, Hideaki, 4,644,849, Cl. 91-445.000.

Hitachi Kiden Kogyo Kabushiki Kaisha: See—
Higuchi, Toshiro; Kamei, Shigeki; and Kawaguchi, Kojiro, 4,644,870, Cl. 104-292.000.

Hitachi, Ltd.: See—
Fukunaga, Yasushi; and Fujita, Ryo, 4,646,073, Cl. 340-709.000.

Haramaki, Takashi; Shiota, Katsuhiko; Kokura, Satoshi; Funamoto, Takao; and Tomita, Akira, 4,645,119, Cl. 228-183.000.

Hattori, Sadao, 4,645,633, Cl. 376-179.000.

Hiratani, Masahiko; Miyauchi, Katsuki; Ito, Yukio; Kanehori, Keiichi; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,645,726, Cl. 429-191.000.

Hirosawa, Toshio; Ohki, Masaru; Motobayashi, Shigeru; and Kuwahara, Yutaka, 4,646,235, Cl. 364-200.000.

Ichikawa, Norio; Takeda, Seiji; and Tsuruoka, Kazuhiro, 4,644,797, Cl. 73-706.000.

Ishigaki, Masaji; Ohishi, Tetsu; Tokusyuku, Nobuhiro; Koda, Yoshie; and Fukui, Yukio, 4,645,712, Cl. 428-433.000.

Kamata, Yasuji; and Kato, Kazuo, 4,646,029, Cl. 330-283.000.

Kanamaru, Hisanobu; Sasaya, Kazushi; Onuma, Tomiyasu; and Tohkairin, Akira, 4,644,850, Cl. 91-507.000.

Kimura, Shin; Fukui, Hiroshi; Amano, Hisao; Yatsuo, Tsutomu; Oikawa, Saburo; and Nagano, Takahiro, 4,646,122, Cl. 357-38.000.

Kobayashi, Masaharu; Okamoto, Hiroo; and Arai, Takao, 4,646,170, Cl. 360-22.000.

Koga, Masataka; Kitagawa, Masatoshi; and Oishi, Konosuke, 4,645,341, Cl. 356-307.000.

Morita, Kiyomi; Kashiwaya, Mineo; and Sakamoto, Masahide, 4,644,923, Cl. 123-493.000.

Ohmura, Keiji; Kawai, Suet; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, 4,645,258, Cl. 296-204.000.

Okamoto, Hiroo; Kobayashi, Masaharu; Kimura, Hiroyuki; Noguchi, Takaharu; and Arai, Takao, 4,646,301, Cl. 371-37.000.

Shimohigashi, Katsuhiko; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, 4,646,267, Cl. 365-189.000.

Sonoda, Shinji; Ozaki, Norihiko; Watahiki, Seishi; Sakuma, Yasuzi; and Yamaguchi, Masayoshi, 4,644,791, Cl. 73-432.100.

Sugiyama, Hisataka; Shigematsu, Kazuo; Maeda, Takeshi; Saitoh, Atsushi; and Takasugi, Wasao, 4,646,103, Cl. 346-1.100.

Uchiyama, Kunio; and Nishimukai, Tadahiho, 4,646,271, Cl. 365-49.000.

Uragami, Akira, 4,645,951, Cl. 307-446.000.

Yokokura, Hisao; Era, Susumu; Abe, Hidetoshi; Nakata, Tadao; Kitamura, Teruo; and Mukoh, Akio, 4,645,305, Cl. 350-351.000.

Yonezawa, Seiji, 4,646,279, Cl. 369-46.000.

Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,645,647, Cl. 422-81.000.

Hitachi Maxell, Ltd.: See—
Goto, Shinichi, 4,646,191, Cl. 360-132.000.

Hitachi Metals, Ltd.: See—
Murakami, Shiro; Fujii, Shigeo; Nakao, Masayuki; Igarashi, Yoshio; and Endo, Juro, 4,645,690, Cl. 427-128.000.

Hitachi Zosen Corporation: See—
Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, 4,645,065, Cl. 198-573.000.

Hitoshi, Yamazaki: See—
Takao, Takeda; Hitoshi, Yamazaki; Shizuo, Nakano; Kouzi, Yamamoto; Hiroshi, Ito; and Jun, Imai, 4,645,972, Cl. 313-634.000.

Hittenberger, Drew A.: See—
Poggi, Donald L.; Burgess, Ernest M.; Moeller, David E.; and Hittenberger, Drew A., 4,645,509, Cl. 623-55.000.

Hix, William R. Isometric exercising device. 4,645,200, Cl. 272-73.000.

Hixenbaugh, Dennis L.; and Gossar, Ronald C., to Pennsylvania Engineering Corporation. Arc furnace burner control method and apparatus. 4,646,315, Cl. 373-2.000.

Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., to Landstingens Inkopsentral Lic Ekonomisk Forening. Agent for preventing or treating infections in human beings and animals. 4,645,757, Cl. 514-54.000.

Ho, Sa Van, to Monsanto Company. Method for separating polypeptides. 4,645,829, Cl. 530-344.000.

Hochtemperatur-Reaktorbau GmbH: See—
Nicolai, Rainer; Wachholz, Winfried; and Weicht, Ulrich, 4,645,641, Cl. 376-283.000.

Hodgson, Darel E.: See—
Krumme, John F.; and Hodgson, Darel E., 4,645,489, Cl. 604-65.000.

Hoechst Aktiengesellschaft: See—
Bauer, Klaus; Bieringer, Hermann; and Schumacher, Hans, 4,645,526, Cl. 71-88.000.

Pieper, Werner, 4,645,835, Cl. 544-190.000.

Hofer, Wolfgang: See—
Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,645,525, Cl. 71-88.000.

Hoffman, George J., to Litton Systems, Inc. Ferro-fluid bearing. 4,645,960, Cl. 310-90.500.

Hoffman, Jerzy, to Wavecom. Solenoid having a plunger non-fixedly adjoining an end of the armature. 4,646,043, Cl. 335-255.000.

Hoffman, Mary V., to General Electric Company. Skin tanning fluorescent lamp construction utilizing a phosphor combination. 4,645,969, Cl. 313-487.000.

Hoffmann, Armin, to Hilti Aktiengesellschaft. Press-out piston for dispensing substance from a container. 4,645,098, Cl. 222-386.000.

Hoffing, Peter; and Schoneewiss, Klaus, to O&K Orenstein & Koppel Aktiengesellschaft. Roller-path system. 4,645,059, Cl. 198-321.000.

Hofmeister, Helmut: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; and Wendt, Hans, 4,645,763, Cl. 514-178.000.

Hoganson, Gerald G.: See—
Brown, Trevor J.; and Hoganson, Gerald G., 4,645,269, Cl. 301-37.00P.

Hogden, John D., Sr.; and Clelland, Charles M., to HoPec Enterprises, Inc. Fish gripping device. 4,645,253, Cl. 294-19.100.

Holbrook, Gerald W.: See—
Kilop, James T.; and Holbrook, Gerald W., 4,644,772, Cl. 72-88.000.

Holcroft, Brian: See—
Roberts, Gareth G.; Blackburn, Brian; Petty, Michael C.; and Holcroft, Brian, 4,645,693, Cl. 427-402.000.

Holliday, Lawrence E.: See—
Ebert, Philip C.; and Holliday, Lawrence E., 4,646,255, Cl. 364-578.000.

Hollister, Allen L., to Tektronix, Inc. Triggered frequency locked oscillator having programmable delay circuit. 4,646,030, Cl. 331-1.00A.

Holmberg, Brita G. E., legal representative: See—
Holmberg, Gote E. Y., deceased; Holmberg, Brita G. E., legal representative; and Holmberg, Dick L. L., legal representative, 4,644,618, Cl. 24-630.000.

Holmberg, Dick L. L., legal representative: See—
Holmberg, Gote E. Y., deceased; Holmberg, Brita G. E., legal representative; and Holmberg, Dick L. L., legal representative, 4,644,618, Cl. 24-630.000.

Holmberg, Gote E. Y., deceased; by Holmberg, Brita G. E., legal representative; and by Holmberg, Dick L. L., legal representative. Lock for safety bells. 4,644,618, Cl. 24-630.000.

Holmes, Alan W.: See—
Burrowes, David E.; and Holmes, Alan W., 4,646,084, Cl. 340-870.030.

Holmquist, Kurt: See—
Bremer, Gordon; Armstrong, Thomas; Holmquist, Kurt; and Smith, Richard K., 4,645,871, Cl. 380-2.000.

Holmwood, Graham; Kramer, Wolfgang; Buchel, Karl H.; Reinecke, Paul; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Hydroxyethyl-azole derivatives and fungicidal use thereof. 4,645,767, Cl. 514-383.000.

Holtz, Leonard: See—
Jacobs, Alvin D., 4,645,251, Cl. 294-1.300.

Holub, Fred F.: See—
Kim, Bang M.; and Holub, Fred F., 4,645,595, Cl. 210-181.000.

Homan, Gerlof, to Survival Technology, Inc. Anti-contamination hazardous material package. 4,645,073, Cl. 206-219.000.

Homeier, Ronald F., to PT Components, Inc. Dual bend conveyor. 4,645,070, Cl. 198-831.000.

Hommann, Edgar, to Gimelli & Co. A.G. Mouth and tooth spray apparatus. 4,644,937, Cl. 128-66.000.

Honda Giken Kogyo Kabushiki Kaisha: See—
Hidaka, Yoshiaki; Araki, Junichi; and Tamura, Masayuki, 4,644,911, Cl. 123-52.00M.

Maezono, Masakazu; Shimizu, Takeyuki; and Ishikawa, Keiichi, 4,645,051, Cl. 192-0.055.

Matsuda, Minoru; and Muraishi, Tadashi, 4,645,049, Cl. 192-35.000.

Shimizu, Yasuo, 4,644,824, Cl. 74-781.00R.

Yakuwa, Masahiko; and Iijima, Hideto, 4,644,917, Cl. 123-414.000.

Honda, Nobuyasu; Fujii, Masanori; and Kubo, Masahiko, to Mita Industrial Co., Ltd. Method for preventing offset in electrophotography. 4,645,729, Cl. 430-126.000.

Honeycutt, Fred L., Jr.; and Middleton, Robert G., to United Technologies Corporation. Finger seal assembly. 4,645,217, Cl. 277-230.000.

Honeycutt, Thomas E.: See—
Otto, William F.; Roberts, Thomas G.; Jenkins, Andrew H.; and Honeycutt, Thomas E., 4,645,448, Cl. 431-1.000.

Honeywell Inc.: See—
Gordon, William R.; Nicholson, Peter N.; and Six, John E., 4,645,931, Cl. 250-352.000.

Graf, Carl P.; Fairchild, Kim M.; Fant, Karl M.; Rusler, George W.; and Schroeder, Michael O., 4,645,459, Cl. 434-43.000.

Honeywell Information Systems Inc.: See—
Chasse, Dennis W.; Bourgeois, David R.; and Comins, Todd R., 4,646,260, Cl. 364-900.000.

Honeywell Information Systems Italia: See—
Baroni, Giuseppe; and Montorfano, Gianpaolo, 4,646,217, Cl. 363-17.000.

Fossati, Paolo; and Melloni, Paolo, 4,646,304, Cl. 371-38.000.

Honore, Tage: See—
Engelstoft, Mogens; Honore, Tage; Watjen, Frank; Petersen, Erling N.; and Huth, Andreas, 4,645,773, Cl. 514-292.000.

Hood, Alan M.: See—
Phillips, Charles E.; and Hood, Alan M., 4,646,003, Cl. 324-74.000.

Hood, Sammy: See—
Guin, Carmen N.; and Hood, Sammy, 4,644,883, Cl. 112-121.290.

Hoogovens Groep B.V.: See—
van Steden, Gerhard, 4,644,774, Cl. 72-201.000.

Hook, Sidney J.; Tittler, Philip; and Walley, Gerald D., to British Aerospace PLC. Cabinet for electronic apparatus. 4,646,202, Cl. 361-382.000.

HoPec Enterprises, Inc.: See—
Hogden, John D., Sr.; and Clelland, Charles M., 4,645,253, Cl. 294-19.100.

Hopkins, Allen B.; and Dockx, John P., to Disc Technology Corporation. Magnetic disc handling system. 4,645,401, Cl. 414-222.000.

Hopkins, John R.: See—
Cozzens, Brian E.; Hopkins, John R.; and Thakrar, Anil C., 4,645,285, Cl. 339-96.000.

Hoppie, Lyle O.; Chute, Richard; Scharnweber, David H.; and Wachunas, Kenneth P., to Eaton Corporation. Apparatus and method for compressive heating of fuel to achieve hypergolic combustion. 4,644,925, Cl. 123-558.000.

Horie, Motonobu; Shimizu, Teruo; and Obara, Kouichiro, to Japan Tobacco, Inc. Machine for manufacturing filter-tipped cigarettes. 4,644,961, Cl. 131-94.000.

Horn, Guenther; Pieper, Wolfgang; and Roeser, Herbert, to Siemens Aktiengesellschaft. Electrical coil form with connector pins. 4,646,047, Cl. 336-192.000.

Horna, Otakar A.; Stennett, Edwin A.; and El-Mokadem, Ferial T., to Communications Satellite Corporation. Double talk and line noise detector for a echo canceller. 4,645,883, Cl. 379-406.000.

Hornykiewicz, Oleh; Hinzen, Dieter; and Schingnitz, Gunter, to Boehringer Ingelheim KG. Agent for treating Parkinson's disease or Parkinsonism. 4,645,770, Cl. 514-212.000.

Horrocks, GERALD I. E. J.: See—
Knapp, Lionel; and Horrocks, GERALD I. E. J., 4,645,117, Cl. 228-124.000.

Horsley, Larry L., to Horsley, Martha Willene. Adjustable outlet box mounting. 4,645,089, Cl. 220-3.600.

Horsley, Martha Willene: See—
Horsley, Larry L., 4,645,089, Cl. 220-3.600.

Hosaka, Masao: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518.000.

Hoshizaki Electric Co., Ltd.: See—
Hida, Junichi; Tsukiyama, Yasumitsu; Kito, Yoshikazu; and Tatematsu, Susumu, 4,644,757, Cl. 62-188.000.

Hosoi, Hideki; Hasegawa, Toshihiko; and Aoyama, Taizo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride polymer composition. 4,645,795, Cl. 525-83.000.

Hotaka, Nobuhiro: See—
Sekino, Yoshihiro; Aoki, Masayuki; and Hotaka, Nobuhiro, 4,646,221, Cl. 363-41.000.

Hou, Kenneth C.; and Ostreicher, Eugene A., to Cuno, Inc. Filter media and method of making same. 4,645,567, Cl. 162-181.600.

House Food Industrial Company, Limited: See—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Koji; and Nagatome, Yoshiaki, 4,645,681, Cl. 426-634.000.

Hovan, Edward J.; and Zimonis, Joseph P., to United Technologies Corporation. Air cooler for providing buffer air to a bearing compartment. 4,645,415, Cl. 415-115.000.

Hovenga, LaVern B.: See—
Wohlford, William P.; and Hovenga, LaVern B., 4,645,273, Cl. 305-40.000.

Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., to AT&T Bell Laboratories. Fresnel lens fabrication. 4,645,523, Cl. 65-3.110.

Howe, Blair E., to Padelford, James. Tire theft prevention device. 4,645,397, Cl. 411-431.000.

Howe, Ernie W.; and Howe, Stanley C. Tree trimming apparatus. 4,644,654, Cl. 30-296.00R.

Howe, Stanley C.: See—
Howe, Ernie W.; and Howe, Stanley C., 4,644,654, Cl. 30-296.00R.

Howell, Edward K., to General Electric Company. Varistor quenched arc chute for current limiting circuit interrupters. 4,645,889, Cl. 200-144.0AP.

Howell, Edward K., to General Electric Company. High speed contact driver for circuit interruption device. 4,646,041, Cl. 335-195.000.

Howkins, Stuart D., to Exxon Printing Systems, Inc. Method of operating an ink jet. 4,646,106, Cl. 346-1.100.

Howmedica, Inc.: See—
Larrabee, Edward W.; and Huck, Charles M., 4,645,111, Cl. 227-19.000.

Howse, Geoffrey P., to Aquatech Marketing Limited. Drive mechanism. 4,644,809, Cl. 74-25.000.

Hoyne, Earl K.; Nordeen, Charles K.; and Young, James D., to Minnesota Mining and Manufacturing Company. Electrographic stylus recording apparatus. 4,646,112, Cl. 346-153.100.

Hsu, Michael S., to Massachusetts Institute of Technology. Integrated fuel-cell/steam plant for electrical generation. 4,644,751, Cl. 60-676.000.

Huang, Tracy J.: See—
McCullen, Sharon B.; Wong, Stephen S.; and Huang, Tracy J., 4,645,751, Cl. 502-37.000.

Huang, Wann-Sheng; and Hight, Margaret A., to Texaco Inc. Patterns of horizontal and vertical wells for improving oil recovery efficiency. 4,645,003, Cl. 166-245.000.

Huber, Hans: See—
Knott, Valentin; Huber, Hans; Langheinrich, Wolfgang; and Maier, Stephan, 4,645,040, Cl. 188-79.5GT.

Huber, Josef: See—
Eberle, Heini; and Huber, Josef, 4,644,666, Cl. 34-34.000.

Huck, Charles M.: See—
Larrabee, Edward W.; and Huck, Charles M., 4,645,111, Cl. 227-19.000.

Huels Aktiengesellschaft: See—
Sridhar, Srinivasan; and Hartmann, Manfred, 4,645,570, Cl. 203-73.000.

Huelsmann, Dieter: See—
Atalar, Abdullah; Fischbach, Herbert; and Huelsmann, Dieter, 4,645,937, Cl. 250-561.000.

Huether, Werner, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Hybrid vane or blade for a fluid flow engine. 4,645,421, Cl. 416-92.000.

Hughes Aircraft Company: See—
Harvey, Robin J.; and Gallagher, Hayden E., 4,645,978, Cl. 315-111.810.
Landis, Abraham L.; and Naselow, Arthur B., 4,645,824, Cl. 528-353.000.
Liao, Kuan Y.; Chang, Kuang-Yeh; and Ma, Hsing-Chien, 4,645,562, Cl. 156-643.000.
Vitriol, William A.; and Brown, Raymond L., 4,645,552, Cl. 156-89.000.
Hughes, George W. Locking means for garage door actuator signal transmitters. 4,646,072, Cl. 340-696.000.
Hughes, Thomas R.: See—
Buss, Waldeen C.; and Hughes, Thomas R., 4,645,588, Cl. 208-138.000.
Hull, Robert E., to Du Pont de Nemours, E. I., and Company. Dryer roll. 4,644,668, Cl. 34-119.000.
Hull, William L., III: See—
Hargrave, Franklin; Zeller, David A., Jr.; Smith, Mark G.; Hull, William L., III; and Middleton, Francisco A., 4,646,342, Cl. 379-24.000.
Hulsen, Ralf: See—
Grethe, Klaus; Hulsen, Ralf; and Thielen, Walter, 4,644,879, Cl. 110-343.000.
Hultqvist, Lars, to Broderma Holmbergs Fabriks AB. Lock for safety belts. 4,644,615, Cl. 24-574.000.
Hunt, Eugene V.: See—
Wheatley, Charles E., III; Mosley, Charles G.; and Hunt, Eugene V., 4,646,032, Cl. 331-78.000.
Hunt, Robert H.; and Klappert, Willi, to General Electric Company. Core and winding assembly with relieved core edges and method of manufacture thereof. 4,646,048, Cl. 336-213.000.
Hunter, Edward H. Boiler tubes of enhanced efficiency and method of producing same. 4,644,907, Cl. 122-235.00C.
Huntzinger, Mark E.: See—
Backof, Charles A., Jr.; and Huntzinger, Mark E., 4,646,326, Cl. 375-39.000.
Hurwitz, Charles; Rosano, Carmen L.; Parhami, Nourollah; and Hechemy, Karim. Protein which is characteristic of rheumatoid arthritis. 4,645,748, Cl. 436-509.000.
Husler, Balthasar, to Liform AG. Resilient surface for sitting and lying furniture, preferably for beds. 4,644,596, Cl. 5-236.00R.
Hussain, Moayyed A.: See—
Schenck, John F.; Hussain, Moayyed A.; and Edelstein, William A., 4,646,024, Cl. 324-318.000.
Husslein, Julius, to Bosch-Siemens Hausgeraete GmbH. Heating device for radiation heating units heated by electric energy. 4,645,911, Cl. 219-464.000.
Husted, Royce H., to Husted, Royce H.; and Shiber, Samuel. Incrementally variable bicycle transmission. 4,645,475, Cl. 474-56.000.
Huth, Andreas: See—
Engelstoft, Mogens; Honore, Tage; Watjen, Frank; Petersen, Erling N.; and Huth, Andreas, 4,645,773, Cl. 514-292.000.
Hutson, Duane. Fishing float. 4,644,681, Cl. 43-44.910.
Huttlin, Herbert. Filter assembly for dust removal from gases, especially in fluidized bed apparatus. 4,645,520, Cl. 55-302.000.
Hydock, Michael A.: See—
Ornstein, Jacob L.; and Hydock, Michael A., 4,645,120, Cl. 228-190.000.
HydriL Company: See—
Woods, Allan O., 4,646,083, Cl. 340-856.000.
Hydrotherm Geraetebau GmbH: See—
Metz, Peter, 4,644,904, Cl. 122-133.00R.
I.C.M. S.p.A. Italiana Costruzioni Metalmeccaniche: See—
Bucfari, Massimo; and Rubecchini, Roberto, 4,644,743, Cl. 59-31.000.
I.M.A. Industria Macchine Automatiche S.p.A.: See—
Argazzi, Ivo, 4,645,060, Cl. 198-409.000.
IABP: See—
Schiff, Peter, 4,644,936, Cl. 128-1.00D.
Ichiba, Toshinobu: See—
Take, Takao; Kaneko, Katsuaki; Kusonoki, Kokyo; and Ichiba, Toshinobu, 4,645,548, Cl. 156-39.000.
Ichikawa, Masayoshi: See—
Okumoto, Tadaoki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.
Ichikawa, Norio; Takeda, Seiji; and Tsuruoka, Kazuhiro, to Hitachi, Ltd. Semiconductor pressure transducer. 4,644,797, Cl. 73-706.000.
Ichikawa, Tsutomu: See—
Sakashita, Wataru; Chiyoya, Tsukasa; Ichikawa, Tsutomu; and Hayano, Makoto, 4,645,437, Cl. 418-55.000.
Ichimura, Kazushi: See—
Okado, Chihiro; Ichimura, Kazushi; and Ambo, Tatsuki, 4,646,222, Cl. 363-56.000.
Ichinose, Katsuki: See—
Shinohara, Hirofumi; and Ichinose, Katsuki, 4,645,998, Cl. 323-313.000.
ICI Americas Inc.: See—
Bare, Thomas M.; and Heald, Anthony F., 4,645,838, Cl. 546-84.000.
Davis, Ronald I.; Phalangas, Charalambos J.; and Titus, George R., 4,645,794, Cl. 525-61.000.
Kruse, Walter M.; and Stephen, John F., 4,645,839, Cl. 546-290.000.
Stephen, John F.; Smith, Jerry H.; and Meshreki, Makram H., 4,645,853, Cl. 560-58.000.

Idel, Karsten; and Willenberg, Bernd, to Bayer Aktiengesellschaft. Fibres and filaments of polyarylene sulphides. 4,645,825, Cl. 528-388.000.
Idemitsu Kosan Company Limited: See—
Kubota, Katsuzo; Nakai, Masayuki; and Ono, Shigeyoshi, 4,645,513, Cl. 44-10.00H.
Igarashi, Akira; Ikeda, Kensuke; and Ikeda, Kenji, to Fuji Photo Film Co., Ltd. Heat-sensitive recording sheet. 4,646,113, Cl. 346-209.000.
Igarashi, Tadao: See—
Kato, Shinichiro; Chiba, Teruo; and Igarashi, Tadao, 4,646,188, Cl. 360-132.000.
Igarashi, Yoshio: See—
Murakami, Shiro; Fujii, Shigeo; Nakao, Masayuki; Igarashi, Yoshio; and Endo, Juro, 4,645,690, Cl. 427-128.000.
IHC Holland N.V.: See—
Langejan, Hendrik, 4,644,888, Cl. 114-27.000.
Ii, Akira: See—
Okano, Hiroshi; Kawai, Yukio; and Ii, Akira, 4,644,784, Cl. 73-117.300.
Iida, Sachihiko: See—
Yanagi, Kenichi; Makihara, Katsumi; Fukushima, Takeo; Hashimoto, Osamu; and Iida, Sachihiko, 4,644,667, Cl. 34-54.000.
Iijima, Hideto: See—
Yakuwa, Masahiko; and Iijima, Hideto, 4,644,917, Cl. 123-414.000.
IIT Research Institute: See—
Bridges, Jack E.; Taflove, Allen; and Sresty, Guggilam C., 4,645,004, Cl. 166-248.000.
Iizuka, Jiro; and Ozu, Akira, to Victor Company of Japan. High-speed video camera and method of high-speed imaging using a beam splitter. 4,646,156, Cl. 358-225.000.
Iizuka, Kazuo: See—
Shimomura, Hiroshi; Karino, Katsuyoshi; and Iizuka, Kazuo, 4,645,384, Cl. 407-42.000.
Iizuka, Tetsuya, to Kabushiki Kaisha Toshiba. Semiconductor device. 4,646,126, Cl. 357-51.000.
Iizuka, Yo; Iwasaki, Takao; Katto, Takayuki; and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for production of high to ultra-high molecular weight linear polyarylenesulfides. 4,645,826, Cl. 528-388.000.
Iizuka, Yoshio; Matsunaga, Shigeo; and Ogawa, Satoshi, to Fujitsu Limited. Facsimile apparatus. 4,646,160, Cl. 358-257.000.
Ikari, Kazuo, to Olympus Optical Co., Ltd. Photographic lens system. 4,645,312, Cl. 350-464.000.
Ikari, Kyoichiro: See—
Negi, Taichi; Kawasaki, Akihiko; and Ikari, Kyoichiro, 4,645,695, Cl. 428-35.000.
Ikeda, Akihiko: See—
Ai, Hideo; Ikeda, Akihiko; and Matsuoka, Yoshio, 4,645,823, Cl. 528-336.000.
Ikeda, Kenji: See—
Igarashi, Akira; Ikeda, Kensuke; and Ikeda, Kenji, 4,646,113, Cl. 346-209.000.
Ikeda, Kensuke: See—
Igarashi, Akira; Ikeda, Kensuke; and Ikeda, Kenji, 4,646,113, Cl. 346-209.000.
Ikeda, Masahiko: See—
Shimizu, Takanori; and Ikeda, Masahiko, 4,646,107, Cl. 346-74.200.
Ikeda, Masami; Aoki, Seiichi; Saito, Akio; Inamoto, Tadayoshi; and Yokoi, Katsuyuki, to Canon Kabushiki Kaisha. Liquid injection recording apparatus. 4,646,110, Cl. 346-140.00R.
Ikeda, Masami: See—
Matsumoto, Tokio; Aoki, Seiichi; Matsuda, Hiroto; Ikeda, Masami; Matsumoto, Haruyuki; and Saito, Asao, 4,646,105, Cl. 346-1.100.
Ikeda, Yoshiaki, to Fanuc Ltd. Graphic display device. 4,646,228, Cl. 364-192.000.
Ikeguchi, Nobuyuki: See—
Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,645,805, Cl. 525-437.000.
Ikuzaki, Kunihiro: See—
Shimohigashi, Katsuhiko; Masuda, Hiroo; Ikuzaki, Kunihiro; and Kawamoto, Hiroshi, 4,646,267, Cl. 365-189.000.
Imagawa, Takeshi: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.
Imai, Hirosuke: See—
Takezono, Tetsuya; Amari, Takaaki; and Imai, Hirosuke, 4,645,576, Cl. 203-30.000.
Imai, Keiji: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.
Imai, Osamu: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94.000.
Imaizumi, Tomio, to Tokico Ltd. Hydraulic damper of adjustable damping force type. 4,645,043, Cl. 188-319.000.
Imaizumi, Tomio: See—
Kato, Tetsuo; and Imaizumi, Tomio, 4,645,044, Cl. 188-319.000.
Imperial Chemical Industries Plc: See—
Campbell, Frederick; Davies, Peter K.; and Schofield, John D., 4,645,611, Cl. 252-62.510.
Mills, Stuart D., 4,645,771, Cl. 514-277.000.
Whittam, Thomas V., 4,645,655, Cl. 423-277.000.
Ina, Hideki: See—
Suzuki, Akiyoshi; and Ina, Hideki, 4,645,924, Cl. 250-236.000.

Inada, Yuiji, to Bellex Corporation. Modified lipase. 4,645,741, Cl. 435-134.000.
Inamoto, Tadayoshi: See—
Ikeda, Masami; Aoki, Seiichi; Saito, Akio; Inamoto, Tadayoshi; and Yokoi, Katsuyuki, 4,646,110, Cl. 346-140.00R.
Incoe Corporation: See—
Seres, Alex, 4,644,678, Cl. 43-4.000.
Indesit Industria Elettrodomestici Italiana S.p.A.: See—
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Index-Werke Komm.-Ges. Hahn & Tetsky: See—
Link, Helmut F.; and Grossmann, Walter, 4,644,636, Cl. 29-568.000.
Link, Helmut F.; and Schafer, Erich E., 4,645,219, Cl. 279-1.00C.
Ingenhoven, Jurgens, to Kiekert GmbH & Co Kommanditgesellschaft. Device for actuating a motor vehicle door closure. 4,645,050, Cl. 192-36.000.
Ingersoll Cutting Tool Company, The: See—
Smith, Darrel E., 4,645,386, Cl. 407-113.000.
Inoguchi, Kenichi; Iwakura, Yoichi; and Umehara, Jun, to Aisan Kogyo Kabushiki Kaisha; and Daihatsu Motor Company, Ltd. Warming-up system of a car engine. 4,644,919, Cl. 123-438.000.
Inoue, Hiroshi: See—
Amagasa, Nobutada; Takatani, Ryoji; Inoue, Hiroshi; Suzuki, Kazuichi; and Kiriya, Mitsuo, 4,646,131, Cl. 357-79.000.
Inoue Japax Research Incorporated: See—
Inoue, Kiyoshi, 4,645,048, Cl. 192-0.034.
Inoue, Kiyoshi, 4,646,088, Cl. 340-870.310.
Inoue, Kiyoshi, to Inoue Japax Research Incorporated. Drive mechanism for machines. 4,645,048, Cl. 192-0.034.
Inoue, Kiyoshi, to Inoue Japax Research Incorporated. Magnetic encoder system. 4,646,088, Cl. 340-870.310.
Inoue, Masaru; and Ashiba, Masahiro, to Jidosha Denki Kogyo Kabushiki Kaisha; and Tokico Ltd. Hydraulic damper. 4,645,042, Cl. 188-319.000.
Inoue, Norihiro; Tominaga, Shinji; Kashima, Masataka; and Nakamura, Ikushi, to Minolta Camera Kabushiki Kaisha. Electronic instrument which selectively receives different kinds of batteries. 4,645,325, Cl. 354-484.000.
Inoue, Seiji; and Ota, Shigenori, to Kyowa Hakko Kogyo Co., Ltd. Preparation of improved bread with gamma-glutamyl transferase. 4,645,672, Cl. 426-20.000.
Inoue, Yutaka: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518.000.
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Born, Maurice; Parc, Guy; Briquet, Lucienne; and Paquer, Daniel, 4,645,610, Cl. 252-45.000.
Dufresne, Pierre; Marclly, Christian; and Trinh, Dinh Chan, 4,645,752, Cl. 502-66.000.
Instruments, S.A.: See—
Thevenon, Alain, 4,645,344, Cl. 356-328.000.
Intel Corporation: See—
Prak, Jan, 4,645,947, Cl. 307-269.000.
International Business Machines Corporation: See—
Anderson, Karen L.; Mitchell, Joan L.; Pennebaker, William B.; and Goertzel, Gerald, 4,646,356, Cl. 382-56.000.
Childress, John F., 4,646,250, Cl. 364-518.000.
Crockett, Peter N.; Jewett, Robert P.; Scriven, Arthur J.; and Tucker, Thomas A., 4,646,236, Cl. 364-200.000.
Juliana, Anthony, Jr.; Latta, Milton R.; Sincerbox, Glenn V.; and Willson, Carlton G., 4,645,338, Cl. 356-150.000.
Schuster, Stanley E., 4,645,954, Cl. 307-475.000.
Vincent, James P.; and Weidmann, Mary E., 4,645,238, Cl. 283-67.000.
International Health Services: See—
Beal, Charles B.; Fields, C. Bruce; and Stewart, David L., 4,645,486, Cl. 604-4.000.
International Hydraulic Systems, Inc.: See—
Zepp, Lawrence P., 4,644,893, Cl. 114-286.000.
International Standard Electric Corporation: See—
Behrens, Hermann-Josef, 4,646,091, Cl. 342-47.000.
Goldhorn, Bruno; and Stapelfeldt, Rolf, 4,646,344, Cl. 379-58.000.
Intersil, Inc.: See—
Ely, Glenn L., 4,646,331, Cl. 377-47.000.
Ionics, Incorporated: See—
Lundstrom, Jerry E., 4,645,625, Cl. 252-631.000.
Iqbal, Zafar: See—
Baughman, Ray H.; Elsenbaumer, Ronald L.; Iqbal, Zafar; Miller, Granville G.; and Eckhardt, Helmut, 4,646,066, Cl. 340-540.000.
Irmiter, Richard J.: See—
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Irsid: See—
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Irsigler, Walter: See—
Hawelka, Walter; and Irsigler, Walter, 4,645,009, Cl. 169-15.000.
Irvine Sensors Corporation: See—
Carson, John C.; and Clark, Stewart A., 4,646,128, Cl. 357-74.000.
Irwin Magnetic Systems, Inc.: See—
Sokolik, Edmund L.; and Lum, Francis, 4,646,175, Cl. 360-78.000.
Isban, Elliot; Stephenson, Charles F.; and Cook, Robert F., to Isban, Elliot. Quick connect power tap system. 4,645,286, Cl. 339-125.00L.
Isban, Elliot. Quick connect power tap system. 4,645,289, Cl. 339-190.000.

Ishida, Akira; Yumen, Akira; and Saito, Naotada, to Dainippon Screen Mfg. Co., Ltd. Method and apparatus for reproducing color separation picture image. 4,646,144, Cl. 358-75.000.
Ishida, Haruhiko: See—
Kohyama, Mitsuo; Kasai, Toshihiro; Ishida, Haruhiko; and Shimazaki, Takashi, 4,645,330, Cl. 355-14.00R.
Ishida Scales Mfg. Co., Ltd.: See—
Haze, Setsuo, 4,645,020, Cl. 177-25.000.
Ishigaki, Masaji; Ohishi, Tetsu; Tokusuyuku, Nobuhiro; Kodera, Yoshie; and Fukui, Yukio, to Hitachi, Ltd. Information recording medium. 4,645,712, Cl. 428-433.000.
Ishihara Sangyo Kaisha, Ltd.: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94.000.
Ishii, Hidenaga: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.
Ishii Syoji, Ltd.: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.
Ishijima, Koji: See—
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Ishikawa, Fumio; and Tanaka, Kuninobu, to Sony Corporation. Two phase trapezoidal signal generating circuit. 4,645,946, Cl. 307-261.000.
Ishikawa, Keiichi: See—
Maezono, Masakazu; Shimizu, Takeyuki; and Ishikawa, Kenichi, 4,645,051, Cl. 192-0.055.
Ishimaru, Shingo: See—
Sugimoto, Naohiko; Kojima, Tetsuro; and Ishimaru, Shingo, 4,645,735, Cl. 430-512.000.
Ishimizu, Hideaki: See—
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Isobe, Masakazu: See—
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Isomet Corporation: See—
Harris, Jeffery J.; and McNeish, Allister, 4,645,309, Cl. 350-358.000.
Istituto de Angeli, S.p.A.: See—
Bietti, Giuseppe; Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; Giachetti, Antonio; and Micheletti, Rosamaria, 4,645,841, Cl. 548-128.000.
Italiano, Pietro: See—
Sisti, Giorgio; Italiano, Pietro; Riva, Ermere; and Tosi, Bruno, 4,644,779, Cl. 73-38.000.
Ito, Kenzo: See—
Takanabe, Kazunori; Yamamoto, Masaki; Ito, Kenzo; and Fujinami, Hiroshi, 4,646,089, Cl. 340-995.000.
Ito, Kunio: See—
Kimura, Kiyoshi; Okamoto, Yukio; Miwa, Tadashi; Fukuchi, Masakazu; Tsurumi, Noriyoshi; and Ito, Kunio, 4,645,327, Cl. 355-3.00R.
Ito, Masashi; Yasuda, Hiroshi; Nakamura, Hiroyuki; and Matsuno, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Objective lens driving apparatus for optical disc player. 4,646,283, Cl. 369-256.000.
Ito, Satoshi: See—
Nakashima, Syozo; Takahashi, Akinori; Suganuma, Nobuo; and Ito, Satoshi, 4,645,662, Cl. 424-52.000.
Ito, Toshimitsu: See—
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Ito, Yukio: See—
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Itoh, Nobuaki; and Sekine, Takashi, to Yokohama Aeroquip Company. Valve unit for air-conditioner piping. 4,644,973, Cl. 137-883.000.
Itoh, Nobuaki: See—
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ITT Corporation: See—
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Palmer, Jerry D.; Janus, Robert J.; and Lambert, Larry D., 4,646,064, Cl. 340-392.000.
Itzrodt, Gerd: See—
Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Ryssel, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, 4,644,658, Cl. 30-381.000.
Iwai, Hiroji, to Sharp Kabushiki Kaisha. Paper feed control in a printer. 4,645,365, Cl. 400-568.000.
Iwaki, Hiroshi, to Sanyo Electric Co. Ltd. Apparatus for scanning an original. 4,645,329, Cl. 355-8.000.
Iwakura, Yoichi: See—
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Iwami, Morita: See—
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Iwamoto, Tadashi; and Sumida, Shizuo, to Mazda Motor Corporation. Solid-state information display apparatus for automobile vehicle. 4,646,059, Cl. 340-52.00F.

Iwasa, Hiroki: See—
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Iwasaki, Akito: See—
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Iwasaki, Eiji: See—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,644,695, Cl. 49-352.000.

Iwasaki, Mitsuhiro: See—
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Iwasaki, Takao: See—
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Izawa, Takaharu: See—
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Izumi, Tomoo, to Showa Cabot Supermetals K. K. Tantalum powder and method of making. 4,645,533, Cl. 75-0.5AB.

Izumisawa, Hiroyuki: See—
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J. I. Case Company: See—
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J. R. Mercer P.E. Company: See—
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Jabbusch, Wolfgang: See—
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Jackson, Clive L.: See—
Nordmeyer, Friedrich; Schunk, Eckard; Winter, Frank; and Jackson, Clive L., 4,646,318, Cl. 373-105.000.

Jackson, Randall L.: See—
O'Connor, Michael; Jackson, Randall L.; and Marple, David P., 4,646,254, Cl. 364-574.000.

Jackson, Rodney P., to USM Corporation. Removable blades for cut-clinch head assembly. 4,644,634, Cl. 29-566.300.

Jackson, Winston J., Jr.; and Morris, John C., to Eastman Kodak Company. Blends of bisphenol A polycarbonate with poly(ester-imides) and poly(ester-imide-amides). 4,645,802, Cl. 525-419.000.

Jacobs, Alvin D., to Holtz, Leonard, a part interest. Glove-like waste disposal system. 4,645,251, Cl. 294-1.300.

Jacobsen, Hans; and Jacobsen, Ole. Rain gauge of the tiltable spoon type. 4,644,786, Cl. 73-171.000.

Jacobsen, Ole: See—
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Jacobsen Research Corp.: See—
Jacobsen, Stephen C., 4,644,651, Cl. 30-251.000.

Jacobsen, Stephen C., to Jacobsen Research Corp. Instrument for gripping or cutting. 4,644,651, Cl. 30-251.000.

Jacoby, Elliot G.: See—
Ngo, Dai V.; and Jacoby, Elliot G., 4,646,203, Cl. 361-388.000.

Jagenberg AG: See—
Klapp, Hartmut, 4,645,481, Cl. 493-150.000.

James G. Biddle Company: See—
Reynolds, Peter H., 4,646,248, Cl. 364-483.000.

James, Jack L., to Lee Pharmaceuticals, Inc. Adhesive compositions for tooth enamel. 4,645,456, Cl. 433-217.100.

Jamesbury Corporation: See—
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Jamet, Daniel: See—
Oguey, Claude; Jamet, Daniel; and Berreby, Alain, 4,645,294, Cl. 350-96.150.

Jansen, Paul. Illuminated standing support for plant and flower boxes and other recipients. 4,646,209, Cl. 362-122.000.

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Japan Atomic Energy Research Institute: See—
Arisawa, Takashi; Maruyama, Yoichiro; Shiba, Koreyuki; Niwa, Toshio; Kaneko, Masaharu; and Ono, Hitoshi, 4,646,309, Cl. 372-53.000.

Japan Tobacco, Inc.: See—
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Jeffers, Robert K.: See—
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Jeges, Paul: See—
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Jendrzek, Gary S.: See—
Goss, Reginald J., Jr.; and Jendrzek, Gary S., 4,644,748, Cl. 60-395.000.

Jenkins, Andrew H.: See—
Otto, William F.; Roberts, Thomas G.; Jenkins, Andrew H.; and Honeycutt, Thomas E., 4,645,448, Cl. 431-1.000.

Jenkins, Thomas E.: See—
Gerdes, Keith W.; Cortis, Douglas E.; Jenkins, Thomas E.; Lesmeister, Stephen C.; and Welle, Louis A., Sr., 4,644,698, Cl. 49-478.000.

Jenkner, Erwin. Workpiece supporting table for panel saws. 4,644,833, Cl. 83-99.000.

Jensen, Thomas W.: See—
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JEOL Ltd.: See—
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Jergl, Joseph J.: See—
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Jerila, Torsti T. T., to Acme General Corporation. Pivot block for bifold doors. 4,644,992, Cl. 160-213.000.

Jet Spray Corp.: See—
Coppola, Peter J., 4,645,095, Cl. 222-64.000.

Jeter, Howard R., to Westinghouse Electric Corp. Self-supporting pipe rupture and whip restraint. 4,644,780, Cl. 73-40.50R.

Jett, William B., Jr., to National Semiconductor Corporation. Blend control for low voltage stereo decoders. 4,646,348, Cl. 381-10.000.

Jewett, Robert P.: See—
Crockett, Peter N.; Jewett, Robert P.; Scriver, Arthur J.; and Tucker, Thomas A., 4,646,236, Cl. 364-200.000.

Jiang, Ching-Lin: See—
Smith, John W., Jr.; Scherpenberg, Francis A.; Jiang, Ching-Lin; and Bolan, Michael L., 4,645,943, Cl. 307-150.000.

Jidosha Denki Kogyo Kabushiki Kaisha: See—
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Jidosha Kiki Co., Ltd.: See—
Ohe, Takeshi; Fujii, Tadaaki; and Koike, Ichiro, 4,645,025, Cl. 180-79.100.

Jochem, Cornelis M. G.; and van der Ligt, Jacobus W. C., to U.S. Philips Corporation. Arrangement for coating optical fibres. 4,644,898, Cl. 118-405.000.

Johans, Thomas G., to Arrow International, Inc. Device for making electrical connection to an electrolyte, and system employing same. 4,644,960, Cl. 128-786.000.

Johansen, Jack T.: See—
Bredam, Klaus; Johansen, Jack T.; and Widmer, Fred, 4,645,740, Cl. 435-71.000.

John D. Brush & Co., Inc.: See—
Harvey, Nathan A.; and Avery, Roland M., Jr., 4,645,613, Cl. 252-70.000.

John Hopkins University: See—
Pressman, Norman J.; and Frost, John K., 4,645,872, Cl. 379-54.000.

John Zink Company: See—
Schwartz, Robert E.; and Noble, Roger K., 4,645,449, Cl. 431-8.000.

Johns, Dennis M., to Dow Chemical Company. The Continuous process for removing water-soluble particles from organic liquids. 4,645,512, Cl. 23-293.00R.

Johnson, Larry K.: See—
Yevak, Harold M., Jr.; Johnson, Larry K.; and O'Malley, Austin S., 4,645,278, Cl. 339-17.00T.

Johnson, Randall K.: See—
Hill, David T.; and Johnson, Randall K., 4,645,756, Cl. 514-24.000.

Johnson, Robert R.: See—
Ovshinsky, Stanford R.; Johnson, Robert R.; Cannella, Vincent D.; and Yaniv, Zvi, 4,646,266, Cl. 365-105.000.

Johnson, Roger A. Patient transport device. 4,644,594, Cl. 5-81.00R.

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Jones, Darrell R. Method and apparatus for enhancing the pollination of alfalfa. 4,644,683, Cl. 47-1.410.

Jones, John F. Apparatus for making chocolate-coated ice cream cookie sandwiches. 4,644,901, Cl. 118-694.000.

Jones, John G.: See—
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Jones, John R., to Kriz, Richard F.; Lemon, Thomas; and Thomas, Charles, part interest to each. Vending apparatus for vending individual servings of ice cream. 4,645,093, Cl. 221-93.000.

Jones, Richard D., to UHR Corporation. Residential heating, cooling and energy management system. 4,645,908, Cl. 219-378.000.

Jones, Richard E.: See—
Whitehouse, Martin H.; and Jones, Richard E., 4,644,813, Cl. 74-431.000.

Jones, Steven P.; and Tilles, David J., to United States of America, Air Force. Computer controlled lead forming. 4,644,633, Cl. 29-566.300.

Jordens, Ernst-Gunter, to Lemforder Metallwaren AG. Resilient bearing with a hydraulic damper. 4,645,188, Cl. 267-140.100.

Jos Schneider Puische Werke Kreuznach GmbH & Co KG: See—
Schroder, Wolfgang, 4,645,314, Cl. 350-504.000.

Joseph, Claude, to Societe Anonyme Kerma. Ski pole handle. 4,645,235, Cl. 280-821.000.

Joseph, Daniel D., to University of Minnesota, Regents of the. Spinning rod interfacial tensiometer. 4,644,782, Cl. 73-64.400.

Joss, Michael S.; and McDowell, David E., to Bissell Inc. Stick vacuum cleaner. 4,644,605, Cl. 15-329.000.

Juliana, Anthony, Jr.; Latta, Milton R.; Sincerbox, Glenn V.; and Willson, Carlton G., to International Business Machines Corporation. Optical system for focus correction for a lithographic tool. 4,645,338, Cl. 356-150.000.

Jun, Imai: See—
Takao, Takeda; Hitoshi, Yamazaki; Shizuo, Nakano; Kouzi, Yamamoto; Hiroshi, Ito; and Jun, Imai, 4,645,972, Cl. 313-634.000.

Jung, Louis: See—
Stambach, Jean-Francois; Jung, Louis; Heitz, Christiane; Schott, Claire; Stoclet, Jean-Claude; and Schutz, Fabienne, 4,645,772, Cl. 514-280.000.

Junghans Uhren GmbH: See—
Allgaier, Jergen; Ganter, Wolfgang; and Flaig, Hans, 4,645,357, Cl. 368-187.000.

Jungner Marine AB: See—
Bystrom, Karl; Karlsson, Erik; Kihlberg, Gunnar; and Reit, Henry, 4,646,010, Cl. 324-208.000.

Junkers, John K. Fluid-operated wrench. 4,644,829, Cl. 81-57.390.

Junkosha Company, Ltd.: See—
Suzuki, Hirosuke, 4,645,868, Cl. 174-117.00F.

Juravic, Davor, to Star-Kist Foods, Inc. Apparatus for removing an adhered fragile food product from a support surface. 4,645,404, Cl. 414-417.000.

Jurgens, Gerhard: See—
Bruse, Kurt; Jurgens, Gerhard; and Becker, Herbert, 4,645,233, Cl. 280-808.000.

Kaas, Werner: See—
Rellermeyer, Heinrich; and Kaas, Werner, 4,645,184, Cl. 266-81.000.

Kabushiki Kaisha Aoki Seisakusho: See—
Aoki, Katashi, 4,645,443, Cl. 425-150.000.

Kabushiki Kaisha Daikin Seisakusho: See—
Kitayama, Kozi, 4,645,053, Cl. 192-106.200.

Kabushiki Kaisha Ishida Koki Seisakusho: See—
Minamide, Kazukiyo; and Asai, Yoshiharu, 4,645,019, Cl. 177-25.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: See—
Nagashima, Yoichi; and Nagashima, Eiji, 4,644,841, Cl. 84-1.100.

Kabushiki Kaisha Saginomiya Seisakusho: See—
Aoki, Tadashi; Isobe, Masakazu; and Kuno, Hiroshi, 4,644,760, Cl. 62-324.600.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—
Baba, Takeshi; Iwasa, Hiroki; Nagasaka, Chikao; and Ohmi, Kyozo, 4,645,299, Cl. 350-99.000.

Kabushiki Kaisha Tokuda Seisakusho: See—
Ooshio, Hirosuke; and Watanabe, Osamu, 4,645,218, Cl. 279-1.00M.

Kabushiki Kaisha Toshiba: See—
Akaeda, Tadayoshi; Yamamoto, Yuko; and Kanaoka, Katsuki, 4,646,102, Cl. 343-915.000.

Iizuka, Tetsuya, 4,646,126, Cl. 357-51.000.

Kohyama, Mitsuaki; Kasai, Toshihiro; Ishida, Haruhiko; and Shimazaki, Takashi, 4,645,330, Cl. 355-14.00R.

Matsumura, Yoshiaki, 4,645,546, Cl. 148-33.000.

Nakayama, Yasunobu; and Sato, Yasuji, 4,645,882, Cl. 379-387.000.

Sakashita, Wataru; Chiyoya, Tsukasa; Ichikawa, Tsutomu; and Hayano, Makoto, 4,645,437, Cl. 418-55.000.

Terada, Toshiyuki, 4,645,563, Cl. 156-643.000.

Tomita, Toyofumi, 4,644,799, Cl. 73-861.120.

Watanabe, Junji, 4,645,192, Cl. 271-9.000.

Watanabe, Junji, 4,645,333, Cl. 355-30.000.

Yoshida, Tadatoshi; and Natori, Kouji, 4,646,333, Cl. 378-4.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: See—
Mitsuya, Kinpei; and Iwasaki, Mitsuhiro, 4,644,980, Cl. 139-435.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Kamigaito, Osami; Doi, Haruo; Noda, Shoji; and Yamamoto, Nobuyuki, 4,645,115, Cl. 228-121.000.

Kabushiki Kaisha Yamazaki: See—
Yamazaki, Yoshio, 4,644,825, Cl. 74-813.00R.

Kaczmarek, Wesley R.; Zador, Eugene; and Ravipati, Sitaramaiah, to Norton Company. Plural layered coated abrasive. 4,644,703, Cl. 51-401.000.

Kadron, Don G.: See—
Mattern, John; and Kadron, Don G., 4,646,098, Cl. 342-14.000.

Kafka, James D.; and Baer, Thomas M., to Spectra-Physics, Inc. Synchronously pumped dye laser using ultrashort pump pulses. 4,646,308, Cl. 372-25.000.

Kahle, Hans J.: See—
Garbade, Rolf; Kahle, Hans J.; Schreier, Hans H.; and Jabbusch, Wolfgang, 4,645,018, Cl. 177-6.000.

Kaiser, Albrecht; and Schaublin, Hans-Jurg, to Herbert Kannegiesser GmbH & Co. Apparatus for bonding sheet-like textile pieces. 4,645,559, Cl. 156-583.100.

Kalafala, Ahmed K.: See—
Chari, Madabushi V.; Kalafala, Ahmed K.; D'Angelo, John; and Palmo, Michael A., Jr., 4,646,045, Cl. 335-301.000.

Kalin, Horst W.: See—
Coleman, Darrel F.; Kalin, Horst W.; and Verhaagen, Donald R., 4,645,242, Cl. 285-158.000.

Kamata, Yasuji; and Kato, Kazuo, to Hitachi, Ltd. Variable-gain amplifying circuit. 4,646,029, Cl. 330-283.000.

Kamei, Shigeki: See—
Higuchi, Toshiro; Kamei, Shigeki; and Kawaguchi, Kojiro, 4,644,870, Cl. 104-292.000.

Kamen, Dean L., to Baxter Travenol Laboratories. Modular clamp system with externally threaded adjuster. 4,645,175, Cl. 251-9.000.

Kamigaito, Osami; Doi, Haruo; Noda, Shoji; and Yamamoto, Nobuyuki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of bonding ceramic article. 4,645,115, Cl. 228-121.000.

Kaminaga, Toshiyuki: See—
Omura, Hideo; Kaminaga, Toshiyuki; and Takei, Hirofumi, 4,645,031, Cl. 181-232.000.

Kamizyo, Eiji: See—
Miyazawa, Hideyuki; and Kamizyo, Eiji, 4,646,155, Cl. 358-213.000.

Kammeyer, Karl-Dirk; and Rungeler, Andreas, to Robert Bosch GmbH. Converting and decoding receiver for digital data recorded in analog form on magnetic tape. 4,646,173, Cl. 360-51.000.

Kamoshita, Yasuhiro: See—
Ogusu, Mikio; Urata, Kazuo; Tamaru, Takuya; and Kamoshita, Yasuhiro, 4,646,285, Cl. 369-291.000.

Kanamaru, Hisanobu; Sasaya, Kazushi; Onuma, Tomiyasu; and Tohkairin, Akira, to Hitachi, Ltd. Fluid machine. 4,644,850, Cl. 91-507.000.

Kanaoka, Katsuki: See—
Akaeda, Tadayoshi; Yamamoto, Yuko; and Kanaoka, Katsuki, 4,646,102, Cl. 343-915.000.

Kanars Data Corporation: See—
Sekiguchi, Hiroshi, 4,646,223, Cl. 364-130.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—
Hosoi, Hideki; Hasegawa, Toshihiko; and Aoyama, Taizo, 4,645,795, Cl. 525-83.000.

Nagoshi, Toshiharu; Totsuka, Hidehiko; Taira, Takeshi; Gotoh, Youkichi; and Senuma, Kazuya, 4,645,249, Cl. 293-102.000.

Kanehori, Keiichi: See—
Hirata, Masahiko; Miyauchi, Katsuki; Ito, Yukio; Kanehori, Keiichi; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,645,726, Cl. 429-191.000.

Kaneko, Katsuaki: See—
Take, Takao; Kaneko, Katsuaki; Kusunoki, Kokyo; and Ichiba, Toshinobu, 4,645,548, Cl. 156-39.000.

Kaneko, Masaharu: See—
Arisawa, Takashi; Maruyama, Yoichiro; Shiba, Koreyuki; Niwa, Toshio; Kaneko, Masaharu; and Ono, Hitoshi, 4,646,309, Cl. 372-53.000.

Kanerva, Heikki: See—
Tammisalo, Erkki; Kanerva, Heikki; Aarnio, Jaakko; Wederhorn, Markku; and Laner, Kai, 4,646,335, Cl. 378-38.000.

Kangaroos U.S.A. Inc.: See—
Gamm, Robert J., 4,644,673, Cl. 36-136.000.

Kangyo Denki Kikaku Kabushiki Kaisha: See—
Sudo, Michio, 4,644,643, Cl. 29-845.000.

Kanjo, Wajih; and Sommerfeld, Howard R., to American Standard Inc. Draft gear assembly. 4,645,187, Cl. 267-9.00A.

Kann, William J.: See—
Burelbach, James P.; Kann, William J.; Pan, Yen-Cheng; Saiveau, James G.; and Seidensticker, Ralph W., 4,645,638, Cl. 376-254.000.

Kanter, Irving, to Raytheon Company. Method of resolving closely spaced targets. 4,646,095, Cl. 342-149.000.

Kao Corporation: See—
Okumoto, Tadaaki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.

Kapanka, Harley L., to General Motors Corporation. Compact seat belt retractor. 4,645,138, Cl. 242-107.40A.

Karapita, Alexander D. Suspension system. 4,645,156, Cl. 248-280.100.

Karino, Katsuyoshi: See—
Shimomura, Hiroshi; Karino, Katsuyoshi; and Iizuka, Kazuo, 4,645,384, Cl. 407-42.000.

Karl Jungel GmbH & Co. KG: See—
Krus, Werner, 4,644,837, Cl. 83-864.000.

Karlcek, Robert F., Jr.: See—
Donnelly, Vincent M.; and Karlcek, Robert F., Jr., 4,645,687, Cl. 427-53.100.

Karlsson, Anders: See—
Brandt, Nils; and Karlsson, Anders, 4,646,004, Cl. 324-79.00R.

Karlsson, Erik: See—
Bystrom, Karl; Karlsson, Erik; Kihlberg, Gunnar; and Reit, Henry, 4,646,010, Cl. 324-208.000.

Kasai, Toshihiro: See—
Kohyama, Mitsuaki; Kasai, Toshihiro; Ishida, Haruhiko; and Shimazaki, Takashi, 4,645,330, Cl. 355-14.00R.

Kasama, Nobuhiro: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518.000.

Kase, Takao: See—
Miyamoto, Takeshi; Ura, Mikio; Kazama, Shigenori; Kase, Takao; and Maeda, Yoshiko, 4,645,307, Cl. 350-357.000.

Kashima, Masataka: See—
Inoue, Norihiro; Tominaga, Shinji; Kashima, Masataka; and Nakamura, Ikushi, 4,645,325, Cl. 354-484.000.

Kashiwaya, Mineo: See—
Morita, Kiyomi; Kashiwaya, Mineo; and Sakamoto, Masahide, 4,644,923, Cl. 123-493.000.

Kasai, Kenzo, to Aprica Kassai Kabushiki Kaisha. Mechanism for locking opened state of baby carriage. 4,645,229, Cl. 280-650.000.

Kasai, Kenzo, to Aprica Kassai Kabushiki Kaisha. Joint structure for use in foldable baby carriages. 4,645,370, Cl. 403-56.000.

Kastening, Bertel: See—
Divisek, Jiri; Furst, Leander; Kastening, Bertel; and Luft, Harald, 4,645,607, Cl. 210-719.000.

Kastl, Hans: See—
Bauer, Rainer; and Kastl, Hans, 4,645,637, Cl. 376-249.000.

Kasuga, Akira: See—
Nagashima, Yasuo; and Kasuga, Akira, 4,646,179, Cl. 360-99.000.

- Katayama, Nobuaki: See—
Sasaki, Kan; Takimura, Keisuke; Katayama, Nobuaki; and Tsuchiya, Fumitomo, 4,645,029, Cl. 180-249,000.
- Katayama, Toshikazu; Shibata, Tsugio; and Arimune, Hisao, to Director-General of Agency of Industrial Science & Technology; and Kyocera Corp. Photo-thermo-magnetic recording medium and method of preparing same. 4,645,722, Cl. 428-694,000.
- Kato, Ippei; Takasu, Masao; and Maruyama, Nobuo, to Mushima Paper Co., Ltd.; and Kureha Chemical Industry Co., Ltd. Process for producing electroconductive films. 4,645,566, Cl. 162-138,000.
- Kato, Kazuo: See—
Kamata, Yasuji; and Kato, Kazuo, 4,646,029, Cl. 330-283,000.
- Kato, Kiminari: See—
Matsuhisa, Tadaaki; and Kato, Kiminari, 4,645,700, Cl. 428-116,000.
- Kato, Shinichiro; Chiba, Teruo; and Igarashi, Tadao, to Sony Corporation. VTR tape cassette. 4,646,188, Cl. 360-132,000.
- Kato, Tetsuo; and Imaizumi, Tomio, to Tokico Ltd. Hydraulic damper of adjustable damping force type. 4,645,044, Cl. 188-319,000.
- Kato, Yoshiaki: See—
Niwa, Toshiro; and Kato, Yoshiaki, 4,645,832, Cl. 534-637,000.
- Katsma, William L.: See—
Skogler, Brian I.; Nyhof, Eldon J.; and Katsma, William L., 4,646,210, Cl. 362-142,000.
- Katto, Takayuki: See—
Iizuka, Yo; Iwasaki, Takao; Katto, Takayuki; and Shiiki, Zenya, 4,645,826, Cl. 528-388,000.
- Kaufman, John G. Sidewall dispenser. 4,645,097, Cl. 222-207,000.
- Kaus, David P. Solar energy heating system. 4,644,934, Cl. 126-435,000.
- Kavoussi, James P.; and Hartford, Louise D. Scent clock alarm device. 4,645,353, Cl. 368-12,000.
- Kawaguchi, Kojiro: See—
Higuchi, Toshiro; Kamei, Shigeki; and Kawaguchi, Kojiro, 4,644,870, Cl. 104-292,000.
- Kawai, Hiroshi; Ohtsuka, Yukio; and Mizuno, Kuniaki, to Toyota Jidosha Kabushiki Kaisha. Inclining molten metal charging apparatus for forced cooling casting. 4,644,996, Cl. 164-336,000.
- Kawai, Suet: See—
Ohmura, Keiji; Kawai, Suet; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, 4,645,258, Cl. 296-204,000.
- Kawai, Yukio: See—
Okano, Hiroshi; Kawai, Yukio; and Ii, Akira, 4,644,784, Cl. 73-117,300.
- Kawamoto, Hiroshi: See—
Shimohigashi, Katsuhiko; Masuda, Hiroo; Ikuzaki, Kunihiro; and Kawamoto, Hiroshi, 4,646,267, Cl. 365-189,000.
- Kawamura, Seiichi, to Suzuki Motor Co., Ltd. Apparatus for cooling cylinder head of an engine. 4,644,910, Cl. 123-41,310.
- Kawamura, Takao; and Sugimura, Akihiko, to Kyocera Corporation; and Kawamura, Takao. Liquid crystal device having interdigitated electrodes with shade member. 4,645,304, Cl. 350-336,000.
- Kawano, Ken; Sibata, Takuo; and Kouketu, Kouiti, to Toyota Jidosha Kabushiki Kaisha. Lubrication device in transmissions. 4,644,815, Cl. 74-467,000.
- Kawasaki, Akihiko: See—
Negi, Taichi; Kawasaki, Akihiko; and Ikari, Kyoichiro, 4,645,695, Cl. 428-35,000.
- Kawasaki, Hiroyoshi: See—
Kikuchi, Hiroshi; Teshima, Minoru; Ishimizu, Hideaki; and Kawasaki, Hiroyoshi, 4,645,277, Cl. 339-17,0LM.
- Kawasaki Jukogyo Kabushiki Kaisha: See—
Fujita, Yoshitada; Hanada, Sadashi; Yamamoto, Yoshiaki; and Nakabayashi, Akira, 4,645,412, Cl. 414-786,000.
- Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182,000.
- Niina, Jiro, 4,644,891, Cl. 114-201,00R.
- Kawasaki Steel Corp.: See—
Tanimoto, Wataru; and Tsunoyama, Kouzou, 4,645,342, Cl. 356-318,000.
- Yanagi, Kenichi; Makihara, Katsumi; Fukushima, Takeo; Hashimoto, Osamu; and Iida, Sachihiko, 4,644,667, Cl. 34-54,000.
- Kawase, Shigeki: See—
Suzuki, Takashi; Hibino, Kunio; Murai, Mikio; Kawase, Shigeki; Shinohara, Koichi; and Nouchi, Norimoto, 4,645,703, Cl. 428-141,000.
- Kawashima, Masahiro, to Yamaha Hatsudoki Kabushiki Kaisha. Motor-cycle having balloon tire. 4,645,028, Cl. 180-227,000.
- Kawashima, Takuji: See—
Hashimoto, Yoshiyuki; Toida, Tomohiro; Sekine, Kazunori; Saito, Minoru; Kawashima, Takuji; and Kuboyama, Morio, 4,645,667, Cl. 424-92,000.
- Kawata, Shun, to Konishiroku Photo Industry Co., Ltd. Focus adjusting mechanism in exposure optical apparatus. 4,645,335, Cl. 355-55,000.
- Kawauchi, Hiroshi; Yamaguchi, Kazuo; and Shirahata, Kunikatsu, to Kyowa Hakkō Kogyo Co., Ltd. Fish growth hormone. 4,645,755, Cl. 514-12,000.
- Kaya, Seitoku: See—
Wachi, Hiroshi; Kaya, Seitoku; and Kojima, Gen, 4,645,799, Cl. 525-199,000.
- Kazama, Shigenori: See—
Miyamoto, Takeshi; Ura, Mikio; Kazama, Shigenori; Kase, Takao; and Maeda, Yoshiko, 4,645,307, Cl. 350-357,000.
- Kearns, Donald S.: See—
Gambini, Michael R.; Martone, Ronald J.; Kearns, Donald S.; Enos, Gary W.; Franke, Rudi; and Schoeppe, Herbert, 4,645,933, Cl. 250-363,00S.
- Kedzierski, Stanley G., to Talon, Inc. Locking slider for slide fastener. 4,644,613, Cl. 24-421,000.
- Keem, John E.: See—
Ovshinsky, Stanford R.; Keem, John E.; Flack, James D.; Bergeron, Richard C.; and Tyler, John E., 4,645,715, Cl. 428-469,000.
- Kelbert, Adam: See—
Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Rysel, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, 4,644,658, Cl. 30-381,000.
- Keller, Arnold: See—
Engelbrecht, Eckart; Nieder, Elmar; and Keller, Arnold, 4,645,507, Cl. 623-23,000.
- Keller, Werner. Device for clamping cutting inserts. 4,645,385, Cl. 407-105,000.
- Kelly, Michael J.: See—
Davies, Richard A.; and Kelly, Michael J., 4,645,707, Cl. 428-213,000.
- Kemp, Louis F., Jr. Book holder. 4,645,236, Cl. 281-42,000.
- Kendall Company, The: See—
Rosenberg, Helmut W. G., 4,645,490, Cl. 604-103,000.
- Rupinskas, Vytautas R., 4,645,499, Cl. 604-362,000.
- Kennecott Corporation: See—
King, Glenn G.; and Molloy, Francis X., 4,645,476, Cl. 474-153,000.
- Kensuke, Asada: See—
Yasushi, Mikura; Kensuke, Asada; and Hajime, Toguchi, 4,645,830, Cl. 530-351,000.
- Keramaris, Nikolaos: See—
Bayerlein, Friedrich; Haberer, Peter-Paul; Keramaris, Nikolaos; Kottmair, Nikolaus; and Kuhn, Manfred, 4,645,833, Cl. 536-17,100.
- Kerhart, Yves: See—
Serra, Oberto; Abbott, Hayden; Kerhart, Yves; and Vincent, Philippe, 4,646,240, Cl. 364-422,000.
- Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung: See—
Chatzipetros, Johann; Dujka, Bernhard; Elf, Frank; and Will, Georg, 4,644,761, Cl. 62-514,00R.
- Divisek, Jiri; Furst, Leander; Kastening, Bertel; and Luft, Harald, 4,645,607, Cl. 210-719,000.
- Eulenberg, Hannspeter, 4,646,014, Cl. 324-251,000.
- Kerr-McGee Coal Corporation: See—
Barczak, Virgil J., 4,645,654, Cl. 423-244,000.
- Keve Corporation: See—
Skillicorn, Brian, 4,646,338, Cl. 378-110,000.
- Keyzer, Willem G., to NRF Holding B.V. Radiator. 4,645,002, Cl. 165-175,000.
- Kiang, Raymond. Protective covering device for rifles. 4,644,987, Cl. 150-52,00R.
- Kidd, Roy E.: See—
Andrejasic, Raymond J.; and Kidd, Roy E., 4,646,069, Cl. 340-603,000.
- Kidde Consumer Durables Corp.: See—
Thoben, Matthew A.; Clowers, Earl; Cih, Guy; Ball, Dean; McCurdy, Jack L.; and Rummelsburg, Al S., 4,645,909, Cl. 219-411,000.
- Kiekert GmbH & Co Kommanditgesellschaft: See—
Ingenhoven, Jurgen, 4,645,050, Cl. 192-36,000.
- Kierce, Jack W. Roller paint applicator for wrought iron railing. 4,644,604, Cl. 15-244,00A.
- Kihlberg, Gunnar: See—
Bystrom, Karl; Karlsson, Erik; Kihlberg, Gunnar; and Reit, Henry, 4,646,010, Cl. 324-208,000.
- Kikkawa, Shinichi: See—
Shiraki, Kenhachi; Kikkawa, Shinichi; Izawa, Takaharu; Miyazaki, Yoshifumi; Nonoue, Torahiko; and Moriki, Etsuzo, 4,645,328, Cl. 355-8,000.
- Kikuchi, Hiroshi; Teshima, Minoru; Ishimizu, Hideaki; and Kawasaki, Hiroyoshi, to Oki Electric Industry Co., Ltd. Connector for connecting boards. 4,645,277, Cl. 339-17,0LM.
- Kikuchi, Toshitsugu: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182,000.
- Killgoar, Paul C., Jr.: See—
Theodore, Ares N.; and Killgoar, Paul C., Jr., 4,645,791, Cl. 524-490,000.
- Kilopp, James T.; and Holbrook, Gerald W., to Anderson-Cook, Inc. Snap ring forming and grooving. 4,644,772, Cl. 72-88,000.
- Kim, Bang M.; and Holub, Fred F., to General Electric Company. Water softening system particularly for individual appliances. 4,645,595, Cl. 210-181,000.
- Kimbara, Hidenori: See—
Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,645,805, Cl. 525-437,000.
- Kimberly-Clark Corporation: See—
Morris, Marion C.; Hill, Randolph J.; Frick, Richard H.; and Kons, Hugo L., 4,645,135, Cl. 242-67,10R.
- Kimmel, Arthur T.: See—
Weatherford, James R.; Kimmel, Arthur T.; and Wallach, Steven J., 4,646,233, Cl. 364-200,000.

- Kimura, Hiroyuki: See—
Okamoto, Hiroo; Kobayashi, Masaharu; Kimura, Hiroyuki; Noguchi, Takaharu; and Arai, Takao, 4,646,301, Cl. 371-37,000.
- Kimura, Kiyoshi; Okamoto, Yukio; Miwa, Tadashi; Fukuchi, Masakazu; Tarumi, Noriyoshi; and Ito, Kunio, to Konishiroku Photo Industry Co., Ltd. Recording apparatus having water vapor removing or preventing means. 4,645,327, Cl. 355-3,00R.
- Kimura, Mutsumi: See—
Komatsu, Kousuke; Miyauchi, Tsutomu; Misao, Ikuo; Kimura, Mutsumi; Fujiwara, Tadashi; Tsuchida, Yoshio; and Kuroiwa, Junko, 4,646,134, Cl. 358-11,000.
- Kimura, Satoshi: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236,000.
- Kimura, Shin; Fukui, Hiroshi; Amano, Hisao; Yatsuo, Tsutomu; Oikawa, Saburo; and Nagano, Takahiro, to Hitachi, Ltd. Semiconductor device with floating remote gate turn-off means. 4,646,122, Cl. 357-38,000.
- Kimura, Shiro G., to General Electric Company. Method for scrubbing sulfur oxides and nitrogen oxides in a flue gas duct. 4,645,652, Cl. 423-235,000.
- Kimura, Shiro G., to General Electric Company. Method for dry flue gas desulfurization incorporating nitrogen oxides removal. 4,645,653, Cl. 423-235,000.
- Kimura, Tsutomu: See—
Shimada, Takeo; Kimura, Tsutomu; and Hayashi, Ryoichi, 4,645,334, Cl. 355-40,000.
- King, Dennis D., to E-Systems, Inc. Off-channel frequency discriminator circuit for use in a precision distance measuring equipment (DME/P) receiver. 4,646,097, Cl. 342-95,000.
- King, Glenn G.; and Molloy, Francis X., to Kennecott Corporation. Work conveyor sprocket and link assembly. 4,645,476, Cl. 474-153,000.
- King Instrument Corporation: See—
Woodley, George M.; and Wilson, Albert H., 4,645,136, Cl. 242-68,300.
- Kinoshita, Seiichi: See—
Asai, Koh; Izumisawa, Hiroyuki; Owada, Katsuaki; Kinoshita, Seiichi; and Matsuno, Shunji, 4,646,352, Cl. 382-5,000.
- Kinoshita, Tomoaki; Takano, Kunio; and Tachikawa, Osamu, to Tokyo Juki Industrial Co., Ltd. Sewing machine input device having scaling prohibit function. 4,646,246, Cl. 364-470,000.
- Kinoshita, Toru, to Sanyo Kokusaku Pulp Co.; and Saiten Chemical Industry, Co., Ltd. Adhesive copolymer microspheres-containing aqueous suspension and method for producing the same. 4,645,783, Cl. 523-221,000.
- Kinugasa, Masahiro: See—
Kuno, Kazuo; and Kinugasa, Masahiro, 4,646,044, Cl. 335-299,000.
- Kirchpfering, Martha M., Stefan Kirchpfering, Klaus Kirchpfering, heirs: See—
Plackner, Kurt; Schamberger, Rudolf; and Kirchpfering, Max, deceased, 4,645,963, Cl. 310-266,000.
- Kirchpfering, Max, deceased: See—
Plackner, Kurt; Schamberger, Rudolf; and Kirchpfering, Max, deceased, 4,645,963, Cl. 310-266,000.
- Kirino, Fumiyoshi: See—
Hirata, Masahiko; Miyauchi, Katsuki; Ito, Yukio; Kanehori, Keichi; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,645,726, Cl. 429-191,000.
- Kiriya, Mitsuo: See—
Amagasa, Nobutada; Takatani, Ryoji; Inoo, Hiroshi; Suzuki, Kazuichi; and Kiriya, Mitsuo, 4,646,131, Cl. 357-79,000.
- Kirkhill Rubber Co.: See—
Mock, Donald E., 4,645,076, Cl. 206-400,000.
- Kirsten, Rolf: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90,000.
- Kishi, Hiroto, to Canon Kabushiki Kaisha. Image display apparatus. 4,646,164, Cl. 358-300,000.
- Kissling, Bruno: See—
Heller, Jurg; Kissling, Bruno; Robinson, Tibor; and Valenti, Salvatore, 4,645,511, Cl. 8-549,000.
- Kita, Toru: See—
Yasuhara, Seishi; Kobayashi, Hiroshi; Kita, Toru; and Saito, Hideyuki, 4,646,070, Cl. 340-603,000.
- Kitagawa, Katsutoshi, to Toyota Jidosha Kabushiki Kaisha. V-type four stroke engine with counter rotating balance weights canceling out first order imbalance moments of reciprocating and of rotational motion. 4,644,916, Cl. 123-192,00B.
- Kitagawa, Masatoshi: See—
Koga, Masataka; Kitagawa, Masatoshi; and Oishi, Konosuke, 4,645,341, Cl. 356-307,000.
- Kitagawa, Tsuneo: See—
Sugiura, Masamichi; and Kitagawa, Tsuneo, 4,646,330, Cl. 377-15,000.
- Kitai, Adrian H.; and Wolga, George J., to Cornell Research Foundation, Inc. Self-scanning electroluminescent display. 4,646,079, Cl. 340-781,000.
- Kitamura, Teruo: See—
Yokokura, Hisao; Era, Susumu; Abe, Hidetoshi; Nakata, Tadao; Kitamura, Teruo; and Mukoh, Akio, 4,645,305, Cl. 350-351,000.
- Kitayama, Kozi, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,645,053, Cl. 192-106,200.
- Kitazawa, Osamu: See—
Nakamura, Shigekazu; Kitazawa, Osamu; Nakamori, Masao; and Ohzeki, Yoshiyuki, 4,646,194, Cl. 360-137,000.
- Kitchin, Vaughan N.: See—
Bailey, Philip C.; and Kitchin, Vaughan N., 4,646,140, Cl. 358-50,000.
- Kiteley, Terence J.; and Vasavanonda, Sudthichard, to Zenith Electronics Corporation. Vertical compensation circuit utilizing variable gain amplifier. 4,645,987, Cl. 315-389,000.
- Kito, Kiyoharu, to Nippon Dyeing Machine Mfg. Co., Ltd. Continuous treating system for wide cloth. 4,644,765, Cl. 68-62,000.
- Kito, Yoshikazu: See—
Hida, Junichi; Tsukiyama, Yasumitsu; Kito, Yoshikazu; and Tate-matsu, Susumu, 4,644,757, Cl. 62-188,000.
- Kiuchi, Masayoshi; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Camera with computer circuit. 4,645,326, Cl. 354-484,000.
- Klancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Machine tools. 4,645,092, Cl. 221-239,000.
- Klancnik, Kenneth A.: See—
Klancnik, Adolph V.; and Klancnik, Kenneth A., 4,645,092, Cl. 221-239,000.
- Klapp, Hartmut, to Jagenberg AG. Method and apparatus for preventing contamination by splashing glue in a carton forming machine. 4,645,481, Cl. 493-150,000.
- Klappert, Willi: See—
Hunt, Robert H.; and Klappert, Willi, 4,646,048, Cl. 336-213,000.
- Klare, Robert J., to E.I. Du Pont de Nemours and Company. Coated glass fabric. 4,645,709, Cl. 428-251,000.
- Klebovich, Imre: See—
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,645,779, Cl. 514-648,000.
- Klein, Hans-Rudolf: See—
Stauss, Eberhard; Klein, Hans-Rudolf; and Thalmeir, Alfons, 4,644,728, Cl. 52-710,000.
- Kleinschmit, Peter: See—
Deschler, Ulrich; Panster, Peter; Kleinschmit, Peter; Wolff, Siegfried; and Tan, Ewe-Hong, 4,645,850, Cl. 556-431,000.
- Panster, Peter; and Kleinschmit, Peter, 4,645,847, Cl. 556-9,000.
- Panster, Peter; and Kleinschmit, Peter, 4,645,848, Cl. 556-9,000.
- Klett, Siegfried: See—
Peter, Gunter; and Klett, Siegfried, 4,644,976, Cl. 138-31,000.
- Kleykamp, Donald L., to Dayco Products, Inc. Hatch cover for hopper cars. 4,644,874, Cl. 105-377,000.
- Kling, Michael R.; and Shaffer, John W., to GTE Products Corporation. Glow discharge starter containing thorium for improving dark starting. 4,646,049, Cl. 337-27,000.
- Kling, Michael R.; and Audesse, Emery G., to GTE Products Corporation. Glow discharge starter. 4,646,050, Cl. 337-27,000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—
Partz, Klaus-Dieter, 4,645,068, Cl. 198-676,000.
- Kluth, Joachim: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90,000.
- Knapp, Lionel; and Horrocks, Gerald I. E. J., to Standard Telephone and Cables Public Ltd. Co. Bonding metal to ceramic. 4,645,117, Cl. 228-124,000.
- Knierim, David L.; and Rosener, Harvey J., to Tektronix, Inc. Graphics display rapid pattern fill using undisplayed frame buffer memory. 4,646,078, Cl. 340-750,000.
- Knoll International, Inc.: See—
Eldon, James B.; and Wnek, Kenneth, 4,645,155, Cl. 248-278,000.
- Knon, Gunter: See—
DeHubry, Frederick; and Knon, Gunter, 4,646,146, Cl. 358-108,000.
- Knorrr-Bremse AG: See—
Brearey, Nicholas J.; and Burt, Harry G. P., 4,645,271, Cl. 303-14,000.
- Knothe, Erich; Melcher, Franz-Josef; and Oldendorf, Christian, to Sartorius GmbH. Electronic balance with dual purpose 10-key keyboard. 4,645,021, Cl. 177-165,000.
- Knott, Valentin; Huber, Hans; Langheinrich, Wolfgang; and Maier, Stephan, to Maschinenbau Knott Eggstatt Ing. Valentin Knott, Firma. Adjusting and centering contrivance for servo brakes. 4,645,040, Cl. 188-79,5GT.
- Knowles, Robert W.; Dupont, Bo; Naito, Kazuyuki; and Morishima, Yasuo, to Memorial Sloan-Kettering Institute Cancer Center. Method for differential diagnosis of T cell leukemias using monoclonal antibodies. 4,645,738, Cl. 435-7,000.
- Kobayashi, Hiroaki: See—
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Itoh, Nobuaki, 4,645,702, Cl. 428-141,000.
- Kobayashi, Hiroshi: See—
Yasuhara, Seishi; Kobayashi, Hiroshi; Kita, Toru; and Saito, Hideyuki, 4,646,070, Cl. 340-603,000.
- Kobayashi, Masaharu; Okamoto, Hiroo; and Arai, Takao, to Hitachi, Ltd. Method and apparatus for recording and reproducing a digital signal with a stationary head. 4,646,170, Cl. 360-22,000.
- Kobayashi, Masaharu: See—
Okamoto, Hiroo; Kobayashi, Masaharu; Kimura, Hiroyuki; Noguchi, Takaharu; and Arai, Takao, 4,646,301, Cl. 371-37,000.

Kobayashi, Nobuyuki; and Ito, Toshimitsu, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling air-fuel ratio in internal combustion engine. 4,644,921, Cl. 123-489,000.

Koch, Wilhelm H.: See—
Weidmann, Markus; Ott, Hans; and Koch, Wilhelm H., 4,645,350, Cl. 356-418,000.

Kock, Wulf, to Dornier System GmbH. Electrically conductive ceramic material. 4,645,622, Cl. 252-521,000.

Kodama, Tetsuji: See—
Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; and Tsutsumi, Hironobu, 4,645,993, Cl. 318-568,000.

Kodama, Tetsuji: See—
Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; Tsutsumi, Hironobu; and Ushio, Hiroshi, 4,646,354, Cl. 382-28,000.

Kodatsky, William K.: See—
Hacetoglu, Ararat; Kodatsky, William K.; and Gonzales, Ray O., Jr., 4,645,130, Cl. 241-16,000.

Kodera, Yoshie: See—
Ishigaki, Masaji; Ohishi, Tetsu; Tokusyuku, Nobuhiro; Kodera, Yoshie; and Fukui, Yukio, 4,645,712, Cl. 428-433,000.

Koehn, Richard R.: See—
Hanson, David W.; Koehn, Richard R.; Nash, Richard C.; and Fox, Lonnie G., 4,644,727, Cl. 52-687,000.

Koga, Masataka; Kitagawa, Masatoshi; and Oishi, Konosuke, to Hitachi, Ltd. Double polarized light beam spectrophotometer of light source modulation type. 4,645,341, Cl. 356-307,000.

Kogumazaka, Shinji: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshiyugu, 4,645,133, Cl. 241-182,000.

Kohler, Elke: See—
Heitmann, Uwe; Pinck, Peter; Kohler, Elke; Maiwald, Berthold; and Marsau, Uwe, 4,645,921, Cl. 250-223,000.

Kohler, Fritz; and Perotti, Andre, to Edouard Dubied & Cie, S.A. Knitting machine with electromagnetic needle selection. 4,644,763, Cl. 66-75,200.

Kohli, Dalip K.; and Fisher, Michael M., to American Cyanamid Company. Curable epoxy resin compositions. 4,645,803, Cl. 525-423,000.

Kohmoto, Shinsuke, to Asahi Kokagyo Kogyo Kabushiki Kaisha. Zoom lens with macromechanism. 4,645,310, Cl. 350-430,000.

Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, to Fujisawa Pharmaceutical Co., Ltd. Tetracycline compounds and a pharmaceutical composition containing the same. 4,645,765, Cl. 514-233,000.

Kohyama, Mitsuaki; Kasai, Toshihiro; Ishida, Haruhiko; and Shimazaki, Takashi, to Kabushiki Kaisha Toshiba. Electrophotographic device. 4,645,330, Cl. 355-14,000.

Koide, Teruhiko, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Webbing guide apparatus. 4,645,234, Cl. 280-808,000.

Koike, Ichiro: See—
Ohe, Takeshi; Fujii, Tadaaki; and Koike, Ichiro, 4,645,025, Cl. 180-79,100.

Koike, Keiji: See—
Furuya, Tai; and Koike, Keiji, 4,645,419, Cl. 415-210,000.

Koishi, Musubu: See—
Tsuchiya, Yutaka; Koishi, Musubu; and Takeshima, Akira, 4,645,918, Cl. 250-213,0VT.

Kojima, Gen: See—
Wachi, Hiroshi; Kaya, Seitoku; and Kojima, Gen, 4,645,799, Cl. 525-199,000.

Kojima, Junpei: See—
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,645,808, Cl. 526-119,000.

Kojima, Tetsuro: See—
Sugimoto, Naohiko; Kojima, Tetsuro; and Ishimaru, Shingo, 4,645,735, Cl. 430-512,000.

Kojima, Yuichi; Fujita, Etsumi; and Hideshima, Yasuhiro, to Sony Corporation. Waveform shaping apparatus. 4,646,327, Cl. 375-60,000.

Kokayeff, Peter, to Union Oil Company of California. Process for removing silicon compounds from hydrocarbon streams. 4,645,587, Cl. 208-91,000.

Kokura, Satoshi: See—
Haramaki, Takashi; Shiota, Katsuhiko; Kokura, Satoshi; Funamoto, Takao; and Tomita, Akira, 4,645,119, Cl. 228-183,000.

Koleske, Joseph V.; and Kwiatkowski, George T., to Union Carbide Corporation. Blends of cyclic vinyl ether containing compounds and epoxides. 4,645,781, Cl. 522-169,000.

Kolkman, Dick J., to American Standard Inc. Fail-safe voltage-limiting circuit for an audio frequency overlay track circuit. 4,645,148, Cl. 246-34,00A.

Kollmorgen Technologies Corporation: See—
Whited, James S., 4,645,997, Cl. 323-211,000.

Komada, Mitsuharu: See—
Yoshihara, Mitsu; Morikawa, Yoshitada; Yamamoto, Yasuo; Komada, Mitsuharu; and Hattori, Masaaki, 4,645,297, Cl. 350-96,230.

Komatsu, Koussuke; Miyauchi, Tsutomu; Misao, Ikuro; Kimura, Mutsumi; Fujiwara, Tadashi; Tsuchida, Yoshio; and Kuroiwa, Junko, to Sony Corporation. Apparatus for encoding image signal. 4,646,134, Cl. 358-11,000.

Komatsu, Norimasa: See—
Tsuchiya, Tatsuhiko; and Komatsu, Norimasa, 4,646,186, Cl. 360-130,210.

Komatsu, Yasuhiro: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370,000.

Komori, Tadaaki: See—
Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, 4,645,765, Cl. 514-233,000.

Komorowski, Robert; and Punia, Harpal, to Plessey Overseas Limited. Variable timing and power storage arrangements. 4,644,864, Cl. 102-215,000.

Konishiroku Photo Industry Co., Ltd.: See—
Kawata, Shun, 4,645,335, Cl. 355-55,000.

Kimura, Kiyoshi; Okamoto, Yukio; Miya, Tadashi; Fukuchi, Masakazu; Tarumi, Noriyoshi; and Ito, Kunio, 4,645,327, Cl. 355-3,00R.

Konrad Hornschuch AG: See—
Hellwig, Manfred, 4,645,704, Cl. 428-176,000.

Konrad Rosenbauer KG: See—
Hawelka, Walter; and Irsigler, Walter, 4,645,009, Cl. 169-15,000.

Kons, Hugo L.: See—
Morris, Marion C.; Hill, Randolph J.; Frick, Richard H.; and Kons, Hugo L., 4,645,135, Cl. 242-67,10R.

Kontz, Robert F., to Owens-Illinois, Inc. Method and apparatus for fabricating nestable thermoplastic containers. 4,645,480, Cl. 493-106,000.

Kopp, Georg, to SIG Schweizerische Industrie-Gesellschaft. Transfer apparatus for flat items. 4,645,062, Cl. 198-448,000.

Kopp, Norbert: See—
Rochard, Jean-Claude; and Kopp, Norbert, 4,644,670, Cl. 36-117,000.

Koppers Company, Inc.: See—
Dressler, Hans; and Ward, Hans A., 4,645,780, Cl. 514-731,000.

Korsunsky, Iosif: See—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,645,279, Cl. 339-17,0CF.

Korth, Bernd, to Protone B.V. Rotatable and vertically adjustable single-column presentation stand. 4,645,081, Cl. 211-196,000.

Kosak, Imogene. Hot or cold compress with bladder enclosure. 4,645,498, Cl. 604-289,000.

Koseki, Ryoji, to Amada Engineering Service Co., Inc. Flow control device for a laser generator. 4,646,310, Cl. 372-58,000.

Koseki, Ryoji, to Amada Engineering Service Co., Inc. Laser generator. 4,646,336, Cl. 372-58,000.

Kosmos, Peter, to Austenal International, Inc. Uniformly fluorescing porcelain dental restorations. 4,645,455, Cl. 433-203,100.

Kosonocky, Walter F., to RCA Corporation. Charge coupled circuits. 4,646,119, Cl. 357-24,000.

Kostanecki, Andrew T.: See—
Madden, Paul R.; Kostanecki, Andrew T.; Mileos, George; and Michno, Michael J., Jr., 4,645,091, Cl. 220-85,00P.

Kostlin, Heiner: See—
Bouman, Anton J.; Kostlin, Heiner; and Kroontje, Wiggert, 4,645,967, Cl. 313-248,000.

Kotaki, Masahiro: See—
Hayashi, Ken-ichi; Hirozawa, Kunikazu; and Kotaki, Masahiro, 4,646,208, Cl. 362-80,000.

Kotoda, Yoshihiro: See—
Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, 4,646,187, Cl. 360-130,210.

Kottmair, Nikolaus: See—
Bayerlein, Friedrich; Haberer, Peter-Paul; Keramaris, Nikolaos; Kottmair, Nikolaus; and Kuhn, Manfred, 4,645,833, Cl. 536-17,100.

Kouketu, Kouiti: See—
Kawano, Ken; Sibata, Takuo; and Kouketu, Kouiti, 4,644,815, Cl. 74-467,000.

Koyama, Toshitake, to NEC Corporation. Television signal synchronizing apparatus with sync phase control for video signal. 4,646,136, Cl. 358-19,000.

Kouzi, Yamamoto: See—
Takao, Takeda; Hitoshi, Yamazaki; Shizuo, Nakano; Kouzi, Yamamoto; Hiroshi, Ito; and Jun, Imai, 4,645,972, Cl. 313-634,000.

Kowalewski, Janusz J.; Forest, Jerry W.; Christie, Alan E.; and Patrick, Paul H. Acoustic fish behavioral control device. 4,646,276, Cl. 367-139,000.

Koyama, Hiroyasu: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370,000.

Koyama, Jiro: See—
Yoshida, Taizo; Tanji, Akihito; Masuda, Masamitsu; and Koyama, Jiro, 4,645,293, Cl. 350-96,140.

Koyanagi, Toru: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94,000.

Kozakae, Kunitoshi, to Bridgestone Cycle Co., Ltd. Stepless speed change device for bicycle. 4,644,828, Cl. 74-750,00B.

Kozlak, Martin J., to Combustion Engineering, Inc. Annular venturi flow measuring device. 4,644,800, Cl. 73-861,640.

Kozuka, Hajime, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Power steering system. 4,644,846, Cl. 91-31,000.

Kozuki, Susumu: See—
Takei, Masahiro; and Kozuki, Susumu, 4,646,139, Cl. 358-44,000.

Kraftwerk Union Aktiengesellschaft: See—
Bauer, Rainer; and Kastl, Hans, 4,645,637, Cl. 376-249,000.

Voggenthaler, Ludwig; Operschall, Hermann; and Weber, Jakob, 4,645,581, Cl. 204-275,000.

Krambeck, Frederick C.; Richardson, Craig A.; and Walters, James C., to Deere & Company. Twin sickle cutter bar. 4,644,738, Cl. 56-259,000.

Krambeck, Frederick J.; Lam, Chiu T.; and Schipper, Paul H., to Mobil Oil Corporation. Process for removing metals from crude. 4,645,589, Cl. 208-251,00R.

Kramer, Wolfgang: See—
Holmwood, Graham; Kramer, Wolfgang; Buchel, Karl H.; Reinecke, Paul; and Brandes, Wilhelm, 4,645,767, Cl. 514-383,000.

Krans, Keith A. Sailboat keel. 4,644,889, Cl. 114-40,000.

Krasselt, Manfred M.: See—
Apontowell, Peter; and Krasselt, Manfred M., 4,645,665, Cl. 424-89,000.

Kraus, Larry A.: See—
Ahmad, Shamim; Kraus, Larry A.; and Staab, Paul C., 4,644,988, Cl. 152-209,00R.

Krause, Robert F.; and Rauch, Gary C., to Westinghouse Electric Corp. Loss ferromagnetic materials and methods of improvement. 4,645,547, Cl. 148-111,000.

Krauss, Richard C.: See—
McKendry, Lennon H.; and Krauss, Richard C., 4,645,852, Cl. 558-49,000.

Kremer, Paul W.: See—
DePasquale, Ralph J.; Evans, James M.; and Kremer, Paul W., 4,645,846, Cl. 556-419,000.

Krishnan, Vedavalli G., to Racal Data Communications Inc. Automatic digital strapping apparatus for data modems. 4,646,320, Cl. 375-8,000.

Kriz, Richard F.: See—
Jones, John R., 4,645,093, Cl. 221-93,000.

Kroontje, Wiggert, to U.S. Philips Corporation. Method of removing hydrocarbons from vacuum tubes. 4,645,468, Cl. 445-55,000.

Kroontje, Wiggert: See—
Bouman, Anton J.; Kostlin, Heiner; and Kroontje, Wiggert, 4,645,967, Cl. 313-248,000.

Kruger, H. Eckhard, to Blaupunkt-Werke GmbH. Method and apparatus for scrambling an unscrambling television signals. 4,646,147, Cl. 380-14,000.

Krumme, John F.; and Hodgson, Darel E., to Beta Phase, Inc. Fluid delivery apparatus with shape-memory flow control element. 4,645,489, Cl. 604-65,000.

Krus, Werner, to Karl Jungel GmbH & Co. KG. Device for the burr-free cutting of strip-shaped material. 4,644,837, Cl. 83-864,000.

Kruse, Walter M.; and Stephen, John F., to ICI Americas Inc. Sulphur dehydrogenation process to yield 5-methyl-2-pyridone. 4,645,839, Cl. 546-290,000.

Kubo, Masahiko: See—
Honda, Nobuyasu; Fujii, Masanori; and Kubo, Masahiko, 4,645,729, Cl. 430-126,000.

Kubo, Seitoku; Taga, Yutaka; and Nakamura, Shinya, to Toyota Jidosha Kabushiki Kaisha. Idling control system for an automatic transmission providing smooth starting off action. 4,644,826, Cl. 74-866,000.

Kubota, Katsuzo; Nakai, Masayuki; and Ono, Shigeyoshi, to Idemitsu Kosan Company Limited. Process for modification of coal. 4,645,513, Cl. 44-10,00H.

Kubota, Reiko: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370,000.

Kuboyama, Kiyoshi, to Asahi Screen Process Insatsu Kabushiki Kaisha. Hot stamping method. 4,645,555, Cl. 156-234,000.

Kuboyama, Morio: See—
Hashimoto, Yoshiyuki; Toida, Tomohiro; Sekine, Kazunori; Saito, Minoru; Kawashima, Takuji; and Kuboyama, Morio, 4,645,667, Cl. 424-92,000.

Kubushiki Kaisha Toyota Chuo Kenkyusho: See—
Sumiyoshi, Masaharu; and Matsunari, Fumio, 4,644,821, Cl. 74-689,000.

Kudo, Tetsuichi: See—
Hiratan, Masahiko; Miyauchi, Katsuki; Ito, Yukio; Kanehori, Keiichi; Kirino, Fumiyoshi; and Kudo, Tetsuichi, 4,645,726, Cl. 429-191,000.

Kuhle, Engelbert; Paulus, Wilfried; and Genth, Hermann, to Bayer Aktiengesellschaft. N-(dichlorofluoromethylthio)-3,4-dimethylmaleimide and its use as a fungicide. 4,645,776, Cl. 514-425,000.

Kuhn, Klaus: See—
Albrecht, Wilhelm; Wurz, Dieter; Peitsmeier, Karl; Waldschutz, Heinz; Ruckert, Walter; Kuhn, Klaus; and Patzelt, Helmut, 4,644,817, Cl. 74-552,000.

Kuhn, Manfred: See—
Bayerlein, Friedrich; Haberer, Peter-Paul; Keramaris, Nikolaos; Kottmair, Nikolaus; and Kuhn, Manfred, 4,645,833, Cl. 536-17,100.

Kuiper, Bernardus A.: See—
Timmermans, Franciscus W. A.; and Kuiper, Bernardus A., 4,646,141, Cl. 358-50,000.

Kuklo, Anthony F., Jr.: See—
Szostak, Tadeusz; and Kuklo, Anthony F., Jr., 4,644,647, Cl. 30-164,900.

Kula, Frank N.: See—
Beaumont, Gregory J.; Duval, Casimir J.; Kula, Frank N.; and Tamkin, Michael S., 4,646,159, Cl. 358-254,000.

Kulieke, Fred C., Jr.: See—
Hanula, Richard M.; and Kulieke, Fred C., Jr., 4,645,085, Cl. 213-155,000.

Kumeth, Siegmund. Device for grooving cylindrical workpieces. 4,644,777, Cl. 72-402,000.

Kummer, Rudolf: See—
Reuvers, Johannes G.; Richter, Wolfgang; and Kummer, Rudolf, 4,645,855, Cl. 560-204,000.

Kump, William H.; and Jergl, Joseph J., to GNB Incorporated. Battery comprising dual terminal bushings. 4,645,725, Cl. 429-179,000.

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Tsuchiya, Satoshi; Aoyagi, Minoru; and Kuniyoshi, Yasunobu, 4,646,161, Cl. 358-29,000.

Kuno, Hiroshi: See—
Aoki, Tadashi; Isobe, Masakazu; and Kuno, Hiroshi, 4,644,760, Cl. 62-324,600.

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Kuno, Kazuo, to NEC Corporation. Semiconductor bipolar memory device operating in high speed. 4,646,268, Cl. 365-179,000.

Kunzler, Wilhelm F.: See—
Falcetta, Joseph J.; and Kunzler, Wilhelm F., 4,645,811, Cl. 526-279,000.

Kuppens, Bernardus J.: See—
Wardenaar, Hendrik C.; and Kuppens, Bernardus J., 4,644,642, Cl. 29-834,000.

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Shirai, Ryoichi; Yokoyama, Fumitomo; and Kuramochi, Koujiro, 4,645,441, Cl. 418-126,000.

Kuraray Co., Ltd.: See—
Murayama, Yoichi, 4,645,685, Cl. 427-39,000.

Negi, Taichi; Kawasaki, Akihiko; and Ikari, Kyoichiro, 4,645,695, Cl. 428-35,000.

Shirai, Tsuneo; and Suzuki, Koji, 4,645,583, Cl. 204-435,000.

Kurata, Mitsuru: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518,000.

Kureha Chemical Industry Co., Ltd.: See—
Kato, Ipeji; Takasu, Masao; and Maruyama, Nobuo, 4,645,566, Cl. 162-138,000.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Iizuka, Yo; Iwasaki, Takao; Katto, Takayuki; and Shiiki, Zenya, 4,645,826, Cl. 528-388,000.

Kuroda, Akio: See—
Hamaguchi, Toshiaki; Namikawa, Kazuhira; Nakamura, Mutsuaki; Kuroda, Akio; and Akai, Toshio, 4,646,284, Cl. 369-276,000.

Kuroishi, Tadafumi: See—
Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,645,647, Cl. 422-81,000.

Kuroiwa, Junko: See—
Komatsu, Kousuke; Miyauchi, Tsutomu; Misao, Ikuro; Kimura, Mutsumi; Fujiwara, Tadashi; Tsuchida, Yoshio; and Kuroiwa, Junko, 4,646,134, Cl. 358-11,000.

Kurokawa, Hideo; Mitani, Tsutomu; and Yonezawa, Taketoshi, to Matsushita Electric Industrial Co., Ltd. Plasma CVD apparatus and method for forming a diamond like carbon film. 4,645,977, Cl. 315-111,210.

Kurps, Armin; Fischer, Hermann; Hartmann, Jurgen; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Preparation of concentrated, stable water-in-oil emulsions of water-soluble or water-swelling polymers. 4,645,568, Cl. 203-14,000.

Kusiak, Edward H., to United Technologies Corporation. Actuator having tolerance to ballistic damage. 4,644,852, Cl. 92-151,000.

Kustanovich, Yosef. Surface-area pressure transducer and line-selection circuit for use therewith. 4,644,801, Cl. 73-862,040.

Kusunoki, Kokyo: See—
Take, Takao; Kaneko, Katsuki; Kusunoki, Kokyo; and Ichiba, Toshiobu, 4,645,548, Cl. 156-39,000.

Kusz, Maximilian, to Owens-Illinois, Inc. Tamper indicating device. 4,645,087, Cl. 215-254,000.

Kutz, Donald F.: See—
Raap, Gerald G., 4,645,165, Cl. 248-476,000.

Kuwabara, Michiaki; and Hayashi, Hiromasa, to Tokyo Shibaura Denki Kabushiki Kaisha. IC socket

L. & C. Steinmuller GmbH: See—
Grethe, Klaus; Hulsen, Ralf; and Thielen, Walter, 4,644,879, Cl. 110-343.000.

L. R. Nelson Corporation: See—
Ransburg, David P.; Fletcher, Douglas C.; and Wahlstrom, Sven E., 4,646,224, Cl. 364-143.000.

L. W. Fleckenstein, Inc.: See—
Hartman, Neil W., 4,644,746, Cl. 60-269.000.

La Corporation de l'Ecole Polytechnique: See—
Dubreuil, Alain; and Pelton, Arthur D., 4,645,571, Cl. 204-1.00T.

Ladin, Eli M. Strap cutting tool, 4,644,646, Cl. 30-134.000.

Lagabe, Andre: See—
Bucher, Claude; and Lagabe, Andre, 4,645,243, Cl. 285-47.000.

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Terrade, Francois; and Laheyne, Claude, 4,645,129, Cl. 239-427.000.

Lahodny, Johann; and Dreier, Ernst, to Fritz Gegauf AG Bernina Nahrmaschinen Fabrik. Surgical instrument, more particularly hysterectomy, 4,644,953, Cl. 128-305.000.

Laine, Richard M.; and Shvo, Youval, to SRI International. Catalyst system for amine transalkylation, 4,645,837, Cl. 544-402.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Salinier, Guy; and Bossard, Jean-Paul, 4,645,973, Cl. 315-39.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Goumy, Daniel; and Defrance, Charles, 4,644,995, Cl. 164-159.000.

Lakin, Bryan L., to Fasco Industries, Inc. End shield with cylindrical bearing mount, 4,645,361, Cl. 384-441.000.

Lalancette, Jean M., to Societe Nationale de l'Amiante. Moulded compounding mixtures of adjustable density, 4,645,784, Cl. 523-400.000.

Lalanne, Henri: See—
Gongora, Henri; Lalanne, Henri; and Perono, Rene, 4,645,648, Cl. 422-186.000.

Lalor, Walter T. Composite tapes and apparatus for winding composite tapes, 4,645,549, Cl. 156-54.000.

Lam, Chiu T.: See—
Krambeck, Frederick J.; Lam, Chiu T.; and Schipper, Paul H., 4,645,589, Cl. 208-251.00R.

Lamb, Mark E.: See—
Hansen, Loren F.; and Lamb, Mark E., 4,645,012, Cl. 172-22.000.

Lambers, Howard: See—
Martin, Eugene J.; Tootle, James N.; Fallows, Walter; Lambers, Howard; and Vanderlaan, Robert D., 4,645,178, Cl. 251-229.000.

Lambert, Larry D.: See—
Palmer, Jerry D.; Janus, Robert J.; and Lambert, Larry D., 4,646,064, Cl. 340-392.000.

Landis, Abraham L.; and Naselow, Arthur B., to Hughes Aircraft Company. Method of preparing high molecular weight polyimide, product and use, 4,645,824, Cl. 528-353.000.

Landis, Peter: See—
Nowak, Claude; and Landis, Peter, 4,644,768, Cl. 70-364.00R.

Landstingens Inkopsentral Lic Ekonomisk Forening: See—
Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., 4,645,757, Cl. 514-54.000.

Lane, Robert H., to Oxco Fuel Company. Coal-aqueous slurry, 4,645,514, Cl. 44-51.000.

Laner, Kai: See—
Tammsalo, Erkki; Kanerva, Heikki; Aarnio, Jaakko; Wederhorn, Markku; and Laner, Kai, 4,646,335, Cl. 378-38.000.

Lang, Keven W.; Eberhardt, George M.; Entenmann, William J.; and Shipman, Frank P., to Entenmann's Inc. Glaze composition for bakery products, 4,645,674, Cl. 426-94.000.

Lang, Walter; Mueller, Gerhard; and Weimer, Eugen, to Carl-Zeiss-Stiftung. Apparatus for dose measurement upon photocoagulation in the fundus of the eye, 4,644,948, Cl. 128-303.100.

Lange, Jurgen: See—
Harty, Alexander; and Lange, Jurgen, 4,645,260, Cl. 297-35.000.

Lange, Wolfgang, to AKZO, NV. Microporous powder form polyacetalides, 4,645,664, Cl. 424-78.000.

Langejan, Hendrik, to IHC Holland N.V. Floating hopper barge with discharging trap doors in the bottom, 4,644,888, Cl. 114-27.000.

Langheinrich, Wolfgang: See—
Knott, Valentin; Huber, Hans; Langheinrich, Wolfgang; and Maier, Stephan, 4,645,040, Cl. 188-79.5GT.

Langrenne, Albert: See—
Droux, Jacques; and Langrenne, Albert, 4,646,192, Cl. 360-133.000.

Languillat, Jean-Paul, to L'Homme, S.A. Process and apparatus for forming a multilayer tube, 4,645,553, Cl. 156-153.000.

Larrabee, Edward W.; and Huck, Charles M., to Howmedica, Inc. Surgical stapler with retractable anvil, 4,645,111, Cl. 227-19.000.

Larson, Mikiel L.; Robrock, Anne A.; and Toy, Wing N., to AT&T Bell Laboratories. Idle period signalling in a packet switching system, 4,646,287, Cl. 370-60.000.

Larson, Nils E.: See—
De Vito, Joseph; Lytle, Kevin A.; Sutton, Ronald D.; Westendorf, Alan J.; Larson, Nils E.; and Uttrachi, Gerald D., 4,645,903, Cl. 219-137.00R.

Laser Magnetic Storage International Company: See—
Verboom, Johannes J., 4,646,281, Cl. 369-59.000.

Latassa, Frank M.: See—
MacDonald, Wallace T.; and Latassa, Frank M., 4,645,283, Cl. 339-50.00R.

Latta, Milton R.: See—
Juliana, Anthony, Jr.; Latta, Milton R.; Sincerbox, Glenn V.; and Willson, Carlton G., 4,645,338, Cl. 356-150.000.

Lattner, Manfred, to Zinser Textilmaschinen GmbH. Spinning machine drafting frame, 4,644,609, Cl. 19-244.000.

Lau, Arthur L. Y.: See—
Charlton, Steven C.; Fleming, Roger L.; Hemmes, Paul; and Lau, Arthur L. Y., 4,645,744, Cl. 436-74.000.

Laurent, Henry: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; and Wendt, Hans, 4,645,763, Cl. 514-178.000.

Laux, Friedrich-Gunther; and Laux, Steffen, to Laux, Friedrich-Gunther; and Laux, Steffen. Manually operated cutting tool, 4,644,650, Cl. 30-250.000.

Laux, Steffen: See—
Laux, Friedrich-Gunther; and Laux, Steffen, 4,644,650, Cl. 30-250.000.

Lawhon, James T.; and Lusas, Edmund W., to Texas A&M University System. The Process for removing flatulence-causing sugars from bean products, 4,645,677, Cl. 426-431.000.

Lawhon, James T., to Texas A&M University System. The Process for removing undesirable constituents from wheat gluten products, 4,645,831, Cl. 530-374.000.

Lawrence, David M., to Automation Associates, Inc. One-piece cartridge and sabot with gas-actuated cutter member, 4,644,865, Cl. 102-430.000.

Laws, Gerald E.; and Diefendorff, Keith E., to Texas Instruments Incorporated. Self testing data processing system with system test master arbitration, 4,646,298, Cl. 371-16.000.

LCC-CICE Compagnie Europeenne de Composants Electroniques: See—
Turolla, Jean-Pierre; and Belin, Simone, 4,646,037, Cl. 333-182.000.

Lebetzki, Egon: See—
Schneider, Hartmut; Lebetzki, Egon; and Vogt, Wolfram, 4,645,451, Cl. 431-278.000.

Leclercq, Joseph; and Bonnamour, Michel, to Fragma. Hold down device for a nuclear reactor, 4,645,642, Cl. 376-364.000.

Leclercq, Joseph, to Fragma. Nuclear fuel assembly containing burnable poison, 4,645,643, Cl. 376-447.000.

Lecoffre, Yves, to Alstom. Apparatus for measuring the concentration of cavitation nuclei in a liquid, 4,644,808, Cl. 73-866.000.

Leduc, Yves: See—
LeToumelin, Loic; Tollon, Franck; and Leduc, Yves, 4,645,881, Cl. 379-252.000.

Lee, Duk H.; Feierberg, Susan; and O'Brien, Robert E., to Du Pont de Nemours, E. I., and Company. Water soluble floors, 4,645,618, Cl. 252-301.170.

Lee, Jeffrey A.; and Martinez, Felix J., to Renal Systems, Inc. Peritoneal device system, 4,645,494, Cl. 604-175.000.

Lee, Kam B.; and Simpkin, Alan A., to Cabot Corporation. Production of carbon black, 4,645,657, Cl. 423-457.000.

Lee Pharmaceuticals, Inc.: See—
James, Jack L., 4,645,456, Cl. 433-217.100.

Lee, Ung L. Reversible rake, 4,644,740, Cl. 56-400.040.

Lee, William E., III; Bangel, James M.; White, Robert L.; and Bruno, David J., Jr., to Procter & Gamble Co., The Process for making a corn chip with potato chip texture, 4,645,679, Cl. 426-560.000.

Leftaive, Etienne; and Guignard, Claude. Building material, its application for embankment, surfacing, or as foundation mass over a loose ground, and method and installation for the production of said material, 4,645,381, Cl. 405-258.000.

Leggett & Platt Incorporated: See—
Zugel, Martin J., 4,644,819, Cl. 74-665.00B.

LeGrand, Donald G., to General Electric Company. Internal protective coatings for sensitive resinous laminates, 4,645,708, Cl. 428-215.000.

Lehman, John F., to Steel City Corporation, The. Post anchor device, 4,644,713, Cl. 52-165.000.

Leiber, Heinz, to Robert Bosch GmbH. Brake Booster, 4,645,272, Cl. 303-119.000.

Leland Stanford Junior University, The Board of Trustees of the: See—
Bracewell, Ronald N., 4,646,256, Cl. 364-725.000.

Lembke, Robert W.; and Wiebeld, Howard J., to GTE Communication Systems Corp. Disconnect circuit for use between telephone switching systems, 4,645,880, Cl. 379-191.000.

Lemelson, Jerome H. Video system and method, 4,646,172, Cl. 360-33.100.

Lemforder Metallwaren AG: See—
Jordens, Ernst-Gunter, 4,645,188, Cl. 267-140.100.

Lemon, Thomas: See—
Jones, John R., 4,645,093, Cl. 221-93.000.

Lemon, William C. Container carrier, 4,645,072, Cl. 206-199.000.

Le Mouellic, Georges; Brun, Jean-Paul; and Gidrol, Jean C., to Societe d'Applications Generales d'Electricite et de Mecanique Sagem. Reading and/or writing apparatus including a removable memory-containing cassette, 4,646,263, Cl. 365-1.000.

Lenk, Erich; and Feth, Max, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Melt spinning apparatus, 4,645,444, Cl. 425-192.00S.

Lerner, David R. Fluorescent light mounting system, 4,646,201, Cl. 361-377.000.

Lesmeister, Stephen C.: See—
Gerdes, Keith W.; Corts, Douglas E.; Jenkins, Thomas E.; Lesmeister, Stephen C.; and Welle, Louis A., Sr., 4,644,698, Cl. 49-478.000.

LeToumelin, Loic; Tollon, Franck; and Leduc, Yves, to Texas Instruments Incorporated. DC level trip detector, 4,645,881, Cl. 379-252.000.

Leupold & Stevens, Inc.: See—
Mathis, Henry L., 4,646,085, Cl. 340-870.190.

Levenston, Frederick M. Neck exercising device, 4,645,198, Cl. 272-70.300.

Lever Brothers Company: See—
Niven, Ian E.; and Travill, Andrew W., 4,645,616, Cl. 252-135.000.

Levin, Robert E.; and English, George J., to GTE Products Corporation. Motor vehicle lighting system including a sealed lens member as part thereof, 4,646,207, Cl. 362-80.000.

Levin, Robert E.; and English, George J., to GTE Products Corporation. Lamp reflector, 4,646,215, Cl. 362-296.000.

Levine, Peter A., to RCA Corporation. Method and apparatus for aligning solid-state imagers, 4,646,142, Cl. 358-50.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicide thiophenesulfonamides, 4,645,529, Cl. 71-90.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Alkyl sulfones, 4,645,531, Cl. 71-92.000.

Lewin, David. Baking utensils, 4,645,090, Cl. 220-23.400.

Lewis, Billy M.; and Myers, Walter I., to Wiseda Ltd. Parking brake for off-highway vehicles, 4,645,039, Cl. 188-72.300.

Lewis, Irwin C.: See—
Didchenko, Rostislav; and Lewis, Irwin C., 4,645,584, Cl. 208-40.000.

Lewis, Larry N., to General Electric Company. Heat curable organopolysiloxane compositions, 4,645,815, Cl. 528-15.000.

Lewis, Larry N., to General Electric Company. Hydrogenation of unsaturated hydrocarbons with cyclometallated transition metal catalysts, 4,645,849, Cl. 556-16.000.

Leybold-Heraeus GmbH: See—
Reich, Gunter, 4,645,413, Cl. 415-72.000.

L'Homme, S.A.: See—
Languillat, Jean-Paul, 4,645,553, Cl. 156-153.000.

Liao, Kuan Y.; Chang, Kuang-Yeh; and Ma, Hsing-Chien, to Hughes Aircraft Company. Double layer photoresist technique for side-wall profile control in plasma etching processes, 4,645,562, Cl. 156-643.000.

Liao, Paul F.: See—
Howard, Richard E.; Liao, Paul F.; and Stolen, Rogers H., 4,645,523, Cl. 65-3.110.

Lienard, Jean; Denoize, Xavier; and Dessales-Martin, Diane, to Thomson-CGR. Process of compressing a succession of digital data and device for carrying out the same, 4,646,148, Cl. 358-135.000.

Liescheidt, Duane B.: See—
Rogers, William R.; and Liescheidt, Duane B., 4,644,730, Cl. 53-397.000.

Liform AG: See—
Husler, Balthasar, 4,644,596, Cl. 5-236.00R.

Lightolier Incorporated: See—
Florence, Noel S., 4,646,212, Cl. 362-150.000.

Lin, Steve T.; Conjeevaram, Seshadri; and Henderson, Don J., to Orthomatrix Inc. Moldable bone-implant material, 4,645,503, Cl. 623-16.000.

Lincoln, Andrew J.; Osborn, Robert; and Dreher, Geoffrey A., to Minolta Camera Kabushiki Kaisha. Strip map memory controller, 4,646,259, Cl. 364-900.000.

Lindig, Charles E.: See—
Brandstetter, Robert W.; Fonneland, Nils J.; and Lindig, Charles E., 4,645,300, Cl. 350-162.120.

Lindsay, Harold W. End milling cutter and method of making same, 4,645,383, Cl. 407-36.000.

Lingo, William J., Jr. Converter for biodegradable material, 4,645,594, Cl. 210-170.000.

Link, Helmut D., to Waldemar Link GmbH & Co. Hip joint endoprosthesis with a stem to be anchored in the femur, 4,645,506, Cl. 623-23.000.

Link, Helmut F.; and Grossmann, Walter, to Index-Werke Komm.-Ges. Hahn & Tesky. Device for changing chuck attachment jaws, 4,644,636, Cl. 29-568.000.

Link, Helmut F.; and Schafer, Erich E., to Index-Werke Komm. Ges. Hahn & Tesky. Chuck, 4,645,219, Cl. 279-1.00C.

Lion Corporation: See—
Nakashima, Syozi; Takahashi, Akinori; Suganuma, Nobuo; and Ito, Satoshi, 4,645,662, Cl. 424-52.000.

Liotto, Donna; and Scocozza, Victor. Baking pan assembly, 4,644,858, Cl. 99-449.000.

Liou, Shu L. Door with a shutter device, 4,644,687, Cl. 49-38.000.

Lippe, Lloyd K. Lip block construction, 4,644,710, Cl. 52-86.000.

Lisaukas, Richard J., to Texas Instruments Incorporated. Motor protector particularly suited for use with compressor motors, 4,646,195, Cl. 361-25.000.

Little, Roger H. Method for the recovery of precious metals from ores, 4,645,535, Cl. 75-118.00R.

Little, William R.: See—
Faulkner, Danny E.; and Little, William R., 4,645,071, Cl. 198-842.000.

Litton Systems, Inc.: See—
Brown, Alison, 4,646,096, Cl. 342-357.000.

Hoffman, George J., 4,645,960, Cl. 310-90.500.

Liu, Thomas C., to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Ringing signal reformatting circuit, 4,646,347, Cl. 379-375.000.

Lloyd-Jones, Peter G.: See—
Cooper, John; Hall, Reginald E.; and Lloyd-Jones, Peter G., 4,644,993, Cl. 160-229.00R.

Loadmaster Systems, Inc.: See—
Burell, John A.; and Mason, Joseph, 4,644,715, Cl. 52-170.000.

Lockett, George E.; and Thurston, Robert D., to Energy Soft Computer Systems Limited. Heat recovery systems, 4,644,750, Cl. 60-641.200.

Lockheed Corporation: See—
Hendricks, Klaas, 4,645,147, Cl. 244-137.00P.

Loeb, Karen C.: See—
Emerson, William D.; Hill, Deborah J.; Loeb, Karen C.; Mizrahi, Albert; Schlegel, Charles T.; and Scott, Lowell C., 4,646,346, Cl. 379-214.000.

Loga Mobil GmbH: See—
Harty, Alexander; and Lange, Jurgen, 4,645,260, Cl. 297-35.000.

Lotsch, Wolfgang; and Henning, Georg, to BASF Aktiengesellschaft. Transparent isindoline pigment having a high color strength, 4,645,539, Cl. 106-288.00Q.

Lott, David A. Trimaran with planing hull, 4,644,890, Cl. 114-61.000.

Lovas, Kurt; Mayer, Walter; and Wittmann, Stephan, to Schubert & Salzer. Process and device for joining a thread in an open-end spinning device, 4,644,742, Cl. 57-263.000.

Lovell, Walter C., to Avant Incorporated. Non-electronic card-key actuated combination lock, 4,644,766, Cl. 70-276.000.

Lowder, Eldon L. Colonic irrigation board, 4,645,497, Cl. 604-276.000.

Lowe Alpine Systems, Inc.: See—
Lowe, Greg E., 4,645,149, Cl. 248-1.000.

Lowe, Greg E., to Lowe Alpine Systems, Inc. Camming device for climbers, 4,645,149, Cl. 248-1.000.

Lowrie, Harman S.; and Baran, John S., to G. D. Searle & Co. Pentanedioic acid derivatives, 4,645,858, Cl. 562-582.000.

Lowry, Robert D. Mixing faucet, 4,644,970, Cl. 137-625.410.

LRC Electronics, Inc.: See—
Burger, Donald A., 4,645,281, Cl. 339-37.000.

LTV Aerospace and Defense Company: See—
While, Donald M.; and Matza, Edward C., 4,645,394, Cl. 411-110.000.

Lubbers, Lawrence M.: See—
Yates, Jan B.; and Lubbers, Lawrence M., 4,644,938, Cl. 128-26.000.

Lucht, Phillip H.: See—
Andrews, David H.; Lucht, Phillip H.; and Putnam, Leland K., 4,646,075, Cl. 340-747.000.

Luedeman, Harold J. Lawn edger, 4,645,010, Cl. 172-13.000.

Luerken, Adolf; Cannistra, John S.; Zimmerer, John L.; and Pilatowicz, Edward J., to McCulloch Corporation. Lawn/garden blower/vacuum, 4,644,606, Cl. 15-330.000.

Luft, Harald: See—
Divisek, Jiri; Furst, Leander; Kastening, Bertel; and Luft, Harald, 4,645,607, Cl. 210-719.000.

Luly, Jay R.; Plattner, John J.; and Dellaria, Joseph F., to Abbott Laboratories. Renin inhibiting compounds, 4,645,759, Cl. 514-18.000.

Lum, Francis: See—
Sokolik, Edmund L.; and Lum, Francis, 4,646,175, Cl. 360-78.000.

Lumo, Inc.: See—
Morton, Jay, 4,644,732, Cl. 53-412.000.

Lund, Ivar, to Ameco A/S. Method and device for energy recovery by manufacturing of asphalt in bulk, 4,644,932, Cl. 126-343.50A.

Lundgren, Bengt, to SKF Nova AB. Locking nut, 4,645,395, Cl. 411-210.000.

Lundholm, Gunnar, to Mechanical Technology Incorporated. Seal arrangement, 4,645,212, Cl. 277-3.000.

Lundstrom, Jerry E., to Ionics, Incorporated. Decontamination of a radioactive waste liquid by electrodialysis, 4,645,625, Cl. 252-631.000.

Lusas, Edmund W.: See—
Lawhon, James T.; and Lusas, Edmund W., 4,645,677, Cl. 426-431.000.

Lutron Electronics Co., Inc.: See—
Ngo, Dat V.; and Jacoby, Elliot G., 4,646,203, Cl. 361-388.000.

Luursema, Meerten, to U.S. Philips Corporation. Discharge lamp circuit with protected PTC resistor, 4,645,976, Cl. 315-106.000.

Luz, David W.: See—
Sutherland, Hugh F., II; and Luz, David W., 4,645,984, Cl. 315-371.000.

Lynch, William T.; and Parrillo, Louis C., to AT&T Bell Laboratories. Latchup-preventing CMOS device, 4,646,123, Cl. 357-42.000.

Lyon, Craig A.: See—
Ross, David F.; and Lyon, Craig A., 4,645,032, Cl. 181-250.000.

Lytle, Kevin A.: See—
De Vito, Joseph; Lytle, Kevin A.; Sutton, Ronald D.; Westendorf, Alan J.; Larson, Nils E.; and Uttrachi, Gerald D., 4,645,903, Cl. 219-137.00R.

M&T Chemicals Inc.: See—
Berger, Abe; and Silverstein, Irwin B., 4,645,844, Cl. 548-545.000.

Ma, Hsing-Chien: See—
Liao, Kuan Y.; Chang, Kuang-Yeh; and Ma, Hsing-Chien, 4,645,562, Cl. 156-643.000.

MacConkey, James S.; Melville, Douglas F., Jr.; and Sharkany, Edward J., to Acme United Corporation. Membrane dispensing assembly and method of manufacture, 4,644,944, Cl. 128-132.00D.

MacDonald, Wallace T.; and Latassa, Frank M., to North American Philips Corporation. Adapter for mounting a fluorescent lamp in an incandescent lamp type socket, 4,645,283, Cl. 339-50.00R.

Macey, James P.; and Vahabzadeh, Hamid, to General Motors Corporation. Geared-neutral continuously variable transmission, 4,644,820, Cl. 74-689.000.

Machler, Meinrad; Bittner, Reinhold; Gluck, Franz; Schlemmer, Harry; and Sachse, Richard, to Carl-Zeiss-Stiftung. Method of assembling the optical components of an optical apparatus and a device therefor, 4,644,632, Cl. 29-469.000.

Mackiw, Vladimir N.; Nadezhdin, Alexander; and Weir, Donald R., to Sheritt Gordon Mines Limited. Production of fine spherical copper powder. 4,645,532, Cl. 75-0.50A.

Madden, Paul R.; Kostanecki, Andrew T.; Mileos, George; and Michno, Michael J., Jr., to Union Carbide Corporation. Valve cover for gas storage cylinder. 4,645,091, Cl. 220-85.00P.

Madsen, Bruce K.: See—

Hayes, Alan B.; Brown, Russell A.; Jensen, Thomas W.; and Madsen, Bruce K., 4,646,251, Cl. 364-518.000.

Madwed, Albert. Gripper assembly. 4,645,411, Cl. 414-753.000.

Maeda, Takeshi: See—

Sugiyama, Hisataka; Shigematsu, Kazuo; Maeda, Takeshi; Saitoh, Atsushi; and Takasugi, Wasao, 4,646,103, Cl. 346-1.100.

Maeda, Yoshiko: See—

Miyamoto, Takeshi; Ura, Mikio; Kazama, Shigenori; Kase, Takao; and Maeda, Yoshiko, 4,645,307, Cl. 350-357.000.

Maeda, Yoshiyasu, to Murata Kikai Kabushiki Kaisha. Draw texturing and entanglement apparatus for yarn. 4,644,620, Cl. 28-220.000.

Machara, Kazuo; and Fukuda, Toshiyuki, to Sanden Corporation. Refrigerated display cabinet. 4,644,758, Cl. 62-234.000.

Maezono, Masakazu; Shimizu, Takeyuki; and Ishikawa, Keichi, to Honda Giken Kogyo Kabushiki Kaisha. Brake and speed responsive controlled transmission. 4,645,051, Cl. 192-0.055.

Magnetic Peripherals Inc.: See—

Gitzendanner, Louis G., 4,646,193, Cl. 360-133.000.

Mahieu, Marc: See—

Varon, Jacques J.; Martin, Marie-Josephe; and Mahieu, Marc, 4,646,116, Cl. 357-17.000.

Maier, Andreas, to Hartmetallwerkzeugfabrik Andreas Maier GmbH & Co. Multiple-tooth drill bit. 4,645,389, Cl. 408-230.000.

Maier, Helmut K., to Henkel Corporation. Method of suspension polymerization of vinyl chloride. 4,645,812, Cl. 526-200.000.

Maier, Stephan: See—

Knott, Valentin; Huber, Hans; Langheinrich, Wolfgang; and Maier, Stephan, 4,645,040, Cl. 188-79.5GT.

Mainhardt, Robert. Gun for firing a variety of projectiles. 4,644,930, Cl. 124-58.000.

Maiwald, Berthold: See—

Heitmann, Uwe; Pinck, Peter; Kohler, Elke; Maiwald, Berthold; and Marsau, Uwe, 4,645,921, Cl. 250-223.00R.

Makihara, Katsumi: See—

Yanagi, Kenichi; Makihara, Katsumi; Fukushima, Takeo; Hashimoto, Osamu; and Iida, Sachihiko, 4,644,667, Cl. 34-54.000.

Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichi; and Suzuki, Hiroshi, to Hitachi Chemical Company, Ltd. Composition for protective coating material. 4,645,688, Cl. 427-82.000.

Malabarba, Adriano; Strazzolini, Paolo; Borghi, Angelo; Cavalleri, Bruno; and Coronelli, Carolina, to Gruppo Lepetit S.p.A. Glycopeptide antibiotic L 17054. 4,645,827, Cl. 530-322.000.

Malinge, Jean; Rabilloud, Guy; and Sillion, Bernard, to Centre d'Etude des Matériaux Organiques pour Technologies Avancées. Precursor of copolyphthalocyanine-imide lattice, preparation, and the resultant lattice. 4,645,821, Cl. 528-331.000.

Mallory, Roy, to ADE Corporation. Contacts for conductivity-type sensors. 4,646,009, Cl. 324-158.00R.

Mally, Timothy G.; Hartl, Carroll P.; Orloff, Daniel L.; and Total, Robert V., to Oscar Mayer Foods Corp. Product neatening system. 4,645,400, Cl. 414-28.000.

Malsky, Herbert, to Charles Stark Draper Laboratory, Inc., The. Dynamoelectric machine having a large magnetic gap and flexible printed circuit phase winding. 4,645,961, Cl. 310-156.000.

Malyon, Brian R., to British Library Board, The. Photocopying device. 4,645,332, Cl. 355-25.000.

Man-Mor Industries, Inc.: See—

Manning, Joseph H., 4,645,158, Cl. 248-343.000.

Mandel, Alan F.; Eichler, Kenneth M.; and Moore, William H., to Westinghouse Electric Corp. Elevator system with lamp failure monitoring. 4,646,058, Cl. 187-100.000.

Maney, Patrick: See—

Emory, Lyle J.; and Maney, Patrick, 4,645,127, Cl. 239-299.000.

Mannesmann Aktiengesellschaft: See—

Nordmeyer, Friedrich; Schunk, Eckard; Winter, Frank; and Jackson, Clive L., 4,646,318, Cl. 373-105.000.

Manning, Jarue S.; and Poli, Giorgio, to University of California, The. Regents of the. Vaccine for bluetongue disease employing platinum compounds. 4,645,666, Cl. 424-89.000.

Manning, Joseph H., to Man-Mor Industries, Inc. Ceiling fan mounting apparatus. 4,645,158, Cl. 248-343.000.

Mansfield, Peter W. System and method for increased efficiency of screw presses. 4,644,861, Cl. 100-37.000.

Manzoni-Bouchot: See—

Manzoni, Stephane, 4,645,164, Cl. 248-475.100.

Manzoni, Stephane, to Manzoni-Bouchot. Support for fitting and locking a mirror support on an adjustable member of a vehicle rearview mirror. 4,645,164, Cl. 248-475.100.

Mar, Dav, to Dionex Corporation. Fluid sample delivery apparatus. 4,644,807, Cl. 73-864.620.

Marcell, Christian: See—

Duffresne, Pierre; Marcell, Christian; and Trinh, Dinh Chan, 4,645,752, Cl. 502-66.000.

Marconi Company Limited, The: See—

Church, Peter D., 4,644,793, Cl. 73-505.000.

Marce, Michel: See—

Guillot, Jean; Raynaud, Jacques; Marce, Michel; Vaillant, Robert; and Ansaldi, Jean, 4,645,139, Cl. 244-3.220.

Marinelli, Nick A.: See—

Dunk, Thomas H.; and Marinelli, Nick A., 4,645,593, Cl. 210-169.000.

Marlow Industries, Inc.: See—

Burke, Edward J., 4,644,753, Cl. 62-3.000.

Marple, David P.: See—

O'Connor, Michael; Jackson, Randall L.; and Marple, David P., 4,646,254, Cl. 364-574.000.

Mars G.B. Limited: See—

Woolman, Paul; and Seward, Barry, 4,644,855, Cl. 99-280.000.

Marsau, Uwe: See—

Heitmann, Uwe; Pinck, Peter; Kohler, Elke; Maiwald, Berthold; and Marsau, Uwe, 4,645,921, Cl. 250-223.00R.

Marshall Richards Barcro Limited: See—

Pamplin, John W.; and Astbury, Brian R., 4,644,769, Cl. 72-43.000.

Martin, Eugene G.; and Risser, Dale M., to FoodCraft Equipment Company, Inc. Thigh deboner. 4,644,608, Cl. 17-46.000.

Martin, Eugene J.; Tootle, James N.; Fallows, Walter; Lambers, Howard; and Vanderlaan, Robert D., to Pneumo Abex Corporation. Redundant drive mechanisms for a direct drive valve and force motor assembly. 4,645,178, Cl. 251-229.000.

Martin, Jean-Pierre H.; Pozzi, Jean-Pierre A.; and Despax, Damien M., to Compagnie Francaise des Petroles. Magnetic probe exploration device for determining residual fossil magnetization of well hole rocks. 4,646,025, Cl. 324-346.000.

Martin, Marie-Josephe: See—

Varon, Jacques J.; Martin, Marie-Josephe; and Mahieu, Marc, 4,646,116, Cl. 357-17.000.

Martinez, David R., to Atlantic Richfield Company. Method and apparatus for correcting distorted seismic data. 4,646,274, Cl. 367-41.000.

Martinez, Felix J.; Fuller, Larry E.; and Irmiter, Richard J., to Renal Systems, Inc. Oxygenator having an improved heat exchanger. 4,645,645, Cl. 422-46.000.

Martinez, Felix J.: See—

Lee, Jeffrey A.; and Martinez, Felix J., 4,645,494, Cl. 604-175.000.

Martinez, Kenneth: See—

Zuranski, Edward S.; and Martinez, Kenneth, 4,646,325, Cl. 375-39.000.

Martinola, Friedrich, to Bayer Aktiengesellschaft. Process and device for treating liquids with cation exchangers and anion exchanges. 4,645,604, Cl. 210-675.000.

Martone, Ronald J.: See—

Gambini, Michael R.; Martone, Ronald J.; Kearns, Donald S.; Enos, Gary W.; Franke, Rudi; and Schoeppy, Herbert, 4,645,933, Cl. 250-363.00S.

Maruyama, Nobuo: See—

Kato, Ippai; Takasu, Masao; and Maruyama, Nobuo, 4,645,566, Cl. 162-138.000.

Maruyama, Yasuo: See—

Suga, Yoshinori; Tanaka, Eiji; Enokido, Nobuo; and Maruyama, Yasuo, 4,645,797, Cl. 525-191.000.

Maruyama, Yoichiro: See—

Aisawa, Takashi; Maruyama, Yoichiro; Shiba, Koreyuki; Niwa, Toshio; Kaneko, Masaharu; and Ono, Hitoshi, 4,646,309, Cl. 372-53.000.

Marz, Daniel J.: See—

Robbins, Clyde; and Marz, Daniel J., 4,646,150, Cl. 358-144.000.

Marzluf, Werner; and Ott, Gunter, to Maschinenfabrik Hellmut Geiger GmbH & Co. KG. Security bar rack. 4,646,067, Cl. 340-550.000.

Maschinenbau Knott Eggstatt Ing. Valentin Knott, Firma: See—

Knott, Valentin; Huber, Hans; Langheinrich, Wolfgang; and Maier, Stephan, 4,645,040, Cl. 188-79.5GT.

Maschinenfabrik Hellmut Geiger GmbH & Co. KG.: See—

Marzluf, Werner; and Ott, Gunter, 4,646,067, Cl. 340-550.000.

Mason, Joseph: See—

Burell, John A.; and Mason, Joseph, 4,644,715, Cl. 52-170.000.

Massachusetts Institute of Technology: See—

Hsu, Michael S., 4,644,751, Cl. 60-676.000.

Seyferth, Dietmar; Wood, Timothy G.; and Yu, Yuan-Fu, 4,645,807, Cl. 525-474.000.

Masters, Edward R.: See—

Fanelli, Michael W.; and Masters, Edward R., 4,646,213, Cl. 362-180.000.

Masuda, Fumitoshi: See—

Watanabe, Hiroyuki; and Masuda, Fumitoshi, 4,646,055, Cl. 338-162.000.

Masuda, Hiroo: See—

Shimohigashi, Katsuhiro; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, 4,646,267, Cl. 365-189.000.

Masuda, Masamitsu: See—

Yoshida, Taizo; Tanji, Akihito; Masuda, Masamitsu; and Koyama, Jiro, 4,645,293, Cl. 350-96.140.

Masuda, Yutaka, to Yamaha Hatsudoki Kabushiki Kaisha. Automatic speed control system for motorcycles. 4,645,027, Cl. 180-176.000.

Masunaga, Hikotaro: See—

Suzuki, Hirokazu; Akiyama, Takehiro; Morita, Teruo; Takeda, Hirofumi; and Masunaga, Hikotaro, 4,645,958, Cl. 307-597.000.

Material Concepts, Inc.: See—

Orban, Ralph F., 4,645,573, Cl. 204-14.100.

Orban, Ralph F., 4,645,574, Cl. 204-14.100.

Mathes, Gunther, to Etablissement Sinoval. Slide gage. 4,644,660, Cl. 33-143.00M.

Mathis, Henry L., to Leupold & Stevens, Inc. Shaft position encoder apparatus with logic and decoder. 4,646,085, Cl. 340-870.190.

Mathis, Joseph D., to AT&T Information Systems. Antenna support. 4,646,101, Cl. 343-878.000.

Matsubara, Hironaga: See—

Shioya, Jun; Yamaguchi, Yoichi; Ueba, Yoshinobu; and Matsubara, Hironaga, 4,645,713, Cl. 428-457.000.

Matsubara, Mamoru, to Showa Denko Kabushiki Kaisha. Dehydrating and water-retaining sheet. 4,645,698, Cl. 428-68.000.

Matsuda, Hiroto: See—

Matsumoto, Tokio; Aoki, Seiichi; Matsuda, Hiroto; Ikeda, Masami; Matsumoto, Haruyuki; and Saito, Asao, 4,646,105, Cl. 346-1.100.

Matsuda, Minoru; and Muraishi, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Clutch system having means for converting transmitted torque into frictional force. 4,645,049, Cl. 192-35.000.

Matsuda, Mitsunobu: See—

Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, 4,645,065, Cl. 198-573.000.

Matsuda, Terumi: See—

Arakawa, Satoshi; and Matsuda, Terumi, 4,645,721, Cl. 428-690.000.

Matsuhisa, Tadaaki; and Kato, Kiminari, to NGK Insulators, Ltd. Ceramic honeycomb structural body. 4,645,700, Cl. 428-116.000.

Matsui-Walterschild Ltd.: See—

Suzuki, Tsunehiko, 4,645,372, Cl. 403-325.000.

Matsumoto, Haruyuki: See—

Matsumoto, Tokio; Aoki, Seiichi; Matsuda, Hiroto; Ikeda, Masami; Matsumoto, Haruyuki; and Saito, Asao, 4,646,105, Cl. 346-1.100.

Matsumoto, Kazuhisa; Morishita, Hiroshi; Akai, Shinichi; and Miyazawa, Shintaro, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph and Telephone. Liquid encapsulation method for growing single semiconductor crystals. 4,645,560, Cl. 156-607.000.

Matsumoto, Shuso: See—

Toyama, Akio; Matsumoto, Shuso; and Tada, Kazunori, 4,646,109, Cl. 346-134.000.

Matsumoto, Tokio; Aoki, Seiichi; Matsuda, Hiroto; Ikeda, Masami; Matsumoto, Haruyuki; and Saito, Asao, to Canon Kabushiki Kaisha. Liquid jet recording method. 4,646,105, Cl. 346-1.100.

Matsumoto, Yukio: See—

Ojima, Kumiko; Naruse, Tsunehide; and Matsumoto, Yukio, 4,645,724, Cl. 428-695.000.

Matsumura, Osamu: See—

Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Matsumura, Yasushi: See—

Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Koji; and Nagatome, Yoshiaki, 4,645,681, Cl. 426-634.000.

Matsumura, Yoshitake: See—

Abe, Kunihiko; Matsumura, Yoshitake; and Morozumi, Takurou, 4,644,920, Cl. 123-479.000.

Matsunaga, Katsumi; and Tsuji, Yoshitsugu, to Sumitomo Wiring System, Ltd. Slow blow fuse. 4,646,052, Cl. 337-166.000.

Matsunaga, Shigeo: See—

Iizuka, Yoshio; Matsunaga, Shigeo; and Ogawa, Satoshi, 4,646,160, Cl. 358-257.000.

Matsunari, Fumio: See—

Sumiyoshi, Masaharu; and Matsunari, Fumio, 4,644,821, Cl. 74-689.000.

Matsuno, Shunji: See—

Asai, Koh; Izumisawa, Hiroyuki; Owada, Katsuaki; Kinoshita, Seiichi; and Matsuno, Shunji, 4,646,352, Cl. 382-5.000.

Matsuno, Toshiki: See—

Ito, Masashi; Yasuda, Hiroshi; Nakamura, Hiroyuki; and Matsuno, Toshiki, 4,646,283, Cl. 369-256.000.

Matsuoka, Yoshio: See—

Ai, Hideo; Ikeda, Akihiko; and Matsuoka, Yoshio, 4,645,823, Cl. 528-336.000.

Matsushita Electric Industrial Co., Ltd.: See—

Ito, Masashi; Yasuda, Hiroshi; Nakamura, Hiroyuki; and Matsuno, Toshiki, 4,646,283, Cl. 369-256.000.

Kurokawa, Hideo; Mitani, Tsutomu; and Yonezawa, Taketoshi, 4,645,977, Cl. 315-111.210.

Suzuki, Takashi; Hibino, Kunio; Murai, Mikio; Kawase, Shigeki; Shinohara, Koichi; and Nouchi, Norimoto, 4,645,703, Cl. 428-141.000.

Uya, Masaru, 4,645,944, Cl. 307-243.000.

Matsushita, Yoshiaki, to Kabushiki Kaisha Toshiba. Semiconductor substrate. 4,645,546, Cl. 148-33.000.

Matsuura, Eiichi; and Tsukada, Nobuo, to Seiko Instruments & Electronics Ltd. Wristwatch. 4,645,356, Cl. 368-160.000.

Matsuura, Hitoshi, to Fanuc Ltd. Adaptive feed rate controller for tracer head. 4,646,225, Cl. 364-167.000.

Matsuyama, Katuo: See—

Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Matsuzaki, Yasuhiro, to Fujitsu Limited. Programmable read-only memory device. 4,646,264, Cl. 365-104.000.

Mattel, Inc.: See—

Herring, Donald E.; and Gross, Raymond J., 4,645,471, Cl. 446-258.000.

Mattern, John; and Kadron, Don G., to Westinghouse Electric Corp. Phase coherent decoy radar transmitter. 4,646,098, Cl. 342-14.000.

Matthijse, Pieter: See—

De Blok, Cornelis M.; and Matthijse, Pieter, 4,645,923, Cl. 250-227.000.

Matukas, Victor J., to University of Alabama, Board of Trustees of the. Syringe for extrusion of wetted, particulate material. 4,645,488, Cl. 604-59.000.

Matuska, David G.: See—

Ferris, Donald L.; and Matuska, David G., 4,645,423, Cl. 416-140.000.

Matusz, John M., to Westinghouse Electric Corp. Steam generator wrapper closure and method of installing the same. 4,644,908, Cl. 122-511.000.

Matza, Edward C.: See—

While, Donald M.; and Matza, Edward C., 4,645,394, Cl. 411-110.000.

Maurer, Ghislain: See—

Michelet, Jacques; and Maurer, Ghislain, 4,646,316, Cl. 373-72.000.

Mawhinney, Daniel D., to RCA Corporation. Codeable identifying tag and method of identification thereof. 4,646,090, Cl. 342-44.000.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: See—

Spensberger, Wilhelm, 4,646,040, Cl. 333-239.000.

Mayer, Frederic C. Production of metal rods. 4,644,998, Cl. 164-461.000.

Mayer, Walter: See—

Lovas, Kurt; Mayer, Walter; and Wittmann, Stephan, 4,644,742, Cl. 57-263.000.

Mayfield, Richard B.: See—

Goodman, William R.; Mayfield, Richard B.; Tawshunsky, Ted; and Zardiackas, Fredrick L., 4,646,300, Cl. 371-33.000.

Mazda Motor Corporation: See—

Iwamoto, Tadashi; and Sumida, Shizuo, 4,646,059, Cl. 340-52.00F.

Murai, Masayoshi; and Fuyuki, Akira, 4,644,635, Cl. 29-568.000.

Murata, Yoshinori; and Tanita, Yoshio, 4,645,440, Cl. 418-178.000.

Sakurai, Shigeru; and Hamada, Shigeki, 4,644,926, Cl. 123-569.000.

MBB GmbH: See—

Soelter, Michael, 4,645,142, Cl. 244-100.00A.

McCauley, Robert E. Photosensitive motion detector apparatus. 4,645,919, Cl. 250-214.00B.

McCauley, Ronald D.: See—

Seaman, Roy C.; and McCauley, Ronald D., 4,644,649, Cl. 30-229.000.

McCauley, Jon R.; Smallwood, Troy L.; and Welliver, Paul, to Textron Inc. Wood-metal drill screw. 4,645,396, Cl. 411-387.000.

McCauley, Ronald J.: See—

Winkley, Michael W.; and McCauley, Ronald J., 4,645,857, Cl. 562-456.000.

McClune, June A. Treated cloth and method of preparing same. 4,645,706, Cl. 428-196.000.

McCrickerd, John T., to Newport Corporation. Holography with insensitivity to object size. 4,645,291, Cl. 350-3.830.

McCullen, Sharon B.; Wong, Stephen S.; and Huang, Tracy J., to Mobil Oil Corporation. Regeneration of noble metal-highly siliceous zeolite with sequential hydrogen halide and halogen or organic-halogen compound treatment. 4,645,751, Cl. 502-37.000.

McCulloch Corporation: See—

Luerken, Adolf; Cannistra, John S.; Zimmerer, John L.; and Piatowicz, Edward J., 4,644,606, Cl. 15-330.000.

McCurdy, Jack L.: See—

Thoben, Matthew A.; Clowers, Earl; Cih, Guy; Ball, Dean; McCurdy, Jack L.; and Rummelsburg, Al S., 4,645,909, Cl. 219-411.000.

McDermott, Michael G., to General Motors Corporation. Knock control with AGC having reduced knock dependence. 4,644,918, Cl. 123-425.000.

McDowell, David E.: See—

Joss, Michael S.; and McDowell, David E., 4,644,605, Cl. 15-329.000.

McElreath, Kenneth W., to Rockwell International Corporation. Automatic flight control system. 4,645,141, Cl. 244-17.130.

McFee, Richard. Bounce board exerciser. 4,645,197, Cl. 272-65.000.

McGuire, Douglas R.; McGuire, Sherry L.; and Rohrich, Ellen A. Fitted comforter for infant. 4,644,598, Cl. 5-497.000.

McGuire, Sherry L.: See—

McGuire, Douglas R.; McGuire, Sherry L.; and Rohrich, Ellen A., 4,644,598, Cl. 5-497.000.

McKendrick, Lorne J. Electro-pneumatic pressure regulator for tools. 4,644,848, Cl. 91-419.000.

McKendry, Lennon H.; and Krauss, Richard C., to Dow Chemical Company, The. One step conversion of epoxyalkanes to alkyl esters of alkyl and aryl sulfonic acids. 4,645,852, Cl. 558-49.000.

McLaughlin, Brenda C.; and McLaughlin, John W. Receipt holder. 4,645,077, Cl. 206-449.000.

McLaughlin, John W.: See—

McLaughlin, Brenda C.; and McLaughlin, John W., 4,645,077, Cl. 206-449.000.

McMillan, Thomas A.: See—

Patipa, Michael; McMillan, Thomas A.; and Mitchell, Henry W., 4,644,952, Cl. 128-305.000.

McNamara, James M.: See—

Verhoeven, Thomas R.; McNamara, James M.; and Slettinger, Meyer, 4,645,854, Cl. 560-60.000.

McNeish, Allister: See—

Harris, Jeffery J.; and McNeish, Allister, 4,645,309, Cl. 350-358.000.

Measurix Corporation: See—
Moon, William S., 4,646,226, Cl. 364-176.000.
Mechanical Technology Incorporated: See—
Lundholm, Gunnar, 4,645,212, Cl. 277-3.000.
Mecilec S.A.: See—
Berger, Jean-Claude, 4,645,331, Cl. 355-25.000.
Medical Engineering Corporation: See—
Weeks, Vaughan B., 4,645,492, Cl. 604-174.000.
Meguro, Hiroshi, to Sony Corporation. Magnetic tape cassette having automatic brake. 4,646,190, Cl. 360-132.000.
Meiners, Hans-Joachim: See—
Rasshofer, Werner; Meiners, Hans-Joachim; Seel, Klaus; and Wus-sow, Hans-Georg, 4,645,630, Cl. 264-54.000.
Meinzer, Karl. Method and system for digital data transmission. 4,646,323, Cl. 375-37.000.
Meitzler, Allen H.; and Saloka, George S., to Ford Motor Company. Composite light pickup device. 4,645,975, Cl. 315-82.000.
Melbert, Joachim G.; and Sawicki, Eduard, to SGS Halbleiter-Bauelemente GmbH. Deflection system for a television set comprising a power transistor. 4,645,986, Cl. 315-387.000.
Melcher, Franz-Josef: See—
Knothe, Erich; Melcher, Franz-Josef; and Oldendorf, Christian, 4,645,021, Cl. 177-165.000.
Meliss Company: See—
Hambrick, John L.; and Poirot, Ralph G., 4,645,380, Cl. 405-220.000.
Melloni, Paolo: See—
Fossati, Paolo; and Melloni, Paolo, 4,646,304, Cl. 371-38.000.
Melville, Douglas F., Jr.: See—
MacConkey, James S.; Melville, Douglas F., Jr.; and Sharkany, Edward J., 4,644,944, Cl. 128-132.000.
Melzer, Milena; Roller, Hermann; Schneider, Norbert; Fitterer, Horst; and Munzner, Wulf, to BASF Aktiengesellschaft. Production of magnetic recording media possessing a backing coating, and magnetic recording media thus produced. 4,645,723, Cl. 428-694.000.
Memorex Corporation: See—
Verdone, Michael A., 4,644,641, Cl. 29-603.000.
Memorial Hospital for Cancer and Allied Diseases: See—
Miodownik, Saul, 4,646,258, Cl. 364-825.000.
Memorial Sloan-Kettering Institute Cancer Center: See—
Knowles, Robert W.; Dupont, Bo; Naito, Kazuyuki; and Mori-shima, Yasuo, 4,645,738, Cl. 435-7.000.
Mendleski, Ronald J. Miniature coaxial lighting assembly. 4,646,214, Cl. 362-294.000.
Menichetti, Alberto, to Gebruder Hoffman AG. Plastic closure for bottles and the like. 4,645,088, Cl. 215-329.000.
Menrath, Albert: See—
Mutschler, Otto; and Menrath, Albert, 4,645,367, Cl. 401-199.000.
Mercer, James R., to J. R. Mercer P.E. Company. Universal heliochro-nometer. 4,645,354, Cl. 368-15.000.
Merck & Co., Inc.: See—
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McCullen, Sharon B.; Wong, Stephen S.; and Huang, Tracy J., 4,645,751, Cl. 502-37.000.
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- Morinaga Milk Industry Co., Ltd.: See—
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- Morrison, Donald R. Motorized dumping vehicle, 4,645,264, Cl. 298-1.00H.
- Morrison, Robert L., Jr., to United Technologies Corporation. Turbine or compressor blade mounting, 4,645,425, Cl. 416-215.000.
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- Mortensen Educational Products, Inc.: See—
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- Mosesian, Jerry L., to Gould Inc. Electric fuse having welded fusible elements, 4,646,053, Cl. 337-232.000.
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- Moss, Arthur. Portable forearm developer, 4,645,203, Cl. 272-117.000.
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- Backof, Charles A., Jr.; and Huntzinger, Mark E., 4,646,326, Cl. 375-39.000.
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- Perkins, Geoffrey W., 4,646,033, Cl. 331-116.00R.
- Ryan, Carl R., 4,646,005, Cl. 324-123.00R.
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- Wanet, Ronald J., 4,646,038, Cl. 333-202.000.
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Yokokura, Hisao; Era, Susumu; Abe, Hidetoshi; Nakata, Tadao; Kitamura, Teruo; and Mukoh, Akio, 4,645,305, Cl. 350-351.000.
- Mukohjima, Hitoshi: See—
Hiramatsu, Akira; and Mukohjima, Hitoshi, 4,645,964, Cl. 310-323.000.
- Muller, Alexander, to General Electric Company. Apparatus and method for adjustably effecting the disposition of a magnet material element in a preselected position therefor, 4,644,640, Cl. 29-596.000.
- Muller, Hanns P.: See—
Probst, Joachim; Sonntag, Michael; Richter, Roland; and Muller, Hanns P., 4,645,817, Cl. 528-45.000.
- Muller, Klaus-Helmut: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90.000.
- Muller, Kurt, to Sanetta Textilwerk Gebrüder Ammann. Device for mounting articles of clothing in an ironing apparatus, 4,645,101, Cl. 223-66.000.
- Muller, Oscar: See—
Hilger, Wilfried; and Muller, Oscar, 4,645,878, Cl. 379-202.000.
- Mullersman, Ferdinand H.: See—
Terrell, Jacquelyn B.; and Mullersman, Ferdinand H., 4,645,995, Cl. 320-2.000.
- Munchbach, George E.: See—
Walton, Richard R.; and Munchbach, George E., 4,645,193, Cl. 271-18.300.
- Munzner, Wulf: See—
Melzer, Milena; Roller, Hermann; Schneider, Norbert; Fitterer, Horst; and Munzner, Wulf, 4,645,723, Cl. 428-694.000.
- Murai, Masayoshi; and Fuyuki, Akira, to Mazda Motor Corporation. Machining center, 4,644,635, Cl. 29-568.000.
- Murai, Mikio: See—
Suzuki, Takashi; Hibino, Kunio; Murai, Mikio; Kawase, Shigeki; Shinohara, Koichi; and Nouchi, Norimoto, 4,645,703, Cl. 428-141.000.
- Murai, Yasushi: See—
Shibahara, Seiji; Okonogy, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Nida, Taro; Christensen, Burton G.; and Wakazawa, Tadashi, 4,645,769, Cl. 514-210.000.
- Muraishi, Tadashi: See—
Matsuda, Minoru; and Muraishi, Tadashi, 4,645,049, Cl. 192-35.000.
- Murakami, Shiro; Fujii, Shigeo; Nakao, Masayuki; Igarashi, Yoshio; and Endo, Juro, to Hitachi Metals, Ltd. Method of manufacturing a magnetic media, 4,645,690, Cl. 427-128.000.
- Murakami, Yoshimasa: See—
Ohmura, Keiji; Kawai, Sueo; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, 4,645,258, Cl. 296-204.000.
- Murata Kikai Kabushiki Kaisha: See—
Maeda, Yoshiyasu, 4,644,620, Cl. 28-220.000.
- Murata Manufacturing Co., Ltd.: See—
Watanabe, Hiroyuki; and Masuda, Fumitoshi, 4,646,055, Cl. 338-162.000.
- Murata, Yoshinori; and Tanita, Yoshio, to Mazda Motor Corporation. Rotor for rotary piston engines, 4,645,440, Cl. 418-178.000.
- Murayama, Yoichi, to Kuraray Co., Ltd. Method for producing an optical recording medium by a chalcogenide suboxide, 4,645,685, Cl. 427-39.000.
- Murdock, James R.: See—
Schinabeck, John; and Murdock, James R., 4,646,299, Cl. 371-20.000.
- Murphy, Michael D., to Donnelly Corporation. Illuminated EL panel assembly, 4,645,970, Cl. 313-509.000.
- Murray, Brian A.: See—
Fast, Raymond D.; and Murray, Brian A., 4,646,031, Cl. 331-25.000.
- Mushima Paper Co., Ltd.: See—
Kato, Ipppei; Takasu, Masao; and Maruyama, Nobuo, 4,645,566, Cl. 162-138.000.
- Mushlin, Richard A.: See—
Graham, Daniel J.; and Mushlin, Richard A., 4,645,340, Cl. 356-301.000.
- Muterspaugh, Max W., to RCA Corporation. Constant bandwidth RF filter with improved low frequency attenuation, 4,646,360, Cl. 455-195.000.
- Mutoh Industry Ltd.: See—
Toyama, Akio; Matsumoto, Shuso; and Tada, Kazunori, 4,646,109, Cl. 346-134.000.

- Mutschler, Otto; and Menrath, Albert. Writing implement venting system, 4,645,367, Cl. 401-199.000.
- Muzzarelli, Gabriele. Method for cheese compacting, 4,645,680, Cl. 426-582.000.
- Mychajlowskij, Walter: See—
Ong, Beng S.; and Mychajlowskij, Walter, 4,645,727, Cl. 430-106.000.
- Myers, Walter I.: See—
Lewis, Billy M.; and Myers, Walter I., 4,645,039, Cl. 188-72.300.
- N.U.S. S.r.l.: See—
Ferrando, Ugo; Gardi, Giovanni; and Pagliano, Giustino, 4,645,493, Cl. 604-174.000.
- Nadezhdin, Alexander: See—
Mackiw, Vladimir N.; Nadezhdin, Alexander; and Weir, Donald R., 4,645,532, Cl. 75-0.50A.
- Nagano, Takahiro: See—
Kimura, Shin; Fukui, Hiroshi; Amano, Hisao; Yatsuo, Tsutomu; Okawa, Saburo; and Nagano, Takahiro, 4,646,122, Cl. 357-38.000.
- Nagao, Kunihiko, to G-C Dental Industrial Corp.; and Mitsubishi Rayon Co., Ltd. Apparatus for curing resin films coated on dental resin prosthesis, 4,645,649, Cl. 422-186.300.
- Nagaoka, Shigenori: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.
- Nagasaka, Chikao: See—
Baba, Takeshi; Iwasa, Hiroki; Nagasaka, Chikao; and Ohmi, Kyoza, 4,645,299, Cl. 350-99.000.
- Nagasawa, Tomonori; and Ushijima, Hisashi, to Sony Corporation. Image tube circuit, 4,645,983, Cl. 315-370.000.
- Nagashima, Eiji: See—
Nagashima, Yoichi; and Nagashima, Eiji, 4,644,841, Cl. 84-1.100.
- Nagashima, Yasuo; and Kasuga, Akira, to Fuji Photo Film Co., Ltd. Flexible magnetic disc, positioning apparatus and method permitting improved head contact, 4,646,179, Cl. 360-99.000.
- Nagashima, Yoichi; and Nagashima, Eiji, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument, 4,644,841, Cl. 84-1.100.
- Nagatome, Yoshiaki: See—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Koji; and Nagatome, Yoshiaki, 4,645,681, Cl. 426-634.000.
- Nagoshi, Toshiharu; Totsuka, Hidehiko; Taira, Takeshi; Gotoh, Youkichi; and Senuma, Kazuya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Core for an automobile bumper, 4,645,249, Cl. 293-102.000.
- Nagy, Jeffrey J.: See—
Morris, Bernard L.; Nagy, Jeffrey J.; and Walter, Lawrence A., 4,645,948, Cl. 307-296.00R.
- Nair, Kumaran M., to Du Pont de Nemours, E. I., and Company. Resistor compositions, 4,645,621, Cl. 252-513.000.
- Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; and Tsutsumi, Hironobu, to Mitsubishi Denki Kabushiki Kaisha. Position control method, 4,645,993, Cl. 318-568.000.
- Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; Tsutsumi, Hironobu; and Ushio, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Area measuring apparatus using television, 4,646,354, Cl. 382-28.000.
- Naito, Hiroichi, to Fuji Photo Film Co., Ltd. Soft magnetic thin film having uniaxial magnetic anisotropy, 4,645,719, Cl. 428-626.000.
- Naito, Kazuyuki: See—
Knowles, Robert W.; Dupont, Bo; Naito, Kazuyuki; and Morishima, Yasuo, 4,645,738, Cl. 435-7.000.
- Naito, Motohiro, to JEOL Ltd. Sweeping method for superimposed-field mass spectrometer, 4,645,928, Cl. 250-282.000.
- Nakabayashi, Akira: See—
Fujita, Yoshitada; Hanada, Sadashi; Yamamoto, Yoshiaki; and Nakabayashi, Akira, 4,645,412, Cl. 414-786.000.
- Nakai, Masayuki: See—
Kubota, Katsuzo; Nakai, Masayuki; and Ono, Shigeyoshi, 4,645,513, Cl. 44-10.00H.
- Nakajima, Akihiro: See—
Ban, Itsuki; and Nakajima, Akihiro, 4,645,991, Cl. 318-331.000.
- Nakajima, Kouichi: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.
- Nakajima, Shigeru: See—
Morie, Takashi; Minegishi, Kazushige; and Nakajima, Shigeru, 4,645,564, Cl. 156-643.000.
- Nakamori, Masao: See—
Nakamura, Shigekazu; Kitazawa, Osamu; Nakamori, Masao; and Ohzeki, Yoshiyuki, 4,646,194, Cl. 360-137.000.
- Nakamura, Hiroyuki: See—
Ito, Masashi; Yasuda, Hiroshi; Nakamura, Hiroyuki; and Matsuno, Toshiki, 4,646,283, Cl. 369-256.000.
- Nakamura, Ikushi: See—
Inoue, Norihiro; Tominaga, Shinji; Kashima, Masataka; and Nakamura, Ikushi, 4,645,325, Cl. 354-484.000.
- Nakamura, Mutsuaki: See—
Hamaguchi, Toshiaki; Namikawa, Kazuhira; Nakamura, Mutsuaki; Kuroda, Akio; and Akai, Toshio, 4,646,284, Cl. 369-276.000.
- Nakamura, Shigekazu; Kitazawa, Osamu; Nakamori, Masao; and Ohzeki, Yoshiyuki, to Copal Company Limited. PG yoke position detecting apparatus, 4,646,194, Cl. 360-137.000.
- Nakamura, Shinya: See—
Kubo, Setoku; Taga, Yutaka; and Nakamura, Shinya, 4,644,826, Cl. 74-866.000.
- Nakamura, Toshiro. Hallux valgus brace, 4,644,940, Cl. 128-81.00R.
- Nakanishi, Yoshiro: See—
Okada, Hiromi; Nakanishi, Yoshiro; and Nomura, Yoshifumi, 4,646,293, Cl. 370-85.000.
- Nakao, Masayuki: See—
Murakami, Shiro; Fujii, Shigeo; Nakao, Masayuki; Igarashi, Yoshio; and Endo, Juro, 4,645,690, Cl. 427-128.000.
- Nakashima, Syozi; Takahashi, Akinori; Suganuma, Nobuo; and Ito, Satoshi, to Lion Corporation. Oral composition, 4,645,662, Cl. 424-52.000.
- Nakata, Rikizo: See—
Okumoto, Tadaoki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.
- Nakata, Tadao: See—
Yokokura, Hisao; Era, Susumu; Abe, Hidetoshi; Nakata, Tadao; Kitamura, Teruo; and Mukoh, Akio, 4,645,305, Cl. 350-351.000.
- Nakayama, Yasunobu; and Sato, Yasuji, to Kabushiki Kaisha Toshiba. Latching relay drive circuit for use in telephone sets, 4,645,882, Cl. 379-387.000.
- Nakazono, Shuzo. Method of producing filler added in foods, 4,645,676, Cl. 426-417.000.
- Nalco Chemical Company: See—
Fong, Dodd W., 4,645,813, Cl. 526-247.000.
- Nam, Chul W. Engine system for ships, 4,644,752, Cl. 60-716.000.
- Namikawa, Kazuhira: See—
Hamaguchi, Toshiaki; Namikawa, Kazuhira; Nakamura, Mutsuaki; Kuroda, Akio; and Akai, Toshio, 4,646,284, Cl. 369-276.000.
- Nannig, Urban R.: See—
Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., 4,645,556, Cl. 156-242.000.
- Narusawa, Sadayuki; and Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Data error detection and correction circuit, 4,646,303, Cl. 371-38.000.
- Naruse, Tsunehide: See—
Ojima, Kumiko; Naruse, Tsunehide; and Matsumoto, Yukio, 4,645,724, Cl. 428-695.000.
- Naselow, Arthur B.: See—
Landis, Abraham L.; and Naselow, Arthur B., 4,645,824, Cl. 528-353.000.
- Nash, Richard C.: See—
Hanson, David W.; Koehn, Richard R.; Nash, Richard C.; and Fox, Lonnie G., 4,644,727, Cl. 52-687.000.
- Natec, Reich, Summer GmbH & Co., K.G.: See—
Fessler, Ewald, 4,644,729, Cl. 53-157.000.
- Nathanson, Dan: See—
Goldman, Melvin; and Nathanson, Dan, 4,645,457, Cl. 433-220.000.
- National Castings, Inc.: See—
Hanula, Richard M.; and Kulieke, Fred C., Jr., 4,645,085, Cl. 213-155.000.
- National Information Utilities Corp.: See—
Hills, Michael T., 4,646,290, Cl. 370-84.000.
- National Research Development Corporation: See—
Fray, Derek J.; and Hancock, Herbert A., 4,645,650, Cl. 423-49.000.
- Roberts, John P.; and Vuillemer, Maxime L., 4,644,783, Cl. 73-116.000.
- National Semiconductor Corporation: See—
Jett, William B., Jr., 4,646,348, Cl. 381-10.000.
- Szepesi, Tamas S., 4,645,999, Cl. 323-315.000.
- Natori, Kouji: See—
Yoshida, Tadatoshi; and Natori, Kouji, 4,646,333, Cl. 378-4.000.
- Natrass, Peter J., to Bulk Lift International, Incorporated. Transport bag for particulate material, 4,646,357, Cl. 383-20.000.
- Nauchno-Issledovatel'skiy Institut Tekhnologii Avtomobilnoi Promyshlennosti Niiavtoprom: See—
Gorokhovskiy, Alexandr M.; and Fomichev, Leonid F., 4,644,771, Cl. 72-69.000.
- Naunapper, Dietmar; and Braun, Gunter, to Glatt GmbH, Firma. Process for supervising and/or controlling of physical treatment processes and bioreactions in ventilation systems as well as device for executing the process, 4,644,665, Cl. 34-26.000.
- NCR Corporation: See—
Allen, Jerrold L., 4,646,237, Cl. 364-200.000.
- Goldsbury, Timothy G.; and Schmidt, Carson T., 4,646,312, Cl. 371-38.000.
- Granzow, Robert H.; Richard, Harold S.; and Hermann, Thomas L., 4,645,153, Cl. 248-178.000.
- NEC Corporation: See—
Asai, Koh; Izumisawa, Hiroyuki; Owada, Katsuaki; Kinoshita, Seiichi; and Matsuno, Shunji, 4,646,352, Cl. 382-5.000.
- Kouyama, Toshitake, 4,646,136, Cl. 358-19.000.
- Kuno, Kazuo, 4,646,268, Cl. 365-179.000.
- Tsunoda, Kazuyuki, 4,646,081, Cl. 340-825.440.
- Usui, Takeshi, 4,646,361, Cl. 455-601.000.
- Nederveld, Terrill L., to Packaging Corporation of America. Container for produce and the like, 4,645,122, Cl. 229-45.00R.
- Needs, Steve. Measuring device, 4,644,663, Cl. 33-486.000.
- Negi, Taichi; Kawasaki, Akihiko; and Ikari, Kyoichiro, to Kuraray Co., Ltd. Resinous composition and molded article and container made thereof, 4,645,695, Cl. 428-35.000.
- Nelson, Bertel S., to Wedgtrac Corporation. Gear mechanism for brake adjustment, 4,644,812, Cl. 74-425.000.

- Nelson, Dennis L.: See—
Calltharp, Glen R.; Norcross, Kenneth L., III; and Nelson, Dennis L., 4,645,592, Cl. 210-142.000.
- Nelson, Gary W. Simplified universal drawer guiding system. 4,645,359, Cl. 384-19.000.
- Nemoto, Tsuneo: See—
Sasaki, Shin; Nemoto, Tsuneo; Yamashina, Shuichi; and Uchida, Hiroyuki, 4,646,189, Cl. 360-12.000.
- Nestler, Richard F. Product dispenser. 4,645,036, Cl. 186-55.000.
- Neugebauer, Constantine A.: See—
Yerman, Alexander J.; and Neugebauer, Constantine A., 4,646,129, Cl. 357-74.000.
- Neuroth, Norbert, to Schott Glaswerke. Building-integrated fluorescent solar collector. 4,644,716, Cl. 52-173.00R.
- Neveu, Jean-Louis, to Spontex Incorporated. Pile cleaning material and needling method of making same. 4,645,699, Cl. 428-95.000.
- New Holland Inc.: See—
Young, Robert G., 4,644,862, Cl. 100-189.000.
- Newport Corporation: See—
McCrickard, John T., 4,645,291, Cl. 350-3.830.
- Newton, William D., II. Landscape edging bender. 4,644,778, Cl. 72-457.000.
- Ng, Ed C., to Motorola Computer Systems, Inc. Local video controller with video memory update detection scanner. 4,646,261, Cl. 364-900.000.
- NGK Insulators, Ltd.: See—
Matsuhisa, Tadaaki; and Kato, Kiminari, 4,645,700, Cl. 428-116.000.
- Nishizawa, Hitoshi; and Mizutani, Yoshihiko, 4,645,572, Cl. 204-1.00T.
- Ngo, Dat V.; and Jacoby, Elliot G., to Lutron Electronics Co., Inc. Mounting structure for semiconductor devices. 4,646,203, Cl. 361-388.000.
- Nichols, Richard D. E.: See—
Bianchi, John E.; Gregory, Wayne B.; and Nichols, Richard D. E., 4,645,103, Cl. 224-243.000.
- Nicholson, Peter N.: See—
Gordon, William R.; Nicholson, Peter N.; and Six, John E., 4,645,931, Cl. 250-352.000.
- Nickels, Helmut: See—
Rebafka, Walter; and Nickels, Helmut, 4,645,863, Cl. 568-899.000.
- Nicolai, Rainer; Wachholz, Winfried; and Weicht, Ulrich, to Hochtemperatur-Reaktorbau GmbH. Process and installation to secure a prestressed concrete pressure vessel surrounded by a reactor protection building against excessive pressure and to prevent the release of activity to the environment. 4,645,641, Cl. 376-283.000.
- Nicolas, Andre, to Commissariat a l'Energie Atomique. Pulse generator. 4,645,941, Cl. 307-110.000.
- Nida, Edmund A. Security screen assembly. 4,644,697, Cl. 49-401.000.
- Nieder, Elmar: See—
Engelbrecht, Eckart; Nieder, Elmar; and Keller, Arnold, 4,645,507, Cl. 623-23.000.
- Niel, Philippe: See—
Henin, Jean-Pierre; and Niel, Philippe, 4,645,452, Cl. 432-58.000.
- Nielinger, Werner; Stix, Wolfgang; and Bottenbruch, Ludwig, to Bayer Aktiengesellschaft. Polyamide stabilized against the effect of light with maleic imide carboxylic acid chloride chain terminator. 4,645,822, Cl. 528-336.000.
- Niemerg, Willi, to Westfalia Separator AG. Control valve for self-emptying centrifuge drum. 4,645,485, Cl. 494-27.000.
- Nifco, Inc.: See—
Mizusawa, Akira, 4,644,614, Cl. 24-453.000.
- Tanaka, Toshie, 4,644,611, Cl. 24-231.000.
- Nighan, William L.; Tittel, Frank K.; and Wilson, William L., Jr., to United Technologies Corporation. Multi-component buffer gas mixture for XeF(C-A) laser. 4,646,311, Cl. 372-60.000.
- Nihon Medi-Physics Co., Ltd.: See—
Takahashi, Keietsu; Ueda, Nobuo; Hazue, Masaaki; Yokoyama, Akira; and Ohmomo, Yoshiro, 4,645,660, Cl. 424-1.100.
- Nihon Schumacher Kabushiki Kaisha: See—
Kuwajima, Soichi, 4,645,596, Cl. 210-193.000.
- Niida, Taro: See—
Shibahara, Seiji; Okonogy, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Niida, Taro; Christensen, Burton G.; and Wakazawa, Tadashi, 4,645,769, Cl. 514-210.000.
- Niima, Jiro, to Kawasaki Jukogyo Kabushiki Kaisha. Unit for mounting hood of watercraft. 4,644,891, Cl. 114-201.00R.
- Nilssen, Ole K. Clock with programmable actuator means. 4,645,942, Cl. 307-140.000.
- Nimmo, Philip E.: See—
Muelling, Duane D.; Willett, Ronald J.; and Nimmo, Philip E., 4,645,320, Cl. 354-81.000.
- Nippon Dyeing Machine Mfg. Co., Ltd.: See—
Kito, Kiyoharu, 4,644,765, Cl. 68-62.000.
- Nippon Gakki Seizo Kabushiki Kaisha: See—
Narusawa, Sadayuki; and Tomisawa, Norio, 4,646,303, Cl. 371-38.000.
- Nishimoto, Tetsuo, 4,644,839, Cl. 84-1.010.
- Ogusu, Mikio; Urata, Kazuo; Tamaru, Takuya; and Kamoshita, Yasuhiro, 4,646,285, Cl. 369-291.000.
- Nippon Kogaku K. K.: See—
Takahama, Akio, 4,644,659, Cl. 33-1.00T.
- Nippon Notion Kogyo Co., Ltd.: See—
Taga, Yukio, 4,645,110, Cl. 227-2.000.
- Nippon Oil Co., Ltd.: See—
Takezono, Tetsuya; Amari, Takaaki; and Imai, Hirosuke, 4,645,576, Cl. 203-30.000.
- Nippon Piston Ring Co., Ltd.: See—
Umeha, Genkichi; Urano, Shigeru; Hirakawa, Osamu; and Takegushi, Shunsuke, 4,644,912, Cl. 123-90.340.
- Nippon Shokubai Kagaku Kogyo Kogyo Co., Ltd.: See—
Tamura, Fumihide; and Saotome, Minoru, 4,645,754, Cl. 502-527.000.
- Nippon Steel Corporation: See—
Shimazaki, Yasumi; Tsuyama, Yoshito; Haga, Hiroyo; and Han-zawa, Manabu, 4,645,893, Cl. 219-62.000.
- Nippon Telegraph and Telephone: See—
Matsumoto, Kazuhisa; Morishita, Hiroshi; Akai, Shinichi; and Miyazawa, Shintaro, 4,645,560, Cl. 156-607.000.
- Nippon Telegraph & Telephone Public Corporation: See—
Morie, Takashi; Minegishi, Kazushige; and Nakajima, Shigeru, 4,645,564, Cl. 156-643.000.
- Nippondenso Co., Ltd.: See—
Asai, Toshiyasu, 4,645,974, Cl. 315-50.000.
- Takanabe, Kazunori; Yamamoto, Masaki; Ito, Kenzo; and Fujinami, Hiroshi, 4,646,089, Cl. 340-995.000.
- Nishikata, Masahiro; and Nozaki, Masato, to Aisin Seiki Kabushiki Kaisha. System for cooling internal combustion engines. 4,644,909, Cl. 123-41.100.
- Nishikawa, Hisashi: See—
Shimosato, Masashi; Torisawa, Yoshihiro; Nishikawa, Hisashi; and Endo, Mitsuharu, 4,646,111, Cl. 346-140.00R.
- Nishimoto, Tetsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Method of synthesizing musical tones. 4,644,839, Cl. 84-1.010.
- Nishimukai, Tadashiko: See—
Uchiyama, Kunio; and Nishimukai, Tadashiko, 4,646,271, Cl. 365-49.000.
- Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Memory contents confirmation. 4,646,307, Cl. 371-53.000.
- Nishizawa, Hitoshi; and Mizutani, Yoshihiko, to NGK Insulators, Ltd. Method of determining concentration of a component in gases and electrochemical device suitable for practicing the method. 4,645,572, Cl. 204-1.00T.
- Niske, Jorgen, to Tetra Pak International AB. Method for thinning regions of packing material to facilitate package assemblage. 4,645,484, Cl. 493-362.000.
- Nissan Motor Co., Ltd.: See—
Miyamoto, Takeshi; Ura, Mikio; Kazama, Shigenori; Kase, Takao; and Maeda, Yoshiko, 4,645,307, Cl. 350-357.000.
- Omura, Hideo; Kaminaga, Toshiyuki; and Takei, Hirofumi, 4,645,031, Cl. 181-232.000.
- Yasuhara, Seishi; Kobayashi, Hiroshi; Kita, Toru; and Saito, Hideyuki, 4,646,070, Cl. 340-603.000.
- Nisshin Flour Milling Co., Ltd.: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370.000.
- Nitta, Yoshiteru, to Kyocera Corporation. Photovoltaic device and a method of producing the same. 4,645,866, Cl. 136-244.000.
- Nitto Electric Industrial Co., Ltd.: See—
Yoshihara, Mitsuo; Morikawa, Yoshitada; Yamamoto, Yasuo; Komada, Mitsuharu; and Hattori, Masaaki, 4,645,297, Cl. 350-96.230.
- Niven, Ian E.; and Travill, Andrew W., to Lever Brothers Company. Detergent powders and processes for producing them. 4,645,616, Cl. 252-135.000.
- Niwa, Toshio; and Kato, Yoshiaki, to Mitsubishi Chemical Industries Limited. Cellulose fiber-reactive disazo or trisazo dyes having a triazine ring substituted by A(B-sulfatoethyl) sulfonylanilino group. 4,645,832, Cl. 534-637.000.
- Niwa, Toshio: See—
Arisawa, Takashi; Maruyama, Yoichi; Shiba, Koreyuki; Niwa, Toshio; Kaneko, Masaharu; and Ono, Hitoshi, 4,646,309, Cl. 372-53.000.
- Niznick, Gerald A. Bendable adapter for dental implant. 4,645,453, Cl. 433-173.000.
- Noble, Roger K.: See—
Schwartz, Robert E.; and Noble, Roger K., 4,645,449, Cl. 431-8.000.
- Noda, Shoji: See—
Kamigaito, Osami; Doi, Haruo; Noda, Shoji; and Yamamoto, Nobuyuki, 4,645,115, Cl. 228-121.000.
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- Nofre, Claude; and Tinti, Jean-Marie, to Universite Claude Bernard - Lyon 1. Sweetening agents. 4,645,678, Cl. 426-548.000.
- Noguchi, Ichiro: See—
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- Noguchi, Takaharu: See—
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- Nogueira, Eduardo D.: See—
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- Nomura, Yoshifumi: See—
Okada, Hiroshi; Nakanishi, Yoshiro; and Nomura, Yoshifumi, 4,646,293, Cl. 370-85.000.
- Nonoue, Torahiko: See—
Shiraki, Kenhachi; Kikkawa, Shinichi; Izawa, Takaharu; Miyazaki, Yoshifumi; Nonoue, Torahiko; and Moriki, Etsuzo, 4,645,328, Cl. 355-8.000.
- Noon, Richard A.: See—
Thomas, Clayton A., 4,644,876, Cl. 108-111.000.
- Norcross, Kenneth L., III: See—
Calltharp, Glen R.; Norcross, Kenneth L., III; and Nelson, Dennis L., 4,645,592, Cl. 210-142.000.
- Nordeen, Charles K.: See—
Hoyne, Earl K.; Nordeen, Charles K.; and Young, James D., 4,646,112, Cl. 346-153.100.
- Nordh, Lennart G.: See—
Willman, Nils-Erik; Sjogren, Bengt C. H.; Nordh, Lennart G.; Persson, Gustav L.; and Sjolholm, Goran H., 4,645,758, Cl. 514-239.000.
- Nordmeyer, Friedrich; Schunk, Eckard; Winter, Frank; and Jackson, Clive L., to Mannesmann Aktiengesellschaft. Crucible furnace with adjustable electrodes. 4,646,318, Cl. 373-105.000.
- Nordson Corporation: See—
Gimben, Dale N., 4,645,151, Cl. 248-52.000.
- Norris, Patrick M. Sheet material dispenser. 4,645,107, Cl. 225-37.000.
- North American Philips Consumer Electronics Corp.: See—
Collins, Floyd K.; and Say, Donald L., 4,645,469, Cl. 445-49.000.
- North American Philips Corporation: See—
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- North Atlantic Industries, Inc.: See—
Cohen, William D., 4,646,183, Cl. 360-106.000.
- Northern Telecom Limited: See—
Reid, David I.; Ellison, John C.; and Betts, Malcolm C., 4,646,286, Cl. 370-16.000.
- Richardson, Walter L., 4,645,066, Cl. 198-631.000.
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- Norton Company: See—
Kaczmarek, Wesley R.; Zador, Eugene; and Ravipati, Sitaramaiah, 4,644,703, Cl. 51-401.000.
- Nouchi, Norimoto: See—
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- Nowacki, Christopher: See—
Brisson, Alfred G.; and Nowacki, Christopher, 4,644,958, Cl. 128-725.000.
- Nowak, Claude; and Landis, Peter, to Uniswitch AG. Disc tumbler cylinder lock. 4,644,768, Cl. 70-364.00R.
- Nozaki, Masato: See—
Nishikata, Masahiro; and Nozaki, Masato, 4,644,909, Cl. 123-41.100.
- NRF Holding B.V.: See—
Keyzer, Willem G., 4,645,002, Cl. 165-175.000.
- Nuovo Pignone S.p.A.: See—
Vinciguerra, Costantino, 4,645,083, Cl. 212-210.000.
- N.V. Bekaert S.A.: See—
Dambre, Paul, 4,645,718, Cl. 428-625.000.
- Nyhof, Eldon J.: See—
Skogler, Brian I.; Nyhof, Eldon J.; and Katsma, William L., 4,646,210, Cl. 362-142.000.
- O&K Orenstein & Koppel Aktiengesellschaft: See—
Hofling, Peter; and Schoneweiss, Klaus, 4,645,059, Cl. 198-321.000.
- von Bernuth, Hans-Dietrich; and Heine, Franz, 4,645,030, Cl. 180-333.000.
- O R C Manufacturing Co., Ltd.: See—
Tabata, Hidetoshi, 4,645,349, Cl. 356-382.000.
- Obara, Kouichiro: See—
Horie, Motonobu; Shimizu, Teruo; and Obara, Kouichiro, 4,644,961, Cl. 131-94.000.
- Obereder, Robert J., to PPG Industries, Inc. System for detecting variations in surface composition of an article. 4,645,337, Cl. 356-128.000.
- Oberholzer, Larry E.: See—
Checkley, James D.; and Oberholzer, Larry E., 4,645,166, Cl. 248-503.100.
- Oberholzer, Herbert: See—
Senn, Georg; and Oberholzer, Herbert, 4,644,979, Cl. 139-82.000.
- O'Brien, James A. Variable support cushion for supporting anatomical body weight. 4,644,593, Cl. 5-60.000.
- O'Brien, Robert E.: See—
Lee, Duk H.; Feierberg, Susan; and O'Brien, Robert E., 4,645,618, Cl. 252-301.170.
- O'Connor, Michael; Jackson, Randall L.; and Marple, David P., to GTE Government Systems Corporation. Noise threshold estimating method for multichannel signal processing. 4,646,254, Cl. 364-574.000.
- Oculus Contact Lens Company: See—
Falcetta, Joseph J.; and Kunzler, Wilhelm F., 4,645,811, Cl. 526-279.000.
- Odai Tekko Kabushiki Kaisha: See—
Morita, Shuji; Sato, Katsujiro; Asaoka, Yoshio; Harada, Isao; and Hirano, Tomiyasu, 4,644,914, Cl. 123-90.550.
- Odaka, Kentaro; Fukami, Tadashi; and Ozaki, Shinya, to Sony Corporation. Apparatus for recording and/or reproducing digital information signal. 4,646,171, Cl. 360-32.000.
- Odohira, Tetsu: See—
Tamura, Hisashi; Hirata, Terutaka; Odohira, Tetsu; and Ogawa, Tadashi, 4,644,798, Cl. 73-708.000.
- Oelschlager, Hans H., to Heinrich Oelschlager Metallwarenfabrik. Strap seat. 4,645,033, Cl. 182-6.000.
- Office National d'Etudes et de Recherche Aerospatiale: See—
Fontanella, Jean-Claude, 4,645,346, Cl. 356-353.000.
- Officina Meccanica Della Stanga-O.M.S. S.p.A.: See—
Vianello, Giorgio; and Soloni, Ugo, 4,644,872, Cl. 105-801.000.
- Ogawa, Hiroshi; Sonoda, Yoshiteru; and Dohi, Ryosuke, to Fujikin International, Inc. Control valve. 4,645,176, Cl. 251-129.080.
- Ogawa, Satoshi: See—
Iizuka, Yoshio; Matsunaga, Shigeo; and Ogawa, Satoshi, 4,646,160, Cl. 358-257.000.
- Ogawa, Tadashi: See—
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- Ogino, Izumi: See—
Okawa, Susumu; Ogino, Izumi; and Okuwaki, Shigeru, 4,645,477, Cl. 474-201.000.
- Ogle, George B., II. Orthopedic splint arrangement. 4,644,941, Cl. 128-87.00A.
- Oguchi, Toshiaki: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.
- Oguy, Claude; Jamet, Daniel; and Berreby, Alain, to Compagnie Lyonnaise de Transmissions Optiques. Variable optical attenuator for optical fiber coupling. 4,645,294, Cl. 350-96.150.
- Ogura, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Thyristor with a self-protection function for breaker turn-on failure. 4,646,121, Cl. 357-38.000.
- Ogusu, Mikio; Urata, Kazuo; Tamaru, Takuya; and Kamoshita, Yasuhiro, to Nippon Gakki Seizo Kabushiki Kaisha. Shutter plate control device in a disc playback device. 4,646,285, Cl. 369-291.000.
- Ohe, Takeshi; Fujii, Tadaaki; and Koike, Ichiro, to Jidosha Kiki Co., Ltd. Steering apparatus for vehicle. 4,645,025, Cl. 180-79.100.
- Ohi Seisakusho Co., Ltd.: See—
Ujihara, Hiroshi, 4,644,694, Cl. 49-352.000.
- Ohishi, Tetsu: See—
Ishigaki, Masaji; Ohishi, Tetsu; Tokusyuku, Nobuhiro; Kodera, Yoshie; and Fukui, Yukio, 4,645,712, Cl. 428-433.000.
- Ohki, Masaru: See—
Hirosawa, Toshio; Ohki, Masaru; Motobayashi, Shigeru; and Kuwahara, Yutaka, 4,646,235, Cl. 364-200.000.
- Ohmi, Kyozo: See—
Baba, Takeshi; Iwasa, Hiroki; Nagasaka, Chikao; and Ohmi, Kyozo, 4,645,299, Cl. 350-99.000.
- Ohmomo, Yoshiro: See—
Takahashi, Keietsu; Ueda, Nobuo; Hazue, Masaaki; Yokoyama, Akira; and Ohmomo, Yoshiro, 4,645,660, Cl. 424-1.100.
- Ohmura, Keiji; Kawai, Sueo; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, to Hitachi, Ltd. Underframe construction for railway vehicle. 4,645,258, Cl. 296-204.000.
- Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, to Citizen Watch Co., Ltd. Liquid crystal television receiver. 4,646,158, Cl. 358-236.000.
- Ohori, Koichi: See—
Watanabe, Hideo; Ohori, Koichi; and Takeuchi, Yo, 4,645,543, Cl. 148-2.000.
- Ohsaki, Ryouhei, to OKI Electric Industry Co., Ltd. Ink ribbon cartridge. 4,645,364, Cl. 400-248.000.
- Ohtsubo, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Floating head slider. 4,646,180, Cl. 360-103.000.
- Ohtsuka, Yukio: See—
Kawai, Hiroshi; Ohtsuka, Yukio; and Mizuno, Kuniaki, 4,644,996, Cl. 164-336.000.
- Ohyama, Yasuo, to Toyota Jidosha Kabushiki Kaisha. Rear view mirror assembly. 4,645,316, Cl. 350-632.000.
- Ohzeki, Minoru: See—
Watanabe, Toshiro; Ohzeki, Minoru; and Toyama, Takashi, 4,646,143, Cl. 358-60.000.
- Ohzeki, Yoshiyuki: See—
Nakamura, Shigekazu; Kitazawa, Osamu; Nakamori, Masao; and Ohzeki, Yoshiyuki, 4,646,194, Cl. 360-137.000.
- Oikawa, Saburo: See—
Kimura, Shin; Fukui, Hiroshi; Amano, Hisao; Yatsuo, Tsutomu; Oikawa, Saburo; and Nagano, Takahiro, 4,646,122, Cl. 357-38.000.
- Oilgear Company, The: See—
Goss, Reginald J., Jr.; and Jendrzejek, Gary S., 4,644,748, Cl. 60-395.000.
- Oishi, Konosuke: See—
Koga, Masataka; Kitagawa, Masatoshi; and Oishi, Konosuke, 4,645,341, Cl. 356-307.000.
- Ojima, Kumiko; Naruse, Tsunehide; and Matsumoto, Yukio, to Victor Company of Japan. Magnetic recording medium comprising a specific type of lubricant. 4,645,724, Cl. 428-695.000.

Okada, Hiromi; Nakanishi, Yoshiro; and Nomura, Yoshifumi, to Ricoh Company, Ltd. Multiaccess communications system. 4,646,293, Cl. 370-85.000.

Okada, Hiroshi: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94.000.

Okado, Chihiro; Ichimura, Kazushi; and Ambo, Tatsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter provided with an over-voltage clamping circuit. 4,646,222, Cl. 363-56.000.

Okamoto, Hiroo; Kobayashi, Masaharu; Kimura, Hiroyuki; Noguchi, Takaharu; and Arai, Takao, to Hitachi, Ltd. Decoding method and system for doubly-encoded Reed-Solomon codes. 4,646,301, Cl. 371-37.000.

Okamoto, Hiroo: See—
Kobayashi, Masaharu; Okamoto, Hiroo; and Arai, Takao, 4,646,170, Cl. 360-22.000.

Okamoto, Yukio: See—
Kimura, Kiyoshi; Okamoto, Yukio; Miwa, Tadashi; Fukuchi, Masakazu; Tarumi, Noriyoshi; and Ito, Kunio, 4,645,327, Cl. 355-3.00R.

Okano, Hiroshi; Kawai, Yukio; and Ii, Akira, to Toyota Jidosha Kabushiki Kaisha. Suction pipe pressure detection apparatus. 4,644,784, Cl. 73-117.300.

Okano, Takashi, to Pioneer Electronic Corporation. Pick-up positioning apparatus for data playback apparatus. 4,646,278, Cl. 369-32.000.

Okawa, Haruo: See—
Hirakawa, Tadashi; Sasashige, Hiroaki; and Okawa, Haruo, 4,644,896, Cl. 118-44.000.

Okawa, Susumu; Ogino, Izumi; and Okuwaki, Shigeru, to Toyota Jidosha Kabushiki Kaisha. V-belt assembly for transmitting power. 4,645,477, Cl. 474-201.000.

Okazaki, Masato: See—
Ohmura, Keiji; Kawai, Suet; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, 4,645,258, Cl. 296-204.000.

Oki Electric Industry Co., Ltd.: See—
Kikuchi, Hiroshi; Teshima, Minoru; Ishimizu, Hideaki; and Kawa-saki, Hiroyoshi, 4,645,277, Cl. 339-17.0LM.

Ohsaki, Ryouhei, 4,645,364, Cl. 400-248.000.

Takasugi, Atsushi, 4,646,272, Cl. 365-233.000.

Watanabe, Mituru, 4,644,969, Cl. 137-625.270.

Okonogy, Tsuneo: See—
Shibahara, Seiji; Okonogy, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Niida, Taro; Christensen, Burton G.; and Wakazawa, Tadashi, 4,645,769, Cl. 514-210.000.

Okuda, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Engine ignition timing control device. 4,644,927, Cl. 123-602.000.

Okumoto, Tadaaki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, to Kao Corporation; and Toyoda Gosei Co. Ltd. Chloroprene rubber composition. 4,645,788, Cl. 524-308.000.

Okuwaki, Shigeru: See—
Okawa, Susumu; Ogino, Izumi; and Okuwaki, Shigeru, 4,645,477, Cl. 474-201.000.

Okuzawa, Yoshiyuki: See—
Sugimoto, Takayuki; Okuzawa, Yoshiyuki; and Suzuki, Nobuo, 4,644,756, Cl. 62-160.000.

Oldendorf, Christian: See—
Knothe, Erich; Melcher, Franz-Josef; and Oldendorf, Christian, 4,645,021, Cl. 177-165.000.

Olejnik, Orest, to Fisons plc. Formulations. 4,645,768, Cl. 514-649.000.

Olschewski, Armin; Bauer, Bernhard; and Zirk, Elisabeth, to SKF GmbH. Sealing device for bearing bushings particularly for universal joints. 4,645,474, Cl. 464-131.000.

Olsson, Billy E., to AMP Incorporated. Surface mount connector. 4,645,287, Cl. 339-125.00R.

Olympus Optical Co., Ltd.: See—
Ikari, Kazuo, 4,645,312, Cl. 350-464.000.

Olympus Winter & Ibe, GmbH: See—
Valli, Bruno, 4,644,950, Cl. 128-303.150.

O'Malley, Austin S.: See—
Yevak, Harold M., Jr.; Johnson, Larry K.; and O'Malley, Austin S., 4,645,278, Cl. 339-17.00T.

Omata, Satoshi: See—
Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, 4,645,684, Cl. 427-38.000.

Omori, Toshiaki, to Tokyo Gas Company Limited. Heat transport method. 4,645,125, Cl. 237-12.000.

Omnron Tateisi Electronics Co.: See—
Hiraishi, Tomiyasu, 4,645,914, Cl. 235-380.000.

Morigaki, Masamichi, 4,646,181, Cl. 360-104.000.

Omura, Hideo; Kaminaga, Toshiyuki; and Takei, Hirofumi, to Nissan Motor Company, Limited. Exhaust system for an internal combustion engine. 4,645,031, Cl. 181-232.000.

Ona, Isao; and Ozaki, Masaru, to Toray Silicone Co., Ltd. Method for treating materials with organopolysiloxane compounds. 4,645,691, Cl. 427-180.000.

ONCOGEN: See—
Twardzik, Daniel R.; and Todaro, George J., 4,645,828, Cl. 530-324.000.

Ong, Beng S.; and Mychajlowski, Walter, to Xerox Corporation. Colored toner compositions comprising dye chromophores. 4,645,727, Cl. 430-106.000.

Ono, Hitoshi: See—
Arisawa, Takashi; Maruyama, Yoichiro; Shiba, Koreyuki; Niwa, Toshio; Kaneko, Masaharu; and Ono, Hitoshi, 4,646,309, Cl. 372-53.000.

Ono, Shigeyoshi: See—
Kubota, Katsuzo; Nakai, Masayuki; and Ono, Shigeyoshi, 4,645,513, Cl. 44-10.00H.

Ono, Takuro, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape recorder with a head position control. 4,646,302, Cl. 360-137.000.

Onoda Cement Co Ltd.: See—
Take, Takao; Kaneko, Katsuki; Kusunoki, Kokyo; and Ichiba, Toshinobu, 4,645,548, Cl. 156-39.000.

Onuma, Tomiyasu: See—
Kanamaru, Hisanobu; Sasaya, Kazushi; Onuma, Tomiyasu; and Tohkairin, Akira, 4,644,850, Cl. 91-507.000.

Ooshio, Hirosuke; and Watanabe, Osamu, to Kabushiki Kaisha Tokuda Seisakusho. Electrostatic chuck. 4,645,218, Cl. 279-1.00M.

Operschall, Hermann: See—
Voggenthaler, Ludwig; Operschall, Hermann; and Weber, Jakob, 4,645,581, Cl. 204-275.000.

Opower, Hans, to W. C. Heraeus GmbH. High-power laser having an unstable optical resonator. 4,646,314, Cl. 372-95.000.

Oppermann, Gunter: See—
Goossens, John; Oppermann, Gunter; Grape, Wolfgang; and Har-tel, Volker, 4,645,614, Cl. 252-75.000.

Oppitz, Hans, to Eltac Nöglar & Daum KG. Planar heating element. 4,645,913, Cl. 219-549.000.

Optical Systems International Inc.: See—
Frieder, Philip M.; and deRoja, Edward, 4,645,317, Cl. 351-164.000.

Optische Werke G. Rodenstock: See—
Rothe, Ernst, 4,645,311, Cl. 350-432.000.

Orban, Ralph F., to Material Concepts, Inc. Continuous process for the sequential coating of polyester filaments with copper and silver. 4,645,573, Cl. 204-14.100.

Orban, Ralph F., to Material Concepts, Inc. Continuous process for the sequential coating of polyamide filaments with copper and silver. 4,645,574, Cl. 204-14.100.

Orenstein, Bruce D.; and Bradshaw, Thomas I., to Minnesota Mining and Manufacturing Company. Transparent sheet containing authenticating image and method of making same. 4,645,301, Cl. 350-167.000.

Origin Company Limited: See—
Wada, Yoneji, 4,645,597, Cl. 210-222.000.

Orion-Yhtymä: See—
Tammisalo, Erkki; Kanerva, Heikki; Aarnio, Jaakko; Wederhorn, Markku; and Laner, Kai, 4,646,335, Cl. 378-38.000.

Orlandin, Vanis: See—
Alluto, Luigi; Delotto, Romeo; and Orlandin, Vanis, 4,645,124, Cl. 236-20.00A.

Orloff, Daniel L.: See—
Mally, Timothy G.; Hartl, Carroll P.; Orloff, Daniel L.; and Total, Robert V., 4,645,400, Cl. 414-28.000.

Orlowski, Gerald J. Metal alloy. 4,645,644, Cl. 420-587.000.

Ornstein, Jacob L.; and Hydock, Michael A., to GTE Products Corporation. Thermostatic metal. 4,645,120, Cl. 228-190.000.

Orte, Sven E. V., to SKF Industrial Trading and Development Co. B.V. Brush-type seals. 4,645,362, Cl. 384-485.000.

Ortho Pharmaceutical Corporation: See—
Conley, Richard A., 4,645,836, Cl. 544-286.000.

Orthomatrix Inc.: See—
Lin, Steve T.; Conjeevaram, Seshadri; and Henderson, Don J., 4,645,503, Cl. 623-16.000.

Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, to Canon Kabushiki Kaisha. Method for forming deposited film. 4,645,684, Cl. 427-38.000.

Osborn, Robert: See—
Lincoln, Andrew J.; Osborn, Robert; and Dreher, Geoffrey A., 4,646,259, Cl. 364-900.000.

Oscar Mayer Foods Corp.: See—
Mally, Timothy G.; Hartl, Carroll P.; Orloff, Daniel L.; and Total, Robert V., 4,645,400, Cl. 414-28.000.

Oscarsson, Rolf A., to RAO Medical Devices, Inc. Continuous catheter flushing flow control device. 4,645,496, Cl. 604-248.000.

Osher, John D.: See—
Rattray, Thomas; and Osher, John D., 4,645,183, Cl. 256-25.000.

Osterholtz, Frederick D.: See—
Pohl, Eric R.; and Osterholtz, Frederick D., 4,645,816, Cl. 528-28.000.

Osterland, Robert W., to USM Corporation. Panel retainer. 4,644,612, Cl. 24-295.000.

Ostreicher, Eugene A.: See—
Hou, Kenneth C.; and Ostreicher, Eugene A., 4,645,567, Cl. 162-181.600.

Ota, Shigenori: See—
Inoue, Seiji; and Ota, Shigenori, 4,645,672, Cl. 426-20.000.

Otsuki, Toshiaki, to Fanuc Ltd. Numerical control apparatus with graphic stored stroke limit check. 4,646,247, Cl. 364-474.000.

Ott, Gunter: See—
Marzluf, Werner; and Ott, Gunter, 4,646,067, Cl. 340-550.000.

Ott, Hans: See—
Weidmann, Markus; Ott, Hans; and Koch, Wilhelm H., 4,645,350, Cl. 356-418.000.

Otto, William F.; Roberts, Thomas G.; Jenkins, Andrew H.; and Honeycutt, Thomas E., to United States of America, Army. Laser effects simulator. 4,645,448, Cl. 431-1.000.

Outboard Marine Corporation: See—
Hansen, Loren F.; and Lamb, Mark E., 4,645,012, Cl. 172-22.000.

Rawlings, David E., 4,645,464, Cl. 440-57.000.

Outokumpu Oy: See—
Hanniala, Teuvo P. T., 4,645,186, Cl. 266-212.000.

Overstreet, Thomas S.: See—
Winslow, Louis E.; Bennett, Richard E.; and Overstreet, Thomas S., 4,645,711, Cl. 428-355.000.

Ovshinsky, Stanford R.; Keem, John E.; Flasck, James D.; Bergeron, Richard C.; and Tyler, John E., to Energy Conversion Devices, Inc. Coating composition and method. 4,645,715, Cl. 428-469.000.

Ovshinsky, Stanford R.; Johnson, Robert R.; Cannella, Vincent D.; and Yaniv, Zvi, to Energy Conversion Devices, Inc. Programmable semiconductor structures and methods for using the same. 4,646,266, Cl. 365-105.000.

Owada, Katsuaki: See—
Asai, Koh; Izumisawa, Hiroyuki; Owada, Katsuaki; Kinoshita, Seichiro; and Matsuno, Shunji, 4,646,352, Cl. 382-5.000.

Owens-Illinois, Inc.: See—
Kontz, Robert F., 4,645,480, Cl. 493-106.000.

Kusz, Maximilian, 4,645,087, Cl. 215-254.000.

Oxco Fuel Company: See—
Lane, Robert H., 4,645,514, Cl. 44-51.000.

Ozaki, Masaru: See—
Ona, Isao; and Ozaki, Masaru, 4,645,691, Cl. 427-180.000.

Ozaki, Norihiko: See—
Sonoda, Shinji; Ozaki, Norihiko; Watahiki, Seishi; Sakuma, Yasuzi; and Yamaguchi, Masayoshi, 4,644,791, Cl. 73-432.100.

Ozaki, Shinya: See—
Odaka, Kentaro; Fukami, Tadashi; and Ozaki, Shinya, 4,646,171, Cl. 360-32.000.

Ozu, Akira: See—
Iizuka, Jiro; and Ozu, Akira, 4,646,156, Cl. 358-225.000.

Packaging Corporation of America: See—
Nederveld, Terrill L., 4,645,122, Cl. 229-45.00R.

Padelford, James: See—
Howe, Blair E., 4,645,397, Cl. 411-431.000.

Paganelli, Jude V., to Texas Instruments Incorporated. Cylinder pressure transmitter for an internal combustion engine. 4,645,965, Cl. 310-338.000.

Pagano, Joseph F.: See—
Baker, Josefine T.; Pagano, Joseph F.; and Schoengold, Ronald J., 4,645,743, Cl. 436-66.000.

Pagliano, Giustino: See—
Ferrando, Ugo; Gardi, Giovanni; and Pagliano, Giustino, 4,645,493, Cl. 604-174.000.

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Hasler, Rolf; and Palacin, Francis, 4,645,510, Cl. 8-400.000.

Palazzo, David T. Method of making double wall storage tank for liquids. 4,644,627, Cl. 29-423.000.

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Bremer, Gordon; Armstrong, Thomas; Holmquist, Kurt; and Smith, Richard K., 4,645,871, Cl. 380-2.000.

Zuranski, Edward S.; and Martinez, Kenneth, 4,646,325, Cl. 375-39.000.

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Parker, Barry R., to General Motors Corporation. Beverage holder for vehicle. 4,645,157, Cl. 248-311.200.

Parker-Hannifin Corporation: See—
Sharp, Bernard C., 4,645,170, Cl. 350-632.000.

Parker Kinetic Designs, Inc.: See—
Prince, Aaron E., Jr.; and Pryor, Dale H., 4,645,898, Cl. 219-104.000.

Parrillo, Louis C.: See—
Lynch, William T.; and Parrillo, Louis C., 4,646,123, Cl. 357-42.000.

Partz, Klaus-Dieter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Bonding of highly wear-resistant plates, particularly ceramic plates, to a carrier to be protected against wear. 4,645,068, Cl. 198-676.000.

Patel, Bharat B., to Phillips Petroleum Company. Sulfonated asphalt/causticized lignite blend. 4,645,609, Cl. 252-8.50C.

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Chang, Ki S.; Patrick, Michael W.; Sacarisen, Stephen P.; and Stambaugh, Mark A., 4,646,232, Cl. 364-200.000.

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Kowalewski, Janusz J.; Forest, Jerry W.; Christie, Alan E.; and Patrick, Paul H., 4,646,276, Cl. 367-139.000.

Patsy, Samuel M. Programmable moving target soccer practice. 4,645,210, Cl. 273-369.000.

Patzelt, Helmut: See—
Albrecht, Wilhelm; Wurz, Dieter; Peitsmeier, Karl; Waldschutz, Heinz; Ruckert, Walter; Kuhn, Klaus; and Patzelt, Helmut, 4,644,817, Cl. 74-552.000.

Paulet, Jean-Francois; and Steup, Heinz, to Swiss Aluminium Ltd. Process for galvanic deposition of a dispersion coating, application of said process and device for performing said process. 4,645,580, Cl. 204-272.000.

Paulus, Wilfried: See—
Kuhle, Engelbert; Paulus, Wilfried; and Genth, Hermann, 4,645,776, Cl. 514-425.000.

Paurat, Friedrich W.; and Paurat, Roland. Tunnel and gallery excavator. 4,645,266, Cl. 299-64.000.

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Pawl, E. Timothy, to Pawl Invention Engineering Corporation. Garment carrier. 4,645,106, Cl. 224-313.000.

Pawl Invention Engineering Corporation: See—
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Peters, Michael R., 4,645,355, Cl. 368-88.000.

Pease Industries, Inc.: See—
Bursk, William M., 4,644,696, Cl. 49-367.000.

Pech, Winfried, to Pfaff Industriemaschinen GmbH. Sewing machine with revolving stitch regulator and display device. 4,644,887, Cl. 112-315.000.

Pecha, Ernst; Trost, Rudolf; Gneiting, Rudi; and Dieterich, Karl-Eberhard, to bielomatik Leuze GmbH & Co. Cutting tool for making holes. 4,645,390, Cl. 408-233.000.

Peck, Paul L., to Archery Designs, Inc. Limb structure for archery bows. 4,644,929, Cl. 124-24.00R.

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Yates, Samuel L.; Peckinpaugh, Frank L.; Flower, Thomas A.; and Westmoreland, Michael K., 4,644,621, Cl. 28-247.000.

Pedersen, Hans N. Method of establishing sealed pipe lengths of plastic pipes by joining of pipe elements, particularly district heating pipe lengths. 4,645,557, Cl. 156-250.000.

Pedgonay, John S. Rain gutter debris eliminator. 4,644,704, Cl. 52-12.000.

Pegasus Sewing Maching Mfg. Co., Ltd.: See—
Tatsumi, Eiji, 4,644,884, Cl. 112-130.000.

Peitsmeier, Karl: See—
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- Penney, Carl M.; Roy, Robert N.; and Thomas, Bradley S., to General Electric Company. Swept aperture flying spot profiler. 4,645,917, Cl. 250-201.000.
- Pennsylvania Engineering Corporation: See—
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- Pennwalt Corporation: See—
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- Percepton, Inc.: See—
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- Percy, Penelope C.; and Percy, Roger D., to R. D. Percy & Company. Television viewer reaction determining systems. 4,646,145, Cl. 358-84.000.
- Percy, Roger D.: See—
Percy, Penelope C.; and Percy, Roger D., 4,646,145, Cl. 358-84.000.
- Peritz, Lyonel: See—
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- Perkin-Elmer Corporation, The: See—
Harrington, John H.; and Safai, Saed, 4,645,716, Cl. 428-472.000.
- Perkins, Geoffrey W., to Motorola, Inc. Crystal controlled oscillator. 4,646,033, Cl. 331-116.00R.
- Perntz, Carl-Gunnar E.; and Roos, Sture G., to Telefonaktiebolaget LM Ericsson. Synchronization apparatus in transmitting information on a simplex bus. 4,646,291, Cl. 370-85.000.
- Perono, Rene: See—
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- Perotti, Andre: See—
Kohler, Fritz; and Perotti, Andre, 4,644,763, Cl. 66-75.200.
- Perrissin-Fabert, Jean: See—
Fourrey, Francois; and Perrissin-Fabert, Jean, 4,645,263, Cl. 297-366.000.
- Perrott, Charles H., to Precision Plumbing Products, Inc. Floating seal valve assembly. 4,644,972, Cl. 137-883.000.
- Personal Products Company: See—
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- Persson, Gustav L.: See—
Willman, Nils-Erik; Sjogren, Bengt C. H.; Nordh, Lennart G.; Persson, Gustav L.; and Sjolholm, Goran H., 4,645,758, Cl. 514-239.000.
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- Peter, Gunter; and Klett, Siegfried, to Gesellschaft fuer Hydraulik-Zubehoer mbH. Hydropneumatic floating-piston accumulator. 4,644,976, Cl. 138-31.000.
- Peters, Edward N.: See—
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- Peters, Gary P., to United Technologies Corporation. Rotating seal for gas turbine engine. 4,645,424, Cl. 416-198.00A.
- Peters, Michael R., to Pearl Enterprises, Inc. Mounting system for clock mechanism. 4,645,355, Cl. 368-88.000.
- Petersen, Donald R., to General Motors Corporation. Low-stress shielded exhaust passage assemblies. 4,644,747, Cl. 60-322.000.
- Petersen, Erling N.: See—
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- Petric, Bruce E.; and Wingfield, Perry E., to Tektronix, Inc. Method and apparatus for input picture enhancement by removal of undesired dots and voids. 4,646,355, Cl. 382-54.000.
- Pettis, Mary J. Self administrable garments for arthritic persons. 4,644,589, Cl. 2-109.000.
- Petty, Michael C.: See—
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- Pfaff Industriemaschinen GmbH: See—
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- Schmidt, Gottfried; Busch, Edgar; and Schilling, Lothar, 4,644,881, Cl. 112-103.000.
- Pfister GmbH: See—
Hafner, Hans W., 4,644,802, Cl. 73-862.380.
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- Pfister, Theodor: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90.000.
- Phalagas, Charalambos J.: See—
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- Pham, Luat Q.: See—
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- Phillip, Harald: See—
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- Phillips, Alan C., to Etak, Inc. Flux gate sensor with improved sense winding gating. 4,646,015, Cl. 324-253.000.
- Phillips, Cecil L., to Scott Bader Company Limited. Repairing utility poles. 4,644,722, Cl. 52-514.000.
- Phillips, Charles E.; and Hood, Alan M., to Southern California Edison Company, Inc. Meter testing device. 4,646,003, Cl. 324-74.000.
- Phillips, Nicholas: See—
Gavin, James R.; and Phillips, Nicholas, 4,645,108, Cl. 225-103.000.
- Phillips Petroleum Company: See—
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- Terrade, Francois; and Laheyne, Claude, 4,645,129, Cl. 239-427.000.
- Phillips, Richard B.: See—
Burkart, Susan E.; Phillips, Richard B.; and Roush, David M., 4,645,777, Cl. 514-444.000.
- Phillips, Richard R.; Sandell, Robert D.; and Silver, Arnold H., to TRW Inc. Superconducting analog-to-digital converter with bidirectional counter. 4,646,060, Cl. 340-347.0AD.
- Phormium N.V.: See—
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- Picker International, Inc.: See—
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- Picker International Ltd.: See—
Young, Ian R., 4,646,023, Cl. 324-309.000.
- Pieper, Werner, to Hoechst Aktiengesellschaft. Process for making chloroisocyanuric acids. 4,645,835, Cl. 544-190.000.
- Pieper, Wolfgang: See—
Horn, Guenther; Pieper, Wolfgang; and Roeser, Heribert, 4,646,047, Cl. 336-192.000.
- Pierson, Martha, to Health Research Inc. Activated aminoglycosides and aminoglycoside-aminocyclitols pharmaceutical compositions and method of use. 4,645,760, Cl. 514-39.000.
- Pilatowicz, Edward J.: See—
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- Pilkington Brothers P.L.C.: See—
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- Pilot Man-nen Hitsu Kabushiki Kaisha: See—
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- Pincham, Wilma I. Halo shirt. 4,644,590, Cl. 2-115.000.
- Pinck, Peter: See—
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- Pinnell, Sheldon R., to Biospecifics, NV. Method for the prevention and treatment of scars with enzymes. 4,645,668, Cl. 424-94.000.
- Pioneer Electronic Corporation: See—
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- Pircher, Hans; Bentz, Werner; and Tegethoff, Alfred, to Thyssen Stahl AG. Armour-plate and process for its manufacture. 4,645,720, Cl. 428-683.000.
- Plackner, Kurt; Schamberger, Rudolf; and Kirchpfering, Max, deceased (by Kirchpfering, Martha M.; Stefan Kirchpfering, Klaus Kirchpfering, heirs), to Siemens Aktiengesellschaft. Rotating-field machine with bell-shaped rotor hub and rotatable stator and control element. 4,645,963, Cl. 310-266.000.
- Plattner, John J.: See—
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- Plessey Overseas Limited: See—
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- Plessey South Africa Limited: See—
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- Pletcher, Donald L., to Midland-Ross Corporation. Retainer for mechanical fastener member. 4,645,393, Cl. 411-84.000.
- Pleyber, Gaetan: See—
Allemand, Robert; Gagelin, Jean-Jacques; and Pleyber, Gaetan, 4,645,934, Cl. 250-374.000.
- Plumbridge, Michael M. R. Golfing accessory. 4,645,105, Cl. 224-269.000.
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- Podrini, Maurizio, to Centro Sperimentale Metallurgico S.p.A. Process for the continuous electrodeposition of metals at high current density in vertical cells. 4,645,575, Cl. 204-28.000.
- Poganski, John W. Trailer tongue handle. 4,645,224, Cl. 280-47.170.
- Poggi, Donald L.; Burgess, Ernest M.; Moeller, David E.; and Hittenberger, Drew A., to Model & Instrument Development Corporation. Prosthetic foot having a cantilever spring keel. 4,645,509, Cl. 623-55.000.
- Pohl, Eric R.; and Osterholtz, Frederick D., to Union Carbide Corporation. Novel vulcanizable silane-terminated polyurethane polymers. 4,645,816, Cl. 528-28.000.
- Poirot, Ralph G.: See—
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- Polachowski, Wayne T.: See—
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- Polaroid Corporation: See—
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- Stella, Joseph A., 4,645,323, Cl. 354-303.000.
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- Pollack, Jack, to Amtel, Inc. Detachable mooring and cargo transfer system. 4,645,467, Cl. 441-4.000.

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- Poore, Bernard B.: See—
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- Porta Systems Corp.: See—
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- Postema, Gerrit B.; and Schiffman, Howard G., to Raytheon Company. Digital monopulse for tracking radar. 4,646,093, Cl. 342-151.000.
- Poterala, Robert J. Coating apparatus with automatic trough control and seam passage. 4,644,900, Cl. 118-670.000.
- Potter, Jerry D., to United States of America, Energy. Pushrod assembly. 4,645,639, Cl. 376-260.000.
- Pouillart, Roger V.; and Van Hecke, Francis C. Process and apparatus for the production of ammonium nitrate. 4,645,656, Cl. 423-396.000.
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- Pozzi, Jean-Pierre A.: See—
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- PPG Industries, Inc.: See—
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- Precision Plumbing Products, Inc.: See—
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- Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: See—
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- Pressman, Norman J.; and Frost, John K., to John Hopkins University. Videophone network system. 4,645,872, Cl. 379-54.000.
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- Prince, Aaron E., Jr.; and Pryor, Dale H., to Parker Kinetic Designs, Inc. Powder welding of two members. 4,645,898, Cl. 219-104.000.
- Probst, Joachim; Sonntag, Michael; Richter, Roland; and Muller, Hanns P., to Bayer Aktiengesellschaft. Preparation of hydroxyl group-containing alkoxylation products of organic carboxylic acids. 4,645,817, Cl. 528-45.000.
- Procter & Gamble Co., The: See—
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- Prodel, Jacques: See—
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- Prodel, Maurice; and Prodel, Jacques. Modular installation for assembling and/or machining parts, with work stations including keyboard-display devices. 4,646,245, Cl. 364-468.000.
- Proelochs, Francois, to Samel, S.A. Assembly comprising a flat housing fixed on a textile or a thin synthetic or natural material. 4,645,102, Cl. 224-178.000.
- Professional Medical Products, Inc.: See—
Teed, Richard K., 4,645,501, Cl. 604-390.000.
- Pronovost, Paul F., to Allied Corporation. Fiber optic connector. 4,645,295, Cl. 350-96.200.
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- Prud'Homme, Christian, to Rhone-Poulenc Specialties Chimiques. Selective production of dimethyldichlorosilane. 4,645,851, Cl. 556-472.000.
- Pryor, Dale H.: See—
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- PT Components, Inc.: See—
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- Pucci, Philip D. Portable carrying case and sound shield for a printer with a self-contained support stand. 4,645,275, Cl. 312-244.000.
- Puls, Bernhard. Equipment for the stereophonic sound reproduction in a television receiver. 4,646,349, Cl. 381-24.000.
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- Quartztronics, Inc.: See—
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- Quearry, Robert W.: See—
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- Quipp, Incorporated: See—
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- R. D. Percy & Company: See—
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- Raab, Harald. Torsional vibration damper with smooth transition between two spring systems. 4,645,054, Cl. 192-106.200.
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- Racal Data Communications Inc.: See—
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 Schonbaum, Gregory R., 4,645,661, Cl. 424-10.000.

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Ikeda, Masami; Aoki, Seiichi; Saito, Akio; Inamoto, Tadayoshi; and Yokoi, Katsuyuki, 4,646,110, Cl. 346-140.00R.

Saito, Asao: See—
Matsumoto, Tokio; Aoki, Seiichi; Matsuda, Hiroto; Ikeda, Masami; Matsumoto, Haruyuki; and Saito, Asao, 4,646,105, Cl. 346-1.100.

Saito, Hideyuki: See—
Yasuhara, Seishi; Kobayashi, Hiroshi; Kita, Toru; and Saito, Hideyuki, 4,646,070, Cl. 340-603.000.

Saito, Minoru: See—
Hashimoto, Yoshiyuki; Toida, Tomohiro; Sekine, Kazunori; Saito, Minoru; Kawashima, Takuji; and Kuboyama, Morio, 4,645,667, Cl. 424-92.000.

Saito, Naotada: See—
Ishida, Akira; Yumen, Akira; and Saito, Naotada, 4,646,144, Cl. 358-75.000.

Saito, Shinkichi: See—
Teramoto, Mitsutake; Saito, Shinkichi; and Takebayashi, Takamitsu, 4,645,207, Cl. 273-77.00A.

Saito, Yukio: See—
Shimaoka, Motohiro; and Saito, Yukio, 4,646,176, Cl. 360-97.000.

Saitoh, Atsushi: See—
Sugiyama, Hisataka; Shigematsu, Kazuo; Maeda, Takeshi; Saitoh, Atsushi; and Takasugi, Wasao, 4,646,103, Cl. 346-1.100.

Saiveau, James G.: See—
Burelbach, James P.; Kann, William J.; Pan, Yen-Cheng; Saiveau, James G.; and Seidensticker, Ralph W., 4,645,638, Cl. 376-254.000.

Sajor, Michael E.: and Seghatoleslami, Asadolah, to AT&T Bell Laboratories. Twisted ring counter with recoverable disallowed states, 4,646,332, Cl. 377-124.000.

Sakaguchi, Toshio: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Sakai, Koichi: See—
Okumoto, Tadaoki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.

Sakakiyama, Ryuzo: See—
Takano, Toshio; and Sakakiyama, Ryuzo, 4,644,827, Cl. 74-866.000.

Sakamoto, Hiroya: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Sakamoto, Masahide: See—
Morita, Kiyomi; Kashiwaya, Mineo; and Sakamoto, Masahide, 4,644,923, Cl. 123-493.000.

Sakamoto, Seiichi: to Sanden Corporation. Scroll type fluid displacement apparatus with improved anti-wear device, 4,645,436, Cl. 418-55.000.

Sakashita, Wataru: Chiyoya, Tsukasa; Ichikawa, Tsutomu; and Hayano, Makoto, to Kabushiki Kaisha Toshiba. Scroll compressors with annular sealed high pressure thrust producing member, 4,645,437, Cl. 418-55.000.

Sakuma, Yasuzi: See—
Sonoda, Shinji; Ozaki, Norihiko; Watahiki, Seishi; Sakuma, Yasuzi; and Yamaguchi, Masayoshi, 4,644,791, Cl. 73-432.100.

Sakurai, Hiroshi: to Tokico Ltd. Carriage assembly for a magnetic disc memory apparatus, 4,646,182, Cl. 360-104.000.

Sakurai, Shigeru: and Hamada, Shigeki, to Mazda Motor Corporation. Diesel cycle engines having heat insulated auxiliary combustion chambers, 4,644,926, Cl. 123-569.000.

Sala International AB: See—
Bogen, Jan O., 4,645,434, Cl. 417-476.000.

Salaita, George N.: to Chevron Research Company. Method and apparatus for measuring thermal neutron absorption cross-section, 4,645,935, Cl. 250-390.000.

Salazar, Edward J. Decorative wall panel, 4,644,719, Cl. 52-311.000.

Salinger, Jeremy: See—
Dewar, Robert; Salinger, Jeremy; Waldecker, Thomas J.; and Barlow, Neil E., 4,645,348, Cl. 356-376.000.

Sajnier, Guy: and Bossard, Jean-Paul, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Hyperfrequency energy plasma torch, 4,645,973, Cl. 315-39.000.

Salmon, Michael E. Foot pods, 4,645,257, Cl. 296-75.000.

Saloka, George S.: See—
Meitzler, Allen H.; and Saloka, George S., 4,645,975, Cl. 315-82.000.

Salomon S.A.: See—
Rochard, Jean-Claude; and Kopp, Norbert, 4,644,670, Cl. 36-117.000.

Salton, Lewis L. Electric hot water heater, 4,645,907, Cl. 219-309.000.

Sam Dick Industries, Inc.: See—
Moraski, Dennis P.; and Sadler, Bryon L., 4,645,904, Cl. 219-275.000.

Samel, S.A.: See—
Proelochs, Francois, 4,645,102, Cl. 224-178.000.

Sammueler, Rudolf: to Siemens Aktiengesellschaft. Device for facilitating connecting light waveguides in a connector for a multiple light waveguide, 4,645,292, Cl. 350-96.200.

Samson, Dennis J.: and Alcorn, George R., to Rogers Walla-Walla, Inc. Apparatus for helical cutting of potatoes, 4,644,838, Cl. 83-865.000.

Sandell, Robert D.: See—
Phillips, Richard R.; Sandell, Robert D.; and Silver, Arnold H., 4,646,060, Cl. 340-347.0AD.

Sanden Corporation: See—
Machara, Kazuo; and Fukuda, Toshiyuki, 4,644,758, Cl. 62-234.000.

Sakamoto, Seiichi, 4,645,436, Cl. 418-55.000.

Sugimoto, Kazuo, 4,645,435, Cl. 418-55.000.

Sander, Reinhold: See—
Bender, Richard; Bendler, Hellmut; Penner, Horst; and Sander, Reinhold, 4,644,863, Cl. 102-202.500.

Sanders Associates, Inc.: See—
Apostolos, John T., 4,646,099, Cl. 343-375.000.

Rockwell, Lynn H.; and Dukarich, Gary S., 4,645,869, Cl. 178-18.000.

Sandoz Ltd.: See—
Hasler, Rolf; and Palacin, Francis, 4,645,510, Cl. 8-400.000.

Heller, Jurg; Kissling, Bruno; Robinson, Tibor; and Valenti, Salvatore, 4,645,511, Cl. 8-549.000.

Sandvik, Johannes, to Elkem a/s. Means for suspending a skid pan from a winch mounted on a tractor, 4,645,082, Cl. 212-141.000.

Sanetta Textilwerk Gebrüder Ammann: See—
Muller, Kurt, 4,645,101, Cl. 223-66.000.

Sanford, Platter; Gadsby, Larry R.; and Heath, Robert T., to Electronic Processors, Inc. Automatic tape threading system for use in a tape transport system, 4,646,177, Cl. 360-95.000.

Sano, Fumiaki: See—
Asami, Kazutomo; Sano, Fumiaki; Ishijima, Koji; Wada, Fumio; and Hirahara, Takuo, 4,645,429, Cl. 417-312.000.

Sano, Masafumi: See—
Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, 4,645,684, Cl. 427-38.000.

Santel, Hans-Joachim: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90.000.

Sanyo Electric Co. Ltd.: See—
Iwaki, Hiroshi, 4,645,329, Cl. 355-8.000.

Sanyo Electric Co., Ltd.: See—
Shiraki, Kenhachi; Kikkawa, Shinichi; Izawa, Takaharu; Miyazaki, Yoshifumi; Nonoue, Torahiko; and Moriki, Etsuzo, 4,645,328, Cl. 355-8.000.

Sanyo Kokusaku Pulp Co.: See—
Kinoshita, Toru, 4,645,783, Cl. 523-221.000.

Saotome, Minoru: See—
Tamura, Fumihide; and Saotome, Minoru, 4,645,754, Cl. 502-527.000.

Sarfati, Alberto G., to Sobrevin Societe de brevets industriels-Etablissement. Thread storage and feed device, 4,645,134, Cl. 242-47.010.

Sartorius GmbH: See—
Knothe, Erich; Melcher, Franz-Josef; and Oldendorf, Christian, 4,645,021, Cl. 177-165.000.

Sasaki, Kan; Takimura, Keisuke; Katayama, Nobuaki; and Tsuchiya, Fumitomo, to Toyota Jidosha Kabushiki Kaisha. Four-wheel vehicle drive system, 4,645,029, Cl. 180-249.000.

Sasaki, Lawrence H.: See—
Tsiakas, Nicholas; Sunter, Stephen K.; Wellard, Ronald G.; and Sasaki, Lawrence H., 4,646,289, Cl. 370-76.000.

Sasaki, Shin; Nemoto, Tsuneo; Yamashina, Shuichi; and Uchida, Hiroyuki, to Sony Corporation. Magnetic tape cassette with door opening mechanism, 4,646,189, Cl. 360-12.000.

Sasaki, Toshio: See—
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,645,808, Cl. 526-119.000.

Sasashige, Hiroaki: See—
Hirakawa, Tadashi; Sasashige, Hiroaki; and Okawa, Haruo, 4,644,896, Cl. 118-44.000.

Sasaya, Kazushi: See—
Kanamaru, Hisanobu; Sasaya, Kazushi; Onuma, Tomiyasu; and Tohkairin, Akira, 4,644,850, Cl. 91-507.000.

Sasuta, Michael D.: See—
Zdunek, Kenneth J.; Heyman, Bruce D.; and Sasuta, Michael D., 4,646,345, Cl. 379-62.000.

Satake Engineering Co., Ltd.: See—
Satake, Toshihiko, 4,645,590, Cl. 209-304.000.

Satake, Toshihiko, to Satake Engineering Co., Ltd. Vertical type screening machine for granular material, 4,645,590, Cl. 209-304.000.

Satek, Larry C.: See—
Zletz, Alex; Satek, Larry C.; and Miller, Jeffrey T., 4,645,753, Cl. 502-202.000.

Satkunas, Bruno: See—
Valbona, Bruno M.; Satkunas, Bruno; and Bryn, Stanley J., 4,645,352, Cl. 366-349.000.

Sato, Hidetaka: See—
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,645,688, Cl. 427-82.000.

Sato, Katsujiro: See—
Morita, Shuji; Sato, Katsujiro; Asaoka, Yoshio; Harada, Isao; and Hirano, Tomiyasu, 4,644,914, Cl. 123-90.550.

Sato, Minoru, to Tokyo Automatic Machinery Works, Ltd. Film feeding apparatus, 4,645,558, Cl. 156-351.000.

Sato, Yasuji: See—
Nakayama, Yasunobu; and Sato, Yasuji, 4,645,882, Cl. 379-387.000.

Satoh, Arimasa: See—
Akabane, Toshiaki; and Satoh, Arimasa, 4,645,569, Cl. 203-19.000.

Sattelberger, Siegfried: See—
Hahn, Reinhard; Hess, Hans; and Sattelberger, Siegfried, 4,645,651, Cl. 423-62.000.

Savigny, James G., to AG-PAK, Inc. Construction for mounting mesh bags on bag handling portion of automatic weigher/bagger machine, 4,644,735, Cl. 53-570.000.

Sawicki, Eduard: See—
Melbert, Joachim G.; and Sawicki, Eduard, 4,645,986, Cl. 315-387.000.

Sawicki, Wasy: See—
Squire, Molly A.; and Sawicki, Wasy, 4,645,237, Cl. 281-47.000.

Say, Donald L.: See—
Collins, Floyd K.; and Say, Donald L., 4,645,469, Cl. 445-49.000.

Scarborough, Douglas B.: See—
Ashbrook, Clifford L.; and Scarborough, Douglas B., 4,645,606, Cl. 210-695.000.

Scarselletta, Louis, to General Motors Corporation. Tube and fin heat exchanger, 4,645,000, Cl. 165-152.000.

Schad, Kurt, to General Motors Corporation. Rubber-metal mount, 4,645,190, Cl. 267-141.000.

Schafer, Erich E.: See—
Link, Helmut F.; and Schafer, Erich E., 4,645,219, Cl. 279-1.00C.

Schafer, Timothy V.: See—
Russell, Robert A.; Moore, Trevor J.; and Schafer, Timothy V., 4,644,853, Cl. 92-190.000.

Schamberger, Rudolf: See—
Plackner, Kurt; Schamberger, Rudolf; and Kirchpfering, Max, deceased, 4,645,963, Cl. 310-266.000.

Schapansky, Lloyd D. High performance air jack, 4,645,181, Cl. 254-2.00B.

Scharer, Roger M., to General Binding Corporation. Combined punch and binding machine having an improved pressure bar assembly, 4,645,399, Cl. 412-16.000.

Scharnweber, David H.: See—
Hopple, Lyle O.; Chute, Richard; Scharnweber, David H.; and Waichunas, Kenneth P., 4,644,925, Cl. 123-558.000.

Scharton, Terry D.; and Taylor, George B., to Anco Engineers, Inc. Method of pressure pulse cleaning the interior of heat exchanger tubes located within a pressure vessel such as a tube bundle heat exchanger, boiler, condenser or the like, 4,645,542, Cl. 134-1.000.

Schaublin, Hans-Jurg: See—
Kaiser, Albrecht; and Schaublin, Hans-Jurg, 4,645,559, Cl. 156-583.100.

Schmidt Maschinenbau GmbH: See—
Beyer, Rudolf; Heerdt, Lutz-Peter; and Schemel, Roland, 4,644,700, Cl. 51-237.00T.

Schaumberger, Alfred: See—
Heller, Arthur; Gierlinger, Friedrich; and Schaumberger, Alfred, 4,646,137, Cl. 358-23.000.

Scheidegger, Christian: See—
Franz, Reinhard; Dittmar, Wilfried; Scheidegger, Christian; and Frohlich, Roland, 4,644,840, Cl. 84-1.010.

Schemel, Roland: See—
Beyer, Rudolf; Heerdt, Lutz-Peter; and Schemel, Roland, 4,644,700, Cl. 51-237.00T.

Schenck, John F.; Hussain, Moayyed A.; and Edelstein, William A., to General Electric Company. Transverse gradient field coils for nuclear magnetic resonance imaging, 4,646,024, Cl. 324-318.000.

Schering Aktiengesellschaft: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; and Wendt, Hans, 4,645,763, Cl. 514-178.000.

Biere, Helmut; Rufer, Clemens; and Boettcher, Irmgard, 4,645,762, Cl. 514-108.000.

Engelstoft, Mogens; Honore, Tage; Watjen, Frank; Petersen, Erling N.; and Huth, Andreas, 4,645,773, Cl. 514-292.000.

Scherpenberg, Francis A.: See—
Smith, John W., Jr.; Scherpenberg, Francis A.; Jiang, Ching-Lin; and Bolan, Michael L., 4,645,943, Cl. 307-150.000.

Schertz, William W.: See—
Fraoli, Anthony V.; and Schertz, William W., 4,645,519, Cl. 55-208.000.

Schiff, Peter, to IABP. Percutaneous intra-aortic balloon and method for using same, 4,644,936, Cl. 128-1.00D.

Schiffman, Howard G.: See—
Postema, Gerrit B.; and Schiffman, Howard G., 4,646,093, Cl. 342-151.000.

Schijf, Hendrikus J., to Contractual Services (Jersey) Ltd. Sandwich panel and end strips therefor and assembly of such sandwich panels, 4,644,724, Cl. 52-588.000.

Schijf, Hendrikus J., to Contractual Services (Jersey) Ltd. Double-walled panel, 4,644,725, Cl. 52-463.000.

Schilling, Lothar: See—
Schmidt, Gottfried; Busch, Edgar; and Schilling, Lothar, 4,644,881, Cl. 112-103.000.

Schinnbeck, John; and Murdock, James R., to Fairchild Semiconductor Corporation. Method and apparatus for applying and monitoring programmed test signals during automated testing of electronic circuits, 4,646,299, Cl. 371-20.000.

Schindehutte, Manfred, to Gebr. Bode & Co. GmbH. Drive assembly for the wing of a swing-out sliding door, 4,644,692, Cl. 49-213.000.

Schingnitz, Gunter: See—
Hornykiewicz, Oleh; Hinzen, Dieter; and Schingnitz, Gunter, 4,645,770, Cl. 514-212.000.

Schink, Helmut: See—
Rehme, Hans; and Schink, Helmut, 4,646,253, Cl. 364-527.000.

Schipper, Paul H.: See—
Krambeck, Frederick J.; Lam, Chiu T.; and Schipper, Paul H., 4,645,589, Cl. 208-251.00R.

Schlegel, Charles T.: See—
Emerson, William D.; Hill, Deborah J.; Loeb, Karen C.; Mizrahi, Albert; Schlegel, Charles T.; and Scott, Lowell C., 4,646,346, Cl. 379-214.000.

Schlemmer, Harry: See—
Machler, Meinrad; Bittner, Reinhold; Gluck, Franz; Schlemmer, Harry; and Sachse, Richard, 4,644,632, Cl. 29-469.000.

Schlumberger Technology Corporation: See—
Ellis, Darwin V., 4,645,927, Cl. 250-269.000.

Schmidt, Carson T.: See—
Goldsbury, Timothy G.; and Schmidt, Carson T., 4,646,312, Cl. 371-38.000.

Schmidt, Gottfried; Busch, Edgar; and Schilling, Lothar, to Pfaff Industriemaschinen GmbH. Embroidery frame securing device, 4,644,881, Cl. 112-103.000.

Schmidt, Robert R.: See—
Diehr, Hans-Joachim; Fest, Christa; Kirsten, Rolf; Kluth, Joachim; Muller, Klaus-Helmut; Pfister, Theodor; Priesnitz, Uwe; Riebel, Hans-Jochem; Roy, Wolfgang; Santel, Hans-Joachim; and Schmidt, Robert R., 4,645,528, Cl. 71-90.000.

Forster, Heinz; Hofer, Wolfgang; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,645,525, Cl. 71-88.000.

Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Reference mark coding system, 4,645,925, Cl. 250-237.00G.

Schmitt, Wolfgang: See—
Fuchs, Dieter; and Schmitt, Wolfgang, 4,645,215, Cl. 277-152.000.

Schneider, Hartmut; Lebetzki, Egon; and Vogt, Wolfram, to Siemens Aktiengesellschaft. Gas burner for externally heating glass bodies, 4,645,451, Cl. 431-278.000.

Schneider, Norbert: See—
Meizer, Milena; Roller, Hermann; Schneider, Norbert; Fitterer, Horst; and Munzner, Wulf, 4,645,723, Cl. 428-694.000.

Schneider, Raymond H. Hardwood flooring system, 4,644,720, Cl. 52-392.000.

Schnell, Karl: See—
Sziele, Alfred, 4,644,607, Cl. 17-45.000.

Schoengold, Ronald J.: See—
Baker, Josefina T.; Pagano, Joseph F.; and Schoengold, Ronald J., 4,645,743, Cl. 436-66.000.

Schoeppe, Herbert: See—
Gambini, Michael R.; Martone, Ronald J.; Kearns, Donald S.; Enos, Gary W.; Franke, Rudi; and Schoeppe, Herbert, 4,645,933, Cl. 250-363.00S.

Schofield, John D.: See—
Campbell, Frederick; Davies, Peter K.; and Schofield, John D., 4,645,611, Cl. 252-62.510.

Scholer, Kenneth C., to Zenith Electronics Corporation. Self-adjusting switched mode power supply, 4,646,218, Cl. 363-21.000.

Scholes, Ian R.: See—
Burrows, George R.; and Scholes, Ian R., 4,644,674, Cl. 40-27.500.

Scholz, Hans J.: See—
Scholz, Wolfgang; Gzik, Herbert; Scholz, Hans J.; and Flaig, Hubert, 4,645,901, Cl. 219-125.100.

Scholz, Wolfgang; Gzik, Herbert; Scholz, Hans J.; and Flaig, Hubert, to Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.v. Apparatus for automatic changing of welding torches in an industrial robot welding system, 4,645,901, Cl. 219-125.100.

Schonbaum, Gregory R., to St. Jude Children's Research Hospital. Method for alleviating cisplatin-induced nephrotoxicity and dithiocarbamate compounds for effecting same, 4,645,661, Cl. 424-10.000.

Schoneiss, Klaus: See—
Hoffing, Peter; and Schoneiss, Klaus, 4,645,059, Cl. 198-321.000.

Schott, Claire: See—
Stambach, Jean-Francois; Jung, Louis; Heitz, Christiane; Schott, Claire; Stoclet, Jean-Claude; and Schutz, Fabienne, 4,645,772, Cl. 514-280.000.

Schott Glaswerke: See—
Neuroth, Norbert, 4,644,716, Cl. 52-173.00R.

Schramm, Matthias: See—
Stoltefuss, Jurg; Heiker, Fred R.; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,645,775, Cl. 514-352.000.

Schramme, Karin; and Bohler, Theresia. Device for coupling carriers, such as shopping carriers and luggage carriers, 4,645,057, Cl. 194-246.000.

Schreier, Hans H.: See—
Garbade, Rolf; Kahle, Hans J.; Schreier, Hans H.; and Jabbusch, Wolfgang, 4,645,018, Cl. 177-6.000.

Schreuder, Jan, to Plessey South Africa Limited. Method of and apparatus for continuous wave electromagnetic distance measurement of positioning, 4,646,092, Cl. 342-125.000.

Schroder, Wolfgang, to Jos Schneider Ptiische Werke Kreuznach GmbH & Co KG. Reflector telescope with upright image, 4,645,314, Cl. 350-504.000.

Schroeder, Michael O.: See—
Graf, Carl P.; Fairchild, Kim M.; Fant, Karl M.; Rusler, George W.; and Schroeder, Michael O., 4,645,459, Cl. 434-43.000.

Schubert & Salzer: See—
Lavas, Kurt; Mayer, Walter; and Wittmann, Stephan, 4,644,742, Cl. 57-263.000.

Schuette, Wilhelm: See—
Heinz, Gerhard; Schuette, Wilhelm; and Simon, Georg N., 4,645,785, Cl. 524-100.000.

- Schumacher, Hans: See—
Bauer, Klaus; Bieringer, Hermann; and Schumacher, Hans, 4,645,526, Cl. 71-88.000.
- Schumaker, Michael J., to Adjustable Fixture Company. Examining lamp, 4,646,205, Cl. 362-2.000.
- Schumann, Douglas D. Inductively coupled position detection system, 4,646,087, Cl. 340-870.310.
- Schunk, Eckard: See—
Nordmeyer, Friedrich; Schunk, Eckard; Winter, Frank; and Jackson, Clive L., 4,646,318, Cl. 373-105.000.
- Schuster, Stanley E., to International Business Machines Corp. ECL to FET interface circuit for field effect transistor arrays, 4,645,954, Cl. 307-475.000.
- Schutz, Fabienne: See—
Stambach, Jean-Francois; Jung, Louis; Heitz, Christiane; Schott, Claire; Stoclet, Jean-Claude; and Schutz, Fabienne, 4,645,772, Cl. 514-280.000.
- Schwartz, Bertram: See—
Henein, Gerard E.; Hepplewhite, Ralph T.; and Schwartz, Bertram, 4,645,116, Cl. 228-123.000.
- Schwartz, Robert E.; and Noble, Roger K., to John Zink Company. Methods and apparatus for burning fuel with low nox formation, 4,645,449, Cl. 431-8.000.
- Schweitzer, Edmund O., Jr. Clamp mechanism for power line mounted monitoring device, 4,646,006, Cl. 324-127.000.
- Scipar, Inc.: See—
Cozad, C. Paul, 4,644,895, Cl. 116-200.000.
- SCM Corporation: See—
DePasquale, Ralph J.; Evans, James M.; and Kremer, Paul W., 4,645,846, Cl. 556-419.000.
- Scocozza, Victor: See—
Liotto, Donna; and Scocozza, Victor, 4,644,858, Cl. 99-449.000.
- Scopatz, Stephen D., to Pennwalt Corporation. Method and apparatus for grading non-orienting articles, 4,645,080, Cl. 209-558.000.
- Scott Bader Company Limited: See—
Phillips, Cecil L., 4,644,722, Cl. 52-514.000.
- Scott, Lowell C.: See—
Emerson, William D.; Hill, Deborah J.; Loeb, Karen C.; Mizrahi, Albert; Schlegel, Charles T.; and Scott, Lowell C., 4,646,346, Cl. 379-214.000.
- Scott Paper Company: See—
Abbott, Thomas G., Jr., 4,645,705, Cl. 428-195.000.
- Scranton, Robert J.; and Spehrley, Charles W., Jr., to Eastman Kodak Company. Sheet-registration and feeding apparatus, 4,645,195, Cl. 271-246.000.
- Scriven, Arthur J.: See—
Crockett, Peter N.; Jewett, Robert P.; Scriven, Arthur J.; and Tucker, Thomas A., 4,646,236, Cl. 364-200.000.
- Sea Hawk Corporation: See—
Beard, James R., 4,645,168, Cl. 248-548.000.
- Seaman, Roy C.; and McCaul, Ronald D. Apparatus for trimming reeds of musical instruments, 4,644,649, Cl. 30-229.000.
- Seats Incorporated: See—
Van Duser, Harold J., 4,645,160, Cl. 248-429.000.
- Seel, Klaus: See—
Rasshofer, Werner; Meiners, Hans-Joachim; Seel, Klaus; and Wussow, Hans-Georg, 4,645,630, Cl. 264-54.000.
- Seelig, Wolfgang, to Siemens Aktiengesellschaft. Inert gas ion laser, 4,646,313, Cl. 372-64.000.
- Seghatoleslami, Asadolah: See—
Sajor, Michael E.; and Seghatoleslami, Asadolah, 4,646,332, Cl. 377-124.000.
- Seidensticker, Ralph W.: See—
Burelbach, James P.; Kann, William J.; Pan, Yen-Cheng; Saiveau, James G.; and Seidensticker, Ralph W., 4,645,638, Cl. 376-254.000.
- Seiko Epson Kabushiki Kaisha: See—
Wakai, Yoichi; and Chihara, Hiroyuki, 4,646,157, Cl. 358-236.000.
- Seiko Instruments & Electronics Ltd.: See—
Matsuura, Eiichi; and Tsukada, Nobuo, 4,645,356, Cl. 368-160.000.
- Seitz Enzinger Noll Maschinenbau Aktiengesellschaft: See—
Bernhard, Herbert, 4,644,981, Cl. 141-39.000.
- Sekiguchi, Hiroshi, to Kanars Data Corporation. Drive control system for electric equipment, 4,646,223, Cl. 364-130.000.
- Sekine, Kazunori: See—
Hashimoto, Yoshiyuki; Toida, Tomohiro; Sekine, Kazunori; Saito, Minoru; Kawashima, Takuji; and Kuboyama, Morio, 4,645,667, Cl. 424-92.000.
- Sekine, Takashi: See—
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- Sekino, Yoshihiro; Aoki, Masayuki; and Hotaka, Nobuhiro, to Shinano Electric Co., Ltd. Control circuit for inverter, 4,646,221, Cl. 363-41.000.
- Sekiya, Fukuo; and Shimizu, Hiroshi, to Citizen Watch Co., Ltd. Liquid crystal matrix display panel drive method, 4,645,303, Cl. 350-332.000.
- Selig, Henry: See—
Palchan, Israel; Davidov, Dan; and Selig, Henry, 4,645,620, Cl. 252-502.000.
- Selvatici, Franco. Radially disposed sealing device for rotating members, 4,645,216, Cl. 277-188.000.
- Semikron Gesellschaft für Gleichrichterbau und Elektronik m.b.H.: See—
Creutz, Helmut, 4,646,130, Cl. 357-79.000.
- Sengoku, Koji: See—
Sugisawa, Kō; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Koji; and Nagatome, Yoshiaki, 4,645,681, Cl. 426-634.000.
- Senn, Georg; and Oberholzer, Herbert, to Sulzer Brothers Limited. Needle drive for a weaving machine, 4,644,979, Cl. 139-82.000.
- Senuma, Kazuya: See—
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- Seragnoli, Enzo, to G.D. Società per Azioni. Cigarette transfer device, 4,645,063, Cl. 198-450.000.
- Seres, Alex, to Incoe Corporation. Pulley for downrigger weighted line, 4,644,678, Cl. 43-4.000.
- Serra, Oberto; Abbott, Hayden; Kerbart, Yves; and Vincent, Philippe. Method and apparatus for determining geological facies, 4,646,240, Cl. 364-422.000.
- Seto, Yasuhiro, to Fuji Photo Film Co., Ltd. Methods and apparatus for discriminating between the front and back surfaces of films, 4,645,351, Cl. 356-443.000.
- Seward, Barry: See—
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- Sexton, Joe F.: See—
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- Seyferth, Dietmar; Wood, Timothy G.; and Yu, Yuan-Fu, to Massachusetts Institute of Technology. Method for forming new preceramic polymers for SiC and Si₃N₄/SiC systems, 4,645,807, Cl. 525-474.000.
- Sfikas, Nicholas. Laminating envelope, 4,645,241, Cl. 283-109.000.
- SGS Halbleiter-Bauelemente GmbH: See—
Melbert, Joachim G.; and Sawicki, Eduard, 4,645,986, Cl. 315-387.000.
- Shafer, Paul H.: See—
Carlson, William H., Jr.; and Shafer, Paul H., 4,646,238, Cl. 364-403.000.
- Shaffer, John W.: See—
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- Shalev, Shaul: See—
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- Shanley, Charles W., to Motorola, Inc. Signaling arrangement for two-way radio communication, 4,646,358, Cl. 455-35.000.
- Shannon, John M.; Slatter, John A. G.; and Coe, David J., to U.S. Philips Corporation. Semiconductor devices having field-relief regions, 4,646,115, Cl. 357-15.000.
- Sharkany, Edward J.: See—
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- Sharon K. Baumann Trust: See—
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- Sharp, Bernard C., to Parker-Hannifin Corporation. Outside rear view mirror, 4,645,170, Cl. 350-632.000.
- Sharp Kabushiki Kaisha: See—
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- Hashimoto, Shintaro, 4,646,074, Cl. 340-718.000.
- Iwai, Hiroji, 4,645,365, Cl. 400-568.000.
- Mizoguchi, Saburo, 4,644,790, Cl. 73-293.000.
- Nishimura, Kosuke, 4,646,307, Cl. 371-53.000.
- Shaver, Richard. Automatic animal feeder, 4,644,903, Cl. 119-51.000.
- Shell Oil Company: See—
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- Shell Western E&P Inc.: See—
Simpson, Wayne F., 4,645,376, Cl. 405-63.000.
- Sheppard, Douglas P.: See—
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- Sheppard, Howard H. Plier tool for making an improved electrical connection, 4,644,625, Cl. 29-268.000.
- Sherex Chemical Co., Inc.: See—
Bayerlein, Friedrich; Haberer, Peter-Paul; Keramaris, Nikolaos; Kottmair, Nikolaus; and Kuhn, Manfred, 4,645,833, Cl. 536-17.100.
- Sherriffs, Neill M.: See—
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- Sherritt Gordon Mines Limited: See—
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- Shiba, Koreyuki: See—
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- Shibahara, Seiji; Okonogy, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Niida, Taro; Christensen, Burton G.; and Wakazawa, Tadashi, to Merck & Co., Inc. 1-oxa-1-dithia-cephalosporin compounds and antibacterial agent comprising the same, 4,645,769, Cl. 514-210.000.
- Shibamoto, Nobuji: See—
Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, 4,645,065, Cl. 198-573.000.
- Shibata, Makoto: See—
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- Shibata, Tsugio: See—
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- Shiber, Samuel: See—
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- Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, to Sumitomo Chemical Company, Limited. Process for producing olefin polymer, 4,645,808, Cl. 526-119.000.
- Shigematsu, Kazuo: See—
Sugiyama, Hisataka; Shigematsu, Kazuo; Maeda, Takeshi; Saitoh, Atsushi; and Takasugi, Wasao, 4,646,103, Cl. 346-1.100.
- Shiiki, Zenya: See—
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- Shimada, Takeo; Kimura, Tsutomu; and Hayashi, Ryoichi, to Fuji Photo Film Co., Ltd. Printing and trimming apparatus, 4,645,334, Cl. 355-40.000.
- Shimaoka, Motohiro; and Saito, Yukio, to Alps Electric Co., Ltd. Recording and reproducing apparatus including a cassette loading detecting device, 4,646,176, Cl. 360-97.000.
- Shimazaki, Takashi: See—
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- Shimazaki, Yasumi; Tsuyama, Yoshito; Haga, Hiroyo; and Hanzawa, Manabu, to Nippon Steel Corporation. Method for manufacturing spiral-welded steel pipe, 4,645,893, Cl. 219-62.000.
- Shimizu, Hiroshi: See—
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- Shimizu, Takanori; and Ikeda, Masahiko, to Pilot Man-nen Hitsu Kabushiki Kaisha. XY plotter apparatus, 4,646,107, Cl. 346-74.200.
- Shimizu, Takeyuki: See—
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- Shimizu, Teruo: See—
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- Shimizu, Tsutomu: See—
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- Shimizu, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Epicyclic gear speed change mechanism, 4,644,824, Cl. 74-781.000.
- Shimohigashi, Katsuhiko; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, to Hitachi, Ltd. Semiconductor memory, 4,646,267, Cl. 365-189.000.
- Shimomura, Hiroshi; Karino, Katsuyoshi; and Iizuka, Kazuo, to Mitsubishi Kinzoku Kabushiki Kaisha. Insert cutter, 4,645,384, Cl. 407-42.000.
- Shimoni, Moshe: See—
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- Shimosato, Masashi; Torisawa, Yoshihiro; Nishikawa, Hisashi; and Endo, Mitsuharu, to Tokyo Electric Co., Ltd. Ink dot printer, 4,646,111, Cl. 346-140.000.
- Shimpuku, Yoshihide, to Sony Corporation. Magnetic recording device, 4,646,169, Cl. 360-21.000.
- Shinano Electric Co., Ltd.: See—
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- Shinnenryoyu Kaihatsugijutsu Kenkyukumiai: See—
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- Shinohara, Hirofumi; and Ichinose, Katsuki, to Mitsubishi Denki Kabushiki Kaisha. Constant voltage generating circuit, 4,645,998, Cl. 323-313.000.
- Shinohara, Koichi: See—
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- Shinohara, Nobutaka; Hirakawa, Shuji; Minami, Akihiko; and Tanaka, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital superimposed edge generation apparatus, 4,646,154, Cl. 358-183.000.
- Shiota, Katsuhiko: See—
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- Shioya, Jun; Yamaguchi, Yoichi; Ueba, Yoshinobu; and Matsubara, Hironaga, to Agency of Industrial Science & Technology. Method for forming conductive graphite film and film formed thereby, 4,645,713, Cl. 428-457.000.
- Shipman, Frank P.: See—
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- Shirahata, Kunikatsu: See—
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- Shirai, Ryoichi; Yokoyama, Fumitomo; and Kuramochi, Koujiro, to Aisin-Warner Limited; and Toyota Motor Corporation. Internal-gear pump with partition plate having a chamfered edge, 4,645,441, Cl. 418-126.000.
- Shirai, Tsuneo; and Suzuki, Koji, to Kuraray Co., Ltd.; Showa Denko Kabushiki Kaisha; and Shirai, Tsuneo. Reference electrode, 4,645,583, Cl. 204-435.000.
- Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Co., Ltd. Door window regulator, 4,644,695, Cl. 49-352.000.
- Shiraki, Kenhachi; Kikkawa, Shinichi; Izawa, Takaharu; Miyazaki, Yoshifumi; Nonoue, Torahiko; and Moriki, Etsuzo, to Sanyo Electric Co., Ltd. Apparatus for scanning an original, 4,645,328, Cl. 355-8.000.
- Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexander N.; Avxentiev, Anatoly G.; and Rylov, Evgeny E., deceased (by Rybakova, Nina A., administratrix), to Vsesoyuzny Nauchno-Issledovatel'skiy Institut Meditsinskikh Polimerov. Device for administering powdered substances, 4,645,487, Cl. 604-58.000.
- Shizuo, Nakano: See—
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- Shock, John. Method of making flooring assembly for dump trucks and R.R. cars, 4,644,631, Cl. 29-460.000.
- Shorter, John J.; and Early, Stanley T., to Chas. A. Blatchford & Sons Limited. Artificial ankle joint, 4,645,508, Cl. 623-48.000.
- Showa Cabot Supermetals K. K.: See—
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- Showa Denko Kabushiki Kaisha: See—
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- Shirai, Tsuneo; and Suzuki, Koji, 4,645,583, Cl. 204-435.000.
- Showscan Film Corporation: See—
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- Shuey, Kenneth C., to Westinghouse Electric Corp. Current limiter for power line communication amplifier, 4,645,956, Cl. 307-562.000.
- Shulze, John E.: See—
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- Shumway, Jerry L., to Denro Laboratories, Inc. Multi-line accumulator/multiplexer, 4,646,288, Cl. 370-62.000.
- Shuttleworth, George L.: See—
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- Rich, Joseph F.; Sabatella, Robert J.; and Shuttleworth, George L., 4,646,198, Cl. 361-346.000.
- Shvo, Youval: See—
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- Sibata, Takuo: See—
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- Siedel, Joachim: See—
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- Siegel, Arthur D., to Farrel Corporation. Fluid pump, 4,645,418, Cl. 415-199.500.
- Siemens Aktiengesellschaft: See—
Criegern, Rolf V.; and Weitzel, Ingo, 4,645,929, Cl. 250-307.000.
- Gehring, Gerhard, 4,645,949, Cl. 307-309.000.
- Horn, Guenther; Pieper, Wolfgang; and Roeser, Heribert, 4,646,047, Cl. 336-192.000.
- Plackner, Kurt; Schamberger, Rudolf; and Kirchpfering, Max, deceased, 4,645,963, Cl. 310-266.000.
- Rehme, Hans; and Schink, Helmut, 4,646,253, Cl. 364-527.000.
- Rohl, Wolfgang, 4,646,219, Cl. 363-21.000.
- Sammueler, Rudolf, 4,645,292, Cl. 350-96.200.
- Schneider, Hartmut; Lebetzki, Egon; and Vogt, Wolfram, 4,645,451, Cl. 431-278.000.
- Seelig, Wolfgang, 4,646,313, Cl. 372-64.000.
- SIG Schweizerische Industrie-Gesellschaft: See—
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- Sigma Enterprises, Inc.: See—
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- Sillion, Bernard: See—
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- Silver, Arnold H.: See—
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- Silverman, William: See—
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- Silverstein, Irwin B.: See—
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- Simmons, Richard M., to Telelogic, Inc. Call-routing device, 4,645,879, Cl. 379-355.000.
- Simon, Georg N.: See—
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- Simond, Jacques A.: See—
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- Simpkin, Alan A.: See—
Lee, Kam B.; and Simpkin, Alan A., 4,645,657, Cl. 423-457.000.
- Simpson, John D.; and Butler, Christopher C., to Dana Corporation. Quick disconnect mechanism for selectively securing a shaft to a power take-off end yoke, 4,645,368, Cl. 403-9.000.
- Simpson, Wayne F., to Shell Western E&P Inc. Fireproof boom, 4,645,376, Cl. 405-63.000.
- Sincerbox, Glenn V.: See—
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- Sisti, Giorgio; Italiano, Pietro; Riva, Ermete; and Tosi, Bruno, to Carlo Erba Strumentazione S.p.A. Method and equipment to perform porosimetric analyses, 4,644,779, Cl. 73-38.000.
- Six, John E.: See—
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- Sjogren, Bengt C. H.: See—
Willman, Nils-Erik; Sjogren, Bengt C. H.; Nordh, Lennart G.; Persson, Gustav L.; and Sjolholm, Goran H., 4,645,758, Cl. 514-239.000.
- Sjogren, Christer A., to Quipp, Incorporated. Vacuum accumulating conveyor, 4,645,069, Cl. 198-689.100.

- Sjoholm, Goran H.: See—
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- Skala, Stephen F. Ice monitoring system using neutron moderation. 4,646,068, Cl. 340-580.000.
- SKF GmbH: See—
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- SKF Industrial Trading and Development Co. B.V.: See—
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- SKF Nova AB: See—
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- Lundgren, Bengt, 4,645,395, Cl. 411-210.000.
- Skillicorn, Brian, to Kevex Corporation. Modular portable X-ray source with integral generator. 4,646,338, Cl. 378-110.000.
- Skogler, Brian I.; Nyhof, Eldon J.; and Katsma, William L., to Donnelly Corporation. Vehicular mirror and light assembly. 4,646,210, Cl. 362-142.000.
- Slapvagnskopplingar AB: See—
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- Slatter, John A. G.: See—
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- Slettinger, Meyer: See—
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- Slomski, Bruce A.: See—
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- Small, John D. Disposable floor mat. 4,644,592, Cl. 4-583.000.
- Smallwood, Troy L.: See—
McCauley, Jon R.; Smallwood, Troy L.; and Welliver, Paul, 4,645,396, Cl. 411-387.000.
- Smith, Darrel E., to Ingersoll Cutting Tool Company, The. Thread-cutting apparatus. 4,645,386, Cl. 407-113.000.
- Smith, David M., to Ramtek Corporation. Feedback vector generator for storage of data at a selectable rate. 4,646,262, Cl. 364-900.000.
- Smith, Gary F.: See—
Fox, Daniel W.; Peters, Edward N.; and Smith, Gary F., 4,645,804, Cl. 525-433.000.
- Smith, H. Reid. Method for monitoring saw blade stability and controlling work feed rate on circular saw and bandsaw machines. 4,644,832, Cl. 83-72.000.
- Smith, Jerry H.: See—
Stephens, John F.; Smith, Jerry H.; and Meshreki, Makram H., 4,645,853, Cl. 560-58.000.
- Smith, John W., Jr.; Scherpenberg, Francis A.; Jiang, Ching-Lin; and Bolan, Michael L., to Dallas Semiconductor Corporation. Space-saving back-up power supply. 4,645,943, Cl. 307-150.000.
- Smith, Kenneth R., to Geometrics, Inc. Dynamic range compression for variable area or wiggle trace display method and apparatus. 4,646,275, Cl. 367-67.000.
- Smith Kline Beckman Corporation: See—
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- Smith, Mark G.: See—
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- Smith, Martin P.: See—
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- Smith, Richard K.: See—
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- Smith, Thomas W.: See—
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- SmithKline Diagnostics, Inc.: See—
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- SMW Schneider & Weisshaupt GmbH: See—
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- Snopko, Paul A.: See—
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- Snyder, Daniel S., to Clevite Industries Inc. Liquid level indicator system. 4,644,789, Cl. 73-290.00V.
- Sobrevin Societe de brevets industriels-Etablissement: See—
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- Societe Anonyme de Telecommunications: See—
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- Societe Anonyme dite L'Oreal: See—
Grollier, Jean-Francois; Monnais, Christian; and Peritz, Lyonel, 4,645,663, Cl. 424-62.000.
- Societe Anonyme Kerma: See—
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- Societe Anonyme Recherche, Montage, Production "Polylignes": See—
Chureau, Bernard, 4,644,677, Cl. 43-4.000.
- Societe d'Applications Generales d'Electricite et de Mecanique Sagem: See—
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- Societe d'Etudes Techniques et d'Entreprise Generales Sodeveg: See—
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- Societe Nationale de l'Amiante: See—
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- Societe Nationale Elf Aquitaine: See—
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- Societe Nationale Industrielle et Aerospatiale: See—
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- Soderberg, Paul B., to Soderberg Research & Development, Inc. Tubing drain valve. 4,645,007, Cl. 166-374.000.
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Soderberg, Paul B., 4,645,007, Cl. 166-374.000.
- Soelter, Michael, to MBB GmbH. Impact attenuation. 4,645,142, Cl. 244-100.00A.
- Sokolik, Edmund L.; and Lum, Francis, to Irwin Magnetic Systems, Inc. Method and apparatus for positioning transducers by digital conversion of analog-type signals. 4,646,175, Cl. 360-78.000.
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- Solomon, Elias E. Fault-tolerant control system. 4,646,065, Cl. 340-511.000.
- Soloni, Ugo: See—
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- Sony Corporation: See—
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- Kato, Shinichiro; Chiba, Teruo; and Igarashi, Tadao, 4,646,188, Cl. 360-132.000.
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- Shimpuku, Yoshihide, 4,646,169, Cl. 360-21.000.
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- Ritenour, Roger L., 4,645,992, Cl. 318-469.000.
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- Spontex Incorporated: See—
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- Sprague Electric Company: See—
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- Spraying Systems Co.: See—
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- Squire, Molly A.; and Sawicki, Wasyli. Binder assembly for publications and retainers for same. 4,645,237, Cl. 281-47.000.
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- Star-Kist Foods, Inc.: See—
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- State of Connecticut: See—
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- Steer, Peter L., to Craig Medical Products Limited. Non-return valve assembly. 4,645,500, Cl. 604-378.000.
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- Stella, Joseph A., to Polaroid Corporation. Film processor. 4,645,323, Cl. 354-303.000.
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- Sullivan, Donald F. High resolution printed circuits formed in photopolymer pattern indentations overlaying printed wiring board substrates. 4,645,733, Cl. 430-314.000.
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- Senn, Georg; and Oberholzer, Herbert, 4,644,979, Cl. 139-82.000.
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- Sumitomo Chemical Company, Limited: See—
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- Suncast Corporation: See—
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- Suzuki, Hirokazu; Akiyama, Takehiro; Morita, Teruo; Takeda, Hirofumi; and Masunaga, Hikotaro, to Fujitsu Limited. Variable delay gate circuit. 4,645,958, Cl. 307-597.000.
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- Suzuki, Koji: See—
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Kubo, Seitoku; Taga, Yutaka; and Nakamura, Shinya, 4,644,826, Cl. 74-866.000.
- Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, to Nishin Flour Milling Co., Ltd. Isoprenylamine derivatives. 4,645,862, Cl. 564-370.000.

- Taiho Kogyo Co., Ltd.: See—
Washimi, Kouichi; Shibata, Makoto; and Ugajin, Mitsuuyuki, 4,645,213, Cl. 277-53.000.
- Taira, Takeshi: See—
Nagoshi, Toshiharu; Totsuka, Hidehiko; Taira, Takeshi; Gotoh, Youkichi; and Senuma, Kazuya, 4,645,249, Cl. 293-102.000.
- Taiyo Seiki Iron Works Co., Ltd.: See—
Takaguchi, Hiroyuki, 4,645,392, Cl. 410-80.000.
- Takabayashi, Toshiyuki, to Aisin Seiki Kabushiki Kaisha. Electrical power steering system. 4,645,024, Cl. 180-79.100.
- Takada, Juichiro. Stalk for a seat belt buckle or the like. 4,645,231, Cl. 280-801.000.
- Takada, Mitsuuyuki; Endo, Atsushi; and Takasago, Hayato, to Mitsubishi Denki Kabushiki Kaisha. Composite having conductive layer on resin layer and method of manufacturing. 4,645,734, Cl. 430-315.000.
- Takagi, Satoshi: See—
Hayashi, Hideki; Takagi, Satoshi; and Yoshikawa, Kikuo, 4,646,174, Cl. 360-74.200.
- Takagi, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device including Darlington connections. 4,646,125, Cl. 357-46.000.
- Takaguchi, Hiroyuki, to Taiyo Seiki Iron Works Co., Ltd. Deck fitting. 4,645,392, Cl. 410-80.000.
- Takahama, Akio, to Nippon Kogaku K. K. Transit. 4,644,659, Cl. 33-1.00T.
- Takahashi, Akinori: See—
Nakashima, Syozi; Takahashi, Akinori; Suganuma, Nobuo; and Ito, Satoshi, 4,645,662, Cl. 424-52.000.
- Takahashi, Keietsu; Ueda, Nobuo; Hazue, Masaaki; Yokoyama, Akira; and Ohmomo, Yoshiro, to Nihon Medi-Physics Co., Ltd. Increasing labeling efficiency by forming diagnostic agent in the presence of ascorbic acid or the like. 4,645,660, Cl. 424-1.100.
- Takahashi, Masahiko: See—
Takano, Toshio; and Takahashi, Masahiko, 4,645,046, Cl. 192-4.00A.
- Takahashi, Toshihiro: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370.000.
- Takahashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. System for diagnosing an internal combustion engine. 4,646,008, Cl. 324-158.0MG.
- Takamizawa, Takashi; and Hashizume, Motomu, to Texas Instruments Incorporated. Serial ROM devices. 4,646,265, Cl. 365-104.000.
- Takanabe, Kazunori; Yamamoto, Masaki; Ito, Kenzo; and Fujinami, Hiroshi, to Nippondenso Co., Ltd. Travel guidance system for vehicles. 4,646,089, Cl. 340-995.000.
- Takanashi, Yukio, to Toshiba Kikai Kabushiki Kaisha. Injection device of injection molding machine. 4,645,445, Cl. 425-208.000.
- Takano, Kunio: See—
Kinoshita, Tomoaki; Takano, Kunio; and Tachikawa, Osamu, 4,646,246, Cl. 364-470.000.
- Takano, Toshio; and Sakakiyama, Ryuzo, to Fuji Jukogyo Kabushiki Kaisha. Hydraulic control system for an infinitely variable belt-drive transmission. 4,644,827, Cl. 74-866.000.
- Takano, Toshio; and Takahashi, Masahiko, to Fuji Jukogyo Kabushiki Kaisha. Parking lock mechanism for a vehicle having an infinitely variable transmission. 4,645,046, Cl. 192-4.00A.
- Takao, Takeda; Hitoshi, Yamazaki; Shizuo, Nakano; Kouzi, Yamamoto; Hiroshi, Ito; and Jun, Imai, to Mitsubishi Denki Kabushiki Kaisha. Low pressure discharge lamp. 4,645,972, Cl. 313-634.000.
- Takasago, Hayato: See—
Takada, Mitsuuyuki; Endo, Atsushi; and Takasago, Hayato, 4,645,734, Cl. 430-315.000.
- Takase, Shigehiro: See—
Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, 4,645,765, Cl. 514-233.000.
- Takasu, Katsuji: See—
Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, 4,645,684, Cl. 427-38.000.
- Takasu, Masao: See—
Kato, Ippai; Takasu, Masao; and Maruyama, Nobuo, 4,645,566, Cl. 162-138.000.
- Takasugi, Atsushi, to Oki Electric Industry Co., Ltd. Data I/O circuit with higher integration density for DRAM. 4,646,272, Cl. 365-233.000.
- Takasugi, Wasao: See—
Sugiyama, Hisataka; Shigematsu, Kazuo; Maeda, Takeshi; Saitoh, Atsushi; and Takasugi, Wasao, 4,646,103, Cl. 346-1.100.
- Takatani, Ryoji: See—
Amagasa, Nobutada; Takatani, Ryoji; Inoo, Hiroshi; Suzuki, Kazuichi; and Kiriya, Mitsuo, 4,646,131, Cl. 357-79.000.
- Takayama, Yasuhiko: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshiro, 4,646,158, Cl. 358-236.000.
- Takayanagi, Yoshiaki, to Canon Kabushiki Kaisha. Load control unit in an image forming apparatus. 4,645,982, Cl. 315-307.000.
- Take, Takao; Kaneko, Katsuaki; Kusunoki, Kokyo; and Ichiba, Toshihiro, to Onoda Cement Co. Ltd. and Asahi Asbestos Co. Ltd. Process for producing non-combustible gypsum board and non-combustible laminated gypsum board. 4,645,548, Cl. 156-39.000.
- Takebayashi, Takamitsu: See—
Teramoto, Mitsuake; Saito, Shinkichi; and Takebayashi, Takamitsu, 4,645,207, Cl. 273-77.00A.
- Takeda Chemical Industries: See—
Yasushi, Mikura; Kensuke, Asada; and Hajime, Toguchi, 4,645,830, Cl. 530-351.000.
- Takeda, Hirofumi: See—
Suzuki, Hirokazu; Akiyama, Takehiro; Morita, Teruo; Takeda, Hirofumi; and Masunaga, Hikotaro, 4,645,958, Cl. 307-597.000.
- Takeda, Seiji: See—
Ichikawa, Norio; Takeda, Seiji; and Tsunooka, Kazuhiro, 4,644,797, Cl. 73-706.000.
- Takefuta, Hideyasu, to Diesel Kiki Co., Ltd. Automatic transmission system for vehicles. 4,645,045, Cl. 192-3.620.
- Takegushi, Shunsuke: See—
Umeha, Genkichi; Urano, Shigeru; Hirakawa, Osamu; and Takegushi, Shunsuke, 4,644,912, Cl. 123-90.340.
- Takei, Hirofumi: See—
Omura, Hideo; Kaminaga, Toshiyuki; and Takei, Hirofumi, 4,645,031, Cl. 181-232.000.
- Takei, Masahiro; and Kozuki, Susumu, to Canon Kabushiki Kaisha. Color image pickup apparatus with color filter array comprising filter elements of three different colors arranged to provide reduced folding distortion. 4,646,139, Cl. 358-44.000.
- Takeichi, Michifumi: See—
Ohmura, Keiji; Kawai, Sueo; Murakami, Yoshimasa; Takeichi, Michifumi; and Okazaki, Masato, 4,645,258, Cl. 296-204.000.
- Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device. 4,646,118, Cl. 357-23.600.
- Takeshima, Akira: See—
Tsuchiya, Yutaka; Koishi, Musubu; and Takeshima, Akira, 4,645,918, Cl. 250-213.0VT.
- Takeuchi, Yo: See—
Watanabe, Hideo; Ohori, Koichi; and Takeuchi, Yo, 4,645,543, Cl. 148-2.000.
- Takezono, Tetsuya; Amari, Takaaki; and Imai, Hirotsugu, to Nippon Oil Co., Ltd. Process for isolating and recovering butene-1 of high purity. 4,645,576, Cl. 203-30.000.
- Takimura, Keisuke: See—
Sasaki, Kan; Takimura, Keisuke; Katayama, Nobuaki; and Tsuchiya, Fumitomo, 4,645,029, Cl. 180-249.000.
- Takita, Kentaro: See—
Palmquist, Steven R.; Takita, Kentaro; and Hasegawa, Kazumi, 4,646,297, Cl. 371-1.000.
- Talley, John J., to General Electric Company. Flame retardant polyphenylene oxide thermoplastics. 4,645,787, Cl. 524-122.000.
- Talon, Inc.: See—
Kedzierski, Stanley G., 4,644,613, Cl. 24-421.000.
- Tamaru, Takuya: See—
Ogusu, Mikio; Urata, Kazuo; Tamaru, Takuya; and Kamoshita, Yasuhiro, 4,646,285, Cl. 369-291.000.
- Tamkin, Michael S.: See—
Beaumont, Gregory J.; Duval, Casimir J.; Kula, Frank N.; and Tamkin, Michael S., 4,646,159, Cl. 358-254.000.
- Tammisalo, Erkki; Kanerva, Heikki; Aarnio, Jaakko; Wederhorn, Markku; and Laner, Kai, to Orion-Yhtyma. Apparatus for X-ray photography of the area of the dentition and of the jaws. 4,646,335, Cl. 378-38.000.
- Tamura, Fumihide; and Saotome, Minoru, to Nippon Shokubai Kagaku Kogyo Kogyo Co., Ltd. Silver catalyst for production of ethylene oxide and method for manufacture thereof. 4,645,754, Cl. 502-527.000.
- Tamura, Hisashi; Hirata, Terutaka; Odohira, Tetsu; and Ogawa, Tadahiro, to Yokogawa Hokushin Electric Corporation. Capacitive type converter device. 4,644,798, Cl. 73-708.000.
- Tamura, Masayuki: See—
Hidaka, Yoshiaki; Araki, Junichi; and Tamura, Masayuki, 4,644,911, Cl. 123-52.00M.
- Tan, Ewe-Hong: See—
Deschler, Ulrich; Panster, Peter; Kleinschmit, Peter; Wolff, Siegfried; and Tan, Ewe-Hong, 4,645,850, Cl. 556-431.000.
- Tanaka, Eiji: See—
Suga, Yoshinori; Tanaka, Eiji; Enokido, Nobuo; and Maruyama, Yasuo, 4,645,797, Cl. 525-191.000.
- Tanaka, Hideaki, to Hitachi Construction Machinery Co., Ltd. Locking apparatus of inertial mass drive hydraulic circuit system. 4,644,849, Cl. 91-445.000.
- Tanaka, Koichi: See—
Shinohara, Nobutaka; Hirakawa, Shuji; Minami, Akihiko; and Tanaka, Koichi, 4,646,154, Cl. 358-183.000.
- Tanaka, Kuninobu: See—
Ishikawa, Fumio; and Tanaka, Kuninobu, 4,645,946, Cl. 307-261.000.
- Tanaka, Toshie, to Nifco, Inc. Snap hook. 4,644,611, Cl. 24-231.000.
- Tandem Computers Incorporated: See—
Goodman, William R.; Mayfield, Richard B.; Tawshunsky, Ted; and Zardiackas, Fredrick L., 4,646,300, Cl. 371-33.000.
- Tanimoto, Wataru; and Tsunoyama, Kouzou, to Kawasaki Steel Corp. Method of laser emission spectroscopic analysis of steel and apparatus therefor. 4,645,342, Cl. 358-318.000.
- Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, to Canon Kabushiki Kaisha. Image processing system. 4,646,249, Cl. 364-518.000.
- Tanita, Yoshio: See—
Murata, Yoshinori; and Tanita, Yoshio, 4,645,440, Cl. 418-178.000.

- Tanji, Akihito: See—
Yoshida, Taizo; Tanji, Akihito; Masuda, Masamitsu; and Koyama, Jiro, 4,645,293, Cl. 350-96.140.
- Tarin, Bernard: See—
Saccomani, Daniel; and Tarin, Bernard, 4,644,705, Cl. 52-27.000.
- Tarumi, Noriyoshi: See—
Kimura, Kiyoshi; Okamoto, Yukio; Miwa, Tadashi; Fukuchi, Masakazu; Tarumi, Noriyoshi; and Ito, Kunio, 4,645,327, Cl. 355-3.00R.
- Tata, Robert P., to General Motors Corporation. Magnetic drive vehicle coolant pump, 4,645,432, Cl. 417-420.000.
- Tatematsu, Susumu: See—
Hida, Junichi; Tsukiyama, Yasumitsu; Kito, Yoshikazu; and Tatematsu, Susumu, 4,644,757, Cl. 62-188.000.
- Tatsumi, Eiji, to Pegasus Sewing Maching Mfg. Co., Ltd. Thread chain sewing apparatus for use in overedge sewing machine, 4,644,884, Cl. 112-130.000.
- Tawshunsky, Ted: See—
Goodman, William R.; Mayfield, Richard B.; Tawshunsky, Ted; and Zardiackas, Fredrick L., 4,646,300, Cl. 371-33.000.
- Taylor, F. Warren, to Fasco Industries, Inc. Push-in wall mount for vacuum cleaning system, 4,645,150, Cl. 248-56.000.
- Taylor, George B.: See—
Scharton, Terry D.; and Taylor, George B., 4,645,542, Cl. 134-1.000.
- Technical Manufacturing Corporation: See—
Heide, Ulf B., 4,645,171, Cl. 248-637.000.
- Technion Research & Development Foundation, Ltd.: See—
Cais, Michael; Shimoni, Moshe; and Baniel, Abraham, 4,645,747, Cl. 436-500.000.
- Teed, Richard K., to Professional Medical Products, Inc. Disposable absorbent garment construction, 4,645,501, Cl. 604-390.000.
- Tegethoff, Alfred: See—
Pircher, Hans; Bentz, Werner; and Tegethoff, Alfred, 4,645,720, Cl. 428-683.000.
- Tektron Licensing B.V.: See—
Evans, Harold R., 4,645,201, Cl. 272-97.000.
- Tektronix, Inc.: See—
Hollister, Allen L., 4,646,030, Cl. 331-1.00A.
Knierim, David L.; and Rosener, Harvey J., 4,646,078, Cl. 340-750.000.
Palmquist, Steven R.; Takita, Kentaro; and Hasegawa, Kazumi, 4,646,297, Cl. 371-1.000.
Petrick, Bruce E.; and Wingfield, Perry E., 4,646,355, Cl. 382-54.000.
- Telecommunications Radioelectriques et Telephoniques: See—
Barazecche, Bahman; Alexis, Roger P. J.; and Guidoux, Loic B. Y., 4,645,884, Cl. 379-406.000.
- Teleuc Systems: See—
Chomet, Marc, 4,645,873, Cl. 379-93.000.
- Telefonaktiebolaget LM Ericsson: See—
Andersson, Leif H., 4,645,363, Cl. 400-196.100.
Pernitz, Carl-Gunnar E.; and Roos, Sture G., 4,646,291, Cl. 370-85.000.
- Telelog, Inc.: See—
Simmons, Richard M., 4,645,879, Cl. 379-355.000.
- Telephone Cables Limited: See—
Gill, Ronald Y., 4,645,628, Cl. 264-1.400.
- Telex Computer Products, Inc.: See—
Flanagan, Stephen D.; and Gord, John C., 4,646,322, Cl. 375-27.000.
- Temple, Carroll G.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., to Southern Research Institute. Intermediates for preparing 1,2-dihydropyrido[3,4-b]pyrazines, 4,645,840, Cl. 546-308.000.
- Temple, Victor A. K., to General Electric Company. Method of making an insulated-gate semiconductor device with improved shorting region, 4,644,637, Cl. 29-571.000.
- Temple, Victor A. K., to General Electric Company. Power semiconductor devices with increased turn-off current ratings and limited current density in peripheral portions, 4,646,117, Cl. 357-23.400.
- Tenge, Johannes; and Tenge, Paul A., to Stork Screens B.V. Method for checking patterns and apparatus to carry out such method, 4,646,353, Cl. 382-12.000.
- Tenge, Paul A.: See—
Tenge, Johannes; and Tenge, Paul A., 4,646,353, Cl. 382-12.000.
- Terada, Takami; and Hayashi, Masayuki, to Aisin Seiki Kabushiki Kaisha. Powered seat adjusting device, 4,645,159, Cl. 248-429.000.
- Terada, Toshiyuki, to Kabushiki Kaisha Toshiba. Method of manufacturing GaAs field effect transistor, 4,645,563, Cl. 156-643.000.
- Teramachi, Hiroshi. Simultaneously ground type bearing body and limited sliding bearing unit employing the same, 4,644,702, Cl. 51-291.000.
- Teramoto, Mitsutake; Saito, Shinkichi; and Takebayashi, Takamitsu, to Yokohama Rubber Co., Ltd., The. Set of golf club irons, 4,645,207, Cl. 273-77.00A.
- Terano, Hiroshi: See—
Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsumi; and Takase, Shigehiro, 4,645,765, Cl. 514-233.000.
- Terashita, Takaaki, to Fuji Photo Film Co., Ltd. Color film inspection method, 4,646,252, Cl. 364-525.000.
- Terrade, Francois; and Laheyne, Claude, to Phillips Petroleum Company. Atomizing nozzle and use, 4,645,129, Cl. 239-427.000.
- Terrell, Jacquelyn B.; and Mullersman, Ferdinand H., to General Electric Company. Battery charger for plural cell holding modules, 4,645,995, Cl. 320-2.000.
- Terumo Kabushiki Kaisha: See—
Yoshida, Takao, 4,645,482, Cl. 493-189.000.
- Tervo, John N., to United States of America, Air Force. Termination load carrying device, 4,644,811, Cl. 74-412.0TA.
- Teshima, Minoru: See—
Kikuchi, Hiroshi; Teshima, Minoru; Ishimizu, Hideaki; and Kawasaki, Hiroyoshi, 4,645,277, Cl. 339-17.0LM.
- Tetra Pak International AB: See—
Niske, Jorgen, 4,645,484, Cl. 493-362.000.
- Texaco Inc.: See—
Huang, Wann-Sheng; and Hight, Margaret A., 4,645,003, Cl. 166-245.000.
- Texaco Limited: See—
Bishop, Stephen R., 4,644,983, Cl. 141-387.000.
- Texas A&M University System, The: See—
Lawhon, James T.; and Lusas, Edmund W., 4,645,677, Cl. 426-431.000.
Lawhon, James T., 4,645,831, Cl. 530-374.000.
- Texas Instruments Incorporated: See—
Carvajal, Fernando D., 4,645,950, Cl. 307-415.000.
Chang, Ki S.; Patrick, Michael W.; Sacarisen, Stephen P.; and Stambaugh, Mark A., 4,646,232, Cl. 364-200.000.
Culley, Paul R., 4,646,077, Cl. 340-748.000.
Essig, Daniel L.; Pham, Luat Q.; Sexton, Joe F.; and Tubbs, Graham S., 4,646,257, Cl. 364-760.000.
Laws, Gerald E.; and Diefendorff, Keith E., 4,646,298, Cl. 371-16.000.
LeToumelin, Loic; Tollon, Franck; and Leduc, Yves, 4,645,881, Cl. 379-252.000.
Lisaukas, Richard J., 4,646,195, Cl. 361-25.000.
Paganelli, Jude V., 4,645,965, Cl. 310-338.000.
Palmer, Charles D., 4,646,028, Cl. 330-277.000.
Ruszczky, Vicki V.; and Ting, Youn H., 4,646,051, Cl. 337-107.000.
Takamizawa, Takashi; and Hashizume, Motomu, 4,646,265, Cl. 365-104.000.
Yevak, Harold M., Jr.; Johnson, Larry K.; and O'Malley, Austin S., 4,645,278, Cl. 339-17.00T.
- Textron Inc.: See—
McCauley, Jon R.; Smallwood, Troy L.; and Welliver, Paul, 4,645,396, Cl. 411-387.000.
- Thakrar, Anil C.: See—
Cozzens, Brian E.; Hopkins, John R.; and Thakrar, Anil C., 4,645,285, Cl. 339-96.000.
- Thalmeir, Alfons: See—
Stauss, Eberhard; Klein, Hans-Rudolf; and Thalmeir, Alfons, 4,644,728, Cl. 52-710.000.
- Theeten, Jean-Bernard: See—
Gourrier, Serge; and Theeten, Jean-Bernard, 4,645,683, Cl. 427-38.000.
- Theodore, Ares N.; and Killgoar, Paul C., Jr., to Ford Motor Company. Environmentally durable elastomer composition with excellent low temperature dynamic properties, 4,645,791, Cl. 524-490.000.
- Thermal Concepts, Inc.: See—
Bingham, Grady A., 4,644,759, Cl. 62-324.100.
- Thermom Manufacturing Company: See—
Yagnik, Chandrakant M.; and Goss, David C., 4,645,906, Cl. 219-301.000.
- Theurer, Josef; and Hansmann, Johann, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Continuously advancing track leveling, lining and tamping machine, 4,644,868, Cl. 104-7.200.
- Thevenon, Alain, to Instruments, S.A. Optical device for an emission spectrometer, 4,645,344, Cl. 356-328.000.
- Thielen, Walter: See—
Grethe, Klaus; Hulsen, Ralf; and Thielen, Walter, 4,644,879, Cl. 110-343.000.
- Thirtle, James H.: See—
Bayless, John H.; Steinberg, Neil I.; and Thirtle, James H., 4,645,731, Cl. 430-271.000.
- Thoben, Matthew A.; Clowers, Earl; Cihl, Guy; Ball, Dean; McCurdy, Jack L.; and Rummelsburg, Al S., to Kidde Consumer Durables Corp. Toaster and overhead support, 4,645,909, Cl. 219-411.000.
- Thoma, Peter: See—
Weiss, Franz-Josef; Habermann, Wolfgang; Hammes, Peter; Frommer, Elmar; Thomas, Erwin; and Thoma, Peter, 4,645,579, Cl. 204-182.400.
- Thomas & Betts Corporation: See—
Szostak, Tadeusz; and Kuklo, Anthony F., Jr., 4,644,647, Cl. 30-164.900.
- Thomas, Bradley S.: See—
Penney, Carl M.; Roy, Robert N.; and Thomas, Bradley S., 4,645,917, Cl. 250-201.000.
- Thomas, Charles: See—
Jones, John R., 4,645,093, Cl. 221-93.000.
- Thomas, Clayton A., to Noon, Richard A. Knockdown table or the like, 4,644,876, Cl. 108-111.000.
- Thomas de la Rue and Company Limited: See—
Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., 4,645,240, Cl. 283-74.000.
- Thomas, Erwin: See—
Weiss, Franz-Josef; Habermann, Wolfgang; Hammes, Peter; Frommer, Elmar; Thomas, Erwin; and Thoma, Peter, 4,645,579, Cl. 204-182.400.
- Thomas, Gunter: See—
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- Thompson, David A.: See—
Bocko, Peter L.; Thompson, David A.; and Wein, William J., 4,645,524, Cl. 65-18.100.
- Thompson, Malcolm J.: See—
Tuan, Hsing C.; and Thompson, Malcolm J., 4,646,163, Cl. 358-300.000.
- Thompson, Roby C.; Erdman, Arthur G.; and Dorman, Frank D., to University of Minnesota, Regents of the. Bone fixation device, 4,644,943, Cl. 128-92.0YY.
- Thompson, Steven: See—
Garratt, Ford; and Thompson, Steven, 4,646,178, Cl. 360-98.000.
- Thomsen, Jack W.: See—
Regunathan, Perialwar; and Thomsen, Jack W., 4,645,601, Cl. 210-433.200.
- Thomsen, Leon A.: See—
Bodine, John H.; Bork, Jonathan; Alford, Richard M.; Wright, James H.; and Thomsen, Leon A., 4,646,239, Cl. 364-421.000.
- Thomson-CGR: See—
Lienard, Jean; Denoize, Xavier; and Dessales-Martin, Diane, 4,646,148, Cl. 358-135.000.
- Thomson Components - Mostek Corporation: See—
Davis, Harold L.; and Sheppard, Douglas P., 4,646,306, Cl. 371-49.000.
van Tran, Hiep, 4,645,952, Cl. 307-448.000.
- Thomson - CSF: See—
Brissot, Louis; Berger, Jean-Luc; and Cazaux, Yvon, 4,645,938, Cl. 250-578.000.
Chapelle, Pierre, 4,646,035, Cl. 331-117.00R.
de Sartre, Jean, 4,645,945, Cl. 307-254.000.
- Thomson-CSI: See—
Ricodreau, Jean, 4,645,971, Cl. 313-527.000.
- Thorne, Robert H. Protector garment for men, 4,644,945, Cl. 128-159.000.
- Thurston, Robert D.: See—
Lockett, George E.; and Thurston, Robert D., 4,644,750, Cl. 60-641.200.
- Thyssen Aktiengesellschaft: See—
Rellermeyer, Heinrich; and Kaas, Werner, 4,645,184, Cl. 266-81.000.
- Thyssen Stahl AG: See—
Pircher, Hans; Bentz, Werner; and Tegethoff, Alfred, 4,645,720, Cl. 428-683.000.
- Tichenor, Hardy: See—
Asbo, Einar L.; and Tichenor, Hardy, 4,646,351, Cl. 382-3.000.
- Tiers, George V. D.: See—
Roche, John L.; and Tiers, George V. D., 4,645,714, Cl. 428-458.000.
- Tilles, David J.: See—
Jones, Steven P.; and Tilles, David J., 4,644,633, Cl. 29-566.300.
- Timmermans, Franciscus W. A.; and Kuiper, Bernardus A., to U.S. Philips Corporation. Television camera, 4,646,141, Cl. 358-50.000.
- Ting, Youn H.: See—
Ruszczky, Vicki V.; and Ting, Youn H., 4,646,051, Cl. 337-107.000.
- Tinsley, Paul J. Annulus access valve system, 4,645,006, Cl. 166-374.000.
- Tinti, Jean-Marie: See—
Nofre, Claude; and Tinti, Jean-Marie, 4,645,678, Cl. 426-548.000.
- Tisbo, Cosmo N.; and Tisbo, Thomas A., to Suncast Corporation. Edging strip, 4,644,685, Cl. 47-33.000.
- Tisbo, Thomas A.: See—
Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,644,685, Cl. 47-33.000.
- Tittel, Frank K.: See—
Nighan, William L.; Tittel, Frank K.; and Wilson, William L., Jr., 4,646,311, Cl. 372-60.000.
- Tittler, Philip: See—
Hook, Sidney J.; Tittler, Philip; and Walley, Gerald D., 4,646,202, Cl. 361-382.000.
- Titus, George R.: See—
Davis, Ronald I.; Phalangas, Charalambos J.; and Titus, George R., 4,645,794, Cl. 525-61.000.
- Todaro, George J.: See—
Twardzik, Daniel R.; and Todaro, George J., 4,645,828, Cl. 530-324.000.
- Todd, Alan B. Unit point scoring system and scoreboard, 4,645,206, Cl. 273-1.50R.
- Todd, Leonard M. Telephone answering programming devices, 4,645,875, Cl. 379-70.000.
- Tohkairin, Akira: See—
Kanamaru, Hisanobu; Sasaya, Kazushi; Onuma, Tomiyasu; and Tohkairin, Akira, 4,644,850, Cl. 91-507.000.
- Toida, Tomohiro: See—
Hashimoto, Yoshiyuki; Toida, Tomohiro; Sekine, Kazunori; Saito, Minoru; Kawashima, Takuji; and Kuboyama, Morio, 4,645,667, Cl. 424-92.000.
- Toki, Tadaaki: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94.000.
- Tokico Ltd.: See—
Imaizumi, Tomio, 4,645,043, Cl. 188-319.000.
Inoue, Masaru; and Ashiba, Masahiro, 4,645,042, Cl. 188-319.000.
Kato, Tetsuo; and Imaizumi, Tomio, 4,645,044, Cl. 188-319.000.
Sakurai, Hiroshi, 4,646,182, Cl. 360-104.000.
- Tokusyuku, Nobuhiro: See—
Ishigaki, Masaji; Ohishi, Tetsu; Tokusyuku, Nobuhiro; Kodera, Yoshie; and Fukui, Yukio, 4,645,712, Cl. 428-433.000.
- Tokyo Automatic Machinery Works, Ltd.: See—
Sato, Minoru, 4,645,558, Cl. 156-351.000.
- Tokyo Electric Co., Ltd.: See—
Shimosato, Masashi; Torisawa, Yoshihiro; Nishikawa, Hisashi; and Endo, Mitsuharu, 4,646,111, Cl. 346-140.00R.
- Tokyo Gas Company Limited: See—
Omori, Toshiaki, 4,645,125, Cl. 237-12.000.
- Tokyo Juki Industrial Co., Ltd.: See—
Kinoshita, Tomoaki; Takano, Kunio; and Tachikawa, Osamu, 4,646,246, Cl. 364-470.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Eguchi, Kazutoshi, 4,646,230, Cl. 364-200.000.
Kuwabara, Michiaki; and Hayashi, Hiromasa, 4,646,132, Cl. 357-80.000.
Ogura, Tsuneo, 4,646,121, Cl. 357-38.000.
Ohtsubo, Yasuo, 4,646,180, Cl. 360-103.000.
Okado, Chihiro; Ichimura, Kazushi; and Ambo, Tatsuki, 4,646,222, Cl. 363-56.000.
Ono, Takuro, 4,646,302, Cl. 360-137.000.
Shinohara, Nobutaka; Hirakawa, Shuji; Minami, Akihiko; and Tanaka, Koichi, 4,646,154, Cl. 358-183.000.
Sonobe, Yoshiaki; and Suzuki, Toshiyuki, 4,646,168, Cl. 360-18.000.
Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, 4,646,187, Cl. 360-130.210.
- Tollon, Franck: See—
LeToumelin, Loic; Tollon, Franck; and Leduc, Yves, 4,645,881, Cl. 379-252.000.
- Tolman, J. Leonard; and Ekstrom, Joseph J., to Brigham Young University. Anti-piracy system using separate storage and alternate execution of selected proprietary and public portions of computer programs, 4,646,234, Cl. 364-200.000.
- Tolve, Pietro: See—
D'Angelo, Renato; Ramacciotti, Aldo; Repetto, Eugenio; and Tolve, Pietro, 4,645,534, Cl. 75-10.220.
- Tomalla, Gebhard: See—
Bebber, Hans J.; Rossner, Heinrich-Otto; and Tomalla, Gebhard, 4,645,899, Cl. 219-121.0PN.
- Tomba, Giuseppe: See—
Tomba, Silvano; and Tomba, Giuseppe, 4,645,202, Cl. 272-97.000.
- Tomba, Silvano; and Tomba, Giuseppe, to Metallmeccanica Fracasso S.p.A. Pre-skiing exercise implement, 4,645,202, Cl. 272-97.000.
- Tominaga, Shinji: See—
Inoue, Norihiro; Tominaga, Shinji; Kashima, Masataka; and Nakamura, Ikushi, 4,645,325, Cl. 354-484.000.
- Tomisawa, Norio: See—
Narusawa, Sadayuki; and Tomisawa, Norio, 4,646,303, Cl. 371-38.000.
- Tomita, Akira: See—
Haramaki, Takashi; Shiota, Katsuhiko; Kokura, Satoshi; Funamoto, Takao; and Tomita, Akira, 4,645,119, Cl. 228-183.000.
- Tomita, Seiji; Morinaga, Kaoru; and Kotoda, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Cassette tape recorder, 4,646,187, Cl. 360-130.210.
- Tomita, Toyofumi, to Kabushiki Kaisha Toshiba. Electromagnetic flow meter, 4,644,799, Cl. 73-861.120.
- Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, to Hitachi Zosen Corporation. Apparatus for feeding waste tire chips, 4,645,065, Cl. 198-573.000.
- Tomlinson, Christopher J.: See—
Green, Howard H.; and Tomlinson, Christopher J., 4,646,231, Cl. 364-200.000.
- Toops, Kenneth E., to General Electric Company. Rechargeable battery and electrical circuit for charging thereof, 4,645,996, Cl. 320-2.000.
- Tootle, James N.: See—
Martin, Eugene J.; Tootle, James N.; Fallows, Walter; Lambers, Howard; and Vanderlaan, Robert D., 4,645,178, Cl. 251-229.000.
- Toray Industries, Inc.: See—
Asakura, Toshiyuki; Kobayashi, Hiroaki; and Itoh, Nobuaki, 4,645,702, Cl. 428-141.000.
- Toray Silicone Co., Ltd.: See—
Ona, Isao; and Ozaki, Masaru, 4,645,691, Cl. 427-180.000.
- Torigoe, Yutaka, to Dainichi-Nippon Cables, Ltd. Tape for corrosion protection, 4,645,697, Cl. 428-43.000.
- Torisawa, Yoshihiro: See—
Shimosato, Masashi; Torisawa, Yoshihiro; Nishikawa, Hisashi; and Endo, Mitsuharu, 4,646,111, Cl. 346-140.00R.
- Torley, Jozsef: See—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, 4,645,774, Cl. 514-317.000.
Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, 4,645,779, Cl. 514-648.000.
- Tornblom, Bengt H. Method and apparatus for eddy current testing by at least two different frequency signals, 4,646,013, Cl. 324-225.000.
- Toshiba Kikai Kabushiki Kaisha: See—
Takanashi, Yukio, 4,645,445, Cl. 425-208.000.
- Tosi, Bruno: See—
Sisti, Giorgio; Italiano, Pietro; Riva, Ermete; and Tosi, Bruno, 4,644,779, Cl. 73-38.000.
- Total, Robert V.: See—
Mally, Timothy G.; Hartl, Carroll P.; Orloff, Daniel L.; and Total, Robert V., 4,645,400, Cl. 414-28.000.

Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szabolcs; Szporny, Laszlo; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Aminoethoxybenzylalcohol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,645,774, Cl. 514-317.000.

Toth, Edit; Torley, Jozsef; Fekete, Gyorgy; Szporny, Laszlo; Vereczkey, Laszlo; Palosi, Eva; Klebovich, Imre; Vittay, Pal; Gorog, Sandor; and Hajdu, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Dialkylaminoalkoxybenzylalcohol derivatives, process for their preparation and pharmaceutical compositions containing them. 4,645,779, Cl. 514-648.000.

Totsuka, Hidehiko: See—
Nagoshi, Toshiharu; Totsuka, Hidehiko; Taira, Takeshi; Gotoh, Youkichi; and Senuma, Kazuya, 4,645,249, Cl. 293-102.000.

Toy, Wing N.: See—
Larson, Mikiel L.; Robrock, Anne A.; and Toy, Wing N., 4,646,287, Cl. 370-60.000.

Toyama, Akio; Matsumoto, Shuso; and Tada, Kazunori, to Mutoh Industry Ltd. Automatic drafting machine having air blower means for holding paper down. 4,646,109, Cl. 346-134.000.

Toyama, Takashi: See—
Watanabe, Toshiro; Ohzeki, Minoru; and Toyama, Takashi, 4,646,143, Cl. 358-60.000.

Toyoda Gosei Co., Ltd.: See—
Hayashi, Ken-ichi; Hirozawa, Kunikazu; and Kotaki, Masahiro, 4,646,208, Cl. 362-80.000.

Okumoto, Tadaoki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.

Toyohashi Braided Rope Industrial Co., Ltd.: See—
Ban, Tatsuzo, 4,644,679, Cl. 43-7.000.

Toyosawa, Masao, to Sony Corporation. Optical disk record player with fast access time. 4,646,280, Cl. 369-50.000.

Toyota Jidosha Kabushiki Kaisha: See—
Kawai, Hiroshi; Ohtsuka, Yukio; and Mizuno, Kuniaki, 4,644,996, Cl. 164-336.000.

Kawano, Ken; Sitata, Takuo; and Kouketu, Kouiti, 4,644,815, Cl. 74-467.000.

Kitagawa, Katsutoshi, 4,644,916, Cl. 123-192.00B.

Kobayashi, Nobuyuki; and Ito, Toshimitsu, 4,644,921, Cl. 123-489.000.

Kubo, Seitoku; Taga, Yutaka; and Nakamura, Shinya, 4,644,826, Cl. 74-866.000.

Morita, Shuji; Sato, Katsujiro; Asaoka, Yoshio; Harada, Isao; and Hirano, Tomiyasu, 4,644,914, Cl. 123-90.550.

Ohyama, Yasuo, 4,645,316, Cl. 350-632.000.

Okano, Hiroshi; Kawai, Yukio; and Ii, Akira, 4,644,784, Cl. 73-117.000.

Okawa, Susumu; Ogino, Izumi; and Okuwaki, Shigeru, 4,645,477, Cl. 474-201.000.

Sasaki, Kan; Takimura, Keisuke; Katayama, Nobuaki; and Tsuchiya, Fumitomo, 4,645,029, Cl. 180-249.000.

Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,644,695, Cl. 49-352.000.

Toyota Motor Corporation: See—
Shirai, Ryoichi; Yokoyama, Fumitomo; and Kuramochi, Koujiro, 4,645,441, Cl. 418-126.000.

Washimi, Kouichi; Shibata, Makoto; and Ugajin, Mitsuyuki, 4,645,213, Cl. 277-53.000.

Toyoto Jidosha Kabushiki Kaisha: See—
Hamada, Hideki; and Shimizu, Tsutomu, 4,645,232, Cl. 280-801.000.

Tractech, Inc.: See—
Choma, Alvin A.; and Edwards, Timothy R., 4,644,818, Cl. 74-650.000.

Tracy, C. Edwin; Benson, David K.; and Ruth, Marta R., to United States of America, Energy. Low voltage solid-state lateral coloration electrochromic device. 4,645,308, Cl. 350-357.000.

Travill, Andrew W.: See—
Niven, Ian E.; and Travill, Andrew W., 4,645,616, Cl. 252-135.000.

Trentmann, Heinz: See—
Anthonsen, Reiner; Sack, Wieland; Trentmann, Heinz; and Wollmer, Hans-Georg, 4,645,736, Cl. 430-538.000.

Tretter, Steven A.; Redick, Robert P.; Stuart, Richard L.; Treynor, Paul E.; and Gordon-Smith, David, to Case Communications, Inc. High speed data modem using multilevel encoding. 4,646,305, Cl. 371-43.000.

Treynor, Paul E.: See—
Tretter, Steven A.; Redick, Robert P.; Stuart, Richard L.; Treynor, Paul E.; and Gordon-Smith, David, 4,646,305, Cl. 371-43.000.

Trinh, Dinh Chan: See—
Dufresne, Pierre; Marcilly, Christian; and Trinh, Dinh Chan, 4,645,752, Cl. 502-66.000.

Trojan, Gunter, to Hein, Lehmann AG. Continuously operating centrifuge. 4,645,540, Cl. 127-19.000.

Trost, Rudolf: See—
Pecha, Ernst; Trost, Rudolf; Gneiting, Rudi; and Dieterich, Karl-Eberhard, 4,645,390, Cl. 408-233.000.

Trumbull, Douglas, to Showscan Film Corporation. Apparatus for projecting a largely 360° motion picture image. 4,645,318, Cl. 352-69.000.

Trusty Doll Company, The: See—
Benton, Duane C., 4,645,470, Cl. 446-73.000.

Trutek Research, Inc.: See—
Brisson, Alfred G.; and Nowacki, Christopher, 4,644,958, Cl. 128-725.000.

TRW Cam Gears Limited: See—
Adams, Frederick J., 4,645,026, Cl. 180-132.000.

TRW Inc.: See—
Phillips, Richard R.; Sandell, Robert D.; and Silver, Arnold H., 4,646,060, Cl. 340-347.0AD.

Tsiakas, Nicholas; Sunter, Stephen K.; Wellard, Ronald G.; and Sasaki, Lawrence H., to Northern Telecom Limited. Signal multiplexing circuit. 4,646,289, Cl. 370-76.000.

Tsuchida, Shin: See—
Baba, Yoshio; and Tsuchida, Shin, 4,645,544, Cl. 148-12.70A.

Tsuchida, Yoshio: See—
Komatsu, Kousuke; Miyasuchi, Tsutomu; Misao, Ikuo; Kimura, Mutsumi; Fujiwara, Tadashi; Tsuchida, Yoshio; and Kuroiwa, Junko, 4,646,134, Cl. 358-11.000.

Tsuchihashi, Masaaki: See—
Okumoto, Tadaoki; Nakata, Rikizo; Ichikawa, Masayoshi; Tsuchihashi, Masaaki; and Sakai, Koichi, 4,645,788, Cl. 524-308.000.

Tsuchiya, Fumitomo: See—
Sasaki, Kan; Takimura, Keisuke; Katayama, Nobuaki; and Tsuchiya, Fumitomo, 4,645,029, Cl. 180-249.000.

Tsuchiya, Satoshi; Aoyagi, Minoru; and Kuniyoshi, Yasunobu, to Sony Corporation. Automatic white balance control circuit. 4,646,161, Cl. 358-29.000.

Tsuchiya, Tatsuhiko; and Komatsu, Norimasa, to Alps Electric Co., Ltd. Cassette tape recorder with plural tape guide structure. 4,646,186, Cl. 360-130.210.

Tsuchiya, Yutaka; Koishi, Musubu; and Takeshima, Akira, to Hamamatsu Photonics Kabushiki Kaisha. Instruments for measuring light pulses clocked at high repetition rate and electron tube devices therefor. 4,645,918, Cl. 250-213.0VT.

Tsuda, Hisanori: See—
Osada, Yoshiyuki; Tsuda, Hisanori; Sano, Masafumi; Omata, Satoshi; Takasu, Katsuji; and Hirai, Yutaka, 4,645,684, Cl. 427-38.000.

Tsuji, Yoshitsugu: See—
Matsunaga, Katsumi; and Tsuji, Yoshitsugu, 4,646,052, Cl. 337-166.000.

Tsukada, Nobuo: See—
Matsuura, Eiichi; and Tsukada, Nobuo, 4,645,356, Cl. 368-160.000.

Tsukiyama, Yasumitsu: See—
Hida, Junichi; Tsukiyama, Yasumitsu; Kito, Yoshikazu; and Tate-matsu, Susumu, 4,644,757, Cl. 62-188.000.

Tsunoda, Kazuyuki, to NEC Corporation. Radio paging receiver operable on a word scrolling basis. 4,646,081, Cl. 340-825.440.

Tsunoyama, Kouzou: See—
Tanimoto, Wataru; and Tsunoyama, Kouzou, 4,645,342, Cl. 356-318.000.

Tsuruoka, Kazuhiro: See—
Ichikawa, Norio; Takeda, Seiji; and Tsuruoka, Kazuhiro, 4,644,797, Cl. 73-706.000.

Tsuruse, Hideki: See—
Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; and Tsutsumi, Hironobu, 4,645,993, Cl. 318-568.000.

Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; Tsutsumi, Hironobu; and Ushio, Hiroshi, 4,646,354, Cl. 382-28.000.

Tsutsumi, Hironobu: See—
Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; and Tsutsumi, Hironobu, 4,645,993, Cl. 318-568.000.

Naito, Akira; Kodama, Tetsuji; Tsuruse, Hideki; Tsutsumi, Hironobu; and Ushio, Hiroshi, 4,646,354, Cl. 382-28.000.

Tsuyama, Yoshito: See—
Shimazaki, Yasumi; Tsuyama, Yoshito; Haga, Hiroyo; and Han-zawa, Manabu, 4,645,893, Cl. 219-62.000.

Tsuzuki, Akira: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Tuan, Hsing C.; and Thompson, Malcolm J., to Xerox Corporation. Ion projection copier. 4,646,163, Cl. 358-300.000.

Tubbs, Graham S.: See—
Essig, Daniel L.; Pham, Luat Q.; Sexton, Joe F.; and Tubbs, Graham S., 4,646,257, Cl. 364-760.000.

Tucker, Thomas A.: See—
Crockett, Peter N.; Jewett, Robert P.; Scriver, Arthur J.; and Tucker, Thomas A., 4,646,236, Cl. 364-200.000.

Tudor Webasto Limited: See—
Dufft, Jurgen, 4,645,259, Cl. 296-223.000.

Tupper, Alan W.; and Flux, Peter R. Releasable locking coupling or support device. 4,644,617, Cl. 24-611.000.

Turolia, Jean-Pierre; and Belin, Simone, to LCC-CICE Compagnie Europeenne de Composants Electroniques. Filter contact and its use in electric connectors. 4,646,037, Cl. 333-182.000.

Tuszyski, Alfons A., to University of Minnesota, Regents of the. Circuit for high impedance broad band probe. 4,646,002, Cl. 324-72.500.

Twardzik, Daniel R.; and Todaro, George J., to ONCOGEN. Platelet related growth regulator. 4,645,828, Cl. 530-324.000.

Tyler, John E.: See—
Ovshinsky, Stanford R.; Keem, John E.; Flasek, James D.; Bergeron, Richard C.; and Tyler, John E., 4,645,715, Cl. 428-469.000.

Uchida, Hiroyuki: See—
Sasaki, Shin; Nemoto, Tsuneo; Yamashina, Shuichi; and Uchida, Hiroyuki, 4,646,189, Cl. 360-12.000.

Uchida, Itsuo: See—
Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, 4,645,765, Cl. 514-233.000.

Uchiki, Hideo: See—
Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, 4,645,647, Cl. 422-81.000.

Uchimura, Shun-ichiro: See—
Makino, Daisuke; Sato, Hidetaka; Suzuki, Hiroshi; Uchimura, Shun-ichiro; and Suzuki, Hiroshi, 4,645,688, Cl. 427-82.000.

Uchiyama, Kunio; and Nishimukai, Tadahiko, to Hitachi, Ltd. Content addressable memory having dual access modes. 4,646,271, Cl. 365-49.000.

Ueba, Yoshinobu: See—
Shioya, Jun; Yamaguchi, Yoichi; Ueba, Yoshinobu; and Matsubara, Hironaga, 4,645,713, Cl. 428-457.000.

Ueda, Nobuo: See—
Takahashi, Keietsu; Ueda, Nobuo; Hazue, Masaaki; Yokoyama, Akira; and Ohmomo, Yoshiro, 4,645,660, Cl. 424-1.100.

Uematsu, Hiroyuki: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Ueno, Tatsunori, to Fuji Electric Corporate Research & Development, Ltd. Signal conversion circuit for photosensor array. 4,645,955, Cl. 307-518.000.

Ugajin, Mitsuyuki: See—
Washimi, Kouichi; Shibata, Makoto; and Ugajin, Mitsuyuki, 4,645,213, Cl. 277-53.000.

UHR Corporation: See—
Jones, Richard D., 4,645,908, Cl. 219-378.000.

Ujihara, Hiroshi, to Ohi Seisakusho Co., Ltd. Winding device for cables. 4,644,694, Cl. 49-352.000.

Umeha, Genkichi; Urano, Shigeru; Hirakawa, Osamu; and Takegushi, Shunsuke, to Nippon Piston Ring Co., Ltd. Cam shaft and method of manufacture. 4,644,912, Cl. 123-90.340.

Umehara, Jun: See—
Inoguchi, Kenichi; Iwakura, Yoichi; and Umehara, Jun, 4,644,919, Cl. 123-438.000.

Union Carbide Corporation: See—
De Vito, Joseph; Lytle, Kevin A.; Sutton, Ronald D.; Westendorf, Alan J.; Larson, Nils E.; and Uttrachi, Gerald D., 4,645,903, Cl. 219-137.00R.

Doshi, Kishore J., 4,645,516, Cl. 55-16.000.

Koleske, Joseph V.; and Kwiatkowski, George T., 4,645,781, Cl. 522-169.000.

Madden, Paul R.; Kostanecki, Andrew T.; Mileos, George; and Michno, Michael J., Jr., 4,645,091, Cl. 220-85.00P.

Pohl, Eric R.; and Osterholtz, Frederick D., 4,645,816, Cl. 528-28.000.

Union Carbide Corporation: See—
Best, Donald F., 4,645,750, Cl. 502-26.000.

Union Oil Company of California: See—
Green, James A., II; and Young, Donald C., 4,645,859, Cl. 564-38.000.

Green, James A., II; and Young, Donald C., 4,645,860, Cl. 564-73.000.

Kokayeff, Peter, 4,645,587, Cl. 208-91.000.

Switzer, Jay A., 4,644,638, Cl. 29-572.000.

Uniswitch AG: See—
Nowak, Claude; and Landis, Peter, 4,644,768, Cl. 70-364.00R.

United Chemical Corporation: See—
Friedman, Lester; and Hamilton, Jock A., 4,645,577, Cl. 204-62.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defense in Her Britannic Majesty's Government of the: See—
Corbin, Malcolm J.; and Jones, John G., 4,646,227, Cl. 364-184.000.

United States of America
Air Force: See—
Jones, Steven P.; and Tilles, David J., 4,644,633, Cl. 29-566.300.

Stevenson, Theodore E., 4,646,094, Cl. 342-155.000.

Tervo, John N., 4,644,811, Cl. 74-412.0TA.

Army: See—
Hacskaylo, Michael, 4,646,120, Cl. 357-30.000.

Mon, George, 4,644,781, Cl. 73-55.000.

Otto, William F.; Roberts, Thomas G.; Jenkins, Andrew H.; and Honeycutt, Thomas E., 4,645,448, Cl. 431-1.000.

Energy: See—
Birn, Daniel L.; and Reginato, Louis L., 4,646,027, Cl. 328-233.000.

Burelbach, James P.; Kann, William J.; Pan, Yen-Cheng; Sai-veau, James G.; and Seidensticker, Ralph W., 4,645,638, Cl. 376-254.000.

Fraoli, Anthony V.; and Schertz, William W., 4,645,519, Cl. 55-208.000.

Nodd, Dennis G.; and Walker, Richard J., 4,644,878, Cl. 110-264.000.

Potter, Jerry D., 4,645,639, Cl. 376-260.000.

Tracy, C. Edwin; Benson, David K.; and Ruth, Marta R., 4,645,308, Cl. 350-357.000.

National Aeronautics and Space Administration: See—
Vaicaitis, Rimas, 4,644,794, Cl. 73-583.000.

National Aeronautics & Space Administration: See—
Blume, Hans-Juergen C., 4,645,358, Cl. 374-9.000.

Navy: See—
Soper, William G., 4,644,843, Cl. 89-7.000.

U.S. Philips Corporation: See—
Bauer, Manfred, 4,646,340, Cl. 378-155.000.

Bouman, Anton J.; Kostlin, Heiner; and Kroontje, Wiggert, 4,645,967, Cl. 313-248.000.

Gourrier, Serge; and Theeten, Jean-Bernard, 4,645,683, Cl. 427-38.000.

Gustafsson, Jan A. C., 4,645,892, Cl. 219-10.55D.

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USM Corporation: See—
Fischer, Eleonore, 4,645,810, Cl. 526-204.000.

Jackson, Rodney P., 4,644,634, Cl. 29-566.300.

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- Utscheid, Georg. Electric overhead trolley conveyor. 4,644,873, Cl. 105-29.100.
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- Vaillancourt, Vincent L. Vascular access implant needle patch. 4,645,495, Cl. 604-180.000.
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- Valaas, Andrew M., to Boeing Company. The. Aircraft automatic braking system. 4,646,242, Cl. 364-426.000.
- Valbona, Bruno M.; Satkunas, Bruno; and Brym, Stanley J., to Dynamics Corporation of America. Conversion unit for a portable hand-held appliance and convertible mixer combination utilizing same. 4,645,352, Cl. 366-349.000.
- Valenti, Salvatore: See—
Heller, Jurg; Kissling, Bruno; Robinson, Tibor; and Valenti, Salvatore, 4,645,511, Cl. 8-549.000.
- Vallee, Antoine; and Cortinchi, Henri, to Arjomari-Prioux. Material in sheet form, convertible into a finished product by moulding-stamping or heat-shaping, comprising reinforcing fibers and a thermoplastics resin in power form, and process for preparing said material. 4,645,565, Cl. 162-123.000.
- Valleylab, Incorporated: See—
Valli, Bruno, to Olympus Winter & Ibe, GmbH. High frequency resection endoscope with movement actuated switch. 4,644,950, Cl. 128-303.150.
- Van Den Brekel, Jacques; Crothers, Carlyle W.; and Squires, Dale B., to Northern Telecom Limited. Shaped solder pad for surface mounting electronic devices and a surface mounting position incorporating such shaped pads. 4,645,114, Cl. 228-56.300.
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- van der Ligt, Jacobus W. C.: See—
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- Vanderlinden, Roy E.; and Francis, John H., to Frederick Manufacturing Company. Conical drive. 4,644,810, Cl. 74-191.000.
- Van Duser, Harold J., to Seats Incorporated. Cam operated locking device. 4,645,160, Cl. 248-429.000.
- van Esdonk, Johannes, to U.S. Philips Corporation. Display tube with fluid cooled window. 4,645,966, Cl. 313-24.000.
- Van Hecke, Francis C.: See—
Pouillart, Roger V.; and Van Hecke, Francis C., 4,645,656, Cl. 423-396.000.
- Vanlangendonck, Robert: See—
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- van Leynseele, Francis J.: See—
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- van Paassen, Nicolaas A. I.; and Verschuur, Jacobus G., to Stamicarbon B.V. Salts of acid ether sulphates and a process for the preparation of these salts. 4,645,627, Cl. 260-501.210.
- Van Ruyven, Lodewijk J., to U.S. Philips Corporation. Bar code reader. 4,645,915, Cl. 235-473.000.
- van Steden, Gerhard, to Hoogovens Groep B.V. Apparatus for cooling a work roll in a rolling mill for rolling metal strip. 4,644,774, Cl. 72-201.000.
- van Tran, Hiep, to Thomson Components-Mostek Corporation. High speed NOR gate. 4,645,952, Cl. 307-448.000.
- van Wersch, Kurt, to A. Monforts GmbH & Co. Method and apparatus for applying evaporable finishing means or textile material. 4,644,601, Cl. 8-149.200.
- Vapor Energy Corp.: See—
Wyatt, W. Gerald; and Redus, Richard, 4,644,967, Cl. 137-599.000.
- Varon, Jacques J.; Martin, Marie-Josephe; and Mahieu, Marc, to U.S. Philips Corporation. Semiconductor device having an electroluminescent diode. 4,646,116, Cl. 357-17.000.
- Vasavanonda, Sudthichard: See—
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- Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Polyvinyl fluoride coating process. 4,645,692, Cl. 427-318.000.
- Vavrek, Robert M.; and Grigsby, Nancy S., to General Electric Company. Shielded room construction for containment of fringe magnetic fields. 4,646,046, Cl. 335-301.000.
- VDO Adolf Schindling AG: See—
Wallrafen, Werner, 4,646,011, Cl. 324-208.000.
- Vepa AG: See—
Feissner, Gerold, 4,645,109, Cl. 226-42.000.
- Verbeeck, Pierre, to Phormium N.V. Woven screen material and method of making. 4,644,684, Cl. 47-31.000.
- Verboom, Johannes J., to Laser Magnetic Storage International Company. Read channel for an optical recorder. 4,646,281, Cl. 369-59.000.
- Vercellotti, Leonard C.: See—
Engel, Joseph C.; Boomgaard, Dirk J.; and Vercellotti, Leonard C., 4,646,319, Cl. 375-7.000.
- Verdone, Michael A., to Memorex Corporation. Fabrication of "Delta" magnetic head-sliders. 4,644,641, Cl. 29-603.000.
- Vereczkey, Laszlo: See—
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- Verhaagen, Donald R.: See—
Coleman, Darrel F.; Kalin, Horst W.; and Verhaagen, Donald R., 4,645,242, Cl. 285-158.000.
- Verhoeven, Thomas R.; McNamara, James M.; and Slettinger, Meyer, to Merck & Co., Inc. Process for preparing HMG-CoA reductase inhibitors with a 3,5-dihydroxypentanoate subunit. 4,645,854, Cl. 560-60.000.
- Versailles, Richard E.: See—
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- Verschuur, Jacobus G.: See—
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- Vesterby, Hans, to Danmarks Geotekniske Institut. Method of causing sedimentation of sedimentary solid material transported in a body of water, such as a lake, a sea, or an ocean. 4,645,377, Cl. 405-74.000.
- Veth, George J., to Food Automation-Service Techniques, Inc. Header assembly for deep fat frying cooking system. 4,644,931, Cl. 126-21.00R.
- Vianello, Giorgio; and Soloni, Ugo, to Officina Meccanica Della Stanga-O.M.S. S.p.A. Depressed floor turnage for articulated rail vehicles. 4,644,872, Cl. 105-801.000.
- Vick, Ralph L., to Allied Corporation. High pressure pilot operated valve. 4,644,971, Cl. 137-625.640.
- Vickers Public Limited Company: See—
Roberts, Gareth G.; Blackburn, Brian; Petty, Michael C.; and Holcroft, Brian, 4,645,693, Cl. 427-402.000.
- Victor Company of Japan: See—
Iizuka, Jiro; and Ozu, Akira, 4,646,156, Cl. 358-225.000.
- Ojima, Kumiko; Naruse, Tsunehide; and Matsumoto, Yukio, 4,645,724, Cl. 428-695.000.
- Victor Company of Japan, Ltd.: See—
Fukuda, Hisatoshi; and Fujita, Mitsuo, 4,646,153, Cl. 358-167.000.
- Hamaguchi, Toshiaki; Namikawa, Kazuhira; Nakamura, Mutsuaki; Kuroda, Akio; and Akai, Toshio, 4,646,284, Cl. 369-276.000.
- Hirota, Akira, 4,646,165, Cl. 358-310.000.
- Mizuno, Hideaki; and Doi, Keiichiro, 4,646,282, Cl. 369-126.000.
- Vierling, Donald E. Method of producing steam. 4,644,905, Cl. 122-31.00A.
- Vincent, James P.; and Weidmann, Mary E., to International Business Machines Corporation. Annotated calendar assembly. 4,645,238, Cl. 283-67.000.
- Vincent, Philippe: See—
Serre, Roberto; Abbott, Hayden; Kerbart, Yves; and Vincent, Philippe, 4,646,240, Cl. 364-422.000.
- Vinciguerra, Costantino, to Nuovo Pignone S.p.A. Overhead travelling crane for power gas turbine bays. 4,645,083, Cl. 212-210.000.
- Vinn, Charles L.; and Harris, David J., to Raytheon Company. Integrated circuit Zener diode. 4,646,114, Cl. 357-13.000.
- Visa International Service Association: See—
Asbo, Einar L.; and Tichenor, Hardy, 4,646,351, Cl. 382-3.000.
- Vitafin N.V.: See—
Wittkamp, Frederik H. M.; and Rickards, Anthony F., 4,644,954, Cl. 128-419.00PG.
- Vitriol, William A.; and Brown, Raymond L., to Hughes Aircraft Company. Process for fabricating dimensionally stable interconnect boards. 4,645,552, Cl. 156-89.000.
- Vittay, Pal: See—
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- Vivian, Thomas A., to Dow Chemical Company. The. Stripping compositions with reduced vapor containing MgCl_2 , a wax and ethylene or propylene carbonate. 4,645,617, Cl. 252-165.000.
- Voegel, Robert L.; and Wright, Kenton B., to Aluminum Company of America. Current distribution assembly for electrode used in an electrolytic reduction cell. 4,645,582, Cl. 204-286.000.
- Voest-Alpine Aktiengesellschaft: See—
Zierler, Reinhard, 4,644,844, Cl. 89-40.080.
- Voggenthaler, Ludwig; Opershall, Hermann; and Weber, Jakob, to Kraftwerk Union Aktiengesellschaft. Apparatus for electropolishing the inner surface of U-shaped heat exchanger tubes. 4,645,581, Cl. 204-275.000.
- Vogt, Wolfram: See—
Schneider, Hartmut; Lebetzki, Egon; and Vogt, Wolfram, 4,645,451, Cl. 431-278.000.
- Vokaty, Joseph L. Tool holder. 4,645,104, Cl. 224-253.000.

- von Bernuth, Hans-Dietrich; and Heine, Franz, to O&K Orenstein & Koppel Aktiengesellschaft. Multi-function directional handle. 4,645,030, Cl. 180-333.000.
- von der Heide, Hans. Speed-controlled apparatus for cutting and taking out blocks from a silo fodder bin. 4,644,657, Cl. 30-379.500.
- Von Hellens, Walter; Mohammed, Sheikh A. H.; and Hallman, Robert, to Polysar Limited. EPDM elastomeric compositions. 4,645,793, Cl. 524-518.000.
- Voss, Donald J., to Motorola, Inc. Video graphic dynamic RAM. 4,646,270, Cl. 365-230.000.
- Vsesojuzny Nauchno-Issledovatel'skiy Institut Meditsinskikh Polimerov: See—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Avxentiev, Anatoly G.; and Rylov, Evgeny E., deceased, 4,645,487, Cl. 604-58.000.
- Vuillermoz, Maxime L.: See—
Roberts, John P.; and Vuillermoz, Maxime L., 4,644,783, Cl. 73-116.000.
- W. C. Heraeus GmbH: See—
Opower, Hans, 4,646,314, Cl. 372-95.000.
- Reynolds, Quentin M., 4,646,057, Cl. 338-312.000.
- Wachholz, Winfried: See—
Nicolai, Rainer; Wachholz, Winfried; and Weicht, Ulrich, 4,645,641, Cl. 376-283.000.
- Wachi, Hiroshi; Kaya, Seitoku; and Kojima, Gen, to Asahi Glass Company, Ltd. Curable composition of elastomeric vinylidene fluoride copolymer. 4,645,799, Cl. 525-199.000.
- Wada, Fumio: See—
Asami, Kazutomo; Sano, Fumiaki; Ishijima, Koji; Wada, Fumio; and Hirahara, Takuhio, 4,645,429, Cl. 417-312.000.
- Wada, Yoneji, to Origin Company Limited. Filter medium and method of manufacturing the same. 4,645,597, Cl. 210-222.000.
- Wadstrom, Torkel M.: See—
Hjerten, Wilhelm E. S.; and Wadstrom, Torkel M., 4,645,757, Cl. 514-54.000.
- Wagner, William R., to Rockwell International Corporation. Fixed geometry rocket thrust chamber with variable expansion ratio. 4,644,745, Cl. 60-258.000.
- Wahl, Robert O.: See—
Finer, Paul; Wahl, Robert O.; and Silverman, William, 4,646,341, Cl. 378-207.000.
- Wahlstrom, Olle L. W., to Hammarberg, Lars. Method and apparatus for producing spacers or blocks primarily for use in load pallet structures. 4,644,770, Cl. 72-51.000.
- Wahlstrom, Sven E.: See—
Ransburg, David P.; Fletcher, Douglas C.; and Wahlstrom, Sven E., 4,646,224, Cl. 364-143.000.
- Waichunas, Kenneth P.: See—
Hopple, Lyle O.; Chute, Richard; Scharnweber, David H.; and Waichunas, Kenneth P., 4,644,925, Cl. 123-558.000.
- Wakabayashi, Takayuki: See—
Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, 4,645,065, Cl. 198-573.000.
- Wakai, Yoichi; and Chihara, Hiroyuki, to Seiko Epson Kabushiki Kaisha. Pocket television receivers. 4,646,157, Cl. 358-236.000.
- Wakazawa, Tadashi: See—
Shibahara, Seiji; Okonogy, Tsuneco; Murai, Yasushi; Fukatsu, Shunzo; Niida, Tarō; Christensen, Burton G.; and Wakazawa, Tadashi, 4,645,769, Cl. 514-210.000.
- Walchli, Urs: See—
Hanni, Eduard; and Walchli, Urs, 4,644,834, Cl. 83-415.000.
- Waldecker, Thomas J.: See—
Dewar, Robert; Saling, Jeremy; Waldecker, Thomas J.; and Barlow, Neil E., 4,645,348, Cl. 356-376.000.
- Waldemar Link GmbH & Co.: See—
Engelbrecht, Eckart; Nieder, Elmar; and Keller, Arnold, 4,645,507, Cl. 623-23.000.
- Link, Helmut D., 4,645,506, Cl. 623-23.000.
- Waldschutz, Heinz: See—
Albrecht, Wilhelm; Wurz, Dieter; Peitsmeier, Karl; Waldschutz, Heinz; Ruckert, Walter; Kuhn, Klaus; and Patzelt, Helmut, 4,644,817, Cl. 74-552.000.
- Walker, Richard J.: See—
Nodd, Dennis G.; and Walker, Richard J., 4,644,878, Cl. 110-264.000.
- Walker, Robert A., to Dynatech, Inc. Air mattress with pressure relief valve. 4,644,597, Cl. 5-449.000.
- Walkhoff, Klaus, to Raichle Sportschuh AG. Athletic footwear, especially a ski boot. 4,644,671, Cl. 36-119.000.
- Wallach, Steven J.: See—
Weatherford, James R.; Kimmel, Arthur T.; and Wallach, Steven J., 4,646,233, Cl. 364-200.000.
- Walley, Gerald D.: See—
Hook, Sidney J.; Tittler, Philip; and Walley, Gerald D., 4,646,202, Cl. 361-382.000.
- Wallrafen, Werner, to VDO Adolf Schindling AG. Electronic angular position transmitter with toroidal core and rotatable magnet. 4,646,011, Cl. 324-208.000.
- Walsh, Peter J., to Duro-Test Corporation. Selective color filter. 4,645,290, Cl. 350-1.700.
- Walter, Lawrence A.: See—
Morris, Bernard L.; Nagy, Jeffrey J.; and Walter, Lawrence A., 4,645,948, Cl. 307-296.00R.
- Walters, James C.: See—
Krambeck, Frederick C.; Richardson, Craig A.; and Walters, James C., 4,644,738, Cl. 56-259.000.
- Walton, Richard R.; and Munchbach, George E., to Walton, Richard R. Fabric pickup and the like. 4,645,193, Cl. 271-18.300.
- Wanat, Ronald J., to Motorola, Inc. Ceramic resonator filter with electromagnetic shielding. 4,646,038, Cl. 333-202.000.
- Wang, Chien-Yuan. Safety joint mechanism, particularly for folding ladders. 4,645,371, Cl. 403-93.000.
- Wang, Hong J. Electric device for opening or shutting automotive doors. 4,644,693, Cl. 49-280.000.
- Wang, Taylor G.; Granett, Dan; and Akutagawa, Wesley M., to California Institute of Technology. Shell forming apparatus. 4,645,442, Cl. 425-6.000.
- Ward, Frederick E.: See—
Corey, Paul F.; Ward, Frederick E.; Yip, Kin F.; and Yip, Meitak T., 4,645,842, Cl. 548-541.000.
- Ward, Gregg D., to Energy Pipelines International Company. Mechanical pipe joint. 4,645,247, Cl. 285-382.100.
- Ward, Hans A.: See—
Dressler, Hans; and Ward, Hans A., 4,645,780, Cl. 514-731.000.
- Ward, Roger W., to Quartztronic, Inc. Pressure measurement apparatus and method. 4,644,796, Cl. 73-702.000.
- Ward, Roger W., to Quartztronic, Inc. Force measurement apparatus and method. 4,644,803, Cl. 73-862.580.
- Warden, Roland R. Portable golf ball retriever. 4,645,254, Cl. 294-19.200.
- Wardenaar, Hendrik C.; and Kuppens, Bernardus J., to U.S. Philips Corporation. Method of and device for placing chip-type electrical and/or electronic components on a substrate. 4,644,642, Cl. 29-834.000.
- Warner, John C.: See—
Bateman, Paul M.; and Warner, John C., 4,645,479, Cl. 474-242.000.
- Warner, Timothy R., to Avco Corporation. Propeller control system. 4,645,420, Cl. 416-48.000.
- Washimi, Kouichi; Shibata, Makoto; and Ugajin, Mitsuyuki, to Taiho Kogyo Co., Ltd.; and Toyota Motor Corporation. Non-contact type seal device for turbocharger. 4,645,213, Cl. 277-53.000.
- Watahiki, Seishi: See—
Sonoda, Shinji; Ozaki, Norihiko; Watahiki, Seishi; Sakuma, Yasuzi; and Yamaguchi, Masayoshi, 4,644,791, Cl. 73-432.100.
- Watanabe, Hideo; Ohori, Koichi; and Takeuchi, Yo, to Mitsubishi Aluminum Kabushiki Kaisha. Superplastic aluminum alloy. 4,645,543, Cl. 148-2.000.
- Watanabe, Hiroyuki; and Masuda, Fumitoshi, to Murata Manufacturing Co., Ltd. Rotary trimmer potentiometer. 4,646,055, Cl. 338-162.000.
- Watanabe, Junji, to Kabushiki Kaisha Toshiba. Sheet feeder. 4,645,192, Cl. 271-9.000.
- Watanabe, Junji, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,645,333, Cl. 355-30.000.
- Watanabe, Mituru, to Oki Electric Industry Co., Ltd. Water control valve with pneumatic actuator. 4,644,969, Cl. 137-625.270.
- Watanabe, Osamu: See—
Ooshio, Hirosuke; and Watanabe, Osamu, 4,645,218, Cl. 279-1.00M.
- Watanabe, Toshinori; and Noguchi, Ichiro, to Alps Electric Co., Ltd. Magnetic head assembly including a leaf spring. 4,646,185, Cl. 360-121.000.
- Watanabe, Toshiro; Ohzeki, Minoru; and Toyama, Takashi, to Sony Corporation. Video projector type television receiver. 4,646,143, Cl. 358-60.000.
- Watercraft Offshore Canada Ltd.: See—
Rea, Kenneth A.; and Reynolds, Alan H., 4,645,023, Cl. 180-9.320.
- Watjen, Frank: See—
Engelstoft, Mogens; Honore, Tage; Watjen, Frank; Petersen, Erling N.; and Huth, Andreas, 4,645,773, Cl. 514-292.000.
- Watson, Gary Q., to Morrow Manufacturing Co., Inc. Earth anchor. 4,644,712, Cl. 52-162.000.
- Watt, Richard L., to Weber-Knapp Company. Adjustable keyboard supporting mechanism. 4,644,875, Cl. 108-93.000.
- Waugh, Robert E.; Nannig, Urban R.; and Rockwood, Clyde R., to D. L. Auld Company, The. Substrateless decorative embedded article and method of making. 4,645,556, Cl. 156-242.000.
- Wavecom: See—
Hoffman, Jerzy, 4,646,043, Cl. 335-255.000.
- Way, Donald R., to Garrett Corporation, The. Adjustable gear pump. 4,645,439, Cl. 418-104.000.
- Weatherford, James R.; Kimmel, Arthur T.; and Wallach, Steven J. Physical cache unit for computer. 4,646,233, Cl. 364-200.000.
- Weaver, Richard A., to L. A. Weaver Co., Inc. Template and work-piece holder. 4,644,985, Cl. 144-145.00R.
- Webb, James E., Sr.; and Dunn, William F., to Dunn, William F. Automatic closing system for window blinds. 4,644,990, Cl. 160-5.000.
- Webber, Ronald R. Container making device. 4,645,113, Cl. 227-154.000.
- Weber, Jakob: See—
Voggenthaler, Ludwig; Opershall, Hermann; and Weber, Jakob, 4,645,581, Cl. 204-275.000.
- Weber-Knapp Company: See—
Watt, Richard L., 4,644,875, Cl. 108-93.000.
- Weber, William R. Wallboard clip. 4,644,723, Cl. 52-514.000.
- Wederhorn, Markku: See—
Tammisalo, Erkki; Kanerva, Heikki; Aarnio, Jaakko; Wederhorn, Markku; and Laner, Kai, 4,646,335, Cl. 378-38.000.
- Wedgtrac Corporation: See—
Nelson, Bertel S., 4,644,812, Cl. 74-425.000.

Weeks, Vaughan B., to Medical Engineering Corporation. Catheter anchoring device. 4,645,492, Cl. 604-174.000.

Wehle, Anton: See—
Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Rysell, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, 4,644,658, Cl. 30-381.000.

Weicht, Ulrich: See—
Nicolai, Rainer; Wachholz, Winfried; and Weicht, Ulrich, 4,645,641, Cl. 376-283.000.

Weidmann, Markus; Ott, Hans; and Koch, Wilhelm H., to Gretag Aktiengesellschaft. Densitometer. 4,645,350, Cl. 356-418.000.

Weidmann, Mary E.: See—
Vincent, James P.; and Weidmann, Mary E., 4,645,238, Cl. 283-67.000.

Weimer, Eugen: See—
Lang, Walter; Mueller, Gerhard; and Weimer, Eugen, 4,644,948, Cl. 128-303.100.

Wein, William J.: See—
Bocko, Peter L.; Thompson, David A.; and Wein, William J., 4,645,524, Cl. 65-18.100.

Weiner, Harvey I., to United Technologies Corporation. Valve and manifold for compressor bore heating. 4,645,416, Cl. 415-115.000.

Weir, Donald R.: See—
Mackiw, Vladimir N.; Nadezhdin, Alexander; and Weir, Donald R., 4,645,532, Cl. 75-0.50A.

Weiss, Franz-Josef; Habermann, Wolfgang; Hammes, Peter; Frommer, Elmar; Thomas, Erwin; and Thoma, Peter, to BASF Aktiengesellschaft. Preparation of aqueous hydroxylamine solutions. 4,645,579, Cl. 204-182.400.

Weitzel, Ingo: See—
Criegern, Rolf V.; and Weitzel, Ingo, 4,645,929, Cl. 250-307.000.

Welbourn, Christopher M.; Smith, Martin P.; and Stewart, Andrew D. G., to Spandrel Establishment. Integrating sphere arrangement for producing size-corrected color signals. 4,645,922, Cl. 250-226.000.

Welch, Hubert E. Machine for stacking nestable extruded cans. 4,645,061, Cl. 198-420.000.

Weld Racing Enterprises, Inc.: See—
Weld, Richard G., 4,645,267, Cl. 301-37.00R.

Weld, Richard G., to Weld Racing Enterprises, Inc. Vehicle wheel having non-suspension wire spokes. 4,645,267, Cl. 301-37.00R.

Wellard, Ronald G.: See—
Tsiakas, Nicholas; Sunter, Stephen K.; Wellard, Ronald G.; and Sasaki, Lawrence H., 4,646,289, Cl. 370-76.000.

Welle, Louis A., Sr.: See—
Gerdes, Keith W.; Cortis, Douglas E.; Jenkins, Thomas E.; Lesmeister, Stephen C.; and Welle, Louis A., Sr., 4,644,698, Cl. 49-478.000.

Welles, Kenneth B., II; Wojnarowski, Robert J.; and Eichelberger, Charles W., to General Electric Company. Television frame synchronizer with independently controllable input/output rates. 4,646,151, Cl. 358-149.000.

Welliver, Paul: See—
McCauley, Jon R.; Smallwood, Troy L.; and Welliver, Paul, 4,645,396, Cl. 411-387.000.

Wells, Peter R., to Wrightel Limited. Dispensing spigot. 4,645,100, Cl. 222-505.000.

Wendt, Hans: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; and Wendt, Hans, 4,645,763, Cl. 514-178.000.

Wengenroth, Kurt: See—
Wepner, Joachim; and Wengenroth, Kurt, 4,644,836, Cl. 83-698.000.

Wepner, Joachim; and Wengenroth, Kurt, to Rolf Peddinghaus. Punch press with vertically reciprocating plunger. 4,644,836, Cl. 83-698.000.

Wertheim, Max M., to Grumman Aerospace Corporation. Interrupt-free, unregulated power supply. 4,645,940, Cl. 307-66.000.

West, John S., to Control Technics, Inc. System and process for controlling the flow of air and fuel to a burner. 4,645,450, Cl. 431-12.000.

Westendorf, Alan J.: See—
De Vito, Joseph; Lyttle, Kevin A.; Sutton, Ronald D.; Westendorf, Alan J.; Larson, Nils E.; and Uitrachi, Gerald D., 4,645,903, Cl. 219-137.00R.

Westfalia Separator AG: See—
Niernerg, Willi, 4,645,485, Cl. 494-27.000.

Westinghouse Electric Corp.: See—
Changle, Joseph F., 4,645,891, Cl. 300-153.00G.

Engel, Joseph C.; Boomgaard, Dirk J.; and Vercellotti, Leonard C., 4,646,319, Cl. 375-7.000.

England, Forrest E., 4,646,100, Cl. 343-757.000.

Feichenfeld, Michal M.; and Geis, Charles G., 4,646,012, Cl. 324-208.000.

Jeter, Howard R., 4,644,780, Cl. 73-40.50R.

Krause, Robert F.; and Rauch, Gary C., 4,645,547, Cl. 148-111.000.

Mandel, Alan F.; Eichler, Kenneth M.; and Moore, William H., 4,646,058, Cl. 187-100.000.

Mattern, John; and Kadron, Don G., 4,646,098, Cl. 342-14.000.

Matusz, John M., 4,644,908, Cl. 122-511.000.

Paton, Charles R.; and Haugh, Charles E., 4,645,890, Cl. 200-153.00G.

Ritz, William C., 4,645,640, Cl. 376-264.000.

Shuey, Kenneth C., 4,645,956, Cl. 307-562.000.

Westmoreland, Michael K.: See—
Yates, Samuel L.; Peckinpaugh, Frank L.; Flower, Thomas A.; and Westmoreland, Michael K., 4,644,621, Cl. 28-247.000.

Wheatley, Charles E., III; Mosley, Charles G.; and Hunt, Eugene V., to Rockwell International Corporation. Controlled oscillator having random variable frequency. 4,646,032, Cl. 331-78.000.

Wheeler, Charles F. Steel placement assembly. 4,644,726, Cl. 52-677.000.

Wheeler, Glynn P.: See—
Temple, Carroll G.; Montgomery, John A.; Elliott, Robert D.; and Wheeler, Glynn P., 4,645,840, Cl. 546-308.000.

White, Donald M.; and Matza, Edward C., to LTV Aerospace and Defense Company. Fastener apparatus. 4,645,394, Cl. 411-110.000.

White, Albert E. S.: See—
Baldwin, David G.; and White, Albert E. S., 4,646,001, Cl. 324-65.00P.

White, Noam, to Broken Hill Proprietary Company Limited. The Production of fuels, particularly jet and diesel fuels, and constituents thereof. 4,645,585, Cl. 208-58.000.

White, Robert L.: See—
Lee, William E., III; Bangel, James M.; White, Robert L.; and Bruno, David J., Jr., 4,645,679, Cl. 426-560.000.

Whited, James S., to Kollmorgen Technologies Corporation. Transient free solid state automatic power factor correction. 4,645,997, Cl. 323-211.000.

Whitehead, Colin J.; Bratchley, Robin; and Haslop, John M., to Thomas de la Rue and Company Limited. Numbered documents. 4,645,240, Cl. 283-74.000.

Whitehouse, Martin H.; and Jones, Richard E., to Byrne & Davidson Industries Limited. Drive means for roller door. 4,644,813, Cl. 74-431.000.

Whiting, James C., to Facet Enterprises, Inc. Pressure differential bypass sensor switch. 4,645,887, Cl. 200-82.00E.

Whitman, William C. Ornamental plant pot. 4,644,686, Cl. 47-71.000.

Whittam, Thomas V., to Imperial Chemical Industries PLC. Process for the preparation of zeolite Nu-27 using tetramethylmedamine. 4,645,655, Cl. 423-277.000.

Whitwam, James G.; and Chakrabarti, Mihir K. Respirator. 4,644,947, Cl. 128-204.250.

Widmer, Fred: See—
Bredam, Klaus; Johansen, Jack T.; and Widmer, Fred, 4,645,740, Cl. 435-71.000.

Wiebeld, Howard J.: See—
Lembke, Robert W.; and Wiebeld, Howard J., 4,645,880, Cl. 379-191.000.

Wiechert, Rudolf: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; and Wendt, Hans, 4,645,763, Cl. 514-178.000.

Wiedenman, Gregory B.; Morley, Kenneth S.; Frederickson, Gary H.; and Williams, Jeffrey L., to Sperry Corporation. Method and apparatus for high speed graphics fill. 4,646,076, Cl. 340-747.000.

Wiederaufarbeitungsanlage Karlsruhe Betriebsgesellschaft mbH: See—
Zeh, Horst, 4,645,256, Cl. 294-86.400.

Wieland, Dieter: See—
Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Rysell, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, 4,644,658, Cl. 30-381.000.

Wilke, Gerhard. Starch-based dry product in the form of flakes, bits, or grains in porous bags for making dumplings. 4,645,675, Cl. 426-113.000.

Wilkes, Louis H. Tail shortener for cylinder and dial knitting machines for knitting ribbed socks. 4,644,764, Cl. 66-140.00S.

Will, Georg: See—
Chatzipetros, Johann; Dujka, Bernhard; Elf, Frank; and Will, Georg, 4,644,761, Cl. 62-514.00R.

Willenberg, Bernd: See—
Idel, Karsten; and Willenberg, Bernd, 4,645,825, Cl. 528-388.000.

Willett, Ronald J.: See—
Muelling, Duane D.; Willett, Ronald J.; and Nimmo, Philip E., 4,645,320, Cl. 354-81.000.

Williams, Anthony M., to EMI Limited. Gripper for a programmable manipulator. 4,645,407, Cl. 414-730.000.

Williams, James E., to Cuisinarts, Inc. Switch for automatically providing a safety function when its contacts are fused together in the "ON" position. 4,645,886, Cl. 200-1.00R.

Williams, Jeffrey L.: See—
Wiedenman, Gregory B.; Morley, Kenneth S.; Frederickson, Gary H.; and Williams, Jeffrey L., 4,646,076, Cl. 340-747.000.

Williams, Jerry R., to Phillip, Harald. Athletic evaluation and training apparatus. 4,645,458, Cl. 434-251.000.

Willis, Donald H., to RCA Corporation. High voltage control circuit for video display apparatus. 4,645,990, Cl. 315-411.000.

Willis, Donald H., to RCA Corporation. Video signal recursive filter with luma/chroma separation. 4,646,138, Cl. 358-36.000.

Willman, Nils-Erik; Sjogren, Bengt C. H.; Nordh, Lennart G.; Persson, Gustav L.; and Sjolholm, Goran H. Urinary incontinence ameliorating dibenz-*b,e*-oxepin and -thiepin derivatives, compositions, and method of use therefor. 4,645,758, Cl. 514-239.000.

Wills, Robert H., to Yellow Springs Instrument Company, The. Method and apparatus for measuring soil salinity. 4,646,000, Cl. 324-61.00R.

Willson, Carlton G.: See—
Juliana, Anthony, Jr.; Latta, Milton R.; Sincerbox, Glenn V.; and Willson, Carlton G., 4,645,338, Cl. 356-150.000.

Wilms, John H., to Quaker Oats Company, The. Frozen pizza with low fat pastry crust. 4,645,673, Cl. 426-94.000.

Wilms, Klaus G.: See—
Freitag, Dieter; Bottenbruch, Ludwig; Wilms, Klaus G.; and Tacke, Peter, 4,645,806, Cl. 525-462.000.

Wilson, Albert H.: See—
Woodley, George M.; and Wilson, Albert H., 4,645,136, Cl. 242-68.300.

Wilson, Cecil R. Apparatus for mounting a motorcycle engine to a dune buggy. 4,645,172, Cl. 248-674.000.

Wilson, Charles G.: See—
Grading, J. Gary; Quearry, Robert W.; Chalfant, Robert D.; and Wilson, Charles G., 4,644,741, Cl. 57-256.000.

Wilson, Clyde D.: See—
Spencer, Larry K.; Wilson, Clyde D.; and Vanlangendonck, Robert, 4,645,431, Cl. 417-401.000.

Wilson, William L., Jr.: See—
Nighan, William L.; Tittel, Frank K.; and Wilson, William L., Jr., 4,646,311, Cl. 372-60.000.

Windmoller & Holscher: See—
Feldkamper, Richard, 4,645,339, Cl. 356-237.000.

Wingfield, Perry E.: See—
Petrick, Bruce E.; and Wingfield, Perry E., 4,646,355, Cl. 382-54.000.

Winkler & Dunnebie, Maschinenfabrik und Eisengiesserei GmbH & Co. KG: See—
Heyden, Gunter, 4,645,900, Cl. 219-121.0LG.

Winkley, Michael W.; and McCaully, Ronald J., to American Home Products Corporation. Process for preparing indoline-2-carboxylic acids via α -hydroxy-2-nitrobenzenepropanoic acid. 4,645,857, Cl. 562-456.000.

Winslow, Louis E.; Bennett, Richard E.; and Overstreet, Thomas S., to Minnesota Mining and Manufacturing Company. Removable pressure-sensitive adhesive tape. 4,645,711, Cl. 428-355.000.

Winter, Frank: See—
Nordmeyer, Friedrich; Schunk, Eckard; Winter, Frank; and Jackson, Clive L., 4,646,318, Cl. 373-105.000.

Wiseda Ltd.: See—
Lewis, Billy M.; and Myers, Walter I., 4,645,039, Cl. 188-72.300.

Wisler, David C., to General Electric Company. Compressor casing recess. 4,645,417, Cl. 415-170.00R.

Wittkamp, Frederik H. M.; and Rickards, Anthony F., to Vitafin N.V. Rate adaptive pacemaker apparatus and method. 4,644,954, Cl. 128-419.0PG.

Wittmann, Stephan: See—
Lavas, Kurt; Mayer, Walter; and Wittmann, Stephan, 4,644,742, Cl. 57-263.000.

Wnek, Kenneth: See—
Eldon, James B.; and Wnek, Kenneth, 4,645,155, Cl. 248-278.000.

Wnukiewicz, Stanley A., Jr., to 501 Daylab, Ltd. Photographic print making and developing tray assembly. 4,645,324, Cl. 354-312.000.

Wohlford, William P.; and Hovenga, LaVern B., to Deere & Company. Endless track flexor having cord reinforced tensile load-carrying plate. 4,645,273, Cl. 305-40.000.

Wohlford, William P.; and Poore, Bernard B., to Deere & Company. Restraints for controlling undesired deflection of track link sections embodying a flexor. 4,645,274, Cl. 305-47.000.

Wojnarowski, Robert J.; and Eichelberger, Charles W., to General Electric Company. Alternate field luminance enhancement in a spectrum conserving television system. 4,646,149, Cl. 358-143.000.

Wojnarowski, Robert J.: See—
Eichelberger, Charles W.; and Wojnarowski, Robert J., 4,646,135, Cl. 358-12.000.

Eichelberger, Charles W.; Wojnarowski, Robert J.; and Mihran, Theodore G., 4,646,152, Cl. 358-166.000.

Welles, Kenneth B., II; Wojnarowski, Robert J.; and Eichelberger, Charles W., 4,646,151, Cl. 358-149.000.

Wolcott, Anna M. Bed cover lifter. 4,644,599, Cl. 5-504.000.

Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,645,530, Cl. 71-91.000.

Wolf, Reinhold: See—
Bauer, Karl-Heinz; and Wolf, Reinhold, 4,646,206, Cl. 362-32.000.

Wolf, Robert C., to Fluiron, Inc. Reduction of failure incidence of metallic diaphragms for compressors. 4,644,847, Cl. 92-78.000.

Wolfe, Loren K.: See—
Chandler, Kenneth E.; and Wolfe, Loren K., 4,644,699, Cl. 49-502.000.

Wolff, Leslie C. Athletic exerciser for paraplegics and quadriplegics. 4,645,205, Cl. 272-143.000.

Wolff, Siegfried: See—
Deschler, Ulrich; Panster, Peter; Kleinschmit, Peter; Wolff, Siegfried; and Tan, Ewe-Hong, 4,645,850, Cl. 556-431.000.

Wolga, George J.: See—
Kitai, Adrian H.; and Wolga, George J., 4,646,079, Cl. 340-781.000.

Wollenberg, Robert H., to Chevron Research Company. Modified succinimides (II). 4,645,515, Cl. 44-63.000.

Wollmer, Hans-Georg: See—
Anthonsen, Reiner; Sack, Wieland; Trentmann, Heinz; and Wollmer, Hans-Georg, 4,645,736, Cl. 430-538.000.

Wong, James, to Supercon, Inc. Tantalum capacitor lead wire. 4,646,197, Cl. 361-307.000.

Wong, Sing Y., to Monolithic Memories, Inc. Current source which saves power in programmable logic array circuitry. 4,645,953, Cl. 307-466.000.

Wong, Sing Y.; and Chen, Johnny, to Monolithic Memories, Inc. Multiple programmable initialize words in a programmable read only memory. 4,646,269, Cl. 365-230.000.

Wong, Stephen S.: See—
McCullen, Sharon B.; Wong, Stephen S.; and Huang, Tracy J., 4,645,751, Cl. 502-37.000.

Wood, Timothy G.: See—
Seyferth, Dietmar; Wood, Timothy G.; and Yu, Yuan-Fu, 4,645,807, Cl. 525-474.000.

Wood, W. Graham: See—
Gadow, Andre; and Wood, W. Graham, 4,645,646, Cl. 422-61.000.

Woodgate, Bryan F. Anchor. 4,644,894, Cl. 114-304.000.

Woodley, George M.; and Wilson, Albert H., to King Instrument Corporation. Takeup spindle. 4,645,136, Cl. 242-68.300.

Woods, Allan O., to Hydriol Company. Borehole measurement and telemetry system. 4,646,083, Cl. 340-856.000.

Woolman, Paul; and Seward, Barry, to Mars G.B. Limited. Beverage production. 4,644,855, Cl. 99-280.000.

Wright, James H.: See—
Bodine, John H.; Bork, Jonathan; Alford, Richard M.; Wright, James H.; and Thomsen, Leon A., 4,646,239, Cl. 364-421.000.

Wright, Kenton B.: See—
Voegel, Robert L.; and Wright, Kenton B., 4,645,582, Cl. 204-286.000.

Wright, Thomas M., to Amercock Corporation. Apparatus for mounting and stabilizing a tiltable window sash. 4,644,691, Cl. 49-161.000.

Wright, William E.; and Zaweski, Edward F., to Ethyl Corporation. Asphaltic compositions. 4,645,538, Cl. 106-273.00N.

Wrightel Limited: See—
Wells, Peter R., 4,645,100, Cl. 222-505.000.

Wurz, Dieter: See—
Albrecht, Wilhelm; Wurz, Dieter; Peitsmeier, Karl; Waldschutz, Heinz; Ruckert, Walter; Kuhn, Klaus; and Patzelt, Helmut, 4,644,817, Cl. 74-552.000.

Wussow, Hans-Georg: See—
Rasshofer, Werner; Meiners, Hans-Joachim; Seel, Klaus; and Wussow, Hans-Georg, 4,645,630, Cl. 264-54.000.

Wyatt, W. Gerald; and Redus, Richard, to Vapor Energy Corp. Fluid flow control system. 4,644,967, Cl. 137-599.000.

Wyser, Johann, to Stork Brabant B.V. Apparatus and method for adhering successive webs by means of adhesive applied to a predetermined side thereof. 4,645,554, Cl. 156-159.000.

Xerox Corporation: See—
Badesha, Santokh S.; and Smith, Thomas W., 4,645,619, Cl. 252-314.000.

Ong, Beng S.; and Mychajlowskij, Walter, 4,645,727, Cl. 430-106.000.

Reale, Louis, 4,646,196, Cl. 361-230.000.

Tuan, Hsing C.; and Thompson, Malcolm J., 4,646,163, Cl. 358-300.000.

Yagasaki, Toshiaki: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518.000.

Yagnik, Chandrakant M.; and Goss, David C., to Thermo Manufacturing Company. Reduced resistance skin effect heat generating system. 4,645,906, Cl. 219-301.000.

Yahagi, Kyoichi: See—
Hagiwara, Tatsuo; Imai, Keiji; Nagaoka, Shigenori; Kogumazaka, Shinji; Yahagi, Kyoichi; Imagawa, Takeshi; Ishii, Hidenaga; and Kikuchi, Toshitsugu, 4,645,133, Cl. 241-182.000.

Yakuwa, Masahiko; and Iijima, Hideto, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for controlling an internal combustion engine. 4,644,917, Cl. 123-414.000.

Yaloz, Hanan: See—
Boxman, Raymond L.; Goldsmith, Shmuel; Brosh, Nissan; Shalev, Shaul; and Yaloz, Hanan, 4,645,895, Cl. 219-76.130.

Yamaguchi, Kazuo: See—
Kawauchi, Hiroshi; Yamaguchi, Kazuo; and Shirahata, Kunikatsu, 4,645,755, Cl. 514-12.000.

Yamaguchi, Masayoshi: See—
Sonoda, Shinji; Ozaki, Norihiko; Watahiki, Seishi; Sakuma, Yasuzi; and Yamaguchi, Masayoshi, 4,644,791, Cl. 73-432.100.

Yamaguchi, Teruhito: See—
Tahara, Yoshiyuki; Komatsu, Yasuhiro; Koyama, Hiroyasu; Kubota, Reiko; Yamaguchi, Teruhito; and Takahashi, Toshihiro, 4,645,862, Cl. 564-370.000.

Yamaguchi, Yoichi: See—
Shioya, Jun; Yamaguchi, Yoichi; Ueba, Yoshinobu; and Matsubara, Hironaga, 4,645,713, Cl. 428-457.000.

Yamaha Hatsudoki Kabushiki Kaisha: See—
Kawashima, Masahiro, 4,645,028, Cl. 180-227.000.

Masuda, Yutaka, 4,645,027, Cl. 180-176.000.

Yamakawa, Tadashi: See—
Tanioka, Hiroshi; Yamakawa, Tadashi; Inoue, Yutaka; Hosaka, Masao; Yagasaki, Toshiaki; Kasama, Nobuhiro; and Kurata, Mitsuru, 4,646,249, Cl. 364-518.000.

Yamamoto, Albert K.: See—
Cosenza, Frank J.; and Yamamoto, Albert K., 4,645,398, Cl. 411-438.000.

Yamamoto, Masaki: See—
Takanabe, Kazunori; Yamamoto, Masaki; Ito, Kenzo; and Fujinami, Hiroshi, 4,646,089, Cl. 340-995.000.

Yamamoto, Nobuyuki: See—
Kamigaito, Osami; Doi, Haruo; Noda, Shoji; and Yamamoto, Nobuyuki, 4,645,115, Cl. 228-121.000.

Yamamoto, Yasuo: See—
Yoshihara, Mitsuo; Morikawa, Yoshitada; Yamamoto, Yasuo; Komada, Mitsuharu; and Hattori, Masaaki, 4,645,297, Cl. 350-96.230.

Yamamoto, Yoshiaki: See—
Fujita, Yoshitada; Hanada, Sadashi; Yamamoto, Yoshiaki; and Nakabayashi, Akira, 4,645,412, Cl. 414-786.000.

Yamamoto, Yuko: See—
Akeda, Tadayoshi; Yamamoto, Yuko; and Kanaoka, Katsuki, 4,646,102, Cl. 343-915.000.

Yamashina, Shuichi: See—
Sasaki, Shin; Nemoto, Tsuneo; Yamashina, Shuichi; and Uchida, Hiroyuki, 4,646,189, Cl. 360-12.000.

Yamashiro, Yoshihiro: See—
Tomita, Yukio; Wakabayashi, Takayuki; Matsuda, Mitsunobu; Shibamoto, Nobuji; and Yamashiro, Yoshihiro, 4,645,065, Cl. 198-573.000.

Yamashita, Michio: See—
Kohsaka, Masanobu; Terano, Hiroshi; Komori, Tadaaki; Iwami, Morita; Yamashita, Michio; Hashimoto, Masashi; Uchida, Itsuo; and Takase, Shigehiro, 4,645,765, Cl. 514-233.000.

Yamazaki, Yoshio, to Kabushiki Kaisha Yamazaki. Indexing and positioning device. 4,644,825, Cl. 74-813.00R.

Yanagi, Kenichi; Makihara, Katsumi; Fukushima, Takeo; Hashimoto, Osamu; and Iida, Sachihito, to Mitsubishi Jukogyo Kabushika Kaisha; and Kawasaki Steel Corporation. Cooling apparatus for strip metal. 4,644,667, Cl. 34-54.000.

Yang, Miriam. Adaptor sleeve. 4,644,831, Cl. 81-125.000.

Yang, Tai-Her. Lighting system having photosensing timing switch circuit. 4,645,980, Cl. 315-159.000.

Yaniv, Zvi: See—
Ovshinsky, Stanford R.; Johnson, Robert R.; Cannella, Vincent D.; and Yaniv, Zvi, 4,646,266, Cl. 365-105.000.

Yarza, Javier: See—
Arregui, Manuel; Diaz, Rafael; Gamon, Vicente; and Yarza, Javier, 4,645,428, Cl. 417-273.000.

Yasuda, Hiroshi: See—
Ito, Masashi; Yasuda, Hiroshi; Nakamura, Hiroyuki; and Matsuno, Toshiki, 4,646,283, Cl. 369-256.000.

Yasuhara, Seishi; Kobayashi, Hiroshi; Kita, Toru; and Saito, Hideyuki, to Nissan Motor Company, Limited. Oil deterioration detector method and apparatus. 4,646,070, Cl. 340-603.000.

Yasushi, Mikura; Kensuke, Asada; and Hajime, Toguchi, to Takeda Chemical Industries. Stable composition of interleukin-2 and albumin. 4,645,830, Cl. 530-351.000.

Yates, Jan B.; and Lubbers, Lawrence M., to Danning Medical Technology. Hand exerciser. 4,644,938, Cl. 128-26.000.

Yates, Samuel L.; Peckinpaugh, Frank L.; Flower, Thomas A.; and Westmoreland, Michael K., to Allied Corporation. Chilled yarn guide. 4,644,621, Cl. 28-247.000.

Yatsuo, Tsutomu: See—
Kimura, Shin; Fukui, Hiroshi; Amano, Hisao; Yatsuo, Tsutomu; Oikawa, Saburo; and Nagano, Takahiro, 4,646,122, Cl. 357-38.000.

Ye Data Inc.: See—
Goto, Tadahiko; and Abe, Hideo, 4,646,184, Cl. 360-110.000.

Yellow Springs Instrument Company, The: See—
Wills, Robert H., 4,646,000, Cl. 324-61.00R.

Yerman, Alexander J.; and Neugebauer, Constantine A., to General Electric Company. Hermetic power chip package. 4,646,129, Cl. 357-74.000.

Yevak, Harold M., Jr.; Johnson, Larry K.; and O'Malley, Austin S., to Texas Instruments Incorporated. Circuit panel connector, panel system using the connector, and method for making the panel system. 4,645,278, Cl. 339-17.00T.

Yip, Kin F.: See—
Corey, Paul F.; Ward, Frederick E.; Yip, Kin F.; and Yip, Meitak T., 4,645,842, Cl. 548-541.000.

Yip, Meitak T.: See—
Corey, Paul F.; Ward, Frederick E.; Yip, Kin F.; and Yip, Meitak T., 4,645,842, Cl. 548-541.000.

Yokogawa Hokushin Electric Corporation: See—
Tamura, Hisashi; Hirata, Terutaka; Odohira, Tetsu; and Ogawa, Tadahiro, 4,644,798, Cl. 73-708.000.

Yokohama Aeroquip Company: See—
Itoh, Nobuaki; and Sekine, Takashi, 4,644,973, Cl. 137-883.000.

Yokohama Rubber Co., Ltd., The: See—
Teramoto, Mitsutake; Saito, Shinkichi; and Takebayashi, Takamitsu, 4,645,207, Cl. 273-77.00A.

Yokoi, Katsuyuki: See—
Ikeda, Masami; Aoki, Seichi; Saito, Akio; Inamoto, Tadayoshi; and Yokoi, Katsuyuki, 4,646,110, Cl. 346-140.00R.

Yokokura, Hisao; Era, Susumu; Abe, Hidetoshi; Nakata, Tadao; Kitamura, Teruo; and Mukoh, Akio, to Hitachi, Ltd. Liquid-crystal compound, liquid crystal composition and liquid crystal display device. 4,645,305, Cl. 350-351.000.

Yokoyama, Akira: See—
Takahashi, Keietsu; Ueda, Nobuo; Hazue, Masaaki; Yokoyama, Akira; and Ohmomo, Yoshiro, 4,645,660, Cl. 424-1.100.

Yokoyama, Fumitomo: See—
Shirai, Ryoichi; Yokoyama, Fumitomo; and Kuramochi, Koujiro, 4,645,441, Cl. 418-126.000.

Yonezawa, Seiji, to Hitachi, Ltd. Optical disk cutting apparatus using multiple beams. 4,646,279, Cl. 369-46.000.

Yonezawa, Taketoshi: See—
Kurokawa, Hideo; Mitani, Tsutomu; and Yonezawa, Taketoshi, 4,645,977, Cl. 315-111.210.

Yoshida, Kasumi; Uchiki, Hideo; and Kuroishi, Tadafumi, to Hitachi, Ltd. Method and apparatus for continuous flow analysis of liquid sample. 4,645,647, Cl. 422-81.000.

Yoshida, Kiyomitsu: See—
Haga, Takahiro; Toki, Tadaaki; Koyanagi, Toru; Okada, Hiroshi; Yoshida, Kiyomitsu; and Imai, Osamu, 4,645,761, Cl. 514-94.000.

Yoshida Kogyo K. K.: See—
Miyakawa, Kazuo, 4,644,886, Cl. 112-265.200.

Yoshida, Masaru: See—
Ohno, Hideshi; Tsuzuki, Akira; Oguchi, Toshiaki; Futami, Shigeru; Yoshida, Masaru; Kimura, Satoshi; Uematsu, Hiroyuki; Nakajima, Kouichi; Matsuyama, Katuo; Sakamoto, Hiroya; Takayama, Yasuhiko; Matsumura, Osamu; and Sakaguchi, Toshio, 4,646,158, Cl. 358-236.000.

Yoshida, Tadatoshi; and Natori, Kouji, to Kabushiki Kaisha Toshiba. CT scanner. 4,646,333, Cl. 378-4.000.

Yoshida, Taizo; Tanji, Akihito; Masuda, Masamitsu; and Koyama, Jiro. Optical waveguide coupler having a grating electrode. 4,645,293, Cl. 350-96.140.

Yoshida, Takao, to Terumo Kabushiki Kaisha. Method of manufacturing medical bag. 4,645,482, Cl. 493-189.000.

Yoshihara, Mitsuo; Morikawa, Yoshitada; Yamamoto, Yasuo; Komada, Mitsuharu; and Hattori, Masaaki, to Nitto Electric Industrial Co., Ltd. Fiber reinforced resin coated optical fiber and process for producing the same. 4,645,297, Cl. 350-96.230.

Yoshikawa, Kikuo: See—
Hayashi, Hideki; Takagi, Satoshi; and Yoshikawa, Kikuo, 4,646,174, Cl. 360-74.200.

Young, Donald C.: See—
Green, James A., II; and Young, Donald C., 4,645,859, Cl. 564-38.000.

Green, James A., II; and Young, Donald C., 4,645,860, Cl. 564-73.000.

Young, Ian R., to Picker International Ltd. Nuclear magnetic resonance imaging. 4,646,023, Cl. 324-309.000.

Young, James D.: See—
Hoyne, Earl K.; Nordeen, Charles K.; and Young, James D., 4,646,112, Cl. 346-153.100.

Young, John N., to Charles C. Worth Corporation. Spinning reel with quickly adjustable disc drag. 4,645,137, Cl. 242-84.50A.

Young, Niels O., to Helix Technology Corporation. Linear motor compressor with clearance seals and gas bearings. 4,644,851, Cl. 92-127.000.

Young, Robert G., to New Holland Inc. Adjusting apparatus for baler packer assembly. 4,644,862, Cl. 100-189.000.

Young, Walter M., to AMP Incorporated. Method for manufacturing two-sided circuit board. 4,645,732, Cl. 430-314.000.

Youngdale, Gilbert A., to Upjohn Company, The. 1,2-dihydro-2-oxo-3-hydroxymethyl pyridines, compositions and use. 4,645,766, Cl. 514-345.000.

Yu, Yuan-Fu: See—
Seyferth, Dietmar; Wood, Timothy G.; and Yu, Yuan-Fu, 4,645,807, Cl. 525-474.000.

Yuen, Peter S. L.; Campbell, Philip; Montin, John L.; and Ardron, Keith H., to Canada, Atomic Energy of, Limited. Method and apparatus for determining the properties of wet steam. 4,645,635, Cl. 376-245.000.

Yumen, Akira: See—
Ishida, Akira; Yumen, Akira; and Saito, Naotada, 4,646,144, Cl. 358-75.000.

Zador, Eugene: See—
Kaczmarek, Wesley R.; Zador, Eugene; and Ravipati, Sitaramaiah, 4,644,703, Cl. 51-401.000.

Zangheri, Carlo, to FIAT S.p.A. Method and equipment for the automatic inserting of encoded cards inside envelopes, and relating envelope module. 4,644,731, Cl. 53-411.000.

Zardiackas, Fredrick L.: See—
Goodman, William R.; Mayfield, Richard B.; Tawshunsky, Ted; and Zardiackas, Fredrick L., 4,646,300, Cl. 371-33.000.

Zarrow, Scott F. Credit card carbon copy defacer. 4,645,701, Cl. 428-120.000.

Zawacki, Edna M., to Alba Health Care, division of Alba-Waldensian, Inc. Eye shield cap for infants. 4,644,588, Cl. 2-10.000.

Zaweski, Edward F.: See—
Wright, William E.; and Zaweski, Edward F., 4,645,538, Cl. 106-273.00N.

Zayas, Victor A., to Earthquake Protection Systems, Inc. Earthquake protective column support. 4,644,714, Cl. 52-167.000.

Zdunek, Kenneth J.; Heyman, Bruce D.; and Sasuta, Michael D., to Motorola, Inc. Automatic unit ID for quasi-transmission trunked systems. 4,646,345, Cl. 379-62.000.

Zeh, Horst, to Wiederaufarbeitungsanlage Karlsruhe Betriebsgesellschaft mbH. Gravity actuated gripper. 4,645,256, Cl. 294-86.400.

Zelenetsky, Vladimir E.: See—
Shishov, Nikolai M.; Zelenetsky, Vladimir E.; Demina, Nadezhda A.; Bondarev, Ivan M.; Cherny, Alexandr N.; Avxentiev, Anatoly G.; and Rylov, Evgeny E., deceased, 4,645,487, Cl. 604-58.000.

Zeller, David A., Jr.: See—
Hargrave, Franklin; Zeller, David A., Jr.; Smith, Mark G.; Hull, William L., III; and Middleton, Francisco A., 4,646,342, Cl. 379-24.000.

Zenith Electronics Corporation: See—
Adler, Robert, 4,645,870, Cl. 178-19.000.

Beaumont, Gregory J.; Duval, Casimir J.; Kula, Frank N.; and Tamkin, Michael S., 4,646,159, Cl. 358-254.000.

Blanchard, David L.; and Snopko, Paul A., 4,646,133, Cl. 358-11.000.

Gawell, George R.; Steinmetz, Richard J.; and Sutton, Leroy A., 4,645,988, Cl. 315-401.000.

Kiteley, Terence J.; and Vasavanonda, Sudthichard, 4,645,987, Cl. 315-389.000.

Scholer, Kenneth C., 4,646,218, Cl. 363-21.000.

Zepf, Hans R. Load hook. 4,645,255, Cl. 294-82.190.

Zepp, Lawrence P., to International Hydraulic Systems, Inc. Position indicating apparatus for use in a boat leveling system. 4,644,893, Cl. 114-286.000.

Zerhouni, Elias A. Radiographic test phantom for computed tomographic lung nodule analysis. 4,646,334, Cl. 378-18.000.

Zerrer, Gerhard: See—
Dolata, Hans; Fink, Reinhold; Itzrodt, Gerd; Kelbert, Adam; Ryssel, Siegfried; Wehle, Anton; Wieland, Dieter; and Zerrer, Gerhard, 4,644,658, Cl. 30-381.000.

Ziegenhorn, Joachim: See—
Deeg, Rolf; Roder, Albert; Siedel, Joachim; Gauhl, Helmgard; and Ziegenhorn, Joachim, 4,645,739, Cl. 435-25.000.

Zierhut, Hermann, to Richard Hirschmann Radiotechnisches Werk. Motion detector. 4,645,930, Cl. 250-342.000.

Zierler, Reinhard, to Voest-Alpine Aktiengesellschaft. Movable cannon. 4,644,844, Cl. 89-40.080.

Zilg, Harald, to Behringwerke Aktiengesellschaft. Process for the stabilization of hematin. 4,645,670, Cl. 424-101.000.

Zimmerer, John L.: See—
Luerken, Adolf; Cannistra, John S.; Zimmerer, John L.; and Pila-towicz, Edward J., 4,644,606, Cl. 15-330.000.

Zimonis, Joseph P.: See—
Hovan, Edward J.; and Zimonis, Joseph P., 4,645,415, Cl. 415-115.000.

Zingg, Warren M., to Dowell Schlumberger Incorporated. Choke flow bean. 4,644,974, Cl. 138-44.000.

Zinser Textilmaschinen GmbH: See—
Lattner, Manfred, 4,644,609, Cl. 19-244.000.

Zirk, Elisabeth: See—
Olschewski, Armin; Bauer, Bernhard; and Zirk, Elisabeth, 4,645,474, Cl. 464-131.000.

Zletz, Alex; Satek, Larry C.; and Miller, Jeffrey T., to Standard Oil Company. Doped aluminum borate. 4,645,753, Cl. 502-202.000.

Zovar, Alan P. Clip board desk and stand. 4,645,163, Cl. 248-452.000.

Zugel, Martin J., to Leggett & Platt Incorporated. High-low speed drive system for multiple spindle machines. 4,644,819, Cl. 74-665.00B.

Zunino, Michael J., to Sprague Electric Company. Level shifting BLMOS integrated circuit. 4,646,124, Cl. 357-43.000.

Zupanick, Joseph E., to Atlantic Richfield Company. Method and apparatus for effecting fine control of aircraft velocity. 4,645,144, Cl. 244-113.000.

Zuranski, Edward S.; and Martinez, Kenneth, to Paradyne Corporation. Index decoder for digital modems. 4,646,325, Cl. 375-39.000.

501 Daylab, Ltd.: See—
Wnukiewicz, Stanley A., Jr., 4,645,324, Cl. 354-312.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF FEBRUARY, 1987

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Carmien, Joseph A. Flexible core for tool handles. Re. 32,364, Cl. 294-57.000.
- Duggan, Stephen R., to Medtronic, Inc. Implantable telemetry transmission system for analog and digital data. Re. 32,361, Cl. 128-696.000.
- Marketing Displays, Inc.: See—
Seely, James R., Re. 32,359, Cl. 40-602.000.
- Martineau, Tom N., to Stoelting, Inc. Soft-serve freezer control. Re. 32,360, Cl. 62-127.000.
- McCabe, Francis J., to Prefco Products, Inc. Fire damper and method of fabrication. Re. 32,362, Cl. 137-15.000.
- Medtronic, Inc.: See—
Duggan, Stephen R., Re. 32,361, Cl. 128-696.000.
- Portec, Inc.: See—
Warren, Kenneth D.; and Tenold, Gregory G., Re. 32,363, Cl. 241-300.000.
- Prefco Products, Inc.: See—
McCabe, Francis J., Re. 32,362, Cl. 137-15.000.
- Seely, James R., to Marketing Displays, Inc. Portable wind-resistant sign stand with flexible sign. Re. 32,359, Cl. 40-602.000.
- Stoelting, Inc.: See—
Martineau, Tom N., Re. 32,360, Cl. 62-127.000.
- Tenold, Gregory G.: See—
Warren, Kenneth D.; and Tenold, Gregory G., Re. 32,363, Cl. 241-300.000.
- Warren, Kenneth D.; and Tenold, Gregory G., to Portec, Inc. Anvil assembly for vertical shaft centrifugal impact crushing machine. Re. 32,363, Cl. 241-300.000.

LIST OF REEXAMINATION PATENTEEES

TO WHOM

CERTIFICATES WERE ISSUED

- Engelhardt, Edward L., to Merck & Co., Inc. Method of treating depression with 5-(3-dimethylaminopropylidene)dibenzo[a,d][1,4]py-
- cloheptadiene or its non-toxic salts thereof. B1 3,428,735, 2-24-87, Cl. 514-657.000.
- Merck & Co., Inc.: See—
Engelhardt, Edward L., B1 3,428,735, Cl. 514-657.000.

LIST OF DESIGN PATENTEEES

- AB Jarnkonstruktioner: See—
Jarnum, Lennart, 288,498, Cl. D34-28.000.
- Abbott Laboratories: See—
Vcelka, John L., 288,480, Cl. D24-21.000.
- Abe, Takeshi: See—
Takeuchi, Akitaka; Abe, Takeshi; Endo, Hiroshi; Shimizu, Hideyasu; and Tsunematsu, Shinichiro, 288,444, Cl. D14-94.000.
- Apple Computer, Inc.: See—
Gemmell, Rob J., 288,434, Cl. D13-11.000.
- Arai, Tomoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Automobile wheel. 288,431, 2-24-87, Cl. D12-211.000.
- Astronics Corporation: See—
Winfield, Mason C., 288,427, Cl. D12-153.000.
- AT&T Bell Laboratories: See—
Sylvester, Gordon E.; Tilley, Alvin R.; and Wyckoff, Robert R., 288,445, Cl. D14-106.000.
- Atlas Design Corp.: See—
Mottais, Philippe J., 288,393, Cl. D6-436.000.
- Autry Industries, Inc.: See—
Autry, James C., 288,383, Cl. D2-318.000.
- Autry, James C., to Autry Industries, Inc. Shoe insole. 288,383, 2-24-87, Cl. D2-318.000.
- B.M.X. Products, Inc.: See—
Hess, Stanley C., 288,421, Cl. D12-123.000.
- Baugh, Benjamin C.: See—
Schmidt, Frank T.; Cherryholmes, John T.; and Baugh, Benjamin C., 288,473, Cl. D23-124.000.
- Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., to Goodyear Tire & Rubber Company, The. Tire. 288,425, 2-24-87, Cl. D12-146.000.
- Bell-Canada: See—
Lalonde, Michel R., 288,441, Cl. D14-55.000.
- Belue, Cathy S.; and Tucker, Sandra J. Clothed doll. 288,458, 2-24-87, Cl. D21-171.000.
- Bentley, James: See—
Young, Michael J.; and Bentley, James, 288,495, Cl. D34-10.000.
- Berg, Lloyd T.; and Flowers, Stephen A. Beverage and accessories dispenser. 288,399, 2-24-87, Cl. D7-313.000.
- Birchwood, Joan E. Shoe/boot heel protector. 288,382, 2-24-87, Cl. D2-314.000.
- Black & Decker, Inc.: See—
Somers, Robert I.; and House, Lawrence E., 288,404, Cl. D8-49.000.
- Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., to Johnson & Johnson Dental Products. Combined container and display case for dental bottles. 288,482, 2-24-87, Cl. D24-31.000.
- Blatherwick, William J.: See—
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 288,481, Cl. D24-31.000.
- Blumenthal, Martin. Sand toy. 288,455, 2-24-87, Cl. D21-120.000.
- Bode, Robert H.; and Hidden, William P., to Cambridge Wire Cloth Company, The. Transfer comb module for an endless conveyor belt. 288,408, 2-24-87, Cl. D8-499.000.
- Bonbright, James D. Plug puller for repairing automotive generators. 288,402, 2-24-87, Cl. D8-14.000.
- Boore, Robert E.: See—
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 288,425, Cl. D12-146.000.
- Bossi, Giuseppe: See—
Rossio, Bruno; Bossi, Giuseppe; and Roggero, Francesco, 288,398, Cl. D7-309.000.
- Brown, Michael, to Northern Telecom Limited. Telephone handset. 288,442, 2-24-87, Cl. D14-63.000.
- Brownlie, Alan, to Volk, Jeffrey B. Mobile hose reel. 288,496, 2-24-87, Cl. D34-17.000.
- Cambridge Wire Cloth Company, The: See—
Bode, Robert H.; and Hidden, William P., 288,408, Cl. D8-499.000.
- Canter, Stanton J., to Diversified Group, Inc. Point of sale display module. 288,394, 2-24-87, Cl. D6-475.000.
- Carlson, Scott W.; Sembrowich, Walter L.; Knudson, Mark B.; Little, Richard L.; Eibensteiner, Ronald E.; Johnson, Logan W.; and Funk, Roger L., to SenTech Medical Corporation. Clinical chemistry analyzer. 288,478, 2-24-87, Cl. D24-17.000.

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- Carr, Alan R. High frequency pulsed dopple radar antenna. 288,443, 2-24-87, Cl. D14-86.000.
- Castellane, Vincent F., to Gillette Company, The. Bottle holder. 288,411, 2-24-87, Cl. D9-455.000.
- Centennial Jewelers, Inc.: See—
Finkler, Saul M., 288,414, Cl. D10-64.000.
- Finkler, Saul M., 288,415, Cl. D10-64.000.
- Cherryholmes, John T.: See—
Schmidt, Frank T.; Cherryholmes, John T.; and Baugh, Benjamin C., 288,473, Cl. D23-124.000.
- Cincinnati Microwave, Inc.: See—
Dilgard, Robert E., Jr., 288,418, Cl. D10-104.000.
- Colby, Donald B., to Lee L. Woodard, Inc. Foldable table. 288,391, 2-24-87, Cl. D6-429.000.
- Coleman Company, Inc.: See—
Schmidt, Frank T.; Cherryholmes, John T.; and Baugh, Benjamin C., 288,473, Cl. D23-124.000.
- Collins, Ethel. Pompon maker. 288,449, 2-24-87, Cl. D15-78.000.
- Comus International, Inc.: See—
Romano, Robert P., 288,416, Cl. D10-78.000.
- Cornwell, Paul D., to Import Auto Products, Ltd. Dashboard cover. 288,429, 2-24-87, Cl. D12-192.000.
- Cornwell, Paul D., to Import Auto Products, Ltd. Dashboard cover. 288,430, 2-24-87, Cl. D12-192.000.
- Covell, Edward F.; and Shaw, Raymond C., to Tambrands Inc. Diagnostic test kit. 288,479, 2-24-87, Cl. D24-17.000.
- Crowell, Christopher S., to Structural Graphics Inc. Desk top decoration or container for holding pencils and the like. 288,410, 2-24-87, Cl. D9-335.000.
- Crump, Robert L.: See—
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 288,425, Cl. D12-146.000.
- Cundiff, William P.: See—
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 288,425, Cl. D12-146.000.
- Darnall, Keith L.; and Hudson, Gary A. Hunting target. 288,465, 2-24-87, Cl. D22-15.000.
- Dawson, Robert E.: See—
Miller, David C.; Dawson, Robert E.; and Pendleton, Thomas J., 288,472, Cl. D23-77.000.
- DBA Products Co., Inc.: See—
Picchietti, Remo N., Sr., 288,433, Cl. D32-6.000.
- Denno, Benjamin. Sanitary garment. 288,485, 2-24-87, Cl. D24-51.000.
- Diamond, Harvey E. Bathing. 288,470, 2-24-87, Cl. D23-55.000.
- Dilgard, Robert E., Jr., to Cincinnati Microwave, Inc. Police radar warning receiver. 288,418, 2-24-87, Cl. D10-104.000.
- Diversified Group, Inc.: See—
Canter, Stanton J., 288,394, Cl. D6-475.000.
- Ebnoether, Guido, to LUWA AG. Gas filter. 288,476, 2-24-87, Cl. D23-149.000.
- Ebsco Industries, Inc.: See—
Gowing, James R., 288,466, Cl. D22-28.000.
- Eibensteiner, Ronald E.: See—
Carlson, Scott W.; Sembrowich, Walter L.; Knudson, Mark B.; Little, Richard L.; Eibensteiner, Ronald E.; Johnson, Logan W.; and Funk, Roger L., 288,478, Cl. D24-17.000.
- Eldred, Charles R.; Lowe, Robert E.; and Walker, Elizabeth L., to General Foods Corporation. Cereal piece. 288,380, 2-24-87, Cl. D1-128.000.
- Eldred, Charles R.; Lowe, Robert E.; and Walker, Elizabeth L., to General Foods Corporation. Cereal piece. 288,381, 2-24-87, Cl. D1-128.000.
- Endo, Hiroshi: See—
Takeuchi, Akitaka; Abe, Takeshi; Endo, Hiroshi; Shimizu, Hideyasu; and Tsunematsu, Shinichiro, 288,444, Cl. D14-94.000.
- Envall, Bjorn E. A.; and Giugiaro, Giorgetto, to Saab-Scania Aktiebolag. Rear bumper. 288,428, 2-24-87, Cl. D12-169.000.
- Etablissements le Simplex: See—
Juy, Henri, 288,420, Cl. D12-119.000.
- Etablissements Renault: See—
Regnault, Pierre, 288,450, Cl. D19-49.000.
- Finkler, Saul M., to Centennial Jewelers, Inc. Diamond gauge. 288,414, 2-24-87, Cl. D10-64.000.
- Finkler, Saul M., to Centennial Jewelers, Inc. Diamond gauge set. 288,415, 2-24-87, Cl. D10-64.000.
- Flowers, Stephen A.: See—
Berg, Lloyd T.; and Flowers, Stephen A., 288,399, Cl. D7-313.000.
- Folkmar, Jan: See—
Mikkelsen, Henrik, 288,409, Cl. D9-305.000.
- Funk, Roger L.: See—
Carlson, Scott W.; Sembrowich, Walter L.; Knudson, Mark B.; Little, Richard L.; Eibensteiner, Ronald E.; Johnson, Logan W.; and Funk, Roger L., 288,478, Cl. D24-17.000.
- Furusawa, Toshinori, to Ohtsu Tire & Rubber Co., Ltd., The. Vehicle tire. 288,422, 2-24-87, Cl. D12-136.000.
- Furusawa, Toshinori; and Umemoto, Hitoo, to Ohtsu Tire & Rubber Co., Ltd., The. Vehicle tire. 288,423, 2-24-87, Cl. D12-136.000.
- Gemmell, Rob J., to Apple Computer, Inc. Housing for electrical circuit which provides an interface between a computer and a television set, or the like. 288,434, 2-24-87, Cl. D13-11.000.
- General Foods Corporation: See—
Eldred, Charles R.; Lowe, Robert E.; and Walker, Elizabeth L., 288,380, Cl. D1-128.000.
- Eldred, Charles R.; Lowe, Robert E.; and Walker, Elizabeth L., 288,381, Cl. D1-128.000.
- Gillette Company, The: See—
Castellane, Vincent F., 288,411, Cl. D9-455.000.
- Giraudet, Bernard. Parasol. 288,490, 2-24-87, Cl. D25-56.000.
- Giroflex Entwicklungs AG: See—
Ochsner, Koni, 288,387, Cl. D6-366.000.
- Ochsner, Koni, 288,388, Cl. D6-366.000.
- Ochsner, Koni, 288,389, Cl. D6-366.000.
- Ochsner, Koni, 288,390, Cl. D6-379.000.
- Giugiaro, Giorgetto: See—
Envall, Bjorn E. A.; and Giugiaro, Giorgetto, 288,428, Cl. D12-169.000.
- Gladstone, Jay R. Handle for a toilet seat or the like. 288,471, 2-24-87, Cl. D23-71.000.
- Glasdon Limited: See—
Palmer, T. Eric, 288,494, Cl. D34-5.000.
- Goodyear Tire & Rubber Company, The: See—
Beeghly, Richard M.; Cundiff, William P.; Legas, William H.; Hurst, Lawrence B., Jr.; Crump, Robert L.; and Boore, Robert E., 288,425, Cl. D12-146.000.
- Gowing, James R., to Ebsco Industries, Inc. Fishing lure bill. 288,466, 2-24-87, Cl. D22-28.000.
- Hamilton, Leslie: See—
Blatherwick, William J.; Hamilton, Leslie; and Holewinski, Robert D., 288,482, Cl. D24-31.000.
- Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 288,481, Cl. D24-31.000.
- Hardware & Industrial Tool Co., Inc.: See—
Vosbikian, Mark, 288,400, Cl. D8-1.000.
- Hasbro Industries, Inc.: See—
Williams, Rebecca, 288,456, Cl. D21-159.000.
- Hasegawa, Sigeru: See—
Itoh, Masafumi; Hasegawa, Sigeru; Takita, Haruki; Suzuki, Junko; and Suzuki, Kouji, 288,437, Cl. D14-5.000.
- Hess, Stanley C., to B.M.X. Products, Inc. Bicycle sprocket. 288,421, 2-24-87, Cl. D12-123.000.
- Hewitt, Stephen M. Mirror assembly. 288,385, 2-24-87, Cl. D6-302.000.
- HGM, Inc.: See—
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- Hirai, Masakazu, to Nagase Gomukogyo Kabushiki Kaisha. Ball for use in sports. 288,462, 2-24-87, Cl. D21-205.000.
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	4,644,595	366	4,644,662	412	4,644,732	116	4,644,782	190	4,644,853	90.34	4,644,912
236 R	4,644,596	486	4,644,663	472	4,644,733	117.3	4,644,783	2.09	4,644,854	90.46	4,644,913
449	4,644,597			500	4,644,734	151	4,644,784			90.55	4,644,914
497	4,644,598	CLASS 34		570	4,644,735	187	4,644,785			142.5 R	4,644,915
504	4,644,599	10	4,644,664			290 V	4,644,786			192 B	4,644,916
		26	4,644,665	CLASS 55		293	4,644,787			414	4,644,917
		34	4,644,666	16	4,645,516		4,644,788			425	4,644,918
166	4,644,600	54	4,644,667	182	4,645,517		4,644,789			438	4,644,919
		119	4,644,668	203	4,645,518		4,644,790			479	4,644,920
CLASS 8		CLASS 36		208	4,645,519		4,644,791			489	4,644,921
149.2	4,644,601	9 R	4,644,669	302	4,645,520		4,644,792			493	4,644,922
400	4,645,510	117	4,644,670	309	4,645,521		4,644,793			506	4,644,923
549	4,645,511	119	4,644,671				4,644,794			558	4,644,924
		134	4,644,672	CLASS 56			4,644,795			569	4,644,925
		136	4,644,673	41	4,644,736		4,644,796			602	4,644,926
CLASS 12				249	4,644,737		4,644,797				
1 A	4,644,602	CLASS 40		259	4,644,738		4,644,798				
CLASS 15		27.5	4,644,674	341	4,644,739		4,644,799				
104.3 SN	4,644,603	531	4,644,675	400.04	4,644,740		4,644,800				
244 A	4,644,604	602	Re.32,359				4,644,801				
329	4,644,605			CLASS 57			4,644,802				
330	4,644,606			256	4,644,741		4,644,803				
				263	4,644,742		4,644,804				
CLASS 17				CLASS 59			4,644,805				
45	4,644,607	CLASS 42	4,644,676				4,644,806				
46	4,644,608	CLASS 43		31	4,644,743		4,644,807				
		4	4,644,677	CLASS 60			4,644,808				
CLASS 19		7	4,644,678	39.15	4,644,744		4,644,809				
244	4,644,609	18.1	4,644,679	258	4,644,745		4,644,810				
		44.91	4,644,681	269	4,644,746		4,644,811				
CLASS 23		100	4,644,682	322	4,644,747		4,644,812				
293 R	4,645,512			395	4,644,748		4,644,813				
CLASS 24				459	4,644,749		4,644,814				
30.5 S	4,644,610	CLASS 44		641.2	4,644,750		4,644,815				
231	4,644,611	10 H	4,645,513	676	4,644,751		4,644,816				
295	4,644,612	51	4,645,514	716	4,644,752		4,644,817				
421	4,644,613	63	4,645,515				4,644,818				
453	4,644,614	CLASS 47		CLASS 62			4,644,819				
574	4,644,615	1.41	4,644,683	3	4,644,753		4,644,820				
602	4,644,616	31	4,644,684	18	4,645,522		4,644,821				
611	4,644,617	33	4,644,685	62	4,644,754		4,644,822				
630	4,644,618	71	4,644,686	126	4,644,755		4,644,823				
				127	Re.32,360		4,644,824				
CLASS 28				160	4,644,756		4,644,825				
100	4,644,619	CLASS 49		188	4,644,757		4,644,826				
220	4,644,620	38	4,644,687	234	4,644,758		4,644,827				
247	4,644,621	67	4,644,688	324.1	4,644,759						
271	4,644,622	130	4,644,689	324.6	4,644,760						
		161	4,644,690	514 R	4,644,761						
CLASS 29		213	4,644,691	CLASS 65							
148.4 D	4,644,623	280	4,644,692	3.11	4,645,523		4,644,830				
149.5 R	4,644,624	352	4,644,693	18.1	4,645,524		4,644,831				
268	4,644,625			CLASS 66			4,644,832				
421 R	4,644,626	367	4,644,694	51	4,644,762		4,644,833				
423	4,644,627	75.2	4,644,695	140 S	4,644,763		4,644,834				
429	4,644,628	401	4,644,697	62	4,644,764		4,644,835				
448	4,644,629	502	4,644,699	CLASS 68			4,644,836				
453	4,644,630			276	4,644,766		4,644,837				
460	4,644,631	CLASS 51		312	4,644,767		4,644,838				
469	4,644,632	237 T	4,644,700	364 R	4,644,768		4,644,839				
566.3	4,644,633	241 S	4,644,701	CLASS 70			4,644,840				
	4,644,634	291	4,644,702	276	4,644,766		4,644,841				
568	4,644,635	401	4,644,703	312	4,644,767		4,644,842				
	4,644,636	CLASS 52		364 R	4,644,768		4,644,843				
571	4,644,637	12	4,644,704	CLASS 71			4,644,844				
572	4,644,638	27	4,644,705	88	4,645,525		4,644,845				
589	4,644,639	63	4,644,706	90	4,645,526		4,644,846				
596	4,644,640	65	4,644,707	91	4,645,527		4,644,847				
603	4,644,641	79.14	4,644,709	92	4,645,528		4,644,848				
834	4,644,642	79.9	4,644,708		4,645,529		4,644,849				
	4,644,643	86	4,644,710		4,645,530		4,644,850				
		127.11	4,644,712		4,645,531		4,644,851				
CLASS 30		165	4,644,713	CLASS 72			4,644,852				
28	4,644,644	167	4,644,714	43	4,644,769		4,644,853				
41	4,644,645	170	4,644,715	51	4,644,770		4,644,854				
134	4,644,646	173 R	4,644,716	59	4,644,771		4,644,855				
164.9	4,644,647	209	4,644,717	88	4,644,772		4,644,856				
228	4,644,648	295	4,644,718				4,644,857				
229	4,644,649	311	4,644,719				4,644,858				
250	4,644,650	392	4,644,720				4,644,859				
251	4,644,651						4,644,860				

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CLASS 404	476	4,645,433	431	4,645,694	114	4,645,745	422	4,645,778	286	4,645,836	
6	4,645,375	4,645,434	CLASS 418	35	4,645,695	115	4,645,746	425	4,645,779	402	4,645,837
CLASS 405	55	4,645,435	43	4,645,696	500	4,645,747	444	4,645,777	84	4,645,838	
63	4,645,376	4,645,436	43	4,645,697	509	4,645,748	648	4,645,778	290	4,645,839	
74	4,645,377	4,645,437	68	4,645,698	6	4,645,462	649	4,645,768	84	4,645,838	
146	4,645,378	4,645,438	95	4,645,699	57	4,645,463	657	4,645,780	308	4,645,840	
210	4,645,379	4,645,439	116	4,645,700	4	4,645,464	731				
220	4,645,380	4,645,440	120	4,645,701	40	4,645,465	169	4,645,781	128	4,645,841	
258	4,645,381	4,645,441	141	4,645,702	74	4,645,466	179	4,645,782	541	4,645,842	
264	4,645,382		176	4,645,703	49	4,645,467	221	4,645,783	543	4,645,843	
CLASS 407	587	4,645,644	195	4,645,704	55	4,645,468	400	4,645,784	545	4,645,844	
36	4,645,383	4,645,645	196	4,645,705	73	4,645,470	100	4,645,785	407	4,645,845	
42	4,645,384	4,645,646	213	4,645,706	258	4,645,471	106	4,645,786			
105	4,645,385	4,645,647	215	4,645,707	35	4,645,469	122	4,645,787	9	4,645,847	
113	4,645,386	4,645,648	251	4,645,708	48	4,645,472	137	4,645,788	16	4,645,848	
CLASS 408	186	4,645,649	317.7	4,645,709	79	4,645,473	191	4,645,789	419	4,645,849	
127	4,645,387	4,645,650	433	4,645,710	131	4,645,474	192	4,645,790	431	4,645,850	
230	4,645,388	4,645,651	457	4,645,711	601	4,645,475	199	4,645,791	472	4,645,851	
233	4,645,389	4,645,652	458	4,645,712	48	4,645,476	340	4,645,792			
CLASS 409	49	4,645,653	469	4,645,713	79	4,645,477	404	4,645,793	49	4,645,852	
225	4,645,391	4,645,654	472	4,645,714	131	4,645,478	419	4,645,794			
CLASS 410	244	4,645,655	503	4,645,715	242	4,645,479	423	4,645,795	456	4,645,853	
80	4,645,392	4,645,656	625	4,645,716	106	4,645,480	433	4,645,796	582	4,645,854	
CLASS 411	277	4,645,657	626	4,645,717	150	4,645,481	437	4,645,797			
84	4,645,393	4,645,658	683	4,645,718	189	4,645,482	462	4,645,798	38	4,645,859	
110	4,645,394	4,645,659	690	4,645,719	296	4,645,483	474	4,645,799	99	4,645,860	
210	4,645,395	4,645,660	694	4,645,720	362	4,645,484		4,645,800	370	4,645,862	
387	4,645,396	4,645,661	695	4,645,721	27	4,645,485	119	4,645,801			
431	4,645,397	4,645,662	179	4,645,722	45	4,645,486	140	4,645,802	899	4,645,863	
438	4,645,398	4,645,663	191	4,645,723	26	4,645,487	200	4,645,803			
CLASS 412	62	4,645,664	201	4,645,724	37	4,645,488	247	4,645,804	408	4,645,864	
16	4,645,399	4,645,665	242	4,645,725	66	4,645,489	256	4,645,805			
CLASS 414	89	4,645,666	258	4,645,726	108	4,645,490	279	4,645,806	4	4,645,866	
28	4,645,400	4,645,667	278	4,645,727	150	4,645,491		4,645,807	58	4,645,867	
222	4,645,401	4,645,668	282	4,645,728	189	4,645,492	15	4,645,808	59	4,645,868	
224	4,645,402	4,645,669	288	4,645,729	220	4,645,493	28	4,645,809	65	4,645,869	
317	4,645,403	4,645,670	296	4,645,730	26	4,645,494	45	4,645,810	103	4,645,870	
417	4,645,404	4,645,671	362	4,645,731	37	4,645,495	93	4,645,811	158	4,645,871	
494	4,645,405	4,645,672	362	4,645,732	66	4,645,496	125	4,645,812	174	4,645,872	
500	4,645,406	4,645,673	362	4,645,733	108	4,645,497	171	4,645,813			
730	4,645,407	4,645,674	362	4,645,734	150	4,645,498	331	4,645,814	175	4,645,873	
733	4,645,408	4,645,675	362	4,645,735	189	4,645,499	336	4,645,815	180	4,645,874	
735	4,645,409	4,645,676	362	4,645,736	220	4,645,500		4,645,816	248	4,645,875	
740	4,645,410	4,645,677	362	4,645,737	26	4,645,501	15	4,645,817	276	4,645,876	
753	4,645,411	4,645,678	362	4,645,738	37	4,645,502	28	4,645,818	303	4,645,877	
786	4,645,412	4,645,679	362	4,645,739	66	4,645,503	45	4,645,819	362	4,645,878	
CLASS 415	20	4,645,680	362	4,645,740	108	4,645,504	93	4,645,820	378	4,645,879	
72	4,645,413	4,645,681	362	4,645,741	150	4,645,505	125	4,645,821	390	4,645,880	
83	4,645,414	4,645,682	362	4,645,742	189	4,645,506	171	4,645,822			
115	4,645,415	4,645,683	362	4,645,743	220	4,645,507	331	4,645,823	175	4,645,873	
170 R	4,645,416	4,645,684	362	4,645,744	26	4,645,508	336	4,645,824	180	4,645,874	
199.5	4,645,417	4,645,685	362	4,645,745	37	4,645,509		4,645,825	248	4,645,875	
210	4,645,418	4,645,686	362	4,645,746	66	4,645,510	15	4,645,826	276	4,645,876	
CLASS 416	582	4,645,687	362	4,645,747	108	4,645,511	28	4,645,827	362	4,645,877	
48	4,645,420	4,645,688	362	4,645,748	150	4,645,512	45	4,645,828	378	4,645,878	
92	4,645,421	4,645,689	362	4,645,749	189	4,645,513	93	4,645,829	390	4,645,879	
93 A	4,645,422	4,645,690	362	4,645,750	220	4,645,514	125	4,645,830			
140	4,645,423	4,645,691	362	4,645,751	26	4,645,515	171	4,645,831	10	4,645,840	
198 A	4,645,424	4,645,692	362	4,645,752	37	4,645,516	331	4,645,832	16	4,644,942	
215	4,645,425	4,645,693	362	4,645,753	66	4,645,517	336	4,645,833			
CLASS 417	39	4,645,694	362	4,645,754	108	4,645,518		4,645,834	21	4,645,841	
38	4,645,426	4,645,695	362	4,645,755	150	4,645,519	15	4,645,835	23	4,645,842	
108	4,645,427	4,645,696	362	4,645,756	189	4,645,520	28	4,645,836	48	4,645,843	
273	4,645,428	4,645,697	362	4,645,757	220	4,645,521	45	4,645,837	55	4,645,844	
312	4,645,429	4,645,698	362	4,645,758	26	4,645,522		4,645,838			
359	4,645,430	4,645,699	362	4,645,759	37	4,645,523	106	4,645,834	463	4,644,999	
401	4,645,431	4,645,700	362	4,645,760	66	4,645,524	190	4,645,835			
420	4,645,432	4,645,701	362	4,645,761	108	4,645,525					

CLASSIFICATION OF DESIGNS

D1—	128	288,380	D8—	1	288,400	119	288,420	55	288,441	205	288,461	31	288,481							
		288,381			288,401	123	288,421	63	288,442		288,462		288,482							
D2—	314	288,382		14	288,402	136	288,422	86	288,443	254	288,463	32	288,483							
	318	288,383		36	288,403		288,423	94	288,444		288,464		288,484							
D3—	48	288,384		49	288,404	146	288,424	106	288,445	D22—	15	288,465	51	288,485						
D6—	302	288,385		72	288,405		288,425		288,446		288,466		288,486							
	356	288,386		78	288,406	147	288,426	107	288,447	30	288,467	D25—	10	288,487						
	366	288,387		354	288,407	153	288,427	111	288,448	117	288,468		288,488							
		288,388		499	288,408	169	288,428	D15—	78	288,449	D23—	21	288,469		288,489					
		288,389	D9—	305	288,409	192	288,429	D19—	49	288,450		55	288,470		288,490					
	379	288,390		335	288,410		288,430	D21—	12	288,452		71	288,471	D28—	91.1	288,491				
	429	288,391		455	288,411	211	288,431		77	288,453		77	288,472	D32—	6	288,493				
		288,392	D10—	6	288,412	D13—	5	288,432		65	288,454		124	288,473		288,494				
	436	288,393		57	288,413		288,433		65	288,454		124	288,473		54	288,494				
	475	288,394		64	288,414		288,434		120	288,455		143	288,474	D34—	1	288,493				
		288,395		78	288,415	19	288,435	359	288,456		288,475		10	288,494		5	288,495			
		288,396		103	288,416	99	288,436		288,457		288,476		149	288,476		10	288,495			
D7—	1	288,397		104	288,417	D14—	5	288,437	171	288,458	D24—	10	288,477		17	288,496		24	288,497	
	9	288,398		103	288,417		288,438	6	288,438	191	288,459		17	288,478		17	288,497		24	288,497
	509	288,398		104	288,418		288,439		288,439	195	288,451		288,479		28	288,498		28	288,498	
	313	288,399	D12—	106	288,419		288,440		288,440	198	288,460	21	288,480	D99—	36	288,499		36	288,499	

CLASSIFICATION OF PLANTS

P—	68	5,887	5,888	5,889	5,890	69	5,891	88	5,892
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PATENTS

01 :	4,644,759	4,645,017	4,645,666	4,646,310	4,646,106	4,645,181
	4,645,448	4,645,061	4,645,706	4,646,312	4,646,198	4,645,298
	4,645,462	4,645,076	4,645,737	4,646,322	4,646,199	4,645,682
	4,645,488	4,645,080	4,645,743	4,646,331	4,646,200	4,645,909
	4,645,840	4,645,103	4,645,814	4,646,336	4,646,241	16 : 4,645,461
02 :	4,645,376	4,645,118	4,645,824	4,646,338	4,646,311	17 : 4,644,605
04 :	4,644,595	4,645,121	4,645,837	4,646,348	4,646,324	4,644,685
	4,644,598	4,645,131	4,645,843	4,646,351	4,646,342	4,644,689
	4,644,600	4,645,137	4,645,859	4,646,699	4,645,327	4,644,691
	4,644,649	4,645,147	4,645,860	4,644,719	4,645,329	4,644,812
	4,644,662	4,645,163	4,645,888	4,644,842	4,645,531	4,644,915
	4,644,715	4,645,198	4,645,916	4,644,949	4,645,692	4,644,958
	4,644,811	4,645,200	4,645,935	4,644,977	4,645,710	4,644,965
	4,645,032	4,645,209	4,645,947	4,645,016	4,645,794	4,644,968
	4,645,161	4,645,223	4,645,953	4,645,149	4,645,839	4,645,004
	4,645,280	4,645,228	4,645,960	4,645,227	4,644,803	4,645,092
	4,645,439	4,645,237	4,645,978	4,645,242	4,644,627	4,645,104
	4,645,458	4,645,244	4,645,994	4,645,308	4,644,663	4,645,127
	4,645,521	4,645,261	4,645,999	4,645,745	4,644,669	4,645,187
	4,645,551	4,645,262	4,646,003	4,645,746	4,644,681	4,645,386
	4,645,644	4,645,291	4,646,015	4,646,177	4,644,682	4,645,399
	4,645,869	4,645,318	4,646,016	4,646,281	4,644,726	4,645,455
	4,646,005	4,645,324	4,646,017	4,646,017	4,644,732	4,645,464
	4,646,033	4,645,338	4,646,018	4,646,346	4,644,775	4,645,475
	4,646,036	4,645,359	4,646,019	4,644,591	4,644,861	4,645,490
	4,646,270	4,645,391	4,646,020	4,644,740	4,644,902	4,645,499
05 :	4,644,955	4,645,393	4,646,021	4,644,800	4,644,935	4,645,519
	4,645,658	4,645,397	4,646,022	4,644,901	4,644,951	4,645,601
06 :	Re.32.364	4,645,398	4,646,027	4,644,924	4,644,952	4,645,638
	4,644,599	4,645,404	4,646,032	4,644,931	4,645,011	4,645,673
	4,644,604	4,645,426	4,646,043	4,645,286	4,645,037	4,645,753
	4,644,606	4,645,442	4,646,060	4,645,289	4,645,069	4,645,759
	4,644,638	4,645,453	4,646,080	4,645,295	4,645,158	4,645,813
	4,644,641	4,645,456	4,646,096	4,645,352	4,645,217	4,645,838
	4,644,652	4,645,460	4,646,114	4,645,411	4,645,317	4,645,870
	4,644,676	4,645,463	4,646,128	4,645,415	4,645,373	4,645,942
	4,644,706	4,645,465	4,646,163	4,645,416	4,645,466	4,645,962
	4,644,709	4,645,467	4,646,167	4,645,418	4,645,556	4,645,987
	4,644,714	4,645,471	4,646,178	4,645,420	4,645,732	4,645,988
	4,644,720	4,645,486	4,646,214	4,645,423	4,645,798	4,646,006
	4,644,745	4,645,489	4,646,220	4,645,424	4,645,846	4,646,038
	4,644,785	4,645,502	4,646,226	4,645,425	4,645,871	4,646,068
	4,644,807	4,645,503	4,646,231	4,645,567	4,645,880	4,646,082
	4,644,814	4,645,504	4,646,237	4,645,602	4,645,995	4,646,101
	4,644,866	4,645,514	4,646,254	4,645,730	4,645,996	4,646,133
	4,644,880	4,645,515	4,646,256	4,645,803	4,646,061	4,646,159
	4,644,930	4,645,542	4,646,261	4,645,886	4,646,120	4,646,216
	4,644,941	4,645,552	4,646,262	4,645,889	4,646,325	4,646,218
	4,644,946	4,645,562	4,646,269	4,645,927	4,646,358	4,646,224
	4,644,962	4,645,577	4,646,275	4,645,933	4,644,886	4,646,277
	4,644,971	4,645,586	4,646,299	4,646,007	4,644,890	4,646,287
	4,644,992	4,645,587	4,646,300	4,646,041	4,645,071	4,646,326
	4,645,015	4,645,588	4,646,308	4,646,087	4,645,089	4,646,345

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DESIGN PATENTS

01 :	288,458		288,484		288,432		288,454		288,471		288,404
05 :	288,466		288,493		288,433		288,456		288,481	39 :	288,418
06 :	288,384		288,495		288,463		288,497		288,482	41 :	288,465
	288,392	08 :	288,429		288,464	26 :	288,380	36 :	288,397	42 :	288,394
	288,402		288,430		288,480		288,381		288,414		288,487
	288,406		288,443	18 :	288,385		288,401		288,415		288,488
	288,421	09 :	288,410	20 :	288,417		288,485		288,419		288,489
	288,434		288,472		288,473	27 :	288,478		288,427	48 :	288,383
	288,446	12 :	288,391	24 :	288,425	30 :	288,449		288,445		288,467
	288,470		288,486		288,436	34 :	288,400		288,479		288,469
	288,477	17 :	288,399	25 :	288,408		288,416	37 :	288,496	49 :	288,435
	288,483		288,403		288,411		288,455		288,393		

PLANT PATENTS

06 :	5,891	12 :	5,892	41 :	5,890			
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